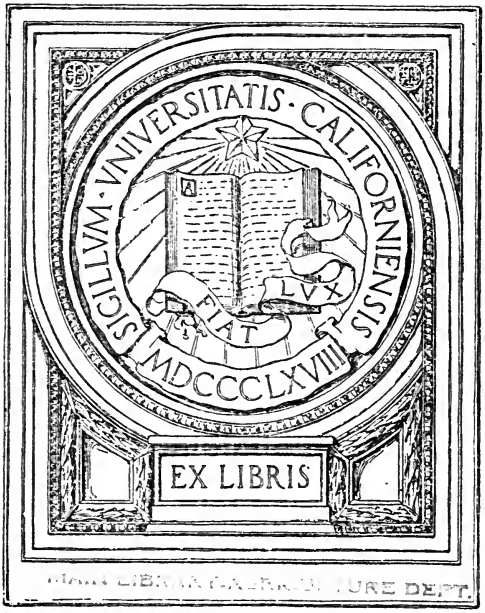
ORNAMENTAL GARDENING IN FLORIDA

CHARLES T. SIMPSON



COCONUT PALMS NEAR MIAMI.

These magnificent palms, growing on the estate of Charles Deering at Buena Vista, are as large and vigorous as any to be found in the South Sea islands, and annually bear heavy crops of nuts. The coconut is a prince among ornamental plants; it can almost be considered, in fact, emblematic of the tropics, and its presence in any planting creates an atmosphere which cannot be produced by any other member of the plant kingdom. (Frontispiece)

ORNAMENTAL GARDENING IN FLORIDA

BY

CHARLES TORREY SIMPSON

A TREATISE ON THE DECORATIVE PLANTS ADAPTED TO FLORIDA AND THEIR CULTIVATION, WITH SUGGESTIONS FOR THE ORNAMENTATION OF FLORIDA HOMES AND GROUNDS

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TO MR. CHARLES DEERING WHO, INSTEAD OF DESTROYING
THE HAMMOCK, IS CREATING IT, THIS LITTLE
BOOK IS RESPECTFULLY DEDICATED.

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INTRODUCTION.

In the Proceedings of the Florida Horticultural Society for 1912 there was published a paper by the writer entitled "Ornamental Plants of Dade County, Florida," giving some account of the native and exotic plants of the region which it covered. On account of the fact that no separates of this were printed an illustrated edition was published later which met with considerable favor from plant growers and lovers in general. The suggestion has frequently been made to the author that he write something more extended and the following pages are the result.

Florida, especially the southern part of it, is really so new that we know but little as to what we can or can not do in the matter of growing ornamental plants, or making and decorating homes within its borders. The writer has had over thirteen years of experience in cultivating plants in Dade County and four in Manatee County and yet he feels that he is not competent to teach. Many things that he once supposed he had learned he has later been compelled to unlearn, and every day new problems are coming up which must be solved, problems for which the books on gardening give no help whatever. This little work is written, then, more as a set of suggestions than of instructions. I said in my paper on Dade County plants that it was a sort of first aid, and the same remark may be applied to this.

We can scarcely form the faintest conception of the enormous number of useful and ornamental trees and plants from the warmer parts of the world which will grow within the limits of this state. The veteran botanist and explorer, Richard Spruce, who spent fifteen years in the equatorial regions of South America in search for new plants (1849–1864) in a letter to George Bentham says:—"I have lately been calculating the number of species that yet remain to be discovered in the great Amazonian forest, from the cataracts of the Orinoco to the mountains of Matto Grosso; taking the fact that by moving away a degree of latitude or longitude I found about half the plants different as a basis, and considering what very narrow strips we have up to

this day actually explored, and that often very inadequately, by Humboldt, Martius, myself and others, there should still remain some 50,000 or even 80,000 species undiscovered."

That was in 1864, and only a few of these new things have since been introduced. Think, then, of the enormous number yet to come from the warmer regions of the earth, that will flourish here and help to beautify the gardens and homes of our state. Hundreds of new things are coming in every year and in many cases we receive almost no information with them. We learn nothing of their habitats, whether they are trees, shrubs or vines, nor anything of the treatment they need. Is it any wonder that much of our gardening is merely an experiment, that we lose a large number of our finest plants because we do not know how to give them proper treatment?

Indeed, for that matter, we scarcely know more of a great number of plants which are described in standard works on gardening and are offered for sale by nurserymen. The grower here must very often find these things out by his own, often bitter, experience. He constantly finds himself planting things in the wrong places, in improper soil, with wrong conditions of light and shade and moisture; what he gives them for fertilizer may be poison, and what he intends for the kindest treatment may ruin them. It will sometimes happen that he will have plants for years which do no good under various kinds of treatment that with something still different begin to flourish. Again and again I have tried plants under different conditions, losing one after another until I concluded they were not adapted and could not be grown here. Then, perhaps, I would see the same thing growing for others like the proverbial green bay tree, and after a trial under the right conditions it would succeed with me.

It seems to be reasonable, then, that if any one here has had any considerable experience in growing ornamentals in Florida his knowledge, his successes and failures must be of some value if given to others who have had little or no opportunities along such lines, but who want to grow plants. This little work is in no sense whatever a manual of gardening or an encyclopedia of plants. Any one who has an extensive collection, or who cultivates on a large scale, should by all means have one or more

such works. Even the small grower will find it to his advantage to have some of these books which will help, at least, in identifying the things that are unknown to him. I have written this for Florida where our conditions are peculiar, and, as a general proposition, it would be of little value elsewhere. The plants of the warmer regions which are cultivated in the north are usually grown in rooms or glass houses, mostly with artificial heat, and they are often bedded out in the summer in the open ground. As a consequence they are usually dwarfed and do not have the vigor or attain the size that they do in Florida.

This work covers a somewhat wider field than mere ornamental gardening; it is intended to discuss in a general way the decoration and beautifying of homes and grounds in our territory. I have as far as possible endeavored to give some idea of the comparative hardiness or tenderness of the plants discussed. Those which I have mentioned as being suitable for cultivation in the extreme lower part of the state will generally be too tender to grow much north of that region. Usually, though not always, where it is stated that plants come from the tropics they are quite tender. Most things which are hardy in the northern part of Florida will flourish down two-thirds of the length of the state, but comparatively few of them will succeed at the extreme lower end of it.

In some cases it is quite probable that errors have been made in identifying species, as I have not had access to extensive libraries or herbaria. Many of the descriptions in the botanies and encyclopedias are so brief, so vague and misleading that it is absolutely impossible for any one with ordinary intelligence to make anything out of them. These descriptions, often containing not over fifteen or twenty words, are as dry as the moral law, appearing as though their author had put his data into a hopper, turned the crank and ground the thing out, there being no remarks or comparison with other species. Even expert botanists with whom I have worked complain that they can make out nothing with certainty from such descriptions.

It is quite probable that the matter of this little work will be found to be rather fragmentary and disjointed as it has been written, for the most part, a few minutes at a time during rests

from the work of hoeing, wheeling muck, digging and attending to my garden.

My experience in gardening in Florida is confined to the lower part of the peninsula. In order to form some idea of what could and what could not be grown in different parts of the state I sent lists of plants to several growers of large experience in various places, asking them to mark such as had succeeded or failed and to give other data, also to add additional species to the lists and their knowledge of how they had done. Mr. Frank MacLaren of Fernandina, Mr. John Schnabel of Gainesville, Mr. C. E. Pleas of Chipley, Mr. E. N. Reasoner of the Royal Palm Nursery at Oneco, Prof. H. Nehrling of Gotha and Mrs. Marian McAdow of Punta Gorda have rendered the greatest assistance in this way. I have visited a large number of places scattered throughout the state and made notes on the cultivated ornamentals and asked questions. Mr. Charles Mosier of Little River has given me great help on the chapter on insects and plant diseases.

I am indebted to Mr. Charles Deering who is developing a wonderful garden here, to Mr. David Fairchild and Mr. Wilson Popenoe of the United States Department of Agriculture, and to Mr. Paul Popenoe of the American Genetic Association, for great and repeated favors and help in getting up this little work.

The American Photograph Company of Havana, Cuba, has kindly permitted me to use the picture of the Cuban highway, the splendid group of royal palms, and the great bamboos overlooking the water.

The chapters "In The Hammock" and "A Midsummer Morning at The Sentinels" were published in the *Tropic Magazine.* While they do not strictly pertain to gardening they set forth the beauties of an ornamental home in Florida.

There are 100,000,000 people in the United States today, and this number may be doubled within the lifetime of many of those who will read this little treatise. The wealth of the country is increasing at a remarkably rapid rate. A constantly augmenting number of people are coming to Florida each year to spend their winters or to make permanent homes. It is becoming a rich

man's playground, a land of attractive winter homes for people in moderate circumstances and a refuge for thousands who are suffering from various ills of the flesh. I can look forward with full confidence to a time in the near future when a large area within the territory covered in this work will be girdled with the finest of roads bordered with beautiful tropical and semi-tropical shade trees; I can see the land filled with happy homes shaded and embowered with the glorious vegetation of the equatorial regions, a land of peace and contentment, a land of hope, of rest for the weary, a land of perennial verdure and fadeless beauty.

LAYING OUT GROUNDS AND CLEARING LAND.

Any one reading the title of this chapter might think that I had put the cart before the horse, but I feel satisfied that the two headings have been placed in their proper sequence. It is customary in Florida when making ready to build a home to clear out all or nearly all the vegetation on the land and then plan for roads, paths and general planting. I believe it to be the part of wisdom to carefully study one's land and location from every direction for a considerable time, if possible, before beginning the labor of clearing. One should know his land as a pilot knows his river before commencing work and he should have a tolerably clear idea of what he wants to do.

It is an excellent plan to construct a light, cheap, portable frame or scaffold so that one can get up on it to a height of twelve or fifteen feet above the ground level. This may be built of 1 x 3 strips, with cross pieces and braces and pieces nailed on for steps, so that one can mount to the top of it. It can be set where one thinks of placing his house and from the top of it he can form an idea of what kind of views he will have from his windows. Two men should carry it about and by its aid one can form a far better idea of the lie of his land, of what will make a fine vista and what is likely to be unsightly, than he could at ground level.

If convenient, the site chosen for the dwelling should be on a slight elevation; certainly it should not be in a depression, and if one is compelled to locate in such a place the house should, by all means, be set up high enough so that the surface may be filled in to a level. If there are unsightly objects in the view it should be so placed that they may be screened out by plantings of quick growing trees. If there are fine views set the building so that they may be seen from the windows. It will be found well worth while in many cases to devote considerable time and study to the selection of the site, for a mistake made in this matter cannot be remedied.

Most of the homes in Florida must be located on pine land,

as there is comparatively little hammock in the state. It is getting to be the fashion nowadays, and a good fashion it is, to leave standing all the clean, healthy pine trees. They shade the ground to some extent and furnish some shelter, and they blend fairly well with the planted vegetation. They do not rob the ground of fertility to any great extent, and they relieve the place from the dreadful appearance of bleakness and nakedness it would have if everything was cut away. I consider it an excellent idea to preserve the young pines and a goodly number of the scrub palmettos. They furnish an admirable shelter for the young and tender plants which the home builder puts out. They break the force of winds, they are some protection from frost and if the little things are frostbitten they keep the sun from striking them early in the morning, at the time when its effects are deadly. The saw palmetto grows over almost the whole state, and from middle Florida southward a dwarf cabbage palmetto is mixed with it. In the Biscayne Bay region there flourishes, especially on the rocky ridges, a lovely small silver palm (*Coccothrinax garberi*). In many places in the northern half of the state is found a dwarf Sabal (*S. adansoni*) and the beautiful Porcupine Palm (*Rhapidophyllum hystrix*). All of these will flourish when the thick scrub is cleared away from about them, even without fertilizer, and if given a little care they all make fine ornamentals. Any of them can easily be cleared away at any time when the planted vegetation has attained some size.

In the northern part of the state the hammocks consist of live oak and one or more other oaks, hickory, red bay, liquidambar, cabbage palmettos and a few other species of trees and shrubs. In a few places some of the more northern vegetation is found such as elms, maples, walnuts and the like. As we go southward most of these drop out and are replaced by a great variety of tropical trees, so that by the time the extreme southern end of the mainland and lower keys is reached practically everything belongs to the torrid zone, the species being almost without exception those which have their metropolis in the West Indies and the Spanish Main.

No word picture can give the faintest idea of the bewildering beauty of many of these hammocks, especially those of the

warmer parts of the state. The live oaks and some other trees are draped with wonderful festoons of long moss, the strange and startling cabbage palmettos are in evidence everywhere, wild coffee and other handsome shining leaved shrubs carpet the ground, and an orgy of vines and creepers sprawl and clamber over all. The trees are veritable air gardens, being loaded to the breaking point with epiphytic orchids, Tillandsias, Peperomias, Guzmannias, Catopsis and a variety of beautiful ferns.

I wish it were in my power to persuade my readers who come into possession of such land to leave this glorious vegetation just as nature has created it. The small remnant of this untouched beauty is fast disappearing before the settler's fire and ax and especially before the real estate man. Mankind everywhere has an insane desire to waste and destroy the good and beautiful things that nature has lavished upon him.

Several years ago a man from the North spent a winter near my home and was a frequent visitor in my hammock. He claimed to be a lover of nature but he wrote atrocious doggerel poetry, and what was worse, he insisted on inflicting it on me. One day he dragged me to a seat in the hammock and read me one of these effusions containing some fifty or sixty stanzas and then looking around he said: "Do you know what I would do with this timber if I had it?" and when I gave it up he said: "If this was mine I would take my ax and chop out all the underbrush and all the crooked and little trees, and I'd clean out all those gnarly oaks that is layin' round and I'd pull off that long moss an' all that rubbish that's growin' on them trees and then it would look as tho' somebody had been here and done something for it." Sure enough, that is just what the average person seems to be crazy to do, he wants to clean up, to improve, to let people know that he has been there and with his wisdom has fixed things and made them "look purty."

It seems to be an instinct among humans to want to mutilate, cut down and destroy trees. Sir James Brooke tells how the lazy natives of Borneo cut down and burn up new tracts of beautiful virgin forest with an outlay of an immense amount of labor, in preference to working the land they already have cleared, though of course the new land is full of roots and stumps.

Here in South Florida we have a lot of men who buy up land, clear off the vegetation, lay it out into lots and sell it. It seems to be their especial delight to get hold of hammock, put in a gang of ignorant Negroes, and utterly destroy the beautiful growth that it has taken centuries to create.

If you are fortunate enough to obtain a piece of virgin hammock, let it alone for a time; study it carefully and learn its beauties, learn to love and fully appreciate it, find out all the objects of interest in it and when you are fully acquainted with its weird attractions a path or paths may be carefully cut through it to whatever is of most interest, always leading these trails along the lines of least resistance. As a general thing no large or valuable trees need be removed, and abrupt turns are allowable. The walk may be carried far enough in from the border of the wood so that one cannot see out and yet far enough away from any of its turnings or reaches that it will be impossible to see across to it. In this way it will make the hammock appear to be much larger than it really is.

There should be an open space left in front of the house for a lawn or grass plot. Even if one has only a good sized lot it seems to me to be better taste to lay out a small area to be planted in grass than to fill up the whole with trees and shrubs. Leave it all free and open; do not disfigure it by putting beds of plants or shrubs in it. Its border does not need to be regular; in this one may well imitate nature, and nature doesn't make straight rows or borders. Keep the roads and paths away from the center of the lawn; in fact let it be an uninterrupted sheet of grass if possible.

Whatever is done in the way of laying out a place should be honest and sincere; there should be no shams, no shallow trickery. One should remember that he is doing work for a lifetime; if it is to be his home he will have to live with it; it will be his constant companion year by year. It is wise then to give to such a task plenty of time and the very best that is within him. Of course if one has an extensive tract it may be best to consult a landscape gardener, but it seems to me that in a majority of cases where there is only a limited area it is best for one to find out what he wants, study carefully the situation and work out a plan himself.

FORMAL OR GEOMETRIC GARDENING.

Formal gardening is a sort of compromise between natural gardening and architecture. As I am not an architect I scarcely feel competent to discuss the subject. Edward Kemp, a celebrated English gardener, speaks of it in this manner,—"Doubtless the geometrical style is that which an architect would most naturally prefer; for it subordinates everything to the house, and is a carrying out of the principles common to both itself and architecture. A series of straight lines, joining one another at right angles, and of beds in which some form of a circle or a parallelogram is always apparent, or which fit into any regular figure, are, as just before remarked, the leading and most expressive features of this style. Flights of steps, balustraded walls, terrace banks, symmetry and correspondence of parts, circles, ovals, oblong and angular beds, exotic forms of vegetation, raised platforms and sunken panels are some of the materials with which it deals."

The formal style of gardening is adapted to the grounds of public buildings, especially those of classic design, and to small places where there is not room to produce any general landscape effect, such as homes in cities and towns. In all cases the architectural idea is dominant and the vegetation is more or less subservient.

Where the dwelling or public building is large a terrace is often made which may entirely surround it; at least it should do so at the front and sides. This may be of considerable width; it can join the level of the grounds by a sharp slope of turf or by a parapet or wall, and in elaborate designs this is usually surmounted by a balustrade. This parapet and balustrade should be made of stone or concrete, as wood is too cheap-looking for such a place and it decays too soon. The terrace may be wide enough so that beds of low growing ornamental plants can be put out in it, or the whole may be closely cropped lawn.

Usually the approach to the main building is broad and straight; the grounds are laid out in squares, parallelograms,

circles or ellipses; in short, in strictly geometrical designs. Ordinarily the design on the one side of the approach is exactly like that on the other.

The walks are highly finished and often bordered with some kind of low growing plant; sometimes merely with close cropped turf. In some cases low hedges border the walks. In the cooler part of Florida the different forms of box or the privets will be found useful for such purposes; farther south the Alternantheras will make fine borders and *Phyllanthus nivosus* will produce admirable hedges. The Acalyphas make attractive hedges in the most tropical part of the state.

In some cases the main figure in a geometrical garden may be made in the form of a large square or parallelogram; the ends or corners can be rounded or square. Around this design a broad path or roadway is made and the main pattern can either be left entire or subdivided by narrower walks. Often this main design is wholly or in part sunk below the level of the main surrounding walk, as if it were a picture set within a frame. This central part may be wholly of closely cut lawn, or it may have one or more fountains or choice pieces of statuary or a few neat beds of low growing plants. Around its border there might be planted formal looking large plants or even trees in case the design is a large one. Such things as *Phoenix canariensis*, *P. dactylifera*, Cycas of different species, Yuccas, Dioon, in fact most of the Cycads, some of the Dracaenas, *Cordyline indivisa* and *C. australis* and a number of other formal looking plants will look well in such situations if kept in good shape. This large central design may be located immediately in front of the central structure or at one side of it.

Outside of the broad path or roadway between it and the wall enclosing the whole a wide border may be planted. This should consist of low growing stuff nearest the walk; farther back larger growers may be put in and the back part or outside of the planting can be moderate sized trees. This outer border need not be kept in such regularity as is the inner part. In fact the growth in it may be allowed to become somewhat irregular.

Sometimes the owner of a large place which has been planted in the natural way may want a piece of formal garden, a flower

garden perchance. This can be placed to one side and screened off from the more natural part by a wide border of planting, irregular on the outside and more evenly finished on the inside.

One of the fine examples of geometrical gardening is the grounds of the Casino at Monte Carlo, France. The garden at Mount Vernon, the former home of Washington, is an example in our own country of the old-fashioned formal style of gardening. In it are closely sheared hedges, some of them straight, others made into a variety of more or less intricate patterns.

It may be well for those who have only a city or town lot to adopt the formal style of decoration in a greater or less degree. The front walk had best run from the main entrance to the road or street and at right angles with the house. If desired some kind of geometric design could be made on each side of it, either in the way of plant beds or a simple affair bordered with some such thing as Alternanthera, Alyssum, Echeveria or box.

To my mind the specimens of sheared trees and shrubs which we sometimes see in formal grounds are simply monstrosities. They certainly do not represent nature and they are atrocities as art. It may be allowable sometimes to shear a couple of trees or shrubs at the entrance of a formal garden so that with training they will form an arch, but what beauty or sense is there in mutilating with the shears an acre or more of trees as is seen in some of the so-called Italian gardens?

Remember that whatever is attempted in formal gardening should be honest. Unless one is a master at designing the plan had better be simple, and simplicity often marks the work of a great designer. The geometrical garden is a picture and the picture should represent something; it should not be spoiled by frivolities and absurdities.

MAKING A HOME IN FLORIDA.

There is a class of people that comes down to Florida merely to escape from the cold and discomforts of winter. Whatever there may be of beauty here does not seem to appeal to such, or only in a small degree. They arrive in November or December and after spending a winter or two here they buy a piece of land and build. After completely clearing out all the native vegetation from the land they put up a cheap and nasty house of hideous design,—I say design, because their builders appear to have deliberately intended to make them unattractive. The final touch is perhaps added to the pile in the shape of a paper roof. Almost any kind of a shelter seems to be good enough,—though probably their owners are abundantly able to build decently,—and in this they remain until March or April and then flit north, leaving the place to look out for itself, to grow up with the vilest weeds which spread their seeds over the land of those who remain here.

I am not attempting to cast any slur on the tourist or winter resident in general. There are thousands of such who are charmed with the beauty of Florida, who fully appreciate its splendid climate and who are ready to join in any move to upbuild it and advance its interests. Neither am I wishing to say anything disrespectful about those who haven't the means to build expensive places. It is easily possible at a cost of seventy-five or a hundred dollars to construct of rough boards a house that will be attractive, and to surround it in a short time with inexpensive trees and plants in such a way that the whole will be a veritable bit of paradise. I am simply berating in my gentle way the man or woman who merely comes here for physical comfort, who cares nothing for the welfare of the state or its people, whose eyes are blind to beauty, whose ears are deaf to progress and the general welfare.

There are many thousands in the states to the north of us who are honest, willing to learn, energetic, who come here and are ready to help on with the glorious work of making Florida

a beauty spot, and at the same time make for themselves pretty homes. It doesn't require much to make an attractive home; many a man wastes a hundred thousand on buildings and grounds which, in the end, are perfectly hideous. A little taste, a little good sense and judgment and a small amount of careful study will go a long way farther towards making an attractive home than a large sum of money without them. I think it is far better even to servilely copy after that which is beautiful than to originate that which is ugly. If you cannot design a tasteful house and grounds take your time and look around: in every neighborhood some one will be pretty sure to have an attractive home. Talk with the owners of such places, ask for suggestions. I am sure that almost any one in Florida with such a place would be willing to help others who are to be their neighbors to make nice homes. No one of taste wants a monstrosity of a house or grounds near him; therefore as a matter of self-defense he will be willing to help a newcomer in such matters.

Don't undertake to do too much; let the house be simple and adapted to the climate and surroundings; let your work outside be for a purpose. Don't make serpentine walks or drives merely in order to imitate the crawling of a snake. Every curve should be for a reason and a reasonable directness is best in all walks that are much frequented, in other words, business walks.

There are several grasses that make good lawns here; the St. Lucie grass, a variety of the Bermuda grass which does not produce underground runners; the St. Augustine grass, which is a strong grower, and some others make good covering.* In my own lawn, if I can call it that, I let the native grasses and herbaceous plants grow at first, thinking to plant St. Lucie grass later. I cut this growth down once or twice a year and now I have become so attached to these beautiful and interesting plants that I have not the heart to destroy them. They make an open space in front of my home and I botanize out there and enjoy them and, on the whole, I am as well satisfied as if I had a smooth, velvety turf.

The ground for a lawn or grass plat should be cleared of roots or rock to the depth of half a foot and levelled; then, during a wet time if possible, plant pieces of grass in rows a foot or so

*_Zoysia pungens_, recently introduced, is a beautiful lawn grass.

AN IDEAL TROPICAL HOME.

Houses of this type, which are seen throughout Latin America, are admirably adapted to the tropical climate and fit in harmoniously with the surroundings. The tall palms on either side are *Chrysalidocarpus lutescens*. (Fig. 1)

THE SENTINELS.

Home of the author at Little River, Florida. The two Cuban pines, which stand like sentinels in front of the house, have given the name to the place. To the right is a border of palms, ornamental trees, and tropical shrubs. (Fig. 2)

A COUNTRY HOME IN CUBA.

A good example of artistic planting. Shrubs and palms are grouped around the edges of the lawn and at each side of the house, but the lawn itself is left unbroken. This is the home of Prof. F. S. Earle at Herradura. (Fig. 3)

ORNAMENTAL PLANTS IN A CUBAN COURTYARD.

Crotons, Monstera, and Bougainvillea are planted along the edge of the veranda, while to the right stands *Araucaria excelsa*. A circle of Royal Palms surrounds the fountain in the center. (Fig. 4)

apart; water well and when the ground is covered it should be mowed.

Of course every one making a home in Florida is anxious to have a good showing from his plantings as soon as possible. It is a fine idea, when planting, to scatter rapid growing trees and shrubs quite freely about one's grounds, as they will soon make a big display. Such things as many species of Ficus (religiosa, nitida, aurea, populnea, elastica and glomerata), *Paritium elatum* and *tiliaceum*, *Albizzia lebbek*, most of the eucalypts, Adenanthera, *Terminalia catappa*, *Delonix regia*, Eriodendrons, and *Cassia fistula* for the warmer parts of the state and *Melia azedarach var. umbraculiformis*, the maples and oaks for the cooler parts of Florida. Among the palms Cocos in variety, most of the dates, Archontophoenix, the Acrocomias, the Neowashingtonias, the royal palms and oil palm (*Elaeis guineensis*) grow to good size very quickly. *Eugenia jambos*, *Hibiscus rosa-sinensis*, Dombeyas, Crape myrtles, the Pittosporums, the Oleanders, *Pandanus sanderiana* and *veitchi* among shrubs and herbaceous plants soon get up and cover the ground as well as very many other things. The Giant Bamboos, *Dendrocalamus latiflorus* and *D. strictus* soon make very effective clumps.

If one is in a great hurry to cover his ground and make a showing he can plant the cheapest of these abundantly at first, mingling choicer things freely among them and later he can cut away the commoner things, if he has the heart to do it.

The settler may, perhaps, buy a place on which some improvements have already been made. There may be fruit and ornamental plants already growing and buildings erected. This has both advantages and disadvantages. It is a fine thing to have fruit trees bearing or under way, and whatever growth ornamentals have made saves time in getting a place in order. On the other hand, the planting may be badly done and the buildings are likely to be hideous and misplaced. However, one can generally utilize much of such work and recreate it into beauty by taking time and giving the subject plenty of study. Spare all the vegetation that is possible, remembering that one can destroy in a few minutes what it has taken nature years to produce.

Plans may often be changed so as to leave what is wrongly placed to grow and form part of a perfect whole.

Don't plant trees in rows unless they are put along a straight road or path and never under any circumstances alternate one species with another in a row along a road or anywhere else. It is the fashion in places to put out a California fan palm and a Chinese Hibiscus or a Coconut and some low growing shrub alternating in rows, and it seems to me that no greater atrocity in planting can be perpetrated. I can not conceive how the idea ever originated in the brain of any human being.

In laying out and planting a place of any considerable size it is often possible to make a vista, a view of some pleasing object at a distance such as a group of trees, a fine building, or water. This vista may be cut out through a forest or made by judicious planting of trees and shrubbery. Its borders should be irregular and of varied forms and foliage. Such views may open out upon a landscape that stretches for miles away or it may only extend for a few rods, and if they are managed right they will always be surprising and charming.

Notwithstanding the fact that one encounters many drawbacks and discouragements in laying out and developing a home in Florida the whole process is a delightful one. What can be pleasanter than daily contriving and making plans for buildings, walks and roads, for the disposal of one's trees and plants so that they shall produce the best effects? What a pleasure it is to put a rustic seat here, to open out for, or so to plant trees that he may have a lovely view there. Even one's mistakes are not so bad after all for they help to teach him useful lessons. What a joy it is to watch the plants grow and develop under one's loving care, to realize, that, as the years roll by his home is becoming more and more beautiful, more and more a part and parcel of his very life.

ARCHITECTURE.

Strictly speaking architecture and ornamental gardening are two very different things, and yet, when it comes to making a home, especially in Florida, the two are likely to be intimately connected. I believe that it will not be out of place here to devote a brief chapter to the subject.

Robinson, the noted English gardener, says, "The architect is a good gardener when he makes a beautiful house." And I might add that he is a better one when he makes a house which will harmonize with what are to be its surroundings. The dwelling and all other buildings that are at all conspicuous should be fitted for their surroundings as well as for the purposes for which they are constructed.

The peculiarities of our climate and environment call for peculiar treatment when it comes to the construction of buildings. In thousands of cases people come here from the north and put up just such structures as are built in that region. A great many of these are designed by northern architects who have never been in a tropical or semi-tropical country and who know nothing whatever of the needs of such a region as Florida. In other cases architects come here and bring their ideas with them and turn out work such as they did in the north with but little modification.

California has its own architecture, the Mission style, which is used here to a considerable extent; in New England they have the Colonial style, which is, just now, all the rage generally, even in Florida; the Italian order is also somewhat used here. None of these is just fitted for our climate and needs; why shouldn't we have a Floridian style of architecture?

In this region we have occasional West Indian hurricanes, which usually occur in the fall and they are almost always accompanied by a very heavy fall of rain. One who has never gone through any of these storms can not have the faintest idea either of the fury of the wind or the power and penetrating ability of the water. A house as ordinarily constructed at the north

would be completely saturated from roof to basement during one of these storms. Plaster and wall paper are either ruined or seriously injured, and the contents of rooms sure to be badly damaged. I built the first part of my house with a third pitch roof of the best cypress shingles carefully laid, and it faced to the north and south. During a severe hurricane the wind hauled to the northwest and I am sure that every drop of rain that struck the north side of it was driven by the force of the wind up through the shingles and into the building. Good close workmanship is absolutely necessary, tar paper under shingles and exposed walls is excellent, and a finish of wood alone for rooms, or some material that will not be injured by water.

The greater part of Florida is very flat, especially near the coast. If one's house is placed down near the level of the ground it is impossible to get a view out over the surrounding country. By elevating it a few feet a much better outlook is obtained; if it is raised seven or eight feet so much the better, and the space beneath can be utilized for workshop, photographic dark room, bathroom or other purposes. Insects are far less troublesome in a house so built; there is not one mosquito at an elevation of ten feet where there are a dozen at ground level. It is probable that a house thus built is more conducive to health than one placed close to the ground and there is far less danger of the dreaded wood fungi which attack and destroy timber at or near the soil.

There are probably two or more kinds of these fungi which attack the timber houses of Florida. They work in posts set in the earth or timbers just above it, slowly creeping into the upper structure, sometimes destroying the entire house. No wood should ever be placed on or near the ground in the construction of any building in Florida. Concrete is, no doubt, the coming material, especially for the warmer part of the state. In the southeastern part of it a soft, porous limestone rock is abundant, and this when laid up in a wall without being dressed is very attractive and durable. Such a wall properly laid will stand against any hurricane that visits this region. The upper part of the building may be either of rock, concrete or wood.

In the temperate zone we live inside our houses the greater part of the year; in Florida we live mostly outside of them. At the north we go outside and use the porches for a brief time during the warm season; here we only go inside to eat and sleep, and for shelter during northers or severe storms. It goes without saying then that a dwelling in this region should consist largely of verandas. If one can run a porch entirely around his house so much the better; it will make a delightful place to walk and look out over his garden. With such an arrangement one can always have a chance to promenade unless the weather is very boisterous. I love to walk around my veranda and enjoy my plants, especially by moonlight or during showers. I can rejoice with them when they are being deluged with rain.

Many persons in Florida screen in all or part of a porch and make a sun parlor of it. Such a room is a delightful place in good weather, but it ought to be furnished with heavy roller curtains which can be tightly closed in time of hard storms. Such screened rooms make fine places to sleep in and are all the more desirable if they are located so that one can look out over attractive grounds.

If possible arrange for lovely views when building a dwelling. Everything of beauty on the place or in the immediate neighborhood should be visible from the windows or porches if that is possible. As a general thing the house should be simple in style and an excess of scroll work or furbelows of every description should be avoided. It is true that there are elaborate buildings which are finished most ornately and are at the same time very beautiful; the great cathedral at Milan, which Mark Twain has called "A poem in stone" is an example, but there is not one man in a million who can design such a structure, and there are thousands who can create a tasteful simple building who would fail with an elaborate one.

I have introduced an illustration of my own house which I designed and built. Some of the best architects in the country have pronounced it an atrocity and I present it to my readers in order that they may know what an atrocity is and be able to distinguish one at sight. It shows some of the ideas I have mentioned; the living part elevated well above the ground, the

wide, encircling veranda or gallery as it is often called in South Florida and the West Indies, and the rather sharp roof which has never leaked seriously in the worst hurricane. Some of the ideas embodied in it have been taken from dwellings in Jamaica, Hawaii, Haiti, Cuba and the Philippines; others are my own, and it is not like anything in the heavens above, the earth beneath, or the waters under the earth.

Nature is very kind in this land of warmth and sunshine, where every one plants trees, shrubs and herbaceous plants in their grounds and around their dwellings. In a few brief years the growing vegetation covers up and hides the deformities and mistakes of the builder; trees screen it out and kindly vines most mercifully spread themselves over the architectural enormities that man has perpetrated, so that at length his shortcomings and blunders are made a part of a thing of beauty and elegance.

SOIL; FERTILIZERS.

Florida is not only a new country so far as development and settlement are concerned but it is new geologically. No strata are known within its borders that are older than the Tertiary, and much of it belongs to what the older geologists called the Recent. And throughout a large part of the state there is a sort of unfinished appearance, as though its creation had been begun late in the week and Saturday night had come on before it was done. An acquaintance of mine from Illinois came to the west coast of the state a good many years ago and was very much disappointed and in his disgust he declared that Florida possessed "A soil of unsurpassed sterility."

I have often thought of what he said and wished that the state could have been born back in the Silurian or Carboniferous epochs. However, those who have come here to make their homes find that with proper treatment this poor, sandy soil can be made to produce wonderfully. Some time away back in geological history, probably when most of what now forms the state was under the sea, the sands along the New England coast were carried southward by the cold return current of the Atlantic and deposited along the shores of the southern states and over the greater part of what was to be Florida. This sand is siliceous and is practically destitute, in a natural state, of any plant food whatever. It has been worked over, to some extent, by the action of the wind and sea.

Shortly after the elevation of this sand above sea level the Georgia Pine (*Pinus palustris*) began to invade the region from the north, and the Caribbean Pine (*Pinus caribaea*) came, most likely, from the south, the seeds having been carried in by the Gulf Stream.

Quite a large area of the southeastern part of the state is composed of soft, mostly oölitic limestone which forms the rim of the Everglades. The rock generally comes to the surface and is perforated everywhere with pot-holes which are filled with sand. The lowlands of the southern part of the state are com-

posed largely of muck or marl, though in some places they are sandy. Much of the Everglades is rich, deep peat or muck, with patches of sandy soil or rock. The Everglade soil and most of the peat or muck throughout the state are fairly rich in nitrogen and phosphoric acid, but are lacking in potash. Often this lowland soil is sour, as is much of the pineland, and it can be helped by applications of fertilizer which is rich in potash, and by being worked. In places throughout the state the pineland is underlaid with hardpan, which tends to make the soil sour, and with such land thorough drainage is necessary. In the northern part of the state there are considerable areas of clayey soil.

It may seem that I have entered into quite a lengthy dissertation on soils in a work devoted to ornamental gardening, but as this is the foundation in which plants must be grown it is well to understand something of soils in order to plant and cultivate intelligently.

The crying need of all our sandy pine land is humus. For this reason every scrap of anything which, by its decay, will make mould should, in some way, be given to the land. I consider it nothing short of a crime against one's ground and plants to burn or throw away any trash, dead limbs, wood or any vegetable product. If one objects to putting grass, weeds and trash around in his garden on account of their unsightliness he can make a compost heap, which, when well decayed, will form an admirable dressing for his plants and at the same time will help the soil. Seaweed should be collected whenever it is possible and either used as a mulch or in making compost. Broken limbs, trimmings from trees and shrubs, grass, the refuse from waste baskets, dead leaves, everything that will decay can be piled up where it will not be unsightly and used in the good work when it is decomposed. If this heap can have a small amount of cottonseed meal or bone meal sprinkled over it occasionally and if the whole can be turned over once in a while, so much the better. Muck and peat, if obtainable, are excellent for the soil or compost heaps, so are all kinds of marine vegetation and all dead animals. The Chinese, who have cultivated their lands from time immemorial, have never used commercial fertilizers of any kind, but

have kept them in a high state of fertility by putting back on them all the waste and rubbish obtainable. We in the United States, with a wonderfully fertile soil, have in a little over a century so exhausted much of our land that it will scarcely produce anything. My own ground, though mostly ordinary pine land, is far richer and darker colored now than when it was virgin soil, and all because I have put far more on it than I have taken off. I have used but little commercial fertilizer on it.

Much of the substance of vegetation comes from the atmosphere and quite a little from rain, and it stands to reason that if all the waste material on a plantation goes back into the soil it will be enriched instead of exhausted. It is in this way that leaf mould has been formed in forests; in fact, that humus has been made all over the earth.

Of course it is best to use some commercial fertilizer on our poor soil. Throughout the state quite generally stable manure is purchased, often shipped in, and applied freely to vegetable and ornamental gardens with excellent results to the plants. But there are those who think its use draws the terrible mole crickets, and it is certain that in many places in this vicinity where it is used freely these insects have become an intolerable pest, while in others where none of it has been used they do not trouble.

I think it a good idea to spread muck around trees and plants on pine land, say a couple of inches in depth; then hoe or dig it into the soil. If one can, it is better to give a little fertilizer often, working it into the ground, than to put it on in large amounts.

During the winter in Florida,—especially southern Florida,—we are liable to have warm spells with some rain. If the soil around plants is worked through the cool season and fertilizer is applied it is quite probable that growth may start, and then, in case of frost, much more damage will be done than if the plants had been left alone. It is a good rule to let plants go without culture during the time of year when there is danger of frost. Even hardy stuff is likely to suffer if frozen when in full growth. I have had monthly roses when growing vigorously

killed outright here with frost, although they are hardy in Washington.

It is an excellent idea to apply a fertilizer rich in potash in the fall just before cool weather comes on; this will harden up plant tissues, tend to check rampant, soft growth, and give the plants vigor to go through the winter. Sulphate of potash, muriate of potash or kainit are excellent fertilizers for wet, sour or mucky lands which are always lacking in potash.

Where it is possible, plant a crop of velvet beans (*Dolichos multiflorus*), cow peas (*Vigna catjang*), or beggar weed (*Desmodium molle*), plowing the whole under or in some way burying it in the soil, and it is an excellent idea to do this before any planting is done. I plant the Canavalias (*C. gladiata* and *C. obtusa*) in my grounds on account of the nitrogen which their roots collect and for the great amount of humus the decaying vines produce, even though they may be something of a nuisance at times by climbing over other things or being in the way under foot.

Liquid manure is very useful, especially for potted plants or many delicate things. Such things as the greenhouse and hothouse terrestrial orchids when planted in the open ground are benefited by applications of weak liquid manure every week or so during the growing season. A teaspoonful or a little more of nitrate of soda dissolved in a gallon of water is a quick acting and handy fertilizer for pot plants. If a handful of chicken-, sheep- or well-decayed cow-manure is put into a ten-quart pail full of water and the mixture is allowed to stand a day or so it will make fine liquid fertilizer, and it may be applied every week or ten days through the growing season.

CLIMATE; PROTECTION OF PLANTS.

As the climate of any region has much to do with the character of its wild and cultivated plants it may be proper here to give a brief account of that of Florida.

The lower keys reach down to within a degree of the Tropic of Cancer, and, with the extreme southern end of the mainland, have a climate much like that of western Cuba. The wind in Florida, especially during the cooler season, usually swings around the compass in the same direction as the hands of a clock. Whenever, during the cooler part of the year, it gets into the northwest there is a decided lowering of the temperature: it usually blows from this direction for about three days and then shifts to the northeast. During these "Northers," as they are called, frost may occur over any part of Florida, even to the lowermost keys.

I am aware that this statement will be contradicted by many who are residents of this region. In the latter part of December 1906, a severe and protracted norther visited South Florida, lasting eight days in the Miami region. Sharp frost occurred five nights in succession, doing great damage to tender vegetation. This norther swept over Cuba, extending to the southern part of the island, and near Cienfuegos it wrought great destruction to the sugar cane at the Soledad Plantation. I was informed by Mr. Hughes, the manager, that ice formed on ponds and still water, and at the beautiful home of the Cabadas near that city I saw many young trees which they told me the freeze had killed outright.

No doubt I shall be condemned for making these statements but I am simply telling the truth, facts which ought to be known by every one who intends making a home and growing fruit or ornamentals in this state. No matter in what part of it one may settle he should be prepared for occasional frosts and should know all that is known about what is best to do to protect his plants.

The climate of the extreme northern part of the state, especially

inland, may be called warm temperate, and the nights in winter are cool, so that a fire is needed to sit by in the evenings and sharp frosts are not uncommon. In the lower part of the state the temperature at sunrise, except during northers, is usually from 60° to 70° with a midday temperature of from 70° to 78° and the native vegetation is largely tropical. As a general thing the plants of the tropics grow and flourish from year to year, only suffering when an occasional frost occurs.

The greater part of the rainfall comes during the warm season. Heavy rains are likely to begin in the latter part of May and continue with more or less interruption until about the last of October. It must not be supposed that these so-called rainy seasons are periods of anything like continual rain. Showers sometimes fall every day for awhile; then there may be a number of rainless days and the showers vary from a few drops to a downpour of several inches. During the dry season there is an average of from two to three inches of rain a month and, as a rule, the fall is fairly well distributed throughout the year. This is conducive to vegetable growth as most of the precipitation occurs during the growing season, while during the period of plant rest enough falls to keep vegetation in good condition. The rainfall varies in different parts of the state from 40 inches on some of the lower keys to 65 in the upper part of the state.

Hurricanes occur occasionally, usually from August to the end of October. They may visit any part of the state, lasting from a few hours to several days. It is possible for them to come at any season, though we feel practically safe from November first until the beginning of the rainy season. Sometimes they do little damage beyond breaking off limbs and switching young growth and leaves; at other times they are very destructive to buildings and vegetation. In some cases large trees are blown over and nearly all the leaves are stripped from the trees. If such a storm occurs before the first of October and the weather following is mild new leaves are likely to develop, but if a storm comes later than that the trees are most likely to go through the winter more or less naked. Ordinarily there is a very heavy rainfall during these storms but sometimes there is little or none. During such dry hurricanes a large amount of salt is carried

from the sea by the wind, proving very destructive to foliage and small limbs, especially on the side of vegetation towards the wind. At such times forests that are not overthrown may be almost destroyed, partly by the salt spray and in part, perhaps, by the passage of electricity from the clouds to the earth. This salt spray does not especially affect vegetation when there is an abundant rainfall or at any great distance inland.

Most of these hurricanes originate in the Caribbean or to the eastward of it, moving to the west and north until they reach the Tropic of Cancer, when they veer to the northward and finally to the northeastward. The wind may blow from any direction.

Much has been published on the subject of protecting plants from frost and a good many devices have been used for this purpose, but so far as my experience goes I cannot help acknowledging that we can do but little to defend ourselves from severe freezing. Almost any kind of covering will ward off a light frost, but in case of a sharp freeze such protection does but little good. If by any means the morning sun can be kept from falling on frosted plants they may come through with but little injury; therefore tall trees or a forest standing to the eastward of one's garden should be preserved by all means. If an open space lies to the westward of such a forest the cold air during a time of frost may settle there and a heavy frost result.

A good many growers have installed irrigation works on their grounds, and if water from an ordinary well can be thrown on vegetation during a moderate frost it will be protected, but in case of a very hard freeze it will form thick ice all over the plants and the chances are that they will be ruined. When once water is turned on, it must be kept going until all danger of frost is over. One generally has tender plants scattered all over his place and his irrigation works are not sufficiently powerful to keep up a flow of water over the whole all night. It is claimed that if water is sprayed over frozen plants very early in the morning it will save them but I have never had much success with this plan.

A clouded sky at night is an excellent protection against frost,

hence anything which imitates such a condition is good. If one can burn wood, trash, coal or crude oil in suitable vessels among his plants during a comparatively calm night when there is a light frost he may often save his plants, but if there is a high wind or a hard freeze such attempts at protection will do little good. Twice since living here I have seen such severe freezing during a time of high wind that all the leaves on lofty coconut trees were killed, and for more than a month these trees showed no sign of life. Of course smudge pots or any ordinary protection would be worthless at such a time.

Growers here have resorted to various plans such as putting screens around and over tender plants, some of them permanent and others which are removed in summer. Those which are intended to remain have posts set in the ground with tight, boarded walls and a framework overhead which may be slatted: the top is generally covered with canvas during winter. Some of these are large structures covering several acres. Small frames covered with canvas and temporary tents are often used. Posts are often set in the ground around or partly around plants, slats nailed on and palmetto leaves fastened to the slats. All these protect more or less but none of them will always save tender stuff unless some kind of heating apparatus is used.

As a general thing in the lower third of the state, shrubs and trees which have attained a height of six or eight feet are not in much danger of being destroyed by frost if the collars can be kept from freezing. It is almost always at this point that the greatest injury is done, because the air just at the ground is usually colder than at any higher point. In many cases I have known trees or shrubs whose limbs and leaves were wholly untouched by frost to die outright from its effects, and when they were afterwards examined it would be found that a short space just at the collar had been frozen so that wood and bark were turned black. Now the one thing to do which will never fail to save one's trees from destruction is to make a mound of earth around their bases as soon as there is any danger of frost in the fall and let it remain until there is no longer any risk from it in spring. This mound should be a foot or more high and it would be better if it could be made when the ground is dry.

Be sure that it is carefully filled in around the stem or stems and it will be well to examine it occasionally through the winter to see that mice have not dug it away. In case of warm and wet weather in winter it would be best to watch herbaceous or other delicate things for fear their stems might rot: if there seems to be any danger the soil should be temporarily removed and replaced when the weather grows cooler. If plants are so treated one can be almost absolutely sure of carrying the tenderest things safely through the winters of lower Florida. Generally it will be found that the tops of plants so treated will receive but little damage, and even if they are destroyed fresh suckers will spring up from the living part. The mound should be so constructed that no water can enter at the stem of the plant.

In some cases a mound of earth may be made at the side of a small plant just before a hard frost, the plant bent down over it, the whole covered with gunny sacks and earth laid over all to the depth of several inches. This must be removed immediately after danger is over and, at the best, it will be nearly as hard on the plants as a frost. Leaving native plants for protection, or planting rapid growing vegetation among one's tender things, is some help.

But little protection can be made for vegetation against hurricanes. So far as possible I try to have my things grow low, and I am glad to have trees and shrubs with as many stems as possible. Never trim trees up so that they will have long, naked trunks, for this gives the wind an extra leverage whereby it can uproot or break them. If trees and large shrubs are frozen down allow them to send up a number of sprouts if they will. By so doing they will form low heads which will help to protect them from the next frost and from heavy winds. By allowing the vegetation in your grounds to grow up densely it will be more likely to withstand severe wind storms than if it is open, as the trees protect each other.

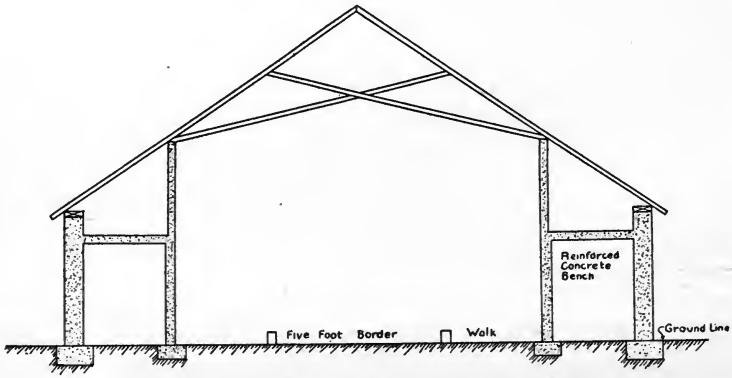
In low land or regions underlaid with hardpan it will be necessary to cut ditches or put in tiling to carry off the water. Sometimes as much as thirty inches of rain falls in a month, and this must be promptly removed.

PROPAGATION.

If one has any considerable amount of planting to do it will be almost absolutely necessary to build some kind of a propagating house or even more than one. Such buildings should be placed where they will be well sheltered from winds, and especially the northwest wind. They should have sunshine the greater part of the day. Posts can be set in the ground, their tops being a little over six feet high, and on these a horizontal strip can be nailed at the top and bottom. On these strips vertical pieces of 1 x 3 should be nailed, leaving about an inch and a half space between them, or the north and west sides may be boarded up close or all sides if thought best. Pieces of 2 x 4 may be nailed across the top about six feet apart and supported by other posts and on these a flat roof of 1 x 3 slats should be nailed. These slats may have spaces left between them anywhere from an inch and a half to two inches wide. Part of this roof may be laid closer than the rest if necessary and if considerable shade is required for any purpose the slats over that part may be laid with one-inch spaces or even less. There will need to be a door, and one must have a well inside, or if outside as close to the door as possible. This is the cheapest, simplest form of slat house and may be built from ten feet square to a large size, either of rough material or dressed stuff and painted. Shelves on which to sow seeds or plant cuttings can be built along one or more sides of the structure at a height of three to three and a half feet above the ground and from two to three feet wide. A rim should be made along the inside of the shelving and two or three inches of sand or earth placed on the shelves. One may, however, be quite successful rooting cuttings or raising seedlings in the ground without having shelves.

A much more ornamental and permanent structure can be built with concrete walls and a span roof, the ridge of which had better run north and south. The side walls of such a building can be four and a half feet high, and the end walls may be the same height with the upper part of wood or the whole may be

concrete. If the walls are tight and fertilizer sacks are hung from the fronts of the shelves the space enclosed will be found to be a fine place in summer to root large Croton and other cuttings with nearly all their leaves, as it can be kept dark and close with such degree of moisture as is needed. Such large cuttings make fine plants almost at once.



PLAN FOR A SIMPLE PLANT HOUSE.

End elevation, showing how a substantial building for use in Florida can be put up at small expense. It may be covered with glass or slats. (Fig. 5)

On the south side of the slat house, or in any well-sheltered spot nearby, it is an excellent plan to have a glass covered frame, even if of only a single sash. In this, if it is exposed to the sun and well covered on cold nights, many very tender things can be kept through the winter that would perish out of doors or in an ordinary slat house. Such things as the Dieffenbachias, Hemigraphis and the Fittonias are sometimes killed by cold when there is no actual frost. Cuttings of many tropical plants—not all—can be rooted in such a frame in winter if it is handled rightly, and seeds of the more tender things can be started. Where a large collection of plants is to be propagated and cultivated a glass-covered house is very convenient and almost necessary.

It may be made in the simplest form by sinking in the ground, say a couple of feet, a pit the size of the future structure. Then lengthwise through the middle of it a trench about three feet wide is to be excavated a couple of feet deeper. The building may be

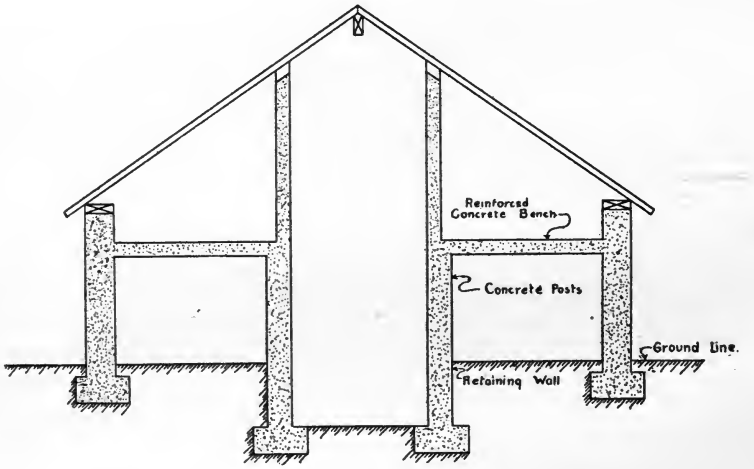
a span roof and run north and south, or a lean-to and run east and west facing the south. A concrete wall six inches thick is built facing both sides of the trench, leaving a passageway two feet wide the length of the pit. This should be carried up at intervals of perhaps six feet in the form of posts to support side benches and the roof. It is best to make the benches of reinforced concrete, since nothing below the surface of the ground can then decay. The roof can be made of sashes which should be hinged above and lifted below for ventilation. It needs a door in one end and steps to descend to it. If one of the benches or a part of it is screened off in front with fertilizer sacks during cold weather and one or more lamps or a small oil stove is put in and lighted a fine bottom heat may be kept up, furnishing ideal conditions for rooting cuttings, starting seeds, or for small or delicate plants. There should be a pipe or some kind of a ventilator leading from this space out to the open air. Such a building may be ten feet wide over all. Of course one can build a regular glass house with hot water pipes if he wishes.

It is always well to keep in such a place one or more extra plants of rare, tender things. If one cannot have any kind of a propagating house he can put in cuttings or sow seeds in flats or shallow boxes, either in the house or a sheltered, partly shaded place. It is almost absolutely necessary that such a propagating arrangement should be protected from all wind.

A majority of the plants which succeed in the latitude of Florida when planted in the open, bear seeds which will germinate and produce healthy seedlings, and in general raising plants by such means is the quickest and best way to propagate. Young seedlings need some sun and the boxes in which they are grown should be turned around occasionally to keep them from being drawn. It is best when they have three or four leaves to transplant them into separate pots, or tin cans having a hole punched in the bottom will do. From pots they can be turned out without greatly disturbing the ball of earth around their roots. If in a can, it should be struck against some hard object several times to loosen the contents.

One is likely to receive the seeds of tropical plants at any time during the winter and such seeds, as a rule, should be planted at

once. But if while they are in the ground a norther of several days' duration occurs or an extended cold spell such as we sometimes have anywhere in Florida, these seeds are very sure to rot, unless one can keep them in a warm place. In planting palm seeds, if one can spare pots long enough it is an excellent idea to put a single seed in each pot and set them thickly in sand or earth on the benches. This is for the reason that the palms form long, hard and brittle tap roots and if planted in open earth they are difficult to transplant.



ANOTHER FLORIDA PLANT HOUSE.

This design requires less space than the preceding one, and is quite sufficient for those who are working only with potted plants. Some sort of a plant house is almost a necessity, if one is to enjoy the full possibilities of Florida for the propagation of tender plants. (Fig. 6)

I like to grow plants to a considerable size before putting them out in the open ground. Plants in from four- to six-inch pots are much better fitted to withstand the hardships of their first year in the open ground than those from smaller sizes. A large number of the plants which we grow in this region may be propagated from cuttings and this is especially true of the herbaceous and soft wooded kinds. Shrubs and trees having very hard wood rarely root from cuttings with us. I have the best success with the woody forms by taking not quite ripened shoots and cutting them into lengths from eight inches to a foot long. These I set in the

ground, often in a sloping position, to within a couple of inches of their tops. Then I firm the earth around them and drench them with water. They should be kept warm and moist but not too wet. If one could have bottom heat for the tenderer kinds it would be a great advantage. Cuttings of most tropical things must be rooted (unless one has a warm place) in the growing season. Those of hardy plants can be rooted in winter. They may go in a slat house or even a well-sheltered spot out of doors. Great care should be exercised in lifting out rooted cuttings not to break off the delicate roots. If a number are rooted in a pot the ball of earth can be carefully turned out and the soil washed from the roots. I prefer to let cuttings of wooded plants stand until their roots have hardened a little before transplanting them.

Cuttings taken from plants growing in pots or boxes root much more readily than those from plants which are growing in the open ground. Cuttings of Oleanders, rose and zonale Geraniums are often troubled with a blight, probably some sort of a fungus, and either will not root or die soon after doing so. I know no remedy for this but it might be a good idea to dip the cuttings in Bordeaux mixture or sprinkle them with sulfur before putting them in to root. Oleanders and some other hardy shrubs may be rooted in winter by taking large cuttings, a half inch to an inch in diameter, defoliating them and planting them to within a couple of inches of their tops in damp ground.

Layering may be successfully practiced with many things which have branches near the ground, or as is sometimes done, with small limbs at some distance above the ground by making a stage on which to set a pot or box filled with soil. It is better to cut a slit in the branch, holding it open with a bit of wood. Make an excavation in the earth and bury the cut part a few inches in it, fastening the limb down if necessary with a small wooden fork. If the ground becomes dry it is well to water it.

Some things, including most of the Ficus, are best propagated by air layering. Prepare a small limb on the tree in the same way as for ground layering, wrap it well with sphagnum, tying it on thoroughly. This should be done during the rainy season; if it gets dry water should be applied. In a few weeks roots will

form and penetrate the moss and the layer can be cut off and planted.

The process of inarching is rarely resorted to in the propagation of ornamentals and the same is true with budding and grafting in Florida. Full instructions for these operations can be found in any good work on gardening. Some of the palms send up suckers from or near the ground and these often send out roots but it is sometimes difficult to make them grow when they are cut off. If one will make an incision at the base of a sucker, set a pot or box of earth under it, digging out below if necessary, he can catch these roots and when the plant is established cut off the connection with the parent. In this way not only palm suckers but a variety of others, even limbs of trees, may be made into fine plants.

The entire process of propagation and all that is connected with it are among the most delightful experiences of the plant lover and gardener. What joy can be sweeter than actually to witness the creation of living organisms,—to see the plumules pushing their way up through the earth? What is there more delightful than to feel that these dear little things are your very own, that, in partnership with nature, you have helped to bring them into existence? Only a true lover of plants can ever feel the pleasure of digging up a cutting he has planted and finding at its base a heavy white callus, or the delicate, young, soft roots pushing out. He realizes that in his hand he holds the possibility, perhaps, of a noble and beautiful tree which may live through generations, to cheer and bless mankind long after he has passed away.

PLANTING.

There is little in the way of instruction that I can give about the mechanical part of planting and caring for ornamentals. I make claim to no particular skill; I am only an amateur and a poor one at that; there are many who succeed where I fail. I love all these dear things with a mother's devotion, but somehow I fall a little short of complete success in planting and making them grow.

I find it a difficult matter to get little plants to grow when put out in the open sun and exposed to the wind. And indeed it is trying for them under ordinary circumstances in Florida. Our sandy soil becomes scorchingly hot under the almost vertical sun, and it soon dries out on the surface, even after rain or thorough watering. For these reasons I have urged that some of the native growth should be left when clearing is being done, for a slight protection until the plants can get a start. I try, when possible, to put my things out in a rainy time but it seems to me that no matter how wet it is when I begin planting it always turns dry immediately and stays so.

It is a good idea to dig out a larger hole than the dimensions of the roots and if one is planting in pine land, as most of us have to do, to work in with the soil some muck and a little fertilizer. Leave a slight depression around the tree or plant to hold water. Water thoroughly and shade the plant if it has leaves on it: palmetto leaves stuck in the ground around it are just the thing and I have sometimes thought that they were made for this especial purpose. I believe in mulching, and always, where it is possible, put a good cover of leaves, grass, seaweed or some kind of trash around newly set plants. If the weather is dry after planting one should water freely until his stuff is established. If necessary the mulching can be removed when the plants are being hoed, or one can use a tooth hoe and not greatly disturb it.

I approach the subject of arranging plants so that their colors and forms of leaves and growth shall harmonize with a good deal of hesitation, first because, judged by the standards of modern

landscape gardening I know little about it, and second, what little I think I know is directly contrary to the modern teachings.

I believe that nature is a pretty safe guide in the matter of laying out and planting grounds; at least she points out the way for us. She plants forests, she leaves open glades which stand for our lawns; she joins the forest to the glade by making an irregular border of lower growth between them. Wild animals make paths through the woods and along the open spaces, and these are always made to be used; they stand for our paths and roads. They usually lead along the lines of least resistance, and though they are not often made in straight lines they are usually reasonably direct. They teach that curves and deviations are not to be indulged in merely for ornament. Nature leaves bold ledges and scoops out depressions and grottos, she lays out the courses of rivers and streams, she makes pools and lakes. She makes some mistakes but not many. It has always seemed to me that she blundered when she developed the Australian Pine in the tropics.

Nearly all the art that is required in the natural style of landscape gardening is to show the best of nature and to show nature at her best. Aside from the building of our dwellings and outbuildings we need to do but little that nature doesn't do somewhere and in some way. As Downing has said, "Landscape gardening is an union of natural expression and harmonious cultivation."

We hear a great deal about massing trees and shrubs for effect, of matching colors in planting, of harmony and discord and of many kinds of plants that should never be put near each other, and it seems to me that those who are so insistent about these things only use plants as a means to an end; that to them these beautiful things, which to me seem to have souls, are merely what soldiers are to a commanding general on a battlefield. They remind me of the society woman who must have a nurse whose complexion harmonized with that of her baby. I love each tree, shrub, vine and plant for its own sake; to cut one down or even trim it seems almost cruel. I am interested in them all from the time they are set out, as they build leaf after leaf and growth after growth until they grow old and die. They are my friends

and I am theirs, and we seem, in some measure, to understand each other. It is a rest and comfort to me to go among them and visit with them.

And it seems to me that if landscape architects and those who create gardens had more of this feeling we would hear less about matching colors and being shocked over dreadful discords in vegetation. Nature violates the rules on every hand. What are you going to do with a tree or shrub that bears green leaves and masses of purple flowers, the very worst of discord? This is just what one of our finest Bauhinias does; so does the well-known Bougainvillea,—yet these are both generally admired.

We are told that a certain class of plants is *taboo*, that we must not under any circumstances use the Crotons, Acalyphas, Pandanus or anything that has showy, variegated foliage. I want to lift my voice against this. In the cold and dreary north, where winter prevails for half the year, where fogs and cloudy skies are the regular thing during much of the rest of it, such plants may be out of place, and somber conifers and orderly greens may be the proper thing.

But Florida is a land of illimitable light and glory, where the sun shines in splendor nearly every day throughout the livelong year, where there is no winter and the forces of nature are always active. Everything shows the effect of this splendid light and heat power; the atmosphere is soft and brilliant; all animate life puts on brighter colors than it does in a cold climate; all nature is simply bubbling over with life. These gorgeously colored plants were developed in the tropics; they are as much a part of the general scheme as are the bright feathers of parrots and peacocks or the noble leaves of palms. In my judgment they may to a reasonable extent, be mingled with other vegetation.

The following quotation which bears directly on this subject is taken from "How to Lay Out a Garden" by Edward Kemp, an English gardener of the highest standing. "By a due admixture of different sorts of plants, variety may be additionally realized. The habit and character of trees and shrubs exhibit a wonderful amount of variation. Some of them, indeed, possess unusually striking characteristics, and assume a most peculiar garb. But there is something of difference; and little peculiarities show themselves to advantage in a small place. The selec-

tion of plants for a garden should therefore comprise all the best and most showy sorts that can be procured, or for which there is proper room and a suitable situation. And these should be well mixed together, though not to the exclusion of the practice of grouping particular kinds. To throw the various tribes of plants into masses, according to their natural affinities, as is sometimes recommended for arboretums, while it is destructive of all variety under the most favorable conditions, is quite out of the question in small gardens." This was written in 1850 and whatever was beautiful then is beautiful today and will be in a thousand years from now,—yes, forever.

Nature continually produces the most violent discords of color. We find in any considerable collection of plants those whose blossoms and foliage are in decided discord and if we were to combine these colors in art they would be hideous, but nature can combine them and they look all right. In a fine sunset we see nearly every color and the same is true in the rainbow or an autumn forest yet no one finds fault with any of these.

Why should we not condemn all plants with showy flowers or striking leaves, the gorgeous beds of annuals, the Chinese Hibiscus or the palms? It is well to be careful when we set plants close to buildings or walls for in that case we are mingling art and nature, and the same is true when planting a formal garden, the latter being more a work of art than of nature. I do not want to defy the laws of good taste but I would, in most cases, subordinate them to those of nature. In writing what I have done on this most important subject I have registered the solemn convictions of an old man who has loved all these dear things with a deep devotion since he was old enough to know his right hand from his left.

There are some plants which will not do well in the full sunlight, for example, *Thunbergia erecta*, *Dracaena godseffiana* and many of the palms, and I have specified these in the catalogue.

One may produce excellent effects by planting palms or other plants with striking foliage against a background of hammock or other tall trees and the bamboos look well in such situations. Bamboos or palms look well when planted as isolated specimens where they can have plenty of room, and when they get up so that they cut the sky line the effect is indescribably beautiful.

THE CULTIVATION AND CARE OF A GARDEN.

This chapter will be a sort of "General good of the order," a gathering together of scraps of information and experience that I cannot make fit anywhere else.

There are two schools of cultivators in Florida; one which believes it to be better to let weeds grow in summer, merely mowing them down; the idea being to shade the ground. The other school believes in clean culture. As a matter of fact we see good plants grown by both methods. Personally I believe in clean culture, though I do not, by any means, always live up to my ideas. It is well to begin to cultivate one's plants as soon as danger from frost is past in spring and to continue it until a short time before it may come in the fall. Hoe or cultivate your plants often, giving them a little fertilizer every time they are worked, and if they are mulched the material can be taken away before cultivating and replaced afterwards. The mulch will soon decay and enrich the soil.

For the past two years the rainfall in this vicinity has been far below normal. Within that time during the "rainy season" there have been months with scarcely an inch of precipitation and very little cloudiness. Yet in these two summers a neighbor of mine has raised fine crops of cow peas, sweet potatoes, velvet beans, peppers and other things on pine land without irrigation, largely because he kept the hoe and cultivator constantly going.

Many cultivators have put irrigation systems in their grounds and there is no doubt but that the judicious use of water on naturally dry land is beneficial. There are a number of different systems on the market but, generally speaking, one should get a plant which has as little obstruction from pipes as possible. For a small place a windmill will do the pumping, forcing the water into an elevated tank, but a gasolene engine is better. Where one can have an electric current it can be used to run a light engine with tank that works automatically, a most excellent arrangement. It is better to water plants in the evening or when it is cloudy, and it never should be done when the sun is

shining, especially during the warm season. The evening is the best time as there is no danger of sun scald if water is put on then, and one gets the greatest effect from a given quantity of water.

As a general thing I do not think plants need a great deal of trimming in Florida. Sheared trees and shrubs are, generally speaking, monstrosities and nothing of the kind should ever be grown except in a formal garden. To my mind they have no beauty even there. Dead wood should be cut out and often when shrubs get old they become straggling, and no amount of care or fertilizer will restore them to vigor and beauty. The reason for this is probably that our soil is poor and in time becomes exhausted. The best thing in such cases is to cut the growth back severely, sometimes almost to the ground, at a time when the plant is dormant. Then fertilize and work around it and in a short time a fine, vigorous growth will spring up and the shrub will be renewed. It is a good plan to work in some muck with the fertilizer. Old Oleanders and Chinese Hibiscus may be wonderfully renewed by this process.

If possible one should set trees and plants where they are to remain, but sometimes it is necessary to make changes in one's grounds and transplant large specimens. If any considerable amount of moving must be done it will pay to build a stone boat to use in carrying the plants from the old to the new locations. Dig the new hole first, taking care to make it a little larger than the ball of earth which is taken up with the plant to be moved. Dig the plant up carefully, raise it and slide it on the stone boat and haul to the new location; ease it into the hole without disturbing the ball of earth if possible, then carefully fill in earth into any crevices and thoroughly water. With such transplanting large things can be moved with but little risk and their growth need not be checked, especially if they are well mulched. I have generally had poor success transplanting palms of any considerable size but many of them can be successfully moved by the above method.

One can hardly estimate how much may be done in the way of decoration by the judicious use of ornamental vines. I have elsewhere suggested that when one is clearing pine land for a home the vigorous, well-formed pine trees should be left standing.

A GARDEN IN SOUTH FLORIDA.

A view in the garden of Mrs. Marian McAdow at Punta Gorda. The palm *Caryota urens* just shows in the upper right hand corner. The clump in the center is a species of Phoenix. (Fig. 7)

A RUSTIC SEAT.

A seat such as this is easily constructed of native rock, and finished with cement. The one here shown is beside a small pool in the hammock at The Sentinels. (Fig. 8)

There is a class of vines which adheres to walls, the bark of trees, rocks and the like by means of adventive roots, tendrils or tendril-like processes which can be used to cover the stems of such trees. In the upper part of the state such vines as *Tecoma radicans*, *Bignonia capreolata* and *Euonymus radicans* are hardy and cling to smooth surfaces. *Ficus repens* covers walls beautifully and it should be hardy over the greater part of the state. The Bougainvilleas can be made to climb to the tops of the tallest trees and so can *Bignonia venusta* and all are superb ornaments in winter. The Solanums, seaforthianum and wendlandi, the Argyreias and Antigonons are fine for covering arbors, verandas, or trees in the southern part of the state. I have a poultry yard fence which was unsightly and I planted a vine of *Ipomoea sidioides* at one corner of it several years ago. This has spread over perhaps a dozen rods of the fence, has covered the poultry house and a quarter of an acre of adjoining ground. Through December every year it is covered with white blossoms until it resembles huge banks of snow. By counting the flowers on a given space and making an estimate of its entire surface I came to the conclusion that it bore a million flowers a day for over a month. I have seen a sheet of moonflower covering the entire front of a hammock for hundreds of feet, and a single specimen of *Agdestes clematidea* completely hiding a half dozen large trees. There is scarcely anything unsightly on one's place that cannot be covered and beautified with vines.

Florida is infested with a number of pestiferous weeds and among the worst of these are the sand burs (*Cenchrus* spp.) of which we have four or five species; Boerhaavia, a branching plant with rounded wavy leaves and minute purple flowers followed by small burs; *Bidens leucantha*, a common weed with white flowers and flat, two-awned seeds which attach themselves most lovingly to every passer-by. All these spread themselves by their seeds which fasten on man and beast. They are not indigenous to the virgin forest, though they come in soon after cultivation commences. Their seeds germinate only on or very near the surface of the ground and if one will dig a hole in the sand two or three inches deep and bury the plant and all its seeds, scraping all that

lie about into the hole, they will never come up. It is a good plan to step on the mound and press it down well.

Another weed nuisance is the smut grass (*Sporobolus indicus*) a wanderer from India which has become completely naturalized in the Southern States as well as over many of the warmer parts of the world. It is generally found along roads and paths or much trodden places where it soon occupies the ground to the exclusion of almost everything else. It seems to have a wonderful capacity to scatter its seeds for they constantly come up in the most unexpected places. I know of no way of eradicating it except by pulling or hoeing it up and burying it with all its seeds a couple of inches deep. I have been able by constant vigilance to keep my grounds reasonably clear of all of these by the above means but fresh seeds are constantly being brought in from other places. Cyperus, or Nut Grass, is a terrible weed which takes complete possession of ground when once it is established. It is said that hogs will clean it out or it may be destroyed by constant hoeing.

It sometimes happens that a plant which is put into the open ground absolutely refuses to grow for a series of years, though it may seem to be in perfect health; or that it refuses to blossom. In such cases it is best to be patient and, instead of digging it up and throwing it away, let it remain and assume that you can wait as long as it can. Give it careful culture and a little fertilizer during the growing season; a small quantity of stable or liquid manure may be good, and it is probable that in time you can overcome its balky disposition and be rewarded with growth and bloom. Again small plants sometimes actually deteriorate, they grow smaller and smaller. This may be caused by dry or cold weather, insect ravages or unsuitable soil and conditions. In some such cases I have carefully lifted the plants and put them back into pots in the slat house. In fact I have several plants that have been put out and taken up a number of times, and at last are doing well.

It seems necessary sometimes to use diplomacy, if I may use such an expression, when handling these delicate, sensitive things. We are wholly unacquainted with their native habitats in very many instances and must grope about blindly in our

endeavors to find what is suitable for them. They appear to have their whims and humors like a gasolene engine, and one must favor them if he hopes to succeed. But what a joy it is after spending years, it may be, with some such sickly, backward thing to see it grow strong and flourish at last, to feel that, to a certain extent, you have conquered the stubborn forces of nature, to behold the wonder of long delayed growth and bloom. Verily, there is more joy over the one plant that was lost and found than over the ninety and nine that went not astray.

If one must make his home in the hammock I would advise that he cut out as little of it as possible, and that what he does cut should be done gradually, because if too much is cleared away at once it will give hurricanes a chance to break it up badly. One can plant exotic things from time to time as he takes out the native growth and thus his plantings will be sheltered from high winds and frost. In the lower part of the state it is an excellent idea to plant beggar weed or pigeon peas rather thickly in grounds where tender things are set out, and as these are rapid growers they will form a fine shelter and protection in time of frost. They at the same time furnish an abundance of nitrogen for the soil.

More and more as the years go by I am coming to favor the plan of close planting and of thickly scattering hardy, rapid growing things among the tender stuff. Leave the clean, healthy pine trees and a goodly number of low growing palmettos for a first protection; then put in rather abundantly such things as the oleanders, the Pittosporums, *Prunus caroliniana*, Daubentonias, Gordonias, some of the hardier Eucalypts, Magnolias, the evergreen oaks, the hardy bamboos and a variety of similar things which will make a shelter in a short time. Then plant among these, as soon as they have reached some size, the tender things, thinning out the branches of the hardy plants as the tender ones need room. When the hardy trees begin to crowd badly cut them out here and there as needed but leave enough for a good shelter. Never plant tender things where the morning sun will fall on them nor where the northwest wind will touch them. In case of severe frost the hardy plants will still make a show of green.

PLANT ENEMIES.

I approach this subject with more hesitation than any I shall attempt to treat in this little work, for the reason that the wisest of us are so ignorant and the ablest so little prepared to do battle for the saving of our plants. It has been stated on good authority that no species of injurious insect has ever been exterminated and I think it not unlikely that the same may be said of diseases which injure or destroy our plants. Yet it is true that new harmful insects and diseases are continually coming to the front to take their dreadful toll from the cultivator.

There are two classes of insects which do damage to plants; first, those which devour the foliage, some during the larval stage and others when adult; second, those which pierce the bark, leaves, flowers or fruit and suck out the juice. The former, which includes all the Lepidoptera, and the Chrysomelids among the Coleoptera, are best combated by arsenical poisons applied to the plants on which they live; the latter by contact insecticides that will form a coat over them and shut off their breathing. To the second class belong the Hemiptera in which the Aphides and scales are included. These are best combated with the whale oil emulsions, but the greatest care should be taken in preparing them lest damage be done to the foliage.

The cottony scale (Pulvinaria sps.) infects Ficus of all species, including the wild ones, and it must be combated before it reaches the cottony stage, which is an egg stage, and during this time the cotton containing the eggs is blown about by the wind. I believe that ants sometimes carry these eggs. Use an emulsion of whale oil soap for these and spray from the under side of the leaves. The Lecanium scales are found on many tropical plants; the comptie and *Hamelia patens* for example, and should have similar treatment. Aphides are sometimes quite troublesome and should be sprayed with a solution of whale oil soap or gold dust.

One of the greatest scourges the cultivator has to contend with in our area is root knot, the work of a Nematode worm. It usually attacks the roots of young plants and in a short time

they swell up and become knotted into unsightly shapes and the plant dies. It attacks plants in pots or boxes but is worst on those in the open ground. I know of no satisfactory remedy for it but heavy mulching for outdoor things is helpful, though it does not always prevent its ravages. One should closely watch his young plants and if they look sickly or are inclined to wilt it is best to dig down carefully and examine about the roots. If they show the knot dig the plants up and thoroughly wash all the dirt from them. It may be possible by severe trimming to cut away the injured part, after which put the plant into a small pot and in some cases it will come on. All trimmings should be destroyed. In case the roots are ruined it may be possible to make cuttings from the top of the plant.

There is a borer, the larva of one of the night flying moths, which enters the growing ends of shoots of Erythrinas and some other things; it also works down the flower stems and wherever it attacks it brings ruin. The branches attempt to put out new growth, only to be attacked again, while the bloom stems that it works on shrivel and die. In some cases it prevents large trees from growing or blossoming. I do not know at what time of the year this moth is active but if at the proper time a light could be put inside a muslin enclosure covered with any sticky substance and the same set near the trees the moths would be caught.

We have a twig girdler which is occasionally troublesome as it cuts off twigs and small limbs. It is a beetle and is very hard to control because it works singly and at night. The only remedy would be to keep trees and shrubs likely to be troubled with it continually sprayed with arsenical poison.

Many palms are greatly disfigured and even injured by having the epidermis of their leaves eaten, the refuse being deposited along the surface. This is the work of a small Chrysomelid beetle which looks to the ordinary observer exactly like a blue ladybug. For several years I was deceived by this wretch, and as I knew that ladybugs were the horticulturist's friends I was always careful not to injure these gentry; I even distributed them around, hoping that they might help me out. It is needless to say that now I am not even polite to them any more. The arsenical solutions would destroy them but they would disfigure

the palms, hence it would be better to use some colorless contact solution such as Pratt's Scalecide and this will also destroy other kinds of scales on palms.

Ants are often very troublesome, and they carry various kinds of scale and aphis which they establish on cultivated plants. O. and W. Thum's Tree Tanglefoot applied to the trees or plants which they infest will prove an effective remedy. The lubber grasshopper (*Dictyophorus reticulatus*) is one of the regular features of Florida, and is sure to be found during the growing season wherever Crinums or Amaryllis are grown. They hatch out in early spring, the young being greenish black marked with yellow or red. Later in life they change color and sometimes reach a length of three inches; at this time they are gaudily painted with yellow, orange, black and rose or red. They are handsome at all times but are as evil as they are beautiful. I would not say that a full grown lubber will eat as much as a mule, but he will in a short time destroy nearly as much. Woe to any of the Amaryllis, Crinums or other succulent leaved plants that he visits, for his path is marked as if by fire and the sword. He cuts off at or near the ground the most vigorous leaves, apparently eating only at the point where he cuts. One lubber at a single visit will often cut off every leaf from a large Eucharis or Hippeastrum and then go on to the next and destroy it.

I keep close watch in early spring, and whenever I find the newly hatched young I kill every one of them, which is usually not difficult to do, for they huddle close together on a plant stem and are not very active. It is well worth while to watch closely and when they are found make a most careful search in order that none may escape. I remember my poor slaughtered plants of the year before and take murderous revenge. And I find that by so doing there are few left to do damage later. Of course one must watch through the growing season, but here they become scarce by August.

They are especially bad about swamps and they no doubt migrate over the adjoining country. They seem to have no enemies and fowls will not touch them but a friend, Mr. William Matheson, believes that Guinea fowls will destroy them.

Other grasshoppers do considerable damage though none are

so harmful as the lubber. If plants are sprayed with kerosene emulsion from time to time it will prove a tolerable protection against these insects and bran mash and arsenic will help to keep them down.

Some of the injurious insects seem to come in waves to such an extent that they threaten utterly to wipe out the vegetation on which they prey. Then the tide appears to ebb and their numbers are greatly diminished and the cultivator has a respite. At one time I became so alarmed over the swarm of cottony scales that I cut off and burned all the small branches and leaves of a number of my trees. In a short time the scale entirely disappeared from nearby trees that I had not touched. I have seen a hedge of Acalypha so covered with this pest that it looked as though it had been snowed on, yet in a short time, without any remedy being applied, all the scales had disappeared.

Insects, however, constitute but a part of the animated enemies of the plant grower. The great blue West Indian land crab has become thoroughly established on our coasts from somewhere in the neighborhood of Palm Beach to Cape Sable, and probably to some distance north of there on the west coast of the state. Fortunately it does not extend far into the interior at any place, but it makes up for that by its pernicious activity along shore. It swarms in the brackish marshes and is only a little less abundant in fresh water swamps near the sea, digging out its holes into which it hastens when disturbed. During the dry season it is less in evidence, but when the rains come it commences activities. It then goes out in great numbers into cultivated lands, tearing down and destroying quantities of plants. I have seen banana stems as large as a man's thigh so pulled to pieces by them that they toppled over, and they can and do invariably distinguish between a twenty-five-cent plant and one that cost five dollars, always taking the latter. They are to some extent nocturnal, but in the rainy season are much in evidence in the daytime, especially in wet weather, and they often move out into the highlands. They then live temporarily in holes, sometimes in the pine woods; they climb up trees and enter chicken- and out-houses, they invade dwellings and it has been reported that they sometimes play on the piano. Usually they swarm

over the entire shore region sometime in early autumn; this perhaps being the mating season. At such times I have seen acres so thickly covered with them that they almost touched each other.

Something may be done in the way of destroying them by dipping a wad of cotton, oakum, old cloth or anything that is an absorbent into gasolene, putting it into a fresh hole and tightly closing it with mud. Small pieces of bread partly coated with Rough on Rats or any roach paste will be eagerly eaten by them with fatal results. It is almost impossible to protect anything from their ravages. I have set a barrel with the heads knocked out over some choice plant, pushing it well down into the earth, only to find a little later that one or more of these wretches had tunneled under the rim, come up inside, and utterly destroyed my plant. The best protection I have found is to stick branches of trees or palmetto leaves closely around a plant several rows deep, but even this often fails.

Rabbits are sometimes very destructive, being especially bad during the dry, cold weather of winter. I have never been able to catch one though I have had several traps that were warranted to get them every time. A gun in the hands of a good marksman, or pieces of apple doped with rat poison or roach paste, will help to keep them down. They are prone to cut off the leaves and stems of young palms, and these may be protected by setting branches or palmetto leaves around them in the manner directed for protecting from land crabs. Sometimes, however, they manage to push these away and destroy the plant.

There is a wood rat that makes his home in and around our dwellings that often is very destructive to plants, especially to epiphytes. I have only been able to get a very few of them with traps or poison. After one or two are taken the rest become wise and rob the bait from traps with immunity. There is a preparation made by the Pasteur laboratories which works by inoculation, that seems to be a good thing.

I can say but little about the many plant diseases which work destruction for every grower. I have spoken of Orchid blight elsewhere and I consider sulfur an excellent remedy for various blights, or perhaps a preventive. It sometimes happens that a

lot of apparently healthy cuttings suddenly die even when they have made fine calluses, and this is probably caused by a fungous blight. I think it would be a good idea to wet the cuttings before setting them and then dip the lower parts of them in dry sulfur. They should be planted with a dibble so that the sulfur will not be brushed off. Rose and oleander cuttings are particularly liable to be troubled with this blight.

Prevention is better than cure and it is always best, if possible, to put out only healthy, vigorous plants and then by good care keep them in good condition. Healthy specimens are less liable to attack from disease, as a rule, than sickly plants and have far more power to resist disease.

TREATMENT AND PLANTING OF LOW GROUND.

It oftens happens that the builder of a home has a piece of low land, too wet for gardening or ordinary cultivation, which is really an eyesore. Now it is quite possible to work every foot of such land into the general scheme of landscaping and to make it as beautiful as any part of the grounds. This is true of brackish as well as fresh water swamp. Wherever the land is so low that it is generally under water it may easily be made into a pool, pond or lake with a moderate amount of labor, and the mud which is removed can either be filled into adjoining low land or used as muck for high land. I have elsewhere in this work written about the construction of pools, so that it will not be necessary here to treat at length on the subject. In some cases there will be a considerable growth of scrub or even timber on low land which is to be treated and there may be open spaces here and there upon it. Such open spaces would seem to be natural locations for artificial bodies of water.

In laying out walks in low land it will, perhaps, be found best to carry them in a general way on the higher, firmer ground. If the land is partly timbered they may be so laid out that very little cutting will need to be done. If one has rock it may be broken finely and two or three inches laid over the mud where the walk is to be, an inch of sand being put on over all for a cover. I have made such walks throughout several acres of swamp, some of it being so soft that one would mire down in it, but with the amount of material I have mentioned, a walk has been made that bears up with any amount of foot travel, though the whole trembles when it is walked over. If rock cannot be had marl and sand or even sand mixed with a little muck will answer, though a considerable depth must be put on in order to make it bear up.

Rustic seats can be built in low land if a sufficient amount of rock or sand is placed around them to make it dry under foot. Such seats may often be so placed that a fine view can be had from them over artificial bodies of water. I have constructed

them of rough rock and cement, simply building them on the mud with only a slight enlargement of the base, and they have never cracked or settled in the least. The outside should be made as rough and irregular as possible, while the seat itself is made smooth and easy in which to sit. Below the seat the space is to be filled in with broken rock, pounded in so that it will not settle and two or three one-inch pins should be set up vertically in this. The cement in the seat bottom is to be smoothed around these and when it has set the pins are to be pulled out. This will allow the rainwater to drain out so that the seat will always be dry. If one has no rock, wooden seats can be made; the posts being driven deep into the mud. All seats should have a good rake back, rocking chair fashion.

Open spaces may be left in low grounds which if mowed occasionally would have something the effect of a lawn. I do not as yet know of any grass that would answer for lawn in such locations but there is a succulent, half creeping plant (*Monniera monniera*) that grows in brackish and fresh water swamps from Maryland to Texas which, without any attention whatever, makes a lovely carpet in low, open places. This charming little plant bears its pale blue flowers in abundance throughout the greater part of the year and flourishes in much trodden places.

I have made some experiments in planting my low grounds, some of which are very wet. The entire area is subject to occasional overflow from Biscayne Bay during hurricane tides, and I am surprised at the large number of things which do well or promise to do so. Undoubtedly this list might be greatly extended but very good effects can be produced with the plants here mentioned.

Among the palms all the species of Phoenix which I cultivate do excellently in brackish mud; a number of them being planted where they are surrounded with water during every unusually high tide. Here they grow with the greatest vigor, their leaves being of a rich, intense green and that without any fertilizer. The list includes *P. reclinata*, *P. tenuis*, *P. farinifera*, *P. rupicola*, *P. cycadifolia*, *P. tomentosa*, *P. paradenia*, *P. paludosa*, *P. canariensis*, *P. pumila*, *P. humilis*, *P. senegalensis* and *P. melanocarpa*. I have not tried *P. sylvestris* and *P. dactylifera* on low ground but believe they would succeed. All the Inodes (better known under

the name of Sabal) do equally as well as the species of Phoenix. I have tried with perfect success *I. umbraculifera, I. havanensis, I. megacarpa, I. mexicana* and everyone knows that our native cabbage palmetto, *I. palmetto*, is perfectly at home in all kinds of marsh. So are the varieties of the saw palmetto, *Serenoa serrulata*, some forms of which assume almost tree-like proportions in such conditions.

Cocos nucifera, the common coconut, is a moisture and salt loving tree and I have seen specimens flourishing in locations where their roots were bathed by tolerably salt tides; it is probable that other species of this genus will do well in marshes. The Florida royal palm, *Oreodoxa floridana*, usually grows in swamps and often those which are brackish. The Cuban species, *O. regia*, and the palmiste of the Caribbean islands, *Oreodoxa oleracea*, also do well in our low lands. Two comparatively new Florida palms, *Acoelorraphe wrighti* and *A. arborescens*, both well worthy of cultivation, grow in swamps which are sometimes brackish. All the Thrinax do finely, so far as I have tried them, in low, brackish soil. *Pritchardia pacifica* is doing finely in a brackish swamp at Coconut Grove, and the two dwarf palms which inhabit the northern half of the state, *Rhapidophyllum hystrix* and *Sabal adansonii* are moisture loving species.

Coccolobis uvifera, or Shore grape, a most beautiful, broad leafed tree, grows everywhere along the shores of South Florida and does finely on high ground as well as in low lands. Most of the bananas do well in low land but should have partial drainage. Rough lemons, limes and sour oranges will grow in quite moist land, so will the calabash, *Crescentia cujete;* while *C. cucurbitana*, our native species and a handsome tree, will flourish where it is often surrounded by tide. It also inhabits high hammocks. There are believed to be two species of cocoa plums native here, *Chrysobalanus icaco* and *C. pellocarpus;* both grow in wet land and are quite ornamental, and are fine for forming masses. Several of the Eucalyptus do well in even brackish swamps which are not too low, such as *E. globulus, E. robusta, E. rudis* and others. *Paritium elatum*, a beautiful Cuban tree which probably grows on our coasts, blooms the year through and is at home in salt or fresh swamps; so are *P. tiliaceum* and *P. abutiloides*, also natives. All these do well on high ground.

A native elderberry, *Sambucus intermedia*, grows in the wettest swamps, fresh or salt and is very ornamental,—it produces its large heads of snowy flowers in great abundance. Quite a number of bamboos do finely in wet ground, among them *Arundo donax*, *Bambusa disticha*, *B. argentea* and the common giant bamboo, *B. vulgaris*, a glorious plant.

Many of the aquatics will grow in slightly brackish water and fine effects may be produced by introducing these into artificial pools. Our native Acrostichums are among the noblest of ferns and they produce a fine effect when planted along the borders of ponds or lakes. *Osmunda spectabilis* and *Blechnum serrulatum* grow in very wet, brackish soil and are fine; *Nephrolepis biserrata* and *N. exaltata*, our native sword ferns, occupy all habitations from the tops of trees to slightly brackish swamps.

The following plants in addition to those mentioned above do well in Florida swamps and low lands, all of them in slightly brackish soil. *Ficus aurea*, *F. brevifolia*, *Melaleuca leucadendron* or Cajeput tree, *Delonix regia* in soil not too wet, *Pandanus veitchi*, *P. sanderiana*, *P. baptisti*, and *P. candelabrum*, *Ravenala madagascariensis*. *Nipa fruiticans*, a magnificent palm from the East Indies flourishes in the wettest, most brackish situations. The Strelitzias, Alpinias, *Cordia sebestina*, *Hamelia patens*, *Hibiscus rosa-sinensis* and *H. mutabilis*, the Oleanders and *Rhodomyrtus tomentosa* are also useful in this connection.

It will be seen from the above list and from what has been said that a great variety of attractive vegetation may be made to grow in low and swampy places, that a considerable area of Florida which has not only been considered worthless but even a nuisance can, with a limited amount of labor and intelligence, without the trouble of draining, be made into an earthly paradise. On the trees in such grounds many of the most lovely Orchids and epiphytes will succeed; Philodendrons and other aroid vines as well as many different climbers, can be made to cover the trees. I am confidently looking forward to a time when my pestiferous swamp, which in places was a miry bog, will be the most charming spot on all my place, when instead of a waste of weeds and sawgrass it will be filled with the beauty and fragrance of ornamental plants and flowers.

MISCELLANEOUS ORNAMENTS.

Elsewhere I have devoted an entire chapter to the subject of fern pools and similar adornments. In this I shall treat of a variety of artificial constructions intended to be ornamental but often quite otherwise.

The average person who locates in Florida, either for the winter or permanently, in a region where there is open water, is desirous of having a water front. A view over the water is always delightful; it appeals even to those who are absolutely destitute of taste. Many wish to own a boat, to fish or have a wharf; hence a water front is always a desideratum.

No sooner does the average man possess a water front than he considers it necessary to build a sea wall along it. In nine cases out of ten there isn't the slightest need for it: he simply builds it because it is supposed to be the correct thing, because it is the fashion to do so, just as he would wear a collar around his neck a foot high if the other fellows did. There are cases where the sea or a stream is encroaching on the land and a wall is needed, but it is safe to say that as a general thing it is not, and that it is only a blot on the landscape. Each owner usually makes a straight wall a little different from that of his neighbor; each conforming with the line of his front, and when all is done it gives one the impression that the country is involved in war and that the whole construction is a line of fortifications, that only a few guns mounted at proper intervals are needed to put the place in a state of defence.

Most of the shores of all bodies of brackish water in the lower part of the state are heavily fringed with a growth of mangroves and other trees that love the salt of the sea. No device that was ever constructed could equal this growth as a protection against the encroachment of the ocean. It is a very rare thing that even the hardest hurricane that visits this region does any serious injury to this nature-planted sea wall. The mangroves with their wonderfully arched, stilted roots and their strange manner of propagation are among the greatest objects of wonder that

the stranger sees here. Nevertheless the owner gets an ax, or has some one else get it, and slaughters every tree. Then he digs a trench with infinite labor and builds a cement or rock wall which the next severe hurricane is almost certain to demolish. When he builds a hideous house the vegetation that he has planted is pretty sure to cover it up and in a few years hides much of its ugliness, but in the case of a sea wall it is different. As it is exposed to storms, the salt spray or heavy seas, it is rare, indeed, that anything can be got to cover and hide it in the way of vegetation.

One of the things of which the average home builder almost makes a fetish is what is called a rockery. This consists usually of a rather regular pile of stones, often smooth and rounded; sometimes broken pieces of plaster images or crockeryware are introduced and mingled with the pile to add to the effect. The whole is generally built on level ground and is often surmounted with a vase containing plants; sometimes a few plants are grown on the sides of the pile. It is hard to say what the thing is intended for; perhaps there is a sort of idea in the mind of the builder that it resembles a natural stack of rocks.

Rockwork should always appear as though it was a natural ledge or formation, a part of the landscape: it should never have any crockeryware or artificial stone or plaster mixed with it. It should be constructed, if possible, along a slope and should be made to appear like a natural outcrop. It requires considerable art to lay up an artificial ledge and make it look natural. However, any defect in construction will be remedied to some extent by the plants and vines which should be put on it. Back of such a ledge the space should be filled with good soil and in it a variety of herbaceous plants and small shrubs may be set. On the ledge and in its crevices succulents and plants which will stand drought should be planted, such things as the Crassulas, Sedum, Echeveria, Bryophyllum and similar things. If one has water so that it may be sprinkled the Zebrinas and a variety of creepers will flourish. Small species of Agaves are fine in such places and the native Ampelopsis or Virginia creeper will creep over it sometimes almost too rampantly. *Rhoeo discolor*, commonly known as *Tradescantia discolor* and some of the Aloes

A RUSTIC BRIDGE IN THE HAMMOCK.

A view in the hammock at The Sentinels, showing a small rustic bridge built of native limestone. In the rear is a large clump of *Pandanus baptisti*. (Fig. 9)

A SHADY ROAD IN CUBA.

Cuban roads are frequently planted to a variety of ornamental trees, making an ever changing panorama of tropical vegetation. The large tree whose trunk appears in the foreground is a species of Ficus. (Fig. 10)

do well here. It may be constructed either in shade or sunshine.

Sundials are neat ornaments and are more or less useful. They must, of course, be set where the sun will fall on them all day but they should never be put out in the middle of a lawn. A spot along a path with trees or shrubs to the north and open space in other directions is good.

Statuary should never be introduced into small grounds, in fact it would be better to leave it out of the ordinary garden altogether. The most of the statuary that we see in grounds is entirely lacking in artistic qualities or is even hideous. As a general thing it is most appropriate in formal gardens and it ought to be placed near dwellings or in the most artificial part of the grounds. The same thing may be said about fountains, for the most part. They are highly artificial and generally do not look well in any natural scheme of landscape gardening. I cannot understand the motive which leads so many designers of fountains to construct figures of animals and humans who throw water from their mouths. One sees such things everywhere in this country and in Europe, and they seem to me to be in the worst of taste. Fountains are all right in formal gardens where they harmonize well with the regular designs and architectural surroundings.

Rustic seats are an attractive feature in a natural garden if properly built and placed. They should be set in rather secluded places; if convenient, in shaded nooks where a side path leads to them. It should be remembered that they are built for comfort, to lounge and rest or read in, therefore the seat itself should be made low; it should tip back somewhat, and the back should have a good slope. It is well to keep the rocking chair idea in mind when one of these is being constructed.

Bridges should only be built where they are really needed, never for mere ornament, and this remark may well be applied to all kinds of structures used in making an ornamental garden. A bridge is allowable where it is necessary to cross a body of water and it should be, in a natural garden, of some simple and quiet design. In Florida, owing to the warm climate and abundant rainfall, wood is a poor material to use in rustic work, as it ordinarily decays rapidly. In the southeast part of the state

we have an abundance of soft limestone which has a rough surface and is an admirable material for all kinds of work which is exposed to the weather. In many other parts of the state rock of some kind can be obtained which can be used for rustic effects. In building rough rock bridges it is best to put down piling to a good depth, on which concrete or rock piers should rest; though of course if one can reach bed rock it is better. If for a foot bridge only, the arch may be light, but for vehicles it should be of reinforced concrete, the exposed surfaces being finished with rough rock. If wood is used it should be peeled (which detracts greatly from its attractiveness) and the whole covered with two or more coats of Carbolineum.

Arbors and summer houses are not so much in fashion now as pergolas. A properly built pergola, either attached to a dwelling or detached, and covered with vines is an attractive object, provided it is well kept. It is, however, best to make the posts of concrete or better of rough rock. This remark is applicable to all arbors, trellises and, in fact, to all structures. No wood should ever be used in construction in or near the ground in Florida, especially the warmer part of the state.

Entrances to grounds are often marked by some kind of architectural ornaments: piers or arches or in small places posts set in at the side of the road. In extensive places a gatekeeper's lodge is sometimes built in addition to the work at the entrance and the whole may be quite elaborate. All such work should be made of cement, brick, or better of rough rock. The same thing may be said of walls which are used to enclose grounds or separate one part of them from another. It is a good idea to cover such structures with vines, preferably those which cling by means of adventive roots. In the northern part of the state the common English ivy (*Hedera helix*) is fine for this purpose and throughout the greater part of Florida *Ficus repens*, the trailing rubber plant, does admirably. Our native woodbine, which grows generally throughout the state, is a good plant, but it loses its leaves more or less in winter. Some of the Bignonias are fine for this purpose.

A TROPICAL AVENUE AS IT SHOULD BE.

This splendid example of avenue planting can be taken as an ideal. The trees used are *Enterolobium cyclocarpum*, *Pithecolobium saman*, *Albizzia lebbek*, and *Delonix* (*Poinciana*) *regia*. While furnishing ample shade, they permit at the same time an unhampered view to either side of the road. Such an avenue as this is vastly more attractive in appearance, and more in keeping with its surroundings, than the avenues of Australian Pine (*Casuarina equisetifolia*) which have been so freely planted in Florida. (Fig. 11)

FICUS NITIDA.

A magnificent specimen of this Oriental species on the estate of Charles Deering at Buena Vista, Florida. This tree is widely used in the tropics for avenue planting, a purpose for which it is admirably adapted. Its foliage is of a rich, glossy green color. (Fig. 12)

SHADE TREES FOR ROADS AND STREETS IN FLORIDA.

There are a number of qualities which may be considered almost absolutely essential in the makeup of a shade tree for roads and streets.

First,—It should be what its name indicates, a shade tree; it should have a moderately smooth, straight trunk, a spreading head with a mass of clean, bright, healthy foliage which it retains in good color throughout the whole, or nearly the whole year.

Second,—It should be adapted to its environment. Such a tree for Florida should flourish in our poor, sandy soil with a small amount of care or fertilizer. It should be able to withstand dust, drought or excessive rain; it should not be too tender and it should stand up against high winds or hurricanes with a minimum of damage.

Third,—It should be easy to propagate, though not to the extent of sprouting too readily or propagating itself too freely from seed along the roads or streets.

Fourth,—It should be, so far as our knowledge goes, free from serious diseases or the attacks of very bad insects, though of course these things are liable to be introduced at any time.

Fifth,—It should be free from vicious thorns. In addition to these it would be well if it were long lived, if its leaves were not too large and if its fruit did not greatly litter or cumber the way. It is not at all likely that any tree will ever be found that will have all or nearly all the good qualities mentioned above;—the only thing we can hope for is to find one or more that will have the most of them.

So far as the planting of ornamentals is concerned Florida is a new country and we are yet in the experimental stage. Our knowledge, gained in regions to the north of this, is of little value to us here. We must plant tropical and semi-tropical stuff here almost altogether, and only a few things have really been at all thoroughly tried as shade trees here.

First, some of the palms have been recommended and a few of

them are being tried. The common coconut has been planted considerably in the extreme lower part of the state as a road and street tree but while it is a most rapid grower, is healthy and free from serious insect pests here so far, and is one of the most magnificent objects in nature, I consider it unfit for any such purposes. Its stem is almost invariably crooked, oftentimes exceedingly so, hence it never forms a good line and, although experiments have been made with a hope of forcing it to grow straight they have totally failed. Its leaves do not have a sufficient spread to shade a broad road properly even if it grew straight. But when the tree has attained a considerable height there would always be great risk from falling leaves and nuts along any much frequented thoroughfare. I have seen a woman knocked senseless by being struck with the butt of a leaf which did not fall over ten feet.

Some of the other Cocos have been used for street and highway planting, particularly C. plumosa which is a very beautiful tree, but with the same defect as all other palms which we are likely to plant here,—their leaves do not spread wide enough to shade an ordinary street or road. *Washingtonia robusta* is planted to some extent here and it becomes a noble tree; so does the royal palm, but the latter will not do well on dry pine land. This tree is often used for avenues in Cuba but it makes but little shade. Several of the palms are fine for planting along walks or byroads. Our common cabbage palmetto is excellent for this purpose and is hardy everywhere in the state.

The Australian pine, *Casuarina equisetifolia*, which is not at all closely related to the pines, is used for street and road shading more extensively than any other tree in tropical Florida. It belongs to a family whose relationships are uncertain and it inhabits tropical seashores of the Australian region. Although a native of the torrid zone it seems strangely out of place in it, for it looks something like a slender white pine, and one might expect to find it growing wild among the mountains of some boreal country; however, it has some excellent qualifications for a road and street tree. It is one of the most rapid growers in the world, it flourishes in our poor pine land with a limited amount of culture and fertilizer, its slender, wand-like branches and narrow foliage bend

before hard winds, hence it stands the storms fairly well. It is generally healthy and free from insect pests, though of late it is beginning to be troubled by a boring beetle; and it is easily propagated from seed, which it produces in great abundance. Yet to me and many others it does not seem to be a fit tree for planting along our highways: until it reaches a considerable age the lower limbs are the longest and must be cut away in order to allow of free passage along the road. It does not cast much shade on account of the tenuity of its foliage. It produces a hard seed-vessel something like a prickly cone and it is claimed that these are injurious to automobile tires. Certainly they are not pleasant to the feet of barefoot children and they sometimes literally cover the highway.

But it is the appearance, the tone, the general color of the tree that, it seems to me, is its greatest drawback. It has a sad, dull, gloomy tint that is especially depressing, that is suggestive of cemeteries, of the end of life, and of the dark and silent tomb. This is a land of clear skies, of illimitable light and sunshine, a land of glorious color, and it seems to me that such a depressing tree is entirely out of place in it.

There are a number of trees that bid fair to be useful for road and street planting and ought at least to be tried out; one of these is the mango, *Mangifera indica*. It has a clean, straight stem, a wide spreading, compact and shapely top. Its long, thick, glossy leaves are exceedingly beautiful, especially when they first develop, as at that time they have a marvellous range of tints varying from pale ashy pink to reddish brown and rich wine color. So far it is generally healthy and free from insect attacks; its fruit is valuable and it stands up against winds well. Several stems often come from each seed and all or only one may be left to grow.

Albizzia lebbek, Woman's Tongue, is a tree much used for road planting in the Old World. I have a splendid specimen in my grounds about nine years planted that has a head more than fifty feet across and forty in height with a trunk diameter in excess of two feet. It has attractive pinnate leaves and heads of silvery and green stamens all summer and it appears to stand well against high wind. Its leaves are retained throughout the

greater part of the year, falling in the spring when the new foliage almost pushes off the old. It has not seeded very well here but seed could be imported in abundance. Its broad whitish pods are, however, one of its attractive features.

The Indian Laurel, *Ficus nitida*, is not a laurel at all nor any kin thereto, but one of the figs. It has rather small glossy, thick leaves and forms an immense, rounded head of intensely deep green foliage. It has been used in Key West for a street tree with success and is a great favorite for roads in Cuba and many parts of the Orient. It stands hurricanes pretty well and holds its leaves all the year. It may be propagated from seed or by slitting and balling the limbs with sphagnum, or it can be grown from cuttings. Another fig, *Ficus religiosa*, the Sacred Ti, Bo or Pipal Tree of the Hindus, everywhere held sacred in India, will probably make a fairly good road tree. It is a rapid grower, with thick, shining, heart shaped leaves which are drawn out to a long point, and it has a fine rounded head. It is used in Havana as a shade tree on the beautiful Prado and stands hurricanes fairly well.

The Circassian Bean (*Adenanthera pavonina*) is a handsome, spreading tree with delicate, compound leaves and spikes of brownish flowers and spiral pods with brilliant red beans. I have a fine tree some twenty feet high which stands winds well and is a fairly rapid grower. There is another tree in my grounds which I am watching with great interest the Myrobalan (*Phyllanthus emblica*), which is without doubt one of the loveliest trees, so far as growth and foliage are concerned, that I have ever seen. It has long, wand-like shoots, slender, delicate pinnate leaves and in appearance resembles, to some extent, a bamboo. It is called a large shrub or small tree in the books, but my specimen is twenty-five feet high and has a trunk diameter of over a foot, the result of some six years growth; De Candolle says it becomes a large tree. It would have to be propagated from foreign grown seed until it could be got into bearing here. It is grown as far north as Japan but Reasoner reports that it is not quite hardy at Oneco.

The mahogany (*Swietenia mahagoni*) is a native of the Florida keys and the extreme lower mainland of the state, growing in almost any kind of land from swamp to high hammock. Where

AN AVENUE OF TAMARINDS.

The Oriental Tamarind is one of the most graceful of tropical trees. It grows well in extreme south Florida and is desirable for street and avenue planting. The avenue here shown is at Rio de Janeiro, Brazil. (Fig. 13)

THE CARISSA AS A HEDGE PLANT.

The Carissa or Natal Plum (*Carissa grandiflora*) makes an excellent hedge plant for regions not subject to severe frosts. It stands trimming well, and its stout thorns render it practically impenetrable. (Fig. 14)

it has room it makes a handsome tree with a good trunk and a fine spreading head. The leaves are rich green and pinnate, the leaflets one sided and glossy; they remain on the tree until late winter or early spring, suddenly turn yellow and fall, and are quickly replaced by the new foliage. It is a rapid grower and will do well on ordinary pine land with a little fertilizer.

Inga dulcis is a native of the Oriental Tropics, is cultivated to some extent in the lower part of this state, and is apparently hardy in the Miami region. It has wand-like branches and delicate leaflets in pairs, it has a few small thorns, and seed pods which contain an edible pulp. It is a decidedly ornamental tree of rapid growth, is perfectly at home in the poorest of ordinary pine land, and will get on with little fertilizer and attention. It is sometimes placed in the genus Pithecolobium.

For planting farther north where considerable hardiness is required the water oak (*Quercus nigra*) should be an excellent street and road tree. It has a magnificent, large round head covered with evergreen foliage of a fine glossy character, is a rapid grower and will do well in any but the poorest soil. The same may be said of the live oak (*Quercus virginiana*) which is one of the most majestic trees of North America. *Q. laurifolia*, laurel oak, and *Q. phellos*, willow oak, are noble trees and should succeed on any fairly good soil. *Gordonia lasianthus* (Loblolly Bay) is a handsome, native tree with evergreen leaves and large white flowers. It grows in swamps and low grounds but will flourish on much higher, drier ground, and would probably make a fine road and street tree. It is, however, rather short lived. The Magnolia (*M. foetida*) is one of the most magnificent of trees and it will do exceedingly well on high pine land. Although its large leaves might suffer in high winds I think it would be an excellent road tree in the cooler part of the state.

Although not a very rapid grower the camphor tree (*Cinnamomum camphora*) is a most handsome tree eventually attaining to large size, and it should stand high winds well. The white elm, red maple and umbrella tree might be mentioned among trees for road purposes up the state; although deciduous, they are beautiful and worthy.

In Cuba they have a fashion of shading their roads with a

large variety of trees planted as an irregular border along each side of the drive. In clearing up the country, royal palms, Ceibas, Ingas, Ficus, Spondias and other trees which naturally grow at the sides of the highways are allowed to stand. Where there happen to be open spaces young trees are planted, and in some cases vines and shrubs. As a result the roads are beautifully shaded and as one drives along them the eye is greeted with a constantly changing panorama of varying green. Shrubs fill up many of the openings and flowering vines scramble over the whole in places, often covered with gorgeous blossoms. Here there will be a spot so densely shaded that inside there is twilight at midday; farther on it is more open and one can have glimpses of a lovely country. No description can give any idea of the magnificence and beauty of some of these Cuban highways. I cannot too strongly recommend that this system be, at least, tried here in Florida. In the ordinary way of planting trees along roads or streets in straight rows, if one tree dies it makes a very bad break which can rarely be satisfactorily filled, whereas if the mixed system is adopted the loss of a tree makes little difference.

There are many other trees of which we know but little which would probably succeed along our roads and not only make good shade but would bear beautiful flowers. Instead of rows of dreary Australian pines which only add to the monotony of our pine woods we should have something to please the eye and remind us of the glory of the tropics.

A few words may be said on the planting and care of roadside trees. It is worse than useless to grub holes among the palmettos in the pine woods and plant trees therein. Every year or so forest fires rage through the pines and many of the trees which have cost good money and hard labor go up in flame and smoke. A space sufficiently wide should be grubbed and cleared of rubbish on each side of the road that the trees may grow in safety therein. This should be kept clear as long as there is the least danger of forest fires. Holes of good size should be dug and some kind of fertilizer mixed with the soil. The trees will need occasional hoeing and fertilizing, and it goes without

A BAMBOO WINDBREAK.

The common bamboo (*Bambusa vulgaris* [?]) makes an excellent windbreak and has the additional advantage of being highly ornamental in appearance. It is here shown growing at Lavras, Brazil. (Fig. 15)

A PHILIPPINE ORCHID.

Phalanopsis schilleriana, one of the most beautiful orchids in the world, is here shown growing on a tree in the hammock at The Sentinels. This plant and a companion species, *P. amabilis*, have done remarkably well here. (Fig. 16)

saying that they do not need any cultivation by cattle, hogs or horses.

A time will come, I hope, when in each county we shall have a competent person as superintendent of trees and tree planting along our roads, not a politician but a devoted lover of them, not only for their utility but for their beauty. This superintendent should have intelligent laborers to help and a sufficient fund properly to carry on the work.

I can look ahead in imagination to a time when Florida will be netted with a magnificent system of roads; when these roads will be shaded everywhere with the most glorious trees that the warmer parts of the earth produce. What a feeling of pride every citizen will have in such a system of highways! What an inducement they will be to the northerner to spend his winters,—yes and his summers—among us; what an opportunity for autoing it will make!

The true lover of trees is not likely to figure on their cash value, but the business man can easily estimate without fear of exaggeration that such a road system as I have pictured would be the best possible advertisement we could make. It would bring more desirable tourists and settlers than tens of thousands of pages of advertising.

WIND BREAKS AND HEDGES.

It will often be found that it is a good thing to throw a sort of screen or protecting wall of trees or shrubs around all or part of a place as a shelter against wind or frost. In fact, in many locations on large rivers or the sea it is well-nigh impossible to grow anything without some such screen.

As a general thing I do not like straight rows of trees or shrubs in an informal garden scheme for the reason that they look too artificial. If one wants to make a wind break, or to separate a part of his grounds from the rest or from his neighbor's it seems to me far better to plant an irregular border. This may consist of lofty growing trees, shrubs and even herbaceous plants so arranged that when grown he will have an irregular sky line, a variety of form and colors. Where one is merely separating one part of his land from the rest a low screen may be planted consisting of shrubs and small growing plants.

For a wind break it is necessary in exposed places to use trees which are practically evergreen and quite wind resistant, and as yet we have, perhaps, not had sufficient experience in Florida to make the best selection of species. The Australian pine, *Casuarina equisetifolia*, is a native of the Oriental littoral region of the tropics. It is one of the most rapid growing trees known; it stands the salt air remarkably well, it is fairly wind resistant. It is probable that all the date palms will work in finely for wind breaks and that they will stand salt air, and this is likely true of the Inodes and most of the Cocos. Our own cabbage palmetto does excellently in the most exposed situations, even fronting onto the sea. The live oak will only resist salt spray moderately well and where it is too much exposed its foliage is likely to be scorched on the seaward side. Some of the bamboos work in finely in mixed wind breaks but, so far as my experience goes, their leaves do not stand salt air well. One of the finest things for a wind break in the lower part of the state is the rose apple, *Eugenia jambos*. It has long, glossy, evergreen leaves which are a rich red or purple when young, the growth is compact and bends

readily before the wind. It has lovely creamy blossoms and pleasantly flavored fruit. I doubt whether it would stand salt air. On the sheltered side of a mixed wind break vines might be planted and the whole might be made to have such an ornamental appearance that no one would suppose it was other than a piece of decorative planting.

The oleanders, the privets, Ligustrum spp., *Laurocerasus caroliniana*, or Carolina cherry, the two Raphiolepis, *R. ovata* and *R. indica*, the Pittosporums, Gordonia, two or three of the hollies and a number of other trees and shrubs are suitable for such work and are hardy throughout the state.

If one must plant formal hedges the privets are fine evergreens for such work and are hardy anywhere within our limits; so is the dwarf tree box (Buxus). The common sweet myrtle and some of the climbing roses can be pruned so as to form a fine hedge. In the more tropical part of the state the various species of Carissa make beautiful hedges, as do the Phyllanthus of the nivosus type. I have no doubt that Catesbaea, Tabernaemontana, some of the Ixoras, Duranta, some of the Jasmines and Gardenia would stand shearing well. The Acalyphas and Chinese Hibiscus are considerably used for hedges in this region. And I would suggest that any of the following would be likely to do well as hedge plants or to work into wind breaks: *Eugenia uniflora*, *Thea viridis*, *Bambusa disticha*, *Triphasia trifoliata* and several of the Pandanus.

It should be remembered that dead air fills open spaces that are left among plantings of trees and shrubs, and that this air becomes very cold during a norther, so that in such spaces frost is more likely to occur than in more exposed places. Any open space on the north or west of a close wall of vegetation is peculiarly subject to frost, for the reason that the cold air is driven in and lodges.

ORCHIDS.

Probably no one except a few professional botanists knows that there are at present no less than twenty-two species of native, epiphytic Orchids known in the State of Florida. Some of these are beautiful while all are strange and interesting. Nearly all of these are natives of the West Indies or Tropical America, and it is probable that they were introduced, for the most part, into South Florida during late geological time by birds, winds, and, it may be, on floating vegetation carried on the Gulf Stream.

There are nine species of Epidendrum known in the state, most of which have no beauty, as the Epidendrums are called the weeds among Orchids. However, *E. cochleatum* has odd purple and yellow flowers that remind one a little of those of a pansy. *E. nocturnum* has spidery white blossoms and *E. tampense* has really pretty flowers of purple, greenish and white with sometimes yellowish or chocolate tints.

Cyrtopodium punctatum is a noble Orchid, sometimes forming immense clumps, the stems and numerous rather large flowers being greenish yellow barred with brown red; a large plant may carry as many as 300 blossoms at a time. There are three species of the genus Dendrophylax in lower Florida, one of which, *D. lindeni*, with leafless stems and handsome, large, satiny blossoms, usually grows on the trunks of royal palms. *Oncidium luridum* is a magnificent Orchid with large, thick leaves, and stems of flowers which sometimes reach a length of ten feet. The color of the blossoms is lurid, greenish yellow barred and blotched with red or red brown. *O. sphacellatum* is an epiphytal Orchid in Cuba but here it is more or less terrestrial, growing on pine land in the edges of swamps or rarely in hammocks. The flowers are yellow and quite attractive. Besides the above there is a Macradenia, an Ionopsis, a Polystachya and a Brassia, the latter only just discovered in our region. This strange plant, *B. caudata*, is a native of Cuba and has curious spider-like greenish yellow blossoms. We have two Vanillas which climb trees by means of aerial roots

and have rather attractive flowers. With their thick, fleshy stems and scale-like leaves, they are curious plants.

Many of the exotic Orchids can be successfully grown on the trees of our hammocks if proper care is given them. Two of our native species, *Epidendrum conopseum* and *E. tampense* grow on trees in the hammocks throughout the greater part of the peninsula of the state and it is probable that a few of the hardier exotic species might be cultivated over most of this area. First among exotics are the Cattleyas,—queens among Orchids. All of them bear large, handsome flowers, and with the exception of *C. citrina*, which is a cool house species, all that I have tried have done well. With a good selection one may have blossoms throughout the entire year, provided his plants are large and in good condition. *C. labiata* and its varieties will furnish flowers during the spring, summer and autumn and *C. trianae*, by some considered a variety of labiata, is a winter bloomer. *C. labiata* and *C. trianae* have mostly pink to purplish flowers; *C. dowiana*, yellow, and *C. wagneri*, white.

The Laelias have handsome flowers and are closely related to the Cattleyas, having much the same range of color, though they are less showy. *L. anceps*, *L. majalis*, *L. perrini*, *L. jonghiana* and *L. superbiens* promise well here.

Dendrobium is a large genus of Oriental Orchids, most of which are handsome and easily grown. *D. nobile* and its varieties are among the finest; *D. wardianum*, *D. palpebre*, *D. moschatum*, *D. superbum*, *D. fimbriatum*, *D. formosum*, *D. densiflorum* and *D. griffithianum* are all doing well with me. The last two have hyacinth-like spikes of deep yellow flowers; those of the others vary through white, red, purple and straw color. *D. phalanopsis* and its variety schroederianum are very fine, with deep purple flowers, individual specimens of which have remained in perfection with me for over three months. So far the Dendrobes are perfectly healthy with me. A number of them throw out air roots from the young stems; these stems can be cut off and will make new plants. I occasionally put stems among my pots containing plants on the shelves in the slat house and by keeping them slightly moist I can sometimes root them.

Oncidium is a large and fine genus inhabiting the American

Tropics and yellow and brown-red are the prevailing colors of their flowers. *O. tigrinum* and its near ally *O. splendidum* are exceedingly showy; *O. leucocheilum* from Guatemala has panicles of flowers often nine feet long, the color being greenish and white. *O. papilio*, the Butterfly Orchid, has broad, usually spotted leaves and striking yellow and brown banded flowers which bear a stong resemblance to a butterfly, *O. cavendishianum*, *O. varicosum* and its variety rogersi, and *O. ampliatum* have all done well with me. *O. ornithorhynchum* has lovely, delicate lilac flowers, but is a cool house orchid and soon dies here.

The Vandas are superb Orchids from the East Indian region. I have *V. coerulea* which has handsome blue flowers and *V. teres* with pink flowers, also an unnamed species, all of which are doing well.

Phalanopsis is a genus of Orchids from the Indo-Malayan region, and contains, perhaps, the most chastely beautiful species of the entire family. Here I have in splendid condition *P. amabilis* and *P. schilleriana*, the former bearing long racemes of nearly pure white, large flowers while those of the latter are a lovely lilac rose. They have a rich, waxy texture and solid substance that causes their flowers to be as lasting as those of any Orchids grown in the state. I have had individual blossoms of *P. amabilis* remain in perfection for four months. Here on my trees in the low land they send out their large, flat roots in great profusion and produce their handsome, glossy, leathery leaves with the greatest vigor. In fact, although these are considered rather difficult plants to grow in northern hothouses, they have done better with me than anything I have grown. They have endured long droughts and winter temperatures of light frost without injury, and when in bloom they have been the wonder of a great number of visitors.

Besides the above I have tried quite a number of other Orchids including *Brassia verrucosa*, *Brassavola glauca*, *Chysis aurea*, *Lycaste aromatica* and *skinneri*, several *Maxillarias*, *Miltonia roezeli*, *Schomburgkia tibicina*, a couple of Gongoras, Stanhopea sp. and a considerable number of unnamed plants from Guatemala and Cuba, most of which are doing well.

There is a class of Orchids which grows at high elevations in the

tropics where the atmosphere is always moist and cool. These are called "Cool House Orchids" and can only be grown in the north with great difficulty. Among them is the genus Odontoglossum, containing some of the most exquisitely beautiful things in the world, and there are many others. I have repeatedly tried a number of these in my hammock and have met with absolute failure. Our summers are no doubt too warm and they cannot stand dry weather.

There is another class of Orchids which is neither wholly epiphytic nor terrestrial; the plants may grow in a native state near the ground on trees, on rocks or even in the ground. Among these is *Oncidium sphacellatum*, which I have mentioned in the list of Florida species, the Coelogynes and some of the Cymbidiums. They should be grown in moist places in the hammock at the bases of trees, on rocks with moss or leaf mould, or a sort of artificial rock-work with decaying wood and leaf mould mixed in will suit them. I have not had much experience with Cypripediums and other strictly terrestrial forms but they might probably be grown successfully in moist hammock in a mixture of peat, fern root and leaf mould.

Most of the Orchids received from the dealers have their roots contained in the mixture of chopped fern root or peat and sphagnum in which they grew in the orchid house. In my earlier attempts at growing them on my trees I made the mistake of leaving this all on and fastening the ball against the tree by means of pieces of shingle nailed on so as to press against it. I believe that the freshly imported plants which have not yet been potted are better than the potted and established ones.

No Orchid will flourish on a tree unless it is so firmly fastened to it that it cannot possibly be moved about. It must also be so fastened that the collar, that is the part of it where the roots join the stems, is not choked or smothered. I find it best with plants that come with the potting material around their roots to soak the mass a little and carefully remove as much of it as possible without unduly mangling the roots. Most of these die anyhow after the plants have been on the tree awhile. Cut window screen wire (iron wire is best) into strips an inch wide and of any length. Fasten one end of a strip with a small nail to the

trunk of a tree at the side of where the Orchid is to be placed. Put a thin layer of sphagnum on each side of the mass of roots, which have been previously flattened; place the roots against the tree close to where the strip is fastened; draw the strip tightly across the roots and nail on the other side of them. If the plant is large it will be necessary to put two or more strips across, sometimes in several directions; at any rate bind it firmly and neatly to the tree, taking care that the collar of the plant is not choked. This fastening will admit air to the roots and will not look unsightly. Water well and if possible repeat the watering at least once a week during dry weather until the Orchid is established.

They may be planted at any time of the year but I prefer to put them on the trees just before the commencement of the rainy season. If one has irrigation it makes little difference. Do not put them on trees whose bark scales off. The live oak which grows generally throughout Florida is an ideal tree for this purpose as it has rough bark which never comes off and the roots seem to revel in its crevices. The red bay is another good tree for this purpose. An upright trunk four or five feet above the ground is a good place and elevation.

I have had best success with good sized plants; small specimens are liable to dry out and die. Most Orchids are very slow growers; often only a single leader is sent up in a year even under favorable circumstances, unless the plant is large. In some cases they produce fertile seed but it is excessively minute and difficult to make grow. One may scatter such seed on mossy, leaning trees in a damp hammock and rarely grow a plant. Even when he succeeds it will take from four to eight years for it to bloom. Roots are sometimes thrown off from leaders and in such cases the latter may be carefully cut off below the roots and made to grow, preferably in pots of peaty soil at first, in a close damp slat house. In the north growers are largely dependent on plants which are imported from their native countries where some species are now almost exterminated.

A few words regarding enemies and insects may not be out of place. There is a native wood rat which at times does great damage to Orchids planted on trees, working them loose and often eating them. Something may be done in the way of put-

ting out poison but if there is likelihood of continued trouble it is best to fasten the plants only on the vertical stems of trees, and not on horizontal or sloping surfaces. There are nocturnal insects that eat the leaves of Orchids, which could probably be held in check by spraying according to instructions in the chapter on insects. The only disease that has so far troubled my plants is a blight which breaks out suddenly and sometimes destroys a large plant in a single day. The affected parts turn to a semi-transparent brown and become soft as though they had been boiled. I presume that it is the work of a fungus. Slitting the sheaths that surround the pseudobulbs and removing them, in case there are indications of trouble, is a good thing, and thorough dusting with sulfur is excellent. Cut away and burn all diseased parts.

I would advise every one who has hammock and cultivates ornamental plants to try at least a few Orchids. One can start with the Cattleyas, Dendrobiums, Epidendrums or Laelias; the cheaper plants are as good as any. Do not put them too high on the trees as it will be difficult to water and attend to them, and much of the fine effect of the flower is lost if they are out of reach. If one can have a background of thick foliage so much the better.

One can even grow Orchids in a clump or grove of planted trees; all that is needed is shade, protection from strong wind and a reasonable degree of moisture in the air. One sometimes sees them growing in exposed places in full sunshine but I have had poor success in trying to establish them in such places.

There is an indescribable charm about the Orchids and whoever once becomes interested in them can never break away from their spell. The forms of their flowers are so strange, their texture is so delicate, their colors so soft and beautiful, often so wonderfully brilliant and bizarre that it is no wonder that they claim almost universal admiration, whether seen in Orchid houses or used for decoration. But to see them in perfection one must go into the dark, steamy, tropical forests where they naturally belong. Charles Kingsley said "Even to look up at them perched on bough and stem as one rides by, and to guess what exquisite and fantastic forms may issue, in a few months or weeks,

out of those fleshy, often unsightly leaves is a strange pleasure, a spur to the fancy which is surely wholesome, if we will but believe that all these things were invented by A Fancy, which desires to call out in us, by contemplating them, such small fancy as we possess."

It is only when seen growing on the trees in tropical or semi-tropical forests that they really look natural, for there they fully harmonize with the magnificent tangled growth, the confusion of struggling lianas and the veritable air gardens of wild Tillandsias and other epiphytes which sometimes load down the limbs to the breaking point. It is in such environment alone that one can appreciate their weird and almost unearthly grotesqueness and beauty; it is there that their brilliant and fantastic blossoms shine out almost like stars in the darkness.

FERN POOLS.

Down in what is called the "Homestead Country" in lower Dade County the water from the Everglades finds its way through the rocky limestone strata to the sea by underground passages. The carbonic acid in the water dissolves the rock to such an extent that in places the roof falls in, and often the rock, earth and rubbish dam up the stream and form a pool. On the banks of these pools, especially those in the hammocks, many species of ferns and other shade and moisture loving plants spring up and flourish in rare luxuriance and beauty.

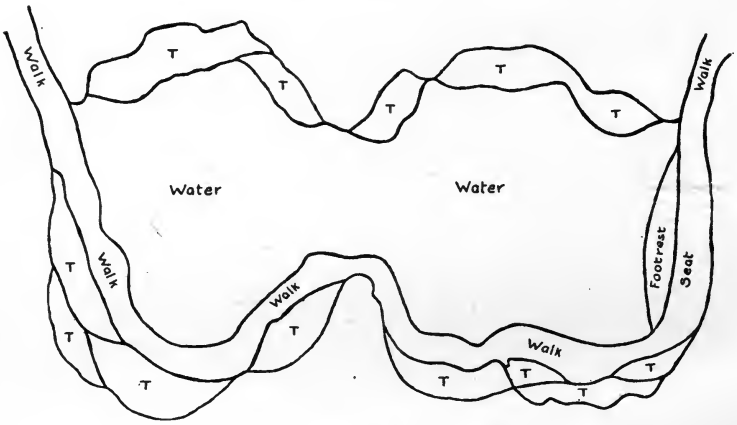
On my first visit to this region I became infatuated with them and I wondered if it was not possible to make something like them in my own hammock. Shortly after my return I blasted out a space where there were but a few small saplings, wheeled away the rock to use for paths in the lowland, and finally sank the excavation to a foot or so below water level. I left the sides as irregular as possible, filled earth into the crevices and pockets, planted a lot of ferns and in a short time had a fair imitation of a natural fern pool.

So I am not the inventor of the fern pool but only its discoverer and developer, and I shall not even attempt to patent it. My first pool was worked out near the swamp bordering the bay and I soon had land crabs in great numbers, not merely as visitors but as permanent residents. They didn't come to admire the plants or the beauty of the landscape; they were there strictly for business. They ate nearly all my delicate ferns and what they didn't eat they pulled out and destroyed, and I soon found that I could only grow the stronger and coarser native species in it.

My next venture was made considerably farther away from the bay in high, dense hammock, and there I have been able by watching and occasional poisoning to keep my unwelcome visitors pretty well in check, and to grow plants with reasonable success. There is only a small pool sunk some ten feet in the rock, and it is well shaded by overhanging trees. On its sides

I have, however, perhaps twenty-five species of ferns, Alocasias, Anthuriums, Zebrinas, Pellionia, Dieffenbachias, Pothos, Fittonias, Peperomias, Begonias, Selaginellas and a variety of other things. *Ficus repens* and other creepers are beginning to cover the walls in places and a Monstera starting from down near the water will eventually climb up one of the trees outside the pool.

I have put native fish in all my pools and they not only prevent the breeding of mosquitoes but at the same time add to the



HOW TO MAKE A FERN POOL.

Diagram of a fern pool such as the one described in the text. The spaces indicated by T are terraces. (Fig. 17)

attractiveness of the place. It is a great resort for butterflies and many of the woodsy insects. And in a seat which I have worked out in the rocky side which can be reached by an irregular path I can sit and enjoy it all to the utmost.

Any one can have a pool who has rocky hammock or even pine land that is never overflowed and that does not lie too high above standing water. In many parts of the state rock comes to or near to the surface and where it is overlaid with soil or sand this may be cleared away to the rock, the latter blasted out to the necessary depth, and from it an irregular wall can be laid up to the level of the surface. At least a considerable part of the surface of the whole should be shaded by trees. These

ON THE BANK OF A FERN POOL.

A small pool may easily be excavated in the soft limestone of southern Florida, and delicate ferns and mosses will luxuriate on its banks. In most places the pool does not need to be very deep in order to reach the permanent water level. (Fig. 18)

A TROPICAL BORDER AT THE SENTINELS.

Archontophoenix alexandrae, a beautiful pinnate-leaved palm from Queensland, growing among native plants in the hammock. The white stemmed trees in the foreground are *Cecropia palmata*. *Chlorocodon whitei* is climbing up the trunk in the left side of the picture. (Fig. 19)

may be planted about it if there is not already sufficient shade. It may be made any length and width but, for the most part, I think it should not be over twenty feet wide if it is to be used wholly for shade loving plants. The outlines should be quite irregular,—in fact irregularity is to be the watchword throughout. A good plan would be to widen each end and leave the middle narrower. In such a case a small footpath could be worked out down one end or side, carried along the water, leaving in front of part of it a bit of beach; then it could be carried up the other end where a seat could be worked out in the rock. From such a seat one would have a pretty view along its whole length. And the whole could be made so irregular that neither seat nor path would be at all conspicuous.

As the rock is taken out shelves and pockets should be freely left, and rich earth, composed largely of leaf mold, ought to be put in to receive the plants. It may be necessary in places to build up low walls of rock in front of the shelves but this can be done so as to look natural. I have growing on the sides of my upper pool a few terrestrial orchids which are doing well, especially *Phaias grandiflorus*.

I am a most enthusiastic believer in fern pools and would urge every one who has a place and cultivates ornamentals to make one or more if possible. Even if there is no rock where you want to make one it would pay to haul it from some distance and build up irregular walls inside an excavation. If no trees are at hand to furnish shade one could plant quick growing species which in a very short time would furnish ample shelter. It will be necessary to clean out the mud and leaves which accumulate in the bottom of pools occasionally and this will make good mulching. In dry weather the plants will probably need an occasional spraying with water until they are established. If the pool is made in land which is liable to be flooded some kind of drainage will have to be provided, an open ditch or underground tiling.

In the southeastern part of the state where the soft limestone strata come to the surface everywhere the rock has been blasted out in places and used for making roads, thus leaving unsightly pits and excavations which are a great blemish on the landscape.

In general they have been excavated down to the water level, or a little below it, and abandoned because of the difficulty of getting out material under water. Land on which these abandoned pits are located is greatly depreciated in value as it is almost impossible to fill them. But how easily any one having such a pit on land at his home could make a thing of beauty of it! If its outline is not sufficiently broken and irregular he could easily make it so by blasting out here and there along the edge of it. Small bays and nooks could be worked out and the whole could soon be sheltered by planting rapid growing trees and shrubs, and along the walls in such spots an infinite variety of ferns and other plants requiring shade, shelter and moisture would flourish. Rich soil could be put into the water in places and aquatics planted. All the Thrinax palms will flourish in such places in the lower end of the state and Agaves, Aloes, Rhoeo and perhaps Saxifraga. Our native Ampelopsis or woodbine and *Ficus repens*, also many other vines and creepers might be employed in screening, and they would soon turn an eyesore into a thing of beauty.

Many of the places where phosphate has been mined might be skillfully treated in a somewhat similar way and the same remark applies to natural sinks or any excavation in the rock.

Any one who loves his home and enters heartily into the spirit of cultivating plants and who has taste can devise almost innumerable schemes for adding to the beauty of his place and doing away with what is unsightly in his surroundings.

IN THE HAMMOCK.

By far the greater part of the state of Florida is covered with monotonous pine forests. Only a small fraction of it is hammock; that of the northern part of the area being composed largely of live oaks, hickory, magnolia, red bay and a few other species of trees. In the low hammocks the tupelos, sweet gum, swamp red bay, two or three species of holly, cypress and some others occur. Along the coastal region throughout the state they are generally glorified by the wonderfully striking cabbage palmetto.

As we go southward a number of trees and shrubs begin to appear whose metropolis is in the American Tropics. In the lower part of the state the Caribbean pine (*Pinus caribaea*) takes the place of the Georgia pine (*P. palustris*), a number of Eugenias are met with, the gumbo limbo (*Bursera gummifera*), the marlberry (*Icacorea paniculata*), and by the time Miami is reached on the east coast and Cape Romano on the west the larger portion of the hammock vegetation is West Indian. The lower keys have, for the most part, a foundation of coral rock and their vegetation is strictly tropical.

I have been in a number of the West Indian islands and Central America but nowhere have I seen vegetation more strikingly beautiful than it is in the hammocks of Florida. I know no more majestic tree than an old, finely grown live oak, especially when it is draped with long moss. This plant, now called *Dendropogon usneoides*, is found growing in a wild state as far south as southern Brazil, but perhaps nowhere in all its range is it more finely developed than in our hammocks.

Unfortunately the soil in the hammocks, being composed largely of leaf mould, is of much better quality than that of the pine land. Hence it matters not that this forest growth is among the most beautiful in the world; the greedy land owner seizes his ax and grub hoe and with the aid of fire he wipes out of existence this lovely vegetation which it has take nature centuries to develop. He does it that he may raise a few vegetables or put in a Citrus grove, or perchance that he may have an opportunity

to show his skill in ornamental planting; putting out rows of palms alternated with Chinese Hibiscus, it may be.

I have in front of my house a couple of acres of high, rocky hammock and I have always considered it the most valuable asset on the place, not to cut down and plant, but to keep in its natural beauty. It became necessary to cut an opening through it immediately in front of the house in order that I might carry a walk down to the bay, and to have a peep across the water. This I was fortunately able to do with but very little cutting, as it happened that the narrowest part of the hammock was at that point. Only a couple of old, partly decayed trees had to be cut and a small amount of unimportant young stuff, and when the irregular opening was cleared out, not over thirty feet wide anywhere, I had a lovely view out over the water. Across this vista one can watch the passing boats and it serves as a passage through which cold air during northers can pass.

I have cut out a narrow trail, just wide enough for a single person, getting down on my knees in the thick scrub, and working it out with a hatchet. Nothing of any value was destroyed in cutting out this walk, for where I came in contact with any choice tree or small thing I worked around it and left it standing. This trail was apparently cut without any particular purpose, but in no case did it come near enough to the edge of the wood to permit one to see out of it. At the same time it went pretty well around the hammock and did not, at any point, approach near enough to itself so that it was possible to see across. By this means the impression was created that this bit of wood was quite a considerable forest, and visitors have supposed that it contained twenty acres.

I led the trail to all the objects of interest in the little wood; here a great live oak whose branches spread widely over the lower growth in the forest; there to a grand specimen of cabbage palmetto; again to another oak which had been overthrown in a hurricane long ago, and which had sent up vigorous stems only to be overturned a second time, so that at last its branches were a strange tangle. Here it passes under a large tree that had probably sometime been partly overthrown in a gale and which now forms a wonderful arch, under which the path was carried.

It came down to the low land near an artificial pool and up by another. So thick was the undergrowth in many places that I could not crawl through it and I had difficulty, first in locating the interesting things and afterwards in finding them. At one place not far from a large palmetto I made a turn in the walk, then I trimmed out the vegetation between the angle and the tree, and placed a rustic seat there so that one could sit and gaze at the glorious head of foliage.

Here and there along the walk and in secluded nooks I have planted shade-loving palms and other plants. A number of trees and shrubs belonging in the lower part of the state but which do not grow wild in this hammock have been introduced and established as I fear that they may soon be exterminated elsewhere. Many of the larger trees, especially the live oaks, are loaded with wild epiphytes, Tillandsias, Peperomias, Orchids and various ferns almost to the breaking point and among these I have planted numbers of exotic species which are generally doing well and becoming a part of the general air garden. The common sword or Boston fern (*Nephrolepis exaltata*), which is found growing all over the warmer parts of the world, has made itself completely at home here and in places is carpeting the ground. It has established itself in the tops of the palmettos, growing among the decaying leaf stalks. A nearly related species which is native elsewhere in this region is working in on rotting logs in the lower hammock. *Phlebodium aureum*, a strong-growing fern, lives along with the sword fern and the lovely grass fern also hangs down from the tops of the palmettos. The creeping Polypodium (*P. polypodioides*) covers the trunks and branches of the live oaks, drying up during dry weather until the fronds sometimes become so crisp that they break off, but turning green and commencing growth at once when rains come. *Campyloneuron phylliditis*, without any common name, grows on decaying logs and has long, strap-shaped, elegant fronds. I have brought in from hammocks elsewhere the beautiful *Asplenium serratum*, which somewhat resembles the foregoing, and established it in damp places. Here and there I have put sword ferns and Phlebodiums on the cabbage palmettos just at the base of the crown

of leaves and they have established themselves as though nature had planted them.

I have devoted a chapter to fern pools and there are two of them in this bit of forest. In the upper one, which is not badly infested with land crabs, I have a great variety of exotic ferns and other shade and moisture loving vegetation. Down one side of this pool I have worked out an irregular, sloping path which leads to a seat also worked out in the wall of the pool, and from the seat it turns and goes down to the water. In this seat I often sit and visit with the plants, the fish and tadpoles in the pool, and the various little woodsy people that come to it. Birds come to drink and look curiously at the old man. Mud wasps hang about the water and make up balls of limy mud which they bear off to build their nests with.

This pool is a great resort for butterflies and there is rarely a time when the sun is shining that some of them are not hovering about it. Conspicuous among them is *Heliconius charitonius*, a lovely, slender winged species of a jet black with diagonal yellow bars. Sometimes fifty or more of them may be seen on the wing moving about with a peculiar trembling flight. When at rest they hang themselves up by the feet, allowing the wings to drop down; the color of the lower sides of the wings often fades, and in this position they look exactly as though they were dead. I have seen a dozen or more of them clinging to a dead twig, a habit no doubt adopted as a means of protection from enemies. The family is widely distributed and abundant in the American Tropics but this species is its only representative in the United States. Occasionally the dainty Comptie butterfly (*Eummenia atala*) drifts into the forest, though for the most part it prefers the open, and yellow and orange Catopsilias and some of the great Papilios visit the pool. Several other rare tropical forms, some of which are supposed not to occur in this country, are occasionally seen here.

The birds are perfectly at home here and have increased in numbers since I have lived on this place. I am sure that they understand that they are welcome and that they are safe with me from the guns of hunters. They flit about and peer curiously but wholly unafraid at the old, white bearded man who sits in

AN AERIAL GARDEN IN SOUTH FLORIDA.

A live oak tree in the hammock at The Sentinels, covered with native epiphytes and vines. The characteristic Spanish moss is predominant. At the lower right may be seen an East Indian palm, *Dictyosperma rubra*. (Fig. 20)

CROCODILE HOLE.

A deep narrow lagoon on the key opposite Lemon City, Florida. It is overarched and densely shaded by the mangrove, a remarkable tree whose peculiar root development is one of the wonders of the tropical world. Any landscape treatment of our coastal mangroves should take such possibilities as this into consideration. (Fig. 21)

THE SEA-GRAPE OR SHORE-GRAPE.

A handsome native tree, *Coccolobis uvifera*, abundant along south Florida shores. It succeeds admirably in cultivation and makes an excellent ornamental plant, having large round leaves, veined with red. Its fruit is sometimes eaten. (Fig. 22)

MANGROVES ON THE SHORE OF BAY BISCAYNE.

The mangrove is one of the characteristic growths of tropical regions, and one of the most important agencies in the building up of land. It gradually encroaches upon the sea, collecting sediment among its roots until the submerged shore eventually becomes dry land. (Fig. 23)

the seat and talks to them, and sometimes they chatter at him in reply.

There are about three and a half acres of swamp and low land on the place, reaching from the high hammock to the bay. The former owner had cut down the timber on most of this area, and it lay a festering, rotting, tangled mass in the mud and saw grass, grown over in part with thorny Smilax vines. I hardly knew what to do with it but while I was busy with other matters new growth began to spring up from the stumps and I conceived the idea of making of it a sort of low hammock park. This idea has been carried out as I could get time to attend to it; a large variety of ornamental trees and shrubs suitable to salt marsh were planted, two pools were dug and a half mile or so of walk of broken rock was made. A rough rock bridge was built over a narrow part of one of the pools and a couple of similarly constructed seats were made. A small piece of mangrove forest was left standing by the former owner and of course this was not disturbed. Already this lowland hammock is beginning to foreshadow the beauty that is to come.

Here within an area of a half dozen acres there are growing wild over eighty species of trees and large shrubs which sometimes attain to tree-like proportions, a larger number, I have no doubt, than can be found in any state in the Union lying north of the fortieth parallel. There are places in the hammock where within a radius of thirty feet fully that number of species of trees are growing wild. Some half dozen species of these trees are naturalized in Florida from other warm countries; the rest are native. There are some seventeen species belonging to the low land and fifty that are strictly tropical.

To me the hammock is, by far, the most attractive part of my garden, it is the part which is nearest to nature; the jungle is the thing that visitors ask after and rave over. When I am lonely and depressed I wander down into it to be alone with nature, to get away from the artificialities and annoyances of civilization, to let myself become a part and parcel of it all. I feel that the dear trees are my friends and comforters; I can take counsel with them and trust them; and I always come back to the world and its duties strengthened and refreshed.

I want to lift up my voice and plead for the hammocks. Like the wild game they are disappearing fast before the destroyer, man. It is only a question of time, and little time at that, when, at the rate they are being wiped out now the last of them will be gone. Along the shores of Biscayne Bay and on the nearby keys there are over one hundred species of tropical trees which are found growing wild nowhere else in the United States. It seems to me that it is almost a crime to exterminate these rare and beautiful things. Just within the boundaries of Miami and to the south of it there was, probably, the finest body of tropical hammock within the state and it ought to have been preserved for a park and arboretum but it is rapidly being destroyed and turned into building lots.

If you have a bit of hammock on your premises save it; if you have already cut it down it may be that it would grow up again if it was not disturbed. Don't thin out the trees or in any way trim it up, for nature has made it more interesting and beautiful than it is possible for you to do.

A WILDWOOD GARDEN.

Down in my low land which fronts on the bay is a strip of the wettest and blackest muck varying from twenty-five to forty feet wide and a hundred and fifty feet long and lying at the base of the high, rocky hammock. At its southeastern border is an artificial pool and along the northeastern part is a tract of slightly elevated marl. In this whole area is a dense growth of tangled, scrubby vegetation; Yaupon (*Ilex cassine*), Wax Myrtle (*Myrica cerifera*), two kinds of Pond Apple (*Annona*), Persimmon (*Diospyros virginiana*), a couple of willows, Wild Rubber (Ficus), Red Bay (Persea), Button Bush (Cephalanthus), and Buttonwood (Conocarpus), the latter being a strange tree which, although upright in growth when young, almost always falls over when it has acquired age. In one place there is a large clump of swamp magnolias (*Magnolia glauca*), and there is quite a growth of large saw palmetto here and there. The axils of the leaves of this palm are admirable places for sword and other ferns and the irregular cavities in the trunks of the buttonwoods prove equally good for this purpose. On the floor of the swamp were masses of royal ferns (*Osmunda spectabilis*), which is distributed over all the eastern United States and probably is found in Europe. There were also a few clumps of the great Acrostichums (*A. aureum* and *A. lomarioides*), which are the largest ferns in our country. On the trees and shrubs were a few epiphytic orchids and quite a number of air pines (Tillandsias).

It was a wild, secluded place, shut away from the rest of the grounds, and so thickly grown up that it was difficult to enter it. It was pretty, but it seemed to me that I could improve a little on nature or rather help her out a little. There are few naturally beautiful effects of landscape gardening that nature does not sometimes produce; man can create many of these effects on a limited space and that was what I wanted to do; I was going to try to condense a little.

I first made an irregular walk of broken rock, leading it around to the most interesting places and this I covered with palmetto leaves and other rubbish so that no one would suppose that a

walk had ever been made. If one cannot obtain rock for such a purpose sand mixed with a little marl or even swamp earth will answer; enough of the latter to bind the whole together but not make it muddy.

Then I dragged in rotten logs from the woods and scattered them around so as to look natural. This was a difficult task as they could neither be wheeled nor hauled in on account of the thickness of the scrub and the soft bottom. Years before a former owner of the land had chopped down the original forest and some of the old logs lay there, in many cases partly covered with sword ferns and Blechnums. These and the epiphytes on the trees gave me my cue.

I brought in quantities of sword ferns (*Nephrolepis exaltata* and *N. biserrata*) from the hammocks and planted them on the decaying logs, also in the axils of the saw palmetto leaves, while in cavities of the reclining buttonwoods and on slightly elevated tussocks of earth *N. cordifolia*, a species much like exaltata but bearing tubers on the root stalks, was also used. It sprawls along the stems of trees, throwing out new plants at short intervals. The lovely native resurrection fern (*Polypodium polypodioides*) was successfully introduced. This creeps along the stems of certain hardwood trees in the hammocks, drying out and turning brown in dry weather but becoming fresh and resuming growth whenever a quarter of an inch of rain falls.

There are not less than ten species of epiphytal orchids growing in this general region, and these with as many more kinds of wild pines (Tillandsias, Guzmannias and Catopsis) were brought in, tied fast to trees and, with a little watering occasionally, were soon established.

The beautiful Tongue Fern (*Campyloneuron phylliditis*) was easily made to grow on decaying logs in such situations and on large tussocks the magnificent *Asplenium serratum* was found to do well. This fern has long, rather broad, entire fronds of a rich, glossy green, and these form a splendid crown that is worthy of a king.

More Acrostichums, Osmundas and Blechnums were brought in and planted in the mud, also *Crinum americanum* and Hymenocallis and several species of native herbaceous bog plants. An exceedingly delicate vine with compound leaves which clings

by tendrils (*Ampelopsis arborea*) grows occasionally in our low lands and is very beautiful. This I planted in this wild garden with the common woodbine which is equally at home in dry or wet land. *Sambucus intermedia*, a wild elderberry with handsome heads of white flowers, grows in swampy places and this, too, was introduced here.

At the north end of the garden I have planted a number of cultivated things including some hothouse orchids, Bromeliads, Aroids and some of the staghorn ferns. *Phalanopsis schilleriana* and *P. amabilis*, two of the lovely Moth Orchids from the Philippines, are growing wonderfully here and bloom gloriously every winter. And there are Cattleyas, Dendrobiums, Brassias, Epidendrums and Oncidiums nearly all of which are doing well in the moist atmosphere of the swamp.

Throughout the greater part of this tract I have put out only native plants such as were already growing in it or would naturally flourish in such a place and they are in consequence perfectly at home. Not a thing that the average visitor sees would indicate that the place had ever been touched by the hand or planned by the brain of man. It is just as it would be if Nature had planted it and tended it as only she could. There is, however, a fly in the ointment. The great blue West Indian land crabs seem to know that nature has not planted this spot and they have migrated to it in numbers, bent on destruction. Many of the ferns and other plants on or near the ground have either been destroyed or roughly handled by them. I have tried in vain to keep them down with poison.

I have not written this chapter nor the one on fern pools for the purpose of giving instruction but rather in the way of suggestion. There are many in Florida who have homes or who are planning to have them where there are bits of waste land, dense thickets, swamps or sink holes which are little better than eyesores as they are. The ordinary way of proceeding is to clear them, drain or fill up, often at considerable expense, and when this is done they add but little to the beauty of a place.

It seems to me that it would be much better carefully to study such situations with a view to beautifying them in some such natural, simple and inexpensive way as has been applied to this little piece of useless, out-of-the-way swamp.

A SUMMER MORNING AT THE SENTINELS.

It is early morning and I am up and out enjoying the beauty of nature. I often think that in order to live fully one must have his home in the country and rise early. To me it seems as though the developing of the day was the most glorious thing in all the splendid pageant of nature.

It is very early, only the faintest flush shows in the northeast, and it is hard to say whether it is daylight or the zodiacal light. The day birds are not awake yet, but one is likely to hear the strange, discordant cry of the chuck-will's-widow somewhere off in the forest. This bird is one of the early harbingers of our spring; in April and May the night is often a babel of its shrill music, so much so that sleep is at times impossible on account of it. As soon as the rains begin it becomes less in evidence and usually by this time (early August), unless the season is dry, as it is this year, it is rarely heard. Once in awhile the note of the rare but more pleasant voiced whip-poor-will is heard here but it is mostly replaced in the Southeastern states by the chuck-will's-widow, its near relative.

The monotonous churr of a variety of nocturnal insects fills the air, and to me these are most delightful sounds. They are produced by crickets and various other Orthoptera and wherever one goes, whether in the tropical or temperate regions, he is pretty sure to hear them during the warmer part of the year. Another musician whose notes may be heard here by night or day is the tree frog. These little fellows make their homes in the trumpet-like bases of the great Allamanda blossoms and their call is supposed to be a prophesy of rain. It is a sort of hybrid between a croak and a quack, yet to me it is sweeter than the music of the masters.

Out in the hammock there is but little hint of the approaching day, for it is as dark as at midnight. Here and there one sees a glow worm vainly endeavoring to dispel the darkness. The lightning bugs are not in evidence at this time of the year

but in the late fall and early winter the forest is aglow with their kindly little lanterns.

Jupiter, who may be called the King of the Planets, is just south of the zenith and Venus, who with equal justice might be called The Queen, is just showing in the east, a magnificent pair of planets they are; while the Pleiades glimmer in the early morning light. Here and there around the horizon great masses of soft cumuli, the typical rainy season clouds, are piled up. On their sides nearest the light they show various shades of silvery gray, pearl, straw color and salmon, while the shaded sides are various tints of lead color, even to blue black. No word description can give the slightest idea of the wonderful beauty and magnificence of the sky and cloud effects during our rainy season. The tourists who come here in the fall and return in early spring wholly miss one of the most glorious of natural phenomena which is a part and parcel of the rainy season only.

Now broad bars of golden light spring out from the yet hidden sun and shoot over to and beyond the zenith and the blue sky that is between them assumes a greenish tint, while low lying cirro-stratus clouds near the eastern horizon flame into gorgeous red.

"Pale amber waves of light in billowy floods
Surge grandly in upon the waking sky,
With soft, faint green, like tints of April woods
And richest crimson blent exquisitely."

It is said that there is never a morning in all the year without a cloud lying out over the Gulf Stream and my observation agrees with this. The warm vapor rising from that great ocean river is condensed at daylight by the cooler air into some form of clouds.

One of the beauties of a midsummer morning is seen in the outline of the vegetation silhouetted against the brightening sky. Standing on my veranda and looking out I see a continually varied and broken line all around me. To the south immediately in front of the house is a group of some thirty species of palms among which two coconuts, taller than the rest, toss up their wonderfully plume-like leaves with infinite grace and

beauty. Just a bit to the eastward and at some little distance a lofty water tower in an adjoining place, its roof made of red tiles, is a striking object as seen above the forest. To the southeast and just across the lawn a giant East Indian bamboo stands close against the hammock and throws its great, feathery plumes far above it. It is so still that not a leaf on it is stirring and the whole shows with marvellous effect against the brightening sky. To the left is an opening cut through the hammock, giving a vista across Biscayne Bay and the low, mangrove covered shore beyond. This opening is nearly east of the house and three or four times a year the moon rises through it after dark, with an effect, as it weirdly lights up the waters of the bay, which is absolutely indescribable. Farther east, almost between me and the spot where the sun will rise, is a wonderful tree, a young Myrobalan of the East Indies. It reaches well above the general outline of the forest and its long, wand-like branches are well clothed with the most wonderfully delicate, slender, pinnate foliage. These leaves are pale green below, sometimes almost silvery, and dark green above and among the mass of them all the intermediate tints are shown. The whole is as delicate and graceful as a bamboo but it is unlike any bamboo I ever saw.

To the northeast is a solid stemmed Oriental bamboo some thirty feet high which is beginning to rise above the general line of the hammock. The name of this splendid plant is in dispute but the species has been sent out as *Dendrocalamus strictus* and it will reach a height of fifty feet and even more. Its large stems are crooked at the ground and curve strongly outward until at their ends they are horizontal; their foliage is almost massive, yet it is wonderfully graceful. I never see these immense plumes outlined against the sky but I am reminded of some of the gigantic ferns of the Carboniferous Age.

Around the lawn and in the near foreground a Century plant sends up its great flower stem with candelabra-like branches, just now in full bloom, making a most striking figure against the sky. Near it is a group of palms, a Cuban royal and one from Porto Rico, an African Oil Palm, two species of California Fan palms, a Chamerops from South Europe, the Wine Palm of India (*Arenga saccharifera*), and an immense-leaved Sabal from South America.

No words can describe the glory and beauty of such a mass of foliage, whether one looks at it from a little distance or from within it, or its wonderful outlines against the sky. The Wine or Sugar Palm is just throwing out an immense new leaf, fully fifteen feet long, and as it is only partly expanded it looks like some gigantic scimitar; but it is a sword of peace and not of war.

Beyond and to the left of this group are three tall pine trees with finely rounded heads, the "Three Graces," and up one of them an American woodbine has climbed to the very tip top. At night their great heads stand out as blots of darkness against the sky. To the west of the house a moonflower has covered a long stretch of fence, a patch of bananas and a large mango tree, and its great white blossoms gleam out like stars in the dawn.

The stars are dimming fast and now the clear note of a Cardinal that has just awakened breaks on the ear, then another and another with a song almost as varied as that of a mocking bird, but in which the peculiar "Chew, chew" is often repeated. Next a mocking bird joins the morning chorus and, in a little while the woods will echo with the sharp cry of the bluejay.

Along the road which encircles the house there is a large Avocado tree on one side and an umbrella China tree on the other, and the latter reaches its branches across until the two meet overhead forming a grand arch. Under this it is still quite dark but there is a lovely vista looking through it towards the northeast. Near it a Dombeya has grown into an immense shrub, and in the winter this will be loaded with large, pendent heads of handsome pink blossoms. Farther on a young tropical almond tree has pushed its whorled horizontal branches across the road and they are overlapping those of a big silk cotton from the West Indies and forming another arch.

To the left is a group of young pine trees, seven in number,—the "Seven Sisters." Up one of them a Stigmaphyllum, a charming vine bearing Orchid-like flowers, is climbing. Up another the great flowered *Solanum wendlandi* grows; on a third is a scarlet Bougainvillea; a fourth is enveloped by a Kudzu vine and up a fifth a young *Faradaya splendens* is beginning to twine. On the sixth a *Bignonia venusta* is gay with gorgeous orange scarlet, tubular blossoms all through the late winter. Over the last

of the sisters there sprawls a moon vine that has reached out along the ground and up some of the other trees and threatens to dispute with their occupants for possession. Here is a magnificent Oriental Ficus, *F. nymphaefolia*, one of the most superb trees I have ever seen with great, nearly round leaves, a foot wide and thirteen inches long that look exactly as though they had just been varnished. Along the road are two species of Hamelia, one of them a native, both having reddish leaves and clusters of handsome orange red flowers; there are Poincianas, Brunfelsias, Clerodendrons and Catesbaeas, the latter with very long, yellow tubular blossoms, and all of these in the glory of full bloom. And this almost overpowering fragrance comes from a night-blooming jasmine which is still exhaling its odor.

Here near the forks of the road is a clump of bananas twenty-five feet across and nearly as high. This is one of the few ornamental species which do well for me (*Musa rhodochlamys*), a more erect grower than the common fruiting species. Speaking of the banana Kingsley says, "As for the plant no mere words can picture the simple grandeur and grace of a form which startles me whenever I look steadily at it." I wonder why so few people cultivate these glorious plants? This cluster is in a sheltered place and no words can describe the immense, almost entire leaves or their wonderful effect against the morning sky.

Around me on every side is a sea of vegetation, a varied and variegated panorama of fadeless green, and the sun, which has now risen above the hammock, lights it up with wonderful effect. It is a scene of peace and harmony and beauty, a home in which a man may well be content to live, to enjoy nature and end his days.

CATALOG OF PLANTS.

This list is merely intended as a rough guide and not a complete list of the things which have been or are being cultivated in the territory covered by this work. It contains the plants that the writer has tried sufficiently to form some idea as to what they may be expected to do here; those that have come under his notice in the grounds of others, and most of those that have been cultivated in the state of which he has authentic information. A considerable number of species have been grown here of which the writer has had only hearsay information and these, for the most part, have not been discussed. In a few cases I have mentioned plants that, so far as I know, have not been introduced; things of considerable importance which ought to be tried here.

I have not attempted to follow the nomenclature adopted by any one. No two authors agree in the names they use for any set of plants; in fact, no author that I know of agrees with himself if he publishes the same list more than once. I have made no attempt to use the latest applied names; in order to do this it would be necessary to have access to extensive libraries, and the latest names only hold good until someone publishes again.

The descriptions in many of the botanies and plant encyclopedias are lamentably brief and unsatisfactory and in numerous instances where keys are given they do not lead the student to the plant he is trying to identify. I have not attempted to describe the species here listed as, in order to do so, it would be necessary to extend the work beyond reasonable limits, but I have pointed out in many cases the most obvious characters of the plants discussed. The arrangement followed here is essentially the same as that used in my Plants of Dade County.

CATALOG OF INDIGENOUS AND NATURALIZED PLANTS.

Native Palms.

Florida is quite rich in palms for a region lying wholly outside the tropics, for no less than sixteen species have been found growing wild within its limits. A part of these, Inodes, *Sabal adansoni*, *Rhapidophyllum hystrix* and *Serenoa serrulata* are probably derived from an ancient warm temperate flora that was driven south during the Glacial Epoch, while the other species, no doubt, are derived directly from the American Tropics. The common coconut (*Cocos nucifera*), now believed to be a native of Tropical America and not of the Old World as was formerly supposed, has become completely naturalized on the keys and in the lower part of the state.

Oreodoxa regia. First among our native palms and, for that matter, one of the first in the world, is the royal palm. It occurs in Florida abundantly at the Royal Palm Hammock at some distance inland from Cape Romano, on the southwest coast of the state; on Harney River and Rogers River just north of Cape Sable and here and there to some distance to the eastward of the cape not very far away from the sea. A large number are found at Paradise Key in the southeast part of Dade County, this being an island in the Everglades. Until recently a few specimens grew in brackish hammock just north of my home near Little River. They were in a forest of giant Avicennias, Annonas, Conocarpus and mangroves, the latter the largest and finest I have ever seen. Some of these were a hundred feet high and six feet in diameter. In this strange forest there was a dense growth of wild calabash (*Crescentia latifolia*), *Pavonia racemosa*, ordinarily a shrub but here attaining the dimensions of a tree, and two species of giant Acrostichums, the fronds of which reached a height of a dozen feet. All this splendid growth was destroyed by the hand of brutal, greedy man in the hope of making money from tannic acid in the bark of the mangroves.

I am happy to say that this financial speculation resulted in total failure.

It is quite probable that the royal palm will be found in other Floridian localities. It is believed by Mr. O. F. Cook, an authority on palms of the U. S. Department of Agriculture, that this is distinct from the Cuban species, and he has given it the specific name floridana. I am inclined to believe his judgment is correct in the matter. Our palm generally grows in brackish swamps, the only exception I know of being Paradise Key.

Whether growing in groups or singly it more fully conveys to my mind the idea of kingly majesty than any living object I have ever seen. Michaux truly said that the American White Elm was the noblest vegetable of the Temperate Zone and with equal propriety it may be claimed that the royal palm is the noblest vegetable of the tropics. It should be planted in rich, deep soil, if possible in a moist location, if it is to do its best, and in such a situation in fifteen or twenty years it will become an object worthy to be worshipped. Ordinarily it does poorly on pine land but if a large hole is dug when it is planted and this is filled with muck, rich soil and stable manure and the ground is well mulched it will do very well. An occasional top dressing of muck or mulching with seaweed or trash will be beneficial.

Next among native palms in importance and striking appearance is the cabbage palmetto (*Inodes palmetto*), a tree distributed throughout the maritime parts of the state. To northern eyes,—yes, to the eyes of all who are really *en rapport* with whatever is attractive in nature,—this strange tree is always wonderful. I can never pass it without turning to gaze at it with awe and admiration; it is so absolutely unlike anything that the dweller of the temperate zone is used to. Singly or in groups it is always attractive.

This tree is at its best in rich hammocks though it frequently grows in low pine land or the edges of prairies or brackish swamps. It will do well on high pine land if well mulched or treated with muck. There are those who can transplant this tree when grown to a good size by cutting off the leaves and the roots close to the stem, taking care not to injure the bark in any way,

but I have never been able to make anything larger than small plants with a few leaves grow.

Along the shores of Biscayne Bay and for some distance to the northward there grows a dwarf Inodes (*I. megacarpa*) in rocky or sandy pine land, which is believed by some to be a depauperate form of the common cabbage palmetto. The trunk of this form is either prostrate or bent back deep into the ground, from whence it rises to the surface where it throws out a head of leaves. Its larger seeds and peculiar manner of growth would seem to be good distinguishing characters. If given plenty of fertilizer this makes a fine object, and, with the saw palmetto, is very useful for forming low screens along the sea.

The despised saw palmetto (*Serenoa serrulata*), when given room and a little care, makes fine clumps and can be used with highly decorative effect, especially at the border of large groups of palms. There are several varieties of it, just as there are of the cabbage palmetto. One of them has leaves of a glaucous, bluish tint, in another they are brilliant green; and there are forms which are almost arboreal.

In the northern part of the state a low growing fan palm (*Sabal adansoni*) is found, mostly in moist ground, which somewhat resembles the saw palmetto. It has been placed by some botanists in with the genus Inodes but the most obvious difference is that this species has flat leaves while in all the Inodes the midrib is curved back toward the summit of the leaf. This low Sabal does finely on pine land and is a good species for borders of groups of palms.

Growing in the same general region as the last is the porcupine palm, *Rhapidophyllum hystrix*, which has fan-shaped leaves that are silvery underneath and is armed with many long spines or needles. It is an exceedingly slow grower but is well worth cultivating in shaded situations, and when in bloom is very attractive.

The genus Thrinax, comprising fan-leaved, usually slender stemmed, palms is represented in Florida by four species, all of them living on the lower keys and the extreme southern part of the mainland. Until recently the species have been in much confusion, it having been believed that all of ours were West

Indian forms. Not long ago Professor C. S. Sargent discovered that three of these were new and bestowed new names on them and described them.

T. floridana has been sold as *T. parviflora* and was so named by Vasey. It has been found on the southwest coast of the state from Cape Romano to Cape Sable and on several of the lower keys. The leaves are yellow green above and silvery beneath, and the slightly tapering stem is from four to six inches in diameter; the tree occasionally reaches a height of thirty feet.

T. keyensis is a stouter tree than the last, as its stem sometimes reaches a diameter of fourteen inches, with rather smooth, ashen gray bark. It has large, thin leaves which are silvery underneath and dark green above. It has been reported from the Marquesas and Crab Keys, but lately was found by Mr. John Soar and the writer on Pumpkin Key. It has a base of thick, matted roots.

T. microcarpa is a taller and more slender species than the last and has no basal enlargement: the under side of the leaves is silvery.

T. wendlandiana is a very common form on the lower keys and on parts of the south shore of the mainland, also in Cuba. This species has been continually confused by botanists, having been identified under several other names. The writer called Professor Sargent's attention to the fact that its leaves were green beneath and insisted that it was new to Florida, and when specimens were submitted to Beccari, the Italian palm expert, he pronounced it to be this Cuban species. The leaves often show a tendency to face each other in parallel series. It has a taller and more slender stem than our other species.

Coccothrinax jucunda is a beautiful palm which grows on several of the lower keys and is closely related to Thrinax. It has a smooth, brownish gray stem and elegant, glossy, fan leaves which are brilliantly silvered beneath. It rarely reaches a height of twenty-five feet, but when finely grown is a most beautiful object.

C. garberi is very much like jucunda but is smaller in all its parts, and, if possible, is more beautiful and more satiny beneath

its leaves. It grows only, so far as is known, along the shores of Biscayne Bay.

All the species of the Thrinax group that have come under my notice grow slowly at first but all are beautiful either as pot plants or in the open where they are not subject to frost. They grow more rapidly when they attain to some size and are perfectly at home in partial shade or sunshine and in all soils from damp muck to high pine land.

Pseudophoenix sargenti is a pinnate leaved palm which has been found in a wild state on Elliott's Key and, according to Sargent, on the east end of Key Largo near the northern shore. It is a rather slender, stiff looking palm with very dark green foliage, and though a striking tree is not nearly so ornamental as some of our other native palms. I understand that it is practically extinct in the localities I have given as many specimens have been dug up and taken away to be planted, but it does well in cultivation.

Two species of fan palms belonging to the genus Acoelorraphe are found growing in almost inaccessible swamps in extreme South Florida. *A. arborescens* belongs to the Chokoloskee River region and reaches a height of forty feet with more or less recumbent or erect stems, often in clusters. I found a single specimen of what I suppose is this species back of Flamingo, near Whitewater Bay.

A. wrighti is found in similar situations to the last along the south coast of the mainland. It grows in immense clumps fifty feet or more across and thirty feet high, and when seen in such masses it is a beautiful object. The latter species is growing finely in moist ground at Mr. John Soar's place and without doubt the former would succeed in a like situation.

Lastly the coconut (*Cocos nucifera*) has been completely naturalized on the Florida Keys and the lower mainland. It is cultivated occasionally as far north as Manatee on the west coast and Fort Pierce on the east coast. No words can adequately describe the beauty of this palm, which is as fine and vigorous in many of the lower Floridian localities as it is within the tropics.

I have entered into some detail in my account of our native

palms because all of them are well worthy of cultivation and it is probable that all of them may be successfully grown. The cabbage palmetto, the porcupine palm, the saw palmetto and Sabal will prove hardy without doubt throughout most of the state; the other species will, most likely, only succeed in the lower part of it. It is probable that the species which grow in swamps will, with liberal feeding, do well on high ground.

Native Ornamental Trees.

Florida is rich in native trees and undoubtedly has a considerably larger number of such species than any other state in the Union. In the northern part are many species belonging in the colder part of the eastern United States, such as the oaks, hickories, ashes, maples and walnuts. Then a number of warm temperate forms occur, and in the southern part of the state there are considerably over one hundred species whose metropolis is in the American Tropics, or which have been derived from tropical forms. Many of our trees are quite ornamental and a considerable number of them have been cultivated.

Both the Georgia Pine (*Pinus palustris*) and the Caribbean pine (*P. caribaea*) are striking trees, quite ornamental, and good specimens should be left for ornament when ground is being cleared.

Tumion taxifolium, better known as *Torreya taxifolia* or Stinking Cedar, is a handsome tree related to the yews and has proved to be hardy much farther north than its native locality, the left bank of the Appalachicola River. It has been suggested that it be grown in a half shaded, somewhat moist location.

Juniperus barbadensis, the red cedar of Florida, also found in the Bahamas and several of the West Indies, is often planted in cemeteries in the state and is the most attractive of the Junipers.

Casuarina equisetifolia, Australian Pine, is not a pine at all nor any near relation thereto. It is a native of the Oriental Tropics but is now quite generally distributed throughout the warmer parts of the world. It is an exceedingly rapid grower with hard, durable wood of a reddish color and is often called Beefwood on this account. It has become completely naturalized on the lower keys and mainland and will flourish on any kind of soil,

though it is quite tender. It is much used for shading roads and streets.

Quercus laurifolia, one of the water oaks, is a handsome, evergreen tree found growing wild as far south as Cape Romano on the west coast and Arch Creek on the east. It grows in moist, rich soil and ought to do well in any fairly good ground. It is one of the most beautiful of the oaks.

Quercus virginiana, Live Oak. A majestic, evergreen tree, attaining a great height and spread, common generally throughout the lower south in good soil. It is universally respected and allowed to stand in the vicinity of dwellings wherever it is native, and is often planted for ornament. It is a rapid grower when young and would probably do well in ordinary pine land if fertilized and cared for. It more or less completely sheds its leaves in late winter, but is soon covered with pale new foliage which rapidly changes to dark green. When they are draped with long moss they are weirdly beautiful and are among the most striking objects of our southern forests.

Ulmus americanus, White Elm. It may not be generally known that this tree extends south to Peace Creek on the west coast of Florida and to Cape Canaveral on the east side. It will no doubt do well when planted as an ornamental in good soil throughout the greater part of the state.

Celtis occidentalis, Hackberry. A fine tree which ranges down to near the extreme southern end of the state, which is sometimes planted for shade and ornament in the south.

Ficus aurea, or Wild Fig, is a common tree in the southern half of the state, and is often planted for ornament. It retains its glossy, leathery leaves usually until near spring when suddenly they turn yellow and are apparently pushed off by the new ones. Sometimes a part of a tree will be almost entirely bare during this process while another part will be clothed with the rich green leaves of the last year; in another part they may be yellow and in still another place the new leaves will be showing. The tree attains its greatest size and development on the southeast coast, where it drops its air roots in such great profusion that they often twist into ropes or glue themselves to one or more of the trunks. In the course of years the tree becomes a veritable banyan and

is one of the most striking vegetable productions of Florida. *F. populnea*, a closely related species with smaller leaves, also throws out air roots and becomes a banyan. Both are stranglers, each often beginning life from a seed dropped by a bird on the trunk of a tree where it germinates, and by sending down its air roots eventually strangles its host. Later the poor tree decays and the Ficus, having become an almost solid cylinder, begins to grow on the inside, thus for a time becoming an endogen, and finally it forms a solid trunk. At this stage no one would suspect that it had ever been a strangling epiphyte.

Coccolobis uvifera, Shore Grape, grows abundantly along seashores throughout the southern half of the state. It has large, almost round, very thick, glossy leaves, and bears long spikes of purplish fruits of a rather pleasant, subacid taste. The young leaves are of various shades of red and when mature have red veins; when dying they become a splendid orange, red or purple. Charles Kingsley said it was the most beautiful broad leafed plant he had ever seen. Ordinarily it grows as a great, straggling shrub or half tree but when given room and attention it becomes a good sized tree. It may be grown from seed or dug up from the shore and transplanted. *C. laurifolia*, the Pigeon Plum, which is somewhat more tender, is also a handsome tree.

Magnolia foetida. The very appropriate name by which this tree has been known (*M. grandiflora*) has been changed to the above, which is little short of an outrage. This, the most glorious of southern trees, grows as far south as Manatee on the west coast. It is cultivated as far south as Fort Myers on the west coast and in this vicinity Mr. M. S. Mishler has a fine tree eight years planted that is twenty feet high and is in perfect health, blooming finely each year. This tree is one of the most superb in the whole world, and would be well worth planting for its fine foliage alone. Every plant grower in Florida should attempt its cultivation. If dug up from the ground it should be defoliated and it is better to transplant it in cool weather.

M. glauca is a fine species, extending south to the shores of Biscayne Bay, often growing in brackish swamps and blooming during most of the year. It is as fragrant as the other and would probably do well on rich, high ground.

M. macrophylla with immense flowers a foot across, grows as far south as middle Florida and is often cultivated.

Liquidambar styraciflua, Sweet Gum, is a lofty tree which ranges south to Tampa Bay and Cape Canaveral. It has attractive, starry leaves which become wonderfully brilliant in autumn. Although an inhabitant of swamps it will grow well on rich, moderately dry soil.

Prunus caroliniana, Carolina Laurel, Wild Orange. A beautiful small tree growing as far south as Biscayne Bay, having rich, glossy, deep green leaves and bearing white flowers in spring. It would make an excellent wind break or hedge as it is evergreen and will stand clipping; it is fine as a single specimen or in mixed planting.

Another closely related tree is *Laurocerasus sphaerocarpus* which is found in the United States only along the shores of Biscayne Bay, though it is abundant in the West Indies. It has elegant, glossy leaves and in November is covered with flowers, recalling those of the northern plums. It ripens its small, greenish, globular fruit in spring or early summer. It is found in hammocks, is one of our most attractive trees, and would doubtless do well in any good soil where there is but little frost.

Acacia farnesiana. This pretty little tree, sometimes called Popinac, has become completely naturalized in southern Florida, usually growing in the edges of hammocks near the sea. It has delicate compound leaves and globular heads of exceedingly fragrant yellow flowers. A single tree in bloom will scent a large garden on a calm night. It does well in pine land.

Cercis canadensis, Redbud or Judas Tree, grows south to Tampa Bay. It is a deciduous tree, blooming when naked and is then a charming object either in the woods or in cultivated grounds. It will grow in any good soil.

Parkinsonia aculeata is a native of Texas but is naturalized at Key West and probably some other places in South Florida. It is a peculiar small tree with long pinnate leaves and small leaflets, which usually fall before the rachis does. The nearly regular yellow flowers are airily beautiful. If planted on pine land it should be well fertilized.

Guaiacum sanctum is one of the Lignum-vitae trees and is

found on the lower keys. It has small, one-sided leaflets and pretty blue flowers, and with me has grown slowly in hammock.

Amyris elemifera, Torchwood. A delicately beautiful little tropical tree which inhabits only the lower end of the state, with trifoliate leaves and hard, resinous wood. It is found in hammocks and would probably do best in rich ground in partial shade.

Simaruba glauca. This is one of the Quassia trees, its bark and wood being intensely bitter. It grows in the United States only along the southeast coast and keys. The glossy pinnate leaves are very handsome, hence it is called Paradise Tree. When planted in good soil where there is little frost it does well.

Bursera simaruba, commonly called Gumbo Limbo or West Indian Birch. This is one of the most striking trees of lower Florida, and is abundant everywhere in hammocks. Its tall, usually branchless and crooked trunk bears a few tortuous branches at the top; the whole covered with smooth, shining, copper colored bark. This continually peels off like that of a birch. The compound leaves are glossy but not especially attractive and are deciduous in winter or spring. Occasionally a tree has silvery or variegated bark, and the trunk is always conspicuous and striking. Large stems driven in the ground will root and grow in pine or hammock. It furnishes the Gum Elemi of druggists.

Swietenia mahagoni, or Mahogany, grows on the extreme southern mainland and the lower keys in considerable quantity. In the American Tropics and especially Honduras this tree grows to a large size. It is generally a crooked tree, the leaves are pinnate, glossy, and the leaflets are one-sided. The large, obovate seed vessels are striking and the tree is attractive and well worthy of cultivation. It will grow in all soils from brackish marsh to pine land.

Drypetes keyensis and *D. lateriflora* are attractive trees with thick, glossy leaves; the former has ivory white fruit and that of the latter is red. They are both tropical.

Ilex opaca, Holly, grows south to Mosquito Inlet and Charlotte Harbor and is too well known to need comment. It will probably succeed over most of the state in good soil.

The Red Maple (*Acer rubrum*) is another very well-known tree which grows as far south as New River in Broward County. It prefers moist, rich soil. When covered with its red flowers or showing its autumn leaves it is a pretty object.

Sapindus saponaria, Soapberry. A native of the extreme southern part of the state, having winged pinnate leaves and small, yellow, globular fruit. It will probably do well on almost any kind of soil.

Gordonia lasianthus, Loblolly Bay. This handsome small tree receives this name, no doubt, because it grows in swamps. It reaches south to near the lower end of the mainland of the state. It has thick, glossy, elongated leaves and handsome, large, white flowers produced in summer. Will probably grow on good soil almost anywhere in the state but, so far, it has failed with me, perhaps on account of the lime in the soil.

The Wild Cinnamon (*Canella winteriana*) is found on the lower keys and extreme southern mainland. It is a handsome small tree with thick, glossy, elongated leaves. All parts of it are acrid and have a slight flavor of cinnamon.

Eugenia confusa, Red Stopper. This tree was formerly called *E. garberi* after a dear botanist who did excellent work on the flora of Florida, but the name has been changed for some reason. It is a beautiful tree with thick, glossy, long-pointed leaves and small white flowers. It is a hammock tree, found in the United States only along the shores of Biscayne Bay; it should be grown in good soil from seed as it does not transplant well from the woods.

Cornus florida, the well-known Flowering Dogwood, is found in the northern half of the state. It is a beautiful ornament of the woods in spring and would probably do well throughout most of the state if planted in good soil and somewhat shaded.

The Marlberry (*Icacorea paniculata*) is a rather attractive large shrub or small tree growing in hammocks in the south half of Florida. It has thick, glossy leaves and in autumn dainty bell-shaped flowers in clusters that are so richly and spicily fragrant that they can be smelled for long distances. The wood is very hard, and the tree must be grown from seed.

Jacquinia keyensis is another small tree or large shrub with

exquisitely fragrant flowers which open in winter. It grows along the littoral from Sanibel Island around the south coast.

Chrysophyllum olivaeforme is one of the loveliest of our native trees. It has elliptical leaves of a deep, metallic green above with a golden, coppery pubescence beneath. This tree would probably do well in fairly rich soil but, I think, should be shaded, at least when young.

Mimusops sieberi, Wild Dilly, is a handsome tree closely related to the sapodilla. It is found only on the extreme lower part of the state in our region and is therefore tropical. Its fruit is an inch in diameter and the pulp is probably about the stickiest thing in nature. It will most likely do well in rich soil.

The Fringe Tree (*Chionanthus virginica*) grows through north Florida as far south as Tampa. It is a large shrub or small tree, is grown for its drooping, graceful panicles of fragrant, whitish flowers, and probably would do best in rich, moist soil.

Cordia sebestina is commonly called Geiger Tree. It is rather a straggling grower with large, cordate leaves and clusters of brilliant orange red flowers, perhaps the handsomest of any tree native to Florida. It may easily be grown from cuttings of partly hardened wood, but it will stand only a little frost.

Crescentia cucurbitana, Black Calabash, grows wild in the United States only along the shores of Biscayne Bay. It is a handsome small tree with large, glossy leaves, irregular purplish flowers, followed by oval fruits three inches in diameter. Will grow in any soil not too poor.

In extreme southern Florida a small tree called Prince Wood (*Exostema caribaeum*) with opposite, lanceolate leaves and long tubular white flowers that look a little like those of a Fuchsia is sparingly found. It is a very attractive small tree and should be generally cultivated.

Genipa clusiifolia, Seven Years Apple. A small tree with thick, obovate leaves, pretty white flowers and oval fruits three inches long. It is said that it takes this fruit seven years to ripen and it no doubt does for I have never yet seen one ripe or fit to eat.

Sambucus intermedia, Elderberry. This species, which grows in lower Florida, is a more profuse, showy bloomer than the

northern one. It reaches the dimensions of a small tree and grows in moist places but will flourish on dry ground.

Paritium elatum, Cuban Bast. I am not positive that this tree grows wild in Florida though I have evidence which goes to show that it does, and that it has been found along the shores of Biscayne Bay. It is a spreading tree with large, cordate, nearly orbicular and pointed leaves and good sized flowers which are a peculiar buff color at first and turn to brownish red at a later stage. I have a tree fifty feet high in my grounds which is always in flower. The variety abutiloides is abundant at Baker's Haulover at the head of Biscayne Bay and has lighter green leaves and larger flowers. Although it is found there in a brackish swamp it does finely on high pine land.

Paritium tiliaceum. This is a native of the Old World Tropics and is widely distributed along the sea throughout the warmer parts of the world. It has been found along the shores of Biscayne Bay and it does well in cultivation in ground that is not too poor. Its leaves are smoother than those of either of the others and they are darker green. The blossoms are large and handsome, yellow at first and turning darker later.

Thespesia populnea grows on the lower keys and coast of the state and has shining, cordate leaves and salmon or pinkish, bell-shaped flowers which are quite attractive. If grown on pine land it should be well fertilized.

There are several ornamental trees which extend their range into the extreme western or northern part of the state which I have not listed as they belong to the northern flora and probably would not do well much farther south. Nearly all that I have mentioned grow in hammocks or rich lowland, consequently if they are planted in high pine land the soil should be enriched and it would be a good idea to mulch them. In a general way it is not to be expected that trees which grow wild in Florida will succeed much farther north than the limits I have indicated, though sometimes they may.

Many of our native trees and shrubs are very attractive and striking and would be useful in cultivation, and some of them are on the verge of extermination within our limits. A few of the softer-wooded species can be propagated from cuttings. Some of

the hard-wooded forms do not transplant well from the forest and it is best to propagate them from seed.

Native Ornamental Shrubs.

Erythrina herbacea, Coral Bush, is a straggling shrub with trifoliate leaves and in spring, spikes of dark crimson flowers which are followed by moniliform pods containing scarlet beans. There is a form growing in South Florida that is sometimes arboreal which has been called *Erythrina arborea*, but is probably only a variety of the above.

Hamelia patens has no common name that I know, though it is attractive enough to deserve one. It is a large, rather compact shrub with reddish green, oval leaves and clusters of elegant, tubular, orange red flowers borne throughout most of the year. It thrives in pine land over the south half of the state.

Catesbaea parviflora, a thorny, branching shrub with small, almost round, glossy leaves and white flowers which is quite ornamental. I have only seen it on Bahia Honda Key where it stands a chance of speedy extermination. It grows in dry, sandy soil.

Pinckneya pubens. A large shrub or small tree growing in the northern part of the state, with oval or oblong leaves and showy, greenish flowers spotted with purple. It grows in swamps or low hammocks.

Yucca gloriosa, Spanish Bayonet. It is hard to say whether this and the following are trees, shrubs or herbaceous perennials. This species extends along the Atlantic coast into North Florida while *Y. aloifolia* is Floridian and West Indian.

Yucca aloifolia. Both of these are splendid ornaments of the flower garden and will grow in poor soil and with little care. The former is not so tall as the latter and its leaves have smooth edges.

Sophora tomentosa is an attractive, pinnate-leaved shrub with yellow flowers, growing along the coasts of peninsular Florida. Will do well in pine land.

Cereus monoclonos. This is found on the lower keys where it grows in immense clumps up to fifteen feet high; the stems

being sometimes as large as a man's thigh. It is a most striking plant but it has never done well for me.

Cereus serpentinus. I first discovered this plant in a Floridian locality on shell mounds in McGill's Bay, near Terra Ceia on the west coast; then later on several of the lower keys and the extreme southern mainland. It is a sprawler and bears large, handsome nocturnal white flowers. It has not done very well for me here but succeeded admirably at Bradentown.

Osmanthus americanus, Florida Olive, is a fine large shrub with thick, lance-oblong leaves and panicles of dull white, fragrant flowers. It is hardy all over the state.

Lantana camara. A half shrubby plant or bush with rough stems and leaves and umbels of strong-scented, yellow flowers. It will grow on pine or hammock land.

Callicarpa americana is another half-shrub related to Lantana having dense clusters of purple berries in whorls on the stems. It grows usually in the edges of hammocks.

Tecoma stans, or Yellow Elder, is too well known over the south half of the state to need any description. It is the Queen of the Autumn here, being covered at intervals for months with great clusters of golden trumpets. It comes up in gardens very freely from naturally planted seed and these plants are so cheerful and beautiful I never have the heart to destroy them. It is naturalized in lower Florida.

Ornamental Native Vines.

Vanilla eggersi, Florida Vanilla. This curious vine is found in a few hammocks in the lower part of the state. It has thick round stems and almost scale-like leaves and clusters of purplish green, fragrant flowers. *V. articulata*, a closely related species grows wild over the same territory as eggersi. If planted at the foot of trees they will climb up them.

Rosa setigera, the common Prairie Rose found from Ontario to Texas, is also a native of northern Florida and is widely cultivated. It should do well anywhere in the northern part of the state.

Rosa cherokeensis, Cherokee Rose, is too well known to need any comment. It is hardy all over the state and is generally useful wherever a climbing plant is needed.

Guilandina bonducella is the Gray Nicker Bean, a strong growing climber, very prickly and bearing short, thorny pods containing the well-known Nicker Beans. Rather tender.

Guilandina bonduc is similar but has yellow beans, and the compound leaflets are larger. Both are quite ornamental. Tender.

Canavalia obtusifolia has purple, pea-shaped flowers and emarginate leaves; it sprawls mostly on the ground or near it.

Canavalia gladiata has larger, pointed leaves and is a high climber. These are the Jumby Beans of the West Indian Negroes, and are planted by them so that they may not be "Overlooked by the Evil Eye." Both are widely distributed along tropical shores and their roots furnish nitrogen for the soil.

Ampelopsis quinquefolia, Woodbine, wild throughout the eastern United States. Abundant in Florida, its leaves turning purple here in midwinter. It has become almost a nuisance in places.

Passiflora incarnata is one of the many passion flowers. It has purplish flowers and three- to five-lobed leaves. It is hardy all over the state.

Cereus triangularis is a native of Tropical America but is naturalized in places in lower Florida. It has enormous white flowers which are nocturnal, and triangular stems. I have seen fifty of these great blossoms on a single vine at once,—a sight for the gods.

Gelsemium sempervirens, or Carolina Jessamine, is known and loved throughout the southeastern states. It grows wild in Upper Florida.

Rhabdadenia biflora. A rampant, sprawling vine native of brackish swamps in the more tropical part of the state. It has opposite, elongate leaves and elegant funnel-shaped, fragrant white flowers. I have no doubt but that it would grow in high ground if it were well fertilized.

Philbertella clausa. A twining herbaceous vine of swamps in the lower part of the state with curious fragrant white flowers.

The Goatsfoot Ipomoea (*I. pes-caprae*) grows everywhere on tropical beaches. It will do well on high pine land.

Ipomoea bona-nox, Moonflower, grows everywhere in South

Florida in the borders of hammocks. The *I. tuba* is confined mostly to the lower keys and is quite similar.

Ipomoea dissecta is a species with finely dissected leaves and white and purple flowers.

Ipomoea fuchsioides is now called *Exogonium microdactylum.* It grows among the rocky pine forests of lower Dade County, has elongated leaves and rosy crimson flowers an inch and a half across, and is one of the most exquisite vines I am acquainted with. I have it in fine condition in my grounds and it is almost equal to the famous *Ipomoea horsfalli.*

Jacquemontia pentantha is another beautiful contribution from Florida, belonging to the Ipomoea family. It is a native of the lower keys. It has cordate leaves and elegant blue flowers produced in profusion. It is not long lived when cultivated in pine land but does better in hammock.

Bignonia capreolata. An evergreen vine of northern Florida climbing high by means of adventive roots and bearing dull crimson, trumpet-shaped flowers. Will grow well in pine land or hammock in the lower end of the state.

Tecoma radicans, or Trumpet Flower, occupies the same area as the last and is a more showy vine. This will also do well in the southern part of Florida.

Chiococca racemosa. This sprawling vine is common in the hammocks of lower Florida and bears exquisite, bell-shaped, honey-scented flowers in summer.

Lonicera sempervirens is the common Trumpet Honeysuckle which is distributed throughout most of the eastern half of the United States and is too well known to need comment. It has been grown successfully in Dade County.

Native Ferns.

I have treated the subject of ferns at some length in the chapter on fern pools and will only allude briefly to our species here.

Cheiroglossa palmata, Hand Fern. A rare fern which grows in the axils of the leaves of the cabbage palmettos. I have not been successful in transplanting it but it might be grown from spores. It has V-shaped fronds cut into deep, blunt lobes.

Osmunda spectabilis and *O. cinnamomea* are grand ferns which grow in low ground and are well worthy of cultivation.

Acrostichum aureum and *A. lomarioides* are the largest and most robust ferns found in the United States. They grow in brackish marshes or in fresh water swamps not far from the sea. The former is the smaller of the two. It has a few spurs on the stipes and the blades of the fronds are broader than those of *A. lomarioides*.

Phlebodium aureum is a noble fern which grows almost invariably among the leaf stalks of the cabbage palmettos. Its large fronds are deeply cut; it has creeping, swollen rootstalks, and will grow readily if these are transplanted to other palmettos.

Phymatodes swartzii. A delicate climbing fern found on the north end of Key Largo and in Bauer's hammock, lower Dade County. It has lanceolate fronds and creeps over rocks and trees.

Campyloneuron phylliditis. A fine fern with thick, chartaceous fronds, often three feet long, growing on decaying logs in the southern half of the state.

Vittaria lineata, Grass Fern, grows usually on the trunks of cabbage palmettos, a lovely plant with linear, dark green fronds, which I have found rather difficult to transplant.

Adiantum capillus-veneris and *A. tenerum* are lovely and dainty ferns, the former inhabiting the northern and the latter the southern part of the state.

Asplenium serratum is a fine fern resembling a Campyloneurum, but with broader fronds. They form a beautiful crown around the border of the plant. It grows in the southern part of the state, mostly on rotting logs, though it is sometimes found on the trunks of trees. There are several other species of Asplenium found in the state, some of which are exceedingly delicate and beautiful.

Dryopteris ampla. This noble fern has a stout, erect rootstalk and an immense crown of finely divided, compound fronds. It grows in hammocks in lower Dade County and is a true tree fern, the only one known in the United States.

Tectaria heracleifolia is a fine fern with ample, triangular fronds, which grows in lower Dade County and is doing well in my hammock.

Polypodium pectinatum is a lovely fern found as far south as Pumpkin Key, *P. plumula* is also beautiful and both occur sparingly in peninsular Florida.

Nephrolepis exaltata, Sword Fern, is widely distributed throughout the tropics and is abundant in southern Florida in hammocks, both on the ground and in the tops of cabbage palmettos. *N. biserrata* is a stronger growing species found quite generally in hammocks in Dade County. It occasionally grows on reclining tree trunks in damp hammocks.

A large number of other native ferns are attractive and worthy of cultivation, though some of them are rare or local. All the species I have mentioned with the exception of Cheiroglossa may be grown in hammocks in any part of the state where they are hardy.

Native Ornamental Herbaceous Plants.

Piaropus crassipes, Water Hyacinth. Introduced from Brazil and now a nuisance over large areas of the state. If confined to pools or ponds it can do no harm, and the flowers and foliage are very attractive.

Tillandsia fasciculata. A lovely Bromeliad with maroon or purplish bracts and bluish corollas, common on trees in hammocks in South Florida and will grow on any tree if it is firmly fastened to it.

Lilium catesbaei is one of the members of this beautiful genus which grows in low pine land throughout the northern two-thirds of the state, and would doubtless do well almost anywhere in Florida in similar soil. The bulbs should be taken up when the plants are dormant and disturbed as little as possible afterwards.

Agave sisalina, *A. decipiens* and *A. neglecta*, all century plants, make fine ornaments but like the Yuccas it will not do to be too neighborly with them. *A. decipiens* is more hardy than the others and would probably succeed all over the south half of the state.

Zephyranthes atamasco, Atamasco Lily, is a native of Florida and is quite common in general cultivation. It is hardy throughout the state and will do well in any good soil, preferably that which is a little damp. *Z. treatei* and *Z. simpsonii* are pretty plants and will do well generally in Florida.

Crinum americanum with its lovely pure white flowers lights up the dreary Florida swamps and is hardy generally over the state. It produces its fragrant flowers the greater part of the year and may be readily transplanted. There are apparently two nearly related species growing in Dade County.

Hymenocallis, Spider Lily. There are several species of this genus which are natives of Florida and all have flowers of delicate satiny texture. They look like little white umbrellas with the ribs projecting beyond the cover. The ribs are the stamens and the cover is a sort of crown which connects them. The large green, fleshy seed bulbs are often carried by sea from the West Indies and are landed on our shores where they germinate.

Canna flaccida. A beautiful native Canna with yellow flowers, an inhabitant of wet lands throughout the state. It will do well in good soil that is not too dry.

Thalia divaricata. A handsome bog plant growing throughout the state. It reaches a height of ten feet, with banana-like leaves three or four feet long, and bears elegant purplish flowers. It should be planted in deep, rich soil.

Blepharigottis. A genus of terrestrial orchids that is well represented in Florida and one that contains some very attractive species. I do not know whether any attempt has been made to cultivate any of them or not but they should be tried. *B. ciliaris* is especially fine.

Hibiscus grandiflorus. A half shrubby plant growing in swamps near the sea coast throughout the state. It has hastate, lobed hoary leaves and very handsome large pink flowers with a deep red center. It is abundantly worthy of cultivation and might grow in moderately dry, rich soil. *H. moscheutos* is very much like the former but has ovate leaves. There are several other fine native Hibiscus and among them are *H. coccineus* with a deep red flower, *H. militaris* which is nearly glabrous and has a large, dark eyed pink flower, *H. incanus* having a yellow blossom with a crimson eye and *H. aculeatus* which is hispid all over, with lobed leaves and a yellow, purple-eyed flower. All are hardy throughout the state and are cultivated elsewhere.

Verbena maritima. This plant grows wild in Dade County and bears charming purple flowers in profusion. There are two

forms here, one having much more finely dissected leaves than the other. Both grow on dry pine land.

Lobelia cardinalis, Cardinal Flower. Probably there is no more vivid red in nature than the color of the flower of this plant. It grows in wet places and has a wide distribution in the Eastern United States. It will do well in cultivation in rich, not too dry soil. It will do finely in partial shade.

There are many other native Floridian plants that might be mentioned in this list which are worthy of cultivation. This long list shows, however, how rich our state is in attractive things wherewith to decorate our grounds and homes.

Exotic Ornamental Plants.

In a general way plants which are designated as coming from tropical regions will not prove hardy in Florida north of the extreme lower part of the state, though there are some notable exceptions. It sometimes happens that a plant whose home is within the tropics may there grow well up on the sides of mountains where it is exposed to sharp frost during the winter months. And it is quite often true that plants from warm temperate or even temperate countries will do well even down into the Torrid Zone. I have endeavored in these lists to point out such exceptions as far as I knew of them. Usually the vegetation of temperate regions does not succeed in tropical countries.

In the following lists I have for the most part mentioned such things as have either come under my actual notice or that of competent observers and cultivators in Florida. Of course there are many plants grown in the state that it was impossible to obtain any record of, and I have listed some things that, so far as I know, have not been introduced here, things that seemed to me were especially important or desirable.

Pinnate-Leaved Palms.

Acrocomia. A genus of palms having the rachides and trunks more or less covered with spines; the stems sometimes bulging. They are all American and the distinctions between some of the species are not very decided. So far as my experience goes they are strong, rapid growers and do well in Florida. *A. sclerocarpa*

is West Indian and South American; *A. lasiospatha* has a small base and an evenly swollen trunk; *A. totai* is a fine species which will probably prove hardy over South Florida; *A. media* is a very vigorous species from Porto Rico. All of these do well here on pine land.

Archontophoenix alexandrae is a tall, rapid growing palm of great beauty and elegance from Queensland. The pinnae are more delicate than those of the next species and are silvery underneath. This generally goes under the name of *Ptychosperma alexandrae*. *A. cunninghami* (*Seaforthia elegans*) is also a fine tree, a little more robust than the other. Both are doing well with me in pine land.

Areca. A fine genus of palms from the Oriental Tropics containing several species. *A. triandra* has leaves which are only partially pinnate, being cut into broad segments. It is a beautiful palm and is doing fairly well for me in sunshine but I think it would succeed better in partial shade. *A. glandiformis* is a superb palm and is growing strongly and rapidly for me. *A. alicaea* is doing fairly well for me in shade. *A. catechu* has never succeeded for me.

Arenga saccharifera is the Sugar Palm of India, a noble palm with peculiar leaflets. I have a fine specimen in pine land.

Astrocaryum mexicanum has failed with me but I think it might succeed here. There are a number of species, *A. murumuru*, *A. ayri*, *A. argenteum*, *A. filiare*, etc., and all are spiny.

Attalea. The name signifies magnificent and it is well applied. The species have long, beautiful pinnate leaves with numerous, elegant pinnae. *A. cohune*, the Monaco Palm from Central America, has nearly erect leaves and Mr. O. F. Cook informs me that he has measured these in Guatemala which were fifty-five feet long. A fine specimen has bloomed and fruited in the grounds of Commodore Monroe at Cocoanut Grove.

Bactris. Exceedingly spiny palms that have entirely failed with me, though repeatedly tried under various conditions. *B. gasipaes* is the celebrated Peach Palm of the Amazon region.

Balaka seemani is a slender pinnate palm from Fiji which would probably succeed in the shade.

Calamus, the rattans. Oriental, tropical palms, many of

COCOS PLUMOSA.

This graceful palm from South America is hardier than the coconut, and can be grown in subtropical regions where frosts are not severe. When mature, it closely approaches the Royal Palm in beauty. (Fig. 24)

A MAGNIFICENT AVENUE OF ROYAL PALMS.

This is undoubtedly one of the most superb avenues in the world, and a splendid example of the effects which can be obtained through the use of palms. The species here shown is not the same as the Royal Palm of Cuba, but is *Oreodoxa oleracea*, the palmiste of the French West Indies, where it is native. Botanic Garden, Rio de Janeiro, Brazil. (Fig. 25)

A HANDSOME ORIENTAL PALM.

Young specimen of *Chrysalidocarpus lutescens*, often called *Areca lutescens*, at The Sentinels. When mature, this graceful palm, with its slender curving trunk, is one of the best tropical decorative plants. (Fig. 26)

THE FAMOUS TALIPOT PALM.

This is one of the most magnificent of Oriental palms. After attaining large size the plant flowers, and dies as soon as the seed is matured. Up to the present time, the Talipot has not been successful in Florida. The specimen here shown is growing in the Botanic Garden at Rio de Janeiro, Brazil. (Fig. 27)

which climb to great distances. Most of these would probably do well in hammocks in the lower part of the state. *C. rotang* and *C. tenuis* furnish the rattan of commerce.

Caryota, the Fish Tail palms. A genus of striking palms, most of which sucker freely. Their leaves are twice pinnate and the leaflets are more or less fan-shaped and irregularly truncate. When they reach maturity they send out immense tassels of flowers at the top of the tree, continuing to produce others along down the stem until finally the plant dies. Around Fort Myers and Punta Gorda these palms do finely but here they do not always succeed. *C. urens*, *C. blancoi*, *C. sobolifera*, *C. purpuracea* and *C. mitis* are in the writer's collection.

Chamaedorea. A genus of slender palms some of which grow in clumps. They are from the American Tropics, are spineless and often reed-like. *C. graminifolia* is a strong growing, tufted species, *C. multicaulis* soon forms a large cluster; *C. arenbergiana* and *C. corallina* are growing in my hammock and are very slender and attractive. They should be grown in shade and will probably stand but little frost.

Chrysalidocarpus lutescens is one of the most exquisitely graceful palms in cultivation. It forms large clumps, the stems rising to the height of thirty feet in time and crowned with elegant, glossy rich green leaves, tinted yellow. It is a native of Mauritius and is rather tender; it will grow equally well in sunshine or shade and it should be cultivated all over the lower part of the state. It has been generally sold as *Areca lutescens*.

Cocos. Besides the common coconut there are a number of fine species, most of which do well in Florida. Several of these are natives of southern Brazil, Paraguay and Argentina and are therefore hardy throughout a considerable part of our territory. Mr. John Schnabel of Gainesville reports that *C. plumosa*, one of the hardiest species, does well at his place when grown in a sheltered situation. It was formerly believed that the common coconut originally came from the old world but there is good evidence to show that all the Cocos are natives of the new world only. There is a species said to come from Cuba which is growing in my grounds that looks something like a diminutive coconut. *C. coronata*, *C. flexuosa*, and *C. romanzoffiana* are fine

species with beautiful, dark green foliage. *C. australis*, *C. bonnetti*, *C. campestris*, *C. yatay*, *C. alphonsei*, *C. gaertneri*, *C. eriospatha* and one or two others have more or less glaucous foliage. All of the above are doing fairly well for me in pine land. Several of the species of the Australis group have edible fruits. *C. weddelliana* and *C. insignis* are exceedingly dainty and beautiful but I have not been able to make them succeed, probably because of lime in the soil.

Daemonorops contains about forty species of palms which are closely related to Calamus. I have tried a couple of species which seem to be very tender and have failed.

Desmoncus major is a climbing palm from Trinidad which is doing finely in my hammock. It is very spiny and holds on vegetation by means of anchor-like hooks at the ends of the rachides. It is a most interesting plant.

Dictyosperma rubra and *alba* are among our finest and most successful palms, both doing equally well in shade or sunshine, in pine or hammock. They are rather rapid growers and should be cultivated by everybody in lower Florida.

Dypsis madagascariensis. I have plants received under this name that I am doubtful about. My plants are rapid growers with leaflets in fascicles; they are cespitose and have triangular stems.

Elaeis guineensis is the celebrated Oil Palm of Tropical Africa. It does well for me in ordinary pine land and has borne seed when quite small.

Euterpe. A small genus of slender growing palms from the American Tropics. I have had several species which for some reason have not succeeded but I see no reason why they will not do well in lower Florida.

Geonoma. Very elegant, usually slender palms from Tropical America. They do best in a shaded, moist locality, such as a low hammock, but they probably will not stand much frost.

Hedyscepe canterburyana is cultivated somewhat in the north and is a tall, handsome, spineless palm. It is a native of Lord Howe's Island at a considerable elevation and should stand some frost. I have a healthy young specimen in my grounds.

Howea belmoreana and *forsteriana* are two of the most popular

palms of the north. I have never succeeded with the former and have only partly done so with the latter. I do not think they have done well generally in Florida.

Hydriastele wendlandiana is a tall, handsome, rapid growing palm from Queensland. The segments of the leaflets are jagged at their outer edges something like those of a fish tail palm. I have a fine young specimen in partial shade in the edge of the hammock.

Hyophorbe. Three species of slow growing palms from Mauritius, two of which, *H. verschaffeltii* and *H. amaricaulis* have been considerably cultivated in lower Florida. They are stocky in growth, with bulging stems and short, highly colored leaves, the former tinted yellowish, the latter purple. Both are doing well with me and I have no doubt but that they will prove to be among our finest palm ornaments.

Jubaea. A genus from Chile containing one or two of the hardiest palms in the world. They are slow growers when young and have some resemblance to the date palms.

Kentia. A large number of palms have been referred to this genus which are now placed elsewhere and I am not sure that any of the true Kentias are in cultivation in the state. *K. belmoreana* and *K. forsteriana* are now placed in Howea.

Martinezia caryotaefolia is sometimes cultivated in lower Florida but I have rarely seen it in good condition. It is a rather slender, spiny palm with broad, closely set, truncate and ragged segments.

Manicaria. This genus contains a few magnificent species from Tropical America which are really pinnate leaved but often the pinnae are not separated and the leaves are more or less entire. In *M. sacchifera* the leaves are not divided and are often thirty feet long and four or five wide. I do not know that any of these have been cultivated in the state but they should be tried.

Maximiliana contains a few species of grand tropical American palms which should be tried in extreme southern Florida. It was of *M. regia*, of the Orinoco, that Humboldt said, "On this palm nature has lavished every charm."

Oenocarpus is a small group of South American palms, one

species of which (*O. disticha*) has the leaves arranged in two ranks. None of them has been tried here to my knowledge, but they should be.

Oreodoxa. *O. borinquena* is a fine species from Porto Rico, not so lofty as the common royal palm. *O. oleracea* is a tall, noble species from the Antilles. *O. regia*, the common royal palm, is grown everywhere in lower Florida.

Phoenix, the date palms. This is probably the most useful genus of palms cultivated in Florida, though Inodes and Cocos are close competitors. There are some twenty or more nominal species in cultivation here, and all of them do finely so far as my experience goes, either in pine, hammock or wet land. Several of the hardiest, such as *P. dactylifera*, *P. canariensis*, *P. sylvestris* and *P. tenuis* stand the winters very well as far north as Gotha and probably farther, though Mr. C. E. Pleas reports that they are a little tender at Chipley. *P. acaulis* does not form a stem, the trunk being bulbiform; *P. canariensis* is the most stately and magnificent of all with a trunk three feet or more in diameter and leaves twelve feet long. *P. cycadifolia* is a fine, vigorous species; *P. dactylifera* is the well-known date and one of the hardiest. It is not so graceful as some of the others but is a most striking object; *P. farinifera* is a handsome species; *P. humilis* is an elegant low grower; *P. leonensis* is believed to be a strong growing variety of *P. reclinata*, which is one of the best and most popular species; *P. melanocarpa* has edible fruit; *P. pumila* has a slender stem and long recurved leaves and *P. pusilla* is a low form. *P. roebelini* is the gem of the genus as it has exceedingly delicate, rich green leaves. I have a specimen six feet high planted out as many years. It is the most distinct of the lot. *P. sylvestris* is the wild date of India; *P. rupicola* is a beautiful species and *P. tenuis* somewhat resembles it. The names are much confused and it is probable that a number of so-called species are valueless,

The sexes of the dates are separate and it is generally believed that they are dioecious. However, a female humilis in my ground raised fertile seed when no male plant of any species was large enough to bloom anywhere in the neighborhood. Most of them

send up suckers in abundance which may be carefully removed and used for propagation. Professor H. Nehrling has a most excellent article on the date palms in Florida in Bailey's "Encyclopedia of Horticulture."

Pinanga. A genus of usually slender-stemmed palms some of which send up suckers quite freely. They are from the Malayan region and are therefore tender. Two or three species have been cultivated in the warmer parts of the state and it is probable that they will do best in partial shade.

Ptychospermas are Oriental palms which seem to be but little understood, most of the members being now placed in other genera. *P. macarthuri* is a beautiful, tufted species of which I have a large and fine example. It eventually forms large clumps, and is a native of New Guinea. There is another specimen in the grounds of Mrs. Marian McAdow at Punta Gorda.

Raphia ruffia is a magnificent palm from the Mascarene Islands and Madagascar which produces the fiber called raffia. It has a tall caudex and the immense leaves reach a length of fifty to sixty feet. I have several times grown this palm from seed to a height of over a foot and it has died but I see no reason why it should not succeed. Another majestic palm from the Amazon has been called *Raphia taedigera* but I can hardly believe that it belongs in this genus.

Rhopalostylus baueri and *R. sapida*, the only species of the genus, are hardy palms from Norfolk Island and New Zealand, formerly placed in Areca. I have had small plants of both but have not had sufficient experience with them to say what they will do.

Roscheria melanochaetes is a slender, spiny palm from the Seychelles, with leaves from three to five feet long and two to three feet wide that are entire when young but more or less pinnate when old. It should be grown in the shade and probably is tender. This and the two following have entirely failed for me after repeated trials in the open ground.

Stevensonia grandifolia is one of the most beautiful of palms having very large, bifid, reddish green leaves; the whole plant is beset with spines. It is possible that it may be grown in a

moist, sheltered place free from frost. I have it doing well in a pot.

Verschaffeltia splendida is a beautiful spiny, lofty-growing palm from the Seychelles, with large bifid leaves. The Seychelles Islands have a tropical climate, the lowest range of the thermometer being 70°; there is a very heavy rainfall and the soil is granitic,—conditions very different from those of Florida.

Wallachia. A genus containing two or three species from India which promise to do well in the warmer part of the state. I have a young *W. caryotoides* which is doing finely in partial shade in the edge of hammock. The leaves closely resemble those of Caryota.

Fan-Leaved Palms.

Borassus flabelliformis is a grand tropical palm from southern Asia, and the East Indian Archipelago. The Palmyra, as it is called, is dioecious, has enormous, fan-shaped leaves and bears bunches of flowers and fruit from the axils of the leaves. I do not know that it has been cultivated in Florida but it should be tried in the warmer parts of the state.

Chamaerops humilis from southern Europe and northern Africa is a beautiful, very hardy palm. The leaves are divided into a great number of segments and their under surfaces are somewhat silvery. The compact heads of yellow flowers are quite attractive; the tree is vigorous and healthy here, and it ought to be generally cultivated. It is quite variable and the variations have received specific names. There is a larger form, possibly a species, which grows in northern Africa, called *C. macrocarpa*, which is also fine. They will grow on pine land and in exposed situations.

Copernicia. *C. cerifera* is the Wax Palm of Brazil, the young leaves being covered with wax. It is a handsome palm and should be tried in Florida. There are several fine species in Cuba.

Corypha. A genus of noble palms with immense leaves from southeastern Asia which contains the famous Talipot Palm (*C. umbraculifera*). The leaves are said to be sometimes twenty feet across and the enormous panicles of white flowers may reach an equal length. The trees of this genus are slow growing when

A GROUP OF FAN LEAVED PALMS.

At the left is *Thrinax wendlandiana*, which is abundant in lower Florida; in the center *Thrincoma alta*, and to the right *Thrinax altissima*. Photographed at The Sentinels. (Fig. 28)

ROYAL PALMS IN CUBA.

A characteristic view of Royal Palms (*Oreodoxa regia*) as they grow in the island of Cuba. This palm is the most striking feature of many Cuban landscapes. (Fig. 29)

A GROUP OF OIL PALMS IN BRAZIL.

The West African oil palm, *Elaeis guineensis*, is extensively grown in several tropical countries for the valuable oil yielded by its orange colored fruits. In addition to its economic value, it is a splendid ornamental species, and is doing well in south Florida. (Fig. 30)

THE OLD MAN IN THE GARDEN.

The author standing by a small pool in his tropical garden at Little River, near Miami, Florida. (Fig. 31)

young and when they blossom they die. I have tried *C. umbraculifera*, *C. megapoda*, *C. gebanga* and *C. elata* and all have failed. I understand that they have not succeeded in Florida.

Erythea. A group of palms from Lower California and Mexico, containing three species,—I have had no success whatever with any of them.

Hyphaene. Tropical palms from Equatorial Africa with very firm leaves, the rachides armed with strong spines. The trunks branch in old trees and the nut is covered with an edible pulp, hence the name Gingerbread Palm. I have a very fine specimen of *H. schatan* in my grounds but up to date it has not produced anything in the cookery line.

Inodes. The species included in this group have generally been called Sabal. In Inodes the midrib of the leaf is bent backwards while in Sabal the leaf is flat. This is a group of American palms designated as the palmettos, rather slow growing when young but quite vigorous at maturity. They all succeed admirably in Florida and are among our finest garden ornaments. The genus is represented in Florida by *I. palmetto* the common cabbage tree, and a dwarf species with an S-shaped stem which is all buried in the ground; the latter, *I. megacarpa*, living on the shores of Biscayne Bay and for some distance northward. *I. caerulescens*, *I. mauritiaeformis*, *I. ghiesbreghti*, *I. umbraculifera* and *I. princeps* are beautiful. When on pine land it is a great help to give them liberal dressings of muck. Most of the species will probably prove hardy half way up the peninsula.

Latania. A magnificent group of palms from Mauritius and neighboring islands. Their leaves are among the most majestic of any of the family, either in a young state or when mature, all being more or less highly colored. They are tender but may be grown in places exposed to the sea, even where they are sometimes submerged. Specimens of *L. loddigesi* and *L. commersoni* at Cape Florida were completely covered with water for several hours some years ago during a hurricane but were uninjured. The so-called *Latania borbonica* is a Livistona.

Licuala peltata, *elegans*, *rumphi*, *grandis* and *horrida* have all been in my collection but without exception have totally failed, and other growers in the state report a similar experience. They

are beautiful palms, generally of dwarf size, which grow in the hot, steamy forests of the Oriental Tropics.

Livistona is a fine genus of palms from the same general region as Licuala, but I have had much better success with it. *L. chinensis*, commonly called *Latania borbonica*, is a beautiful, slow growing species, quite hardy. *L. altissima*, *L. hoogendorpi*, *L. subglobosa*, *L. jenkinsiana*, *L. olivaeformis* and *L. mariae* have all done well with me. *L. rotundifolia* is a charming species. All except the first are probably tender.

Lodoicea seychellarum is the celebrated Coco de Mer, or Double Coconut, from the Seychelles. It is a wonderful tree with a trunk a foot in diameter and a hundred feet high; the fan-shaped leaves are twelve feet long and twenty wide. It does not bear fruit until it is thirty years old; the nuts weigh forty pounds each and require ten years to ripen. The base of the tree is rounded and fits into a natural bowl which is filled with holes through which the roots pass. This bowl is a part of the tree but is not attached to it and it has been found in a good state of preservation sixty years after the tree has died. The nuts require a long time to germinate but they have been sprouted and are growing at Washington. They should be tried in lower Florida.

Mauritia. A genus of half a dozen species of lofty palms from the lower West Indies and South America. I do not think that they have been cultivated to any extent in Florida but they should be tried.

Pritchardia. The species of this genus vie with those of Latania in beauty and majesty but, unfortunately, they are all very tender and can only be grown successfully in practically frostless situations. I have had *P. marti*, *P. pacifica*, *P. thurstoni* and one or two others and all of them have been injured repeatedly.

Rhapis flabelliformis and *humilis* are elegant, tufted, reed-like palms from China and Japan, both quite hardy but slow of growth. Both are doing finely for me in shade in the edge of the hammock; the latter is making the better growth. Most elegant effects might be produced by planting these in masses, especially along the banks of pools or lakes.

Thrinax is a genus of very beautiful and useful palms for the

warmer parts of the state. Besides the native species which I have discussed elsewhere there are a number of others eminently adapted for growing in clumps, or for borders of large palm groups. I have in perfect condition *T. argentea*, a fine Cuban species, *T. barbadensis*, *T. morrisi*, *T. parviflora*, *T. radiata* and *T. pumilio*. *T. altissima* is one of the finest palms I have. The large, orbicular leaves are cut into many segments, are rich, shining green above and silvery beneath and are indescribably beautiful. Unfortunately it was planted in a somewhat exposed position and its splendid foliage is injured by high winds. I know of no more satisfactory group of palms for regions exempt from frost as they are at home in almost any kind of soil.

Thrincoma alta from Porto Rico is a fine Thrinax-like palm which is growing nicely for me in pine land.

Trachycarpus. A genus of a few species from Asia, one of which, *T. excelsus*, should be hardy over the entire state. It has never succeeded with me and Nehrling has had the same experience with it in Gotha, but Mr. C. E. Pleas states that it does finely at Chipley.

Washingtonia. It is probable that this name which was once applied to the great redwood trees of California should not be used for this group of palms but the longer one Neowashingtonia. *W. robusta* is grown in this vicinity to a considerable extent for shading streets and roads and for ornament in grounds. It is a strong, rapid grower, with dark, glossy leaves whose petioles are armed with heavy, curved spines and it is altogether a very ornamental and satisfactory tree. *W. filifera* is a slower grower with somewhat glaucous and larger leaves. I have under the name of *W. sonorae* a young palm which is more delicate in all its parts than the other two. Nehrling reports that all the Washingtonias fail at Gotha.

A surprisingly large number of the palms are succeeding with me and as I make no claim whatever to skill as a cultivator, and as, for want of time, my plants are much neglected, I cannot but believe that these glorious productions of nature are very much at home in Florida. Uncle Nat Berry remarks in the well-known play *Shore Acres* that "You can't have too many babies"

and it may be said here that you can't have too many palms. They are so magnificent, so characteristic of the tropics, so strange and striking to northern eyes that it seems to me it is hard to overdo in planting them. Put them out singly, in groups, mix them with other vegetation, and in a few years they will grow into objects of wonderful beauty and stateliness, a perennial comfort to the heart, a joy to the eye, something to show with swelling pride to friends and visitors.

Ornamental Exotic Trees.

There is such a wealth of attractive material among exotic trees that are adapted to the soil and climate of Florida that it is hard to know what to choose and what to reject. I have over one hundred species of ornamental tropical trees in my grounds without including palms and I have only a mere fraction of what may be grown.

Acacia. A large genus of trees and shrubs mostly from Australia, having compound leaves (sometimes phyllodia) and cylindrical or globular heads of flowers. I have tried a dozen or more species under various conditions and have met with almost total failure. *A. neriifolia* does fairly well.

Adansonia digitata, Baobab Tree of Tropical Africa, reaches enormous dimensions, the trunks sometimes attaining a diameter of thirty feet, though the height of the tree rarely equals eighty. The wood is remarkably soft; the leaves of young trees are simple but those of larger ones are trifoliate, and at a later stage of growth digitate. The flowers are large and handsome; the fruit is the size of a small melon, and is edible. I have a small tree which grows very slowly; another in Miami has bloomed.

Adenanthera pavonina, Circassian Bean, is an attractive tree with compound leaves and spikes of brownish flowers. These are followed by spiral pods containing brilliant scarlet, lenticular beans which are used in its native country, India, for food and for forming elegant necklaces. It is a rapid grower and is somewhat hardy.

Ailanthus glandulosa, Tree of Heaven, is a very rapid grower from China, having immense pinnate leaves which have a decid-

edly tropical appearance. It should succeed in the upper parts of the state but it sprouts badly.

Albizzia lebbek is a vigorous, rapid growing tree which I have mentioned in the chapter on trees for roads. When young it is somewhat tender but with age will be hardy in lower Florida. It is a fine ornamental and grows to a great size in pine land. *A. julibrissin* is much hardier, being cultivated as far north as Washington. It is a handsome tree, and does well in the northern part of the state. Mr. C. E. Pleas informs me that it is naturalized around Chipley.

Aleurites triloba, or Candle-nut of the Moluccas, is a rapid growing tree with large, trilobed leaves which bears clusters of small white flowers, the leaves surrounding the flower heads being silvery. It bears a soft, two-celled fruit, each cell containing a nut somewhat resembling a walnut. The entire kernel is rich in oil and has a flavor equal to that of English walnuts. The tree is quite ornamental at all stages and grows well and bears fruit in lower Florida. It should be planted in a protected place as it breaks badly in high winds. *A. cordata* from South China is a handsome tree and is doing finely in the grounds of Professor Nehrling at Gotha. One or two other species have been cultivated in Florida.

Amherstia nobilis from India is considered by many the most magnificent flowering tree in the world. It has compound leaves and immense candelabrum-like sprays of brilliant red and yellow flowers drooping from every branch. Macmillan says that in Ceylon it does not seem to flourish near the sea. It should be tried in the warmer parts of Florida and if it could be made to succeed it would be a splendid acquisition.

Araucaria is a genus of noble conifers from the warmer parts of the Southern Hemisphere, several of which do well in Florida. *A. excelsa*, Norfolk Island Pine, largely cultivated in the north as a pot plant, makes a lofty tree in the more tropical part of the state, and is very handsome and striking. *A. bidwilli*, Bunya-bunya Pine of Australia, is a noble tree much hardier than excelsa, flourishing as far north as Tampa. It is doing splendidly with me and promises soon to become a large tree. *A. braziliensis*, if one can believe the pictures of it, must be one of the most

striking trees in the vegetable kingdom. I have not succeeded with it so far. *A. imbricata*, Monkey Puzzle from Chile, has totally failed here but it may do something in clayey soil in northern Florida. Mr. Frank MacLaren of Fernandina informs me that *A. bidwilli* succeeds there with some protection.

Barringtonia is a genus of beautiful flowered trees from the East Indian region, none of which, so far as I know, have been tried in Florida. The species should be planted in moist places near the sea.

Bauhinia. A large genus of trees, shrubs and vines from the Old and New World Tropics, all of which, so far as I have seen tried, do well in South Florida. The queen of them all is *B. purpurea* of which a specimen in Fort Myers has reached a height of nearly forty feet with a trunk diameter of two feet. Its gorgeous variegated purple flowers that open in late winter are like those of some superb orchid. *B. alba* has white flowers, blooming at intervals through the year; *B. furfuracea* is a thorny tree with white nocturnal blossoms; *B. krugii* has pink and yellow flowers; *B. triandria* seems to be represented here by two varieties, one with pale purplish flowers, the other having them pink and white striped. *B. tomentosa* has yellow flowers. Most of these will stand some frost and if mounded up in winter would go through a hard freeze with a loss of only the tops. They should be planted in all gardens.

Bischofia javanica, from Java, has fine large, trifoliate leaves and is quite ornamental. It is much hardier than would be supposed, coming from the heart of the tropics.

Bixa orellana, Arnotto, a tree from the West Indies, whose seeds are covered with a reddish paste, annatto, which is not only used to color butter and cheese but to decorate the faces and bodies of tropical Indians. It does well in lower Florida.

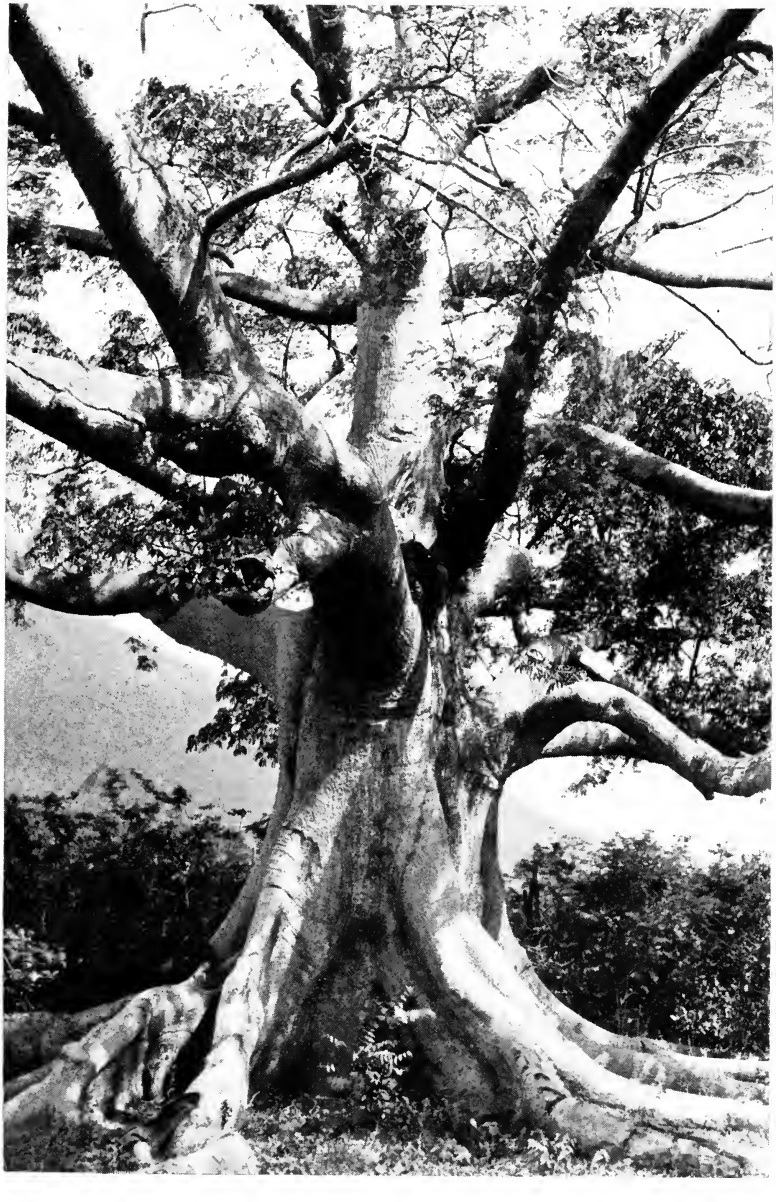
Bombax ceiba, one of the silk cotton trees, rejoices in a variety of scientific names but that does not prevent it from being an interesting and attractive tree. It is a rapid grower, and in its native place, the American Tropics, it reaches enormous dimensions. It casts its digitate leaves in winter and in early spring bears great waxy red flowers. If it is planted in pine land it would be well to give it plenty of muck.

FICUS NYMPHAEFOLIA AT THE SENTINELS.

A beautiful young specimen of this broad-leaved Oriental species. The leaves are very large, glossy, and of a rich green color. (Fig. 32)

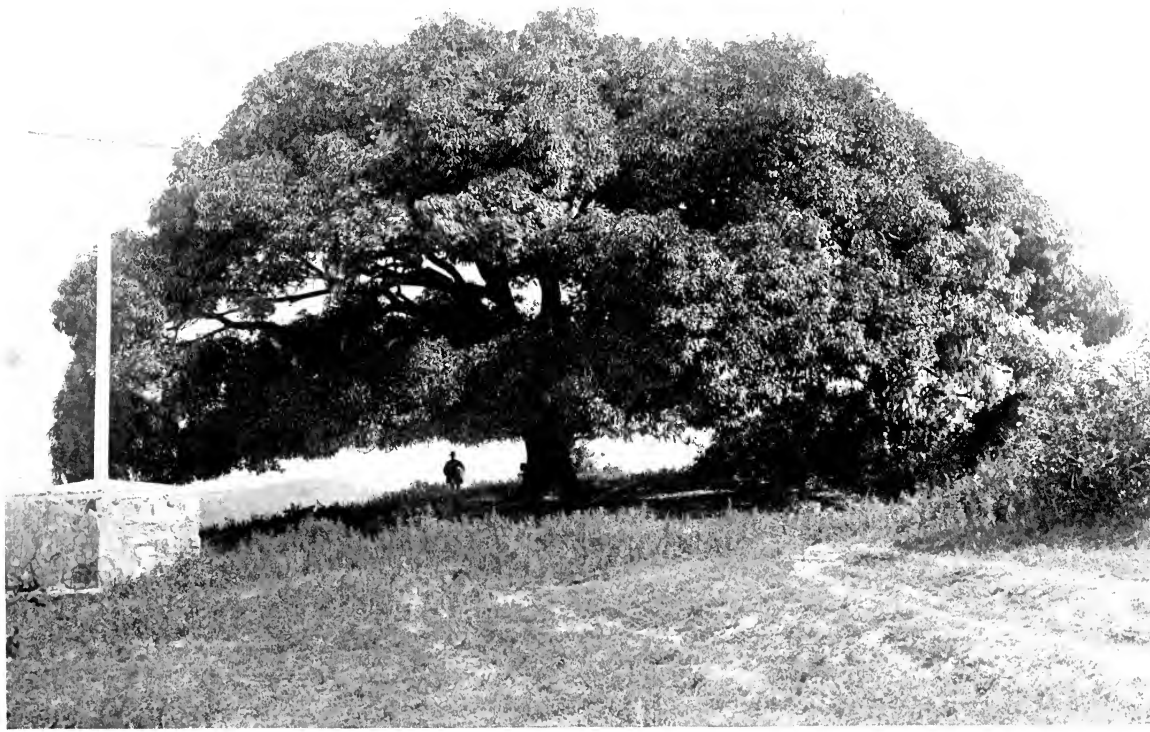
A FIG OF MUCH PROMISE FOR FLORIDA.

This species of Ficus was secured in Rhodesia by the Office of Foreign Seed and Plant Introduction, U. S. Department of Agriculture, and sent to the Dry Tortugas, where it has become the largest tree in the islands. Its success there indicates that it should make a useful ornamental tree in even the most unfavorable localities of southern Florida. Photograph from Alfred Goldsborough Mayer. (Fig. 33)



THE SILK-COTTON TREE.

An immense deciduous tree, *Bombax ceiba*, of the West Indies. In winter it is covered with waxy red flowers. The thick, buttressed trunk is very striking. (Fig. 34)



THE MANGO.

This noble Indian tree is one of the finest ornamental trees of the tropics, and at the same time one of the most widely grown. The specimen here shown is at Bahia, Brazil. On the shallow soils of south Florida the mango does not reach such large size. (Fig. 35)

Brachychiton acerifolium bears waxy, bright crimson flowers but I have never succeeded in making it grow here and it probably prefers a clayey soil or one free from lime. It should be hardy over the lower half of the state.

Brownea is a group of magnificent ornamental trees from the American Tropics. The elegant pinnate leaves droop and are highly colored when young; the flowers in long racemes are pink or red. *B. ariza* is doing finely in my grounds.

Butea frondosa is a native of India and is closely related to Erythrina. It should be grown in dry, good soil in a protected place. There is a fine young tree in my hammock.

Callitris robusta is a rapid growing conifer, somewhat resembling a red cedar. Personally I do not like most of the conifers for Florida because they seem out of place in a subtropical country, but this tree is hardy and vigorous and makes fine wind breaks.

Calodendron capense is a handsome tree from the Cape of Good Hope, having fine, large leaves and attractive flowers, in fact it is considered the finest tree in South Africa. It has been offered for sale here and should be somewhat hardy.

Calophyllum inophyllum is a native of the Oriental Tropics where it is much used for a shade tree. The generic name signifies beautiful leaf, and it is well applied; the flowers are said to be handsome. *C. calaba* has handsome leaves and is a native of the West Indies. Some years ago I planted a seed of this which was washed up on our shores and the tree is now twenty feet high, but the flowers are inconspicuous.

Cananga odorata yields the celebrated Ylang Ylang perfume of the East Indies. The tree is handsome and bears greenish yellow flowers. It is fruiting at the Royal Palm Hotel in Miami.

Canarium commune is an Indian tree of great beauty, much used for street planting. The wide, thin, flat root-buttresses are used for tables, cart wheels, etc., and the nut has an edible kernel. I do not know that it has been tried in lower Florida but it should be.

Cassia fistula. A tree with large pinnate leaves and long, pendent racemes of pale yellow, handsome flowers. Tropical America. Does well here.

Casuarina equisetifolia has been discussed in the chapter on road trees.

Catalpa speciosa has been offered for sale in Florida and I have seen what I suppose is this in Fort Myers, though it was not very vigorous. It ought to do well farther north in the state.

Cedrela odorata. The wood has the color and smell of cedar but the tree is a very different thing. Cigar boxes are made from its wood and it is used in manufacturing furniture. It does well here in rich, moist land and succeeds moderately in pine land. *C. toona* is a nearly related species from India.

Cedrus libani, Cedar of Lebanon, *C. atlantica* and *C. deodara* are majestic conifers that might do well in fairly good soil in the hilly region of the northern part of the state where they could have good drainage. They are quite hardy.

Ceratonia siliqua, Carob Tree or St. John's Bread of southern Europe, has thick, shining, pinnate leaves and bears pods with edible pulp; will probably do well generally in Florida. It succeeds at Miami.

Cinnamomum. *C. cassia* is the Bastard Cinnamon and *C. camphora* is the Camphor tree. Both are fine trees, the latter being hardy throughout the state; the former is much more tender. *C. zeylanicum* (the true cinnamon) has entirely failed with me after repeated trials. There is a *C. cassia* in Fort Myers that must be forty-five feet high, a fine tree.

Clusia, Matapalo or Scotch Attorney. A genus of trees from the American Tropics whose members are usually parasitic on other trees. *C. rosea* has handsome, very thick, obovate leaves and large rose colored flowers. It will grow in soil or on trees.

Couroupita guianensis, Cannon Ball Tree, receiving its common name because its large fruit is shaped like a cannon ball. A fine specimen of this tree is in cultivation at Fort Myers and bears flowers and fruit.

Crescentia cujete is the Calabash Tree of the West Indies. It is a straggling tree, bearing curious, purplish blossoms along the trunk which are followed by very large globular fruits, the hard shells of which are used for a variety of domestic purposes. It succeeds fairly well in lower Florida but is very tender.

Cryptomeria japonica is a noble conifer which would be hardy throughout the state. Its branches are brittle and it should be grown in a sheltered place.

Cunninghamia sinensis is another fine hardy conifer which should have a light, well-drained soil. It will probably do well in the north part of Florida.

Cupressus. Several species are grown in the state, among them being *C. funebris*, *C. knightiana*, *C. lawsoniana*, *C. torulosa* and others, all of which make good wind breaks. They succeed in any soil that is not too wet. All are hardy.

Cyathea, Alsophila, Dicksonia, Cibotium and Hematilia are fine tree-ferns, some of which may succeed but as a general thing most of them probably will not do well here. In a yard at Fort Myers I saw a fine specimen of a tree-fern about five feet high in partial shade; but I could not make out what it was.

Cycas revoluta and *C. circinalis* are fine decorative small trees, the former being hardy throughout the state; the latter is tender. The former grows slowly; the latter much more rapidly, is taller and has longer leaves. They are propagated from suckers which spring up around the trunk. These should be taken off carefully, completely defoliated and rooted in a moist, shaded place. These plants are often stricken with a destructive blight for which I know no remedy.

Dammara australis is a fine conifer from New Zealand and would be hardy anywhere in Florida.

Delonix regia, Royal Poinciana, a native of Madagascar, is one of the most glorious trees in the world, and is now cultivated everywhere in the tropics. It can only be grown here in the lower part of the state, in a general way south of Latitude 27°. Here it casts its beautiful bipinnate foliage in winter, the new leaves appearing in April or May and at the same time the tree is covered with immense clusters of large red flowers, variegated with white, yellow and purple. Trees in the neighborhood of Miami attain a height of forty feet and often twice that size of crown, and when almost solidly covered with bloom they look from a distance like a great burst of flame. I have seen clusters of flowers fully as large as a bushel basket. I said when I first saw one of these trees in bloom that I was willing to endure the tor-

ment of mosquitoes, sand burs, land crabs and all the pests and vermin of Florida in order that I might live in a land where the royal poinciana flaunted its splendid blossoms to the sky.

Dillenia. A genus of beautiful Oriental tropical trees having large leaves and handsome flowers. *D. indica* is sparingly cultivated in lower Florida but is greatly subject to root knot, and I have never succeeded with it on that account.

Eriodendron, Silk Cotton Tree. A genus of very large, rapid growing trees from the tropics of the Old and New Worlds. *E. anfractuosum* becomes an enormous tree in the West Indies; its trunk is usually smooth and bulging, and in a young state it is variegated with light and dark green. It is perfectly at home in lower Florida in pine or hammock land.

Erythrina, Coral Tree. A genus with thorny stems and trifoliate leaves, bearing brilliant red flowers in long racemes. In certain districts a borer greatly injures the branches and in some cases destroys the flowers. There is a good deal of similarity among many of the species but *E. crista-galli* is quite distinct. In the north this is almost herbaceous, being bedded out in summer and dug up and wintered in a cellar. At Fort Myers I saw a fine tree of this fifteen feet high. It would be hardy throughout the state; the rest are tender.

Eucalyptus. A large genus of trees which has its metropolis in Australia. Quite a number are cultivated in South Florida and in some cases specimens are already reaching considerable size. In many instances the trees have proper leaves; in others they have only phyllodia, which are leaf-like expansions that are alike on both sides and hang vertically. Most of the trees are brittle and break badly in high wind.

Euphorbia. Some of the species are weeds, others are shrubs and still others are trees. *E. havanensis* has triangular branches which are variegated and furnished with spines, and it is much used in Cuba for hedges. *E. tiriculli* has round stems and very rudimentary leaves, a most curious tree. *E. sanguinea* has a dense crown of deep, metallic purple foliage. These species are tender.

Ficus. An immense genus of trees, shrubs and vines from the warmer parts of the earth, which furnishes many ornaments for

the garden. *F. religiosa*, which looks like a glorified cottonwood, is the sacred Ti or Bo or Pipal Tree of the Hindus; a rapid grower and quite ornamental. *F. elastica* is the original India Rubber Tree, much cultivated in rooms and plant houses in the north; here it becomes an immense, wide-spreading tree. *F. altissima* is a handsome tree with large, glossy leaves; *F. pandurata* has very large fiddle-shaped foliage and has not long been introduced into Florida. *F. bengalensis* is the famous Banyan Tree which drops numbers of air roots that establish themselves in the ground until the tree covers a large area. *F. rubiginosa*, *F. macrophylla*, *F. cunninghami*, *F. infectoria* and several others are cultivated in our area. *F. parcelli* has finely variegated leaves, green, splashed white; *F. nymphaefolia* has cordate, pointed, glossy leaves a foot in length. All the above are growing in my grounds and are, no doubt, tender. A number of species drop air roots which fasten into the ground and produce banyan trees on a small scale.

Garcinia morella, Gamboge tree. I have a fine young specimen of this and it promises to be a most beautiful ornament in a short time as it is a rapid grower. The leaves are large, long and glossy, of very thick texture and brown red when young. As it is a native of Malaya and Ceylon it is, no doubt, quite tender.

Grevillea robusta is widely grown throughout southern Florida, doing pretty well over most of the peninsula. It is extensively used at the north as a pot plant for its ornamental, fern-like foliage, but here it becomes a large tree and bears clusters of curious and handsome flowers arranged on one side of the rachis. *G. banksii* is in my grounds and is a most attractive tree. Its handsome leaves are deeply pinnatifid and for a long time in summer and fall it bears compact heads of brilliant red, peculiar flowers. I have a variety with creamy white blossoms. All are of the easiest culture in pine or hammock land if moderately fertilized. The last two are probably somewhat hardy.

Guaiacum officinale, Lignum-vitae. A slow growing West Indian tree with curious compound, shining leaves which bears attractive blue flowers. It should have plenty of fertilizer and a rather dry soil.

Haematoxylon campeachianum, Logwood. A small, straggling

tree with compound leaves and whitish flowers, grown as a curiosity. It does well in pine land.

Heritiera littoralis from the tropical coasts of the Old World is a fine tree with long, lanceolate leaves which are silvery beneath; it bears curious large seeds. It does well in brackish swamps.

Jacaranda mimosaefolia from Brazil is one of the most beautiful ornaments grown in Florida. It has wonderfully delicate, bipinnate leaves and large panicles of drooping, trumpet-shaped blue flowers. It is hardier than some of the tropical trees. It attains a height of sixty feet in Florida.

Kigelia pinnata, Sausage Tree, so called because of its peculiar shaped fruits which hang on long stems. A rapid grower, bearing large, dull red trumpet-shaped flowers. There is a large tree at Cocoanut Grove.

Lagerstroemia flos-reginae. A tree from the Malay Archipelago which is something like a glorified crape myrtle. The leaves somewhat resemble those of a guava and it bears immense panicles of pink or purplish flowers. It is quite tender and should have good soil and be well fertilized.

Libocedrus decurrens is a fine conifer from California which has handsome, bright green leaves when young. It will be hardy all over the state. It needs good soil and will not do well in sand.

Melaleuca leucadendron, Cajeput Tree. The leaves of this are lanceolate and are alike on both sides, the petioles being twisted so that they sit edgewise after the manner of phyllodia. The bark is very soft and spongy and is used for caulking vessels; the flowers are white and attractive. From the leaves is distilled the strong, aromatic oil which bears the name of "Cajuput" or "Cajeput" or "Cajaput." It is a case where one can pay his money and take his choice in the matter of names. It will stand some frost and will grow in all soils.

Melia. *M. azedarach* var. *umbraculiformis* is the Umbrella Tree cultivated everywhere throughout the lower south. It does best in middle and northern Florida and is a glorious ornament when covered with its exceedingly dense, dark green foliage. It is a profuse bloomer and casts its leaves in the fall while *M. sempervirens* holds them through the winter. *M.*

floribunda is a leggy shrub or small tree but is a most constant bloomer. It is called "Indian Lilac" on account of its delightful fragrance. The flowers of all are bluish or lilac colored.

Mesua ferrea of Tropical Asia is extensively planted and is loved by the people of its native region. It has elegent lanceolate leaves and large, beautiful white flowers. It should be tried in lower Florida.

Moringa pterygosperma, Horseradish Tree, is so called because the large, soft roots have a flavor almost exactly like those of horseradish. It is a native of India, a rapid grower with delicate compound leaves and pretty white flowers. It will stand some frost and does well in pine land.

Oroxylon indicum. A very tender tree from Tropical Asia with immense compound leaves and racemes of one-sided, bell-shaped flowers. They are white, striped purple and are ill smelling. The seeds are thin with a very wide, satiny border which makes them quite ornamental. It is doing well in lower Florida.

Pachira. A genus of highly ornamental trees from Tropical America, having shining, digitate leaves and very large flowers. *P. fastuosa* has brilliant red blossoms; in *P. princeps* and *P. macrocarpa* they are white. All do well with me.

Parkinsonia aculeata and the Paritiums have been noticed under the head of native trees.

Parmentiera cerifera, Candle Tree from Tropical America, belongs to the Bignonia Family, has small, winged, trifoliate leaves and white, trumpet shaped flowers. These are followed by fruits two or three feet long resembling candles, which are said to be edible. It is doing well here. There is a beautiful picture of this tree in fruit in Macmillan's "Handbook of Tropical Gardening."

Peltophorum ferrugineum is a lofty, rapid growing tree from the Philippines with bipinnate leaves and racemes of attractive yellow flowers. A young tree in my grounds has bloomed at a height of fifteen feet. It seems to be very much at home in pine land and is more hardy than many tropical trees.

Pithecolobium dulce is a rapid grower with bipinnate leaves, the leaflets in pairs, which I have discussed under the head of shade

trees for roads. *P. saman* has four to six pairs of pinnae, the outer leaflets being largest. It is one of the standard shade trees for roads in Cuba and though I had tried it repeatedly here it failed until recently. I have it now doing finely and it will probably make a large and attractive ornamental for lower Florida.

Pimenta officinalis, the Allspice of Jamaica, is an attractive tree with thick, elongated, glossy leaves and white flowers in corymbs. It is growing finely and has bloomed in my hammock.

Plumeria. A small genus of fine trees from the American Tropics with white, pink or red, very fragrant flowers from which the perfume called Frangipani is made. The branches are club-shaped; the flowers are in heads and handsome. *P. alba* has white flowers; *P. rubra* rich red; *P. acutifolia* white within and pink outside; *P. tricolor*, yellow, red and white. They do best in dry, rather poor soil and can be grown from cuttings if care is taken that they are kept pretty dry.

Podocarpus. A genus of ornamental conifers of which a few species have been cultivated in Florida. *P. macrophylla* from Japan is doing well with me and is quite striking. My specimen is twelve feet high and has sent out a number of stems which are densely set with large, dark green leaves. According to Schnabel it is tender at Gainesville.

Ricinus, Castor Bean. This well-known bedding plant of northern gardens reaches the dimensions of a tree here. When grown in rich soil and fertilized it produces quite a tropical effect but it is likely to become scraggy. The variety or species called sanguineus is dwarfed in habit and has purple-crimson foliage. They are tender.

Saraca indica. When I first received this I planted it in pine land in sunshine and for years it did no good. Later I transplanted it to a more moist, somewhat shaded place where it is now doing well. Like Brownea its young pinnate leaves are purplish and drooping; it also has fine red flowers. It is probably tender.

Schinus molle. I have repeatedly failed with this beautiful tree, but it may do better in soil that is free from lime. *S. tere-*

binthifolius has also failed with me. Reasoner reports that the latter does well with him.

Schizolobium excelsum is a noble tree from Brazil which has been introduced into Florida. I have had it reach twelve feet but it was badly hurt in a freeze and never fully recovered. Its immense decompound leaves are very beautiful.

Sciadophyllum pulchrum is probably the correct name of a tree received as *Aralia pulchra.* It has beautiful, glossy, digitate foliage and when well grown is an elegant object. There is a good specimen in the grounds of the Royal Palm Hotel at Miami. Tender, no doubt.

Sciadopitys verticellata is a tall, slow growing conifer from Japan with elegant whorls of curved leaves and attractive, curiously sculptured cones. It ought to be hardy anywhere in Florida. I do not know that it has been introduced but it should be tried in moderately moist, rich soil in the upper districts.

Spathodea campanulata is a superb flowering tree from tropical Africa, belonging to the Bignoniaceae, having large, light green, pinnate leaves and great, flattened, one-sided, pitcher-shaped flowers. These are dull red, bordered yellow and the effect of the tree when in bloom is wonderful. It is a rapid grower but very tender and should be planted in a sheltered place. It blooms when quite small.

Sterculia. A large genus of ornamental trees mostly from the warmer parts of the Old World. Several have been cultivated in Florida and some are quite handsome. *S. foetida* from tropical Africa has dull red flowers and striking leaves; *S. acerifolium* is the same as *Brachychiton acerifolium; S. alata* from India has very large, ovate cordate leaves; *S. carthagenensis* has large, handsome palmate leaves and interesting flowers. *S. platanifolia* is a striking tree that is almost hardy in Washington. It has grown very slowly with me, merely putting out healthy leaves each year, but there is a fine specimen in the grounds of the Flagler residence at Palm Beach. It may be that a limy soil is distasteful to it.

Stereospermum suaveolens is an Indian tree with immense compound leaves and dull red or purplish flowers. *S. sinicum* is a handsomer tree from China with yellow blossoms. The

latter is hardy up to the middle of the state, the former is tender.

Tabebuia pentaphylla has been distributed as *Bignonia adenophylla*. It is a native of Cuba and has digitate leaves and large clusters of handsome purplish pink, trumpet-shaped flowers. It has bloomed finely for me.

Tamarindus indica, Tamarind, is a noble tree, almost worshipped in India, having pinnate leaves and small, yellowish, pea-shaped flowers, often striped with red. The pods contain a sweetish or subacid pulp that is used in making cooling drinks. It will stand some frost.

Terminalia catappa, Tropical Almond, is a famous tree which is probably a native of the warmer parts of Asia but which has been distributed all over the tropics. It bears rosettes of immense obovate, shining leaves at the ends of its whorled, horizontal branches, and nuts resembling almonds, but whose small, sweet kernel has a rather thick shell. It is somewhat tender and in subtropical regions its leaves assume most gorgeous tints of yellow, red, scarlet and purple before they fall, autumn leaves without frost. In the tropics they remain green all winter.

Theobroma cacao is a small tree with good-sized handsome leaves, which bears large fruits that contain cocoa seeds. It is very tender and has totally failed with me.

Theophrasta. A genus of handsome leaved trees from tropical America which ought to be tried in extreme southern Florida.

Thevetia neriifolia is an attractive but poisonous small tree from the West Indies. It has slender, shining leaves and handsome, fragrant, funnel-shaped flowers which are followed by curious, large seeds called "Sailor's Lucky Beans." There is a salmon-flowered variety.

Thespesia. A genus of tropical trees containing some fine ornamentals. *T. grandiflora* is a native of Porto Rico and has large, cordate leaves and very large, bell-shaped, rosy crimson flowers. It promises to become one of the finest of our ornamentals for lower Florida.

Exotic Ornamental Shrubs.

Abutilon, Flowering Maple. A genus of handsome shrubs with bell-shaped flowers, belonging to the Hibiscus family, and

much used for bedding out in the north. I think they would do fairly well here in rich soil if it were not for their being badly troubled with root knot. Schnabel reports that they are a little tender at Gainesville, but they would probably be hardy over most of the peninsula.

Acacia. Several of these are shrubs and I can see no reason why they should not do well in middle Florida. They fail with me and others about here who have reported to me.

Aloysia citriodora, Lemon Verbena. A shrub which will probably be hardy over the whole state, a native of Chile, cultivated for the delicious fragrance of its foliage. It has whorled, lanceolate leaves which are deciduous, and it may easily be propagated from cuttings. Here it does not do well, perhaps on account of the lime in the soil, but according to one of Reasoner's old catalogues it succeeds in Florida. It was one of twelve greenhouse plants that I bought when a boy, the first I ever owned, walking ten miles to a nursery and carrying my treasures home in a basket. These twelve were the above, a Fuchsia, Souvenir de Chiswick; a scarlet Geranium, then called Fish Geranium; *Cestrum elegans; Veronica longifolia; Abutilon striatum; Malvaviscus arboreus;* a scarlet Verbena, Brilliant de Vaise; *Begonia evansiana; Calla ethiopica; Cuphea platycentra* and *Viburnum tinus*. They were almost the first greenhouse plants that I, a country boy, had seen; my pride and comfort in owning them was immeasurable and I called them my "Twelve Apostles." And ever since I have felt a sort of tenderness towards these same plants that I have for no others.

Aralia. A genus of shrubs or small trees which has been considerably divided up of late. *A. guilfoylei* has handsome, glossy, pinnate leaves which are variegated with white, a very fine, erect growing shrub, much cultivated in lower Florida. There are a few other tender species cultivated here. The genus is close to Panax. *A. spinosa*, Hercules Club, is grown for its large compound leaves and immense clusters of white flowers. It is densely spiny and is hardy as far north as Washington.

Ardisia crenulata is a small, pretty shrub with thick, glossy, wavy-edged leaves and clusters of red berries which remain in perfection a long time. It is doing fairly well for me in a shaded

spot in the edge of the hammock. *A. polycephala* is a fine plant with black berries and *A. japonica* which is quite hardy, has white fruit. The two former are tender.

Althea, see *Hibiscus syriacus.*

Artabotrys odoratissima. The False Ylang-ylang, a half climbing shrub related to the sugar-apple, having elliptic, glossy leaves and delightfully scented flowers, a native of the East Indies and probably tender. It is doing well with me in half shade.

Aucuba japonica, Japan Gold-dust Shrub. A handsome large shrub with glossy leaves blotched with gold, probably hardy throughout the entire state. It should be grown in a half shaded place and prefers a clayey, moist, well-drained soil. It has totally failed for me.

Allamanda neriifolia is one of our best shrubs, being always covered with its golden, funnel-shaped blossoms; in fact, it is liable to injure itself by overblooming. It should have good soil and plenty of fertilizer and ought to be well trimmed back when it becomes scraggy. It is tender.

Azalea. Probably all the Azaleas will prove hardy throughout the state. They should be grown in somewhat shaded places where they are sheltered from high winds, preferably in clayey soil, though muck or peat added to it would be beneficial. Lime in the soil seems to be poisonous to them, hence they all fail in this region. They are so beautiful that they should be cultivated wherever it is possible to do so.

Baphia. DeCandolle and Don state that Baphia has pinnate leaves while Nicholson says they are entire. *B. racemosa* has a simple leaflet which is jointed to the petiole, and pretty, white, pea-shaped flowers. It is growing nicely for me on pine land.

Bouvardia. A genus of American shrubs and herbaceous perennials bearing attractive flowers. Most of them are tropical but a few extend north to Texas. I have several times tried these plants but something has happened to them. I do not see why they should not do well in South Florida.

Bauhinia. Several species are shrubs and all that I have tried have done well. *B. acuminata* has fine, large, white flowers in summer and a species which was sent to me as B. picta, but which has yellow, Abutilon-shaped flowers, does nicely. All the

species do well, so far as I have seen, in South Florida, where if they are injured by frost they soon come on again.

Brunfelsia americana is a fine West Indian shrub with shining leaves and very long tubed whitish flowers; one of our most profuse bloomers. It is tender.

Buxus sempervirens is a small tree or shrub, commonly called Box Tree. The large form is used throughout the south for decoration and the dwarf variety for edgings. I have not seen it in lower Florida.

Caesalpinia pulcherrima, Barbados Flower Fence, is one of the most popular plants in South Florida. It is so well known that no description of it is needed. There are two varieties in cultivation, the commoner one with scarlet and yellow flowers; the other with clear yellow blossoms. Both do well in pine land but should be liberally fertilized. It comes up quickly if frozen down and may be, no doubt, cultivated all over the peninsula.

Callistemon lanceolatus, Bottle Brush, usually sold under the name *Metrosideros floribunda*, the latter probably being a different thing. An Australian shrub which will probably prove hardy over most of the state. It does finely at Gotha in the garden of Professor Nehrling but seems to fail here. It has handsome spikes of crimson stamens arranged on a stem after the manner of a bottle brush.

Calotropis. A genus of shrubs and small trees from the Oriental Tropics that is cultivated around the world. The group belongs to the Asclepiadaceae, the Butterfly-weed family, and the species have large leaves and attractive flowers. *C. procera* has white blossoms while those of *C. gigantea* are purple rose. They are cultivated at Miami.

Calycanthus floridus and *C. glaucus* are natives of the southeastern states, the former possibly reaching to Florida. They have very fragrant, brownish or purplish flowers and are of easy culture.

Camellia. Too well known to need description. The varieties of *C. japonica* are most commonly cultivated and should be hardy throughout the state. They will no doubt do well in the upper half of the state, planted in sheltered, cool situations, but it is probable that they will not succeed in lower Florida.

Cassia. There are several shrubby species of Cassia of which *C. alata* does well here.

Catesbaea spinosa is a thorny shrub with small, shiny leaves and astonishingly long, large, trumpet-shaped, yellow flowers which hang pendent from its branches. It is a native of the Bahamas and is probably tender. It is a most profuse bloomer and is highly decorative.

Centradenia. A genus consisting of four species of handsome flowering shrubs and herbs from Mexico. Not tried in lower Florida that I know of, but should be.

Cestrum. Fine shrubs, sometimes half climbing, from Mexico to Chile, all of which do well in the warmer parts of the state but are subject to root knot when young. *C. parqui, diurnum* and *nocturnum* have greenish flowers that are richly fragrant, the latter being the Night Blooming Jessamine. *C. aurantiacum* has yellow flowers and those of *C. elegans* are purple crimson.

Clerodendron siphonanthus is a shrub from the East Indies which is becoming half naturalized around old dwellings in Florida, and is somewhat hardy. It has large terminal racemes of long-tubed, white flowers, followed by showy red and purple berries. *C. fragrans* has large cordate leaves and dense corymbs of single or double white flowers which are very fragrant. It spreads badly and is difficult to eradicate when it is once established. *C. bungei* has lilac flowers and with the last is quite hardy.

Codiaeum, commonly called Croton. Shrubs from the South Seas with magnificent glossy, variegated foliage, green, pink, red, white and various shades of yellow. They enjoy sunshine and moisture though they will do well in partial shade. The many varieties in cultivation are mostly from hybrids of two or three probable species with greatly diverse forms of leaves. They are quite tender and can only be grown successfully in the extreme lower part of the state,—even there they had better be sheltered from high winds and frost. They will grow in any ordinary pine land that is well fertilized. The names are in great confusion, no two dealers agreeing on them, so it is almost useless to attempt to give lists. A few of them which have light colors are inclined

to burn in the sun but nearly all the varieties do well in frostless regions.

Cydonia japonica, Japan Quince, has rich scarlet flowers and is very ornamental. It is widely cultivated at the north and does well with McLaren at Fernandina. There are white, pink and salmon varieties.

Daphne. Several species of rather small, hardy shrubs with evergreen leaves and fragrant flowers. They do well in light, open, well-drained soils and would probably succeed in the upper half of the state.

Deutzia. Hardy shrubs with showy white or blush flowers that appear in spring or early summer. Some of them should do well in the northern part of the state and possibly farther south. Pleas says that *D. crenata* does best with him at Chipley but that *D. gracilis* nearly fails.

Duranta plumieri or *repens* is a rampant, straggling shrub which bears spikes of blue flowers like large forget-me-nots through most of the year. When in bloom there is always hovering over the flowers a swarm of gaudy butterflies as attractive as the blossoms themselves. It is a native of the American Tropics and would probably not be hardy north of the middle of the state. In some cases it bears handsome yellow berries.

Euphorbia. *E. splendens*, the Crown of Thorns, with its fleshy, thorny stems and deep red bracts is a favorite pot plant in the north. Here it blooms throughout the year and is hardier than some tropical plants. *E. jacquiniflora*, Scarlet Plume, is a small shrub with willowy branches and orange scarlet bracts in winter, a very tender plant.

E. pulcherrima, Poinsettia as it is commonly called, is one of the standard ornamentals of South Florida. Here it grows to be a great shrub twelve feet high and under favorable circumstances it becomes a small tree. From November, until as late as March, it bears its great crowns of gorgeous crimson bracts, often fourteen inches across and in the greatest profusion. The stems have a tendency to grow long and straggling and it is better through the summer to pinch out the buds from time to time thus causing them to branch, become stocky and produce more blooms. After the blossoming season is over they should be cut back

severely and well fertilized, as the soil must be very rich for them to do their best. Muck worked in around the roots is excellent. These cuttings, taken off in March or April, will root readily if kept rather dry. They may be put in the ground nearly to their tops or into pots. There is a double and a white variety. If cut down by frost it comes up quickly.

Fatsia papyrifera is a native of Formosa, with large cordate, somewhat lobed leaves, a most striking plant. The pith in the main stem is an inch in diameter and by a sharp instrument is cut into sheets as it is unrolled, forming the beautiful rice paper. Reasoner reports that this does splendidly with him but it fails with me; perhaps it dislikes the lime in the soil.

Fuchsia. These well-known and charming plants fail with me, and several others in various parts of the state report a like experience. Sometimes they do well in pots but they are short lived. Whenever I see beautiful pictures of them in the catalogues I get soft and send for some of them and then go through the same experience again. It only shows that we can't have everything in Florida, though we can come pretty near it.

Gardenia florida and its variety fortuniana are natives of China, too well known to need comment. They are hardy all through this state and do well generally except perhaps in the extreme southern portion. Here they fail, probably because of lime in the soil.

Graptophyllum hortense is a handsome shrub from the hotter parts of the Old World. It has bright green elliptical leaves having a sort of oak leaf pattern of white laid on over the middle part with most striking effect. I think it prefers partial shade and it should be planted in a place protected from frost.

Grevillea thelemanniana is a most charming shrub, having handsome red flowers. I have repeatedly had this sent from California but it seems to suffer greatly in transportation, for although it has sometimes arrived in apparently good condition it has invariably turned yellow and died in a short time. Possibly if it was defoliated before being shipped it might survive. It ought to be tried thoroughly here.

Hamelia sphaerocarpa is much like our *H. patens* but the flowers have more of an orange tint. It is excessively tender.

Hibiscus rosa-sinensis, Chinese Hibiscus. There is hardly a home, either of white or black, so poor and lowly in South Florida that it does not have one or more of these "Hibiscus" as they are simply called. This shrub, the scarlet bush Poinciana, the Acalyphas and the towering coconut are the poor man's plants in the warmer part of the state, the first pioneers of home decoration, the harbingers of other beautiful things to come. The Hibiscus succeed to a certain extent to the northern limits of the peninsula; for, if frozen down in this area, they spring up with renewed vigor and are soon covered with their gaudy blossoms. One of the finest is the old dazzling scarlet; the purple crimson is very fine, so is the pink, and the salmon with a dark eye. I bought a plant some years ago advertised as a white which comes out a pale pink and turns to an almost pure white. Kirk Munroe tells me of seeing three hundred varieties of Chinese Hibiscus flowers in India. *H. mutabilis* has lovely large flowers that are pale pink in the morning and turn almost to red in the evening, but it is a straggling grower. *H. schizopetalus* has fuchsia-shaped flowers with remarkably incised petals. *H. syriacus* is hardy in the northern part of the state and has flowers of several colors.

Ipomoea fistulosa is an upright, somewhat shrubby plant bearing large purple flowers, very common in the West Indies. I have seen it in cultivation at Fort Myers where it was doing well.

Hydrangea. These well-known plants evidently dislike lime in the soil as repeated efforts made in this vicinity to grow them have failed. They do well in places throughout the state, being perfectly hardy. They prefer a rich, somewhat moist soil and partial shade. According to Schnabel they are subject to root knot at Gainesville.

Ixora. A large genus of shrubs and small trees from the Torrid Zone. The leaves are opposite and generally shining and leathery; the flowers are borne in corymbs and are often superb. Many of them are hybrids and all can easily be grown from cuttings during the warm part of the year. *I. coccinea* is a glorious large shrub, bearing almost continually clusters of rich scarlet flowers of great endurance; *I. williamsi*, reddish

salmon; *I. dixiana*, deep orange; *I. colei*, pure white; *I. flore lutea*, light yellow; *I. rosea splendens*, bright rose. They are all a little tender.

Kopsia. I have a species of this which may be *K. arborea.* It has beautiful, obovate, thick, glossy leaves, small white flowers and handsome red fruits. It does well in pine land but is very tender.

Lagerstroemia indica, Crape Myrtle. There are several varieties of this, the commonest being a purplish pink; there is a white and a red form, also a sort of lilac tint. They are most completely at home in the north half of the state where almost every yard is gay with their blossoms in summer and fall. They may be propagated by cuttings of the ripe wood.

Laurus nobilis, Common or English Laurel. It was with branches of this that the Greeks and Romans crowned the heads of their heroes. It does fairly well in Florida and is generally hardy. Cuttings planted in a moist, shady place will grow.

Lawsonia inermis, Henna, bears clusters of small white flowers which have almost exactly the odor of tea roses. It is a straggling shrub and is somewhat tender.

Ligustrum, Privet. *L. lucidum* and *L. amurense* are hardy shrubs used for hedges in the northern part of the state.

Malvaviscus arboreus is a fine old-fashioned shrub related to the Abutilons, which constantly bears erect, crimson flowers. It is a native of the West Indies and is hardier than some tropical plants. It does fairly well here if given good soil and plenty of fertilizer. Although it bears the specific name "arboreus," meaning a tree, it is only a shrub and the appellation is, no doubt, one of the playful liberties the botanists take to relieve the tedium of systematic work.

Murraya exotica, Orange Jessamine, is a beautiful shrub from the Oriental Tropics having glossy, three to eight foliate leaves and small white, fragrant flowers. It is used in the West Indies for hedges.

Mussaenda frondosa is a fine shrub with small orange-colored flowers, the cluster subtended by a large, leathery, pure white bract which holds its beauty for a long time. It is a native of the East Indian Archipelago and is quite tender.

Myrtus communis, Common Myrtle. A pretty, hardy shrub from South Europe which, so far as I can learn, does well in the cooler parts of the state. It fails here.

Nerium, Oleander. I write this name with great satisfaction for the varieties of this shrub are among our finest and most satisfactory garden ornaments. It is hardy throughout most of the state; it grows well in all kinds of soil from brackish muck to high pine land. Mr. Pleas reports that it does well at Chipley but is a little tender. The old semi-double pink is one of the finest, the flowers being large, beautifully colored and very abundant; there are single and double whites, cream color to almost yellow. There are many varieties of pink, red and crimson and variegated sorts. The Oleander makes a fine hedge as it stands shearing well.

Ormosia dasycarpa, Necklace Tree of Jamaica. A small tree or large shrub belonging to the Pea family, having pinnate leaves and large blue flowers.

Osmanthus fragrans, usually sold as *Olea fragrans*. A hardy shrub from China and Japan with opposite, shining leaves and small whitish, very fragrant flowers. It does well in regions free from limestone.

Phyllanthus. Several species of ornamental shrubs are placed in this genus, among them *P. nivosus* and its varieties which are often cultivated for hedges in the lower part of the state. The type has delicate green foliage mottled with white, a lovely plant. The variety roseo-pictus is like the type but has in addition shades of pink, red and brownish. Variety atropurpureus is a stronger grower and has foliage varying from green to brownish purple. It sprouts very badly. *P. angustifolius* is one of the oddest things we cultivate. It has compressed branches and distichous branchlets, the latter with serrated edges and strong, raised veins. The small, purplish, salver-shaped flowers have a way of roosting around the edges of these, singly or in clusters. The botanists say it is a native of the West Indies and that it is only two feet high but I have a young specimen that is fully ten. It is tender.

Pittosporum. A genus of hardy shrubs with evergreen leaves and small, often fragrant flowers, natives of Australasia. They

generally do well throughout the state and here they grow finely but are shy about blooming. At Rockledge *P. tobira* blossoms abundantly. *P. tobira variegata* is prettily marked with creamy white; *P. viridiflorum* is a rank grower; *P. undulatum* has wavy leaves.

Plumbago. A few species of fine, straggling shrubs of which two are in common cultivation, *P. capensis*, a lovely pale blue flowered plant, and its variety alba with white bloom. Both are hardy and do well in pine land. *P. rosea* has charming rosy red flowers but is considerably more tender. *P. larpentae* with vivid blue flowers is now called *Ceratostigma*. It has not succeeded with me.

Raphiolepis ovata is a slow grower with heavy, glossy, obovate leaves and pretty pinkish white flowers. *R. indica* has smaller, narrower leaves and pinkish or reddish blossoms; both are hardy and are doing well for me.

Rondeletia odorata is an exquisite shrub from the West Indies. I have a plant which has had a hard time of it. I first planted it out in the sun and it didn't do well; then I was told by Mr. Theodore Mead of Oviedo to put in it the shade, which I did and it began to grow. Twice it has been scratched up by chickens and once it was accidentally buried and lost for awhile. Then it was cut down with frost; later it fell into innocuous desuetude, probably from too much shade. Two years ago I was over in Cuba and saw it growing there in a most exposed place on the high bank of a small river in the blazing sun. I came home and cleared away around my plant and now it is looking fine and is in bloom. I think it will do well now for it seems to me it has met with and overcome all the calamities, and that its pathway should now be bright and shining. It has fine oval leaves in pairs and verbena-like heads of orange scarlet flowers with a yellow eye.

Rosa, the Rose. I do not think one can honestly say that roses are perfectly at home in Florida, certainly not in the way they are on the western coast of the United States. Roses prefer a strong soil, rich, well-drained clayey loam being preferable, and they should be sheltered from high winds. They also need plenty of water and if one attempts to grow them on high

pine land it is almost absolutely necessary to have some means of irrigating, for water is a crying need for roses on such soil. If one has only a few plants it will pay to dig out a couple of feet of the sand and fill in with marl or any kind of strong soil, sods from an old pasture being good. Liquid cow or horse manure will be beneficial and bone meal is a fine fertilizer. The Monthly roses are so glorious that it is worth any trouble to raise them, and some of the Hybrid Perpetuals succeed if well cared for. A large portion of the roses grown here are budded, it being believed that this is better than growing them on their own roots. They do better during the cooler part of the year and should be transplanted during autumn or winter.

Spirea. Hardy shrubs cultivated at the north, some of which do well in the upper districts. Among these are *S. reevesi* and its double-flowered variety; *S. salicifolia* and *S. van houttei*. All have white flowers.

Tabernaemontana coronaria is one of the finest shrubs (sometimes almost a tree here) that we cultivate. The large, glossy, oblong leaves are handsome and almost all the year through it bears a profusion of waxy white flowers about two inches across that are fragrant a part of the time. It has been suggested that in their native country certain insects which visit their flowers for honey are only active at certain hours of the day. As these plants find the insects useful for purposes of cross-fertilization their blossoms give out fragrance in order to attract these insects only while they are active. There is a species from Kashmir received without a name, with narrow leaves and fine single white flowers that I have seen in bloom at Fort Myers. They should be well fertilized.

Tecoma velutina is much like *T. stans* but has pubescent leaves and paler yellow flowers.

Veronica. This genus which consists mostly of herbs contains a few shrubs. They have long spikes of dainty blue or purplish flowers which are fine for bouquets. I have not had sufficient experience with them to say whether they will succeed here or not but they have failed with Reasoner at Oneco and with Schanbel at Gainesville.

Viburnum tinus, Laurustinus. This fine, hardy old shrub

from the Mediterranean region has opposite leaves and cymes of pretty white or pinkish flowers which are slightly fragrant. It does finely with me though it has been reported as failing in some parts of the state. There are several other species, some of which may do well here.

Ornamental Fruit-Bearing Plants.

In the temperate regions few of the fruit trees or shrubs are particularly ornamental but in tropical and subtropical parts of the world many of these are very fine for foliage or flowers and in some cases the fruit is peculiar or handsome. Thus the orange, lemon and grapefruit are often cultivated in the north in pots for ornament and certainly most of the citrus trees are very beautiful where they flourish in the open.

Achras sapota, Sapodilla. This tree has been loaded down with a number of scientific names but they have not spoiled its beauty. It puts out its branches in whorls after the manner of the conifers and these bear rosettes of elliptical, thick, shining leaves which are closely penninerved. It has almost globular fruit which has a russet rind and very sweet, brown pulp with shining black seeds. The milky juice abounding in the whole plant is called "Chicle" in Mexico, its native country, and is the base of chewing gum, hence the classical name "Chiclets."

Artocarpus incisa, Bread Fruit, is a noble tree with immense, incised, shining leaves which bears great fruits something like those of an Osage Orange. I have never succeeded with it and I believe it has not done well in lower Florida. *A. integrifolia* is the Jak Fruit which has handsome entire leaves and bears still larger fruits. There is a magnificent bearing tree in the grounds of Mr. Wm. Matheson at Cocoanut Grove.

Cupania sapida, Akee of Tropical Africa. A beautiful pinnate-leaved tree whose foliage reminds one of a glorified hickory. Its pear-shaped, triangular fruits are brilliant red and very attractive. When ripe the thick outer covering splits open after the manner of a hickory nut and reveals a cream-colored kernel in which are imbedded three large, protruding, shining seeds. Mixed up with this kernel is a sort of pink integument. Now, the kernel is much like that of a very rich nut and is wholesome and the

integument is poison, but when I get ready to eat one of these fruits I can't remember to save me which part is wholesome and which is poison and I have to go to the book to find out, for it is rather important that one should be sure. The tree will grow on well-fertilized pine land but it is tender.

Carica papaya, Tropical Papaw. When well grown the cultivated form is one of the finest of ornamentals but in order to have it do well it should have good soil; pine land will do but it must be well fertilized. It likes lots of water.

Carissa. The different species of this genus bear good fruits and the bushes are decidedly ornamental when well grown. They all have thick, glossy leaves and fragrant white flowers; the fruits are generally red. *C. grandiflora* has quite large flowers with the fragrance of a tuberose; *C. acuminata* has small flowers in clusters with a peculiar fragrance and pretty berries like those of a barberry; *C. carandas* has slightly variegated leaves and blackish fruits. They are from Africa and rather tender.

Ceratonia siliqua, St. John's Bread, Carob Tree. A large tree in the Mediterranean region; I have seen a specimen not far from Nice that was eighty feet high with a large top. It has shining pinnate leaves and bears pods having a sweetish pulp. It is hardy and is quite ornamental.

Citrus. It is not necessary to comment on the various species and varieties of this genus. One of the most attractive of the lot is the Kumquat, and the Bergamot Berry (*Triphasia trifoliata*) with its trifoliate, shining leaves and reddish berries is also beautiful.

Coffee. There are several species of coffee in cultivation and all are handsome. They should be grown in good soil in partial shade; all are quite tender.

Cecropia palmata is a small tree from the Caribbean Islands, with immense lobed peltate leaves, green above and silvery beneath. *C. peltata* has great leaves which are not so deeply lobed, a native of the West Indies. Both are dioecious and the female bears long, edible finger-like fruits. Both do well in lower Florida in any good soil and are very striking.

Chrysophyllum cainito, Star Apple. One of the most beautiful trees I have ever seen, much like our native species. The upper

sides of the leaves are deep green; the lower surfaces are a yellowish silky brown. Kingsley says of it:—"And what is the next, like an evergreen peach, shedding from the underside of every leaf a golden light,—call it not shade? A Star-apple." When the wind tosses up the leaves the effect is indescribable. The beautiful purple fruit shows a dark star when cut across, and when grown in our sandy soil with plenty of fertilizer it is quite good.

Dillenia indica, mentioned with ornamental trees, bears an edible fruit.

Eriobotrya japonica, Loquat, is a handsome tree, hardy throughout the state, and bearing delicious subacid fruits. Its large, evergreen, serrated leaves are very ornamental and it will grow on any fairly good soil.

Eugenia jambos, or Rose apple, is a fine tree with long, leathery, glossy leaves something like those of a Mango. In late winter and early spring it bears large flowers consisting of masses of long, creamy white stamens, which are followed by fruits with a decided flavor of roses. It is a charming sight to pull open the dense foliage and see the glorious blossoms hidden within, shining like great stars in the semi-darkness. *E. malaccensis* has broader leaves and larger fruits. Both are from the Oriental Tropics and are tender.

Mammea americana, Mammee Apple. A very tender tree from the West Indies, having opposite, elliptic leaves which are thick and glossy. It becomes a large tree and bears great, russet fruits which have a pleasant subacid flavor. It is a handsome, dark foliaged tree of which there are immense specimens in and near Miami.

Mangifera indica, Mango, is one of the finest ornamentals grown and needs no description.

Monstera deliciosa, sometimes called *Philodendron pertusum*, Ceriman of the Lesser Antilles. A magnificent tropical climber with immense, rounded, deeply incised leaves and large white spathes, shaped like a boat, followed by long, cone-like, edible fruits. The plant climbs by means of strong adventive roots which attach themselves to trees or rocky faces. From time to time other roots are dropped from the climbing stem which fall

to the ground and sustain the plant. Charles Kingsley states that such is the vital force of the blossoms that they actually give off heat which may be measured with a thermometer. The fruit is covered with hexagonal scales and the pulp is very fine, having a flavor of pineapples and bananas, as well as a characteristic one of its own. There is, however, a thorn with this rose, for the rachis of the fruit is armed with slender, very sharp spicules that easily break off and he who eats it must be very careful. The leaves are full of large natural holes, sometimes to the number of a hundred, and scientists have been puzzled to know what they were for. Dr. John Gifford of Cocoanut Grove, who is something of a wag, informed me some time ago that they were created by nature to save the insects the trouble of cutting them. I have measured leaves here that were three feet four inches wide and four feet long!

Musa, Plantain, Banana. These plants are among the most glorious ornaments of the tropics even if they are everywhere common. The plantain for some reason does not flourish in lower Florida, but the fruiting bananas do fairly well under favorable conditions. The Orinoco or Horse Banana does well, even on pine land if it is well fed, though it, like all of them, prefers rich, damp soil. It is cultivated all over the state for ornament and even up into Georgia and the Gulf states, where it occasionally goes through mild winters with little damage and fruits the following summer. Hart's Choice or Lady Finger, is a somewhat hardy form while the Cavendish or Dwarf is quite tender.

Phyllanthus emblica, Myrobalan. One of the most exquisitely graceful trees I have ever seen. As I sit here writing the morning breeze is gently waving the wand-like branches of a beautiful specimen just across the lawn, and it rivals the most elegant of the bamboos. My tree has proven to be a rapid grower and has stood some frost without injury although it is a native of Tropical Asia. It bears round, green fruits the size of a marble which are used for preserving. *P. distichus*, Otaheite Gooseberry, is also a fine ornamental, having long, incurved pinnate leaves which are brownish when young. The white-ribbed, very acid fruit is used in lower Florida for marmalade and sauce.

Punica granatum, Pomegranate. A large shrub or small tree bearing handsome scarlet flowers followed by good-sized, edible fruits. It is hardy almost as far north as Washington and does well throughout the state. It should be well fertilized.

Rhodomyrtus tomentosus is a shrub that bears handsome purplish pink flowers and fine edible berries. MacLaren reports that it does well with him at Fernandina and it flourishes with me.

Tamarindus indica, Tamarind, has been discussed in the list of ornamental exotic trees.

Ornamental Vines and Creepers.

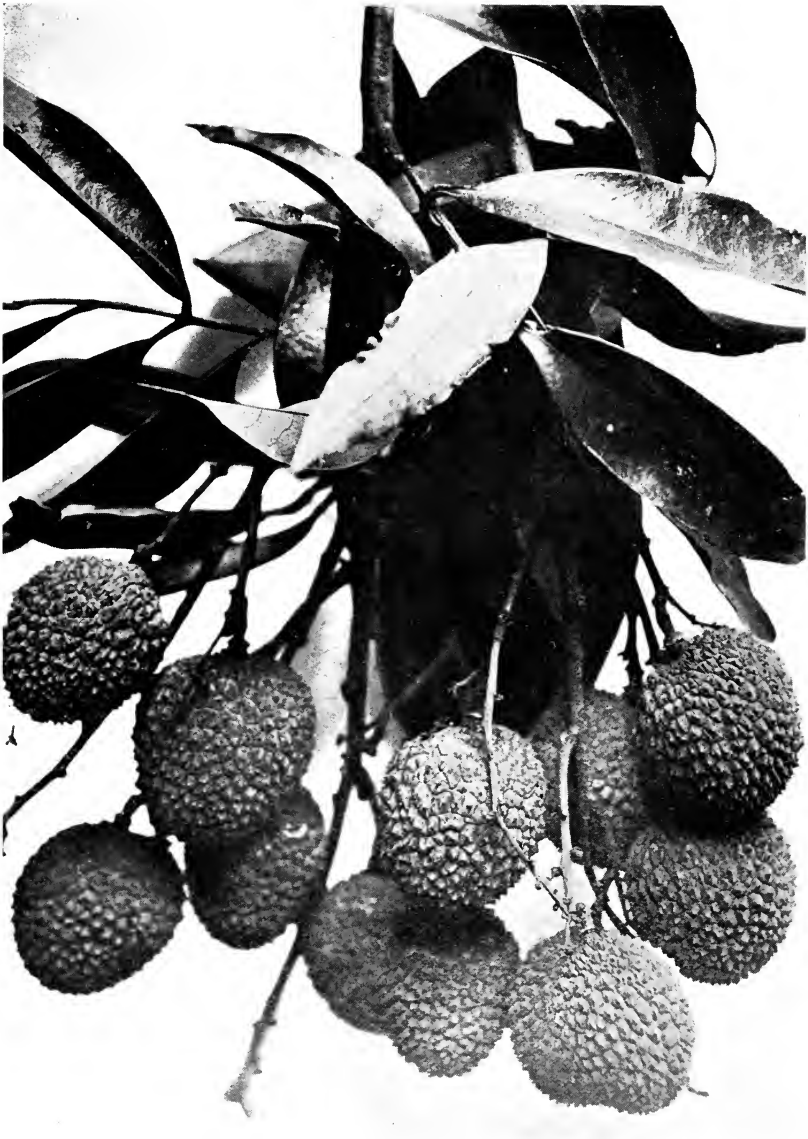
Abrus precatorius, Crab's Eye Vine. A delicate vine with pinnate leaves, inconspicuous flowers and pods of scarlet beans, each with a black eye. It is believed to be a native of the East Indies and Tenison-Woods says that it grows in Malaysia just inside of the mangroves; as it is found in the tropics around the world it is probable that the seeds have been distributed by the sea. The leaves are rich in licorice and are fine to eat but it is claimed that the seeds are poisonous. When once established on a place it spreads rapidly by means of its seeds.

Agdestes clematidea is a tender climbing herbaceous plant from Mexico with soft, cordate leaves and lovely panicles of small, pure white flowers in summer and fall. The young shoots hang down and over them the leaves are beautifully imbricated, making a handsome plant when not in flower; but when it is in full bloom it is simply superb. The tuberous roots sometimes attain a diameter of two feet and with the whole of the plant are ill-smelling.

Allamanda. These beautiful shrubs are among the queens of the flower garden and the finest is *A. hendersoni*. If given a good place and well fed it is a rampant grower and is covered most of the year with its large, trumpet-shaped, golden yellow blossoms. I have a vine growing over my porch; the tree frogs make their homes in its great flower tubes and the dear little creatures always notify me when they expect rain, though sometimes they seem to be mistaken. *A. cathartica* has rather small obovate leaves, the flowers marked with white in the throat; *A. schotti* is a strong grower. *A. violacea* is a fine plant with violet-tinted flowers of which excellent specimens are growing at

THE CARISSA, OR NATAL PLUM.

This is one of the best hedge plants for south Florida, and as an ornamental is worthy of a place in every garden. Its white, waxy flowers have the fragrance of the jasmine, and its scarlet fruits, which are here shown natural size, make an excellent sauce or jelly. The Carissa comes from South Africa. (Fig. 36)

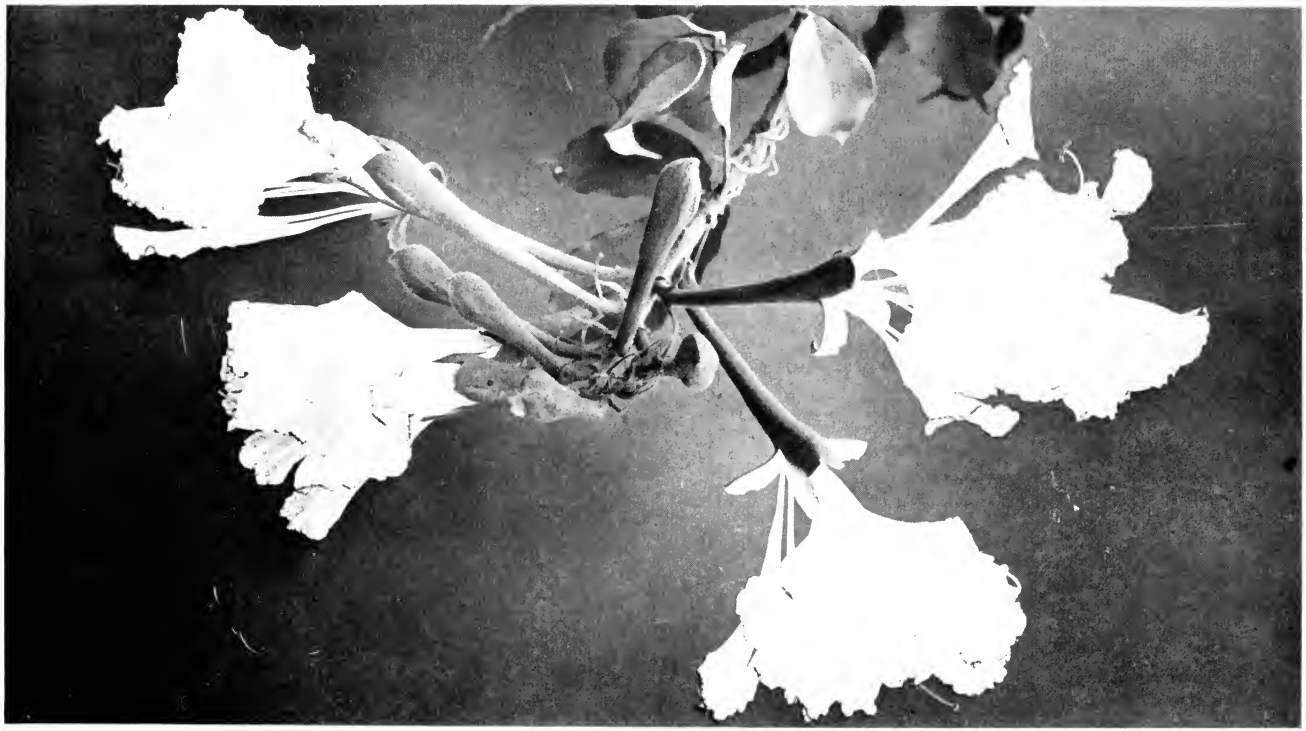


THE LITCHI.

In south China the litchi is a favorite fruit. It has recently been planted in south Florida and gives promise of being successful. The tree is handsome and of value as an ornamental, while the rough, reddish brown fruits contain a crisp, juicy pulp of delicious flavor. (Fig. 37)

AN AVENUE OF MANGO TREES.

These trees, which are growing in the Botanic Garden at Rio de Janeiro, Brazil, are said to have been brought from India over a century ago. The trunks have been hacked to induce the trees to fruit, a practice common in Brazil. (Fig. 38)



CAMOENSIA MAXIMA.

A beautiful vine from tropical Africa, producing deliciously fragrant flowers eight inches across The petals are white, margined with gold. The genus was named for Luiz de Camoens, author of the great Portuguese epic "Os Lusiadas." (Fig. 39)

Fort Myers. All except the last have yellow blossoms and all are sprawlers and may be made to grow as shrubs. *A. williamsi* is a half climber and is very floriferous. All are a little tender but might be grown well up the state if a mound of earth were banked around their stems every winter.

Ampelopsis veitchi has failed with me, probably on account of the limy soil. It should be hardy over the whole state.

Antigonon leptopus, Mountain Rose. Probably there is no more intense pink color anywhere in nature than in the flowers of this Mexican vine. It has hastate leaves, climbs by tendrils, and the flowers in compound spikes are produced through the whole year. Many years ago I was in Port au Prince, Haiti, and seeing for the first time this glorious vine, which grew in great magnificence, I was anxious to know its name. I became acquainted with a merchant who seemed desirous of serving me and he said he could tell me the names of any trees or plants I wanted to know. So I took him to where a fine specimen of this was in full bloom and asked him what it was. He struck an attitude, threw up both hands and exclaimed "O that iss a flow-wer."

Argyreia. A genus of handsome vines closely related to Ipomoea. *I. tiliaefolia* has large, heart-shaped leaves that are silvery silky beneath, and attractive rosy purple flowers. In *A. cymosa* the leaves are smaller and not silvery below. They are of easy culture if well fertilized.

Aristolochia, Birthwort. Many species in temperate to tropical countries, the flowers very odd, with curved, often inflated, sometimes U-shaped tubes. In *A. grandiflora* the outline of the flower is something like that of a bird; the face of the corolla is variegated with lurid purple and it has a long, twisted tail. It emits a terrible odor which probably attracts insects that crawl down its throat and cannot get out on account of reversed hairs in it. There are one or two others occasionally cultivated here, all probably natives of tropical forests, which should have rich soil and shelter. *A. sipho* is a hardy species which would probably do well in the northern part of the state.

Bauhinia vahli is a giant vine with immense cloven leaves, the Malu of the lower Himalaya region. It runs for immense dis-

tances among and over the trees in the forest and has great clusters of white flowers. I have a young vine which is doing well.

Beaumontia grandiflora is a superb vine with large, white fragrant flowers, which has been successfully cultivated as far north as Tampa. Reasoner says that it is grand at Oneco. It is related to the oleander.

Bignonia. A genus of vines containing some of our finest garden ornaments. *B. capreolata* and var. *atrosanguinea* are hardy all over the state; *B. tweediana* is a delicate vine with yellow flowers, which clings by adventive roots and is quite hardy; *B. speciosa* is a grand vine with glossy, dark leaves and great clusters of large, purplish flowers, also somewhat hardy; *B. argyreo-violescens* has its leaves elegantly variegated with purple; *B. buccinatoria* from Mexico has evergreen leaves and flowers over two inches across and four in length, of a rich blood color; *B. venusta* bears immense clusters of fiery orange, long-tubed flowers in late winter and spring, one of the finest garden ornaments of lower Florida.

Bougainvillea. Sprawling vines with simple leaves and inconspicuous flowers, each subtended by a brilliant bract; when in bloom they are among the most gorgeous plants in cultivation. *B. glabra* and var. *sanderiana* are commonly cultivated and are much used at the north. *B. spectabilis* is a stronger grower; both have dazzlingly purple bracts. *B. lateritia* may be only a variety of the latter: it has brick-red bracts. The two former are grown from half hardened cuttings or layers but the latter is difficult to propagate. There are those who disclaim against these gorgeous colors but nature has made them and on occasion uses them lavishly and I confess I am barbarian enough to admire them.

Chlorocodon whitei is a strong growing vine with large, opposite leaves and axillary clusters of odd flowers which is easily grown. Probably tender.

Cereus. Several species are scandent and are cultivated in South Florida. *C. grandiflorus* and *C. nycticalus* are a good deal alike, having angled, spiny stems and large white nocturnal flowers, the former fragrant. *C. triangularis* has three-winged stems and immense white, nocturnal blossoms. *C. pitajaya* (?) is a

plant common in the forests of Cuba where it grows up trees and rocky cliffs. It has many-angled, spiny stems and bears white or purplish nocturnal flowers. It is absolutely at home with me.

Caesalpinia nuga is a thorny vine with sweet scented flowers that is doing well for me.

Cissus discolor. This is one of the loveliest of tropical vines when well grown. It is a delicate plant, requiring shade, moisture and warmth, without all which conditions it will not flourish. It would be a fine thing to grow in a damp hammock "Below the Frost Line," if any one knows where that is. Its oblong cordate leaves are rich purplish red beneath and are variegated dark green and silvery above.

Clematis. *C. paniculata* is a vigorous climber with dull white, fragrant flowers that seems to succeed fairly well at many points in the state. Pleas reports that *C. henryi* and *C. jackmani* do fairly well at Chipley and a few others do reasonably well here and there through the state. They do best in rich, deep soil and are impatient of drought.

Clerodendron thompsonae is a half vine with ovate leaves and panicles of flowers having a white calyx and a deep crimson corolla, followed by shining black seeds. After the corolla falls the calyx turns purple and it often happens that the combination of these four colors is seen on the plant at once. It is hardy in Florida.

Clianthus, Glory Pea. Two species of this splendid genus of Australian plants have been grown somewhat in the north, *C. dampieri,* a low, half climber with hoary leaves and racemes of strange crimson and black flowers, and *C. puniceus* which has glabrous foliage and plain crimson blossoms. They prefer sandy soil but will not stand transplanting; it is even difficult to shift them from one pot to another and make them live, so it would be better to plant the seed where the plants are to stand. They should be hardy over the peninsula at least.

Clitorea ternatea is a delicate climber with pinnate leaves and large pea-like flowers of an intense dark azure with white and yellow center. There is a white flowered variety. When

planted on pine land they do finely with plenty of water and fertilizer. They are quite tender.

Cobaea scandens is a rapid climber with compound leaves and bell-shaped greenish purple flowers, which comes from Mexico and is rather tender. Reasoner tells me that it does fairly well at Oneco.

Combretum. This genus contains climbers with magnificent flowers which are usually arranged in one-sided spikes. *C. coccineum*, *C. grandiflorum* and *C. laxiflorum* are among the finest and should be tried in the warmest part of the state. I have several times imported plants but they have reached me in such condition that they have died.

Cryptostegia grandiflora is a climber from Tropical Africa with opposite, glossy, oval leaves and large, pale purple, campanulate flowers. *C. madagascariensis* has reddish leaves and pale purple blossoms. Both do exceedingly well here and are very handsome. The milky juice of these vines produces caoutchouc.

Dioscorea. Tropical vines with cordate or sagittate, strongly ribbed leaves and greenish yellow flowers in long spikes. They bear curious air tubers and the entire plants are attractive, though they die down in winter. They do excellently here.

Dipladenia. A genus of very handsome, mostly twining shrubs which grow at considerable elevations on mountains in tropical South America, hence they will probably stand some cold. They are related to Allamanda and are as attractive as are the members of that genus. They should be tried here by all means.

Epipremnum mirabile. A climbing aroid which attaches itself to the trunks of trees by air roots after the manner of the Ceriman. At first the leaves are lanceolate, those following are broader, later ones are incised on one side and the final leaves are deeply incised around the entire border. It has large boat-shaped spathes and is close to Monstera. I have two fine plants from cuttings sent from the Philippines. Tender, no doubt.

Ficus. This polymorphus genus is represented by several vines, the most common one being *F. repens.* This clings to trees and walls with its adventive roots and has two kinds of growth; the commoner one with closely appressed stems and

small one-sided leaves; a second which has larger leaves, grows out free, and bears fruit. It is fine for covering trees or walls and will stand considerable frost. *F. villosa* is a stronger grower with larger leaves. *F. quercifolia* has leaves shaped like those of an oak.

Gloriosa. Climbing plants belonging to the Lily family, clinging by tendril-like processes at the ends of the leaves and bearing in summer and fall elegant lily-like flowers. *G. virescens* and *G. superba* are cultivated to some extent in this state. They are from the Oriental Tropics but as they die down in the fall they may probably be grown over most of Florida.

Hedera helix, English Ivy. Too well known to need description; does finely in the northern half of the state.

Hoya, the well-known Wax Plant, has not done well for me, and others who have tried it have had a similar experience.

Ipomoea. An immense genus, mostly climbers and generally known as morning glories. The commonest is *I. purpurea*, cultivated widely and now escaped in many places where its lovely purple flowers gladden the eye. Another, *I. quamoclit*, the Cypress Vine, has dissected leaves and scarlet flowers. One of the queens of the genus is *I. horsfalliae* with lobed leaves and splendid rosy crimson flowers. *I. tuberosa* has five- to seven-lobed leaves and yellow bloom; *I. sidifolia* from Cuba has clusters of white flowers at Christmas; all of these are tropical.

Jasminum, Jessamine or Jasmine. The South is often called "The Land of the Jessamine" and we naturally associate these beautiful and fragrant plants with home life throughout the Southern States. All do well in Florida, most of them being more or less hardy; among these are *J. simplicifolium*, *J. pubescens*, *J. officinale* and *J. grandiflorum* with white flowers, and *J. humile* and *J. primulinum* with yellow blossoms. *J. sambac*, Arabian Jessamine, with fragrant white flowers, is tender. All of these are sprawlers but may be grown as shrubs by proper trimming.

Lonicera, Honeysuckle. A few species do well in the cooler part of the state and among these is *L. japonica* which is too well known to need comment.

Mandevillea suaveolens which does so well in southern California has totally failed with me after repeated trials. It should be somewhat hardy.

Mucuna urens and other species called Sea Beans have been repeatedly raised in lower Florida and in some cases grow wonderfully and bloom and bear, but they have been short lived with me. The former grows wild in Nixon's Hammock in lower Dade County.

Nepenthes, Pitcher Plant, from the Oriental Tropics. Some of these strange plants are vines and might grow in damp hammock in the extreme lower districts.

Norantea is a genus of superb tropical climbers some of which might succeed in hammocks in the warmer part of the state.

Passiflora, Passion Flower. Several species do well in various parts of Florida besides the native forms. *P. quadrangularis*, the Granadilla, is a strong climber and has succeeded at Miami. *P. princeps* has lovely red flowers and there are a number of other fine species. They should have rich soil and shelter. The above are tropical but *P. caerulea* is quite hardy.

Pellionia daveauana is a charming trailer with oblong unequal leaves beautifully variegated with light green, olive and bronze. It is a native of Cochin China and should be grown in a moist, warm place. It is fine for fern pools in the lower region.

Pereskia is a climbing cactus which bears leaves and fine rosy flowers. *P. aculeata* and *P. bleo* are in my grounds and do well.

Petrea is a lovely tender vine, very difficult to propagate. It bears loose spikes of exquisite purple flowers in late winter and spring and should be in every garden where the climate is suitable for it.

Philodendron. A genus of noble tropical Aroids, natives of the New World, most of which are scandent. *P. lacerum* from Cuba, the other West Indian islands and northern South America, has large, deeply cleft leaves; *P. hederaceum* has cordate leaves; *P. verrucosum* has cordate leaves variegated in bands of light and dark green; *P. giganteum* has immense cordate leaves twenty by thirty inches. I have a species which may be *P. erubescens* with elongated leaves more than a foot in length, rich green above and deep coppery red below. All of the above and several others

are doing finely with me. They are tender and should be grown in a moist, shaded place.

Phyllocactus. A genus of flat-stemmed cacti of which *C. latifrons* is a sprawler. It has large white noctural flowers and is epiphytic. I have a fine plant growing on a live oak in my hammock.

Piper. Pepper, Black Pepper. One of the species, *P. futokadsura*, has been tried in Florida and it is somewhat hardy as it is from Japan; *P. porphyrophyllum* is a beautiful climber with cordate leaves six inches long, deep bronzy green above with numerous pink spots, the under surface dull purple. It ought to be tried in lower Florida in moist hammock.

Pithecoctenium clematideum and *P. muricatum* are allied to Bignonia and have white or whitish flowers. *P. aubleti* has pale rose flowers and large, rough pods which are quite striking. I have introduced this with many other interesting things from Cuba.

Porana paniculata is a rapid grower with small white flowers, related to the morning glories. It is cultivated by Professor Nehrling at Gotha.

Pothos. Two species are in cultivation here, *P. aurea* being a rampant grower with large cordate leaves often fourteen by eighteen inches, sometimes lobed, green, streaked and splashed with straw color. *P. argyraea* is more delicate with one-sided gray green leaves spotted white. Both climb by air roots and delight in warm, moist, shaded places.

Pueraria thunbergiana, Kudzu Vine, is perfectly hardy and is a wonderfully vigorous grower with trifoliate leaves and purple flowers. It should succeed all over the state and is valuable for screens.

Quisqualis indica. A climbing shrub from tropical Asia and Africa with opposite leaves and clusters of rather small handsome reddish flowers which change color throughout the day. It does well in lower Florida.

Rosa, The Rose. But little need be added to what I have already said of this genus. Among climbers Cherokee, Climbing Devoniensis, Lamarck, Macartney, Marechal Niel, Ramona, Solfaterre and a few others will be likely to do well in Florida.

Solandra guttata is considerably cultivated in lower Florida and is a sprawler with immensely elongated flowers with a swollen, yellow, purple-striped tube. I have never seen *S. grandiflora* in cultivation but presume it would do well here.

Solanum. A large genus containing several ornamental vines. *S. seaforthianum* has cut leaves and clusters of rich blue flowers with yellow stamens. It bears bright red berries which the mocking birds take in exchange for music and as soon as this plant is established on one's place these birds scatter the seeds all over so that one soon has these charming vines everywhere. *S. wendlandi* is a much stronger grower, climbing high by means of prickles on the backs of the leaves and on the stems. Its flowers are of considerable size, in immense clusters, pale blue with yellowish center. A large vine of this in full bloom is a sight worth going a long way to see. Both are of easy culture in pine or hammock. Both are from the American Tropics and are tender.

Stephanotis floribunda is a fine hothouse vine from Madagascar with opposite, thick, elliptic leaves and clusters of waxy, fragrant white flowers. I have a vine in the edge of the hammock which has climbed to the top of a live oak and every June is covered with blossoms.

Stigmaphyllum ciliatum is a delicate vine bearing umbels of large golden blossoms with fringed petals which does fairly well with me but would stand only a little frost.

Tecoma. Handsome climbers or shrubs from the warmer parts of the world, having pinnate leaves and trumpet-shaped flowers; commonly called Trumpet vines. *T. australis* is an evergreen climber with white flowers; in *T. ricasolina* they are pink, striped red; *T. grandiflora* has large orange scarlet flowers, very floriferous and showy; *T. jasminoides* has rosy blossoms. All of these are hardy throughout most of the state and are among the finest of garden ornaments. *T. capensis* from South Africa has scarlet flowers borne all through the year and is a sprawler, but can be grown as a shrub. It is also quite hardy. All the Tecomas like good soil and plenty of feed, though they grow on pine land. Heavy mulching is beneficial and nitrogenous fertilizer is a great help.

Tacsonia is a genus of climbers closely related to Passiflora. I have repeatedly tried them and have failed with them. They do well in the open in northern California.

Thunbergia. There are quite a number of species of climbers in this genus, all deserving of culture. *T. alata* is grown as an annual in the north but here in lower Florida and the tropics it is a perennial. Although a native of South Africa it has become naturalized in the West Indies. There are three varieties, white, deep buff and pale yellow, and each of these has a variation with a dark throat. When once established in one's grounds they are likely to remain, propagating themselves by seeds. *T. erecta* is a sprawling shrub which seems to like partial shade: it delights to grow up among other shrubbery, half climbing among it. *T. grandiflora* and *T. laurifolia* are fine vines with blue flowers. *T. coccinea* has scarlet flowers but has not been tried here to my knowledge. All should be grown in lower Florida.

Vallaris heynei is a twining shrub with smooth, opposite leaves and pretty white, salver-shaped flowers. I have a specimen that has climbed to the top of a tree in the hammock and is doing finely. It is from the Oriental Tropics.

Trachelospermum jasminoides, Confederate Jessamine. A fine twiner with abundant, starry, white blossoms that are deliciously fragrant. Rabbits are so fond of the plants that it has been impossible for me to grow it. It is hardy and, I think, a success generally in the state.

Wistaria. A few species do well in the cooler parts of Florida. *W. brachybotra* and var. *rubra*, *W. chinensis* and var. *alba* are fine.

Zebrina pendula, which translated means the old *Tradescantia zebrina* or Wandering Jew, is an example of the constant changes of names in the books apparently for no purpose whatever but to change, and which keeps the student constantly confused. It is grown all over the country and in South Florida frequently becomes partly established in moist shady places. There are a couple of plain-leaved forms which are not nearly so fine as the striped variety. They are tender.

Herbaceous Plants.

It is impossible always to draw the line between shrubs and herbaceous plants, just as the line cannot be always marked between shrubs and vines. Many things that are ordinarily herbaceous occasionally become woody.

Acalypha. A genus of plants containing a number of species or varieties with richly variegated leaves. The names are in some confusion in the catalogues so that it is sometimes difficult to understand what is meant and the descriptions in the books are too brief and vague. If I identify *A. wilkesiana* correctly the leaves are broadly ovate and decidedly, though sometimes bluntly, acuminate, not at all cordate, but often one-sided and contorted. They are strongly and bluntly serrate, have a groundwork of coppery or bronzy green, are variegated with a light and dark shade of red, and within this red are angular flecks or mosaics of the groundwork. Sometimes a whole leaf will be bronzy reddish or greenish; in fact the diversity of color is very great. A form which may be macafeana has leaves which are sometimes almost cordate; they are broadly ovate and acuminate but not so drawn out as in the last. It may be said that they are light red blotched with bronzy crimson or the reverse, and sometimes the bronzy crimson becomes bronzy green. There is a variety cultivated here with large cordate leaves which are usually deep bronzy red, or it may be splashed with light red, or the whole leaf may be the latter color. This may be triumphans. *A. marginata* has green, bronzy or reddish green leaves bordered with white or pink and *A. godseffiana* is much like it but is glossier. A form known as bicolor compacta has green leaves bordered with yellow and *A. miltoniana* has similarly marked but narrower and lacerated leaves. *A. hispida* bears long spikes of close set carmine flowers. All are from the East Indian region and are tender, *A. marginata* being hardiest. These are the poor man's plants in lower Florida and there is scarcely a home here that is not brightened by some of them.

Achimenes. Rather delicate plants with large salver-shaped flowers of considerable beauty which spring from scaly tubers. They make their growth in the warm season and during

winter should rest, hence it is probable that they could be grown generally over the state. They like rich soil, moisture and shelter.

Agapanthus umbellatus, African Lily. A fine bulbous-rooted plant from the Cape region of Africa which bears umbels of handsome blue flowers in spring and early summer. I have never succeeded with it but from reports it seems to do well elsewhere in the state.

Agave, Century Plant. A large genus of striking succulents wholly from the warmer parts of America. In the north they are grown in pots and tubs and require many years to bloom but here they often blossom at four or five years. A few such as *A. americana* sometimes do well in sheltered places to the north limit of the state while *A. sisalina* is quite tender. Both are cultivated in lower Florida with *A. salmiana*, *A. densiflora*, *A. macracantha*, *A. filifera* and others. *A. victoriae-reginae* is a gem. The flower stems should be cut down before the bulblets ripen, otherwise one's whole garden will become overrun with young plants. They grow in pine and hammock land.

Ageratum. Plants cultivated in the north as annuals for their heads of blue or white flowers. Here they sometimes become established in grounds and take care of themselves and are usually perennial.

Alocasia. Handsome tropical Aroids which require plenty of heat, shade and moisture. *A. macrorhiza* and its variegated variety are much used in lower Florida for tropical effects, the former tolerating some sun; *A. cuprea* has lovely dark metallic leaves, rich purple beneath; *A. violacea* has very dark leaves tinted purple; *A. sanderiana* has deeply lobed leaves, white bordered and veined. They make a fine show on the walls of fern pools.

Aloe. Succulent plants of which a few species are grown in Florida. Schnabel reports that they are tender at Gainesville. *A. vera* is the most commonly grown species and like the rest needs a dry, sunny situation.

Alpinia. Plants belonging to the Ginger family, of which a couple of species are sometimes planted in Florida. They have ong, lanceolate leaves and terminal spikes of odd flowers. *A.*

nutans is a tall, rank grower, sometimes fifteen feet high, with great clusters of fleshy white, yellow and orange flowers; *A. mutica* has white and yellow blossoms veined with brownish red. They will grow on pine land but do better on rich, moist soil. Although tropical they may be grown where sharp frost occurs.

Alternanthera. Small plants with richly variegated foliage, much used in the north for borders. Here in the lower part of the state they do fairly well in open sunshine.

Amaryllis. Nearly all the plants formerly belonging here are now placed in other genera. One species, *A. belladonna*, has not succeeded with Professor Nehrling at Gotha and has utterly failed with me.

Ananas, Pine Apple. The variegated variety of this is sometimes cultivated in lower Florida and is a beautiful plant.

Andropogon schoenanthus (Lemon Grass) is a handsome tropical, decorative plant, forming large clumps; its leaves yield the well-known citronella oil.

Angelonia angustifolia (allied to the snapdragon) is a pretty plant with spikes of purplish or blue flowers. It is a native of Mexico and is becoming naturalized here. It grows on pine land but is improved by liberal feeding.

Anthurium. A genus of splendid Aroids, some of which are grown for their handsome flower spathes and others for their showy foliage. *A. crassinervium*, perhaps from Cuba, with immense leaves eighteen inches wide and four feet long, does finely here. *A. crystallinum* and *A. magnificum* have velvety green leaves marked with silver. *A. woroqueanum* has very large leaves of velvety green with lighter veins and midrib. All need heat, moisture and shade; the first, however, sometimes grows on exposed rocks. They are fine for fern pools.

Antirrhinum, Snapdragon. Too well known to need description. They do well in the cooler part of the state and in the lower part may be grown in winter as annuals.

Aphelandra. Tropical American plants with opposite leaves and four-sided, terminal spikes of brilliant flowers. *A. roezeli* is dwarf and has rich orange scarlet blossoms. This grows, blooms and seeds itself on the walls of one of my fern pools and is a great

ornament. There are other fine species which would probably do well here.

Aquatics. Under this general head it may be well to say a few words about such as do well in Florida. *Cyperus alternifolius*, Umbrella plant, has been found wild in Dade County and will do well in low ground anywhere if the land crabs do not get too friendly. *C. papyrus* does well in fresh water swamps but has failed with me where there was salt in the soil. *Limnobium spongia* is a pretty native plant; *Limnocharis humboldti*, Water Poppy, is a handsome plant with yellow, poppy-like flowers. The Nuphars and Nymphaeas are among our most desirable aquatic ornaments and the species of the latter now offered in the catalogues are superb. Nelumbium is another magnificent genus suitable for cultivation in the state. There are many other desirable aquatics which would probably grow here and it is likely that all or nearly all would go through the winters of the northern part of the state. I see no reason why the great Victorias should not succeed here. In some cases aquatics spread until if they are not cleared out they will take full possession and destroy the effect they were intended to produce.

Bambusa, Bamboo. It is hard to say whether these should be called herbs or shrubs. They are among the princes of the vegetable kingdom and take their place with the palms as gloriously decorative objects. They are the embodiment of grace and elegance; constantly swaying their feathery foliage in the wind, they are often so ethereal that they scarcely seem to be of the earth. I never tire of watching the bamboos for they seem not only to be endowed with life, but to be animate and to possess souls. It would be impossible here to attempt to give any list of the species that have been grown in the state. Professor Nehrling has a large collection of them at Gotha where a considerable number of species do well. One of the finest and hardiest is *Dendrocalamus latifolius*, which grows in great tufts, sending up its large stems to a height of seventy feet almost as straight as arrows, just tipping out a little at the top like the wonderful foliage of the Cohune Palm. These stems are clothed with deep green, broad leaves nearly a foot long and a couple of inches wide. At one time when I visited Professor Nehrling there grew a

majestic group of this bamboo at the corner of his house. The windows of my upstairs sleeping chamber opened out upon it and the moon was at the full. I sat for hours and gazed on this wonderful sight and worshipped. It was a thing of unearthly beauty, a vision that I shall carry with me till the end of my life. *B. argentea*, *B. disticha* and *B. verticillata* are fine and comparatively hardy. A plant sold as *Phyllostachys spinosa*, which Nehrling says is *Bambusa arundinacea*, is a splendid, wide-spread species.

Begonia. Too widely known to need much comment. Some of the species do well in the state in good soil and sheltered, half shaded places. They do nicely on the walls of fern pools where there is shade and moisture. They are subject to a fungous disease which is little understood and are also subject to root knot. *B. evansiana* is quite hardy but most of them are tender.

Bryophyllum calycinum is a well-known succulent plant with yellowish red, green and brown flowers; when it once becomes established it will take care of itself and is difficult to eradicate since every leaf will produce a number of plants. Tender.

Buddleia. Ever since I was a child I have been reading about Buddleias and how ornamental they were, but had never seen any of them. Recently I obtained a couple of species, *B. braziliensis* with spikes of minute, dirty yellow flowers and rough, coarse foliage and *B. hemsleyana* with a little better leaves, and minute bluish blossoms. Both have grown fast and bloomed freely but neither is good enough to be called a low grade weed.

Caladium. Jared Smith believes that most of our cultivated plants are forms of *C. picturatum* and *C. bicolor*. There are many hundreds of named varieties in cultivation and no words can adequately describe the beauty of a large collection such as that of Professor Nehrling at Gotha. They die down in winter in our climate, though in Haiti they are in full glory all through this season. There is every conceivable shading and patterning of green, white, red, pink and yellow and an acre of these in their glory is a sight never to be forgotten. *C. roezeli* is probably a distinct species with deep green leaves and irregular gray, yellowish green and white spots. They all do best in rich moist ground in partial shade.

Calathea. The species of this genus are ordinarily called Marantas and differ only in technical characters. The leaves are marked with shades of green, red, brown, yellow and white. *C. zebrina*, well known, has leaves purple beneath and alternating bars of light and pale green above. *C. veitchi* is very beautiful. They require shade, heat and moisture and are fine for fern pools.

Calceolaria. These have beautiful, odd flowers and are much cultivated in England but are rather delicate and should be tried in a sheltered place. They cannot stand our hot sun and therefore need some shade and plenty of moisture. They should have rich soil and they will stand some frost.

Carludovica palmata and a few other species are the plants whose leaves are used in making Panama hats. They are handsome, stemless, palmlike plants from Middle America and therefore tender. They can only be grown out of doors in the warmer part of the state in a sheltered, half shaded location. In such a place I have a nice plant of *C. palmata*.

Cereus. I have had plants of a number of upright growing Cerei but have had no success with them.

Chrysanthemum. Everybody knows Chrysanthemums, or "Mums" as they are often called. They do well in the northern part of the state, but as far as I can learn they are not generally a success in the more tropical part of it. Some of the dwarfs do fairly well here in hammock soil.

Clerodendron squamatum. Several years ago I brought seed of this from Cuba and it has done very well. The leaves are large, cordate and velvety; the great panicles of scarlet flowers open the whole year through. It should be well fertilized.

Coleus. Nothing that we grow has more gorgeously colored foliage than the Coleus and nothing could be more at home here if it were not for the root knot, which is very destructive to them. They are rather short lived and need to be renewed occasionally by means of cuttings. These can be rooted with the greatest ease in summer and when ready to set out should be put where none has been planted for several years, in order to avoid the root knot. In case choice specimens are attacked with this cut off the tops and make cuttings of them, which will be healthy; then dig up and burn the old plants.

Colocasia antiquorum is the name just now in favor for the well-known Elephant's Ear, though it has gone under a variety of names. It does not always do well on pine land but succeeds better in hammock; all the better if it is damp. It needs plenty of feed.

Convallaria, Lily of the Valley. This does not seem to be a success generally in the state.

Cordyline. Some of these plants become somewhat shrubby with age. I do not think they are a complete success in Florida as they prefer a strong, clayey soil. In Cuba they are perfectly at home and probably would succeed here in such ground. Some of the species are still classed under the old name of Dracaena. *C. indivisa*, *C. australis* and *C. terminalis* are placed here.

Crassulas and Echeverias are fine succulents which fail with me on account of root knot.

Crinum. Bulbous plants which seem peculiarly adapted to the sandy soil of Florida and which succeed all over the state. *C. longifolium* and *C. moorei* are very hardy and bloom all summer. *C. asiaticum* is a large plant with narrow petalled white flowers, *C. pedunculatum* is something like it, *C. scabrum* has long, slender leaves and large drooping white flowers striped red, *C. amabile* is one of the finest, an immense plant with a large, long-necked bulb and an umbel of twenty to thirty purplish red flowers, much cultivated here. There are a number of other desirable forms, all of which do well with us. They do best in rich, slightly damp soil; if they were shaded at blooming time it would keep the flowers in perfection much longer.

Crossandra undulaefolia. Notwithstanding its long name this is really a very attractive plant, with opposite, shining leaves and heads of rich orange salmon flowers freely borne. It does well on good pine land but is tender.

Cuphea. Half shrubby, half herbaceous plants the commonest of which is *C. ignea* or *platycentra*. It is a neat little plant which constantly bears its tubular red flowers tipped with black and white. It does well in pots and for a while in good soil out of doors but is short lived with me. There is another species, *C. microphylla*, which is sometimes cultivated here. They are tender.

Curculigo recurvata is a plant whose leaves resemble those of a young palm. It does well in good soil but is tender.

Curcuma. Two or three species of this genus which have flowers in close heads do well here in rich, moist ground. They are probably tender.

Cyanophyllum magnificum. A plant from tropical Mexico with magnificent, large leaves which are richly colored, might grow in moist hammock in the most tropical part of the state. It should be tried.

Dahlia. Reports from the northern part of the state show that Dahlias do well there but further south they do not seem to succeed. In this region they are occasionally cultivated in rich soil.

Daedalocanthus nervosus is a profusely blooming plant which does excellently here, where it should be cut back to the base of the stems when it is done flowering. All winter it bears spikes of rich blue flowers in great abundance and should be well fertilized to keep it in good condition. It is tender.

Datura. Strong growing plants, often strong smelling, which bear very large white, yellow or purple funnel-shaped flowers, single or double. They are tender plants which ordinarily do well in good moist soil, but they are subject to root knot.

Dianthus. A crimson flowered carnation often does well here but is subject to a blight which generally kills it. The Chinese pinks succeed as annuals in winter. I should think that the pinks would do finely in the cooler part of the state as they would be hardy.

Dieffenbachia. A genus of Aroids with superbly variegated leaves, natives of Central and South America. Their juice is extremely acrid and is said to produce speechlessness, and not only that but swelling of the throat and burning agony for hours, hence the native name "Dumb Cane." I planted a number of these in the edge of my brackish swamp, confident that the land crabs would not dare to touch them or if they did their careers would be ended, but not the slightest injury came to them. They munched my beautiful plants as cheerfully as a horse would oats and even dug up and devoured the roots. They

grow along streams and wet places in shade and are so tender I can scarcely get them through the winter.

Dioon. A magnificent Mexican Cycad with a great crown of long, flat, pinnatifid leaves of a rich, attractive green. It is a member of a once noble family that is now nearly extinct. It has a stiff, formal appearance and is appropriate for planting near dwellings. It will stand quite a little cold.

Dracaena. *D. draco*, the Dragon's Blood Tree of the Canaries, does well for me in pots but not in the open. *D. fragrans* partly succeeds in rich soil out of doors, *D. godseffiana* is doing well in partial shade, *D. goldieana* and *D. sanderiana* grow nicely in pots but not outside.

Echinocactus. So far as my experience goes none of these, the Mamillarias, Echinocereus or Melocactus do well here. A large number of the latter were brought from the Bahamas some years ago and planted in the grounds of the Royal Palm Hotel at Miami but they have not taken hold. A few of the Opuntias succeed here more or less.

Encephalartos. Magnificent Cycads with long leaves, from tropical South Africa. They are expensive plants and I have never tried them.

Eucharis amazonica is one of the most beautiful herbaceous plants we grow in South Florida. It is doing fairly well in the edge of the hammock. The lubber grasshoppers do not seem to know whether they prefer this or the Crinums but they generally manage to get both.

Euphorbia. I have never been able to make any of the succulent species do any good. *E. jacquiniflora* is a fine half shrubby form, beautiful but very tender.

Fittonia. Two species, *F. argyroneura* with elliptical leaves netted with silver veins and *F. verschaffelti* with similar shaped leaves netted with coppery red, are cultivated. They require heat, shade and moisture and are fine for ferneries.

Furcraea. Succulent plants resembling Agaves but the flowers are more showy. *F. cubensis* has green leaves; *F. gigantea*, *F. tuberosa*, *F. beddinghausi* and *F. pubescens* are fine. *F. lindeni* is a splendid plant of great size with striped leaves. All are from tropical America and are tender except *F. longaeva*.

Geranium. See Pelargonium.

Gesnera. A genus of lovely plants from the American Tropics, all of which need a moist atmosphere and shade. They might do in fern pools.

Gladiolus. Summer flowering plants, mostly from South Africa, the roots being corms. MacLaren at Fernandina and Pleas at Chipley report success with them. Here they are not very successful.

Gloxinia. Beautiful, delicate plants allied to Gesnera and requiring the same treatment. It is probable that they would grow in ferneries and on the walls of fern pools. It would be well to dig up the tubers of both genera when the plants die down and keep them rather dry during winter.

Gynerium or Pampas Grass is now *Cortaderia argentea*. It does well in the upper part of the state but I doubt if it will flourish here.

Gynura, Velvet Plant. A sort of second-rate plant, one of the kind you put in an out-of-the-way corner where you don't want to put anything else. Its leaves are covered with velvety purple hairs and it has tassel-like, yellow flowers; one of the things that are hardly worth keeping and yet just a little too good to throw away.

Hedychium coronarium, also *H. gardnerianum*. Garland Flowers. They are fine, tall plants with canna-like leaves and handsome flowers, the former white, the latter yellow. Both are from India and like rich, damp ground. The latter is the hardier of the two.

Heliconia. Plants allied to the bananas, with slender stems and curious flowers borne in spathes. There are three or four species grown of which *H. bihai* is best known. They should have rich soil, moisture and shade.

Heliotropium. The well known Heliotrope. Old plants of this become half shrubby and when they do well attain considerable size. I once had one reach a height of six feet here but generally they do no good.

Hemigraphis colorata is a pretty plant with purple leaves but is so tender that I can hardly carry it through the winter.

Hippeastrum, formerly Amaryllis. Glorious bulbous plants that generally do well in Florida. They grow best in rich, damp soil but succeed somewhat in good pine land with plenty of fertilizer and mulching. Nehrling raises his wonderful hybrids at Gotha under slats in the rich, moist border of a lake. They are superb, and *H. johnsoni*, *H. equestre* and *H. reginae* are also fine.

Hemerocallis, yellow day lilies, are old favorites in the north and do well in all but the warmest part of the state. So do the Funkias.

Hyacinths which generally flourish throughout the south are reported as doing finely at Chipley by Pleas and at Fernandina by MacLaren but Schnabel says they fail at Gainesville and Reasoner makes a like report for Oneco.

Impatiens sultani and its varieties are beautiful flowering plants which do fairly well in rich soil in lower Florida but are especially subject to root knot. I have seen splendid specimens at Rita on the south shore of Lake Okeechobee. When troubled with root knot make cuttings of the tops and burn the roots.

Iresine or Achyranthes are well-known plants with highly colored leaves, much grown at the north for bedding. They do fairly well here in good soil, especially when they are irrigated, but they are subject to root knot.

Iris do better in the cooler part of the state than in the lower end. Pleas states that they succeed at Chipley. There is a fine lot, probably *I. hexagona*, at Cocoanut Grove.

Jacobinia. The species of this and allied genera are in a sad muddle and names are all mixed up. *J. magnifica* is probably the old *Justicia carnea*. *J. velutina* is much like it but the leaves are velvety. The plant sold by the name of *J. coccinea* in Florida is not that. I haven't the literature to straighten out the tangle of the family Acanthaceae. There are several plants cultivated in Florida belonging to this family that I can not name.

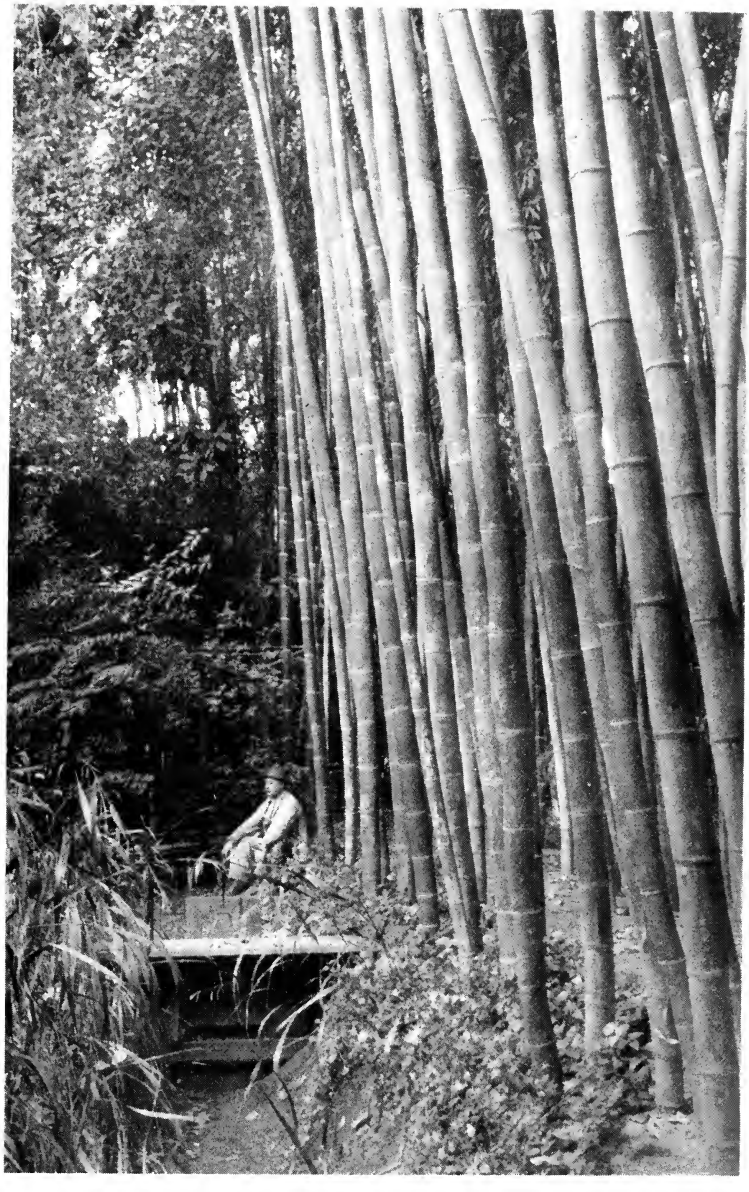
Jatropha multifida is a fine plant with palmate, dissected leaves, cut something like those of a rose Geranium, and cymes of vivid, coral-like crimson flowers. *J. curcas*, French Physic Nut, is a soft-wooded plant, sometimes almost tree-like, which has ornamental foliage. The fruit is very poisonous.

BAMBOO IN CUBA.

The common bamboo, *Bambusa vulgaris*, is abundant in Cuba, and forms one of the most picturesque features of the landscape. It is widely grown in many tropical countries and succeeds quite well in south Florida. (Fig. 40)

A CUBAN AIR PLANT.

An immense epiphyte from Cuba, probably a *Hohenbergia*, growing at The Sentinels. Since this photograph was taken the plant has flowered. (Fig. 41)



PHYLLOSTACHYS PUBESCENS.

A group of the giant timber bamboo of Japan, at Bakersfield, California. It covers several hundred square feet and originated about fourteen years ago from a single plant which the owner, Dr. William Tevis, bought of a Japanese gardener. The culms are over fifty feet high. (Fig. 42)

Justicia. The books are so much at sea about this genus that I cannot do anything with it.

Lantanas are bedded out in the north to some extent and are perfectly at home in Florida, at least throughout the lower half of it. There is a considerable range of color, white, yellow, orange, pink, purple and red, with various combinations of these. They are at their best in good pine land in full sunshine if well fertilized.

Leonotis leonurus has loose whorls of orange scarlet, tubular flowers in long spikes, is a quick grower and blooms at intervals throughout the year. It is quite hardy and is one of our most desirable plants.

Lilium. Nehrling, who has had large experience with bulbous plants in Florida, does not report favorably on most of the species, and those with which he has succeeded require such careful treatment that it is doubtful if they will ever become popular with us. He recommends *L. henryi*, bearing orange yellow flowers, as one of the best for Florida. He has also found some of the funnel-flowered lilies which flourish with proper treatment, such as *L. neilgherrense*, *L. sulphureum* and *L. nepalense*. He recommends that a bed three feet wide be dug, that old logs be put in the bottom and the rest filled with muck, leaf mold, cow manure and charcoal. It should be kept well watered.

Maranta. Closely allied to Calathea and requiring the same treatment.

Musa. Besides the fruiting species a number of strictly ornamental ones are in cultivation in the north. I have tried most of them here repeatedly and nearly all have failed. *M. rhodochlamys* is a fine, upright grower and does well, so do *M. martini* and *M. gilletti*. *M. ensete*, the great Abyssinian Banana, has entirely failed in repeated trials. The same is true of *M. rosacea*, *M. sumatrana*, *M. vittata*, *M. superba*, *M. coccinea* and *M. textilis*. Like all other bananas the ornamental species need rich soil, heat and moisture.

Nipa fruticans. I have planted a number of seeds of this superb plant, which closely resembles a palm, in my brackish swamp but it would require all the police on the New York force to keep the land crabs from destroying the young plants. I put

stakes closely around them but they climbed up and got over, I made them higher but they tunnelled under like Andersonville prisoners. I put barrels with both heads knocked out over them, thinking that if they didn't see the plants they wouldn't be tempted but I learned that a land crab doesn't need temptation to lead him into evil: they tunnelled under and came up inside just the same. I have two plants left for which I have hope but not confidence. This plant ought to do well in low ground in lower Florida that is free from crabs and it is certainly a superb ornamental.

Oxalis. There are a number of species in this genus and some of them are quite ornamental. Several of them ought to do well in the cooler part of the state but they have not entirely succeeded with me. Those that grow well are shy bloomers.

Panax. Ornamental leaved plants, sometimes half shrubby, a number of which do well in the warmer part of Florida. They generally have delicate, often cut leaves, sometimes like those of ferns. *P. aureum* has leaves with yellow and greenish markings; *P. victoriae* is marked with green and white; *P. plumatum* and *P. excelsum* have fern-like foliage. They are all tender and, I think, do better with shelter and a little shade.

Pandanus, Screw Pine. I write the name Pandanus with a good deal of satisfaction for the genus is a superb one and completely at home in the more tropical part of the state. This is especially true of the limestone region of Dade County. They are all natives of the tropics, mostly the Malay Archipelago. They have long, folded leaves which are generally spinose, and they are arranged along the stems in spirals. *P. baptisti* forms immense clusters and has long spineless leaves which are elegantly striped with yellowish. I have in my back yard a plant fifteen feet high and thirty feet across that has never had any fertilizer or care, this in ordinary pine land. It resembles a gigantic clump of ribbon grass. *P. sanderi* does finely here and holds its coloring better than *P. veitchi*. *P. candelabrum*, the striped variety, is fine but tender. *P. odoratissimus* has slender, recurved leaves and fragrant flowers. *P. utilis* forms such a trunk that it is tree-like and makes one of the most striking plants we grow, its immense heads of seed being seven or eight

inches in diameter. *P. pacificus* has beautiful broad, bright green leaves and is a superb plant but being one of the tenderest things we cultivate, it is almost impossible to winter it here in the open. There are several others in my collection, all of which do well.

Panicum excurrens is a grand, broad-leaved grass whose foliage resembles the first leaves of some of the palms.

Pedilanthus tithymaloides has bright red shoe-shaped flowers and will grow without attention in lower Florida.

Pelargonium. This includes all the so-called Geraniums, few of which really do well out of doors in Florida. The scented species, however, grow better than those in the zonale section.

Peperomia. These charming plants do well in pots or damp, shaded spots, such as the banks of fern pools. I once grew a fine plant on a live oak in the hammock. It is probable that the species are epiphytic.

Phlox. The perennial species succeed in some places in northern Florida and fail in others.

Phormium, New Zealand Flax. I have tried several species repeatedly in different locations and they have invariably failed. Schnabel reports that they are tender at Gainesville.

Phytelephas, Ivory Nut Palm. Not a true palm but much resembling one. I have had several of these which are at home in pots but not in the open.

Pilea. Pretty little plants with watery stems and neat foliage. Good in a damp, shady place.

Pleroma. This plant has magnificent purple flowers, is from Brazil and is probably tender. It does not do well on the limestone soil but flourishes with Reasoner at Oneco.

Ravenala madagascariensis, Traveller's Tree. A glorious plant which forms a stem often twenty feet high, but constantly throws up suckers so that, unless they are cut out, it becomes a great clump of immense foliage. It is related to the banana and probably has the largest entire leaves of any plant grown. Many of those here are three feet wide and nine feet long and with the great stem reach a height of twenty feet. A time-honored story has it that this tree grows in the desert and that the perishing traveller may pierce the bases of its leaves and obtain water. Ellis

states that it grows in damp places where water is abundant so there is no need to get water from it. Thus perishes another cherished legend. *R. guianensis* from tropical South America is a smaller plant. It is doing finely for me. They are among the most striking plant productions of the world.

Rhoeo discolor. A hothouse herb from Central America with rather large, long, sheathing leaves which are crowded on the short stem. They are deep, metallic green above, bright purple below, are fine for rockeries, and may be grown in sunshine or partial shade. It is tender.

Richardia, Calla lilies. These are cultivated more or less throughout the state, often as pot plants and occasionally in the open as far south as Little River.

Ruellia. *R. formosa* is an old favorite at the north, and here it would probably flourish out of doors in a partly shaded place in good soil. I have long grown it here in pots for its pretty scarlet, funnel-shaped blossoms. *R. makoyana* has prettily variegated leaves and carmine flowers,—give it a moist, shaded place.

Russelia juncea is so perfectly at home in this vicinity that it is running wild in places. It bears quantities of bright scarlet, tubular flowers all the year. It is a native of Mexico and is tender but if cut down with frost would spring up again.

Sanchezia nobilis is a noble plant from Ecuador, with large, shining leaves. The variety glaucophylla has pale yellow margins along the veins and midrib. The flowers are attractive enough to make it one of our most showy plants but it is very tender.

Sanseviera. Attractive plants with thick and long radical leaves which are variegated with white or yellowish. They all increase by underground suckers with such rapidity that if once turned loose they soon take possession. It is better to grow them in pots.

Saxifraga sarmentosa. Who among the old time cultivators of house plants does not remember the dear "Strawberry Geranium" which was grown as a basket plant? It is somewhat hardy but has invariably failed with me. I presume it dislikes the lime in the soil.

Schismatoglottis. Handsome Aroids which prosper with me, either in a slat house or fern pool. The only thing to do is to give shade and moisture and keep them from frost.

Selaginellas are delicate plants requiring shade and moisture. They are fine for ferneries.

Sericographis. Plants of what are probably *S. pauciflora*, grow about here occasionally; they have opposite, lanceolate leaves and orange scarlet, deeply cleft flowers. It is a tender plant which likes moist, rich ground.

Strelitzia, Bird of Paradise Flower. A small genus of noble and striking plants from South Africa. They have long leaves arranged distichously and very curious, bird-like flowers developed from a spathe. *S. reginae* grows to a height of five feet and has orange and blue flowers, *S. nicolai* is very much larger and has immense leaves while it bears bluish and whitish blossoms. Both are doing well for me in the edge of the hammock and no doubt they would do even better on rich, moist soil.

Strobilanthus. *S. anisophyllus* and *S. isophyllus* have attractive purplish blue flowers; *S. dyerianus* has elliptical leaves gorgeously variegated with iridescent purple, blue, lilac and rose. It likes best a partial shade. All are tender.

Talinum patens. The variegated variety of this is sometimes cultivated in lower Florida. It is a pretty little plant which Reasoner says prospers at Oneco, but is here subject to root knot.

Torenias are lovely little plants which bear a profusion of yellow or blue flowers with yellow and black throats. They are from the Old World Tropics and are tender. They do best in rich, moist soil, though sometimes they succeed in dry land. In northern and middle Florida they make good annuals and here they might be sown in the fall for winter blooming.

Tropaeolum. The Nasturtiums are everywhere well known and succeed nicely in this state. Like the Torenias they might be grown in the colder part of the state as annuals. Here they grow also in summer if partly shaded. Give them plenty of water and rich soil.

Vallota purpurea requires the same treatment as Hippeastrum. I have had this plant several years and it has shown a disposition

to flourish but the lubber grasshoppers have cultivated it so assiduously that it has never succeeded.

Victoria. I do not know that these grand aquatics have been cultivated in the state but see no reason why they should not succeed.

Verbena. From what I can learn Verbenas are satisfactory in the northern part of the state though in the more tropical region they do not go through the summer very well. They are good as annuals here. At Rita I saw fine Verbenas in October which had grown beautifully all summer.

Vincas might almost be called beautiful weeds in South Florida. The Madagascar Periwinkles are certainly as much at home here as in Madagascar.

Violets. These do best in rich, well-drained soil in partial shade with a considerable amount of moisture and should succeed over the cooler part of the state. In the lower portion they may be grown in slat houses or in a cool, shaded situation out of doors.

Xanthosoma lindeni is a superb plant with sagittate leaves whose veins and midrib are white. *X. javanica* has immense sagittate foliage tinted purple. The great Elephant's Ear (*Colocasia esculenta*) is nearly related. The literature of these groups of Aroids is badly mixed and most of these plants have been sold under a variety of names. A plant called *Colocasia illustris* has dark green leaves shaded and blotched with black. All of these need the richest of soil, plenty of moisture, heat and some shade for their best development.

Yucca filamentosa is a hardy, attractive plant, native of the state and will flourish in sandy soil. It is widely grown in the north.

Miscellaneous Epiphytes.

I give here a list of epiphytes which I have cultivated in my hammock, not including Orchids, and I will remark that almost everything that has been tried has succeeded. There is little danger of frost in the hammocks of the lower part of the state; as Reclus has shown, the temperature of forests is about two and one-fourth degrees higher in winter than in the surrounding open country and the same amount cooler in summer. There is

probably even greater difference than this in our region so that our hammocks are finely adapted to these plants. They may be fastened to trees in the same way as recommended for Orchids. Water should be kept out of the leaf bases of most of the Bromeliads until they are established.

Aechmea. About sixty species of plants from Tropical America belonging to the Bromeliads or Pineapple family. *A. fulgens* is a superb plant of which I have a fine example; its broad leaves end abruptly; they are purplish green above and purple below and in summer bear heads of coral red calyces with blue corollas. *A. mariae-reginae* has broad green leaves; the scape is clothed with pink bracts and the flowers are blue tipped but change to crimson.

Aeschynanthus. Tropical plants, mostly epiphytes, often climbing and bearing brilliant small flowers. *A. grandiflorus* is doing well for me.

Anthurium. Some of these are more or less epiphytic and can be grown on the trunks of trees in damp hammocks or the walls of fern pools.

Begonias. A number of these grow on moist, rocky walls in tropical forests.

Billbergia. A large tropical genus, several species of which are luxuriating on my trees. *B. nutans* has drooping flowers, sepals reddish, petals yellowish green, both with blue margins, blooming at intervals through the year. I have other unnamed species.

Caraguata lingulata, Heart of Fire. The leaves are pale, grayish green when the plant is at rest but when the flower stem springs up they turn a brilliant red until the season of blooming is over, then becoming green again.

Cryptanthus zonatus. A prettily variegated plant, the leaves being reddish green barred with silvery bands and silvery below. *C. acaulis* has undulated leaves which are greenish red with two longitudinal paler stripes, the whole with metallic shadings, —a very beautiful plant.

Epiphyllum truncatum is a well-known window and conservatory plant in the north, where it is called Crab's Claw and Christmas Cactus. Here it thrives on trees in the hammock.

Karatus spectabilis. A superb epiphyte with strap-shaped, blunt leaves which are tipped with red, rich, reddish green above and darker below.

Peperomias may be grown on trees in a damp place.

Pitcairnia. The species of this genus succeed on trees and rotting stumps.

Rhipsalis. *R. cassytha* from the West Indies (also the Old World Tropics) is growing splendidly on trees for me. It is one of the Cacti, and the only one believed to be indigenous to the Old World.

Tillandsia. A large genus, well represented in Florida and abundant through the American Tropics. Several of these tropical species are already cultivated and I have little doubt that all could be in the lower part of the state.

Vriesia splendens. A beautifully marked Bromeliad which has done well for me.

Annuals.

I will close this list with a few words about annuals. So far as I can learn nearly all the common species grown at the north may be grown in summer in the cooler part of the state, where quite a number of the hardy perennials flourish. As we go southward in the state climatic conditions change somewhat and when the more tropical part is reached the annuals are less successful in summer. However, I have seen a very good showing of Zinnias, Petunias, Snapdragons and *Phlox drummondi* grown in Lemon City in July and August on new pine land without irrigation. There is a beautiful flower garden on Big Pine Key at Mr. J. T. Knowles' place where quite a showing of annuals was noticed in May. As a general thing, however, these plants fail in lower Florida during the warm season.

In this region the ground may be prepared in September or October and it would be an excellent idea to work in some muck into pine land. Plenty of cow manure is a fine thing for annuals; if this cannot be had use stable manure. It may be well in some cases to plant the seeds in small pots, later turning the ball out and putting it in the ground. Planting in boxes is a good idea;

when the seedlings are two or three inches high they can be put out in the ground.

In order to succeed in pine land with annuals in winter in lower Florida it will be necessary to use some water. If one has an irrigating plant he will have no trouble; if not, a well with a force pump and hose will solve the problem on a small scale. Usually a considerable amount of rain falls during the drier months but hardly enough for annuals on high land. One can, when dry spells occur, do something in a small way for annuals by carrying water.

Pleas gives the following list of annuals which are successfully cultivated at Chipley. Petunias, Cosmos, Sweet alyssum, Candytuft, Nasturtiums, China pinks, Marigolds, California poppies, Sunflower, Larkspurs, Cypress vine, Standing cypress, Celosia, Coreopsis, Portulaca, Balsams, Globe amaranths, Sweet peas (with protection), Mignonette, Thunbergia, Zinnias, Gerardia, Periwinkle.

INDEX.

The various species are discussed or described on the italicized page.