THE FAIRCHILD TROPICAL GARDEN

A MEMOIR

by

William Lyman Phillips

My connection with the Fairchild Tropical Garden began in 1938. I was at that time Superintendent of CCC Camp Florida SP-I. This Camp, assigned to the National Park Service and sponsored by the Dade County Park Department, had been working for about two years on the Matheson Hammock Park. A major part of my duties was to lay out and design the various work projects, all of which were subject to the approval of the National Park Service. On some unrecorded date in 1938 Mr. A. D. Barnes, Superintendent of Dade County Parks, told me that Col. Montgomery had purchased land adjoining the Hammock on the south, proposing to start a botanical garden on it, and had decided to convey a part of it to the County, with the proviso that it be developed as a part of the botanical garden. The proposal was welcome because it would provide opportunities for more CCC jobs.

Soon after that, Mr. Barnes came to my office accompanied by Col. Montgomery and his close friend, Noel Chamberlin, a landscape architect from New York, and W. A. Cook, a landscape architect who was working at the time for Mr. Barnes. I have little recollection of that meeting. I do remember that Mr. Cook showed us a plan study that he had drawn up hastily for the occasion. In some way I took over the planning job, probably on the principle that since I should have to justify the plan to the N.P.S., I could do that more readily if I made it myself.

Thus the planning of the Garden originated. I remained with the Camp until May, 1941, some three years after the beginning of the Garden work. During those years I prepared, with the valuable help of my assistant, Raymond C. Ward, a number of plans for the Garden as a whole and for various details, all of which were duly approved by the N.P.S., and were carried out completely and exactly insofar as the upland portion of the Garden was concerned, and on the County property. On the lowland part, only the lakes touching the foot of the slope were dug by the Camp. The CCC plans can be seen in the files of the County Park Department. Between May 1941 and June 1942 I worked directly for the Park Department making studies for the Haulover and Crandon Park layouts, but by agreement continued to have authority over whatever was done on the County side of the Garden, and was consulted to some extent on what was done on the retained portion, or Palmetum. In February, 1943, Col. Montgomery retained my services as landscape architect for the Garden, in which retained status I remained until March 6, 1954. During those years I exercised a close control over most of what went on throughout the Garden, over new plantings, buildings (and building plans), and over the development of features such as the Palm Glade, Amphitheatre, Moos Memorial, and the Founders' Court.

This, then, is the historical record. The motivation of the plan requires a more elaborate explanation. Motives can be found in general ideas as to the kind of thing aimed at, in the site—its size, shape, topography—and in existing vegetation worth retaining permanently or temporarily.
I recall no positive help from anybody regarding the character the Garden should have. Col. Montgomery expressed no opinions other than that there should be the palms on the one side and "flowering trees" on the other, that the place should be a garden rather than a park, and that palms looked best standing on a smooth lawn. I myself had had no previous experience with botanical gardens, had visited very few, and had taken very little interest in those I had seen. It seemed to me, however, almost axiomatic that a botanical garden is distinguished from a park by two things: first, that it attempts to exhibit a wide range of flora, and, second, that it does this in an orderly way, by groupings that illustrate botanical relationships, either taxonomical or ecological. It may look like a park or like a garden—if one cares to make such fine distinctions—and it may give more consideration to beauty than to science, but the scientific purpose will be present in some degree at least, even if only by the labelling of species.

I assumed from the first that grouping by families was the logical and right procedure. In this I believe I was tolerated rather than supported. Neither Col. Montgomery, who deplored botany, nor Dr. Fairchild, who was impatient with mere botany, nor Dr. Barbour for some other reason—none of these showed much interest in how or where plantings were made. Col. Montgomery, to be sure, was insistent that the Palm Family be grouped by itself, and would have obliterated everything else in the Palmetum, but he gave no heed to the genera. Nor did Dr. Merrill, curiously enough to me, seem to think it important to group the families; in nature you rarely found several species together, you found them scattered and intermixed with other things, and he saw no reason why genera and species should not be intermixed in a botanical garden. Still, the group system seemed to me to constitute one clear motive for design in a collection which was to be built up gradually through the years. I clung to it and have yet to see that it has been anything less than an advantage.

With this basic decision, the first step was to decide what principle families would be exhibited, and how much space might be devoted to each. The List of Plants Growing in the Botanical Garden of the Atkins Institution, Soledad, Cuba, was of immediate assistance, containing as it did a list of genera according to families, growing in a region of cultural possibilities much like our own. I should note here that I had proposed to Col. Montgomery that the Garden should live up to its name and should contain only tropical plants; that we should not include extratropical species, common further north, even though they might grow well enough at Miami. He had heartily endorsed this principle. There were some 160 families shown in the Atkins list, but it was evident that there would be no need to provide separate plots for each of all these 160 families; some contained only one or two genera or species, some were mere herbs or minor shrubs which could be planted as undergrowths. It was decided to designate areas mainly for families containing trees and large shrubs. But at least two of the families—Leguminosae and Moraceae—were likely to furnish so many genera and species, and many of the trees were so large, that there was no hope of providing adequate space for them on our limited extent of ground. Moraceae, containing the very large Ficus genus, and mostly very large trees capable of almost unlimited growth, could obviously be given only a token representation.
It is to be noted in connection with this discussion of space, that the upland portion of the Garden (excluding the salt flats) amounted only to about 23 acres, of which more than half was to be devoted to the Palmetum; and that any planting ground which might be created by fills on the lowland would not be suited to the run of upland vegetation. The space limitation was therefore severe. I proposed at the start that the County acquire a strip of land lying just south of the Matheson Hammock property between the Old Cutler Road and Red Road, and that this be made an annex to the Garden. It would not only provide additional planting space and more favorable growing conditions for many species, but would serve as a corridor leading to the arboretum at the west end of Matheson Hammock, making that, in effect, a part of the Garden. The Garden plan still shows a proposed crossing and entrance to the corridor. Unfortunately a decision to negotiate this purchase was arrived at too late and the property was acquired by the Girl Scouts during the War years.

The actual planning of the garden was of course very much influenced by the plot of ground that had to be dealt with. Here was a tract 1320 feet wide extending east from the Old Cutler Road a mean distance of about 2700 feet. It was divided into a northerly half under one ownership (Dade County) and a southerly half under another (The F.T.G. Association). By a later deed the portion of the southerly half lying on the marine flats was added to the County holding. The County then held about 66 acres, the Garden about 13 acres.

The westerly end of the total plot, a strip about 500 feet wide on the northerly half and 800 feet wide on the southerly half, lay on the Miami Rock Ridge. This we call the "upland", to distinguish it from the quite different "lowland" or marine flats. It is fairly level at Elevation 18, more or less, but has a strong slope or escarpment face 100-200 feet wide joining it to the lowland. It is in reality the edge of an ancient marine terrace which appears as an abrupt cliff at other points along the Biscayne Bay shore. The escarpment was the boldest topographical feature and strongly influenced the planning.

The problem was to evolve a unified plan for the overall tract without distinction of ownership, without proposing work projects that would overlap them. It was decided to put the public entrance and parking place near the dividing line of the two properties, and to extend from that entrance to the east an esplanade, or alley terminating in a terrace thrust out over the lower edge of the escarpment and overlooking the entire lowland. From the alley and the overlook terrace, lines of movement would be developed left and right linking the two separately owned areas. Aside from this formal element, an informal treatment was envisaged throughout, because the principle of informality would demand no specific form or character in the vegetation masses. The growths could vary in kind and size through the years without detriment to the general effect. Informality offered the utmost freedom in the choice of vegetation, was compatible with any stage of growth; whereas formality would limit the choice, would impose demands for specific size and form. Certain formal elements were later proposed--the Amphitheatre, the central panel of the Palmlglade--for what seemed to be good and sufficient reasons; but these illustrate the point just made, that their realization demands a uniformity of vegetation which has little to do with the general
purpose of forming a botanical collection. They do, however, demonstrate the use of particular species for compositional purposes.

Of physical controls over the planning, other than the shape of the plot and the topography of upland, lowland and slope between, there were few. A good many tall pines were scattered over the property; these were ignored as not being likely to persist in the presence of cultivation. There were many live oaks, large and small, some of which were allowed to remain, but none of which—except the close stand on the Palmetum escarpment—particularly influenced the planning. A number of old mango, avocado and sapodilla trees on the Palmetum site did affect the layout to some extent, as did three sink holes, one in the Palmetum and two on the County side. The escarpment had a definite influence, particularly that on the north side of the Overlook. Since the surface was scarcely more than bare rock, a system of terraces was worked out, stone walls retaining earth fills, forming plots elongated along the sidehill. Since the whole north portion of the upland was exposed to severe and damaging northeast winds in the winter, these elongated plots would, when filled with trees, form an effective windbreak. To make the windbreak more effective the passages between plots were made devious, or turned so as to deflect the wind. The oak stand on the Palmetum escarpment provided a sufficiently good windbreak on that side.

The main features of the plan for the upland were a more or less well-defined peripheral road, and the Overlook walk which, crossing the peripheral road just inside the entrance, where strong views open to left and right, continues to the Overlook terrace from which radiate lines of movement and vision. The plan for the lowland is constructed around two long axial views related to two standpoints on the upland. The entire plan is essentially an articulated complex of openings. The necessity of open spaces was obvious for without well defined openings no sense of organization, no scenic effects, would be possible. They were necessary in order to assure light to bordering trees and opportunity for growth. Open spaces, furthermore, could be compared to rooms and corridors in a picture gallery, where the walls carry the things displayed. The more well developed, the more effective would be the use of the land. Space limitations, on the upland at least, imposed a small scale of openings; to a great extent they could be no more than lanes or walks. Dominant openings were provided on both the north and the south portions, but even these can hardly be called large—the northerly one, though 500 feet long, has a greatest width of no more than 100 feet. The smallness of the openings was not thought to be disadvantageous aesthetically, for in Florida small landscape units and close views of vegetation are apt to be more attractive than wide views, and walks in shade more agreeable than walks in sun. By way of contrast, the proposed lakes on the lowland would provide much larger openings than any possible on the upland, and deeper, bolder views. The lakes, moreover, would constitute inviolable open spaces. The large parking field, though it has had relatively little use thus far, has great value as one large piece of open ground whose openness is not likely to be threatened.

Ideally, from a purely horticultural point of view, it might have been better to provide for tree plantings by making the plots narrow strands or belts, so narrow that no tree would stand surrounded on all
sides by others. There was plainly not enough space to permit that as a rule, and making it a rule would have led to a certain monotony. The plan, though a compromise in this respect, still, in one way or another, by openings of appreciable size, by a few broad passageways, by a great deal of lake shore, provided extensive opportunities for the free or relatively free growth of trees.

The plan as it stands has no marked appearance of organization. To the casual eye it might appear to be a rather aimless scramble of lines and shapes. There are, nevertheless, clear purposes and principles underlying it, principles aimed at assuring certain aesthetic qualities regardless of what vegetation may be present, namely:

Variety. It will be noted that the openings and separating spaces between planting masses are never twice alike; they differ in length, in width, in shape, in orientation, in character (formal, informal). Thus, vision along these openings is constantly varied both in what is seen, and, by changes in lighting, how it is seen. Here are powerful measures for forestalling monotony. Wherever one walks, some new, some slightly different view at least, unfolds before him. From few points can any great portion of the Garden be seen, and the visitor is led on from point to point in a well-justified hope of discovering a new kind of interest. Any shape or line could be made use of to contribute to this result, whether curvilinear or rectilinear. Nor would this result, as I have said, be dependent wholly on what might be planted, or in what stage of growth it might be seen. The openings were and remain the vital elements of the plan.

Consistency (Unity, Harmony). The pattern, overall, is of a piece. The lines and shapes are dominantly free, casual, irregular, naturalistic, favoring if not absolutely assuring a natural randomness in planting. The plan aims at effects generically similar, specifically different.

Contrast. This quality, so indispensable to the existence of anything normally regarded as landscape, arises in part from conditions associated with variety. There is contrast between large and small openings and masses, between sunny and shady passages, between the close, intimate views on the upland and the broad open views on and over the lowland. Contrast may be found in the nature of the two points from which, on the high level, views can be had over the lowland. The Overlook is thrust out over the lower edge of the escarpment; the view from it is panoramic. The Palm Glade terrace is set back on the upper edge of the escarpment; the view from it is narrow and deep.

The Plan of the Palmetum

I define the Palmetum as that part of the Garden lying south of the Overlook walk and extending east from the Old Outler Road to the foot of the escarpment. Whereas the plan of the rest of the Garden was carried out in quite strict accordance with the CCC plans of 1939-40 (including the lakes so far as they have been dug), and in a continuous operation, the Palmetum was developed more slowly and the plan underwent considerable change. The changes were brought about by building projects and by uses
and activities not clearly foreseeable in the early years.

It was, to be sure, anticipated that the Garden Staff, and the horticultural and maintenance services would be mainly quartered in the Palmetum. The driveway was thought of as a service road. But since the Museum, Garden House, staff offices, plant houses, refreshment stand, gift shop, and equipment shed, etc., have been tied onto the service road, it has become the main entrance to the garden; the other entrance has lost meaning and use, and the pattern of visitor circulation has little of a planned character. Were it not for the Tramette tours, a good many visitors would probably never see the north side of the Garden.

The early plans indicated a group of buildings near the center of the Palmetum tract, no very exact idea being present as to just what would be needed. When definite building needs became apparent, and money with which to build became available, sites were chosen according to what then seemed expedient. The first building constructed was a rough wooden shed for the storage of tools, equipment and fertilizer. I say the first constructed, for there was standing on the ground, just east of the present turn-around, an old shed with stone walls and wooden roof. It served to house a pump and was the office of the first Superintendent, K. Dahlberg—and a poor sort of office it was, particularly when the gasoline driven pump was operating. The stone shed was demolished after the museum was built. This first shed of which I speak was erected near the east end of the present lath house, in a then undeveloped area. From that beginning, which tended to establish a service area, the present service group developed. The lath and glass houses were built in 1946, the equipment shed in 1947. The original wooden shed was moved to the northwest corner of the lath house, where it was first used as a potting shed and tool house and later transformed into a gift shop, part of it later on becoming a refreshment stand.

In 1949 I prepared a plan and proposal for an Orchid House, a fanciful structure, irregular, partly roofed, partly open. The plan was printed and distributed with an appeal for donations which did not evoke the hoped for response. However, in 1950 a part of it, a plant house especially designed for orchid culture, was built adjoining the glass house on the west, and in 1952 an addition to this was built on the north side along with a potting shed and further revisions of the old shed.

This plan of 1947 showed a proposed visitors' quarters to the northeast of the lath house, and to the northwest of that a superintendent's house. The idea of a visitors' quarters was short lived. The indicated site was assigned to an office building, the need for which was becoming more and more apparent. It was not until 1952 that the construction of the office building became possible. Russell Pancoast was the architect. In the same year the donated Director's House was built—design also by Pancoast—and also a public toilet building located in a tree clump just to the northwest of the Gift Shop, which I designed.

The plan of 1949 contemplated shifting the service road to the east of the office building, and removing all vehicular traffic from the area west of it. This relocation is, as a matter of fact, indicated on the map included in the current Catalog of Plants. The necessities of the
Tramette circulation, including the control of the Tramette by personnel of the Gift Shop or Refreshment Stand and the proximity of the public toilet, have tended to freeze the present rather fortuitous arrangement. The situation is unsatisfactory in that there is a confusion of visitor accommodations with service activities. The service road, originally thought of as only a service road, has become the main route of pedestrian access to the Garden—being the only firm walk—and it leads them directly to and through the service area, not to the most favorable line of circulation.

When the Director's House was proposed in 1953, the question of where to put it was extremely perplexing. The site for a superintendent's house suggested in 1949 was unsatisfactory in that no adequate private grounds could be attached to it, and the going and coming to it at any time of day or night would be objectionable. It plainly needed to be adjacent to the Highway, and to have free access to the Highway. The site decided on, in the southwest corner of the Palmetum, seems to be entirely satisfactory. It affected the plan only to the extent of eliminating Plot Pl, which contained nothing very valuable; it attached the house to the Garden without doing the latter any violence, without encumbering it in any way.

The Museum (1939-40, Robert Fitch Smith, Architect) was the first of several testimonial or memorial structures and features. Its location seemed an obvious choice. The Garden House (1946, Robert Fitch Smith) was first studied for a location on Plots 64 and 65, where, it was thought, its proximity to the large parking field would be advantageous. That site was found to be excessively costly to build on, and it clearly presented inconveniences with respect to administration, oversight and routine use. The site settled on was chosen partly because it avoided those inconveniences, and partly because a building of auditorium shape would fit in there with as little intrusion into the Garden as could be hoped for.

The creation of the Liberty Hyde Bailey Palmglade, dedicated in February, 1942, brought about one of the major changes in the Palmetum plan. The site was the live oak hammock occupying the escarpment slope, shown on the early plans as merely subdivided by some meandering walks, with a central cut looking down the south lake. The story of its beginning is amusing but throws little light on the significance of the name. Some time in 1941 Dr. Fairchild called me up and said, "We've got to make a palmglade in the Garden." I asked, "what is a palmglade?" "I don't know," he said, "but it's a good word. You go ahead." Col. Montgomery, a little before this conversation, had said he would like to have a cut made through the oak woods so that he could see the lake from his desk in the end of the Museum wing. Such a cut would have had an angular relation to the Lake axis and would not, by itself, have been a very attractive piece of planning. Looking over the map with a view to providing something that could be called a palmglade, it occurred to me that by making a similar cut to the south and symmetrical with the first on an axis extending down the south lake, and by clearing away the woods between, I would have a trapezoidal opening with some suggestion of design. The narrow east end of the trapezoid would not let in much of the unwanted northeast wind, and the broad upper end would make possible a standing
place where people could take in the view down the lake. The ground between the flanking walks (the northerly one of which would give Col. Montgomery his view) could be dug out, carrying the lower level back to the upper edge of the opening, and the sunken place might afford favorable growing conditions for certain palms. The sunken portion could not be filled up with large palms (as it now is) without invalidating the viewing purpose; thus the opening alone could not constitute a palmlade, no matter how broadly one might interpret that term. However, by cutting through the woods two diagonal avenues centered on the viewing position, the whole plot would acquire a certain integration and might then be regarded as a palmlade. The sides of the trapezoid could be lined with palms, and the avenues as well, and the oak woods could be underplanted with shade-demanding species of palms. The idea needed only to be worked up with appropriate walling, steps, etc., and it was forthwith adopted. Most of the stonework was done by a mason named Henderson under the direction of Roy Mathews, who, as I recall, did some of it himself. The formal axial approach to the terrace from the turn-around, indicated on the map, remains to be done. It requires a slight amount of regrading in order to get rid of an unpleasant hump in profile that the ground now has. I still think that this development would be desirable.

The other memorial features in the Palmetum are the Elizabeth Hambley Patio, the Founders’ Court, and the Moos Memorial. The Patio (1953) and the Founders’ Court (1954) join up the Museum and Garden House in a satisfactory architectural way and add a special kind of interest to the Garden. The "free forms" of the Court were strongly indicated, if not imposed, as a means of accommodating the movement of pedestrians and for reconciling the slight but troublesome differences of level encountered. The Moos Memorial (1948) exploited the possibilities of the one sink hole in the Palmetum, possibilities which had been long talked about but neglected in the absence of funds to do anything especially fine. The sink was deepened to the extent thought possible without running into drainage difficulties. The sandy sides were steepened and stabilized with rock work—little natural ledge having been uncovered—with the objective of creating a dump, sheltered spot bordered with massed tall palms, where a particular lushness of vegetation would be possible.

Memorials Outside the Palmetum

The Pergola of the Semple Vine Collection was actually a CCC job, as were the various free-standing vine supports. Mrs. Semple merely contributed towards the purchase of plants. A collection of vines was one of the things in which Dr. Fairchild was particularly interested at the start. Much discussion took place concerning ways to support and display vines. A pergola was one obvious way. Its location was discussed with Noel Chamberlin, and a final unqualified agreement was reached to run it along inside the Cutler Road wall. Mr. Clarence Dean, the architect, made valuable suggestions on details of the Pergola. The curious laminated pieces of oolite with which the stone pillars were made, came from a pit on LeJeune Road a little way north of the Coral Gables Canal. Similar stone may be seen on the walls of the canal near the bridge. For free-standing vines we erected poles with pipe cross-pieces variously arranged. Few of these survived the hurricanes that were frequent in the early years of the Garden. Tripods of poles were then tried, but if these were more stable, they were not immune to decay, and the free-standing vines have
tended to disappear. The problem of displaying vines in all of their potentialities—some of them being capable of almost unlimited growth—seems to have been rather discouraging. And interest in vines seems to have just about disappeared; I doubt if any have been planted for a long time.

The Garden Club of America Amphitheatre

I am not sure about the origin of this feature. It is shown on the CCC Master Plan of 1940, and Mrs. Wait records that the proposal of the Garden Club of America to bestow the income of their Founders Fund for 1940 on the FTG was made in 1939, and that Mrs. Cudahy came down in February, 1940, to decide on a project on which to use it. Yet this map of 1940 has the amphitheatre labelled as The Liberty Hyde Bailey Amphitheatre. It may have been specially designed as a memorial, or it may have been simply a make-work project that I invented on the assumption that an outdoor meeting place would be a good thing to have in the Garden. In any case the excavation and fill was done by the Camp or by County forces. I remember Roy Matthews working on the wall in 1941 or 1942, and Don Martin (Dade County Parks) built the Dais in 1943 and completed the causeway in 1944. The Garden Club of America award was spent on planting.

Noel Chamberlin Hibiscus Garden

This was proposed by Col. Montgomery in 1943. My first plan had it at the east end of the south lake, in plots numbered 87 and 91, the shapes of which on the present map reveal the general scheme of the Memorial. We set up stone posts to mark the entrance and did some planting of hibiscus, but the famous high-water hurricane of Sept. 15, 1945, knocked down the entrance posts and left the plantings in a ruinous state. Besides that, some of the ground remained persistently salty, to the extent that grass could not be got to grow. We decided therefore to set up the Memorial on the mainland, in Plots 17 and 59 and along the road south of those plots, as an underplanting to whatever trees might be there, and possibly to move it back to the original site in a few years. Some of the hibiscus that survived the storm of '45 on the original site have done extremely well, and some of those on the present site have not done well. There may, therefore, be something to be said for going back to the first site. On the other hand it is remote and might be little visited.

The Lowland

The plan here has never been appreciably altered. A slight change was made at the time the central lake was dug in 1952-53 by eliminating the arm of the south lake between Plots 81 and 84 and similar arms across the road; this in order to enlarge the parking field in accordance with Col. Montgomery's request. The pattern of land and water, developed on two long east-west axes, was merely such as might be expected to yield picturesque scenery, and the amount of water (excavation) such as might be expected to yield a sufficiency of fill. It was anticipated that the lowland would never be suitable for family groups, or at least many of them, on account of its saltiness. The thought was that here the aim
would be mainly to produce pleasant scenery. It seemed possible to permit driving on the lowland; hence the circuit road around the central lake, hence the forward-branching openings between planting masses, which assumed a normal anti-clockwise circulation. Whether public use of this drive will ever be feasible, whether the gate at the Matheson Hammock road can ever be left normally open, is a question. Misuse of the property by visitors having no interest in the Garden per se is certainly to be expected. Even the use of the parking field on special occasions is attended by difficulties. I shall say more about the lowland under the next heading.

**Planting**

Except in the early years of the Garden, when a systematic search was made for species of the various genera planned for, and except for certain features and formal layouts—Amphitheatre, Palmglade, Moos Memorial—planting has been generally a matter of disposing of accessions as they came to hand; and the accessions are somewhat haphazard. That is to say, they seem to have been collections of what at the moment was collectable and thought to be of interest, they were distributed by this or that agency, or were gifts, and so on. They had to be disposed of, and the obvious thing, in the planting I did, was to put them in the appropriate Family plot, and, if salt-demanding or thought to be salt-tolerant, to try them on the lake shores.

In adding to the existing plantings, I tried to estimate the effect of the addition. That is to say, I looked into the character of the plant in maturity, whether it would be a tree or a shrub, large or small, shade-tolerant, light demanding, etc. These things could not always be found out. I tried at least to dispose of them casually, informally as we see trees in nature, avoiding regularity of spacing, avoiding rows. This manner of placing following the style and spirit of the layout, aided in the realization of the aesthetic qualities aimed at in the plan. It is fair to say that the general effect of the Garden, whatever special beauty it presents, is due in small part to any precise preconception of the eventual appearance but rather to the pursuit of a set of principles. It is fair to say also, that whatever praise or blame may be given to the planting, I have to share it with a number of other people. Dr. Dahlberg planted a great many of the palms in the Palmetum. Werner Nehrling planted a number of them, especially those in the opening in front of the Garden House. (He also scattered a number of dicotyledonous trees around the Palmetum). Roy Matthews did more or less planting, as did Mr. A. C. Jordahn, as did Harry Dunaway and Paul Allen. But, broadly speaking, little was done contrary to the spirit of the plan.

**Distinction between Planting Plots and Lawns**

If only for the purely practical reason that grass is ordinarily highly competitive with young trees, the practice has been from the first, in the dicotyledonous section, to keep it out of the plots. Weeds were suppressed as well as might be, and the plots were allowed to acquire a normal woods floor of fallen leaves, or were mulched, and some of them later on were provided with coverings of various herbacious and low, woody
plants of sorts that would absorb the leaf-fall. This not only created better growing conditions, by building up an organic soil, but greatly reduced the cost of maintenance. It also contributed to the beauty of the Garden, adding to visual interest by adding detail, sharpening the contrast between masses and voids. With palms the leaf-fall is a minor inconvenience, and they are little affected by grass competition. The tendency in the Palmetum, therefore, was to let the palms stand in turf, and this, eventually, brought on an inordinate expenditure of labor on lawn maintenance. In recent years a policy of covering the plots with mulch, with or without a growing ground cover, has greatly simplified maintenance and, at the same time, has improved appearances by creating contrasts between lawn and planted areas. It may, in some places, have resulted in some loss of simplicity and breadth. In some places the contrasts may be too violent, but this is a matter of detail.

Planting of the Lowland

No clear policy for planting the lowland has ever been laid down. I did a good deal of planting along and around the south lake in the years 1920-1924, with little more than the "picturesque scenery" idea in mind, following the example set by Col. Montgomery in planting his own lowland. A good deal of the impulse behind that work was, most likely, pressure to get rid of plants on hand, although many of the coconuts, certainly, were donated or were picked up here and there.

Planting to use up stock on hand, or simply to produce more and more of the same kind of scenery--drinking the ocean to find out if it is salt--seems to me an unworthy use of ground that has cost so much to make plantable. Dr. Fairchild used to deplore merely repetitious plantings; we should save space, he said, for the new things to come. Years have gone by and not many new things have come in that have been particularly suitable for planting on the lowland. Much of the lowland already reclaimed remains bare, while members and Directors display an understandable impatience to see something done.

The question is, what would be the most worthy use of the lowland? I do not at all mean to suggest abandoning the idea of a scenic treatment, but the place makes scenery of some sort whatever we do, and tropical of a sort as well, even though there be nothing but mangroves. I should like to aim at some special scenic effects, tropical not simply because made up of miscellaneous tropical species, but by illustrating and displaying various specific characteristics of tropical scenery.

Tropical vegetation differs from that of temperate regions so strongly as to be unmistakable to the most casual observer. Most people would probably note first the presence of large-leaved plants, palms, for example, and Araceae generally. In northern gardens, canvas--having only a mild boldness of leaf--may be thought to give a tropical effect. But the tropical forest has other significant differences. Marie-Victorin (Itinéraires Botaniques Dans l'Isle de Cuba (Premiere Series, p. 66) observes: "The tropical forest is not a high-vaulted temple, it does not generally exhibit the vertical zonation so remarkable in the temperate forest. The plants here struggle for space rather than light. Moreover, the leaves are often shiny and have a tendency to present their edges to the sun rather than their surfaces. Finally, it is remarkable that like huma,
who, in the tropics, dress themselves in white, the bark of trees is often of a light color." On page 293, "One particular physical character of the tropical forest is the architecture of the supporting system. Thus the natural energy of the forest, that vaunted exuberance, is expressed not by an outburst of foliage masses, but by the construction, the differentiation of a powerful supporting structure" (Examples, Ceiba with its massive root butresses, Baobab and other members of the Silk Cotton family, various Ficus, Albizia, etc.) Again he says (p. 291) "Characteristic of all the tropical florals is the large number of species and small number of individuals of each species in a given space." In contrast with the last, we see in these two books of Marie-Victorin's, many illustrations of species that tend to grow in clumps or colonies, as pure stands (e.g. Copernicia Gigas, Cocothrinax Miraguana) or in associations with undergrowths.

The extent of such vegetal variations in the tropics, accompanied by marked differences of appearance, is infinite. They have an ecological basis; the plants, in kind and in character of growth, are dependent on soils differing in chemical constituents and texture, in soil moisture, on rainfall regimes, and so on. We cannot expect to transfer to our site growths identical in kind and appearance with those found, say, in Cuba. But we may be able—indeed we are able to grow some of them—to use other species that will give substantially the same effects, and thus be typical of the tropics. In this principle, I think, a basis for a purposeful development may be found.

Consider the group or colony-forming habit. We already have plantings more or less illustrative of this with Pandanus and with Copernicia Bailyana (in Plot 78). Other species have been suggested on plans I have made, such as Nipa and Bamboo; and many more could doubtless be selected and obtained. We have Paurotis Wrightii growing on the lowland, but we do not have it in an isolated clump or round, as seen in nature.

The display of the highly characteristic tropical trunk development—the high-crowned tree—requires isolation, the tree standing on open ground or rising out of a relatively low mass. The scattering of Royal Palms that we already have produces this sort of effect. It could be extended with scattered Ficus of selected species, possibly with certain Bombacaceae.

Another typical aspect of tropical woods, light-toned trunks rising from a bushy cover, or seen against a solid green background, should be possible on the lowland. I had this effect in mind in the planting study I made for the central lake in 1955, referring particularly to the island. This island planting also tended to illustrate the "large number of species and small number of individuals of each species," though somewhat limited by the number of species thought likely to be available.

It may be possible to do some planting with a strictly ecological motivation. Certainly the site should be favorable for almost any of the species that grow on our own salt shores, and in view of the rapid disappearance of natural shore growths there would be good reason to preserve some of the species here. The planting study of 1955 included one such collection, on the mound and nearby. Owing to the close relationship
of halophytism and xerophytism, one might be encouraged to form a collection of succulents on the lowland.

What I am suggesting is plainly not simple and easy. To do it really well would demand a good deal of special knowledge, knowledge of a sort not easily acquired without extensive travels in tropical regions, by a person animated by a particular point of view. Nor could it be carried out by casual, haphazard procedures. Definite plans would have to be elaborated, and definite species of plants would have to be sought for and grown for the purpose, some of them in considerable quantities.

The amount of ground to be planted ultimately, and even now, is considerable. If it were to be planted and maintained like the upland—with lawns between plots, and the plots neatly set off by mulches and ground covers—the expense of maintenance might be a heavy if not impossible burden. The use of mulches, except temporarily, seems inadvisable because of the ever-present risk of their being floated off by a hurricane high water. The use of herbaceous and shrubby ground covers throughout appears to be the more practical measure. And I should like to see the whole area treated as a wilder, more natural place than the upland, a place where, once things were planted, nature would be allowed to take its course, where spontaneous and accidental development of vegetation would occur, where even plants regarded as weeds would be allowed if their presence were not detrimental to the growth of planted material. Under this conception dense growths might to some extent be anticipated, which would attain a stability similar to that of dune hammocks, or inland hammocks for that matter, where maintenance in any ordinary sense is out of place. In close plantings of palms on the Montgomery lowland, we see bare marl and fallen palm fronds—and crab holes. This is not neat but it is natural, and quite admissible, I think. Crabs have been found to be destructive of young plants, when first set out on these lowlands, but that is a passing phase which can be got around by the use of metal collars; and I venture to say that if there were a great deal of low vegetation on the ground they would not be so apt to concentrate on the planted things.

The lowland presents a truly unique opportunity. The exploitation of that opportunity warrents a very special effort.

Some Problems of the Future

At the Fairchild Garden an effort has always been made, is now being made, and presumably always will be made to enlarge the collections. This continuing effort is founded on the commonly-held conviction that whatever is not going forward is going backward; nothing can stand still. No one can quarrel with the principle, but the fact remains that eventually space limitations must reduce the urge to expand to an effort merely to maintain a status quo, for the probability of adding to the space is nil. A detached section of the Garden, such as the Jennings Estate (should it become available) is not wholly impracticable and might conceivably be desirable, but that solution need not concern us here. The fact is that the upland section of the Garden is now so closely planted that few trees of size could be added, particularly in the dicotyledonous section; the Palmetum is a little better off because palms generally occupy less space
than dicotyledonous trees. Also there is a good deal of repetitive planting of palm species, which suggests that some of them might be eliminated to make room for new kinds. There is a certain danger, to be sure, in reducing representations too far, since there is always a chance of heavy or complete loss of some or other kind of tree by insect attack, disease, or storm. As I have already recommended, I would sell excess trees rather than automatically move them onto the lowland, unless they happen to be species that will definitely fit into a planting scheme there.

In general, for the upland, it would seem desirable to search for plants of low or moderate growth suitable for underplantings, and for small shrubs and trees suitable for outside positions in the plots or, being shade-tolerant, for interplantings in the larger plots. The tier arrangement, the association of trees whose crowns stand at different levels, is useful to keep in mind. Recent extensive Philodendron accessions show how much can be achieved in enlarging the total collection without encroaching on the open spaces.

Maintaining the integrity of the open spaces should be the first concern of any administration, since these spaces are the prime source of the Garden's beauty and distinction. No matter what may be the demands for space for new specimens, the plantings should not be carried outside the lines drawn. It is not so much that these lines are the best that could have been thought of, but that they exist and that some lines must be drawn and held to or else all effect will be lost.

One of the major problems in the management of plantations is how to deal with change. Any aggregation of plants, whether of the same kind or of differing kinds, has its periods of youth, maturity, and decay. It presents a picture of continual change. If a group be planted with trees of approximately equal age, some will grow more vigorously than others, the stronger will dominate the weaker, and eventually the weaker ones will be killed or reduced to a state of decrepitude in which they are no longer of value as specimens of their kind. In this way the arboreal population of the Garden may be reduced. If a tiered formation be established, the higher trees may become so tall as to pass out of the zone of effective observation, as has happened already in parts of the Garden, e.g., the Triplaris americana in Plot 25.

Thus, aging may be regarded as a process of deterioration. On the other hand, aged trees are normally large trees, and size is in itself a potent source of interest and aesthetic effect. And only in age, with many species, do the notable characters appear—the buttress roots, the vigorous architectural structure. If such gains can only be had at the cost of a reduction in the number of lesser individuals, we may well regard size as the better choice. But, in this hurricane belt, large trees lead a precarious existence; they may be destroyed or broken down. We might then, propose to ourselves a system of replacement, starting young trees to replace eventually the older ones. This is difficult because if we plant the young tree near the old one it will be suppressed from the start by root competition and shade. And we cannot place it in the open nearby without intruding on some opening, theoretically inviolable. It seems impossible to lay down any rules for dealing with problems of this kind. At times it may be possible to plant a replacement in situ for a tree lost by storm or destroyed on account of decrepitude, at other times
not possible. Efforts should certainly be made, however, to replenish and perpetuate the collections.

A common method of dealing with growth is to restrict it by pruning. This practice, universal on house grounds, seems definitely out of place in a botanical garden, where one of the objectives is presumably to exhibit species in their normal growth, whatever that may be. I myself have always discouraged pruning in the Garden, except on objects having some functional form in relation to structures, and on ground cover shrubs whose normal appearance is regained by a few months of growth. If a plant has become absolutely too large and obstructive, it may be better to grub it out and have done with it. Or, with some, it may be feasible to cut it to the ground and seek a replacement of it by sprout growth. Trees and shrubs are singularly hard to kill by merely cutting them down.

A great many seedling trees spring up in the Garden, where germination of seeds is favored by the accumulation of organic soil and by the constant watering. More attention should be paid to suppressing such growths, which is very simple and effective when they are young and can be pulled up like weeds, and not so easy when they attain some size. Sometimes, when the seedling comes up in its own proper family group, it may present a replacement possibility, for the seedling ordinarily makes a more vigorous growth than transplanted stock. Sometimes the seedlings are in so much shade that they cannot possibly attain much size, and only make a small contribution to the ground cover. The seedlings to be removed are those growing outside their proper ground, and those likely to pre-empt space needed for other plants. Seedling removal, therefore, should not be prescribed by routine orders, but should be done comprehensively, say once a year, by someone who understands what needs to be removed and what does not.

With age, trees may achieve dominance over grass. Caretakers then begin trying to take the side of grass, to keep it growing when its outlook is hopeless. The difficulty is most pronounced with grass walks, where the shading out of grass in places breaks the continuity of green, as on the walks bordering the Ficus plot (#28) and on the Overlook walk. I see no great misfortune in this sort of change; the former grassy lanes between trees have simply become woods walks under trees, where bare ground and fallen leaves are to be expected. These situations need to be dealt with according to circumstances. The Overlook walk, for instance, is sufficiently important to warrant a little dressing up, as with sawdust. The walks under the Ficus might remain bare earth and fallen leaves, or they may need to be smoothed with rock screenings.

The question of walks—whether or not to replace some of the grass walks with concrete or asphalt or whatever—is raised from time to time. People are permitted to walk anywhere, the layout assumes that they will do so, and, so far as the ground is concerned, no damage results. Nor does the occasional passage of vehicles over grass roads or lawns, for service or for visits, leave any lasting blemish. The tram, following a uniform circuit several times a day, does wear out a bare track, which is not always as smooth as one might desire. The appearance of this track is not particularly objectionable; it may be less objectionable than a solid walk would be. Nevertheless I do not think that a paved walk, co-
inciding with the tram circuit would necessarily have a bad appearance. It might be of some benefit (beyond providing a smoother road for the tram) by inducing visitors to walk around the Garden more than they do. At present they tend to follow the service road down to the foot of the slope, where, seeing no more surfaced walk, they turn back the way they came. The grass openings and walks do not give them any very obvious lead, as a hard surfaced walk would do.

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September 3, 1958