Membership

REPORT ON
THE NEW YORK BOTANICAL
GARDEN

BY
OLMSTED BROTHERS

1924

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REPORT ON THE NEW YORK BOTANICAL GARDEN

August, 1924

DR. FREDERIC S. LEE, President,
Board of Managers,
New York Botanical Garden,
New York City.

DEAR SIR:

This Report* is submitted at your request to set forth the results to date of our investigation and study of the grounds of the Botanical Garden, as a basis for comprehensive plans for their improvement. It is a revision, in the light of further discussion and study, of a preliminary report, made in December, 1923.

This investigation was set on foot because of an impression, voiced in your Statement of April, 1923, that the grounds of the Botanical Garden are much less beautiful and much less attractive and valuable to the general public, and especially to that part of the public particularly interested in gardening, in gardens and in landscape beauty, than is reasonably to be expected in the leading institution of its kind in the metropolis of the United States.

Our investigation has emphatically confirmed this impression, has defined its particulars in many respects, and has begun to make clear the means by which this condition can best be changed to a really satisfactory one.

For the purpose of this Report the defects can best be considered incidentally and in connection with the probable means of overcoming them by positive constructive measures directed toward making the Garden by degrees more and more excellent, on the assumption that means can be found to carry forward such progressive improvement in an orderly, well-balanced and reasonably rapid way without any arbitrary limit on the extent of the improvement.

As already indicated, this Report is to be regarded as a progress report, as a step toward the adoption of a general program in accordance with which definite plans for improvement may be successively elaborated in the necessary degree of detail.

*The reading of this Report will be facilitated by consulting Maps A and B, which follow the text.

It will be convenient to group what we have to say under the following five main headings:

I. *Maintenance of grounds.* Pages 6-11.

II. *Improvements closely associated with maintenance;* the making of existing features better of their kind. Pages 11-17.

III. *Improvements which would constitute new departures* (the introduction of distinctly *new features*), so far as not dependent on the questions considered under the two remaining heads. Pages 17-24.

IV. *Questions of automobile through-traffic or park traffic* and of *park uses* distinct from and more or less conflicting with Botanical Garden uses as such; of *possible restrictions on the right of the public to enter* upon all parts of the grounds at all times of day and night; and of related matters. Pages 25-31.

V. *The vicinity of the Museum* and various other questions dependent upon that and upon the questions discussed under heading IV. Pages 32-39.

PART I

MAINTENANCE OF GROUNDS

The basic need in the improvement of the grounds, without meeting which other improvements will be nugatory, wasteful and transitory in effect, is that of greatly increasing the quantity and quality of maintenance—involving a correspondingly large increase in the annual expenditure for maintenance.

This matter is so fundamental and the manner in which the possibilities of annual maintenance control all other decisions is so direct and so far-reaching, that it seems necessary to discuss it at some length and attempt to gauge, at least in a general way, the cost of adequate and economical maintenance.

Maintenance may be made in any given case so costly as to be uneconomical; but it should be noted at the start that *inadequate* maintenance is *always* uneconomical in that it involves progressive depreciation of the capital investment. In the case of a botanical garden or a park, where the real values derived from the investment are largely dependent on the cumulative effect of the growth of plants in certain ways over long periods of years, the effect of inadequate or ill-directed maintenance is peculiarly disastrous because the resulting depreciation (or failure to secure legitimate increase of value) can never be offset in short order by liberal investment in repairs and improvements, as can generally be done with buildings and engineering works. There is

absolutely no other road to first-rate results than by the process of slow natural growth under the selective control, protection and guidance of suitable methods of maintenance year after year.

The kind, amount and cost of maintenance of grounds necessary to keep on the safe side of the border which separates cumulative advance in values from progressive deterioration depend mainly on three sets of factors. *One* obviously is the efficiency and cost of labor and the skill with which it is directed. A *second* includes the inherent advantages and disadvantages of the site and of external or otherwise largely uncontrollable conditions—such factors as soil, climate, atmospheric impurities, and the habits of the people who resort to the grounds. But normally it is the *third* set which accounts for the greatest variations in the cost of adequate maintenance. These are the variations in what might be called types of landscape treatment, such as:

(a) Established native woodlands, where there is an approach toward the self-maintaining equilibrium of a mature natural forest.

(b) Areas in which mixed ground-covers of herbaceous or woody plants, or both, while never quite attaining a permanent natural equilibrium, such as characterizes many forest floors and many marshes, can be kept in satisfactory condition by wholesale methods, as, for example, by infrequent scything and a limited amount of hand weeding.

(c) Broad areas of simple lawn or meadow, little interrupted by trees or other obstacles, where the main item of maintenance cost is periodic wholesale cutting by horse or power mowers.

(d) Intricate combinations of turf with plantations and other obstacles, requiring frequent hand mowing under difficult conditions and involving hand cultivation, weeding, and other control of the interspersed plantations.

(e) Areas of a sort requiring still more intensive gardening operations to secure and maintain the results at which they are aimed.

Other things being equal, the above indicated variations in type of grounds ordinarily account for a range in the amount of labor required for suitable maintenance, varying from a maximum of about one man per year for each acre or less in type "e," to a minimum of one man for each twenty acres or more, type "b;" with the possibility of an almost indefinite reduction of maintenance labor in type "a," *in those cases where intensive human use does not enter in to upset the balance* and require special counter-active measures.

We have attempted roughly to classify the lands of the Botanical Garden according to the types of landscape treatment as affecting maintenance costs; grouping them in three classes:

Class 1

$\frac{2}{3}$ to 2 acres per man, as in type "e" and part of type "d."

Class 2

2 to 6 acres per man, as in part of type "d" and in type "c."

Class 3

6 to 18 acres per man, as in type "b."

Note: As will be seen, the first class would be likely to require on the average about three times as much labor per acre as the second, and the second about three times as much per acre as the third.

This classification is not based primarily on the amount of maintenance labor now applied to the several areas in the Botanical Garden, because that is manifestly (but in widely varying degree) insufficient for properly maintaining the sort of treatment which appears to have been attempted. Neither is it based on an arbitrary assumption of our own as to what conditions it would be ideally desirable to create and maintain on each area.

We recognize that your own organization has in the past "bit off" more than it is able properly to "chew" under present conditions of cost and of funds available for maintenance; and our classification of areas was based on what each area was apparently intended to be. Knowing from experience elsewhere about how much labor is apt to be required for maintaining various types of landscape treatment in reasonably good condition under reasonably efficient and skilful management, we have thus arrived at a rough estimate of the amount of labor which would be required to maintain properly what you have already "bit off."

This is a starting-point for all the rest of our discussion. Obviously by abandoning some of the things already attempted which are relatively costly of maintenance, thus transferring some areas from a more costly to a less costly classification, our estimates could be cut without sacrifice of quality in the maintenance of each kind of area. And, on the other hand, any addition of new features tending to raise any piece of land from a cheaper maintenance type to a more costly maintenance type would call for a corresponding increase in the maintenance force.

Taking the Botanical Garden as it is, then, and assuming the proper upkeep of the sort of thing that appears to have been

intended and attempted, we believe the maintenance force necessary for adequate care of what now exists should be about 110 men, which is about $2\frac{1}{2}$ times as many as are now employed.

As said above, it would be possible to advise some modifications in the above classification by adapting certain areas to somewhat different types of treatment than those which we conceive to have been intended, and thereby diminish the cost of maintenance; but, to put our opinion broadly, if you had available a sum of money producing annually an income three times that which is now spent for maintenance, we should advise putting practically all of that sum into a maintenance endowment rather than invest any of it in new "improvements" at the expense of continued deficiency in the maintenance budget.

To put the matter in dollars and cents, we think the most urgent need for the improvement of the grounds is an increase in the annual maintenance budget for gardeners, laborers, watchmen, foremen, supplies (including manure), tools, equipment, etc., from the present figure of about \$70,000 to about \$200,000 with a further gradual increase in connection with any new improvements or changes in conditions of use or in labor conditions, which may tend to increase the maintenance burden.

Appendix A gives some comparative figures of maintenance labor and maintenance costs, which we have used in arriving at our tentative conclusions of this subject.

We see no signs whatever of such a flocking of capable men into the ranks of gardeners and gardening laborers in America as would tend to lower the costs of such work as compared with the costs of all the other things that money buys. If anything, the tendency seems likely to be the other way, as it has been for some time in the past. The private individual can and does "pull in his horns" on the matter of gardening maintenance, by having less of that sort of thing to maintain in proportion to what he has of the other conveniences and amenities of life, as the latter become relatively less costly than gardening. The Botanical Garden, as a specialized institution, if it is to do its job well, has got to meet the increased cost of the most essential part of its function without sacrifice of quality. Otherwise it is manifestly failing as a Garden, however useful it may be in other respects.

But whatever program you adopt as to increase of maintenance funds, it seems likely that the increase will come only by degrees and that a serious deficiency must be faced for some time to come.

One of the great difficulties of such a condition is the temptation to yield first to an impulse that would rob Peter to pay Paul and

then to an impulse that would in desperation reverse the process when it is seen that Peter also is starving. It is very hard to adhere to a well-balanced and self-consistent policy of maintenance when confronted by insufficient means at every turn, but it is even more important under these circumstances than when no part of the work is in serious danger of starvation.

As a help toward a consistent and well-balanced distribution of maintenance funds we would urge a deliberate classification of the Garden lands for maintenance purposes, along the lines of our rough preliminary classification but much more carefully studied, and a correspondingly deliberate and systematic apportionment of the available resources for maintenance to the several classes of lands. The emphasis, of course, should not be upon a meticulously detailed cost-accounting and rigid adherence to budget allotments. Emergencies frequently arise which require shifts, as when infections arise that need to be promptly suppressed at the cost of almost any postponement of routine work. And it is proper here to point out, as a parenthesis, that we have observed in the Garden some such infections, notably of scales, which no well-conducted commercial establishment would have permitted to go as far as they have gone. If the infected plants could not have been cured with the means available, they would have been destroyed and burned.

The emphasis in the maintenance budgeting should rather be upon a general continuity of policy in treating each parcel of land year after year with about the same degree of economy in relation to other parcels, unless and until convincing reasons appear for deliberately changing its classification.

But in addition to this general classification, we strongly advise the deliberate selection within each class of lands of one or more preferential areas, no matter how small, which shall be kept up thoroughly well as *samples* of what would be done throughout all the areas of that class if funds permitted, leaving the rest of the lands in that class to be kept up only as well as the funds permit after taking care of these small samples perfectly.

The reasons for such a policy are two-fold. In the first place, it will show the public what can be done with adequate maintenance funds; and by the very sharpness of the contrast between these samples of first-rate maintenance in each class and the conditions which poverty enforces elsewhere in that class of lands, will stimulate increased financial support. In the second place, it will be of great value in building up and maintaining the ideals of the maintenance force itself. Where, because of poverty,

almost nothing is thoroughly well done of its kind, where nearly every job is left half-finished because of the necessity of taking a few stitches somewhere else, not only is there much waste of effort—the sort of waste inseparable from poverty—but also there is bound to be a tendency to demoralization of the maintenance force itself, a lowering of its standards and ideals, an acceptance of enforced low standards as good enough, a loss of the priceless stimulus of pride and shame, of *esprit de corps*.

In addition to such suggestions for improvement of the mechanism of maintenance, we would urge the importance of placing the responsibility, under the Director-in-Chief, for the maintenance of grounds and for those cumulative improvements in detail which are inseparable from maintenance, upon some one first-class superintendent having the necessary technical skill and ideals, and the peculiar qualities needed by one who is to be at once a good executive and leader in his own department, a loyal subordinate to the Director-in-Chief, and a sympathetic collaborator with other specialists. Perhaps you have in your present personnel the man for such a position. Perhaps you need to look outside. But obviously a first-class man in such a position is of the greatest importance, especially during a period of building up the gardening and maintenance force and improving its work.

PART II

IMPROVEMENTS CLOSELY ASSOCIATED WITH MAINTENANCE; THE MAKING OF EXISTING FEATURES BETTER OF THEIR KIND

As previously indicated, no sharp line can be drawn between maintenance of the sort which ensures progressive improvement (as a result of the controlled growth of long-lived plants and associations of plants), and, on the other hand, improvements of detail which are not strictly maintenance but which, although not very notable individually, are important because of their collective and cumulative effect.

There are many opportunities for this sort of improvement of detail in the Botanical Garden, as would be almost inevitable where past improvements and maintenance have been carried on under the handicap of insufficient funds, and with the recurring temptation to undertake an improvement under circumstances adverse to the best results.

Merely as examples we will mention a few such opportunities which have thrust themselves upon us as important. The making of such improvements is so bound up with improved maintenance

that while the cost of them might properly be met either out of increased maintenance funds or out of special improvement funds, the work should be done mainly by the maintenance personnel.

1. *Fruticetum*. What might be called the general scenic quality of the areas devoted to the systematic collection of shrubs could be greatly improved, together with its instructiveness as to the esthetic value of many species as elements in landscape composition, by a patient, laborious and discriminating study of the entire collection, acre by acre and plant by plant, followed by a great deal of minor shifting of the position of individual plants, by the elimination of some and by the addition of others, so as to make more agreeable and interesting compositions—all without in the least impairing the prime function of the *Fruticetum* as a systematic collection of specimens of representative shrubby plants. From the esthetic point of view this job would be very much like the job of a sculptor in perfecting a model in clay; sometimes pressing back here and building out there without addition or subtraction of material, sometimes adding a little, sometimes taking away a little. The details can no more be embodied in a specification or a plan than can the touches of the sculptor which determine the final quality of his work. But because the *Fruticetum* is not solely or even primarily intended as a work of fine art, but primarily as a living botanical museum, whoever is charged with the artistic responsibility for such an improvement would have to keep the Director-in-Chief closely informed of his intentions in advance and work under his supervision and with his continuing approval as to the effect of the changes on the value of the collection from the botanical standpoint.

2. *Herbaceous Grounds*. There is opportunity for similar improvement, probably far less general and far less notable in its effect, in the area devoted to the synoptic collection of herbaceous plants, known as the Herbaceous Garden. Incidentally it has occurred to us that the name “Herbaceous Grounds,” which is applied at Kew to an area having similar purposes, would be better than “Herbaceous Garden;” because the latter is so apt to suggest to visitors the idea of a garden of herbaceous flowering plants selected and arranged primarily for esthetic effects, as so-called “herbaceous borders” ordinarily are, and to cause some disappointment on finding quite a different sort of thing.

We do not want to imply that the area devoted to this collection is not now esthetically agreeable. It is among the pleasantest of the sophisticated features of the Botanical Garden grounds. But without changing its function as a synoptic collection of herbac-

eous plants, which necessarily contains many specimens selected and assigned to certain localities for reasons quite other than esthetic, we believe that the existing pleasant landscape qualities of the scene could be appreciably heightened and refined by minor adjustments in the positions of the plants and outlines of beds and by the addition of certain "background" and "filler" plants not part of the exhibit proper, but serving functions not unlike those of frames and cases and backgrounds and partitions in an indoor museum.

3. *Border Plantations.* The strengthening, extension and refinement of screening and background plantations on the borders of the Garden land is a very important matter for the sake of future effect, because the outlooks into the surrounding city are generally most inharmonious, distracting and unpleasant, and it takes a long time to grow trees large enough to screen them.

4. *Cherry Garden.* The area devoted to Japanese flowering cherries, which is interesting in topography, contains good specimens and has an attractive memorial shelter, Japanese in spirit, could be made very much more lovely by carefully studied shifting of some of the specimens so as to secure better artistic composition, taking better advantage of the topography, by the addition of appropriate subordinate elements for enrichment, and by readjustment of the paths so as to lead people conveniently and easily to just the right points of view and at the same time fit into place as appropriate parts of the scene. It could be made, and ought to be made, a notably exquisite piece of landscape.

5. *Means of circulation as related to the improvement of existing plantations.* The mention of paths in connection with the Cherry Garden brings us to a very perplexing, and very important matter. In a botanical garden resorted to by great numbers of people, it is a fact, as frequently pointed out by the Director-in-Chief, that an adequate and convenient path system is very important for handling the crowds without destruction of the more essential element—which is the vegetation. It is also important that it should lead the people conveniently, agreeably, and without a sense either of confusion, or unpleasant compulsion, or of disappointment, through those places where they can best see and enjoy what is prepared for their benefit. It is a further fact that the topography of the Garden is in parts so intricate and peculiar as to have made the design and construction of such a system of circulation, in a thoroughly satisfactory way, extremely difficult, especially under the conditions of piecemeal construction with funds available in limited amounts from time to time. In

places the existing path system is excellent. But in other places, in face of these topographical difficulties, it seems to us extremely unsatisfactory, confusing, arduous and uninviting to follow, failing to lead to the best points of view and neither conforming pleasantly to the natural topography nor accompanied by a bold and skilful modification of the topography so as to conform to the exigencies of proper circulation.

We believe, therefore, that there should be a very careful and thorough study of the whole system of circulation, existing and prospective, with a view to determining, *first*, all those areas in the Garden within which the existing means of circulation can reasonably be regarded as permanently satisfactory, so that improvements and refinements to the plantations can there be undertaken without danger that things will have to be seriously upset by subsequent changes in or additions to the path and road system. This will clear the way for perfecting the landscape beauty of those areas by refinements in the vegetation to the utmost degree that the available means and skill will permit. Concentration on that sort of improvement will make more showing, esthetically, per dollar expended than where costly structural changes are needed, and for that reason should probably receive preference in the earlier part of the program of improvement.

But in preparation for a *second* step in the program of improving the existing features, those areas within which the existing means of circulation can not be regarded as permanently satisfactory should be studied in detail, section by section, and detailed plans prepared for successive sections to determine the precise locations and grades of the permanent paths and roads; the sometimes radical changes in grading required in connection therewith; and at least the general nature of the treatment of vegetation contemplated. This will show what improvements in detail of vegetation within these areas can safely be undertaken pending the expected changes in paths, etc., and open the way for undertaking these improvements without serious risk of waste.

And then, as a *third* step in the program, the more costly structural changes can themselves be undertaken, section by section, accompanied by perfecting the vegetation in direct connection therewith.

Throughout this program of improvement of existing features, the paths and roads and grading should be considered solely as a necessary means to the end of developing and maintaining in the most beautiful manner possible, those features of scientific and horticultural and landscape interest for the sake of which

the Botanical Garden exists, and of making them conveniently and pleurably accessible to the public without their destruction by public use; while at the same time recognizing that this mechanism of good circulation for crowds *is* a necessary means to such an end and in some cases can be properly provided for on such topography only by radical surgical operations the scars of which must be made and healed before the final esthetic and scientific end can be attained.

For example: in a number of places important lines of path circulation are needed running transversely to sharp ridges and hollows. This is a very difficult situation, in which a half-hearted compromise may be easy but is most deplorable. Every effort should be made to find a satisfactory way of really solving the problem without violence to the natural topography, as by seeking a more circuitous route which will not seem disagreeably indirect and which will fully accomplish the purposes that need to be served. But where this can not be satisfactorily done—and there are places where it can not—a bold course, which pierces through a rocky ridge in a narrow ravine-like passage artificially made but not unnatural in appearance, or even by a short tunnel, or which spans a narrow ravine on an arched bridge at the level of the flanking ridges, may not merely produce a more convenient path system and one which leaves its users free to appreciate what they see instead of focussing their attention on the inconvenience and discomfort of the path, but it may also make nine-tenths of the path fit naturally and pleasantly to the surface of the ground it traverses instead of its *all* looking somewhat forced and unnatural as it climbs and drops over ground obviously uninviting for a main path. Again, in view of the necessity, in so large an area, of permanent means of circulation for automobiles, and of the increasing danger and annoyance of innumerable crossings of this traffic by crowds of people on foot, it is important to provide for the ultimate separation of the grades of main paths and main automobile roads where crossings are inevitable, much as was done in Central Park at a time when the danger and annoyance of such crossings were infinitely less than in these days of motor traffic.

All this sort of thing is of very great ultimate importance, can not sensibly be ignored and should be planned for, in a courageous, far-sighted, uncompromising way. But, as previously pointed out, this does not mean that the *construction* of a first-rate system of circulation should take precedence over refining and perfecting details of planting and planting maintenance. Preference should be given, in this improvement of the vegeta-

tion, to areas the least likely to be upset by such construction. On the other hand, in areas that are likely to be upset by such construction, improvements in the vegetation should be undertaken only when the desirable changes in the paths and roads seem, because of lack of funds, unlikely to be made for so long a time that the value of the temporary improvement in the vegetation would, in the meantime, justify the money and effort expended on it.

6. *Qualities generally to be sought in improving the vegetation through better maintenance.* The esthetic qualities to be sought and developed in the care of the vegetation must of course vary widely. Anything approaching a stereotyped effect, which one seeing elsewhere would at once recognize as the "Botanic Garden style" is to be avoided at almost any cost. But some qualities are desirable nearly everywhere, qualities now too often lacking. The plants should look well-nourished and vigorous. No pains should be spared, of the kind a good plantsman best knows how to give, in building up the fertility of the soil in those respects necessary for the healthy typical growth of each kind of vegetation in its place, in adjusting different kinds of plants to the places most favorable for their healthy continued growth, and in fighting their enemies. One of the agents destructive to this quality is the public; in its careless or wanton injury of plants by trampling, breaking and deliberate picking. Both constant watchfulness by a sufficient number of maintenance men and the promptest possible restoration of injuries when they occur are essential to keeping up a good standard in this quality. Nothing encourages depredations so much as the evidence of previous depredations supinely accepted.

Hence there is no question but that the Garden should be so planned as to be closed at night and that there should be uniformed guards on duty when it is open; not merely a few City Police temporarily assigned to duty here, but special Botanical Garden Guards forming part of the Garden's maintenance force, carefully selected and trained for the double purpose, first, of guiding and assisting the public to get the greatest legitimate benefit out of what the Garden has to offer, and, second, of preventing those individually trifling abuses of the Garden which in cumulative effect tend so greatly to make it shabby.

An important quality, hard to describe in positive terms, is one which is the reverse of "weediness." It is not necessarily "tidiness." That may be highly appropriate in some sophisticated places: on clipped lawns, among garden beds of a frankly artificial man-made sort, on paths and roads and picnic grounds; but

for most of the Botanical Garden, where a natural-seeming aspect should be sedulously sought, the word "tidiness" suggests a smug and artificial quality quite too sophisticated. Yet weediness with its connotation of neglect, ought everywhere to be avoided; and there is a good deal of it today. It comes from the presence of plants—whether classed in common parlance as "weeds" or not—which look out of place in their surroundings; often plants much coarser of texture or ranker in growth than their neighbors, and always suggestive of encroachment on something that would be pleasanter without them. Millions of volunteer seedlings spring up every year and many of them, if not systematically repressed, are able to survive in places where they look distinctly weedy.

The avoidance of shabbiness and weediness is the negative aspect of the problem. The positive aspect, in addition to securing healthy vigorous growth of all vegetation that is not to be suppressed as weedy, lies in the progressive, appropriate enrichment not merely of the regular "collections" but of the incidental or background flora.

The latter may in some places involve the introduction of more kinds of plants, especially of the more delicate native flowering plants, but is perhaps more likely to mean simply the multiplication in certain places of a limited number of species peculiarly and charmingly characteristic of distinctive types of flora, at the expense of those species which are less characteristic.

PART III

IMPROVEMENTS CONSTITUTING NEW DEPARTURES AND SUBSTANTIALLY INDEPENDENT OF PARTS IV AND V

1. *Rhododendron Glade*. One of the most beautiful, striking and completely self-contained and independent new features which could be added to the Botanical Garden is that which has been for some time under favorable consideration by the Director-in-Chief in the so-called "Lake Valley"—a great naturalistic exhibition of rhododendrons (including azaleas) and of plants suitable for association therewith, in such a manner as to make a notably impressive landscape unit, a valley of rich foliage and brilliant bloom enclosed by wooded rocky hills. The natural enframement of this valley is almost perfect except on the southeast, where the frame must be completed by adequate grading and massive border planting. As a scenic and topographic unit the valley begins in a rocky wooded defile just east of the Lorillard Mansion, whence it descends, widening slightly but still almost overarched

by trees, to the point where the earth-fill of the road now under construction traverses and blocks the valley. South of this it widens out into a broader sunlit valley flanked by pleasantly wooded hills, the site of a former artificial lake abandoned because of the intercepting of much of its natural water supply.

The embankment of the new road is in itself an ugly interruption of the valley, but it can and should be pierced by an ample archway through which the narrow sylvan portion of the valley and a pathway traversing it would debouch at the head of the broader glade, the embankment of the roadway being heavily embowered in trees. Such an arrangement would afford sweeping views of the open part of the valley from the road without letting the automobiles spoil the charm of the valley as enjoyed from the foot-paths within it or seriously impairing the intimacy of its connection with the narrow sylvan upper portion. The situation lends itself admirably to providing both the scenic and the cultural variety of conditions desirable for such an exhibition of rhododendrons and related plants.

An unfortunate obtrusion at present into this valley are the stables of the Park Department. It is of vital importance that these be removed from the scene, preferably to the undeveloped park lands just across Pelham Parkway. A portion, at least, of the site of these buildings would be included in the scheme, in order to reclaim the complete form of the valley and to complete the essential enclosing plantations.

In Appendix B we have developed somewhat more in detail, in a tentative way, the ideas which have occurred to us for the treatment of this Rhododendron Glade; and we believe it would be the best large new feature on which to concentrate first, after assuring increased funds for general maintenance and for the detailed improvement of existing features.

It must of course be borne in mind that the proper maintenance of such a Rhododendron Glade will cost much more per acre than the old lake with its borders of unsophisticated woodland, or than a simple meadow; and that such an improvement, however desirable from every point of view, ought not to be undertaken without seeing the way perfectly clear to obtaining the necessary *additional* maintenance funds. The principle, of course, is the same as that which has very properly led various institutions to refuse gifts of very much desired new buildings in the absence of endowment for their operation and maintenance.

2. A group or series of desirable new undertakings is that referred to in your report of April, 1923, under the heading "Model Gardens." Some of the most valuable of these from

the point of view of the general public, such as city back-yard gardens and typical good treatments for small suburban homes, present peculiar difficulties in that they would be rather lacking in realism and effectiveness unless associated with buildings which would be in themselves inharmonious with the general informal park-like landscape of the tract as a whole, and that most of them would need almost complete isolation from each other and from the general landscape.

There are along the Pelham Parkway frontage some rather isolated areas of moderate width, as yet undeveloped and cut off by rocky hills from the rest of the Botanical Garden which can be devoted in whole or in part to small detached Model Gardens.

But one of the assets of these sites is the fact that they *do* front on the Pelham Parkway and can be seen by the large numbers of motorists who use that route without ordinarily entering the Botanical Garden enclosure. So far as practicable, therefore, it would seem advantageous to use these sites for exhibits somewhat of the nature of "show-window displays"—bold, striking, adequate to arrest the attention and pleasantly arouse the interest of people going by at the rate of twenty miles an hour or more, despite the interposition of the enclosing fence and the trees of the Parkway itself. There seems no sufficient reason why this part of the grounds should not be thus thrown visually open to the outside, because the logical line of scenic enclosure for the main body of the ground lies for the most part on the height of land just north of this bordering strip. We are not prepared as yet to offer definite and well-considered suggestions for the kinds of Model Gardens most suitable to these sites, but it would seem that they might well include some of the more bold and striking types of display offering a succession of colorful effects through each season. On the other hand, it would be a pity to put only such exhibits in these "show windows." Some other equally striking but perhaps more refined and quasi-naturalistic exhibits should be provided for, such, perhaps, as a show of lilacs and one of *Crataegus* and crab-apples and other so-called "flowering" trees.

For small special domestic gardens of urban and suburban types, places might be found, preferably in direct connection with small houses occupied by Garden employees or adapted to necessary uses other than residential which are capable of fitting into a dwelling-house structure, in accessible locations near the entrance closest to rapid transit stations but completely isolated from the general landscape by screen planting.

3. *Iris Garden Region.* What seems on preliminary inspection like an opportunity for an essentially new feature of much beauty and interest, if dealt with boldly and skilfully in a large way, is presented in the vicinity of the present Iris Garden and Horticultural Garden. Here is an open hillside sloping irregularly to the eastward from a bench at about elevation 90 near the Southern Boulevard, to a hollow at about elevation 60 near the interior road, and flanked on either side by bold well-wooded hills. Its landscape unit, however, is disturbed by the bulge of the rounding ridge occupied by the Horticultural Garden and by the fact that the open space, once quiet meadow or lawn, is cut up and spotted with paths and flower beds which are yet not sufficiently continuous to produce a unified texture of a richer sort.

Directly opposite to the east is the one important gap in the rocky ridges which border the Bronx River on the west for three quarters of a mile, and in and beyond this gap the natural woods are thin or altogether lacking, giving opportunity, at the sacrifice of a few trees, for a very lovely natural-seeming transverse vista extending to the ridge just west of the Rose Garden.

The vista is well worth getting in itself, because one of the defects of the Botanical Garden today is its deficiency in landscape reaches and views of sufficient length to give the sense of spaciousness and the mystery of distance. Moreover there is an unpleasantly complete landscape separation of all the land to the east of the river from that to the west.

But the special opportunity which the situation of the Iris and Horticultural Gardens seems to present lies, in connection with opening the vista, in the bold regrading of portions of the non-conforming hillside above mentioned, and the extension of the mainly herbaceous planting of these gardens so as to produce a continuous and unified, though rich and varied, texture throughout the space within the framing trees and hills.

Within the limits of this general conception the garden might successfully be given any one of an infinitude of local expressions, from that of a naturalistic hillside rich in flowers, like some alpine glades, to that of an intricately terraced hillside where the flower beds and paths would be made flatter in cross-section for the practical convenience of intensive use and be supported by low walls. Such a terraced treatment might, on the one hand, be highly architectural in its general structure, or, on the other hand, it might be rather casual and unobtrusively irregular and picturesque like many of the hillsides so pleasantly and richly terraced into vineyards and gardens by the peasants of Italy, of Switzerland, of the Rhine and of Japan. Considering the practical

necessities of exhibiting many kinds of plants of horticultural interest, of making them closely accessible to large numbers of people, of cultivating the beds and of avoiding the waste of rain water on steeply sloping cultivated ground, we should be inclined to favor the latter type, frankly man-handled in its general scheme but rather free and picturesque in its detail, its terraces supported in the main by uncemented walls suitable for treatment as wall gardens. The lower slopes and terraced benches could well be used in large part for a great collection of the upland irises, perhaps in conjunction with peonies; the hollow at the base might be devoted largely to the moisture-loving Japanese irises; while the outer and upper portions could be used for other horticultural exhibits of the type represented by the now isolated and unrelated beds of beautiful chrysanthemums, of narcissus, and (this spring) of tulips.

4. If and when the Park Department greenhouses and work yards can be removed from the old Lorillard Mansion gardens, as they certainly ought to be for the proper development of the Botanical Garden (preferably, as in the case of the Park stables, to the undeveloped park lands just across Pelham Parkway) a peculiarly valuable area in the very heart of the Garden's most precious landscape will be freed and will offer a very notable opportunity for a new feature.

To begin with, the opportunity here exists to create a long north and south view, wholly self-contained, beautifully enclosed, and nicely fitted to as interesting a piece of topography as is to be found anywhere within the limits of the Botanical Garden. And, as already stated, there is a serious deficiency in such long inviting views.

In the second place, within the land thus freed from obstructive utilitarian structures, and without impairing the long views thus obtained but enhancing their charm and interest, there could be developed, under the most favorable conditions, an admirable example of a sort of thing of which there certainly ought to be a first-rate example somewhere on the tract. The sort of thing we mean is a type of what is sometimes called a landscape garden, the heart of which is a beautifully modelled lawn, enframed by beautifully composed trees irregularly disposed, under which the lawn here and there loses itself in shadowy mystery, while elsewhere its irregular margin is formed by masses of flowering shrubs and flowering herbaceous plants, providing, as an incident of the landscape, an informal or naturalistic herbaceous garden designed predominantly or almost exclusively for esthetic effect.

The suggestion in your report of April, 1923, at first appealed to us strongly, namely, that this area, if and when freed from the Park Department greenhouses, work yards, etc., be used for a really first-rate Formal Garden in connection with the reconstruction of the Lorillard Mansion, which you proposed should serve as a place for exhibitions, for the meetings of garden clubs and for kindred activities. Unquestionably it is a very desirable thing to provide, in the most perfect possible way, somewhere in the Botanical Garden area, for the grouping of such functions in a beautiful building, domestic in scale but considerable in size, intimately related to a beautiful garden of a suitable kind. The most suitable kind of garden for such a purpose would be, in an agreeable sense of the word, "formal;" that is to say emphatically not "naturalistic."

This is not the place to attempt a thorough clearing up of the confusions of meaning which have caused for many years so much misunderstanding over this word "formal" as applied to gardens and gardening. Most of the misunderstanding is due to unexpressed mental reservations as to what is meant by the word, or to differences of emphasis on various phases of formality. To some the word suggests mainly certain kinds of formality which are unattractive or even distressing to them; associated with stiffness, rigidity, bald precision of detail, or such complete dominance of architectural elements as to make the term "garden" almost a misnomer. To others the word suggests merely a pleasantly obvious orderliness in the general disposition of the major parts of a garden, frankly expressing deliberate human design and control; as by symmetry of certain forms about a straight axis, or the disposition of paths and masses of vegetation in such a way as to suggest to the eye easily recognized simple shapes of agreeable proportions, rectangular and otherwise; all of which is consistent with great exuberance and freedom and spontaneity of detail, especially in the growth of plants and in the composition of plants within the orderly and formal framework of the general plan. If so conceived, "formal" is applicable alike to a garden made up wholly of flower beds and turf and to one largely characterized by paved walks and steps and walls and fountains and sculptural and architectural elements, provided the latter be enriched by sufficient vegetation to entitle it to the name of garden at all.

Obviously a botanic garden is hardly a legitimate place to devote much space or money to the creation, for its own sake, of any formal design so predominantly architectural or sculptural in its interest that the vegetation plays a wholly secondary rôle—

such a thing as might be more properly called a court-yard or a plaza than a garden. But it is equally obvious that it is legitimate and desirable to provide, for the benefit of that great part of the public which is interested in plants mainly for their usefulness in pleasure gardens, one or more excellent examples of a sort of garden which countless generations of mankind have delighted to have in association with dwellings—a frankly man-made thing, expressing man's skillful artistry and the completeness of his command over his surroundings: formal in the sense that the dominant form of the thing as a whole and the form of the more conspicuous relationships between its several parts are not merely beautiful but unmistakably intentional and deliberate.

We do not question that such a formal garden could be done beautifully in the locality now in question.

On further study, however, two considerations have led us to believe that this is not the best place for such a thing. One is that a center for meetings and exhibitions, both indoor and outdoor, other things being approximately equal, ought to be more conveniently and quickly accessible from rapid transit stations than is the neighborhood of the Lorillard Mansion, and also should have space in its vicinity for small special exhibition gardens and preferably also for special exhibitions under glass, which could be introduced near the Lorillard Mansion only by sacrifice of existing and potential values of another sort of great importance to the Botanical Garden.

The most notable natural feature of the Botanical Garden, perhaps as a matter of botany and certainly as a matter of landscape, is the gorge of the Bronx River with its wild growth of hemlocks and associated plants, its picturesque precipitous slopes and ledges, its sense of remoteness and seclusion from the city and most of the works of man. The Lorillard Mansion and its appendages conspicuously intrude upon this landscape unit in a manner contradictory to its essential character. From the point of view of botanical consistency no less than landscape value these contradictory elements ought to be removed and the entire landscape unit of the gorge, on both sides of the river, gradually restored as nearly to the conditions characteristic of such a gorge in a state of nature as is consistent with making it accessible to and enjoyable by large numbers of people. No artificial structures except such as are necessary to that end should be maintained here and these should be made as inconspicuous as is consistent with efficiency in operation and maintenance. The precise limits of this gorge unit we are not prepared to define positively as yet; but plainly they should include the

site of the Mansion itself, the slopes to the north of it (where the small stone stable occurs) up to the height of land on the east, and in the region further south at least far enough eastward from the river to include the whole of the narrow ridge that lies between the river and the Park Department greenhouses.

We believe this consideration alone precludes the rebuilding of any garden house or other such structure on the site of the Lorillard Mansion, whether the matter is looked at from the point of view of a Botanical Garden or that of a public park.

The land which lies to the south of a line drawn through the existing foot-bridge across the gorge and to the east of the service road that hugs the west side of the greenhouse is not quite so intimately associated with the gorge; and, if the natural forest border on the low intervening ridge were restored and widened and made more dense, the outlying area beyond the limits above defined might perhaps have a landscape character quite dissimilar to that of the gorge without impairing the perfection of the latter. But to introduce even in this area a highly elaborate and sophisticated formal development with a garden house of considerable size, would bring two contrasting kinds of things in such close juxtaposition as to make the plan questionably wise.

The second consideration, closely related to the point just made, is that we have found no place on the whole Botanical Garden lands nearly as well adapted as this swale (where the greenhouses are) for the development of such a naturalistic Landscape Garden as we have attempted to describe above; for the development of a landscape characterized by a long stretch of beautifully modelled lawn in association with free-growing trees, flowering shrubs and herbaceous flowering plants; or indeed for the development of an equally long, restful, completely unified and self-contained view of any sort. These also are elements of which there should be at least one admirable example within the Botanical Garden.

Therefore we have sought for other possible sites for a first-rate formal garden in conjunction with a building for exhibitions, meetings and social activities and with other features desirable to associate with such a center. We believe that these things can be provided for in another locality, which upon the whole would be more advantageous for such purposes, and we will discuss it in Part V. For this reason we do not hesitate to recommend the assignment of the Lorillard Mansion area and the area embracing the Park Department greenhouses and the swale south of them nearly to the picnic grove for the purposes of the Landscape Garden above outlined.

PART IV

AUTOMOBILE THROUGH-TRAFFIC

The successive steps in the formation of routes of automobile travel within and through and near Bronx Park, largely controlled as they have been by considerations entirely independent of the Botanical Garden, and the interjection of the Botanical Garden into the area traversed by or affected by these routes, have resulted in a situation quite unprecedented, so far as we know, in any of the important botanical gardens of the world.

Many of these botanical gardens are substantially self-contained, free from intersecting through-routes of vehicular travel, and subject to design and management for botanical garden purposes alone. Most of them, like Kew, have no roads for public vehicular travel within them at all. The Arnold Arboretum, more nearly comparable in size with the New York Botanical Garden than is Kew, but because of its confinement to woody plants presenting less administrative difficulties in controlling public abuse of its collections than is the case where more strictly garden-like elements are involved, has roads open to the public in the daytime, but it is completely closed at night and up to the present time the roads have not been open to automobiles.

In an area the size of the New York Botanical Garden, we believe that automobile roads for circulation within the area are necessary and desirable, although for the public benefit to be derived from the Botanical Garden as such it is extremely desirable, as heretofore indicated, that every possible care should be exercised to minimize the danger and annoyance of frequent crossings at grade of these roads and the main routes of circulation for people on foot.

But the successive and almost independent steps in the development of the *main lines of through-travel* for automobiles in this part of the Borough of the Bronx, have placed the Garden in the path of some of the most important of these lines and thrown upon its roads a burden of through-traffic which is already a very serious problem and bids fair to become immensely worse.

The completion of Bronx River Parkway, debouching from the north into what was evidently designed as a local loop road for circulation wholly within what is now the Botanical Garden, taken in connection with the prior opening of the Grand Concourse (laid out long after the establishment of Bronx Park and the design of most of its roads), opens through the Garden, on roads very ill adapted to the purpose, what is plainly destined to be one of the most busily thronged automobile thoroughfares leading in and out of Manhattan.

Both for the benefit of this through-traffic as such and for the benefit of the Botanical Garden as such, a radical improvement in this situation seems almost imperative. It is possible that the City may find a way to open a new and more direct connection for this great line of through-traffic independent of the Botanical Garden, between the Grand Concourse near its present northern end and a point in the southerly part of Bronx River Parkway north of the Garden. (See Map B.) Also there is even more reason to hope for the contemplated connection of Bronx River Parkway Drive with the northern end of Bronx Park East, the complete opening and improvement of the latter to Pelham Parkway, and its ultimate extension across Pelham Parkway into Boston Post Road. Such by-passes, if provided, would greatly ease the situation, but even so it would remain far from satisfactory.

Certainly if this is not done, and probably even if it is done, there should ultimately be a shorter and less tortuous road, on good lines and grades and of ample width, following as closely as practicable the westerly boundary of the Botanical Garden and substantially independent of all its routes of interior circulation, from Bronx River Parkway Drive at a point north of the northwest corner of the Garden lands to Southern Boulevard, which borders the southern part of the Garden on the west, and connecting at grade, conveniently, with the roads which cross into the Garden over the railroad at Woodlawn Road, at Mosholu Parkway and at Bedford Park Boulevard (200th Street).

Such a road or parkway for through-traffic, because of the necessity for connecting with the bridges over the railroad, should be built largely in heavy fill, on a broad embankment that would provide a platform for a tall and dense border plantation serving ultimately to screen from the landscape of the Botanical Garden not merely the railroad but the very conspicuous miscellaneous buildings on the higher ground to the west, far better than they can ever be screened otherwise. And from such an embankment-road the throngs of people using it would be able to overlook and enjoy in passing the neighboring portions of the Garden without invading it or coming into conflict with those who resort to the Garden primarily for its own sake.

As a matter of intelligent city planning we believe that ultimately a branch of such a thoroughfare should be, and probably will be, provided directly south near the railroad to Fordham Road along the edge of the Fordham University property. We understand that this is now prohibited by legislation secured in the supposed interests of Fordham University; but looking to

the remote future we cannot but believe that the time will come when it will be to the interest of all concerned to complete such a connection in a properly designed manner. This possibility obviously reinforces the importance of such a through-traffic line as we have suggested along the westerly boundary of the Garden, whether the City does or does not open the independent connection between the north end of the Grand Concourse and Bronx River Parkway.

There has long been an agitation for a street across the Bronx valley from the end of Burke Avenue on the east to some point on Webster Avenue. This proposal first took the form of a high-level viaduct substantially on the north line of the Garden lands. This was indefinitely postponed because of its excessive cost. The project now comes up again in the form of a descending earth-fill embankment from the end of Burke Avenue, crossing by bridges over the road which connects the Garden with Bronx River Parkway, and over the Bronx River, coming nearly down to the elevation of the meadow along the northerly line of the Garden land at a point between the river and the railroad, thence curving across the northwest corner of the Garden land and rising on an embankment adjacent to the railroad so as to meet the grade of the existing bridge over the railroad at the Woodlawn Road Entrance. This latest proposition, besides being less costly, can be made in its ultimate effect a much less conspicuous intrusion on the landscape of the Garden than a high-level viaduct. Its immediate effect would be very distressing through the substitution of high, raw earth-banks where many well-grown trees now exist; but *if these banks are liberally and skilfully graded and composed of material suitable for the vigorous growth of permanent trees and underplanting*, and if they are properly planted, they can be made in due time to furnish a good enframement of the Garden, especially desirable on the railroad side.

The portion of this embankment road which would parallel the railroad from the north boundary of the Garden to the Woodlawn Road Entrance bridge would coincide with the west-side through-travel route previously discussed, and if the City undertakes the work it is highly important for the Garden that the grading plans be worked out in such a way that the slopes can be counted on as permanent, that trees can be promptly planted on them and grown to maturity. It would be a shame to permit the work to be done in such a way that after beginning by the destruction of the now-existing trees it would leave the new plantations subject to probable destruction by a future widening of the embankment when the west-side through-route is opened.

South of the Woodlawn Road Entrance the construction of the west-side through-route may be quite remote, but we believe it would be most unwise to proceed except upon the assumption that it will ultimately be constructed. Its precise location and grades and the eastern limits of the regrading necessary in connection with it we have not attempted to determine. Obviously the operation as a whole should be so designed as to minimize the disturbance to the Garden to the utmost degree consistent with securing (a) satisfactory grades, alignment and width for the through-road, (b) the best possible permanent bordering plantation for the landscapes of the Botanical Garden, and (c) incidentally attractive park-like qualities for the enjoyment of users of the through-road, including pleasant views over the Garden while maintaining an effective barrier, for police purposes, between this road and the interior of the Garden. Our impression is that a continuous, dense, high, but narrow screen of trees and undergrowth should be provided between the road and the railroad; that the slope toward the Garden should be more openly and intermittently planted; and that the permanent fence between the road and the Garden might in many places take the form of a mere parapet supported by a high retaining-wall so as to permit unobstructed views of the Garden without facilitating trespass and at the same time minimize the encroachment of the slope-grading on the present plantations of the Garden.

We assume, then, such a west-side through-traffic road, as a fundamental part of a comprehensive plan for the Botanical Garden.

With this new through-traffic line and the complete improvement of Bronx Park East, the interior roads can be wholly or almost wholly relieved of the burden of through-traffic, and some of them could advantageously be eliminated. One road in particular seems to us unnecessary and undesirable under such conditions. This is the one which extends past the easterly corner of the Museum and across the Water Gardens. As long as it remains, it will offer a temptation to high-speed through-travel by automobiles and motor cycles between the Southern Boulevard Entrance and Bronx River Parkway. It will also interpose a very objectionable traffic-line between the Museum, with other features yet to be developed in its vicinity, and the entire area of the Garden to the east of it. Incidentally it constitutes a strongly marked line in the landscape composition, having a very awkward and unpleasant relation to the orientation of the large and dominating architectural mass of the Museum itself.

We are inclined to think that the steep road which now runs

from the hollow below the Iris Garden up over the ridge and down to the junction of Southern Boulevard and Pelham Parkway, could advantageously be eliminated. To do so would certainly be advantageous to the great majority of people who visit the Garden on foot, and would remove one element of danger and complexity at the important traffic-junction where it now makes a five-corner intersection. It would also facilitate a more useful and more beautiful treatment of the Iris Garden unit through which the road now runs.

On the other hand, certain additional road construction is necessary to complete a satisfactory system of interior circulation for the Garden.

One such addition of unquestionable importance is a link across the river somewhere south of the Gorge, so as to avoid the necessity of going outside of the Garden enclosure into Pelham Parkway and back again into the enclosure in passing between the southeasterly and southwesterly parts of the land. In our opinion such a road and bridge, while ultimately necessary, are far less urgent than many other improvements. But it is extremely important to fix the precise location and grades of such a future road because of its intimate relation to the design of all the adjacent areas, within which improvements in maintenance, in planting, in the path system, etc., are needed. These should all be directed toward a well-studied landscape treatment into which this road will fit perfectly whenever it is built. In other words, the design of this road and bridge ought to be part of a design for the permanent treatment of the two landscape units to the north of it — namely the Hemlock Gorge unit and the suggested Landscape Garden unit — and of the picnic grove unit to the south of it; and no permanent improvements should be attempted in any of these areas until the plans for all have been worked out with a considerable degree of finality. Our present impression is that the best line for the road would be, very roughly, as indicated on Map A. This shows alternative lines for the easterly end of the road, choice between which can not be made without working out the details with much care. In any case the road ought not to be permitted to encroach upon the natural southern and southeastern limits of the topographic unit suggested for development as a Landscape Garden. And probably in any case an underpass should be provided for a foot-path connecting that unit with the picnic grove unit.

The proposal of a west-side parkway for through-traffic outlined at the beginning of this portion of the Report, together with

the development of the vicinity of the Museum, discussed in the following section, Part V, necessitates a revision of the vehicular approach to the Museum and of the connection along its west-erly side with the roads in the Fruticetum. As to the latter connection, it would be almost as undesirable to force vehicles, circulating within the Garden between the vicinity of the Fruticetum and the vicinity of the Museum and points further south, to go outside the Garden enclosure into the contemplated through-travel road and back again, as it is to force out into Pelham Park-way the vehicles that need to cross the Bronx River in the southerly part of the Garden. And for reasons already indicated we believe it would be far better to provide such an interior circuit west of the Museum and the Water Gardens, even at the expense of considerable local regrading and replanting, than to maintain permanently the present road in the heart of the Garden northeast of the Museum.

The location of the present east-and-west road south of the Museum through the center of the valley which lies between the Museum and the ridge northeast of Conservatory Range No. 1, and the concurrent splitting of this valley into two halves of contrasting treatment — the northeast half occupied on the Museum axis by a formal approach to the Museum which begins abruptly in the very middle of the valley unit, while the southwest half is treated as an open informal landscape — is to us very distressing and esthetically self-contradictory. Some permanent cross-connection for the interior circulation of vehicular traffic somewhere between the Museum and Conservatory Range No. 1 seems essential. The best place for it we are not yet sure of, because it is involved with three other very perplexing problems which will be discussed in the next section of the Report.

Briefly there seem to be four possible solutions: One would be to leave the cross-road substantially where it is but to unify the valley by applying the same kind of landscape treatment to both its halves; either by extending a generally formal treatment southwesterly across the valley from the Museum to the opposite ridge, this treatment being traversed by the cross-road; or by curtailing the formal treatment to the immediate vicinity of the Museum and leaving the entire heart of the valley treated informally but still traversed by the cross-road. A second would be to shift the cross-road much closer to the Museum and leave the entire heart of the valley open for treatment as a single unit, either informal or formal, but undivided by a road. A third would accomplish a similar result by shifting the cross-road much further from the Museum to a position fairly well up the slope

on the southwesterly side of the valley. A fourth would be to remove the road entirely from the valley by resorting to the old road line just to the northeast of Conservatory Range No. 1.

Upon the whole, as well as we can judge without working out thoroughly the problems discussed in the next section of this Report, it would seem that number three or number two of the above alternatives would hold the best promise of first-rate ultimate results. These two are roughly indicated as alternatives on Map A.

Under the circumstances, clearly, no considerable permanent changes should be undertaken in the area between and surrounding the Museum and Conservatory Range No. 1 until a satisfactory general plan for this whole area has been worked out and agreed upon, unless they are such as would surely fit in with any one of the above mentioned alternatives.

Only one other additional road for interior circulation has occurred to us as at all desirable, and we are not yet entirely confident that it is worth while. The road now under construction from the Rose Garden to the Allerton Avenue Entrance is in part ugly and positively dangerous in alignment and grade. The most objectionable points are where it crosses the Lake Valley and near the undeveloped Arboretum Entrance. It is apparently possible to lay out a substitute for this section of the road on good lines and grades, by swinging off from this newly built road at a depression southwest of the Propagating Houses, crossing by an arch over the ravine east of the Lorillard Mansion and from there to the Rose Garden following approximately the old Lorillard approach road. In this position the road would overlook, without intruding upon, the Landscape Garden discussed in Part III, Section 4, and would make it possible to bypass or entirely to eliminate that section of the newly constructed road which now injures by its embankment the Lake Valley and which has the only steep and dangerous gradient and curve in the Garden road-system.

There are various other adjustments of roads and road-junctions, mostly of a minor sort but important in the aggregate, which ought to be made in order to adapt what were designed as park drives for horse-drawn vehicles to use as automobile roads in a botanical garden; but we will here mention only one, the very confusing junction in the Fruticetum north of the Water Gardens. This ought to be radically changed and simplified for the convenience and safety of traffic, and we believe it can at the same time be so handled in connection with the readjustment of the Fruticetum planting as to improve the appearance of this part of the Garden very materially.

PART V

VICINITY OF THE MUSEUM

Three main problems are here presented which we have found very perplexing, and the best solution of which we do not yet feel confident that we have found. One problem is that of the appearance of the Museum building in relation to its surroundings and of those surroundings in relation to it. The second problem is that of the most effective use, for the purposes of the Garden, of the area immediately surrounding the Museum and lying between it and Conservatory Range No. 1 and westward to the railroad. The third is that of making a far better impression upon the great number of visitors who enter the Garden in this vicinity, both from the rapid transit lines and by automobile; and at the same time, while making such a strongly agreeable immediate impression, inducing them to disperse rapidly to various parts of the Garden instead of congesting near the entrances.

As to the first, our frank opinion is that the present conditions are esthetically very bad. Considered simply as a piece of architecture, apart from relation to surroundings and without allowance for any limiting conditions which may have necessitated the present design, the exterior of the Museum building could not, we believe, be regarded by any competent critic as an artistic success. The story above the main cornice is peculiarly unfortunate in its effect on the silhouette and general proportions of the building. And for a building situated, as this is, in a large open landscape, the high-shouldered effect thus produced is particularly unhappy. Looking forward to the time when extensive additions will be made to the north, it would seem worth while seriously to consider the total elimination or radical change of the present top story at that time. It may even be worth while to consider, in connection with the possibility of very extensive future additions, whether the present building could be entirely enclosed in and masked by such extensions, with a radical change of architectural character; as was done with the original ugly units of the Metropolitan Museum of Art.

The effect of the building is very much worse as seen from a westerly direction, where the ground falls away rapidly from the basement level of this high building-mass and where there are no supporting trees near it, than as seen from southerly and southeasterly directions, where the ground is more nearly level and there are numerous large trees to compose with it.

It was doubtless this rapid falling-away of the ground to the westward which dictated the narrowness of the formally sym-

metrical treatment of the axial approach to the building from the southwest. The strip of land occupied by this approach, with its four rows of fine tulip trees, is in considerable fill all along its northwestern edge and this fill drops off abruptly and rather skimpily to what appears to be the original natural surface of the ground just outside the outermost row of trees; whereas the façade of the building extends far beyond this line.

The result is to divide the landscape opposite the long façade of the building into three distinct parts, of three totally different characters, the combined relations of which to the building seem to us most unfortunate.

The formal treatment on the axis is too narrow to furnish in itself an adequate setting for the frontage of so wide a building, and yet is so massive that, instead of seeming a mere incident within a unified open space relating as a whole to the whole façade, it almost completely divides the open space. This effect is exaggerated by the marked lack of symmetry between the two resulting pieces of open space on opposite sides of the axis, both as to levels and as to the presence and absence of trees.

In relation to so big a building, emphatically symmetrical in design, the formal treatment on the axis seems to us, therefore, an unfortunate compromise between two alternative schemes either of which might be good.

In one of these possible schemes the building would face upon a broad park-like space of more or less undulating topography, not rigidly symmetrical about the axis of the building, but not so markedly unsymmetrical as to the grades in immediate contact with the walls of the building or its terraces as to produce a limping effect. In such a scheme, not predicated upon extending the perfect symmetry of the building far beyond its walls, the approach road, instead of being straight and axial for a distance of some 400 feet (or about half-way across the topographic unit in front of the building) and there breaking into asymmetry, would probably sweep up on curving lines from right and left to a formal forecourt in immediate contact with the building.

The other scheme would be to formalize the treatment of the land on which the building fronts to a width comparable with that of the façade itself, and would probably extend this formal treatment out along the axis of the building (although not necessarily at the same width throughout) to the opposite side of the topographical unit over which the eye sweeps as one looks out from the building; in other words, to the opposite side of the valley.

The first scheme could originally have been carried out success-

fully at less expense than the second. It probably could now be carried out at less expense, although only by the sacrifice of the well-grown tulip tree avenues and some other features of the present scheme. It would, however, require that a large area, certainly not less than 20 acres, near the Museum and between it and the Conservatory, should be kept permanently in a rather broad, open, park-like treatment, which would be suitable for the exhibition of a limited number of well-grown specimen trees but for hardly any other specifically botanical garden purposes.

We are inclined to believe that this area, so conveniently adjacent to the Museum, to the Conservatory and to transportation services, ought to be much more intensively used than would be possible under such a broad, simple, park-like treatment; that it should include, for example, provision for diversified exhibition gardens and kindred purposes.

Such intensive use for various appropriate botanical garden purposes might conceivably be worked out in a series of units almost wholly informal and naturalistic in character; but for many of them there would be much more assurance of securing results good of their kind and at the same time compact, efficient and easily maintained when visited by large numbers of people, if they were frankly artificial or formal in their arrangement. Such units, suitably designed and disposed, could be provided with backgrounds and enclosing and separating masses of trees, whether deciduous or coniferous or both, which would constitute part of the botanical collection of trees and would be quite as numerous as could be provided for in a rather open park-like treatment such as has hitherto been attempted in this region, if not more so.

On the theory of more intensive use, therefore, the second and more ambitious scheme involving a considerable amount of formally planned development as distinguished from a mainly naturalistic landscape, would seem to be the better.

With either kind of general scheme, although more readily perhaps in one characterized by the more extensive use of formal elements in the plan, it would be feasible to provide in this vicinity for the proposed Garden House and a representative Formal Garden of the most exquisite sort, as previously discussed in Part III, Section 4.

In our preliminary report we ventured to suggest one possible site for such a Garden House and for the Garden in connection with it, but we are by no means satisfied that these would be the best locations, nor can the best locations be determined without developing a complete plan for the entire area in question.

Whether a mainly informal scheme or a more largely formal scheme is adopted, a permanently satisfactory result in this part of the Botanical Garden can in our opinion be attained only by radical, extensive and costly changes. Plans for either kind of scheme, sufficiently well worked out to be dependable and to be clearly explanatory of the results to which they would lead—such plans, in other words, as the Managers should have before them at the time of reaching a definite decision in a matter of such importance and involving commitment to such large expenditures—can be prepared only with much study and labor. Every part would be so interlocked with other parts that it would be unsafe to stop short of working out all the parts in considerable detail, continually revising and adjusting until a satisfactory and harmonious whole is quite certainly assured.

We have made numerous diagrammatic and partial studies in hopes of being able to illustrate and clarify our general statements above, but those which show enough features to be really explanatory go further and appear to commit us to more definite conclusions than is safe without much more thorough and detailed planning than we have felt to be justified at present.

If it is thought that there would be a reasonable prospect of carrying out such a radical plan of improvement in the vicinity of the Museum as we have outlined above, we should be interested to work it out in definite form so that at least the pros and cons could be thoroughly canvassed and clearly understood. To do so is so much of an undertaking that we hesitate to embark upon it and to ask the donors of our services to pay for it, without knowing whether the Managers would be inclined to consider such a proposition favorably.

There is, however, one part of any plan for this vicinity about which more needs to be said, and about which something even might be done in the way of execution without dangerously complicating the main problem of how to treat the valley between the Museum and the Conservatory ridge. We refer to the reception and initial distribution of the throngs of visitors who enter from the terminal of the Elevated Railway.

It is important, as has already been pointed out, to induce the rapid dispersal of visitors, and it might be held that a more intensive development in the vicinity of the Museum and Conservatory would necessarily defeat this purpose and lead to congestion.

There are, however, two sides to this question. A large proportion of the visitors, especially of those on foot delivered by the rapid transit lines, have no definite objective when they enter the Garden. Also most of them are lazy about walking far; and, if

confronted, upon entering, by a relatively uninviting prospect with few objects of much attractiveness immediately beyond them, are extremely apt to settle down or to "mill around" near the entrance without going much further. The mere fact of the existence of interesting things half a mile away, which they can not see and do not know about, is very little inducement to their dispersal. We believe that a better theory even for the mere purpose of dispersing the public and inducing them in large numbers to penetrate into the interior of the Botanical Garden, and certainly a better means of making them promptly interested and satisfied, is to provide from the very start a series of markedly attractive prospects, leading on from one to another in several different directions, so as to "toll" them along; making what they see at each step offer a direct inducement to go further; drawing some to the right and some to the left and some straight ahead; but, no matter which course they choose, leading them onward step by step and making continued movement psychologically inviting.

We think that no one who studies the conditions on the ground can deny that those who arrive by the Elevated Railway at the western corner of the Garden (the route of approach which is apparently used by the largest numbers and is likely to remain so) upon arriving at the end of the causeway near the men's toilet house are confronted with a very uninviting prospect. They debouch abruptly on a disagreeable and dangerous grade crossing of two automobile roads. Some of them are deflected at once into the not unattractive little *cul-de-sac* between the railroad and these roads. Those who cross the roads find themselves crossing a broad path nearly at right angles to their course and in neither direction showing anything that is very inviting or likely to draw them aside. Ahead of them rises an uncomfortably steep path in rather poor condition and again not presenting any immediately inviting prospect, although beyond the top of the rise the Conservatory looms above the foliage in a way that suggests something interesting in that direction.

If in the absence of other immediate attraction and of a knowledge of just how to reach more distant points of interest, they pursue this mild invitation to a slightly toilsome ascent, they reach the west corner of the Conservatory terraces in a rather unimpressive way and find their way around either to the main entrance court on the southwest side of the Conservatory or to the flower garden on its northeast side, whence they can drift along pleasantly enough through part of the Pinetum to the

Herbaceous Grounds and so to the east or southeast, entirely by-passing the vicinity of the Museum.

To reach the latter from this important entrance the normal route is to turn abruptly to the left after crossing the two roadways and descend on a distinctly uninviting path, shut off from the main body of the Garden area by a hillside rather uninterestingly planted. This hill must be passed by a walk of a sixth of a mile, parallel with and looking toward the automobile roads and the railroad, before entering the main cross-valley between the Conservatory ridge and the Museum. This valley is entered at an elevation which does not present an attractive or inspiring view of such landscape quality as the valley has and does not lead the eye and invite the steps to the very delightful region east of it. The Museum looms into view in one of its less attractive aspects, but to those who are more interested in outdoor than in indoor matters a walk of fully a third of a mile intervenes before they begin to find themselves in surroundings which have the quality so much to be desired, upon entering the Garden, that of giving immediate delight while stimulating to press onward.

This is negative criticism. To take the constructive side, without pretending to submit a final solution, let us imagine how a solution might be approached from the point of view, let us say, of a stage manager bent upon getting certain fairly definite pleasurable reactions from large numbers of people and ready to spend money freely to get his "effects."

Starting from the station of the Elevated they would be led, as now, through a belt of trees rising from the low land on either side of the causeway which they must traverse to reach solid ground. This is the one admirable feature of the present approach — a sort of sylvan screen, in passing which to brush off, as it were, the impressions of the utterly urban commonplaceness of the railway mechanism. The sylvan character could well be more complete, more overarched and umbrageous; it could well extend somewhat further along the route; and instead of adhering to the boundary of the property the causeway might well strike at once diagonally into it, so that the surroundings on both sides would be permanently controllable. It would almost certainly be made to rise on a gentle gradient so as to pass across the two automobile roads, above grade, probably by an arched bridge of sufficient width to carry a narrow plantation of shrubbery on either side, after the manner of the bridges which carry roads and paths across the transverse traffic-roads of Central Park, arriving at grade upon the flatter portion of the

hillside west of the Conservatory, where the main lead would debouch from the shut-in sylvan vestibule upon an open sunny space, rich with color of flowers and well-kept, smooth, green turf; strongly enclosed on the northwesterly side, toward the railroad and the city and the direction of bleak winds, by a dense enframement of tall-growing full-foliaged trees. The present enframement of the space on the southeast is fairly good, with its inviting glimpse of the Conservatory dome and its suggestion of specifically horticultural interest. This unit of first impression, about a hundred yards in length from southwest to northeast, would occupy the space where the word "Pinetum" first occurs upon the Guide Map, but where in fact are ill-kept, impoverished slopes of grass, bordered by weak and dwindling firs, of species which have proved not to thrive in such a locality. In character of design this unit might be anything rich and vigorous and gay and inviting, but perhaps a rather sophisticated naturalistic treatment might be best, a foretaste *in petto* of the prevailing characteristics of the Botanical Garden as a whole, as an antechamber to the principal elements of formal design adjacent to the Conservatory and the Museum, through which or past which lies access to the main body of the grounds.

Before entering this unit of first impression, but just within sight of it, would branch easily to the right a path of direct approach to the main entrance court on the southwest side of the Conservatory, so treated as to give a glimpse suggestive of the kind of interest to be found by following that course. Passing through the unit of first impression one would cross the main path or paths of the flower garden which lies northeast of the Conservatory at a grade and in a way which would give glimpses of that garden, inviting some to turn aside, while the main lead would continue northeasterly at easy grades through successive minor units of informal character but individual, distinctive interest, all backed up by heavy tree plantations on the northwesterly side, to a point on the hillside pleasantly overlooking the valley southeast of the Museum. Here the choice would be open of proceeding, on the one hand, directly toward the Museum, from a point on its axis at a distance of rather more than two hundred yards from the building, or, on the other hand, through the valley to the plainly visible and very pleasant and inviting region south of the Museum, through which to reach the Herbaceous Grounds, the Economic Garden, the Hemlock Grove, the Water Gardens, and all that lies beyond them.

Because of its grades, because of the sense of at once getting into the heart of things, and because of leading on insensibly

from one point of attraction to others beyond it, such an entrance scheme would be incalculably more effective than the present one, and as already indicated could be made to fit in with almost any final treatment of the main cross-valley near the Museum.

If actually put into execution before the latter was finally planned, it would involve some path-building and other minor changes in the valley which would have to be regarded as temporary and subject to modification. For that reason and because they are otherwise so closely related to the vicinity of the Museum we did not include this group of entrance improvements with the others listed in Part III. But if the Managers, in view of the urgency of other matters and the large cost of any radical improvement in the vicinity of the Museum, should see fit to postpone decision as to the latter for a long time it might be worth while to consider the improvement of this entrance independently thereof.

IN CONCLUSION

The purpose of this Report is in part to point out needs and opportunities for bettering the grounds of the New York Botanical Garden, in part to set before the Managers, some of the rather complicated and far-reaching considerations which ought constantly to be kept in view whenever a decision affecting any part of the grounds confronts them, in order that they may make each decision wisely for the Garden as a whole and avoid snap-judgments.

It is not in itself a program, but it may become a useful basis for a program to be adopted by the Managers, definite as to the near future and tentative as to the more distant future.

It is not at all in the nature of a set of plans and specifications for all or any of the modifications suggested. So far as any of the suggestions it contains may be embodied into a program by the Managers, the first step in the physical execution of any part of that program should be the preparation of plans and specifications so thorough and detailed that the Managers, with the aid of their various technical advisors, can assure themselves in advance exactly what is proposed to be done, just how it is to be done, how it will affect other parts of the program, and what it involves financially and administratively both in first execution and in proper maintenance. The Managers and the Director-in-Chief of the Botanical Garden are in a wholly different situation in such matters from the owner of a private estate, whose purposes may be admirably served if, with a fairly consistent and intelligent idea of the kind of place he wants, he authorizes a succession

of improvements in general terms and leaves the details of execution of each, within reasonable limits of cost, to be settled as the work proceeds by designers and executives in whom he has confidence, without requiring complete plans and specifications in advance. The difference is not merely that the Managers have a fiduciary obligation to take fewer chances than a man may reasonably do with his own property, but also that the purposes to be served are far more complicated and enduring and proposals need to be scrutinized in detail from more diverse technical points of view before final commitments are made.

Respectfully submitted,

(Signed) OLMSTED BROTHERS

APPENDIX A

A record of actual cases giving comparative figures of maintenance labor and maintenance costs. Referred to on pages 7 to 9 of the Report.

We have classified this record in accordance with the three classes of maintenance given on page 8 of the Report.

It should be stated that these figures are only approximate, because in some, and perhaps most, cases it was not possible to eliminate all the factors that should have been eliminated or to include all the factors that should have been included. However, they are close enough to serve as a basis for discussion and estimating. Labor is figured on the basis of \$4.00 for an 8-hour day, 288 days in a year. The reason for not stating where the various areas referred to are located is that some people preferred not to have their data openly published; although none of them, probably, would object to having them passed around privately.

CLASS I

In this class the labor upkeep for the year consists of the equivalent of one man per year for $\frac{2}{3}$ to 2 acres. It comprises such areas as described under (e) on page 7, examples being the Rose Garden, Herbaceous Garden, the gardening effects immediately around Conservatory Range No. 1.

There are about 40 acres of this class in the Garden.

A PUBLIC ROSE GARDEN

Maintenance costs

Labor per acre per year	\$870.00
Supplies and teaming per acre per year	1,130.00

\$2,000.00

Rate per year = 1.327 acres per man.

A PRIVATE FORMAL (walled-in) GARDEN, a part being a rose garden. Area $\frac{4}{5}$ acre.

Rate per year = 0.53 acre per man
(A little teaming extra.)

AN HERBACEOUS AND ANNUAL GARDEN, for supplying cut flowers for the house. Area $\frac{3}{4}$ acre.

Rate per year = 1.12 acres per man.
(A little teaming extra.)

A PUBLIC CITY PARK,
of a highly ornate and sophisticated kind, comprising
ornamental trees and shrubs, hand-mown lawns,
“bedding-out,” statues, pools, and so on. Area
24 acres.

Maintenance costs

Labor per acre per year	\$906.40	
Supplies and teaming per acre per year	154.00	
		<hr/>
Rate per year = 1.272 acres per man.		\$1,060.40

A PUBLIC HERBACEOUS GARDEN
Area 4 acres, about half of which is lawn.

Maintenance costs

Labor per acre per year	\$1,060.00	
Supplies and teaming per acre per year	375.00	
		<hr/>
Rate per year = 1.087 acres per man.		\$1,435.00

CLASS II

In this class the labor upkeep for the year consists of the
equivalent of one man per year for 2-6 acres. It comprises such
areas as described under (d) on page 7, examples being the
Cherry Garden, Fruticetum, and perhaps the lawn areas around
the Museum. There are about 75 acres of this class in the
Garden.

A SUBURBAN PLACE. Design rather complex, outline of lawn very irregular.
Area 1.80 acres, composed as follows:

Buildings	.18 acres
Roads and yards	.13 “
Garden (mostly vegetable)	.13 “
Lawn	.50 “
Balance (trees and shrubbery with a few paths and herbaceous beds)	.86 “

Maintenance costs

Labor per acre per year	\$512.00	
Supplies and teaming per acre per year	127.22	
		<hr/>
Rate per year = 2¼ acres per man.		\$639.22

SHRUBBERY AND LAWNS ON A SUBURBAN PLACE
Area, 30 acres.
Rate per year = 4.09 acres per man.
(A little teaming extra.)

QUASI-SUBURBAN COUNTRY PLACE, excluding farm lands,
including considerable macadam road about 16' wide,
mostly grass-bordered.

Landscape portion, 22 acres, composed as follows:

Grounds immediately about house, largely in turf terraces, with a few beds of annuals . . .	about 3 acres
Nursery	1 $\frac{3}{4}$ "
Balance made up of lawn, partly hand-mown among trees and partly horse-mown, with considerable areas in trees with undergrowth	17 $\frac{1}{4}$ "

Rate per year = 2 $\frac{1}{2}$ acres per man.
(A little teaming extra.)

CLASS III

In this class the labor upkeep for the year consists of the equivalent of one man per year for 6-18 acres. It comprises such areas as described under (b) and (c) on page 7, examples being the general woodlands of the Garden and the North Meadow. There are about 265 acres of this class in the Garden.

A MUNICIPAL PARK, of a simple kind, consisting of tree and shrub plantations, and large areas of meadow or lawn roughly mown.

Area, 103 acres.

Maintenance costs

Labor per acre per year	\$127.45
Supplies and teaming per acre per year	60.06

\$187.51

Rate per year = 9.04 acres per man.

A COUNTRY PLACE

Area 250 acres, composed as follows:

Cultivated fields	36.0 acres
Pasture	35.4 "
Garden	3.4 "
Orchard, golf-links, and tennis courts	10.0 "
Lawn and shrubbery near garden	2.0 "
House-grounds (lawn, shrubbery, perennials, $\frac{1}{4}$ mile of road, complex design)	4.0 "
Cottage grounds (lawn and scattered trees)	4.0 "
Woodland, about	150.0 "

Rate per year (average) = 25 acres per man.

APPENDIX B

More in detail, our ideas as to the Rhododendron Glade and the ends to be aimed at in its establishment are as follows, subject, of course, to modification by further conferences with Dr. Britton.

The scheme of planting would be such as to produce in a large general way and at all times the esthetic qualities of *beauty* and *picturesqueness*. The effect of hybrid rhododendrons or azaleas in variety at times of bloom could be gorgeously magnificent so that the beholder might be fairly carried away in his admiration.

At other times the display of bloom, while perhaps in equally large masses and equally effective in stirring the beholder, would be of a more delicate kind, such as is produced by the mountain laurel, which might be further enhanced by being combined with ferns, some of which, notably the gossamer fern (*Dicksonia punctilobula*), are at their most delicate stage of beauty when the laurel is in bloom. When not in bloom, there would be the beauty and interest of variety of form, of varying shades of green, of the play of light and shadow produced by the thoughtful disposition of the plants in masses and groups or as individual specimens. During the leafless season of deciduous plants there would be the pleasing contrasts between the greens and the bronzes of these evergreen ericaceous plants and the leafless branches and twigs of deciduous subjects.

Hybrid rhododendrons, Carolina rhododendrons, azaleas, lily-of-the-valley shrub, Japanese fetter-bush, Japanese bell-flower, would be some of the kinds occurring in large numbers, particularly over large areas on the slopes; and sorrel trees would rise above the general mass here and there. Combined with these would be such smaller growing plants as heath, heather, bearberry (effective cataracting over rocks), box huckleberry, lambkill. All of these would be distributed well up and down the slope, some of them even occurring sparingly on the floor of the valley.

The many ledges and little rocky declivities would be taken into account in planting so that these would not be unduly concealed, because they would be an important factor in the beauty and charm of the place and could be made to compose and contrast agreeably with the vegetation.

In passing it might be mentioned that *Rhododendron maximum* and *Rhododendron catawbiense* would not occur in this scheme except as a few plants of each merely to represent the species, because they have been used abundantly elsewhere in the Garden and because to make them effective scenically, they would have to be used in such large numbers as would seriously curtail other more important effects.

The greater part of the floor of the valley would be a more or less continuous cover made up of low-growing members of the family. There might be a quarter to half an acre in cranberry bog, serving purposes of scenic effect and affording a lesson in economic botany at one and the same time. Other plants that should appear over considerable areas, in simulation of the way they occur in nature, are leatherleaf, Labrador-tea, *Rhodora* (if it can be made to thrive), *Kalmia angustifolia*, *Kalmia glauca*, *Andromeda polifolia*. While in the main this floor-cover should be low, there could be relief here and there from its continuity by individuals and small groups of highbush blueberry, swamp azalea, sweet pepperbush, and even of rhododendrons and mountain laurel.

While the main appeal would thus be to the esthetic and horticultural sense, the botanical or scientific would be well provided for. There would be as complete a representation of the *Ericaceae* (including such other families as formerly were a part of it) as the climate, soil and location would permit; but many kinds, especially those that would contribute little or nothing to the general scenic or floral effect by being present in large numbers would be represented, each by a few individuals or small colonies so disposed that they could be easily discovered and examined, especially by those interested in learning about the family in detail. Examples of this class are species of *Dauboeia*, *Pyrola*, *Kalmiella*, *Dendrium*, *Menziesia*, *Epigaea*.

It would undoubtedly be desirable to include some plants not of the *Ericaceae* for the purpose of enhancing the artistic effect. Ferns it seems should surely be added. Further, we have in mind some of the conifers, especially various dwarf yews and junipers; also hemlocks, both our northern and the Carolina, and particularly the common inkberry.

The system of paths would be such that the people would be led around to the various vantage points for obtaining the best impressions, and also that access would be afforded for the enjoyment and study of the plants in detail.

Besides path-building, considerable other work of a constructive nature would be required. The bottom of the valley

would have to be filled two or three feet in depth above its present elevation and drained somewhat in order to provide the condition suitable for growing the floor-cover vegetation mentioned in the foregoing. Quite likely it would be found advisable to deepen and otherwise to improve the soil conditions on the slopes by adding and incorporating leaf-mold, swamp muck, and the like, and, perhaps, some of the prevalent friable soil native to the region. Here and there a tree might have to be cut and the existing tree growth otherwise manipulated in order to regulate, to as close a nicety as possible, the proportion of light and shade, a factor to which some of the *Ericaceae* are more sensitive and responsive than the common run of plants. Other constructive work would be that described and implied in the body of our Report.

The area under consideration comprises about ten acres, but it is quite possible that it might be increased to fifteen acres should the growth of the collection of plants make this necessary or desirable.

Resolution of the Board of Managers of
THE NEW YORK BOTANICAL GARDEN
adopted November 20, 1924

RESOLVED, that the Report of Olmsted Brothers be approved in principle as a guide for future treatment of the grounds in the Garden except that there be reserved for future consideration that part of the Report which deals with the proposed modifications of the present road system; and that this Report be printed.

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