

PLANS FOR THE DEVELOPMENT OF A NATURALISTIC CITY PARK
WITH ATHLETIC FACILITIES

by

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B. S., Colorado State College
of Agriculture and Mechanic Arts, 1939

A THESIS

submitted in partial fulfillment of the

requirements for the degree of

MASTER OF SCIENCE

Department of Horticulture

KANSAS STATE COLLEGE
OF AGRICULTURE AND APPLIED SCIENCE

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INTRODUCTION

The purpose of this study was to present the conclusions derived from an investigation of the recreational needs of an average American city of 15,000 population, and to design a large naturalistic park with athletic facilities to fulfill these needs.

The chief reason for choosing this problem was that there is an ever increasing need for parks of this type in the United States. In many cases this want is due to lack of adult recreational facilities of any kind. In other places, those existing facilities have been outgrown by an increase in the size of the city; but the most important factor is an increase in the exigency for recreation by the average adult.

The increasing need for adult recreation is a result of changing conditions brought about by the age of industry. These changes have had a tremendous effect on all cities. The factories have brought smoke and dirt. Rapidly expanding cities have resulted in long monotonous rows of masonry and stone buildings. The city has become an area characterized by formality and monotony.

The advent of the automobile has perhaps wrought the greatest change. Living in the city is now characterized by hurrying cars, with their noise mingling with the noise of street cars, buses and other machines. All this noise,

bustle and crowding has had a detrimental effect on the residents of the average city. As these conditions become acute and oppressing, a complete antithesis is needed. This is to be found in the country or in large naturalistic areas, where the formality of the city can be forgotten.

The most influential factors to increase the need for adult recreation has been the shortening of the average man's working day. Nolen (23) stated that in a city of 100,000, assuming all the time not used in working, sleeping and eating is recreation, every individual spends five hours out of each 24 in recreation independent of Sundays and holidays. This gives a total of 20,833 days or 57 years of recreation time each day in this city. With this staggering total of recreation hours, surely a city should provide for at least one hour a day of this time.

Nolen defined recreation as: "Recreation, in the mind of the average American citizen of any sex, age or climate, spells primarily enjoyment; it is pleasure, relaxation, a good time."

It is generally agreed that adults need recreation. Hubbard and Kimball (18) supported the need for recreation in these words:

Everyone needs recreation, that is, something to do and to think of that is not work, something different from the ordinary routine of existence; and everyone at times needs inspiration that is something to make him see the world and his place in it in some broader way, to feel the presence of the larger forces of the universe. Man's recreations

will differ as men differ, but as all city dwellers are alike in suffering, each in his degree, from the restriction and crowding of the city, so they are alike in needing some recreation which will offset this restriction.

Recreation is important, however, to more than just the individual. It affects the entire community. Nolen (23) expressed the opinion that recreation has an important relation to the productivity and wealth of a community of any size. He said that all over America proper recreational facilities will tend to increase the community output in quantity and in value. Hubbard and Kimball (18) listed four things which a community to be successful must provide for its members. These are: a place to live, a place to work, facilities for transportation, and opportunities for recreation and inspiration.

Therefore, as facilities for adult recreation are needed both from the standpoint of the individual and the community, these should be provided in every city. In this solution a park is designed to supply these facilities in as practical and beautiful way as possible.

GENERAL METHOD

In studying this problem, the first thing done was to decide upon the type of park to be developed. A naturalistic city park with athletic facilities was chosen, as there is a need in the United States for parks of this type, and such

a park would have a wide variation of problems to be solved in the design. With this decision made, the next step was to narrow the problem down to designing a park to fulfill definite needs, and to select a known area on which to develop it.

Rather than spend time searching for a city actually needing a park of the type chosen, an imaginary city was set up with definite existing conditions and lacking such a park. This, of course, allowed a great deal of freedom on the part of the designer in setting these conditions. However, several actual cities were kept in mind, including Manhattan, Kansas, and it is felt that the city as finally set up was representative of a great many small cities throughout the United States.

A population of approximately 15,000 was assigned to this city. The location was arbitrarily set for the east-central portion of Kansas. The city was assumed to be similar to Manhattan in most considerations, such as having a college, few industries and being situated in a farming community.

For this problem certain definite existing recreational facilities were set, namely: two fine golf courses, adequate recreational and park facilities for the negro population, an excellent system of neighborhood playgrounds, and a few very small "passing through" parks. Therefore, no provision for the part played by these facilities was

necessary in this problem, and more space could be given to the adult recreational and inspirational needs.

Relative to the size of the park, Butler (4) recommended as an ideal minimum one acre of park for each 100 population. Butler (6) found that in 1935 the average park acreage for 600 cities in the United States with a population of 10,000 to 25,000 to be 153 acres. Other authorities supported this recommendation regarding area. Therefore, a park area of not less than 150 acres would be adequate for this city.

Among the areas of which a topographic map was available was one of 155 acres. This area had a variation in elevation of 60 feet with a natural creek, and a rolling terrain. Actually this area is the Kansas State College campus. After due consideration of other sites, this area was selected as being more nearly the right size and having a topography that would lend itself well to park design.

The relation of the site to the imaginary city was set approximately the same as the present campus is with Manhattan. That is, with a medium class residential section on the east of the area; medium to high class residential section on the south; an undeveloped subdivision to the west; and on the north, farm land.

A topographic map of the campus was obtained, and from it a new map was made. This new map consisted of contours at intervals of two feet, changed to conform as nearly as possible to the topography prior to any building. The

boundries, adjacent streets and orientation were retained without change. It was assumed that there were no drives, buildings, or trees on the property.

Thus with a city having definite conditions and a topographic map of the area to be developed, work on the design was ready to begin. Throughout the designing of the park, research was done to determine size, type and extent of facilities recommended by authorities for parks in cities of this size. All athletic areas were designed with regulation sizes as given by Hicks, Harrington, Loy, Davis (17).

The park was divided into two distinct but interrelated areas: the larger, a naturalistic area, and the smaller, an athletic area. Both were planned primarily for adult recreation.

The naturalistic area to be of greatest value needed to occupy the greater portion of the area. The important features to be included were: large open meadows and vistas, woods and groves, shelters and comfort stations, a concession building, picnic areas, paths and trails. To enhance the naturalistic effect and the enjoyment of this area, all drives were kept to a minimum and were made as inconspicuous as possible.

The athletic area, due to the character of its use, would not be wholly naturalistic and would have more concentrated use than the naturalistic area. It should be kept because of this in as small a space as possible. The main

features of this area were to be the recreation building, swimming pools and outdoor athletic fields.

In connection with either area, it was thought advisable to provide an outdoor theatre, gardens, and children's playgrounds to fill the needs of families visiting the park. Also provisions were necessary for a maintenance group and parking near the areas of greatest use and those areas which would draw large crowds.

In the actual designing of the park, the first approach was by small "thumbnail" sketches--at a scale of 1 inch = 160 feet. In these sketches the general location of the main features in relation to each other were studied.

Next, more designs were worked out, using the best points of the preceding studies, at the scale of the final design--1 inch = 80 feet. In these studies, tree groupings, and the location of all the features of the park were studied.

With a satisfactory design found, more studies of the planting plan, grading plan and detail plan were made at 1 inch = 30 feet--the scale of the final plans. Thus, the final designs were a composite of the best points of all the preceding studies.

Finally two typical construction details were worked out as a representative sample of the types of construction to be used.

As soon as all these studies were completed they were drawn up and rendered in final form in Plates I, II, III,

IV and V.

The design of this park is not complete, but there was not the time in the scope of this problem to work out complete plans. However, representative samples of the major requirements of a complete plan were studied and worked out.

To accompany the designs a report was written to the mayor and city commissioners of this imaginary city. In this report the need for this park and the advisability of constructing the park as designed are discussed.

SUMMARY

There is a growing need for parks of this type in cities all over the nation. This is due to crowded city conditions, and the fact that the average person has more leisure time for recreation. This problem was designed for a particular condition, but the general needs and conditions throughout the nation were kept in mind when setting up the problem and in the designing of it.

The designer feels that the development of parks of this type for cities the size of Manhattan and larger would be very desirable. Consideration should be given the landscape design of such parks so that they will fill all the needs possible without detracting from the beauty of the area.

It is felt that this is a representative sample of conditions often existing, and that this solution is one way

for solving the city's problem of providing recreation areas for its citizens.

REPORT TO THE MAYOR AND CITY COMMISSIONERS

Gentlemen:

In compliance with your request for information on the advisability of establishing a naturalistic park with athletic facilities in your city, the following report is submitted:

Your city has urgent need for a park of the type proposed. This is true not only of your city, but of many cities all over the nation. No longer do the small "passing through" parks of a block or two suffice. There are a number of these in your city, and these parks do offer a valuable contribution to the welfare of the people of your city. However, a different kind of park is needed. This type of park is a recreational park to serve all the members of your community. Too many residents of your city are at present deprived of contact with nature in its unaltered beauty. It is true that as yet one can drive in an automobile to natural areas in the country and obtain this contact. However, these areas are usually either privately owned and vulnerable to private exploitation or are roadsides and other public property which may be ruined by unsupervised

use. Also, not everyone has the transportation facilities to get to these places.

We must, as progressive men and women, look into the future. Not only will the present natural areas be fewer, but city conditions will be more congested. It is our present duty to set aside an area and to develop and preserve the beauty and naturalness of it for our children and all the future generations to enjoy. A naturalistic park would fulfill all these needs, both present and future.

There is another problem that is becoming more pressing as time goes on. The present trend is towards shorter working hours, which of course gives more leisure time to the average man. There must be more healthful ways provided for him to spend this leisure time.

It has been estimated that every individual spends five hours out of every 24 in recreation of some form. The city should provide a means of spending at least one hour a day of this time in healthful recreation.

Two types of recreation are needed, a passive type requiring little physical activity and an active type such as participation in athletic games and contests. Facilities for both types should be provided in one park if possible.

A careful and extensive investigation has been made of the recreational needs of your city. All your present facilities have been noted and compared with other cities, and minimum standards as recommended by many authorities. The recreational facilities for children were far above minimum standards and the average found in other cities. It was found, however, that existing adult recreational facilities were inadequate with several exceptions. The "passing through" parks are excellent and well-maintained. They serve a breathing spot to the near-by residents, but that is all. The two golf courses are very fine, however, only those who like to play golf and can afford the membership fees are able to take advantage of their benefits. The small recreation park for negroes is adequate, but serves only a small portion of the total population.

For the great majority of the people living in your city there are few municipal recreation facilities. The people must rely almost entirely on commercial amusements, those of their own home, or the automobile. In comparison with other cities your provision for adult, outdoor recreation is far below the average in both areas and standards.

The accepted minimum for recreational and park area is one acre of park for 100 people.

Even including your golf courses which would normally not be included, your present park area does not come up to the minimum of 150 acres for your city.

To meet the minimum recreational standards you should develop an additional park of not less than 100 acres and one of 150 to 200 acres would be ideal. In the future as the population grows, more parks should be added. This would be more practical than developing too large a park at present.

A survey has revealed the fact that there is available an area well suited to the development of a park of the type which you need. This area can still be secured at a reasonable cost, and is readily accessible to a large portion of the residential area. If this tract of land is not secured in the near future, it will undoubtedly be swallowed up by the expanding residential section of your city.

The area referred to is the old J. M. Blank estate, which joins the city on the northwest. The boundaries of this property are Anderson avenue on the south, Manhattan avenue on the east, and farm roads on the other two sides. To the west is a new residential development and the land to the north is still farm land. This site has an area of 155 acres.

This area is at present mostly farm land, with an interesting terrain, and a natural creek, which

could be developed into a very beautiful natural area. The northwest corner is relatively level and well-drained, while the rest of the area is rolling. There is a variation in elevation of 60 feet in the area.

Using this area for the park, the accompanying plans have been prepared for a naturalistic and athletic park to fulfill the needs of your city. The naturalistic area, or the greater portion of the park has been designed to fulfill the need for inspiration and relaxation. Here there is opportunity for intimate contact with nature. Drives have been kept to a minimum and a complete system of walks and trails have been laid out to encourage walking and hiking. Shelters with rest room have been strategically placed to serve all portions of the park. Picnic facilities have been provided near the creek with tables, fireplaces and parking areas.

A concession building has been planned near the picnic areas. This building, containing a cafe and picnic supply store, will yield revenue which will help in the maintenance of that area, and will also house the caretaker of the picnic area. By this close supervision the picnic area can be better maintained and supervised.

The most important factor of all is that the whole design of this part of the park has been

naturalistic. Native or adapted trees and shrubs have been recommended throughout. Long vistas and views have been retained, with small groves and woods scattered over the area. The whole park has been surrounded by a belt planting of trees and shrubs giving a full enclosure and the old stone wall surrounding the area has been left intact. In fact, every effort has been made to keep the area as nearly natural as possible.

The athletic portion of the park has been carefully worked out. It has been placed in the northwest corner of the park. This location in the park was selected for several reasons. First, this was the most nearly level portion of the park, and by locating the athletic area here the amount of grading necessary was reduced to a minimum, also this section would have made a less interesting naturalistic development. Second, this is the highest portion of the park and is the best drained part.

Most of this athletic area has been allotted to outdoor athletic fields and playgrounds. Fields of regulation size have been provided for most of the commonly played outdoor group games including: football, basketball, baseball, softball, volley ball, soccer, and hockey. Regulation courts have been provided for the more common games played by two to four

including tennis, paddle tennis, roque, croquet, shuffleboard, horseshoe, tether tennis, and clock golf. In addition, there is a quarter-mile track and jumping pits for track events. Open areas are also provided for unorganized games or could be laid out for other games in the future. Walks serving these fields have been provided and the entire area has been planned to be not only useful, but attractive as well.

Swimming has been provided in two units. There is a large L-shaped main pool, and in addition a small shallow pool for children and beginners. The larger portion of the main pool is relatively shallow water, as this part of swimming pools gets the most use. The pools have been planned for a maximum daily attendance of 1500 and an average daily attendance of 450. Thus, the pool will accommodate the expected attendance effectively and still be of an economical size.

Stands for spectators have been provided for the swimming pools, and more important athletic fields, including football, track, baseball, softball, and tennis. Knock-down bleachers would serve the other areas and for extra crowds.

A recreation building or field house has been provided adjacent to the swimming pools. This building was planned to serve for dressing rooms to the outdoor athletic area, especially to swimming pools

in the summer, and as a recreation building and community center for the entire year. The main part of the building contains an indoor swimming pool, part of the men's dressing rooms, pool control room for both the indoor and outdoor pools, a gymnasium, offices and meeting rooms, a lounge, and rest rooms. The gymnasium was designed with a stage at one end and a balcony at the other end. This room can be used as a gymnasium, an auditorium or as a dance floor. In the wing, or other unit of the building, are the main dressing rooms, recreation room and a small kitchen for occasional banquets.

The recreation building terminates the mall or main approach to the park. On the east side of the mall are the formal gardens consisting of five separate units, the perennial garden, the evergreen garden, the water garden, the bulb garden, and the rose garden. Adjacent to these gardens is a wild or informal garden. Across the mall from these gardens was placed the garden theatre for band concerts, outdoor plays and pageants. It will seat approximately 1950 people.

The playgrounds have been located adjacent to the athletic area. They have not been designed to serve the role of neighborhood playgrounds, or to serve the whole city. Rather, they are for the

children's play while their parents are using the recreational facilities of the park. It is recommended that these playgrounds be supervised to allow the parents complete freedom to enjoy the rest of the park and to prevent misuse of the area.

In general, these playgrounds consist of a wading pool with sandboxes and apparatus for small children, a playground area with apparatus for children of grade school age, and an area for older children.

As this park will be used by many people who will drive to it by automobile, parking areas have been provided. Also when some athletic contest, band concert, pageant, or other public event is staged, many cars must be parked. The three main parking lots, which are located close to the athletic area, will park approximately 700 cars. Extra parking areas have been provided which will park over a thousand cars. Under ordinary circumstances, these extra parking areas will be playgrounds or just an open meadow, and be used only in cases of extra large crowds. The drives are not planned wide enough to allow parking so seldom should parking be allowed on them.

A small area has been set aside for the maintenance group. This group consists of a building containing the foreman's office, shops, locker rooms for employees, and garages for equipment. There is also a small

greenhouse for early starting of flowers in the spring, and a small nursery for replacements of shrubbery and trees.

In conclusion, this park as designed will adequately and beautifully fill the recreational needs of your community. There will be a few times when certain facilities will be overcrowded, but to plan a unit for the maximum size of crowd expected, regardless of the number, is extravagant in design, maintenance and operation. Rather a park should be designed, as this one is, for the greatest possible value from the standpoint of freedom, spaciousness, and wild beauty, and still adequately serve the needs of the community and those who will use the park. The facilities, under normal circumstances, should accommodate all the normal daily crowds for years to come; to make them any larger would be unwise; and if made smaller, they would not adequately care for the average attendance.

This project should be adopted promptly, while this area is still available, and while funds for it can be obtained.

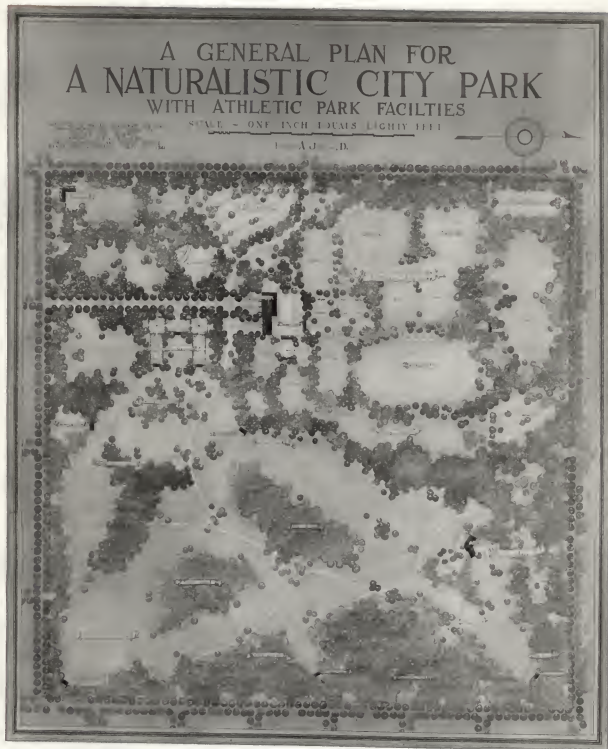
Respectfully submitted,

E. A. Johnson, L. A.

EXPLANATION OF PLATE I

The general plan.

Plate I

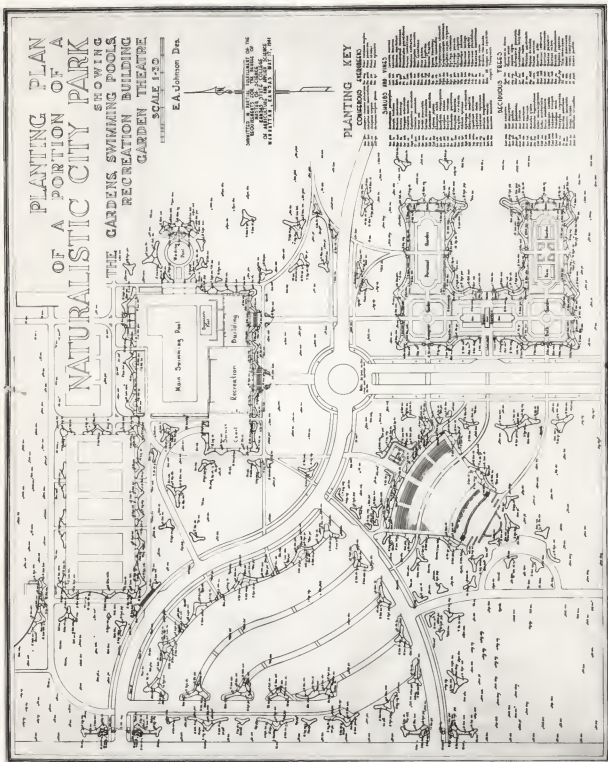


EXPLANATION OF PLATE II

The detail plan.

EXPLANATION OF PLATE III

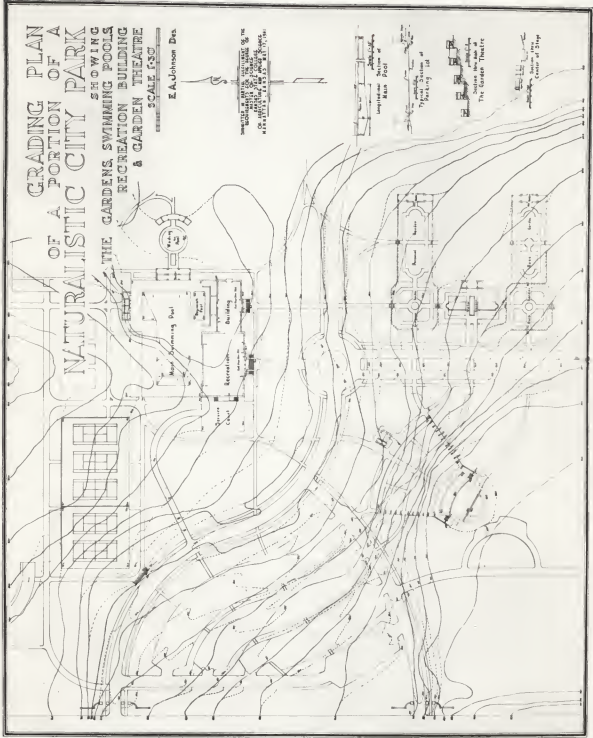
The planting plan.



EXPLANATION OF PLATE IV

The grading plan.

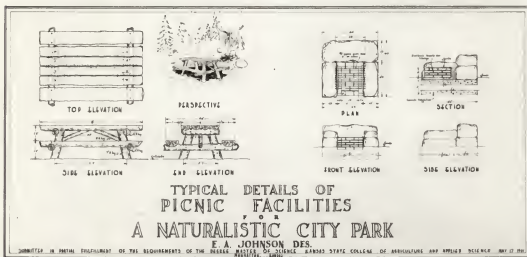
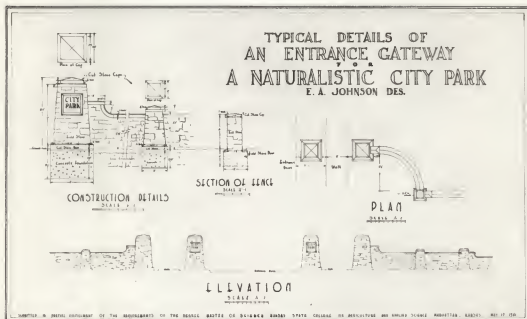
Plate IV



EXPLANATION OF PLATE V

Two construction details.

Plate V



PLANT LIST¹

Shrubs and Vines

<u>Symbol</u>	<u>Botanical Name</u>	<u>Common Name</u>
Aca. pen.	<u>Acanthopanax pentaphyllum</u>	(Five-leaved Aralia)
Amo. fr.	<u>Amorpha fruticosa</u>	Indigobush
Ber. men.	(<u>Berberis mentorensis</u>)	Mentor Barberry
Ber. th.	<u>Berberis thunbergi</u>	Japanese Barberry
Car. arb.	<u>Caragana arborescens</u>	Siberian Pea-Tree
Cel. sc.	<u>Celastrus scandens</u>	American Bittersweet
Ceph. occ.	<u>Cephalanthus occidentalis</u>	Common Buttonbush
Cl. pan.	<u>Clematis paniculata</u>	Sweet Autumn Clematis
Cor. mas	<u>Cornus mas</u>	Cornelian-Cherry
Cor. pan.	<u>Cornus paniculata</u>	Grey Dogwood
Cor. st.	<u>Cornus stolonifera</u>	Red-Osier Dogwood
Cot. ac.	<u>Cotoneaster acutifolia</u>	Peking Cotoneaster
Cyd. jap.	<u>Cydonia japonica</u>	Flowering Quince
Eu. ala.	<u>Euonymus alatus</u>	Winged Euonymus
Eu. atr.	<u>Euonymus atropurpureus</u>	Wahoo
Eu. pat.	<u>Euonymus patens</u>	Spreading Euonymus
Eu. rad.	<u>Euonymus radicans</u>	Wintercreeper

¹All names used are accepted by Standardized Plant Names (51) except those in parenthesis.

<u>Symbol</u>	<u>Botanical Name</u>	<u>Common Name</u>
Ex. gr.	<u>Exochorda grandiflora</u>	Common Pearlbush
For. sus.	<u>Forsythia suspensa</u>	Weeping Forsythia
For. vir.	<u>Forsythia viridissima</u>	Greenstem Forsythia
Hib. syr.	<u>Hibiscus syriacus</u>	Shrub-althea
Hyd. arb.	<u>Hydrangea arborescens</u>	Smooth Hydrangea
Kol. ama.	<u>Kolkwitzia amabilis</u>	(Beautybush)
Lig. amu.	<u>Ligustrum amurense</u>	Amur Privet
Lig. ib.	<u>Ligustrum ibota</u>	Ibota Privet
Lig. reg.	(<u>Ligustrum regelianum</u>)	Regel Privet
Lon. fr.	<u>Lonicera fragrantissima</u>	Winter Honeysuckle
Lon. heck.	(<u>Lonicera heckrotti</u>)	(Goldflame Honey- suckle)
Lon. ma.	<u>Lonicera maacki</u>	Amur Honeysuckle
Lon. mor.	<u>Lonicera morrowi</u>	Morrow Honeysuckle
Lon. tat.	<u>Lonicera tatarica</u>	Tartarian Honeysuckle
Mah. aq.	<u>Mahonia aquifolium</u>	Oregon Hollygrape
Ph. cor.	<u>Philadelphus coronarius</u>	Sweet Mockorange
Ph. gr.	<u>Philadelphus grandiflorus</u>	Big Scentless Mockorange
Pr. to.	<u>Prunus tomentosa</u>	Nanking Cherry
Rha. cath.	<u>Rhamnus cathartica</u>	Common Buckthorn
Rho. kerr.	<u>Rhodotypos kerrioides</u>	Jetbead
Rhu. can.	<u>Rhus canadensis</u>	Fragrant Sumac
Rhu. gla.	<u>Rhus glabra</u>	Smooth Sumac
Rhu. typ.	<u>Rhus typhina</u>	Staghorn Sumac
Rob. his.	<u>Robinia hispida</u>	Rose-acacia

<u>Symbol</u>	<u>Botanical Name</u>	<u>Common Name</u>
Sp. th.	<u>Spiraea thunbergi</u>	Thunberg Spirea
Sp. vh.	(<u>Spiraea vanhouttei</u>)	Vanhoutte Spirea
Sym. ch.	(<u>Symphoricarpos chenaulti</u>)	(Chenault Snowberry)
Sym. rac.	<u>Symphoricarpos racemosus</u>	Common Snowberry
Sym. vul.	<u>Symphoricarpos vulgaris</u>	Coralberry
Syr. ch.	<u>Syringa chinensis</u>	Chinese Lilac
Syr. per.	<u>Syringa persica</u>	Persian Lilac
Syr. vul.	<u>Syringa vulgaris</u>	Common Lilac
Vib. lan.	<u>Viburnum lantana</u>	Wayfaring-tree
Vib. op.	<u>Viburnum opulus</u>	European Cranberry-bush
Vib. to.	<u>Viburnum tomentosum</u>	Doublefile Viburnum
Weig. ros.	<u>Weigela rosea</u>	Pink Weigela
Wis. fl.	<u>Wisteria floribunda</u>	Japanese Wisteria

Deciduous Trees

Acer cam.	<u>Acer campestre</u>	Hedge Maple
Acer dasy.	<u>Acer dasycarpum</u> (<u>Saccharinum</u>)	Silver Maple (Soft)
Acer gin.	<u>Acer ginnala</u>	Amur Maple
Acer pl.	<u>Acer platanoides</u>	Norway Maple
Acer rub.	<u>Acer rubrum</u>	Red Maple
Acer sac.	<u>Acer saccharum</u>	Sugar Maple
Acer tat.	<u>Acer tataricum</u>	Tartarian Maple
Aes. gla.	<u>Aesculus glabra</u>	Ohio Buckeye

<u>Symbol</u>	<u>Botanical Name</u>	<u>Common Name</u>
Aes. hip.	<u>Aesculus hippocastanum</u>	Horsechestnut
Celt. mis.	<u>Celtis mississippiensis</u> (<u>laevigata</u>)	Sugarberry
Celt. occ.	<u>Celtis occidentalis</u>	Hackberry
Ger. can.	<u>Cercis canadensis</u>	American Redbud
Grat. cord.	<u>Crataegus cordata-</u>	Washington Hawthorn
Grat. crus.	<u>Crataegus crussgalli</u>	Cooksbur Thorn
Grat. mol.	<u>Crataegus mollis</u>	Downy Hawthorn
Dio. vir.	<u>Diospyros virginiana</u>	Common Persimmon
Fr. am.	<u>Fraxinus americana</u>	White Ash
Fr. lanc.	<u>Fraxinus lanceolata</u> (<u>pennsylvanica</u>)	Green Ash
Gink. bil.	<u>Ginkgo biloba</u>	Maidenhair-tree
Gled. tri.	<u>Gleditsia tricanthos</u>	Common Honeylocust
Gym. dio.	<u>Gymnocladus dioica</u> (<u>candensis</u>)	Kentucky Coffeetree
Hic. pec.	<u>Hicoria pecan</u>	Pecan
Jug. nig.	<u>Juglans nigra</u>	Black Walnut
Koel. pan.	<u>Koelreuteria paniculata</u>	Goldenrain-tree
Lir. tul.	<u>Liriodendron tulipifera</u>	Tuliptree
Mor. rub.	<u>Morus rubra</u>	Red Mulberry
Pl. occ.	<u>Platanus occidentalis</u>	American Planetree (Sycamore)
Pop. delt.	<u>Populus deltoides</u>	Southern Cottonwood
Pr. ser.	<u>Prunus serotina</u>	Black Cherry
Que. alb.	<u>Quercus alba</u>	White Oak
Que. imb.	<u>Quercus imbricaria</u>	Shingle Oak

<u>Symbol</u>	<u>Botanical Name</u>	<u>Common Name</u>
Que. pal.	<u>Quercus palustris</u>	Pin Oak
Que. rub.	<u>Quercus rubra</u>	Common Red Oak
Rob. ps.	<u>Robinia pseudoacacia</u>	Common Locust
Sop. jap.	<u>Sophora japonica</u>	Chinese Scholar tree
Til. am.	<u>Tilia americana</u>	American Linden
Ul. am.	<u>Ulmus americana</u>	American Elm
Ul. cam.	<u>Ulmus campestris</u>	English Elm
Ul. pum.	<u>Ulmus pumila</u>	Dwarf Asiatic Elm

Coniferous Evergreens

Jun. pf.	<u>Juniperus chinensis</u> <u>pfitzeriana</u>	Pfitzer Juniper
Jun. tam.	<u>Juniperus sabina</u> <u>tamariscifolia</u>	Tamarix Juniper
Jun. vir.	<u>Juniperus virginiana</u>	Common Red Cedar
Jun. gla.	<u>Juniperus virginiana</u> <u>glauca</u>	Silver Red Cedar
Pin. pond.	<u>Pinus ponderosa</u>	Western Yellow Pine
Pin. str.	<u>Pinus strobus</u>	White Pine
Pin. syl.	<u>Pinus sylvestris</u>	Scotch Pine

ACKNOWLEDGMENT

Indebtedness is due Prof. L. R. Quinlan, who is in charge of Landscape Gardening, for his invaluable assistance in the preparation of this thesis. Appreciation also is expressed to Dr. Wm. F. Pickett, head of the Department of Horticulture, and to Prof. R. J. Barnett for their constructive criticism.

REFERENCES

1. Allen, F. Ellwood.
Sunbeams for footlights. Recreation, 33: 3-4,
73-76. Apr., May, 1939.
2. Billings, Chester Bert.
Plans for the landscape development of a large
naturalistic park. Unpublished thesis. Kans.
State Col. Agr. and Appl. Sci. 28 p. 1936.
3. Building types for community recreation. Arch. Rec. 81:
111-152. June, 1937.
4. Butler, George D.
How much play space does a city need? Amer. City,
46: 97-98. Jan. 1932.
5. _____
Playgrounds, their administration and operation.
New York. A. S. Barnes and Company. 402 p. 1936.
6. _____
Municipal and county parks in the United States.
Washington, D. C. U. S. Dept. Int. Natl. Park
Serv. 147 p. 1937.
7. _____
Types of municipal recreation areas. Recreation,
30: 595-598. March, 1937.
8. Check list of park facilities. Arch. Rec. 74: 448.
Dec. 1933.
9. Concrete swimming pools. Chicago. Portland Cement
Assoc. 27 p. Nov. 1938.
10. Cox, Laurie Davidson.
Some principles of state park selection and design.
Lands. Arch. 11: 176-179. July, 1921.
11. Evans, T. N.
Giving the city charm. Recreation, 26: 578-580.
March, 1933.
12. Ford, George B.
Parks and playfields. Amer. City, 38: 115-118.
Apr. 1928.

13. Good, Albert H.
Park and recreation structures. Washington, D. C.
U. S. Dept. Int. Natl. Park Serv. Part I, 200 p.
Part II, 212 p. Part III, 192 p. 1938.
14. Grant, Guifford Burney.
Landscape plans for the development of a garden
theatre. Unpublished thesis. Kans. State Col. Agr.
and Appl. Sci. 26 p. 1937.
15. Haddam, Garen.
Clearance solids for recreation buildings. Arch.
Rec. 80: 13-22. July, 1936.
16. Hare, Herbert S.
Are parks planned or do they 'jus' grow? Lands.
Arch. 22: 16-24. Oct. 1931.
17. Hicks, Curry S., Harrington, W. C., Loy, Lawrence V.,
Davis, Arnold M.
Community playgrounds. Mass. State Col. Ext. Leaflet
176. 2 p. 14 plates. Mar. 1938.
18. Hubbard, Henry Vincent and Hubbard, Theodora Kimball.
Our cities today and tomorrow. Cambridge. Harvard
Univ. Press. 389 p. 1929.
19. Hubbard, Henry Vincent and Kimball, Theodora.
An introduction to the study of landscape design.
New York. Macmillan. 406 p. 1917.
20. Kingery, Robert.
Park and playground standards and achievements in
the Chicago region. Amer. City, 46: 98-99. Jan.
1932.
21. Layout and equipment of playgrounds. New York. The
Playground and Recreation Assoc. of Amer. 60 p.
Feb. 1921.
22. Minimum standards for recreation facilities. Recreation,
32: 241-242. July, 1938.
23. Holen, John.
City planning. New York. D. Appleton and Co.
513 p. 1929.
24. Not for children only. Rotarian, 54: 38. March, 1939.
25. Parks and park buildings. Arch Rec. 77: 351. May, 1935.

26. Park and recreation progress. 1937 Yearbook.
Washington, D. C. U. S. Dept. Int. Natl. Park Serv.
55 p. 1938.
27. Park and recreation progress. 1938 Yearbook.
Washington, D. C. U. S. Dept. Int. Natl. Park Serv.
92 p. 1939.
28. Park and recreation progress. 1940 Yearbook.
Washington, D. C. U. S. Dept. Int. Natl. Park Serv.
92 p. 1940.
29. Park structures and facilities. Washington, D. C.
U. S. Dept. Int. 246 p. 1935.
30. Play areas, their design and equipment. The Playground
and Recreation Association of America. New York.
A. S. Barnes and Co. 205 p. 1928.
31. Standardized plant names. American Joint Committee on
Horticultural Nomenclature. Harrisburg, Pa. 546 p.
1923.
32. Swimming pool data and reference annual. New York.
Hoffman-Harnes, Inc. 128 p. 1936.
33. Wier, L. H.
A manual of municipal and country parks. New York.
A. S. Barnes and Co. 589 p. 1928.