PARKS

A MANUAL OF MUNICIPAL AND COUNTY PARKS

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"Artists in verse, painting, sculpture, landscape architecture, have expressed the belief that the Giver of all good things esteemed the life of man in a garden the happiest that could be given. The creation of the Garden of Eden, the Elysian Fields, the Vale of Cashmere, and the Hanging Gardens of Babylon, bear idealistic or practical testimony to the human desire for vision of verdure and foliage. It is the popular notion that the garden builders of antiquity ministered chiefly to the delight of poets, students, philosophers, statesmen and brain-weary professors. The park or garden, in its modern aspect and under the sway of progressive humanity, has come to be regarded as a place where the weary, whether weary of headwork or handwork, may be refreshed by breathing pure air, gladdened by the sight of flowers and trees, and solaced by the sound of running waters."

HUNTINGTON FALLS, GOLDEN GATE PARK, SAN FRANCISCO, CALIFORNIA

Frontispiece to Volume I.

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Compiled as a result of a nation-wide study of municipal and county parks conducted by the Playground and Recreation Association of America in co-operation with the American Institute of Park Executives at the request of the National Conference on Outdoor Recreation. The study was made possible through funds granted by the Laura Spelman Rockefeller Memorial

EDITED BY L. H. WEIR
DIRECTOR OF THE STUDY

Volume One

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THE WHITE HOUSE
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Three years ago at the initial session of the National Conference on Outdoor Recreation, it was my pleasure to emphasize the need of a national recreation policy. At that time I expressed the hope that all agencies, official and unofficial, might cooperate in gathering information and formulating principles that would be helpful in meeting the recreation needs of the people.

It is therefore very gratifying to write the foreword to this manual which represents a valuable contribution toward this end. This report embodies the findings of an exhaustive nation-wide study of our municipal and county park systems undertaken at the request of the National Conference on Outdoor Recreation, and carried out by the Playground and Recreation Association of America in cooperation with the American Institute of Park Executives.

Play for the child, sport for youth, and recreation for adults are essentials of normal life. It is becoming generally recognized that the creation and maintenance of outdoor recreation facilities is a community duty in order that the whole public might participate in their enjoyment. This presents a particular challenge to municipal and county administrations. I am hopeful that the results of this study may be widely used to the end that our people, even in cities, may not be deprived of opportunities for wholesome play and recreation out of doors.

ENDORSEMENT OF PRESIDENT COOLIDGE

PREFACE

Although the history of parks in municipal corporations in the United States may be traced to the very beginning of many of the oldest towns and cities, and while there has been a definite park movement since the middle of the last century, there is very little literature available on parks in local political corporations. For the past few years a number of public park officials and private individuals interested in parks have felt it would be very desirable to gather together the experiences of the movement in the local communities and compile them into a reference work, covering as nearly as possible the varied fields of park planning, government, financing, executive administration and uses, as these are being developed and practiced today.

Early in 1924 the Playground and Recreation Association of America had under consideration a study of parks throughout the United States which would result in the compilation of such a reference book. Plans for carrying out these projects were under way when it was announced that a conference of individuals and agencies interested in outdoor recreation would be called in Washington under the auspices of the Federal Government.

In May, 1924, President Coolidge convened the conference known as the National Conference on Outdoor Recreation. One of the results of the conference was the definite request that an inventory of the outdoor recreational resources of the American people be taken for the purpose of securing adequate data on which to base plans for a nation-wide systematic planning for outdoor recreation. The Playground and Recreation Association of America was requested in conjunction with the American Institute of Park Executives to undertake a study of municipal and county parks and their systems of administration.

Early in 1925 a grant from the Laura Spelman Rockefeller Foundation enabled the Playground and Recreation Association of America to begin work, and the Association, in consultation with the Executive Committee of the American Institute of Park Executives, appointed Mr. L. H. Weir as director of the study, and formed a National Committee on the study of municipal and county parks. The personnel of the committee was as follows:

C. E. Brewer, Recreation Department, Detroit, Mich.

Martin G. Brumbaugh, Juniata College, Huntingdon, Pa.

Will O. Doolittle, Executive Secretary, American Institute of Park Executives, Rockford, Ill.

Lee Hanmer, Russell Sage Foundation, 120 East 22d Street, New York City.

Henry V. Hubbard, Harvard University, Cambridge, Mass.

David I. Kelly, Secretary, Essex County Park Commission, Newark, N. J.
Paul C. Lindley, J. VanLindley Nursery Company, Pamone, N. C.
Otto T. Mallery, Philadelphia, Pa.
J. H. McCurdy, M.D., Young Men's Christian Association College, Springfield, Mass.
J. Horace McFarland, Mt. Pleasant Press, Harrisburg, Pa.
Herman W. Merkel, Superintendent, Westchester County, N. Y., Park System.
Arthur Ringland, Executive Secretary, National Conference, Outdoor Recreation, Washington, D. C.
Major William A. Welch, *Chairman*, Palisade Interstate Park Commission, New York City.
Theodore Wirth, Former President, American Institute of Park Executives, Minneapolis, Minn.

During 1925 and 1926 information was secured, through field visits and correspondence, as to what more than two thousand, seven hundred municipal corporations and over forty counties had done in planning, developing and operating parks. The two volumes comprising this work are the result of the study and are based upon its findings, although much material has been drawn from sources other than the information compiled. Park development is proceeding so rapidly that some of the facts presented will not coincide with the present situation, but it is believed that the information offered will present a general picture of the park situation throughout the country.

Both in the conduct of the study and in the compilation of these volumes, much valuable assistance was rendered by many individuals and organizations. The members of the National Committee on the Study of Municipal and County Parks have by their individual and collective advice and council been of great assistance. Special thanks are due to the members of the field staff of the Park Study and to a number of the office and field staff of the Playground and Recreation Association of America for their efforts in securing the information. Very grateful acknowledgment is made of the valuable services of all those public officials who gave of their time to assist the field staff in the local studies and to those individuals who answered the questionnaire sent to the smaller cities. It is impossible to give individual acknowledgment and thanks to all those individuals and organizations contributing text material and illustrative data used in the manual, but an effort has been made to give due credit throughout the text.

It is hoped that the information given in this manual and the interchange of experiences which it represents will be of assistance not only to park superintendents and governing bodies, but to all public officials and private individuals interested in promoting the widest possible use of parks for the people.

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INTRODUCTION

OLD PARKS AND NEW

The great pioneer park planners and builders in America had no great difficulty in defining a park. The term then had a definite technical and functional connotation. Eliot defined parks to be "lands intended and appropriated for the recreation of the people by means of their rural, sylvan, and natural scenery and character." Olmsted, Sr., stated the nature and function of a true park as "a place where the urban inhabitants can to the fullest extent obtain the genuine recreation coming from the peaceful enjoyment of an idealized rural landscape in rest giving contrast to their wonted existence amidst the city's turmoil."

At the close of the first quarter of the twentieth century it is not so easy to state the nature and function of that conglomerate aggregation of properties found in a modern, well developed park system. The term "park" has been applied to many different kinds of properties which the original meaning of the term did not comprehend. As long ago as the eighties, Eliot protested against the growing tendency toward an almost universal abuse of the term "park," in that it was being applied to every kind of public property.

Prior to the middle of the nineteenth century (1850) there were no public parks in America, in the sense defined by Eliot and Olmsted. There were plazas and pueblos (public lands) in the Spanish regions or South and Southwest, commons in New England and in parts of the old South, squares in nearly all of the thirteen original colonies and in the newer sections of the United States, and various other types of public properties of an open character. Many of these properties were, moreover, embellished by the planting of lawns, flowers, shrubs and trees. Because of the manner of developmental treatment, however, and the functional uses of many of these properties, it was inevitable when park departments began to be created that such properties should be turned over to them and the word applied to them as a generic term.

The Changing Conception of Parks

During the past twenty-five years the confusion in terminology has become even more marked. The word "park" came to be applied not only to plazas, squares, ovals, triangles, places, monument sites, promenades and public gardens, but to other kinds of properties which functionally were the direct opposite to the "peaceful enjoyment of an idealized

rural landscape." Even the great masterpieces of idealized rural landscape created by Olmsted and others of the pioneers in park building had in many instances been transformed from places where "city dwellers could secure the genuine recreation coming from the peaceful enjoyment of an idealized rural landscape," to active recreation areas. Broad, open meadows had been appropriated for golf or baseball diamonds; the swift moving automobile had usurped the pleasant carriage driveway, destroying the restful atmosphere of the area, and in some rare instances even the amusement devices of the commercial amusement park had been permitted entrance. Intown parks had been appropriated either for children's playgrounds or for neighborhood playfields.

Both Eliot and Olmsted recognized that the supreme functional use of parks was for the recreation of the people, but the type of recreation they advocated was of a passive and semi-active kind, the dominant ideal being peaceful enjoyment amid beautiful surroundings of a naturalistic kind. There can be no doubt that this conception was fundamentally sound then, especially as applied to city dwelling people. It is of even greater importance today, as cities have grown larger and the stress and strain of living has become greater. This phase of the teachings of the great early planners should never be lost sight of in all present and future planning of parks. It so happens, however, that the life needs of people which can be expressed in their leisure are far wider than those comprehended in the early conception, and a wide range of active forms of recreation have come to be included.

Active Recreation Becomes a Part of Park Planning

Beginning in the eighties with sand courts for children and outdoor gymnasiums in the Charlesbank area of Boston, the so-called "playground movement for children," expanding into the "recreation movement" comprehending all age groups in the two succeeding decades, exerted a most profound effect on the entire pioneer conception of parks and their recreational functions. It was natural that with the expanding idea of recreation people should turn to the agency then most closely identified with recreation for the facilities and supervisory services which the new movement demanded, and that there should be a strengthening of the feeling which had been growing up that properties then comprehended in existing park systems should be rendering greater dividends in service.

The effect was epochal both in regard to properties and to the functional services of park departments. The new movement for many forms of active recreation changed the functional uses of many existing park

properties and at the same time brought into existence a number of new types, such as areas devoted more or less exclusively to playgrounds, playfields, athletic fields, stadiums, neighborhood recreation parks, swimming and boating centers, golf courses and boulevards and parkways. It added to the services of park administrating agencies a series of complex and difficult social problems involved in organizing for the people a wide range of recreational activities of a physical, cultural, social and civic nature, involving coöperative relationships with other public and private agencies.

This change was not unattended by growing pains. It was not always easy for members of park governing authorities and park administrators deeply versed in the fine old traditions of park technique to absorb and apply the new and larger ideal of the new recreation service. The period from the late nineties to the present time (1926) has been a period of adjustment and development, and this process of adjustment between the old and simple concept of the functional services of parks and park authorities and the new and more complex functions is still going on. On the whole, however, the expanded recreation concept has been accepted by park authorities.

At the end of nearly three-quarters of a century of park development in the United States the term park[1] has come to mean any area of land or water set aside for outdoor recreational purposes, whether it be recreation of a passive or active nature or any of the degrees between those two extremes, and "that the recreation is expected to come in part at least from beauty of appearance."[2]

[1] The term "public park" is defined in English law as including "any park, garden or other land dedicated to the recreation of the people." (*Mortmain Act, 1888.*)

[2] "Development of Public Grounds for Greater Baltimore," Olmsted Brothers, 1904, page 21.

CHAPTER I

THE WHY OF PARKS

Man is essentially an outdoor animal. So far as our knowledge of his origin goes he has always been found, until comparatively recent times (approximately seven thousand years), in an open country environment. That primitive man worshiped the sun is not strange when it is considered how vitally necessary an abundance of sunlight is to every form of life, including man. All the other forms of worship included in the nature cult which deified the air, earth, water and the stars and moon are equally explicable because of the life-giving and perpetuating powers of these natural elements whose fundamental importance seems to have been deeply understood by primitive man.

After untold æons of living in a naturalistic environment from which he not only secured sustenance but from which he drew the very breath of life itself, man himself turned creator and builder and evolved the city community. For the past seven thousand years the history of the world has been the story of the rise and fall of city civilizations; in nearly every instance of the fall of these civilizations the place of the worn-out people has been taken by a fresh and more virile people from the open country, a process that is less obtrusively going on in the cities of the present day.

In no period of the history of the world has city building been undertaken on such a gigantic scale as in America during the past half century. It is necessary, then, in considering the importance of parks to stress some of the disadvantages of city environment as contrasted with open country environment, which have made parks, with the open country atmosphere they create, so vital to the maintenance of wholesome conditions.

Parks Necessary to Maintenance of Good Physical Condition

In making the change from the open country type of life and civilization in which the great majority of people had lived for nearly eight generations after the first settlement of the United States, to urban conditions, many desirable things were no doubt gained. At the same time the people who gave up life in the country in response to the call of industry and commerce bartered away many things representing distinct losses — losses reparable only by more intelligent and humane city planning and building.

One of the first and most undesirable defects of modern city living and working is that much of the sunlight necessary for man's existence

has been shut out. People are deprived of an abundance of the direct rays of the sun by the smoke and dust in the atmosphere, by the shadows of structures and by the fact that the major part of the work done in the modern city is conducted indoors.

City planners are seeking to offset this by letting in more sunlight through the laying out of broad streets, the limiting of the height of buildings, the installation of devices for the burning of materials which create a great deal of smoke and soot, and through the use of dust-laying materials on our surfacing. The most basic of all planning measures, however, is the reservation of open spaces in such numbers and with such areas, both within and without the city limits, that the majority of people can easily frequent them, thereby getting away from congested living and working places into spaces where the air has unrestricted movement and is reasonably clean and pure. The planting of trees along city streets, of trees and shrubs in all open spaces where they may be grown with a reasonable degree of success, not only adds much to the beauty of city environment but is a great aid in keeping the air freshened.

The nervous system of man, with its delicate and intricate organization, requires repose, rest and relaxation. City life, with its noise and constant movement, gives little opportunity for a let down of the high tension to which the nervous system is subjected. The monotony of the highly specialized processes of modern industry not only leads to extreme irritation of the nerves but thwarts every impulse to initiative, imagination and creation — in itself a source of great irritation to a being who for untold centuries was to a greater or less degree a builder and creator.

The effect on children is equally harmful. Reared in an atmosphere of noise and kaleidoscopic-like motion, their natural impulses to activity restricted on every hand by physical limitations, their nervous systems are under a constant strain and they grow into highly strung adults lacking in power of repose.

Nothing is more in harmony with the previous experience of mankind than the quietness and beauty of large reservations. Small landscaped areas scattered thickly by the cities both in business and residential sections are also highly desirable. But the larger areas are fundamental as an antidote to the rush, hurry and strain of ordinary living and working conditions in modern cities.

City dwellers need above all things to renew frequently contact with soil and growing things; to engage in activities that are different from the daily routine of living and work. Hence the necessity for outdoor and indoor facilities and opportunities which can be provided on children's playgrounds, at playfields, swimming centers and trails for hiking and

riding in large parks. These and other forms of recreation go far toward making life worthwhile under the unnatural conditions of living in modern cities and communities.

All-Round Physical Development Difficult Under Modern Conditions

All-round physical development is extremely difficult for children and adults in modern city life. In common with the young of all animals, children need a tremendous amount and variety of physical exercise in the open air and sunlight. There is scarcely a city of any size in the United States today that has adequately taken care of this most fundamental need of children.

The chores incidental to the daily acts of living in and around the homes in which all members of the family participated and which bore a vital relation to physical development have very largely gone from the city home. Walking and horseback riding, two of the best forms of physical exercise, have practically become non-existent as a habit among the majority of people. Only two generations ago the majority of people (71.4 per cent) lived in a rural environment, and the conditions of life were such as to demand a great number of physical activities using the large muscle groups of the body.

With the coming of the industrial revolution which substituted machines for the hands, minds and bodies of men and women, and for a time for many children as well, this all-round physical activity was cut off from vast numbers of people. The tending of machines frequently uses none of the big muscles of the body, a use vitally necessary to physical health, but instead utilizes excessively the finer muscular and nervous coördinations. Much of this labor is performed under conditions lacking sunlight and an abundance of pure air. The only hope for the preservation of normal physical health in the majority of adults tied to machines and to office and professional work is sufficient leisure to engage in physical activities of an all-round nature.

In modern urban communities these opportunities for both children and adults can best be provided in open areas of different types which allow a wide range of physical activities in the form of plays, games, sports, hiking, riding, gardening, although some of these needs may be met by types of indoor facilities found in gymnasiums and community centers.

The Contribution of Parks to Creative Recreation

In the building of cities man did immeasurable harm not only to the physical development of mankind but to the qualities and powers which

make of man the creator, the lover of beauty and the seeker after happiness. Modern conditions of living and working tremendously limit the expression and the consequent development of the creative capacities of men and women. The labor process is purely mechanical, requiring little or no exercise of craftsmanship ability. Except for a comparatively few creative organizers modern industry holds little hope for the average worker to find an opportunity for creative self-expression. If his qualities as a creator are not to become atrophied he must find some other channel of expression outside his hours of daily labor.

Not only in industry but in the home as well have opportunities for creative expression become limited. Homes have become so transformed that most of the creative activities formerly carried on by the housewife and other members of the family are now cared for by communal agencies. Labor-saving devices, while undoubtedly desirable, are often body-weakening and creative-limiting forces.

In limiting the physical activities of children, their opportunity for creative play has also been restricted. To provide opportunity for the development, through actual expression, of the creative powers of children and adults in this mechanistic age, is one of the most difficult problems in modern life, especially in urban communities. In meeting the problem leisure is the first requisite. The utilization of leisure in creative, constructive activities cannot be met through the mere presence of open spaces, except in so far as they provide opportunities for out-of-door activities for children and adults. The development of the creative faculties is largely a problem of organization on the part of park and recreation authorities, and the predominating need is leadership. Certain kinds of facilities are important, but these are merely accessory to leadership. And this need is as great in rural districts as in urban communities.

To Beauty and Art

One of the predominating characteristics of American urban communities, especially industrial communities, is ugliness. Pathways and roads of wood, stone, brick and concrete have been substituted for wandering paths and winding roads through fields and woods; unsightly structures have taken the place of the beauty of forest and field. All the great natural forces which create anew the spiritual qualities of man and have inspired the great masters to express their thought in beautiful forms, are for the most part lacking in the modern city environment. It is here that park planners can render one of the greatest services. The acquisition, preservation and care of large natural areas, the application of the landscape artist's powers to the creation of beautiful, natural forms in large

and small areas within cities, is of as great importance as preserving and creating areas for the admission of sunlight, pure air, and as places for rest and repose. Such places are the feeding grounds of that instinctive hunger which all people have for beauty.

The contribution which a system of parks and recreation makes to the satisfaction and cultivation of the love of beauty among people does not end with the preservation and creation of beautiful, natural forms. A number of park officials have written and distributed short manuals on the growing of flowers, shrubs and trees; others have distributed plants on condition that they be planted and cared for about the homes of the people. In a few instances series of institutes have been conducted for the instruction of people in home landscape problems.

Landscape art, however, is only one of the fields of art served by the park authorities. There are many examples of really fine architecture to be found in structures in parks, and more attention is being paid to beauty in style and form. There are several notable art museums located in parks, some of which are partially or wholly supported from park funds. This, too, is a contribution of the park to the cultivation of the appreciation of the beautiful.

To Music and Drama

Music has received considerable attention from park authorities, and there is promise of better things in the few examples which exist in a limited number of cities of the presentation of operas, symphony concerts, concerts by great artists and organ recitals. Outdoor dramatic features in parks are becoming more and more common, and practically every community contains a stage for the presentation of different forms of dramatic art.

Best and most fundamental of all the art activities of park authorities is the encouragement of the people to be their own musicians, painters, sculptors, writers and dramatists. The parks are offering opportunities for satisfactions which come only through doing and participating, and a real foundation is being laid for the better appreciation of the work of the great interpreters of various forms of artistic expression. In a number of park systems full-time leaders are employed to develop music, drama, the graphic arts and handcraft.

Fostering the Desire to Know

Aristotle has said, "It is natural for men to want to know." This curiosity interest is the basis of all scientific investigation and achievement and a proper development of it is one of the greatest needs of America

today. In general, modern city environmental conditions have robbed children, and older people as well, of direct contact with the first great instructor, Mother Nature. The very fount of general knowledge for the inquiring mind of youth is thus dried up at its source. His store of knowledge becomes a complex of all the sorts of things which he sees and hears within the limits of an artificial man-made environment. He is deprived of the natural environment from which he may draw a wealth of knowledge of the universe of life's processes. It is true that commercial industrialism has encouraged education and the pursuit of scientific study, but it has done this almost wholly from a purely utilitarian point of view. Happily, out of this industrialism which has threatened to destroy the innate desire of people to acquire knowledge for the pure joy of knowing, there is the possibility of securing the leisure which will enable people to acquire knowledge without linking the process to some utilitarian purpose.

Simultaneously with the growing appreciation of leisure, agencies have been developing which are securing material properties and fitting them for the use of people during their leisure. The character of these properties is for the most part of such a nature that people in urban communities will once more be brought into contact with nature. Thus park departments are assuming a position of major importance in the future development of man as seeker after knowledge, possessing as they do the basic material laboratories for instruction in the knowledge of natural processes. The large open areas with growing things, rocks, wild flower forms, botanical gardens, arboretums, conservatories, greenhouses, aquariums, zoölogical gardens, natural history museums — all features found in modern park systems — provide opportunity for everyone who wishes to make exploration into the great field of knowledge relating to the construction of the universe.

These great laboratories, however, have generally been accepted by the people as something interesting to look at without understanding. Instructional leadership is of prime importance, and only a limited number of park authorities have applied such leadership in connection with the vast equipment the parks offer. The time may come when every director of a zoölogical garden, arboretum, conservatory and natural science museum will think as much of his possible function as a teacher of the people as he does of his function as the scientific manager of his particular institution. The time may not be far off when there will be on the staffs of park departments men and women especially trained in nature lore whose sole function will be to lead people into the open spaces and interpret nature to them.

Parks Increase Neighborliness

For nearly two hundred years America may be said to have been comprised largely of communities of neighbors. Up to 1880 over seventy per cent of the people lived in rural communities, where they were drawn together not only by their natural instincts for companionship but by their dependence on each other in carrying on their daily acts of living. They helped each other in clearing the land, in erecting their homes, in planting and in harvest. They fished and hunted and played together. With the invention and perfection of machine tools, making it unnecessary for people to depend so largely on one another, neighborliness began to decline; quilting parties went out of fashion; spinning bees were no longer the occasion of gatherings of the housewives; the harvesting of hay and wheat, always a coöperative undertaking, began to be done by different types of machines; community recreations were largely destroyed; old folk dances and dancing parties gave way to modern dancing and commercial dance halls, and old-fashioned home parties and community picnics began to disappear. To crown all these social disintegrating forces the lines of social contact were broken everywhere throughout rural America by migrations of large numbers of the people, especially the younger people, to the places where machines and capital were being amassed.

The inevitable result of the present-day system of working and living, making as it does for individualism, has been a distinct loss in the old spirit of neighborliness and coöperation. Out of the leisure of the people comes the only hope for them to build a community life in which neighborliness will thrive.

But leisure itself is not enough. There must be numerous opportunities for people to use this leisure in a way which will promote mutual acquaintanceship, friendship and good will, through all manner of activities which they enjoy together. The facilities and leadership furnished by park authorities which bring people together in their leisure time are steps in the direction of providing opportunity for people to create communities in which the spirit of neighborliness will predominate. It is not too much to say that park and recreation planners and executives and the citizens who are giving thought to the recreational needs of the people are perhaps the chief agents in restoring to modern American community life the spirit which made earlier life in America wholesome and desirable.

The Contribution of Parks to Happiness

Delight in life, or spontaneous happiness, is the thing most desired by all people. In a large sense the end and aim of all city planning and

especially the part having to do with parks and recreation is to increase joy in life; to help people satisfy the instinctive desires whose expression means happiness. There is urgent need for creating in urban life those conditions which will prevent children from growing old before their time, and will keep alive the spirit of childhood in the hearts of men and women. Many agencies are working to make this possible. None, however, have done more to help secure genuine joy in living than those groups working to advance the park and recreation movement whose ideal is well expressed in the motto of *Parks and Recreation*, the official organ of the American Institute of Park Executives and the American Park Society — "To make more abundant facilities for a more expressive life for all."

Park and Recreation Areas as Safety Measures

The modern city has developed conditions which make safety to life very difficult. If children do not have space and facilities for play at home or in playgrounds conveniently situated, they will play in streets or in the danger zones of vehicular traffic. Properly located, supervised playgrounds such as those which many park systems are conducting furnish the means whereby children may play in safety.

A study made by the National Safety Council gives some interesting facts: In a survey of Toledo it was found that out of thirty-two child automobile fatalities during the three years 1922 through 1924, only four occurred within the quarter-mile circle of the playground, and six more in the half-mile circles. In Cleveland, with a very high pedestrian fatality rate, less than thirty per cent of the victims were children. The city has over sixty supervised playgrounds fairly well distributed in proportion to the population. This low percentage of child fatalities is in marked contrast with the high percentage in some other communities where there are fewer playgrounds. In Hudson County, N. J., where there is a limited number of playgrounds, eighty-five of the one hundred and sixty-five pedestrians killed during 1923–24 were children under fifteen years of age. In Richmond, Va., with a high number of playgrounds in proportion to the population, child automobile fatalities were less than twenty-five per cent of the total number in which pedestrians were involved. Only twelve children were killed by automobiles during the three year period ending December 31, 1924.

The Department of Recreation of Detroit (in 1926) made a study of playgrounds as safety agencies. Two spot maps were made, one showing the location of fatal accidents from September 1, 1925 to July 1, 1926, the period during which the playgrounds were not opened. The second map contained the fatal accidents from July 1, 1926 to September 1, 1926,

the two months when the playgrounds were opened. The study showed the following facts regarding five districts: *District 1:* Here there were fifteen fatal accidents during the school year. Seven playgrounds were opened in the summer and there was not a single fatal accident. *District 2:* Here there were twenty-two fatal accidents during the school year; during the summer only two. *District 3:* Seventeen fatal accidents occurred during the school year; only one during the playground season. *District 4:* While a particularly large number of fatal accidents occurred here during the school year — seven in the small district — there was only one fatal accident during the summer, with ten playgrounds in operation. *District 5:* In this district of heaviest child congestion, there were twenty-five fatal accidents during the school year and only ten during the summer. Thirty-four playgrounds were in operation last summer. In 1926, 2,128,723 children attended one hundred and twenty-two playgrounds, operated by the Department of Recreation. The police records show that for the entire summer there were only twenty-two fatal accidents, of which only four were within the vicinity of a playground opened at the time of the accident.

Parks and Recreation Areas Preventives of Delinquency

Juvenile court officials, social workers and educators have testified that play areas under wise leadership tend to diminish juvenile delinquency. Many police and criminal court officials have stated that wholesome recreation is a potent force in the lessening of crime among adults. Every child is possessed of a number of impulses and interests which are normal and naturally good, all of which will be expressed in some fashion or other. The results of the attempts at the expression of these impulses are not always in line with the regulations and standards established by organized society. It is perfectly natural and right for boys to want to play baseball, but if they play in a place forbidden by the local laws of the community, as in the streets in some cities, or if some private property is damaged through playing the game, the results of the expression of this impulse become a misdemeanor. In the great majority of such cases the difficulty has come because the community has not provided the environment through which children can express their natural interests.

Many adult offenders are only continuing to repeat acts which they began without reasoning during childhood, when their natural impulses were thwarted by unfortunate environmental conditions. The checking of juvenile delinquency is the road to follow in checking adult crimes. If real progress is to be made in dealing with delinquency, the emphasis must be placed upon a policy of expression rather than one of repression.

The modern city planning movement, with its provision for parks and recreation, can accomplish much along this line, for its activities are making communities better places in which to live and so restoring environmental conditions that fundamental impulses of children and adults can find wholesome, normal expression.

There are numberless instances showing the efficacy of this method of approach to the problem of delinquency and crime. A few statements and opinions follow:

"There were fifty-nine thousand murders in the United States in a recent seven-year period. $3,000,000,000 represents our annual loss from stealing alone. It is said that $500,000,000 are invested in our prisons and that their annual cost of maintenance is $200,000,000; also that our total annual bill for dealing with crime is close to $200,000,000. It costs a state around $600 per year to care for one in a reformatory; on the other hand, one city recreation department reports that it can and does provide recreation for seven and one-third cents per person per year."

It has been shown in dozens of cities of fifty thousand population that for the cost of the care of one person at a reformatory sixty-seven children could participate daily at play centers during the full season.

"Is it possible," writes the Chief of Police of San Francisco in the December 11, 1920, issue of the *Chronicle* and the *Examiner*, "for you to extend the work of the Community Service Recreation League? I realize so fully the relation of the present outbreak of crime to the wrong use of leisure that I consider it my duty not only to strain every energy to suppress it by the means at my command, but to see if something more cannot be done in a constructive way to prevent it. The work of your organization has been effective in certain districts. Can't it be extended?"

The following resolution was passed in 1925 by the American Prison Congress:

"*Be it resolved that* we express our conviction that the value of constructive, supervised play and recreation needs to be more largely understood by those who are dealing with problems of delinquency, and that if in every community really adequate facilities for the recreational needs of young people were provided, many of their wayward tendencies could be effectively averted and at the same time health, morality, joy, and good citizenship be promoted, and we further believe that recreational activities, properly conducted, may be made a powerful instrument for the restoration to normal living of delinquents who may be upon probation or in the custody of correctional institutions."

It is stated that eighty per cent of the crimes committed in New York City are the acts of youths under twenty-two years of age. In commenting on this Warden Lewis Lawes of Sing Sing has said: "I can see as the only effective way for the prevention of delinquency the wider extension of community system activities such as establishment of more playgrounds,

especially where congestion is greatest, and the establishment of community centers to provide opportunities for playing and wholesome recreation."

When St. Paul, Minnesota, checked up on its delinquency, it found that in areas where playgrounds were operating the definite programs the cases of delinquency had decreased materially, but in sections where there were no playgrounds, there were large numbers of delinquents. For the opening of supervised playgrounds in the public park area of Anaheim, California, in the summer of 1924, according to Judge E. J. Marks of the Juvenile Department, Orange County Court, juvenile delinquency decreased. During the first six months of 1925 it was seventy per cent less than for the same period in 1924.

Analysis of a Philadelphia neighborhood by District Attorney Fox, who covered the district for five years before and a like period after the establishment of playgrounds, led him to state, "I discovered the remarkable fact in five years of playground recreation, the neighborhood showed a fifty per cent decrease in juvenile delinquency as compared with previous years."

In providing such material facilities as parks and playgrounds, it should always be kept in mind by community leaders and governmental officials that these facilities constitute only a part of the necessary body-building, mind-developing and character-forming environment. A vital part is leadership. Just as parents are the most important factor in the home, the teacher in the school, the trained executive in the business organization, so on the playground, at the swimming center, in the park, the leader is the most important and fundamental of all environmental factors.

Parks and Recreation Areas Increase Property Values

It is inevitable that when living conditions are made more desirable in any section of a city, people are more willing to pay for the better opportunities of living they thus enjoy. Sunlight, beauty of surroundings, the opportunity to enjoy wholesome exercises and to renew acquaintance with the things in nature — these are the real reasons why parks and recreation areas increase property values and people are willing to pay for the privilege of having them.

To offer increase in property values as a basic reason for acquiring, developing parks and open spaces is to place the stamp of commercialism on the life needs of the people. Since the argument, however, is potent with many of those who control the destinies of America's communities, the following statements are given as testimony to the value of recreation areas in increasing property values.

REPORTS OF PROPERTY VALUES INCREASED BY PARKS

Extract from the Annual Report of the Board of Park Commissioners, Minneapolis, Minnesota, 1925:

"The people of our city are, as a majority, not aware of the fact that from the viewpoint of monetary interest alone, the park system has cost the city nothing, because the increased property values produced on account of the park system are several times the amount of the total investment of $15,240,000 made during the Board's administration of forty-two years. Moreover, what is the monetary value of our park system as compared to the value of the great joy, pleasure, and good health which these facilities for outdoor recreation afford to the people?"

Extract from "Parks as Investments," published by the Metropolitan Conference of City and State Park Authorities, New York City, New York, February, 1926:

"Comptroller Hawes, writing in 1856, shortly after the city acquired title to Central Park, said the increase in taxes by reason of the enhancement of values due to the park, would afford more than sufficient means for the interest incurred for its purchase and improvement without any increase in the general rate of taxation. And the New Parks Commission quoted figures from the tax returns of the city to show that while the property in the other nineteen wards of the city increased but twofold, the property of the three wards in which Central Park was located advanced from about twenty-six and a half millions to over three hundred and twelve millions. They asserted that whereas before the making of the park, these three wards paid one dollar in every thirteen received as taxes, after the making of the park they paid one-third of the entire expenses of the city and this notwithstanding the fact that the taking of the ground for Central Park removed ten thousand lots from the tax books of the city."

Extract from an address by Henry V. Hubbard, Harvard University, on "Parks and Playgrounds" presented before the International Town Planning Conference, 1924:

"The same general reasoning applies, of course, to parks, although in their locations there is usually a greater range of choice. They must exist somewhere, and when the best location has been found, then the park must be created, or at any rate the land acquired, even if the development of the land as a park must be postponed. There is of course a credit item in the city's accounts that may go far to offset the price paid for the park. After the park is established the land abutting upon it is increased in value, which value comes back to the city in increased taxes; and in addition to this localized increase in values on account of the visible and obvious advantages which accrue to the abutting property, there will also be a general rise of values because the park has raised the tone of the city as a whole. The local benefits are less noticeable in the case of playgrounds. Indeed in some of the more desirable residential areas the presence of the playground is considered to lower the value of the abutting property, as the exclusion of playgrounds by zoning ordinance from the most restricted residence districts in several cases would go to show. But wherever a playground is necessary, it cannot be denied that its presence raises the values of the whole neighborhood. Moreover, in the case of a congested neighborhood the land value increase is both local and general, because, however noisy the playground may be, it is less bad than a street and more airy and open than the blocks of tenements which it has replaced."

Report of the Board of Park Commissioners, Essex County, N. J., 1926:

In 1916, the Board of Park Commissioners in Essex County engaged the services of an expert to make a report as to the actual value in dollars and cents of the County Park System. The report was made on four of the Newark parks. The following extract is taken from a summary published in the *Newark Sunday Call:*

"The reports show that the parks themselves have increased in value from $1,000,000 to more than $5,000,000, but this increase of $4,000,000 is not emphasized, as it is not available for taxing purposes. The property immediately adjoining the four parks named was assessed in 1905 for $4,143,850, and in 1916 for $29,266,000, an increase of $25,122,150, or 606.3 per cent. At the same time property in the same taxing district and perhaps not wholly outside of what may be called the 'park influence,' was assessed in 1905 at $36,606,907, and in 1916 at $111,531,725, a gain of $74,924,818, or 204.6 per cent. In plainer words, while the property adjoining the parks has increased more than six times in value, property in the remainder of the same taxing districts has about doubled in value.

"If the increase in valuations adjoining these parks has been the same as in other property in the same taxing districts, and no more, it would have been $8,453,454, leaving an increase as a result of the parks of $16,668,700. The fortunate owners of this property have been enriched by this large sum beyond what they would have been had the parks not been established.

"But this is not all. The cost of these four parks was $4,241,540. The increase is enough to pay for them four times. The cost of all the parks in the county was $6,929,625.47 — say $7,000,000. The increase of property adjoining these four parks alone, beyond what it would have been if the parks had not been constructed, is sufficient to pay for all the parks in the county 2.4 times, and the increase from the

other parks in the county, while not so great in proportion, is undoubtedly much more than their cost. The increased revenue to the county is already sufficient to pay the interest and sinking fund charges on the bonds issued for park construction, and almost the entire cost of the annual maintenance."

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CHAPTER II

GENERAL PLANNING OF A PARK SYSTEM

Park planning in the general sense of setting aside areas for recreation in communities has been going on to a more or less intensive degree in American municipalities for the past seventy-five years, and for a much shorter period of time in some counties. Out of this experience it is now possible to distinguish several different types of properties, each type designed to meet some major need of the people or special groups of the people. Likewise certain principles have been evolved as to the gross amount of recreation area any given community should have and as to the distribution and size of certain types of recreation areas, although these principles are not yet fixed upon an absolutely scientific basis. Further developments in the future may show the need of other types of open spaces not yet existing in any community park system. Future experiences and study in planning will, without doubt, result in a more certain establishment of the principles involved.

SECTION I. UNIT ELEMENTS OF A PARK SYSTEM

Among the various types of park and recreation areas actually in use in American communities it is possible to distinguish the following more or less clearly:

I. *Children's Playgrounds.* These are of two types as follows:
   1. Playgrounds for children of kindergarten age and under.
   2. Playgrounds for children from five to fourteen years of age.

II. *Neighborhood Playfield Areas or Neighborhood Playfield-Parks.*

III. *Miscellaneous Types of Active Recreation Areas.*
   1. Bathing Beaches on river, lake or ocean.
   2. Golf Courses.
   3. Athletic Fields and Stadiums.
   4. Municipal Camp Sites.

IV. *Areas in Which Landscaping is a Predominating Characteristic.*
   1. Ovals, triangles, circles and other areas of very small dimensions.
   2. "Intown" Park Areas or Neighborhood Parks.
   3. The Large Park Areas.
   4. The Reservation or Forest Park.

V. *Boulevards and Parkways.*

VI. *Areas devoted to a specific educational-recreational purpose, and in which landscaping is a prominent feature.*
   1. Botanical Gardens.
   2. Arboretums.
   3. Zoölogical Parks or Gardens.

VII. *Miscellaneous Areas.*
   1. Sites for Bath and Swimming Centers.
   2. Sites for Community Houses.
   3. Sites for Museums of Different Types.
   4. Sites for Utilitarian Structures and Uses.

In actual practice there is not always the clear line of demarcation among these several types of areas as indicated above. Thus a single area may include a kindergarten playground, a children's playground, a neighborhood playfield or a neighborhood playfield-park, an athletic field and similar facilities. In fact, the inclusion of several different types of areas in one area is more the rule than the exception, but there are a sufficient number of exceptions to make it worth while to take note of the possible classification as presented above.

In the following sections each of the types outlined will be considered in more or less detail relative to size, location, general character, and primary and secondary functions.

I. Playgrounds

a. Playgrounds for children of kindergarten age and under.[1] The primary function of these areas is to provide a safe place for the active open-air play of little children of five or six years of age and under and for the sleep and rest periods of such children in the open air. Their secondary functions are to provide a rest and relaxation place for the mothers, nurses, "little mothers" from the surrounding homes — an isle of beauty and a fresh air breathing spot for the immediate inhabitants.

These playgrounds should preferably be located in the interior of blocks, but a definite area of this type may be located in a playground area for larger children, in neighborhood playfield-parks, in neighborhood parks and in large parks. They are most needed in the congested sections of cities and in tenement or apartment house districts where backyard spaces are lacking, and should be as near as possible to the center of each child population of one hundred children below school age. Children should be able to reach the playground without crossing streets.

[1] The age group under five years of age comprised the following percentage of the total population for each of the following decades: 1880, 13.9 per cent; 1890, 12.2 per cent; 1900, 12.1 per cent; 1910, 11.6 per cent; 1920, 10.9 per cent (United States Census). The average for the five decades is 10.1 per cent. Note the decrease in the percentage from 1880 to 1920.

The play lot, Mr. George Ford of the Technical Advisory Corporation has stated, may be as small as fifty feet by one hundred feet. It is desirable to have it as much larger than this as possible. The committee on recreation problems in city planning appointed by the P. R. A. A. states that the size of such playgrounds should be from six thousand to ten thousand square feet. This is not too high a standard in view of the rapid growth in apartment dwelling and the increasing hazards of street play.

As a matter of fact, play lots as such are chiefly conspicuous by their absence in park systems. Special provisions are made by many park departments in other types of areas for play of little children. It is doubtful whether play lots as separate and independent areas will ever become an integral part of many park systems. If the ideal plan of having one such lot in the center of every block of dwelling should ever be universally practiced — and this would be highly desirable — they would become so numerous that any park department would find it exceedingly difficult to exercise more than a perfunctory service in their care and operation. The probabilities are that such central block areas, while representing open spaces of tremendous importance to this age group, forming from ten to eleven per cent of the total population of any community, will be

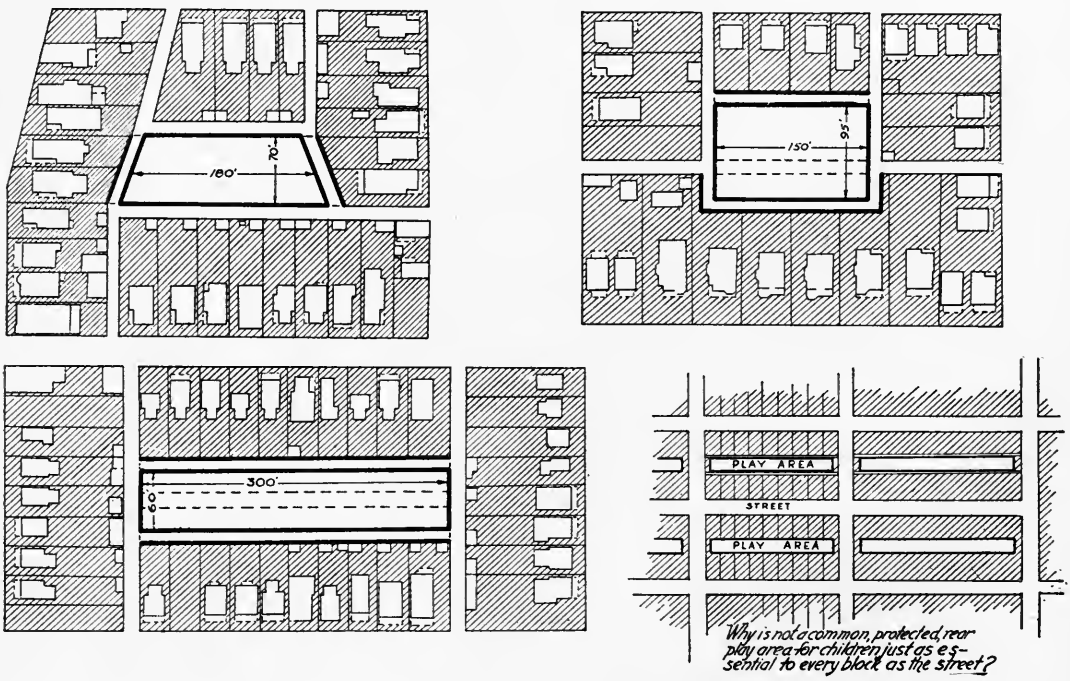


PLATE No. 1. INTERIOR BLOCK PLAYGROUNDS

Showing how they may be developed in old and new sections of a city. (City Plan Commission, Toledo, Ohio. Designs by L. D. Tilton, Bartholomew and Associates.)

held in private ownership under easement by all the residents of each block. Park departments might aid in designing and planting these areas, and it is conceivable that they might maintain the plantations just as they function now in the landscaping of the numerous small triangles and other small properties found in most cities.

Mr. Harland Bartholomew has pointed out that the city may do certain specific things to aid in the provision of interior block playgrounds. These he lists as follows:

a. Prevent platting of two small building lots.

b. Preserve rear yards by building regulations.

c. Encourage real estate promoters to develop interior block playgrounds, the common property of all residents of the block.

d. Purchase numerous protected sites for junior playgrounds to which little tots may go with brothers and sisters.

e. Develop attractive parks and pleasure drives which can be used by parents and small children.

In Chapter IV, page 112, Plate 34, is illustrated a type of interior block park-playground in the Sunnyside housing project of the City Housing Corporation of New York City. This subdivision, comprising approximately seventy acres, is located only fifteen minutes from the Grand Central Station in New York. Practically every block is laid out to include an interior block park and little children's playground. This housing project is an outstanding example of the practical possibilities of providing small parks and little children's playgrounds in the interior of blocks in a region of high land values and a fairly high density of population.

b. Children's Playground Areas. These are areas intended for the play of children from about five years of age to fourteen years — the age group usually comprising about twenty-two per cent of the total population of any community.[1] In school organization the group includes children from the last year in kindergarten through all the grades to the ninth inclusive. Above the kindergarten (five years of age) the group is usually classified as primary (grades from first to sixth inclusive), and intermediate or junior high school (grades from seventh to ninth inclusive). The first group includes children from about six years of age to ten or twelve; the second, children from about eleven or twelve to fourteen. There is no hard and fast line between the two groups, and recent studies in certain cities seem to indicate that the pre-adolescent age is beginning sooner than formerly, at ten instead of eleven or twelve. There is wide variation among children in this respect.

[1] United States Census: 1880, 24.3 per cent; 1890, 23.3 per cent; 1900, 22.3 per cent; 1910, 20.5 per cent 1920, 20.8 per cent. The average per cent for the five decades is 22.4 per cent.

In educational systems two general methods are employed in handling the children from the kindergarten to the eighth or ninth grade inclusive. These are as follows: (*1*) Grouping of all grades from the kindergarten or the first grade to the eighth grade inclusive in one center. This is the common practice in rural districts and in most small urban centers, although this practice is still prevalent in many cities. (*2*) Grouping of all grades from the first, including the kindergarten, to the sixth inclusive in one center; and all the grades from the seventh to the ninth, inclusive, in another center. The former is known as a primary school and the latter an intermediate or junior high school.

These groupings are important in view of the growing feeling that playground areas for children of this age group, particularly the primary group, should be a fundamental part of the equipment of every properly equipped educational center, and that the school has a very definite responsibility in the provision of both indoor and outdoor facilities for the fullest possible expression of the play impulses and needs of children.

There are a number of reasons why the school should assume this responsibility.

a. The play impulses, needs and desires of children bear the most profound relation to their growth and development, or, in other words, their education. This is the basic reason why every school center should provide play space and equipment.

b. The distribution of primary schools, combined primary and intermediate schools, and, to a lesser degree, of the junior high schools, is based upon reasonable walking distance from the homes of the children. This applies to the rural district except in the case of the consolidated school, as well as in towns or cities. This principle of reasonable walking distance is exactly the principle fixed upon by the city planners and recreation planners for the distribution of children's playground areas.

c. Next to the home, the school is the most important center of the daily life activities of children for the greater part of the year. It is therefore poor economy for a community to plan these centers in such a way that the play needs of children must be provided for elsewhere.

d. On every children's playground there is need of certain service facilities such as drinking fountains, toilets and shelter, all of which can be supplied through the use of the school facilities without duplicating their cost, as would be the case if separate areas were provided. To a considerable extent the same is true of playground equipment of other kinds.

A more or less ideal community plan, therefore, for children's playground areas, would be to have as many of them as there are primary and intermediate schools, with the possible addition of areas here and there

throughout a community in sections isolated by topographic conditions or transportation lines, or which for some reason or other it is not practicable to use the school centers.

In actual practice throughout America today, municipal park authorities and recreation departments have secured many areas of this type separate and apart from public schools, partly because the school authorities have failed to provide areas of sufficient size or failed to develop areas owned, and partly because of jurisdictional difficulties in working out the problem of joint use of school properties for public playground purposes. A further reason lies in the fact that while in building new centers, or in erecting new schools in outlying sections, it is possible to secure sufficient land for playfields — and there is a rapidly growing tendency on the part of school boards to secure larger and larger areas for school sites — it often happens that in the case of old school buildings it is impossible for the school board to secure land adjacent to the school, however much it may desire to do so. In such instances it is most important for park departments to provide playground areas in neighborhood playfields and large parks.

Radius of Influence.

Reasonable walking distance may be construed anywhere from a quarter of a mile to one-half mile. Preference, however, is given by most planners to such a distribution of these areas that their radius will be approximately one-quarter of a mile. At the 1924 annual conference of the American Institute of Park Executives, Mr. C. E. Brewer, Chairman of the Playground and Recreation Committee of the Institute, presented the following conclusions as a result of a study of the use radius of children's playgrounds in Milwaukee, Minneapolis, Washington, Detroit and St. Paul. "In the average city 50.4 per cent of the children travel one-fourth and one-half mile; 10.5 per cent travel between one-half mile and three-fourths mile; while 14 per cent travel a mile or more."

Size of Children's Playgrounds.

In considering the size of children's playgrounds it is important first to decide whether children's playground areas should be limited to children up to twelve years of age or should include children to fourteen years inclusive.

As a general rule it is desirable to plan for children's playgrounds for the larger group. Most rural schools and a large percentage of urban schools are still organized on the basis of an age grouping including all children up to fourteen years of age inclusive in one center, and even in public playgrounds separate from schools it is desirable from an administrative

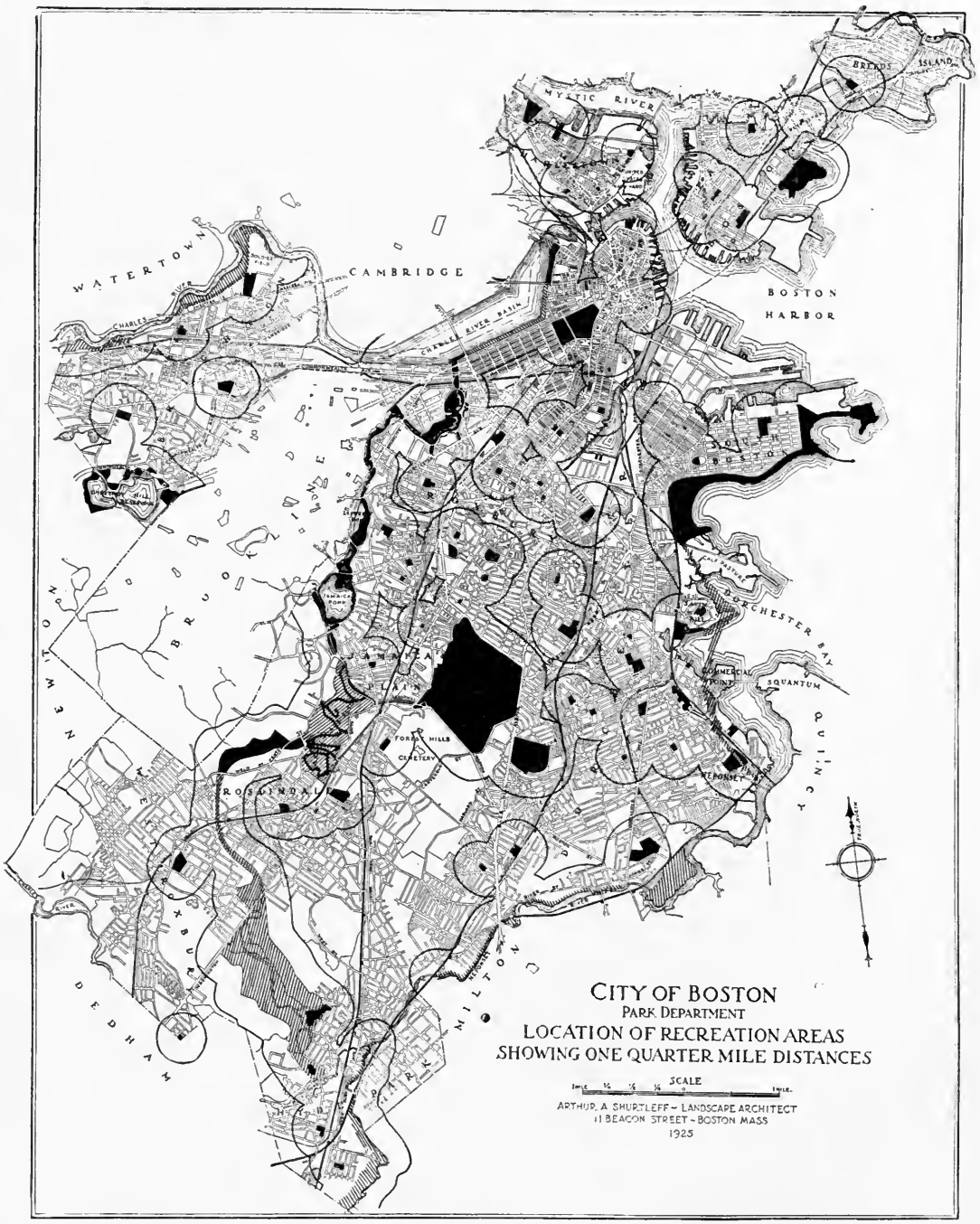


PLATE NO. 2

EXAMPLE OF A MAP DRAWN TO SHOW THE EFFECTIVE SERVICE RADII (¼ MILE) OF EXISTING PUBLIC RECREATION AREAS USED AS CHILDREN'S PLAYGROUNDS

(Report on Future Parks, Playgrounds and Parkways, Boston Park Department, by Arthur Shurtleff, Landscape Architect.)

viewpoint to handle the children up to fourteen in one center divided on the basis of a three-division layout. This larger area will also prove more practicable for general neighborhood use by older groups in the evenings and at other times when not in actual maximum use by the children. It is only in the older sections of very large centers with a high density of population that it is perhaps fundamentally necessary to consider playground area limited only to children of the age group from five or six to ten or twelve.

Numerous attempts have been made to fix standards whereby it will be possible to calculate the amount of space needed in a given situation, having a known number of children to serve.

Mr. Henry V. Hubbard of the School of Landscape Architecture, Harvard University, in an address before the Fourteenth National Conference on City Planning at Springfield, Mass., 1922, said, in reference to this type of playground area, that it should allow one hundred and forty square feet for every child. "Reckoning one-quarter mile as effective radius, a population of two hundred people per acre, one-fifth of whom are children under twelve, and one-third of whom might be expected to be on the playground at the same time, the maximum size of the playground should be about seven acres. This type of playground would generally include space for the little children's playground so that the two are not differentiated in actual practice."

Mr. George Ford of the Technical Advisory Corporation has estimated that a playground for children from six to twelve should provide from one hundred and fifty to two hundred square feet per child actually playing. Such a school site including school building and setting should cover at least two acres and preferably four or five.

At the 1923 Annual Recreation Congress of the Playground and Recreation Association of America it was stated that the normal amount of play space per school child at the maximum development of the elementary school should be two hundred square feet with one hundred square feet as the absolute minimum, and the following standards were set as the ideal toward which school and recreation authorities should work:

For Elementary Schools: The minimum total area should be eight acres, including the land on which the school is located.

For Intermediate Schools: The minimum total should be from ten to twenty acres.

The method of attempting to estimate play area on the basis of so many square feet per child is liable to error for the obvious reason that a small school unit having all the grades from the first to the eighth or ninth as is the case in most rural schools and in many urban schools, or

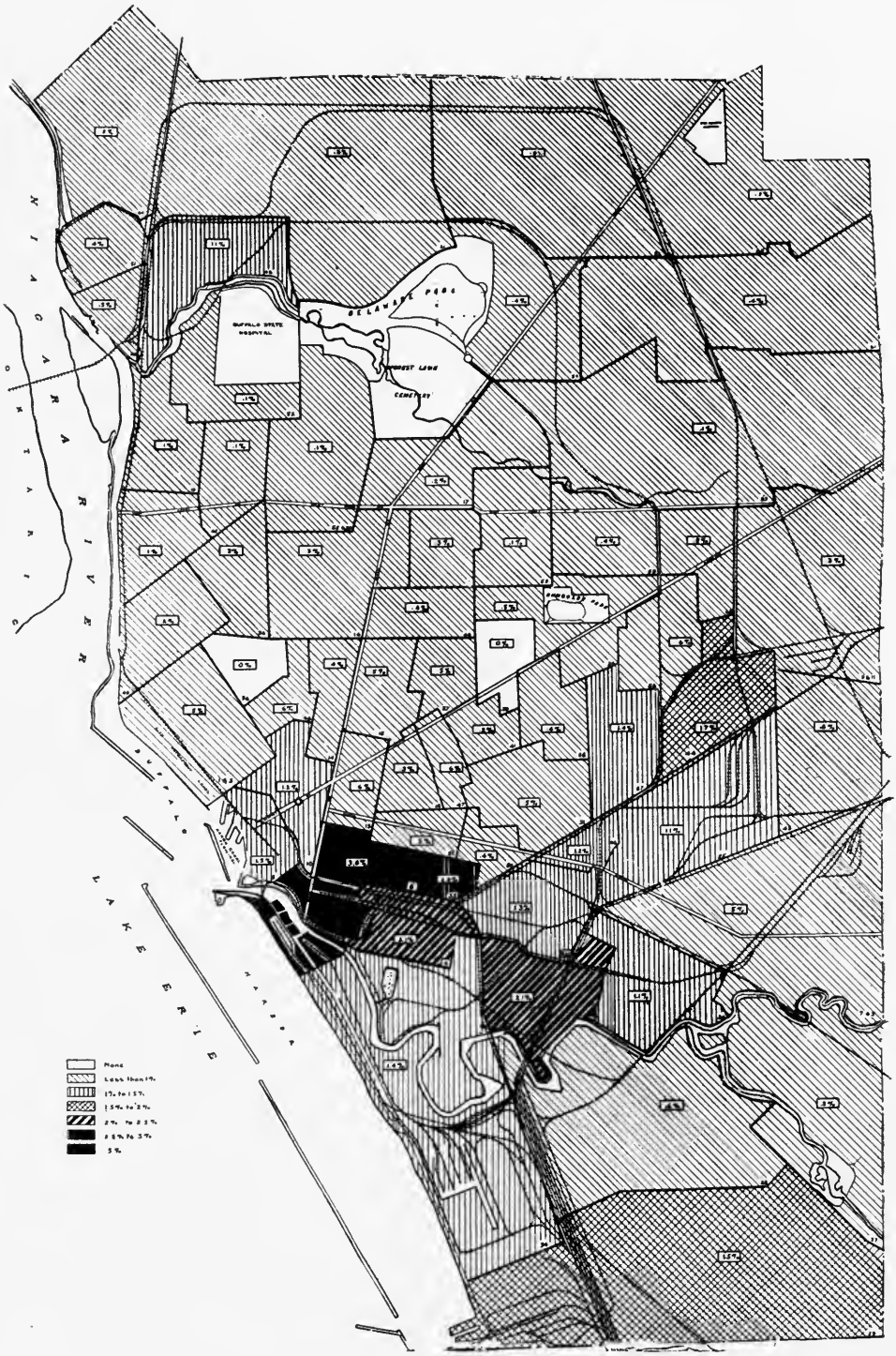


PLATE No. 3. EXAMPLE OF A MAP SHOWING DISTRIBUTION OF JUVENILE DELINQUENCY
(Buffalo Recreation Survey.)

a neighborhood of low density population having children of all ages up to fourteen, will require more space per child than any of the standards advanced, if the older boys and girls are to have the opportunity to play the organized ball games which it is desirable for them to play at their age.

By actual measurement it can be determined that for a playground for children from five or six to fourteen years of age, laid out on a three-division plan and fully equipped with the necessary game facilities, apparatus, shelter or playground clubhouse, small swimming pool and with a proper plantation of ten or more feet in width, approximately three and one-half acres will be required as a minimum irrespective of whether the child population is one hundred or five hundred within its effective radius. As much more land should be secured as is possible to allow for further growth and for the use of the ground for community purposes if this is desirable.

1. The desirability of estimating the size of a children's playground on the basis of the amount of space necessary for certain games which children should have rather than merely on the basis of the number of square feet per child, the density of population and similar features, is borne out by the standards which are being set for rural schools where the number of pupils is small, but where it is believed adequate space should be set aside to make possible the playing of games of many types.

Dr. George Strayer, Teachers College, Columbia University, New York City, has suggested the following standards for rural schools — and many of them are in operation in Delaware, Texas and other states:

For one-room school, minimum of two acres; for two-room school, three acres; for a three-room school, four acres; for a consolidated school, not less than ten acres; for a junior high school, eight to twelve acres; for a senior high school, twelve acres or more. All these standards for rural schools which place the minimum of the school site at two acres for one-room schools are fundamental and sound, notwithstanding the fact that the square feet of play space may range from as much as four hundred square feet to two thousand square feet per child.

2. In making estimates as to the amount of public playground area needed in any given neighborhood, allowance is sometimes made for the possibility that not more than one-fourth, or one-half, or one-third of the children within the radius of influence of the playground will use the area at any one time. This principle should be applied with a good deal of caution. In the first place, if the general principle of considering children's playground areas in rural and urban planning as areas for the use of children up to fourteen inclusive be accepted, the operation of the principle

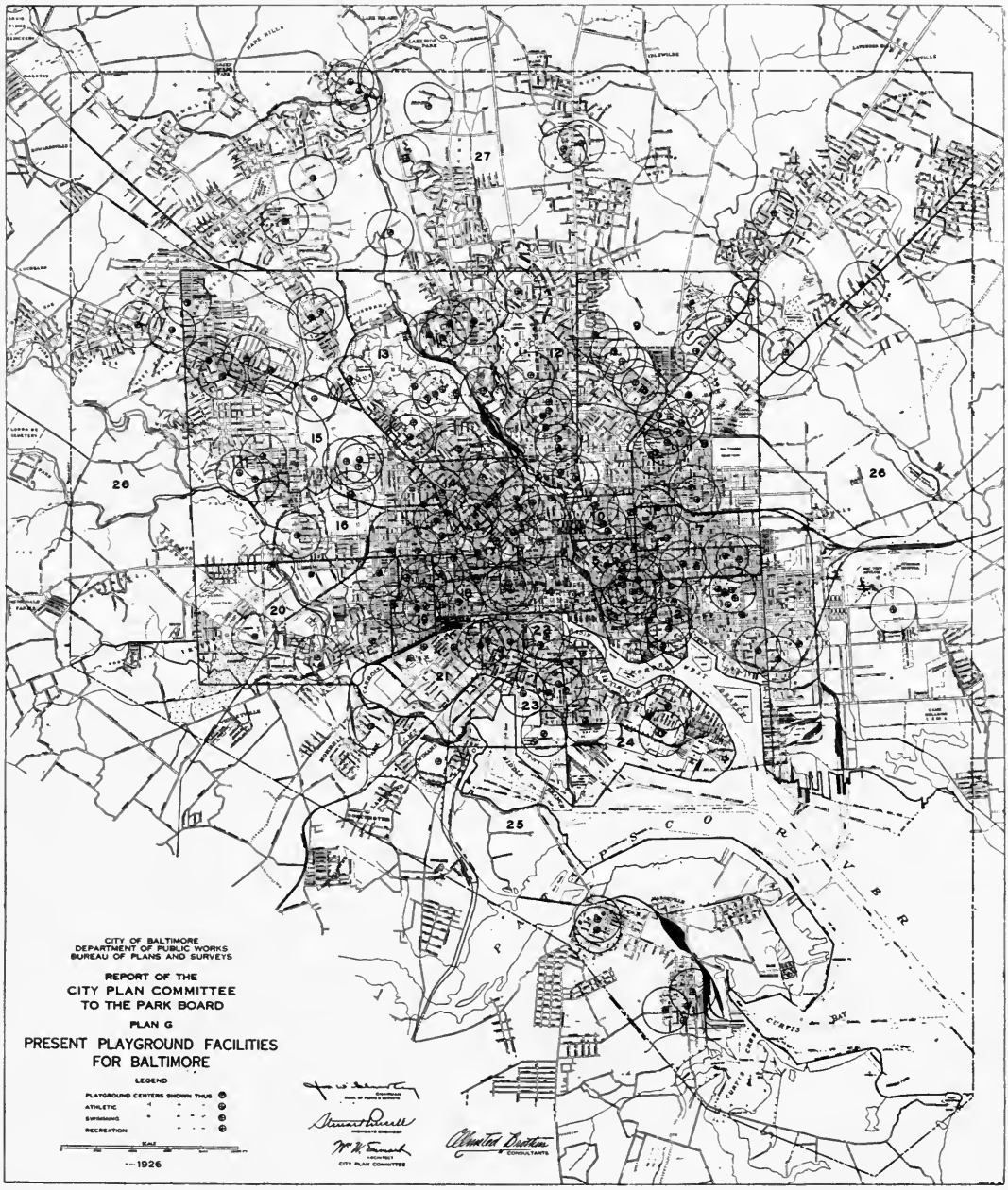


PLATE NO. 4

A METHOD OF GRAPHICALLY REPRESENTING THE EXISTING PLAYGROUND FACILITIES IN BALTIMORE, MARYLAND

(Report of the City Plan Committee to the Park Board, 1926.)

of shifting attendance should not be used to affect the minimum acreage space requirements, although it might affect slightly the acreage requirements above the minimum. Suppose in a given neighborhood there are eight hundred children up to fourteen years of age inclusive and in the calculations for providing play space for them two hundred square feet per child is used, the total free space requirements would be approximately three and six-tenths acres, which is about the lowest practical minimum for a playground of this type even though there were only two hundred children. If in the calculations it is estimated that only one-fourth of the children will attend at one time and the acreage is reduced accordingly, the size of the playground would be about nine-tenths of an acre, or if one-third attended the area would be about one and two-tenths acres, or if one-half attended the area would be about one and eight-tenths acres. In all these cases the acreage would be too small for practical use.

It would be far preferable to consider the area need from the viewpoint of the peak-load use rather than from the minimum-load use. Nothing would be more likely to discourage the children from coming to a playground than to find, when they did come in large numbers, that the area was so crowded there could be no real fun in attempting to play there.

In schools certain administrative devices, such as the work-study-play plan, the platoon system and the class system, enable the effective use of smaller areas for certain kinds of play activities requiring more limited space than would accommodate all or a large part of the children at one time. It is interesting to note, however, that in the city where the work-study-play plan originated the school grounds are all of extraordinarily large size.

II. Neighborhood Playfield–Park Areas

The primary function of this type of area is to provide opportunity for the older boys and girls, young men and young women and all other actively inclined adults, to engage in all manner of outdoor games and sports, especially such games as volley ball, tennis, basket ball, playground baseball, baseball, football, soccer, hockey and others, and such sports as swimming and all the different activities of track and field.

If the area is large enough another primary purpose might be served, *i.e.*, a landscaped area ministering to the æsthetic needs of the people and providing opportunity for recreations of a passive kind. Such an area may also include a space for a little children's playground, thus functioning in two other primary capacities.

The secondary functions of neighborhood playfield-park areas are: to provide fairly large spaces for the admission of sunlight and the free circu-

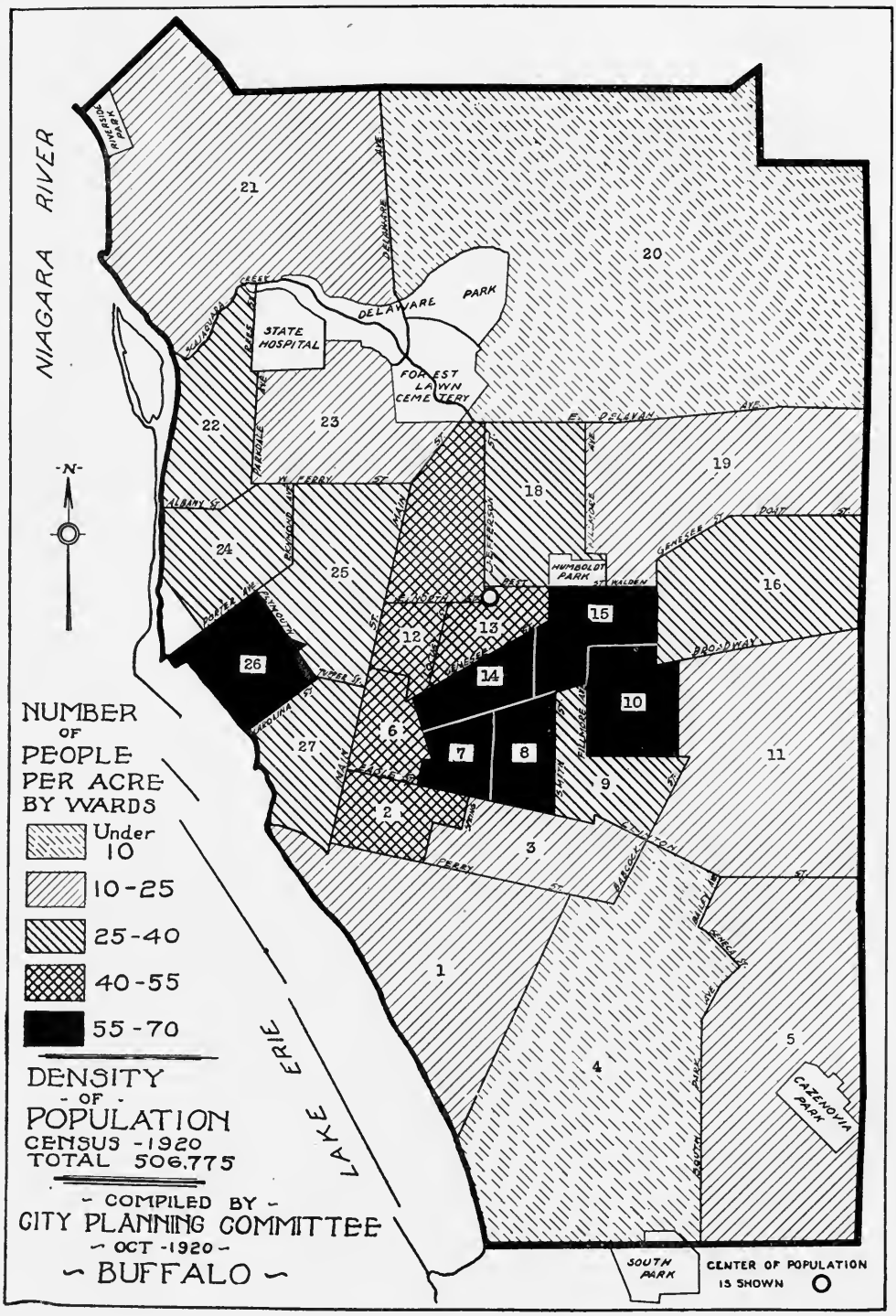


PLATE NO. 5. MAP SHOWING DENSITY OF POPULATION ON THE BASIS OF THE NUMBER OF PEOPLE PER ACRE BY WARDS

(Compiled by the City Planning Committee of Buffalo and taken from the Buffalo Recreation Survey, 1925.)

lation of air; to freshen the air by a more abundant growth of trees, shrubs, flowers, grass, than the size of the average children's playground will permit, and to add a valuable adornment to the neighborhood by the presence of ample plantations, especially around their borders.

Size of Neighborhood Playfield-Parks.

The size of playfield-park areas throughout the United States varies so greatly that it is exceedingly difficult to lay down a principle that would not be distinguished chiefly by exceptions. Playfield-park areas so called and so used are to be found as small as three or four acres — although of course such small areas have no park features — and from this minimum they range upward to fifty, seventy-five, and even a hundred or more acres. Some very large parks of several hundreds of acres that were laid out many years ago as large landscaped parks, have, within recent years, become primarily neighborhood playfield-parks. This has been due to the growth of population around them and to the development of wide interest in active recreation among the people. Such areas, when equipped with many different kinds of facilities for games and sports, attract participants from a much wider radius than do the smaller playfield-parks, especially if the facilities include a golf course, a large number of tennis courts, a number of baseball diamonds, large swimming and boating centers and similar facilities.

Mr. Henry V. Hubbard has said in regard to playfield areas for the active play of adults and young people that this type of area is determined in its minimum size and possible shape by the size and shape of the units which make it up, and that a minimum size for a playfield might be set, for the sake of giving figures, at four acres. If one acre of playfield is allowed for each ten thousand of population and the playfield has an effective radius of a half mile in a district of one hundred people per acre, the playfield should be about six acres in extent.

Mr. George Ford of the Technical Advisory Corporation distinguishes two types of playfields, the first for children from twelve to fifteen years of age and the second for adults and for young people of the senior high school age. The first type, he points out, should be attached to the junior high school, and its maximum practical area, including the high school site, playfield and setting, is about six and one-half acres.

With reference to playfields for adults and young people, Mr. Ford states that they should rarely be smaller than four or five acres. Some of these should be located in large parks.

The Committee on Recreation Problems in City Planning, appointed by the P. R. A. A., designates this type of area as a district playground,

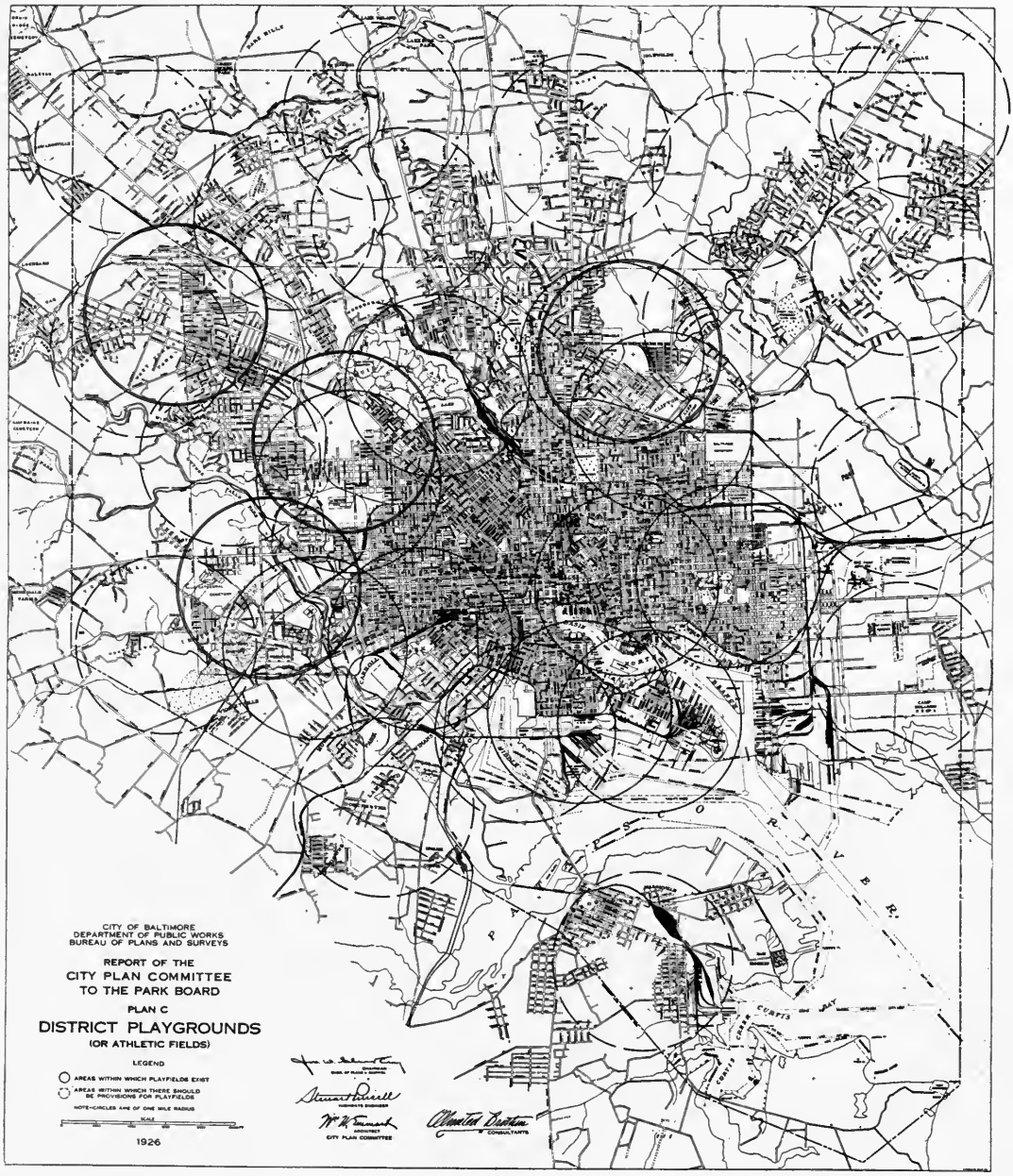


PLATE No. 6

GRAPHIC METHOD OF REPRESENTING THE LOCATION OF EXISTING AND PROPOSED PLAYFIELD-PARK AREAS

(Report of City Plan Committee to the Park Board, Baltimore, Maryland, 1926.)

and states its purpose is "for the active adults and young people over twelve years of age. It offers natural advantages for some park effects, especially where connecting with or touching main streets. To do this playgrounds must be large enough for a generous layout of games such as baseball, football, tennis and camp athletics and yet offer park developments with one or more small group of trees. They must be capable of use for picnics, field days and national celebrations for the district without crowding the regular games fields. The size should be from ten to twenty-four acres. There should be one such playground for every ten or twelve thousand inhabitants. Another good guide is to figure one for every five hundred children of high school age. The most effective radius is one-half to one mile."

Another authority suggests that five per cent of every square mile of inhabited area of the city should be set aside for this type of recreation area.

The term playfield-park is used in this manual to designate the type of property under consideration for the reason that even in minimum size this area should be large enough to allow some genuine parklike treatment while at the same time permitting its major area to be developed for active recreations. As it is increased in size above the minimum there are greater possibilities for multiplying its parklike features, and the more nearly ideal area would be of sufficient size to permit of the development of a neighborhood park together with all the necessary active recreation features for the people within its radius of influence. Any area so small as to make exceedingly difficult or impossible a parklike treatment of at least the border should be considered an inferior and undesirable specimen of this type of property in a park system.

As a practical principle in planning a community park system it appears desirable to limit the standard types of properties for active recreations to two—children's playgrounds (children from five to fourteen inclusive) and neighborhood playfield-parks. Special conditions in communities may make a greater differentiation in these two types, and there will, of course, be special areas for active recreation such as stadiums, athletic fields, golf courses, swimming centers and similar facilities. Just as it has been suggested that children's playgrounds areas should be thought of as providing opportunities for the active play of all the children within its radius of influence up to and including fourteen years of age, so the neighborhood playfield-park should be thought of primarily as providing active recreation opportunities for all ages above fourteen years and in many instances as including a children's playground. It appears undesirable and unnecessary, except in special circumstances, to attempt to provide an

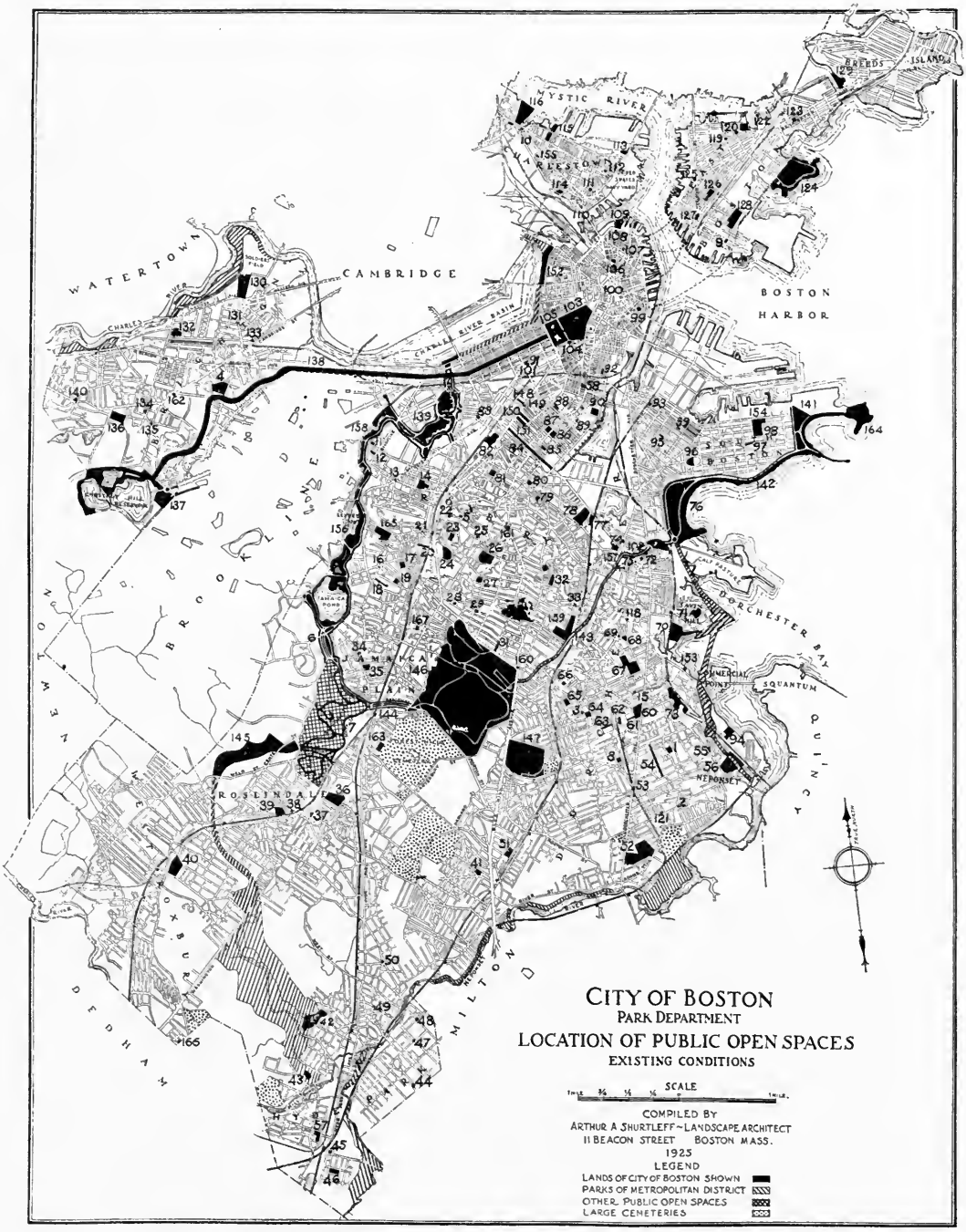


PLATE NO. 7

MAP SHOWING LOCATION OF PUBLIC OPEN SPACES, BOSTON, MASS.

A list of numbered properties accompanies this map. (Report on Future Parks, Playgrounds and Parkways, Boston Park Department, by Arthur A. Shurtleff, Landscape Architect.)

area for the young people of the intermediate age group. Modern educational systems organized on the six-three-three basis recognize three groups, it is true, but from the community recreation viewpoint junior and senior high school sites should each be large enough to be considered as integral parts of the community system of neighborhood playfield-parks. The community system of neighborhood playfield-parks is likely to include other properties in addition to the sites of these high schools.

Almost invariably in a well planned and balanced system of playgrounds and neighborhood playfield-parks each of the latter may include one of the children's playgrounds comprised within the radius of influence of the neighborhood playfield-park.

In determining the desirable minimum size of a neighborhood playfield-park the important factor is not the possible number of patrons, although above the desirable minimum size the possible number of patrons becomes important in determining the desirable size in a given neighborhood. The important factors in determining the desirable minimum size of any playfield-park are the requirements for a proper divisional layout and for a proper layout of play facilities in each division of the area. A fully developed neighborhood playfield-park may have five more or less distinct divisions—children's playground area, girls' and women's games and athletic field, boys' and men's games and athletic field, site for field house or for a community house and swimming pool, a fairly wide parked border and if possible a neighborhood park.

To secure this type of layout the least possible minimum would be ten acres, and fifteen acres would be preferable, especially if the site happens to be also the site of a junior or senior high school. This desirable minimum size is regardless of the density of population for the reason that the gross area depends upon the desirable unit elements which comprise the layout rather than the number of young people and adults within its effective radius. The most desirable size of a neighborhood playfield-park, in order to satisfy amply all possible requirements, would range from twenty to thirty acres.

III. Miscellaneous Types of Active Recreation Areas

It is not uncommon now to find in park and recreation systems throughout the United States areas specifically designed to minister to one major activity. Their distribution as a general rule does not conform to any principle of distribution in relation to the population as in the case of children's playgrounds and neighborhood playfields and certain other areas comprised in a fully developed park system. Natural advantages, as in the case of swimming beaches; topography, as in the case of golf

courses; central location, as in the case of stadiums and fully developed athletic fields, are determining factors. Due regard is given in every case to accessibility, nearness to street railway or traction lines and automobile traffic ways. The park system adapts itself to them and not they to the park system. Among such types of properties may be distinguished the following:

1. *Bathing Beaches on river, lake or ocean.* They may be found in a large park or in a neighborhood playfield-park, but very often they represent distinct units of the system of recreation, selected because of the peculiar advantages for the one form of recreation. No general principle governs their size or their location.

2. *Golf Course Areas.* It is becoming more and more the practice to secure specific areas for municipal golf courses, and to avoid locating them in already existing large landscape parks. This is a highly desirable tendency for the reason that the large landscape park has functions peculiarly different from that of a golf park and vice versa. It may be true, of course, that a golf course may be laid out in very large landscaped parks or public reservations, in parks, for example, of from five hundred acres and upwards, without interfering seriously with the primary functions of such areas; but as a general rule it is more desirable to secure areas devoted exclusively to this game.

The size of golf parks may range from forty acres as an absolute minimum for a nine-hole course to one hundred or one hundred and fifty for an eighteen-hole course.

3. *Athletic Fields and Stadiums.* Both the athletic field and the stadium are types of the neighborhood playfield-park but distinguished from it by a much more highly developed equipment, by their comparatively limited use as to the types of games and sports, and by the fact that they are enclosed, and by their greatly reduced numbers in any community. They are designed primarily for highly organized competitive games and sports, to which as a general rule an admission fee is charged. Extensive provisions are made for spectators.

In their location, accessibility from all parts of the community is a primary consideration. Another important consideration in the development of athletic fields and stadiums is the reservation of a large area outside of the enclosed space for parking automobiles. A parked area entirely around the athletic field site is another desirable feature.

The athletic field or the stadium may be located in a large landscaped park or in a large neighborhood playfield-park, if these happen to be properly located with respect to accessibility to all parts of the city or to those parts of a large city they are designed to serve. As a result of the highly

organized form which certain games and sports have taken among high schools the athletic field or stadium is becoming more and more a permanent equipment of senior high schools throughout the nation. While these to some extent may serve the athletic needs of the general community, as a general rule it is likely to be more satisfactory in communities of from forty thousand to one hundred thousand inhabitants to have at least one municipal athletic field or stadium.

In order to provide a proper landscape area, automobile parking area and ample site for athletic building, seats for spectators, and field for playing, the size of the athletic field or stadium site should be at least fifteen acres, and ranging from this minimum upwards to twenty or thirty acres — in other words, about the desirable average size of the neighborhood playfield-park.

No general principle has yet been evolved as to the desirable number of such highly developed areas in communities of different sizes. One authority estimates that every city of fifty thousand should have at least one athletic field or stadium.[1]

4. *Municipal Camp Sites.* These are areas designed primarily to provide summer outing facilities for boys and girls and, in some instances, for entire families. Because a reasonable degree of isolation and entire change of environment are primary considerations in selecting camp sites, they are usually located outside the city limits, the distance ranging from a few miles to over three hundred miles. A few camp sites conducted by park and recreation systems in this country are located within the city limits, but as a general rule this is undesirable, defeating the very purposes for which camping is organized and conducted.

Municipal camp sites may be owned directly by the municipal park or recreation department as in Detroit; Fort Worth, Texas; Bronx Park Department, New York City; or located in county park reservations as in Cook County, Illinois; Westchester County, New York; or in state parks as in Pennsylvania and New York and other states; or in Federal Forest Reservations as in California (Los Angeles, Oakland, Berkeley, and other cities), or private property may be rented or leased or loaned for such purpose.

It is not desirable to have a camp site of less than a minimum of ten or twenty acres. A study of two hundred and twenty-six private and community organized camps in 1922 showed that the average size of the immediate camp sites was approximately twenty-five acres and that the gross average acreage was one hundred and five acres.[2] Numbers of camps occupy sites of several hundreds of acres.

[1] Mr. George Ford, Technical Advisory Corporation, New York City. Address, National Recreation Congress, Atlantic City, 1922.

[2] "Camping Out, A Manual on Organized Camping," The Macmillan Company, New York, 1922, pp. 23–24.

Camping has not yet developed as a part of the functional activities of park and recreation departments in the United States to the extent that will give a clue to the possible number of camps and camp sites any municipal community of a given size should have. Los Angeles (population 1,222,500 — 1925) has four camp sites; Oakland (population 263,700 — 1925) has four; Detroit (population 1,242,044 — 1925) two; Highland Park, Michigan (population 72,289 — 1925) two. The great volume of camping conducted throughout the country today is under the auspices of private individuals and of community groups such as the Boy Scouts, Girl Scouts, Camp Fire Girls, boys' clubs, church groups, welfare agencies, industrial and commercial establishments, and under the auspices of private individuals.

The rapidity with which this movement has grown during recent years in general, and the success which has attended the efforts of those park and recreation departments which have conducted camps, warrants the conclusion that camping for both children and adults will become an important feature of municipal and county park and recreation departments in the future throughout the entire United States.

IV. Areas with Landscaping the Predominating Characteristic

Among areas of this general character several types may be distinguished in existing park systems in this country.

1. *Ovals, triangles and other small areas formed usually by the intersection of streets.* Owing to attempts to get away from the deadly uniformity of the checkerboard system of street plan layouts in American cities, this type of property has multiplied amazingly during recent years. Those cities that were planned or that are now being planned with wide diagonal avenues or boulevards radiating from the center of the city have a very large number of such properties, *e.g.*, Washington, D. C.; Indianapolis, Indiana; Buffalo, N. Y.; Springfield, Mass. As a general rule there is no conscious city-wide plan of such properties. They simply happen and are usually dedicated by the subdivider to park purposes and turned over to the municipal authorities and eventually to the park departments, often to the dismay and disgust of park officials. Their care is no easy problem, and how to preserve them, especially in very congested sections of cities, with anything like a landscaped aspect, taxes the ingenuity of the most resourceful of park executives.

Their primary purpose is that of embellishment of the neighborhoods in which they are located. Some of them may be of sufficient size to permit the placing of a few benches, serving thus as rest and relaxation places. When large enough to be used for this purpose they shade off imperceptibly into the class of the "small town park" group of properties.

2. *Intown Park Areas or Neighborhood Parks.* As to size there is no common relation among this group of properties. They range from the small squares through commons, public gardens, large or long promenades to parks of hundreds of acres in extent. Some of the finest examples of this type of property in small size are to be found in Savannah, Georgia, in the plan of the old city as laid out by General Oglethorpe, an example that was followed in many cities of the old South. The plazas characteristic of the Spanish towns and cities, the squares laid out by William Penn in Philadelphia in the original plat of the city, those laid out by General Sutter in the original plan of Sacramento are others among a great many examples of original city planning in this country in which this type of park was incorporated. Next to small triangles, ovals, places, "the small intown park" type of property is the most numerous type in the park systems of American municipalities. Great numbers of them have succumbed to the attacks of the organized recreation movement, and no doubt many more of them will go over into the class of children's playgrounds or neighborhood playfield-parks. But this type of property should always be preserved as an integral unit element in any well developed park system.

Functionally these areas provide as near an approach to nature as many dwellers in large cities ever see or come in contact with; they adorn the neighborhoods in which they are located; they enhance property values; they provide breathing, rest and relaxation places for the inhabitants, and to a more or less extensive degree a certain amount of opportunity for semi-active recreation in the form of walking, listening to band concerts, taking part in or observing a festival, play, pageant, and other public meetings of various kinds.

The number of parks of this type should practically duplicate the neighborhood playfield type of area. In fact their numbers should be slightly larger in the larger cities than the playfield areas for the reason that the small park areas should be provided in downtown sections of cities where playfields are not needed. They may exist as separate properties or combined with a playfield or the playfield with the park. They are especially desirable in those sections of cities having a high density of population but valuable for all sections, industrial, commercial, residential. It is not only in cities that these small landscaped areas are desirable. Every village, small town and small city should have one or more of them. Even in rural districts counties have found small natural parks of great value for picnicking and overnight camping.

3. *The Large Park or Country Park Area.* This is an area "designed to give as far as is consistent with intensive use all the sense of freedom that the unspoiled country gives, and is the nearest thing to unspoiled

country that most of the city dwellers can commonly take time to enjoy. It is fitted to receive large crowds and not be spoiled by them, for its main use is still to relieve a man from too close contact with his fellows."[1] It is further defined as "a city park to provide for the average man and woman, as far as it is consistent with fairly intensive use, access to open areas away from the man-made stone city with its heat and noise and dangers from traffic; to rest his sense of sight and hearing and smelling and touch by the colors and noises and odors of nature and the contact with Mother Earth."[2]

To accomplish these purposes large areas are required. The Committee on Recreation Problems in City Planning of the National Recreation Congress (1922–23–24) has suggested that this type of property should range from one hundred to two hundred and fifty acres. In point of fact there are many large parks of this character to be found in park systems of American cities comprising much larger acreage than the maximum mentioned above, and there are some smaller than the minimum that functionally fulfill the purposes of a large park. Fairmount Park in Philadelphia comprising 3,881.7 acres; Pelham Bay Park in the Bronx, New York City, with 1,756 acres; Golden Gate Park, San Francisco, having 1,013 acres, are a few examples of parks of this character having very large acreage. Parks of this type are likely to change their character in process of time through the growth of population around them. Central Park in New York City (843 acres), formerly a large country park, is now practically a park of the "intown" class; Delaware Park (365 acres), in Buffalo, has become a cross between a large neighborhood playfield-park and an "intown" park; the same thing has happened or is happening to Hermann Park (545 acres) in Houston, Texas. Likewise through expansion of cities large park reservations, a type of property to be subsequently mentioned, may become large city parks. For the protection of these areas against the encroachment of commerce, industry and transportation every power of modern zoning should be invoked.

It has been suggested by one group of experts in park and city planning that there should be one such park for every forty thousand inhabitants and that it should be located tangent to or near the city limits of such population.[2]

In providing opportunities, through large parks, for people of cities to renew frequently contact with nature, it is exceedingly difficult for anyone to say under what circumstances a given number of acres will suffice.

[1] Henry V. Hubbard, Harvard University, editor of *Landscape Architecture*, in an address before the Fourteenth National Conference on City Planning, Springfield, Massachusetts, 1922.

[2] Committee on Recreation Problems in City Planning, National Recreation Congress, Atlantic City, 1922, and Springfield, Illinois, 1923.

Natural beauty and spaciousness are prime considerations in areas of this character — a spaciousness so large that the natural beauty cannot be greatly marred by the presence of large numbers of people, and even a single individual may find some place where he can be alone, if he desires, without being too conscious of the crowd. Because it is desirable that people frequent them as often as possible, these areas should be reasonably accessible.

Their size and the element of cost in acquisition will as a rule require their location on original acquisition toward the outskirts of the city, although they may later be completely surrounded by the city. If a city is growing evenly in all directions a diagrammatic representation of where large parks should be might properly show one at each of the major points of the compass, and as the city grows around these a more numerous ring of them might be shown some five or more miles beyond. Topographical conditions frequently determine the location and the size of large parks for the reason that rough broken areas of cities and lowlands along water courses, while undesirable for residential or other purposes, may present very good or ideal possibilities for large parks. Certain topographical features may be very desirable for other community purposes, but their possibilities for large parks are so valuable that other possible uses should give way to park use. An example in point is the presence of lakes in the vicinity of cities or of certain portions or the whole of a river front.

4. *The reservation.* The invention of the automobile, its subsequent possession by so large a percentage of the people, coupled with the development of an exceedingly large mileage of good roads, especially in the vicinity of cities, are factors that have brought into existence, within recent years, a new type of park property known as the public reservation or forest park. These factors have partially reversed the point of view of park planners of twenty-five to fifty years ago whereby they sought to bring the country into the city through large landscaped parks; whereas now they plan to take the people out of the city into the country into large forest reservation parks. These same factors have caused the projection of miscellaneous types of active recreation areas many miles outside the city limits, such as bathing beaches, golf courses, and municipal camps.

The function of the forest park or reservation is practically the same as that of the large city landscaped park, although it will probably be less intensively developed and used, except in the vicinity of very large cities. There is no general principle governing their size nor their distance from the city, although so far as daily or week-end use is concerned it is not desirable to have them located more than fifty miles from the city limits.

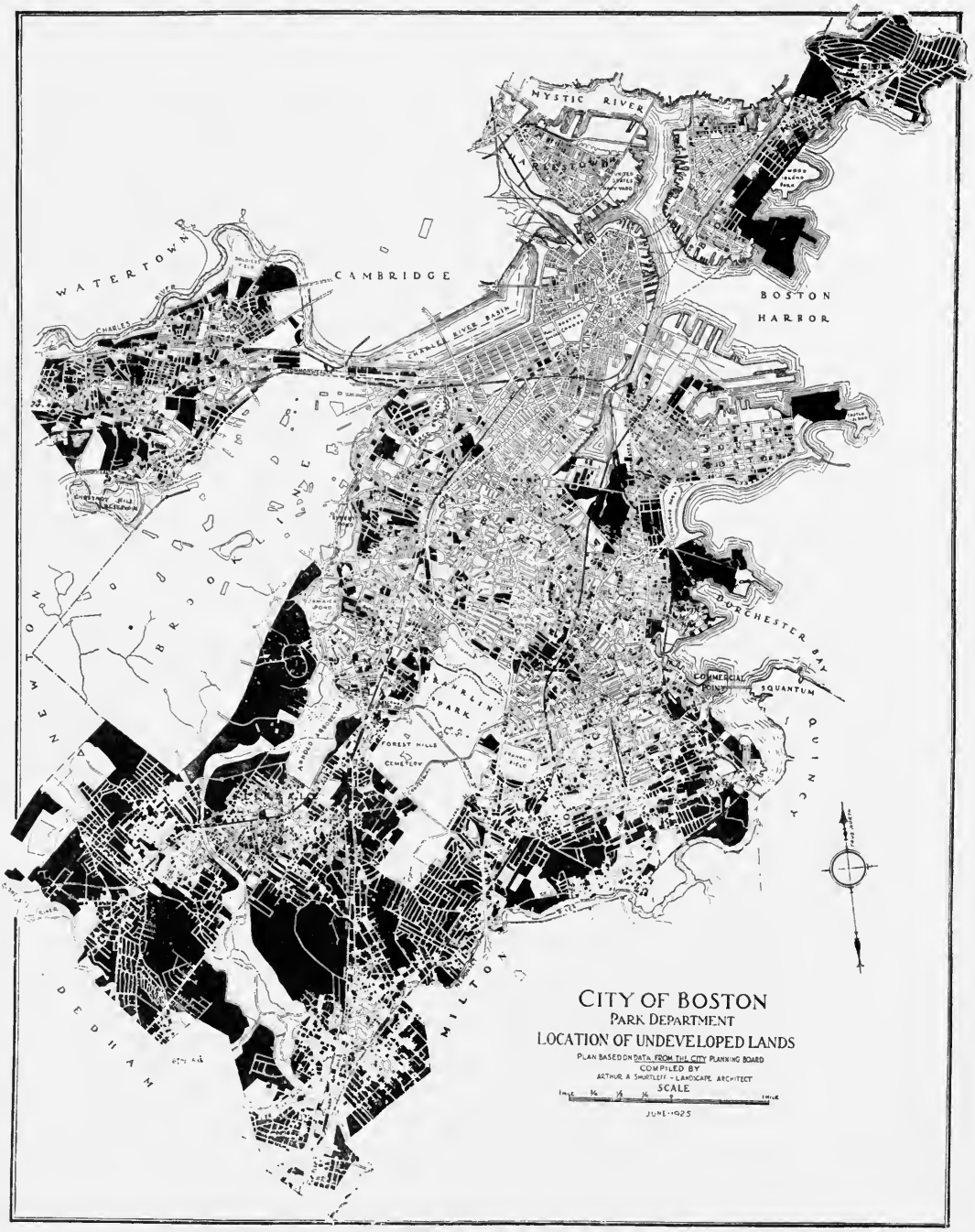


PLATE NO. 8

A GRAPHIC METHOD OF SHOWING EXTENT AND LOCATION OF UNDEVELOPED LANDS WITHIN A CITY

(Report on Future Parks, Playgrounds and Parkways, Boston Park Department, by Arthur A. Shurtleff, Landscape Architect, 1925.)

While the ownership and control of forest parks or reservations may be vested in municipal authorities, these areas, in contrast to most of the other types of recreation properties heretofore mentioned, may be owned and controlled by other public agencies, such as the township, county, state and Federal Government. In a few instances special commissions known as Metropolitan Park Commissions have been created by state legislation to purchase, develop and operate such areas in the vicinity of large cities. In not a few instances large outlying reservations, owned and controlled by water departments, boards or commissions of cities, provide some of the services of forest parks or reservations.

Typical examples of these various types of ownership are as follows:

a. Municipal ownership. 1. The mountain forest park areas comprising 10,239.14 acres (1925) owned by the city of Denver, Colorado, and Phoenix Mountain Park of 15,080 acres under the control of the city of Phoenix, Arizona, are two among many examples of outlying parks owned and controlled by municipalities throughout the country.

2. There are many examples of large outlying areas of land and water under the control of municipal water departments which in some instances are used, or parts of them so used, as recreation areas. One of the notable examples is that of Lake Worth Reservation at Fort Worth, Texas. This reservation comprises over 9,000 acres, of which approximately 2,779 acres are definitely dedicated to park and recreation purposes.

b. Townships. In several states, townships are authorized by law to acquire parks and forest reservations. Near Youngstown, Ohio, is a large township park comprising approximately 850 acres of land and water, under the control of a township park commission. In Massachusetts, numbers of "towns" (townships) have acquired areas known as "town forests" — wooded tracts designed primarily for the growing of timber, but which may be used recreationally by the people living in the near-by villages and cities, very much the same as though they were outlying forest parks. Municipalities in Massachusetts are also authorized by law to acquire such forest tracts.

The town forest is a comparatively new type of area in this country, although in Europe it is centuries old. The distinction between a town or municipal forest and a municipal forest park reservation is that the former is held primarily for economic purposes and only incidentally for recreation, while the latter is for recreation primarily.

c. Counties. The Cook County Forest Preserve Commissioners, Cook County, Illinois; the Westchester County Park Commission of Westchester County, New York; Essex and Union County Park Commissions in those counties of New Jersey, are among the notable examples of county

authorities handling large forest park reservations which are used extensively by the people in the neighboring cities.

d. State Ownership. A study of state park and forest developments throughout the United States during 1925 showed a total of approximately 2,550,000 acres in state parks, including areas under other designations but of equivalent service. Many of these state areas are so located as to serve as large outlying forest park reservations for the inhabitants of neighboring municipalities. Two of the notable examples of such location and service are the Palisade Interstate Park and the Allegany State Park, both in New York, the one serving the people of New York City and neighboring cities and the other the inhabitants of Buffalo and other cities in that region.

e. Special Park Districts. A few cities throughout the country have secured a system of outlying park and recreation areas through special park districts. The Metropolitan Park District of Boston and the Metropolitan Park District of Cleveland are outstanding examples of this method of acquiring, developing and managing a system of outlying parks and recreation areas that may be used by the inhabitants of the city which the districts surround. The Boston Metropolitan Park System comprises 11,035.80 acres (1926) and the Metropolitan Park System of Cleveland comprises approximately 10,000 acres (1926). These districts are organized under special acts of the state legislatures of the respective states.

f. Federal Government. Cities in the vicinity of Federal Forest Preserves, *e.g.*, Los Angeles, Oakland, Berkeley and others in California, Denver in Colorado, Salt Lake City in Utah, and others, make use of these preserves for municipal camps and various other recreational purposes. In fact millions of people from all parts of the United States make use of the recreational opportunities provided through the Forest Service of the Department of Agriculture and the National Park Service of the Department of the Interior. In this sense these areas serve as outlying wild parks for the use of the people of the entire nation.

The possible mileage limits of the use of properties of the character of forest park reservations by the people of cities may be greatly increased in the future, possibly in the near future, by the further perfection of the airplane and its production at wholesale quantities at a price within reach of the average person.

V. Boulevards and Parkways

These types of park properties are given a separate classification because they are, in design and primary function, totally unlike any other type of properties to be found in a park system.

While the primary function is the same, the difference between a boulevard and a parkway may be defined as follows: a boulevard is a glorified street or roadway embellished, as a general rule, on either side, in the center, or both on the sides and in the center, by strips of lawn, shrubs or trees. A parkway is likewise a roadway, but distinguished by areas on either side of the roadway bed, of sufficient depth to give a parklike appearance to the entire parkway area. A parkway may perhaps be more truly defined as an attenuated park with a roadway through it, or along the side of it.

The primary functions of both boulevards and parkways are to serve as ready means of access to the various larger units of the park system from different parts of the city and from one large unit to another; to facilitate the movement of the people out of and into the city and to provide a pleasurable medium for that form of recreation known as motoring. Parkways may also include as a primary function provisions for hiking and horseback riding. Boulevards and parkways serve as air lanes in cities, adorn sections of cities through which they pass, often serve as mediums for the redemption of unsightly areas, especially in the vicinity of streams and low grounds, and enhance values of properties adjacent to their courses. The widened areas of parkways often serve as children's playgrounds, neighborhood parks and neighborhood playfield areas. All these may be considered secondary functions, notwithstanding the importance of each one.

It is practically impossible to state any standards as to the number of miles of boulevards and parkways that any city of a given size should have or the number of acres that should be included in them. In point of fact, there are many so-called boulevards in park systems of this country that might better be classed as a part of the general street systems, so far as there being any difference between them and other particularly fine streets. Their status is different in that as boulevards it is possible to regulate or prohibit entirely their use by commercial traffic, thus making them more desirable residence streets. In the last analysis, however, any boulevard that has merely been made a boulevard by ordinance is practically subject to the legal status of a street. Parkways, on the other hand, have the status of parks and cannot be interfered with except by action of the entire body of citizens.

VI. Areas Devoted to Specific Educational–Recreational Purposes, in Which Landscaping is a Prominent Feature

There are certain types of areas which because of their peculiar functions cannot strictly be classed with any of the other more common types mentioned, although these areas may be included in other types of park areas, especially large parks. Among these areas are the following:

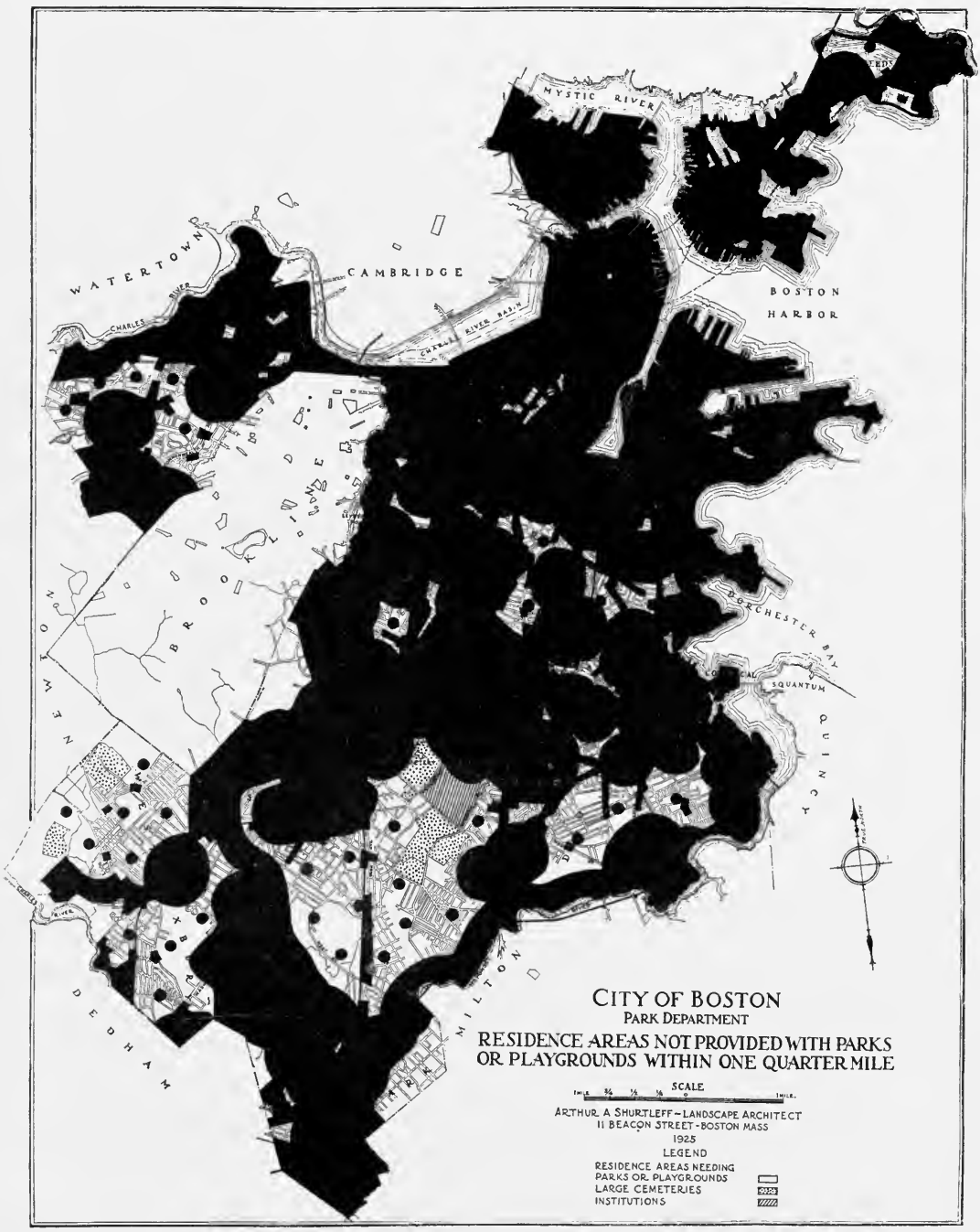


PLATE NO. 9

DARK AREAS ARE EITHER PROVIDED WITH PARKS AT PRESENT OR ARE ZONED FOR OTHER THAN RESIDENTIAL USE

In the original report a plan map showing the location of the schools was printed on thin paper and superimposed over the above map so that the relation between schools and suggested park areas could be studied.

1. *Botanical Gardens.* These are areas devoted to the propagation, culture and display of plant life. They are intended primarily to serve as sources of information on plant life for the general public, to provide æsthetic enjoyment and to serve as a laboratory for the scientific study of plants. As such laboratories they may become of great value from the economic standpoint. They may be located in large landscaped parks, as in South Park, Buffalo, or may occupy areas used exclusively for botanical gardens, as in Washington, D. C. (National Botanic Garden), or St. Louis (Shaw Botanical Garden).

The question whether botanical gardens should be located in large parks or in areas devoted entirely to garden purposes is debatable. It is suggested, however, that a garden set apart from all other park areas establishes a special identity in the minds of the people, and that as a result greater educational-recreational values can be derived therefrom than if located in some large park where the minds of the people would be divided among several different attractive features.

The educational-recreational value of botanical gardens cannot be overestimated. Far too little attention has in general been given the development of such areas by park authorities in this country. It is a feature that even comparatively small park systems might practically develop. Botanical gardens should be rated among the very important features of any park system and their use as actively promoted and organized as is that of playgrounds, playfields and community centers.

No principle governs their size, which may range from a very few acres to several hundreds of acres, depending on the variety and numbers of each variety of plants cultivated. Primary considerations in their location are atmospheric conditions, qualities and conditions of soil, and accessibility to the public.

2. *Arboretums.* An arboretum is a botanical garden devoted exclusively to the culture, care and display of shrubbery, plants and trees. As in the case of the botanical garden, its primary purposes are the general education of the public as to these types of plant life, an enjoyable and profitable source for the use of leisure, and its service as a laboratory for the scientific study of shrubs and trees. Growing out of the scientific culture and study may come results of great economic importance to the locality, state and nation.

The few genuine arboretums in this country are located either in general botanic gardens or occupy a specific area devoted exclusively to the purpose. In point of fact any landscaped or naturalistic park contains some of the elements of an arboretum. There is no general principle governing their size. A very large variety of shrubs and trees can be grown

on a very few acres if only one, or at the most a few of each variety are used. However, in order to get the best results the area used for an arboretum should comprise several hundred acres. Primary consideration in location would include atmospheric conditions, qualities and conditions of soil, topography and accessibility.

3. *Zoölogical Parks.* These are areas devoted to the care and display of specimens of the animal kingdom. The reasons for their inclusion in a park system are to be found in the intimate association in nature between animal and plant life, the never-failing interest and curiosity that people have in animals and the evident enjoyment derived from viewing and studying them. To the scientific student of animal life the zoölogical park is a laboratory. To the art student it is the source of many interesting models.

Zoos are generally to be found in medium-sized or large landscaped parks, but a few occupy areas devoted exclusively to zoo purposes, as in Washington, D. C. (the National Zoölogical Park); Cincinnati, Ohio; Milwaukee, Wisconsin; the new zoo in Detroit, and the new zoo for the city of Chicago. The tendency is toward setting aside specific areas for zoos separate and apart from other types of park properties.

There is no standard as to size. A small exhibit of native animals or a few specimens of exotic animals kept in a menagerie-like fashion would occupy only a very small space. A small zoo, however, developed along naturalistic lines, especially if it includes grazing animals, may occupy many acres. Zoos developed naturalistically (the only way any zoo should be developed), with a large collection of both native and foreign specimens, would occupy anywhere from fifty acres upwards. The Bronx Zoo in New York comprises two hundred and sixty-four acres of land and water. The location of a zoo involves consideration of good atmospheric conditions, topography, adequate space, and accessibility by means of good motor roads, trolley or rapid transit lines.

VII. Miscellaneous Areas

In many park systems there are areas used for sites of structures of various kinds, the structure being the primary features and often covering the entire area. They may be for recreational, or educational-recreational or utilitarian purposes. Among these types of areas are the following:

1. *Sites for Bath and Swimming Centers.* Before the development of modern school buildings with shower baths and swimming pools, and of the modern recreation movement with numerous swimming centers, municipal authorities throughout the country, especially in the larger cities, were quite active in establishing bathhouses both as a health and conven-

ience measure. With the widening scope of activities of park and recreation departments many of these areas and structures were turned over to such authorities for operation and management. Thus some of the properties of this type have been inherited by park authorities.

In other instances, in order to meet the need for facilities of this character in congested centers of population, park authorities of their own initiative have acquired sites and erected structures, generally combining both shower bath and swimming facilities. Buffalo, New York City, Philadelphia, Chicago and Boston are a few of the cities where areas of this type are under the control of park and recreation governing authorities.

The necessity for areas and structures of this character is chiefly confined to those sections of cities having a high density of population.

2. *Sites for Community Houses.* An ideal location for a community house is in a playfield-park; in fact a community house is considered an essential feature of a fully developed playfield area. While there are hundreds of community houses publicly owned throughout the United States on sites separate and apart from the common types of park properties, especially in the small municipalities, examples of such structures on individual sites under the control of park and recreation authorities are exceedingly few. It is a form of development to which park and recreation authorities as community-wide recreation agencies may well give serious consideration, especially in congested sections of cities where high realty values prohibit acquisition of playfield areas and the erection of community houses thereon, but where it might be possible to secure a building site upon which to locate a community house for the indoor recreations of the people. In the better residential sections, a community house is a most valuable social-recreation asset even if not located on a playfield property, although it is more desirable wherever possible to combine on the same site both outdoor and indoor recreation facilities.

In lieu of actual ownership of sites for structures providing indoor recreation facilities and of ownership of the structures themselves by park and recreation authorities, these authorities, as the major agencies for handling community recreation, will of necessity have to make use of facilities owned or controlled by other public agencies or private associations or corporations. This coöperative use of facilities owned by other agencies is practiced to an extensive degree by recreation authorities in Buffalo, Detroit, Oakland, and many other cities throughout the country.[1]

[1] There is considerable confusion in terminology with respect to structures providing indoor recreation facilities or services. Thus field house, recreation center and community house are often used interchangeably. Field house in this book will be defined as a structure providing the necessary facilities needed in connection with athletic fields or other sports and games centers. A community house is a structure providing facilities for a wide variety of activities for both children and adults. Recreation center as used to refer to a building is practically synonymous with community house. The term is sometimes used to refer to an entire area, inclusive of the building.

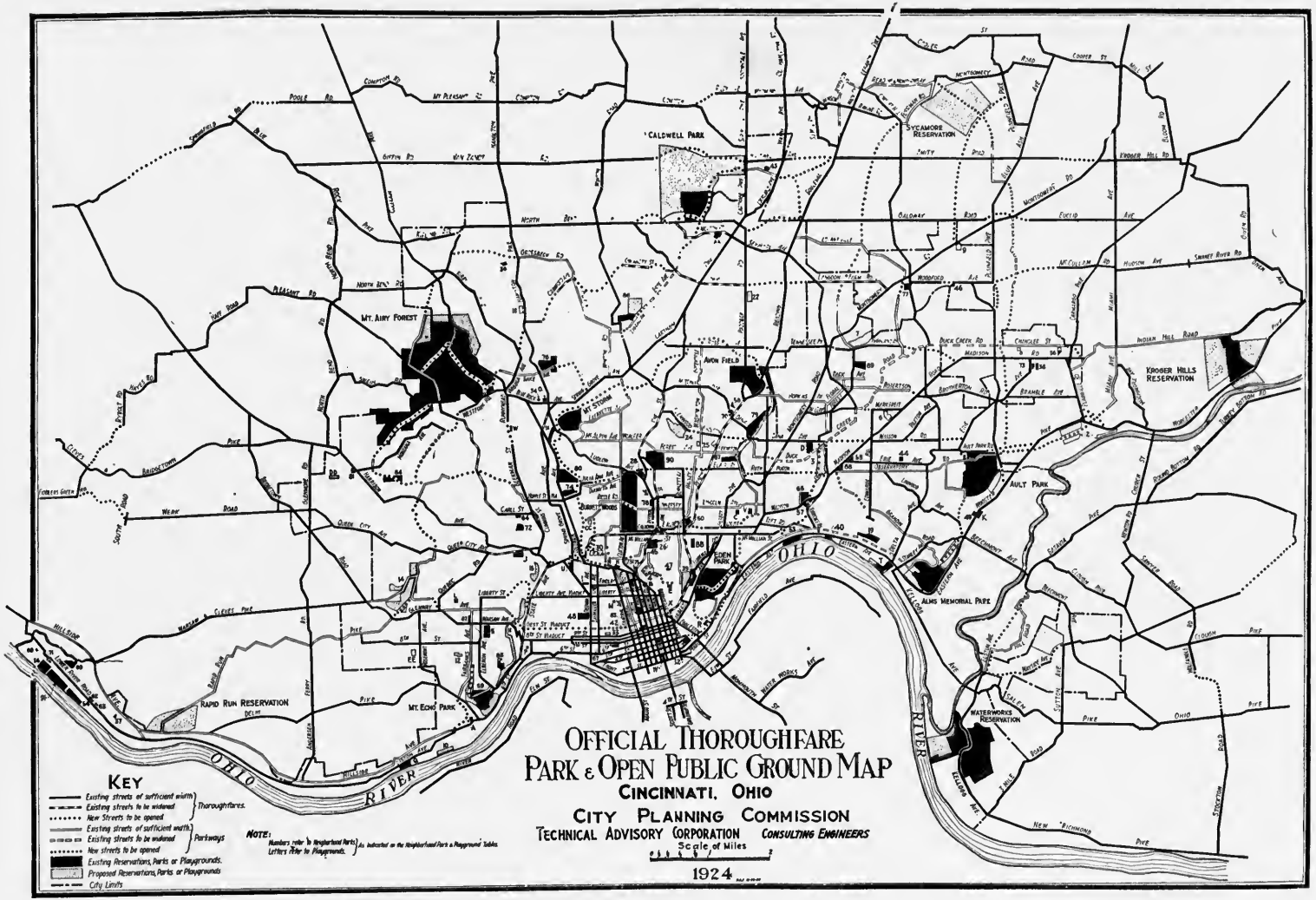


PLATE NO. 10

OFFICIAL THOROUGHFARE, PARK AND OPEN PUBLIC GROUND MAP, CINCINNATI, OHIO

Illustrating a method of graphically showing the location of parks and other open spaces and their relation to major traffic ways and proposed major traffic ways. Shows also proposed extensions of park system. (Report of the City Planning Commission, Technical Advisory Corporation, New York City, Consulting Engineers, 1924.)

3. *Sites for Museums of Various Types.* There are numerous examples of museums of art, of natural history, and of natural science, located in public parks throughout the country. Most of them are in large parks where spacious landscaped areas provide a fitting setting for the style of architecture which these structures usually affect. They are not always in these parks because the original design provided for them, or park authorities particularly wanted them, but because the officials and friends of the associations backing and controlling the museums desired to use park spaces as sites and were powerful enough to put their plans into execution. Functionally, however, there is such close harmony between the services rendered by these institutions and the aims and purposes of the park movement as to warrant their location in parks. The question might be raised whether it would not be better in many instances to locate them on sites used exclusively for this purpose rather than to place them in large landscaped parks. For the widest use these institutions should be located as near as possible to the center of the daily congregation of the people. This is not always accomplished by locating them in large parks; moreover, their introduction in such parks opens the door for the bringing in of other structures, perhaps equally as worthy, but which by their multiplication would in time more or less destroy the original design and purpose of the park.

The example set by Kansas City and by Minneapolis, where individual areas have been set aside by the park authorities as sites, is, on the whole, worthy of emulation by other cities.

4. *Sites for Utilitarian Purposes.* Because of the difficulty in fitting barns, yards, shops and storehouses into landscape designs, some park authorities have provided special areas for such utilitarian purposes. As a practical matter it would often be more desirable to have such an area centrally located as a radiating point from which to work than to have them located in various park properties or in one park property not centrally located.

VIII. Cemeteries

In practically every section of the United States there are examples of cemeteries under the control of park departments. It requires a considerable stretch of the imagination to say that a public cemetery has any of the attributes of a public park, but from some points of view they do perform some of the functions of parks. They admit sunlight and free air, provide places for people to walk about and rest, and furnish many pleasant landscape features in the form of lawns, flowers, shrubs, trees and delightful vistas. Some of the public cemeteries throughout the country, in point of

landscape beauty, rival the most beautiful of landscaped public parks.

The plan of designing cemeteries whereby the conventional monuments are forbidden and only plain slabs or small stones sunk to a level of the ground are allowed, makes possible still more beautiful landscape treatment of these areas. This plan is slowly coming into vogue in some sections of the country.

IX. Streets

Streets, as such, cannot properly be classed as units of a park system, but in many municipalities the park department is responsible for street planting, the care of trees and of parked areas along streets.

From the standpoint of play of children, streets always have been, and very likely always will be, in large cities, important areas of play. Many community recreation systems have made organized use of streets as playgrounds, safeguarding them not only by supervision but also by temporarily barring from traffic the areas used under special authority from the city council or the chief of police.

SECTION II FIRST STEPS IN PLANNING A PARK SYSTEM

The process of determining which of the types of unit elements discussed in the preceding section any given administrative area (municipality, metropolitan district, county) should have, and the number, location and the individual sizes of each type desired, constitutes the preliminary and basic step in planning a park system.

This section is limited to a brief consideration of this phase of park planning together with some notes on putting a plan into execution when once formulated. Those phases of planning which relate to the design and construction of individual areas are considered in subsequent chapters.

Some Principles Involved in First Steps in Park Planning

1. The allocation of areas for recreation (parks, playgrounds, neighborhood playfield-parks and similar areas) must be considered an integral and fundamental part of general city planning. Areas for recreation cannot be considered apart from the uses of land for streets and transportation (land and water); for housing (numbers and distribution of population); and from the probable growth and movement of population, the location and distribution of industrial and commercial establishments, and the number and location of institutions of different kinds, such as sites for schools and sites for other public and private-public institutions.

2. The plan should take under consideration not only present needs but also the estimated needs twenty-five to fifty years hence.

3. Every unit selected in the system should be chosen with a view to its usefulness for one or more specific services.

4. The areas selected should be well balanced with respect to functional services. A few large parks connected by boulevards and parkways do not constitute a system in the modern sense; neither would a complete plan of children's playgrounds and neighborhood playfield-parks alone constitute a park system in the modern sense. The plans should give due consideration to all the different types of areas that experience has shown to be necessary to meet the needs of specific groups of people and to areas that meet the needs of the people in general. Lack of adherence to this principle, coupled with past neglect of proper planning, has brought about the badly balanced systems so frequently found in American communities today.

Without this balance among such basic areas as children's playgrounds, neighborhood playfield-parks, intown parks, large parks, reservations and boulevards and parkways, any general principle, such as the allocation of one acre for every hundred inhabitants in any given community, is practically meaningless. Thus a given city might have a total park acreage of such size that the ratio would be one acre to every fifty inhabitants, and yet the actual recreational resources for the children and young people would be very low, were the property, for example, all in one large area too far removed from the majority of the homes of the people to be of daily use to the children and young people. Likewise the principle that a certain percentage of any given administrative area — for example, ten per cent, twelve and a half per cent or twenty per cent — should be set aside for parks, should be used with a great deal of reservation partly for the reasons stated above, but chiefly because there is no constant ratio in American political units between population and the area within political boundaries. Thus one city may have a population of seventy thousand within incorporated limits of one square mile, while another city with approximately the same number of inhabitants may have incorporated limits of ten, or thirty or even ninety square miles.

5. To ensure the securing of a plan which will take into account all of these elements and principles, it is important that a study of needs and resources be made. Such a study, and the laying down of the plan, should be done by someone who is not only thoroughly trained in the art and science of modern park planning but who is also fully conversant with the principles of community planning. This principle is so important for both large and small communities that it might well take precedence over all others stated.

Considerations Entering into the Study

In incorporating these general principles into a comprehensive park plan for a community there are many elements to be considered, and study must proceed along several lines before it is possible to vision the community-wide plan. Among these considerations are the following:

Topographical Features. A more or less detailed knowledge of the chief topographical features of a community is fundamentally important for the reason that these features frequently determine the location of certain types of park and recreation properties, such as scenic parks, large landscaped parks, forest reservations, parkways and boulevards. Not infrequently they influence the location of playgrounds and playfields. These features also influence the location quality and character of the homes of the people, the location of industrial plants and transportation systems, and cause all too frequently an unwholesome mixture of residential, industrial and transportation properties. A good topographical map is a prime necessity in planning any community, urban or rural.

Population Studies. It is of the greatest importance that detailed information be secured on the population history of the community, including the rate of growth, probable future growth, distribution of the population throughout the community, the trend of movement of the population, the numbers in each age and sex group, and the composition of the population as to nationality and character of occupations. These facts are important because the types of properties, number and approximate size of each type and their location and distribution are based very largely on this data.

Transportation. In planning a system of parks a thorough study of the transportation situation of the community is necessarily involved. Large parks and active recreation areas designed to draw large crowds must have good transportation facilities to them. Large parks, however, should not be so located or shaped in such a manner as to interfere seriously with major traffic lines, neither should major traffic lines run through them if it can possibly be avoided. Children's playgrounds should, if possible, be so located that the children need not cross main traffic ways to reach them. Boulevards and parkways should be properly integrated with the major street system, permitting of ready entry into the heart of the city or exit to the suburbs and the open country or to large parks, or they may be so planned as to provide a system of pleasure driveways encircling the city and connecting the larger park units.

Knowledge of Existing Park and Recreation Facilities Important. The study should include a detailed record of all existing publicly-owned open spaces, whether controlled by the school board, park board or any other civil division of the municipal or county government. Account should also be taken of recreation areas controlled by the state or Federal Government within the vicinity of the community.

It can be stated almost as an axiom in planning that few, if any, communities in America are actually using to the maximum possible limit the public recreation resources available.

While some attention should be given to areas and facilities provided by the people through their own initiative, or by persons for commercial purposes, it is doubtful whether these privately-owned areas or facilities will vitally affect the need for a thoroughgoing system of publicly-owned park and recreation areas.

Zoning. One of the most important factors that has been introduced into laying down a plan for recreation areas in communities is zoning. Zoning may be defined as the outlining of a set of agreements as to the primary use or uses of different sections composing the total area of a city, and the fixing of these agreements legally by ordinance. Through fixing the use or uses to which different sections of a community may be put there is introduced a factor of certainty and stability in planning a park system that earlier planners did not enjoy. In the first place the planner can be reasonably sure that certain sections will be used for residential purposes and he will further know the probable congestion of these residential sections. This vastly simplifies the problems of the planner with respect to selection of sites for future local recreation areas and at the same time stabilizes the continued usefulness of such areas after they have been acquired and developed. Those are factors of such importance that the zoning of a city and the enactment of a zoning ordinance ought really to be made an initial step in planning a park and recreation system, especially with reference to areas primarily of local use and significance. With respect to such areas as stadiums, highly developed athletic fields and bathing beaches, zoning may not be of such fundamental importance, for it is conceivable that they might possibly be located and successfully conducted in regions zoned for industrial or commercial purposes, providing topographical conditions, central location and good transportation facilities were desirable.

General Social Conditions. It is now generally admitted that parks and other recreation areas, properly equipped and managed, are important factors in the promotion and maintenance of health, nervous stability and higher standards of conduct among the people. A more or less detailed

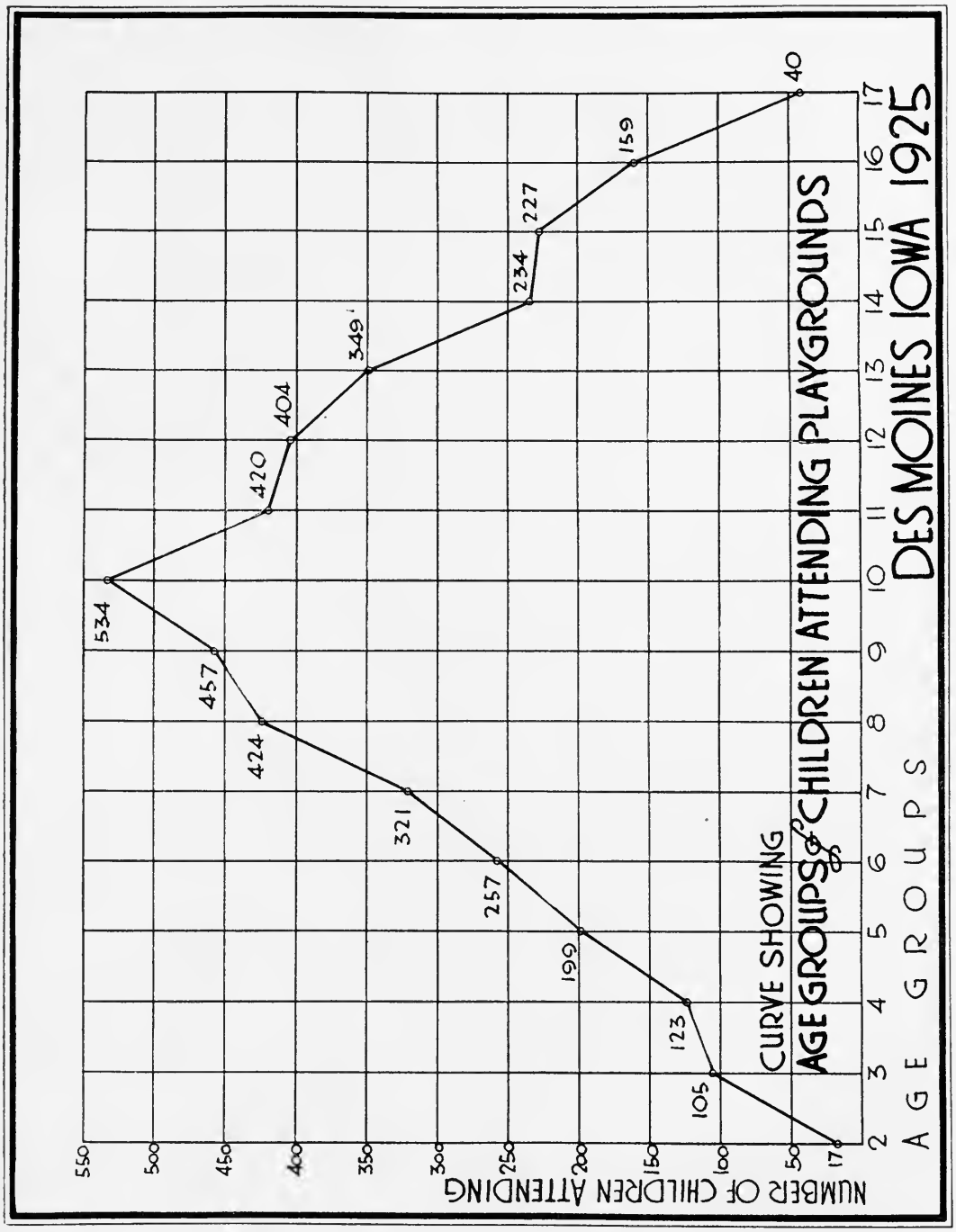


PLATE No. 11

A D GRAMMATIC REPRESENTATION SHOWING AGE GROUPS OF CHILDREN ATTENDING PUBLIC PLAYGROUNDS

(Bartholomew and Associates in a Report on Des Moines, Iowa, 1925.)

knowledge of conditions inimical to the well-being of the people might influence the first efforts of the community toward providing needed areas and facilities in those sections of the community where plague spots of one kind or another are found. Thus, if it be shown by plotting on a map the cases of juvenile delinquency in the community for several years past, that some particular sections of the community are producing more cases as compared with other sections, it would probably indicate that a well-equipped supervised playground would be a desirable asset for that section. If in some section of the community a study of the morbidity and mortality statistics shows an unusually high rate, it might indicate that the children and adults were not receiving enough sunlight, fresh air and opportunities for wholesome exercise, and that an open parklike area should be secured. If a section of the community is found to be inhabited by a large number of workers in highly specialized, standardized manufacturing plants, as an antidote to this type of monotonous, nerve-racking, non-creative work areas for all manner of physical activities and outdoor opportunities ought to be provided for the workers to engage in creative activities of various kinds.

Thus it should be possible to analyze the community needs in such a way as to show where the chief emphasis should be placed in carrying into effect any plan that might be formulated.

Law and Legislation. There should be a careful compilation of all state laws, charter provisions and local ordinances relating in any way to the powers and rights of the community relative to the acquisition, development and operation of parks and other recreation areas. Such a study will show whether there are any powers that are lacking or where merely implied powers need further definition and enlargement. Not infrequently in planning a park system one of the first steps required is to strengthen existing power of the local administrative agency or to secure entirely new powers from the proper legislative authority.

Finances. A thorough analysis of the community's financial resources is fundamentally necessary in planning a park system. All other questions in the establishment and operation of a park system finally come down to this single question of finances. The study might include an investigation of the methods of financing park systems in other communities where an outstanding success has been made in planning, development and operation of park systems.

Suggestions for Organizing the Study

Movements leading to the establishment of a park system, or to the extension of a partially completed system, arise and are fostered in several different ways. Among these ways are the following:

Initiation Through a Private Organization. In some instances the initial move may be made by some local civic or commercial organization, or several such organizations may unite and act through a central committee composed of representatives of all of them. The organization or the central committee will generally raise a private fund and secure the services of a park or recreation planner to make a study of the community and its needs, ending in the formulation and presentation of a report, setting forth in detail the findings of the survey and embodying a plan for future development. This is used as the basis for influencing public opinion and through this influencing the public officials to act.

If there is a great deal of educational work to be done in the community, both before and after the survey, the initiation and carrying forward of the movement by a civic organization or a special group formed for the purpose is one of the best and most effective ways of attacking the problem. It is hardly to be expected that public officials can act the role of propagandists. Most public officials consider it their duty to act only when there is unmistakable evidence of a public demand. They do not consider themselves as agents, and perhaps rightly so, for creating this demand.

City Planning Committee or Commission. A large number of both small and large urban communities throughout the United States have established official city planning committees or commissions. A recent study of the American Civic Association records that, of two hundred and ten cities covered by the report, one hundred and thirty-eight have city planning boards or commissions. Twenty-seven of these are in cities under thirty thousand inhabitants (*Municipal Planning, Park and Art Administration in American Cities,* published by the American Civic Association, May 1, 1925). It is regarded as a fundamental duty and responsibility of such commissions to make studies and lay out a comprehensive plan for parks and other recreation areas, either through their own employed technical planners or through experts brought in from the outside.

In some instances, even in cities having city plan commissions, it is found desirable to organize a private city planning association or a park and recreation association to carry on propaganda work and even to employ an outside expert if public funds for this purpose are not available.

Governing Authority of a City. Sometimes the initiative is taken by the governing authorities of cities. This is especially true in those cities

where parks and recreation are handled more or less directly by the governing authorities themselves, as in city manager cities, commission, federal plan and council governed cities. The procedure is practically the same as under the preceding instances.

Very frequently, however, the governing authorities of cities proceed to acquire individual properties for park and recreation areas without any relation to a well studied and worked out plan, either because some member of the governing authority desires to do something for the people residing in his section of the city or a local committee of citizens present a petition requesting the acquisition of a park or playground for their neighborhood.

In general, this is a method that is undesirable for the reasons that the property acquired may not be well located, nor entirely suited for the purposes for which it is really intended; or there may enter into such transactions personal questions that would have no weight or consideration in a scientifically studied plan.

Park Board or Commission. The preliminary action for the formation of a general park plan may be taken by a park board or commission in two general situations. First, a newly created commission, as the first step in the assumption of its duties, may desire to have a plan made upon which it can base its future actions in the acquisition of properties. Secondly, an already established and functioning commission may wish to have a plan made for the future extension of the system already under its jurisdiction.

As a general rule commissions of this character call in a park and recreation planner who makes the study, lays down the plan and presents a report in detail as a future guide to the commission. Frequently the planner is continued in the capacity of consultant, a practice that is recommended to all commissions. This is especially desirable when the planner is required in addition to laying down the general plan to also make designs for the properties to be acquired.

It is too frequently true that park boards and commissions discount the value of having a well studied plan made for the territories under their jurisdiction and proceed to acquire properties upon their own initiative or by reason of some public pressure. It is desirable and is strongly recommended that park authorities even in small cities have a careful study made of their problems involved in planning before investing much of the people's money in the acquisition of properties.

Methods of Conducting the Survey. Two general methods may be followed in making a park and recreation survey. First, the survey may be made and the report compiled by the park specialist or specialists with the incidental assistance of public officials and private individuals whose

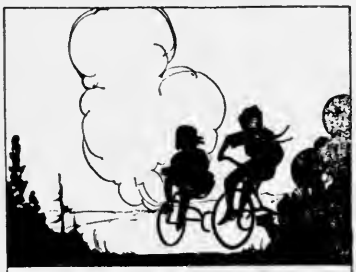
CLASSIFICATION of POPULATION	FACILITIES WHICH SHOULD BE AVAILABLE
 SMALL CHILDREN	HOME GROUNDS INTERIOR BLOCK PLAYGROUNDS NEARBY CHILDREN'S PLAYGROUNDS & KINDERGARTENS DRIVES, PROMENADES } IN PARKS
 SCHOOL CHILDREN	HOME GROUNDS INTERIOR BLOCK PLAYGROUNDS PLAY AREAS IN PARKS SWIMMING POOLS SKATING PONDS COASTING HILLS BOY & GIRL SCOUT CAMPS SCHOOL PLAYGROUNDS PLAYFIELDS FOR ATHLETICS COMMUNITY CENTERS OUTLYING NATURALISTIC PARKS
 YOUTH	
 ADULTS	PLAYFIELDS SWIMMING POOLS SKATING PONDS COASTING HILLS NEIGHBORHOOD PARKS LARGE PARKS COMMUNITY CENTERS PLEASURE DRIVES

PLATE NO. 12

CHART SHOWING A CLASSIFICATION OF POPULATION AND RECREATION FACILITIES THAT SHOULD BE AVAILABLE FOR EACH CLASSIFICATION

(Bartholomew and Associates, City Plan and Landscape Engineers, St. Louis, Missouri.)

connections or knowledge give them possession of facts valuable to the planner. Second, the specialist may direct the agency or authority responsible for the initiation of the survey to form a number of local committees covering the different lines of studies to be made and provide these committees with proper directions for the collection and tabulation of data. Contact with the committees will be maintained from time to time either by mail or by personal conferences until the information is completely collected. The planner may then take this information and in coöperation with the various committees analyze it, and from the data compile the final report. The planner, under this scheme, will, of course, spend enough time in the local community to get a fairly accurate and intimate first-hand knowledge of the environmental conditions of the community.

This method of making a survey is likely to be slower and less scientific than the first, but its advantages are that a considerable number of citizens and officials will be definitely interested in the local problems and will possess first-hand information concerning these problems and the plans for their solution. They will therefore be in a position to promote intelligently any plans or programs that may be adopted.

Forms for Recording Information. A series of forms for collecting and recording data on the various lines of studies in the survey may be found helpful. This is especially true if local people assist the planner in collecting information. There are a great many such forms in existence, but the limits of this manual prevent the exhibition of examples of the various kinds. They include forms for recording data concerning public parks and other recreation areas, features of development of different areas, organization and management activities, financing; forms for recording data concerning properties and facilities controlled by other public agencies, which might be used for public park and recreation purposes; forms for recording social conditions of the community including population studies, and forms for recording data concerning commercial recreations and the properties and facilities that are or may be used for recreation, although controlled by private agencies, institutions and organizations, etc.[1]

Compilation and Publication of the Report of the Study. The report embodying the data, conclusions and final plan or plans should be written in simple, non-technical style. It should be so organized that each major subject shall stand out clearly in its own appropriate section or chapter. A summary of the conclusions or plans should be presented either at the end or the beginning of the report. Above all else, it should be as profusely illustrated as possible by pictures, charts, diagrams, plans and maps, espe-

[1] The Playground and Recreation Association of America has compiled a number of such forms and will furnish samples to anyone desiring them.

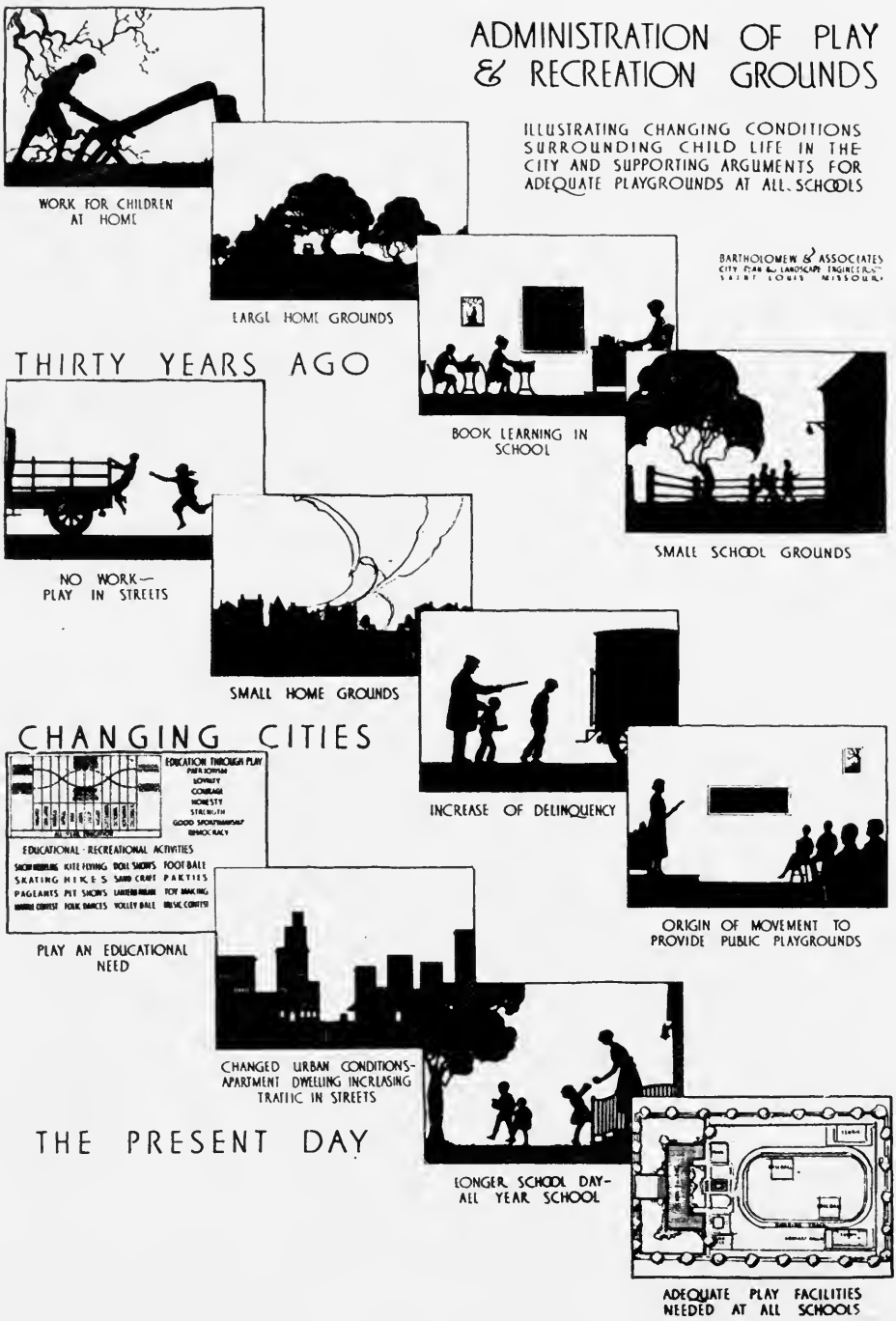


PLATE NO. 13

AN INTERESTING DIAGRAMMATIC CHART ILLUSTRATING CHANGING CONDITIONS SURROUNDING CHILD LIFE IN THE CITY AND SUPPORTING ARGUMENTS FOR ADEQUATE PLAYGROUNDS AT ALL SCHOOLS

(Bartholomew and Associates, City Plan and Landscape Engineers, St. Louis, Missouri.)

cially if the report is to be used for popular educational purposes. Most people are mentally lazy and many have difficulty in visualizing what they read from the printed page. Any method that will help to visualize a fact, a condition, a project or a conclusion is of the highest importance in the compilation of such a report. The methods employed by planners in pictorial, map and diagrammatic representation are very numerous. Only a few samples of these methods are presented in this section. (See illustrations throughout this chapter, pp. 20, 22, 24, 26, 28, 30, 38, 42, 46, 52, 56, 58, 62, and 66.) Those who wish to go into the subject further will find, through a study of the various illustrated reports listed in the bibliography at the close of this chapter, many examples of the methods used by different planners.

The local committee or public authority sponsoring the study and formation of the plan should give special thought at the time the arrangements are made for the study to methods of publishing the report and plan when completed. This is a general rule applicable to those situations where the report is to be used for educational purposes as well as a guide to public officials. It should be issued in an edition large enough for very extensive distribution among the various organized groups in the community and among individual citizens whose influence may be valuable in realizing the plan.

Putting Plans into Execution

The making of studies, the formation of plans, the building of programs, are all of little avail unless means are devised for putting plans into effect. This important part of the task is largely a matter of education of the public.

The Chief Objectives. The study of the findings of park and recreation surveys usually shows the following objectives to which educational propaganda must be directed.

1. *The need of additional legal authority either for the establishment of park programs if none exist or the extension to legal powers already in the possession of an existing administrative authority.* This may involve action by a state legislature, an amendment to a city charter by a vote of the people themselves or passage of an ordinance by the municipal government. With some of this legislation the public is often little concerned. Where charter amendments are in question, however, the public is likely to take a keen interest, and it is most important that the citizens be kept fully and accurately informed of the meaning and scope of the proposed legal measure.

2. *The need of additional sources of revenue for parks and recreation.* To meet this ever present need, municipalities may issue bonds, secure annual appropriations, establish or increase a special tax. Any one of these methods of securing funds will arouse a great deal of interest, since there

is no one thing to which the American public is more sensitive than the question of taxes.

The need for a thorough education of the citizens, who very often are asked to vote on these questions, is absolutely vital. Many much needed increases in the municipal budget are frequently lost because of the citizens' lack of knowledge of the benefits to be derived from a tax rate made higher for the sake of adding to the city's park and recreation assets.

3. *The need of additional properties.* This is an almost inevitable objective, for few communities or counties in America have all the park area they need. Many communities are paying dearly for failure to appreciate their needs in advance and provide for them before property values have become so high that the community can scarcely afford to secure land. Here again enters the need for securing money for the purchase of property through bond issues or other methods with the attendant need for guiding public opinion to a realization of the importance of such measures.

4. *Need for improvement of properties.*

5. *Need of reorganization of the administration of the park system.* Community needs and demands have multiplied so fast during the past quarter of a century that established systems have been hard put to keep pace with them. Everywhere there is constant need of readjustment and enlargement of program and staff. The development of the administrative organization necessary is largely an internal matter, and if the governing authorities can meet these demands fairly adequately as they arise, the public need not be brought in. This is not always the case, and often bitter controversies have arisen over administrative problems. Here again there must be some focal point of educational leadership of the public.

How is Leadership in Educational Work to Come? In the case of the original establishment of a park and recreation system, the leadership must always come from an unofficial group of interested citizens. It may, in the case of established systems, come from the officials themselves, but even in such instances chief reliance must always be placed on the support of organized groups and individuals of the community who have the interest of parks and of their community at heart.

The Follow-Up Group. In the case of park planning and extension, which is generally a part of a broad city plan, the unofficial group interested in initiating the study will usually be the logical group to provide the educational leadership necessary in putting the plans made into effect. Where an official city planning commission was the initiating body it is usually better, it is felt, for the follow-up work to be placed in the hands of an unofficial group such as a Citizen Planning Committee; or, as has been suggested, there are other types of existing civic organizations which may

undertake the task, or a special group having park interests particularly in mind may be created.

The importance of this follow-up work cannot be overestimated. A great many splendid plans have failed of execution because the initiating group has considered its work done when the reports were presented, when in reality its work had just begun.

Mr. Harland Bartholomew, in "The City Plan of Memphis," in pointing out the necessity for follow-up work, says:

"As a first principle it should be understood that the preparation of a plan does not insure its execution. Even were the plan adopted by law or ordinance as a more or less inflexible instrument, its enforcement could not be secured without popular support and sympathetic administration. No law can be stronger than the moral force behind it. . . . If the plan is to endure and withstand the ravishes of selfish interests and of political manipulation, it must have a well qualified sponsor. . . . The commission, therefore, must thoroughly acquaint the citizenship with the fundamental purposes of the plan and of its many details. There should be continuous effort by lectures, by printed reports, by newspaper articles and by such other means to keep the plan alive. . . . The city plan to be successful must first be widely understood and appreciated. Popular appreciation and support will accomplish more than the vigorous enforcement of the plan adopted by law, but meagerly understood, if not completely misunderstood. Coöperation is better than compulsion."

Educational Methods. In the "Official Plan of the City of Cincinnati," prepared by the Technical Advisory Corporation, New York City, the following suggestions are offered for an educational program:

1. Articles constantly in the newspapers.
2. Publication of leaflets or dodgers to be widely distributed.
3. Publication of easily read pamphlet reports on various phases of the plan.
4. Lectures and talks on the plan before all groups that should be interested.
5. Profuse use of lantern slides illustrating the salient features of the plan.
6. Motion pictures of city plans before and after.
7. Exhibition of photographic enlargements of the various features of the plan.
8. Expose in shop windows downtown attractive pen and ink or colored perspectives of striking features of the plan.
9. Employ cartoons with regard to the city plan currently in the newspapers.
10. Distribute a large number of postcards, with views of the plan.
11. Distribute widely striking posters calling attention to the salient features of the plan.
12. Organize a permanent exhibit of the city plan in one of the libraries or museums, or possibly the city hall.
13. Organize a traveling exhibition of the city plan that can be shown in every part of the city.
14. Organize pageants or floats, or both, to explain graphically the value of the plan.
15. Prepare small scale models of the more striking features of the plan, and exhibit them in downtown windows.
16. Prepare animated models of the city plan's salient features, in order to attract the eye of the passer-by.
17. Organize photographic competitions for the most strikingly good, or bad, city planning result.
18. Organize a competition in the newspapers for the best articles on city planning suggestions.
19. Organize competitions for original planning ideas with prizes.
20. Organize competitions for planning suggestions among school children.
21. Organize competitions among the various societies and groups.

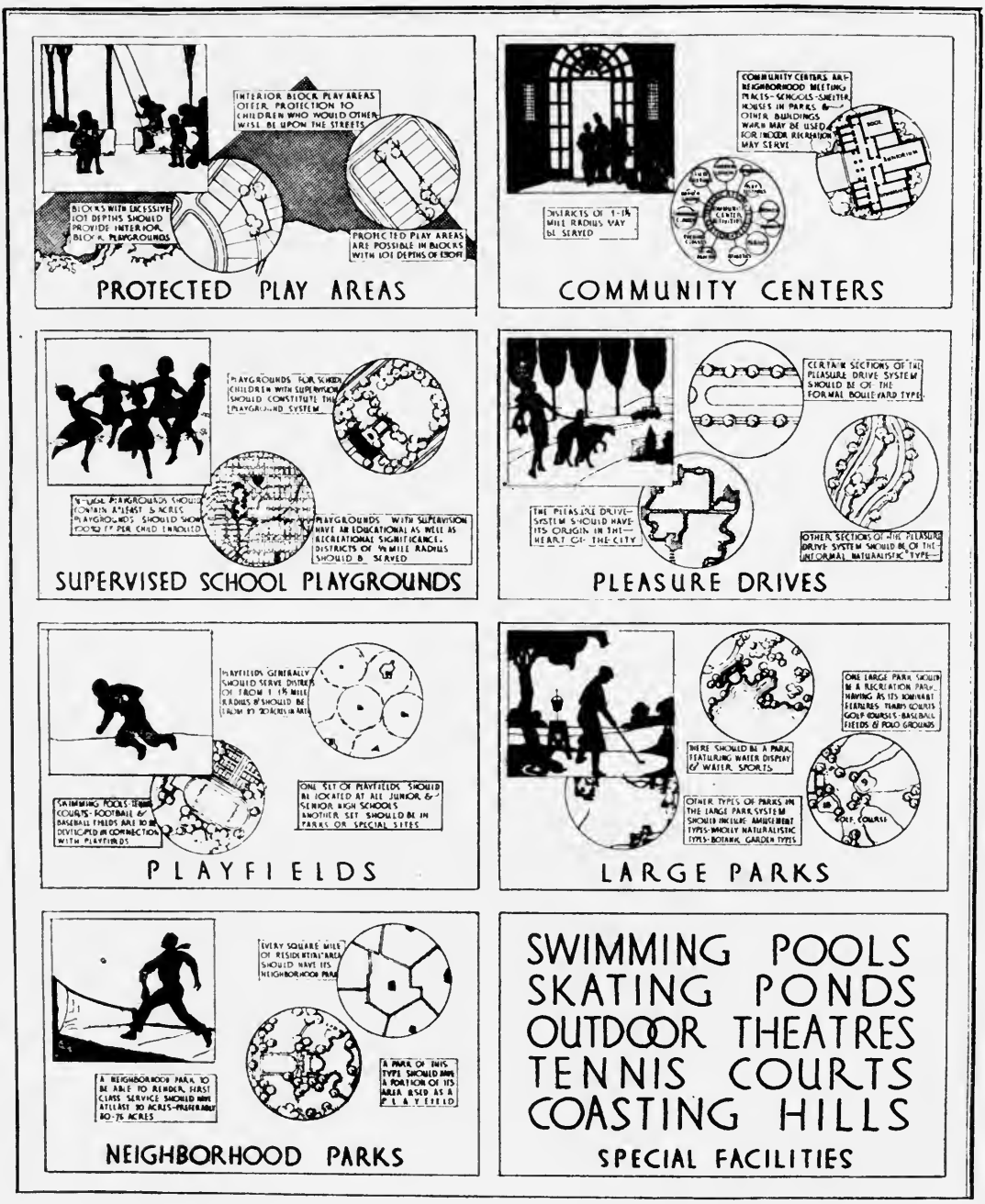


PLATE NO. 14

A GRAPHIC METHOD OF REPRESENTING THE DIFFERENT TYPES OF RECREATION FACILITIES NEEDED IN A MODERN PARK AND RECREATION SYSTEM

(Bartholomew and Associates, City Plan and Landscape Engineers, St. Louis, Missouri.)

22. Offer prizes for the best looking business fronts.
23. Offer prizes for the best looking streets.
24. Offer prizes for the best private yard layout.
25. Offer prizes for the best subdivision layout.

Such a program involves the appointment of sub-committees: one to handle publicity and publications; another to take care of speakers; another to take charge of competitions and various others to meet special needs.

Essential Factors in Publicity. In conducting an educational campaign, particularly in communities where there has not previously been a park and recreation system, the following points may well be stressed:

1. Publicity must be focused. All educational propaganda must have as its objective the particular purpose for which the campaign is being conducted. Whether a bond issue for parks, a charter amendment or other objective, the ultimate aim must constantly be borne in mind.

2. The value of trained leadership in all forms of park and recreation developments in operation must be emphasized. The public should be made to realize from the beginning that the desired results can come only through the service of trained workers whether on the playground, at the swimming center, on the golf course, in the conservatory or in connection with any of the varied activities of the modern park program. This is not easy. There is still a long road of extensive educational work to be followed before the public will clearly understand the fundamental necessity of providing for trained leadership in all phases of park activity.

Newspaper Publicity. The local press presents the most immediate channel for reaching large numbers of people. It is, therefore, an important medium. Material for newspapers, particularly the current news story, which is a plain statement of fact telling what it is all about, should go to the newspaper while it is news, not when it becomes history. There is, too, the feature story usually appearing in the Sunday paper which is valuable regardless of time. Significant facts gleaned from the study; a map of the improvement plans for some large park for which bonds are to be voted on, together with a description of the plans; stories of parks of other cities and pictures showing their development with a statement of the benefits derived from parks, all make good feature story material.

It is an important part of the work of the publicity committee to get local papers to comment editorially on the campaign. There are many people with whom this form of newspaper publicity is particularly effective.

Publications. One or two page leaflets giving facts about the campaign and showing possible contrast pictures are effective. These leaflets should be brief and to the point, giving only significant facts.

Speakers. It is of primary importance that the campaign for parks shall be presented before all community groups. Sometimes the plan is

used of giving noontime talks at factories and between the acts at theatres. Clergymen should be urged to mention from the pulpit the importance of parks and recreation.

Slides aid materially in these talks and a small stereopticon picture machine can easily be carried from place to place. Similarly the whole story may be told by the use of motion picture reels.

Charts, Posters and Demonstrations. Posters made possibly by the school children and placed in store windows always attract interest. Charts containing brief facts and quotations catch the interest of some people. If the particular purpose of the campaign is to extend the recreational activities of the park system and play administration a general play festival will be helpful.

How Some Communities Have Conducted Their Campaigns

A Successful Campaign in a Small Community. A public-spirited citizen of Xville, a community of thirty thousand people, purchased, developed, endowed and gave to the city a large park of approximately two hundred and sixty acres. This was the beginning of interest in public parks in Xville. The next step was taken by the Common Council, which passed an ordinance creating a park board under the authority of the state enabling act. As soon as this board had been appointed, an expert park planner was called in to make a survey and outline general plans for a park system and make suggestions for the development of individual properties which were to be secured.

Soon after the arrival of the planner, a public mass meeting was held for the purpose of presenting to the public the tentative plan for a park system and its advantages. The publicity for the meeting was excellent and there was a large attendance. The mayor presided. The speakers pointed out the importance of the provision of sites for parks and playgrounds to meet the needs of all people in all parts of the city not only for the present, but as far as possible for the future. They showed that park lands would never again be so cheap; that once acquired they would steadily increase in value; that the experience of cities which have judiciously undertaken park improvements has demonstrated that they pay for themselves and that adoption of a permanent park policy is more likely to bring rich gifts of land and money for park purposes.

At the conclusion of the mass meeting a resolution was adopted approving of the tentative plans and of the creation of the park commission by the city government and heartily endorsing the proposed action to levy a special tax of one mill for park purposes. The meeting also favored the issuing of bonds in amounts necessary to carry out the recommendations.

At a meeting of a city council, a few days later, the wishes of the people were confirmed by the levying of a one-mill tax and the issuing of bonds to the amount of seventy-five thousand dollars for the purpose of land and for necessary construction. From this point the work of acquiring land and developing sites has continued until today. Xville ranks at the very front of all cities in its class in point of the number of properties of different types, their development and the efficiency of their maintenance and control.

The results secured in this city were so successful, it is worth while to note the lesson the experience has for other communities. A few of the significant points follow:

1. The main reliance from the beginning was on public action and support. The citizens were taken in on the ground floor and made to feel their responsibility.

2. The park commission has from the start applied the efficient methods of private business to the administration of the department. Each dollar has been expected to bring a full dollar's worth of work and material, and it has.

3. Before a step was taken toward execution a complete general plan was prepared for all the parks and playgrounds included in the system. This inspired public confidence in every part of the city. This method not only wins confidence but prevents mistakes and contributes to economy in many directions.

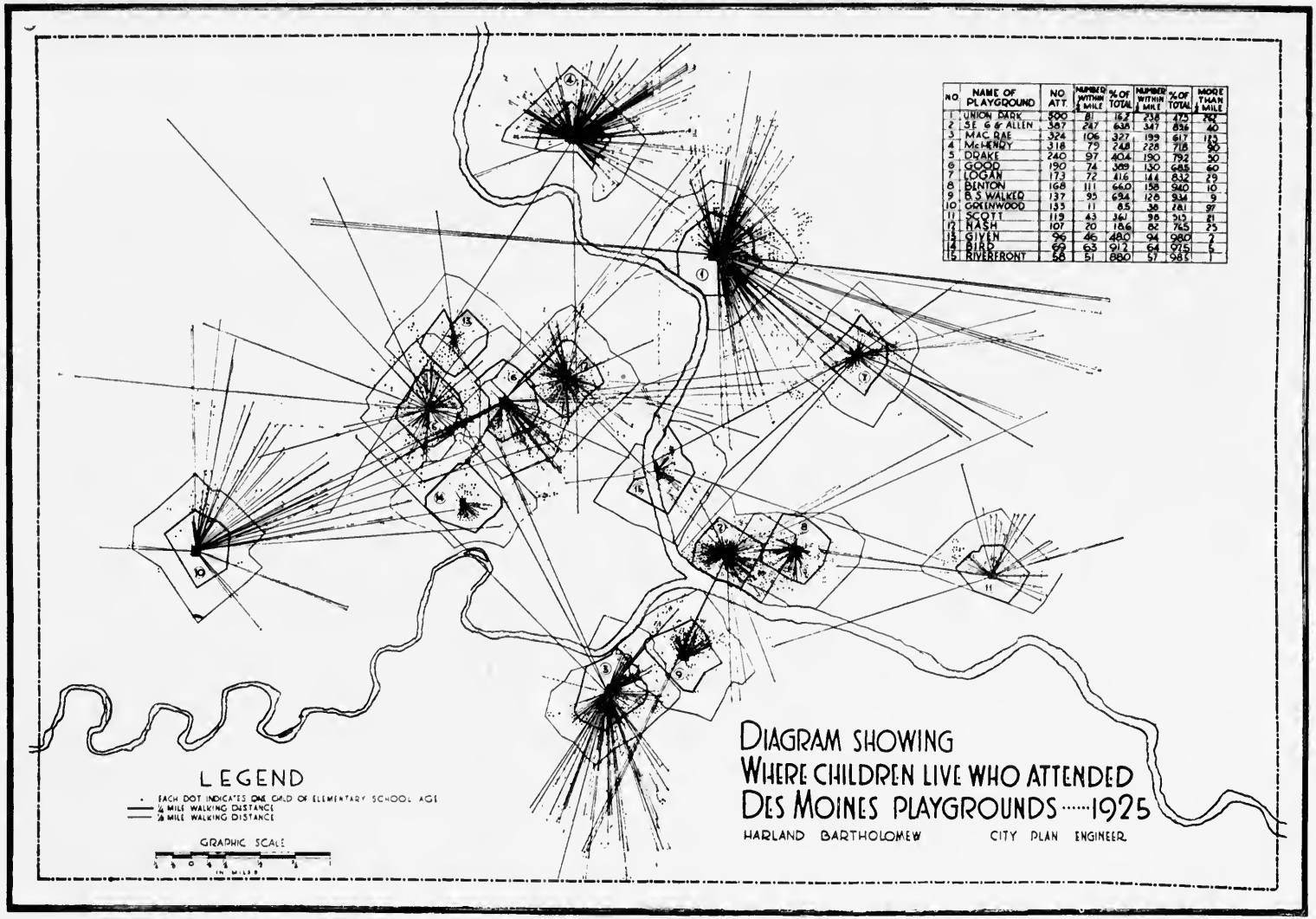
4. The cost of parks and playgrounds of this city has not been heavy. Even under the necessity of issuing bonds for twenty-year periods only and the extra expenses inevitable during a period of heavy construction work, the annual cost has not exceeded fifty cents per capita.

5. Another conclusion justified by the experience of this city is the possibility of enlisting in the service of a community its most honorable and able men.

6. The final lesson of the efforts of this community is the effect upon civic spirit. There has been a noticeable quickening of civic pride and awakening of interest in civic affairs worth all that the improvements have cost in money and personal work.

The Campaign for a County Park Board System. Through the efforts of a private group drawn largely from the boards of trade of two cities in a particular county, a state law was enacted under the authority of which a temporary park commission was appointed. A small appropriation was secured from the county commission to cover the expenses of a preliminary survey.

As the next step the newly appointed commission invited suggestions through circular letters from the governing bodies of the county and from



NO.	NAME OF PLAYGROUND	NO. ATT.	NUMBER WITHIN ¼ MILE	% OF TOTAL	NUMBER WITHIN ½ MILE	% OF TOTAL	MORE THAN ½ MILE
1	UNION PARK	500	81	16.2	238	47.5	262
2	S.E. 6th & ALLEN	387	247	63.8	347	89.6	40
3	MAC RAE	324	106	32.7	199	61.7	125
4	McHENRY	318	79	24.8	228	71.8	90
5	DRAKE	240	97	40.4	190	79.2	50
6	GOOD	190	74	38.9	130	68.5	60
7	LOGAN	173	72	41.6	144	83.2	29
8	BENTON	168	111	66.0	158	94.0	10
9	B.S. WALKER	137	95	69.4	128	93.4	9
10	GREENWOOD	135	11	8.5	38	28.1	97
11	SCOTT	119	43	36.1	98	94.3	21
12	NASH	107	20	18.6	82	76.5	25
13	GIVEN	96	46	48.0	94	98.0	2
14	BIRD	69	63	91.2	64	92.5	5
15	RIVERFRONT	58	51	88.0	57	98.3	1

PLATE NO. 15

DIAGRAM SHOWING WHERE CHILDREN LIVE WHO ATTENDED DES MOINES, IOWA, PLAYGROUNDS, 1925

Attendance facets graphically represented in this diagram need considerable explanatory data from the viewpoint of types of properties and their respective drawing power. (Bartholomew and Associates.)

improvement associations and citizens. Many valuable suggestions as to suitable properties for the contemplated park and boulevard system were secured. The members of the commission visited every suggested site, studied the territory thoroughly and inspected independently all possible land. The commission employed four different park planning and landscape architect firms to make a study of the county and rendered a report independent of each other. After several weeks of study each of the architects filed an exhaustive report covering the results of his study and accompanied by a plan for a system of parks connecting boulevards. All this was done in a year's time.

The next step was the formulation of the needs suggested by the various surveys and reports into a suitable park act. This was presented to the next legislature and without serious modification was enacted. The law was applicable to all counties of the state above a given population.

Soon afterward a permanent commission was appointed under the new law. At the very outset the commission employed an eminent firm of landscape architects, one of the four firms which had worked upon the preliminary studies, to act as expert advisors and planners, and to map out a comprehensive plan for the county. With the money secured from a bond issue asked for from the board of county commissioners soon after the organization of the park commission, the commission set about the acquisition of properties. From that day to this the gradual extension and improvement and the maintenance of the system at a high degree of efficiency has gone on uninterruptedly. A notable fact to be remembered is that through all the history of this development the commission has had the wisdom to secure the ablest expert advice obtainable.

A FEW OF THE NATIONAL AGENCIES FROM WHICH LOCAL COMMUNITIES MAY SECURE AID IN CAMPAIGNS

1. *American Institute of Park Executives, Rockford, Ill.* From this organization may be secured photographs of many different types of recreation areas, facilities and activities, plans of parks and statistical data. Occasionally it may be possible to secure the services of some one of the members of the institute for consultation and for speaking in connection with the campaigns.

2. *Playground and Recreation Association of America, 315 Fourth Avenue, New York City, N. Y.* The Association is prepared to supply photographs of various types of recreation areas and activities, plans of parks and playgrounds, posters, charts and lantern slides. The Association has also issued pamphlets and booklets of various kinds such as *Layout and Equipment of Playgrounds*, and survey material. Through its Bureau of Correspondence and Consultation, the Association will be glad to advise in matters relating to the provision of recreational facilities and activities, and to supply literature. Under certain conditions the field secretaries of the Association may sometimes be secured to assist in organizing and conducting campaigns.

3. *Recreation Department, Russell Sage Foundation, 130 East 22d Street, New York City.* The Department is prepared to supply photographs, lantern slides and statistical data.

4. *National Child Welfare Association, Inc., 70 Fifth Avenue, New York City, N. Y.* A series of posters showing the value of recreation for children and young people which may be used with effect in educational campaigns.

5. *States Relation Service, United States Department of Agriculture, Washington, D. C.* Interesting publications showing what rural communities have done in

providing parks, playgrounds, community houses and other recreation facilities. Material from these may be used in campaigns in rural communities.

6. Children's Bureau, Department of Labor, Washington, D. C. The Bureau supplies photographs, slides, moving picture films and publications of various kinds.

7. National Bureau of Education, Department of the Interior, Washington, D. C. Here may be secured photographs, slides, films, dealing chiefly with playgrounds and physical education activities in connection with the public schools.

8. National Forestry Association, Washington, D. C. Publicity material which may be used in campaigns for forestry work in cities, towns and rural districts is furnished by this group.

9. Massachusetts Forestry Association, Boston, Mass. The Association publishes pamphlets, giving statistical material regarding growth of the town forest movement and suggestions on methods of procedure in establishing such forests.

10. National Safety Council, 120 West 42d Street, New York City, N. Y. The Council issues publicity material on value of playgrounds and other recreation areas in preventing accidents.

PARTIAL LIST OF RECREATION SURVEYS AND CITY PLAN STUDIES CONTAINING PARK AND RECREATION SURVEYS

It will be very helpful to groups interested in the technique of making surveys and compiling reports to consult studies which have been made. Long before the modern recreation movement, a city planning movement assumed much prominence; surveys looking toward the establishment of park systems were made in many cities throughout the United States, some of these by the most eminent representatives in the field of landscape architecture and park planning that this country has ever produced. The reports of these surveyors and planners, often found in old reports of park departments are worthy of the most careful study by modern planners, for the principles then laid down and developed, form the groundwork for much of the best work in landscape architecture in so far as these principles relate to public recreation areas that is being done today.

In the following list a number of outstanding studies are enumerated. A complete list may be secured from the Playground and Recreation Association of America:

Asheville, N. C., 1925: Asheville City Plan. John Nolen, Ph.B., Sc.D. Published by City Commission, 1925. 48 pages, maps in colors.

Baltimore, Md., 1904: Development of Public Grounds for Greater Baltimore. Olmsted Brothers. Published by the Municipal Art Society of Baltimore, 1904. 120 pages, illus., maps.

Baltimore, Md., 1926: Report and Recommendations on Park Extension for Baltimore, to the Board of Park Commissioners, by the City Plan Committee of the Department of Public Works. Olmsted Brothers, Consultants.

Birmingham, Ala., 1925: A System of Parks and Playgrounds for Birmingham. Preliminary Report upon the Park Problems, Needs, and Opportunities of the City and its Immediate Surroundings. Olmsted Brothers. Published by the Park and Recreation Board of Birmingham, 1925. 31 pages, illus., maps.

Boston, Mass., 1925: I. Special Report, City of Boston Park Department. Arthur A. Shurtleff, Landscape Architect. Published by Boston Park Department, 1925. 36 pages, illus., maps, plans, statistical tables. II. Future Parks, Playgrounds and Parkways. Arthur A. Shurtleff, Landscape Architect. Published by Boston Park Department, November, 1925. 61 pages, illus., plans, maps, statistical tables.

Buffalo, N. Y., 1925: Recreation Survey of Buffalo, City Planning Association, Recreation Committee. Published by Department of Parks and Public Buildings, City Planning Committee of Council and Buffalo City Planning Association, 1926. 369 pages, maps, charts, diagrams.

Cincinnati, Ohio, 1907: A Park System for the City of Cincinnati. George E. Kessler & Company. Published by Park Commission and Council Advisory Committee, 1907. 54 pages, photos, plans, maps, diagrams.

Cincinnati, Ohio, 1925: The Official City Plan of Cincinnati, Ohio. Technical Advisory Corporation. Published by the City Plan Commission, 1925. 274 pages, illus., maps, plans and charts.

Cleveland, Ohio, 1920: Cleveland Recreation Survey (Cleveland Foundation Committee). Roland Haynes and Stanley B. Davies, 1920.

Columbus, Ga., 1926: City Plan, Columbus, Ga. John Nolen, City Planner. Hale J. Walker and Justin R. Hartzog, Associates. Published by Planning Board, City of Columbus, Ga., 1926. 34 pages, illus., maps, plans.

Dallas, Texas, 1911: A City Plan for Dallas, Report of Park Board. Prepared by George E. Kessler. 58 pages, illus., plates, plans. (Printed by the Southwestern Company, Dallas, 1911.)

East Orange, N. J., 1922: City Plan for East Orange, N. J. Technical Advisory Corporation, New York City. Published by City Plan Commission of East Orange, 1922. 80 pages, illus., plans.

El Paso, Texas, 1925: The City Plan of El Paso, Texas. Prepared by City Plan Commission. Published by said Commission, 1925. 69 pages, illus., plans, maps.

Essex County, N. Y., 1915: Report on a Proposed Parkway System for Essex County, N. J. Olmsted Brothers. 84 pages, map.

Flint, Mich., 1920: City Plan of Flint, Mich. John Nolen and Blan J. Arnold. Published by City Planning Board, 1920. 95 pages, illus., maps, plans, diagrams.

Hamilton, Ohio, 1920: The City Plan of Hamilton, Ohio. Harland Bartholomew. Published by Chamber of Commerce, 1920. 66 pages, illus., plans.

Ipswich, Mass., 1914: Play and Recreation in a Town of Six Thousand. A Recreation Survey of Ipswich, Mass. Howard R. Knight, Department of Recreation, Russell Sage Foundation. Published by Russell Sage Foundation, 1914. 96 pages, charts, diagrams, photographs, maps.

La Crosse, Wis., 1911: The Making of a Park System in La Crosse. John Nolen. Published by Board of Park Commissioners of La Crosse, 1911. 31 pages, illus., plans, one large map.

Lansing, Mich., 1922: The Lansing Plan. A Comprehensive City Plan. Report for Lansing, Mich. Harland Bartholomew. Published by City Council and City Plan Commission of Lansing, 1922. 62 pages, illus., plans, maps.

Mason City, Iowa, 1926: A Civic Survey of an Iowa Municipality. Rolland S. Wallis, Engineering Extension Department, Iowa State College, Ames, Iowa, 1926. 126 pages, photographs, maps, charts.

Memphis, Tenn., 1924: A Comprehensive City Plan, Memphis, Tenn. Harland Bartholomew, Earl O. Mills, L. D. Tilton and William D. Hudson. Published by City Plan Commission of Memphis, 1924, 176 pages, illus., maps, plans, charts, tables.

Newark, N. J., 1915: A Public Recreation System for Newark. Suggestions and Recommendations by the City Plan Commission. Published by City Plan Commission, 1915. 36 pages.

New York City, N. Y., 1923: Maps and Diagrams. Showing Present Conditions, New York and Its Environs. Published by Committee on Plan of New York and Its Environs, 1923. 39 pages, numerous maps and diagrams.

Oakland and Berkeley, Cal., 1916: Report on a City Plan for the Municipalities of Oakland and Berkeley. Werner Hegeman, Ph.D. Published by Municipal Governments of Oakland and Berkeley, Supervisors of Alameda County, Chamber of Commerce and Commercial Club of Oakland, Civic Art Commission of Berkeley and City Club of Berkeley, 1915. 156 pages, photographs, maps, plans, diagrams.

Pittsburgh, Pa., 1920: Pittsburgh Playgrounds. Being the First Portion of a Report upon the Recreation System. Prepared and published by the Citizens Committee City Plan of Pittsburgh, 1920. 40 pages, maps, charts, plans.

Portland, Ore., 1921: Mayor Traffic Street Plan, Boulevard and Park System for Portland, Ore. Charles H. Cheney. Published as Bulletin No. 7 by Portland City Planning Commission, 1921. 97 pages, illus., maps, folded plan.

St. Louis, Mo., 1917: Recreation in St. Louis by Harland Bartholomew, Engineer of the City Plan Commission. Published by the City Plan Commission, 1917. 48 pages, illus., maps, tables.

Santa Barbara, Cal., 1924: Mayor Traffic Street Plan, Boulevard and Park System. Olmsted Brothers and Charles H. Cheney. Adopted by the City Planning Commission and Board of Park Commissioners, 1924. 70 pages, plans, maps.

Schenectady, N. Y., 1924: Preliminary Report on Mayor Streets, Transit, Parks and Playgrounds. Harland Bartholomew. Published by City Planning Commission, 1924. 70 pages, maps, plans, diagrams.

Spokane, Wash., 1913: Report on Park Needs and Opportunities in the City of Spokane. Olmsted Brothers, 1913. Published by Board of Park Commissioners in Special Report of the Board covering years from 1891 to 1913 inclusive.

Springfield, Ill., 1914: Recreation in Springfield, Ill., by Lee F. Hammer and Clarence Arthur Perry, Department of Recreation, Russell Sage Foundation. Published by Russell Sage Foundation, 1914. 133 pages, illus., tables, plans.

Springfield, Mass., 1922: A City Plan for Springfield, Mass. Progress Report by Planning Board, Technical Advisory Corporation, New York City, Consulting Engineers; F. L. Olmsted, Special Advisor. Published by City Planning Board, 1922. 59 pages, photographs, plans, diagrams.

Toledo, Ohio, 1925: Recreation Report. Harland Bartholomew. Compiled under direction of and published by the Toledo City Plan Commission, 1925. 78 pages, maps, tables, plans, diagrams.

Wichita, Kansas, 1923: A Comprehensive City Plan for Wichita, Kansas. Harland Bartholomew. Published by the City Plan Commission, 1923. 128 pages, photographs, maps, diagrams, charts.

Wilkes-Barre, Pa., 1921: Report and Plans for the Extension and Improvement of the City Plan of the City of Wilkes-Barre and Neighboring Municipalities, Luzerne County, Pa., by Pennsylvania Department of Internal Affairs, Bureau of Municipalities. Published by Municipal Government, City Planning Commission and Wilkes-Barre Chamber of Commerce, 1921. 84 pages, photographs, maps, plans, diagrams.

Williams Bay, Wis., 1922: A Development Plan for Williams Bay. Jacob L. Crane, Jr. Published by Village Planning Committee, 1922. 28 pages, illus., plan, plan map.

Worcester, Mass., 1924: A City Plan for Worcester, Mass. Technical Advisory Corporation, New York City. Published by City Planning Board of Worcester, 1924. 173 pages, charts, tables.

CHAPTER III

GENERAL MUNICIPAL AND COUNTY PARK PLANNING

For convenience in presentation, the municipal corporations of the United States as of 1920 (villages, towns, cities) are grouped into arbitrary divisions as follows: Group I, all incorporated communities under 2,500 inhabitants; Group II, 2,500 to 5,000; Group III, 5,000 to 10,000; Group IV, 10,000 to 25,000; Group V, 25,000 to 50,000; Group VI, 50,000 to 100,000; Group VII, 100,000 to 250,000; Group VIII, 250,000 to 500,000; Group IX, 500,000 to 1,000,000; Group X, 1,000,000 and above. In a final division, illustrations of what some representative counties have done in park planning will be given.

A Brief Analysis of What is Being Done by Municipalities of Various Population Groups and by Counties[1]

For the purpose of rough analysis of the numbers in different age groups in any given community where the actual figures are not known, the following table showing the percentage of the total population of different age groups during the past five decades is presented:

	1920	1910	1900	1890	1880
Under 5 years	10.9	11.6	12.1	12.2	13.8
5 to 14 years	20.8	20.5	22.3	23.3	24.3
15 to 24 years	17.7	19.7	19.6	20.4	20.0
25 to 44 years	29.6	29.1	28.0	26.9	25.8
45 to 64 years	16.1	14.6	13.7	13.1	12.6
65 and over	4.7	4.3	4.1	3.9	3.4
Age unknown	0.1	0.2	0.3	0.3	...

The average of the age group under 5 years for these decades is 12.1 per cent; and of the age group for the years from 5 to 14, inclusive, is 22.24 per cent. It will be noted that the percentage of the age group under 5 years has decreased every decade, and that the same is true in the main for the age group from 5 to 14 years. This probably means that fewer children are being born, since the greatest advance in lowering the general rate of mortality has been made with children.

The first three age groups correspond in a general way to those groups considered in connection with little children's playgrounds, children's playgrounds and neighborhood playfield-parks respectively. By the use of the above table it is possible to estimate fairly accurately the numbers of each age group in any given community, and this information, taken with the principles stated in Section I of the preceding chapter, will make possible a rough calculation as to whether any given community has made ample

[1] In connection with a study of this chapter it is desirable that the student or reader have at hand the Statistical Report of the Park Study published by the United States Labor Department. Special attention in this report is called to table "Aggregate Park Acreage in Municipalities Covered by Park Study."

provision for the needs of the children and young people and to a lesser degree establish the adequacy or inadequacy of outdoor provisions for the population as a whole.

Each group of communities will be considered in order from the group of smallest communities through to the largest city group.

Group I. All Incorporated Communities Under 2,500.

This group is classed in the Federal Census as rural.[1] According to the 1920 Federal Census there were 12,905 incorporated communities in this group, comprising 8,969,149 inhabitants, or 8.5 per cent of the total population of the United States. In the 1910 census this group represented 8.9 per cent of the total population.

During the recent study of municipal and county parks reports were received from 1,320 incorporated villages falling within this group. This represents slightly over ten per cent of the total number of such communities (12,905 — 1920 census). These reports came from all sections of the United States, so that a fairly good representation of the conditions prevailing in communities of this type for the whole nation was secured. As to properties that might be classed as parks, in a broad interpretation of that term, 751 villages of the 1,320 reporting, or 56.9 per cent, stated they had no parks, while 569, or 43.1 per cent, reported parks. The total of all park properties reported was 5,346.64 acres, or a general average of approximately 9.4 acres per village.

Of the 569 villages reporting parks, 80 were selected as most representative from the viewpoint of either the size of their park area or school ground area or both. These villages ranged in population from 86 to 2,484 inhabitants. Sixty-nine of these have parks and the total park area was 1,762.17 acres. The total population of the 69 communities was 59,749. The ratio of park acreage to population is one acre to about every 33 inhabitants. Seventy-five of the 80 communities report a total of 594.99 acres of school sites. If these communities are not overstocked with park and school site areas, these figures indicate that the commonly accepted standards relative to the ratio of recreation area to population as applied to large cities cannot be applied to villages. The same condition will be shown later in connection with the ratios in small municipalities.

If among the 11,603 village communities which did not report at all, the same ratio of percentages prevail as for the 1,320 communities that did report, it means that not only several millions of people living in these small communities have no public recreation facilities but also that several

[1]In other rural territory (unincorporated communities and open country) there were 42,436,776 inhabitants (1920), or in all rural territory a grand total of 51,406,017 inhabitants or 48.6 per cent of the total population of the nation.

millions more living in the open country tributary to these communities are without public recreation facilities. This presents a problem in rural planning that as yet has not been touched by modern planning movements to any appreciable degree.

No doubt general statistics of this kind do not give a true picture of the actual outdoor recreational resources of this large group of incorporated communities nor of the open country surrounding them. In the first place the open country is in itself a recreational resource of fundamental importance and none of the inhabitants of these communities are far removed from it. Secondly, many of the communities that have no park properties, strictly speaking, have large school grounds or have private properties that are used recreationally. A goodly number are within reach of properties provided by the Federal Government, the states, counties and in some instances within reach of properties provided by cities.

After making every allowance possible, however, the barrenness of the recreational resources of the fifty millions or more of the people living in the rural districts of the nation is a fact that has been emphasized from the days of Roosevelt's Country Life Commission to the present time.

The basic reasons for parks and other recreation areas in relation to village life and rural life are found in various urges for expression that are common to all people whether living in villages or in cities. The urge of children to play is as strong in the village as in the city; the desire of young people to participate in music, dramatics and social activities is as keen. And so through the entire range of interests there is even greater need in the village for the proper tools and leadership than there is in the larger centers of population.

While the lack of leadership is perhaps the most fundamental problem in recreational needs of the village community, this discussion is concerned only with the material factors of the problem. The following tentative suggestions for physical provisions for recreation are offered as being more or less applicable to the majority of the village communities in this group size.

1. At least one children's playground — as a rule on a school site — of a gross minimum size of from three to five acres.

2. One larger space ranging from five to ten acres for the sports and games of older boys and girls and adults. In the very small villages this might be combined with a children's playground, and where there is a high school or consolidated school, this area should be the school site, and, if possible, as large as ten acres.

3. One small park located near the economic center of the village and the surrounding country. This should be approximately one block in size or perhaps larger than two or three acres. The courthouse square in county

seat towns often serves the purpose. This type of property is virtually an outdoor social center where people may visit, where band concerts, political meetings, church socials, small fairs and similar gatherings may be held. If properly landscaped and maintained it helps beautify the village.

4. One naturally wooded type from ten to twenty acres in extent for large gatherings for the people of the village and the surrounding country. This type of property serves as a gathering place for civic celebrations, country fairs, church and school picnics and other general community gatherings.

5. It is desirable, if local conditions permit, to have a community house located as near the center of the village as possible. This structure might provide a combined auditorium and gymnasium with a stage at one end of the hall and dressing rooms on either side of the stage, dressing rooms for those taking part in sports and games, a few lockers, toilets and showers where running water is available, and an office and a rest room for women. All these features may be combined in the consolidated school, although as a general rule it is better to have a separate structure for a community house.

Every small community should have a swimming center. Often this may be obtained through the utilization of some natural resources such as many villages have in streams, rivers and lakes. Some very good swimming places have been created by damming a small stream. The construction of a concrete pool is not beyond the financial resources of many villages.

With reference to a planning and administrative unit for rural parks and recreation, the county is the desirable unit, inasmuch as few of the village communities have the financial resources to maintain a year-round program of recreation. While the villages may be able to provide some of the necessary individual properties, the general planning and administrative machinery should be organized on a territorial basis of much larger revenue producing resources. The county is the logical unit for this purpose.

Group II. All Incorporated Communities of from 2,500 to 5,000 Inhabitants.

In 1920, according to the Federal Census, this group numbered 1,320 communities comprising 4,593,953 inhabitants, or 4.3 per cent of the total population of the nation. In 1910 the population of this group was 4.2 per cent of the total population.

While this group of communities is classed as urban by the Federal Census, in reality, so far as general environmental conditions are concerned, the majority of them are characteristically rural. The general environmental conditions are not greatly different from the conditions surrounding the lives of the people living in the first group. Similarly the

reasons for parks and other recreation areas for these communities are practically the same as for the first group.

Of the 1,320 communities in this group (Census — 1920) 309 complete reports were received during the recent study of municipal and county parks, or approximately 23.4 per cent of the total number. Of the 309 communities reported, 72 were reported as having no park areas, while 237 reported owning one or more parks. The total area of all the parks owned by the 237 communities was 5,186.89 acres or an average of 21.46 acres per community. This does not include the school sites which, in many instances, are large enough to provide quite amply for the outdoor active recreation needs of the children and young people.

Thirty-five of the 237 communities in this group reporting parks were selected as most representative by reason of the size of their individual gross park area. These 35 communities reported having a total of 2,529.89 acres of parks. The total population (1920) of these communities was

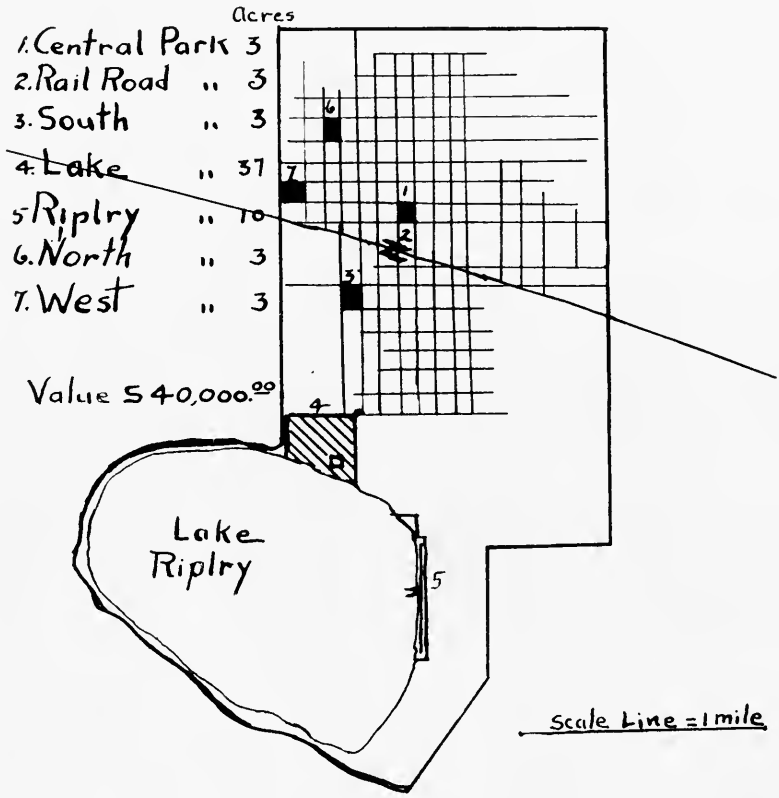


PLATE No. 16. SHOWING PARK AREAS OF THE VILLAGE OF LITCHFIELD, MINNESOTA

The village in 1920 had a population of 2,790 and an incorporated area of 2,560 acres. There are four well distributed neighborhood parks of about one block in area each; two larger parks located on the lake front; and in addition there are four school sites, not shown on the map, totaling 17 acres, one of which is 10 acres in area, giving ample space for a neighborhood playfield. The total park area is 62 acres.

116,032. The average ratio of park acreage to population is one acre to about every 45 inhabitants. The number of individual park properties per community ranged from one to seven.

Thirty-three of these communities reported a total of 298.91 acres in school sites and a total number of 89 sites.

The 35 communities had almost fifty per cent of the total park acreage of the entire 237 communities, although they represent only about fourteen per cent of the group. This indicates how meager the park provisions are in the majority of the communities reporting parks.

A suggested general layout of recreation spaces for communities in this group would not be greatly different from the suggestion made for the communities in Group I. The following changes and additions, however, may be noted: the increase of the number of children's playgrounds to correspond with the increase in the number of schools; slight increase in the area of the general playfield-park area; addition of one or more "intown" squares in the larger communities; possible enlargement of the suggested forest park into a genuine town forest; and, the development of a small municipal golf course.

Group III. All Incorporated Places Having from 5,000 to 10,000 Inhabitants.

The number of such places was 721 in 1920, having a total population of 4,997,794, or 4.7 per cent of the total population. The percentage of the total population in 1910 was 4.6 per cent. A study of the area included within the incorporated limits of two hundred and eighty-two communities in this group showed:

Ten communities having less than 1 square mile in city limits; 45 communities having from 1 to 2 square miles; 52 communities having from 2 to 3 square miles; 42 communities having from 3 to 4 square miles; 30 communities having from 4 to 5 square miles; 15 communities having from 5 to 6 square miles; 12 communities having from 6 to 7 square miles; 7 communities having from 7 to 8 square miles; 7 communities having from 8 to 9 square miles; 4 communities having from 9 to 10 square miles; 58 communities having 10 square miles and above. The majority of the communities showing an area above seven or eight square miles are for the most part located in New England where the "town" type of organization is prevalent.

The average density of population in even the most restricted of these communities is obviously very low. One may expect to find, therefore, in the communities of this group, that the people live in individual family homes for the most part, with yard space about them; and after making allowance for space occupied by stores and shops and other places

of business, there will still remain much open space within the incorporated limits unoccupied by structures of any kind. Moreover, no inhabitant is very far removed from the open country. The general environmental conditions are not greatly different from the conditions surrounding the people living in the previous group of communities. The essential types of minimum recreation areas are in no wise different except that the areas should be more numerous and in some instances larger.

Reports were secured of 322 communities in this group or 44.6 per cent of the entire number of communities in the group. Sixty-seven, or 20.8 per cent of the total number reporting, had no parks, but this does not necessarily mean that all these communities were without any recreational resources, as in many instances school grounds, properties belonging to other civil authorities, and to private interests, provide some means for outdoor recreation. Two hundred and fifty-five communities, or 78.8 per cent of the total number reported, had one or more parks, and the total area of all park properties owned by these communities was 11,366.87 acres. This represents an average of 44.57 acres per community, exclusive of school sites.

Of the 255 cities reporting parks, 29 were selected as being most ade-

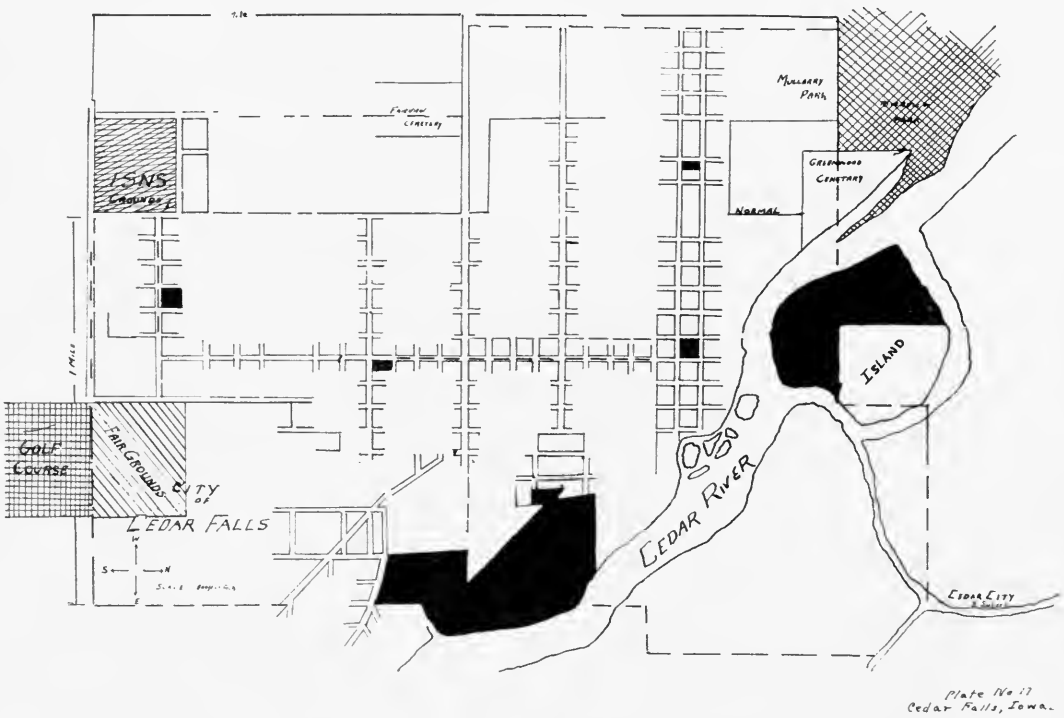


PLATE NO. 17

OUTLINE MAP OF CEDAR FALLS, IOWA, SHOWING LOCATION OF PUBLIC PARKS, SCHOOL SITES, AND OTHER PUBLIC AND PRIVATE PROPERTIES

An example of a very small city that is unusually well provided with outdoor recreational facilities.

quately provided with park areas. Eliminating Chico, California, which by reason of its extraordinary park area (2,400 acres) is not typical of the most representative cities, the 28 municipalities with a total population (1920) of 188,782 had a total park area of 3,238.69 acres. The ratio of total park area to total population of the 28 cities was one acre to every 58 inhabitants. The total number of individual park properties was 128, or an average of a little more than 4 per city. In addition to their park areas the 29 cities had 621.3 acres in 139 school sites.

AN EXAMPLE IN DETAIL OF THE PROVISIONS FOR OUTDOOR RECREATION AREAS MADE BY A SMALL CITY

CEDAR FALLS, IOWA.

Population, 1920, approximately 6,350. Estimated population, 1926, was approximately 6,800. Area of the city 3.25 square miles or 2,080 acres.

Parks: Three small intown parks ranging from 1.033 acres to 2.066 acres, or one being a half block and two an entire block each. Two large parks totaling 184 acres, one being 90 acres and the other 94 acres. Eighteen blocks of center parking in streets. The 94-acre park provides a swimming beach and bathhouse, picnic grounds, horseshoe courts and tennis courts both lighted for evening play. The 90-acre park contains one nine-hole golf course, football and baseball field, two fine double clay tennis courts. Total acreage 190 acres or one acre to every thirty-three persons.

Public School Grounds: Four public schools with a total of 9.35 acres in school sites or an average of approximately 2.34 acres per school.

Other Public Properties: One State Normal School with a campus of 80 acres, 40 acres of which are devoted to outdoor games and sports. This is used by the local schools as well as by the students of the college. The college also has a nine-hole golf course, comprising 48 acres, used by general public.

Properties Privately Controlled but Used by the Public: One fair ground of 50 acres. In addition to other structures on this property there is a dance pavilion in which dancing is conducted three times a week under the auspices of the Chamber of Commerce. This hall is also rented to organized groups for social affairs. One park of 40 acres owned by a church organization, undenominational. The park contains a pavilion seating 4,000, many cottages, dining hall, kitchen, etc. The park is used for religious gatherings of many kinds, picnicking, Chautauquas and lectures.

Group IV. Incorporated Places of from 10,000 to 25,000 Inhabitants.

The number of such cities in 1920 was 459, including a total population of 6,942,742, or 6.5 per cent of the total population of the nation. In 1910 the population of this group represented 6.0 per cent of the total population of the United States.

Of the 459 communities in this group, reports were received of 385, or 83.8 per cent of the total number of communities. Of these 385 communities, 346, or approximately 90 per cent, were reported as having parks, while 39, or approximately 10 per cent, had no parks.

The gross park area of the 346 communities reported as having parks was 33,589 acres, or an average of 97.3 acres per community. Taking 17,500 as a population average for communities of this group in connection with the average of 97.3 acres of park properties per community, the approximate average ratio of park acreage to population would be one acre to every 180 inhabitants.

Fifty-one communities have been selected as representative of this

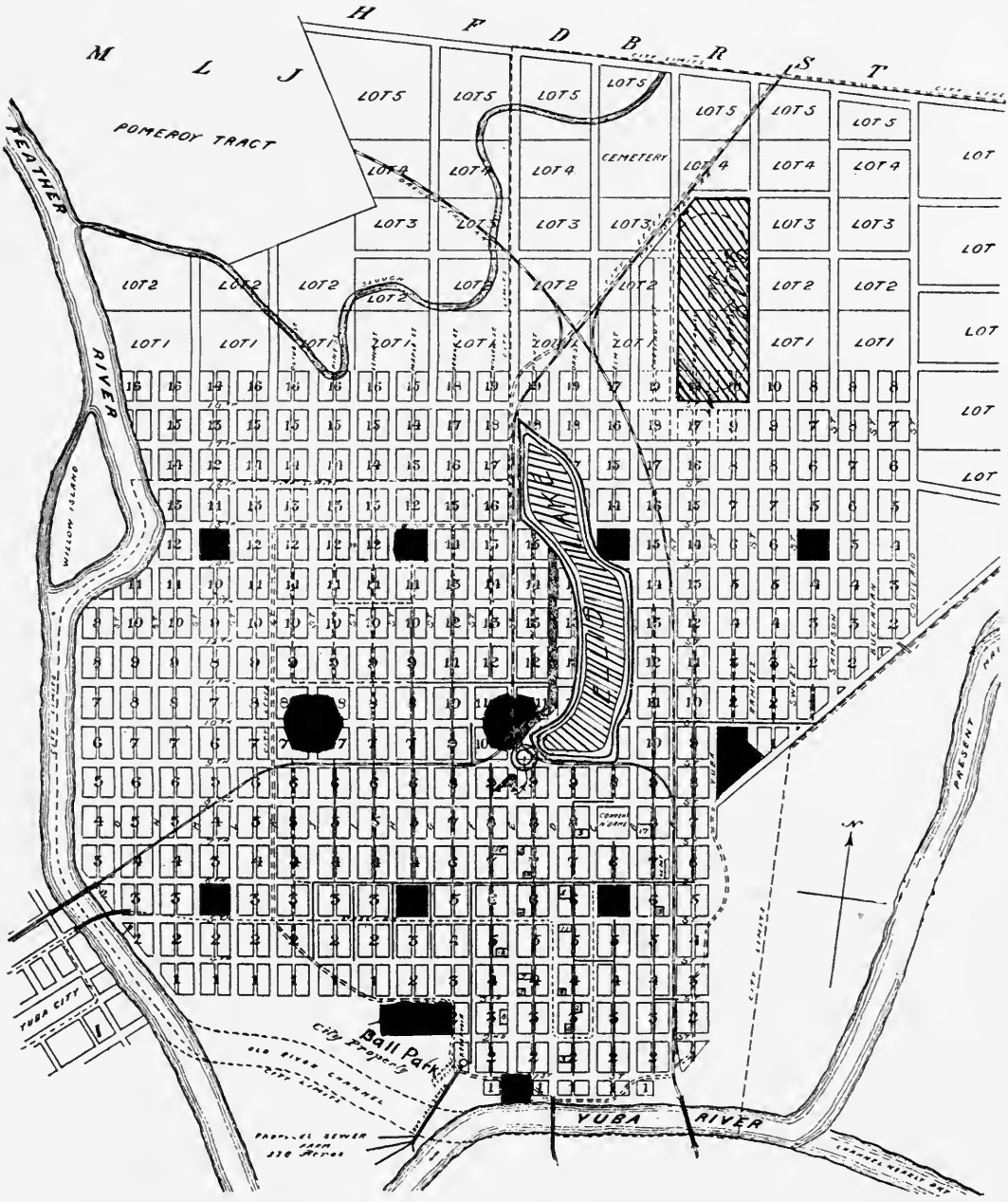


PLATE NO. 18. OUTLINE MAP OF MARYSVILLE, CALIFORNIA

Illustrates a plan for neighborhood parks laid down at the time when the original plat of the city was made. Since the original plat of the city was laid down, other properties have been acquired until (1925) the total park area comprised 125 acres in fourteen different properties. In addition to strictly park properties there are 104 acres in two school grounds.

group. Eliminating Boulder, Colorado, which, because of its unusually large park acreage (6,000.77 acres), is not typical of these representative communities, the total population of the fifty cities (1920) was 724,181; the total park acreage, 13,078.96 acres; total number of park properties, 324; total average number of acres per community, 261.7; and the average number of park properties per city, between 6 and 7. The ratio of park acreage to population for the whole group is one acre to every 49 persons.

It is interesting to compare these totals and averages with any city having a population (1920) approximating the aggregate population of these fifty small cities, as for example Baltimore, Boston, St. Louis. As compared to 13,078 acres of park properties, Baltimore had 2,858, Boston 2,637, and St. Louis 2,896 acres, respectively. As compared to 324 different park properties Baltimore had 66, Boston 161, St. Louis 96. The combined park acreage of Boston and the Boston Metropolitan Park System approximates the total park acreage of these fifty small cities. New York City, with a population considerably over 5,000,000, had approximately 3,000 acres less park area than these fifty small cities with a population of 724,181.

In addition to their park areas, forty of these fifty cities had 937.02 acres in school sites; 345 different sites; an average school site area per city of 23.4 acres; and an average number of school sites per community of between 8 and 9.

A FEW EXAMPLES IN DETAIL OF THE PROVISIONS FOR OUTDOOR RECREATION AREAS MADE BY CITIES IN THIS GROUP

Santa Cruz, California

Population, 1920, 10,917. Total area of city 8 square miles or 5,120 acres.

Park Areas: The park properties comprise four areas of .10 of an acre, 1.5 acres, 3 acres, and 640 acres, respectively. There is one other parked area around the city hall of two acres and an area called Memorial Park controlled by the School Board. Counting only those areas classed strictly as parks the total area is 644.6 acres or approximately one acre to every 16 inhabitants. All the properties are within the limits of the city, the largest property lying at the extreme northeastern part of the city.

School Sites: There are nine school sites, the smallest being 1.5 acres and the largest 15 acres. The average size of the school sites is approximately four acres.

Other Areas: There are extensive areas belonging to the Federal Government and the state government within easy reach of the people of the city.

Keene, New Hampshire

Population, 1920, 11,210. Estimated population, 1925, 11,855. Total area of the city, 23,685 acres.

Park Areas: The park system of Keene comprises 11 different properties with a total of 245.12 acres, or one acre to every 48 inhabitants. The area of these properties is as follows: .40 of an acre, 1, 5, 7.5, 12, 12.25, 13, 16.15, 39.32, 55.5, and 83 acres respectively. One of these properties is known as Robin Hood's Forest; another, the Children's Wood; another, the Ladies' Wildwood Park; another, the Ministers' Lot, etc. In the deed of gift of the Children's Wood it is stated that the property is "to be held in trust for the children and kept as a forest, and the pines growing there are to be kept to their full age. The income is to be used to construct paths, cabins, grottoes, statues of animals or other attractive objects." The donor of this park had a genuine, sympathetic imagination. The Faulkner Colony Forest Reserve is covered with a magnificent growth of native evergreens and partially used by the Yale School of Forestry for experimental purposes. All the properties are beautifully wooded and exceedingly attractive.

School Sites: Ten school sites have a total area of 8.7 acres, which indicates that the public schools are poorly supplied with children's playground spaces.

Other Properties: The High School Alumni Association owns 22 acres just outside of the chief residential sections of the city; there is a country club controlling 150 acres. The city owns various other properties totaling over 2,000 acres, chiefly water properties.

Biloxi, Mississippi

Population 1920, 10,937. Estimated population, 1925, 12,571. Total area of the city, 8,625 acres, or 13.4 square miles.

Park Areas: There are five park areas, but the areas of but three were reported. These three had 2 acres, 2 acres and 400 acres respectively, or a total of 404 acres. This is a ratio of about one acre to every 31 inhabitants. One of these properties (two acres) is leased only, on a 20-year lease. The large park located within the city limits, has 1.5 miles of fine beach and is equipped with a pier and pavilion over the water, one tourist camp provided with running water and toilets, one keeper's house. The park proper is covered with a magnificent growth of oaks and pines. Central Beach Park is equipped with a municipal pier 420 feet long, with pavilion 30 by 60 feet, and boat landing; one two-story clubhouse; picnic ground with 40 benches; one clay tennis court; three roque courts; and there is a beach 255 feet in length. City Park is equipped with band stand, children's playground apparatus, drinking fountains, two horseshoe courts, one clubhouse (40 by 75 feet) for tourists, and 45 benches.

School Sites: There are seven school sites with a total area of 20 acres. The smallest site is one acre and the largest, a grade school, six acres. The high school has five acres. The average area per school is approximately three acres. All the areas are equipped with various pieces of apparatus and with games courts.

Other Areas: There are numerous privately controlled recreation areas and facilities either within or in close proximity to the city.

Bridgton, New Jersey

Population, 1920, 14,323. Estimated population 1925, 14,387. Area within incorporated limits, 4,250 acres.

Park Areas: There are four park areas with a total acreage of 818 acres or one acre to approximately every 17 inhabitants. The areas of the properties are 8, 10, 125, and 675 acres respectively. The two last mentioned properties are practically one area. In these two properties there are three lakes (25, 50, and 100 acres respectively) and a water raceway one mile long and with an average width of 20 feet. In these two properties there are: one band stand; two rustic wood shelter houses 40 feet square; one public comfort station; two tennis courts; 30 acres landscaped; one private canoe concession house with storage for 315 canoes; one large old dwelling; three picnic places provided with 20 tables and 80 benches; swimming facilities; five miles of gravel roadway; six miles of footpaths; five miles of bridle paths. The ten-acre properties are chiefly covered with trees but has one baseball field with a small set of bleachers. The eight-acre property has one ball field, but is chiefly covered with a fine growth of trees. Plans are under way for construction of a municipal golf course, athletic field and children's playground in the largest of the properties mentioned above. The Johnson Reeves Playground of two acres is a public playground but owned and operated by the Bridgton Playground Association. The property was a gift of a public spirited citizen at a cost of $13,500 — land and improvements.

School Areas: There are seven school sites with a gross total of 17.05 acres and a free play space of approximately 14 acres. Of the gross acreage 12 acres are in the senior high school ground which has a six-acre athletic field.

Glendale, California

Population in 1920, 13,536. Estimated population, 1925, 21,290. Total area within incorporated limits, 16.83 square miles or 10,771.01 acres.

Park Properties: The park properties comprise four separate areas of .75 of an acre, 3 acres, 8 acres, and 800 acres, respectively, or a total of 811.75 acres all within the city limits. This gives a ratio of park area to population, based on 1925 estimate, of one acre to approximately every 26 persons.

School Sites: There are twelve grade schools with sites as follows: 4.15, 4, 5, 4.5, 2.5, 4.3, 3.5, 4.2, 3.9, 3.8, 3, 4.6 acres respectively. Such a layout of school areas should provide very amply for the play needs of the children.

There are two high school sites of 7.5 and 20 acres respectively.

In 1925 plans were under way for the development of six new school sites, five of which would provide an average of three acres of free play space at each school and one would have seven acres of free play space. Three of the present sites were to have increases totaling 3.75 acres.

Other Properties: This city is located within easy reach of huge national forest reservations, and some state and county recreation areas.

Greensboro, North Carolina

Population, 1920, 19,861. Estimated population, 1925, 47,132. By reason of its extraordinary growth Greensboro belongs within the group of cities following, but because the 1920 census has been used as the basis for all groupings and general calculations, has been retained in the group it belonged in 1920.

Park Areas: The park system of Greensboro comprised up to the middle of 1926 a total of 377 acres with 490 acres more in process of acquisition. The properties actually possessed included the following areas: a neighborhood park of 10 acres; a neighborhood park of 20 acres; colored park of 20 acres; stadium site of 17

acres; and a continuous series of tracts along Buffalo Creek running through the city of 310 acres. Few small cities have as comprehensive park plans as does Greensboro.

School Sites: The school sites of Greensboro comprise the following areas: .25 of an acre; .5 of an acre; 3, 7, 9, 10, 12, 12, 15, 17, 75 acres respectively (1925), or a total of 160.75 acres. As is readily seen the majority of these provide not only amply for children's playgrounds but also may serve as neighborhood playfield-parks.

Other Properties: There are in the city and within a radius of 10 miles of the city 29 different properties owned and controlled by private institutions, such as private schools and colleges, real estate companies, industrial and commercial concerns, country clubs, fair associations. These properties, totaling 2,404 acres, are all used more or less for recreational purposes. The majority of them have water acreage, five have swimming pools and nearly all of them are equipped with clubhouses.

Few cities are so lavishly provided with public and private facilities for all manner of outdoor recreations as is this thriving city of North Carolina.

The park and driveway system of Great Falls, Montana, is an excellent example of original planning by the town site company followed by continuous expansion of the system as the community grew. The total area within the incorporated limits of the city is 8.1 square miles or 5,218 acres. The population in 1920 was 24,121. The estimated population in 1925 was 27,000. The total area of the park system, exclusive of 37 miles of boulevard driveways, was, in 1925, 686.77 acres. Based on the 1920 census there is one acre of park property to approximately every 35 inhabitants.

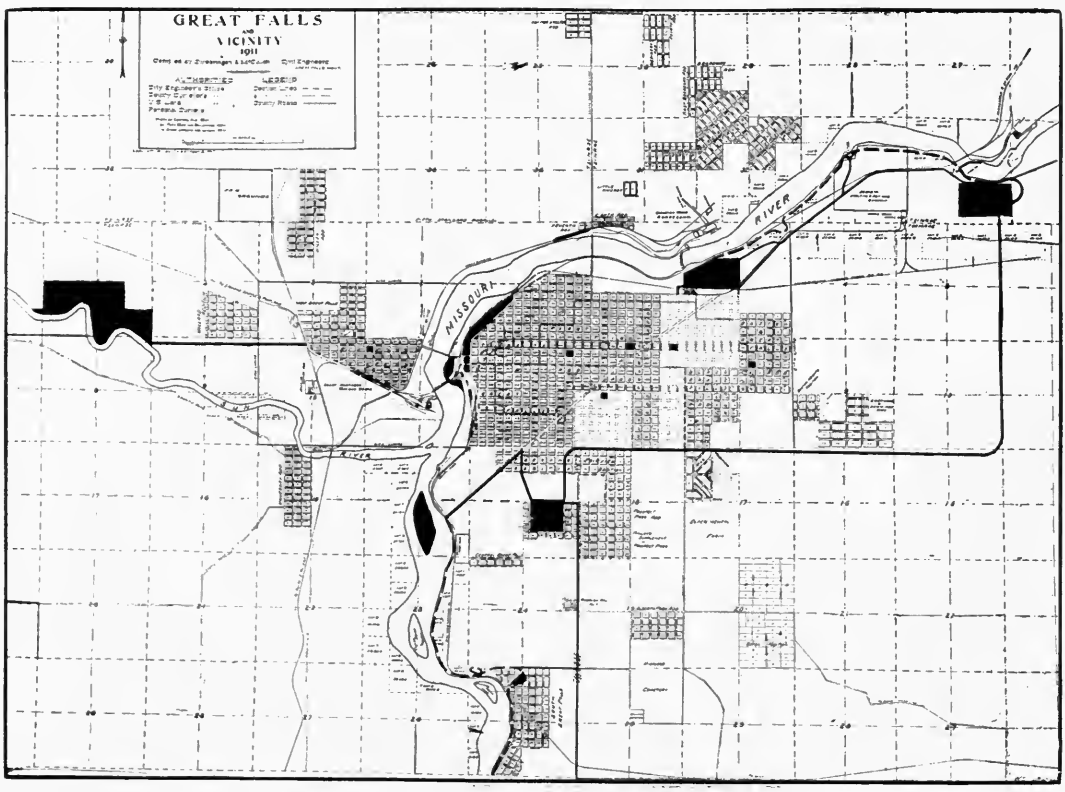


PLATE No. 19. GENERAL MAP OF THE PARK SYSTEM OF GREAT FALLS, MONTANA

Parks and driveways shown in heavy black.

The selection of properties as to size and location has been admirably planned. The system comprises 17 properties exclusive of the 37 miles of boulevard driveways. These properties include six large parks of 48.5, 60, 100, 100.8 and 240 acres, respectively, distributed at strategic points both within and without the city limits; five neighborhood playfield-parks comprising 5, 5, 8.1, 10, and 14 acres, respectively; six neighborhood squares, each 2.5 acres. The courthouse square of 2.5 acres adds a seventh to the list of neighborhood parks. In addition to the park area there are ten school sites comprising 13.85 gross acres.

The total area within the incorporated limits of Eau Claire is 16.5

PLATE NO. 20
GENERAL MAP OF THE PARK SYSTEM OF EAU CLAIRE, WISCONSIN

square miles, or 10,560 acres. The population in 1920 was 20,906. Estimated population in 1925 was 22,375. The total park area comprised (1926) 361.8 acres. There was one acre of park property to every 61 inhabitants, based on the 1925 population estimate.

The park system includes 14 properties owned by the city and one small bathing beach property leased by the city. The large parks include two properties of 115 and 172.4 acres, respectively. There are two lesser properties that in some respects serve as large parks. These comprise 19.5 and 20 acres, respectively. Two small waterfront properties of 10 and 14.3

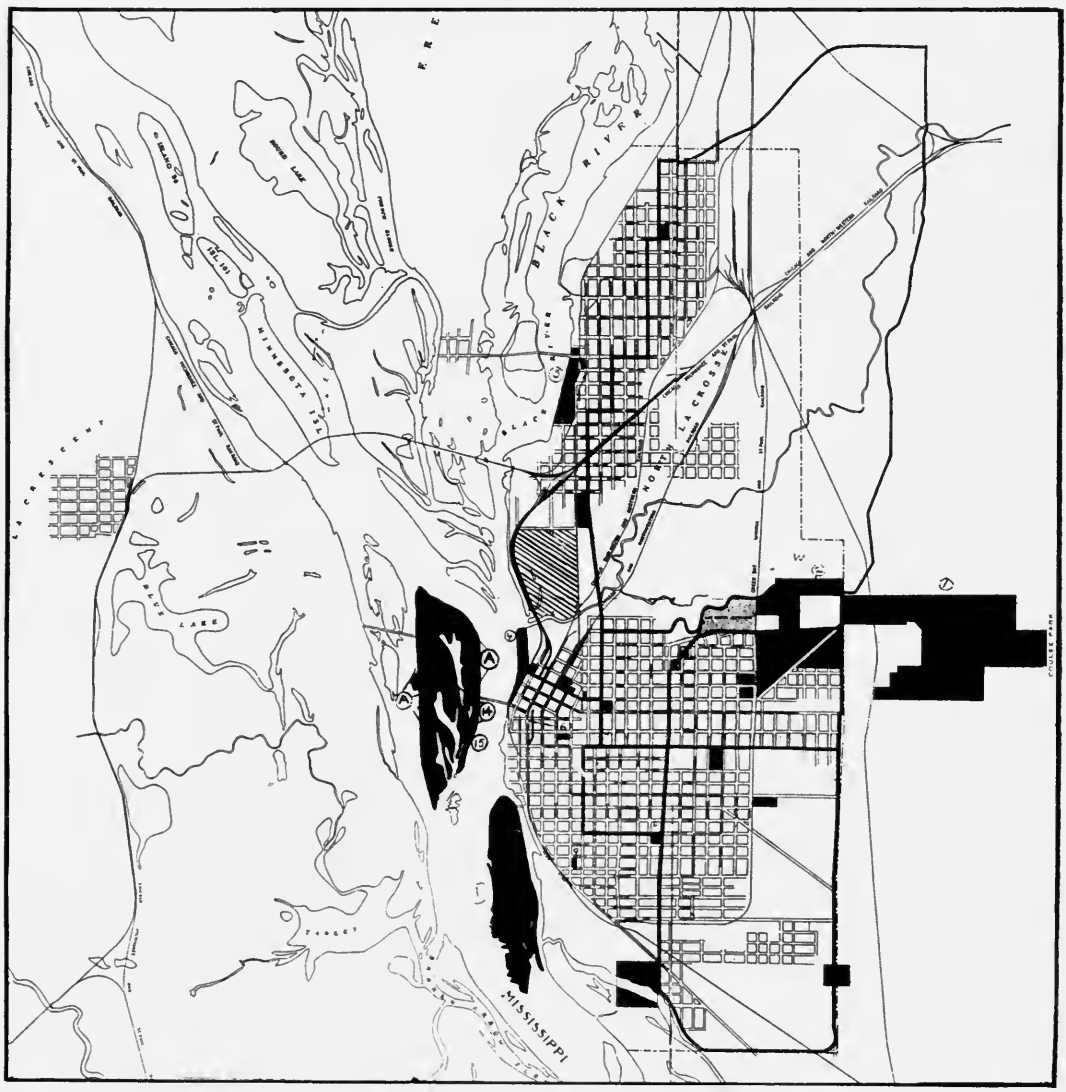


PLATE NO. 21

OUTLINE MAP OF THE PARK AND RECREATION SYSTEM OF LA CROSSE, WISCONSIN

(See page 85 for descriptive matter.)

acres; five properties of the neighborhood park class, 1.5, 1.6, 1.6, 2, and 2.8 acres, respectively; two small triangles and a parked site of a municipal auditorium complete the present layout of the system. Other public properties possessing to some extent a parklike character include a courthouse square of one acre and a water department property of 30 acres.

In addition to the park properties and other public properties of a parklike character there are 11 school sites comprising 10.9 acres, of which 7.9 acres are free play space. This would appear to be inadequate provision for the outdoor play of the school children. This inadequacy is remedied in some instances by use of neighborhood squares adjacent to schools.

Private properties of a recreational character include a country club of 83 acres and several commercial recreation centers of which the area of the properties was not reported.

Among other cities in this group especially worthy of note are Boulder, Colorado, with 16 properties totaling 6,000.66 acres; Casper, Wyoming, with 9 properties and 780.25 acres; Burlington, Iowa, with 529.75 acres in 7 properties; Ithaca, New York, with 12 properties totaling 340.5 acres. It is often true that many cities with less acreage than those specifically mentioned may be equally efficiently or even better provided with outdoor recreation resources because their properties may have been better selected from the viewpoint of functional uses and more advantageously distributed. A large gross acreage does not always mean efficient park planning. The use of areas for outdoor recreation not comprised in the actual park systems is another noteworthy feature of the recreational resources of many of these communities, a condition which appears as well in connection with communities in all the different population groups. Thus Vicksburg, Mississippi, which has 219 acres in 9 park properties, municipally owned, is almost surrounded by the National Military Park of 1,322 acres, beside having a courthouse park, a fairground of 75 acres and a country club. Other instances of such additional recreational resources have been cited in previous examples given. A considerable number of cities in this group have had the foresight to have definite plans made for their park and recreation systems by skilled city and park planners, a step that is strongly recommended to all others that have not done so.

Group V. Cities Having a Population of from 25,000 to 50,000.

In 1920 there were 143 such urban communities, with a total population of 5,075,041, or 4.8 per cent of the total population of the country. In 1910 the total population of this group represented 4.4 per cent of the total population of the nation. Reports were received from 134 of the 143

cities, or 93.7 per cent of the total number of cities. Of the 134 cities reported, 133 were reported as having parks and one without parks.

The 133 cities were stated to have 30,129.57 acres of parks exclusive of 357.25 acres in township parks in the vicinity of two cities in the group. This represents an average of 226.6 acres per city. Taking 37,500 as an average population of this group of cities in connection with the average number of acres per city, the average ratio of park acreage to population would be one acre to approximately every 165 inhabitants.

Selecting twenty cities of this group as most adequately provided with park areas, the reports showed a total population (1920) of 739,201; a total park area of 13,729.48 acres; total number of park properties, 261; total average number of acres per city, 686.47; and the average number of properties per city approximately 13. The ratio of park acreage to population for the entire group is one acre to every 53 inhabitants.

These statistics show, in general, a far more ample provision for outdoor recreation in these small cities than in any single city in the United States with a population approximately the same or larger than the aggregate population of these twenty small cities.

However, the total number of acres per community in the twenty cities is three times the average number of acres per city for the entire group of 133 cities. This indicates that general park planning has not proceeded evenly throughout the entire group. This unevenness is still further shown by the fact that the 20 cities, while only 15 per cent of the total number of cities reported as having parks, have about 45 per cent of the total park area of the 133 cities. Nineteen of these 20 cities had a total of 917.01 acres in school sites, and there were 300 different school sites. The average number of school sites per city was between 17 and 18, and the average number of acres per community was 48.2.

A FEW EXAMPLES IN DETAIL OF PARK, SCHOOL SITE AND OTHER OUTDOOR RECREATION AREAS IN CITIES OF THIS GROUP

LA CROSSE, WISCONSIN

The population of La Crosse in 1920 was 30,421. The area of the city is 9.943 square miles or 6,364.8 acres.

Public Parks, 1925: The park areas under public control in 1925 comprised 16 properties totaling 518.7 acres. The areas of these properties are as follows: .2, 1.2, 1.3, 1.3, 3, 3, 5, 7, 10, 14, 17, 37, 40, 67.5, 70, 240 acres. There was in addition a park of 40 acres the ownership of which by the city was in question. Total area of parks without the 40 acres, 518.7 acres or one acre to every 58 inhabitants. With the 40-acre park added the ratio would be one acre to every 54 inhabitants. See page 83 for illustration.

Private Public Park: There is one large park of 260 acres privately owned but under a special park board appointed by the donor. This park is endowed and is used by the public as a public park.

If this were added to the above as it should be the total park acreage would be 778.7, and the ratio of park acreage to population would be one acre to every 37 inhabitants.

School Sites: Nine primary schools have a total of 13.5 acres or an average of approximately 1.5 acres per school. The junior high school has a site of four acres and the senior high school a site of 4.7 acres. The total area of free play space for all the schools is 17.8 acres.

Six of the schools are equipped with gymnasium, and the high school has a swimming pool. All the primary school grounds are equipped with playground apparatus and have facilities for playing organized games such as

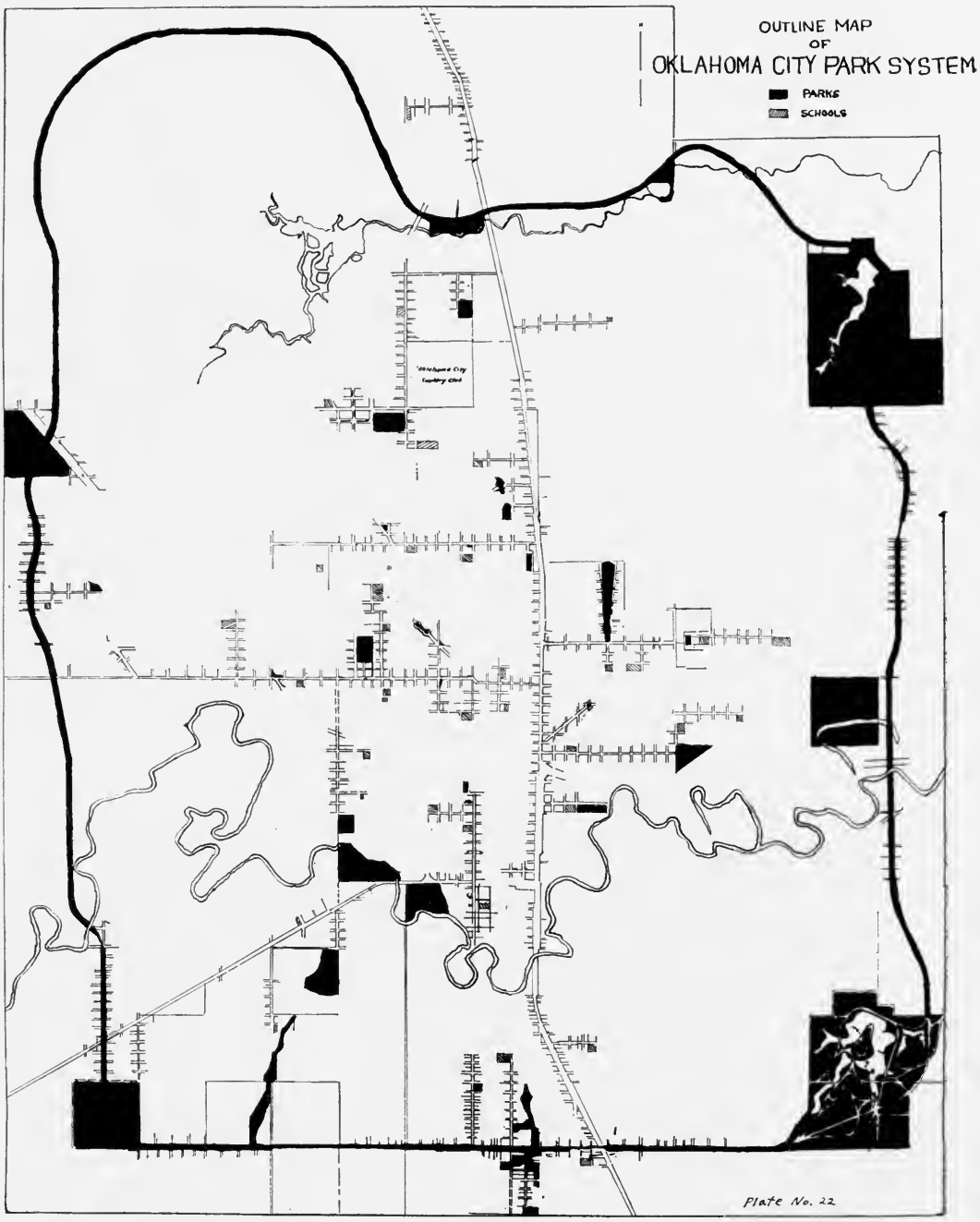


PLATE No. 22. OUTLINE MAP OF OKLAHOMA CITY, OKLAHOMA

Showing location of park and school site areas. (For description see page 91.)

basket ball, volley ball and playground baseball, etc., and the high schools have athletic fields.

Other Public Properties: These include State Normal campus comprising 7.5 acres. State park within fifteen miles of city comprising 300 acres. County court house park of two acres. Several county picnic parks throughout the county equipped with tables, benches, toilets, water. City water department lands comprising 130 acres.

Facilities in Public Parks for Active Recreation: Four parks have children's playgrounds. There are three basket ball courts; four regulation baseball diamonds; nine playground baseball diamonds; two football fields; six horseshoe courts; one running track; two soccer fields; two tennis courts; five volley ball courts; three skating rinks; one golf course of nine holes privately controlled; one shooting range; one bathing beach; 1.5 miles of footpaths; 3.25 miles of driveways.

Service and comfort facilities include: two grand stands seating 2,200 and 4,800 respectively; one band stand; one refreshment stand; one shelter house; one shop; one storehouse; four toilet buildings; one automobile tourist camp; 362 benches.

The game courts and fields on both public and private property include five regulation baseball diamonds; five football fields; 12 tennis courts; 14 basket ball courts; 17 playground baseball diamonds (soft ball); one running track; 11 volley ball courts; six horseshoe courts.

Council Bluffs, Iowa

Population, 1920, 36,162. Estimated population, 1925, 39,795. Area of the city, 16.5 square miles, or 10,560 acres.

Park Areas: The park system of the city comprises 15 separate properties, counting the boulevards as one property, with a total area of 972.61 acres, or one acre to every 40 inhabitants. The area of the individual properties is as follows: .10, 1.6, 2.15, 2.5, 2.58, 3, 3, 3.6, 4.5, 6, 90, 102, 270, 444 acres respectively. The boulevards comprise 37.58 acres.

All of these properties are located within the incorporated limits of the city with the exception of the park of 102 acres which is outside about four miles.

San Jose, California

Population of the city, 1920, 39,642. Estimated population, 1925, 43,551. Total area of the city, 6.8 square miles or 4,352 acres.

Park Areas: The park system of San Jose comprises 659.42 acres or one acre to every 66 inhabitants. There are nine properties the areas of which are as follows: .13, .43, 2.23, 2.23, 3.2, 3.2, 8, 13, and 627 acres respectively. The large park is located five miles outside the city limits. This system is not well balanced as there should be more larger intown properties of the neighborhood playfield-park type of property.

School Sites: There are 16 school properties, which may be classified according to size as follows:

	No. Sites	*Area Acres*
1 to 2 acres	1	1.0
2 to 3 acres	2	5.2
3 to 5 acres	6	22.1
5 to 8 acres	5	25.7
10 to 12 acres	2	21.0
Totals	16	75.0

Other Available Recreation Areas: Within a radius of thirty miles of the city the state owns three properties totaling 14,626 acres, and within twelve miles the county owns a park of 200 acres. Within a radius of approximately 35 miles there are nine privately owned recreation places providing picnicking facilities, camping, hunting and fishing. Four of these properties total 1,638 acres.

Decatur, Illinois

Population, 1920, 43,818. Estimated population, 1925, 53,859. Area of the city, 9.37 square miles or 5,996.80 acres.

Park Areas: The park system of Decatur is under the control of a District Park Commission, the jurisdiction of which extends over a territory larger than the city of Decatur proper. The park properties comprise the following areas: 2, 2, 18, 19, 20, 22, 45, 83, 138, 172 acres respectively and various tracts along Lake Decatur totaling 210 acres. The grand total of all park properties is 731 acres, or one acre to about every 73 inhabitants. Of these properties 383 acres are located within the city limits and 348 acres outside the city limits. Lake Decatur, in the near vicinity of the city, is a magnificent body of water 14 miles long, approximately one-half of a mile wide and contains 4,000 acres.

School Sites: There are 18 school sites with a gross area of 57.9 acres. The majority of these sites are too small to provide adequate play space, but the following grounds have acreage areas: 4, 5, 8, 8, 20 acres respectively. All these are grade schools and newer schools indicating an admirable policy of securing larger grounds.

Other Recreation Areas: There are four country clubs having areas totaling 480 acres, and an athletic field of eight acres provided by one of the largest manufacturing companies. This has a grand stand seating 4,000. It is used by the town baseball teams and by the high school athletic association.

Pasadena, California

Population of city in 1920, 45,354. Estimated population, 1925, 56,732. Total area of the city, 20 square miles or 12,800 acres.

Park Areas: The park and recreation system of Pasadena comprises 15 separate properties totaling 1,001.05 acres or one acre to every 56 inhabitants.

The size of the park areas is as follows: .86 of an acre, 1.25, 2.6, 3.1, 3.4, 4, 5.53, 6.6, 8, 9, 9.53, 13, 22.46, 67.03, 334.03, 516.26 acres respectively. This appears to be a very good distribution as between neighbor-

hood parks, or neighborhood playfield-parks and large properties.

School Sites: The school sites classified according to size are as follows:

	No. Sites	*Total Acres*
From 1 to 2 acres	4	5.50
From 2 to 3 acres	6	14.25
From 3 to 5 acres	7	25.50
Over 5 acres	3	15.00
From 10 to 20 acres	5	74.00
Over 20 acres	1	40.00
Totals	26	174.25

As can readily be seen from the table, the large majority of these sites provide amply for playgrounds for children and some of them are large enough to provide space for neighborhood playfields.

Other Available Recreation Areas: National Forest Reservations, county park of over 5,000 acres, beach resorts, etc., are within easy reach of the people of the city. There are three private golf courses totaling approximately 450 acres, and two large private estates totalling 450 acres which are at times open to the public.

Other cities in this group especially worthy of mention include Colorado Springs with 2,788.14 acres in 13 properties, exclusive of boulevards and parkways; Petersburg, Virginia, with 506.6 acres in 6 properties; Meriden, Connecticut, with 1,344.5 acres in 5 properties; and Beaumont, Texas, with 689.4 acres in 13 properties. A considerable number of the cities are especially noteworthy because of the adequacy of their school site areas.

Group VI. Cities Having a Population of from 50,000 to 100,000.

These numbered, in 1920, 76 cities comprising 5,265,747 inhabitants, or 5 per cent of the total population of the nation. In 1910 the percentage of the total population was 4.5.

Reports were received during the survey (1925–26) of 73 of the 76 cities in this group. The 73 cities were reported to have a total of 37,203.94 acres of park properties or an average of 509.64 acres per city. Taking 75,000 as an average population per city of this group, together with the average acreage per city, the average ratio of park property to population would be one acre to every 147 inhabitants.

Fifteen cities were selected as most representative of this group because of the gross acreage of their park properties. The average gross acreage of these cities was 1,348.68 acres or 2.6 times the average for the entire group reporting parks. The average number of park properties per city for the 15 was between 21 and 22.

While these 15 cities represent but 20 per cent of the total number of cities reported, they had 20,230.29 acres of the total of 37,203.94 acres, or 54 per cent of the total. The 15 had also in 1920 approximately 20 per cent of the total population of all the cities of this group.

The lack of uniformity in planning is still further shown by the fact that ten cities, or only 13.6 per cent of the entire number reported, had 16,863.33 acres of the total of 37,203.94 acres of park properties, or 45 per cent. The population of the ten cities was in 1920 only 828,584.

In 14 of the 15 cities mentioned above the average acreage of school

sites per city was between 32 and 33. This amount of school site area per city if properly distributed ought to provide fairly amply for the play of the children from 5 to 14 years of age in those cities.

A FEW EXAMPLES OF PARK AND SCHOOL SITE AREAS OF CITIES IN THIS GROUP

Sacramento, California

Population, 1920, 65,908. Estimated population, 1925, 72,260. Area of the city, 13.92 square miles or 8,908.8 acres.

Park Areas: The park and recreation system of the city comprises 19 properties exclusive of municipal camp site in Federal Forest Reserve, totaling 1,185.99 acres. This is one acre to every 60 inhabitants. The size of the areas is shown by the following classification:

	No. Properties	*Total Acres*
Under 1 acre	3	1.5
1 to 2 acres	2	2.5
2 to 3 acres	8	19.59
7 acres	1	7.00
22.6 acres	1	22.60
32.0 acres	1	32.00
36.8 acres	1	36.80
236 acres	1	236.00
828 acres	1	828.00
Totals	19	1,185.99

To this total should be added an area of 35 acres in a Federal Forest Reserve used for a municipal camp site. Most of the smaller properties noted above are neighborhood parked squares which were laid out in the original plan of the city.

School Sites: There are 21 different sites totaling 159.5 acres gross. The size of the sites is shown by the following table:

	No. Properties	*Total Acres*
Under 1 acre	1	.5
1 to 2 acres	1	1.5
2 to 3 acres	9	21.5
4 acres	1	4.0
5 acres	3	15.0
6 acres	2	12.0
7 acres	1	7.0
8 acres	1	8.0
30 acres	1	30.0
60 acres	1	60.0
Totals	21	159.5

Sacramento furnishes a fairly effective demonstration of the important principle in planning a community system of recreation areas, that the school sites should be large enough to provide for the children's playground areas and to some extent the neighborhood playfield areas.

East St. Louis, Illinois

Population, 1920, 66,767. Estimated population, 1925, 71,423. Area of the city, 13 square miles, or 8,320 acres.

Park Areas: There are 13 properties in the city's park system, totaling 1,355.5 acres. There is a small parked area about the city hall of .8 of an acre in addition. The size of these areas is shown by the following table:

	No. Properties	*Total Acres*
1 to 2 acres	2	3.0
3 to 5 acres	3	10.0
5 to 10 acres	1	7.5
10 to 20 acres	4	50.0
25 acres	1	25.0
130 acres	1	130.0
Over 1,000 acres	1	1,130.0
Totals	13	1,355.5

The majority of the smaller areas are used as children's playgrounds during the summer months. The small areas are admirably distributed over the city. The large park of over a thousand acres immediately adjoins the city at its southeastern extremity. In fact the suburban area of the city in this direction is building around the park.

School Sites: There are 29 school sites totaling 57.5 acres. The size of these areas is shown by the following table:

	No. Properties	*Total Acres*
Under 1 acre	6	3.0
1 to 2 acres	6	7.0
2 to 3 acres	12	26.9
3 to 5 acres	2	7.1
6.5 acres	1	6.5
7 acres	1	7.0
Totals	29	57.5

It is clearly apparent that the school system is not equipped with as much play space about the schools as it should have, which no doubt accounts for the fact that the District Park Commission has had to provide a considerable number of small areas which are used as children's playgrounds.

Sioux City, Iowa

Population, 1920, 71,227. Estimated population, 1925, 76,411. Area of the city, 46 square miles or 29,440 acres.

Park Areas: The park system of the city comprises 22 properties totaling 1,120.257 acres or one acre to every 68 inhabitants. These areas classified according to size are as follows:

	No. Properties	*Total Acres*
Under 1 acre	4	1.507
1 to 2 acres	6	7.960
2 to 5 acres	4	9.580
5 to 10 acres	2	14.750
10 to 20 acres	3	45.410
20 to 30 acres	2	52.770
50 to 70 acres	1	66.840
100 to 125 acres	1	120.440
Over 800 acres	1	801.000
Totals	22	1,120.257

School Sites: There are 33 school sites with a total gross area of 42.869 acres and an estimated free play space of 18.852 acres. Only five of the school sites (gross area) are over two acres, and only one has an estimated free play space of slightly over two acres. The school system is very inadequately provided with play space for the children.

San Diego, California

Population, 1920, 74,683. Estimated population, 1925, 106,047. Area of the city, 90 square miles or 57,600 acres.

Park Areas: The park system of the city comprises 34 different properties totaling approximately 2,260 acres. This is one acre to about every 46 inhabitants. The areas classified according to size are as follows:

	No. Properties	*Total Acres*
Under 1 acre	15	4.825
1 to 2 acres	6	7.840
2.5 acres	1	2.500
3 acres	1	3.000
5 to 10 acres	6	44.540
Slightly over 10 acres	1	10.290
60 acres	1	60.000
Slightly over 100 acres	1	116.900
Slightly over 600 acres	1	610.000
Over 1,000 acres	1	1,400.00
Totals	34	2,259,895

About 61 per cent of these properties are small and chiefly of use for adornment and for breathing spots. However, taken with the large school grounds the city appears to be fairly well provided with neighborhood playfield-park properties and large parks.

School Sites: The school sites comprise 35 different properties totaling 145.2 acres, gross. These areas classified according to size are as follows:

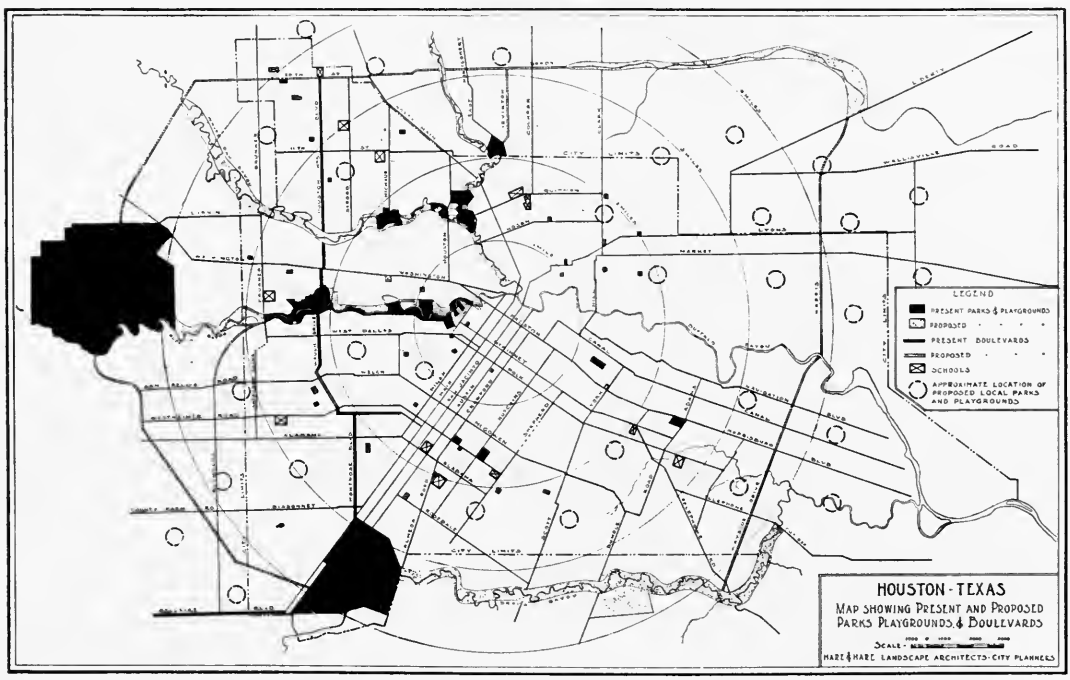


Plate No. 23

MAP OF THE PRESENT AND PROPOSED EXTENSIONS OF THE PARK SYSTEM OF HOUSTON, TEXAS

(Plan by Hare and Hare, Landscape Architects and City Planners, Kansas City, Missouri. See page 93.)

	No. Properties	*Total Acres*
Under 1 acre	2	.90
1 to 2 acres	8	11.70
2 to 3 acres	8	18.80
3 to 4 acres	5	16.80
4 acres	3	12.00
5 to 10 acres	4	26.00
10 acres	3	30.00
12 acres	1	12.00
17 acres	1	17.00
Totals	35	145.20

Nearly 50 per cent of these school sites are too small for efficient children's playgrounds after taking out building sites and areas for beautification.

Other Areas Available for Recreation: Twenty miles outside the city is the beginning of the Cleveland National Forest of nearly 550,000 acres. About the same distance from the city is a 20-acre county park suitable for picnicking. There are, of course, several private golf clubs and organized camps, etc.

Tulsa, Oklahoma

Population, 1920, 72,075. Estimated population, 1925, 124.478. Area of the city, 12 square miles or 7,680 acres.

Park Areas: The park system of Tulsa comprises 23 different properties totaling 2,576.5 acres or about one acre to every 48 inhabitants. In addition there are about a dozen miscellaneous triangles totaling seven acres. The park areas arranged according to size are as follows:

	No. Properties	*Total Acres*
Under 1 acre	3	1.5
1 to 2 acres	3	4.5
2 to 4 acres	2	5.5
4 to 8 acres	8	38.0
10 to 20 acres	3	45.0
25 to 50 acres	2	67.0
200 to 220 acres	1	215.0
Over 1,000 acres	1	2,200.0
Totals	23	2,576.5

School Sites: There are 29 school sites with a gross area of 128.2 acres and an estimated free play area of 112.1 acres. These areas classified according to size follow:

	No. Properties	*Total Acres*
1 to 2 acres	1	1.7
2 to 3 acres	8	17.5
3 to 4 acres	3	9.0
4 to 6 acres	11	52.0
6 to 10 acres	3	18.0
10 acres	3	30.0
Totals	29	128.2

This layout of school sites ought to provide fairly amply for the play of the children from 5 to 14 years of age inclusively, and some of the areas are large enough for sports and games of older people.

Other Areas: There are four privately controlled golf courses, two amusement parks, one professional ball park, and one fairground area of 240 acres.

Oklahoma City, Oklahoma

The area of the city comprises 17.9 square miles (1925) or 11,456 acres. The population in 1920 was 91,295. The estimated population (1924) was 104,080.

Park Areas: The total park area comprised 2,248 acres in 1925. A classification of these areas as to size follows:

	No. Areas	*Total Area*
Under 1 acre	4	2.3
1 to 3 acres	4	6.0
3 to 5 acres	5	16.9
5 to 10 acres	2	13.8
10 to 25 acres	7	113.0
25 to 50 acres	3	113.0
50 to 100 acres	1	70.0
100 to 200 acres	3	488.0
Over 600 acres (620,800)	2	1,420.0
Totals	31	2,243.0

To the grand totals should be added five acres in miscellaneous parkway strips, also 26 miles of unimproved boulevards connecting the outer parks, area not reported.

School Sites: A classification of the school sites as to size follows:

	No. Areas	*Total Area*
Under 1 acre	4	2.0
1 to 2 acres	7	8.5
2 to 3 acres	18	42.0
3 to 5 acres	10	32.0
5 acres and over	6	33.5
Totals	45	118.0

Tacoma, Washington

Population, 1920, 96,965. Estimated population, 1925, 104,455. Area of the city, 43.63 square miles or 27,923.20 acres.

Park Areas: The park area of Tacoma comprises 21 different properties totaling 1,253.68 acres. This is approximately one acre to every 80 inhabitants.

The areas classified according to size are as follows:

	No. Properties	*Total Acres*
Under 1 acre	2	1.00
1 to 2.5 acres	2	3.15
10 to 15 acres	6	61.91
15 to 25 acres	2	38.40
25 to 50 acres	3	105.68
50 to 75 acres	1	60.30
Over 300 acres (339.34; 637.9)	2	977.24
Totals	18	1,247.68

There are in addition three small street parking strips totaling six acres.

School Sites: Fifty school areas were reported (1925–26) totaling 200.265 acres. A classification of these areas according to size follows:

	No. Properties	*Total Acres*
Under 1 acre	8	5.703
1 to 2 acres	17	28.413
2 to 3 acres	10	24.900
3 to 4 acres	6	20.447
4 to 5 acres	2	8.178
6 to 10 acres	4	31.341
10 to 11 acres inclusive	2	21.083
60 acres and over	1	60.200
Totals	50	200.265

FLINT, MICHIGAN

Population, 1920, 91,599. Estimated population, 1925, 130,310. Total area within the city limits (1925) 18,985 acres.

Park Properties: Flint has (1925) 30 different park and recreation properties under the control of the Park Department. As to size these properties may be classified as follows:

	No. Properties	*Total Area*
Under 1 acre	3	.95
1 acre to 5 acres	9	19.00
5 acres to 10 acres	4	26.00
10 acres to 25 acres	5	63.00
25 to 50 acres	1	37.00
50 to 100 acres	4	277.00
100 acres and over	4	637.00
Totals	30	1,059.95

The properties have been well chosen both as to distribution and as to size.

School Sites: Flint is especially distinguished by the number and size of its school sites. The majority of the sites are not only large enough to provide ample areas for children's playgrounds but to serve also as neighborhood playfield-parks.

The following is a classification of the existing areas:

	No. Sites	*Total Area*
Under 1 acre	3	1.674
1 to 3 acres	8	15.744
3 to 5 acres	11	42.603
5 to 10 acres	7	42.359
10 to 20 acres	5	57.463
20 to 50 acres	3	78.220
50 acres and over	1	57.000
Totals	38	295.063

SPOKANE, WASHINGTON

Population of the city, 1922, 104,437. Estimated population, 1925, 108.897. Area of the city, 39.25 square miles or 25,120 acres.

Park Areas: The park system of Spokane comprises 46 different properties totaling 2,218.01 acres. This is approximately one acre to every 50 inhabitants. The following table shows the distribution of the unit areas in the Spokane park and recreation system arranged according to size:

Size Classification	*No. Properties*	*Total Acres*
Under 1 acre	2	1.6
1 to 2 acres	6	8.51
2 to 3 acres	3	7.87
3 to 5 acres	5	18.10
5 to 10 acres	6	47.87
10 to 25 acres	7	101.45
25 to 50 acres	5	182.66
50 to 75 acres	3	158.11
75 to 100 acres	2	180.00
100 to 250 acres	5	752.84
250 to 500 acres	2	759.00
Totals	46	2,218.01

From the viewpoint of size of properties and the distribution of these properties over the total area of the ctiy, the Spokane park and recreation system is admirably planned and executed. There is hardly a part of the residential sections of the city that is not within walking distance of a park property, and the properties are for the most part of such size as to provide a wide range of recreation opportunities. The system is not burdened with a large number of small properties of the triangle and oval type. Much has been done also to preserve areas along the banks of the beautiful Spokane River which flows through the city.

This generous allowance of play space might well be emulated by every municipality large or small throughout the United States.

Group VII. Cities Having a Population of from 100,000 to 250,000.

In 1920 this group comprised 43 communities with a total population of 6,519,187, or 6.2 per cent of the total population of the nation. In 1910 this percentage was 5.3.

During the decade from 1910 to 1920 this group of cities made a more rapid growth in population than any other of the groups except Group IX (cities from 500,000 to 1,000,000). The 43 cities were reported to have a

total park area of 40,869.79 acres, or an average of 950.46 acres per city. Only six of the cities had a gross park area under or approximate to every 100 inhabitants (Houston, Dallas, Fort Worth, Spokane, Salt Lake City, Springfield, Massachusetts). These six cities had 35 per cent of the total gross park area of the entire group, while their total population (1920) was only 11.5 per cent of the total population of the group.

Nineteen cities (44.1 per cent of the group) having 1,000 acres and over of park properties had a total of 31,836.68 acres, or 77.8 per cent of the total park acreage of the group. The aggregate population of these 19 cities, 1920, was 3,139,962, or 48 per cent of the total population of the 43 cities.

This indicates that, in general, the 24 remaining cities with 52 per cent of the total population of the group and only 22 per cent of the total park acreage are very inadequately provided with park area. Their inadequacy is still further emphasized by the fact that not all of the 9 cities are adequately provided with outdoor recreation areas.

This plan is presented to illustrate the conception of one of the foremost park and recreation planners in America of what a modern growing city of the size and prospects of Birmingham should have in park and recreation area. The existing park acreage at the time this plan was made (1924) comprised 687.40 acres. The proposed additions to existing parks totaled 177.75 acres. Proposed new parks within and near the city totaled

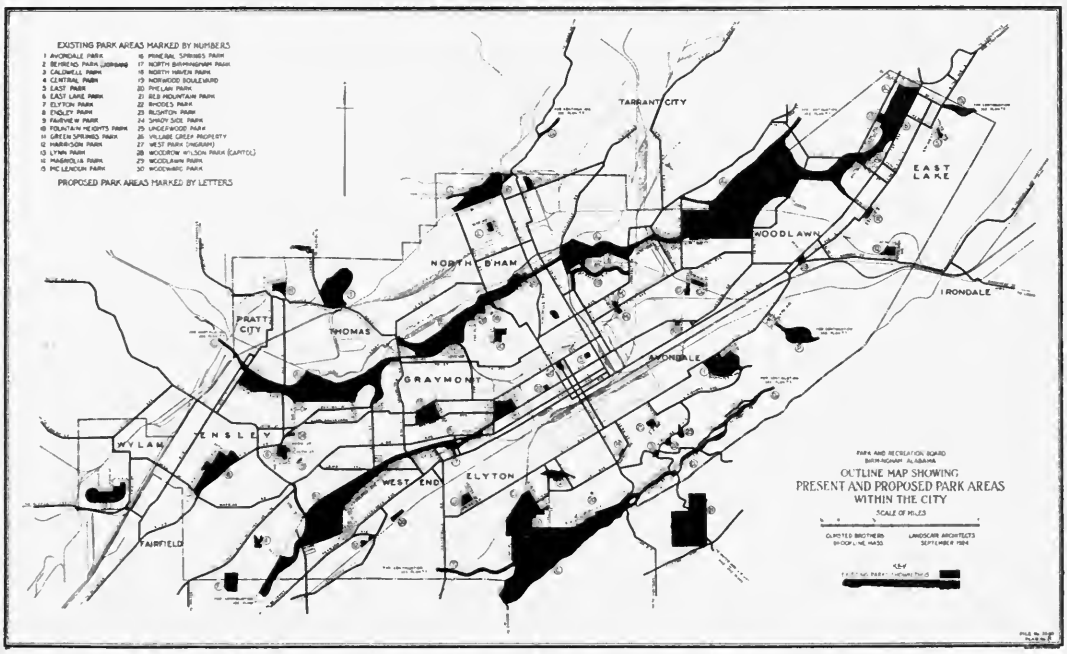


PLATE NO. 24. OUTLINE PLAN OF PROPOSED PARK SYSTEM FOR BIRMINGHAM

(Olmsted Brothers, Landscape Architects.)

2,828.75, making a grand total of 3,540.9 acres. The large outlying reservations are not shown on this map.

This system is especially admirable from the viewpoint of the volume of service that it renders to the people. There are 38 equipped playgrounds, which means that practically every section of the city is provided with a place for the children to play; there are 17 swimming-wading pools and one exceedingly large swimming center; 30 baseball diamonds; 45 tennis courts; 23 centers for outdoor moving pictures; and 4 golf courses, one junior and three adult courses. Two large outlying reservations are not shown on this map. These combined comprise 3,100 acres and provide excellent opportunity for camping, picnicking, boating, fishing.

Houston has made remarkable progress in the extension and development of its park and recreation system within recent years. The above plan is noteworthy in the extensive provisions for neighborhood playfield-park areas, in the redemption and preservation of the stream courses, in the system of parkways and in a ground system of cross city and encircling drives of which the parkways form an integral part. Additional large parks are to be added but are not shown on the map.

Equally progressive is the policy of the School Board whereby, for all senior and junior high schools and for many of the grade schools as well, areas have been and are being acquired of sufficient size not only to provide very amply for the play and organized games needs of the children as students, but also to serve as neighborhood playfields in the general park and recreation system.

Group VIII. Cities Having a Population of from 250,000 to 500,000.

There were 13 such cities in 1920 with a total population of 4,540,838, or 4.3 per cent of the population of the entire country. In 1910 this percentage was the same, or 4.3. The 13 cities in this group were reported to have a total of 37,516.25 acres of park properties of various types, or an average of 2,885.63 acres per community. Over ten thousand of this total acreage, however, was in the Denver Mountain Park System.

The cities in the order of their gross park acreage, beginning with the city having the largest acreage and continuing in order to the city having the lowest, are as follows: (1) Denver; (2) Minneapolis; (3) Washington; (4) Kansas City, Mo.; (5) Cincinnati, Ohio; (6) Indianapolis, Ind.; (7) Portland, Ore.; (8) Seattle, Wash.; (9) New Orleans, La.; (10) Rochester, N. Y.; (11) Milwaukee, Wis.; (12) Jersey City, N. J.; (13) Newark, N. J. This arrangement does not credit Jersey City and Newark with the county park properties within their boundaries.

The same group of cities arranged in the order of their population (1920), beginning with the largest and continuing in order to the smallest,

are: (1) Milwaukee, Wis.; (2) Washington, D. C.; (3) Newark, N. J.; (4) Cincinnati, Ohio; (5) New Orleans, La.; (6) Minneapolis, Minn.; (7) Kansas City, Mo.; (8) Seattle, Wash.; (9) Indianapolis, Ind.; (10) Jersey City, N. J.; (11) Rochester, N. Y.; (12) Portland, Ore.; (13) Denver. This shows that so far as planning is concerned such planning as has been done has borne no special relation to the numbers of people to be served.

The following is the complete list of the cities falling into this group as based on the census of 1920.

	Population 1920	*Park Area*	*Number Parks*	*School Site Area*	*Number School Sites*	*Total Park and School Site Area*
1. [1]Denver, Col.	256,491	11,764.87		236.0	74	12,032.51
2. [2]Portland, Ore.	258,288	2,181.36	55	274.17	88	2,455.53
3. Rochester, N. Y.	295,750	1,771.86	31	205.6	59	1,977.46
4. [3]Jersey City, N. J.	298,103	85.90	20			
5. [4]Indianapolis, Ind.	314,194	2,566.16	73			
6. Seattle, Wash.	315,312	2,144.56	130			
7. [5]Kansas City, Mo.	324,410	3,237.67	69			
8. Minneapolis, Minn.	380,582	4,735.58	132			
9. New Orleans, La.	387,219	1,885.00				
10. Cincinnati, Ohio	401,247	2,718.87	88			
11. Newark, N. J.	414,524	28.74	48			
12. [6]Washington, D. C.	437,571	3,424.51	564			
13. Milwaukee, Wis.	457,147	1,001.16	49			

[1] Of the total park acreage 1,557.37 (42 different areas) acres are in the city park system and 10,239.14 acres in the Mountain Park System outside the city limits.

[2] Area given includes four parks totaling 856.173 acres outside city limits. In addition there are 88 acres in a county park within city limits.

[3] Within city limits are two country parks totaling 267.2 acres.

[4] Exclusive of three state owned areas of 25.3 acres but under the control of the Park Department.

[5] Exclusive of eight small properties the area of which was not reported.

[6] Exclusive of 110 acres in Tidal Basin.

The table shows for each city the population as of 1920, total park acreage, number of park properties, total school site acreage (where available), number of school sites, and the total of park and school site acreage, together with special comments.

The Minneapolis Park and Recreation System is one of the most outstanding systems in America from the standpoint of the number of acres, types of properties, distribution of properties, character of development and quality of maintenance. The following table shows the distribution of the properties according to size:

Size Classification	*No. Properties*	*Total Acres*
Under 5 acres	78	63.22
5 to 10 acres	15	110.578
10 to 25 acres	13	221.182
25 to 50 acres	8	277.979
50 to 75 acres	4	267.017
75 to 100 acres	1	83.016
100 to 250 acres	8	1,430.955
250 to 500 acres	3	1,080.073
500 to 1,000 acres	2	1,203.761
Totals	132	4,735.58

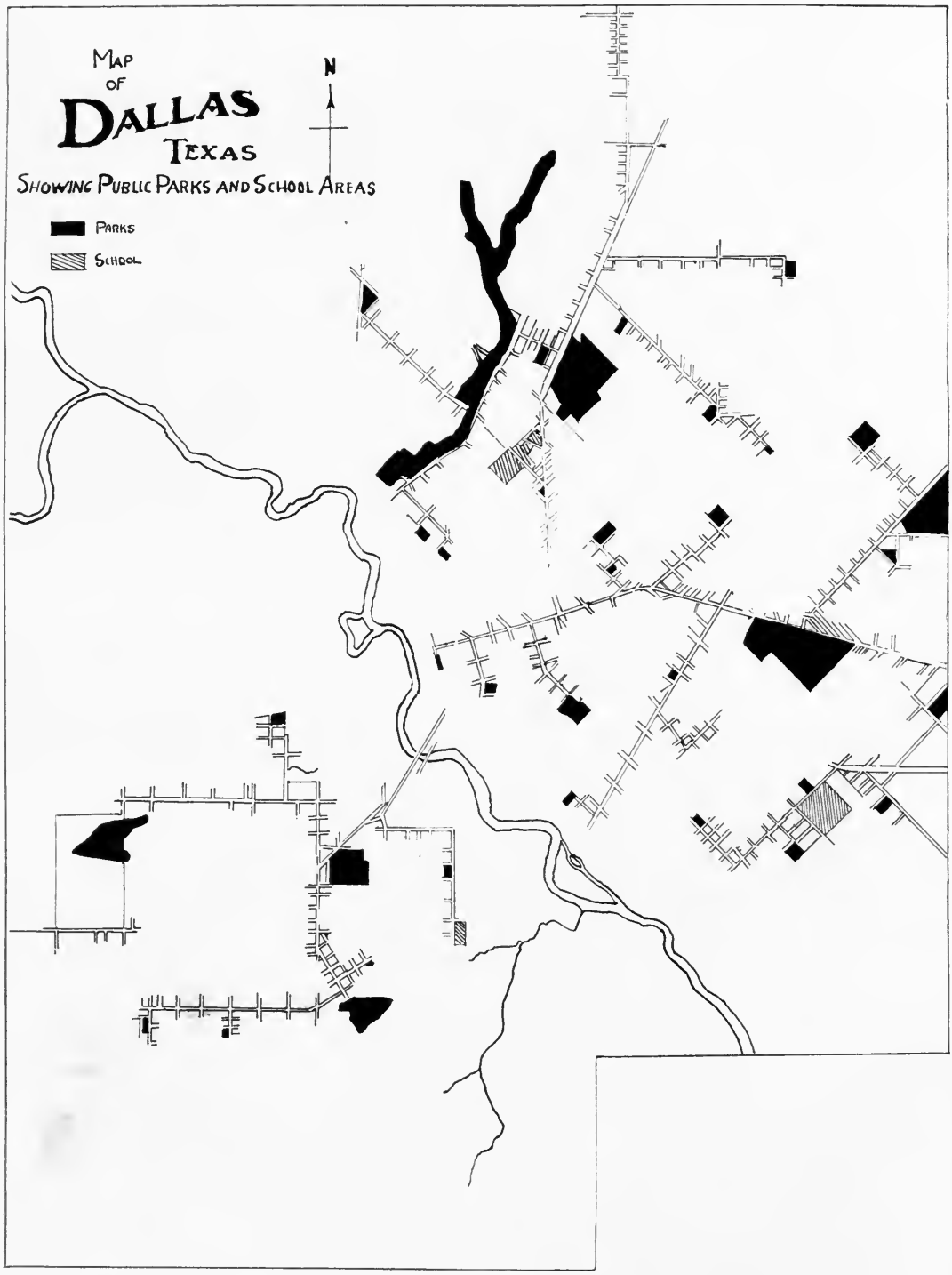


Plate No. 25. MAP OF THE PARK AND RECREATION SYSTEM OF DALLAS, TEXAS

(See page 93.)

Taking into consideration only those properties within the city limits or in close proximity to them, Minneapolis is the only city within this group that comes within the ratio of one acre to every hundred inhabitants. Denver, of course, if the mountain park system be included, far exceeds this ratio. The majority of the cities have had comprehensive plans made and in some instances supplementary plans have been made.

There is a marked lack of comprehensive metropolitan area planning among the cities of this group. Denver, with its great system of mountain parks, has made marked advance in this respect, while Milwaukee is meeting this need through the development of a county park system. To some extent the county park systems in the vicinity of Newark and Jersey City are meeting this need.

Every one of the cities is lacking in adequate provisions for children's playground and neighborhood playfield-park areas. Even Minneapolis, which has the most comprehensive system of municipally owned properties within easy reach of the people, needs additional neighborhood playfield-park areas. Washington, which has the largest number of individual properties, is especially lacking in children's playground and neighborhood playfield-park areas. This system is an example of what a radial system of streets or avenues superimposed over a gridiron street plan does in creating a very large number of small properties which because of their size, and especially because of their location, contribute very little to the active recreation resources of the community. In most of these cities the school play areas, taken as a whole, are totally inadequate.

It appears that the fields for intensive attention now and in the future in these cities lie in supplying the deficiencies in playground and neighborhood playfield-park areas and in planning a system of metropolitan areas.

The children's playground area need should be a primary duty and responsibility of the various school boards in coöperation with the municipal authorities. The planning and providing of neighborhood playfield-park areas is a primary duty and responsibility of the municipal authorities in coöperation with the boards of education. The planning of a metropolitan system of areas and the securing of these areas is a primary function of the municipal authorities in coöperation with county authorities. However, it is more desirable to plan a metropolitan system on a district basis than upon a county basis for the reason that often it is necessary to go outside the limits of a county in which a given city is situated to secure needed properties.

Group IX. Cities Having a Population of from 500,000 to 1,000,000.

In 1920 there were 9 such communities having a total population of

Note: For more detailed information concerning some of these cities see list of survey and city plan reports, Chapter II, pages 68 and 69.

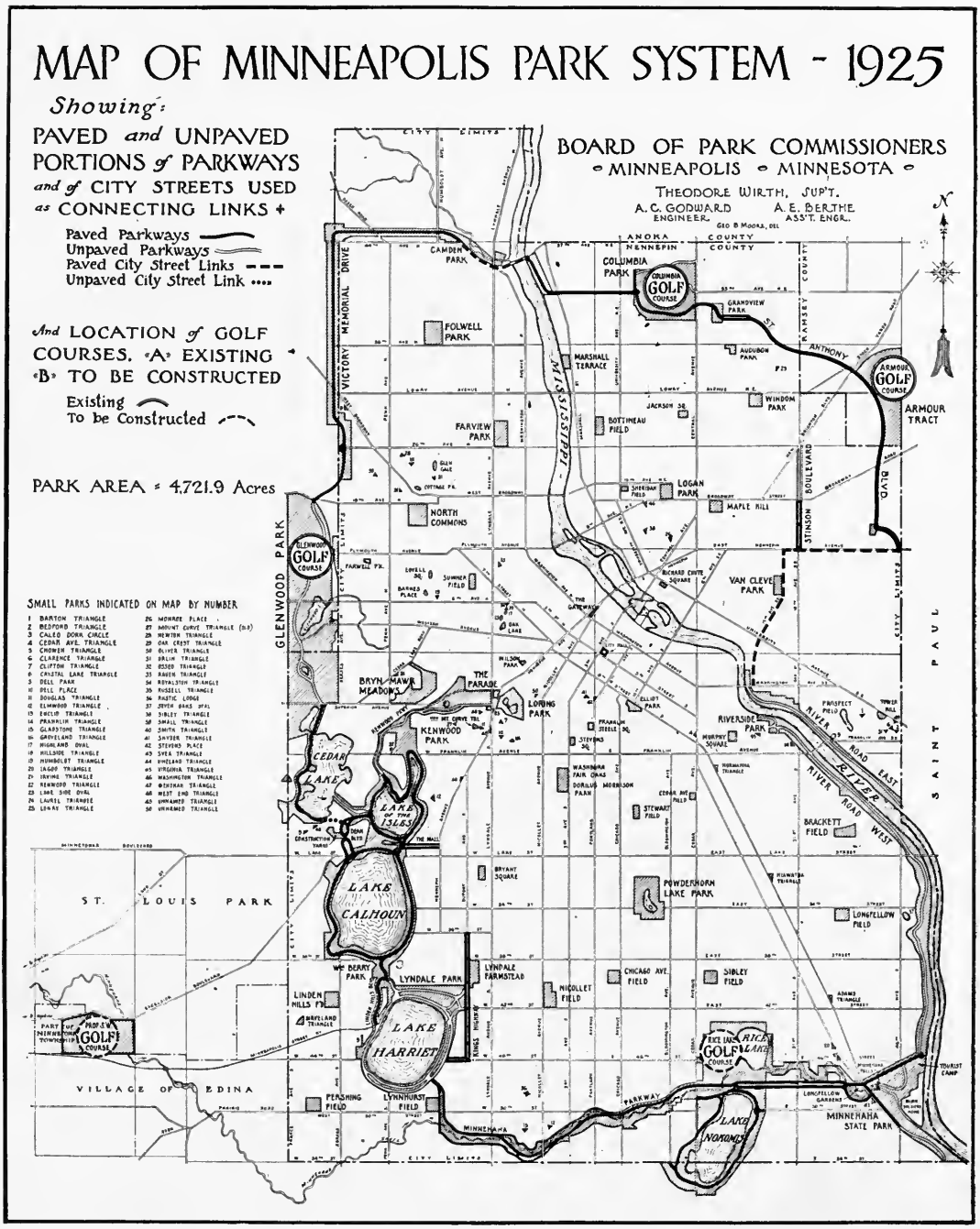


PLATE NO. 26. MAP OF MINNEAPOLIS PARK SYSTEM, 1925

6,223,769 or 5.9 per cent of the entire population of the nation. In 1910 the percentage of the total population of this group of the total population of the nation was 3.3. The group includes San Francisco, Buffalo, Los Angeles, Pittsburgh, Baltimore, Boston, St. Louis, Cleveland and Detroit.

This group of cities increased more rapidly in population in the decade from 1910 to 1920 than any other group, and they will probably show a greater increase at the 1930 census than any other group.

The nine cities in this group were reported to have (1925–26) a total of 24,920.87 acres of park properties of various types, or an average of 2,768.98 acres per city. The ratio of park acreage to population ranges from approximately one acre to every 220 inhabitants in San Francisco to one acre to every 421 inhabitants in Cleveland. These ratios are based on the 1925 estimates of population.

It is interesting to note that these 9 cities with an estimated aggregate population of over 7,500,000 (1925) have over 5,000 fewer acres of park properties than the 133 cities in Group V with only about 5,000,000 population; over 12,000 fewer acres of parks than the 73 cities in Group VI with about 5,500,000 population; nearly 16,000 fewer acres than the 43 cities in Group VII with a population of approximately 7,000,000; and over 12,600 fewer acres than the 13 cities in Group VIII with an estimated population of approximately 5,000,000.

These figures substantiate a well-known fact that as cities grow larger it is increasingly difficult to provide the necessary outdoor recreation areas, especially when comprehensive planning has been too long neglected.

In all these cities the most notable deficiency as to types of properties is in children's playgrounds and neighborhood playfield-parks, two types of properties in a park system that were not given serious consideration in planning until well along in the past quarter of a century. These types are most difficult to obtain after land has once been built up; if they are to be secured in sufficient numbers and area steps should be taken as far as possible ahead of residential development just as the streets are set aside.

Every one of these nine cities has a planning commission and every one has a more or less comprehensive plan for the extension and development of its park area. Every one, likewise, has a regional park plan either actually formed or in process of formation. The Boston Regional Park plan is an accomplished fact; Cleveland has made great progress in the development of a regional park plan within recent years; Buffalo and Detroit have made substantial progress through county park systems, but both have

Note: For literature concerning surveys and plans of a number of the cities in this group see list of Survey Reports in Chapter II, page 68.

For maps of the Boston Park System see Chapter II, Plates 2, 7, 8 and 9.

For maps of the suggested plans for children's playgrounds and neighborhood playfield-parks in Baltimore see Chapter II, Plates 4 and 6.

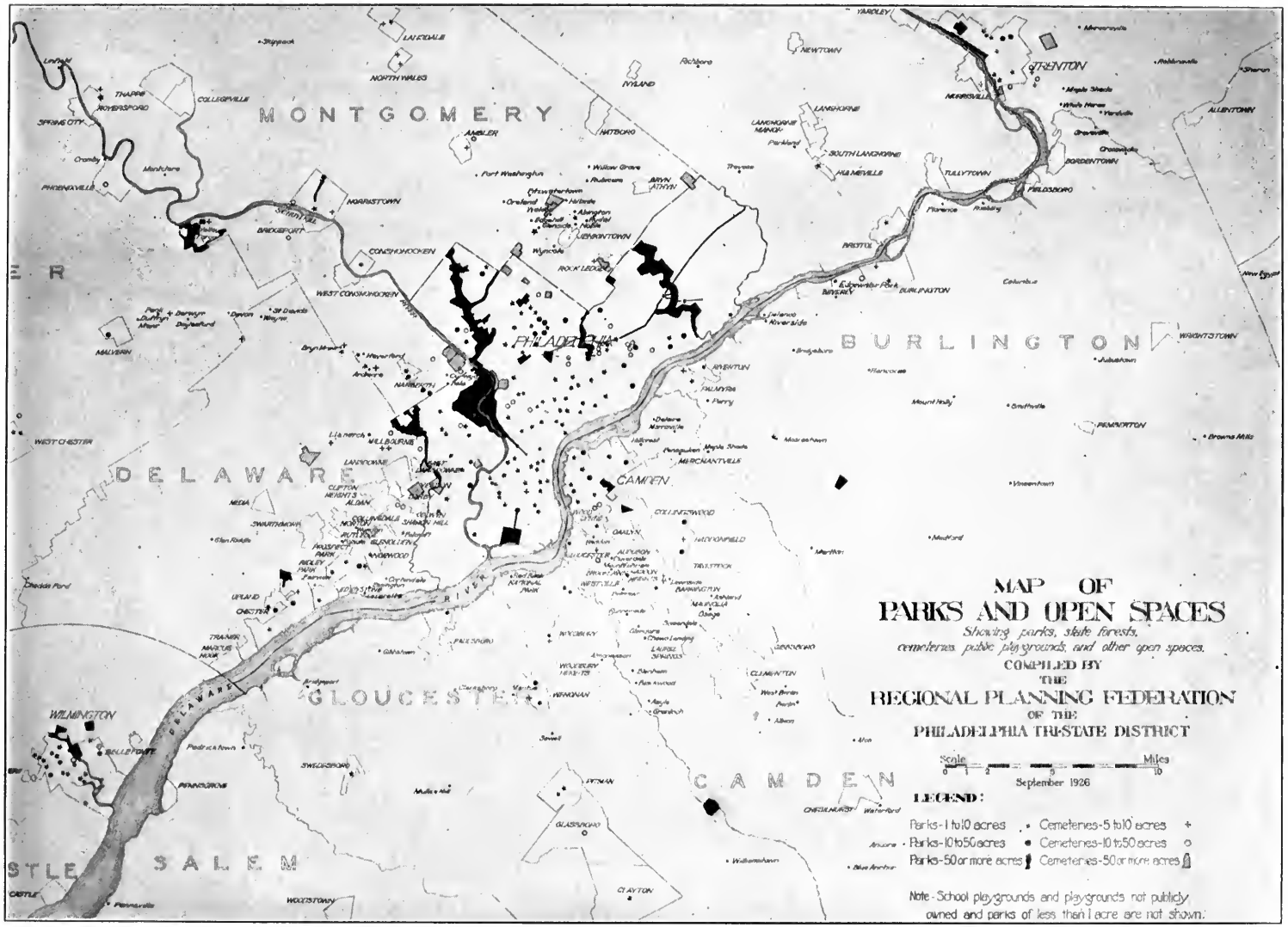


PLATE NO. 27

MAP SHOWING THE DISTRIBUTION OF PARKS AND OPEN SPACES IN THE PHILADELPHIA METROPOLITAN DISTRICT

(Map by Regional Planning Federation of the Philadelphia Tri-State District.)

In the Philadelphia metropolitan area there are no great outlying reservations as is the case in the metropolitan region around New York, or Chicago, or Boston, or Cleveland and several other of the larger cities of the country. There are three or four cities well sprinkled with parks and playgrounds, but by far the majority of the communities in this region are either poorly provided with parks and playgrounds or have none at all.

regional plans more comprehensive than the county park systems; large areas are being acquired in the region about Pittsburgh through a county park plan, and St. Louis, Baltimore and Los Angeles all have regional plans either in process of formation or actually formulated.

While notable progress has been made by school boards in most of these cities in providing children's playground areas, especially in Los Angeles with approximately 1,300 acres in 290 school sites and in San Francisco with 1,346 acres in 100 sites, on the whole, school playground area is very inadequate. In Detroit, through coöperation between the municipal Recreation Department and the Board of Education, large sites combining school site, children's playground, neighborhood playfield and neighborhood park are being secured. Inasmuch as provision for children's play is a subject of general public policy, and at the same time of tremendous importance in the education of children, it should be adopted as a fixed policy in planning that wherever necessary the municipal government and the board of education work always coöperatively in providing these areas.

Group X. Cities Having a Population of 1,000,000 or More.

In 1920 there were three cities within this group comprising 10,145,532 inhabitants or 9.6 of the total population of the entire country. In 1910 this percentage was 9.2.

The three cities in this group were reported to have (1925–26) a total of 22,467.35 acres in park properties of various types. These were distributed among the cities as follows: New York City, 10,178.49 acres; Chicago, 4,487.21 acres; and Philadelphia, 7,801.65 acres. See pages 100 and 103.

As compared with the park acreage in any one of the groups of cities from 25,000 inhabitants upwards this group of three largest cities has, in proportion to population, the smallest park acreage. Every one of them began park planning shortly after the middle of the last century, but planning did not keep pace with the growth of the population within the limits of the municipal boundaries. New York and Chicago are both richly endowed in outlying reservations, the former through state parks and county park systems and the latter through a great system of county forest preserves. Philadelphia while having the lowest ratio of park property to population of the three cities has no such outlying reservations.

County Park Planning

The county courthouse site in addition to serving in its primary capacity as the site for a building has functioned from the beginning of county government in this country as a kind of "intown" park in county seat towns. County fairgrounds have likewise functioned as a type of large park. Up to the close of the last century these two types of properties represent the

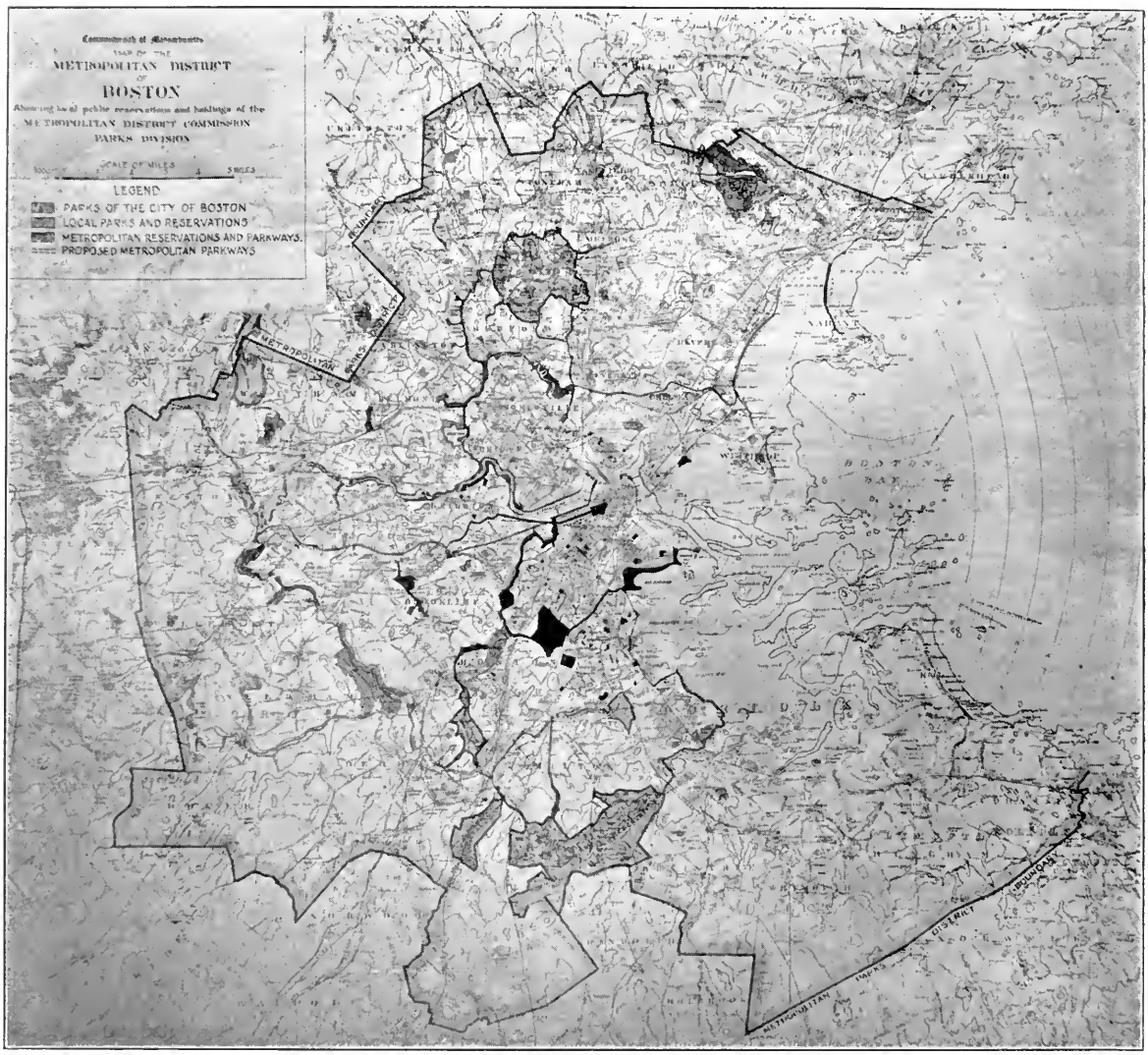


PLATE NO. 28. MAP OF THE BOSTON METROPOLITAN PARK DISTRICT

The Boston Metropolitan Park System is the oldest and most highly developed of the park systems of this type in the United States. The park district comprises an area having a radius of approximately fifteen miles from the center of Boston. Within the area are fourteen cities and twenty-four towns (townships). The system comprises 9,570.83 acres of parks and 1,464.97 acres of parkways or a grand total of 11,035.80 acres. There are 46.66 miles of parkways. (Figures as of March 1, 1927.)

interest that county governments had in parks, and this interest was purely an incidental one.

In 1895 Essex County, New Jersey, undertook the pioneering effort of establishing a county park system. The idea was not of rural origin but came out of the metropolitan park needs of cities and was no doubt inspired in part by the example of the Boston Metropolitan Park District established a few years previous.

The plan, while eminently successful in Essex County, was slow in being adopted elsewhere. Eight years later (1903) Hudson County, New Jersey, adjoining Essex County, adopted the plan. Twelve years (1915) after Hudson County established a park system, Cook County, Illinois, established a system of county forest preserves. The same year DuPage County, Illinois, adjoining Cook County, took similar action.

Since 1920 a number of county park systems have been established in the Middle Atlantic, Southern, Middle Western, Southwestern, Rocky Mountain and the Pacific Coast States. While the idea has spread to nearly all

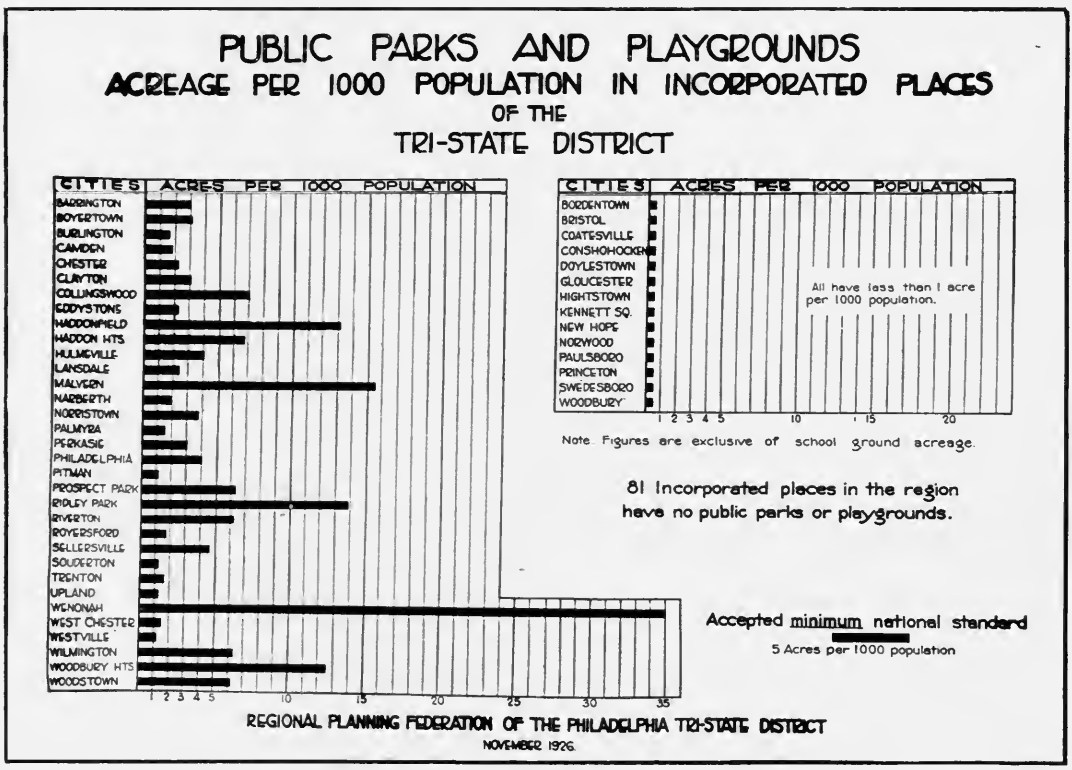


PLATE NO. 29

THIS DIAGRAM SHOWS THE ACTUAL SITUATION WITH RESPECT TO PROVISIONS FOR PARKS AND PLAYGROUNDS IN THE PHILADELPHIA METROPOLITAN AREA, 1926.

(Diagram reproduced by courtesy of the Regional Planning Federation of the Philadelphia Tri-State District.)

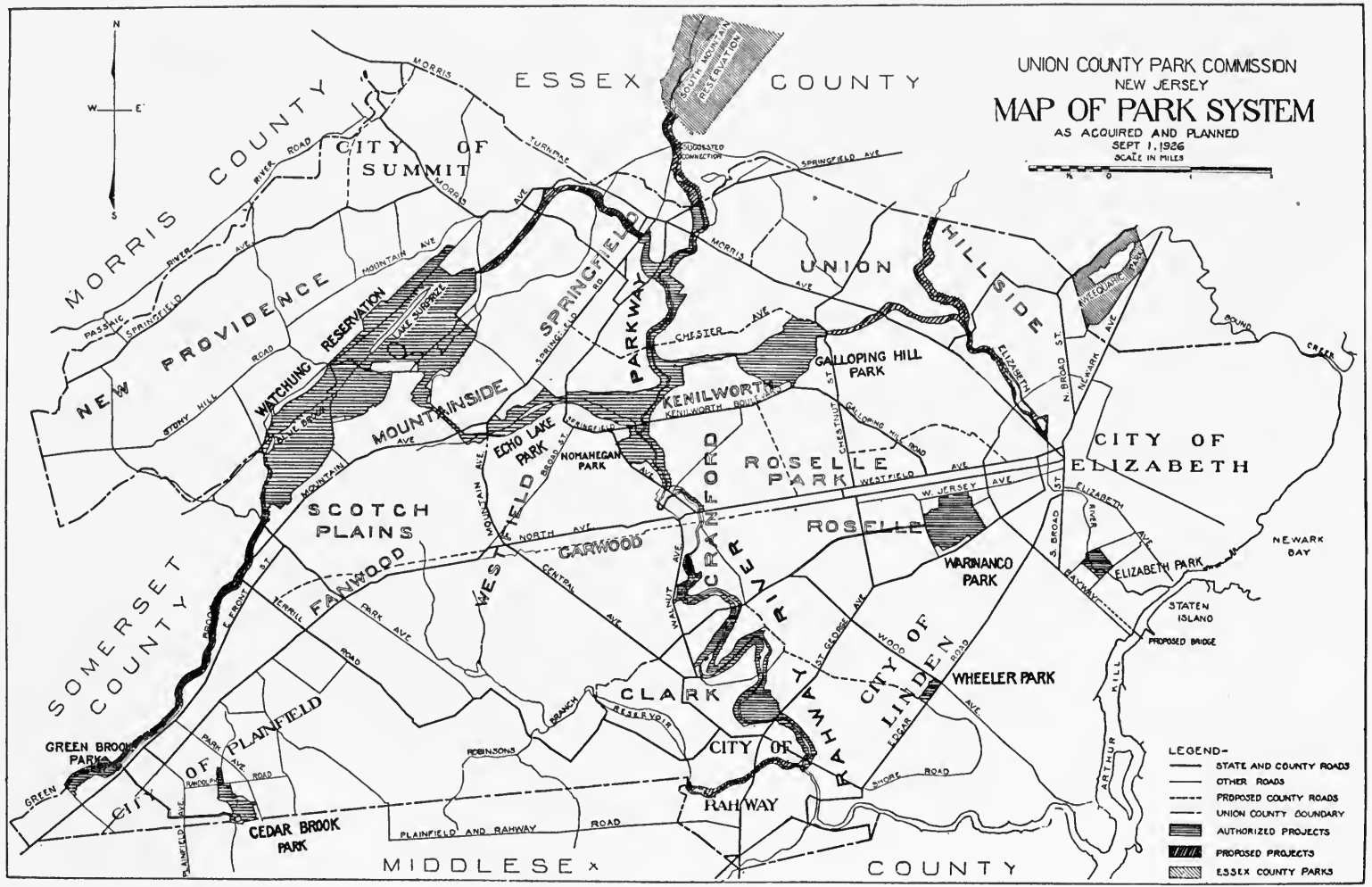


PLATE NO. 30. MAP OF THE UNION COUNTY PARK SYSTEM, UNION COUNTY, NEW JERSEY

This county falls within the metropolitan area of New York City. The greater part of the county is now and is destined to be in the future a residential area because of its attractive topography and its close proximity to New York City. The population of the county in 1920 was 200,157. The plan of the park system is projected upon future as well as present needs. The map shows park areas totaling 3,130 acres. Up to the middle of 1925, 3,170 acres had been acquired.

sections of the country it has not as yet been intensively applied. During the recent study of municipal and county parks reports were received of thirty-eight counties having park systems, and the total area of these systems was 61,656.56 acres. The Cook County Forest Preserve system comprised 31,600 acres of this total, and the Westchester County Park System (New York) comprised approximately 16,000 acres. Seven other countries were reported as in the process of developing park systems.

Considering the fact that there are over three thousand counties in the United States, the number of counties having already established park systems or are in process of establishing such systems appears very small. The counties as political units admirably adapted to park planning under certain conditions are, in fact, undeveloped fields of tremendous importance in the general outdoor recreation movement. They have proven their usefulness both in the metropolitan regions of great cities and in regions more rural in character.

Up to the present time most of the outstanding county park systems have been developed as a unit or units for handling metropolitan park problems. Essex, Hudson, Union counties, New Jersey; Westchester and Erie counties, New York; Wayne County, Michigan; Cook County, Illinois; Milwaukee County, Wisconsin; Los Angeles County, California, are examples. Marathon County, Wisconsin; Henry County, Indiana; Converse County, Wyoming; Muskegon and Jackson counties, Michigan, are examples of county parks in regions more rural in character.

As a general policy in regional planning the use of counties as planning and administrative units for parks in metropolitan regions should be considered with a great deal of caution for the reason that a single county rarely ever comprises within its borders the entire metropolitan region. Regional planning in connection with cities should if possible be considered as a unit, and administrative machinery for handling such a common need as outdoor recreation spaces may be more effective if the jurisdiction covers the region regardless of existing political boundaries.

The Boston and Cleveland Metropolitan Park District plans are admirable in this respect. In the environs of New York the fact that parts of the metropolitan region lie in different states renders both planning and administration of metropolitan affairs exceedingly difficult so far as unity is concerned. Under such conditions the use of counties as planning and administrative units for parks in regional areas is perhaps the only feasible way out of the difficulty. On the other hand it is unfortunate that the Cook County Forest Preserve District is coterminous with the boundaries of Cook County. This district properly should not only include Cook County but also parts of other counties and perhaps in time the whole of other counties.

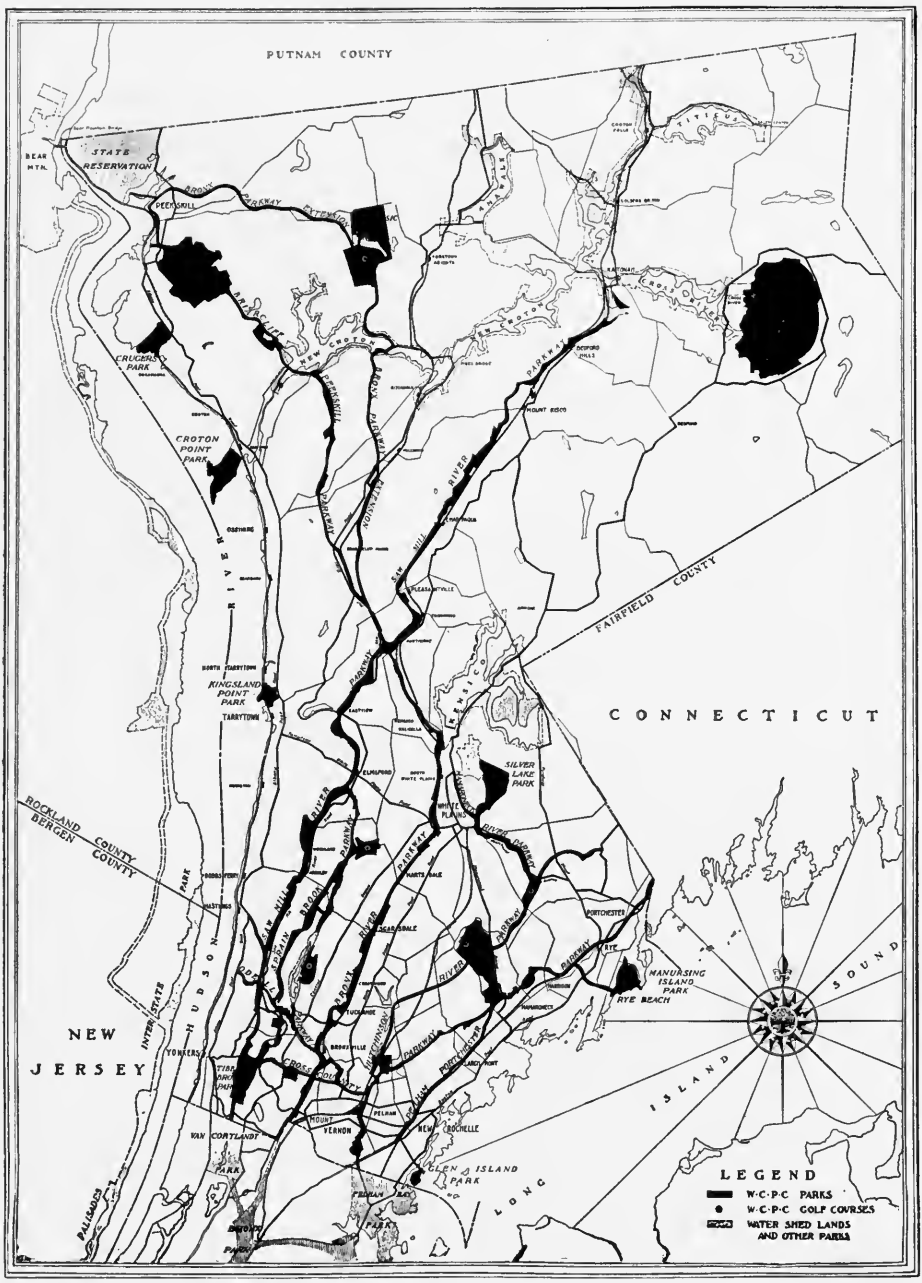


PLATE No. 31. MAP OF THE PARKS, PARKWAYS AND RESERVATIONS OF THE WESTCHESTER COUNTY PARK SYSTEM, WESTCHESTER COUNTY, NEW YORK, 1926

Westchester County is within the Metropolitan Area of New York City. It comprises an area of 286,720 acres and its population in 1920 was 344,436. It is a region of great natural beauty and is rapidly being developed as a residential suburban area immediately adjacent to New York City. It was foreseen that unless the existing open spaces and wooded areas were acquired now they might never be available again except at tremendous expense. Traffic conditions also required the development of a comprehensive system of pleasure driveways connecting with major outlets from New York City and another system running across the county from Long Island Sound to the Hudson River. The efficiency with which this system has been planned and the rapidity with which the plans have been carried out make one of the most heartening and romantic chapters in the history of park planning and development in America. In the space of about four years approximately 16,000 acres have been acquired, or over 5.5 per cent of the total area of the county, and large areas have been developed and thrown open to the use of the people.

No such caution need be suggested as to the use of the county as a planning and administrative unit for parks where the municipal corporations within the boundaries range from villages to small cities. While large numbers of the nearly 13,000 villages in the United States under 2,500 inhabitants have acquired one or more parks, their financial resources are really too small to maintain a year-round recreation service with a trained

PLATE NO. 32

PLAN MAP OF THE CLEVELAND METROPOLITAN PARK DISTRICT SHOWING THE PROPOSED METROPOLITAN PARK SYSTEM

The Cleveland Metropolitan Park District was created in 1917 under the authority of an act of the Legislature of the State of Ohio. It comprises approximately the whole of Cuyahoga County but provision is made in the law for its extension into other surrounding counties. Up to the early part of 1926 approximately 10,000 acres of the plan outlined in the above map had been acquired.

park and recreation executive in charge. The same may as truthfully be said of the majority of the incorporated places from 2,500 to 8,000 population. Nearly all these small municipalities are business, social and recreational centers for the surrounding open country population who may make almost as much use of parks and other recreation facilities provided by the villages and small cities as the inhabitants of the villages and cities themselves. The only effective and equitable way of acquiring, developing, operating and maintaining the necessary recreation area and facilities under such conditions is to make use of a larger political unit with larger revenue-producing resources. The county is an admirable unit for this purpose, as has been demonstrated by the county school systems and by the few county parks systems organized under such conditions.

CHAPTER IV

ELEMENTS IN THE DESIGN OF PARK AND RECREATION AREAS

In the chapter on the General Planning of a Park System it was noted that each type of property is intended to perform certain primary functions in the life of the people. After the areas have been acquired, the next step in planning is so to design or plan and develop these areas that they will serve the people effectively in the ways intended. This is the proper purpose and function of design.

General Suggestions on Design

There are two preliminary steps to actual designing of park and recreation properties that are of the highest importance. The first of these is the accurate establishment of the boundaries of the areas. This should be done previous to actual acquisition, but unfortunately this is not always the case. The second step is to have a topographical survey made of every property. Topographical surveys are of fundamental importance for the reason that the work of the landscape architect, the construction engineer and the recreation expert is based upon them. The services of the topographical engineer is, in general, too greatly neglected in park and recreation systems throughout the country with the result that much time, energy and money have been wasted and poor designs have resulted. Usually these surveys may be made by the city or county engineer's office or by the engineers of the park department.

With boundaries accurately established and the topographical surveys in hand, the designing of the properties can be effectively undertaken. The designing of the numerous types of areas now comprised in a modern park system presents many different and difficult problems. While there are general principles that may be followed each property will present its own peculiar individual problem or problems.

In most instances designing requires the services of several different types of specialists — the landscape architect, the recreation expert, the building architect and lighting engineer. The advice of the construction engineer and the sanitary expert may also be necessary.

In making the original design the most important of these various types of specialists is the landscape architect. The preservation and creation of beauty on all types of recreation areas should be accepted as an axiom in designing any and all these types whether it be a children's play-

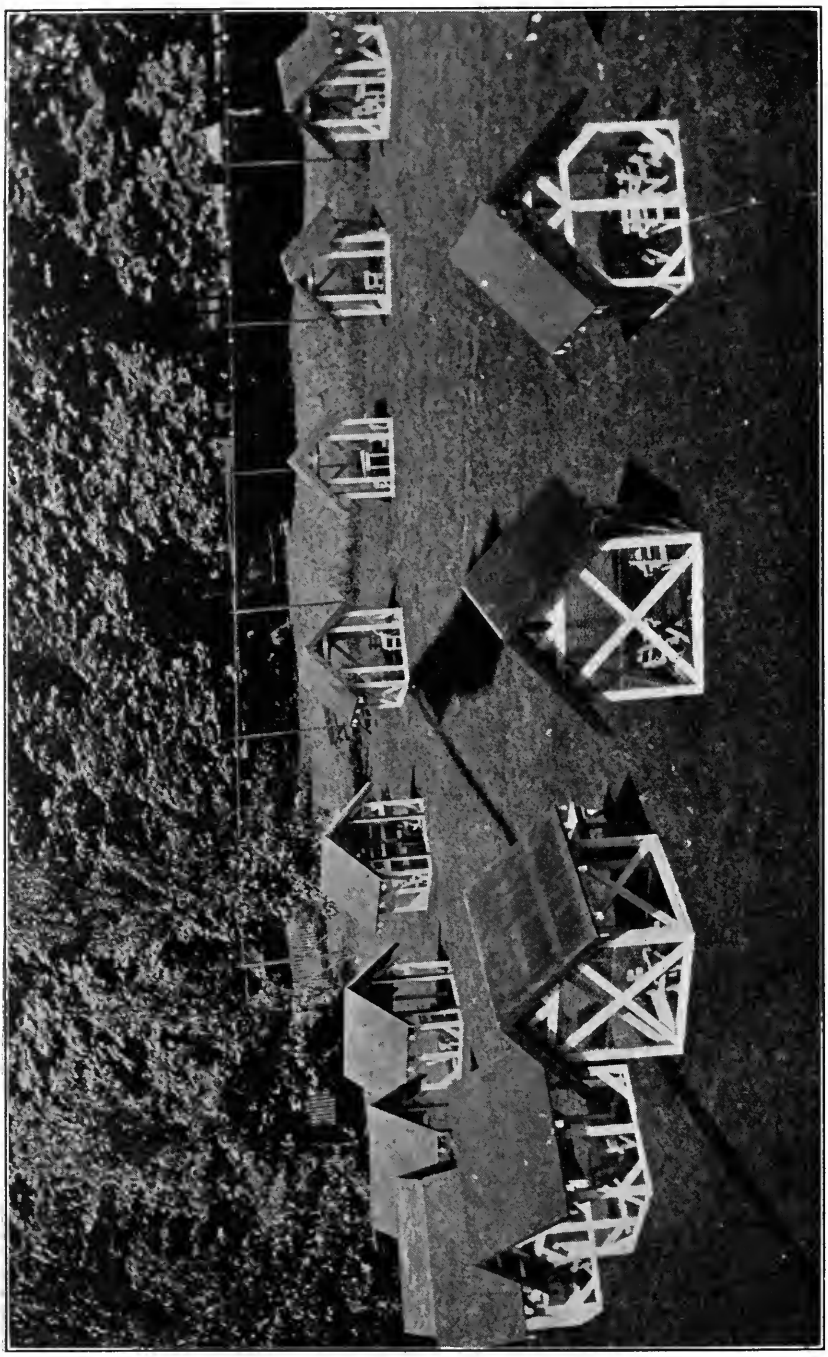


PLATE No. 33

PLAYHOUSES IN THE LITTLE CHILDREN'S PLAYGROUNDS, HARTFORD, CONNECTICUT

ground, a playfield, or a purely landscaped area, a large city park or a forest reservation park.

While it is certainly true that children's playgrounds, playfields and athletic fields often seem to present few art possibilities, nevertheless the designing of such areas from this viewpoint should more and more become an object of serious consideration by landscape architects with a view to perfecting designs that will overcome the ugliness which characterizes so many active recreation areas throughout America. Many school playgrounds are particularly unattractive, and it seems folly to attempt to teach the appreciation of beauty in the schools while at the same time the school grounds are permitted to become and remain the ugliest places in the neighborhood. Many active recreation areas under the control of park and recreation authorities are also totally lacking in beauty. Less should be made of the so-called distinction between art and utility. Beauty of surroundings should always be considered of the highest utility, and utilitarian things should have some elements of beauty. This is especially true of areas comprised in a park system and particularly of the areas devoted to active recreation.

In the designing of purely landscaped areas, or areas predominatingly landscaped, the landscape architect should be the supreme arbiter. In the designing of active recreation areas, and of areas predominatingly landscaped but including active recreation facilities requiring supervision, it is recommended that the architect associate with himself recreation experts, unless the architect is skilled in the management of active recreation facilities and activities. The reason for this is that a landscape architect not skilled in the organization and management of activities may not always perceive the most effective arrangement of the facilities from the viewpoint of supervision, especially when it is remembered that most active recreation areas are undermanned.

Similarly, if there are to be included in the design structures requiring the services of a building architect it is desirable for the landscape designer and the building designer to consider together the general design of the area and the plans of the building. If the structure is one to be used for indoor recreation or as an adjunct to an athletic center or a swimming center, it is desirable that the recreation expert be asked to go over the plans of the interior arrangement, considering them from the viewpoint of supervision and management.

In the designing of areas calling for a great deal of heavy construction work or requiring some particularly difficult piece of construction work, it is advisable for the landscape architect to consult with the engineer of the department or with some competent engineer employed temporarily for

consultation purposes. It would be a very fortunate arrangement if the engineer who is to have charge of the construction work could be consulted.

In modern park systems the lighting engineer is another specialist whom the landscape architect will find it desirable to consult. From the standpoint of adornment, general public service, and especially from the viewpoint of wider use of active recreation areas, lighting has assumed a position of major importance in the design.

Designing of special areas such as those devoted to zoos, botanical gardens, arboretums and similar features requires the services of a specialist in the care and operation of such institutions.

There appears to be a very widespread feeling among the officials of villages, towns and small cities and some counties having one or more park areas, that they cannot afford to secure the services of a landscape architect to make plans for their areas, and furthermore, they probably would

PLATE NO. 34

LITTLE CHILDREN'S PLAYGROUND AREA IN INTERIOR OF BLOCK, SUNNYSIDE DEVELOPMENT PROJECT, CITY HOUSING CORPORATION, NEW YORK CITY

Every block in the entire subdivision has a space similar to this.

not have the resources to carry out the plans when secured. Inasmuch as most of the leading park and recreation designers in this country are more accustomed to dealing with the problems of the larger cities and counties than small city, village or open country problems there is a possible need of caution with respect to the cost items involved in carrying out designs for small communities. In a few examples noted during the course of the recent study of park systems throughout the nation, planners had made designs so elaborate and expensive in execution that the small communities for which they were made could not possibly carry them out without too great a drain upon their financial resources.

However, small communities need this service as well as large ones. This is a problem for the landscape architects of the country to consider through their national organization with a view to devising some plan whereby the needs of the small communities can be met. A few states through their agricultural colleges or through a planning department of the state government have established such a service for small communities. This invasion of the field of the professional landscape architect by publicly supported institutions has sometimes met with opposition from the profession. It is suggested that in the long run this plan of state aid to small communities will be a benefit to the profession because it is an effective means of educating and opening up a large field that hitherto has been more or less closed to landscape architects.[1]

Types of Areas

The term "design" is used in this chapter in a very limited and loose sense, referring primarily to an enumeration of the features that are deemed necessary for the proper fulfillment of the function or functions of each type of property considered. The actual arrangement of these features in a harmonious whole in relation to each other, which is the proper content and meaning of design, is the function of the landscape architect.

Notes on the following types of areas will be presented in the succeeding pages:

1. Little Children's Playgrounds.
2. Children's Playgrounds.
3. Neighborhood Playfield or Neighborhood Playfield-Parks.
4. Special Active Recreation Areas: Athletic Fields, Stadiums, Golf Courses, Organized Camps.
5. Small Landscaped Areas.
6. Intown or Neighborhood Parks.
7. Large Parks.

[1] In 1920 over 25,500,000 people lived in incorporated communities under 25,000 population, or approximately one-fourth of the entire population of the nation.

8. Reservations or Forest Parks.
9. Boulevards and Parkways.
10. Waterfront Areas.
11. Service Areas.

Little Children's Playgrounds

Topography. In general the little children's playground should be level, but slight elevations in the form of hillocks or mounds or ridges are not undesirable and form in themselves very interesting equipment for play.

Surfacing. Turf makes the ideal surface. This will usually stand up under use by little children unless the space is exceedingly restricted and the number of children very large. However, it is desirable for play outdoors, after a rain, to have a small area surfaced with concrete or asphalt, or a wooden platform. If there is a shelter on the area this might provide the floor space needed during and after inclement weather.

Plate No. 35

ONE OF THE SEVERAL ATTRACTIVE LITTLE CHILDREN'S PLAYGROUNDS TO BE FOUND IN THE PARKS OF HARTFORD, CONNECTICUT

Note the small playhouses and the arrangement of seats as a fence.

Play Equipment. Desirable play equipment would include swings (low hung swings of the ordinary type, baby scups, chair swings, small canvas hammocks); small slide; sand box or pile; wading pool; playhouses; small teeters; platform provided with building blocks of various sizes. If there is a structure with a play room, a collection of toys would be an admirable feature. Wooden designs of characters in Mother Goose Rhymes or fairy stories, painted in colors and set up in the playground, prove a great source of pleasure. Benches should be provided for mothers.

Buildings. Unless sheltered by trees, the sand box should be protected by a pergola, under which benches may also be placed. Where the playground is an interior court in the center of a block no special structure for toilets and shelter will be necessary because the children can use their own homes.

Where a little children's playground forms a part of a school playground all the indoor facilities necessary for shelter and comfort may be supplied in the school building. Where it is located in a public playground apart from a public school or in a neighborhood playfield or large park, some kind of structure for comfort and shelter is desirable. The simplest type of structure needed would be a small combination toilet and shelter house with a wood floor. The shelter part might be open, latticed or partially enclosed. If, as is usually the case, the shelter also serves the other groups using the playground or playfield, it may provide toilets, wash room, office for leader or leaders, storage closet and a large room designed and equipped as a genuine kindergarten.

Separation from Other Play Areas. It is highly desirable that little children's playgrounds located in areas used by other children be separated from the spaces used by the older children either by a fence, a thick hedge or by some other device so as to give safety and privacy.

Plantations. These include the lawns previously mentioned for play surface; border plantations of vines and shrubs; trees either inside or outside or both inside and outside of boundary, and scattered over parts of play-area; flower boxes on building; vines trained on or over the building and playgrounds; protected flower beds, etc. A great effort should always be made to have the little children's playground a retired, quiet, restful spot, and a veritable bower of beauty.

Space Requirements for Equipment. The following table contains approximate space dimensions for the different types of equipment suitable for a little children's playground. The space dimensions given for the swings, slide, and teeters, are approximate use spaces. The areas given for the other items of equipment are the actual spaces, which they occupy, and the use space is approximately twice as large as the area given.

Type	*Length*	*Height*	*Approximate Space Required*
Chair Swings (set of 3)	10 feet at top	8 feet	20 x 18 feet
Chair Swings (set of 6)	20 feet at top	8 feet	20 x 30 feet
Scup Swings (set of 3)	10 feet at top	6–8 feet	20 x 18 feet
Kindergarten Slide	8 feet	4½ feet	9 x 18 feet
Teeters (set of 4)	12 feet	24 inches	18 x 16 feet
Wading Pool	any shape or size		10 – 20 feet in diameter
Sand Box	any size		6 x 8 feet to 8 x 16 feet
Playhouses (any number desired)	4–6 feet		4 x 4 feet or larger
Building Platform			4 x 6 feet or larger

An unobstructed area thirty feet square or larger should be provided for free play, circle games and similar activities.

Older Children's Playgrounds

It has been noted (Chapter on General Planning of a Park System) that some planners limit this type of playground to children from five or six to ten or twelve years of age. In point of fact such areas are nearly always used by children of all ages up to fourteen or fifteen, and at certain times, under special conditions, they may be used by the older young people

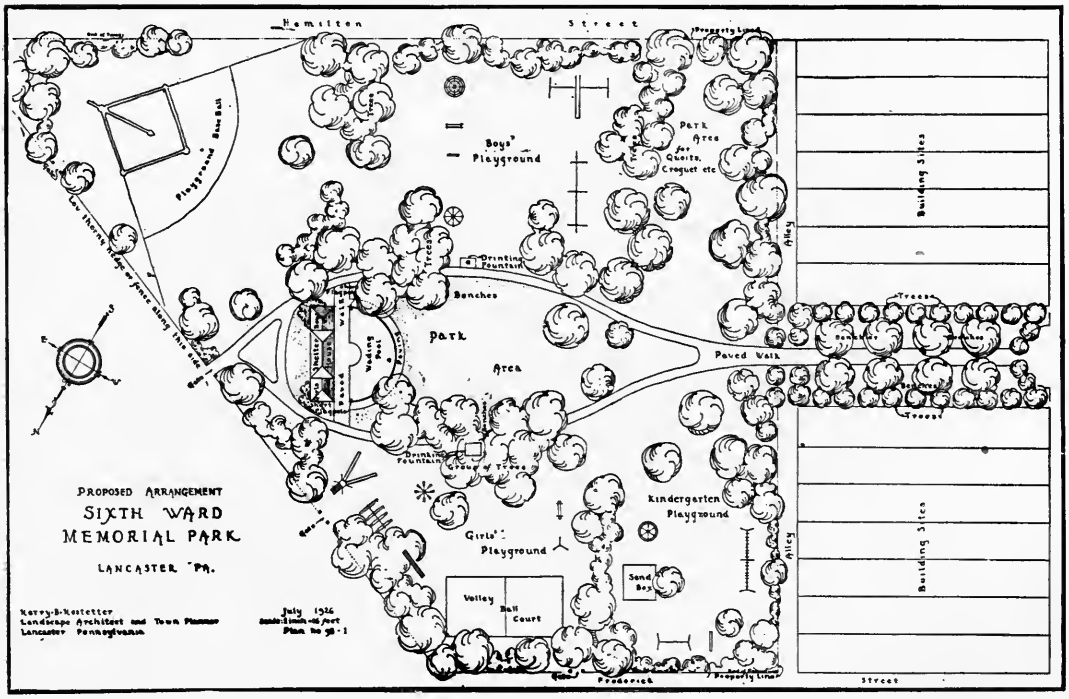


Plate No. 36

DESIGN OF THE SIXTH WARD MEMORIAL PLAYGROUND-PARK, LANCASTER, PENNSYLVANIA

This playground is apparently intended primarily for children from 4 or 5 up to 11 or 12 years of age. A distinguishing feature is a small park area dividing the kindergarten and girls' playground from the boys' playground. The extension of the paved walk in front of the shelter building into the wading pool is designed to be used as a band stand, the park area across the pool forming the auditorium. By rearranging two or three pieces of apparatus in the boys' section a space for volley ball and basket ball could be provided. It is questionable whether a merry-go-round should be included in the kindergarten playground.

and adults. As considered here the children's playground is an area designed to provide for the play needs of children from five or six to fourteen years of age inclusive.

Age Groupings. The age group comprised within the years from five or six to fourteen inclusive, by reason of psychical and physical differences naturally divides into two groups. The first group is composed of children from five or six to approximately ten or eleven years of age. This period is sometimes called the "Big Injun Age." The chief characteristics of this group are that its members desire to do individualistic stunts and to play loosely organized games in which each child has a chance to be a "star."

The second group is composed of the children from ten or eleven to fourteen. This is sometimes called the "Age of Loyalty." The desire to do stunts carries over to a considerable degree, but the chief characteristic of the play of children of this age group is to form more closely organized groups, such as teams, clubs, "gangs," and to play the more highly organized games. This group naturally divides into two groups on the basis of sex. The sexes are mutually repellent and should have separate spaces upon which to play, although there are certain kinds of running games and organized games like tennis, croquet, and volley ball where they might play together very satisfactorily.

Out of these physical and psychical differences arises the necessity for a three-division layout of children's playground areas — a space for the children from five or six to ten or eleven; a space for the older boys, and a space for the older girls. Planners very frequently place the older girls with the younger children. This is not a desirable practice although the limitation of space very often forces this situation. If the children of the "kindergarten age" and younger are permitted to use the playground a fourth division will be necessary.

Topography. The space or spaces in children's playgrounds used for games and sports of all kinds should be reasonably level. If they are not naturally level they should be made so by grading, care being taken to ensure good drainage. There is no objection to different topographical levels. Some very excellent playgrounds have been fashioned out of fairly steep slopes by grading into different levels, forming natural topographical divisions according to age and sex classification. There is no serious objection to fairly uneven tree-shaded areas where apparatus may be located. In fact a broken area topographically, provided it will allow sufficient level space for organized games and play, makes an even more attractive playground than one that is entirely flat. Broken topography often presents better opportunities from the standpoint of landscape embellishment than a perfectly flat surface.

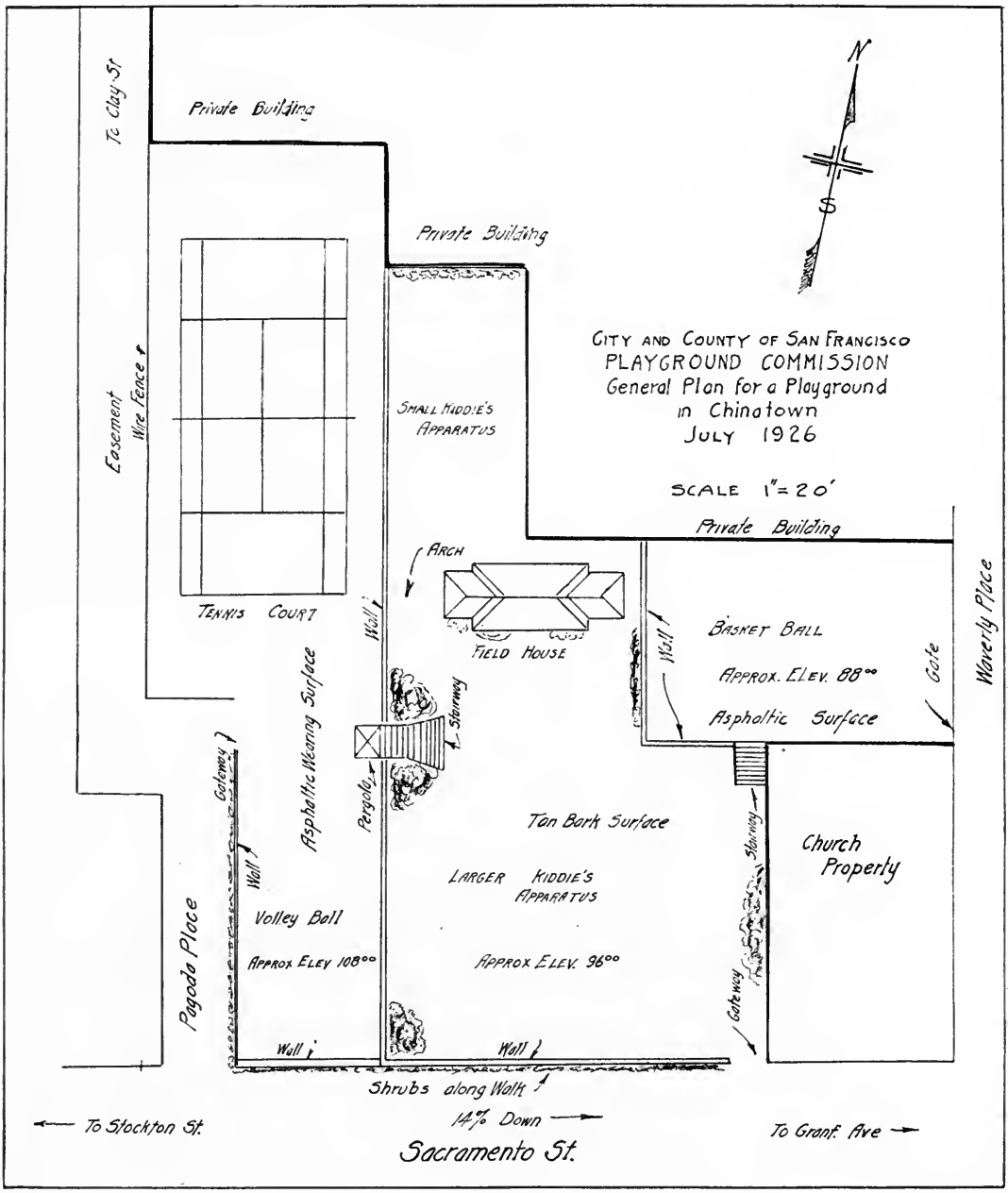


PLATE NO. 37

GENERAL PLAN FOR CHINESE PLAYGROUND, PLAYGROUND COMMISSION, SAN FRANCISCO, CALIFORNIA

This plan is a striking example of the utilization of a small uneven area (approximately half an acre) as a children's playground in a congested section of a city. Note that the playground is laid out on three different levels, with retaining walls and stairways. It provides a variety of play areas and facilities for children of different ages. The sections devoted to games are surfaced with an asphaltic material; the others with a combination of tanbark and gravel. The playground is effectively planted with vines and shrubbery and the attractive field house and pergola are strictly Oriental in design and architecture.

Surfacing. This problem is treated in the Chapter on Construction Notes, pages 302, 303.

Space Divisions.

1. *Area for children from five or six to ten or eleven years of age.*

(*a*) *Apparatus.* This may include swings, teeters, slides, climbing ropes, poles and ladders, horizontal ladders, trapeze, traveling rings, horizontal bars of varying heights, giant stride, jungle gym, merry-go-round, sand box or table and wading pool.

That apparatus is most desirable which provides an outlet for certain well-known interests of children in such activities as swinging, climbing, hanging with hands or feet combined with motion of some kind, moulding things in sand or clay or mud, and wading or paddling in water — the sort of things they would do if they were in the open country with trees and fences and hills to climb, brooks or ponds to wade and paddle in, and sand or mud to fashion things of. The basic principle back of the design of all the best pieces of playground apparatus is to provide an opportunity for the children to do the kinds of things they have done from time immemorial in a more naturalistic environment than the modern town and city provide. Some play leaders tend to minimize the importance of play apparatus. This is believed to be a mistake if carried too far because play apparatus properly selected provides for certain interests and needs of the children that are as old as childhood itself.

The basic principle to be followed in the placement of apparatus on the playground is so to place it that the largest possible open space will be left for activities that do not require apparatus. This result can usually be obtained by locating it along one or more edges or sides of the playground area. It is also advisable as a safety measure to place such apparatus as the giant stride in the corners. Moveable apparatus, such as swings, are often separated from the free play area by a low fence or railing in order to prevent children from running into it.

(*b*) *Open area.* By this is meant space for playing loosely organized games of many kinds. It should comprise by far the larger part of the playground area. While it may be bordered by trees or shrubs the actual play area should be free of plantations of any kind. There are, of course, certain well-known running games that could be played very satisfactorily in a grove.

(*c*) *Shaded area.* The interests of children are many, and they do not care to engage in activities continuously requiring a great deal of physical exertion, although an excess of physical energy is a prime characteristic of this group. They enjoy quiet games of different kinds and especially making

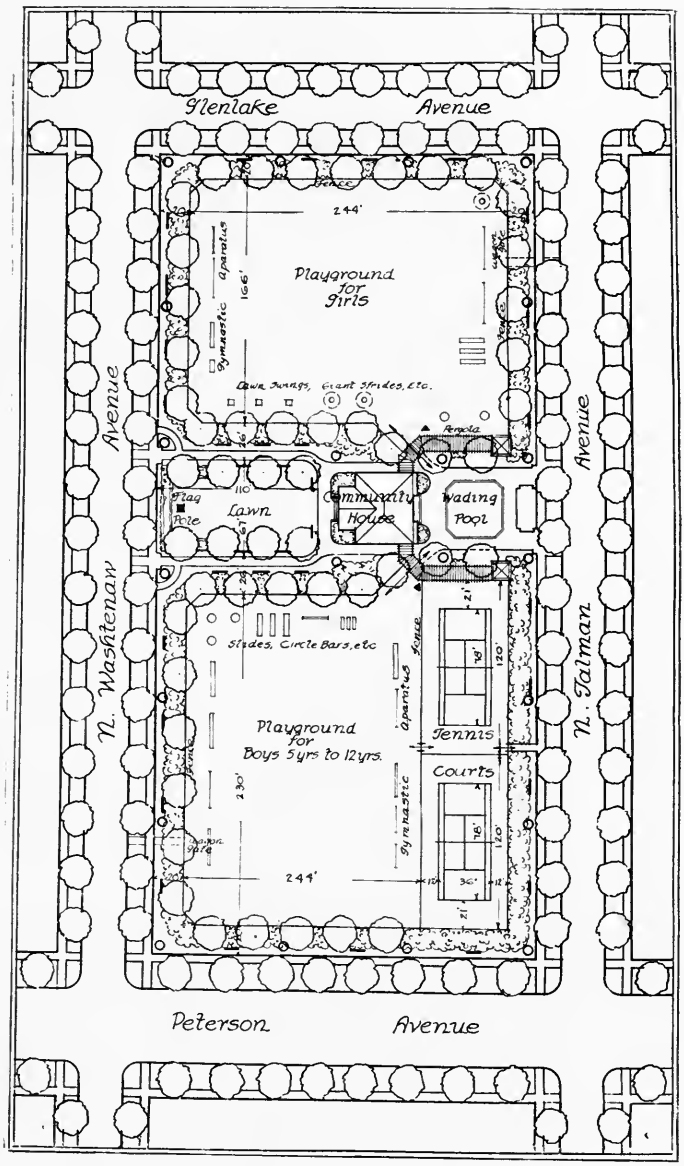


PLATE No. 38

PLAN OF GREEN BRIER PARK, RIVER PARK DISTRICT, CHICAGO, ILLINOIS

(Design by Jacob L. Crane, Jr., Chicago.)

A good design of a rectangular area of approximately three and one-third acres for use as a children's playground. Entire area screened by a border plantation approximately 10 feet wide. Play areas for boys and girls separated by plantations and by facilities which will be used in common. Apparatus is located around edges of play areas, thus reserving maximum area for active games.

It might have been desirable in the boys' area to provide for a playground ball diamond, perhaps in the southeast corner, placing the gymnastic apparatus at the north end of the area. In practice the little boys and girls generally use the same area, and not separate areas as this design appears to provide.

things with their hands. Hence, it is well to provide some shady place where quiet games can be played, handcraft activities carried on, and stories told. This area or areas might be provided in the shelter building, but a shady grove, even though a very small one, is more desirable during good weather for most of these quiet activities than the best indoor facilities. Elaborate equipment for handcraft activities should, of course, be housed. The ideal playground would have a little theatre, indoor perhaps, but preferably some tree-shaded nook where the children might express their well-known interest in dramatic representations. Closely allied with the dramatic interest are the innumerable folk games expressed in rhythmic forms. For these there should be a platform either of wood or some other hard surface, although a good turf is best of all, located in a shady place.

2. *Area for boys from ten or eleven to fourteen.*

(*a*) *Apparatus.* Boys of this age will still find delight in using some of the pieces of apparatus listed for the smaller children's area, but in general the apparatus should consist more of the outdoor gymnasium type, including horizontal bars, trapeze, and parallel rings. As in the case of the younger children's play area, all apparatus should be so placed that a maximum free space will be left for organized games.[1]

(*b*) *Space for organized games.* Special emphasis should be put on organized games and sports of many different kinds for this age group. These games will include playground ball, baseball, volley ball, basket ball of a modified type; handball, quoits or horseshoes, soccer and hockey. Space may be set aside for marbles and rings. The field sports will include running and jumping, chiefly. Swimming, of course, is a universal interest.

(*c*) *Handcraft.* Boys of this age still find delight in making things with their hands. Unfortunately, too little provision is made in the average public playground for a full and rich expression of this great constructive interest. Practically the only agency that has a great deal of equipment for the expression of this interest is the public school, but in every playground building there should be a room equipped with work benches and some simple tools where the boys can fashion things they desire to make.

3. *Area for girls from ten or eleven to fourteen.*

(*a*) *Apparatus.* The apparatus for this age group may include some of the types of apparatus as designated for the smaller children's playground such as teeters and swings, but in general the apparatus should be of the gymnastic type. A balancing beam is a valuable piece of apparatus for girls. The general principle governing the location is the same as that for the

[1] In many cities, children's playgrounds are equipped with only one set of apparatus, which is intended primarily for the use of children from six to ten years but which also serves the older boys and girls who wish to use it.

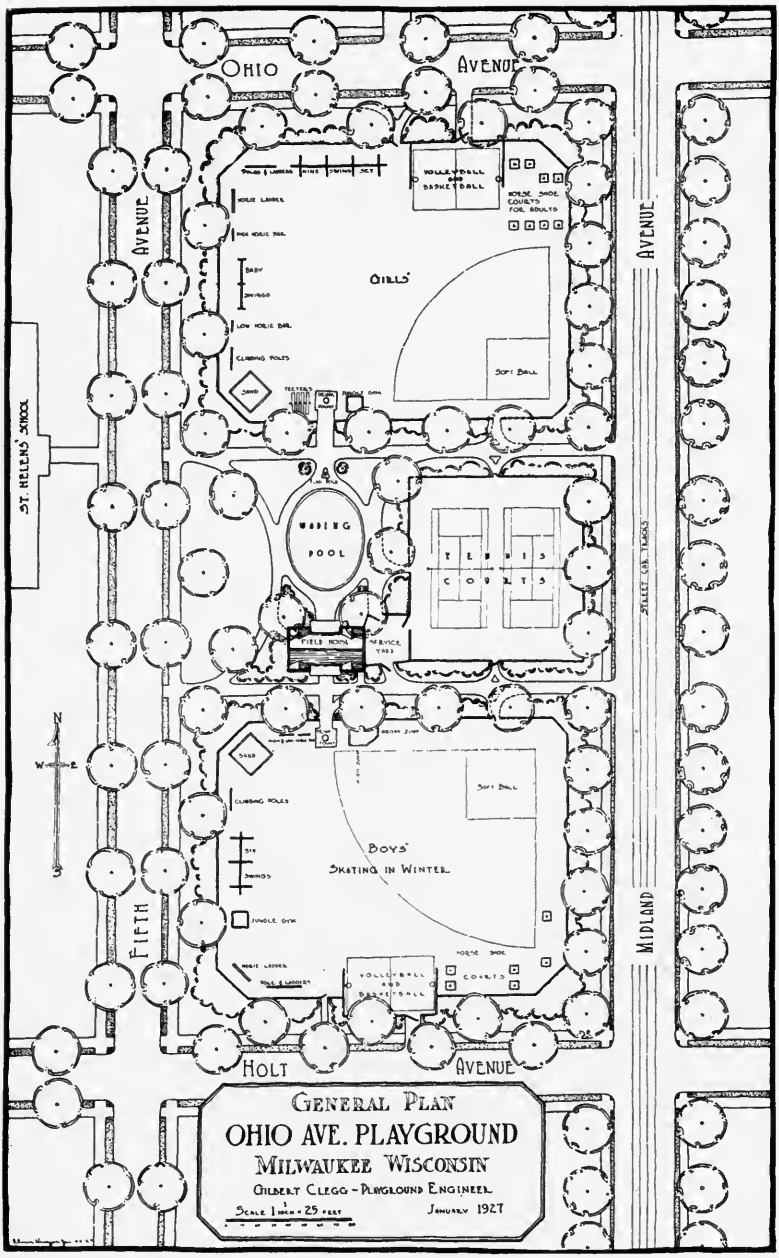


PLATE NO. 39

GENERAL PLAN OF OHIO AVENUE PLAYGROUND, EXTENSION DEPARTMENT, BOARD OF EDUCATION, MILWAUKEE, WISCONSIN

This plan illustrates the possibilities of creating a parklike effect in a school playground of nearly 3.5 acres. The boys and girls are completely separated; the two sections providing for each are separated by the facilities used in common, such as wading pool, shelter house and tennis courts. Practically the same equipment and game areas are provided in the boys' and girls' sections, each of which apparently serves children of a wide range of ages. Although this is typical of many school playgrounds, it does not provide special play areas for the various age groups referred to earlier in the chapter.

smaller children's play area. It should be so placed that the maximum area be left for organized games of different kinds.

(*b*) *Space for organized games.*[1] As in the case of the boys, special emphasis should be placed upon organized games including a modified form of playground ball, basket ball and hockey; volley ball, tether ball, hand and paddle tennis, croquet and many other types of ball games that might be mentioned. Areas should be provided for running games of different kinds aside from ball games, and for some forms of track and field sports.

(*c*) *Shaded area.* This should be provided for handcraft activities and quiet games, story telling and folk dancing. For the latter a platform of wood is desirable, although this form of activity may be carried on indoors if there is a shelter or community house with the necessary floor space. In fact, all these activities could be carried on indoors, but whenever possible it is desirable to have all activities outdoors.

4. *Little children's playground area.*

If a little children's playground is included in the area for the children's playground a fourth space requirement will have to be met, and the layout and equipment of it will correspond to that already stated under the section on the little children's playground.

5. *Miscellaneous space requirements.*

There are certain facilities that may be used in common by all the children coming to the playground and areas that may be considered common space. Among these facilities and areas are:

(*a*) *Tennis court or courts.* It may be possible and sometimes desirable to have a tennis court or courts for both the older boys' and girls' play spaces, but in general if they be included in a children's playground at all, it is more economical to construct such courts in a group unit to be used in common by both boys and girls. They might be located on the dividing line between the older boys' and girls' play spaces or, if the total area is large enough as in a combined playground and neighborhood park, in some other part of the area.

(*b*) *Area for the building with a frontal planting space and with perhaps some space for planting about it.* This structure should be so located that it will be readily accessible from all the different space divisions and will conserve the maximum space for play purposes. It is the focal point for management, shelter and service facilities. It may be any type of building from a simple combined shelter and comfort station, including perhaps

[1] Because of limited space in many playgrounds, there is only one open play area for the use of both boys and girls. On such playgrounds the program should be so arranged that the use of the play area is divided between the two sexes.

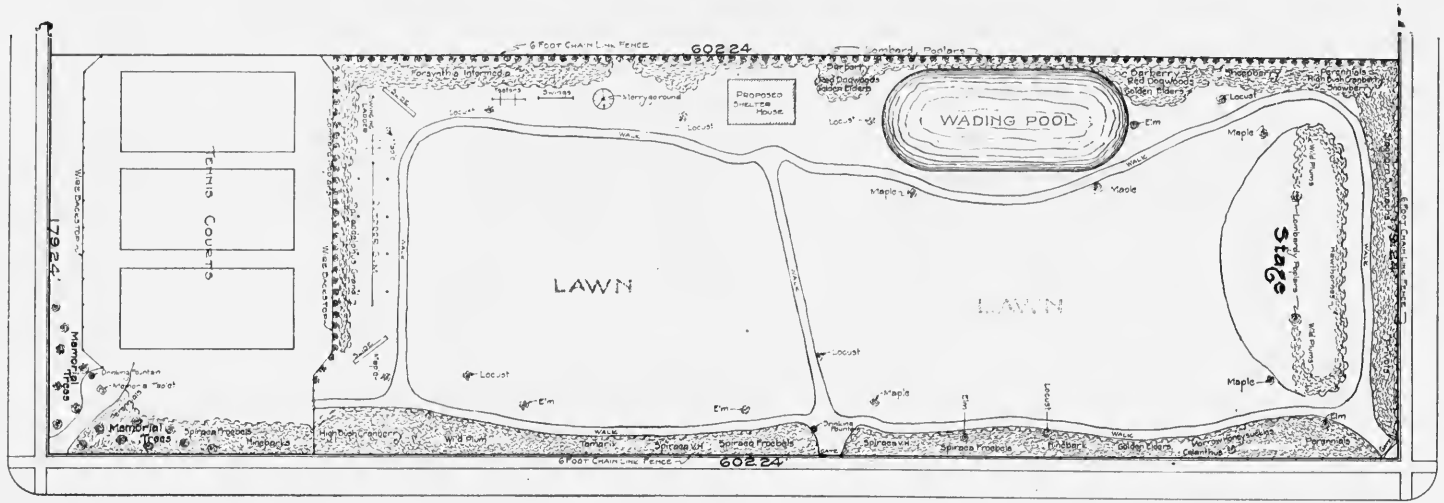


PLATE No. 40. EUGENE FIELD PLAYGROUND, PLAYGROUND BOARD, OAK PARK, ILLINOIS

The features of this plan are the grouping of apparatus in a place where it occupies little space, large open lawn areas for games, a small outdoor theatre and admirable beautification design. The design of this playground is very informal as compared with that of some of the other areas shown in this chapter.

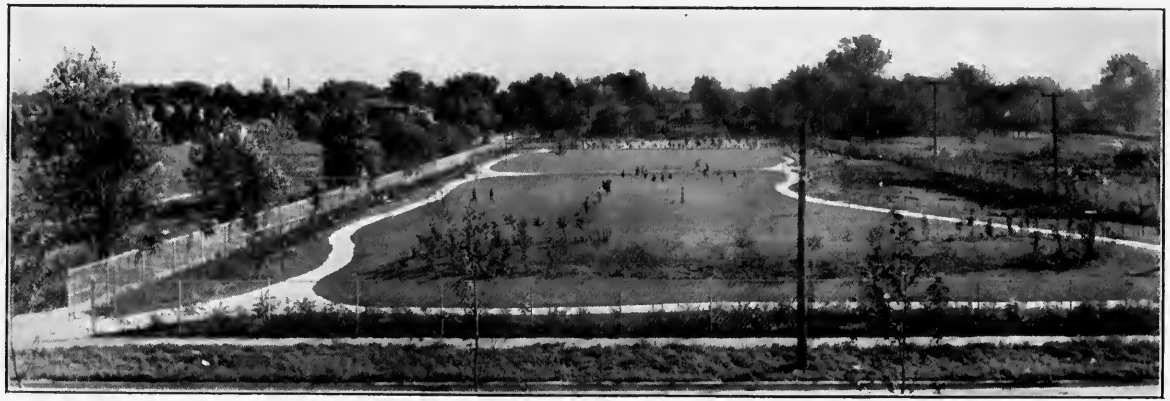


PLATE No. 41. EUGENE FIELD PLAYGROUND, OAK PARK, ILLINOIS

This photograph was taken at the end of the first season after development was begun. The wading pool and theatre have not yet been constructed. This gives promise of becoming a very beautiful playground.

an office for the leaders and a small storage room, to a structure including all the features of a building of the community house type, such as a gymnasium, play room and auditorium, club rooms, workshop, toilets, lockers, shower baths, office, storage room, etc. (See Plate 191, page 393; Plate 194, page 396.)

If the playground is a school site the school building might provide all the facilities pertaining to the simple type of structure mentioned above, and if the schoolhouse is a thoroughly modern building it would provide all the indoor facilities of the community house type of structure. In some large cities where school grounds are widely used for public play and recreation purposes, it has been found desirable to erect a separate building for playground purposes on the basis that it is cheaper to erect and operate such a structure than to keep open the larger building. There appears to be no fundamental reason, however, why in the average community a school building cannot provide the necessary facilities for indoor activities and needs of the children on the school playground.

(*c*) *Wading or swimming pools.* Every playground should have a wading pool, even though a small one. It will serve primarily the children from six to ten and may be located either in the section set aside for this group or in a space accessible to all three age divisions. If the playground is located in a neighborhood playfield or large park it may not be necessary to provide a swimming pool. In a number of cities where other swimming facilities are lacking, small swimming pools, approximately 25 x 50 feet, have been provided in the children's playgrounds. These pools may also be used as wading pools by partially filling them during certain periods. If possible they should be located in close proximity to the playground building (otherwise simple dressing facilities should be provided). (See pages 353-359.)

(*d*) *Fence and plantation space.* The entire playground should be fenced with a strong woven wire or iron picket fence. The fence serves to aid in the management of the playground, protects apparatus and plantations around border, and gives the playground area a distinct identity. Anyone who has had experience in trying to organize and conduct activities or enforce discipline on a playground where the children could run out or enter at any point they desired, or who has the care of unprotected equipment, readily appreciates the absolute value of an adequate fence about a playground.

The fence, if the space is large enough, should be set far enough in from the outer border to allow an ample planting space entirely around the playground. Next to the fence on the outside, vines or tall growing shrubs should be set, with lower growing ones toward the outer boundary. This

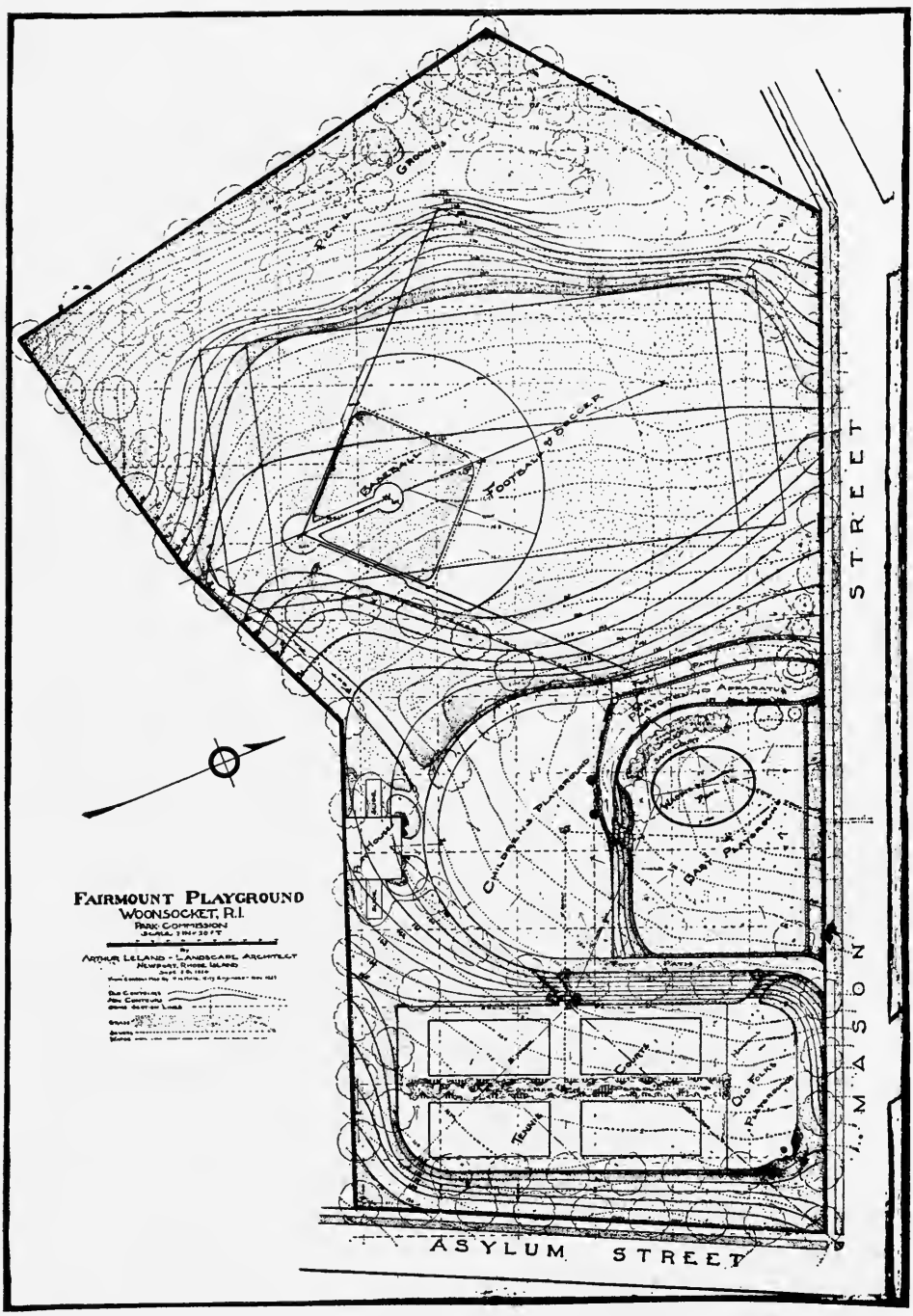


PLATE No. 42. DESIGN FOR FAIRMOUNT PLAYGROUND, WOONSOCKET, RHODE ISLAND

This is an unusual design for a very uneven property of five acres. The comparatively level areas are utilized for games and sports, and the slopes for paths and plantations. Note the grouping of the playground apparatus, and the slides from the roof of the shelter house. These can be used for coasting in the winter. Special provision has been made for all ages from babies to old folks, so this area has some of the features of a neighborhood playfield.

plantation should be of such density that when the vines or shrubs attain their full growth the playground will be effectively screened off from the outer world. If the area is so small as to require the placing of the fence on the property line in order to conserve space, vines of different kinds may be planted along it for a screen and adornment. It is desirable to have a row or two of trees entirely around the playground, either inside or outside the fence, and there should be trees in those sections of the various divisional spaces where the apparatus is located. Wherever possible, patches of lawn and flower beds should be planted in odd spaces. If space permits, a grove, serving somewhat as a neighborhood park, is a very desirable feature in connection with every children's playground.

It would add very much to the attractiveness of the playground if each divisional space were fenced off from the others and a narrow strip of shrubbery planted along each fence. In this case an auxiliary but less strong fence or a railing might be necessary for the protection of the shrubbery.

Miscellaneous Equipment.

1. *Drinking fountains.* An abundance of pure, cool water is an absolute essential on every playground. There should be at least one drinking fountain on each space division of the children's playground.

2. *Flagpoles.* One or more flagpoles should be provided. These may be placed near the entrance in front of the shelter or at some focal point on the playground.

3. *Lighting.* The most delightful time for play in practically all sections of the country is during the hours after the evening meal. This is generally a period of great activity among the children and the time when they are most likely to get into mischief unless there are proper places for the expression of their energies. In some sections of the country many of the daylight hours are too hot for successful play. For these reasons it is highly desirable that children's playgrounds be lighted for evening use, unless, as in the extreme north country, darkness does not set in until time for the children to go to bed. But even in those sections having long evenings of daylight or twilight, there is an hour or more after the children should be in bed that these playground areas could be used by young people and adults. Lights are essential to provide for this wider use.

Space Needed for Given Types of Activities.

In an article entitled "Play Space for Elementary School Children,"[1] Prof. George E. Johnson prefaces his conclusions as to the minimum standards of play space needs of primary school children by a discussion of "Plays and Games that Every Boy and Girl Should Know," to the end

[1] *The Playground*, October 1926.

that certain developmental results may be secured in the lives of the children. A summary of his discussion is presented here not only for the reason that it gives a philosophical-educational background for the kinds of provision that should be made for the children of the primary group on the playgrounds, but also because it leads up to a statement as to the amount of space required for games of different types. Most of his discussion is applicable to the needs of the older children (ten or eleven to fourteen) also. The plays and games every boy and girl should know include:

1. Plays and games that conserve the essential biological and physi-

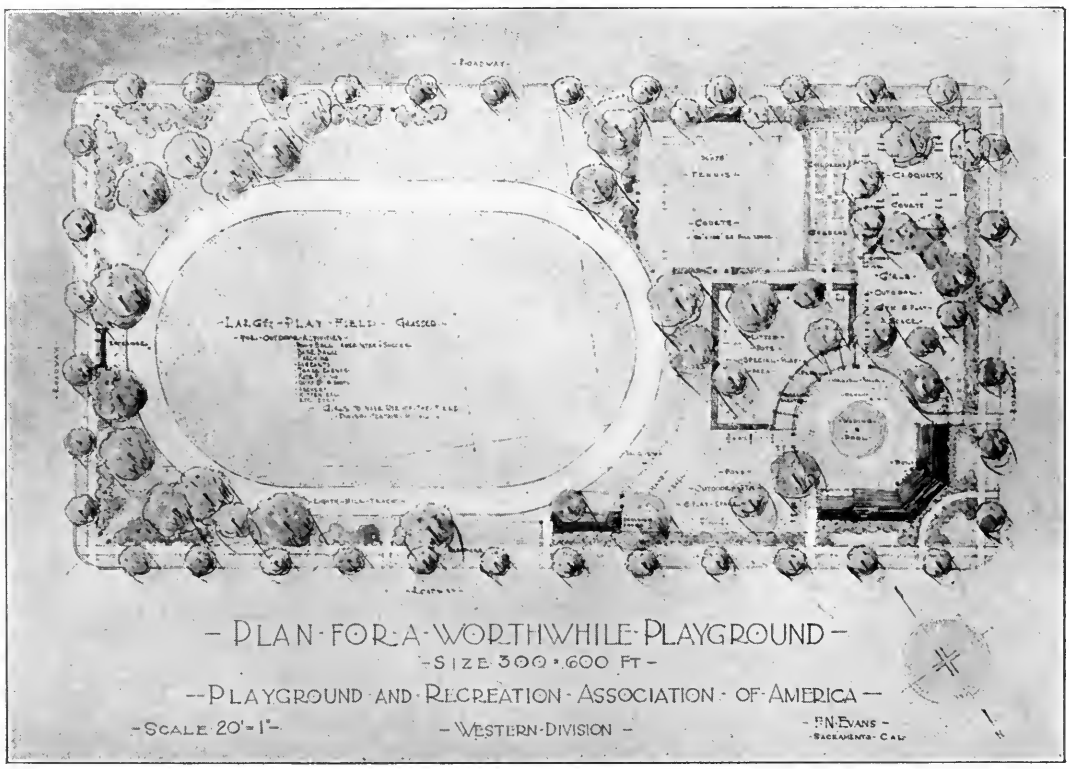


PLATE NO. 43

PLAN FOR A WORTHWHILE PLAYGROUND 300 BY 600 FEET
WESTERN DIVISION, P. R. A. A.
Designed by F. N. Evans, Sacramento, California.

This plan illustrates one method of designing a rectangular area of approximately four acres intended primarily to provide activities for children up to fourteen or fifteen years of age. The main features of the design are: A playground clubhouse, triangular in shape and located in the corner where it will occupy the least possible space; a large wading pool so located that it can be used freely by the children from all the play areas; boys' and girls' gym and minor games area; a pergola and little children's playground; two croquet courts, children's gardens and two tennis courts. More than half the entire area is devoted to an open space for major games and sports. This field and some of the other facilities in the playground might be used by adults. The entire area is admirably screened by border plantations, and there is ample shade on all the playing areas where this is possible and desirable. Unless there is a special reason for including a running track, it might better be omitted from a playground of this type, since it interferes with the most effective use of the playfield area. A 100-yard straightaway along one side of the field would be very desirable. The area along the fence near the tennis courts might be used for volley ball, horseshoes and similar activities.

ological growth of children such as good posture, depth of chest, strength of heart, active circulation, and good digestion. Plays and games recommended to accomplish these results involve walking in difficult places; digging, lifting and hauling; running, throwing, striking, swinging, hanging by the arms; running, dodging and chasing; swimming, playful fighting and wrestling. Good health and sound physical growth are the ends and aims of these plays and games.

2. Plays and games that tend to make the body the perfect organ of feeling, thinking and execution even under the stress of great excitement. Plays and games recommended involve activities tending to complete integration of mind and body and include all the innumerable games of skill beginning perhaps with the game of hopscotch, jumping rope, hoop rolling, bean bag board, ring toss, the simple games of ball, tip cat, top spinning, jackstones, marbles, and concluding with the more complicated games of ball.

3. Plays and games that develop the individualistic virtues. Plays and games recommended involve activities tending toward development of courage, self-respect, admiration for skill, desire for efficiency, persistence, sense of justice, love of fair play, sympathy and sociability. Games recommended as developing sociability are the traditional singing games, folk plays and dances; as developing sympathy, games of impersonation or dramatic plays, and games where the players alternate in having the desirable and undesirable parts; as contributing to the development of the sense of justice and fair play, all games that are or must be played according to rules.

4. Plays and games that tend toward a higher expression of the individual in social relationships and for social ends. Games recommended are group games involving not only an expression of the individualistic qualities mentioned under the preceding paragraph, but their expression under a higher order of social organization. Some of such games are dodge ball, volley ball, captain ball, basket ball, baseball, hockey, and football for boys; and, for girls, such of these games as have been modified for their use.

All the plays and games specifically mentioned above, *except modified ball games*, require, on the average, not more than forty square feet per child. The traditional games of skill, too commonly neglected (marbles, hopscotch, jackstones, tops, jump rope, etc.), require even less space.

Space Requirements for Apparatus on Children's Playgrounds. In the following table are given the dimensions and approximate use areas of several types of apparatus frequently installed on children's playgrounds. Since the types of equipment made by the various manufacturers differ somewhat, the dimensions and areas given are merely suggestive. Further-

more, it is not likely that all of the apparatus listed will be found on a single playground. It is desirable to provide the safety zones around all apparatus, especially that which is moveable.

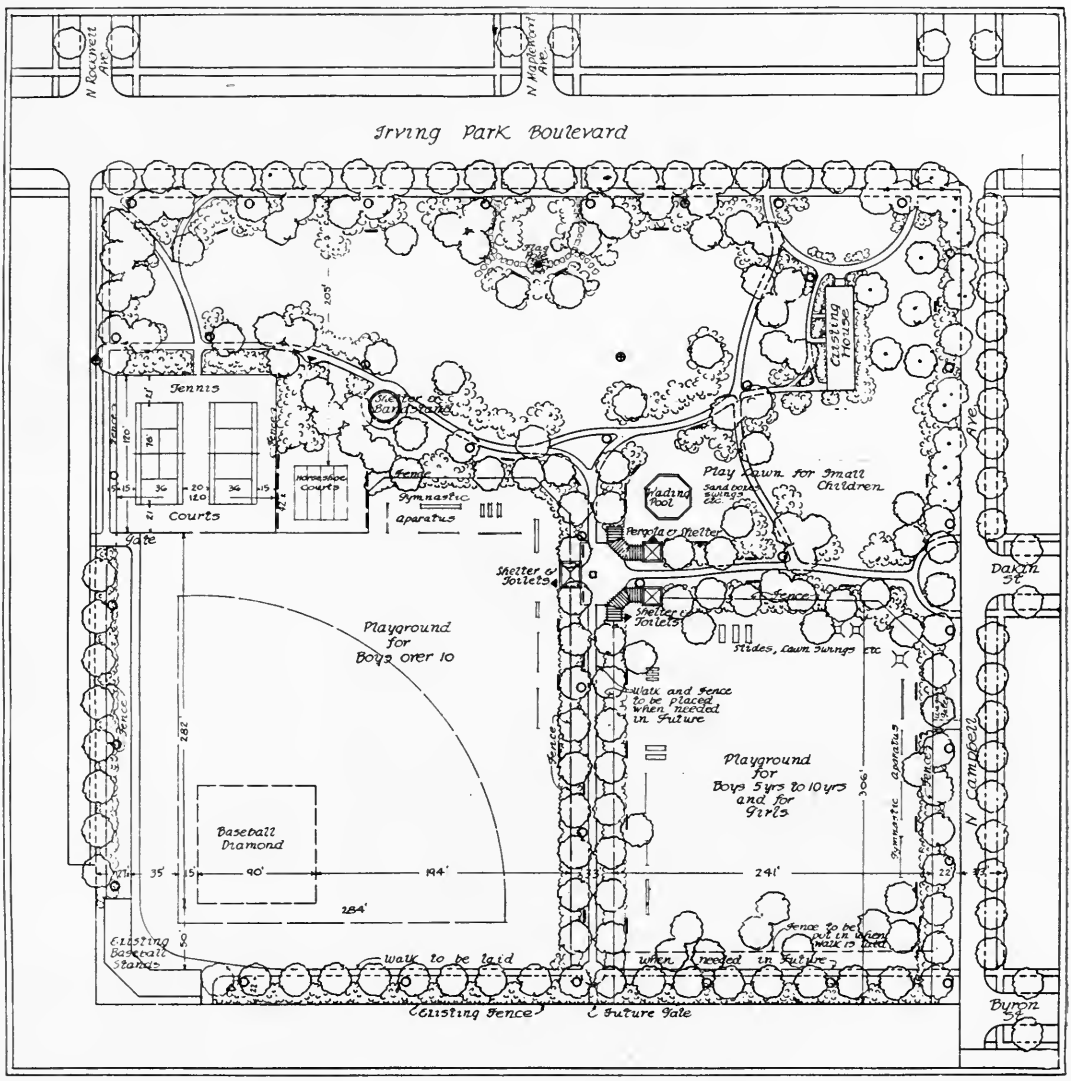


PLATE NO. 44

PLAN OF PAUL REVERE PARK, RIVER PARK DISTRICT, CHICAGO, ILLINOIS

An area of approximately 9.25 acres designed as a children's playground and neighborhood park. The three-part division of play areas in this design is frequently used in children's playgrounds. The general arrangement of the various facilities and the location of equipment are excellent. This area is adopted for evening use as a play center by young people and adults. Plan designed by Jacob L. Crane, Jr., Chicago.

Type of Apparatus	*Dimensions of Apparatus*		*Approximate Use Space Requirements*	*Space in Square Feet*
	Length	*Height*		
Circular Traveling Rings	10 feet diameter	12 feet	25 feet diameter	490
Gang Slide	16 feet	8 feet	20 x 45 feet	900
Giant Stride		12 feet	32 feet diameter	804
Horizontal Bar	6 feet	8 feet upright	12 x 20 feet	240
Horizontal Ladder	16 feet	7½ feet	8 x 24 feet	192
Merry-go-round	10 feet diameter		30 feet diameter	707
	Size and shape varies			
Sand Box or Table	6 x 10 feet to 10 x 20 feet		12 x 16 feet to 16 x 30 feet	
Slide	16 feet	8 feet	12 x 30 feet	360
Slide-Spiral	35 feet	18 feet	25 x 35 feet	875
Swings (set of 3)	15 feet at top	12 feet	30 x 35 feet	1050
Swings (set of 6)	30 feet at top	12 feet	30 x 50 feet	1500
Teeters (set of 4)	12–15 feet x 2½ feet		20 x 20 feet	400
Traveling Rings (set of 6)	40 feet at top	14 feet	20 x 60 feet	1200

The Junglegym and other outdoor gymnasium outfits are manufactured in several sizes and combinations which occupy widely different areas. It is advisable to have all such equipment placed at least 15 feet from the nearest fence, building or other apparatus. The wading pool may be any desired size or shape, although it is usually rectangular or circular. The circular pools generally have a diameter of from 40 to 75 feet. The platform for dancing may be of any desired dimension. An average size would be 20 by 30 feet to 30 by 40 feet. According to a number of authorities from 40 to 50 square feet per child is the amount of space which should be provided for apparatus play.

Space Requirements for Organized Games and Sports on Children's Playgrounds.[1] The following table gives the approximate space requirements for a number of games and sports played on children's playgrounds. The space required for a number of these games is variable, and smaller areas may be used for soccer, field hockey, football and some of the other sports. If the game areas in the children's playground are to be used by adults during certain periods it would be advisable to set aside the amount of space given in the table on pages 133 and 134.

Name	*Dimensions of Play Areas*	*Use Dimensions*	*Space Required Square Feet*	*Number of Players*
Baseball	75 foot diamond	250 x 250 feet	62,500	18
Basket Ball	35 x 60 feet	50 x 75 feet	3,750	10–12
Clock Golf	Circle 20–24 feet in diameter	30 foot circle	706	Any number (4–8)
Croquet	30 x 60 feet	30 x 60 feet	1,800	Any number (4–8)
Field Hockey	150 x 270 feet	150 x 270 feet	40,500	22
Football	160 x 360 feet	180 x 360 feet	64,800	22
Hand Ball	20 x 30 feet	30 x 40 feet	1,200	2 or 4
Horseshoe Pitching	Stakes 30 feet apart	10 x 40 feet	400	2 or 4
Paddle Tennis	18 x 39 feet	26 x 57 feet	1,482	2 or 4
Playground Ball	35 x 45 foot diamond	120 x 120 feet	14,400	20
Soccer	150 x 300 feet (min.)	150 x 300 feet	45,000	22
Tennis	27 x 78 feet (single) 36 x 78 feet (double)	60 x 120 feet	7,200	2–4
Tether Tennis	Circle 6 feet in diameter	20 x 20 feet	400	2
Volley Ball	25 x 50 feet	35 x 60 feet	2,100	12–16

[1] Detailed direction for laying out these courts will be found in "Construction Notes," Chapter V, pages 316 to 335.

Design of Children's Playgrounds.

In this chapter appear a number of plans illustrating various methods of developing children's playgrounds. These include Sixth Ward Memorial Park, Lancaster, Pennsylvania (p. 116), Chinese Playground, San Francisco (p. 118), Green Brier Park, River Park District, Chicago (p. 120), Ohio Avenue Playground, Milwaukee (p. 122), Eugene Field Playground, Oak Park, Illinois (p. 124), Fairmount Playground, Woonsocket, Rhode Island (p. 126), Plan for a Worthwhile Playground, Sacramento (p. 128), Paul Revere Park, River Park District, Chicago (p. 130), and Auer Avenue Playground, Milwaukee (p. 132). They are accompanied by brief com-

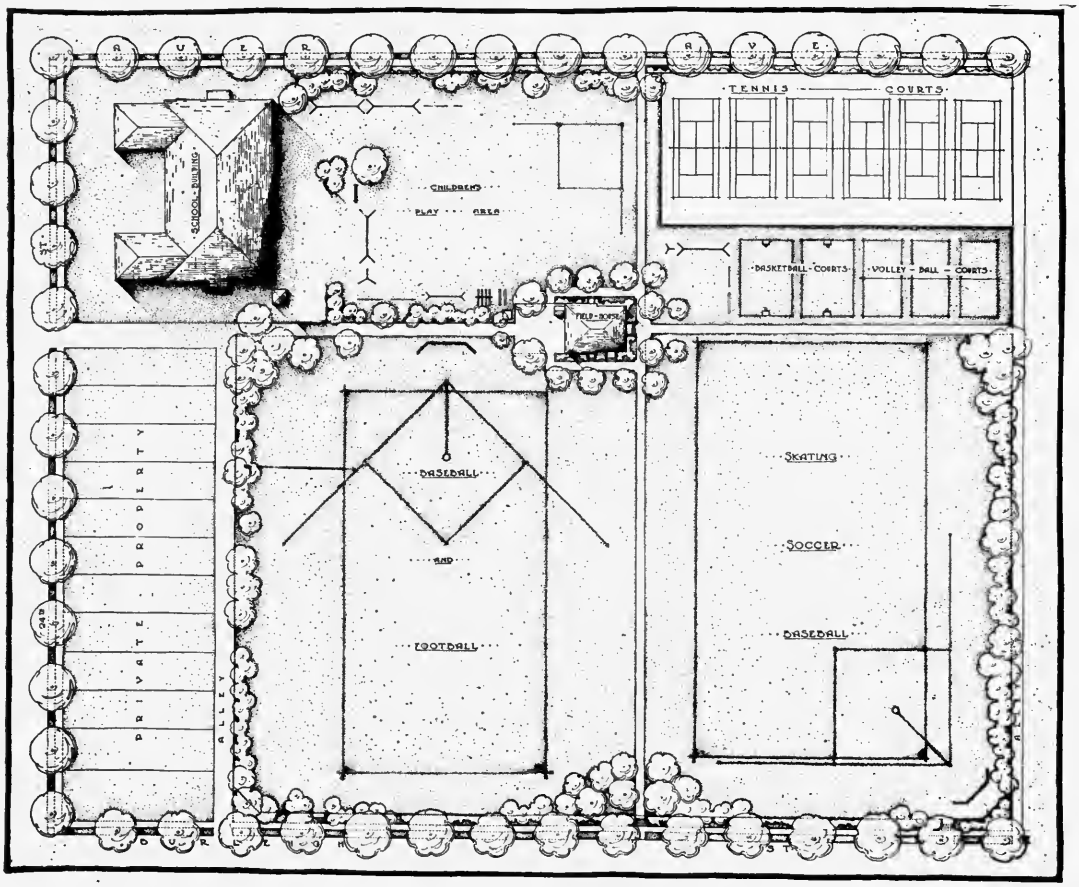


PLATE NO. 45

THE DEVELOPMENT PLAN OF THE AUER AVENUE PLAYGROUND
MILWAUKEE, WISCONSIN

This plan illustrates the present tendency to group most of the apparatus in the section set aside for the younger children (six to ten years) and to utilize most of the playground area for organized games. Note that separate sports fields are provided for the older boys and older girls, although the tennis, basket ball and volley ball courts are used jointly. A small field house is erected on the Milwaukee playgrounds, even though adjacent to school buildings. (The barracks shown on this plan have been removed.) For photograph and plan of the field house see pages 397 and 398. The total area of this property including that on which school is built is approximately 8¾ acres.

ments upon the general arrangement of our special features of the individual plans. Some criticisms are also given. It is possible that some of these criticisms may not be entirely justified because the design may be the most effective one possible under the peculiar local conditions for which it was made. It is believed, however, that comments and criticisms offered may be helpful in considering these designs in the typical situation or under average conditions.

Neighborhood Playfield-Parks

While people fifteen years of age and over will play some of the organized games noted as suitable for children on children's playgrounds, other games and sports belonging peculiarly to young people and adults require a great deal more space than the play activities of the children. Not only is more space demanded for specific activities but the population to be served in the general age group fifteen and above is much greater than the child population. Moreover, the games and sports of the young people and adults are, for the most part, highly organized and specialized with a limited number of players engaged at one time. If large numbers are to have a chance to play, greater spaces are needed.

The following table of the principal games and sports engaged in by young people and adults gives the dimensions of the play areas and the estimated amount of space required for the various games. It will be noted that in the case of some games like tennis, considerable space must be left free around the court, whereas other games such as croquet and roque require very little if any space beyond the borders of the playing court. Some of the dimensions given, especially for use areas, are merely approximate, and greater or less space may be provided depending upon local conditions.

Space Requirements for Organized Games and Sports.

Name	*Dimensions of Play Areas*	*Use Dimensions*	*Space Required Square Feet*	*Number of Players*
Baseball	90-foot diamond	300 x 325 feet	97,500	18
Basket Ball	50 x 94 feet (max.) 35 x 60 feet (min.)	60 x 100 feet	6,000	10
Basket Ball (women's)	45 x 90 feet	50 x 100 feet	5,000	12–18
Bowling Green[1]	14 x 110 feet (1 alley)	120 x 120 feet	14,400	32–64
Clock Golf	Circle 20–24 feet diam.	30-foot circle	706	Any number (4–8)
Croquet	30 x 60 feet	30 x 60 feet	1,800	Any number (4–8)
Field Hockey	150 x 270 feet (min.) 180 x 300 feet (max.)	180 x 300 feet	54,400	22
Football	160 x 360 feet	180 x 360 feet	64,800	22
Hand Ball	20 x 30 feet	30 x 40 feet	1,200	2 or 4
Hand Tennis	16 x 40 feet	25 x 50 feet	1,250	2 or 4
Horseshoe Pitching	Stakes 40 feet apart	10 x 50 feet	500	2 or 4
LaCrosse	210 x 390 feet (min.) 255 x 435 feet (max.)	225 x 410 feet (average)	92,250	24

[1] Most bowling greens in public recreation areas are 120 x 120 feet providing for eight alleys. The amount of space required for a single alley would be 20 x 120 feet.

Space Requirements for Organized Games and Sports (Continued).

Name	*Dimensions of Play Areas*	*Use Dimensions*	*Space Required Square Feet*	*Number of Players*
Paddle Tennis	18 x 39 feet	26 x 57 feet	1,482	2 or 4
Playground Ball	35 x 45-foot diamond	150 x 150 feet	22,500	20
Polo	600 x 960 feet	600 x 960 feet	576,000	8
Quoits	Stakes 54 feet apart	25 x 80 feet	2,000	2 or 4
Roque	30 x 60 feet	30 x 60 feet	1,800	4
Shuffle Board	10 x 40 to 50 feet	15 x 50 feet	750	2 or 4
Soccer	150 x 300 feet (min.) 300 x 390 feet (max.)	210 x 330 feet (average)	69,300	22
Tennis	27 x 78 feet (single)			2
	36 x 78 feet (double)	60 x 120 feet	7,200	4
Tether Tennis	Circle 6 feet diam.	20 x 20 feet	400	2
Volley Ball	30 x 60 feet	40 x 80 feet	3,200	12–16

Track and Field. A one-quarter track laid out in an oval with 330-foot sides and a radius of approximately 105½ feet will enclose approximately 2.3 acres measuring from inner border of the track. A one-half mile track with 660-foot sides and a radius of 210.0841 feet will enclose approximately 9.5 acres. Spaces for various field sports may be laid out within the oval of the running track.

Swimming Pool. Artificial pools may be of any size or shape. Some pools operated by park and recreation systems have as much as three acres of water surface. Such a pool would accommodate considerably over four thousand bathers at one time, allowing thirty square feet per bather. Fifty by one hundred and fifty feet are the dimensions frequently used for outdoor pools. (For a discussion of swimming pool construction with photographs and plans, see "Construction Notes," Chapter V, pages 358 to 374.)

The Layout of Neighborhood Playfields.

A properly planned neighborhood playfield will have approximately five distinct sections or areas in the layout. They would be as follows:

1. *Children's Playground*, the layout of which should follow the plans as outlined in the section in this chapter on children's playground.

2. *Girls' and Women's Play and Athletic Field.*[1] This should be divided into two sections — a very small area devoted to various kinds of outdoor gymnastic apparatus and a platform 30 x 40 feet for dancing; a major area devoted to game facilities like volley ball, basket ball, tennis and croquet, and a free area devoted to playground ball diamonds and a hockey field. There should also be a short running track and jumping pits.

3. *Boys' and Men's Play and Athletic Field.* This should be divided into two sections, a very small area devoted to various kinds of outdoor gymnastic apparatus, and a major area devoted to game facilities like volley ball, basket ball, playground ball, handball, tennis courts, baseball

[1] As a rule in the case of tennis courts and some other game areas, only one set of facilities is provided used in common by both sexes.

diamond or diamonds, and an area which may be used for football, soccer, and in the winter for skating. There should be a running track, four laps to the mile if possible, enclosing the field used for football and soccer. In this field provision should be made for facilities for the regular field events.

4. *Area for Location of a Community House or Field House.* The distinction between a community house and a field house in this book has already been noted (page 45). The area necessary for either of these structures will depend, of course, on the size of the building. Either of these buildings should be set back from one side of the playfield ten, twenty or forty feet, depending on the size of the field, so as to give a proper setting, and should be so located that it will be readily accessible from all the divisions of the playfield. Sometimes a proper setting would be on the line marking the division between the boys' and men's athletic and games area and the areas devoted to the athletic and games field for the women and girls and the children's playground.

The interior arrangements possible in community houses and field houses are discussed in the Chapter on "Construction Notes" (pages 397-399).

The site for the swimming pool should as a general rule be a part of the area set aside for the community or field house. If not an integral part of the layout of this area, whereby the baths, lockers, and dressing rooms are located within the community house or the field house, it should at least be within the area set aside for structures, that is, within fairly close proximity to the community house or the field house.

Wherever the site of a junior high school or a senior high school is large enough to serve the purposes of a neighborhood playfield these buildings, especially if they are modern, will possibly provide all the essential facilities of a community house and a field house. There are instances where modern grade schools have both sites large enough and indoor facilities ample enough to serve as well equipped playfield centers.

5. *Parked or Landscaped Area or Areas.* A definite area should be set aside in all playfields of ten acres or more for the development as a small neighborhood park. This should be equipped with benches, tables, band stand and drinking fountain or fountains. It may be possible so to construct the band stand that it may be used for a small outdoor theatre. Not infrequently, areas of the neighborhood playfield type may naturally possess a wooded area, and often the topography is such that a natural outdoor theatre is possible. In the selection of areas for playfields it is desirable to secure properties that already possess a combination of natural landscape and open fields. It may seem incongruous to suggest a neighborhood park as a part of a neighborhood playfield because the purposes of such a park are so distinct from the purposes of a playfield, but many people secure

great enjoyment from watching the children and young people play and gain rest and relaxation at the same time. The main idea, however, in suggesting this is that people of all ages prefer to play and take their recreation amidst surroundings that are naturally beautiful, and where they can comfortably rest and relax after vigorous exercise. There is no particular reason why the very little children's playground should not be located in the parked area and the apparatus for the children's playground located in the edge of it adjacent to their open space for play.

The space in front of the building should be landscaped and shrubbery planted wherever possible about other sides of the building. It is desirable that the entire area be planted with a border of trees and shrubbery, the width of which depends on the size of the playfield. Single or double rows of trees along the lines marking the various space divisions of the active recreation areas add greatly to the attractiveness of the entire playfield. In general all spaces not definitely used for active organized play and recreation should be landscaped in some simple fashion.

Examples of Suggested Divisions of Playfield Areas of Different Sizes.

No definite rule can be made for the proportion of a playfield which should be allotted to each of the five suggested divisions. It is practically impossible to provide all five areas on a site of less than ten acres. A reasonable ratio between the three areas used for active recreation might be to have the area for young men and boys equal that allotted to both the children's and the women's areas. Naturally the area for buildings will be comparatively constant, regardless of the total area of the playfield. The proportion given over to park areas will usually be increasingly greater, the larger the total playfield area.

The following division of a seven-acre playfield has been suggested by Arthur A. Shurtleff, Landscape Architect for the Boston Park Department.[1] It will be noted that no provision is made in this division for the older girls and women except for tennis. Two full-size ball diamonds are listed under the men's section, although the outfields will overlap excessively if only three acres are allowed for them.

Playfield of seven acres.

a. Space for two full size ball diamonds, which space can also be used for a regulation football field with room for a locker building and bleachers, about	3 acres
b. Space for children's playground with trees, swing shelter and play area large enough for basket ball	1½ acres
c. Add to (*a*) or (*b*) space for two tennis courts in districts where patrons of the games are to be found, about	½ acre
d. Park space separated from the playground spaces, and containing trees, shrubbery, small lawns, foot paths, and space for many outdoor seats, about	2 acres

[1] Report of Future Parks, Playgrounds and Parkways, Boston, November 1925, page 35.

Suggestions for space divisions in areas of larger size follow:

Playfield of ten acres.

a. Space for children's playground, about	2 acres
b. Space for women's and girls' athletic field, about	2 acres
c. Space for men's and boys' athletic field, about	4 acres
d. Space for small park, about	1 acre
e. Space for community house, swimming pool, and additional parking, about	1 acres

Playfield of twenty acres.

a. For children's playground, about	3 acres
b. For women's and girls' athletic field, about	4 acres
c. For men's and boys' athletic field, about	6 acres
d. For park and parking, about	6 acres
e. For site for community house and swimming pool and grounds adjacent, about	1 acre

Some General Considerations Relative to Layout of Playfield Areas.

1. *Pleasure Driveways.* Pleasure driveways should never be permitted in neighborhood playfield areas, no matter how large those areas may be. Only such service driveways as are absolutely essential to maintenance and operation of the playfield should be introduced into the design.

2. *Fencing.* In congested residential sections of cities, playfield areas will generally have a minimum acreage, that is, they will rarely ever be over ten acres, and very few will be as large. In such situations it is highly desirable that the total area be fenced with a strong woven wire or iron picket fence at least seven feet high. This is for the purpose of better disciplinary control, protection of apparatus, structures, and border plantations. For purposes of better organization control and to give more exclusiveness to girls, women and children, it is desirable that fences separate the various space divisions of the playfield area. If plantations are used as borders between various space divisions the fences will also serve as a measure of protection.

In residential districts composed chiefly of one-family houses it is not so important to introduce a border fence into the design, although if the area is comparatively small it is desirable to have it fenced. It would likely be quite possible in districts of low density of population to establish and maintain border plantations without the protection afforded by a fence.

3. *Pathways.* As a rule all pathways in playfield areas should run in straight lines except in the space allotted to a park. A good position for such pathways is on the lines marking the various space divisions. However, it might be possible in the larger areas to lay out the games and sports areas in the form of large ovals with plantations of trees around them and the pathways laid down with curved lines through the plantations.

Neighborhood Playfield Plans. The accompanying plans — Plates 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56 and 57 — illustrate the design of a number of neighborhood playfields and playfield-parks. An additional design

of a park with neighborhood playfield features will be found on page 183 of this chapter.

The following plan for the improvement of Lynnhurst Field (see Plate 46) is typical of a number of modern playfields of about ten acres recently constructed in Minneapolis. The improvement of such a field costs between $75,000 and $100,000, depending upon such factors of the amount of grading and drainage necessary. The cost is paid for by the neighborhood in which the field is located, the assessments ranging from $70 for a 50-foot lot adjacent to the park, to $10 for the lots located about a half mile from the playground. The cost of grading is usually about 40 cents a cubic yard, or a total of $30,000 to $40,000; of drainage, about $10,000; of water supply, approximately $1,200; of shelter building, from $12,000 to $16,000; of cement walks, steps and curbs, about $7,000; of four concrete tennis courts, approximately $6,000; of playground equipment, about $15,000; of lighting, $3,000; of plantings, $5,000, and of engineering and contingencies, $3,000.

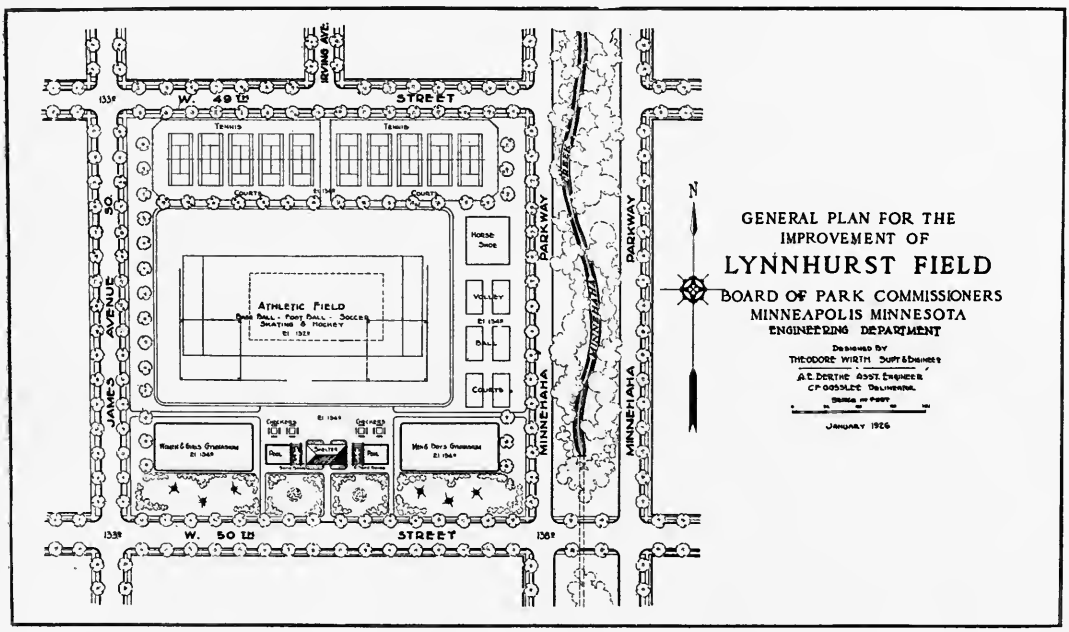


PLATE NO. 46

DESIGN OF A NEIGHBORHOOD PLAYFIELD-PARK, LYNNHURST FIELD, MINNEAPOLIS PARK SYSTEM, MINNEAPOLIS, MINNESOTA

One of the fundamental principles followed in the design of practically all of the neighborhood playfield-parks in Minneapolis is to surround the areas, especially those devoted to active recreation, with a wide border plantation. The effectiveness of this border is often enhanced both as a screen and as an adornment by depressing the major playing area or areas and raising the elevation of the borders. This plan also enables the playing areas to be more readily adapted to winter sports. The field houses are always located so that they are readily accessible from all the divisions and so they interfere as little as possible with a maximum active use of the total areas. This field of 8.268 acres is typical of the many neighborhood playfield-parks of about ten acres in the Minneapolis park system. Note the tables for checkers near the shelter house.

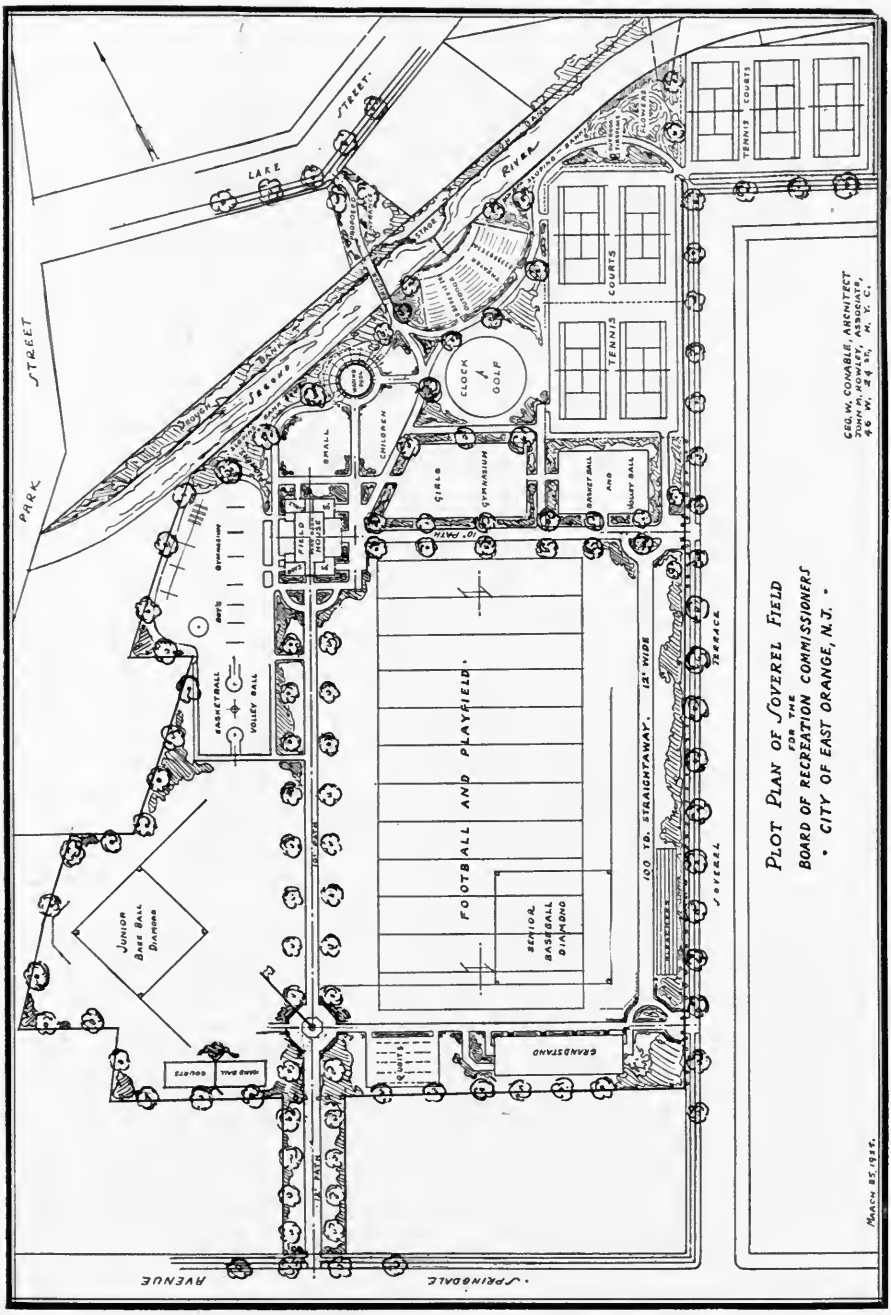


PLATE No. 47. PLOT PLAN OF SOVEREL FIELD, BOARD OF RECREATION COMMISSIONERS, EAST ORANGE, NEW JERSEY
(Area 6.5 acres)

This is an illustration of the variety of recreation facilities that can be provided in a comparatively small area. In this field are a fully equipped children's playground, athletic field, field house, seven tennis courts, outdoor theatre, and areas for a number of minor sports. Plantings are provided around the entire field and between the various play areas. The play house is well placed and is accessible from all parts of the field by a well planned arrangement of paths. This neighborhood playfield is equipped to serve the recreation needs of all ages. A feature of the boys' and girls' play areas is the special spaces for playground equipment and for organized games.

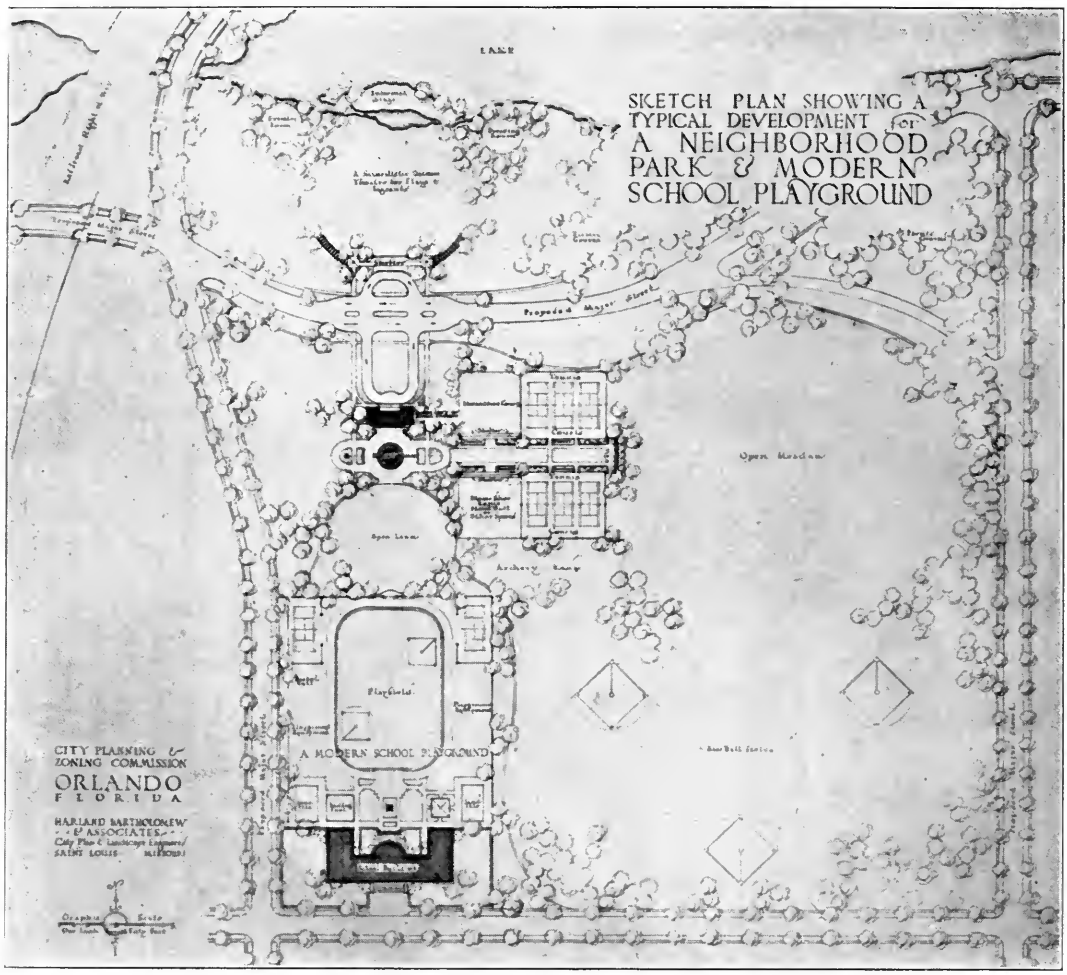


PLATE No. 48. SKETCH PLAN SHOWING TYPICAL DEVELOPMENT FOR A NEIGHBORHOOD PLAYFIELD-PARK AND MODERN SCHOOL PLAYGROUND

(Design by L. D. Tilton, of Harland Bartholomew and Associates, St. Louis, Missouri.)

This plan is distinguished by the wide range of provisions made for diverse types of recreation, children's playground, open areas for playing highly organized games, areas for archery, tennis, horseshoes and other minor sports, music concourse, field house and refectory, outdoor theatre, picnic grove, and ample opportunity for rest and enjoyment of natural beauty. The section indicated as "A Modern School Playground" is laid out according to a plan recommended by Bartholomew and Associates for school play areas.

As a general rule, however, it is not desirable to have a major roadway running through a park-playfield of this type. It is especially objectionable if it passes close to the outdoor theatre.

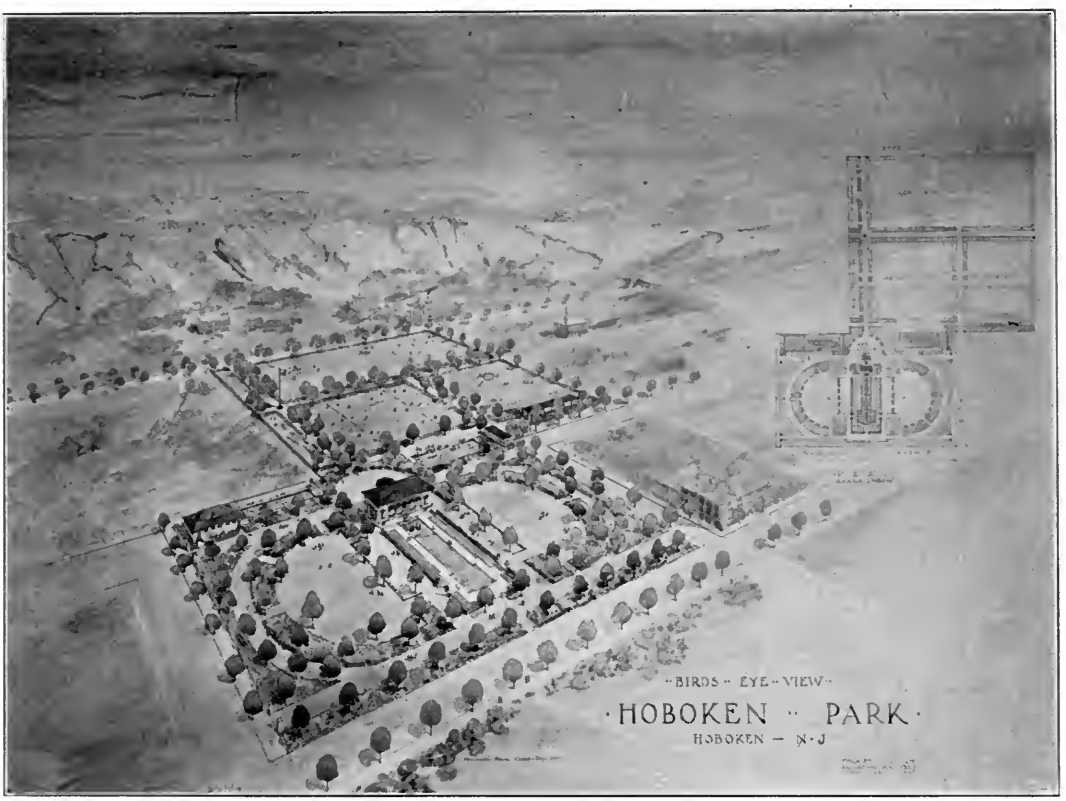


PLATE No. 49. DESIGN OF HOBOKEN PLAYFIELD-PARK, HOBOKEN, NEW JERSEY
One of the properties of the Hudson County Park System, Hudson County, New Jersey.
(Design by Charles N. Lowrie, Landscape Architect, New York.)

The different features of this plan are referred to a main axis running east and west through the area. At the extreme west end of the park is a large athletic field for the use of older boys and men. It is depressed about eighteen inches below the level of the adjacent paths. This gives a more pleasing effect, protects those outside the field, permits the flooding of the field for skating, and makes for economy in the amount of fill. At the south end of this field, and separated from it by the main axis path, is a narrow strip equipped as an outdoor gymnasium for the older boys.

East of this field and separated from it by a path are a ball field and playground for the younger boys and girls. A cinder running track surrounds the ball field. Narrow strips equipped with gymnastic apparatus for the girls extend above the south end of the park near this playground.

The central feature of the park consists of a field house with a semi-detached band stand surrounded by a music court. The first floor of this field house may be arranged as an open pavilion in summer and may be converted into an enclosed hall in winter.

Among the other facilities provided in the east end of the park are an ornamented lagoon, a wading pool for small children, an outdoor swimming pool and bathhouse, and semi-circular graveled areas along the lagoon suitable for the use of older people and family parties.

This playfield is located in a region of great density of population and is surrounded by factories and railroad yards. Aside from the general excellence of the plan from the viewpoint of the variety of facilities for active recreation, this playfield is distinguished by remarkable success in achieving beauty of landscape adornment by the use of shrubs, trees and flowers under conditions commonly believed impossible for growing things. It is a shining rebuke to anyone who considers that it is impossible to make areas of limited extent attractive while at the same time providing a wide variety of active recreation facilities. Since this has been done here successfully under the worst possible environmental conditions and subject to an extraordinary intensity of use, it can be done anywhere.

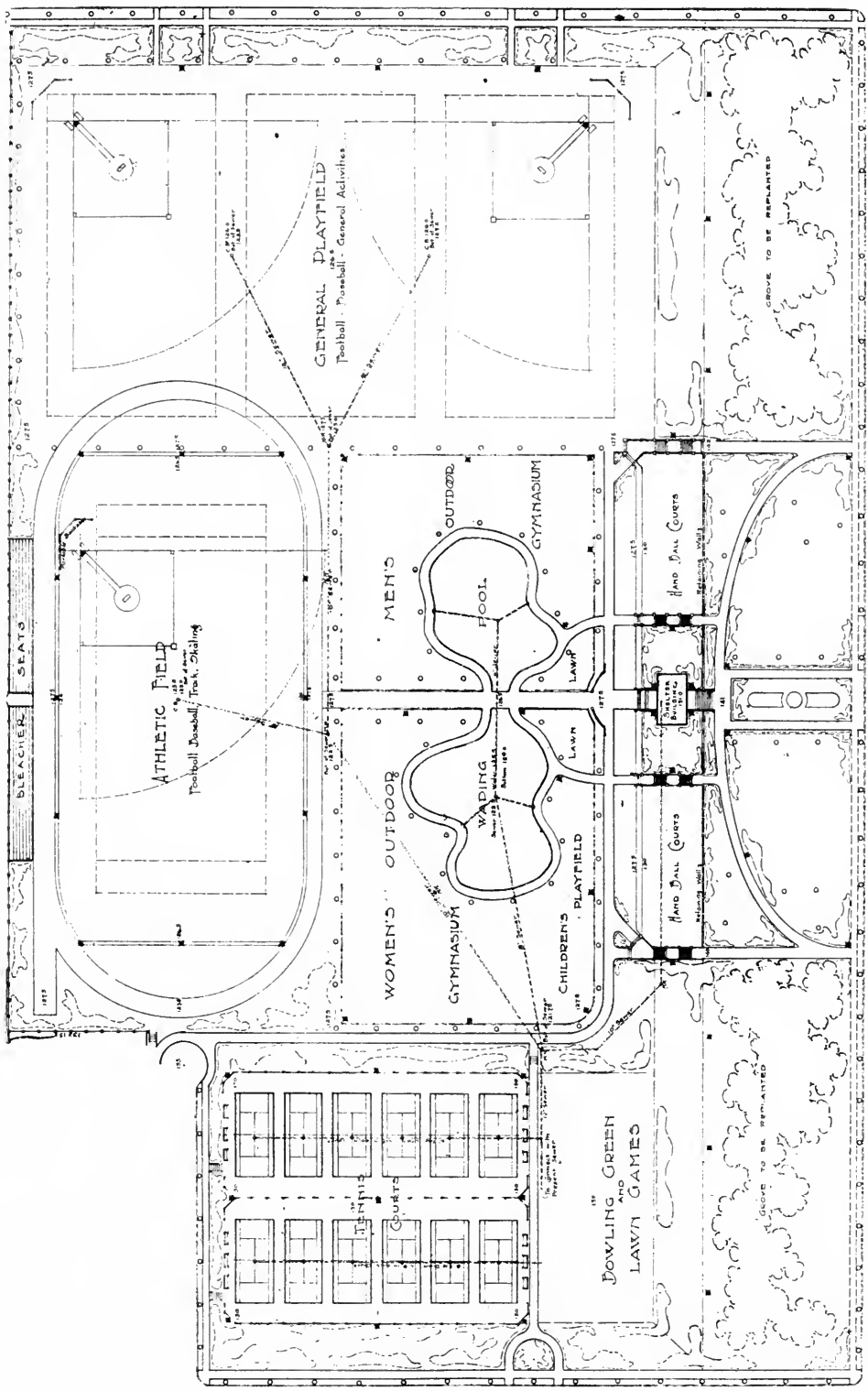


PLATE No. 50. NICOLLETT FIELD, MINNEAPOLIS, MINNESOTA
(Area 21.3 acres)

An outstanding feature of this field is the unusual provision for organized games and sports. Except for the planting strip around the entire area, the small groves on either side of the entrance and the section devoted to the playground, practically the entire area is active recreation areas. This is an excellent plan as to design, variety of facilities provided, and economical use of space available. The bleacher seats are on the east side of the field.

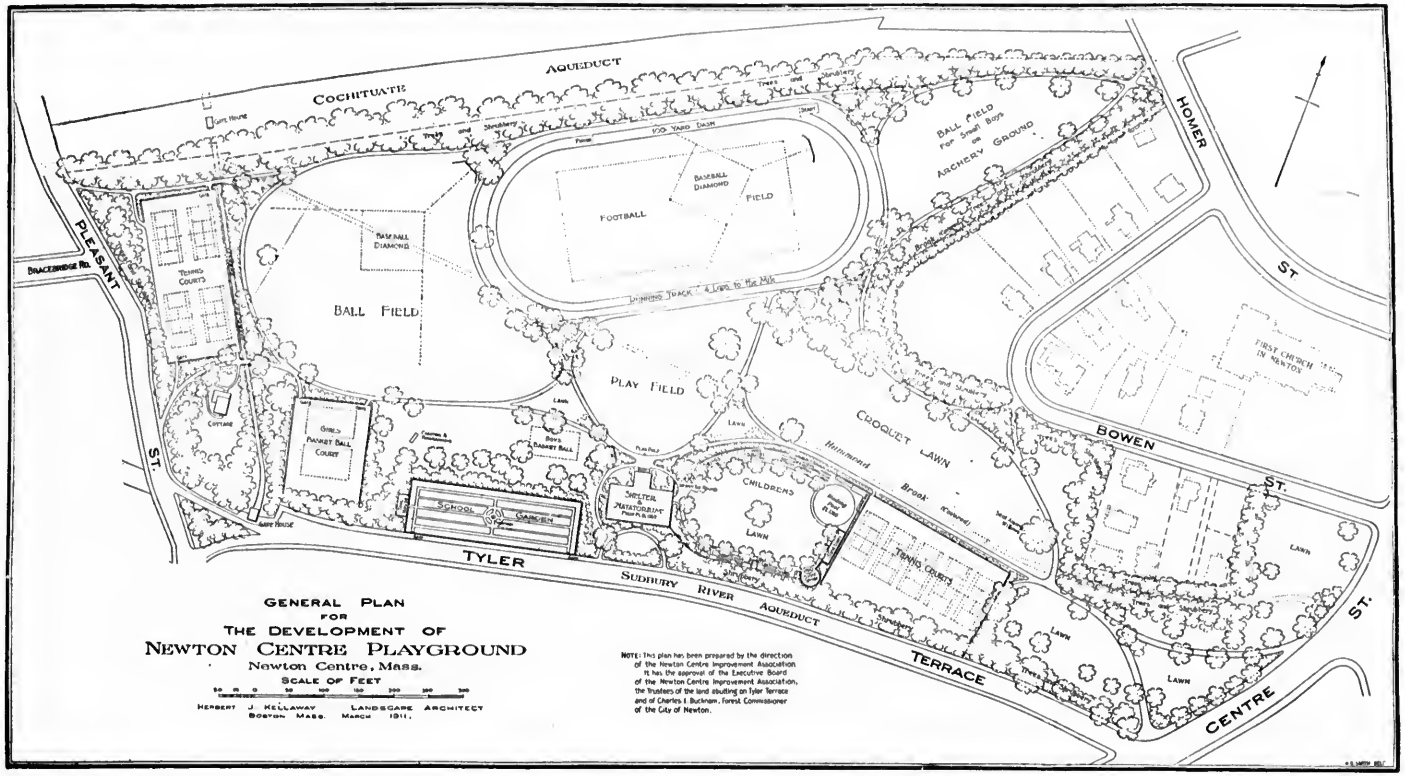


PLATE NO. 51

GENERAL PLAN FOR THE DEVELOPMENT OF A NEIGHBORHOOD PLAYFIELD-PARK, NEWTON CENTRE, MASSACHUSETTS

An especially fine illustration of an area designed for intensive use while at the same time maintaining a parklike effect entirely around the border and on the boundaries of the various play areas. Note particularly the layout of the children's play area where all the play apparatus is located on the border under the trees with the open play area in the center. Among the special features of this plan are the children's gardens, croquet lawn and archery ground.

The area set aside for two basket ball courts for girls may be used also for volley ball and paddle tennis. The two baseball diamonds would be more satisfactory if home plate were placed in the southwest rather than northeast.

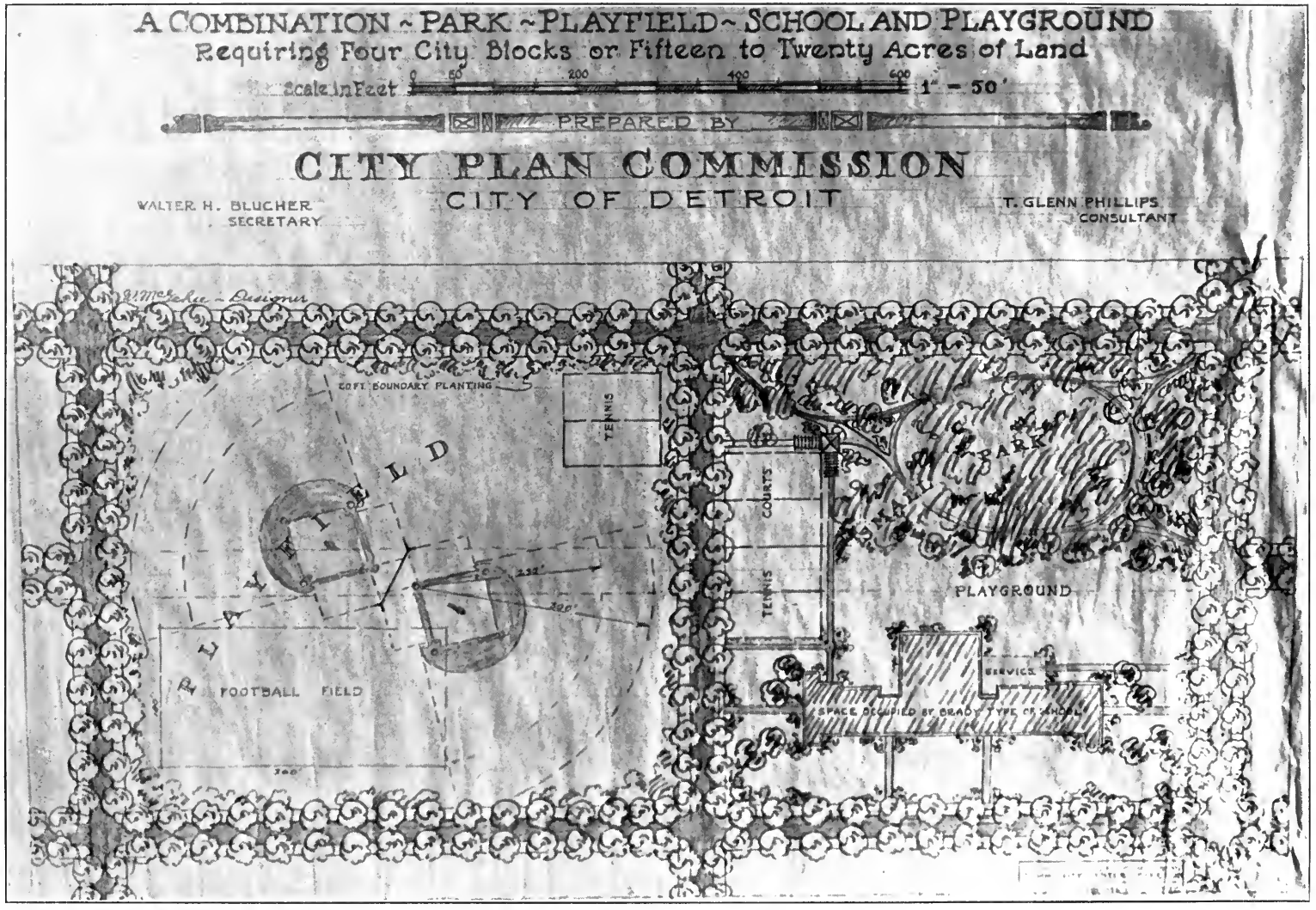


PLATE NO. 52

A DESIGN FOR A COMBINED PARK-PLAYFIELD-PLAYGROUND AND SCHOOL SITE, REQUIRING FOUR CITY BLOCKS OF FROM FIFTEEN TO TWENTY ACRES OF LAND

This plan is being developed in Detroit, Michigan through coöperation between the Recreation Department, School Board and City Plan Commission. It is the intention to have one such community center in each square mile of residential territory. Under this plan the community or field house facilities will be provided by the school building. A section of the playfield near the two tennis courts might be set aside for the use of older girls and women.

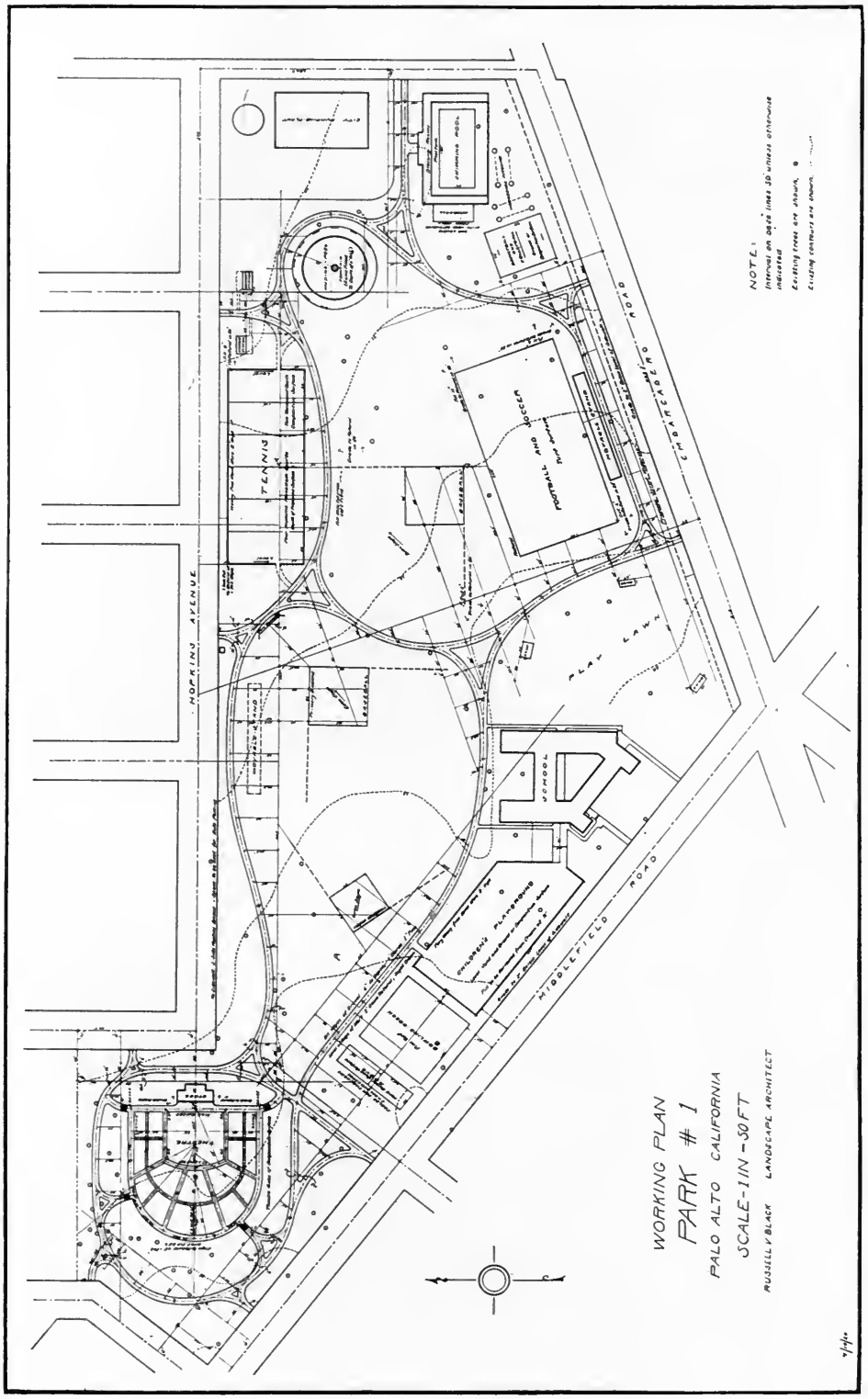


PLATE No. 53. WORKING PLAN OF RICONADA PARK AND WALTER HAYES SCHOOL SITE, PALO ALTO, CALIFORNIA
(Design by Russell V. Black, Landscape Architect.)

An interesting example of combining a school playground and neighborhood playfield-park in a 24-acre tract without interference with one another, and without such detriment to the neighborhood as is often caused by an undersized school site or playground. A distinguishing feature of the design is the outdoor theatre.

Some of the facilities for children might be arranged to better advantage so as to make supervision less difficult. For example, the wading pool is far from the children's playground, and the same is true of the volley ball and basket ball courts. If possible these various facilities should be placed in the section of the playfield designated as the children's playground.

PLATE NO. 54

AN AIRPLANE VIEW OF A PORTION OF THE FLEISHHACKER PLAYFIELD, SAN FRANCISCO, CALIFORNIA

Distinguishing features of the playfield, which has an area of 60 acres, are as follows:

Swimming Pool and Bathhouse. The swimming pool is 1,000 feet long by 100 feet wide, with an offset in the center section 150 feet wide by 100 feet in length, which has been so designed as to accommodate 50-yard straightaway races, water polo, and other swimming events requiring arbitrary spaces. This section has an average depth of six feet. The pool in its entirety has a depth graduated by a uniform slope, with a maximum of nine feet on the north and three feet on the south end. At the north end there is also a diving section 50 feet square and 14 feet deep equipped with diving towers. The capacity of the pool is 8,000,000 gallons of salt water, affording a surface sufficient for 10,000 bathers at the same time, with appliances for filling and refilling rapidly. The retaining walls are of reinforced concrete with the submerged surfaces so treated as to be completely proof against the action of salt water, thereby ensuring its sanitation as well as permanency. The bathhouse on the ocean side of the pool contains 800 dressing rooms, hundreds of steel lockers, fresh water showers and ample rest rooms on the first floor, while on the second floor are an elaborate cafeteria and ice cream saloon with entrances from the Sky Line Boulevard. Approximately 1,000 full grown trees have been placed to protect the pool on the ocean side. A promenade 50 feet wide surrounds the pool which is further beautified by a bisecting strip of lawn, with an Alameda effect of pine trees 25 feet apart to furnish shade and shelter.

Athletic Field. Closely adjoining the swimming pool is the athletic field, which is provided with five baseball diamonds and ten tennis courts. *Children's Playground.* In the more secluded section beyond the athletic field is the children's playground, most of which is heavily wooded. This is equipped with the usual playground equipment and in addition has a mammoth merry-go-round and a miniature railway. On the edge of this area is located "The Mothers' House." *Picnic Grounds.* In a still more secluded and shaded section of the playfield are the ample picnic grounds.

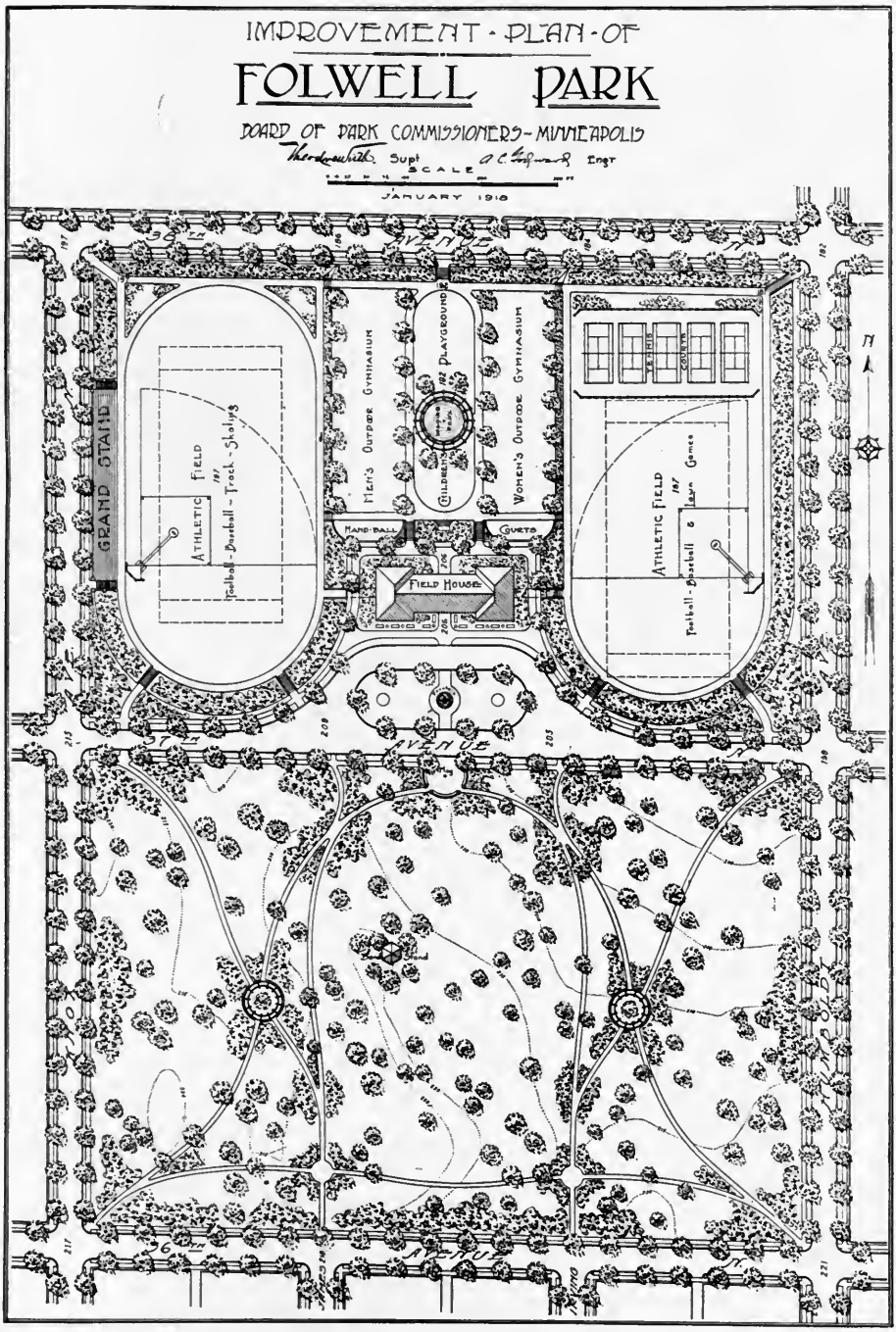


PLATE No. 55. IMPROVEMENT PLAN OF FOLWELL PARK, MINNEAPOLIS PARK SYSTEM, MINNEAPOLIS, MINNESOTA

The total area of this property is 26.75 acres. On this is an excellent example of combining a neighborhood playfield with a neighborhood park. The playfield contains all five of the divisions suggested for such an area and they are well arranged and proportioned. The field house is so located as to be readily accessible from every division. The entire playfield is surrounded by a wide border plantation.

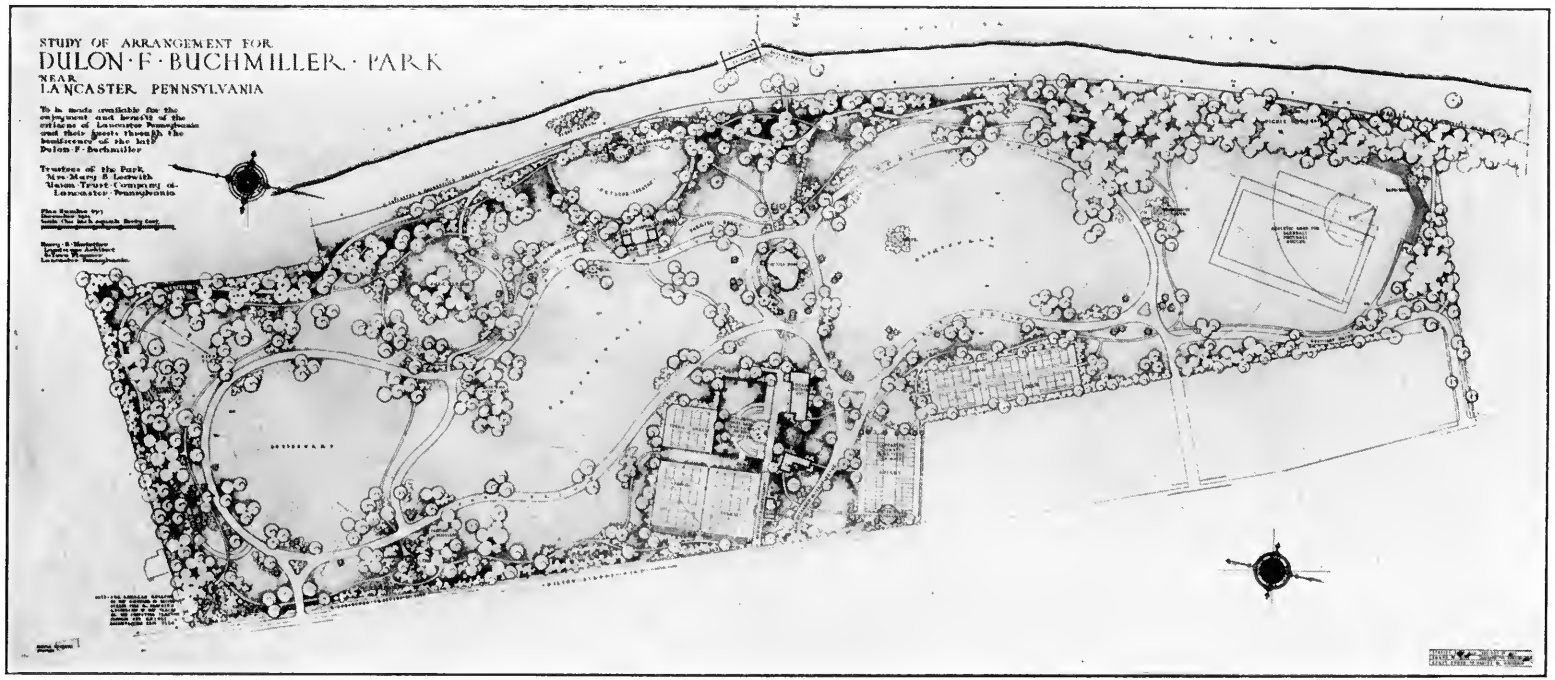


PLATE NO. 56. PLAN OF BUCHMILLER PARK, LANCASTER, PENNSYLVANIA
(Design by Harry B. Hostetter, Landscape Architect.)

This park of approximately 70 acres is so designed as to present features of both a large city recreation park and a neighborhood playfield-park. The system of roadways comprises (1) automobile drives of approximately 20 feet in width, (2) bridle paths and (3) a system of footpaths ranging from 4.5 feet to 8 feet in width. The driveways are to be constructed of bituminous macadam, the bridle paths of cinders and the footpaths of gravel or crushed stone bound with bituminous material. The system of footpaths all lead to and connect the various units of the park.

The recreation features of the park include: (1) an outdoor theatre located in a natural setting for an amphitheatre and stage and a shelter house in close proximity to the rear of the amphitheatre; (2) 14 tennis courts; (3) a combined baseball, football and soccer field; (4) two major picnic sites, although picnicking may be done in several different sections of the park; (5) community house remodeled from a large dwelling; (6) children's playground in the vicinity of the community house; (7) facilities for water sports such as boating, canoeing and swimming in the river forming the western boundary of the park.

Other features of the design include the erection of a combined water and lookout tower on an elevation commanding a view of the surrounding country and city; a small zoo and extensive planting plans.

There is some question whether the system of automobile drives should have been included in a park of this type, although ready access by motor should be provided to such features as the outdoor theatre.

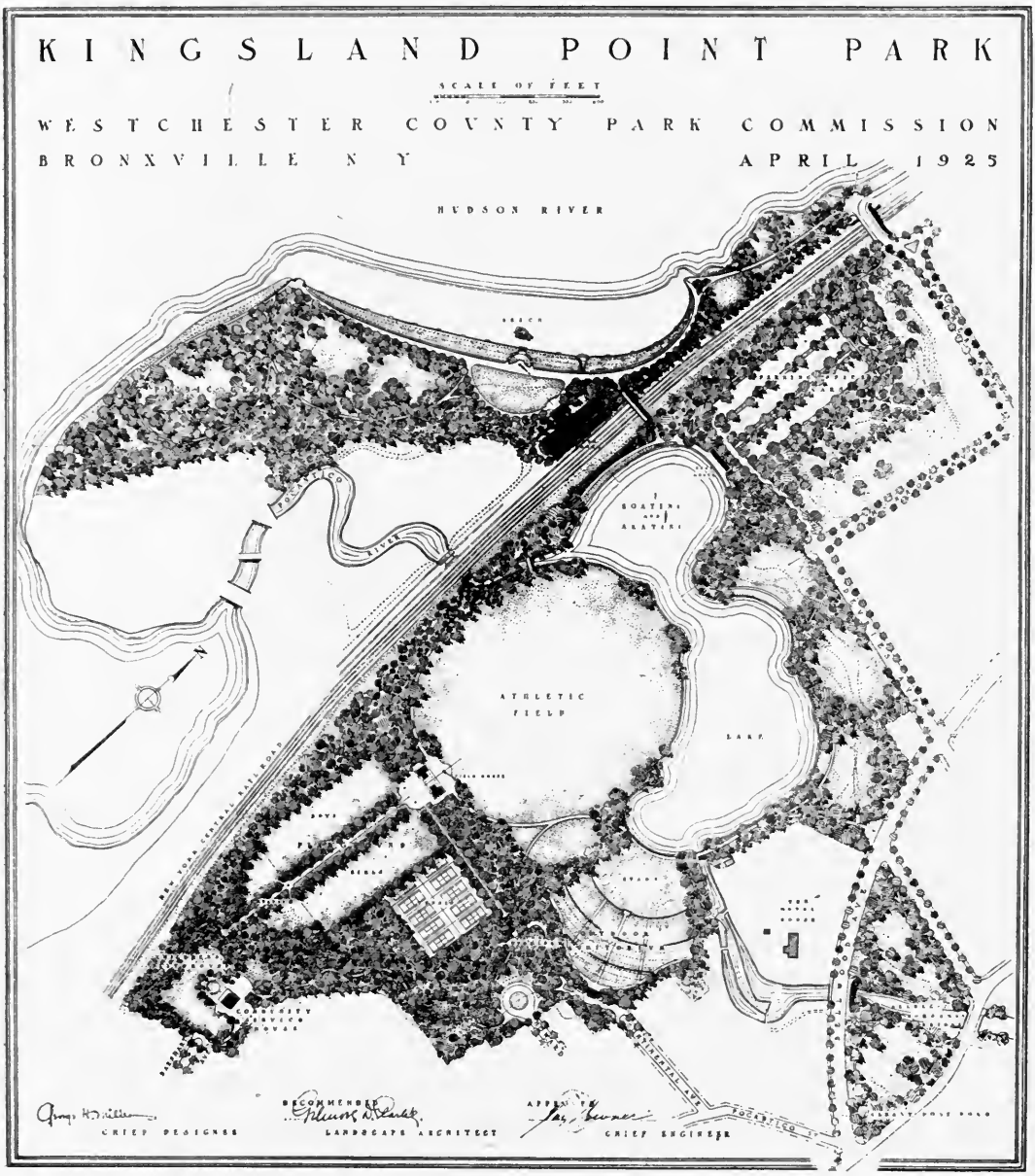


PLATE NO. 57. KINGSLAND POINT PARK, TARRYTOWN, NEW YORK
Property of the Westchester County Park Commission.

This playfield-park of 93 acres has some of the characteristics of a large park. It provides abundant facilities for land and water sports, as well as opportunities for the more quiet forms of recreation. Note the many structures for the use of persons using the various park units — bathhouse, boathouse, shelter near auditorium, field house near athletic field and the "Community Service House" near children's playground. Ample parking space is provided near bathing beach. The area set aside for the picnic grove borders on the river and is apart from the other areas. Much of this park area was in marsh land. The lake was made by dredging and the materials taken from it were used for filling the playground area at the southerly end.

Miscellaneous Active Recreation Areas

1. *Athletic Fields.*[1]

As here considered an athletic field is an area separate and apart from all other areas in a park and recreation system and devoted exclusively to the major and minor organized games and to track and field sports. It has already been noted that athletic fields appear as parts of the design of neighborhood playfield-parks. They may also be found as parts of the design of large parks. Frequently they are provided on high school and junior high school sites. Wherever found, however, their general design, if fully developed, will include the following features:

(*a*) Large open space for running track and ball games requiring comparatively large areas such as baseball, football and soccer.

(*b*) Smaller space or spaces for games requiring limited area such as tennis, basket ball, volley ball, quoits and horseshoes.

(*c*) Area for seating accommodations — grand stand, bleachers.

(*d*) Site for field house and surrounding grounds. The facilities that a field house is designed to provide are sometimes made a part of the design of the grand stand.

(*e*) Area for parking passenger vehicles.

(*f*) High fence entirely around the area or at least that part of the area designed for competitive contests to which an admission fee is charged. This fence may be of wood, concrete, brick or stone. Occasionally a fence of heavy woven wire or iron pickets may be used.

To these features might be added another part of the design, a space or spaces given over to landscape treatment. It may be asserted that there is no athletic field, even of a minimum area, that does not present some possibilities of landscape treatment although it may be nothing more than the planting of a row of trees around the area.

For details as to design and construction of athletic fields of various sizes see Chapter V on "Construction Notes," pages 316–341.

2. *Stadiums.*

The stadium is a highly specialized type of athletic field chiefly distinguished from ordinary formal athletic fields by unusual provisions for seating accommodations. While the stadium may be and is used in the United States for various community gatherings involving a variety of activities, its general design is determined more by the requirements of certain types of games and sports than by any other uses. By far the majority of the stadiums are general purpose stadiums, that is, they are

[1] The term "athletic field" is generally used in a very loose sense throughout the country. It is often used to refer merely to an open space where ball games such as baseball, football and soccer are played, with no running track or provisions for minor games.

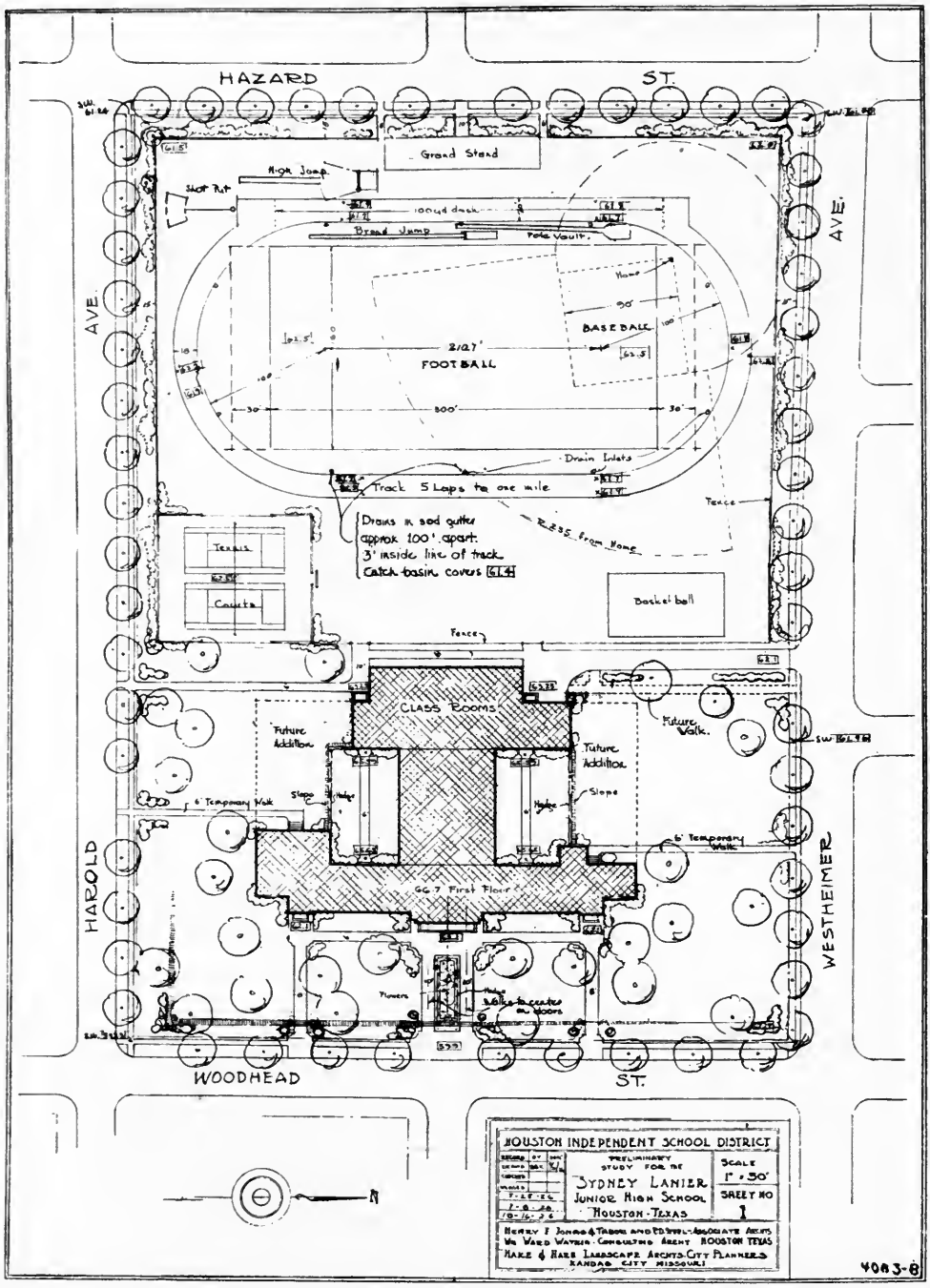


PLATE NO. 58. PLAN FOR THE DEVELOPMENT OF THE SIDNEY LANIER JUNIOR HIGH SCHOOL, HOUSTON, TEXAS

The dimensions of the entire site are 518 x 725 feet, comprising approximately 8.6 acres, of which five acres are given over to the athletic field. The areas for the various games and sports are well arranged. It will be noted that all of the essential features with the exception of the parking space are provided including the landscaped area. The school building serves the purpose of a field house.

designed for the practice, exhibition and viewing of several types of games and sports such as baseball, football, soccer, and track and field sports. There are a few designed for the playing of special games such as the Yale Bowl for football and the Forest Hills Stadium for tennis. All the municipal stadiums existing at the present time are general purpose stadiums.

The original Greek stadium took its form primarily from the requirements of track and field sports. These same requirements to a very large degree determine the general design of most of the stadiums in America, although to the original purpose of the stadium has been added the playing of several types of highly organized competitive games.

The general design of a running track layout is that of an elongated oval within the inner borders of which there is ample space for laying out the playing areas necessary for football, baseball, soccer, and various types of field sports. There is sometimes sufficient space to provide some minor game areas. A few stadiums have a playing area within the track large

PLATE No. 59

A SECTION OF STADIUM, BROOKSIDE PARK, PASADENA, CALIFORNIA

This stadium seats 52,250 but can be expanded to seat 75,000. The field is 275 feet wide and 475 feet long. The entire stadium area covers 14 acres. There are 20 tunnel entrances and two portal entrances; 60 rows of seats at one end and 78 rows on the sides. It is open at one end and elliptical in shape. This illustrates the use of mounds to support the seat tiers which rest on embankments formed by excavation and dirt fill. The retaining walls and tunnels are of concrete and seats are of wood.

enough for laying out a polo field. The average stadium has a total playing area sufficient to amply accommodate the conventional quarter-mile running track.

The general design of the seating plan, which is one of the most characteristic features of stadiums, follows closely in plane outline the design of the running track. The seating plan may be so designed as to enclose entirely the playing area, to enclose two sides and one end, or two sides, leaving both ends open. Some so-called stadiums have a seating deck along one side only. In order to secure a two hundred twenty-yard straight-way in a stadium enclosed entirely by the seat decks it is generally necessary to tunnel through the seat tiers at one end.

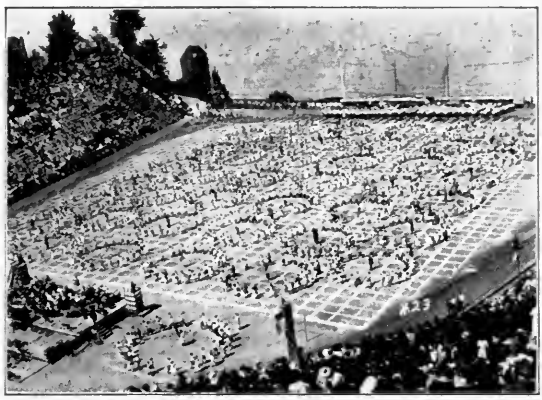


PLATE NO. 60

ILLUSTRATING ONE USE OF A LARGE STADIUM OTHER THAN FOR COMPETITIVE ATHLETICS

Five thousand school children participating in a Field Day, Tacoma Public School Stadium, Tacoma, Washington. This stadium is an example of the use of a natural slope for the support of seat tiers. The concrete amphitheatre seats 40,000 people and the record attendance is reported to be more than 60,000.

The determining factor in the design of the seating plan is visibility for the spectator, which requires that the seats be constructed in steplike tiers and be grouped so that as many as possible of the spectators have the best possible view of the activities on the field. Most of the stadium seat decks have been constructed on a uniform plane around the playing area. It is suggested that more attention be given to the design of the seating plan with respect to visibility than has hitherto been the case. Unfortunately, in general purpose stadiums it is not entirely possible to satisfy the best requirements for viewing baseball on the one hand and football and track and field sports on the other. The most desirable points for viewing football are on either side of the field opposite the center. It so happens that a stadium well designed for viewing football or soccer is also efficient for viewing track and field sports.

For viewing baseball the vantage points of visibility differ decidedly from the best points for viewing football. Because of orientation and in order to secure sufficient playing areas the location of the diamond must be at an angle at one end of the arena. Spectators, in general, prefer seats along the first base line, next behind home plate and next along the third base line. If baseball were viewed by as large crowds as generally attend

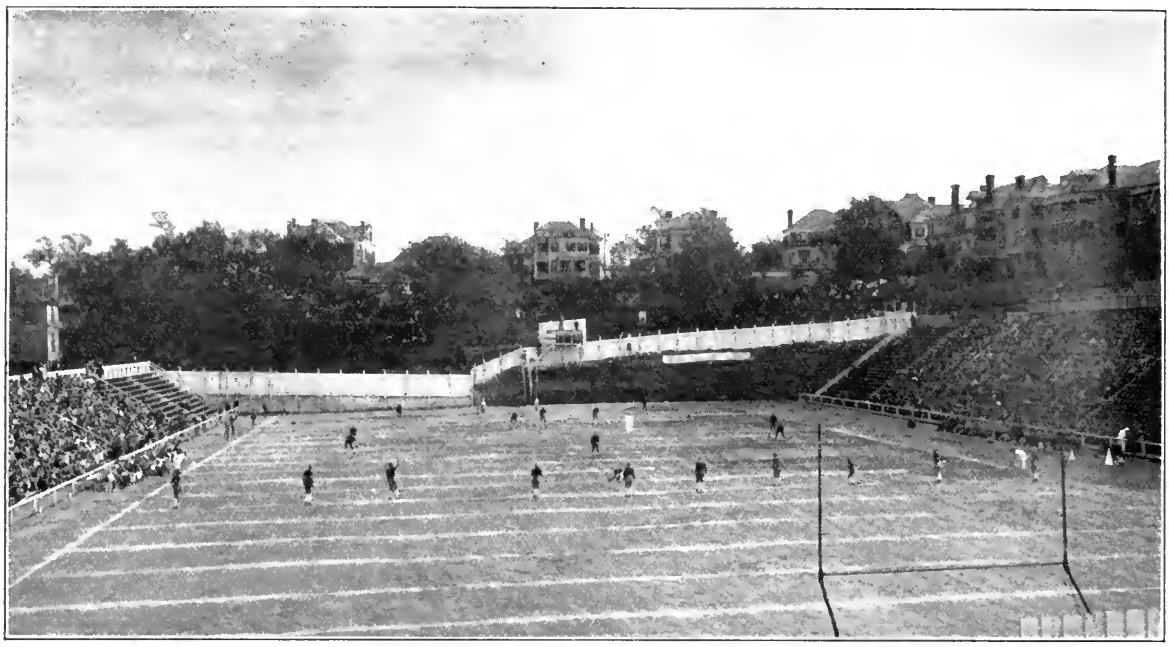


PLATE No. 61. MUNICIPAL STADIUM, LYNCHBURG, VIRGINIA

This stadium is located in center of city. Seats 8,000. Opened for use under the supervision of the Department of Recreation and Playgrounds, October 1926.

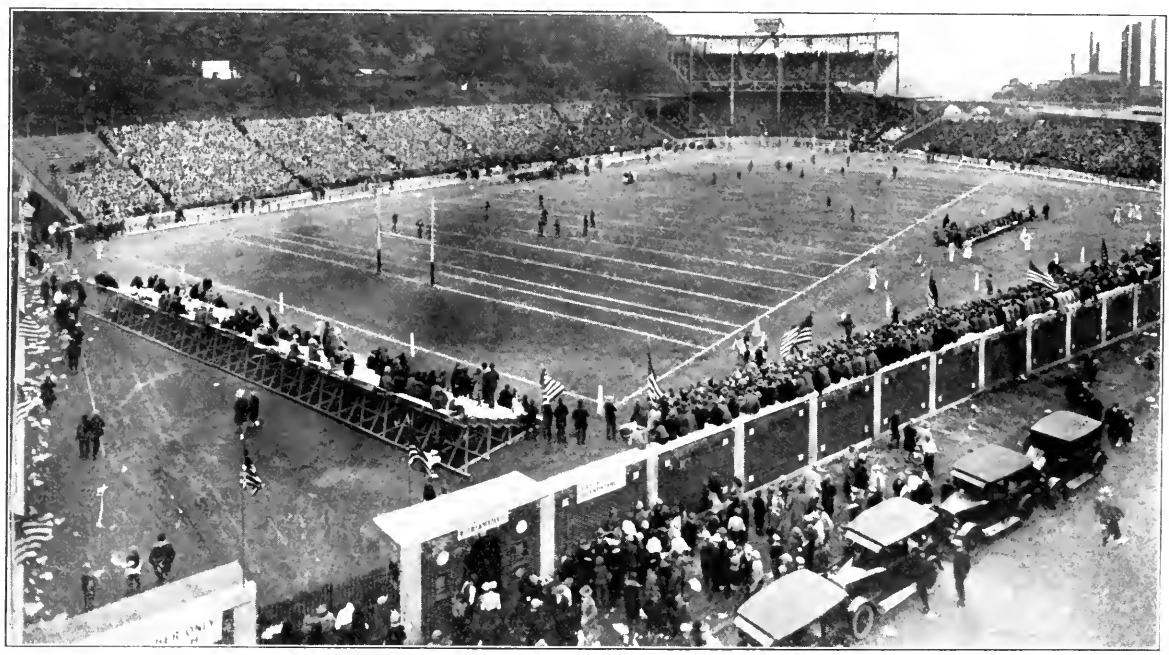


PLATE No. 62

THE POINT STADIUM AND RECREATION CENTER, JOHNSTOWN, PENNSYLVANIA

Excellently adapted to viewing baseball games. This photograph taken during a football game illustrates the choice of seats for viewing this sport. Most of the seats rest on a framework of reinforced concrete, although one section rests on a natural slope.

football games these considerations would call for a modification of the seating design with the provision of more seats at the vantage points mentioned above. However, the seating plan usually followed in the general purpose stadium meets fairly satisfactorily all necessary seating requirements. The municipal stadium at Johnstown, Pennsylvania, is an excellent illustration of a type of seating design admirably adapted to viewing baseball but less suitable for viewing football. (See Plate 62, page 154.)

There are three general methods of handling the problem of supports for the seat tiers. These are: (1) using natural slopes as in Tacoma High School Stadium; (2) constructing mounds as in the case of the Baltimore, Maryland, and Columbus, Georgia, stadiums; (3) erecting a framework of reinforced concrete as in the Chicago Stadium. Sometimes more than one method is used in different parts of the stadium.

Of these three methods the first and second are better from the standpoint of general park design. By using these methods even so huge a structure as a stadium usually is can be handled somewhat in harmony with the ideals of park treatment. The loss in three methods is that there is no space under the seat decks for all the needed indoor facilities, thus necessitating the construction of a special field house as at Baltimore. It may, of course, be possible to construct cellarlike rooms in the embankment under the seats but this is not as desirable as having a special field house.

There appears to be no special reason why the first row of seats should be elevated several feet above the field. The occasion for such an arrangement in ancient stadiums was often real, but there is no such element of danger in the use of modern stadiums. By locating the first row nearly on a level with the field considerable economy of space is attained and it may not be so necessary to extend the tiers of seats so high.

At regular intervals there should be openings through the seat tiers on the ground level for the proper circulation of air. Some stadiums in this country are almost unbearable both to the players and spectators on a hot afternoon because of lack of provision for air circulation. For a stadium with both ends open this provision is not so necessary, although it is desirable for the purpose of securing cross currents of air.

In the installation of water pipes and sewers in stadiums it is desirable to make the capacity at least one-third larger than the normal demands will require. Few stadiums erected in this country have not been taxed at times far beyond their capacity in this respect, creating very unfortunate conditions and suffering among the spectators, due to the inadequate capacity of these facilities.

3. *Golf Courses.*

Everyone knows that the game of golf consists of striking a golf ball with the purpose of getting it into a series of holes that are placed at varying distances upon the course, in as few strokes as possible. To facilitate the following out of this purpose, the course is arranged so that a good play is rewarded and a poor one penalized, and so that everyone who plays may, as far as possible, be kept interested. Moreover, an effort is made to eliminate as much as possible the element of chance, *i.e.*, if the player has made a poor shot, it must be impossible for him to land his ball on the green in the same number of shots as players who have made a better showing.

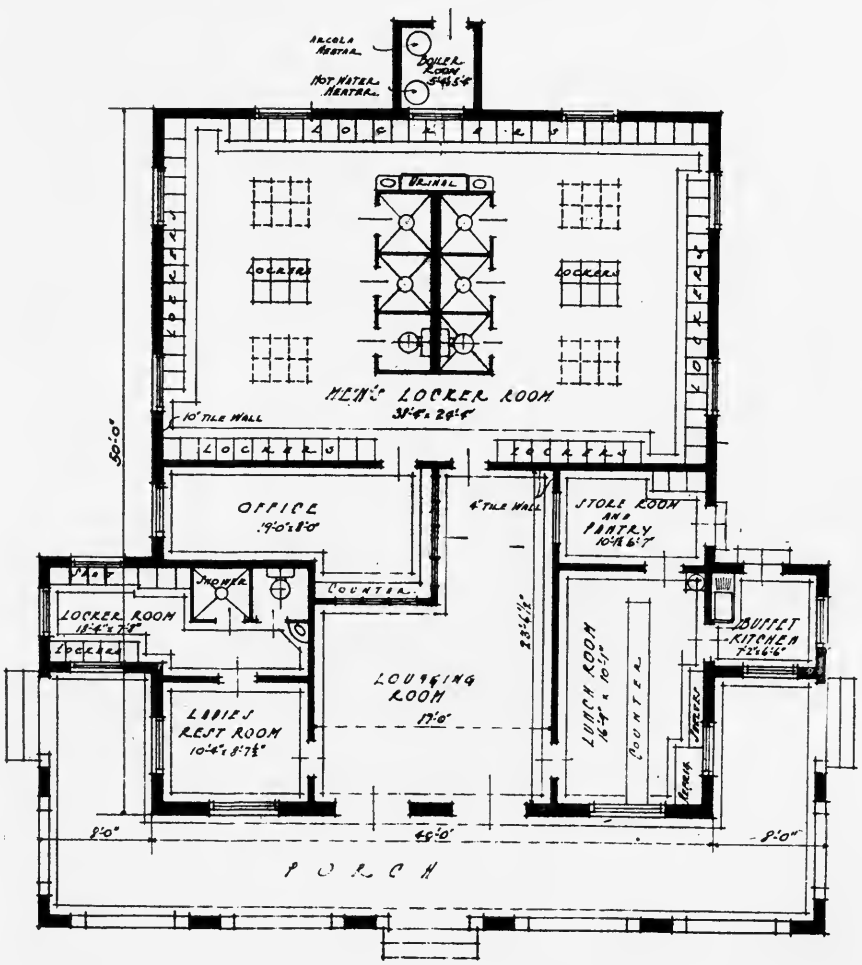


Plate No. 63

FLOOR PLAN OF GOLF CLUBHOUSE ON THE MUNICIPAL GOLF LINKS OF THE PARK AND RECREATION DEPARTMENT, DALLAS, TEXAS

As shown by the plan, the facilities in this building are conveniently arranged and no space is wasted. As a rule it is advisable, on account of the moisture, to have the showers in an enclosed room, separate from the locker room. See page 162 for picture of clubhouse.

A golf course is composed of a certain number of what may be called units, nine or eighteen of them, determined by the number of holes in the course. Each of these units has a start and a finish — the "tee" and the "green" — the former the point from which the ball is driven, the latter the point to which it is driven.

This putting green at the end of the unit consists of a carefully maintained area of smooth, closely cut turf, containing the hole. The greens may be level or slightly undulating, true, not full of excrescences, must be well drained, and should be arranged so that the "cups" can be changed around to distribute the wear. The most difficult greens are often fortified by pits of sand dug into them as hazards. The greens are usually kept at about sixty feet in diameter, for to make them smaller adds to the difficulty of playing, concentrates the wear and the tendency to keep them in poor condition, and to make them larger adds to the expense of the course and to the encouragement of the careless player. In general the shorter the holes the smaller should be the greens.

Putting greens may be of three general types as far as location is concerned; they may be placed in a valley, on a hillside, or on a hilltop. The first of these is probably the least interesting of the group because it is most easily approached and usually needs to be surrounded by traps to make it more difficult. It is difficult to approach a green upon a hilltop and for the ball to stay upon it when at last it has been gained, and therefore this green may become a good sporting green. It is not desirable to place a green at the end of a long shot. The good view to be had from a hilltop green also adds to the player's interest. It is a kind, however, that is used rather infrequently, because of the expense of properly building it. A green upon the hillside is in some respects the most interesting, if it is designed to offset the curvature of the ball, and the tendency of the same, after a long drive, to roll away from the hole. A fair proportion of all three types should be introduced where possible, because of the variety of interest that they offer the players.

Tees and greens of different units should not be too close together, because of the danger from flying balls both to players and spectators. Neither should they be more than one hundred or two hundred feet apart as a general thing, because the distance would unduly impede the progress of the game.

Strictly speaking, the ground that lies between the tee and the green (exclusive of hazards) is known to the player as the "through-the-green." The elements that compose it are the "fair-green" (or fairway) and the "rough." The first of these constitutes the fine playing surface, lying midway between the teeing ground and the putting green. The second of

these, the "rough," which is somewhat of a hazard, is made up of patches of uncut grass and sections of uneven ground, that are located on either side of the "fair-green" and generally for a considerable distance in front of the tee. The purpose of the "rough" is to penalize the shot that is too short or off direction.

Although hazards are not technically considered as part of the "through-the-green," yet they do lie within it, and can be discussed conveniently at this point. Hazards are introduced for the purpose of adding zest to the game, by interfering with the course of the ball from poorly played shots. They may be either natural or artificial in character. They may take the form of a bunker (which is a mound of earth or an embankment), of a sand trap, pond, stream, marsh, road, fence or tree. There is apparently no well-defined practice when it comes to the location of these. The most important thing to remember is that they should not occur in such positions as to catch good plays. They should be so placed that they are not a monotonous repetition of similar positions over the course. They should be introduced not further than one hundred and fifty yards from the tee because, so placed, they constitute a penalty that is too severe, and give the advantage only to the very long driver. They should never be more than ten or twenty yards from the direct line to the hole, because bunkers off the fairway are not likely to be interesting.

The location of hazards around greens is an important consideration, because greens that are guarded by bunkers of one kind or another are made more difficult and interesting since they compel pitch shots upon the

PLATE No. 64
A COMBINED GOLF CLUBHOUSE AND PARK SERVICE BUILDING, CREDIT ISLAND PARK, DAVENPORT, IOWA

approach and more accurately placed shots. Four general arrangements are in use, the "bottle-neck" arrangement with ramparts on both sides of the green, causing the opening between the hazards to be narrow; the one-sided arrangement with a bunker on one side only; the back hazards that give the appearance at least, if not in fact, of the green's being well protected; and the circular or all-around scheme, in which the green is entirely enclosed by bunkers. This is the most difficult of the four types to play and therefore one of the most interesting.

The location of the course with relation to the natural hazards should be considered with care. Water hazards, for example, should not occur so that they will involve compulsory carries that are too long, as they are apt to be the cause of too many lost balls, too much congestion along the course, and of too much discomfort to the short driver.

The proper construction of the hazards is almost as important as the proper location of them. Artificial hazards must be so constructed as to stop every ball hit into them and to allow the player to extricate a ball in one well-played shot. They must penalize by causing a loss of distance but not by completely crippling the player. Their size and character will depend in large measure upon the amount of money that is available to construct them.

The ordinary type of artificial hazard is the bunker, which consists of a sand pit lying in front of a cop or rampart of earth. When the cop is high and the pit before it is narrow, the bunker is rendered unplayable. When the reverse is the case where the cop is low and pit is wide, it becomes an insufficient penalty. In general the wider the pit, the higher should be the cop. A satisfactory ratio of average depth to width will prove to be about one to four. The ramparts should not be constructed to such a height that they prevent the player who is playing a position close to the bunker from sizing up a shot to the green. This places too much of a premium upon local knowledge of the course.

The main objection that applies to the construction of artificial hazards in the past is that they have assumed an appearance too stiff and geometrical in effect. They are immeasurably better when naturalistic in character and more nearly in the spirit of the surrounding landscape.

The various holes or units comprising the course may follow different directions or lines of play, and in so doing may be made to fit a large variety of needs. They may be arranged in a clockwise or in a counter-clockwise manner, they may wander back and forth over the ground *ad libitum*, and at all sorts of angles, or they may see-saw or parallel each other and verge dangerously upon the edge of monotony, for the parallel arrangement is the least interesting of all. Under no circumstances, however, is the crossing of the line of play from one hole to another allowable.

The clockwise plan accomplishes two important results. Where the course moves around in the direction of the hands of a clock, the club property of necessity lies to the right, and because of the tendency of the average player to slice the ball and cause it to fly off to the right, this tends to keep the golf balls upon the grounds. Also, conducting a player around the tract, as this scheme succeeds in doing, it gives him varied scenery as well as varied play.

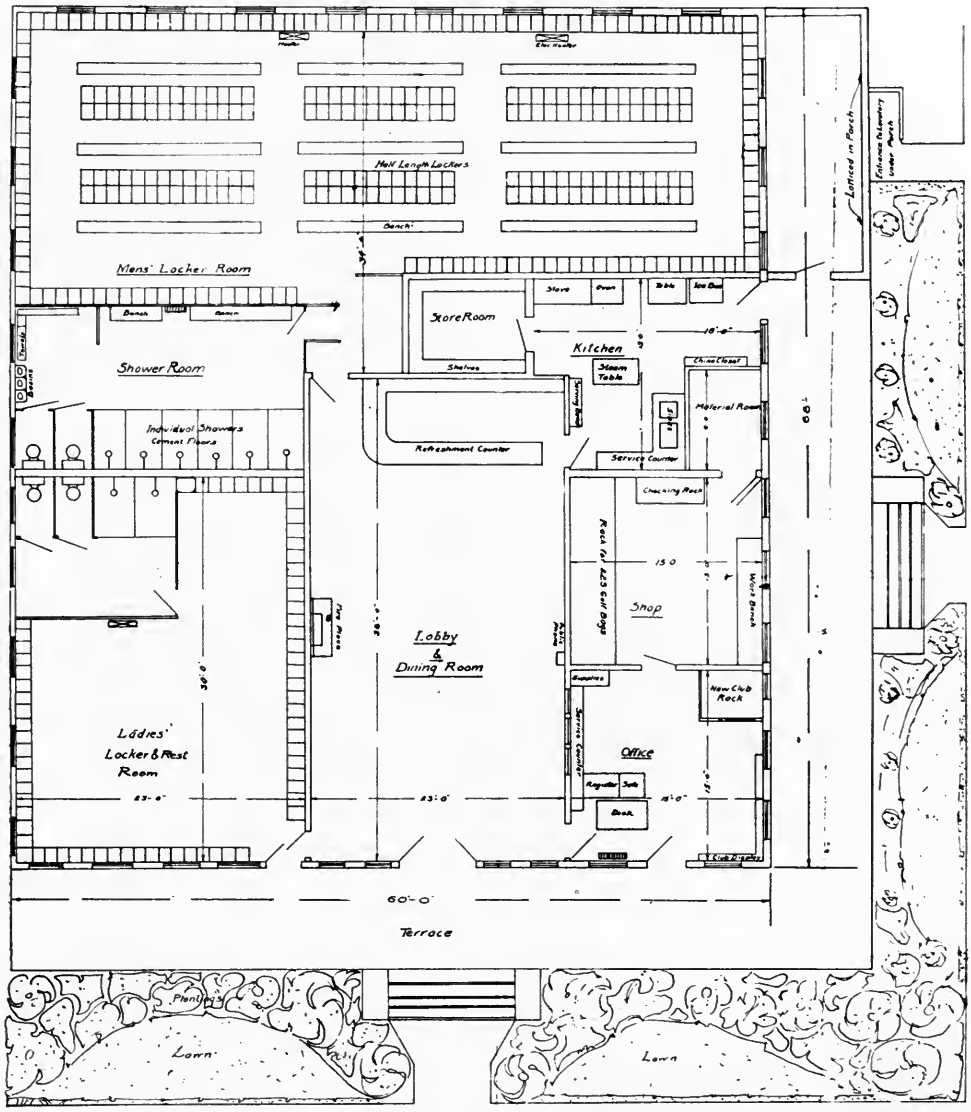


PLATE No. 65. PLAN OF GOLF CLUBHOUSE, OAKLAND, CALIFORNIA

This building was constructed in 1923–24 at a cost of $16,678. Facilities are well arranged, with separate shower rooms. If positions of showers and toilets were interchanged, a slight advantage might be gained. The ample terrace takes the place of club facilities which are not provided in the building.

It is often possible to use the counter-clockwise scheme between the ninth and eighteenth holes following the clockwise arrangement used in the first half of the course.

Sometimes a change of direction within single units or lines of play may be introduced, through the medium of angles and turns in the fair-green known as "doglegs." The essential things to keep in mind about them are that they should be placed so that the ball of the good player will land, upon the first or second shot, at a distance of from one hundred and fifty to two hundred or even four hundred yards from the tee. The angle of turn is usually obtuse, though it may be a right angle. There should be a radius of leeway allowed at each turning, so as to permit the player to exceed or fall short with his shot by a slight distance without penalty. Groups of trees ought to mark the bounds of this area so as to make it more easily distinguishable. A "dogleg" is not placed at the first hole, because anything that tends to hold up play is undesirable at this part of the course (as noted later). As many as one-third of the fair-greens may be in the form of these angles or turns.

As to orientation, a change of direction in the line of play is often affected by the probable glare of the sun. North and south plays are safest from the annoyance of the morning and afternoon sun. East and west ones are not so pleasant.

The need for variation in direction of lines of play is accompanied by the need for variation in the lengths and distances. There are long lines of play and short ones as well as various kinds between, some of them designed to afford interest and variation, others to test skill, and still others to "hurry the course." Obviously interest and variation will be missing if successive lines of play are similar in length. Tests of skill will be lacking where simple shots are too numerous; and on the other hand, if shots are too long and too difficult, the players will soon become exasperated.

Short holes should be hard and interesting, should not succeed each other and should not be too numerous — not more than a total of five in an eighteen-hole course. The longer holes serve mostly to test a player's ability and to speed the course. The last of the first nine holes and the last of the second nine are desirable places to stage tests of skill. In fact, the last three holes of a course might well be severe tests. The first and second holes may be rather long but should be free of unnecessary hazards, so as to get the players away from the clubhouse, thus avoiding congestion at the start.

Whatever may be the length of play from tee to green, it is determined primarily by the number of strokes that are involved in covering the distance. There may be three-, four-, five- (rarely six-) stroke holes which

PLATE No. 66

GOLF CLUBHOUSE AND STARTING BOOTH, MUNICIPAL GOLF COURSE, HERMANN PARK, HOUSTON, TEXAS

This illustrates a very simple and inexpensive clubhouse for temporary use.

PLATE No. 67. AN ATTRACTIVE TYPE OF GOLF CLUBHOUSE

This was erected on the municipal golf links of the Park and Recreation Department, Dallas, Texas. (Designed by H. A. Overbeck, Architect, Dallas, Texas.)

means that so many shots are required to go from the tee to the hole.

The number of strokes in turn will depend upon the kinds of shots that are made with different clubs in the hands of different players. It will be found, however, that an average in the number of strokes and in the distance can be assumed, and indeed must be assumed. For a three-par or three-shot hole (allowing two strokes upon the green) an average distance of from 120 to 234 yards may be negotiated by the average player. For a four-par hole (allowing two shots upon the green) an average distance of from 330 to 424 yards may be attained. In connection with a four-par hole it is best to avoid lengths of from 260 to 330 yards as they cannot be reached in one good and can be negotiated in two bad strokes, which obviously has the effect of giving undue advantage to the bad player. The latter yardages constitute what are known as "leveler holes," which, being neither long nor short, give both good and bad players equal chance. The greens of the latter usually are given special interest by being well fortified with hazards.

For a five-par hole (including two plays on the green) an average distance of from 425 to 595 yards is usually possible.

In speaking of these shorts it is necessary to differentiate between "par" and "bogey." By the former is meant theoretical perfection in the number of strokes for a hole. The latter has reference to a good average score, the number of strokes in which a good player might reasonably be expected to make each hole.

When the lines of play have been decided upon in plan, the widths of the fairway must be properly considered. It is customary to have them not less than 150 feet, when near a hazard 200 feet, and where between trees, 250 feet clearance should be allowed. They should be cut into irregular curves, gradually becoming wider where long drives arrive.

This information, and what has preceded it, should enable one to proceed with the preliminary layout of the course. Some persons with considerable experience behind them can locate lines of play upon the ground without a preliminary plan on paper. Such persons are very rare. Others find it convenient and necessary to have a complete topographic survey to work upon. Schemes to facilitate preliminary study upon paper are numerous. One of these consists of using colored strips of paper to varying average lengths of holes, so as to total an average of 73 shots in an 18-hole course and a total of 6,000 to 6,400 yards. These strips to begin with may be in eighteen such lengths as the following: 130, 160, 190, 220, 250, 330, 345, 360, 375, 390, 405, 420, 435, 450, 470, 500, 530, and 560 yards. Tenta-

tively these slips may be tacked in place upon the contour map and later moved, enlarged upon, or shortened wherever adjustments seem necessary.[1]

Golf Clubhouse and Grounds.

On every golf course a special area of varying size as among courses must be set aside from the fields of active playing of golf for certain service activities and needs connected with the conduct of the course. Unless some other very vital considerations enter into the selection of this area it should be located as near as possible to the main line of travel to the golf park.

The most prominent feature of the design of this particular area, and an essential feature of the design of the golf course in general, is the clubhouse. The size of this structure on existing golf courses ranges from a very simple inexpensive structure designed primarily for shelter to a large structure with all the facilities and equipment of a true clubhouse. For illustrations and floor plans of several types of golf clubhouses now in use on municipal courses see Plates 63-67 and Chapter V, pages 402-403. These, as will be noted, are for the most part examples of the more simple types of structures. The essential features of a comparatively small serviceable clubhouse include the following: locker rooms — small one for women and larger one for men; toilets; wash and bath facilities in close proximity to each locker room; office for the manager; small lunch room; storeroom possibly including a small shop; general lounging room, and as an auxiliary to this an ample veranda on one or more sides of the building. The more elaborate golf clubhouses might include in addition a dining room and kitchen, large social hall suitable for dancing, card rooms, ladies parlor and other facilities.

In general it is recommended that for the large majority of the municipal golf courses the smaller type of clubhouse be constructed providing only those facilities necessary for the comfort and convenience of the players and manager. The reasons for this suggestion are: a golf course is intended primarily for outdoor activities and not for indoor social center activities; as there is generally a shortage of funds for the purpose of land and the construction of the entire course and its attendant service facilities, it is wiser to expend money that might be used for an elaborate clubhouse in the construction of the course proper; the management will not be distracted by the problem of handling groups of people who care more for the social activities than for the playing of golf; the cost of maintenance will be lessened.

In addition to accessibility to main lines of travel to and from the course, the location of the clubhouse and grounds should, if possible, take advantage of good views and fresh breezes, and conform to the design of

[1] The information on golf courses which has been given here is taken from "The Design of Golf Courses," by Karl B. Lohmann, *Landscape Architecture*, October 1926.

the course whereby the ninth and eighteenth greens will be in the vicinity of the clubhouse.

Other divisions of the clubhouse grounds may include: an entrance which in design should conform to the best ideals of entrances to large parks; an ample parking space for automobiles; area for one or more tennis courts, although this is not absolutely essential; a shaded area for a children's playground where parents may leave their children while they are playing; an area for caddies when not on the course, equipped with a few simple pieces of gymnastic apparatus, horseshoe courts, basket ball goal and playground ball diamond; and possibly a site for a service structure housing golf supply, and repair shop and office for the caddy master, as occasionally such a structure is deemed desirable separate and apart from the clubhouse.

Operation Service Structures.

The maintenance of a golf course requires a considerable amount of machinery, tools and supplies, and for the proper care of these there should be an operating service house. This should be located in some inconspicuous place on the course, preferably in a wooded section on courses having woodlands.

Other Structures.

For protection against sudden storms and for shady rest places as well as to aid in keeping the drinking water supply cool it is sometimes found desirable to erect small shelters at various tees. There is opportunity for the designer to exercise considerable skill in the design of these small structures to the end that they will blend as harmoniously as possible into the landscape.

Some General Comments Concerning the Laying Out of Golf Courses.

Of all active recreation areas golf courses present the greatest opportunity for harmonizing landscape beauty with active play. The design of a golf course is largely predetermined by the topography of the area, and the problems in design are as varied and different among courses as are the topographical conditions. However, there are certain general principles in designing golf courses that are more or less applicable to all courses.

The designing of golf courses is a science in itself, and the remarkable development of the game in the United States has developed a group of experts in the design and construction of golf courses.

The following are a few general principles concerning the laying out of golf courses:

1. The golf architect should try to take advantage of any striking natural topographical features that give beautiful views, or that may add

to the enjoyment of the game by reason of the skill called for in overcoming these features. If the golf architect is not a skilled landscape architect it is very desirable that he have associated with him such an architect, not only for the benefit of the landscape architect's skill in noting existing scenic possibilities, but also in seeing the possibilities of creating new scenic resources. An instance of the latter was noted where young trees growing in a projected fairway, instead of being rooted up and burned, were care-

PLATE No. 68

PLAN MODEL OF A TWENTY-SEVEN HOLE GOLF COURSE IN GALLOPING HILL PARK, UNION COUNTY PARK SYSTEM, UNION COUNTY, NEW JERSEY

The course occupies about two hundred and fifty acres. The fairways have been cut through wooded sections, and beautiful vistas meet the eye from almost every angle. The length of holes and the par value of each hole is shown by the following table:

No.	*Length*	*Par*	*No.*	*Length*	*Par*
1	350	4	10	450	4
2	342	4	11	350	4
3	450	4	12	150	3
4	160	3	13	480	5
5	530	5	14	433	4
6	435	4	15	208	3
7	375	4	16	375	4
8	217	3	17	417	4
9	460	5	18	452	5
Out	3,329	36	In	3,315	36
	Total 6,644 yards			*Par 72*	

No.	*Length*	*Par*
1	358	4
2	385	4
3	185	3
4	310	4
5	170	3
6	385	4
7	580	5
8	350	4
9	390	4
	3,113	35

Third Nine Holes 3,113 yards Par 35

fully removed and transplanted on spaces between fairways, giving a delightful forestlike effect to this section of the course. Any unnecessary destruction of tree growth should be avoided.

2. A golf course should never start with a short hole for the reason that it slows the game at the very beginning. It is not desirable to introduce a short hole until the third or fourth hole, and never more than two in any public course of nine holes.

3. As a general rule, where a community has only one course, a design that makes play so difficult that only very good players or professionals find enjoyment in playing, should be avoided. Likewise it is debatable whether it is good economy to go to the expense of constructing a course of professional perfection for beginners or poor players to practice over. If a community has two or more courses one of them at least should be designed for the exercise of skilled play.

4. In so far as it is possible orient the fairways in a general northerly and southerly direction so as to avoid the rays of the morning and evening sun falling directly in the line of play.

5. A golf course should never be so located that one or more of the fairways run adjacent to or parallel to a heavily traveled highway, nor should a course be laid out where fairways will cross pleasure driveways or any other type of highway. These two serious faults are frequently found where golf courses are laid out in old landscaped parks whose original designs did not include such a feature as a golf course. In most of these situations noted throughout the country the systems of driveways should be replanned if the golf courses are to remain features of the parks. On the whole it is undesirable to introduce golf courses in a large city recreation park unless the park is of such size that an area for golf can be set off completely from other parts of the park.

6. The layout of a golf course should never require players in going from a green to the next tee to cross the line of play on another fairway.

Organized Camps.[1]

The laying out of an organized camp is city planning in miniature. It involves practically all the problems that are met in planning a small community. Some of the principles to be followed in planning an organized camp are:

1. *Surveys.* In addition to boundary and topographical surveys those responsible for the selection of a camp site should make careful surveys of the following: water supply, general health conditions in the neighborhood, sources of fresh milk, meat, vegetables, etc., kinds and quantities of food

[1] For a full discussion of a camp site planning see Chapter III, 'Camp Site Planning,' "Camping Out—A Manual on Organized Camping." The Macmillan Company.

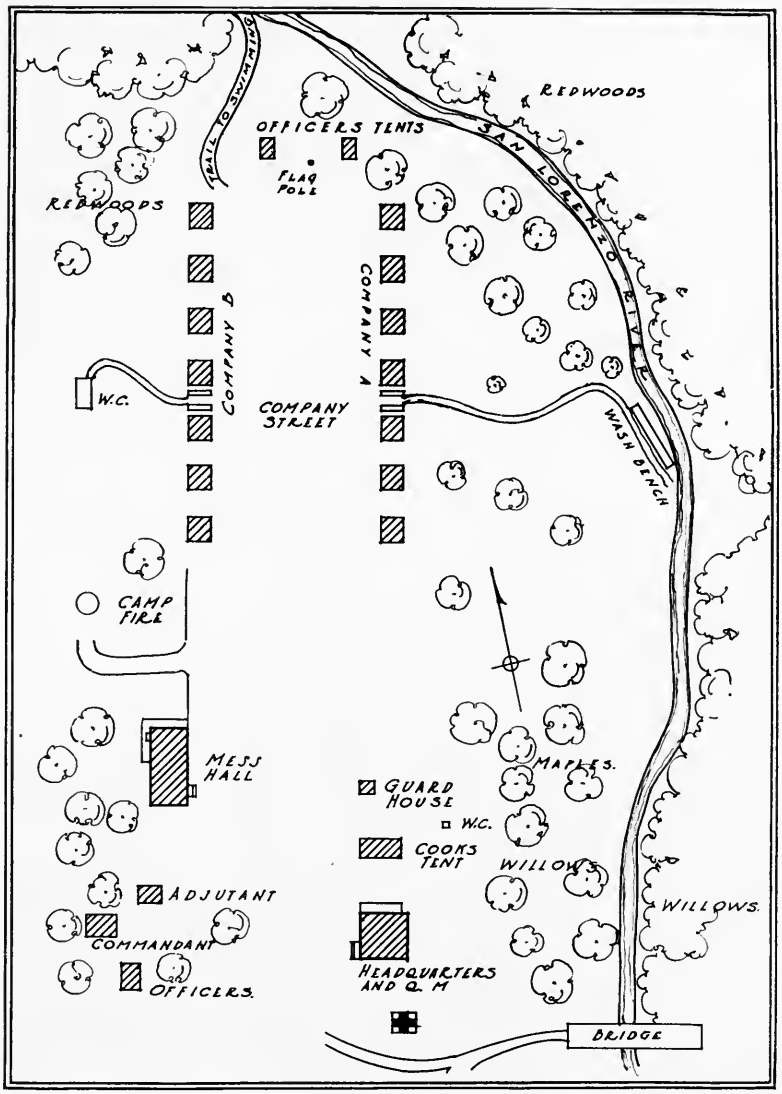


PLATE No. 69. EXAMPLE OF A FORMAL LAYOUT OF A BOY SCOUT CAMP

Mess hall and administrative headquarters grouped at one end of the immediate camp site. Officers' quarters at opposite end and so placed as to give view of the campus. Flag pole in front of the officers' tents. Water closet in rear of one line of sleeping quarters. Wash bench in rear of other line of sleeping quarters.

supplies that can be secured in the neighborhood, and facilities for transportation.

In planning the site, therefore, it is desirable to have the expert opinions of the following persons: an experienced camp director, a civil engineer, a sanitary expert, and a landscape architect, if there is to be a great deal of landscaping of the immediate site. It would probably be wise to consult also a building architect and a construction engineer.

2. *Types of Camp Layouts.* Among different types of camp layouts are:

(*a*) The military plan. This consists of arranging the sleeping quarters in rows forming either streets or a hollow square with other facilities such as kitchen, dining hall, headquarters, hospital, etc., in a certain formal relation to the sleeping and living quarters. (See Plate 69, page 168.)

(*b*) Council ring plan. This is a form of the military plan type with the living quarters arranged in the segment of a circle or an ellipse, the service structures being placed in a certain formal relation to the housing quarters.

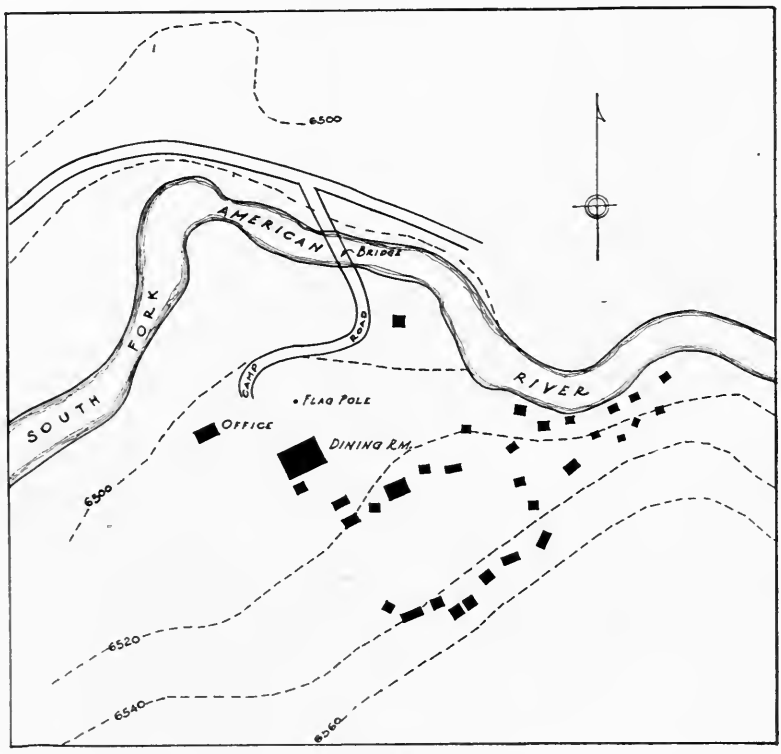


PLATE NO. 70

TOPOGRAPHICAL PLAN LAYOUT OF MUNICIPAL CAMP, SACRAMENTO, CALIFORNIA

Sleeping quarters so arranged that no single unit has its view obstructed by another. Dining room, office and flag pole on lower ground. Water for camp taken from river far above camp. Camp lighted by electricity from its own hydroelectric power plant.

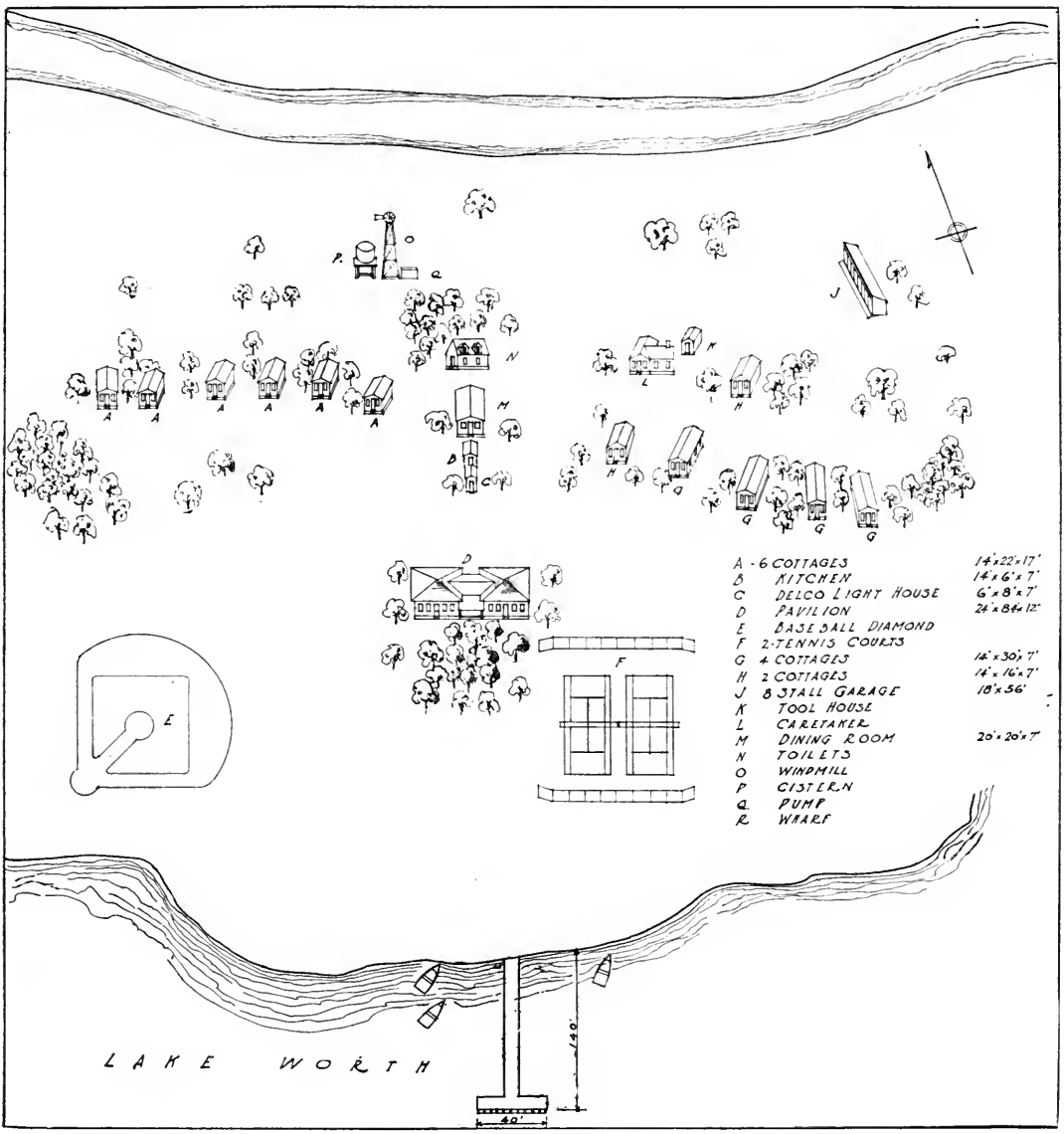


PLATE No. 71

SEMI-TOPOGRAPHICAL PLAN LAYOUT OF AN INDUSTRIAL RECREATION CAMP, LAKE WORTH RESERVATION, FORT WORTH, TEXAS

Sleeping quarters on high ground; dining hall between two divisions of sleeping quarters. Well and water storage facilities on highest ground. Recreation hall in vicinity of games fields, games courts, and boating dock.

(*c*) Topographical plan. No formal or semi-formal layout is followed in this plan, with the possible exception that the living quarters are grouped in one area of the site but scattered here and there in conformity to the peculiarities of the topography. Other structures will likewise be placed in conformity to topographical conditions. Very picturesque landscape effects may be produced by this plan. (See Plate 70, page 169.)

3. *Location of Kitchen and Dining Hall.* In general these structures should be located at least one hundred to one hundred and fifty feet distant from the sleeping quarters, and at least two hundred feet from the latrines or toilets, unless the latter are of the most modern type.

4. *Location of Outside Latrines or Toilets.* These should be located preferably to the rear, or to the right or left of the sleeping quarters and at least from seventy-five to one hundred feet from them.

5. *Location of Cesspools, Septic Tanks and Toilets in Relation to the Water Areas.* No cesspool, septic tank or privy toilet should be placed closer than one hundred feet to water areas used for domestic purposes and swimming, and a greater distance is desirable, especially if the subsoil be of limestone or other open formation. These facilities should always be located below the source of water supply for drinking and washing purposes, or at such a distance as to prevent any possible contamination.

6. *Location of Wells and Springs.* If possible the areas occupied by dwellings and all service facilities should be laid out below wells and springs which are the source of the water supply. The same principle should hold if the water supply is drawn from a running stream. In that case care should be taken to ascertain whether there are possible sources of contamination on the higher reaches of the stream. A knowledge of the geological formation of the camp site is extremely important in determining the relative position of the water supply and the various structures of the camp and especially of the various facilities used for the disposal of sewage.

7. *Location of Barn, Stable or Corral.* Any structure or pen used for housing or confining livestock of any kind should be located at least six hundred to eight hundred feet from the sites occupied by the housing units and the kitchen and dining room.

Very Small Ovals, Triangles, Circles, Trapezoids, Squares

The primary function of these areas, if they can be said to have any special function, is to adorn the vicinity in which they are located, and when numerous enough throughout a city, their ensemble effect is to adorn the city as a whole. Since they are too small to use effectively for any form of recreation, either active or passive, except occasionally as resting points, the problem of their treatment is entirely a landscape one. Such landscape

treatment as they may receive must necessarily be very formal and usually of a very simple nature.

As these areas are generally closely related to the street plan they should be brought to the grade of the street parking strip or sidewalk and the entire area curbed and guttered as are the surrounding streets. This is a general rule. There may be exceptions as to topography now and then.

Their plantings may include merely a simple lawn, or a lawn with one or more flower beds, or lawn and low growing shrubs, or lawn and one or more trees. Since they are usually located at street intersections, planting that will obstruct the vision of drivers of motor vehicles is not desirable.

In congested sections of cities it is often exceedingly difficult to maintain any kind of plantations on these areas, and for this reason they are sometimes completely hardsurfaced, either on a level with the surrounding streets, thus becoming a part of the street, or else hardsurfaced on a level with the sidewalks. In this case they become isles of safety for pedestrians and have some value, perhaps, in the prevention of automobile accidents by dividing the lines of traffic.

If an attempt is made to adorn these areas in congested sections of a city with any kind of plantations, a strong fence entirely around the planted area becomes an absolute necessity.

If the areas happen to be at important points of passenger transfer, a very practical way of treating them is to lay a sidewalk entirely around each area, erect a fence on the inner line of the walk and place the plantations inside the fence. Some very attractive effects have been secured in this way and with some degree of assurance that the plantations will not be destroyed. Sometimes, for the further comfort of persons waiting for a street car or bus, seats have been placed around the fence and either anchored to the fence or to the pavement, or to both.

A rather common use to which these small areas is put is as sites for statues, monuments and small fountains. A few instances have been noted where a living Christmas tree has been grown in such an area.

The following illustrations show examples of the treatment of a number of small areas of various shapes and sizes of a central parking strip. (See Plates 72,-77, pages 173-175.)

PLATE No. 72. THOMAS CIRCLE, WASHINGTON, D. C.
Illustrating a simple treatment of a Circular Area.

PLATE No. 73. COLONIAL COURT, UNION HILLS, KANSAS CITY, MISSOURI
This design by Hare & Hare illustrates the treatment of a "Court" Area.

PLATE No. 74
ILLUSTRATING TREATMENT OF A VERY SMALL CIRCLE AT INTERSECTION OF HEAVILY TRAVELED ROADWAYS

PLATE No. 75
SIMPLE TREATMENT OF A SMALL OVAL AT INTERSECTION OF HEAVILY TRAVELED STREETS AND ROADWAYS

PLATE No. 76
ILLUSTRATING LANDSCAPE AND ARCHITECTURAL TREATMENT OF
A TRIANGULAR AREA, WASHINGTON, D. C.

PLATE No. 77
ILLUSTRATING TREATMENT OF A CENTRAL PARKING STRIP TRAVERSED
BY STREET RAILWAY, WASHINGTON, D. C.

"Intown" or Neighborhood Parks

The wide range in size, shape and topography, and differences in the location of these areas, make it impossible to present anything of immediate practical value concerning their design in the limited space of a section of one chapter. The most that will be attempted will be to give a few general observations concerning their treatment, followed by illustrations and plans of some existing parks of this type.

It was noted in Chapter II, page 35, that the primary functions of this type of park were to provide, in an environment of growing things, rest, relaxation and breathing places for the people of the area where they

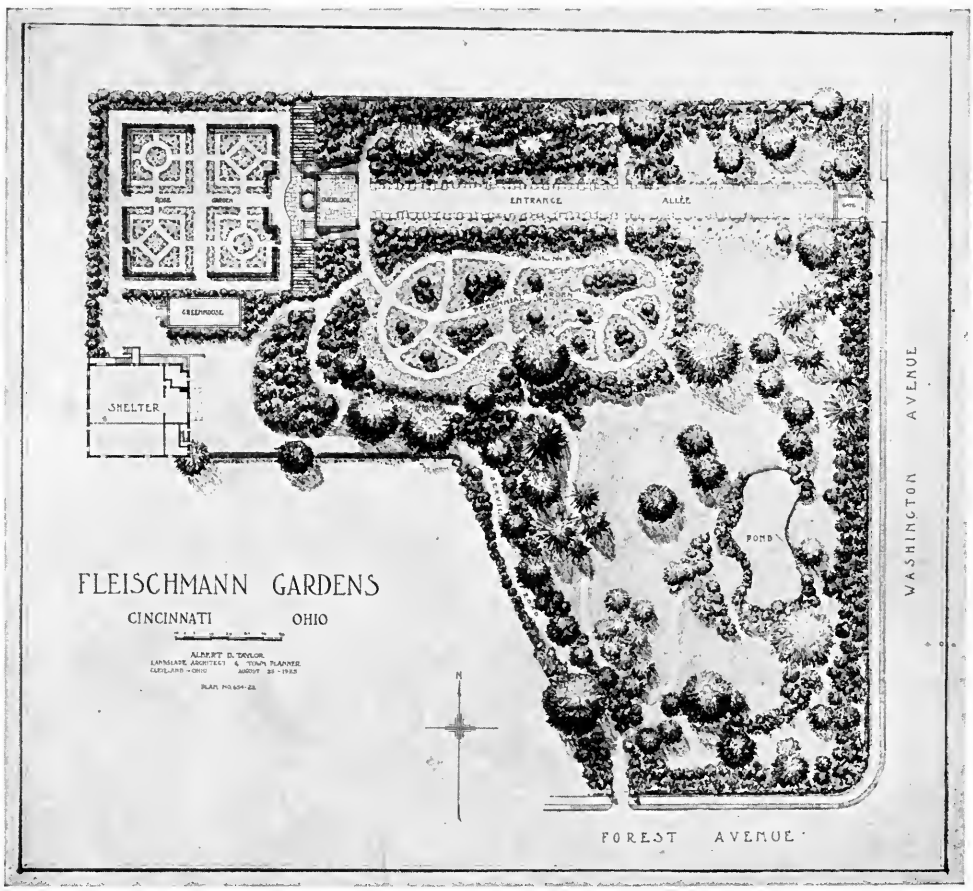


Plate No. 78. THE FLEISCHMANN GARDENS, CINCINNATI, OHIO
(Design by A. D. Taylor.)

This is an excellent illustration of the recent development of an area of the neighborhood park type as a public garden. The area was formerly the site of the home of the late Julius Fleischmann and the grounds were already noted for the fine collection of flowers, shrubs and trees. This situation gave the cue to the present development of the area as a public garden. The area of this property is approximately three acres. (For a full description of the plan including cost estimates of development see *Parks and Recreation*, March–April 1926, pages 401–409.)

are located; adornment of these areas, and, under certain conditions, a limited amount of semi-active recreation.

It cannot be too strongly emphasized that the first of these functions is the most fundamental one, and that all designing of these areas should proceed with this objective in view. In an age when millions of people are subjected to the high nervous tension of a commercial-industrial city civilization, the need of landscaped areas where some degree of beauty, peace and quiet can be found close to the homes of the people is even more important in some degree than the need for active recreation areas, although the people themselves may not always appreciate this fact. From this point of view the problems in design are chiefly problems for the landscape architect alone, although in some instances, as in the development of certain types of small waterfront parks, or waterfront promenades, the construction engineer may play a more important part.

General Factors That May Influence Design.

Perhaps one of the most important general factors influencing the design of intown parks is the factor of location. According to location they may be classified as follows:

1. *Areas in those sections of urban communities where people congregate in large numbers because of public or private business or for social intermingling.* Thus in both small and large communities an intown park may be found about a city hall, a courthouse or other public building. In other instances such parks may be found in industrial districts, and in sections devoted chiefly to shopping and the professions. Small waterfront parks and short or long waterfront promenades are a special type of the intown park where people are likely to go for social intermingling or to enjoy the fine views and cooling breezes.

2. *Areas located in residential districts.* As to the location of intown parks in residential districts a further differentiation may be made as affecting design. This differentiation is as follows:

(*a*) Park areas in highly congested sections in cities, such as tenement or low grade apartment house districts.

(*b*) Park areas located in the better class apartment house districts.

(*c*) Park areas in residential sections where the people for the most part live in single family or double family houses.

The severe use given all these park areas, located in downtown sections of cities where people congregate in large numbers, and in tenement districts, demands a design of the utmost formality and simplicity. The same is likely to be true in factory districts also. While it is desirable to have a decorative and naturalistic treatment in these districts, the prac-

tical difficulties of making grass, flowers, shrubs and trees grow in such regions, and the especially difficult problem of protecting them from destruction by the people themselves, make simplicity imperative.

In sections of better class apartment houses a wider range of design may be possible, but in general a formal design will more likely be in harmony with the surrounding architecture than a park designed along more or less naturalistic lines.

In residential districts of slight congestion a wide range of treatment may be possible, running from the severely formal to semi-formal and naturalistic designs. Naturalistic designs are especially possible and appropriate in residential sections where the topography is broken, as is often

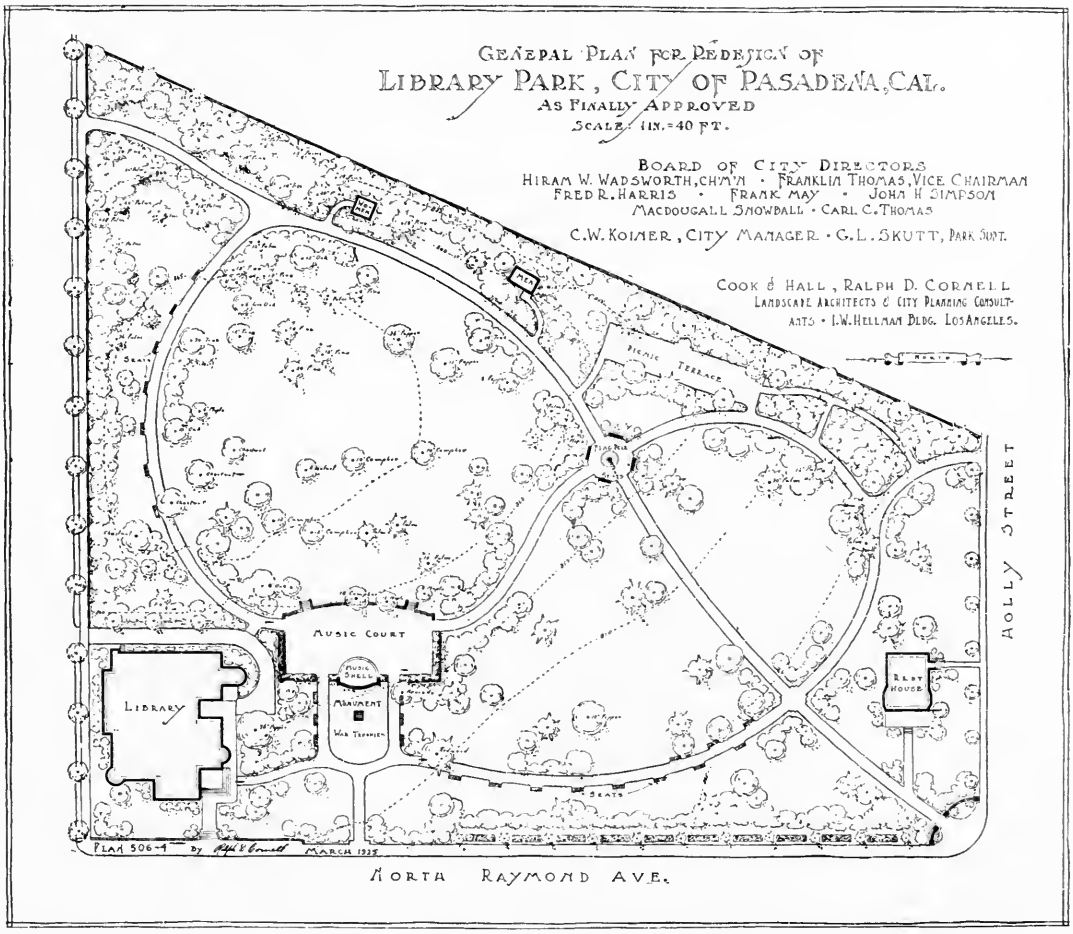


PLATE NO. 79. GENERAL PLAN OF LIBRARY PARK, PASADENA, CALIFORNIA
(Cook and Hall, Ralph D. Cornell, Landscape Architects, Los Angeles.)

This park of 5.53 acres is located near the center of the city. The heavy border plantings serve as a screen, and the trees and stretches of lawn create a restful effect.

The music shell and court and picnic terrace are special recreation features. Note the generous provision of seats along the paths.

the case along deep bedded streams or in hilly regions. Small parks of the naturalistic type may have more than a neighborhood appeal because of some particularly fine specimens of native tree growth, or because of fine views that may be had from a prominent elevation or other unusual conditions. In point of fact there are many intown parks of a natural character that provide some of the conditions which are found at their best only in large parks and reservations.

3. *Areas used by pedestrians.* One other location factor is likely to affect the design of areas located in any of the above-mentioned divisions — the location of the park in such a position as will cause it to be used largely by pedestrians as a part of the general street plan. Examples of such locations are large triangles and circles at street intersections or where squares are located directly across street lines.

In such locations the system of pathways and walks becomes of prime consideration, and arrangements for seats must not be such as to obstruct unnecessarily the movement of the people. The terminal points of the walks will need to be so designed as to connect with the adjoining street system in such a manner as to enable people to go, without too much wandering, directly to the point they desire.

4. *Design as affected by some distinct educational-recreational purpose.* Occasionally an area of the intown park type may be designed to serve some direct educational-recreational purpose. The Boston Public Gardens and the Fleischmann Gardens (Cincinnati) are examples, although in such instances they might properly fall into a separate and distinct classification of their own.

Statuary in Intown Parks.

All over the United States the small intown parks have been seized upon as sites for statues and monuments, and as repositories for cannon balls and cannon and various other things of supposedly memorial character and value. To some extent such use of very formally designed downtown squares and plazas may have some justification, but on the whole the cluttering up of these spots has no justification from the standpoint of taste and certainly has no justification from the standpoint of the fundamental purpose of the areas.

The Use of Water in the Design of Intown Parks.

The use of water in intown parks, either in the form of fountains, ponds, miniature lakes, running streams with cascades and falls, may be a most pleasing feature, for if skillfully handled it may contribute very much indeed to the fundamental purpose of these areas. A fountain that is not too active (and without too much architecture), the gurgle of a little water-

fall, the lazy flow of a stream, the placid peace of a pond or miniature lake, are all very conducive to that feeling of peace, repose and relaxation which the park should produce.

Forms of recreation of a semi-active and active character that may be provided for in the design of Neighborhood Parks.

When forms of semi-active and active recreation are considered in connection with the design of intown parks, the designer begins to tread on dangerous ground, for the reason that it is easy to do violence to the fundamental purpose of these areas and transform entirely their primary character. The introduction of one form of recreation leads to that of another and in this way properties of this type have been transformed into full-fledged children's playgrounds or neighborhood playfield-parks.

As a general principle only those forms of semi-active and active recreation should be included in the design of neighborhood parks as will

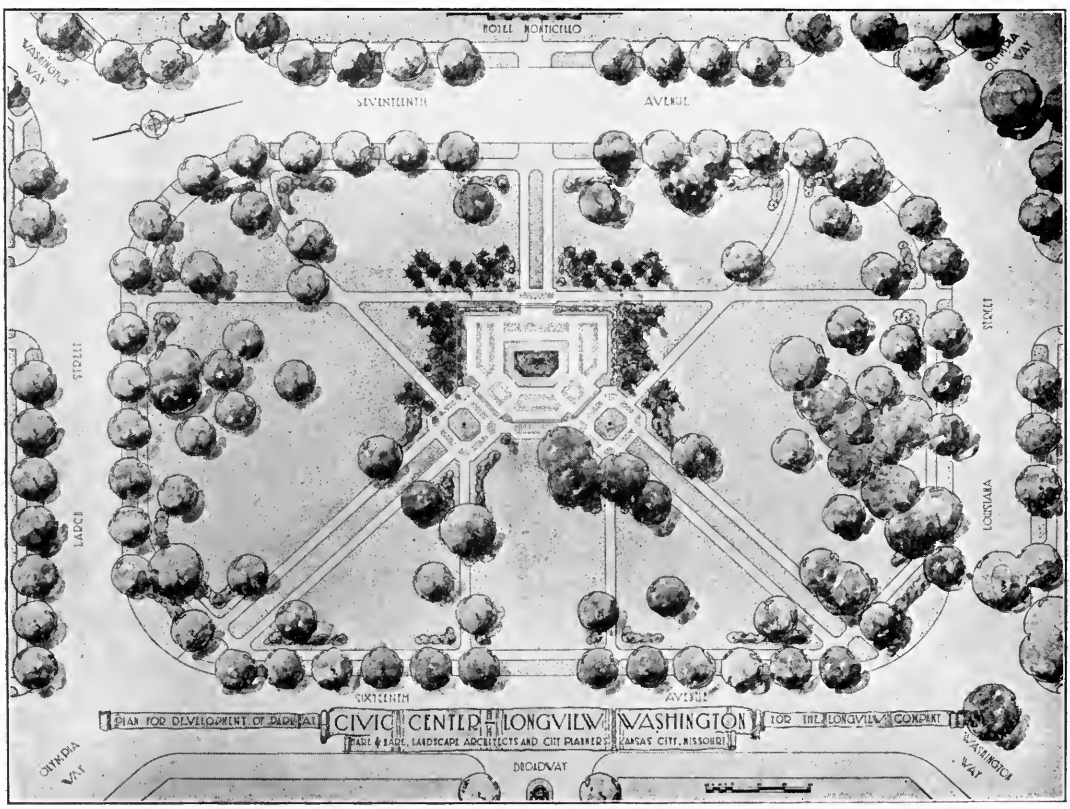


PLATE NO. 80

PLAN ILLUSTRATING THE DEVELOPMENT OF A DOWNTOWN PARK USED AS THE SITE FOR A CIVIC CENTER, LONGVIEW, WASHINGTON

(Design by Hare & Hare.)

not seriously interfere with their primary purpose of providing maximum opportunity for rest, relaxation and repose or which are of such a nature as will not seriously interfere with the maintenance of the environmental characteristics conducive to those desirable physical and mental conditions. Some of the types of semi-active and active recreation that may possibly be considered in designing these areas are as follows:

1. Little children may be permitted to play at will about the lawns under the eyes of their mothers, nurses or older sisters, or a special protected nook may be designed for them where a few simple pieces of equipment may be provided.

2. Games especially adapted to lawns and which may be played by both older children and adults, such as lawn croquet, hand tennis, etc., may be permitted.

3. Quiet games, such as checkers, dominoes and chess, which may be played by both adults and children. The equipment necessary consists of tables and benches scattered about the park. These are quite necessary for other purposes to which the park may be put.

4. Music, in the form of band concerts, solo and chorus singing, victrola and radio concerts, might properly be conducted in parks of this character. The essential equipment requires a band stand which might be so designed as to serve as a shelter with a storage place underneath the band stand floor. This structure might also be so designed as to serve as a small theatre, although a naturalistic stage would be more appropriate in this type of park.

5. Dramatics, in the form of small pageants, plays, small play festivals, might very appropriately be presented in these parks. A small naturalistic stage could more often be included in the design of those parks located in residential neighborhoods than has hitherto been the case.

6. In small communities and in neighborhoods of larger communities these parks may serve admirably for social gatherings of various kinds and also for public addresses and community or neighborhood celebrations. In some large cities the design of downtown squares provides special areas for public addresses. These areas are usually graveled and have no special provision for seating. In many communities of the country where the Spanish influence prevails the downtown plaza or square is a genuine social center. In country communities all over the United States the downtown square serves much the same purpose.

For all these purposes very little equipment of a material character foreign to the landscape environment is required. The most conspicuous would be a combined shelter and band stand, seats and perhaps a few tables.

In the larger intown parks throughout the country there are numerous

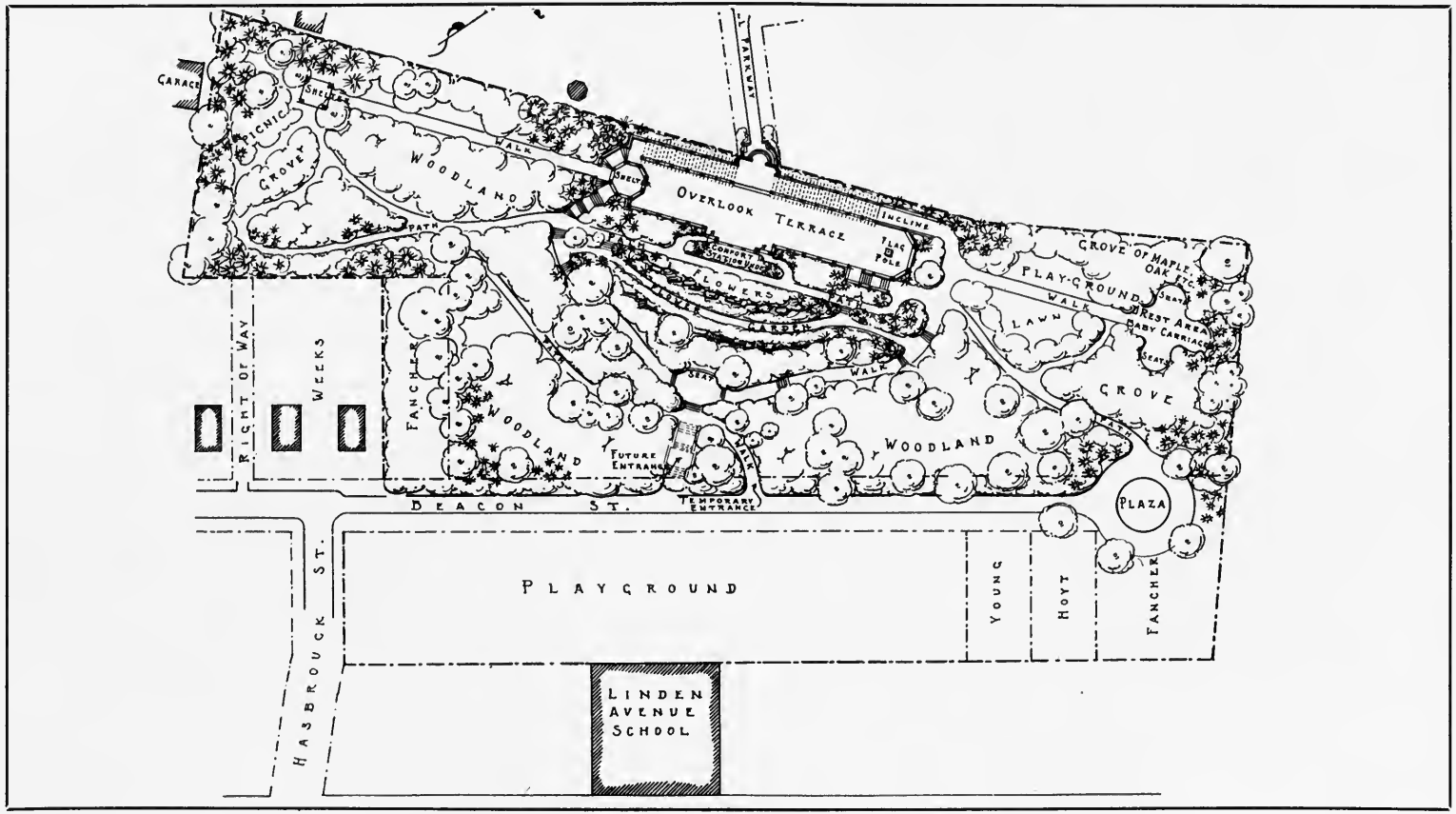


PLATE NO. 81. KATHERINE CHAPPELL MEMORIAL PARK, MIDDLETOWN, NEW YORK

A feature of this hillside area is that its upper part is the highest point in the city. The dominant feature of the plan is the terrace at the summit where people may walk while enjoying the view, children may play, concerts may be enjoyed and patriotic and other meetings may be held.

Along the back of the terrace throughout its length is a vine-covered pergola, or arbor, providing a place for seats in the shade. Here a high wall gives a sense of shelter while it screens the rear of the houses adjoining the park on that side. Under the terrace provision is made for a public comfort station, administration office and tool room. Forming an attractive architectural termination of the terrace at the south end, is a pavilion that provides a vantage point commanding the panoramic view and serving as a shelter. At the end of the terrace opposite the pavilion is a flagstaff. The children's playground and space for mothers with children and baby carriages are provided beyond the northerly end of the terrace. It is in a grove and is reached from the terrace by an incline for baby carriages. Here are to be found the swings, sand boxes, slides, and other suitable apparatus for the children. Other features include the picnic grove with rustic shelter, flower garden below the terrace, lawns and woodland areas. Winding paths with easy grades following the slopes connect the various sections of the park.

examples of the introduction of more active recreation facilities into the design. The "frog pond" in Boston Common is a very interesting feature of this historic intown park, as is the battery of tennis courts, and even a baseball field. Many such parks have fully developed children's playgrounds. The introduction of such features may perhaps be countenanced where the area is so large that the spaces set aside for active recreation are only a minor part of the entire park area. When these active recreation areas begin to assume a position of major importance as to space occupied, the park passes over into the character of a neighborhood playfield-park and ceases to be a true neighborhood park, although it may retain some of the characteristics of such a park. It has already been pointed out that wherever possible a playfield-park should have a section that is entirely landscaped and designed to serve as a neighborhood park.

Plans of Neighborhood Parks. Throughout the section on Intown or

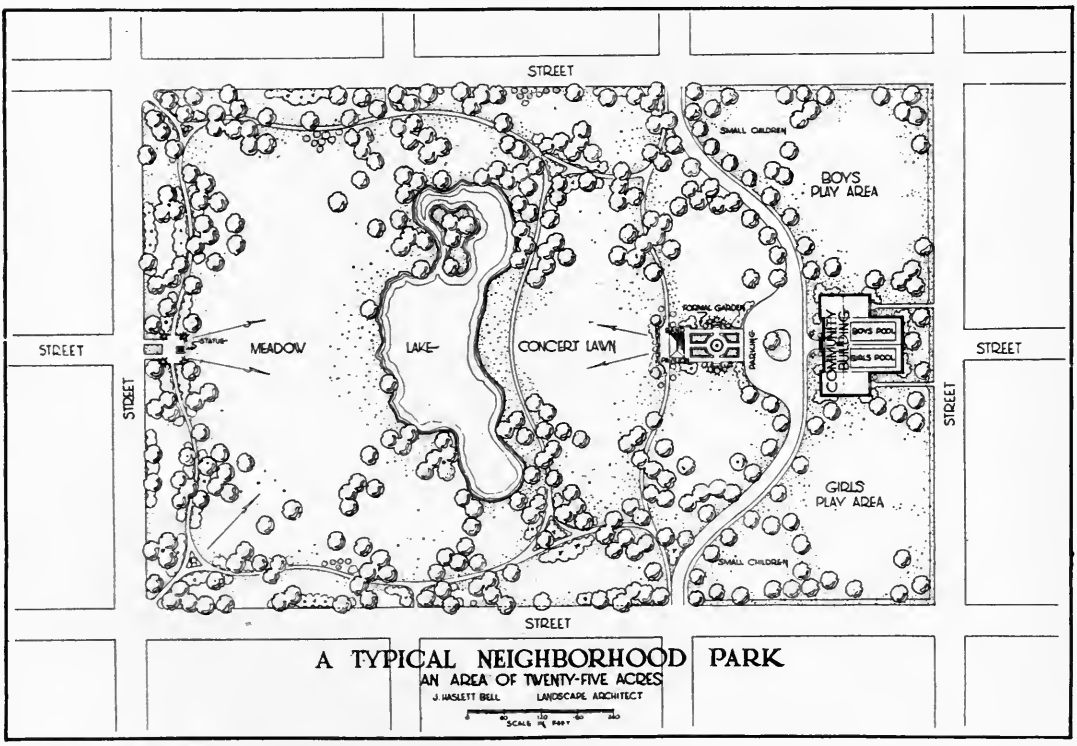


PLATE NO. 82. PLAN FOR "A TYPICAL NEIGHBORHOOD PARK"
(O. J. Haslett Bell, Landscape Architect, Atlanta, Georgia.)

This idealistic conception of a neighborhood park of 25 acres shows the relative position and space allotted to the three divisions: (1) a "real park area," (2) a "playground and community area," and (3) a "buffer area" between the noisy and quiet sections. The park area occupies most of the space and offers vistas across lawn and water. The playground areas are for directed play of children not over twelve years of age. It is assumed that older children and adults will have the use of facilities elsewhere. Band pavilion, rose garden and community building are other important features of this typical plan.

A plan of a neighborhood park adjacent to a neighborhood playfield will be found on page 147 of this chapter.

Neighborhood Parks are to be found plans and illustrations of a number of neighborhood parks which show some of the many methods of developing this type of park property. These plans include the following: Fleischmann Gardens, Cincinnati (p. 176), Library Park, Pasadena (p. 178), Downtown Park used as a site for a civic center, Longview, Washington (p. 180), Katherine Chappell Memorial Park, Middletown, New York (p. 182), Typical Neighborhood Park, Atlanta, Georgia (p. 183).

Large Parks

In general there is nothing in the design of the small or intown park that is new or original or characteristically American. The formal method of treatment which necessity in most cases imposes upon them is in principle almost as old as civilization.

It is quite otherwise with the large city recreation park. The designs of these parks in American cities is a distinct and original contribution to

Plate No. 83
BRIDLE PATH IN WARINANCO PARK, UNION COUNTY PARK SYSTEM, UNION COUNTY, NEW JERSEY
(Cut from *Parks and Recreation.*)

landscape architecture upon principles evolved by the pioneer park planners and builders in this country.

While there may be spaces here and there in larger city recreation parks treated after a formal design, the predominating characteristic of the large park areas in American cities is their naturalness. This naturalness has been attained through the skill of the designers in utilizing already existing natural features or in more or less transforming, topographically and botanically, given areas of ground.

Factors to Be Considered in Selecting Large Park Areas.

1. *Accessibility.* If large parks are to perform the functions intended of them they must be readily accessible not only to those owning their own means of transportation but especially to those who do not. Distance from the people to be served is more or less a relative matter. A property twenty miles from a city with a rapid transit line to or near it would likely be as accessible as another property ten miles from the city but reached only by an ordinary street car line. The latter property, on the other hand, would be as near as one located only five miles from the city if there were no means of transportation within a reasonable distance from it. Due regard therefore should be given to the question of existing transportation or to the possibilities of securing transportation in the immediate future.

2. *Interference with major traffic ways.* It is very desirable that the property selected will not in the future interfere with major traffic ways. Otherwise it will likely be necessary to destroy its desirability by projecting these lines through or across it or else ingress to the city or egress from the city will be seriously obstructed. This problem may be obviated sometimes by securing property in the form of a huge wedge, the edge of which projects toward the heart of the city.

3. *Boundaries.* Special attention should be given to the boundaries. If the property is within an area that is already platted, boundaries should extend to the street; if in the vicinity of a roadway, entirely to the road; if along a river, the entire bank of the river should be secured. Properties facing upon back yards are not particularly desirable. It is sometimes possible by donating some land and by making an agreement with the property owners to get an extra street run through in such a situation. By building a mound and using heavy screen planting the undesirable view may be shut out, but property owners are likely to object to this.

4. *Topographical features.* Care should be exercised to secure the whole of any topographical feature. Thus, if there is a lake, stream, or hill, the entire area in which the feature is situated should be secured, and not merely a part of it.

Desirable Landscape Characteristics. Desirable landscape characteristics in large city recreation parks are:

1. *Topography.* While there are some very beautiful and useful large parks in America where the topography is predominatingly level, on the whole it is more desirable to secure an area that presents some elevations of varying heights—plateaus, mesas or lowlands; water, either in the form of brooks, creeks, rivers or lakes or more of these different water forms, or places where bodies of water can be readily created.

2. *Botanical features.* Botanically desirable features are tree growth either in the form of extensive woodlands or clumps of trees scattered here and there over the area, shrubs along borders of woodlands, especially along the boundaries of the park and here and there along the borders of water areas and other locations; grassy glades and meadows; wild flowers, ferns, mosses and other flora.

PLATE No. 84

THE CHILDREN'S QUARTERS, GOLDEN GATE PARK, SAN FRANCISCO, CALIFORNIA

This section of Golden Gate Park is equipped with a large variety of facilities for the play, amusement and entertainment of the children. It is a never failing source of interest to the parents as well. The picture illustrates an average Sunday attendance at the Children's Quarters.

3. *Zoölogical features.* Presence of specimens of native animal, bird, insect and water life is desirable, except for those specimens that are either dangerous or troublesome to people. There are some large parks in this country that at certain times of the year are practically useless because of swarms of mosquitoes. Every large park should be a bird sanctuary, not only because of the pleasure that people have from their songs, plumage or habits, but also because of the protection which they afford to plant forms.

Elements Involved in Design. Designing of areas selected for large parks involves:

1. Conservation of natural resources of the areas.

2. Making such additions as will preserve the integrity of the park as, for example, screening the park by heavy plantations or by mounds and plantations against the city, which nearly always tends to press upon these areas; or bringing out some possibility, as in creating a lake by empounding water, planting some barren spot which might be more beautiful and useful if covered with trees and shrubs, or filling up some marshy area that would be more beautiful and useful as a meadow.

3. Making the various parts of the park accessible by a system of driveways, bridle paths and footpaths.

4. The introduction of such recreational, educational-recreational, and service facilities as will enable the people to secure greater enjoyment and comfort from their temporary sojourn in the park.

5. The introduction of service facilities necessary for the proper maintenance and operation of the park.

The general principle to be followed in designing the facilities mentioned under 3, 4 and 5 is so to design them that they will merge as completely as possible into the surrounding natural forms and not assume a primary and important position in the general design. This is especially true of those facilities under 4 and 5.

Making Parks Accessible. Among the measures for making various parts of a park accessible are the following:

1. *Pleasure driveways.* Before the advent of the automobile a primary feature of the designs of all large parks was a system of carriage driveways. These driveways were, as a general rule, comparatively narrow, often quite winding, and did not require an excessively heavy and costly roadbed and surfacing. The use of such driveways by fairly slow-moving, horse-drawn vehicles was not inconsistent with the primary purpose of the park. The automobile has changed all this to such an extent that the presence of these driveways is an anachronism, a distinct detriment to the primary purpose or purposes of these areas and of very little recreational value to motorists. They have become in many instances avenues for rapid move-

ment between the city and suburban sections rather than pleasure driveways. At the same time, the peaceful, quiet atmosphere of the parks has been to a great degree destroyed. The usefulness of these driveways for pleasure driving can be gauged when one remembers that an automobile going at the rate of twenty miles an hour would run through a park of a square mile area (if in the form of a square) in about three minutes, and if it ran completely around the park would take only about twelve minutes. Very few motorists like to be so circumscribed in their driving.

The inclusion of automobile pleasure driveways in the design of any large park of less than six or eight hundred acres should be seriously questioned, and in most instances they should be absolutely excluded from an interior of the park. It would perhaps be better design to construct the pleasure driveways in the form of boulevards or parkways around the park or along one rather than through it.

2. *Service-pleasure driveways.* Even though pleasure driveways were excluded from the smaller of the large parks, it would still be necessary to

PLATE No. 85

A SECTION OF BROOKSIDE PARK, PASADENA, CALIFORNIA, DEVOTED TO ACTIVE RECREATION

Swimming center, athletic field, parking facilities and stadium are shown in the distance. Other active recreation facilities in Brookside Park, which contains 516 acres, include: five tennis courts; ten-acre children's playground; stadium seating 60,000 and costing $300,000; riding academy; twelve miles of bridle paths; three miles of driveways; fifty picnic nooks equipped with tables, benches and ovens. (See pages 191-201.)

have a system of minor service-pleasure driveways which might be composed of a major circuit driveway so designed as to come as near as possible to all the major points of interest, with radical service driveways leading to these points of interest, if off the main line, and terminating in spaces providing for parking. This major circuit driveway would not need to be so broad, so expensively constructed, nor so free from comparatively sharp curves and reasonably steep gradients as would be the case if the driveways were to be primarily for pleasure driving. It would be necessary to enforce rigidly rules of low speed movement. The primary purpose of this system of driveways would be merely to get the people to the various points of interest and service in the park, and its use for mere pleasure driving should be discouraged. A series of "thank-you-ma'ams" constructed in the roadways at such intervals as to cause no discomfort at a low rate of speed but capable of causing a great deal of discomfort if passed over rapidly might be a very effective method of enforcing speed rules.

3. *Bridle paths.* With the revival of horseback riding throughout the country the bridle path is once more becoming an important feature in the design of large parks. Obviously it is not desirable to allow horsemen to ride at will over the park area, hence these paths must be regularly laid out, preferably in a circuit or series of circuits, conforming in some respects to the line of the major service-pleasure driveways mentioned above. However, because it is not so necessary to give attention to gradients and sharp curves, these paths may be laid out in parts of a park where it would be impossible or difficult to build roads. The kinds of surfacing commonly used (cinders, gravel, tan bark, etc.), in case special surfacing is needed, blend inconspicuously into the landscape.

4. *Footpaths.* The ideal situation with respect to walking and hiking would be to allow pedestrians to wander at will wherever they desired in large parks, and in point of fact much of the walking in them is done after this manner. However, there are two purposes involved in walking. There is the walk for the pleasure of leisurely movement, of viewing plant, geological, animal forms, fine vistas and for the pleasure and value of the exercise. Walking may also be used as a method of reaching some particular objective such as a music court, a ball field, tennis courts, swimming pool, skating center or other feature in the park. For the first of these objectives, especially in the case of individuals or small groups, a system of pathways is not so important, but for the second purpose it is absolutely essential to have a system of paths following rather closely the system of driveways. To a considerable degree the first-mentioned purposes of walking can be attained by following a regularly laid out system of pathways.

No difficulty will be experienced in keeping vehicles to roadways, and

PLATE No. 86

SKATING ON LAKE IN VAN CORTLAND PARK, BRONX, NEW YORK, NEW YORK

Lake is lighted for night use — skating in winter and boating in summer.

very little difficulty will be experienced in keeping horsemen to bridle paths, but with pedestrians there is always the possibility of their breaking away from the established paths for some shorter cut or better grade unless extraordinary care is exercised in planning the pathways so that they will lead as directly as possible to the objective or objectives. It is desirable, however, to avoid monotony in this respect. Frequently, by judicious plantings of screens at the points where paths may be directed in a longer route than would be possible otherwise, the tendency to break through by a shorter route may be obviated. On the other hand the planner can sometimes learn a great deal as to where paths ought to go by observing where people naturally form them.

In the remote and more or less woodland sections of large parks, paths may be in the form of trails, with no special preparation other than the clearing out of obstructions in the form of bushes, fallen logs, rocks and other debris. If used fairly intensively, a surfacing of gravel, tan bark or pine needles may be all that is necessary to prevent mud and keep down dust. On steep grades it is advisable to use some hard surface with gutters to prevent undue washing. On main lines of travel where use is intensive, paths will have to be specially surfaced, gravel, cinders, tarvia being most commonly used. Special attention should be given to their shape as elements in the design.

Entrances to Large Parks.

Major entrances to large parks throughout the United States range from broad roadways of extremely simple naturalistic design through formal mall-like courses to monumental gateways of stone, brick or other material. "The main entrance should have special emphasis and consideration. The component elements of the main entrance are roadway, paths, architecture and planting, all of which in varying combinations obviously allow considerable variation and ingenuity of design. The road for the main entrance may come into the grounds straight or at right angles to the road upon which the park abuts, or it may come in at an acute angle, but the angle must not be so acute as to interfere with traffic or as to spoil the desired architectural effect. The road may be wide or narrow, or it may be divided into two parallel ways; it may lead up into the park, which is the most desirable approach, or it may lead down into it. A single path may parallel the road, or more than one, or in cases where a more convenient path of entrance may be elsewhere provided, there need be none at all along the main road. The architecture of the entrance may consist of gates, piers, railings, shelters and waiting stations. Whatever the treatment chosen, it is better to be too massive than too small in effect, and it should be harmonious, consistent and appropriate in scale, style, ornament and general workmanship. Similar care should be given to the choice of planting material that is used to accentuate the effect of the design of the entrance. Nothing detracts from a dignified, massive and inviting entrance more successfully than a cluttered and inharmonious collection of plants" (Karl B. Lohmann, Head Division of Landscape Architecture, University of Illinois, in *Parks and Recreation*, November–December 1925, page 121).

Minor entrances to large parks may serve as exits or as convenient entrances to points of interest. They are usually treated in naturalistic design but may have some architectural effects in the form of pillars or gateways. It may be pointed out that the monumental architectural effects which characterize major entrances into some of the large parks of this country represent not only an expenditure of time, money and energy that might have been better applied otherwise, but also an effect completely out of harmony with the general nature of the parks.

Provisions for Various Recreation Activities

Picnic Facilities. Picnicking by both small and large groups is one of the most extensive uses to which large parks may be put, providing they naturally, or by design or both, present the proper locations for picnic grounds. Any planner of a large park for general use who intentionally omits ample opportunities for picnicking does the one thing that will immeas-

urably limit its use. Woodland areas that are reasonably level, groves of trees, wooded places along streams or on the shores of other water forms, scenic points providing shade nearby, are some of the natural locations for picnic facilities. (See Chapter on "Construction Notes," pages 385–392, for plans and illustrations of such facilities.) Picnic grounds intended to provide for medium-sized or large crowds should preferably be located in wooded areas bordering upon open spaces sufficiently large to permit athletic events, for nearly always a more or less informal field day is a part of the program of affairs of this character.

Some of the desirable facilities at picnic grounds are:

1. *Toilet facilities.* Two structures will be desirable, the size of which and the number of seats in which depend upon whether the ground is intended for small groups or large crowds. Modern sanitary plumbing should preferably be installed, but if this is not possible other types of toilets which conform to good sanitary standards may be used. (See Volume II, Chapter XVI on "Park Sanitation.") The structures should be so designed and placed as to blend with the natural landscape.

2. *Drinking water.* The safest and best method of providing water is from lines connected with the municipal water system, with one or more sanitary drinking fountains and faucets for drawing water. The designer will have an opportunity to exercise skill and ingenuity in devising natural cover forms for these modern facilities. It is generally exceedingly dangerous to use springs, and if wells are used they should be deeply driven and the area immediately around the pump carefully protected against seepage.

3. *Facilities for warming, cooking and serving food.* Eating is nearly always one of the main features and pleasures of picnicking. It is not always necessary to provide equipment for warming, cooking and serving food at

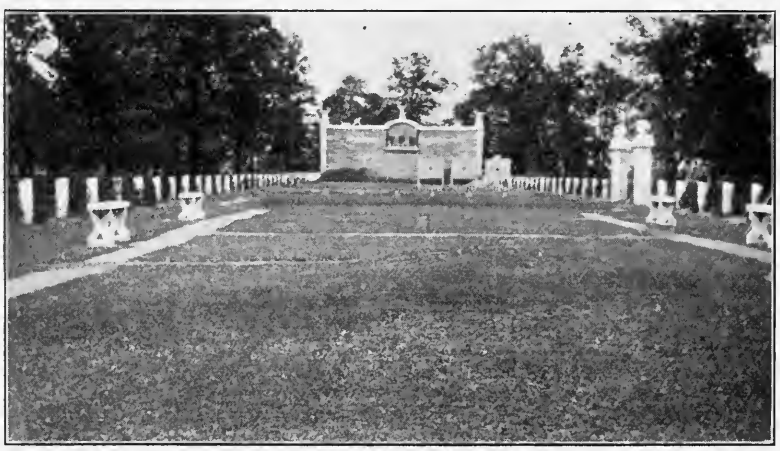


PLATE No. 87. PISTOL RANGE IN ONE OF THE PARKS OF TOLEDO, OHIO

picnic grounds, but in general it is desirable to do so. Inconspicuous stone or concrete ovens or fireplaces, small enough to be economical of fuel, are in general all that will be required. Picnic grounds intended for taking care of large crowds at barbecues and outdoor banquets may be equipped with barbecue pits or larger ovens. The number of ovens at any one picnic ground will depend upon the number of people the ground is intended to accommodate. For the serving of food, tables and benches are more or less necessary. These may be installed in permanent locations in a certain relation to the small ovens and fireplaces, or they may be movable. Movable tables and benches, however, are very likely to come to an early end. The tables and benches should have as rustic a design as possible, and if painted, colors should be used that render the equipment inconspicuous.

4. *Shelters.* As a protection against sudden storms a shelter of some type is essential at a picnic ground. At places intended for small group parties this need not be very large. At the larger picnic grounds the structure may be of very generous dimensions, serving also as an informal dance hall. In the wilder portions of large parks the inconspicuous type known as the Adirondack Shelter (see Plate 184, page 389) would be sufficient for small picnic centers. Attractive log cabins, equipped with an open fireplace and sometimes with an oven in addition, have been erected at some picnic centers serving large groups. These are used for picnicking in winter, a season that has not been sufficiently used for this form of activity in the large parks of the colder sections of the country. This is largely because structures suitable for use in the winter months have not been provided at picnic centers.

5. *Play apparatus for little children.* Picnic grounds used by family groups or by mixed crowds of children and adults should be provided with a few simple pieces of play equipment. These might include a few swings, teeter boards, slide and sand pile, although other types might be added. These should be located in an inconspicuous place among the trees.

A great deal more ingenuity might be exercised in providing this equipment than is commonly employed. Instead of installing steel apparatus, as is usually done, teeter boards across a log, swing frames constructed of heavy timbers, and a huge sand pile would be even more attractive and certainly fit in better with natural surroundings. A wonderfully fine piece of equipment can be made of a long, straight, springy tree pole mounted on two logs or strong horses with the slender end projecting so that it will readily spring up and down. This forms an excellent balancing beam and a capital hobby horse.

Game and Sport Facilities in Large Parks

In the designs of the earliest large parks in this country very little provision was made for games and sports. In fact it was considered a principle of good design that the introduction of facilities for highly organized games was incompatible with the primary purposes and aims of a large park. Facilities for water recreation and winter sports were often included, and the game of tennis was permitted. But on the whole these provisions for active recreation were rigidly subordinated to landscape effects and to passive and semi-active uses. Many of these earlier large parks have become largely transformed during the past twenty-five years or less because of the extensive introduction into their areas of a great variety of active recreation facilities. It is to be expected, of course, that as a city spreads and the population completely surrounds these large areas, there will be greater

Plate No. 88. BALL FIELD, GOLDEN GATE PARK, SAN FRANCISCO, CALIFORNIA

Illustrating the use of a large meadowlike space in a large park for organized games.

and greater demands for more of the space to be given over to active recreation and the park take on more the character of a huge playfield with a wide drawing radius, than the original large landscaped park. This is a condition to keep in mind always, both in the selecting of large park areas and in making original designs.

The list of different kinds of games and sports facilities found in large parks of today is a long one. Among these facilities are the following:

1. *Golf.* This game has made very great inroads into the total area of large park spaces in the United States. It happens that of all the games that have been introduced into these parks golf does least violence to the general landscape effect, unless the topography is so level as to require a large number of artificial hazards or large areas of tree growth are removed for the installation of the course. However, in a very large number of instances golf courses should never have been introduced into existing large parks for the reasons that the driveway plans and the layout of the courses are often incompatible and that large areas of parks have been withdrawn from general use, to say nothing of the occasional necessity for destroying considerable areas of tree growth which it has taken many years to produce. In general no golf course should be introduced into a large park unless the area to be used for golf is in itself a distinct entity, separate and apart from areas through which roadways or other pathways pass, and unless the remaining portions of the park are sufficient in themselves to provide all the necessary resources to meet the other needs of the people. In other words, unless the park is large enough to reduce a golf course to a distinctly minor feature, the course would better not be introduced. An alternative is to utilize the whole of an existing large park for a golf park but only in case another area is provided for general park purposes. Except in the case of exceedingly large city recreation parks it is desirable that separate and distinct areas be secured for golf courses.

2. *Tennis.* Tennis is one of the games commonly found in large parks and its history in such parks is almost contemporaneous with them. For the purposes of ease in maintenance and the better handling of players, tennis courts in large parks are generally constructed in groups ranging from a few in a group to twenty-five, fifty and even a hundred or more. As a general rule the courts are of clay, but occasionally one finds hard surfaced courts and turf courts. The necessity of erecting wire enclosures or at least wire backstops introduces an element that is often very hard to deal with in a landscaped park. This condition is sometimes overcome by locating the courts in such positions that heavy screen plantings will give the impression from the outside of being a part of a larger landscape unit. From the landscape standpoint one of the most desirable methods of intro-

ducing tennis courts into large parks is to use lawn areas, erecting the nets on posts stuck into sockets sunk flush with the soil and using no backstops. There are instances where more than one hundred courts are installed in one turf-covered area (see Frontispiece No. 2). This method is not likely to meet with widespread favor, however, because of the trouble players have in continually chasing balls, and because large lawn areas in large parks are not likely to be sufficiently even to make playing enjoyable.

3. *Baseball.* The tremendous interest of American youth in this game and the consequent demand for spaces to play upon have caused the laying out of large numbers of diamonds in large parks throughout the country wherever these parks included areas level and large enough to permit playing the game satisfactorily. Except for occasional informal ball diamonds in the vicinity of picnic groves the designs of large parks originally did not provide special areas for this game. However, large and small level meadow areas have been appropriated, and in modern designs areas have been definitely included for one or more baseball diamonds. As in the case of tennis courts and for practically the same reasons, diamonds are frequently laid

PLATE No. 89. BOATHOUSE, LAKE MERRITT, OAKLAND, CALIFORNIA

Boathouse and recreational activities on lake under the supervision of the Oakland Recreation Department.

out in groups. Thus a large meadowlike area is often completely covered with diamonds. There appears to be no satisfactory way of merging bleachers and backstops into any kind of landscape setting and the skinned areas of diamonds can never be anything but unsightly. It would seem that an ideal arrangement for baseball diamonds would be to locate them in a level turf-covered area surrounded largely or completely by a thick growth of trees and shrubs, thus giving the game a distinct area to itself, something after the manner of the German Waldspiel.

4. *Soccer, Football, Hockey, La Crosse, Cricket.* These games may be played over the same area or areas allotted to ball diamonds.

5. *Stadiums.* This form of a highly developed athletic field is now found in some large parks. The stadium, as a structure of concrete above ground, presents a problem exceedingly difficult to harmonize with any principles of landscape architecture. However, if the topography of a large park presents a natural site whereby the necessary structural features can be built into the surrounding landscape, there appears no special reason why a stadium might not be more or less harmoniously worked into the general design of the park. It might be possible to secure a degree of harmony by locating a stadium near the border of a large park or of a large landscaped unit of the park, using a type of construction whereby the seats would rest upon a mound of earth. The outside of this could be heavily planted with shrubs and trees in such a manner as to appear a part of the border design. A large park that is already occupied by one or more great structures cannot have its general character greatly affected by the inclusion of a stadium of the conventional type.

6. *Athletic field.* What has been suggested relative to stadiums in large parks applies equally to a fully developed enclosed athletic field. No great additional harm can be done to a landscape design by including an athletic field of the informal enclosed type in the area set aside for highly organized ball games.

7. *Bowling on the green.* This game requires comparatively small space, and an exceedingly fine turf. It is very easy to screen with shrubbery, if desired, and consequently lends itself admirably to introduction into large landscape parks.

8. *Polo.* Except in large cities, in cities adjacent to army posts or in resort cities frequented by the wealthy, there is likely to be no demand for the inclusion of this game in large parks. It requires a large turf area and as such does no particular violence to the general landscape effects of meadow areas, except through the presence of goals at either end and a slight board boundary entirely around the playing area.

9. *Water sports.* (*a*) *Boating, canoeing, yachting.* Any large park

which includes a lake, good-sized creek or river or which fronts upon a lake, river or an arm of the ocean, presents opportunities for water sports with various kinds of water craft, the types depending upon the size and character of the water areas. The presence of water areas generally adds to the possibilities of landscape design. (*b*) *Swimming.* Where there is sufficient water for water craft there is almost always opportunity for swimming unless the water is contaminated. However, there are certain topographical conditions necessary to make desirable natural swimming places, such as a more or less extensive, level, sandy beach. If this does not exist naturally,

PLATE NO. 90

AIRPLANE VIEW OF MUSIC CONCOURSE (CENTER) WITH MUSIC TEMPLE TO LEFT, M. H. DE YOUNG MEMORIAL MUSEUM (ABOVE) AND CALIFORNIA ACADEMY OF SCIENCE AND STEINHART AQUARIUM (BELOW), GOLDEN GATE PARK, SAN FRANCISCO, CALIFORNIA

This section of Golden Gate Park comprises one of the most remarkable educational-recreational centers to be found in any large park in the United States. All these architecturally beautiful and highly useful structures have been the gifts of public-spirited citizens. This center taken as a whole is a shining example of the important place that the modern park and recreation movement is taking in the educational-recreational development of the people. The "auditorium" space of the Music Concourse has been admirably sheltered by the planting of trees and this entire section of the park has been attractively landscaped. A photograph of the Temple of Music is shown on page 413.

it may sometimes be successfully constructed. Artificial swimming pools have been built in many large parks, but it is usually desirable to screen them with plantings and special care must be given to the design of the bathhouse.

10. *Winter sports.* In sections having cold winters, all water areas in large parks, long slopes of sufficient declivity for coasting, steep slopes for ski jumping and tobogganing present natural opportunities for winter sports. If water areas are large enough they provide opportunities for ice boating and horse racing. Toboggan slides made in sections, so that they can be taken down during the spring, summer and fall seasons, are often erected in large parks. Winter sports have always been considered a proper use of large parks, but are a feature deserving a much wider development in regions favorable to these sports.

11. *Shooting range.* Shooting ranges found in large parks are of two types: for trap shooting, and for rifle and revolver practice. These facilities are not numerous in large parks throughout the country, chiefly because of the difficulty of making them safe.

Children's Playgrounds in Large Parks.

Aside from the play facilities mentioned as being valuable in connection with picnic grounds, it is sometimes desirable to devote one or more areas in a large park to a regularly equipped playground that will be under supervision. This is especially true if there are built-up districts in the vicinity of the park where no other playgrounds are provided. Irrespective of the needs of adjacent built-up sections, the children's playground may become a necessity merely to take care of the children who come to the park from considerable distances either by themselves or with their parents. By the judicious planting of screens of trees and shrubbery protected by a concealed fence, such areas may be made to fit into the general character of the park.

Tourists' Camps in Large Parks.

Within recent years tourists' camps have been established in many large city parks throughout the United States. Aside from the disturbing effect the establishment of such a facility has upon the general landscape design and appearance of the park, the withdrawal of several acres of a large park for the continuous use of people from outside the city is hardly justifiable in principle, desirable as it may be to provide accommodations for tourists visiting the city. The public tourist camp is a large problem in itself, and so far as the site is concerned, it is more desirable to secure a special area for this purpose.

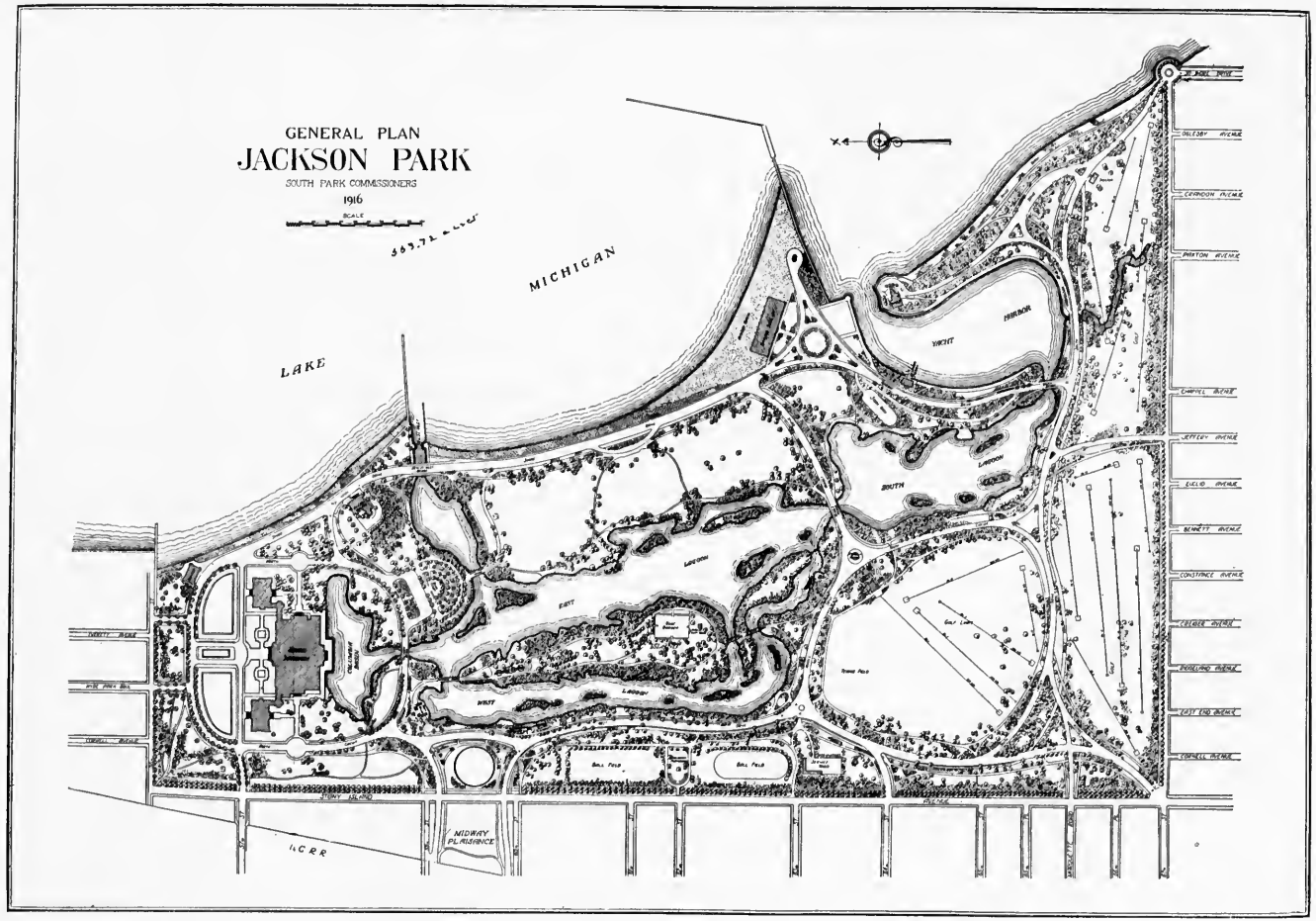


PLATE NO. 91

GENERAL PLAN, JACKSON PARK, SOUTH PARK COMMISSIONERS, CHICAGO, ILLINOIS

Water plays a large part in the design and use of this park of 553.72 acres. The lake front provides an enormous bathing beach and the harbor and lagoons which comprise a considerable proportion of the total area provide ample opportunity for boating. These water areas with their adjoining shores offer many exceedingly beautiful vistas. A special feature of this park is the 18-hole golf course. It will be noted that an entire section at one end of the park, away from the other features, has been set aside for this purpose.

Group and Family Camping.

While this is an activity perfectly proper and permissible in large outlying reservations, it is not to be recommended for large city recreation parks. There are only a few examples of such use of this type of park areas in the United States. So far as group or organized camping is concerned, too close proximity to regions from which the campers come and the inevitable presence of large crowds making general use of the park, create a condition that renders the organization and conduct of a group camp next to impossible. The general environmental condition for this type of activity is also likely to be undesirable. Moreover, because of the extensive and intensive demands for general daily use of various facilities in such parks, it is unwise policy to set aside any portion for the exclusive and extended use of any group.

The chief objection to family camping in large landscaped parks is that no citizen and his family has the right to preëmpt any portion of a public property of this type designed for general public use. In the few large parks where camping is permitted, a few hundred families have grown through the course of years to feel that they have almost a proprietary right to the season's use of a portion of a public property that was purchased by all the people for the use of all the people. The nominal rent that is usually charged is no adequate return for this service even if the policy were a correct one.

Educational-Recreational Features in Large Parks.

While many of the activities listed under the head of Provisions for Recreation Activities in Large Parks are somewhat educational in their effects, other features found in large parks in the United States may be characterized as educational-recreational. Among these features are: botanical gardens, arboretums, conservatories, museums, art galleries, aquariums and zoölogical gardens.

1. *Botanical gardens.* The almost inevitable necessity of using a formal design in laying out a botanical garden introduces a jarring element into the general design of a large park. The same may be said of the introduction of a rose garden, or a commemorative garden such as a Shakespeare garden. If a botanical garden or any of the special varieties of gardens are introduced — and there are many of them in large parks in the United States — the only thing that can be done is to give such a garden a specific place and treat it as though it had no primary relation to the design of the park as a whole.

2. *Arboretums in large parks.* The arboretum, on the other hand, may lend itself to introduction into a large park without changing the

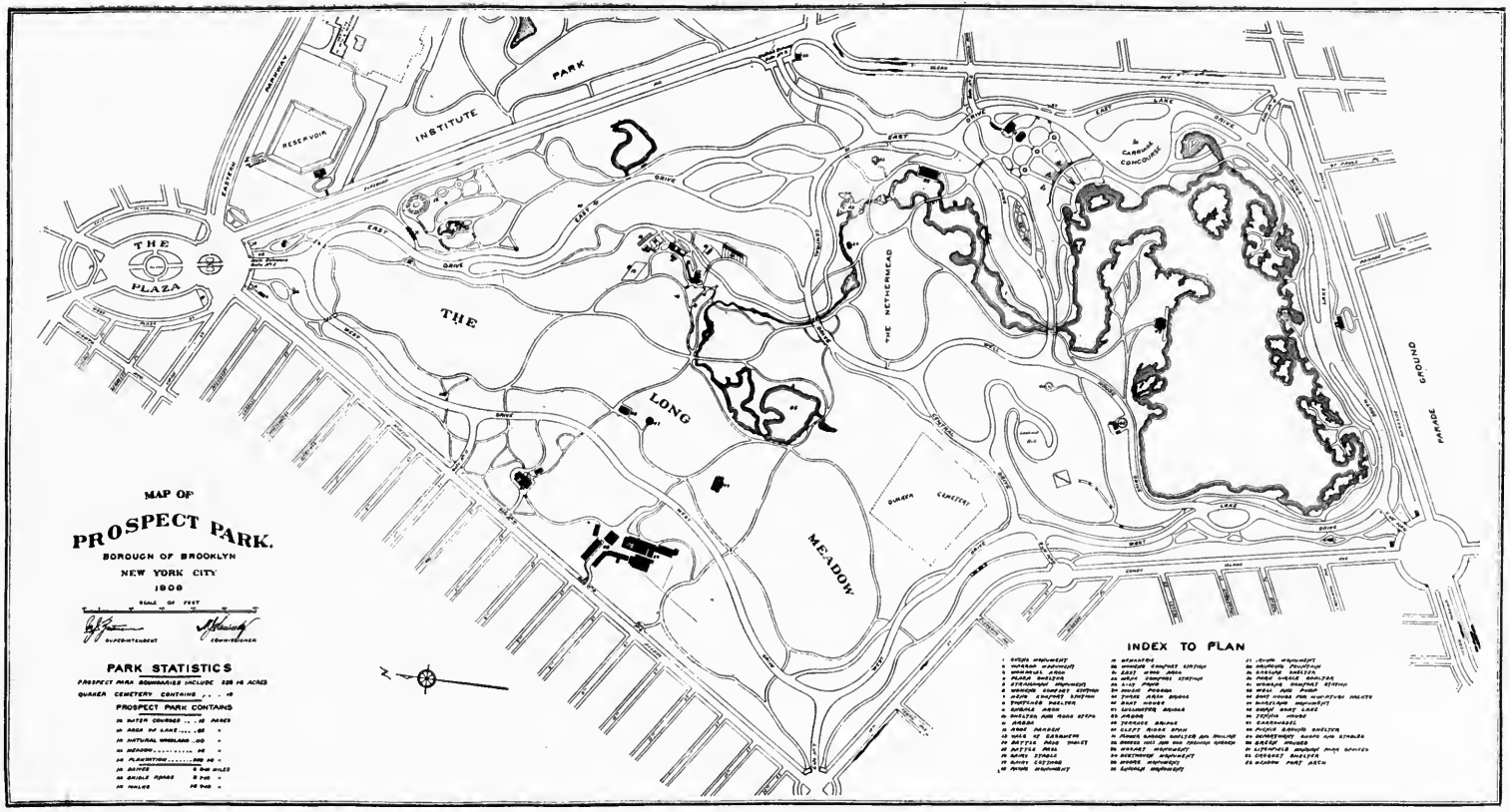


PLATE NO. 92. PROSPECT PARK, BROOKLYN, NEW YORK

Prospect Park, which has an area of 526.16 acres, is one of the earliest and best known large parks in America. The plan was prepared in 1868 by Olmsted, Vaux & Company, Landscape Architects. The park is of inestimable value to the people in the densely populated districts which completely surround it. Although it was primarily intended as a landscape park, many facilities for active and semi-active recreation have been introduced. The Parade Ground is intensively used for baseball, football, soccer and similar sports.

essential character of the park. In fact, the entire park might be used as an arboretum and the various specimens worked into the design without affecting the character of the entire design.

3. *Conservatories.* The introduction of a large conservatory into a large park brings up the age-old question as to the desirability or undesirability of putting structures into large landscaped parks. However, because the environmental conditions in large parks are better adapted to growing plants both indoors and outdoors than smaller locations would present unless located outside of the city, and because the uses of a conservatory and the adjoining greenhouses are so closely related to park needs, the introduction of a conservatory might be pardoned.

4. *Museums and art galleries.* These are structures that in general have no proper place in large parks. For a brief discussion of this matter, see pages in the section "Unit Elements of a Park System."

5. *Zoölogical gardens and aquariums.* However naturalistically a zoölogical garden may be designed, it cannot be anything but a warring element in the general design of a large landscaped park. The necessity of a reasonable degree of concentration of the exhibits, the presence of many different structures, the numerous walks and roadways, all are foreign to the spirit and character of a large landscaped park. As in the case of botanical gardens, if the zoölogical garden must be placed in the park, a definite area should be assigned to it and its treatment follow the lines of its needs without special relation to the design of the park as a whole.

Classification of Buildings

The following classification of structures to be found in large parks in the United States is presented here in order to give a more or less comprehensive picture. The classification is as follows:

1. Structures necessary for the comfort and convenience of those using the park in general.
2. Structures that are necessary adjuncts to specific recreation areas.
3. Structures that in themselves are recreation centers.
4. Structures of an educational-recreational character.
5. Structures necessary for the care and maintenance of the parks.

1. *Structures necessary for the comfort and convenience of patrons.* These may include:

(*a*) *Comfort stations.* These should be found at places throughout the park where the people are likely to congregate in considerable numbers, such as picnic groves, in the vicinity of band stands, outdoor theatres, etc. Comfort stations will, of course, be included in all facilities provided as adjuncts to active recreation areas, such as field houses, boathouses and

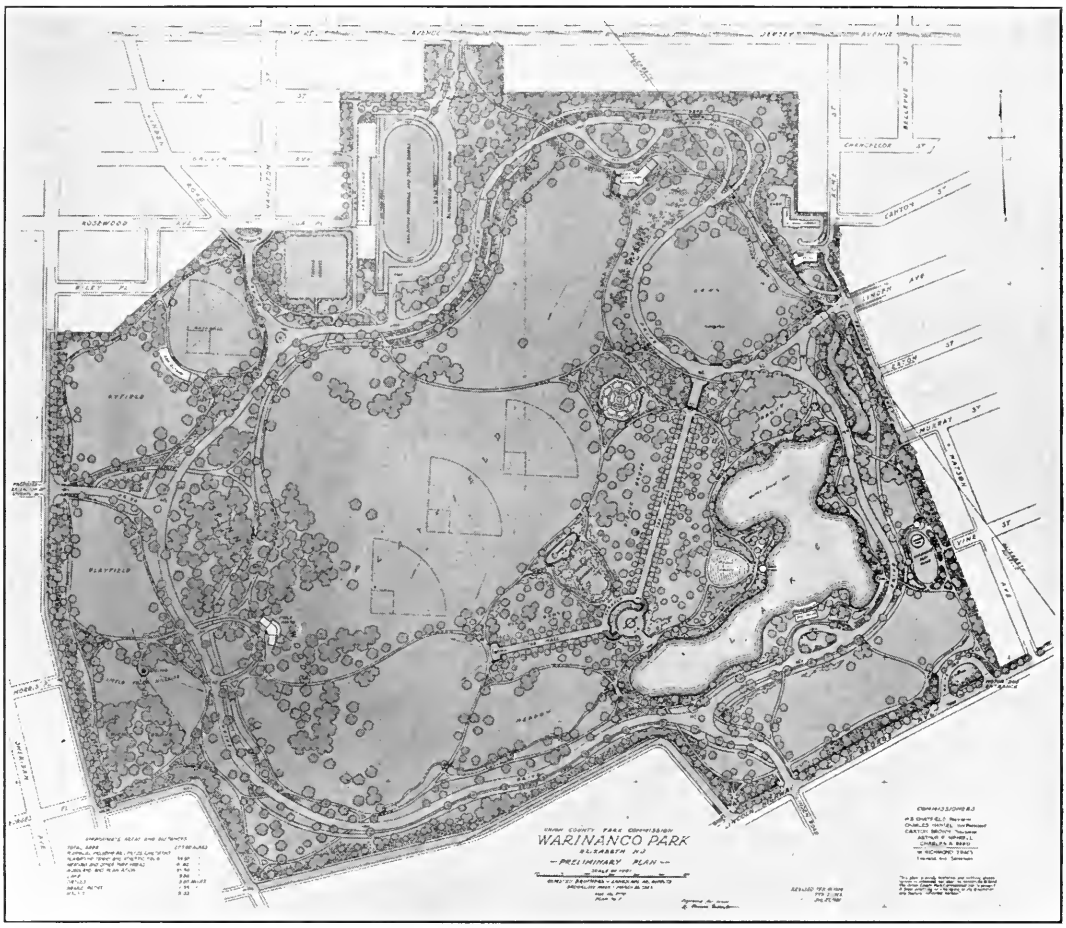


PLATE NO. 93. PRELIMINARY PLAN, WARINANCO PARK, ELIZABETH, N. J.
(Plan by Percival Gallagher, Olmsted Brothers, Landscape Architects, Cambridge, Massachusetts.)

The total area of this property is 207 acres, distributed as follows: Playfields, including ball fields, children's playground, tennis and athletic field, 39.50 acres; meadows and other turf areas, 41.40 acres; woodland and plantations, 85.50 acres; lake, nine acres. The park contains 3.05 miles of drives, 1.95 miles of bridle paths and 8.33 miles of walks. "The purpose of Warinanco Park, according to Landscape Architect's report, 'is to provide near the center of population of the County a pleasure ground of sufficient size and character that will possess the best elements of a park of pastoral landscape.' Ample facilities for games and sports have been provided, so located as to interfere as little as possible with the desired 'pastoral landscape' effect. This park being the most accessible from all parts of the County contains the administration building, the stadium and fully equipped athletic field. . . . One of the most important features is a moderate-size lake for boating and skating. In the heart of a park and immediately west of the proposed lake and occupying the rise of land, there is proposed a series of groves and picnic grounds distributed along a straight, broad walk or promenade called the 'Mall.' The central feature of this region is a semicircular terrace upon which two sections of the Mall converge. Below the terrace, forming the center of the scheme, is a circular plaza with seats and a decorative fountain. This focal point gives access to the lake below it, while above and extending westward is to be another sitting place or overlook, slightly raised above the general level of the ground from which views over the open landscape to the west may be had. The stretch of ground between the two is to be planted with a special collection of evergreen and flowering plants to form a feature of special interest and enjoyment. A music grove is also a feature of the design.

A driveway with an accompanying bridle path makes the circuit of the park. One of the principal points from which to view the length of the park landscape is the elevation of land on the northerly side where the circuit-drive gives access to a proposed refreshment building, from the terrace of which one may enjoy the views of much of the interior landscape of the park. Another part of the circuit-drive on the westerly side traverses the length of 'Spinning Woods,' an existing growth of old trees which adds materially to the beauty of the park. Midway in these woods, and yet convenient to the driveway and the playfield lying beyond on either side, is located a proposed field house with toilet facilities for the use of the public.

bathhouses, and in structures of an educational-recreation character. It is sometimes desirable, even in more or less remote parts of large parks, to have small comfort stations in the vicinity of trails and bridle paths.

(*b*) *Refreshment stands.* The presence of refreshment stands often causes park officials a great deal of trouble when, through political influence, a concessionaire secures the right to place them wherever he chooses and to erect any kind of structure he desires. The location of these stands and the type of architecture employed should never be determined by anyone except by the park designer, or, if introduced later, by the superintendent. They will, as a general rule, be located near the places where people congregate, but they should be so designed and located as to be as inconspicuous as possible. When located in larger structures the problem is much simplified.

(*c*) *Restaurants.* These are nearly always a part of some larger structure, although there are some examples of structures in large parks used primarily for dining purposes. Old mansions or other buildings, the preservation of which is desirable because of some historical or other local significance, have been remodeled into restaurants or more often into combined restaurants and clubhouses. Locations that present fine views over water or long vistas are admirable as sites for restaurants.

(*d*) *Shelters.* Aside from the protection provided by larger structures erected primarily for other purposes, it is necessary at various points about large parks to erect shelters of various types. Such structures are nearly always a necessary adjunct to picnic places, and small shelters should be scattered here and there along trails or at places presenting especially fine views. If a children's playground is included as a distinct unit of a large park, a shelter is a necessary adjunct to this area. Shelters may be of a very simple rustic character or they may be designed to present very splendid architectural effects. The same structure may serve as a shelter and comfort station.

2. *Structures that are necessary adjuncts to active recreation areas.* These may include field houses, boathouses, bathhouses, golf clubhouses, warming houses. The location of these is predetermined to a great degree, although the specific location in the vicinity of the area to be served and the design of the structures should always be under the guidance of the landscape architect and the building architect, with the advice of a trained and experienced recreation organizer. The size of such structures and the variety of service facilities they may include will vary with local conditions.

3. *Structures that in themselves are recreation centers.* These include dance floors or halls, roller skating rinks and clubhouses.

There are a few large parks in the United States where the park offi-

cials have permitted the introduction of most of the structures and paraphernalia of a commercial amusement park. The scarcity of such examples, however, indicates the almost universal disapproval of park officials of such a procedure.

4. *Structures of an educational-recreational character.* Among these are included museums, art galleries, war memorial buildings, aquariums, conservatories and all the structures that enter into the composition of a zoölogical garden, outdoor theatres, band stands and music courts. Many civic storms have arisen and raged over the introduction into large parks of certain of the structures mentioned above, especially museums, art galleries and memorial buildings. Notwithstanding the strenuous objection by all who understand the essential rural character and the primary purposes of large parks, such structures have been introduced and more are liable to be introduced in the future. (For a brief discussion of the location of museums, art galleries, zoölogical gardens, see sections devoted to these subjects in the section "General Planning of a Park System," page 14.)

The same principles discussed in those sections might be applied to the location of aquariums and conservatories. It is possible so to construct an outdoor theatre in a large park that it may seem an essential part of the landscape. Likewise, places for band concerts might be so constructed, but this is not usually the case.

5. *Service structures necessary for care and maintenance of large parks.* These may include house for the foreman or superintendent, houses for laborers, barn, shop, greenhouses and power house. Occasionally the headquarters building of the entire department may be located in a large park. It is not always necessary to attempt to locate these various service structures in secluded parts of large parks, since it is possible to have buildings of artistic design and the grounds surrounding them beautiful. However, the usual conditions relative to such structures and their surroundings, with the possible exceptions of the superintendent's house and the greenhouses, especially in the vicinity of a conservatory, are such that they need to be secluded as much as possible.

Plans of Large Parks.

A number of plans in this chapter illustrate methods of designed large parks. These are Jackson Park, Chicago (page 200); Prospect Park, Brooklyn (page 202); Warinanco Park, Union County, New Jersey (page 204). Those laid out in the early stages of city p anning were almost exclusively landscaped areas with little if any provision for active recreation, although many such facilities have since been added. The more recently designed parks show a general provision for recreation although the parks are primarily landscaped areas.

The Reservation

The human use purpose of the reservation is practically the same as that of the large city park. Hence the fitting of the reservation for human use follows very much the same lines as are followed in designing large parks. The distinct difference is that, as a general rule, the natural topography and plant growth are left more as they came from the hand of God than in the average large city park. The effort of the landscape designer is directed to maintaining the wildness of the reservation, for after all this character is fundamentally its chief charm.

On the basis of size two distinct types of reservations may be distinguished, although the one shades imperceptibly into the other. The first of these types is the small reservation ranging from a few to a hundred or more acres. The small reservations are generally wooded tracts bordering upon streams, shores of lakes or the ocean or arms of the ocean, although there are some instances where there are no water forms of any kind in their topography. Several states, notably Michigan, Iowa, New Hampshire, Texas, Oregon, Washington, and many counties, have provided numbers of these reservations. They are intended primarily for picnicking and temporary camping for tourists and family groups, although some of them may present natural features which make them important bathing and boating centers.

The fitting of these areas for use by the people involves the designing and construction of service roadways, footpaths both for getting about the various picnic grounds with ease and for hiking through the wilder portions, the development of a water supply usually through deep driven wells, the erection of toilet facilities, construction of a shelter house or houses, outdoor ovens or fireplaces, and tables and benches. A home for a caretaker will also be a necessity unless someone living in the vicinity is employed in that capacity. Some of these small reservations have elaborate bathhouse facilities, boating docks and a fleet of boats. Those highly developed for tourist camping may have a shelter house in the form of a small community house, wash house and possibly a special structure for cooking and dining.

At some of these small reservations quite commodious inns have been erected, providing not only dining facilities but sleeping accommodations as well. The sleeping accommodations may be provided in the inns, or in cabins or cottages, or in both types of structures.

The large reservations are distinguished from the smaller, not only by their size but also by a greater variety of topography, plant growth, and by the more varied uses to which they may be put.

In designing them for the use of the people a system of roadways to open up their scenic and other recreational possibilities is of first consideration. In very large reservations this system of roadways will be of two types, first a major highway through or encircling the reservation with cross connections here and there, and second a system of service driveways branching off from the major highway or highways and leading to scenic points of interest, picnic grounds, camping centers or other places more or less intensively used by the visitors. The major highway or highways may be of such width and permanency of construction as to serve as pleasure driveways as well as focal lines for opening up the reservation.

It cannot be too strongly emphasized, however, that an elaborate system of major roads used as pleasure driveways is absolutely antagonistic to the primary purpose and function of large reservations.

Next, special attention should be given to developing a system of hiking trails. These should be numerous and so designed that every part of the reservation, except perhaps those parts set aside for game and bird refuges, shall be readily accessible to visitors. At intervals cross trails should be laid out connecting the major trails so that either long or short hikes may be taken. In addition to their recreational value these trails are likely to prove of some worth as fire breaks.

PLATE No. 94. BRIDLE PATH IN NEW YORK'S CENTRAL PARK

This is seven miles long. There are no grade crossings, all motor roads carrying over paths on viaducts.

Large reservations present almost ideal conditions for riding horseback, but unless stables are maintained either by private individuals in the vicinity, on concession from the management or by the governing authority of the reservation, this splendid recreation is not likely to be much practiced. Where horses are available, a system of riding trails should be made a part of the design of the reservation. The riding trails, because of their greater width, are a more effective fire break than the hiking trails.

Next to those features of the design of reservations which open them up to the public are those which have to do with water supply and disposal of human waste. Some very bad conditions have been brought about in reservations by constructing roadways and thereby admitting people before the fundamental necessities of water supply and waste disposal equipment have been provided.

From the time that numbers of people begin to use reservations, all natural sources of water supply (streams, lakes, springs, etc.) become subject to pollution. Every possible precaution should be taken to protect springs, if, because of their natural position, nature of the terrain and subsoil conditions it appears possible to maintain the purity of their waters. If this seems impossible they should be closed. (See Chapter XVI, "Park Sanitation," for methods of protecting springs.)

While it is quite possible, and often highly desirable, to develop a modern system of water supply in reservations, especially in centers used intensively, such as inns, large picnic grounds and organized camps, it is likely that the least expensive and most reliable source of water supply can be gotten from deep-driven wells. (See Chapter XVI, "Park Sanitation," for methods of protecting wells to ensure the sanitary quality of water.)

Where a storage water supply can be developed, the only type of sanitary facility that should be considered is the modern flush toilet with a cesspool, if the subsoil is of sand and gravel, or the septic tank and drainage system if the subsoil is of clay or limestone formation.

In the majority of reservations the use of modern sanitary appliances is not generally possible and resort must be had to various other devices of disposing of human waste. (For a discussion and examples of the various types of toilets that may be used see Chapter XVI, "Park Sanitation.")

Beyond the provisions for opening up the reservation and for fundamental comfort facilities is a wide range of facilities all designed to aid the people in the better use of their time and of the opportunities for recreation which the reservation affords. Among these may be enumerated:

1. *Picnic places.* There should be many of these, for this is one of the widest services which the reservation provides. The picnic places should be cleared of underbrush and debris, well drained if on low ground,

and equipped with one or more outdoor ovens or fireplaces, one or more shelters, preferably of a rustic design, tables and benches, water supply and toilet facilities. In the construction of ovens, care should be taken to use a design that is not too large. Except at picnic places intended for the accommodation of large crowds as one party, large ovens or fireplaces are never necessary. Any practiced picnicker or camper knows that it does not require a great deal of fuel or a large fire to cook an ordinary meal, and for heating coffee or warming up food, or doing a small amount of cooking, a very small fire is all that is needed. In some reservations ovens have been installed which, because of their large size, if kept supplied with fuel, would practically deforest the area within a few years.

2. *Camping.* There are three types of camps which may be provided for in large reservations — tourist camps, organized camps and family or small group camps. The facilities at tourist camps may consist of nothing more than the facilities provided for an ordinary picnic ground, but in the more elaborate tourist camps a shelter in the form of a small community house, bath and wash house and possibly a common dining shelter may be provided. The camps are liable to become very great nuisances unless operated under fairly strict rules and under the constant supervision of the managing authority of the reservation. If the management is not prepared to equip and properly supervise this type of camp, it is better not to include it as a feature of the reservation service.

The organized camp for boys and girls and even for adults is one of the finest recreational uses to which the large reservation can be put. (For a discussion of the layout of organized camps, see the section of this chapter on organized camps, page 167. For a discussion of the sanitary facilities that may be provided, see Chapter XVI, "Park Sanitation." For a very detailed presentation of the entire subject of organized camping, see "Camping Out — A Manual on Organized Camping," Macmillan, New York City, 1924.) Those who are interested in the financing of organized camps as a part of reservation service can secure most valuable information from the management of the Palisades Interstate Park (Major William A. Welch, Iona, New York).

The admission of family or small group camps into reservations should be considered with very great care. While this type of camping is practiced with apparently much success in Federal forest reservations, in some state forest reservations, and in a few municipal reservations, the withdrawal, under a system of rentals or leases, of even small portions of reservations for practically private use, on the whole makes this form of camping undesirable in large reservations. Added reasons for this lie in the supervisory problems involved and the tendency to a feeling of proprietary

ownership on the part of campers. A possible plan, and one which gains the same service ends, is for the governing authority of the reservation to erect numerous cabins or cottages at suitable places about the reservation, provided with necessary water and toilet facilities, and to rent them to families or small groups for camping for longer or shorter periods of time on such a rental basis as will retire the original investment within from ten to fifteen years and at the same time provide a fund for maintenance and general supervision. This type of equipment in reservations is especially valuable for week-end parties and is likely to be in demand the year round.

3. *Bathing and boating.* Practically every large reservation, if the terrain has been well selected, will include either one or more natural water forms or else present opportunities for the creation of artificial-natural lakes. Bodies of water of adequate size and depth are always desirable in the vicinity of organized camps, not only because of the attractiveness of water itself, but also because camp programs should include water sports. They add greatly to the attractiveness of all types of camps and to picnic grounds. Ocean beaches, lake shores and some riverfronts may present conditions adaptable to the development of large swimming centers separate and apart from picnic and camp sites. Even small reservations often present such conditions.

4. *Inns.* In some reservations a prominent feature of the design is an inn or hotel providing dining and sleeping accommodations. These inns are becoming quite common in state parks and have always been a prominent feature of many of the national parks. The apparent popularity of these places indicates the need of them. Often old mansions on reservations can be remodeled into attractive inns or clubhouses. In designing inns and hotels every effort should be made to keep them in harmony with the environment. At best they represent something that the reservation is intended to help people escape from, but to the degree that they entice people away from cities into the open country they are justifiable.

5. *Refreshment stands.* To enable people to secure refreshments and minor supplies which they have failed to bring with them, the refreshment stand is perhaps a necessity, especially in those places where considerable numbers of people congregate. The refreshment stand is liable, however, to become an eyesore and a general nuisance if handled as a concession. In one of the largest and finest systems of reservations in this country the refreshment stands which clutter the landscape are offensive to the taste, not only in the style of construction but especially in location and because of the very bad sanitary conditions which accompany them. The general administrative authorities handling reservations will do well to leave the

design and location of refreshment stands entirely to their general executives, even though the operation of them is through concession. It would be better still if their operation were handled entirely by the executive departments.

6. *Active recreation facilities not previously mentioned.* Among types of active recreation which may be introduced into reservations in addition to walking, riding, swimming and boating, may be mentioned golf, ball games, children's playgrounds, skating, tobogganing, skiing and other forms of winter sports.

(*a*) *Golf.* A golf course may be included in the designing of a reservation without doing violence to the general intent and spirit of the reservation. The use for this game of a hundred or even two hundred acres out of perhaps several hundreds or thousands of acres can hardly affect the general character of natural wildness of the reservation. Aside from the interest in the science of the game as a game, it does attract many people to undertake considerable feats of walking who would not be induced to make use of the trails in the reservation for this purpose. A very practical question to be considered in relation to golf courses in reservations is whether the patronage would be large enough to secure an income sufficient for maintenance and supervision. If there is no reasonable assurance of this the inclusion of a course might better be deferred.

(*b*) *Ball grounds.* As a general rule these should not be introduced into reservations except as adjuncts to large picnic grounds or in the grounds in the vicinity of inns, especially if a large picnic ground is located in the vicinity. If the topography permits, a ball ground is desirable for each organized camp.

(*c*) *Tennis courts.* These may be deemed necessary or desirable in the vicinity of inns and organized camps.

(*d*) *Children's playgrounds.* Children's playgrounds, or at least some play apparatus, may be found very useful in connection with large picnic centers, tourist camps, inns and organized camps caring for little children. In some reservations it was noted that playground apparatus had been located in open fields near picnic grounds. Apparatus so located is poorly placed from a landscape standpoint and possibly also from the viewpoint of the enjoyment of the children using it. It is better to locate playground apparatus in the woods adjacent to the picnic ground where it will be inconspicuous and the users will have shade. It would seem undesirable to introduce the sort of things that modern city life has made necessary on city playgrounds, into regions where there are trees to climb, woods to roam, streams to wade in, hills to climb and roll down. The superintendent may well use ingenuity in devising pieces of apparatus indigenous to the

region, such as a climbing pole made of a tree, a "jolly log" or balancing tree, rope or pole swings hung from the limbs of trees, a natural paddling pool made by damming a small stream, great sand hillocks or piles unconfined by boards or concrete, teeter boards of heavy planks put across logs and similar equipment appropriate to the environment.

(*e*) *Winter sports.* In northern regions a great deal can be made of winter sports in reservations. This is especially true if cabins or cottages are so constructed that they may be used for week-end outings in winter, or if inns are kept open for the reception of parties during the winter months. The sports that may be provided include skiing, tobogganing, skating, sliding, snowshoeing, and if there are water areas large enough, ice boat sailing. Outdoor vacationing in northern regions during the winter months is becoming more common and is capable of greater development through the provision of greater facilities and well organized promotion.

7. *Nature museums and nature study classes.* Of all types of park areas the large reservation presents the best possible opportunities for learning about the universe and how it is constructed and inhabited. There is a growing interest throughout the country in this great and fundamental field of knowledge, an interest that is being recognized by the controlling authorities of some reservations through the establishment of nature museums and the rendering of aid in the establishment of centers for instruction in nature study. This use of reservations should be promoted to its utmost limits.

Boulevards and Parkways

In his report on "The City Plan for Memphis, Tennessee," Harland Bartholomew makes the following statement in reference to the design of a system of boulevards and parkways. The fundamental principles to be followed in the design of the system may be summarized as follows:

1. Pleasure drives should be wide, ensuring dignity, impressiveness, comfort.

2. Traffic should be restricted, to preserve the street scene from incongruous, disturbing notes.

3. Paving should especially contribute to the pleasure of using these thoroughfares.

4. Private building development should be regulated, to secure unity and harmony.

5. Planting should be of the highest type, for upon this one feature depends a considerable portion of the effectiveness of either formal or informal pleasure drives.

6. Special care should be given the lawn areas, and planting and proper maintenance of roadway should be assured.

7. A generous building set back will add spaciousness to the pleasure drive and permit a wider planting of trees.

8. Car lines, if need be, can be accommodated on streets of this type, but they should be planned for and isolated as much as possible in a wide central strip bordered by planting.

All these measures will contribute to the creation of a first-class pleasure drive system. Most of them cost little or nothing beyond the regulation costs of any ordinary street.

Border Roads for Parkways and Parks[1]

"I have faced the problem of border roads *vs.* their omission in parks and parkways under the widest variety of conditions and from every point of view — from that of the general public using the parkway and that of the general taxpayer, to that of the dealer in abutting real estate and that of the individual lot owners. I have made mistakes both ways, and learned to recognize them. I have learned especially to distrust sweeping generalizations on this subject and mechanically standardized practices, and to realize that each case ought to be considered on its own merits without preconceptions and with an openminded regard: first, for the controlling purposes which each particular parkway or park can best be made to accomplish; and second, for the local conditions, topographic and otherwise, including conditions affecting the probable and possible ways in which abutting land may be developed.

As to the first, to illustrate something of the wide range of different purposes which under different circumstances may properly control the design of things called parkways, consider these types:

1. An elongated park, the dominant purpose of which is to connect two or more broader parks in such a way that people may pass from one to another under pleasant conditions without any appreciable sense of interruption of the parklike environment, without feeling that they have got out of a satisfactory park into something quite different before getting back again.

2. A more or less glorified and ornamental street, such as is sometimes created by subdividers, the prime purpose of which is to add to the value of abutting property while incidentally serving the general public for travel and enjoyment.

3. A thoroughfare, boulevard, or parkway, the prime purpose of

[1] This statement by Frederick Law Olmsted is such a valuable discussion of the problems involved in the acquisition and design of such areas that it is reprinted with the permission of the editor of *Landscape Architecture* in which it was originally published. (January, 1926, issue.)

which is to enable the public to travel from one part of its course to another under conditions which are made more enjoyable, by almost any means, than those of an ordinary city street. Many of the important streets and avenues in the older part of Washington, D. C., are better entitled to classification in this group than many so-called 'boulevards' and 'parkways' laid out as such in other cities with much blowing of trumpets. And obviously the group may be considered to include anything from a reasonably dignified and handsome street with no more than a single row of trees in each sidewalk (there are few pieces of such so-called 'parkways' only seventy feet wide between property lines, to be found among the 'parkways' of the Boston Metropolitan Park System) up to such elaborate undertakings as the Fairmount Parkway in Philadelphia. What distinguishes them from the first type is that they are in effect parts of the general city street system (even though much glorified and embellished parts, and even though their roadways may be limited in whole or in part to passenger vehicles) and that normally the buildings abutting upon them largely influence, if they do not mainly determine, the net æsthetic impression made on those who travel over them.

4. A type of parkway somewhat intermediate and transitional between the first and the third is one which includes considerable widths of ground treated in a more or less parklike way with turf and plantations and often with water in the form of a stream or ponds or lakes, and in which the main æsthetic interest centers in these parklike features regardless of the adjoining private buildings, but in which no deliberate attempt is made, as it is in parkways of the first type, to effect so complete a separation between the abutting private buildings and those who drive along the parkway that the former are unnoticeable and the users of the parkway might feel that they have got inside of a park of indefinite extent.

In some parkways of this fourth type the main drive is at one side and serves as a street of access to buildings on the side of it which is away from the parklike area. A large part of the beautiful Riverway in the Boston Park System is of this description. In some there is a main drive of this sort on each side of the parklike area, each drive having buildings abutting upon it at a moderate distance on the side away from the central ribbon of park. Where the total width is rather limited, say up to two or three hundred feet, or sometimes even more, and where a distinctly parklike aspect of spaciousness within the parkway is regarded as more important than avoiding a sense of close proximity to buildings at the expense of hedging in the park drive in a narrow space between dense plantations, this type of parkway has the great advantage (except under peculiar topographical conditions) that pushing the roadway or roadways to one or both

sides leaves a greater width of land in one body for parklike treatment uninterrupted by roads. Other things being equal this is very advantageous to those who resort to the central area on foot. And those who use the parkway by automobile at least have an outlook to one side over a wider parklike area, other things being equal, at the expense (if they feel it to be such) of being within immediate sight of the abutting buildings on the other side of them.

Now we come to the point about border roads or border streets in connection with these various types. Of course in the fourth type mentioned normally there are no roads except the border roads and no question arises as to their omission or addition.

That question arises most often and in the most complicated way in respect to parkways of the first type. The prime purpose of this type is, as I have said, that of an elongated park, in which people can drive with the feeling that they are continuously within a park, as distinguished from driving on an exceptionally agreeable street or 'boulevard' lined with buildings, and from driving along the edge of a park as in parkways of the fourth type.

To accomplish the purpose of a parkway of this first type at all perfectly usually requires considerable width on both sides of the main drive. Where the total width and the topographic conditions are such that this purpose cannot really be successfully accomplished, it is generally better to recognize that fact frankly and aim at a purpose which can be successfully accomplished under the circumstances: that is to say, make a good parkway of some other type rather than a poor one of this type. But where this purpose is deliberately adopted, the first concern in regard to the boundaries is that their proximity should not be noticeable to the users of the parkway drive and paths, and that buildings and other objects adjoining on the outside, and obviously not appropriate objects to find within a park (whether excellent in themselves or the reverse), should be hidden from sight as much as possible, together with any obvious reminders of their existence close at hand, such as vehicles and people going and coming to and from them or roads or paths obviously meant for such use.

Toward that end the first requisite is an adequate screen of parklike aspect between the users of the parkway and any existing or prospective buildings or other unparklike objects which would otherwise be visible beyond the boundary. Such a screen might be a high cliff or wall rising beside the parkway road and crowned by a few trees or bushes, and such a screen may be absolutely effective without requiring more than three or four feet of horizontal width. It might be formed merely of trees and shrubs unassisted by any natural or artificial differences in elevation of the ground or by any walls or fences. I have known some such foliage screens not ten

feet thick to be impenetrable to the eye, while on the other hand through some high-stemmed woodlands the eye can range freely for a quarter of a mile or so and see buildings beyond the trees almost as plainly as if no trees were there. To state in general terms how much space is required for such a screen is therefore much like saying how big is a piece of chalk.

One can say, however, that to secure a screen really adequate to the purpose of this type of parkway within a space which is not considerably more than a hundred feet wide (without peculiarly favorable topographic conditions) is apt to produce a monotonous effect, especially if the space is uniform in width or nearly so, and still more so if it is also straight for long distances. Where danger of monotony from this source is serious it may be best to make a virtue of necessity and aim deliberately at those qualities which in a formal landscape treatment can lift uniformity and repetition to the plane of dignified impressiveness, as in the great avenues of the Park of Versailles; or else to modify the controlling purpose of the design, and, avoiding an attempt at a type of parkway which cannot be successfully made under the circumstances, aim at the third or fourth type, which can be done to perfection under the existing circumstances.

But assuming that the type of parkway here under consideration is the aim and can be successfully secured under the actual conditions of the case, what bearing has all of the above on the question of whether or not, in addition to the primary roads and paths within the parkway, to provide also for border roads or streets for the frontage of abutting property?

The width required for such a border street is apt to be about fifty feet and may sometimes be even less, as there is seldom need for any sidewalk on the side toward the park or parkway. In some cases, on the one hand, the use of street purposes of that amount of the total space which it is practicable to withdraw in one strip from private occupation would so curtail the space available for plantations as to make all the difference between success and failure in accomplishing the primary public purpose of the parkway. Where this is the case the argument against a border road is practically conclusive. It would be far better to fence off the private property from the parkway, plant it out and forget it. Conditions at least closely approaching this extreme case are to be noted on the east side of the Rock Creek Parkway in Washington northward for a few hundred feet from Q Street, where a border road would accomplish little or no good and at enormous cost would work serious injury to the landscape of the parkway by exposing the backs of houses in full view from the main drive.

On the other hand, in many cases such use of some fifty feet of the total available space would make little or no practical difference in the effectiveness of the landscape enclosure of the essential parts of a park-

way of this type, bearing in mind that the main plantations can usually overhang the roadway and that at least one additional row of trees with adequate space for full foliage development can be secured on the sidewalk toward the private property.

The advantages of such a border road are normally, in the case of a parkway of this type, quite secondary and subordinate to its prime purpose, but they are often considerable. For example:

(*a*) If no means of vehicular access to abutting private property is provided along the border of a parkway, experience shows that such property is almost sure to be developed with the backs (or sometimes sides) of buildings toward the parkway, and that it is only in the most exceptional cases even of very high class residential development that such rear premises are not more disagreeable in appearance than the front. Where the enclosing screen plantations of the parkway are absolutely perfect in effectiveness, this may make no difference in the value of the parkway for its prime purpose. But such perfection is rare, and in so far as the abutting buildings are glimpsed through or over the plantations the usual ragged back-side effect is distinctly more objectionable than that of fronts.

(*b*) Back yards in immediate contact with park plantations offer the temptation to trespass, to throw rubbish over the fence, and to other things which complicate the problem of policing and maintenance.

(*c*) The property abutting on a parkway is normally more valuable if it can be said to front on the parkway and has convenient access by a street or roadway which is physically integral with the parkway. Of course, from this point of view, considering solely the value of the abutting property, even more valuable than a border street would be the privilege of using the main drive of the parkway itself as a frontage and approach street with only a short space intervening and with no plantation that would obscure the view from the private property of all that is pleasant to see in the parkway. Such an arrangement, with the parking of cars by the abutters on the main drive and with frequent paths and garage entrances cutting up the space between the main drive and the private property, is obviously very injurious to the prime purpose of the type of parkway we are considering and should not be conceded unless absolutely unavoidable. If permitted it must be recognized as a serious even though unavoidable defect. In other words the prime purpose should not be avoidably sacrificed to a secondary and incidental value.

(*d*) Because of the value of frontage even on a border street of a parkway, agreement to provide for such a street often makes it possible to secure a greater total width of land for the same cost, or otherwise to secure

better terms in land acquisition. It should be noted here, however, that it is of the utmost importance in negotiations for land purchases and discussions of plans to be extremely careful about the terms of any agreements or promises, express or implied, which can possibly be interpreted as obligations legally or morally binding the public authorities to do or to leave undone at the demand of the abutters any particular thing within the park lands. Especially where there is any question of prospective legal right of abutters to have access to their own lands over parkway lands, either by border streets or otherwise, it is essential to have a clear understanding in each case, in the light of well considered general policies, as to whether and to what extent the cost of facilities provided primarily for their benefit (such as paving, sewering, etc., in border streets) is to be borne by the abutters through special assessment or otherwise.

Of course what is expedient and just in this respect depends wholly on the circumstances in each case, including other terms of the negotiations for land purchase. In Massachusetts, where the terms of the Act under which special assessments are levied are far from satisfactory, it is the usual practice of park commissions in making purchases and in settling condemnation cases out of court, to waive the right of 'assessing betterments' on abutting property of the owner from whom they acquire land, using this waiver as one of the considerations offered for settlement at a price satisfactory to them. But in such cases especially it is very important to make certain of a clear understanding as to what specific improvements, if any, of special benefit to the abutter, the park authorities are obligated to install at the expense of the general taxpayer, and what improvements, if any, within the parkway land the abutter has a right to demand at his own cost.

Where border roads are determined on, whether for parkways of the 'elongated park type' under discussion here, or for parks not elongated into this form, there are many advantages in laying these border ways out as 'streets' and putting them under the jurisdiction of the agency in charge of other streets, even though they be one-sided streets and though the jurisdiction of the park authorities begin at the curb on the park side of the street. The entire legal status of parks is very different from that of streets and from that of most other public lands, as has been very ably discussed by the Legal Department of the Regional Plan of New York and its Environs; and it is important to avoid all doubt as to whether any so called 'parkway' land has one status or the other.

What looks like a border street along a park, and is used like a street, may be, and in some cases may advantageously be, legally speaking, part of a park and not legally a street at all. For example, at the Revere Beach

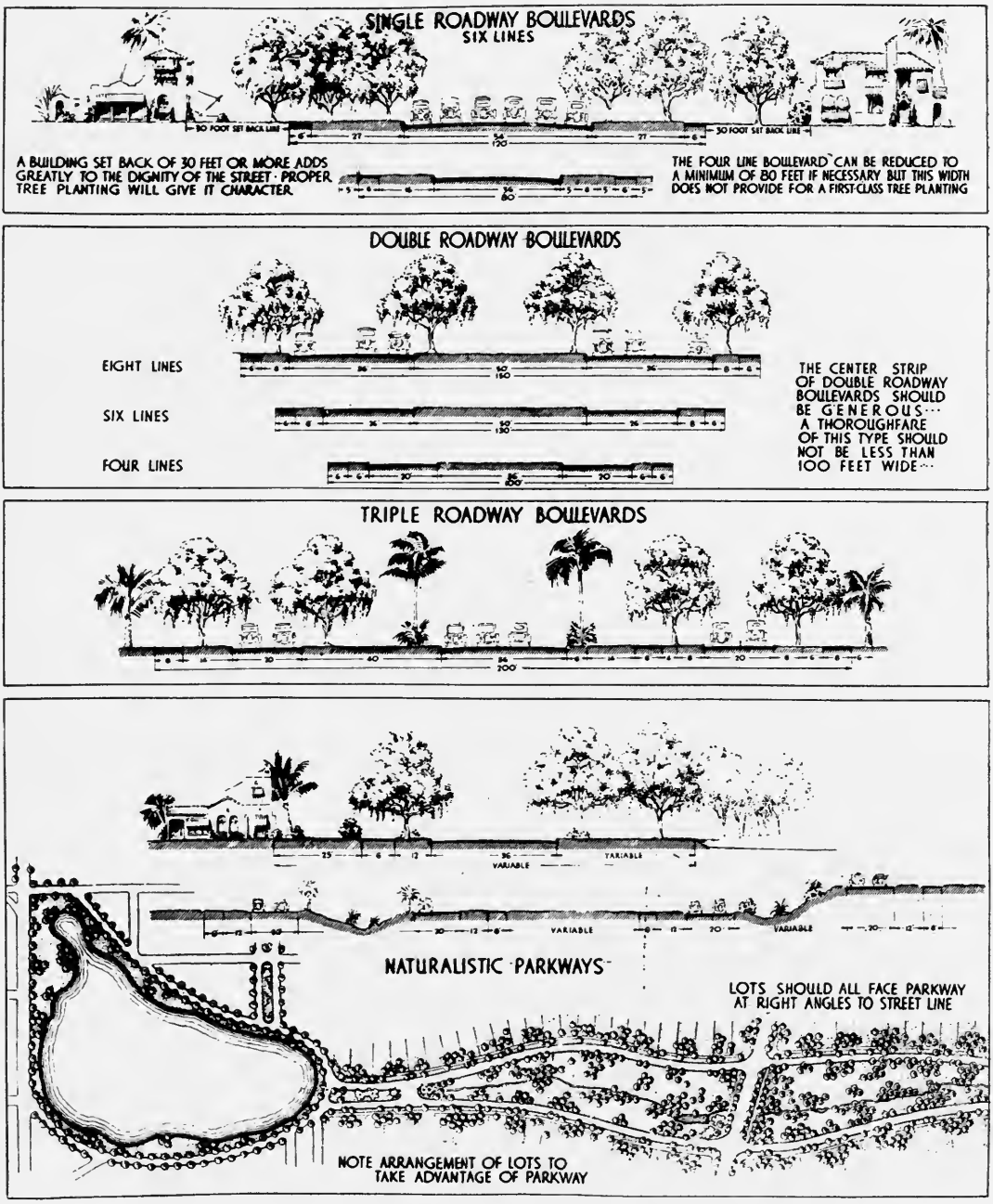


PLATE No. 95. SUGGESTED CROSS SECTIONS OF PLEASURE DRIVES

Designed by Harland Bartholomew and Associates for City Planning and Zoning Commission, Orlando, Florida. Used to illustrate types of pleasure drives.

Reservation of the Metropolitan Park System of Boston there is along the edge of the beach an asphalt roadway flanked by a paved sidewalk on each side. Abutting on the landward sidewalk is a mile or so of private amusement resorts, restaurants, etc., the patrons of which come and go almost wholly by way of that sidewalk. These private properties run through to a city street in the rear in which they have the usual rights of abutters on streets; but the beach front drive and sidewalk, which is the ordinary and extremely valuable means of access to them, is not legally a street but a 'park,' in which they have no rights not possessed by any other citizen. Occasionally when the owner of one of these places has conducted it in a manner unsatisfactory to the park commission, the commission has simply fenced his place of business off from the sidewalk under their control until he came to terms. These abutters received, in fact, great special benefit from the commission's opening and continued maintenance of the roadway and promenade on what was formerly a railroad right of way, but they were not assessed as abutters having special rights in the land taken by the commission; and they have no special rights in it, but merely privileges extended to them on sufferance and revokable at will.

The above, however, is a very special case, and ordinarily where a strip of land along the border of a park or parkway is expected to be used by abutters in a manner substantially equivalent to that of a street, it is better that the abutters should acquire definite street rights in that strip and that it should be legally a street and dealt with as to improvements and assessments like any other street.

I have diverged to the legal aspect of border streets from the question of physical design, because it is so intimately related to it and so important. I now return to the question of physical design in connection with parkways of the third group. We are not concerned with those of the second type, where enhancement of the value of the abutting land is the prime consideration, except to point out that this consideration properly enters into the design of parkways laid out by public authorities solely as a secondary and subordinate consideration — a thing to be sought so far, and so far only, as the means by which it is sought are wholly compatible with the most perfect possible accomplishment of the primary and public purpose of the undertaking. To that extent and with that limitation always in mind it should be sought, not only because enhanced value of property is a good thing for the community, but because under plans calculated to have that effect the land necessary for the public purpose can often be secured more cheaply than otherwise, or even secured as a gift.

Parkways of the third group normally occupy the legal status of streets rather than of parks, or of streets enclosing islands of land having a

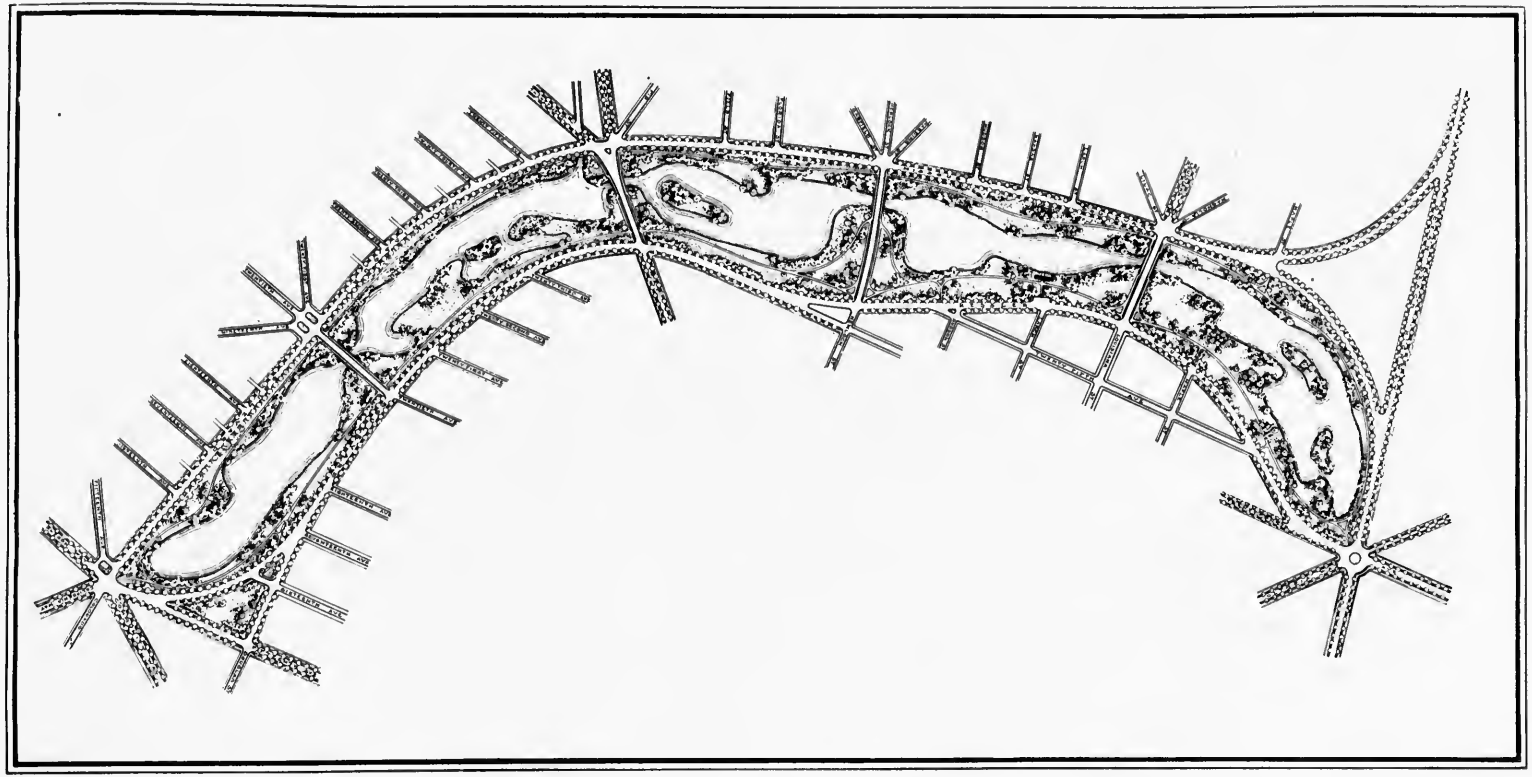


PLATE No. 96. PLAN FOR PARKWAY ALONG FOWLER (SACAJAWEA) LAKE, LONGVIEW, WASHINGTON
An interesting example of how this new city is preserving its natural bodies of water. (See Waterfront Development Projects, page 226.)
(Design by Hare & Hare, Landscape Architects and City Planners, Kansas City, Missouri.)

park status. As to arrangement of roadways they fall with few exceptions into three distinct classes:

(*a*) Having only a single roadway, flanked by 'parked' borders which include paths, trees, and various ornamental features and from which abutters have access to their properties. The beauty and dignity of such a 'parkway' or 'boulevard' or street is largely dependent on the width and treatment of these borders. If they are of sufficient width and the necessary means of paved access to abutting properties are not too frequent, too wide, or otherwise unpleasantly conspicuous, the effect may be really verdant and may justify the name 'parkway.' But the tendency under urban conditions is to cover these bordering spaces spasmodically

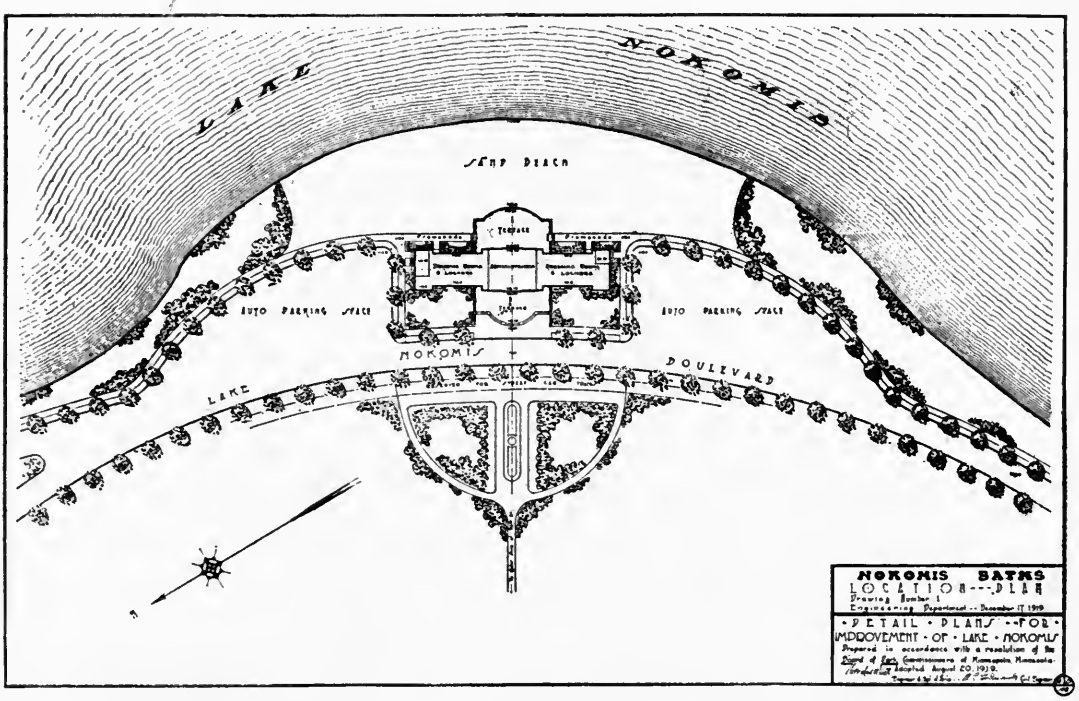


PLATE No. 97

PLAN FOR IMPROVEMENT OF LAKE NOKOMIS BATHS, MINNEAPOLIS PARK SYSTEM, MINNEAPOLIS, MINNESOTA

(See Waterfront Development Projects, page 227.)

An interesting and attractive design of a lake shore bathing center. (For photograph and floor plan of bathhouse, see pages 374-375).

The plan on page 229 shows a series of special studies of the lakes in Orlando, Florida, by L. D. Tilton, Bartholomew and Associates, City Plan and Landscape Engineers. Not many cities in America are, like Orlando, fortunate enough to have within their borders, or in the near vicinity of their borders, a number of beautiful, natural lakes. "The lakes of Orlando, being perhaps the principal attraction in the city, should be owned, developed, and maintained with the object of adding to and conserving their natural beauties. A well-established policy is required for the proper handling of water areas. The lakes must be either all public or all private. A divided ownership and control brings about neglect and abuse of the water and shores, and a slow reduction of value of these wonderful assets."

In Minneapolis the policy of complete public ownership of the lakes encircling the city was adopted and carried out. Such a policy is strongly recommended to cities everywhere possessing such wonderful natural assets.

and unsystematically with more and more strips and pieces of pavement for the convenience of abutters. Even in strictly residential districts, unless the abutting properties are interdicted from direct access by automobile over the 'parkway' and are provided with another street or suitable alley in the rear, the construction of garage runways and of paths from the curb of the central roadway across the area of parkway planting to the lots is apt to impair very greatly any special beauty that might otherwise distinguish the so-called parkway from an ordinarily good residential street.

(*b*) Having one roadway on either side with a strip of ornamental treatment in the middle and usually with at least one row of trees in the sidewalk planting space between each road and the abutting private property. This class of course has no roads except 'border roads,' and where the central strip of ornamental ground becomes wide and parklike in character it merges into the fourth type of parkway previously discussed. There are several practical advantages in these 'double barrelled boulevards' as they are often called, but æsthetically they are apt to be ineffective and 'ribbony' unless the central ornamental ground is much wider than each of the roadways. Where a parkway is to include within a limited width a natural water course and some of its valley, or a cliff, bluff or other long and narrow declivity, this 'double barrelled' sort of parkway is logical and may have a great deal of picturesque charm. Otherwise, unless the central space is very wide, the type is more often adapted to a formal rather than a picturesque or naturalistic treatment. A good example is the older portion of Commonwealth Avenue in the Back Bay district of Boston. Other examples are Unter den Linden in Berlin, the Ringstrasse in Vienna, and many of the Chicago and Kansas City parkways.

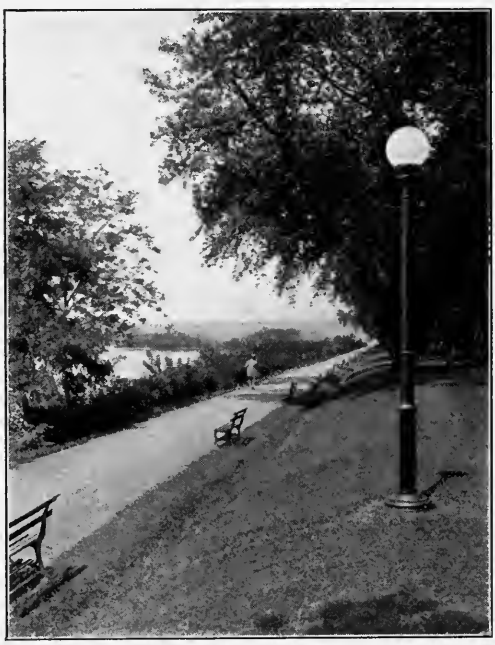


Plate No. 98
PATH ALONG RIVERFRONT PARK,
HARRISBURG, PENNSYLVANIA

(*c*) Having a central roadway immediately flanked by 'parked' areas — ranging from mere formal strips of grass with one, two or more rows of trees with or without footpaths and bridle paths, to elongated gardens or parks, both formal and informal — beyond which are other roadways to

provide for the frontage of buildings more or less visible from the central roadway. This three-road group includes some of the most notable ornamental urban boulevards in the world, such as the Champs Elysées in Paris. Other examples are the wider portion of the Fairmount Parkway in Philadelphia, and Grand Boulevard in Chicago.

To sum up: There is a strong presumption in favor of providing border roads except in cases where the narrowness of the land which can be acquired forces adoption of a design which is no more than a dignified ordinary street with some planting on its sidewalks (group (*a*) of type three just discussed), and except in case of parkways of the first or elongated park type in those portions where limited width or topographic conditions, or both, make it

PLATE No. 99. A VIEW ALONG THE RIVERFRONT, HARRISBURG, PENNSYLVANIA

The beautiful, well-wooded park, two views of which are shown, is one of the outstanding riverfront developments in the United States. The entire river frontage comprising approximately five miles is owned by the city, and the greater portion of it has been improved, resulting in a 55-acre park.

Under the 14-foot promenade shown in Plate 99 is a sewer, which is protected by the walk and by the series of steps leading down to the river. A special feature of the construction is the electric light standards which are removable in order to avoid damage by ice during spring freshets.

The depressed path shown at the left between the parked area and the thoroughfare above, affords long and pleasant vistas. This park is intensively used not only for rest and as a promenade, but also as a place from which to watch water events.

PLATE NO. 99A

A portion of the great highway and bathing beach from the rocks at Sutro Heights, San Francisco Park Department, San Francisco, California. An interesting example of a mammoth waterfront development along an ocean shore.

locally impracticable or inexpedient to provide separate border roads and where the abutting property can reasonably be barred off from access to the parkway."

Designs of Waterfront Development Projects

Waterfront development projects may occur in several different types of park areas. They may be adjuncts to the "intown" or neighborhood park type of properties, neighborhood playfields or large parks, or a special feature of the system in themselves. They are mentioned separately in this

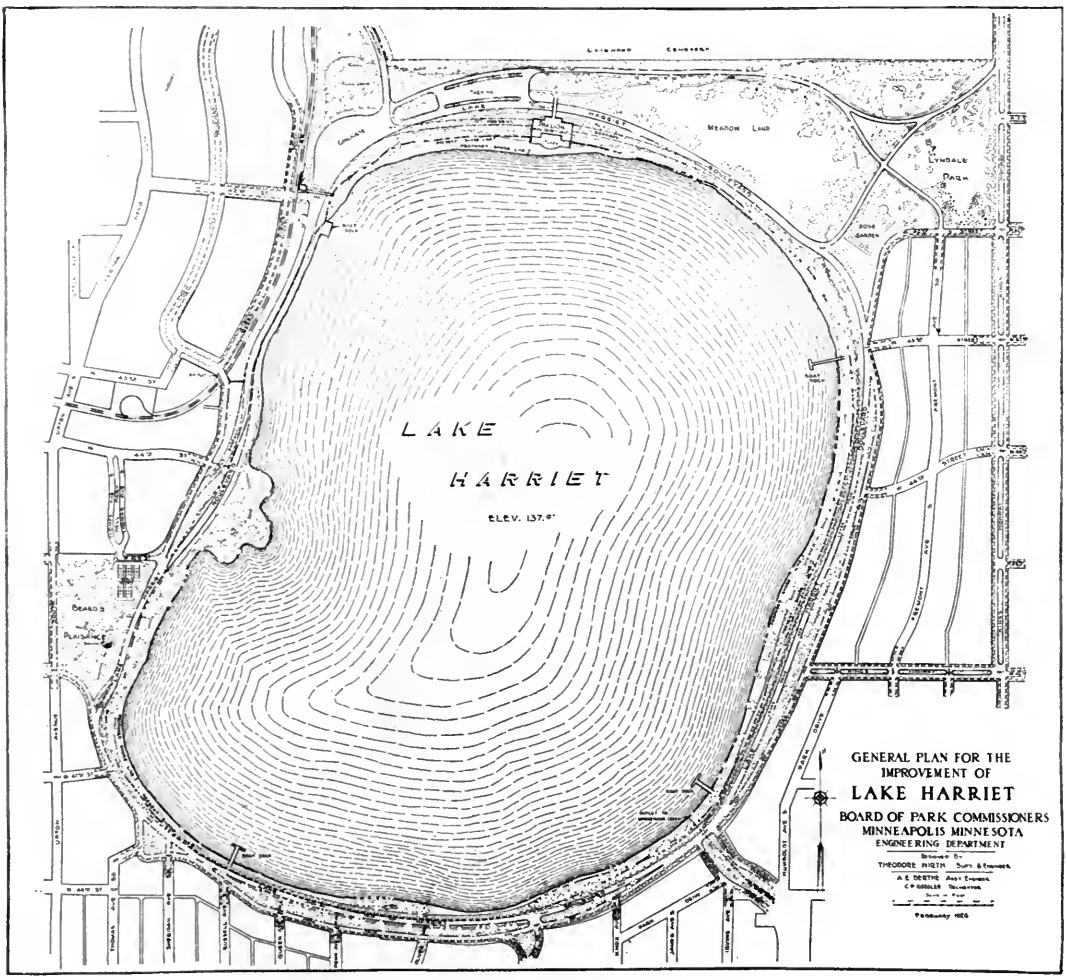


Plate No. 100

GENERAL PLAN FOR THE IMPROVEMENT OF LAKE HARRIET, MINNEAPOLIS PARK SYSTEM, MINNEAPOLIS, MINNESOTA

This is a valuable illustration of the preservation and development of a natural recreational resource within the vicinity of a city. Lake Harriet is only one of a series of inland waters in the vicinity of Minneapolis, all of which have been taken over by the public for recreational purposes. Lake Harriet Park comprises 402.073 acres, of which 353 acres are water and 49.073 land. Twenty acres of the land area are devoted to active recreations of various types, and 29.07 to landscaping.

PLATE NO. 101. WATERFRONT DEVELOPMENT DESIGN, MIRROR LAKE, LAKELAND, FLORIDA

(Design by Charles W. Leavitt and Son, Landscape Engineers, New York City.)

The entire southern half of the lake, which is shown in the above illustration, is bordered by a broad promenade. The public buildings are grouped at the extreme south end of the lake. Along the whole length of the promenade there are to be a number of arcaded shops. The features taken together make a very unusual and imposing civic center development. The Dixie Highway borders the entire northern end of the lake but is not shown in the picture.

A prominent feature of this design is the amphitheatre with a seating capacity of 5,000. It is flanked on either side by auxiliary buildings which provide dressing rooms, rest rooms and offices. The roof over a portion of each building is to be used as a musicians' balcony. The stage is approximately 75 by 100 feet and will be used for pageants, dances, basket ball games, tennis matches and similar events.

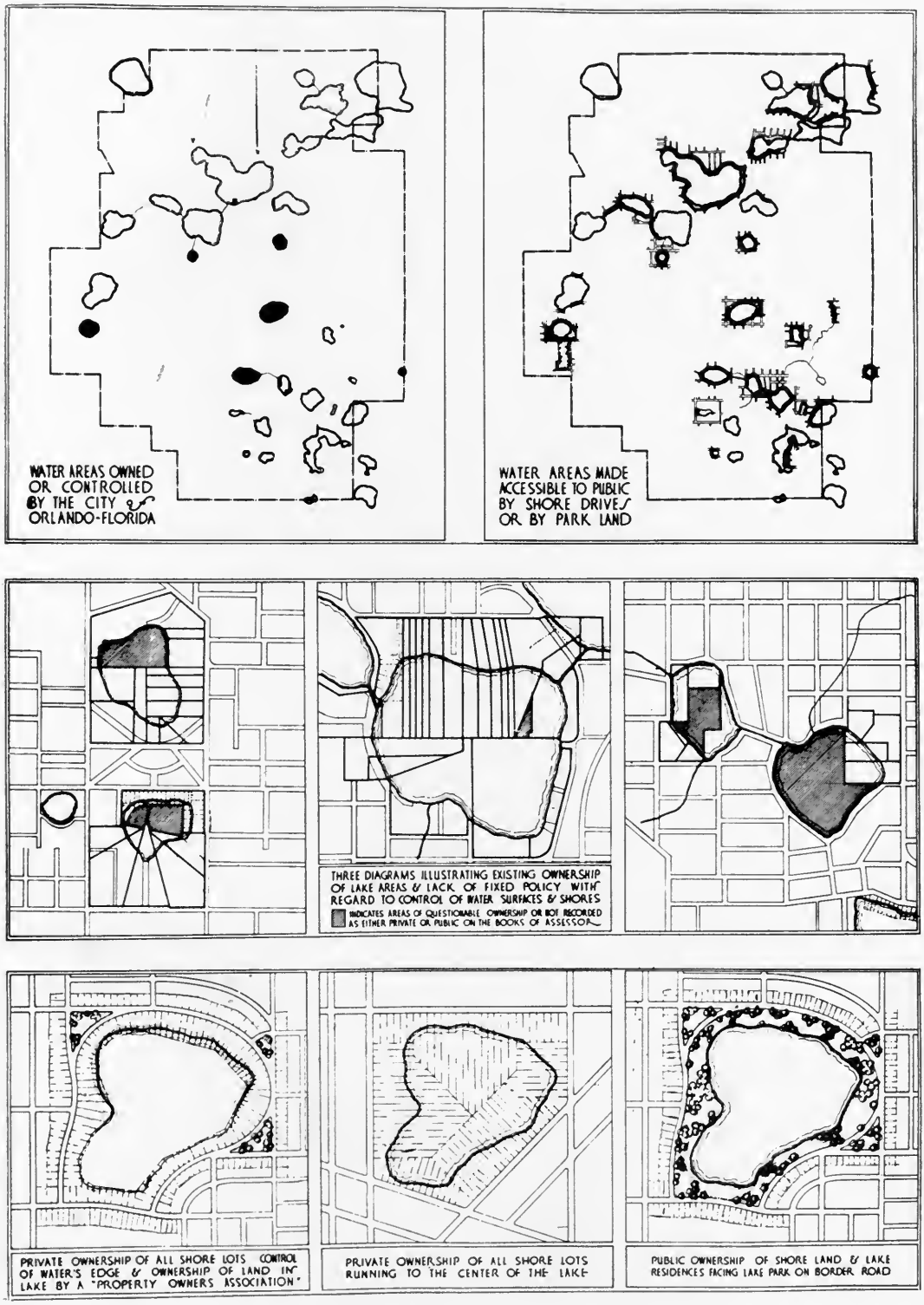


PLATE NO. 102. PLAN OF WATER AREAS, ORLANDO, FLORIDA

chapter for the reason that they represent a distinct set of problems in design.

The use of waterfronts of streams, rivers, lakes or ocean has been altogether too largely neglected in park and recreation planning in American cities. On the whole these most desirable of recreation areas have been

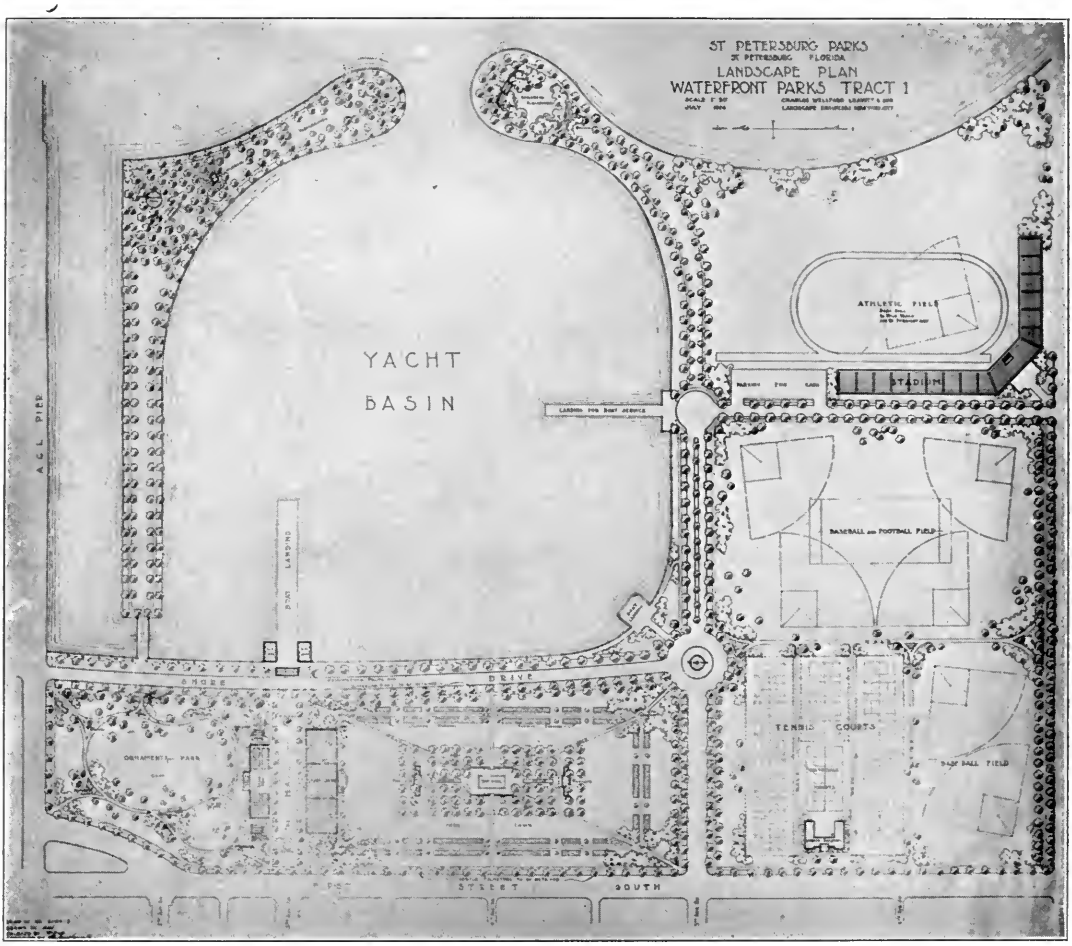


PLATE No. 103. LANDSCAPE PLAN OF WATERFRONT PARK, ST. PETERSBURG, FLORIDA
(Design by Charles W. Leavitt and Son, Landscape Engineers, New York.)

The Waterfront Park, plan of which is shown above, has an area of approximately 65 acres and it is divided into several distinct sections. The yacht basin is enclosed by two tree-lined moles upon which are two children's playgrounds. Plenty of space for the anchorage of yachts and small boats is provided.

The south end of the park is devoted entirely to recreation. It provides an athletic field with ample seating facilities for important athletic events, several baseball and football fields, 24 tennis courts, 14 handball courts and a locker building.

The Shore Drive is connected directly with main arteries from the central portion of the city.

The section west of the Shore Drive is divided into two parts by a formal Mall, the central feature of which is the Fountain of Youth. On one side of the Mall is the Ornamental Park informally designed and planted. On the other side of the Mall is a more formal area. This is bounded by paths bordered by colorful perennials and tropical plants. At the center of this formal park are wading pools for children, surrounding which is an area thickly planted with shade trees. Sand, instead of grass, is used to cover the ground in this area, making a delightfully cool place for children to play.

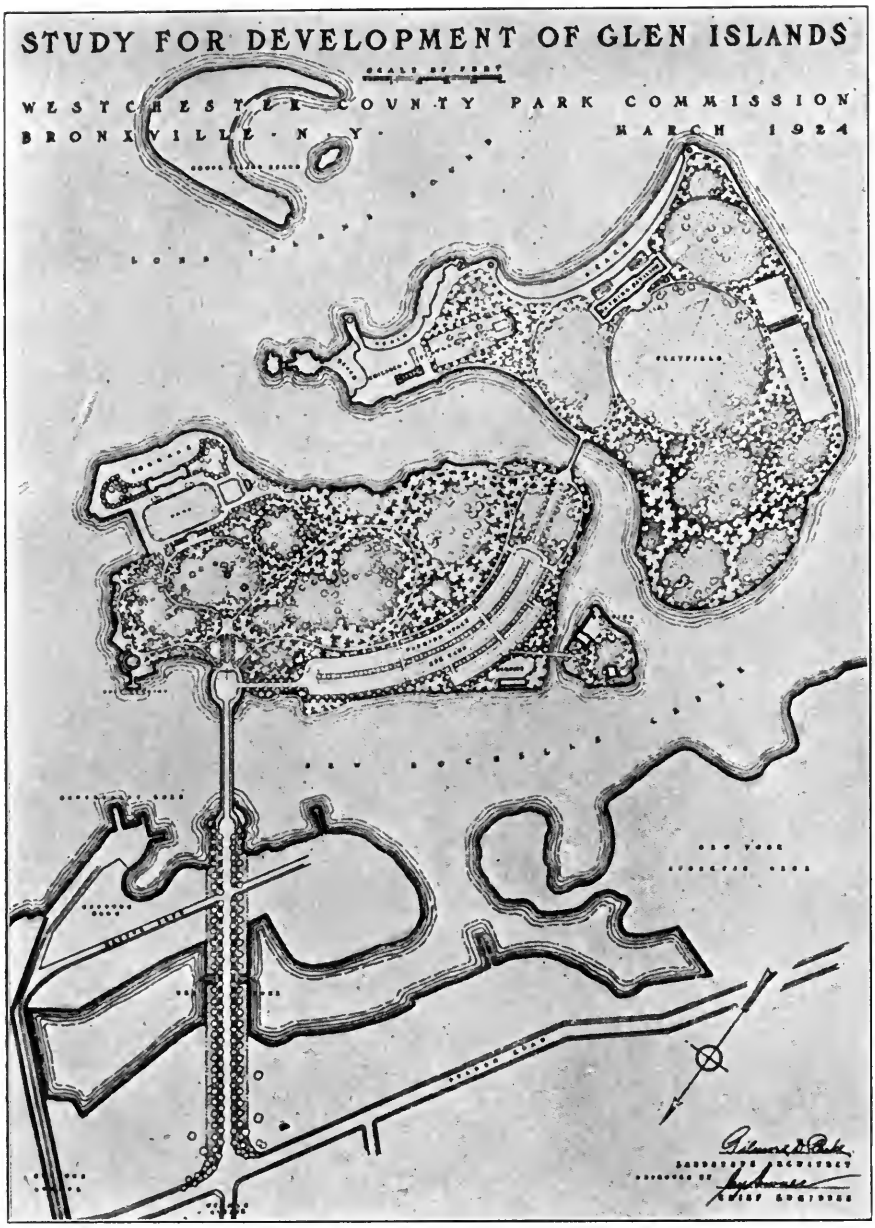


PLATE NO. 104

STUDY FOR THE DEVELOPMENT OF GLEN ISLANDS, WESTCHESTER COUNTY (NEW YORK) PARK COMMISSION

This property of 102 acres situated in Long Island Sound just outside the limits of New York City has been purchased by the Westchester County Park Commission. This development plan illustrates how this type of waterfront property may be used for the recreation of the people. In addition to the bathing beaches and bathhouses, the plan includes a large recreation field, a children's playground, a restaurant and one or two shelters. In order to make the park accessible it is proposed to construct a bridge with a 20-foot roadway connecting the island with the mainland. Note the large area set aside for the parking of cars.

appropriated by private individuals, by transportation and industrial interests or have been neglected entirely. Moreover, the common practice which still prevails throughout the country of draining sewage and other wastes into water adjacent to cities and towns has quite generally made the use of the waters undesirable for recreational purposes. The solution of the sanitary problems involved in water development projects is quite likely to prove of basic importance as preliminary to developmental design.

No attempt will be made here to discuss the principles of the design of waterfront areas, for each area presents distinct and separate problems. The representation through pictures and plans of various designs already put into effect or in process of execution, will carry its own story in a suggestive way to communities contemplating such development projects.

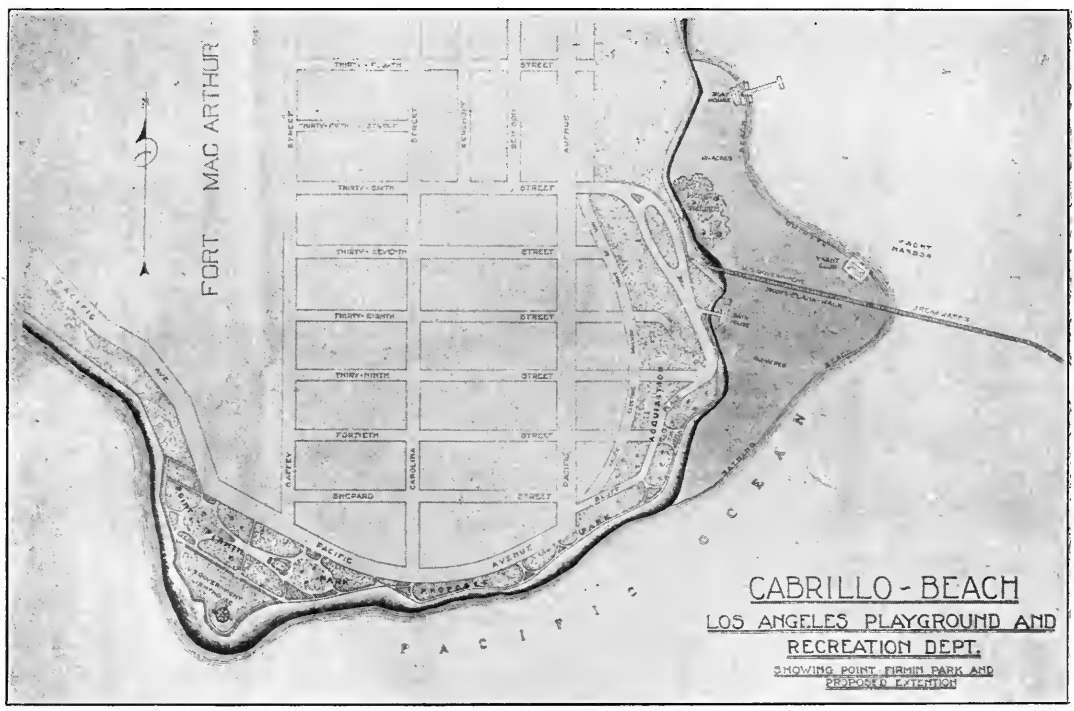


PLATE NO. 105

PLAN OF DEVELOPMENT OF CABRILLO BEACH, POINT FIRMIN PARK, LOS ANGELES, CALIFORNIA

Total area proposed beach, 25 acres.

With the government breakwater as an axis, two new beach sites will be made by the use of hydraulic dredges. One is of approximately twelve acres on the inner harbor side and the other about thirteen acres on the ocean side. More than a million cubic yards of material dredged from the inner harbor will be used in making the two fills.

Plans of the Los Angeles Playground and Recreation Department for this development also include a bathhouse, an anchorage for yachts, boathouse, a beach picnic ground and a comprehensive program of water sports. The development also provides for roadways, automobile parking spaces and a park overlooking the beach.

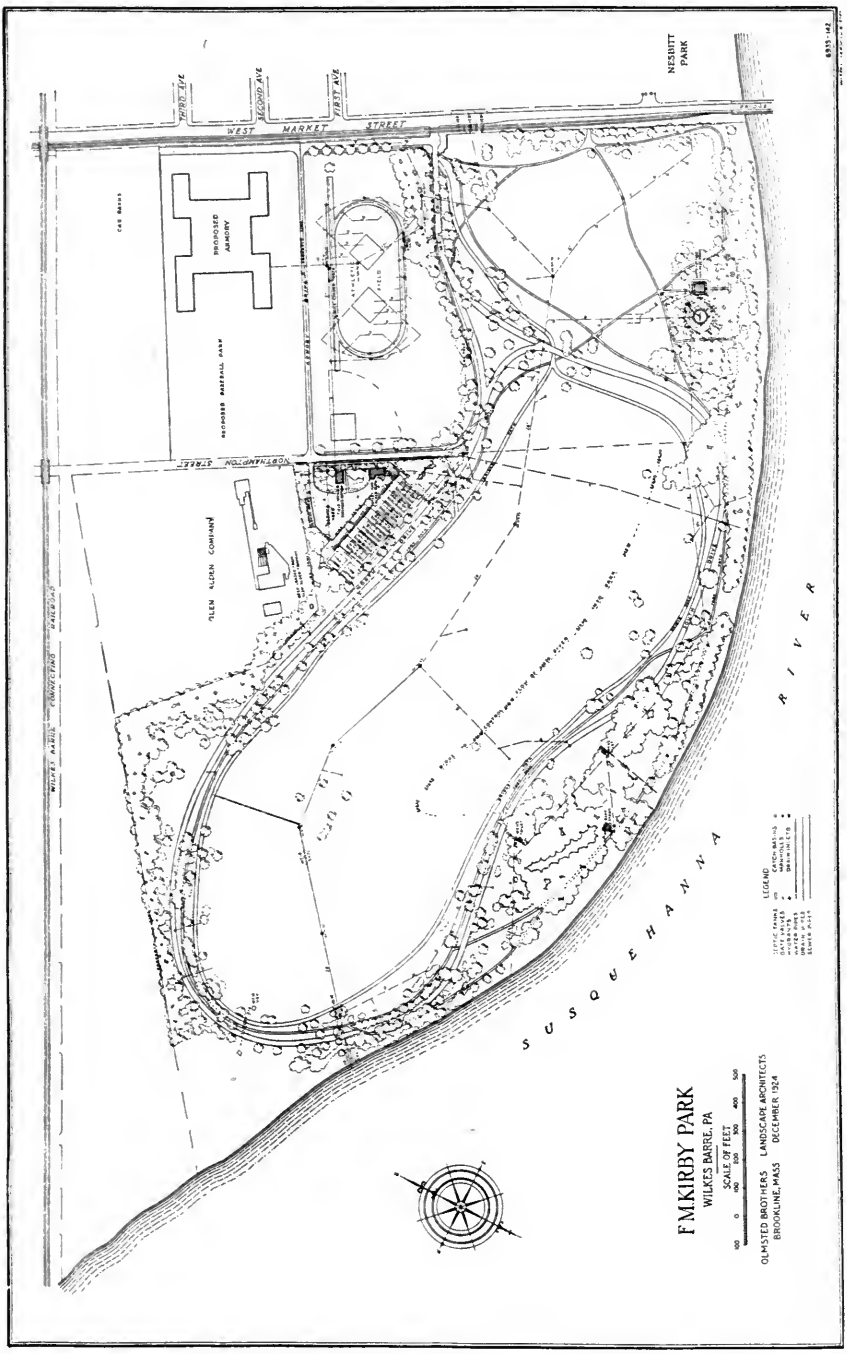


PLATE No. 106. PLAN OF THE F. M. KIRBY PARK, WILKES-BARRE, PENNSYLVANIA
(Design by Olmsted Brothers, Landscape Architects, Brookline, Massachusetts.)

This park comprises 120 acres of comparatively level land lying on a shelf 10 to 20 feet above the normal water level of the Susquehanna River. A periodic flooding of the area by high water and the consequent necessity of guiding the flow so that it would do the least damage to the park and the improvements therein created an engineering problem of some difficulty and interest. For a description of the design and of how the engineering problems were met, see *Parks and Recreation*, November–December 1925, pages 153–155.

Zoölogical Gardens, Aquariums, Botanical Gardens, Arboretums, Conservatories

These features of park systems are each considered in separate chapters or sections of chapters. Their design involves highly technical scientific problems and in the case of zoölogical gardens, aquariums and conservatories, structural engineering as well. These problems are separate and apart from those involved in the design of active recreation areas or of the different types of park areas in which the application of the principles of landscape architecture is of prime importance. They will be discussed in detail in chapters or sections of chapters.

Service Areas

Those areas in park systems devoted to the location of barns, shops, storehouses, greenhouses and other structures and uses connected with operation and maintenance are often the most unsightly places imaginable. Ugliness and disorder are not necessarily fundamental characteristics of such areas. By proper designing of the areas and especially by everlasting maintenance of order, system and upkeep these areas may be made very attractive.

Examples of the design of service areas are given in Chapter XI, "Maintenance."

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CHAPTER V

CONSTRUCTION NOTES

The construction problems involved in the development of different types of recreation areas included in a park system are so many and varied that it will obviously be impossible to deal adequately with all of them within the limits of a single chapter. The notes presented in this chapter, therefore, are intended as merely a preliminary presentation of the subject. The natural order of procedure in the construction work involved in the development of any given undeveloped area is approximately as follows:

1. Topographical surveys.
2. Preparation of design or designs by the landscape architect, including grading and planting plans.
3. Construction surveys by the engineer.
4. Preparation of engineering plans — grading, drainage, irrigation, roads, walks, trails and bridges, sewers, water supply, planting—including estimates, specifications, contracts, etc.
5. Simultaneous with, or following the above-mentioned basic construction features, comes the preparation of plans for the construction of specific areas devoted to play, games and sports, and of necessary structures.

In so far as the information has been included the suggested order has been followed as nearly as possible in the presentation of the material in this chapter. As has been noted in Chapter IV, pages 109–113, the landscape architect and the park engineer must work hand in hand; and, when the property includes active recreation features and structures of importance, the special technical services of the recreation expert and of the building architect should be used by the landscape architect and the engineer. The special services of lighting, electrical, heating and sanitary engineers may also be needed.

Topographical Surveys

The topographical survey, including the hydrographic survey in properties having water areas, is the basic preliminary step to the preparation of the design by the landscape architect. The making of such surveys is an engineering function. No attempt will be made in this chapter to discuss the making of such surveys. Full information can be had from any good engineering manual. In "Parks and Park Engineering" (Lyle, John Wiley & Sons, Inc., N.Y., 1916), Chapter II, pages 25–32, inclusive, may be found a brief discussion of the subject. (See Chapter IV, page 109, for a statement

of the fundamental importance of having a careful topographical survey of every property in a park system.)

Landscape Architect's Plans and Designs

The preceding chapter is devoted to suggestions on elements of designs of different types of park and recreation areas. In construction, the designs of the landscape architect stand in the same general relation to the park engineer as do the designs of the building architect to the building engineer. No park governing authority should attempt to begin construction work on any property under its jurisdiction without first having obtained a design by the most competent landscape architect who can be secured. This is just as important in small systems as large ones.

Grading

Grading in construction has two purposes. First, the topography in most recreation areas will need certain changes to make it conform to the picture which the landscape architect believes the given property should present from a landscape viewpoint. An elevation may be required in one place; in another an elevation may need to be lowered. It may be desirable to create a body of water in a certain location; in another to fill a depression. These are general purposes. Secondly, grading is almost invariably involved in the construction of specific features such as the preparation of a roadbed or the beds for walks and trails, the planning of areas for various kinds of games and sports or the erection of certain structures.

The preparation of general grading plans is the function of the landscape architect. Except as grading is touched upon in dealing with other subjects in this chapter, no attempt will be made to discuss the technical processes of handling this important phase of construction work.

Drainage and Other Engineering Problems

Drainage is one of the most fundamental considerations in the physical layout of park properties, and careful consideration must be given to it. The following pages contain a detailed discussion of drainage and other engineering problems. Most of this material was prepared by Albert D. Taylor, landscape architect and town planner of Cleveland, Ohio, and was first published in *Landscape Architecture.*

Notes on Installation of Drainage[1]

Purposes of drainage. The kinds of drainage to which these notes refer are tile drains, vitrified or porous, laid with open joints or with cemented joints. The general purposes of drainage are as follows:

[1] Albert D. Taylor in *Landscape Architecture*, July 1922.

(*a*) For direct removal of surface water which may accumulate as the result of storms, or of water which may be confined in pools of various types. Thus in the case of surface water to prevent erosion by admitting it to an underground channel.

(*b*) For removal of ground water in order to accomplish the following results: (1) To eliminate the danger of damage from expansion during freezing weather in the vicinity of foundation walls, graves, walks and roads. (2) To aid the normal growth of vegetation by preventing the drowning of roots in supersaturated soil, and by reduction of moisture content to encourage bacterial activity for root growth. (3) To eliminate undue softness of areas, caused by surplus ground water where a firm surface is desired.

Fundamental principles of drainage. There are certain fundamental principles which apply to the practical analysis and eventual solution of a drainage problem. The general method of approaching a drainage problem may be summarized in the following tabulation:

(*a*) Determine the exact nature of the problem — that is, whether the problem is one of surface water removal entirely, one of subsurface or ground water removal where it is desired to effect a permanent lowering of the water table, or whether the problem is a combination of these factors. In so doing a decision will be reached regarding the portion of surface water to be removed by surface channels and the portion of surface water together with ground water to be removed by underground pipes.

(*b*) Determine the time element in the removal of surplus surface water or ground water — that is, whether temporary backing up is permissible and if so at what points in the system.

(*c*) Determine the quantity of run-off from the area to be drained and the resulting size of open ditch or sizes of pipe required under the time element.

(*d*) Determine upon the solution of the out-fall portion of the problem, so that the total construction cost will be most economical.

(*e*) Determine upon the type of channel, pipes and inlets in different parts of the area to be drained which will accomplish the most economical and effective solution under the conditions imposed.

(*f*) Determine upon a proper spacing of the individual drainage lines so that the entire system will be adequate to remove surface or ground water as required, and allow a factor of safety which will meet with demands of abnormal and unexpected quantities of water.

(*g*) Determine the proper depth for various drainage lines in order to answer the requirements of their individual functions.

(*h*) Determine the available minimum grades which can be accepted, and plan if possible the entire system as a unit, making ample provision for future extensions without readjusting the entire plan.

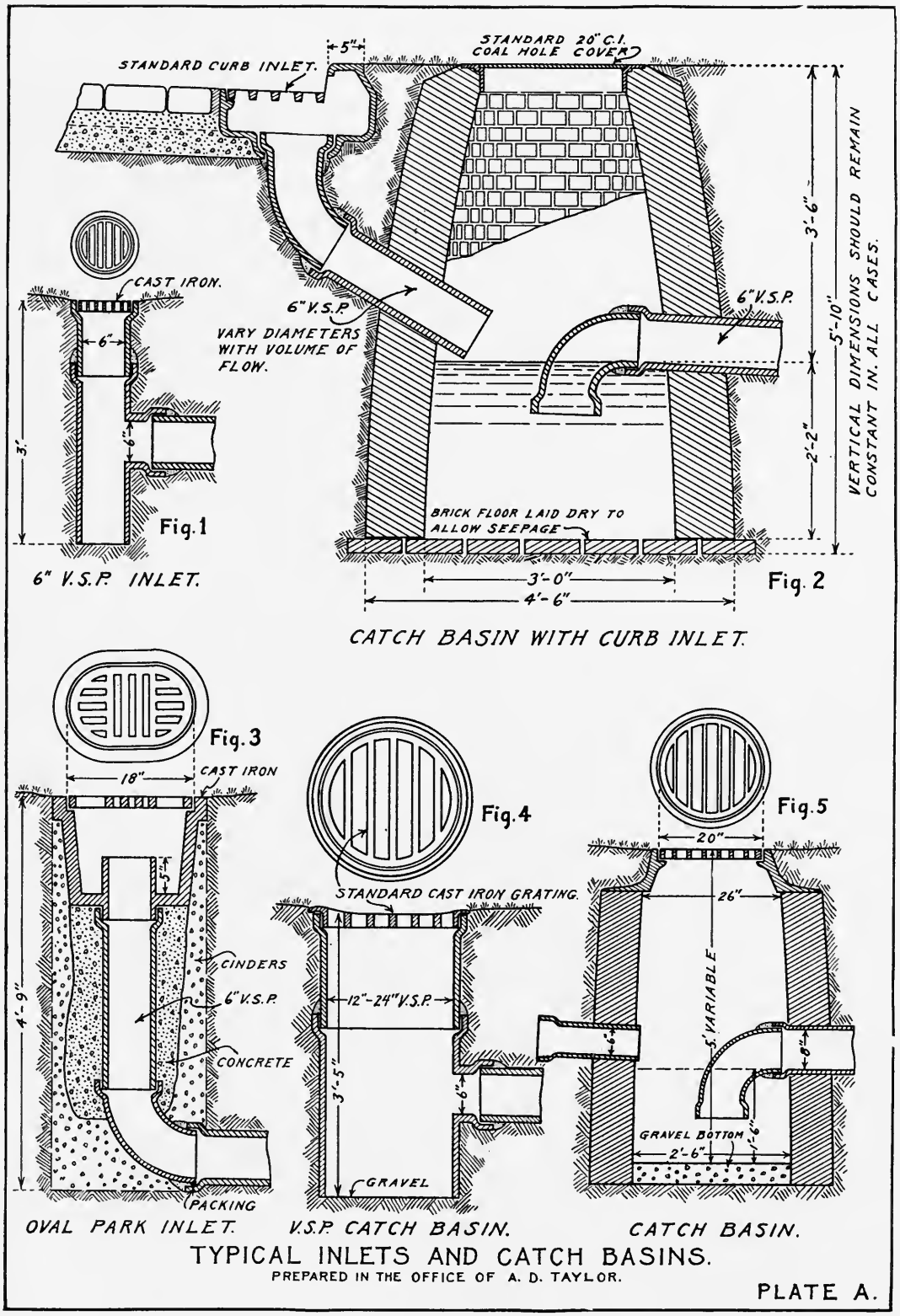

STANDARD CURB INLET.
5"
STANDARD 20" C.I. COAL HOLE COVER
CAST IRON.
6"
3'
6"
Fig. 1
6" V.S.P. INLET.
6" V.S.P.
VARY DIAMETERS WITH VOLUME OF FLOW.
6" V.S.P.
3'-6"
5'-10"
2'-2"
VERTICAL DIMENSIONS SHOULD REMAIN CONSTANT IN ALL CASES.
BRICK FLOOR LAID DRY TO ALLOW SEEPAGE
3'-0"
4'-6"
Fig. 2
CATCH BASIN WITH CURB INLET.
Fig. 3
18"
CAST IRON
5"
4'-9"
CINDERS
6" V.S.P.
CONCRETE
PACKING
OVAL PARK INLET.
Fig. 4
STANDARD CAST IRON GRATING.
12"-24" V.S.P.
3'-5"
6"
GRAVEL
V.S.P. CATCH BASIN.
Fig. 5
20"
26"
5' VARIABLE
6"
6"
GRAVEL BOTTOM
1'-6"
2'-6"
CATCH BASIN.
TYPICAL INLETS AND CATCH BASINS.
PREPARED IN THE OFFICE OF A. D. TAYLOR.
PLATE A.

PLATE NO. 107

Areas Requiring Drainage and General Problems of Each.

(*a*) *Roads.* Roads are usually crowned for drainage of their surface. This crown will usually approximate a half inch to each foot of width between the middle line and the side line for macadam roads, one-fourth inch for smooth impervious surfaces. On roads which are comparatively flat (2% to 5%) the crown may be as slight as three-eighths of an inch to each foot, while on roads of steeper grades (7% to 12%) the crown may be increased to three-fourths of an inch to each foot or even more in order to ensure the prompt removal of surface water to the gutters and thereby eliminate washing of the road surface through streams of water which might find their way over the road surface from some distance before finally reaching the gutter. This applies to macadam roads. For smooth impervious surfaces the crown is not increased with the gradient. There are various types of gutters which are not discussed in these notes. The types of inlets and catch basins to meet the requirements of road drainage are shown on Plate 107.

In the heavier clay soils it is extremely desirable that the subgrade of the road should be thoroughly drained. This may be accomplished either by crowning the subgrade and removing the water through four-inch tile drains (similar to figure 3 on Plate 108) installed within the road area and along the immediate side of the road, or by one single similar tile drain installed in a depression in the subgrade under the middle line of the road. The usual depth of these tile drains under the road approximates twelve inches below the surface of the subgrade.

(*b*) *Walks.* It is quite essential that the surface of walks of all kinds should be so graded that the surface water will be promptly carried to the sides, and it is equally essential that the surrounding surface of the ground on either side of the walk should be so graded that the minimum amount of surface water will find its way to the top of the walk.

Walks constructed on the clay soils are usually drained with a line of four-inch tile installed under the middle line of the walk in a trench approximating twelve inches in width and twelve inches below the subgrade of the walk, and filled with cinders to cover the tile. Such underdrainage removes promptly all surplus water which would cause damage in the presence of freezing conditions and which might also cause a soft condition of the walk surface, especially on gravel and turf walks.

(*c*) *Lawns, garden areas, farm areas.* The modeling of the surface of lawns and gardens is a question of practical and æsthetic grading too long to discuss here. Subdrainage of all these areas is similarly largely a horticultural or agricultural question. Tile drainage for lawns is shown in figures 1, 2 and 3 on Plate 108; for gardens in figures 1 and 4 on Plate 107.

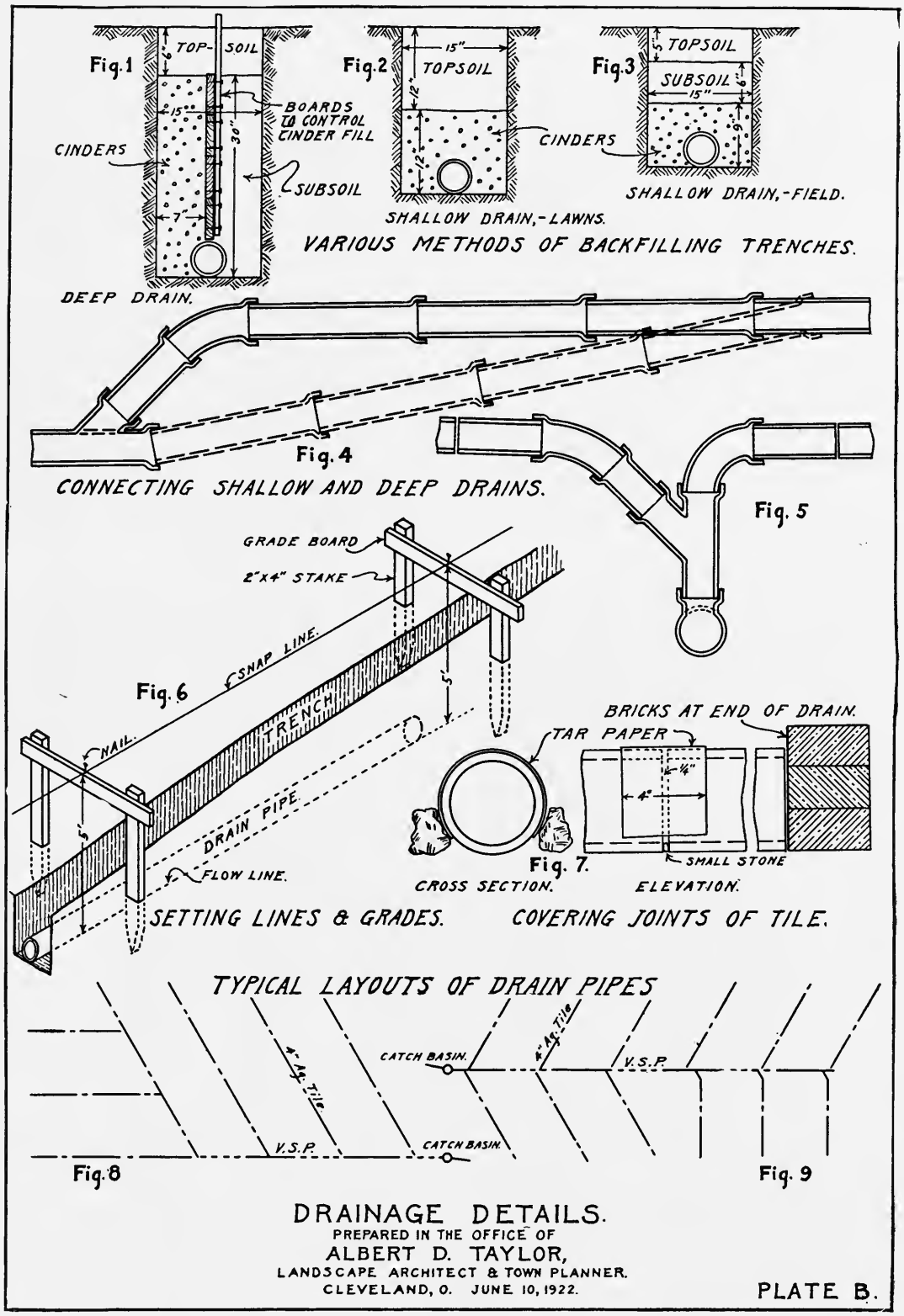


Fig. 1
TOP-SOIL
6"
15"
30"
BOARDS TO CONTROL CINDER FILL
CINDERS
SUBSOIL
7"
DEEP DRAIN.
Fig. 2
15"
TOPSOIL
12"
CINDERS
SHALLOW DRAIN,-LAWNS.
Fig. 3
5" TOPSOIL
SUBSOIL
15"
9"
SHALLOW DRAIN,-FIELD.
VARIOUS METHODS OF BACKFILLING TRENCHES.
Fig. 4
CONNECTING SHALLOW AND DEEP DRAINS.
Fig. 5
GRADE BOARD
2"x4" STAKE
SNAP LINE.
Fig. 6
NAIL.
TRENCH
DRAIN PIPE
FLOW LINE.
SETTING LINES & GRADES.
BRICKS AT END OF DRAIN.
TAR PAPER
¼"
4"
SMALL STONE
Fig. 7.
CROSS SECTION.
ELEVATION.
COVERING JOINTS OF TILE.
TYPICAL LAYOUTS OF DRAIN PIPES
4" Ag. Tile
V.S.P.
CATCH BASIN.
Fig. 8
Fig. 9
DRAINAGE DETAILS.
PREPARED IN THE OFFICE OF
ALBERT D. TAYLOR,
LANDSCAPE ARCHITECT & TOWN PLANNER.
CLEVELAND, O. JUNE 10, 1922.
PLATE B.

Plate No. 108

(*d*) *Foundation walls.* (Include retaining walls, cellar walls and pools.) Such walls must invariably be protected by a line of drain tile installed immediately at the base and on the back of the wall and discharging by tile drains or weep holes in order to remove the surplus ground water that will otherwise cause damage by frost action, or seepage through the wall.

(*e*) *Wooded areas.* The drainage problem of wooded areas is preferably solved by open channels for the surface water, and lines of drain pipe where necessary to remove the ground water, especially in picnic areas and woods which are frequently used during the wet season. These drains should be installed with the greatest of care in order that the natural ground water conditions in the soil may be changed very gradually, thus permitting the root systems of the trees to readapt themselves to the changed moisture conditions of the soil.

(*f*) *Cemeteries.* In cemetery drainage, besides modeling the surface of the ground so far as possible in order to remove to proper inlets and catch basins the surplus surface water, there is also an important problem of providing drainage, especially in the heavier types of soil, for each grave by installing a line of drainage below the level of the grave similar to figure 1 on Plate 108.

(*g*) *Recreational areas.* The drainage of recreational areas is one of the most important problems of drainage. Such areas as playgrounds, tennis courts, bowling greens, polo fields and baseball fields must present a firm surface soil condition at all times and must be as little affected as possible by storm water which should be removed in the shortest time both by surface drains and by underground drains. It becomes necessary to install drainage on these areas with short intervals between the parallel lines of drains, especially where such areas are constructed on the various types of clay soil.

(*h*) *Steep bluffs* having a tendency to disintegrate and slip in large sections on the face of the slope. These conditions present a problem of removing all surface water before it reaches the top of the slope and usually of removing all ground water through the installation of a deep line of drain tile in the bottom of a cinder filled trench. Figure 1 on Plate 108 is for the purpose of intercepting such ground water as will eventually find its way to the lower impermeable hardpan subsoil and follow this layer to the face of the slope.

(*i*) *Meter pits, boiler rooms, newly transplanted trees, etc.* These areas should always be thoroughly drained. This is important with tree pits especially when made in the heavy type of clay soil.

Kinds of pipe used for drainage. The two most common kinds of pipe used for drainage purposes, so far as this discussion is concerned, are agri-

cultural tile (either round or octagonal) and vitrified clay pipe (called vitrified sewer pipe or salt glazed or Akron pipe). There are two grades of vitrified sewer pipe known as first quality and second quality. Where the source of supply for such pipe is close at hand, it is sometimes equally as satisfactory to use second quality vitrified sewer pipe at a less initial cost for the main lines into which the agricultural tile lateral drains empty. The agricultural tile of unglazed burned clay, being quite porous, is most commonly used in the various types of subdrainage. Some engineers claim that the octagonal tile will hold its alignment much better than the round tile, otherwise there is no real reason for the use of one type in preference to the use of another type. Some experienced men say that since most of the underground water enters the pipe through the joints in any case, and since there is no extra cost except that of the pipe in installing vitrified pipe with open joints, this is preferable to agricultural tile because more permanent.

Computing sizes of pipes required for drainage. In the work of determining the required size of pipe for drainage in order to meet the requirements of any specific drainage problem, one must first consider the problem of surface water removal and second the problem of ground water removal.

(*a*) *Surface water.* The area to be drained should be studied to determine its smaller individual areas, each of which collects its own quantity of surface water and each of which should be served by one or more inlets or catch basins. With this information in hand, compute from rainfall and run-off tables the size of the outlet pipe required to remove the water as rapidly as it will collect at any given low point, allowing in the computations for the time necessary for the surface water from the periphery of the drained area to reach the inlet. The second step is to join these units into groups by combining the quantity of surface water collected in pipe lines coming from two or more catch basins and adopting a proper increase in pipe diameter. From these simple groups more complicated groups may be combined until finally the entire surface water is emptied into one or more main outlet lines.

Since the greater the grade on which the pipe is laid, the faster the flow and the smaller the pipe which is required, for these and other considerations it is more economical at times to depart from the apparent natural outfall location and to incur additional expense for excavation on some other part of the system in order to procure a steeper grade on the drainage lines. The time allowed for the removal of storm water is an important element in computing pipe capacities. Many situations arise where temporary backing up is allowable, and consequent economy of cost is effected through the use of smaller pipe. The calculations for the size of pipe should

of course be simplified in practice by the use of engineers' tables for the flow of water in pipes.

(*b*) *Ground water.* Ground water finds its way to drainage outlets much more slowly and more constantly than surface water. Therefore the element of time required to remove surplus soil-moisture is more favorable, and smaller pipe may be used. Drainage lines to meet the requirements of surface water and ground water may often be combined for the reason that in practically every instance the surface water is removed so promptly, following a storm, that the bulk of the flow in the drainage lines is completed at the time when the ground water flow reaches the pipes. In other words the same pipe line may serve both requirements, bearing in mind that it is not necessary to adopt a pipe of much additional capacity to care for surface water and ground water near the immediate points where this type of drainage originates. If this double use is made of the pipes, however, there should be proper catch basins to prevent silting up the lines with surface dirt. Also there is danger that the open joint pipe, if more than full of surface water, will irrigate, not drain, for a time at least. Practice has shown the four-inch tile to be the best minimum size for general ground water drainage and the six-inch tile to be the best minimum size for drainage from inlets and catch basins.

The question of determining the required sizes of pipes in different portions of a drainage system is an important one, and the factor of safety as stated above should always be allowed, to meet the requirement of abnormal conditions. The installation of a slightly larger pipe when the trench is once open is small additional cost, while the expense of reëxcavating and installing a larger pipe is a tremendous relative cost and inconvenience, as well as possibly a source of temporary damage to finished surface conditions.

Effect of soil types on spacing and depth of pipes. This refers primarily to ground water drainage. Gravel and sandy soils need very little or no underdraining. Stiff clay soils on recreation areas may require laterals at intervals as frequent as 10 feet, while normal farm practice is to place laterals approximately 40 feet apart. Under garden areas and average lawn areas the spacing of laterals at 20-foot intervals is reasonable unless extremely stiff clay conditions are common, in which case 12 to 15 feet is the average spacing. Laterals placed under recreational areas such as tennis courts, bowling greens, turf terraces, will average from 10 to 15 feet apart depending upon the condition of the soil (whether heavy clay or light clay loam). All laterals and mains for drainage areas should be laid, in general, to conform with figure 8 and figure 9 on Plate 108. It should be remembered, in determining the spacing of laterals, that the hydraulic gradient for ground water in a heavy clay soil is much greater than the

hydraulic gradient for ground water in a sandy loam, and therefore the spacing of the laterals will depend to some extent upon the depth at which the laterals are installed.

The depth for the installation of tile drains will vary with the type of soil in which the lines are installed, more than the spacing does. In a heavy clay soil the laterals should be laid slightly deeper (approximately 3 to 3½ feet) while in the lighter clay loam two and a half to three feet is ample. The general rule is that the deeper the laterals are located, the slower the action, but the wider the area which can be drained. Therefore quick drainage of ground water would require the minimum depth of laterals with the minimum spacing.

The following are some notes on the average depth of laterals in different kinds of soil and for different drainage purposes: Underdrainage of normal lawn areas on heavy clay loam, 3 to 3½ feet; on lighter clay loam, 2 to 3 feet; of roads and walk areas, 12 to 18 inches below the subgrade of such areas; of garden areas on the lighter clay soils, 2 to 3½ feet; of areas in the vicinity of graves, 7 to 8 feet; of wooded areas, 3½ to 4½ feet (intervals of 30 to 40 feet between laterals); underdrainage of intensely used recreational areas, 18 inches to 2½ feet (spacing between laterals, 10 to 15 feet).

Determining location for drainage lines. The location for drainage lines should be selected with a view to reducing as far as possible the total length of drain pipe required and especially the lengths of deep laid pipe or of pipe of large diameter. Whenever it is necessary to connect shallow pipe with deep pipe, this may be accomplished in a manner similar to that shown in figure 4 and figure 5 on Plate 108. It is quite essential that important drainage lines should be installed within the boundaries of any extremely wet portions of the area being drained. Drainage pipes should also be located where if in the future it is necessary to get at them in order to correct any clogging condition of the pipes or condition where pipes are out of alignment, such excavation can be made without destroying finished surface conditions which cannot be easily repaired.

Setting lines and grades. All drainage lines should be carefully laid out on the ground with stakes at least twenty-five or fifty feet apart along the center line of the drain. Batter boards should be erected as shown in figure 6 on Plate 108 at a uniform height over the flow line of the pipe and a nail or tack driven into each batter board directly over the center of the drain. The posts supporting these boards should be at least twelve inches and preferably farther from the sides of the proposed ditch in order not to be disturbed by excavating operations. Batter boards should be carefully erected for each catch basin or inlet and allowance made for the

additional width of excavation at these points. A grade stake should be carefully set to one side of each inlet or catch basin as a reference for the elevation of the top of the grating. It should be placed so that the top of the grating can be reached by a straight edge not more than ten feet long.

Excavating trenches. In the excavation of all drainage trenches, especially through lawn areas, great care should be exercised to excavate the top soil to the full depth and pile it along one side of the trench. The subsoil should then be excavated to a point slightly above the finished grade for the bottom of the trench, and this subsoil should be piled on the opposite side of the trench. Great care should be exercised in excavating for the bottom of the trench, and frequent checks should be made from the string line stretched between batter boards. This grade at the bottom of the trench is usually a flow line grade for the bottom of the inside of the tile, and an allowance equal to the thickness of the tile should be made in determining this surface for the bottom of the trench. It is very important that no part of the trench should be excavated below the finished grade, because all pipes for the best results should rest firmly upon solid, undisturbed soil.

Laying pipe lines. The method of installing tile drainage is practically the same in all cases. Tiles with open joints should be spaced and covered as shown in figure 7 on Plate 108. Each tile as it is laid should be covered and firmly supported on either side in order to prevent any possibility of getting out of line. The approximate spacing between the ends of the tile is one-eighth to one-fourth inch, and the joints are covered with a strip of tar paper approximately three inches wide and long enough to cover the upper two-thirds of the circumference of the tile. The object of the tar paper is to prevent silt from getting into the tile at the top. Vitrified pipe, having bells, needs no tar paper, but the soil must be cut out below the pipe to fit the bell.

Backfilling trenches. All trenches should be carefully backfilled in layers not exceeding six inches in depth. Each layer should be thoroughly tamped and preferably puddled except immediately around the pipe before a succeeding layer is applied. The method of backfilling with cinders, subsoil and topsoil is shown in figures 1, 2 and 3 on Plate 108. The great danger in backfilling trenches comes from a subsequent settlement which causes oftentimes irreparable damage to the surface conditions above the drains.

All drainage trenches on all areas except wooded areas should be carefully backfilled with screened cinders up to a point where the proper depth of topsoil is required. (See figures 1, 2 and 3 on Plate 108.)

In abnormally deep trenches where it seems advisable to conserve the supply of cinders, the trench can be backfilled, using a board partition on one side of which a backfill of cinders is made and on the other side of

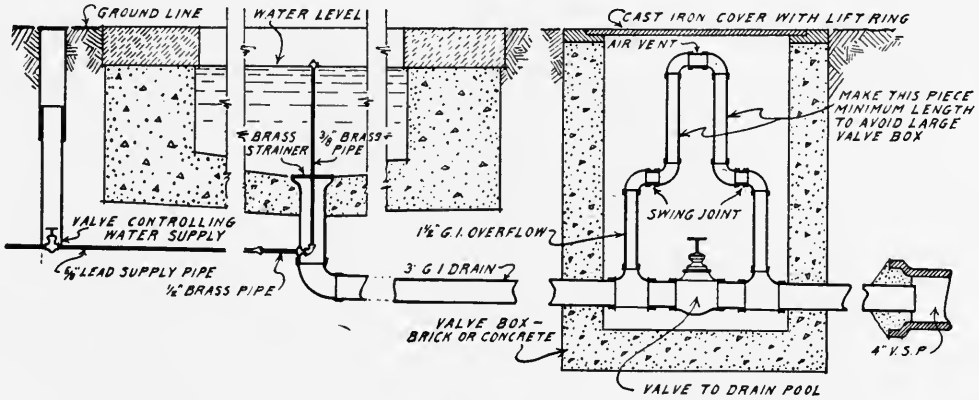


Fig 1

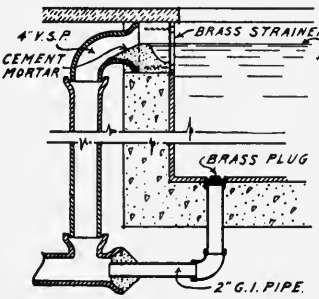


Fig. 2

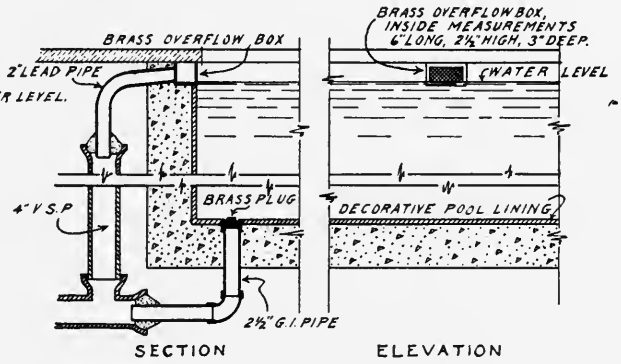


Fig 3

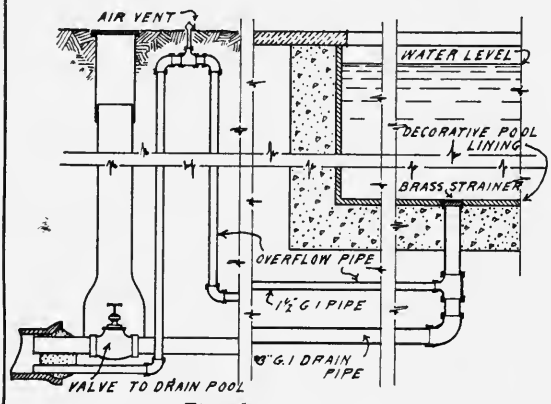


Fig. 4

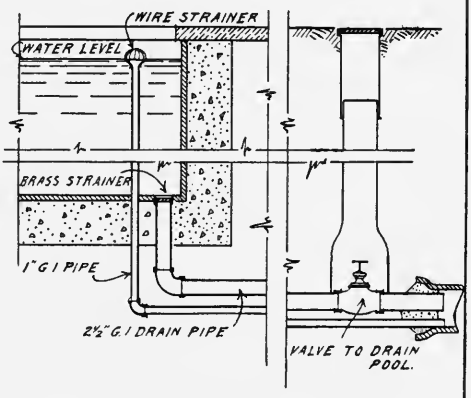


Fig. 5

DETAILS FOR DRAINAGE OF POOLS.

PREPARED IN THE OFFICE OF A. D TAYLOR

PLATE C.

PLATE NO. 109

which a backfill of natural subsoil is made. The installation of tile drainage in heavy clay soils without a backfill of cinders or light sandy loam accomplishes little, and many times a backfill of clay will practically destroy the entire value of the drain.

Catch basins. Inlets and catch basins are of various types, as shown on Plate 107. They may also be of varying depth depending upon the depths of the pipes entering and leaving from these basins. The various types of sand traps are shown in figures 2, 3 and 5 on Plate 107. A detailed discussion of catch basins is omitted in this paper because of lack of space.

Drainage of pools. There are two important problems in the drainage of pools. The first is the problem of the overflow, and the second is the problem of completely draining the bottom of the pool. On Plate 109 the writer has shown various common methods for draining pools. It is very important in the overflow drainage of a pool that the drainage outlet should carry the water from the surface of the pool, thus constantly removing a certain amount of dust and other foreign materials that may rest upon the surface of the water. The methods of controlling the height of the water in the pool are shown in the figures on Plate 109.

Cost Data Notes.

All cost data figures include no charge for teaming or carting of materials to or from site of the trench. The excavated material is thrown immediately along the sides of the trench, from which location it is shoveled into the trench as backfill. Cinders are delivered in piles along the side of the trench. No allowance is included for cost of materials, superintendence, or contingencies, nor for cleaning up after the work is completed. All excavations made in average clay loam during dry weather.

Shallow trenches. The cost per cubic yard to excavate trenches for drain pipes will vary according to the soil and the depth of the trenches. The following tables showing man hours required to excavate trenches to various depths in different soils have been compiled from the cost records of a number of operations over a period of several years, when trenching has been done under varying conditions of soil, labor and weather.

Man Hours per cubic yard of excavation

Depth of trench	*Average width of trench*	*Easy earth*	*Average earth*	*Tough earth*	*Hard-pan*
1 foot	12 inches	1	1.25	1.75	2.5
2 feet	15 inches	1	1.25	1.75	2.5
3 feet	18 inches	1.25	1.5	2	3
4 feet	18 inches	1.5	1.75	2.25	3.5
5 feet	21 inches			2.25	4
6 feet	24 inches			2.75	

Man Hours per one hundred linear feet of trench excavated

Depth of trench	*Average width of trench*	*Easy earth*	*Average earth*	*Tough earth*	*Hard-pan*
1 foot	12 inches	3.7	4.6	6.5	9.2
2 feet	15 inches	9	11.6	16	23
3 feet	18 inches	20.8	25	33	50
4 feet	18 inches	33	39	50	77
5 feet	21 inches			81	130
6 feet	24 inches			122	

When restricted areas compel the disposal of excavation on one side of the trench only, the man hours should be increased one-sixth to cover the extra labor required to keep the material pushed back from the edge of the trench. In any excavation work where it is necessary to handle materials twice, always endeavor to shovel the material on planks in order to decrease the cost of handling it the second time, as materials can be handled at nearly half the cost if shoveled from planks.

Trench excavation (shallow trench not over six feet deep, see Plate 108, figures 2 and 3).

Depth of excavation, 3 feet.

Width of trench, 18 inches.

Total length of trench excavated, 2,113 feet.

Total excavation, 359 cubic yards.

Total labor hours required, 722.

Labor hours required per cubic yard of excavation, 2.01.

Labor hours required per linear foot of trench, .342.

Deep trenches. In excavating trenches more than six feet deep it will be necessary to shovel the earth back from the edge of the trench even for narrow trenches. Loose earth just thrown out of trenches is easily handled, especially if that handling consists in merely pushing it back from the edge of the trench. For trenches from six to eight feet deep, one-half of the total excavation will be handled twice, the second handling costing only one-third that of the first. The following rates in man hours per cubic yard will cover the cost of initial materials handled for trenches six to eight feet deep:

Easy earth, 2 man hours.

Average earth, 2.5 man hours.

Tough earth, 2.75 man hours.

Hardpan or wet clay, 4 man hours.

Therefore the average cost per cubic yard in man hours for trenches from six to eight feet deep will be:

Easy earth, 2.33 man hours.

Average earth, 2.925 man hours.

Tough earth, 3.21 man hours.

Hardpan or wet clay, 4.66 man hours.

The cost for excavating of trenches figured at these rates will not cover the cost of removing the surplus material not needed for backfill, and a separate estimate should be made to cover this cost if there is to be any material removed.

Trench excavation (deep trench over six feet deep, see figure 1 on Plate 108).

Depth of trench excavation, 7 feet.

Width of trench, 27 inches.

Total length of trench excavated, 697 feet.

Total excavation, 406.6 cubic yards.

Total labor hours required, 1,220.

Labor hours required per cubic yard of excavation, 3.

Labor hours required per lineal foot of trench, 1.75.

Backfilling of trenches.

Depth of trench, 3 feet.

Width of trench, 18 inches.

Total length of trench backfilled, 654 feet.

Total cubic yards of trench backfill, 109.

Total labor hours required for backfilling, 90.5.

Labor hours required per cubic yard of backfill, .83.

(This includes backfilling in layers not exceeding 12 inches in depth and tamping or puddling.)

Laying tile (open joints, see figure 7 on Plate 108).

Size of tile	*Total length of tile laid*	*Total labor hours required*	*Labor hours per lineal foot*
4 or 6 inches V. S. P.	198 linear feet	9	.045
4 inches Agricultural	450 linear feet	15	.033
18 inches V. S. P.	180 linear feet	12	.066

Laying tile (cement joints, see figure 4 on Plate 108).

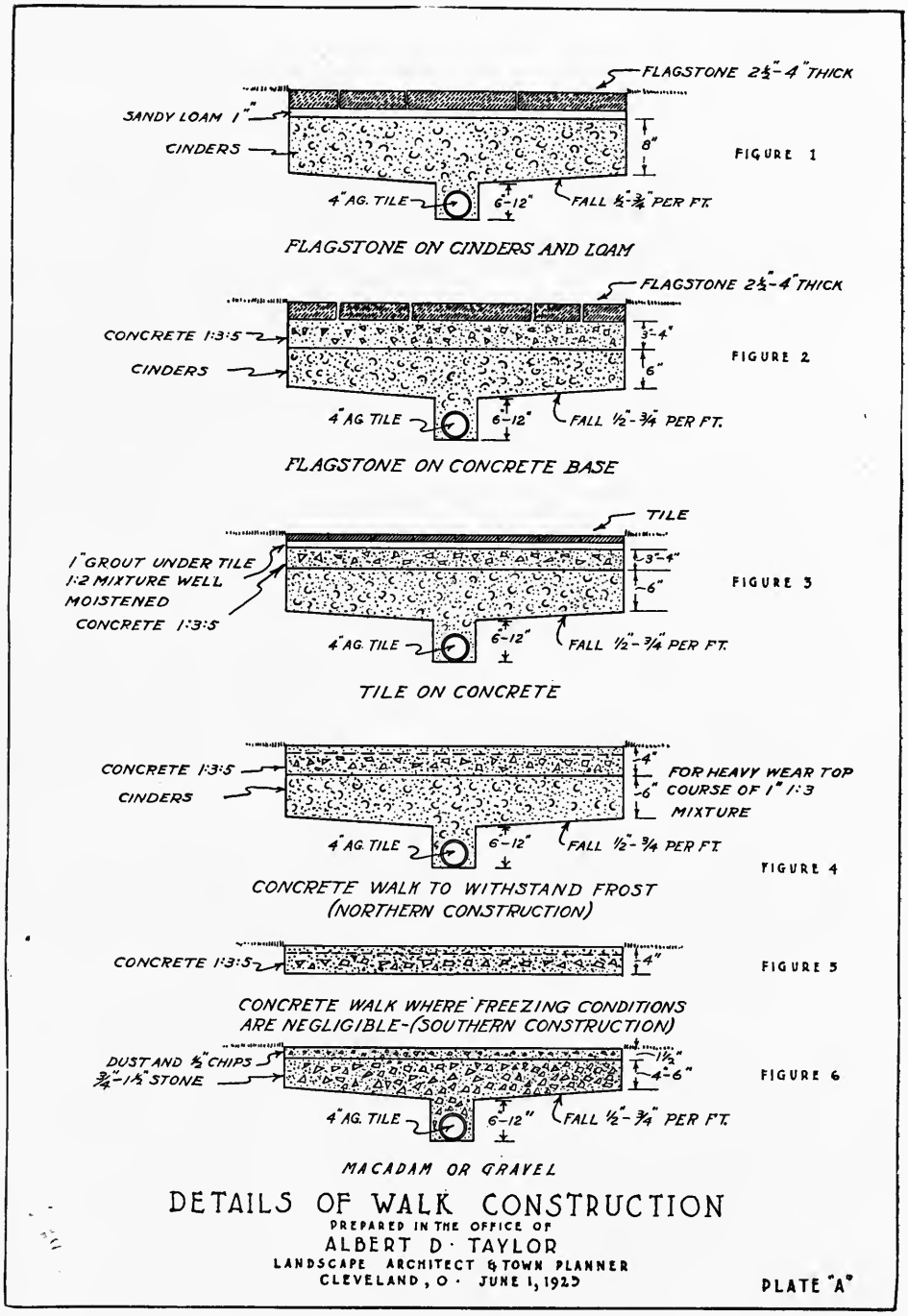
Size of tile	*Total length of tile laid*	*Total labor hours required*	*Labor hours per lineal foot*
12 inches V. S. P.	225 linear feet	15	.066
18 inches V. S. P.	320 linear feet	40	.125

Catch basins (brick, see figure 2 on Plate 107).

Approximate size of catch basin, 6 feet deep by 3 feet wide inside.

Total materials required, 600 common brick plus 4 bags cement.

Total cubic yards of excavation, 4.5.


FLAGSTONE 2½"-4" THICK
SANDY LOAM 1"
CINDERS
8"
4" AG. TILE
6-12"
FALL ½"-¾" PER FT.
FIGURE 1
FLAGSTONE ON CINDERS AND LOAM
FLAGSTONE 2½"-4" THICK
CONCRETE 1:3:5
CINDERS
3"-4"
6"
4" AG. TILE
6-12"
FALL ½"-¾" PER FT.
FIGURE 2
FLAGSTONE ON CONCRETE BASE
TILE
1" GROUT UNDER TILE
1:2 MIXTURE WELL MOISTENED
CONCRETE 1:3:5
3"-4"
6"
4" AG. TILE
6-12"
FALL ½"-¾" PER FT.
FIGURE 3
TILE ON CONCRETE
CONCRETE 1:3:5
CINDERS
4"
6"
FOR HEAVY WEAR TOP COURSE OF 1" 1:3 MIXTURE
4" AG. TILE
6-12"
FALL ½"-¾" PER FT.
FIGURE 4
CONCRETE WALK TO WITHSTAND FROST (NORTHERN CONSTRUCTION)
CONCRETE 1:3:5
4"
FIGURE 5
CONCRETE WALK WHERE FREEZING CONDITIONS ARE NEGLIGIBLE-(SOUTHERN CONSTRUCTION)
DUST AND ½" CHIPS
¾"-1½" STONE
1½"
4"-6"
4" AG. TILE
6-12"
FALL ½"-¾" PER FT.
FIGURE 6
MACADAM OR GRAVEL
DETAILS OF WALK CONSTRUCTION
PREPARED IN THE OFFICE OF
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CLEVELAND, O. JUNE 1, 1925
PLATE "A"

PLATE NO. 110

Total mason hours required for laying brick, 5.
Total labor hours required for excavation, 6.
Total labor hours required for mason's helper, 5.
Labor hours per hundred for laying brick, .833.
Mason hours required per hundred for laying brick, .833.
Labor hours required per cubic yard for excavation, 1.33.
Catch basins (vitrified sewer pipe, see figure 3 on Plate 107).
Size of vitrified sewer pipe, 12″ or 15″.
Labor hours required for complete installation, from 8 to 9.

Tabulation. The following is a tabulation of statistics taken from a number of undertakings, showing the total hours required per hundred linear feet for the complete installation of drainage lines of various sizes of tile. This labor item includes excavation, laying of pipe and backfill.

Complete labor required for one hundred linear feet

3,000 lin. feet of 4″ Agr. tile laid 1′ deep = 18½ hours.
1,200 lin. feet of 4″ Agr. tile laid 3′ deep in clay = 40 hours.
1,152 lin. feet of 4″ Agr. tile laid 2½ to 3′ deep in wet weather = 47 hours.
170 lin. feet of 3″ Agr. tile laid in stiff clay = 38 hours.
1,180 lin. feet of 4″ Agr. tile laid 2′ deep with cinder backfill = 31 hours.
200 lin. feet of 6″ Agr. tile laid 3½′ deep in loam and clay = 50 hours.
25 lin. feet of 4″ V. S. P. tile laid 2′ deep = 36 hours.
516 lin. feet of 6″ V. S. P. tile laid 3½′ deep in stony clay = 40 hours.
140 lin. feet of 6″ V. S. P. tile laid 2 to 4′ deep in loam = 22 hours.
260 lin. feet of 6″ V. S. P. tile laid 3½′ deep in loam = 38 hours.
400 lin. feet of 8″ V. S. P. tile laid 3′ deep in hard gravel and clay = 51 hrs.
590 lin. feet of 8″ V. S. P. tile laid 1′ deep = 26 hours.
38 lin. feet of 15″ V. S. P. tile laid 3½′ deep in old stone road = 285 hrs.
260 lin. feet of 18″ V. S. P. tile laid 3 to 7′ deep in stony soil = 100 hours.

Construction of Walks, Trails and Terraces[1]

The methods of constructing and draining flagstone walks laid upon a concrete foundation and upon loam with cinder, slag, or stone foundation were discussed in a previous installment of these notes. The following discussion is confined to the detailed methods covering the fundamental principles of construction for various types of walks. The construction of terraces has been included in this discussion for the reason that the principle of terrace construction is similar to that of walk construction, with the exception that the problems of subsurface drainage are similar to those on tennis court areas and other recreation areas. Terraces surfaced with flagstone paving on various types of foundation have the same principles

[1] Albert D. Taylor in *Landscape Architecture*, July 1923.

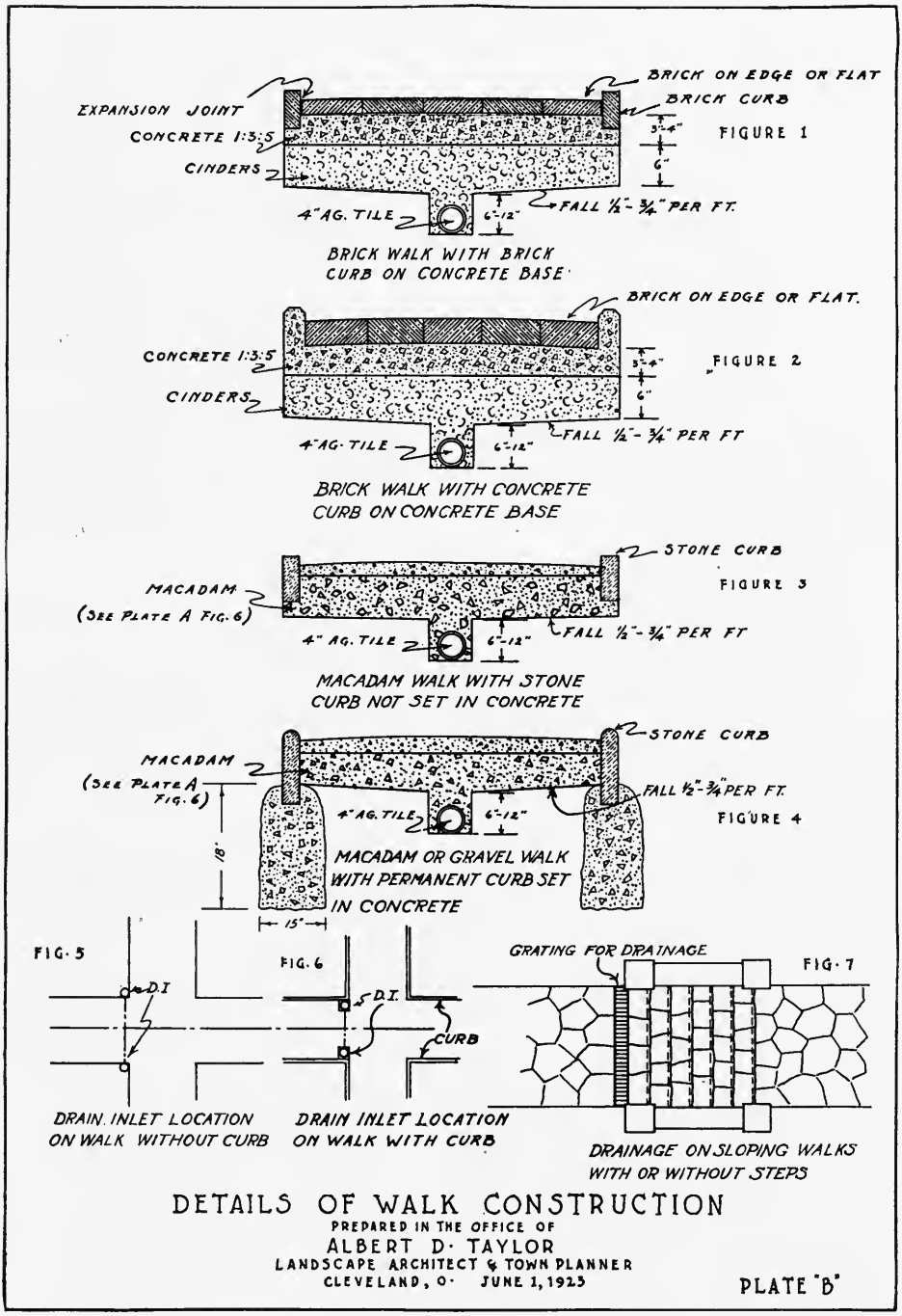

BRICK ON EDGE OR FLAT
EXPANSION JOINT
BRICK CURB
CONCRETE 1:3:5
3"-4"
FIGURE 1
CINDERS
6"
4" AG. TILE
6"-12"
FALL ½"-¾" PER FT.
BRICK WALK WITH BRICK CURB ON CONCRETE BASE
BRICK ON EDGE OR FLAT.
CONCRETE 1:3:5
3"-4"
FIGURE 2
CINDERS
6"
4" AG. TILE
6"-12"
FALL ½"-¾" PER FT
BRICK WALK WITH CONCRETE CURB ON CONCRETE BASE
STONE CURB
FIGURE 3
MACADAM
(SEE PLATE A FIG. 6)
4" AG. TILE
6"-12"
FALL ½"-¾" PER FT
MACADAM WALK WITH STONE CURB NOT SET IN CONCRETE
STONE CURB
MACADAM
(SEE PLATE A FIG. 6)
FALL ½"-¾" PER FT.
FIGURE 4
4" AG. TILE
6"-12"
18"
MACADAM OR GRAVEL WALK WITH PERMANENT CURB SET IN CONCRETE
15"
FIG. 5
D.I.
DRAIN. INLET LOCATION ON WALK WITHOUT CURB
FIG. 6
D.I.
CURB
DRAIN INLET LOCATION ON WALK WITH CURB
GRATING FOR DRAINAGE
FIG. 7
DRAINAGE ON SLOPING WALKS WITH OR WITHOUT STEPS
DETAILS OF WALK CONSTRUCTION
PREPARED IN THE OFFICE OF
ALBERT D. TAYLOR
LANDSCAPE ARCHITECT & TOWN PLANNER
CLEVELAND, O. JUNE 1, 1923
PLATE "B"

Plate No. 111

controlling the method of construction as those outlined under flagstone walks in the previous discussion.

The first step in the construction of any walk is that of establishing correct lines and grades. These should be permanently established and checked prior to the beginning of any construction work. Stakes (2 x 4 inches or 2 x 2 inches) should be set at least twelve inches outside of the side line of the walk, and usually parallel to the middle line. If the walk is located in a cut or a fill the line stakes should be set outside of the area to be regraded. Grades should be established on these stakes. The following discussion, in order to be as brief and as definite as possible, is subdivided under five headings, which are arranged, as far as possible, without duplication, according as the same method applies to more than one type of walk.

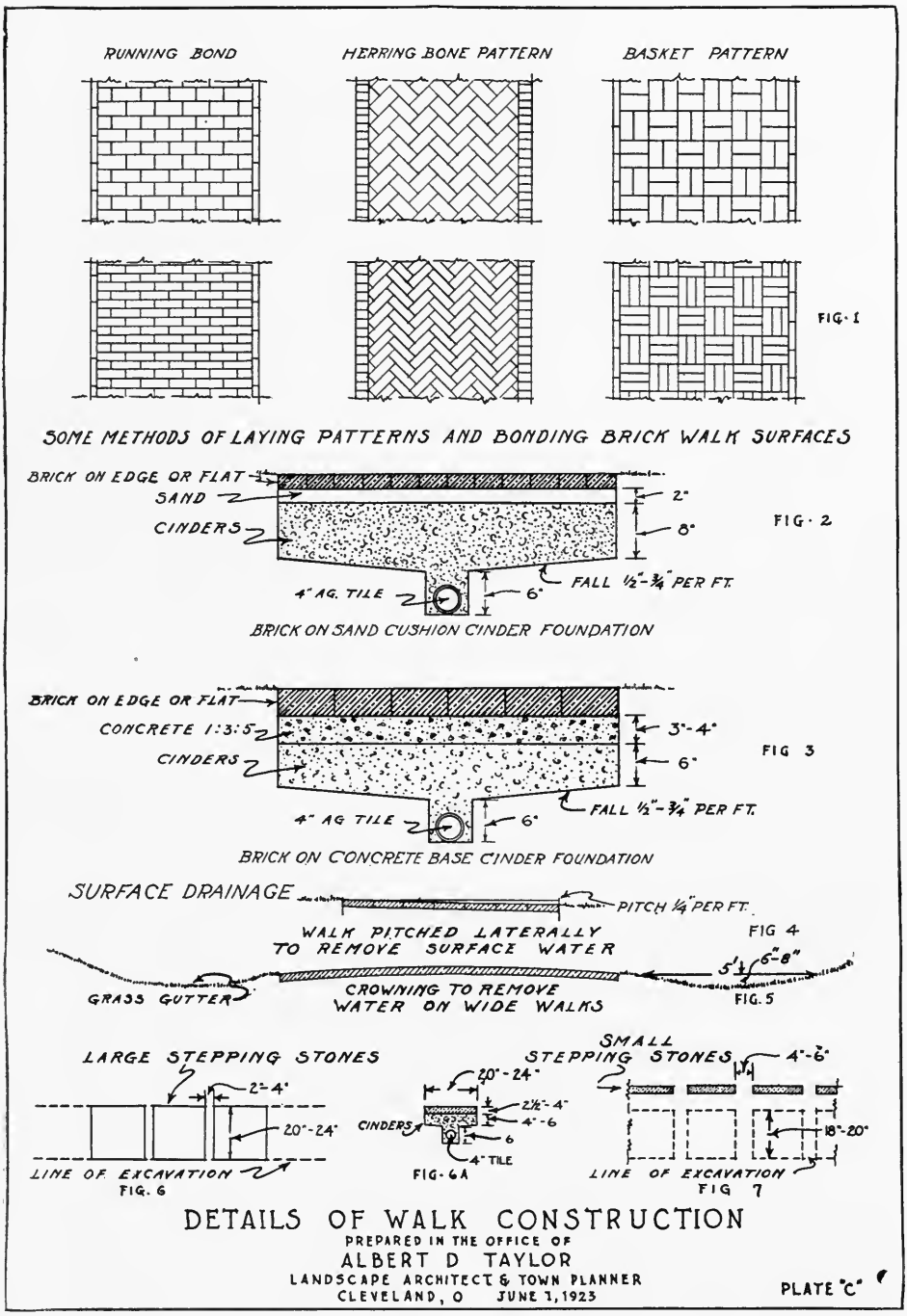
1. Excavation for foundations of walks.
2. Subgrading for foundations of walks.
3. Drainage (surface and subsurface).
4. Foundation courses and wearing surface.
5. Curbs for sides of walks.

1. *Excavation for Walks (General Considerations).*

(*a*) *Brick, tile, concrete, macadam, gravel, cobblestone and medina block.* Rough excavation may be done with scrapers. All excavation within two and one-half inches of the finished subgrade should be hand work, carefully done with shovels, so as not to cause unnecessary loosening of material below the proposed subgrade.

If the proposed walk is to be constructed on a fill, such fill below the subgrade should consist of thin layers approximating six inches in depth, and each layer should be thoroughly puddled, tamped or rolled.

If a heavy fill (exceeding 18 inches in depth) is made, such fill should be allowed to settle for several months (during the winter if possible) before any permanent walk is constructed. In such cases the cinder foundation may be put in place and rolled, and used as a temporary walk until such time as it is advisable to complete the permanent walk. Too much attention cannot be devoted to this question of fill, because any settlement after the permanent walk is constructed would be ruinous to the paved surface and would cause a greater expense to repair than water-bound macadam or gravel walks. The excavation for all walks, the foundation courses and wearing surfaces of which are constructed upon a prepared subgrade and are of other materials than the natural surrounding soil, should be to the required depth as shown in Plate 110, figures 1, 2, 3, 4, 6; Plate 111, figures 1, 2, 3, 4; and Plate 112, figures 2, 3.


RUNNING BOND
HERRING BONE PATTERN
BASKET PATTERN
FIG. 1
SOME METHODS OF LAYING PATTERNS AND BONDING BRICK WALK SURFACES
BRICK ON EDGE OR FLAT
SAND
CINDERS
2"
8"
4" AG. TILE
6"
FALL ½"-¾" PER FT.
FIG. 2
BRICK ON SAND CUSHION CINDER FOUNDATION
BRICK ON EDGE OR FLAT
CONCRETE 1:3:5
CINDERS
3"-4"
6"
4" AG TILE
6"
FALL ½"-¾" PER FT.
FIG 3
BRICK ON CONCRETE BASE CINDER FOUNDATION
SURFACE DRAINAGE
PITCH ¼" PER FT.
WALK PITCHED LATERALLY TO REMOVE SURFACE WATER
FIG 4
GRASS GUTTER
CROWNING TO REMOVE WATER ON WIDE WALKS
5'
6"-8"
FIG. 5
LARGE STEPPING STONES
2"-4"
20"-24"
LINE OF EXCAVATION
FIG. 6
20"-24"
2½"-4"
4"-6"
CINDERS
6
4" TILE
FIG. 6A
SMALL STEPPING STONES
4"-6"
18"-20"
LINE OF EXCAVATION
FIG 7
DETAILS OF WALK CONSTRUCTION
PREPARED IN THE OFFICE OF
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CLEVELAND, O JUNE 1, 1923
PLATE "C"

PLATE NO. 112

(*b*) *Tanbark walks* (*excavation*). If tanbark walks are constructed on a gravel foundation the same principles for excavation apply as are outlined in the foregoing paragraphs under 1*a*. If tanbark walks are constructed on a sand loam foundation then the same principles for excavating apply as are outlined under 1*c* in the following paragraph.

(*c*) *Turf walks and woodland trails* (*excavation*). In the construction of turf walks and woodland trails there are two principles of construction to be kept in mind with reference to the excavation for foundation. Woodland trails are usually constructed in a most inexpensive manner, accepting the natural soil, with or without surface and subsurface drainage, and therefore there is little or no excavation unless it be necessary in order to procure easier gradients or cross-slopes. Turf walks may be constructed in connection with refined formal gardens and lawn areas and subjected to intensive traffic. Turf walks under such conditions vary from woodland trails in that the problems of surface and subsurface drainage require careful study. Where the natural soil is heavy clay or clay loam an excavation should be made as for a gravel or hard surface walk and of sufficient depth to provide for a foundation course of cinders (6 inches deep) and a wearing surface of sandy loam (6 inches deep). On natural sandy loam soils this excavation is unnecessary.

(*d*) *Stepping-stone walks* (*excavation*). The excavation for stepping-stone walks is usually confined to an area covering the full width and length of the proposed line of stepping-stones, especially where the stepping-stones are in larger units (20 to 24 inches square) and laid with a distance of two to four inches between individual stones. (See figures 6 and 6A, Plate 112.) If the individual stepping-stones are in smaller units (18 to 20 inches square and less) and spaced at greater intervals than four to six inches (see figure 7, Plate 112) then the most economical method of completing the excavation for the foundation of such walks is to first space the stones on the finished grade of the walk and then to excavate, to the proper depth, only that portion of the soil directly beneath the individual stones.

(*e*) *Board walks* (*excavation*). Inasmuch as board walks are either of a temporary character to tide over the requirements of traffic until a permanent walk can be constructed, or are constructed for use in summer colonies, especially along the beach where inexpensive construction is desired, there is no problem of excavating for the foundation of such walks.

Variations in specifications for excavating walks under varying conditions of soil and climate. In the southern latitudes where there is no frost action the problem of excavating for a foundation is not important. Under such climatic conditions excavation is necessary only in clay soils, for drainage, and is not necessary in sandy soils except to sufficient depth to provide space to construct the wearing surface.

2. *Subgrading for Walks.*

(*a*) *Brick, tile, concrete, macadam, gravel, cobblestone and medina block.* The subgrade should be completed to an even sloping surface as required for subsurface drainage (figures 1–4, Plate 107) and at the required depth below the proposed finished grade of the walk. In sandy soils the surface of the subgrade should be parallel with the finished grade of the walk surface, no drain being required.

Where frost action extends deep into the ground, especially in clay soils, careful attention must be devoted to the proper drainage of the subgrade, which subgrade should slope from either side of the walk (½ to ¾ inch per foot) toward the middle line in order to remove quickly any subsoil water which may find its way into the area under the walk surface. This is especially important in the construction of all types of walks included in this group, particularly those with a definite paved surface, the heaving of which through frost action causes serious injury.

(*b*) *Tanbark walks* (*subgrading*). Tanbark walks constructed on a sand-loam soil require no subgrading other than that necessary to procure the desired surface. Tanbark walks constructed on a gravel foundation, especially in a clay soil, require the same solution as that outlined above under 2*a* (subgrading for walks).

(*c*) *Turf walks and woodland trails* (*subgrading*). Woodland trails require little or no subgrading other than that necessary to develop the desired surface. The subgrading of turf walks requires the same careful work, for the best results, as that outlined under 2*a*.

(*d*) *Stepping-stone walks* (*subgrading*). The subgrading of the area under a stepping-stone walk presents the same problem as that outlined under 2*a* with the exception that when the stepping-stones are spaced at a considerable interval it is not necessary to finish the surface of the subgrade to meet any drainage requirements. If the stepping-stones are placed at closer intervals, making it necessary to excavate and to subgrade a continuous area under the line of stepping-stones, then provision should be made for proper subsurface drainage.

(*e*) *Board walks* (*subgrading*). The problem of subgrading the area on which board walks are to be constructed involves only the work of making a proper subgrade on the desired profile as a foundation on which the board walk surface is to be constructed.

3. *Drainage* (*General Considerations*).

(*a*) *Brick, tile, concrete, macadam, gravel, cobblestone and medina block.* The surface of the subgrade should be so finished that all ground water will readily drain away. The presence of excessive quantities of water in

the subsoil under such walks will involve injuries on account of frost action. Drainage may be provided by tile or blind drains extending under the middle line of the walk and located as shown in figures 1–4, Plate 107, with proper outlets. The outlets from the four-inch tile drains should be at sufficiently frequent intervals to remove the ground water into larger drainage lines before these smaller pipes are loaded beyond their capacity. The trenches in which any drainage lines are installed should be of a minimum width and have a depth of six to twelve inches below the finished subgrade for the walk. If such walks are constructed upon a soil which is porous and has ample subdrainage to keep the ground water at a depth below the frost line, then the installation of drainage lines under the walk surfaces is unnecessary.

On any of the above walks with a well-defined hard surface it is necessary to provide a slight transverse grade, approximating one-fourth inch per foot (figure 4, Plate 112), to the surface of the walk in order readily to remove the surface water during heavy rainfall. This is especially true if the walk is constructed on a more or less level grade or is used intensively as a public walk.

On all garden walks of whatever character it is quite necessary that the surface drainage problem of the walk area itself and of the surrounding area should be given careful study and that inlets (see figures 5 and 6, Plate 111) should be installed at the proper locations to remove this surplus surface water in the shortest possible time. The surface grades should be so studied that the surface water will readily flow to these inlet locations. Wherever any walk is constructed on a steep grade, especially in a cut or on the side of a slope (see figure 5, Plate 112) where the surface water during storms will naturally follow the line of the walk, definite gratings (see figure 7, Plate 111) should be installed, especially at the top of any steps or at sufficiently frequent intervals along the length of the walk to remove the surplus surface water before it annoys those using the walk or causes injury to the walk and the surrounding area. As a general practice it is desirable to have the finished surface of the walk slightly above the surrounding area on either side. On macadam walks and gravel walks it is quite essential that this surface water should be removed at much more frequent intervals than on brick, tile or concrete walks. Wherever walks are constructed parallel to a well-defined slope there should be, if practicable, a very definite sod or other type of gutter on the uphill side of the walk, provided with catch basins at frequent intervals to remove the surface drainage coming from the slope before this surface drainage has an opportunity to flood the walk and cause serious damage.

(*b*) *Tanbark walks* (*drainage*). The same principles of drainage as are

previously outlined (under 3*a*) should be applied to the construction of tanbark walks with the following exceptions: Tanbark surfaces are much more susceptible to injury from any surface flow of water and therefore such walks should not be constructed on steep grades (6% or greater) nor on slopes where it is not possible to remove entirely the danger of damage from surface wash. On such walks the problem of subsurface drainage is exceedingly important and provision for this should be very adequate and complete.

(*c*) *Turf walks and woodland trails* (*drainage*). The principles above outlined (under 3*a*) apply to the drainage of turf walks and woodland trails with the following exceptions: Woodland trails do not require, because of their natural characteristics and the firm texture of the soil on which they are made, the provision for drainage normally installed for tanbark walks. Subsurface drainage for woodland trails is seldom desirable, not only because of the expense but also because of the great variation in surface profile and the danger to surrounding trees.

Turf walks not only require adequate surface drainage as discussed under 3*a*, but they also require adequate subsurface drainage, especially if such walks are constructed on a clay foundation and are frequently used. Turf walks constructed on a light sandy loam require little or no drainage other than surface drainage. The presence of excessive ground water under the area of turf walks does not cause the same injury to turf surfaces that it causes to walks with hard surfaces as listed under 3*a*. It causes the greatest difficulty through the development of soft surface conditions after a rain, or during early spring and fall.

(*d*) *Stepping-stone walks* (*drainage*). Stepping-stone walks present the same problems of drainage as outlined under 3*a* and 3*c* with the exception that unless stepping-stones require a continuous excavated area the problem of subsurface drainage is usually ignored. Such subsurface drainage as is necessary for the turf surrounding the stepping-stones is provided for by the general solution of the drainage problem on the surrounding lawn or garden area.

(*e*) *Board walks* (*drainage*). Board walks are usually constructed with a surface at least two inches above the surrounding grade and therefore the problem of surface drainage is a negligible factor.

4. *Foundation Course and Wearing Surface* (*General Considerations*).

The types of foundations required for various kinds of walks are so varied that a detailed discussion of each is included in these notes. In locations where frost action is slight (with freezing conditions occurring only occasionally and the depth of frost action seldom being more than

2 or 3 inches) or where the natural foundation soil is of gravel or sand, sufficiently porous, the wearing surface (brick, concrete, cobblestone, stepping-stones, etc.) may be laid on the prepared subgrade of the original soil. In no instance, if a foundation is desired for added safety, should this foundation course under such conditions exceed a depth of two or three inches of cinders or similar material. In every instance where a foundation course is necessary (see figures 1–4, Plate 110) this course should be put in place in layers, approximating not more than four inches in depth, and each layer should be thoroughly wetted and tamped or rolled and brought to an even surface parallel with the proposed finished grade, and at the required depth below the surface of the walk.

Walks with a wearing surface of brick, concrete, cobblestones and medina block may be laid either upon a foundation consisting only of porous material, or upon a concrete foundation (see 4*d*). The other types of walks are almost never laid upon concrete foundation, with the exception of tile walks, which should never be laid upon any other foundation than concrete. The wearing surface of any walk, with the exception of tanbark walks, should be firm, of an even grade within the limits allowed by surface drainage requirements, and of a suitable texture and color to meet the requirements imposed by its use and appearance. The wearing surface should also have a firm bond with its base course; especially is this true in the construction of walks where a bond between the foundation course and the wearing course is by means of cement. Inasmuch as the great differentiation in walk construction occurs largely in the problem of completing the foundation course and the wearing surface, each of these walks will be discussed from this point on as a separate type with its individual problems, although in a small part these problems may be similar.

(*aa*) *Brick walks on concrete base* (*foundation courses and wearing surface*). Walks of brick may be constructed on a concrete base with a cinder foundation, or on a sand cushion with a cinder foundation. On the subgrade prepared in accordance with the previous instructions and at a depth of approximately twelve to fourteen inches below the finished grade of the walk (see figure 3, Plate 109) a foundation course of cinders is put in place as specified heretofore in two layers of equal depth, making a total depth of six inches at the side of the walk when thoroughly watered and tamped or rolled. On this foundation course thus prepared is placed a base course of concrete (1:3:5 mixture), bringing the surface of this concrete to the required lines and grades, allowing proper provision for the economical construction of a brick curb or concrete curb (figures 1 and 2, Plate 111) if such is required. On this concrete foundation thus prepared and after the concrete has been given twenty-four hours for setting, the brick is laid in

mortar (1:3 mixture) in accordance with the desired pattern, care being taken not to get mortar on the surface of the brick. When these bricks thus placed have had a sufficient time for the mortar to set, clear cement if the joints are small (¼ inch or less), or a dry mixture of cement and sand (1:2) if the joints are larger, is swept into the joints and the walk is then sprayed carefully in order thoroughly to wet the cement in the joints. With joints larger than one-fourth inch it is best to pour a very wet grout (1:2 mixture) carefully into the joints until they are filled. On certain types of brick with other than a very smooth surface it is extremely difficult to remove the surplus cement, which may permanently mar the surface of the finished walk. Brick surfaces are brought to an even grade by laying a board on the surface of the walk and tamping on the top of the board before grouting the joints and before the mortar in which the brick are placed has set. If brick walks are constructed with a herringbone pattern (figure 1, Plate 112) it is very desirable that the curved portions of such walks should be radial curves; otherwise considerable difficulty will be experienced in adhering to a uniform and economical method for laying the design in actual construction.

(*ab*) *Brick walks on sand cushion without concrete base* (*foundation courses and wearing surface*). On the subgrade prepared in accordance with previous instructions and at a depth of approximately 14 inches below the finished surface of the brick at the sides of the walk if the brick is to be laid on edge, and 12 inches if the brick is to be laid flat, a foundation course of cinders is put in place in two layers of equal depth, making a total depth of eight inches at the side of the walk. On the surface of these cinders, which have been thoroughly watered and tamped or rolled, is placed a layer of fine sand (passing ⅛-inch screen) to a depth approximating between one and two inches when tamped or rolled. Brick are then laid upon this course of sand, firmly put in place and the joints filled with the same fine sand, to which may be added if occasion required ten per cent of dry cement. The entire surface of the walk is carefully flushed and the brick then carefully tamped, using a board, in order to bring the surface of the walk to the desired finished grade. On all brick walks of this type it is desirable to have a border course of brick as shown in figure 1, Plate 112.

(*ac*) *Brick walks for southern conditions where frost action is a negligible factor.* The following variations from the foregoing instructions are adopted in the construction of brick walks under southern conditions. In clay soil the depth of cinder foundation under the concrete base may be reduced to four inches as a minimum depth and the concrete base may be reduced to three inches in thickness. If walks of this type are laid on sand, the cinder foundation may be omitted entirely, and the concrete base made with a thickness of three inches. In the construction of brick walks on a sand

cushion without a concrete base the bricks may be laid directly on the foundation of natural sand after the sand has been thoroughly wet and tamped or rolled.

(*ad*) *Tile walks on concrete foundation* (*foundation course and wearing surface*). Tile walks are usually constructed in locations where refinement of grade and permanence of surface are required. For this reason such walks are built as solidly as possible and without any sand cushion between the bottom of the tile and the top of the concrete base. A foundation course of cinders is put in place in the same manner as for brick walks, allowing the proper depth to provide for the thickness of the tile and bed of mortar under the tile (see figure 3, Plate 110). The depth of cinders at the side of the walk should be six inches, the depth of concrete four inches (1:3:5 mixture), and the depth of mortar one inch (1:2 mixture), well moistened but not thoroughly wet. On this mortar surface the tile are carefully laid to the desired pattern and grade. Neat cement is then brushed into the joints between the tile, and the entire surface of the tile walk is sprayed carefully with water. Any trace of cement on the tile may be removed with a diluted solution of muriatic acid (not over one pint of acid to each gallon of water) after the cement has set for a period of three or four hours.

(*ae*) *Concrete walks* (*foundation course and wearing surface*). The foundation course of cinders is installed as outlined under 4*aa*. On the surface of the cinders a layer of concrete four inches in thickness (1:3:5 mixture) is put in place and is then finished with a smooth trowelled surface or with a wood float. If the concrete walk is to be subjected to intensive traffic then this concrete course should be constructed in two layers, both of which must be completed during the same day. The bottom layer of concrete three inches in depth (1:3:5 mixture) should be placed and the wearing surface of one-inch depth (1:3 mixture) should be applied within a period ranging from four to six hours after the bottom course of concrete has been finished (see figure 4, Plate 110).

Forms are necessary for construction of concrete walks. These forms, usually two by four inches, are securely staked on required lines and grades. Cross strips are placed at four or six-foot intervals. Sometimes every other section is constructed, the cross pieces removed, and tar paper is then put in place for the joints, extending the entire depth of the concrete.

Surface colors of concrete walks may be varied by the use of lampblack (to darken the walk); copper filings (to obtain brown tone); hematite (to obtain reddish brown). These substances are mixed with the surface layer only. Concrete walks should not be used for a period of 48 hours after completion. During early spring and late fall, walks should not be used for a period of four days after completion. Newly finished concrete

surfaces should be protected from heavy rains for at least twelve hours, and during exceedingly hot weather in open exposure to the sun's rays the surface should be sprinkled freely subsequent to the end of one day, during one week. Covering the surface with a two-inch layer of sand or loam will protect it against undue evaporation until the concrete has set. Freezing conditions are apt seriously to injure new concrete. New walks should be protected during late fall by a covering (4 to 6 inches deep) of straw or stable litter, or by tar paper, which should be kept in place for a period of two or three weeks if freezing conditions prevail.

(*af*) *Macadam walks with tarvia-bound surface* (*foundation course and wearing surface*). The foundation course of slag or crushed stone (passing a 2½-inch screen) should be put in place in a single layer to a depth of four inches when rolled. This foundation course of stone should be thoroughly bound with one-half-inch screenings only sufficient to fill the voids. The foundation course should be thoroughly watered and tamped or rolled. On this course should be spread a layer of crushed stone passing a one and one-half-inch screen. If the walk area is wide and of considerable extent this course as well as the foundation course may be rolled with a two or three-ton drum wheel roller. This wearing course should be rolled but once in order to detect any depressions before the tarvia is applied. The tarvia should then be applied in accordance with standard specifications for completing wearing surfaces of tarvia-bound macadam roads, with the exception that the quantity of tarvia used per square yard of walk will be at least 25 per cent less than for road work. The success in completing a tarvia-macadam walk will depend largely upon the selection and application of a desirable and interesting type of washed gravel or one-fourth-inch stone screenings for the surface, as this decides the color and texture.

(*ag*) *Macadam walks with water-bound construction* (*foundation course and wearing surface*). The total depth of the foundation course and wearing surface for water-bound macadam walks should approximate six inches at the side of the walk. With the subgrade properly prepared and drained, crushed stone or slag, passing a one and one-half-inch screen, should be put in place to a depth of five inches when rolled. On this foundation course a one-inch layer of crushed stone or slag (passing a ¾-inch screen) should be carefully spread, watered and tamped or rolled. Crushed stone screenings (passing a ½-inch screen) should then be applied to the surface of the walk only in the quantity necessary to fill the voids and thoroughly bind the surface of the walk into a permanent condition. It is very desirable slightly to crown the surface of water-bound macadam walks.

(*ah*) *Gravel walks* (*foundation course and wearing surface*). The subgrade should be prepared as shown in figure 6, Plate 110, with a minimum

depth of six to eight inches below the finished grade of the walk at the side of the walk. On this subgrade a layer of slag or crushed stone (to pass a 2 or 2½-inch screen) should be put in place, thoroughly tamped or rolled, leaving the surface at a grade parallel with and one and one-half inches below the proposed finished grade of the walk. On the surface thus prepared a layer of pit gravel (much preferable to washed gravel because of the clay content) should be spread, thoroughly watered and tamped or rolled to a depth of one and one-half inches. If it is necessary to use fine washed gravel, then approximately 15 per cent of limestone dust (not screenings) should be incorporated into this gravel wearing surface to bind the surface. The gravel used for this wearing surface should pass a one-half-inch screen. It is much preferable to construct permanent gravel walks in this way; because if gravel is used for the foundation course the condition of the walk during the wet months of the spring and late fall become extremely soft unless this gravel has been thoroughly screened, excluding all particles which pass a three-fourths-inch screen.

(*ai*) *Cobblestone or medina block walks on cinder foundation* (*foundation course and wearing surface*). Cobblestone and medina block pavements when used for the average walk are usually laid on a sand cushion base with a cinder foundation and are seldom laid on a concrete foundation. Walks of this character should be subgraded to allow at the side of the walk for a depth of six inches of cinders plus a two-inch cushion of sand and the thickness of the cobblestones or medina block. It is quite necessary in this type of walk construction to lay the cobblestones or medina blocks firmly in the sand cushion, leaving an even surface on the top of the walk, and thoroughly to fill the voids between the stones with fine sand. See also 4*ab*.

(*b*) *Tanbark walks* (*foundation course and wearing surface*). Tanbark walks differ from gravel walks only in the method of surfacing, except where a tanbark walk is developed as a woodland trail, in which case the foundation of the walk is constructed in accordance with the notes for woodland trails. On the surface of the gravel walk completed in accordance with previous notes under Gravel Walks a layer of tanbark not exceeding one-half inch in thickness should be carefully spread, watered and rolled. It is quite essential to bear in mind that tanbark walks, because of the loose texture and lightness of the surfacing material, cannot be constructed in any location or on any grade where the surface of the walk will be exposed to any flow of surface water.

(*ca*) *Turf walks* (*foundation course and wearing surface*). Ideal drainage conditions, both surface and subsurface, and a sandy loam soil permanently compacted make for the greatest satisfaction in the construction of turf walks. It is quite essential to install a line of drainage at a depth of not

less than two feet with the trench back-filled with cinders to a point eight inches below the finished surface of the walk and located immediately under the middle line of the proposed walk. The foundation course for the turf on this walk should consist of six inches of sandy loam topsoil thoroughly rolled to an even grade and supplied with a much less amount of fertilizer than would be used for the average lawn. This fertilizer should not come in contact with the roots of newly laid sod. If such a walk is sodded the sods should be laid lengthwise so as to break joints and get the long way of the sods in the direction of greatest travel and of mowing. When turf walks are in contact at the sides with other surfaces they should be laid wider than required and trimmed to an even line after all other work on them is done.

If a turf walk is seeded no clover should be sown, but an attempt should be made to secure an even fine turf of the better sorts of grasses. Kentucky blue grass is one of the best turf grasses where the soil is not wet or sour. Chewings New Zealand red fescue is often used as it is indifferent to the presence of lime, does well in shade or open conditions and is at its best in midsummer. The bent grasses and redtop, which is closely allied, are best for soils which are wet or deficient in lime. Hard or sheep's fescue or timothy or meadow grass should be avoided. Not less than one pound of fancy recleaned high-germination seed should be sown to each thirty square yards of walk, and a special effort should be made to have a favorable germination layer in which to sow the seed. All soft spots and inequalities in line or grade should be corrected before the seed is sown.

(*cb*) *Woodland trails* (*foundation course and wearing surface*). Woodland trails are generally constructed in an inexpensive way as a part of a wild garden area, or a trail system through the woods, in order to make woodland areas accessible. The usual method of procedure is that of clearing the undergrowth in the path of the proposed trail, making an even grade of the existing surface and scattering leaves or sowing woodland grass seed mixture over the surface of the trail on the existing soil.

(*d*) *Stepping-stone walks* (*foundation courses and wearing surface*). There are two types of stepping-stone walks as heretofore discussed under 1*d*, involving either a continuous excavation under the full length of the proposed walk, or an excavation only under the area of each individual stepping-stone.

The subgrade in either case should be prepared to a depth of 10 to 12 inches below the finished surface of the walk. The cinder foundation should be put in place in layers as heretofore specified and the stepping-stones should then be laid directly on the top of the cinders without any loam cushion. This applies to the construction of stepping-stone walks in heavy

clay soil where the frost action creates a serious problem. On sandy soils and in the southern climates stepping-stones may be laid directly on the natural soil which has previously been tamped to the required surface grade.

Terraces. Terrace areas with various types of surfaces present much the same problems as those involved in the construction of walks with similar surfaces. There are a few important points which should be kept thoroughly in mind as contributing largely to the successful construction of terraces. The surface of the subgrade should be so formed that any water reaching it will immediately be carried over it to drainage lines installed at intervals not exceeding ten feet. The surface of any terrace should be very carefully studied so that no surface water will stand on any portion of the terrace without ready access to a drain inlet. Preferably such terraces should slope on a grade of one-fourth inch in each foot of terrace width away from the house. If split flagstone is used in terrace surfacing this flagstone should present a rather even surface, especially if the terrace is to be used freely as an outdoor dining room or living room area. Where a terrace is to be used for such purposes the joints between the stones should either be filled with cement and the terrace constructed on a concrete base, or the joints should be filled with a sandy loam, and be not greater than one-fourth to one-half inch in width in order that the legs of chairs cannot readily slip into these crevices.

5. *Curbs for Walks.*

Where it is desired to construct a curb along either side of any walk this curb should be constructed in a permanent manner in accordance with figures 1 and 2, Plate III, unless it is not necessary that the curb should maintain permanently the line of the original plan. Curbs for concrete walks may become a part of the concrete foundation and wearing surface, and should preferably be constructed as a single operation in connection with the construction of the walk. Curbs for the sides of brick walks on concrete foundations (see figure 1, Plate III) should be constructed by immediately putting the brick curb in place before the surface of the walk is paved with brick. Curbs for any walk, other than a walk surface on a concrete foundation, should be constructed as shown in figure 4, Plate III, in order to be permanent. The depth of the concrete foundation or such curbs should approximate eighteen inches with a concrete mixture of 1:3:5.

For items of cost data as follows: excavation and trimming to subgrade; spreading and tamping cinders; concrete foundation; cutting and laying flagging; laying drain tile, see Landscape Construction Notes I, Volume XII, No. 2, January 1922.

Brick walk (*not on concrete base*). The labor and materials required to lay a brick walk on cinders and sand base for a walk 180 feet long by two feet six inches wide was 2,000 bricks, five cubic yards of cinders, three cubic yards of sand and 100 hours of labor. The amounts per square yard were thus 40 bricks, one cubic yard of cinders, .06 cubic yard sand and two hours labor. An excavation eight inches deep would be required, but this is included in the above labor.

Brick walk (*on concrete base*). The following items enter, in various degrees, into the cost of a brick walk laid on a concrete base: (*a*) excavation and trimming subgrade; (*b*) spreading and tamping cinders; (*c*) concrete foundation; (*d*) bricks. A mason and helper will lay about 31 bricks per hour in a simple pattern. American standard bricks are eight by two and one-fourth by three and three-fourths inches, and allowing half-inch joints, will run between 35 and 40 to the square yard if laid flat or about 60 to the square yard if laid on edge. Any pattern requiring breaking bricks, such as basket weave, will increase greatly the cost of laying a brick walk.

Concrete walks. In addition to the cost data given under concrete foundations, the following will be useful. Cost of mixing, placing and tamping rough concrete will be five man hours per cubic yard, plus one-half man hour for each 100 linear feet which the concrete must be wheeled in addition to the first 100 feet. The mixing and finishing of the mortar for the top finish will require one man to mix the mortar for each finisher. A helper is also generally necessary to assist in trowelling and screening. If the mortar is fairly dry, and can be drawn ahead of a straight edge, one finisher and helper should finish eight square yards of ordinary walk in one hour. The average day's work of a finisher and helper on walks is 64 to 72 square yards for an eight-hour day. The actual work done during the last two hours is likely to be 14 to 15 square yards per hour, while the first two hours are practically lost waiting for some fresh rough concrete to be laid ahead of them.

Tile. A tile setter and helper should lay marble or burnt clay tiles at the following rate:

	Hours per square foot		*Square feet per hour*
	Tile setter	*Helper*	*Two-man team*
2 inches square or hexagonal	.142	.142	7
3 inches square or hexagonal	.125	.125	8
4 inches square or hexagonal	.111	.111	9
6 by 6 inches square	.1	.1	10
6 by 12 inches square	.083	.083	12
12 by 12 inches square	.071	.071	14

The concrete base is not included in these labor items.

Turf walks. Turf walks are always laid on fine soil without any fertilizer, so the only materials required are sod and topsoil if the existing soil will not serve. Two experienced men can cut, roll, pile and load sod at the rate of about nine square yards per man per hour, or .11 man hour per square yard. In the case of less experienced men this will amount to .15 man hour per square yard. Hauling by team will cost one team hour per hundred square yards per mile haul. Laying sod where accuracy is required may require as high as one man hour per square yard but ordinarily should not run on straight turf walks over one-half man hour per square yard. Maintenance in the form of sprinkling will be required in dry weather as often as once a day and ordinarily two or three sprinklings will be necessary in any event. A man with 100 feet of three-fourths-inch hose can sprinkle from 475 to 500 square yards an hour.

Woodland trails. The average labor cost of four woodland trails about three feet wide, exclusive of the cost of logs for steps, was $.049 per linear foot with labor $.22 per hour. A fair average would be from .2 to .25 labor hour per linear foot.

Gravel or macadam walk. To construct a walk made with a three-inch cinder base on a rough foundation (of stones picked up on the job) and a two-inch trap rock dust surface layer (including some drainage) required .16 labor hour per square foot.

Specifications for Tarvia Walks[1]

Subgrade. Grade walk to elevation three inches below finished grade as shown on walk profile, and roll thoroughly with light roller.

Foundation. Upon subgrade spread crushed limestone one-fourth to one inch size (small amount of screenings allowable) and roll dry until thoroughly keyed or compacted. Surface of foundation to be brought to elevation one inch below finished grade line.

Wearing surface. Upon foundation spread one inch of mixture of stone, sand and tar prepared as follows: crushed trap rock, one-fourth to one-half inch, four cubic feet; coarse washed sand, two cubic feet; tarvia k. p., three gallons. Mixed cold in batch concrete mixer. This mixture spread and raked to a depth sufficient to meet contour of finished grade, when thoroughly rolled with 500 hand roller. Cover surface with coarse sand sufficient to leave surplus after interstices in stone are filled and rolled again with light roller.

Crowns. Walk crowned one-fourth inch per foot of width each side of center lines.

[1] Park Department, Minneapolis, Minnesota.

Memorandum of Cost

Labor:		Material:	
Indirect	$0.085	Base course	$0.204
Grading	.168	Top course	.286
Limestone Base course	.104	Total material	$0.490
Tarvia top Surface	.095	Total cost per square yard	$0.942
Total labor	$0.452		

Bridle Paths

The following notes on the construction of bridle paths are by J. F. Foster, formerly superintendent South Park Board, Chicago, Illinois.[1] "When the path has been located and its width determined the sod should be removed from it and used elsewhere. The surface should then be disked and later scraped with a road grader, scraping two inches of dirt from sides to center of the path, thus giving drainage from the center to the sides. Surface water accumulating along the edges should be drained off by means of drain pipes laid and connected with neighboring sewers. In the event that there is no main sewer near they may be drained into the nearest ditches which drain the surrounding country. Special attention should be given to drainage. Two inches of fine cinders should then be used to surface the bridle path. It requires about 500 square yards per mile, and the drainage will usually require about 3,300 linear feet of drainage pipe per mile. A well constructed, properly drained bridle path is easily maintained. The only subsequent attention that it will need will be to scatter and roll fresh cinders. It will require about 100 square yards of cinders per mile per season. From time to time as the surface becomes compact it should be harrowed and the paths should be sprinkled enough to keep down the dust. We have also used some oil with favorable results."

The surface of the bridle paths in the Minneapolis parks is of six inches of clay gravel or road gravel. This surface is kept oiled to compact the surface and lay the dust. The range in width of the paths is from ten to twenty feet.

Construction of Curbs and Gutters[2]

I. *General Considerations.* Success in the construction of walks and roads many times depends upon the proper construction of the curbs and gutters, one or both of which may be required primarily to remove the surface drainage. Curbs become necessary sometimes as a feature of formal design but more often as a means of confining traffic to the roadbed or confining drainage water within the road area.

[1] *Parks and Recreation*, May–June 1926, pages 489–491, "Bridle Paths in Parks," Wayne Dinsmore.
[2] Albert D. Taylor in *Landscape Architecture*, April 1924.

II. *Types of Curbs, Gutters and Combined Curbs and Gutters.* The following tabulation shows the various kinds of materials most frequently used for the construction of curbs, gutters and combined curbs and gutters:

(*a*) *Curbs.* 1. Concrete (usually cast in place, Plate 114, figure 2, page 274); 2. Stone (Plate 113, figure 4, page 272).

(*b*) *Gutters.* 1. Turf (Plate 113, figure 1); 2. Brick (Plate 114, figure 1); 3. Concrete (Plate 113, figure 3); 4. Cobblestone (Plate 114, figure 3).

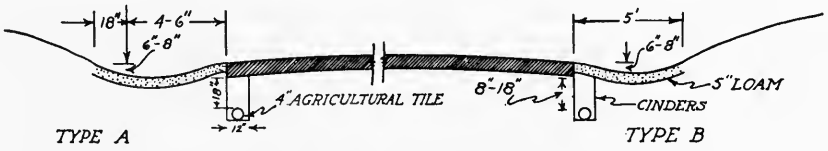
(*c*) *Combined curbs and gutters.* 1. Concrete (Plate 114, figure 4*a*); 2. Stone curbs and concrete gutters (Plate 113, figure 4).

III. *Subsoil Drainage under Curbs and Gutters.* The cross section of any gutter should be so designed that the gutter will readily remove during storms all the surface water coming to it. This is a fundamental requirement. It is also very necessary that the subsoil under the gutter should be thoroughly drained. The different methods of draining this subsoil are shown in the following figures: Plate 113, figure 1; Plate 113, figure 4; Plate 114, figure 4.

In the subsoil drainage for turf gutters (Plate 113, figure 1) the drain may be installed as shown under Type A or as under Type B. When the tile drains are installed as shown in Type A there is great danger that these tiles will be broken by the steam roller unless placed at an adequate depth. A safe depth should approximate 18 inches below the subgrade. In many instances the top of the tile is laid approximately eight inches below the subgrade, but this is not a safe general practice. If the tile is installed as shown in Type B the only reason for the added depth is to provide complete drainage for the subsoil under the full width of the sod gutter. Sometimes a tile may be installed under the middle line of the sod gutter. This is not a recommended practice, particularly if the drain is laid only eight inches deep, because tile thus located will not provide so good drainage for the subsoil under the traveled roadbed. The usual method for draining the subsoil under concrete, brick and cobblestone gutters is shown in Plate 113, figure 3. The tile drain is installed at the required depth under the middle line of the gutter, and the drainage of the subsoil under the traveled roadbed is accomplished as shown in Plate 113, figure 3, and Plate 114, figure 1. The usual method for installing drainage to remove ground water under combination curbs and gutters is shown in Plate 113, figure 4; Plate 114, figure 2, and Plate 114, figure 4. The tile drain thus installed accomplishes three purposes as follows: (*a*) Drainage of the road subgrade; (*b*) Drainage of the subsoil under the gutter; (*c*) Drainage of the subsoil under the curb.

Wherever curbs or gutters are installed on a sandy soil, from which

TURF GUTTERS



GUTTERS LOCATED OUTSIDE OF PAVEMENT

FIGURE - 1

GUTTER LOCATION ONE-HALF
WITHIN THE PAVED ROAD SURFACE

FIGURE - 2

CONCRETE GUTTER

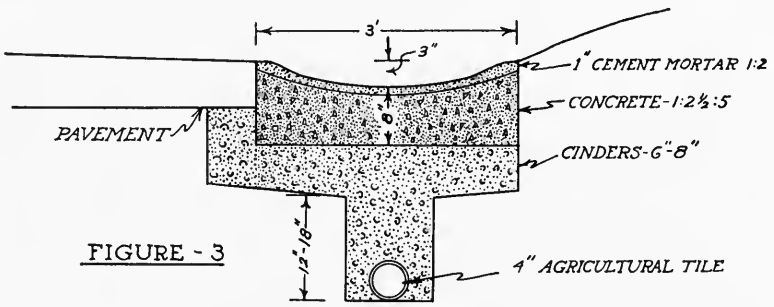


FIGURE - 3

CONCRETE GUTTER AND STONE CURB

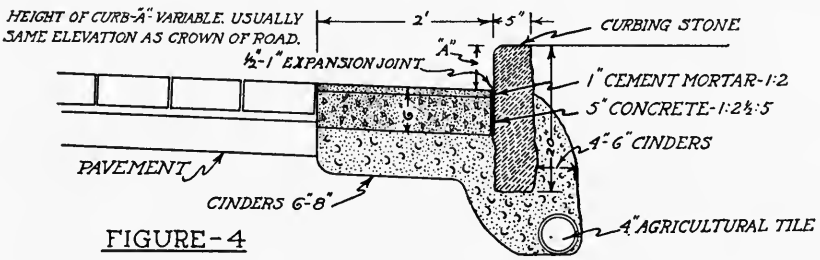


FIGURE-4

DETAILS OF CURB AND GUTTER CONSTRUCTION

PREPARED IN THE OFFICE OF
ALBERT D. TAYLOR
LANDSCAPE ARCHITECT & TOWN PLANNER
CLEVELAND, O. MARCH 1, 1924

PLATE-"A"

PLATE NO. 113

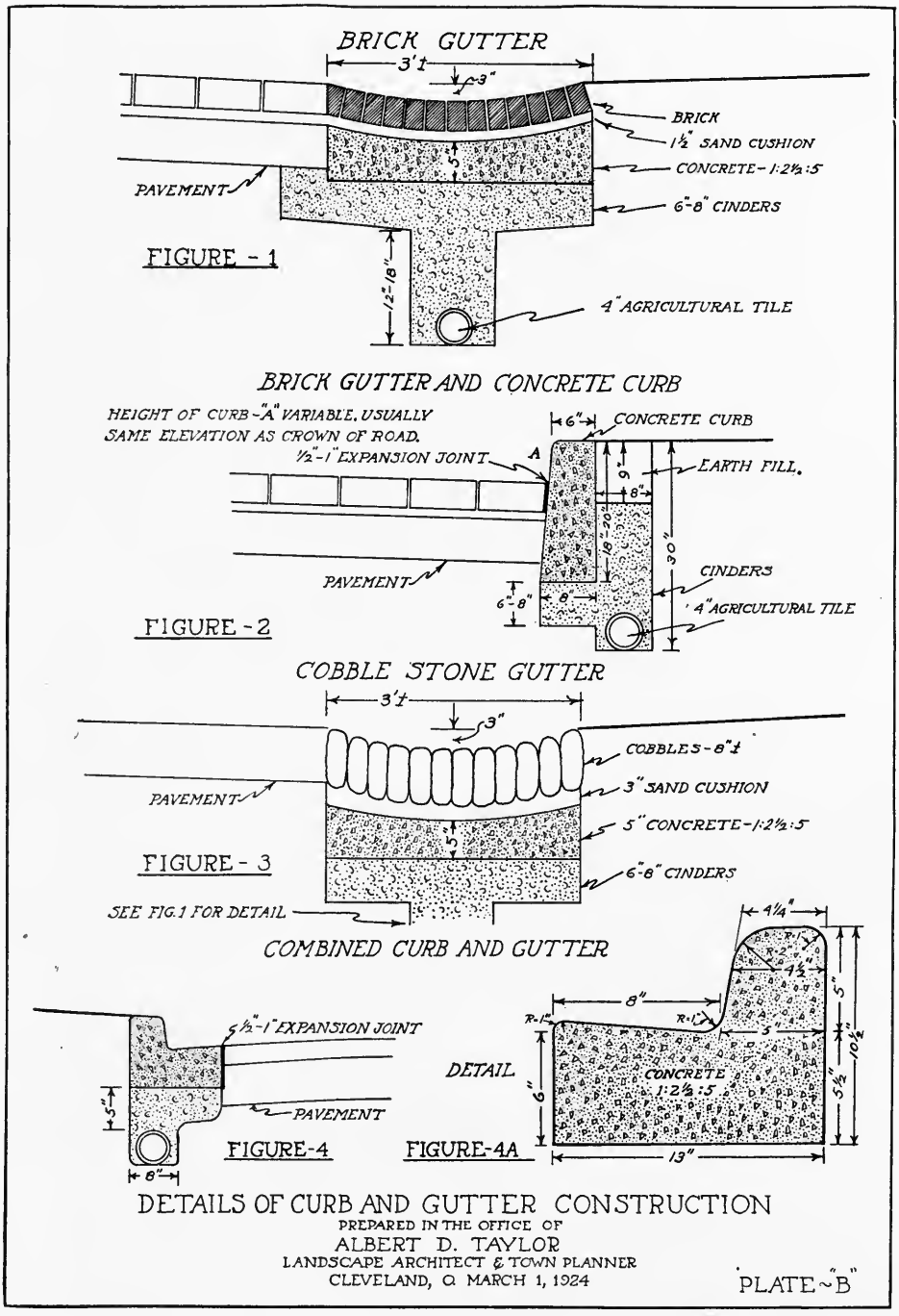
the ground water drains naturally, such provision as previously outlined is not necessary. Neither is it necessary to take such extreme precautions to provide adequate drainage, even when roads are constructed in a clay soil, under climatic conditions where frost action is not an important factor.

IV. *Curbs.* Curbs may be constructed either of stone (Plate 113, figure 4) or of concrete (Plate 114, figure 2). In each instance where the road surface may be paved with brick, provision should be made for an expansion joint from one-half to one inch in width (varying with the width of pavement) and filled with some tar or asphalt preparation. The lines and grades for any curb should be carefully established and checked before any forms are put in place. It is expensive to make changes after the concrete has once been poured. For the construction of concrete curbs (Plate 114, figure 2) a trench is excavated approximating 16 inches in width and three feet in depth. The average depth of the concrete curb is between 18 and 20 inches. The tile drainage is installed and the cinder fill put in place and thoroughly tamped so that the surface of the cinders is approximately 18 inches below the proposed finished grade for the top of the concrete curb.

Forms are then constructed of material sufficiently strong to hold their position and shape under the weight of the concrete. The mixture of concrete, consisting usually of one part cement and two and one-half parts sand and five parts stone or gravel, is put into place and thoroughly tamped. Metal corners to protect the curb from breakage by vehicles are often used in public work, but seldom on private places. The finished surface of the curb may be obtained by the use of a smooth form, by applying a coat of cement mortar after removing the form, by tooling the surface after it has thoroughly set, or sometimes by brushing the surface before it has entirely set. It is very desirable to leave joints in the concrete curbs, at intervals of approximately six feet, of which every fourth or fifth should be an expansion joint. The finished surface of any concrete curbs or gutters should be sprinkled with water two or three times daily for a period approximating one week during hot or dry clear weather. During cold freezing weather the surface should be covered with hay, straw or manure for about ten days as a protection against freezing.

Stone curbs are of the approximate dimensions shown in Plate 113, figure 4, and are installed upon a well-drained foundation of thoroughly compacted cinders. It is very necessary that the cinders and loam fill at the back of the stone curb should be thoroughly tamped before any gutter or road metal is constructed.

Combination curbs and gutters (Plate 114, figures 4 and 4*a*) are constructed upon a firm foundation of cinders. It is preferable to construct the desired type of forms on the proper lines and grades and to pour


BRICK GUTTER
3'-1"
3"
BRICK
1½" SAND CUSHION
CONCRETE - 1:2½:5
6"-8" CINDERS
PAVEMENT
5"
12"-18"
4" AGRICULTURAL TILE
FIGURE - 1
BRICK GUTTER AND CONCRETE CURB
HEIGHT OF CURB - "A" VARIABLE. USUALLY SAME ELEVATION AS CROWN OF ROAD.
½"-1" EXPANSION JOINT
A
6"
CONCRETE CURB
9"
EARTH FILL.
8"
18"-20"
30"
PAVEMENT
CINDERS
6"-8"
8"
4" AGRICULTURAL TILE
FIGURE - 2
COBBLE STONE GUTTER
3'-1"
3"
COBBLES - 8" 1
PAVEMENT
3" SAND CUSHION
5"
5" CONCRETE - 1:2½:5
6"-8" CINDERS
FIGURE - 3
SEE FIG. 1 FOR DETAIL
COMBINED CURB AND GUTTER
½"-1" EXPANSION JOINT
5"
PAVEMENT
8"
FIGURE-4
DETAIL
4¼"
R-2"
1½"
8"
R-1"
R-1"
3"
5"
10½"
6"
CONCRETE 1:2½:5
5½"
13"
FIGURE-4A
DETAILS OF CURB AND GUTTER CONSTRUCTION
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LANDSCAPE ARCHITECT & TOWN PLANNER
CLEVELAND, O. MARCH 1, 1924
PLATE "B"

PLATE NO. 114

the concrete in place. The width of the gutter, depending upon the type of material used for the surface of the road, may vary from eight to 24 inches inside of the face of the curb. Concrete mixed in the proportion of 1:2½:5 is placed in the gutter and tamped until water comes to the surface and the concrete has assumed an even surface about one inch below the finished surface of the gutter. Before this concrete has even commenced to set, a coat of cement mortar one inch in thickness is spread on top, bringing it to true finished grade. This cement mortar should be mixed in the proportion of one part cement to two parts sand. In many cases it is desirable to darken this coat, which is accomplished by adding a one-pound package of lampblack to each two bags of cement. The same methods of curing and of protection should be adopted as are recommended for concrete curbs. It is very important that the individual sections of combined curb and gutter (approximately 6 feet each) should have expansion joints every 25 or 30 feet; but it is also necessary that these should be provided between the inner surface of the gutter and the road metal if any other material than macadam is used.

V. *Turf Gutters.* Turf gutters (Plate 113, figure 1) are usually constructed in connection with private entrance drives. The width of turf gutters ordinarily varies from four feet, six inches, to six feet or eight feet. Where a large quantity of surface water is to be removed by the turf gutters, the catch basins or other inlets should be located at frequent intervals to minimize erosion or wash in the surface of the gutter. Turf gutters should never be less than four inches in depth, and should be preferably six to eight inches in depth. Unlike other types of gutters, the turf gutter should be a part of the surrounding lawn area and, therefore, unnecessarily deep and narrow turf gutters create an unattractive landscape effect. The problem of maintenance requires that turf gutters should be designed so that the average lawn mower can be used to mow the gutter lengthwise.

With the subsoil thoroughly drained and the drainage trench filled with compacted cinders to a height even with the surface of the finished subgrade, the area of the gutter is subgraded so that the surface of the subgrade is parallel with and about four or five inches below the proposed finished grade of the gutter. The topsoil is then put in place, and if the area of the gutter is to be sodded, an allowance for the depth of sod should be made in making the topsoil fill. The most economical method of eventually securing a good turf on the average turf gutter is through seeding, if the grade of the road or the slope of the adjacent bank does not create excessive wash. Even if such conditions exist, it is sometimes more economical, if seeding can be done at the ideal time in the spring or fall, to reseed portions of the gutter one or more times than to incur the expense of sodding

on steep slopes. Gutters constructed as shown in Plate 113, figure 2, are not desirable. It should be kept in mind that the flow of water over turf gutters brings a certain amount of soil from the surrounding areas. This soil constantly deposited in the gutter and held by the growing turf will in a period of years tend to lessen the depth of the gutter and, therefore, its efficiency. For this reason it is suggested that turf gutters should be constructed adequately deep.

VI. *Brick Gutters.* Brick gutters are usually desirable with brick roads, and sometimes with concrete roads (Plate 114, figure 1). In such instances the subsoil under the gutter should be thoroughly drained and the brick should be laid with a sand cushion upon a concrete foundation. The average width of a brick gutter is between three and four feet, and the average depth at the middle line of the gutter is approximately three inches. The exact width of the gutter for purposes of economy is often determined by the size of the brick and by the detailed plan for laying in order to avoid unnecessary cutting of the brick. Where the brick surface or traveled roadbed is grouted with cement it is desirable to grout the surface of the brick gutter.

VII. *Concrete Gutters.* Concrete gutters are usually constructed in connection with concrete drives (Plate 113, figure 3) and more often as a combination curb and gutter (Plate 114, figure 4). The dimensions for the width and depth of a concrete gutter are the same as those for a brick gutter. The wearing surface plus the concrete foundation should approximate seven or eight inches as a minimum depth. The gutter should be placed upon a firm foundation of thoroughly drained cinders. The wearing surface, about one inch in depth, should consist of a cement mortar. The method of curing and of protecting concrete gutters is the same as that for concrete curbs.

VIII. *Cobblestone Gutters.* Cobblestone gutters may be used to excellent advantage in connection with macadam entrance drives on steep grades or sharp curves where the erosion from surface drainage may be excessive. The width and depth of the cobblestone gutters (Plate 114, figure 3) approximates the same dimensions as those required for brick gutters and concrete gutters. The stone is often laid upon a sand cushion two to three inches deep, all of which is placed upon a concrete foundation. The minimum thickness of the concrete foundation should be about five inches. The voids between the stones in the gutter should be filled with sand or sandy loam. This material should be swept over the surface of the cobbles and wet at frequent intervals to ensure the filling of all voids. It is sometimes desirable, where the gutter is subject to extreme wash, to grout these stones with a dry mixture of sand and cement (1 to 2½). This mixture, after being swept

into the voids, should be given a light sprinkling to moisten it thoroughly.

The problem of determining the proper kind of gutter to be adopted under varying conditions depends upon the desire to create certain formal or informal effects in the landscape and also upon the desire to meet adequately the requirements for removing the surface water. On steep grades and sharp curves catch basins should be provided at very frequent intervals, and the type of construction adopted for the gutter should be of the most permanent character.

Cost Data. Curbs and Gutters.

Excavating for and constructing concrete curb. Contractor's cost figures to construct 100 linear feet of curb.

Materials required:	Stone, 3.75 tons at $3.50,	$13.13
	Sand, 2.14 cubic yards at $2.58,	5.52
	Cement, 25.7 bags at 79 cents,	20.30
Labor required:	Excavation, 26.66 hours at 45 cents,	12.20
	Construction	
	Mason, 16 hours at $1.00,	16.00
	Labor, 180 hours at 45 cents,	81.00
		$148.15

Constructing combination curb and gutter. Contractor's bid for constructing typical 24-inch combination curb and gutter in new streets on a large subdivision job was 70 cents per linear foot. Approximate cost of labor and materials: labor, 25 cents per hour; teams, 45 cents per hour; stone, $2.00 per ton; sand, $1.75 per cubic yard; cement, $2.00 per barrel.

Cost of sod gutters. Cost of grading gutters five feet wide and six inches deep, grading carried back on easy slope for .66 of a foot vertically to meet natural grade: area of gutter, 655 square yards; labor, 28 cents; cost, 12.8 cents per square yard of 4.57 labor hours per square yard. For cost of laying sod, see Landscape Construction Notes V, January 1923 issue of *Landscape Architecture*.

For items of cost data as follows: excavation and trimming to subgrade; spreading and tamping cinders; concrete foundation; laying drain tile, see Landscape Construction Notes I, January 1922.

Construction of Retaining Walls and Free-Standing Walls[1]

The discussion with reference to the construction of walls may be divided into two well-defined parts. (1) Retaining walls (these may be reinforced walls entirely of concrete as in Plate 116, figures 1 and 2, page 280, or of concrete with a veneered surface of some other material, or they may be

[1] *Landscape Architecture*, October 1922. Albert D. Taylor.

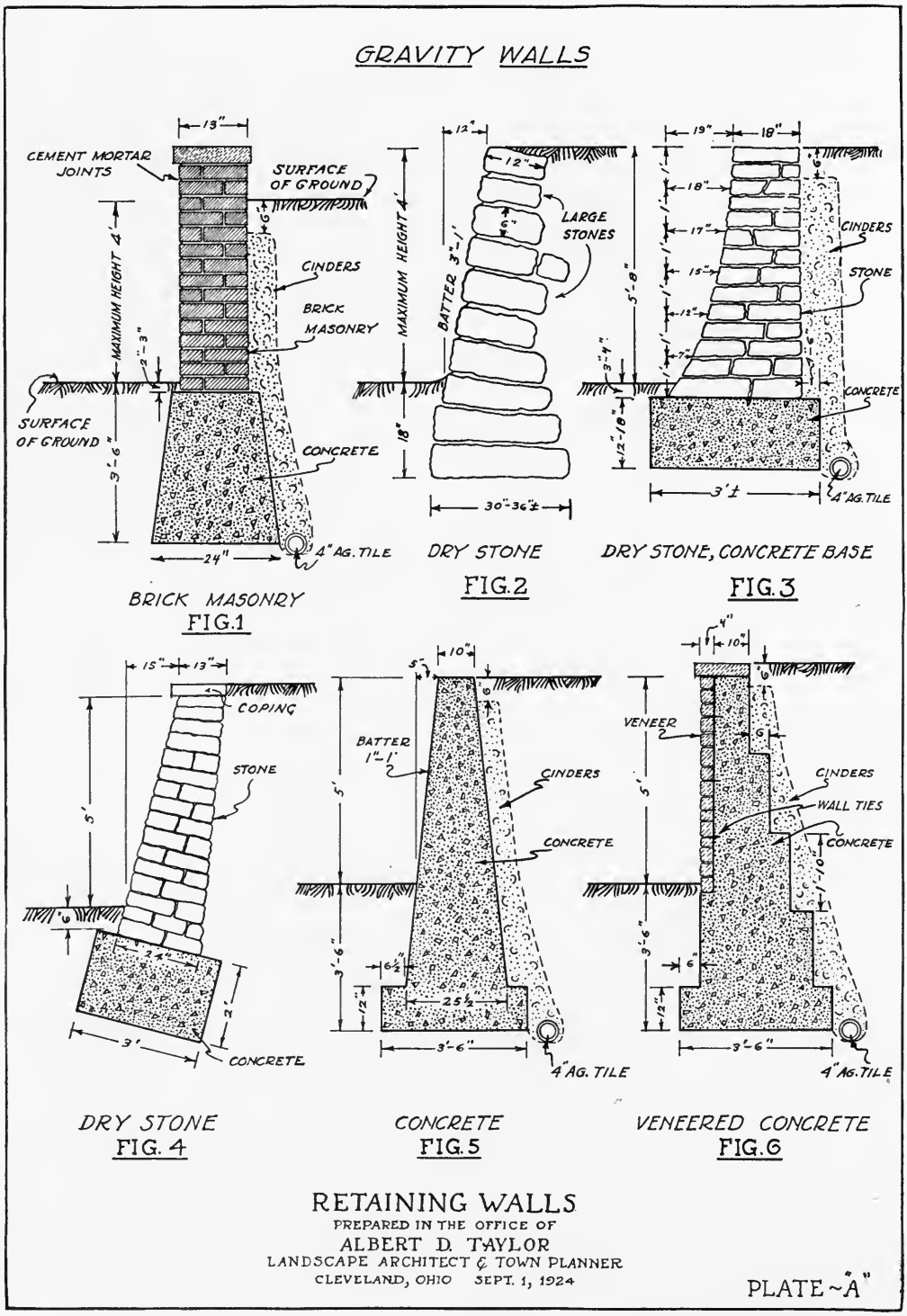

GRAVITY WALLS
13"
CEMENT MORTAR JOINTS
SURFACE OF GROUND
6"
MAXIMUM HEIGHT 4'
CINDERS
BRICK MASONRY
2"-3"
SURFACE OF GROUND
3'-6"
CONCRETE
24"
4" AG. TILE
BRICK MASONRY
FIG.1
12"
12"
LARGE STONES
6"
MAXIMUM HEIGHT 4'
BATTER 3"-1'
18"
30"-36"±
DRY STONE
FIG.2
19"
18"
6"
18"
17"
15"
12"
7"
5'-8"
3'-4"
12"-18"
CINDERS
STONE
CONCRETE
3'±
4" AG. TILE
DRY STONE, CONCRETE BASE
FIG.3
15"
13"
COPING
STONE
5'
6"
24"
2'
3'
CONCRETE
DRY STONE
FIG. 4
10"
5"
6"
BATTER 1"-1'
5'
CINDERS
CONCRETE
3'-6"
6½"
12"
25½
3'-6"
4" AG. TILE
CONCRETE
FIG.5
4"
10"
6"
VENEER
5'
CINDERS
WALL TIES
CONCRETE
1'-10"
3'-6"
6"
12"
3'-6"
4" AG. TILE
VENEERED CONCRETE
FIG.6
RETAINING WALLS
PREPARED IN THE OFFICE OF
ALBERT D. TAYLOR
LANDSCAPE ARCHITECT & TOWN PLANNER
CLEVELAND, OHIO SEPT. 1, 1924
PLATE "A"

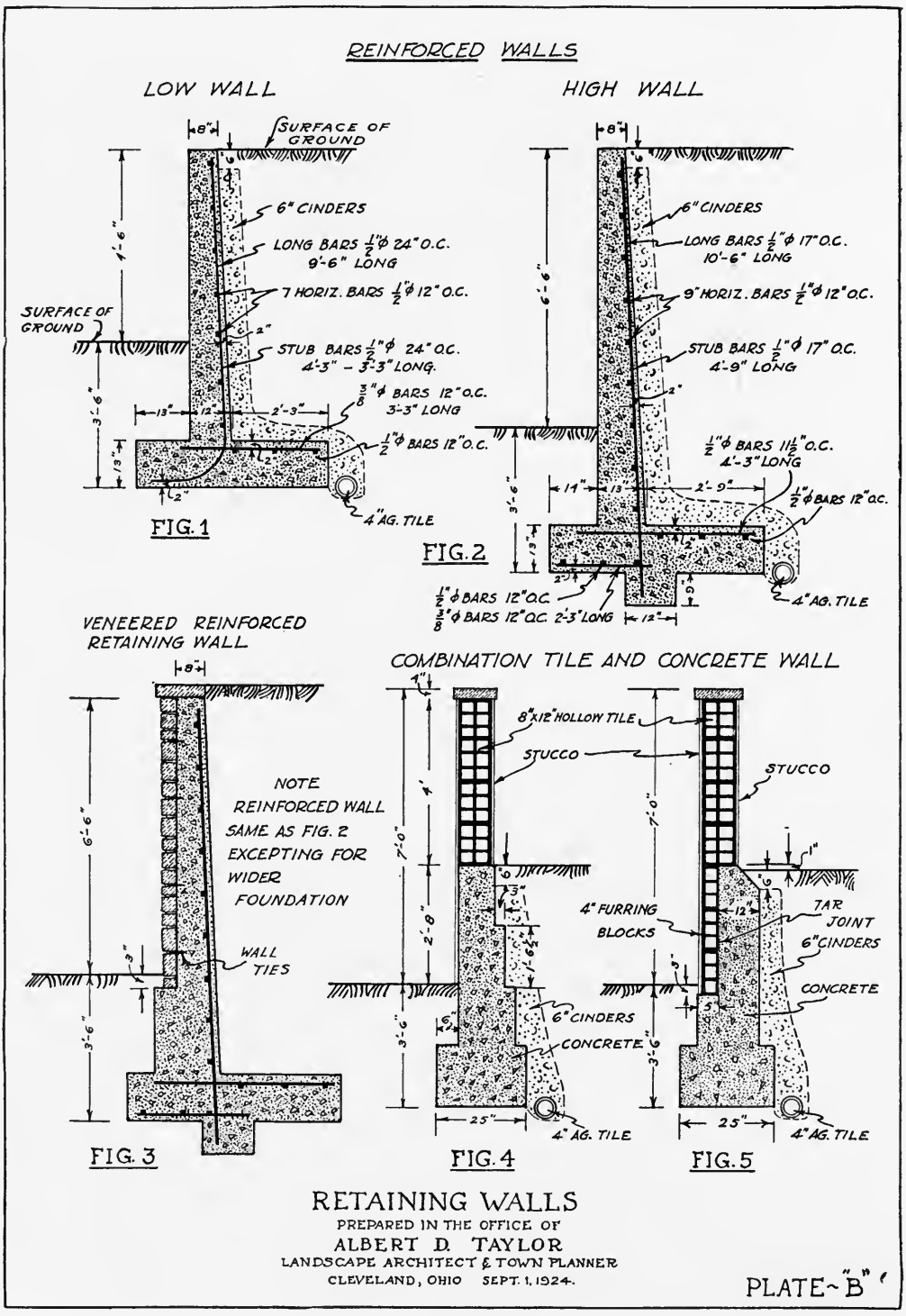
Plate No. 115

gravity walls as in Plate 115, page 278). (2) Free-standing walls (of stone masonry, brick masonry, stucco on hollow tile and stucco on expanded metal, as in Plate 117, page 282, and, partly free-standing, in Plate 117, figures 4 and 4*a*). A retaining wall must be so constructed that it will have adequate stability to resist the lateral pressure from the supported bank of earth. A free-standing wall differs from a retaining wall in that it is usually faced on both sides (see Plate 117) and there is no lateral pressure which would tend to overturn it. In the construction of all walls it is very important that the correct lines and grades should be carefully established, and this is especially important with reference to retaining walls where a small error in elevation may cause greatly increased construction cost.

Foundations for walls. The foundation is one of the most important factors to be considered in the construction of any wall. It is doubly important that the foundation for all concrete or masonry walls (see Plate 116, and Plate 115, except figure 2) should rest upon a well-drained and solid natural subsoil. Any settlement in a wall of this kind may cause serious damage. A similar settlement because of faulty foundation under dry stone walls (see Plate 115, figure 2) may not be as serious and may be more easily repaired. All walls on the top of which a balustrade or iron grill is to be erected should have the most secure type of foundation. The bottom of the foundation under all walls with the exception of dry stone walls (Plate 115, figures 2, 3 and 4) should be below the line of normal frost action. No foundation should be constructed for any type of wall upon subsoil which is not thoroughly compacted. Where frost action is a negligible factor the problem of constructing walls is very much simplified. It is only necessary to extend the foundation to a depth where a firm natural subsoil is encountered. It is desirable to provide drainage in heavy clay soils and especially to install weep-holes which will prevent free soil water from accumulating at the back of the wall.

Retaining Walls.

(*a*) *Reinforced concrete.* The foundation for any reinforced concrete wall should be of concrete properly designed in accordance with standard practice for walls of various heights retaining different kinds of soil. The foundation or footing should have approximately the form shown in Plate 116, figures 1 and 2. In the construction of this type of wall it is customary to pour the concrete (1:2:4 mixture) for the footings after the forms for the footing and a portion of the vertical steel, with the necessary supports, is in place. Because of the great strength required in a reinforced cantilever wall it is very necessary that the steel should be carefully computed and placed in accordance with definite calculations.



RETAINING WALLS

PREPARED IN THE OFFICE OF

ALBERT D. TAYLOR

LANDSCAPE ARCHITECT & TOWN PLANNER

CLEVELAND, OHIO SEPT. 1, 1924.

PLATE "B"

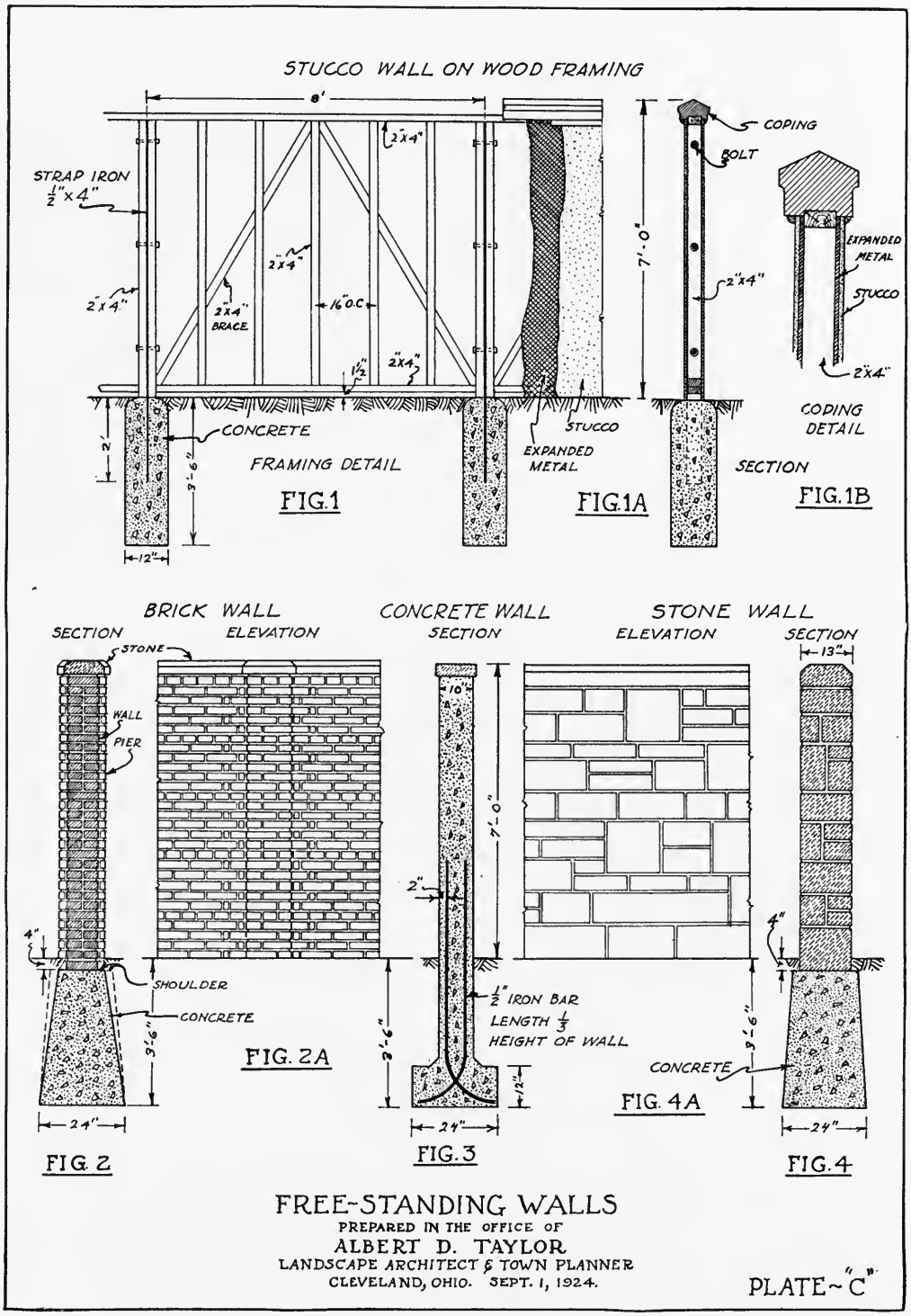
PLATE NO. 116

After the foundation footings are in place the form work for the remainder of the wall above the footings is erected and the horizontal steel is put in the proper place. In all reinforced concrete walls it is almost without exception necessary to construct forms for both faces of the wall. When these forms are in place and carefully wired to prevent spreading, the thoroughly mixed concrete is placed in the forms. It is very necessary to make certain that the concrete on the inner side of the wall toward the bank is thoroughly and evenly distributed around all of the reinforcing steel. If the retaining wall is to be veneered with stone or brick (Plate 116, figure 3) then the wall ties of galvanized iron should be placed in the forms in such a way that, when the concrete has been poured and the forms removed, one end of these wires or iron straps is thoroughly embedded in the concrete and the other end projects from the face of the concrete wall, later to be embedded in the joints of the stone or brick veneer. These wall ties should be staggered at intervals of 18 inches to two and one-half feet horizontally and vertically.

(*b*) *Gravity walls of concrete or stone masonry.* Gravity walls may be divided into two classes for purposes of this discussion: (*a*) Concrete walls and stone or brick masonry walls (Plate 115, figures 1, 5 and 6), and (*b*) Dry walls (Plate 115, figures 2, 3 and 4). The stability of gravity walls depends upon the weight of the wall and the position of the center of gravity of the wall. In order to resist the lateral pressure under average soil conditions the base of the wall should approximate in width not less than .35 to .40 of the total height of the wall. This width may be reduced if the face of the wall has a definite batter (see Plate 115, figures 2 and 4). It is necessary to make the foundation of a greater width in proportion to the height of the wall when the wall retains a water-bearing soil such as clay or fluid mud, as compared with a well-drained gravel or average earth. Under some conditions the width of the base may approach 70 per cent of the height of the wall. The efficient height for a gravity wall of concrete is approximately six to seven feet. The availability of local materials and the cost of purchasing such materials may create a condition where it is much more economical to build a reinforced concrete wall (Plate 116, figure 2) than a gravity wall (Plate 115, figures 5 and 6).

The following is a tabulation which may be of interest in determining the width of the base to be constructed for retaining walls of different soil conditions:

Kind of soil	*Equivalent fluid pressure in pounds per square foot*	*Width of base divided by height of wall*
Well-drained gravel or average earth,	20 to 33	0.35 to 0.40
Wet sand,	50	0.58
Water-bearing soil,	62.5	0.65
Fluid mud,	80	0.73


STUCCO WALL ON WOOD FRAMING
8'
2"X4"
STRAP IRON
½"X4"
2"X4"
2"X4"
2"X4"
BRACE
16" O.C.
1½"
2"X4"
CONCRETE
2'
3'-6"
12"
FRAMING DETAIL
FIG.1
STUCCO
EXPANDED METAL
FIG.1A
COPING
BOLT
7'-0"
2"X4"
SECTION
FIG.1B
EXPANDED METAL
STUCCO
2"X4"
COPING DETAIL
BRICK WALL
SECTION
ELEVATION
STONE
WALL
PIER
4"
SHOULDER
CONCRETE
3'-6"
24"
FIG. 2A
FIG. 2
CONCRETE WALL
SECTION
10"
7'-0"
2"
½" IRON BAR
LENGTH ⅓
HEIGHT OF WALL
3'-6"
12"
24"
FIG. 3
STONE WALL
ELEVATION
SECTION
13"
4"
3'-6"
CONCRETE
24"
FIG. 4A
FIG. 4
FREE-STANDING WALLS
PREPARED IN THE OFFICE OF
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LANDSCAPE ARCHITECT & TOWN PLANNER
CLEVELAND, OHIO. SEPT. 1, 1924.
PLATE-"C"

PLATE NO. 117

The width of the base not only varies because of the lateral pressure of the soil, but there are many instances where it is necessary because of poor subsoil to increase the width of the base in order to make a more stable wall. It is not advisable to construct a brick retaining wall to retain soil of a height exceeding four feet. Brick retaining walls should only be used when non-porous brick are obtainable absorbing less than two per cent of their own weight of water. Under such conditions brick should be laid with a waterproof mortar (Portland cement plus 10% by volume of hydrated lime). Mortar mixture should be one part of the above cement and two parts sand.

Gravity walls of concrete should usually be constructed with a mixture of 1:2:5, although a mixture of 1:3:6 with excellent aggregate may be sufficient. Such walls may take the general section shown in Plate 115, figures 5 and 6. If the surface of a gravity concrete wall is to be veneered with either brick or stone (Plate 115, figure 6), wall ties should be installed as specified under Reinforced Concrete Walls. Stone masonry walls may be constructed with the general section as shown on Plate 115, figures 1, 3 and 4. If constructed similar to figures 3 and 4 the bottom of the foundation of stone masonry or concrete should extend below the line of normal frost action. Brick masonry walls and stone masonry walls of the type shown on Plate 115, figure 1, will have the same approximate section.

(*c*) *Gravity walls laid dry.* All dry walls must be gravity walls (see Plate 115, figures 2, 3 and 4). It is sometimes necessary to construct a dry stone retaining wall of greater height than five feet. The section shown on Plate 115, figure 4, with the stone masonry or concrete foundation on an inclined plane, provides greater stability and is more desirable for the greater heights of wall. Dry stone walls constructed similar to this section ought not to exceed, over the best soil conditions, more than eight feet in height. In the construction of dry stone walls it is sometimes desirable to introduce freely within the structure of the wall a cement mortar which does not show on the surface and which adds to the stability of the wall. While the average width of the foundation of the footing for a gravity wall approximates from .35 to .40 of the height of the wall above grade, it is advisable that the width of the foundation for dry walls should approximate .50 of the total height of the wall. The average dry stone wall should have the stones superimposed in direct contact with each other, although it may be advisable and sometimes practicable, with great care, in low walls, to introduce a thin sandy loam joint. The depth of the foundation for dry stone walls should approximate from 12 inches in sandy soil to 18 inches in the heavier soils, below the finished grade at the face of the wall. A more stable wall is produced by constructing footings with stone masonry or concrete.

(*d*) *Drainage for wall foundations.* It is very essential that foundations of all walls other than dry walls should be thoroughly drained (see Plates 115 and 116). Special drainage is not necessary in sandy or other naturally well-drained soils. In other soils a four-inch agricultural tile laid in accordance with the principles outlined under Drainage (page 288) is sufficient to answer all requirements. After the forms for reinforced walls are removed and after any necessary waterproofing is completed there should be a layer of gravel or cinders backfilled against the back of the wall (Plate 116, figures 1 and 2; Plate 115, figures 1, 5 and 6). If the foundation for the dry stone wall is of concrete or brick masonry construction (Plate 115, figure 3) it is desirable that this should be drained. If the foundation is of dry stone construction it is not essential that it should be drained (Plate 115, figure 2).

(*e*) *Waterproofing of walls.* When a brick masonry wall (Plate 115, figure 1) is constructed it is very desirable that the back of the wall should be thoroughly waterproofed with some tar preparation. This will protect the brick wall from absorbing an excessive amount of moisture. It is sometimes advisable, especially when a concrete retaining wall is veneered (Plate 116, figure 3, and Plate 115, figure 6), that the back of the wall should be thoroughly waterproofed with a standard preparation of tar or other material. Whenever a retaining wall serves the two purposes of being a retaining wall and a free-standing wall or parapet wall, it is very necessary to provide adequate drainage on the upper level to prevent excessive amounts of water coming in contact with the wall. It is sometimes desirable to provide at intervals of 15 or 20 feet a series of weep-holes which will permit an outlet for free soil water that may accumulate at the back of the wall.

(*f*) *Planting pockets.* It may be a part of the design, especially in the construction of stone or brick masonry walls, brick or stone veneered walls and dry walls, to install planting pockets. Under all such conditions a hole of suitable size and shape should be made or left in the face of the wall, extending through the entire thickness of the wall, and becoming larger at the back. Where planting pockets are required for wall planting extreme care should be exercised to prevent excess drainage of soil water from the soil at the back of the wall. Dry stone walls (Plate 115, figures 2 and 4) are ideal types in which to place planting pockets. The planting pockets should be filled with a rich topsoil well fertilized. Planting pockets should be given serious consideration when the forms for concrete, gravity and reinforced (plain or veneered) walls are being constructed in order to provide openings which will give a direct contact between the soil in the wall pocket and the natural soil at the back of the wall. Excellent illustra-

tions of planting pockets in different kinds of walls are shown in the accompanying plates of photographs.

Free-standing walls. Free-standing walls are usually constructed of stone (Plate 117, figure 4), of brick (Plate 117, figure 2), or of wood covered with plaster upon expanded metal (Plate 117, figure 1). Such walls as are shown on Plate 117, and Plate 116, figure 5, are usually faced on both sides. The appearance of the wall depends very much upon the proper height and upon the proper line and grade at the top and bottom of the wall. The foundation for any free-standing wall should extend to a point below the line of normal frost action (see Plate 117). Any differences in grade at the base of the wall should be taken up by a stepped foundation.

Concrete footings are the most desirable type for these walls, although stone and brick may be equally desirable if reinforced occasionally with longitudinal steel bars. The thickness of the footings depends somewhat upon the load produced by the wall superstructure. Walls constructed of wood on which a surfacing of plaster is applied to expanded metal, will not need continuous foundations. The foundations of concrete should be constructed at the piers as shown on Plate 117, figure 1. Exterior plaster is usually applied in three coats. The first coat or scratch coat should be thoroughly trowelled into the depressions of the wall which have been brushed thoroughly clean and moistened with water. The plaster is scratched or roughened with a saw-toothed paddle or other suitable tool before it has hardened. The first coat is rich in cement, the second, browning or intermediate, is much leaner in cement. It is applied over the well moistened scratched coat. The surface of the wall is straightened after the second coat has been applied. The finish coat is applied on the second coat and finished according to the texture and color desired. If the wall is to have a pebble finish the aggregates are added after the finish coat has been applied. The second and finish coats should not be permitted to dry rapidly, but should be sprinkled frequently after the mortar has set, or protected by wet burlap hung over the wall.

Plastering should be carried on continuously in one direction. The second coat should be applied the day after the scratch coat. The finish coat should not be delayed more than a week. In plastering on concrete which has already attained a hard set, it is best to apply a bond coat before any plastering is attempted. There are several patented bonds or binding coats on the market. A neat cement slush put on with a brush will give fairly satisfactory results. This should be applied just before plastering and the plaster applied before the neat cement has started to dry. When the rough coat finish is applied to concrete it is not usually necessary to put on a plaster coat. It is sometimes cheaper in the construction of double-

faced rubble walls, when the material is not very expensive, to make a thickness approximating twenty inches in order to save the expense incurred by dressing the stone if each stone were to extend completely through the wall.

Where a wall is partly retaining and partly free-standing (Plate 116, figures 4 and 5) it is very necessary to exercise extreme care in the wall construction in order to provide a continuous even surface on the face toward the lower level. If a brick or hollow tile wall is constructed as shown on Plate 116, figure 4, damage from surface drainage will occur. This damage may be avoided by a type of construction as shown on Plate 116, figure 5, where the tile or brick is carried below the ground surface on the lower side of the wall and where the concrete foundation is carried slightly above the ground surface on the upper side of the wall.

In the construction of all brick or hollow tile walls it is necessary to keep the water out of the joints and, therefore, a proper coping should be placed on the top of the wall. This coping should preferably project slightly beyond the face of the wall and the top should be given a definite slope in order to shed water. A drip groove should be cut in the under surface of the coping whenever possible. It is not advisable to veneer a free-standing wall. It is more economical to construct a thirteen-inch wall than to construct a six-inch reinforced concrete wall and subsequently to veneer the concrete with stone or brick. In the construction of all walls, whether they are constructed or veneered with brick, or whether they are plastered with stucco, a definite water table should be provided approximately one and one-half inches above the finished grade. There should be a waterproof joint of some suitable mastic between the veneer or stucco and the concrete shelf or foundation below in order to prevent soil moisture from rising and discoloring the wall. This is very desirable in the construction of hollow tile or brick walls the surface of which is to be plastered.

Retaining walls and free-standing walls. Cost data. The author has procured from time to time cost data information with reference to various items of labor involved in the construction of different walls.

Boulder retaining wall. The stone for this wall was gathered on the job, from a distance of one to one hundred yards. The wall averaged 14 inches thick and the stones ran from large at the bottom to small at the top. A foundation trench one foot deep was dug. There were 145 cubic feet of wall and the time required per cubic foot was approximately one-half a labor hour.

Stone wall on concrete footing. This was built from stones with a surface area of one to two square feet and two to three inches thick laid with a mortar joint of one-half to three-fourths inches. The wall was 39 feet

long, 30 inches high and varied from 18 inches thick at the bottom to 13 inches at the top. The surface of the stone on the exposed face of the wall was left rough. The time required was for one linear foot of the wall .61 mason hour plus .69 labor hour and for one cubic yard was 4.68 mason hours plus 5.28 labor hours.

Dry stone wall on concrete footing. This wall was 50 feet long and approximately six feet high. It was two and one-half feet thick at the bottom and battered to 18 inches thick at the top. The stones used varied from two inches thick and 18 inches long to four inches thick and 20 inches long. No cement was used, but there was a filler between the stones made up of stone chips together with gravel and topsoil. Three stone masons and three helpers worked on this job and the average time required for one cubic yard of masonry in place was 4.1 mason hours and 4.3 helper hours. To complete one cubic yard of finished wall there was required approximately 1.5 cubic yards of loose stone.

Cutting and laying coping on dry stone wall. This coping was cut from two and one-half-inch buff sandstone flagging split in layers in the quarry. There were two widths, 14 and 20 inches. The coping was laid in concrete mortar. The stones varied from 18 to 36 inches long. There were 65 linear feet 20 inches wide, and 97 linear feet 14 inches wide, thus making in all 162 feet. Two stone masons worked together, one cutting and one laying. The average time required for one linear foot of coping was for cutting .26 hour and for laying .23 hour.

Hollow tile wall surfaced with stucco. This wall was built of tile 5 x 12 x 8 inches on a concrete base. The piers were built of 2½ x 4 x 8-inch tile. The time required to lay up the hollow tile was one mason hour for each 14 square feet of wall. On straight work a mason could lay up 120 tiles per hour. A coping of stones four feet by one foot by four inches was laid on top of this wall (five feet high) by one mason and one helper at the rate of four stones per hour. A stucco composed of 24 shovels of sand to one bag of Portland sand and one bag of white cement was applied one inch thick. The first coat was applied by four men and two helpers at the average rate of 5.66 square yards per man hour. The finish coat was applied by the same crew at the average rate of 4.2 square yards per man hour.

Exterior plaster work. A plasterer should apply a scratch coat at the rate of ten square yards per hour with one laborer helping him. Browning coat should be applied at the rate of eight square yards per hour. Three laborers can tend four plasterers. On a sand finish two plasterers should apply a rough cast finish at the rate of four and one-half square yards per hour with one laborer helping. When applying a rough cast finish direct to concrete wall a plasterer should apply four square yards per hour.

Excavation for foundation. The average labor hours per cubic yard on five trenches excavated by hand were as follows:

Soil	*Width*	*Depth*	*Length*	*Labor hours per linear foot*	*Labor hours per cubic yard*
Clay	1.5	3	2113	.342	2.01
Loam	3.25	5	178	.84	1.4
Loam	2.5	4.5	125	.45	1.08
Loam	1.25	2	495	.168	1.89
Clay	1	2.5	82		1.9

Concrete foundations. Using a one-bag mixer requiring the wheeling of the concrete 50 feet and shoveling into forms from wheelbarrows, the average rate is .25 cubic yard per man per hour. An average of two jobs where such a long wheelbarrow haul was not required was .43 cubic yard per man hour, when a one-bag mixer was used with six men in a crew. When concrete was mixed by hand for wall foundation an average of five different jobs was 6.92 labor hours per cubic yard or .14 cubic yard per labor hour.

Steps and Ramps

A comprehensive article entitled "Notes with Reference to the Construction of Steps and Ramps," by Albert D. Taylor, was published in the October, 1923, issue of *Landscape Architecture*. The detailed plans and illustrations accompanying the article are especially valuable. Lack of space makes it impossible to reproduce it in this chapter.

Construction of Turf Areas for Lawn Sports in the Northern States[1]

Drainage. In all cases in establishing a lawn the first consideration should be to secure good drainage. It is not possible to lay down hard and fast rules for drainage, which will suit all situations and soil formations. The essential point is that the drain lines should be so laid out as to secure the speedy removal of surplus water from the soil, thus ensuring that stagnation will not follow a wet season, nor soil aëration be arrested. Even though lawn grasses are not essentially deep-rooted plants as compared to shrubs and trees, they should be encouraged to root as deeply as possible so that in time of drought they will not be so likely to burn out. Nothing is more likely to ensure deep rooting than ample drainage and good subsoil conditions.

The drains should be at least thirty inches deep in any soil, and they may be laid at intervals of twenty feet or even less in stiff, cold land. In

[1] Albert D. Taylor in *Landscape Architecture*, January 1927.

looser, warmer soils they may be deeper and farther apart since their influence extends farther in light soil. Ordinary agricultural tile laid as described in pages 238 to 253 (Drainage) will generally serve best for lawn drainage. Care should be taken to get this drainage laid and the trenches back-filled and well settled before any attempt to sow grass seed is made or else the settling may occur after the grass is up and leave disfiguring grooves across the lawn.

Lime. The second fundamental consideration in the making of a lawn is the condition of the top 18 to 24 inches of soil, as regards its supply of lime. This applies to the subsoil just as much as to the topsoil. In places where the topsoil is sweet or even alkaline, the subsoil may be acid and the effect of the acidity may not be very apparent until a period of extremely dry weather comes along. There is a theory that in such a dry spell the acid soil moisture affects grass roots very severely and even kills them. Blue grass and Bermuda grass and clover will not succeed unless lime is present, while many other grasses prefer a sweet or neutral soil. The use of lime is also justified by its power to stimulate bacterial activity in the soil and especially those bacteria which carry on the process known as nitrification or the making available of the nitrogen in the soil humus. Even though the bent grasses and the fescue grasses are not much influenced either way by the presence of lime itself in the soil, they respond to the nitrogen released from the soil humus and are thus indirectly benefited.

Since a lawn is laid down permanently, as a rule, enough lime should be added at the start to ensure a supply for a long time. As much as eight to ten tons per acre of ground limestone, or its equivalent, may be used if the soil is found to be at all acid, and this should be thoroughly incorporated throughout the top layer of soil.

Humus. The third factor which is of vital importance in lawn making is the securing, in the soil, of a plentiful supply of humus. This may be secured, when deficient, by plowing under a cover crop or by applying stable manure. Cover crops can only be grown at certain seasons of the year, while manure can be applied at any time. The vetches, clovers, and rye grasses are all valuable green manures. When these green crops are plowed under care should be taken not to allow them to bunch up in front of the plow coulter or plowshare so that they are turned under in large masses which ultimately decay and cause depressions all over the lawn. When a true and permanent lawn surface is a very important desideratum, it is sometimes worth while to cut heavy cover crops and put them through a hay or ensilage cutter, then spread them upon the lawn and plow them under evenly.

Stable manure should preferably be well rotted before it is applied to

the lawn so as to avoid fresh weed seeds, and it should be thoroughly worked into the soil to a depth of 12 inches, at least. This will ensure that the soil is kept open to that depth and will encourage the grass roots to go deeply after food and thus give them a cool, moist foothold in time of drought. An amount of manure up to 80 or 90 cubic yards per acre may be used, part before plowing or spading, and the remainder afterwards.

Fertilizers. Where the soil contains a satisfactory amount of humus the question of a sufficient amount of nitrogen becomes a minor one. Organic carriers of nitrogen, such as dried blood and tankage and bone meal, are generally superior to mineral carriers such as sulfate of ammonia and nitrate of soda, because their effect is more lasting. Nitrate of soda, however, is the quickest acting nitrogen carrier to use as a top dressing on lawns where the use of well-rotted stable manure is objectionable or impossible. It may be used at the rate of two to three hundred pounds per acre in early spring. When broadcasted upon the soil the rain will carry it down into the soil in solution, and this property makes it preferable to any other mineral salt for this purpose. Since clover is an undesirable plant to have in a lawn area used for sports, it is probable that sulfate of ammonia should be used instead of nitrate of soda as a nitrogen carrier. The residual action of sulfate of ammonia, in the soil, is acid and not alkaline. Therefore, it does not encourage clover and it has been found to discourage many types of weeds.

Phosphorus is the next most important fertilizer constituent because it is almost always deficient in the soil. Bone meal may be used, and it is often plowed in with a cover crop, at the rate of 600 pounds per acre. Acid phosphate is the best carrier of phosphorus for use in lawn making, and from 800 to 1,000 pounds per acre should be thoroughly incorporated in the top foot or 14 inches of soil. Potash is not generally important in lawn making, especially on clay soils, which are believed to contain a sufficient supply of potash ready to be made available by the unlocking action of lime, underdrainage, and humus.

When it is desired to apply a so-called complete fertilizer, probably the best all-round formula is four per cent of nitrogen, eight to ten per cent of phosphoric acid, and four to six per cent of potash. This would be approximately represented by 530 pounds of nitrate of soda, 1,270 pounds of acid phosphate and 200 pounds of muriate of potash, in a ton of the mixture. Land poor or lacking in humus may receive as much as a ton to the acre of this mixture, especially if sandy. Pure chemical or commercial fertilizers should be applied just before the last cultivation of the ground previous to sowing the grass seed, so that they will become thoroughly incorporated in the surface soil. They should not, however, be applied at the same time as

the seed, nor too closely before or afterwards, because of the danger of the strong solution of the fertilizer coming in contact with the newly germinated seedling. It has been recommended that as much as thirty days should elapse between the time of seeding and fertilizing with commercial fertilizers, but that will not always be possible.

Bone meal is not open to the objection just raised against chemical fertilizers in regard to their scalding or other injurious effects upon young grass plants. It may be applied at any time, either to new or old grass, and is rapidly growing into such favor that it is becoming the most important of the organic commercial fertilizers. The availability and, therefore, food value of bone meal depends largely upon how finely it is ground, and for immediate effects pulverized steamed bone should be used. As much as 25 pounds to each 1,000 square feet of lawn or 1,000 pounds to the acre of bone meal may be used when seeding a lawn, and since it contains from three to five per cent of nitrogen and 18 to 20 per cent of phosphoric acid it supplies all the phosphoric acid needed and a large part of the nitrogen. It also contains a so-called bone phosphate of lime and tends to correct soil acidity. Bone meal is considered to be most useful in sandy or gravelly soil. It should be particularly noted that fertilizers cannot take the place of humus or lime or underdrainage and they give their full value only when these other three factors are properly adjusted. See also the discussion under Types of Fertilizers for Lawns in Construction Notes XV (*Landscape Architecture*, July 1925).

Tillage and grading. Before the seeding is done the lawn surface must be thoroughly tilled, and this should not be undertaken until the underdrainage and grading is finished. If possible, this should be at such a season that the grass seed may be sown in the spring before hot weather or in the autumn at the usual season for seeding lawns, as discussed farther on. When the grading is finished there should be a layer of topsoil over the whole area of lawn, which is quite uniform in depth and in composition. This will ensure the appearance of the lawn against spottiness due either to patches of different grasses appearing on different soil types in a large lawn, or to shallow patches of topsoil. A large saving in topsoil may often be made by bringing the subgrade of a lawn to a uniform depth below the proposed finished grade. This should be done by filling up the low spots in the subgrade with soil of good composition. It is often expedient or necessary to strip all the existing topsoil from the area to be made into lawn, before starting any grading operations. This is advantageous for two reasons: (1) it allows bringing the subgrade to a uniform depth below finished grade so as to secure economy in topsoil, and (2) it permits composting the topsoil while it is in piles and thus gives an opportunity to

materially improve the condition of soil which is poor in texture or deficient in plant food. This composting should be done as soon as the topsoil is stripped, and all sods or other vegetable matter should be included in the piles. From eight to 12 cubic yards of soil may be used to each cubic yard of good barnyard manure. The manure may be green if the piles are to remain over winter or for a whole season, but only partly decomposed manure should be used if intended for use in a month or two. It is always advantageous to turn over piles of compost, and it is necessary to turn them three or four times if green or strawy manure is used. In any event the piles should be built up with straight sides and a concave top so made as to conserve all the rain water falling on the pile. Sometimes it is worth while to wet a compost pile down thoroughly if it is not possible to turn it over and the manure shows signs of fire fanging, or burning. When first made, the layers of soil and manure should not be over six inches deep and, of course, after it has been turned once the layers will disappear and the danger of burning will be past. The last time the pile is turned, one-half the amount of lime or bone meal which it is intended to use on the lawn may be added to the compost. See also discussion of composts in Construction Notes XV (*Landscape Architecture*, July 1925). There is no danger of having too deep a layer of topsoil, but it very often happens that the topsoil layer is too shallow. It is probably safe to say that no really permanent lawn is ever established when sown down on a layer of topsoil less than 12 inches deep. What is known as a good garden soil, when underlaid with a good subsoil of a clayey character but open texture, provides the ideal seed bed. All sticks, stones, clods, and rubbish must be removed, especially from the top layer of soil to at least one spade depth. If the already existing topsoil is sufficient in depth and of good character, plowing and harrowing on large areas or spading on small areas will generally put it in good tilth. Disc or cut-away harrows have proven very efficient in this work, and clod crushers may often be used to break up as many lumps as possible before raking. When the topsoil layer is spread it will be necessary to allow for settlement, and if the subsoil layer is also made land, this should be allowed to settle over winter if possible so as to prevent wastage of topsoil required to fill in any unusually deep depressions. Much less settlement will afterward occur if the layers of soil are shallow — never over six inches in depth — and are rolled or tamped lightly when laid. An iron rake and a water-ballasted hand roller are very effective tools to use in bringing the seed bed to a state ready for the sowing of the seed. The final state of the seed bed should be firm, even, fine, and true to grade. As grass seeds are fine and never need to be covered deeper than one-quarter of an inch, it is important that the seed bed be firm so that seeds

will not become buried too deeply in the soil, nor be lost because they are not, on the other hand, covered enough to hold them in place until they take root. Sometimes the surface layer of soil for a depth of an inch or two is passed through a fine sieve or screen so as to ensure uniformity of texture and size of particles, but this is seldom a practicable thing to do except on small areas of special importance. Since the ideal soil for lawn grasses is a loam it sometimes becomes necessary to modify the local soil, if that is very sandy or clayey. Clay or silt may be added to sandy soils up to about one-third of the total content in the top-foot layer. The clay used for such purposes should be dry and crumbly so as to facilitate mixing it with the sand. Humus material of some sort should also be added whenever possible. Sand and humus material may be added to stiff clay. From one-quarter to one-third of the top foot of soil should be sand in this case, and in either case a layer of humus-forming material three to four inches deep should be plowed in or spaded in and thoroughly incorporated in the top layer of soil. This humus material may be stable manure as mentioned above or it may be some other material.

Seeding seasons. Several factors govern the choice of seasons for seeding lawns. More seed is required in late spring or summer on account of the tendency of grass, which is started at that time, to grow tall and spindling instead of forming shorter, stockier growth as in the fall or in the cooler days of early spring. In addition to covering the ground more quickly, fall-sown grass has fewer weeds to contend with at the start, since the period of germination of annual weed seeds is over. Also, the heat of summer has fallen to a point which still forces germination of the grass seeds without burning up the plants. As a final factor, the soil moisture conditions are quite likely to be more favorable in the fall, when seeding is delayed until the fall rains start. In some portions of northern New York and New England and in Minnesota, however, the severe winters are very hard on newly sown grass, while spring sowing is favored in those regions by the fact that severe hot weather seldom comes there before July, thus assuring the grass a good start. From the middle of August to the middle of October, depending upon the locality, is the preferred time for fall seeding, while the latter part of March, all of April, and the greater portion of May form the usual spring seeding season in the north. Patching may be done at any convenient time when the ground is in proper condition.

Seeding methods. The ideal time for seeding is toward evening on a calm, dry day, because if the wind is blowing, an even distribution is practically impossible, and if the soil is wet it is likely to be sticky and pick up in lumps on boots and rakes. A light, shallow raking should be given the surface of the soil, and the seed should then be sown broadcast by hand.

The sower should not be afraid to bend his back so as to get his hand near the ground before releasing the seed and thus ensure even distribution. One-half the seed should be sown while walking in some one convenient direction, and the remaining half while walking in a direction at right angles to the first sowing. The next step is to rake the seed in very lightly, so that it will not be covered over one-quarter of an inch deep, as otherwise much of it will be lost. Sometimes a light raking in two directions is more successful in securing an even covering than one raking. This raking should be followed by a thorough rolling, which will compact the soil thoroughly about the seed and complete the process of covering it. The roller should not be used if the soil is wet, as there is too much tendency to pick up small clods of compacted earth containing seeds which thus become irregularly scattered.

Seed mixtures. For the average lawn in the north, from 100 to 150 pounds of seed per acre should be used for best results. As stated above, more seed is required when the lawn is sown at the beginning of warm weather than when it is sown at the cooler seasons of the year. No one grass seed mixture can be specified for a turf area to be used for lawn sports under all conditions. Clover, however, should never be included in such a mixture since clover foliage is too soft and too easily crushed to stand any hard usage. It also becomes slippery and dangerous underfoot when played on.

The principal grasses used in the north are Kentucky blue grass, redtop, Chewings New Zealand red fescue and mixed German bent grass. Rye grass and timothy are occasionally added to mixtures to provide a green covering quickly and act as a nurse crop. The exact quantities of the different sorts of grasses will vary with the different soils and exposures, but one successful mixture which is commonly used in large quantities is as follows: Kentucky blue grass 30 per cent, redtop 25 per cent, rye grass 35 per cent, mixed German bent 10 per cent. These percentages are given in terms of weight. The Kentucky blue grass is adapted to the northeastern states and the northwestern coast. It thrives on limy soil, and will occasionally grow on land devoid of lime if the drainage is extra good. It makes a dense, vivid green turf except during midsummer, when it is adversely affected by hot weather. It should not be confused with Canada blue grass which produces a tough but not dense or attractive turf and sometimes succeeds where the soil is too thin for Kentucky blue grass. Since Kentucky blue grass does not fully mature until the third year from seed, it is always better to use it in a mixture of early maturing grasses which keep down the weeds until the Kentucky blue grass is established. Redtop succeeds under a very large range of soil conditions, from drought to wet land. It

is one of the best grasses for poor soils throughout the whole of the eastern United States and thus succeeds where blue grass fails. It does not make a dense turf unless planted thickly and mowed closely. If Kentucky blue grass is sown alone, 150 pounds per acre are required and liming is beneficial. If redtop is seeded alone, 40 pounds of fancy recleaned seed per acre is sufficient and no lime is needed.

For a fine turf similar to putting greens, use Chewings or New Zealand red fescue, which is a grass having a dark green color, making a solid compact turf. It is particularly adapted to sowing on sandy loam soil but succeeds well on clay loam or even on clays. When seeded alone, 100 pounds per acre should be used. It is the best lawn grass for growing in the shade under American conditions. Another fine-leaved grass making a dense velvety turf is carpet bent (creeping bent). It does best where the summers are cool and moist; that is, in the northeastern states and on the northwest coast. When the soil is limy, other grasses, such as blue grass and white clover, tend to crowd out carpet bent. It should be sown alone, except that combined with red fescue it will be satisfactory for a few years, but after that the two grasses tend to separate and make circular mats.

Rhode Island bent is a fine turf grass which is especially adapted to New England and Long Island, and is very common in pure stands there. It is much superior to redtop as a lawn grass, but through confusion and fraud the redtop seed has entirely superseded the Rhode Island bent seed on the market. It is also nearly indistinguishable botanically from carpet bent and the seeds are indistinguishable. For this reason also the Rhode Island bent seed is unobtainable and should not be specified. Mixed German bent may be substituted.

Sheep fescue and hard fescue grass produce bunchy turf, and where the finer sorts of grass will thrive these fescues should never be used. The hair fescue is a bunch grass and will thrive in the shade, but red fescue is superior because of its creeping habit. Crested dog's-tail is a grass which is not adapted to American conditions and, except in the far northwest along the coast, it should never be used.

Oats are sometimes sown with grass in late spring to provide a nurse crop until the tender grass can withstand the hot weather. Italian rye grass is sown for a similar purpose as it is short-lived but provides a green cover at the start. A light sprinkling of oats is often sown with grass on slopes where rains are likely to wash the grass seed before it becomes rooted.

After treatment. When grass is sown in the autumn the soil is still warm and the conditions surrounding the seed are very favorable so that the seed may be expected to germinate in from five to ten days, whereas spring-sown seed, especially if sown early, may not germinate for from

two to three weeks, according to the date of sowing and the weather afterward. Not all the grass will germinate at the same time in any event, and Kentucky blue grass is not likely to show above ground until after such grasses as redtop are well up.

Sometimes it may be expedient to water newly sown ground, but it is generally better to keep off the ground until the grass is up one and one-half or two inches. At this time it may be mowed with a lawn mower set high. Also any large weeds may be removed, the resulting holes patched and seeded, and any small bare spots raked over and seeded. From this time on the usual maintenance care may be given the lawn.

Sowing bent grass stolons to produce turf by the vegetative process. For each ten square feet of area to be planted, the turf from one square foot of well developed nursery row should be provided. (The Metropolitan strain or Washington strain of carpet bent are preferred as they are the most resistant to the brown patch disease.)

Soil preparation. The same preparation is required for planting stolons as for planting grass seed. A firm, even surface which should be free from soft spots as well as sticks, stones or other extraneous material should be provided. The top layer of soil should be uniform in texture and contents over the whole area to be planted. Any fair to good agricultural soil in the north is satisfactory. It should be loamy and not too heavy in texture. (Recent experiments show that carpet bent is more susceptible to brown patch in soils which are slightly acid or neutral in reaction.)

If the weather is dry the area to be planted should be thoroughly soaked with water far enough in advance of the planting operation so that the soil will be moist, but not sticky, when the planting starts. Just before the planting work is begun the soil should be lightly raked.

Fertilizers. No fertilizers should be used in preparing the area to be planted other than natural manures and those only to a very limited extent. A light layer of well-rotted stable manure may be incorporated in the top layer of soil if it is heavy in texture or low in fertility. (Young grass plants are easily affected by an excess of soluble salts in the soil moisture and, therefore, no quick-acting fertilizers such as sodium nitrate or ammonium phosphate should ever be used until after the grass is well established and growing vigorously.) It is not necessary to put any fertilizer in the topsoil used for covering the stolons.

Time of planting. In Ohio, central Michigan and central New York the best time to plant stolons is in late summer so as to take advantage of the good grass-growing weather in late September. Therefore, from August 15 to September 15 is the best season. (If planted earlier, weeds and drought make successful growth difficult, and if planted later the stolons will survive but make little growth until the next year.)

Care of stolons before planting. Stolons shipped for any great distance should be shipped as sods. If sent in bags or otherwise they should be dumped out as soon as received, and kept cool, shaded and moist until planted. Sods may be laid out in the shade, grass side up, and kept moist. The great danger is from overheating, which will spoil the stolons if allowed to go too far. All weeds and foreign grasses should be removed by hand before the stolons are cut up. The stolons should never be allowed to dry out at any time.

Preparation of stolons for planting. The stolons should be chopped into lengths such that each piece will contain one node or joint. This length may be from one to three inches, but the shorter length is preferable as long as there is a node on each piece. A feed cutter or combined cutter and shredder may be used. The cut stolons must then be separated so as to permit handling them easily and sowing them evenly.

Topsoil for covering. Before any planting work starts, there should be prepared a quantity of finely screened topsoil to be used in covering the stolons. Not less than one cubic yard of this soil should be prepared for each 1,000 square feet of area to be covered. Not all this material will be required, but the balance should be saved for later top-dressing. This soil should not be heavy enough in texture so that it will bake or cake over the stolons, nor light enough to blow away. A good loam, with 25 per cent sand added, is often used.

Planting operations. The stolons should be planted at the earliest possible opportunity after they are removed from the nursery. The chopped pieces should be carried in ten-quart galvanized pails. The top-dressing should be carried in wheelbarrows on planks from the topsoil pile.

The stolons are spread by hand from the pails and, if there is a strong wind blowing, some sort of movable windbreak should be provided. A live joint or node to each square inch of area should be assured, but it is wise economy to spread the stolons more thickly. They must be evenly distributed by men walking backward, not sidewise, and covering a strip about 30 inches wide. On a dry day the stolons should be covered immediately and should never lie exposed more than ten minutes on any day. The soil used in covering should be sifted through the fingers from wheelbarrow loads conveniently at hand. The wheelbarrows may be moved on planks laid on the sown areas after the stolons have been rolled. The top-dressing should be dropped directly on top of the stolons and not thrown sidewise so as to roll underneath them. The layer of soil should never exceed three-eighths of an inch and one-quarter of an inch is better. The stolons should not be completely buried, as the top-dressing is used only for the purpose of holding the cut stolons in contact with the moist soil beneath.

Rolling. As soon as possible after the top-dressing is spread, the area planted should be rolled lightly with a common lawn roller. This is the same operation as that following grass seeding.

Watering. Immediately after rolling, the area should be well watered. The whole success of the planting depends upon the watering the grass receives during the first two or three weeks after planting. A fine spray from a rose nozzle held in the hand by one man, with another to carry the slack of the hose, should be used. Mechanical watering devices are not satisfactory and should not be used.

Care after planting. The surface should be kept continuously moist for two or three weeks. Care should be taken that the watering is so done that the stolons are not washed out of the ground nor allowed to dry out, nor to become too soggy. In dry weather they should be watered twice a day for the first two or three weeks, and once a day thereafter until fully established.

As soon as the grass is one inch or so high, it may be mowed and the clippings allowed to remain for the first few times. If they are lightly top-dressed, each live node will take root and help to thicken the stand of grass. Keep the grass cut down to a close turf from the start and never permit it to grow long. Top-dressing should be done with a well-prepared soil which may be the equivalent of a greenhouse compost (not mushroom soil). Just enough dressing should be used so that it keeps the surface firm and true and all sinks into the turf. One cubic yard of top-dressing to each 4,000 square feet once a month is sufficient. In late winter or early spring before top-dressing and after the frost is out of the ground the whole area should be lightly rolled. Constant and thorough hand weeding should be attended to the first year after planting.

Construction of Turf Areas for Lawn Sports in the Southern States[1]

Southern conditions. The extreme heat and the long dry spells during the summer months throughout the southern states make it inadvisable to establish a turf similar to the turf of the northern lawns, composed mostly of Kentucky blue grass, redtop, clovers and bents. These grasses, when used for a lawn turf, will completely burn out during the summer months unless an abnormal amount of labor is employed to protect them by excessive waterings. While in the northern section of the country, lawns in general are developed on a good loam soil, the soil conditions of the south are likely to be those of a yellow or gray sand. The topsoil sand, so called, often possesses a considerable quantity of food matter, but the ease with which water leaches from it and the exposure during the heat of

[1] Albert D. Taylor in *Landscape Architecture.*

summer cause the northern types of grasses to burn out and also kill many of the southern types of grasses.

In the north the value of a lawn continues only during the growing season, from April until October. In the south, especially throughout the section visited by many of the northern tourists, temperature conditions are favorable for the growing of a lawn throughout the entire winter. It is therefore desirable to have types of grasses for the development of lawn areas both during the winter months and the summer months. The excessive cost of maintaining a good turf on lawn areas during the hot and dry summer months has discouraged the development of extensive lawn areas as seen in the northern states, except on golf courses, where the fairways and greens are maintained regardless of cost, and on other play areas. Little experimenting has been done in the far south to determine individual types or combinations of types of northern grasses which will thrive best under these climatic conditions both during the winter months and the summer months.

Types of grasses used. There are three types of grasses which are used for the development of lawns in the far south (throughout Georgia, Alabama and Florida). The first type consists of the more or less native grasses — Bermuda grass and St. Augustine grass. These grasses will not make a perfect turf as a perfect turf is known in the northern states. They grow vigorously and spread rapidly when the temperature does not fall below 50 or 55 degrees. The second type, of which Ross's southern mixture is an example, is composed of kinds of northern grasses, such as orchard grass, Rhode Island bent, redtop, and a small portion of Italian rye, which, as a result of experiments, have produced good turf on southern lawns. The third type is Italian rye, which germinates quickly and produces a green turf, but lives only for a short period during the cooler winter months. This burns out quickly during the hot summer months.

Preparation of seed bed. In the preparation and development of lawn areas, especially on virgin soil, the land must be cleared and the stumps removed. It is preferable that stumps should be either pulled out or, in the instance of pine lands, should be burned out. The operation of blasting stumps in order to remove them leaves a considerable hole which, when filled with loose soil, however thoroughly tamped, may cause a depression in the lawn on account of later settling. After the land is cleared and the stumps are removed, the lawn is brought to an even grade, and unless the soil is a rich yellow topsoil sand, it is advisable to spread a layer of muck, averaging from two to four inches in depth, over the entire lawn area. A deeper covering of muck would be better. The cost of excessive mucking is often the determining factor. This muck, which usually comes from

the swamps, should be selected with great care. All so-called muck land in swamps is not adapted for use on lawns. It is often the case that swamp muck put on a high, dry, and sandy soil will, under the sun's rays, quickly dry out and become powdery. It is best to obtain, if possible, a muck or black soil which can be obtained from the edges of the hammock lands. This type of muck does not dry out. Good muck, taken from the upper layers of swamp areas, ought to be mixed with lime at the rate of five tons of lime to twenty tons of muck, and the entire mixture ought to remain for two or three months before it is applied to the lawn area.

Planting season. The season for planting the grass seed on lawns varies with the kind of lawn which is desired, and also with the season of the year when the lawn is to be used. Especially in the far southern states, some lawns may be desired throughout the entire year, while another group of lawns may be required to be at their best during the winter months. Lawns composed of Bermuda grass and St. Augustine grass can be planted at any time of the year from November until the early part of July. It is not advisable to plant Bermuda grass or St. Augustine grass during the hot summer months, for the same reasons that it is not advisable to seed lawns in the north after the spring rains are over and at a time when the dry summer months are just beginning. The average length of time required for grasses of this type to become established and to make a turf ranges during a normal season from three to four months.

Seeding season. Lawns composed of Italian rye may be seeded at any time of the year from the first of November to the first of March. The time required for Italian rye to establish itself and to produce a green lawn area averages from three to five weeks. An excellent way in which to obtain a green lawn during the winter months is to top-dress a Bermuda grass lawn, which is at least three months old, with Italian rye at the rate of one pound for every hundred square feet. In the middle and southern portions of Florida this is perhaps the most satisfactory method of making a good turf which will be more or less firm and which will be green through the winter months. Italian rye will run out as soon as the weather begins to get warmer during the middle or latter part of March, and can be reseeded on the foundation of Bermuda grass, in the same manner, during the succeeding fall.

Lawns composed of the northern mixtures of grass seed, of which the Ross Florida mixture is typical, may be seeded at any time during the cooler months between November and March. These lawns may be maintained in the same manner that any northern lawn is maintained if an excessive amount of care in watering is devoted to them during the hot summer months. This type of lawn is prepared and seeded in a manner

similar to the lawns of the north and will establish itself under normal conditions in a period ranging from four to six weeks. This seed is sown at the rate of one pound for each two hundred square feet of lawn area.

Planting and maintenance. The operation of seeding lawns with mixtures of northern seed adapted for southern use, and also with Italian rye, is the same as sowing seed for the development of lawns in the north. It is not advisable to develop Bermuda grass and St. Augustine grass lawns through seeding. A better lawn can be obtained with less difficulty if the small clumps of these grasses are planted in little drills 10 or 12 inches apart. The usual method is to find a patch of Bermuda grass or St. Augustine grass. This patch is dug over and the grass pulled up by the roots, together with a small amount of soil, all of which is placed in a pile, and the tops and roots are chopped into small sections. These sections of roots or small clumps are planted from one to two inches deep, being more shallow if the soil is moist. It requires approximately three cubic yards of these roots to plant one acre of lawn. These roots should not be permitted to dry out, either while piled waiting for shipment or while in transit to the place where the lawn is being made. If the lawn which is to be developed is large, then a simple method of planting these grasses is to spread them broadcast over the ground and to cover the roots by disk-harrowing or by shallow plowing.

While the Italian rye only lasts during one season, the Bermuda grass and St. Augustine grass will make a lawn nearly as permanent as any northern lawn, provided the proper maintenance and attention in rolling and watering are given. These types of lawn should be watered at least once in ten days or two weeks, at which interval they should be thoroughly soaked. In order to maintain a Bermuda grass lawn in its best condition, the lawn should go through the process of renovation every second or third year. This process consists of a light harrowing, done for the purpose of cutting the roots and producing a new stoloniferous growth. The harrow should not be permitted to go more than two or three inches into the ground.

If the lawn area is composed of a combination of Bermuda grass and Italian rye, or of a southern mixture of northern grass seed, it should be thoroughly soaked with water as often as once every two days. Superficial watering under these conditions of hot sun and dry climate is more injurious to the southern lawn than a similar watering would be to a northern lawn. Where an excellent lawn turf is desired from November to April, it is much preferable to top-dress the Bermuda grass foundation with a thin coating of muck, or rich soil, and to seed each fall with Italian rye as a filler. If a true northern lawn is to be maintained during this period of the

year, experience to date has taught us that the most practical method is that of reseeding the entire lawn area during the middle or latter part of October, or early November, rather than to expend the labor necessary to maintain a turf during the hot summer months when it is not used.

Surfacing of Play Areas

Most of the baseball fields, minor sports areas and children's playgrounds throughout the United States have a natural soil surface that has been made reasonably level by grading, if they were not already level. Special types of surfacing have been developed, however, for intensively used play areas, and descriptions of several types which have proved satisfactory are given here. The methods of surfacing areas for a number of games and sports are described in the section of this chapter relating to the laying out of such areas. The natural soil conditions are an important factor in determining just what surfacing should be used on playgrounds, and experimentation is necessary to determine what is best for a given location. Drainage and grading are primary considerations. The materials used should be sufficiently porous to absorb surplus moisture, yet firm enough for players to run about on without digging holes in it when it is wet or raise clouds of dust when it is dry. Dust binders are used on many playgrounds, among them calcium chloride, glutrin and tasscoil. Calcium chloride has proved very satisfactory and is widely used on play areas throughout the country.

The following method is used in constructing playground surfaces by the Department of Recreation, Detroit, Michigan. This type of surfacing has also been adopted by the New York State Board of Education for School Playgrounds.

Preparation of grounds. All grass, weeds, stones, humus material, or other debris, shall be removed and fill shall be made only with clean cinders. Finished grade to be as shown on plans and by engineer's stakes.

First course. Cinders not to exceed two inches in diameter shall be spread to a depth of three inches, wet and rolled with a suitable roller until no wave appears in front of roller. The finished grade of this course shall parallel the finished grade of the finished course. This course shall be wet before the second course is applied.

Second course. This course shall consist of three inches of limestone screenings and dust spread evenly over the first course and shall be rolled with a suitable roller and wet between rollings until no waves appear and a smooth compact surface is obtained.

Third course. This course shall consist of one-eighth of an inch of coarse, sharp sand spread evenly over the entire surface.

Fourth course. Calcium chloride shall be spread evenly on entire surface, one and one-half pounds per square yard.

On the Chicago School Playgrounds.

The latest specifications for grading and surfacing the children's playground areas of the Bureau of Recreation of the Chicago Board of Education are as follows (1927):

Grading. All surfaces are concave and one 12-inch drain is installed down the center for each 10,000 square feet of surface.

Surfacing. The base is composed of four inches of cinders rolled with a five-ton roller. The second layer is composed of two inches of clay similarly rolled. The top layer is composed of a sprinkling of stone dust topped by one-half inch of torpedo sand and rolled.

An inexpensive hard surface play court. Dr. A. D. Browne, Professor of Physical Education at George Peabody College for Teachers, Nashville, Tennessee, suggests the following as an inexpensive hard surface play court, especially suited for a playground in the south. According to Professor Brown, a play area of 50 x 100 feet may be surfaced in this manner at a cost in Nashville of $119.

Grade surface of ground. Roll with 300 to 800-pound roller. Spread evenly river-bed gravel in such quantity as will produce the thickness of one to two inches after rolling. In spreading, care should be taken to preserve the grade and give a slight crown to the surface. Fill in all depressions and remove humps. The rolling should progress toward center from each side. If the river gravel is too coarse the voids should be filled with finer materials or screenings. Let surface stand until thoroughly dry. The surface is now ready for the hard oil or asphalt road oil. After the surface has been prepared as described above, not less than one-half gallon of hard oil or asphalt road oil, heated to a temperature of 250 degrees, shall be uniformly applied to every square yard by means of a gardener's sprinkling can, the spout of which has been flattened to permit the hot oil to pour fan shaped. After the application of the hot oil the surface shall be uniformly covered with yellow or white sand or fine slag-chip sufficient in quantity to completely cover the surface. The approximate amount of covering sand required is one cubic yard to 280 square yards of surface. The surface should now be rolled and remain unused three days in order to allow the oil to take in the sand. After three weeks, during which time the court may be used, remove the superfluous sand with broom. If the hot sun should soften the surface in spots or if surface should "bleed oil," apply thin layer of sand.

Mr. C. A. Bossen, assistant superintendent of the Minneapolis Park Department, says concerning playground surfacing on the Minneapolis playgrounds: "We have tried cinders, gravel, sand, limestone screenings and other substances on playground surfaces, but nothing seems to be better than a regular loam surface. Six inches of clay is placed on the subgrade, upon which is placed six inches of loam. This is then seeded and rolled."

Construction of Areas for Lawn Sports[1]

Included among the lawn sports now commonly played are both those played entirely on turf such as clock golf, croquet, golf croquet, lawn tennis, lawn bowling, field hockey, archery and tether tennis, as well as those played partly or wholly on clay surfaces such as roque, quoits, horseshoe pitching and hand tennis. As most of the published information on this subject is somewhat inadequate, or not collected in any one publication, an attempt has been made to collect some of the more essential facts about these sports, especially with regard to the construction and maintenance of the areas required.

Clock golf (see Plate 119, page 304). Clock golf requires but little space — just enough lawn on which a circle from 20 to 24 feet in diameter may be drawn. The circle, marked in white on the grass, is divided up into twelve equal parts; each mark is called a figure point. Plates numbering one to twelve are pressed into the ground clockwise at these points, either outside or inside the line of the circle. This completes the clock face. A putting hole, four inches in diameter and four inches in depth, is made in

[1] Albert D. Taylor in *Landscape Architecture*, October 1926.
[2] For a discussion of lighting of play areas for night use, see Chapter XV, "Park Lighting."

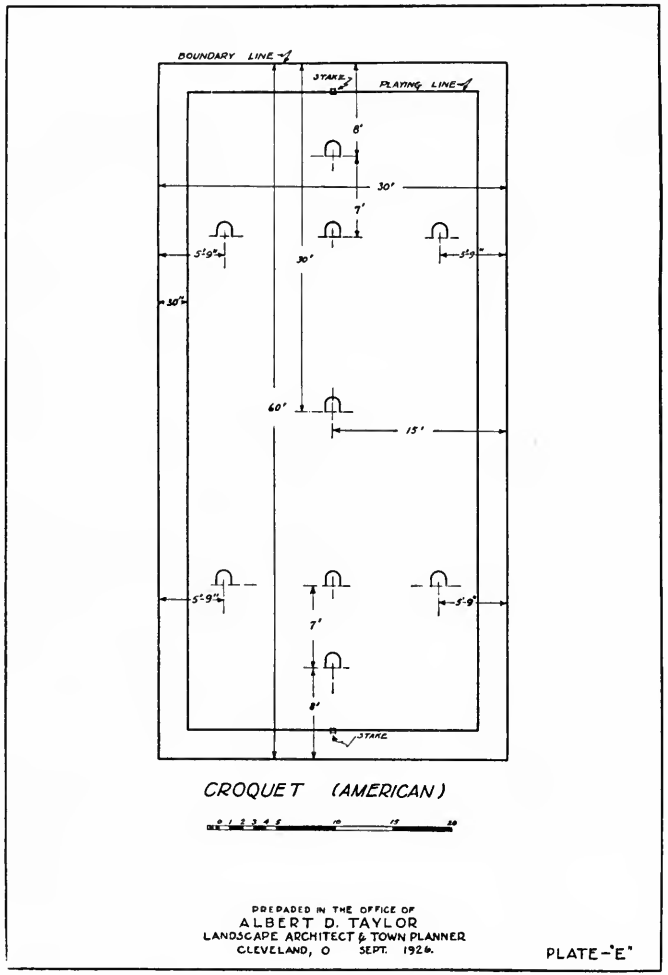


PLATE NO. 118

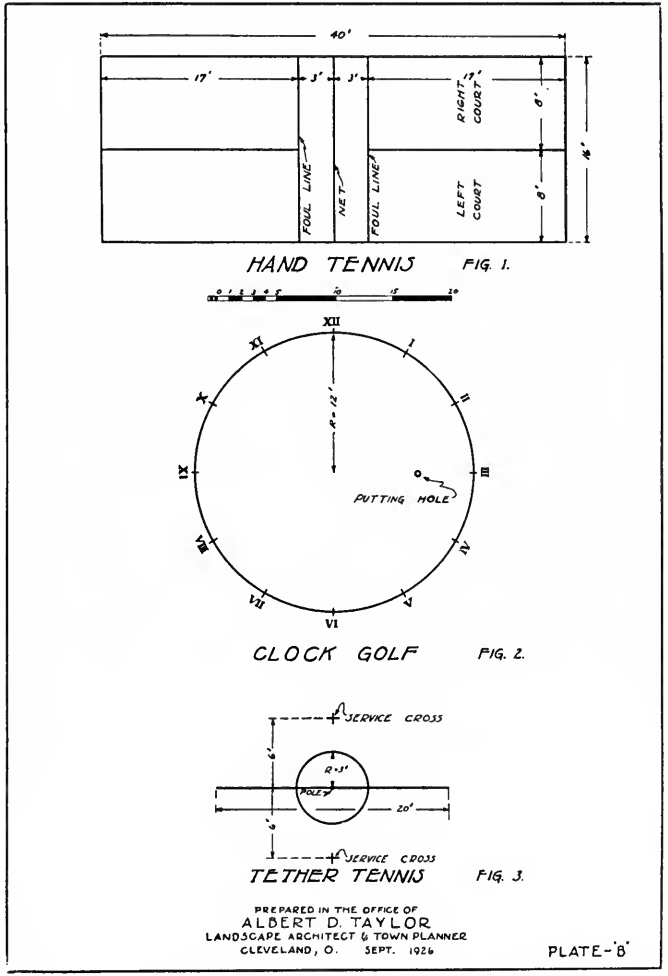


PLATE NO. 119

any spot between the center of the circle and its circumference; the distances from each figure point to the putting hole will differ in length. The object of the player is to hole out from each successive figure, beginning at figure one, in the fewest strokes.

Croquet (see Plate 118, page 304). Croquet is played on a level lawn. The dimensions of the court, measured on the boundary line, are 60 x 30 feet, although the game may be played on a court 25 x 50 feet. Thirty inches inside the boundary line is the playing line; this may be either a marked or an imaginary line. Each stake is set just outside the playing line half way between the end corners. The first arch is placed eight feet from the boundary line, and the second arch seven feet from the first. The side arches are placed on a line across the court with the second arch, and five feet, nine inches in from the boundary line. The center arch may be either single or double. If double, the arches should be placed at right angles to the other arches and 18 inches apart.

The court should be marked on the turf with white tape or lime so that the boundaries may be easily seen from any point in the court. The court is sometimes built in the form of a sunken panel, its sides rising five or six inches as nearly perpendicular as the turf can be held, and from this point gently sloping away from the court for at least four or five feet. The court should be a perfectly smooth, very nearly level space, and the turf should be tough and kept closely clipped. Even though the court is a portion of the lawn not distinctly outlined from the rest, it must be carefully prepared if it is to be in a serviceable condition throughout the entire season. The subgrade should be approximately parallel to the finished grade of the court. Tile drains should be installed at intervals varying from ten to twenty feet, according to the nature of the subsoil. Trenches in which these drains are laid should be refilled with coarse, porous material, such as cinders, gravel or broken stone, to a level of the subgrade. The subgrade should slope about a quarter inch to the foot towards some one of the tile drains. The whole is then covered with a four to six-inch, or preferably thicker, layer of topsoil, which should be screened through a screen of a half-inch mesh to remove all stones, hard lumps, etc. This topsoil should be put down in two layers, if more than four inches thick, and carefully rolled to a smooth, fine, plane surface true to grade. If possible, the area thus prepared should be allowed to stand several days before seeding. If this is not possible, it should be thoroughly sprinkled, care being taken that all parts are equally wet and yet not to use sufficient force to wash any portions and cause a roughness in the surface. The whole should then be dressed up again and rolled to a true surface, scratched up slightly with an iron rake, seeded and lightly rolled.

Golf croquet. The course of golf croquet, as in golf proper, depends on the shape of the ground used. The course, as in croquet, is marked by wickets or arches, and also by numbered flags. The distance between the wickets will vary. A spot or object, *e.g.*, a tree, near the center of the lawn is chosen; all wickets face this center, and all shots are made through the wickets toward the center. The wickets should be placed in sequence so that the one to be shot at is in view of the wicket just left, *e.g.*, No. 2 must be seen from No. 1, and No. 3 from No. 2, and so on. Usually eight wickets are employed, but, as in golf proper, you may have less and go over the course twice for a game.

Lawn tennis. Lawn tennis is played on a court laid out similarly to those described in the April 1922 issue of *Landscape Architecture*, Landscape Construction Notes II, Clay Tennis Courts. The lines are marked with lime on turf which is seeded or planted.

Tether tennis (see Plate 119, page 304). The court may be any smooth piece of ground, free from all obstructions. A circle six feet in diameter is drawn about an upright wooden pole which stands ten feet out of the ground. The pole is seven and a half inches in circumference at the ground and may taper towards the top. A two-inch black band is painted on the pole six feet above the ground. A line twenty feet long bisects the circle. Six feet from the pole, at right angles to and on each side of the twenty-foot line, are two crosses marked distinctly on the ground. A tennis ball is suspended from the top of the pole by a piece of strong fishline; the cord allows the ball to hang seven and a half feet, *i.e.*, two and a half feet from the ground. The game is played by two persons, the object of one being to wind the string around the pole above the black line in one direction; the opponent endeavors to wind the string in the reverse direction. The game is started from each player's court at the point marked with the cross. Stepping in the circle is a foul. Tether tennis may be played anywhere on the lawn or playground, or even indoors.

Field hockey (see Plate 120, page 307). Field hockey may be played on any level, open, and well-drained field, seeded with grasses which will form a tough sod. The field should be from 90 to 100 yards long and from 50 to 60 yards wide. The field should be divided into four equal parts by lines marked parallel to the goal lines. The middle line is called the center line; the other two lines the 25-yard lines. For experienced players the 25-yard lines should not be marked more than seven yards from the side lines. At each side of the field five yards inside the boundary line, parallel to the long axis of the field, a line is marked off, called the five-yard line. The goals are in the center of each goal line. A goal consists of two posts four yards apart (inside measurement) and seven feet high, connected at

the top with a horizontal bar. About the goal is a nearly semicircular area formed by two quarter circles and a common tangent 12 feet long. The quarter circles are drawn with a 15-yard radius, the base of each goal upright being used as a center, and started at the boundary line, and described in front of the goal line. The two quarter circles are then connected by a line 12 feet long, which is tangent to both arcs. If the field is reduced in size, the reduction should be made in the middle area. The 25-yard lines should still be 25 yards from the goal lines; the five-yard lines five yards from the side lines, and the circles regulation size. The ball used in field hockey should be a leather cricket ball painted white or made of white leather.

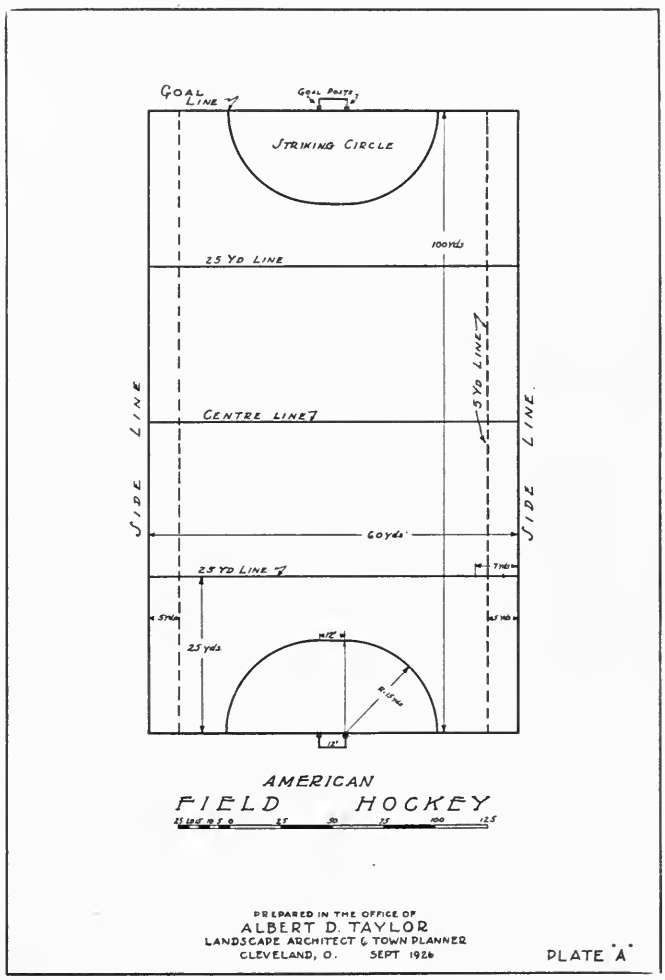


PLATE NO. 120

Archery. Targets are set up in pairs facing each other at distances varying according to the kind of shooting or rounds that are being shot. For convenience the targets are set up five yards farther apart than the distance that particular round calls for. This permits the contestants when shooting to stand five yards in front of one target while shooting at the other.

The targets are four feet in diameter, and three to four inches thick, made of straw and covered with rough cloth on which concentric circles are painted, each four and four-fifths inches in width. The outer ring is white and counts one point when hit; the next ring is black and counts three points; the next is blue and counts five points; the next, red, counts seven points; the last, inner circle, nine and three-fifths inches in diameter, is gold and counts nine points. The target is supported on an iron stand

or easel, sloping slightly backward so that the center of the target measures just four feet from the ground. The contestants shoot at one target of the pair, and then cross over and shoot back at the other target. The field needs no special preparation other than smoothing out and possibly draining the areas about the targets and eliminating from them any long grass or other cover in which arrows may be lost. The area between the targets should permit easy passage. There should be no obstacles which might obstruct the view from one target to another, and the targets should be approximately on the same level. The ground between may be a deep valley or ravine if a means of crossing is provided. The whole field or property should be fenced in and warning signs posted to prevent people from coming unknowingly within the dangerous area.

Distances for various American and English rounds are:

York Round
72 arrows at 100 yards
48 arrows at 80 yards
24 arrows at 60 yards
—
144 arrows

Columbia Round
24 arrows at 50 yards
24 arrows at 40 yards
24 arrows at 30 yards
—
72 arrows

Potomac Round
24 arrows at 80 yards
24 arrows at 70 yards
24 arrows at 60 yards
—
72 arrows

American Round
30 arrows at 60 yards
30 arrows at 50 yards
30 arrows at 40 yards
—
90 arrows

National Round
48 arrows at 60 yards
24 arrows at 50 yards
—
72 arrows

Gentlemen's Team Round
96 arrows at 60 yards

Ladies' Team Round
96 arrows at 50 yards

Roque (see Plate 121, page 309). Roque is never played on a turf court, but on a surface prepared very much like a clay tennis court. The court is 60 feet long by 30 feet wide, each corner cut off by a diagonal line six feet long, running at a 45-degree angle with the side and end lines of the court. The court is surrounded by a raised concrete or wooden border not smaller than four by four inches, laid flat; the border should be beveled to prevent balls from jumping off the ground. The surface of the court should be made as smooth and flat as possible and should be nearly level; *i.e.*, the slope should not be more than two inches in the width of the court. The court should be sprinkled with fine sand to hold the balls.

A boundary line is marked 28 inches inside the border. The stakes, which are one inch in diameter, are located in the center of the width of the field, just clearing the boundary line; the stakes extend one and a half inches out of the ground. The first wicket is located six feet from the stake and the second six feet from the first on a line extending through the center

of the field. The center of the side arches is five feet, nine inches from the border and thirteen feet, four inches from the end of the field. The double wicket in the center of the court is set parallel to the end lines and measures eighteen inches in length and three and three-eighths inches between the wires. The other arches should measure three and a half inches between wires. The arches are made of steel and should not be less than seven-sixteenths of an inch in diameter, and are driven into four by six by eight-inch blocks of hardwood and the blocks, in turn, buried beneath the ground so that they are covered for about one and a half inches. The arches stand eight inches high. The area should be brought to a subgrade approximately parallel to and 10 or 12 inches below the proposed finished grade of the court. If any fill is necessary it should be very carefully built up in thin layers and rolled with a heavy roller. Tile drains should be installed at 10 or 12-foot intervals in a heavy clay soil, but may be at 20-foot intervals in a soil of a porous nature. The trenches should be back-filled with coarse cinders, gravel or broken stone, to a level of the subgrade. The subgrade should slope at all points towards some one of these drains. The whole area should then be covered with a layer of coarse cinders, screened gravel or broken stone to a depth of about six inches. A two-inch layer of finer material, followed by a light covering through a quarter-inch mesh screen, is then applied. Each layer must be thoroughly tamped or rolled as laid. The surfacing is now laid, usually from

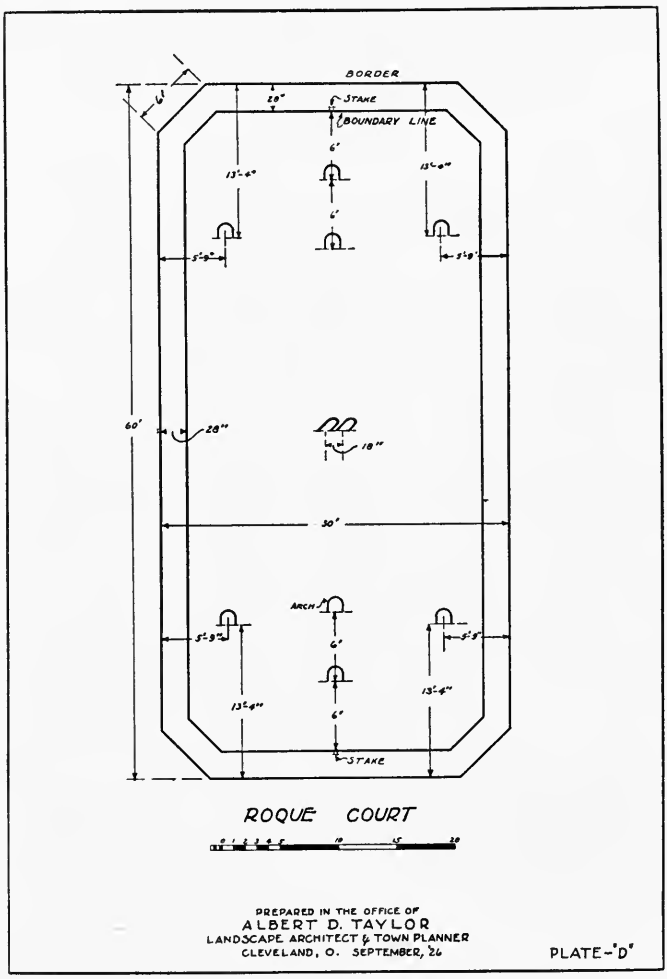


PLATE NO. 121

two to three inches deep, and of uniform thickness. A two-inch surfacing, if it is properly laid and the preparation of the subgrade has been well done, is all that is to be desired in firmness and binding quality, with the added advantage that it dries out much more quickly after a rain, so that the court is in a serviceable condition much sooner than a court which had four or five inches of surfacing material. A clay-sand mixture such as used on a clay tennis court, as described in the April 1922 issue of *Landscape Architecture*, is often used with satisfactory results.

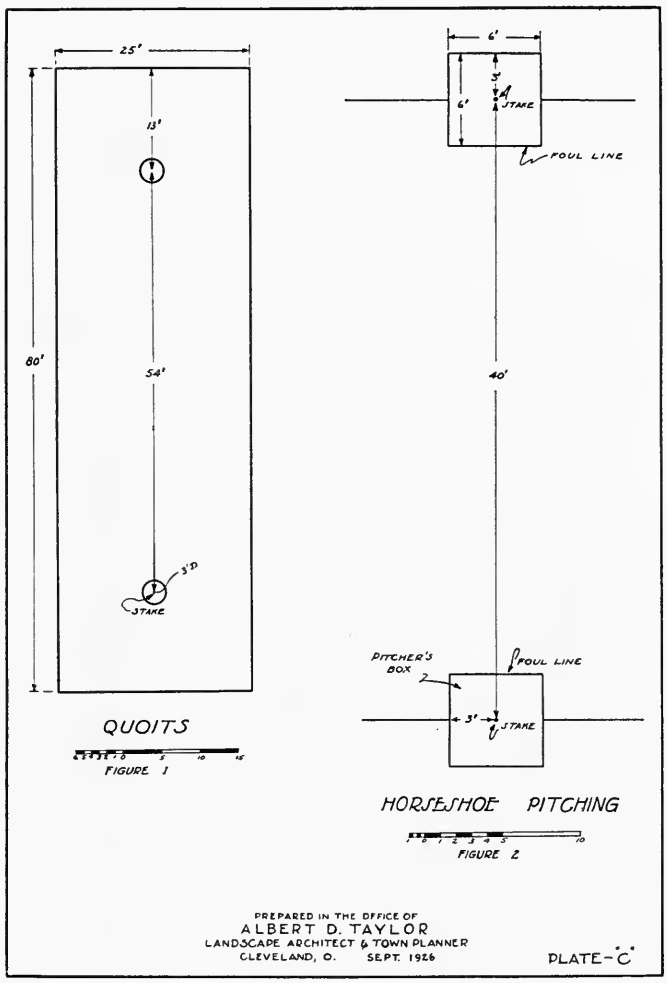


PLATE NO. 122

Quoits (see Plate 122). A quoit rink should measure 80 x 25 feet; these measurements leave ample room outside of the actual pitching distance. Two circles three feet in diameter are excavated 54 feet apart to a depth of about 12 inches. These circles are refilled with a stiff clay thoroughly rammed while moderately wet. In the center of each circle a steel pin or mott, 40 inches long and one inch in diameter, is driven into the ground until the head is flush with the clay. The player, in throwing, stands on a line through the mott perpendicular to the line between motts and not more than four feet, six inches from the mott.

Horseshoe pitching (see Plate 122). The grounds should be as level as possible. The stakes are of iron, one inch in diameter, driven into the ground and inclined one inch toward the opposite stake, eight inches remaining above the ground. The stakes are forty feet apart. The pitcher's box extends three feet on either side, to the rear and front of the stakes,

and should be outlined by wooden joists two by four inches, which should not extend above the level of the ground. The pitcher's box should be filled with a stiff clay thoroughly rammed while moderately wet (as in quoits) to a depth of six inches for at least eighteen inches around the stake. When delivering the horseshoe the contestant may stand anywhere inside the pitcher's box, and when finished he should stand back of a line even with the stake and out of the pitcher's box. The pitching distance for women in contests and tournaments is thirty feet. When several courts are being constructed, they should not be closer than eight feet, *i.e.*, from stake to stake.

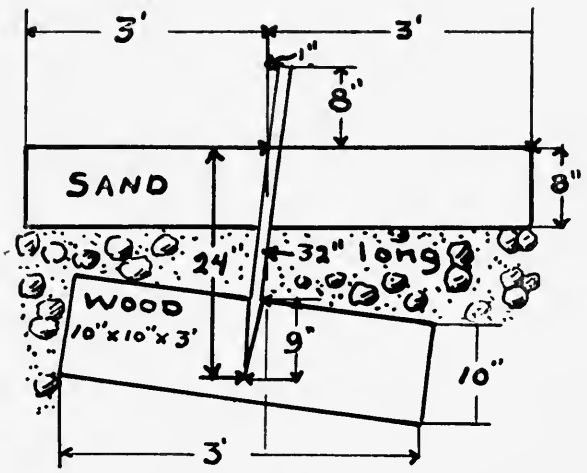


PLATE NO. 123. HOW TO SET STAKE

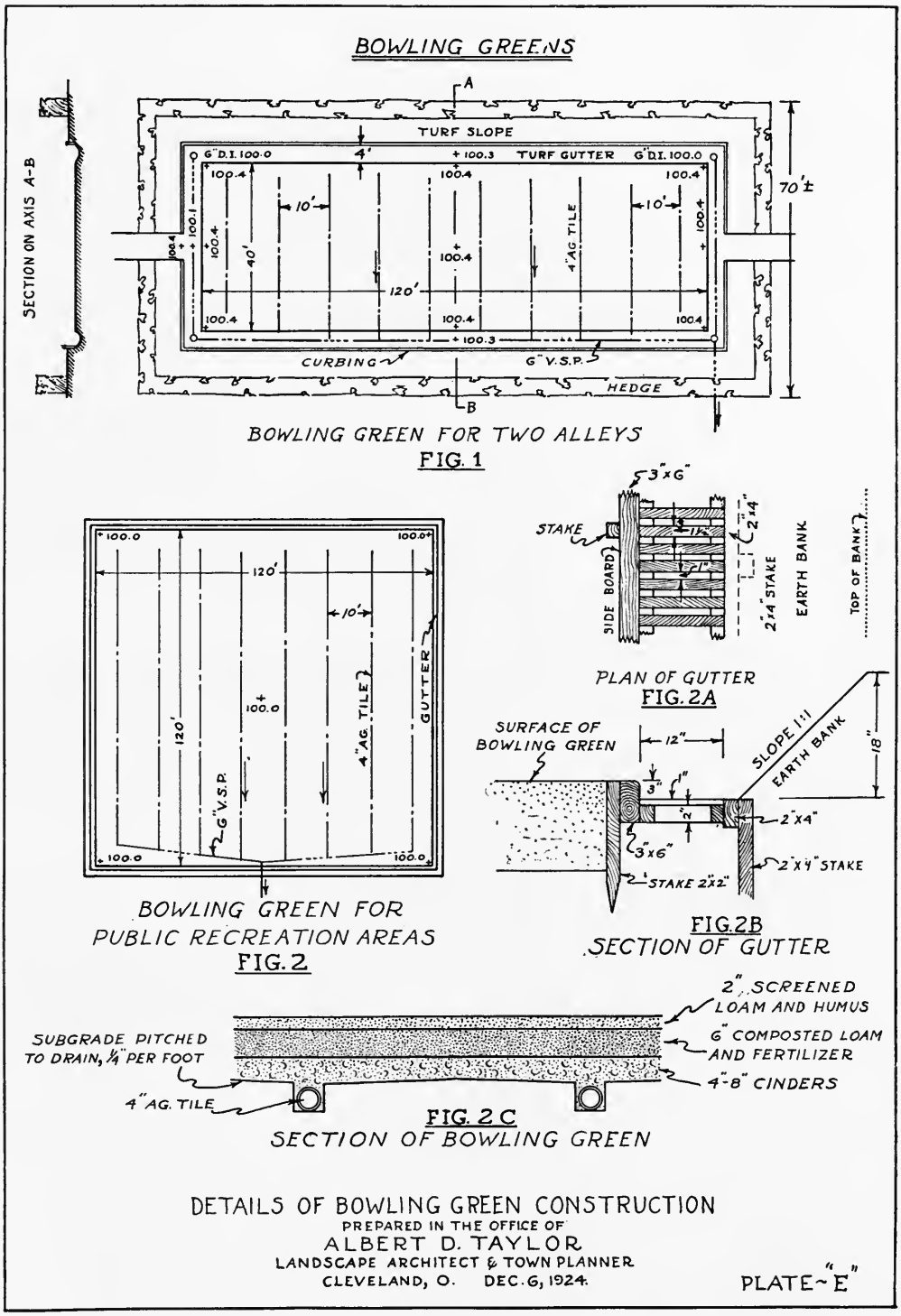
The above diagram illustrating the method of setting a stake for horseshoe pitching has been prepared by J. R. McConaghie of the Bureau of Municipalities, Harrisburg, Pennsylvania.

Hand tennis (see Plate 119, page 304). The playing area is 40 x 16 feet. The net divides this area latitudinally into equal parts, the net being two feet in depth and hung with its bottom two feet, six inches from the ground. Foul lines are drawn parallel to the net, one on each side, at a distance of three feet from the net. Each playing court is then divided longitudinally into two equal parts; this line does not extend through the area between the foul lines and the net. In seasonable weather the game is best played on a clay court, but it may be played on a turf court. Cement and asphalt courts are sometimes used.

CONSTRUCTION OF BOWLING GREENS[1]

Bowls or outdoor bowling is played upon a level lawn area. The bowling green is divided into alleys or rinks about 110 feet long by 14 feet wide. In practice the greens vary from 96 to 120 feet in length and may be greater than 14 feet in width. A small green for two rinks may be of the form shown by figure 1, Plate 124. Where the bowling green is frequently used the green is often made square, as in figure 2, in order that the rinks may be laid out in more than one direction. When the turf is worn, the line of the rink is changed to a new position perpendicular to the former. The nature of the game does not require any especial orientation, so that the

[1] Albert D. Taylor in *Landscape Architecture*, April 1925.


BOWLING GREENS
SECTION ON AXIS A-B
A
B
TURF SLOPE
6" D.I. 100.0
4'
+100.3
TURF GUTTER
6" D.I. 100.0
70'±
10'
40'
120'
4" AG. TILE
CURBING
6" V.S.P.
HEDGE
BOWLING GREEN FOR TWO ALLEYS
FIG. 1
3"x6"
STAKE
SIDE BOARD
2"x4"
2"x4" STAKE
EARTH BANK
TOP OF BANK
PLAN OF GUTTER
FIG. 2A
SURFACE OF BOWLING GREEN
12"
SLOPE 1:1
EARTH BANK
18"
3"
1"
2"
2"x4"
3"x6"
2"x4" STAKE
STAKE 2"x2"
+100.0
100.0
120'
10'
100.0
4" AG. TILE
GUTTER
6" V.S.P.
BOWLING GREEN FOR PUBLIC RECREATION AREAS
FIG. 2
FIG. 2B
SECTION OF GUTTER
2" SCREENED LOAM AND HUMUS
6" COMPOSTED LOAM AND FERTILIZER
4"-8" CINDERS
SUBGRADE PITCHED TO DRAIN, 1/4" PER FOOT
4" AG. TILE
FIG. 2C
SECTION OF BOWLING GREEN
DETAILS OF BOWLING GREEN CONSTRUCTION
PREPARED IN THE OFFICE OF
ALBERT D. TAYLOR
LANDSCAPE ARCHITECT & TOWN PLANNER
CLEVELAND, O. DEC. 6, 1924.
PLATE "E"

changing of the rinks is feasible, excepting that the game is better when played with the sun at the player's back or side.

The green may be surrounded by a barrier to keep the bowls from rolling too great a distance and a gutter to act as a trap to keep the bowls from reëntering the field of play. The barrier may be simply constructed of boards, either nailed to stakes set in the ground or nailed to a movable support. The barrier of figure 1 is a curbing placed on the far side of the surrounding gutter which may be in turn enforced by a turf bank. On private places with a curbing five to seven inches high, the area behind may be used for planting if desired. Public bowling greens may be developed with the gutter and turf bank shown by figures 2*a* and 2*b*.

General grading and drainage. The simplest form of a bowling green is a perfectly level turf area. The ideal green should have a level true surface covered with a short, dense, springy turf. Level greens must usually be underdrained in order to prevent the development of soggy pockets which will quickly ruin the turf. The type of underdrainage will vary with the soil and climatic conditions, however, and porous or sandy soil which absorbs water quickly may not need drainage at all. Agricultural tile, either three or four-inch, should be used, varying in amount from a single line around the outside of the green, or around the outside and across the two diagonals, to numerous lines running across the green every ten feet apart. See figures 1 and 2.

The gutter surrounding the bowling green is for the purpose of collecting the surface water which falls on the area outside of the green, and drains towards it. In the diagram of figure 1, the six-inch drain inlets located at the four corners of the bowling green are at the same elevation and the gutters are pitched to them from high points halfway between inlets.

Excavation. The bowling green is carefully laid out and reference stakes offset at a distance of three or four feet from the excavation. On a line with these stakes, reference grade stakes should be set. The area of the bowling green is excavated from eight to eighteen inches below the level of the finished playing surface. The topsoil is stripped and saved for replacement. The trenches for the tile drains are excavated and the subgrade shaped to give drainage to the tile trenches, a slope of one-quarter inch per foot on the subgrade being sufficient for this purpose. See figure 2*c*. Bowling greens to be constructed on a fill over two feet in depth should be allowed to settle over one winter season. Fills shallower than two feet should be made in layers which do not exceed six inches in depth, each layer being thoroughly compacted by puddling and rolling. Tile drainage is then installed and the joints suitably protected.

Curbing and side boards. If curbing, as in figure 1, or side boards, as

in figures 2*a* and 2*b*, are to be used they are installed and their upper surface brought to the level desired. The side boards of figures 2*a* and 2*b* are set at the finished grade of the bowling green, while curbing is usually set at five to seven inches above the surface of the green.

Foundation. The foundation course of cinders is placed on the subgrade and rolled until thoroughly compacted. The finished cinder course should be at least four inches in thickness. Four inches of topsoil are placed over the cinder course and covered with a layer of well-rotted stable manure. This layer is spread as evenly as possible in order to prevent uneven settling of the upper layers when disintegration takes place. Over this area topsoil is placed to be within two inches of the finished surface when rolled. Before rolling the whole area is thoroughly spaded. The soil for this course can be prepared by thoroughly incorporating well-rotted manure in the soil and using the mixture instead of a layer of soil and manure. This will ensure an even settling and minimize the development of depressions.

The playing surface of the green is now prepared and placed upon the prepared layers. The soil should consist of the best topsoil obtainable, preferably of a light, slightly sandy nature; if the only soil to be had is heavy, a little clean water-washed sand, not sharp, can be mixed with the soil. The soil is screened to remove large lumps, stones and grass roots and mixed with some commercial brand of humus. This mixture is spread evenly over the entire green and rolled. Grade pegs ten feet apart over the surface are set and the surface brought to a true and level plane by means of a straight edge between the grade pegs and rolled again. To avoid footprints in this rolling which, like the previous rollings, should be done with a hand roller, the men should wear rubber boots or shoes with flat heels, and during the final rolling the roller should be pulled not pushed.

Sowing seed. The green should be well watered and kept moist to hasten the germination of weed seeds. When a good crop of weeds has sprouted, they should be carefully hoed with garden hoes. No more than the top three-quarters of an inch of soil should be cultivated so that no more weed seeds may be brought up within germinating distance of the surface. Four or five days before the seed is to be sown, a good commercial fertilizer should be added. When this has thoroughly dissolved, the ground should be sown heavily with seed of the very finest quality. Seeding is best done on a calm day, and half the seed should be sown while walking at right angles to the direction taken in sowing the other half. The seed is then brushed into the soil or covered with a light layer of sifted soil and rolled lightly. The turf should be a dense mat of fine-textured grass, Chewings New Zealand fescue being largely used for the purpose.

The playing surface so constructed usually has a ditch and bank on

four sides if it be square, or ditch and bank across the ends and bank alone at the sides if it be oblong. The bank should be at least eighteen inches high and should be at least a one-to-one slope, in fact the steeper the better. It should be sodded and the sod pegged. The ditch is usually about twelve inches wide by three inches deep. In its simplest form a two by four-inch joist is set on edge next the playing surface. In this case the slope of the bank opposite starts from the bottom of the ditch which is covered with sand. Another form adds to this a strip of two by four inches to hold the bottom of the bank, the two stringers being spaced by spreaders at regular intervals. Another style puts a plank on the bottom of the ditch with holes two inches in diameter every five or six feet. Probably the neatest looking ditch is built as follows: A dressed three by six-inch plank with one rounded corner is set against the playing surface, the rounded corner being toward the ditch. A lattice a foot wide and the length of this ditch is then built of short pieces of one by one and a half-inch boards nailed between two pieces of two by four inches. This lattice is laid flat in the ditch, and the inner side may be nailed there to the three by six-inch plank. A good coat of green or brown stain adds a finishing touch and preserves the wood from early decay. Under some climates it is desirable to remove the lattice and store it in a dry place during the winter.

Bowls are frequently played at night and artificial lighting must be provided. There are three types; the first consists of strings of 150-watt lamps in ordinary green and white metal reflectors spaced about eighteen feet apart in the row and the string hung from a pole at each end so that the lights are about ten feet above the playing surface. The second type uses flood lights at the corners or the ends of the green. These may be 750-watt lamps set twenty feet high. The third type uses 100-candle power arc lights on thirty-foot standards, one at each corner of the green. Where several greens are close together the arc lights have an advantage over flood lights because the flood light illuminates only one portion of the green at which they are pointed, while the arc lights will illuminate two or three greens at once.

Maintenance. No strict rules can be laid down for maintenance of a green because the treatment required will depend on its construction, its use and the weather. In general it must be kept well watered, closely clipped and rolled thoroughly but not too often. Experienced greensmen often use a thin board set on edge and fastened to a handle like a rake to go over the greens and remove any minor irregularities caused by worms or other causes, before rolling.

When a green gets heavy use, worn spots often develop. These must

be carefully cut out and replaced with fresh sod. For this purpose it is well to establish a turf nursery at the time the green is built, taking a bit of good grass land and preparing a seed bed as for any farm crop, then adding two inches of screened loam and seeding with the seed used for the green in about the same amount. For use this sod is cut in the desired size and trimmed to an even thickness. The hole cut for it is cut to the same depth and the sod carefully tamped in place. A light top-dressing of loam is raked over and in a short time the green is as good as new. Particularly in new greens, hollows will develop. At the end of a season the entire green should be carefully tested for level, high spots cut or pounded down and all hollows carefully filled up with rich screened loam and then seeded if necessary. With such treatment a green will improve from year to year.

Layout of Areas for Other Games and Sports

The following pages contain directions for laying out and constructing facilities for the following games and sports: Baseball, basket ball, football, hand ball, paddle tennis, playground ball, shuffleboard, soccer, tennis and volley ball.

Baseball. Baseball may be played on any level field 300 feet square, although an area 325 feet square is preferable. It is possible to play the game on an area as small as 250 x 250 feet if an overhanging backstop is used. A turf area is desirable, although not essential, but when used the turf is generally removed on certain sections of the diamond as described later. The following directions for laying out a baseball diamond are from the *Official Playing Rules* and are reprinted with the permission of the American Sports Publishing Company:

"With a steel tape measure lay out the base lines and place the home plate and pitcher's box as shown in the diagram (page 317). If it is possible to do so, have the home plate due north and the pitcher's plate due south. Remove the sod from the base lines between the home plate and first and third bases; also from first base to second base and from second base to third base. The sod may be removed from around the pitcher's plate. Fill in the base lines and the ground around the pitcher's plate if the sod is removed. Mark the lines of batsman's box, on each side of home plate, with whitewash, chalk or similar substance. Also foul lines, from home plate to first base and from home plate to third base, continuing out into the field beyond first and third bases.

Distance from home base to first base, 90 feet; from first base to second base, 90 feet; from second base to third base, 90 feet, and from third base to home plate, 90 feet. Total distance around the bases, 360 feet. Distance from point of home plate to pitcher's slab, 60 feet, 6 inches. Distance is measured from point of home plate, where the base lines intersect, and not from the front part of the plate. Distance across diamond, from home plate

to second base, 127 feet, 3⅜ inches; from first base, across diamond, to third base, the same. Size of batsman's box, 6 x 4 feet. Size of pitcher's plate, 24 x 6 inches. Size of base bags, 15 inches square. Home plate, one foot square, with the corners filled in on the portion facing the pitcher, where it will measure 17 inches across.

To obviate the necessity for ground rules, where space is limited, the official rules specify that the shortest distance from home plate to a fence or stand in fair territory shall be 235 feet and from home plate to grand stand, 90 feet."

Official dimensions of diamonds for boys under sixteen years of age: Distance between bases, 82 feet; home plate to second base, 115 feet, 11½ inches; same distance across diamond from first base to third base; home plate to pitcher's plate, 50 feet.

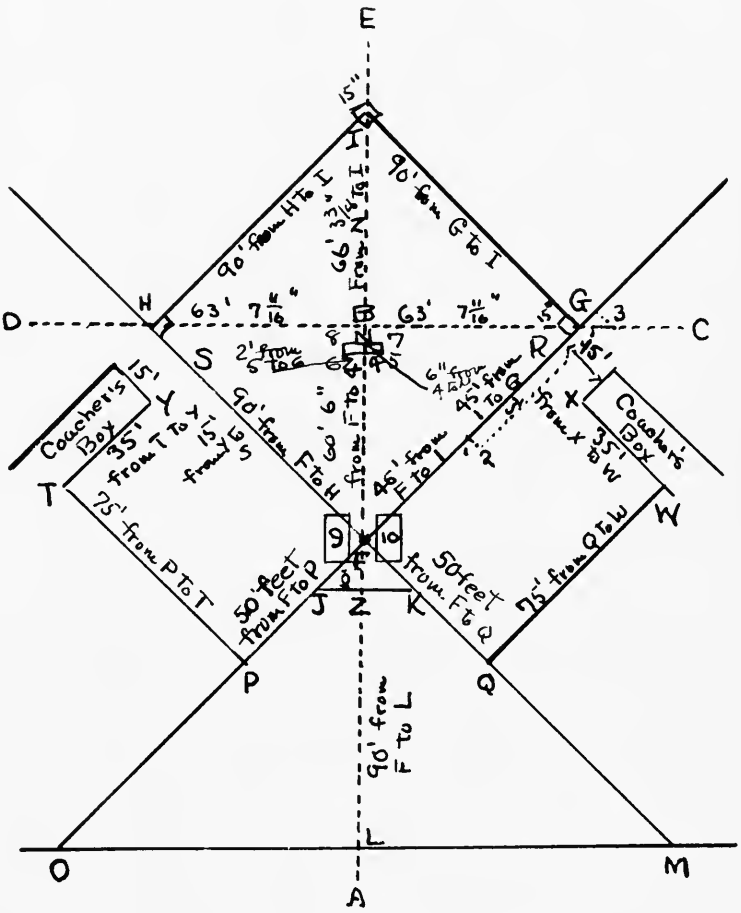


PLATE NO. 125

DIAGRAM FOR LAYOUT OF A BASEBALL DIAMOND

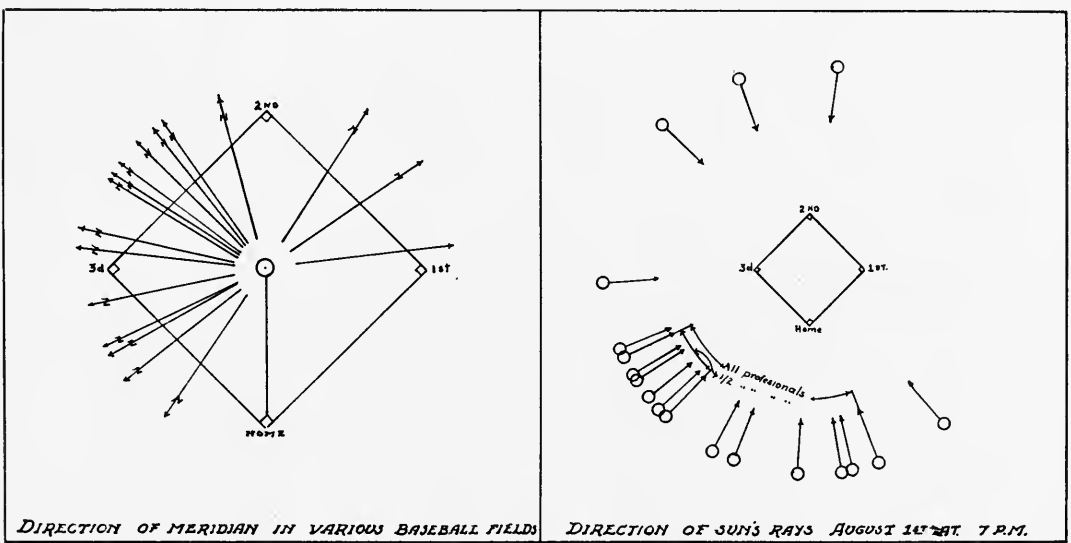
As stated, for official games the distance from home plate to the bleachers or backstop should be not less than 90 feet, although for non-official games the distance may be less. If the distance is greatly reduced, however, it is advisable to have a backstop with wings constructed 10 or 15 feet in back of home plate, and with an overhang extending over home plate. Such a backstop usually varies from 12 to 20 feet in height and from 12 to 20 feet in width, with wings from 6 to 10 feet in width. The overhanging hood may be supported by projecting arms set at an angle of 45 degrees, and extending over home plate. Galvanized iron pipe and a heavy mesh wire should be used for such a backstop. It limits somewhat

the play of the catcher, but it saves space, makes for greater safety and also speeds up the game by intercepting foul fly balls.

The orientation of the baseball diamond is an important factor. Its relation to other features in the area, especially exits, entrances and grand stands must be taken into account, but the chief consideration is to have the diamond so arranged that the players will be bothered by the sun as little as possible. Best results are generally secured when the home plate is located in the southwest, although in many parks it is in the northwest corner.

Basket ball. Basket ball may be played on either a turf, dirt or specially prepared surface. In some cities asphalt courts have been constructed which are used for basket ball, volley ball and other games. In general this game has not proved extremely popular out of doors. The following are quotations from the *Official Basket Ball Rules*, and are reprinted with the permission of the American Sports Publishing Company:

"The playing court shall be a rectangular surface free from obstructions and shall have maximum dimensions of 94 feet in length by 50 feet in width and minimum dimensions of 60 feet in length by 35 feet in width. The court shall be marked by well defined lines, which shall be not less than two inches



DIRECTION OF MERIDIAN IN VARIOUS BASEBALL FIELDS

DIRECTION OF SUN'S RAYS AUGUST 1ST AT 7 P.M.

ORIENTATION OF BASEBALL FIELDS

The ideal way for play is to have the home plate in such a position that the batter is out of the sun and the pitcher throwing the ball across the sun. Some one will have to face the sun on any ball field. It is better to have a sun outfield than a sun infield. This is really the plan on which to go. Adapt your ground the best way you can to use all of it to good advantage, but take care of the infield as much as possible

This drawing shows the meridian as it exists upon some of the National League ball diamonds and also upon certain diamonds laid out by various town planners. To the right of the chart is shown the direction of the sun's rays at 7 p.m. Aug. 1 the time when the twilight sun is the most troublesome to ball players. Sun's azimuth obtained from the Director of Allegheny Observatory. Charts prepared by Blum, Weldin & Co.

PLATE NO. 126. STUDY OF ORIENTATION

in width and which shall be at every point at least three feet from any obstruction. The lines on the long sides of the court shall be termed the side lines; those on the short sides, the end lines. The center circle shall have a radius of two feet and it shall be marked in the center of the court. A diameter parallel to the end lines shall be drawn in this circle. The free throw lanes shall be spaces marked in the court by lines perpendicular to the end lines at a distance of three feet on either side from the middle points of the end lines. These perpendicular lines shall be terminated and the lanes further marked by arcs of circles having a six-foot radius and centers at the middle points of the free throw lanes. A free throw line shall be drawn across each of the circles described. It shall be one inch in width, and extend parallel to, and at a distance of 17 feet from the inner edge of the end lines.

Backboards must be provided, the dimensions of which shall be six feet horizontally and four feet vertically. These backboards shall be made of plate glass or wood, or of any other material that is flat and rigid. The faces of the backboards shall be painted white. The backboards shall be located in a position at each end at right angles to the floor, parallel to the end lines, and with their lower edges nine feet above the floor. Their centers shall lie in the perpendiculars erected at the points in the court two feet from the mid points of the end lines. The faces of the backboards shall be 15 feet from the far edges of the free throw lines. The backboards shall be protected from spectators to a distance of at least three feet behind and at each end.

The baskets shall be nets of white cord, suspended from black metal rings 18 inches in inside diameter. The nets

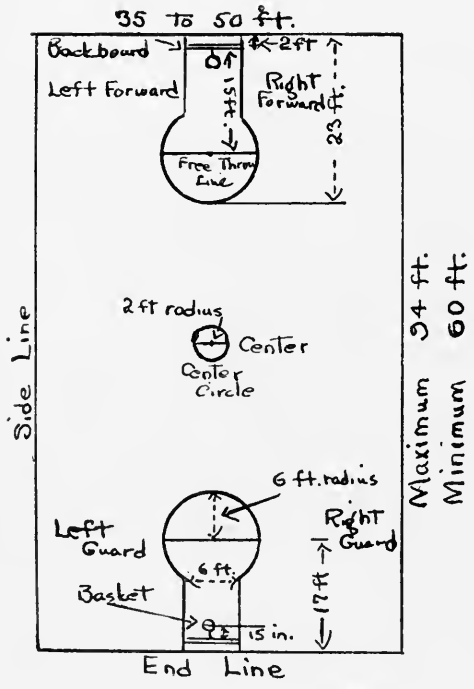


PLATE NO. 127. DIAGRAM FOR LAYING OUT BASKET BALL COURT

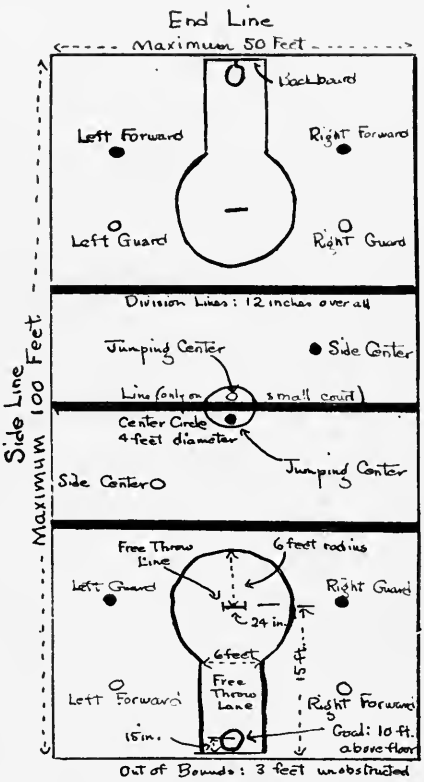


PLATE NO. 126A
DIAGRAM FOR LAYING OUT GIRLS' BASKET BALL COURT

shall be so constructed as to check the ball momentarily as it passes through the basket. It is recommended that the cord used in the baskets be not less than 30-thread nor more than 60-thread seine twine. The ring shall be rigidly attached to the backboard; it shall lie in a horizontal plane 10 feet above the floor and shall be equidistant from the two vertical edges of the backboard. The nearest point of the inside edge of the ring shall be six inches from the face of the backboard."

The game of basket ball has been modified for the use of women and girls as follows:

"Maximum court, 100 x 50 feet, use three divisions. Minimum court, 50 x 25 feet, use two divisions. Regulation size court, 90 feet x 45 feet for college players, 70 x 35 feet for high school players, use three divisions. The face of the backboard should be two feet from the end wall, but on short courts when the backboard is placed against the wall there shall be an end line, the inner edge of which is two inches out from the wall."

Football. A level, well-drained turf field is required for football. The following statement is taken from the *Official Football Rules:*

"The game shall be played upon a rectangular field, 360 feet in length and 160 feet in width. The lines at the ends of the field shall be termed end lines. Those at the sides shall be termed side lines and shall extend indefinitely beyond their points of intersection with the goal lines. The goal lines shall be established in the field of play ten yards from and parallel to the end lines. The space bounded by the goal lines and the side lines shall be termed the field of play. The spaces bounded by the goal lines, the end lines and the side lines shall be termed the end zones. These lines shall be marked in white. The field of play shall be marked at intervals of five yards with white lines parallel to the goal lines. The goal posts shall be placed in the middle of each end line, shall exceed 20 feet in height and be placed 18

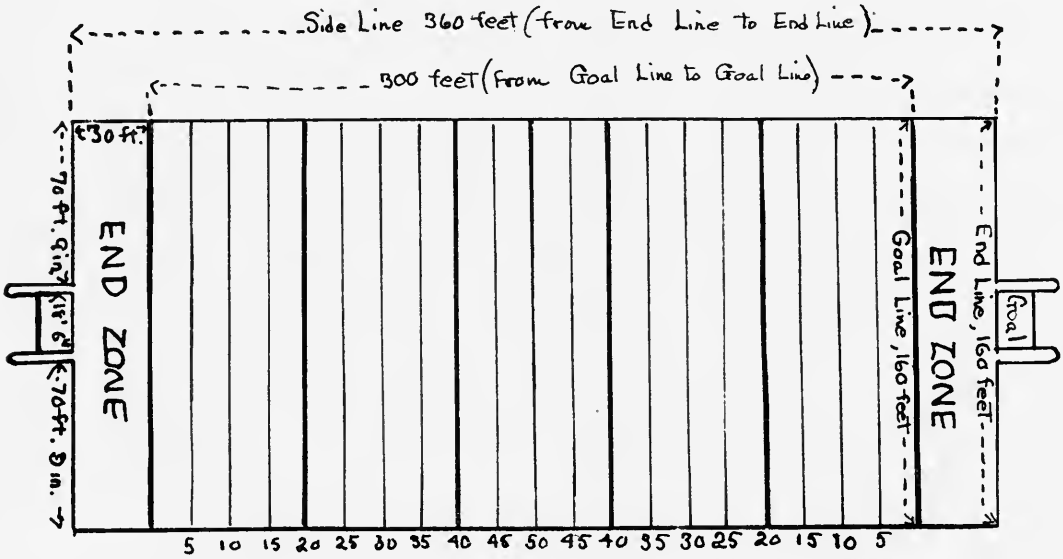


PLATE NO. 128. DIAGRAM FOR LAYING OUT FOOTBALL FIELD

feet 6 inches apart, with a horizontal crossbar ten feet from the ground. Offset goal posts are permissible."

Golf. For discussion of the lay-out of golf courses, see pages 156–167.

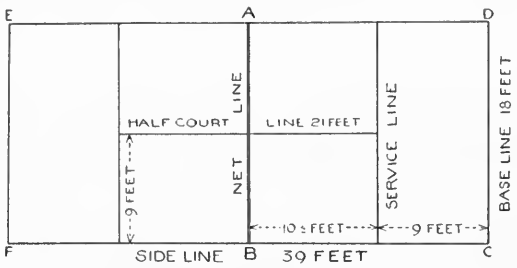


PLATE NO. 130
DIAGRAM FOR LAYING OUT PADDLE TENNIS COURT

Handball. One wall handball is played on a smooth surface court of concrete, asphalt or wood, the playing dimensions of which are approximately 20 feet in width by 34 feet in length. The smooth surface should extend at least five feet beyond the boundaries of the court on all three sides. The wall, which is usually of wood, is 16 feet high and 20 feet in width. It is erected at one end of the court and should be securely braced to avoid vibration. In addition to the line marking the boundaries of the court, there is a service line at least 13 (usually 16) feet from and parallel to the base of the wall. By boarding both sides of the supporting posts, and constructing courts on both sides, a double wall is secured which will serve both courts.

Paddle tennis. This game may be played on any kind of smooth surface, turf, wood, dirt, asphalt or concrete. The court is laid out similar to a regular tennis court, except that all the dimensions are halved. The playing area is 18 x 39 feet. The height at the top of the net should be two feet, four inches at the posts and two feet, two inches at the center of the court.

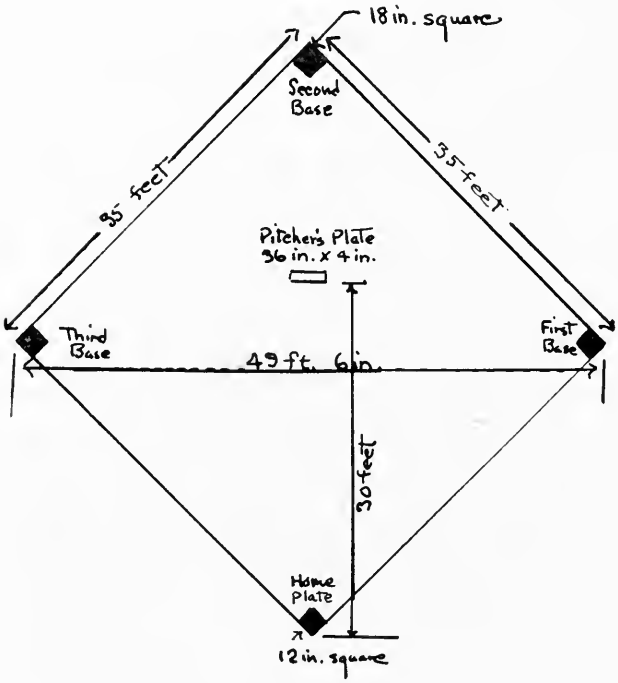


PLATE NO. 131
LAYOUT FOR PLAYGROUND BALL FIELD

Playground ball. This game requires a fairly level field, preferably turf. Adults need an area of approximately 150 feet square if a 12-inch ball is used, while children can play on a space 100 feet square or less. If a 14-inch ball is used, a smaller area will suffice. The diamond is laid out

much the same as in baseball, except that when a 12-inch ball is used the bases are 45 feet apart and the distance from the back edge of the pitcher's plate (6 x 12 inches) to the center of home plate (12 inches square) is 35 feet. When a 14-inch ball is used, the bases are 35 feet apart and the pitching distance is 30 feet. The above dimensions are varied considerably depending upon available space, size of ball used, and age of players.

Shuffleboard. No standard rules have been adopted for this game, which is usually played on a concrete or wood surface about 10 feet wide and 40 to 50 feet long. Round wooden disks are delivered by means of a cue, and in dealing them the player must not step over the foul line. Various ways of marking out courts and scoring are in use.

Soccer. Soccer may be played on any level field, preferably turf, although this is not as essential as in the case of football. The following statement is from the *Laws of the Game*, and it is reprinted with the permission of the American Sports Publishing Company:

"The dimensions of the field of play shall be: Maximum length, 130 yards; minimum length, 100 yards; maximum breadth, 100 yards; minimum breadth, 50 yards. The field of play shall be marked by boundary lines. The lines at each end are the goal lines, and the lines at the sides are the touch lines. The touch lines shall be drawn at right angles with the goal lines. A flag with a staff not less than five feet high shall be placed at each corner. A halfway line shall be marked out across the field of play. The center of the field of play shall be indicated by a suitable mark, and a circle with a ten-yard radius shall be made around it.

The goals shall be upright posts fixed on the goal lines, equidistant from the corner flagstaffs, eight yards apart, with a bar across them eight feet from the ground. The maximum width of the goal posts and the maximum depth of the crossbar shall be five inches. Lines shall be marked six yards from each goal post at right angles to the goal lines for a distance of six yards, and these shall be connected with each other by a line parallel to the goal lines; the space within these lines shall be the goal area. Lines shall be marked 18 yards from each goal post at right angles to the goal lines; the space within these lines shall be the penalty area. A suitable mark shall be made opposite the center of each goal, 12 yards from the goal line; this shall be the penalty kick mark.

In international matches, the dimensions of the field of play shall be maximum length, 120 yards; minimum length, 110 yards; maximum breadth, 80 yards; minimum breadth, 70 yards."

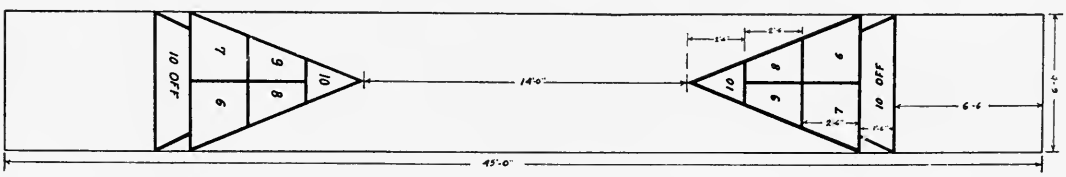


PLATE NO. 132. DIAGRAM FOR LAYING OUT A SHUFFLEBOARD COURT
Designed by August Fischer, Superintendent of Recreation in Winter Haven, Florida.

Tennis. Tennis is played on a variety of surfaces — turf, clay, dirt, asphalt, concrete and wood. The following rules for laying out a singles tennis court are from the *Official Playing Rules*, and are reprinted with the permission of the American Sports Publishing Company:

"The court shall be a rectangle 78 feet long and 27 feet wide. It shall be divided across the middle by a net, suspended from a cord or metal cable of a maximum diameter of one-third of an inch, the ends of which shall be attached to, or pass over, the tops of two posts, three feet six inches high, which shall stand three feet outside the court on each side. The height of the net shall be three feet at the center, where it shall be held down taut by a strap not more than two inches wide. There shall be a band covering the cord or metal cable and the top of the net for not less than two inches nor more than two and one-half inches in depth on each side. The lines bounding the ends and sides of the court shall respectively be called the base lines and the side lines. On each side of the net, at a distance of 21 feet from it and parallel with it, shall be drawn

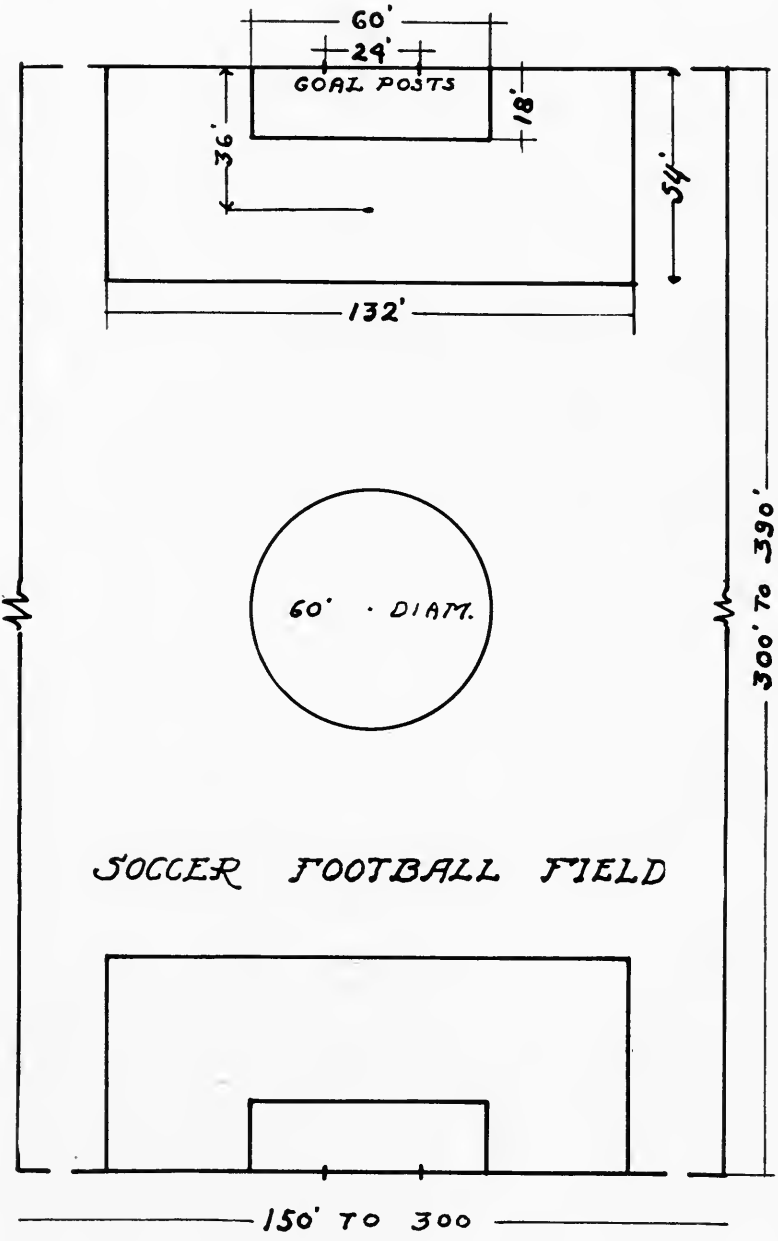


PLATE NO. 133. DIAGRAM FOR LAYING OUT SOCCER FIELD

the service lines. The space on each side of the net between the service line and the side lines shall be divided into two equal parts called the service courts by the center service line, which must be two inches in width, drawn halfway between and parallel with the side lines. Each base line shall be bisected by an imaginary continuation of the center service line to a line four inches in length and two inches in width called the center mark, drawn inside the court and at right angles to and in contact with such base line. All other lines shall be not less than one inch nor more than two inches in width, except the base lines, which may be four inches in width, and all measurements shall be made to the outside of the lines. In the case of the International Lawn Tennis Championship (Davis Cup) or other official championships of the International Federation, there shall be a space behind each base line of not less than 21 feet, and at the sides of not less than 12 feet."

For the doubles game, the court shall be 36 feet in width, *i.e.*, four and a half feet wider on each side than the court for the singles game. In other respects the court is similar to the singles court. Practically all public tennis courts are laid out for the doubles game because they accommodate twice as many players. (See diagram of tennis court, page 330.)

Because of the many problems involved in the construction and maintenance of tennis courts, and the increasing interest in the game, more space is devoted in this chapter to tennis courts than to most of the other play areas. Four of the most important factors in the construction of tennis courts are drainage, orientation, grading and surfacing. Unless there is natural drainage, special provision must be made for it. Low, swampy places, or places where there is a tendency of adjacent ground to drain upon the court should be avoided. The question of subdrainage should be given special attention. If the ground drains readily, the amount of excavation necessary will be greatly reduced.

The court should be laid out from north to south so that the morning or late afternoon sun will not be in the eyes of any of the players. A dark background is desirable, but plantings which cast shadows across the court should be avoided.

There are several ways of grading tennis courts, but in all of them uniformity in grade of surface is essential. For a court constructed alone, Mr. Taylor recommends the gable roof type in which the drainage is from the long axis of the court to both sides. For courts in batteries he suggests the end to end pitch with but one plane surface. In many courts the drainage is from the ends of the court to the net.

Turf courts. Many of the principal tournaments are played on turf courts, but continuous attention is required to keep them smooth and free from bare spots and weeds. In some parks large lawns are used for tennis, but because it is generally impossible to play a fast and accurate game

upon them, and because of the time and energy lost in running after balls, they are not especially popular with good players.

Asphalt courts. For many years asphalt tennis courts have been used on the Pacific Coast and in the Southwest. The popularity of these courts is largely due to the fact that they are so easily maintained, whereas it is difficult to maintain turf or clay courts where there are periods of heavy rainfall and prolonged drought. Because of the extremes in temperature in the East and Middle West considerable difficulty was experienced with some of the first courts to be constructed; courts cracked in the winter and blistered in the summer. The difficulty has been remedied, however, and there has been a rapid increase in the use of these paved courts in the East and Middle West.

Among the advantages of asphalt courts is that they provide a much longer playing season, being usable during most of the year. Furthermore, since their surface is non-absorbent they are available for play, if properly graded and drained, within a few minutes after a rain. One of the greatest advantages is that there is practically no expense involved in maintaining them. If painted lines are used in marking the courts, it may be necessary to renew them every year, but if laid in the cement, they will not have to be replaced. The negligible expense of maintaining asphalt courts as compared with that of maintaining clay and dirt courts is an important item, especially in the case of park and recreation departments which usually operate on a limited budget. Unless there is constant supervision, children and even adults wearing street shoes may play or run on the courts. If the surface is clay or dirt, much damage may result, but street shoes do not injure paved courts. Paved surfaces also permit of faster and more accurate play than is possible on courts where pebbles or irregular or soft surfaces may deflect the ball. There is no loose dirt or dust to annoy players or spectators when the paved courts are used. Under certain conditions it is possible to flood the courts and use them for skating during winter months. One disadvantage of asphalt courts is that they become very hot during extremely warm weather. The chief objection that is raised to asphalt courts is the high initial construction cost. It is true that this cost is greater than in the case of clay or dirt (or even concrete) courts, but over a period of years, they are cheaper.

It has been claimed that asphalt (and concrete) courts are hard on the feet of players, and some have felt that harmful effects might result from playing on such courts. In the opinion of many authorities, however, no harmful effects have resulted and this is probably due to the use of thick-soled shoes by tennis players. It is not an easy matter to arrive at the probable difference in cost of an asphalt court as compared with others and

the cost will vary considerably in different localities, due to the soil conditions and price of labor and materials. Once constructed, these courts present a minimum of maintenance, especially where they are subjected to constant playing.

The following statement concerning the probable cost of constructing an asphalt tennis court was made in October 1926 by Mr. Walter E. Rosengarten, traffic engineer of the Asphalt Association. It should be kept in mind, however, that this figure does not include the cost of excavating where this is necessary or of erecting the backstops.

"In order to give simply a rough idea I would estimate that the mixed types of asphalt surfaces on well prepared foundations for a paved area of 60 x 120 feet might be in the neighborhood of $1,500; for the penetration type of construction about $800, and for the gravel surface treated about $500. If anyone is considering constructing an asphalt tennis court, I would strongly recommend that he discuss the matter with a local asphalt paving contractor who would give a much more reliable estimate. If he is unable to locate an asphalt paving contractor it is quite likely that the city engineer could either give him the information or direct them to a contractor."[1]

The following are specifications of the Park Department at Pasadena, California, for a 60 x 120-foot asphalt tennis court:

Subgrade. The subgrade should be excavated preferably to a grade of .30 foot fall from the center to each end of the court, or almost equally as good the fall may be .60 from one end to the other end. The surface should be brought to as near a perfect plane as is possible.

Sub-base. A layer one inch thick of No. 4 crushed rock should then be placed upon the subgrade and thoroughly rolled, then thoroughly oiled with 60 gravity oil. Upon the No. 4 crushed rock should be placed a layer of pea gravel to cover the oil completely, and the pea gravel in turn thoroughly rolled and oiled.

Surface finish. Fine sand or crushed stone dust should be placed upon the surface, thoroughly rolled to absorb any excess oil and the surplus removed, at which time the court is ready for service.

Asphalt courts in Detroit. Among the cities making extensive use of asphalt courts is Detroit, Michigan, and the following are the specifications used by the Department of Recreation in that city:

Excavate eight inches, and if subsoil needs draining, four inches of agricultural tile should be laid. On top of this, five inches of crushed limestone or granite two inches in size should be uniformly spread, thoroughly wet and rolled with a steam roller. On top of this enough limestone screenings ranging in size from dust to three-fourths of an inch should be spread over the surface and broomed into the voids until all voids are filled to within one-half inch of the top of grade. Excess screenings should be swept from

[1] The Asphalt Association, 441 Lexington Avenue, New York City, has issued a bulletin entitled "Proper Methods in Constructing Asphalt Tennis Courts," containing specifications for materials and detailed directions for constructing a court.

the base in order to leave the large aggregate protruding to form as an anchorage for the Kentucky rock asphalt. On top of this spread two inches of Kentucky rock asphalt cold. This should be straight-edged and rolled with a hand roller to an even finish. Broom over this a light coating of white Portland cement and allow to set two weeks before using. Lines can then be painted on this court with street marking white paint, which is practically the only maintenance required for the remainder of the season.

Concrete courts. Most of the statements in favor of asphalt courts apply equally to concrete surfaces, and park and recreation departments in many cities have installed concrete courts. In 1916 the Board of Park Commissioners of Minneapolis constructed sixty-five tennis courts of various types, only two of which were concrete. The concrete courts proved so satisfactory that twenty-four new concrete courts were constructed by the board in 1925. The average cost of these courts was $1,240.38 per court, including enclosures, net posts, and drainage — an unusually low price.[1]

Specifications for Minneapolis courts. The following is a summary of the specifications for two or more concrete courts constructed in 1925 by the Board of Park Commissioners in Minneapolis:

The subgrade to be stripped of lawn and excavated to nine and one-half inches below finished surface of court if clay, or four and one-half inches if sand, gravel or readily drained material. Subgrade to be compacted uniformly, fill within nine and one-half inches to be made of steam boiler cinders or gravel, not exceeding four inches; this to be spread in layers not to exceed six inches in thickness and compacted. Tile drains to be installed in ditches back-filled with pebbles or stone not smaller than one-half inch. Sub-base to be of steam boiler cinders or gravel kept thoroughly wet, to be spread and rolled thoroughly to a surface at least four and one-fourth inches below finished grade. Grade of each finished court to be two plane surfaces, intersecting at net line and with pitch of three inches from rear edge to valley at net line, the valley to be constructed separately, itself monolithic for each court, and to have pitch of three inches from side of court adjoining second court to outside edge of court. Highest point of valley to be one-fourth inch below edge of adjoining plane surface, expansion joints to be provided. Surface of court to be at its lowest outside point three inches above natural level of adjoining ground, which shall be shaped up to court.

Construction. Thickness of concrete to be not less than four and one-fourth inches. Strips of prepared felt four and one-fourth inches wide and one-half inch thick to be placed to form a joint at net line on each side of valley. Construction joints to be formed by placing the concrete of slabs directly against slabs that have hardened. Concrete base to be mixed in proportion by volume of one sack of cement to two and one-half cubic feet fine aggregate and four cubic feet coarse aggregate of graded crushed rock

[1]The Portland Cement Association, with headquarters at 111 West Washington Street, Chicago, Illinois, but with branch offices in many of the larger cities, has issued an illustrated booklet entitled "Tennis Courts for All-Year Sports," containing much information and detailed directions for constructing concrete courts.

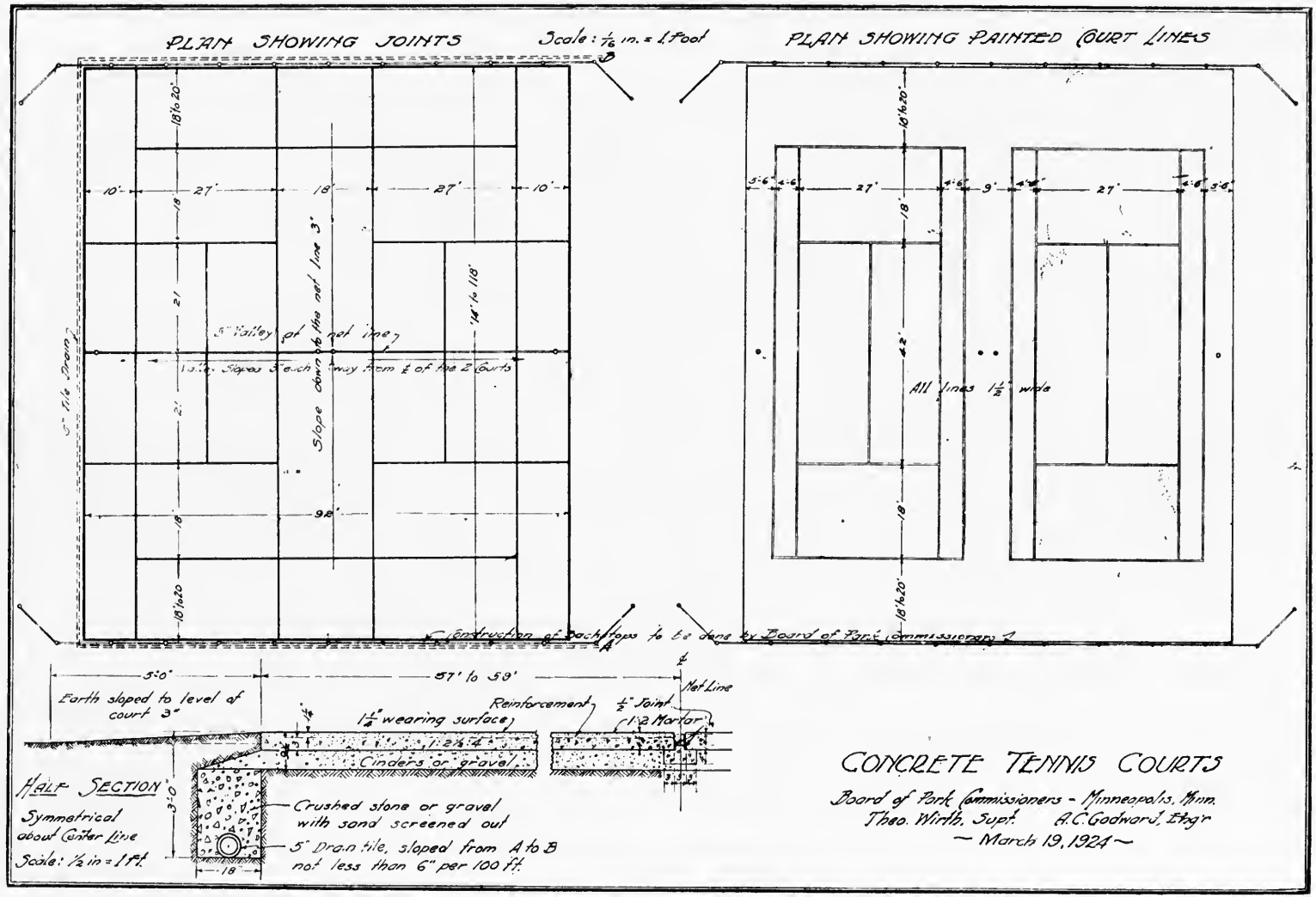


PLATE NO. 134. TENNIS COURT CONSTRUCTION, MINNEAPOLIS

or pebbles one and one-half inches or smaller, and each section to harden before forms are moved and adjoining sections placed. Slabs to be reinforced with welded square mesh cold drawn steel fabric made of No. 10 wire on six-inch centers with effective sectional areas in both directions of .029 square inch of steel per foot of fabric and the effective weight per 100 square feet to be not less than 20.7 pounds. This fabric to be placed lengthwise of court sections and slightly pressed into concrete base immediately after base is placed, without crossing joints. Fabric to be not less than one and one-fourth inches from finished surface of court.

WEARING COURSE

Proportions. The mortar shall be mixed in the proportions of one sack of cement to one cubic foot of sand, one cubic foot of granite screenings, one-half pound of Trimount Germantown lampblack or Iowa Paint Manufacturing Company's carbon black mortar color and two pounds of Iowa Paint Manufacturing Company's or Ricketson's red mortar color.

Consistency. The mortar shall be of the dryest consistency possible to work with a sawing motion of the strikeboard.

Thickness. The wearing course of the court shall have a minimum thickness of one and one-quarter inches.

Placing. The wearing course shall be placed immediately after mixing. It shall be deposited on the fresh concrete of the base before the latter has appreciably hardened and brought to the established grade with a strikeboard. In no case shall more than forty-five minutes elapse between the time the concrete for the base has been mixed and the time the wearing course is placed.

Finishing. After the wearing course has been brought to the established grade by means of a strikeboard, it shall be worked with a wood float in a manner which will thoroughly compact it and produce a surface free from depressions or inequalities of any kind. The surface shall be steel troweled, but excessive working shall be avoided.

Protection from weather. The concrete surface must not be damaged or pitted by rain drops, and therefore the contractor shall provide and use, when necessary, sufficient tarpaulins to completely cover all sections that have been placed within the preceding twelve hours.

Treatment. As soon as each finished court section has hardened sufficiently to prevent damage thereby, the surface shall be covered with at least one inch of wet sand, or two inches of wet sawdust, which shall be kept wet by sprinkling with water for at least ten days.

Court lines. The necessary court line shall be one and one-half inches in width and shall be marked as indicated. All lines shall be formed by painting with two coats of concrete paint.

Concrete courts in Pasadena, California. The following specifications were used by the Pasadena Park Department in constructing a 60 x 120-foot concrete tennis court. Attention is called to the use of lampblack in the surface finish.

Grading. The subgrade should be brought to as near a perfect plane surface as is reasonably possible in locations where there is no frost, and then a layer of sand one inch thick placed upon this surface and in turn the concrete base placed upon this sand.

In locations where there is frost the ground should be excavated to a depth of nine inches and the excavation filled with four inches of one and one-half-inch crushed rock, three inches of one-inch crushed rock, one inch of pea gravel and one inch of sand. Proper drains should be placed in order that no water can accumulate and freeze in the crushed rock. The sand should be brought to a plane surface, as in non-freezing territory.

Grade. The grade of a concrete tennis court should be .05 foot per 12-foot bay. The slope may be entirely from one end or from the middle toward each end. The latter slope is preferable when the topography will permit it.

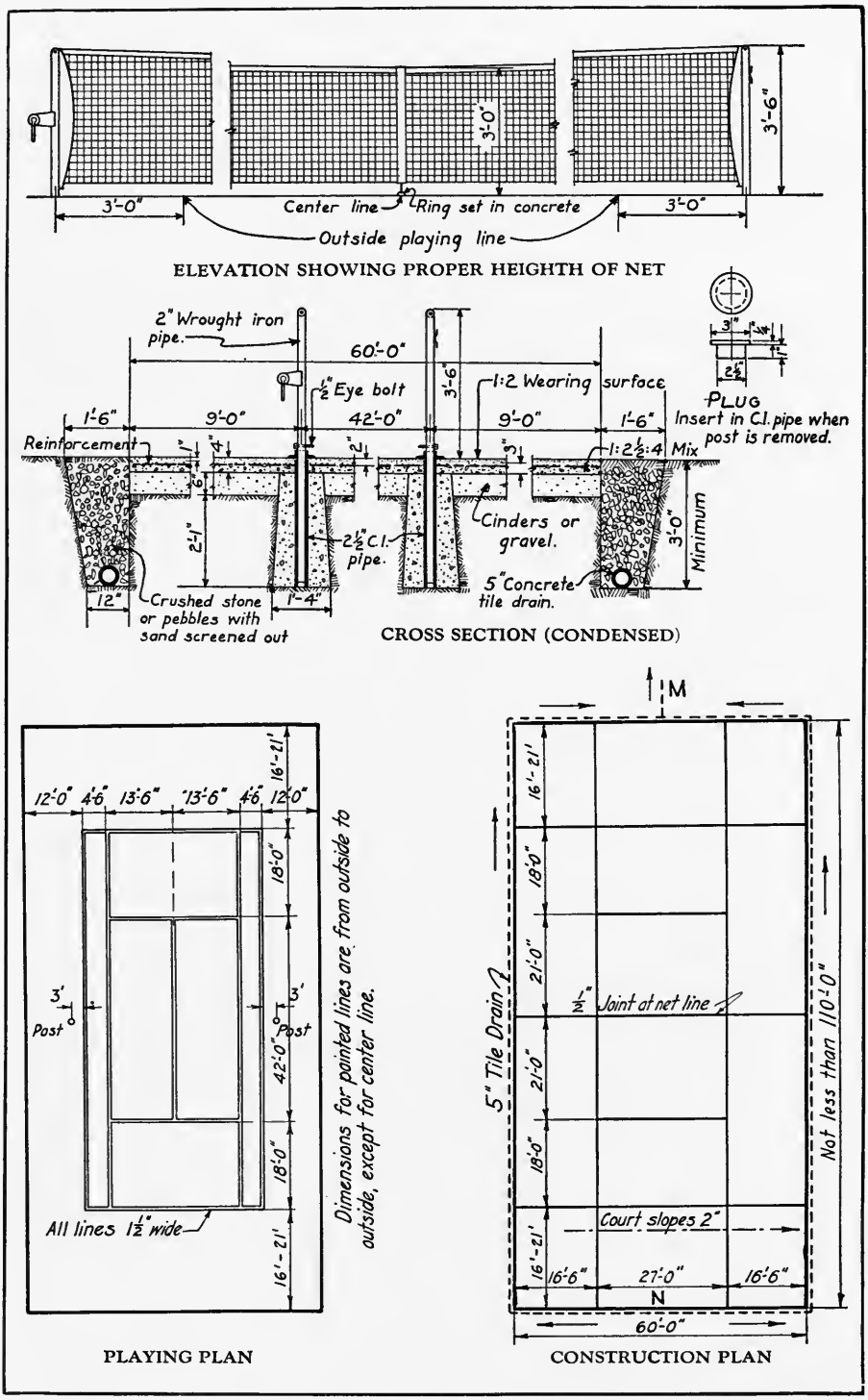


PLATE NO. 135. TENNIS COURT PLANS AND CONSTRUCTION DETAILS FOR CONCRETE COURT, PORTLAND CEMENT ASSOCIATION

Used with permission of the Association.

Base. The base should be constructed of 1:3½:3½ concrete, in which the aggregate should be three-fourths inch crushed rock. The forms should consist of 2 x 4 inches x 20 feet Oregon pine, surfaced four sides, especially selected for straightness. Some twenty pieces will be required. The forms should be set so there is a clear space of 12 feet between them and a header should be centered at the 12-foot point. The bay is then to be filled to a point three-fourths inch below the top of the forms with concrete well tamped and allowed to take the initial set, after which the surface finish is to be placed.

Surface finish. The surface finish is to be mixed from one part of cement to two parts fine sand to which are added two pounds of lampblack for each sack of cement. The space occupied by the header is to be filled with surface finish in order that the surface line may be cut through to the subgrade with ease. After the surface has been brought to a plane the 12-foot lines are cut through to the subgrade, and the alternate lines are cut through to the base. The surface is to be troweled smooth, then allowed to set to the proper stage, and finally steel trowel floated in order to slightly roughen the surface. The proper stage for floating is quite critical and great care should be exercised in order to do this operation at exactly the right time.

Fence. The finished fence should be 12 feet high, constructed of half-inch and two-inch galvanized pipe and of one-inch mesh galvanized poultry netting. The two-inch pipes should be spaced 10 feet center to center, placed in concrete three feet deep, and centered upon a line four inches outside of the finished paving. The two-inch pipes should be cut off at a height of six feet above the paving, except the corner posts, which should be two inches throughout their entire height. The one-inch pipes should be placed above the two-inch pipes as a part of the posts, and horizontally between posts at six feet and 12 feet above the paving. The half-inch pipe is to be placed through the eyebolts embedded in the concrete coping and the bottom of the poultry fence attached to it. Openings for 3 x 7 feet gates should be left at such points as may be desired. A serviceable gate of these dimensions is made by the American Steel and Wire Company.

Coping. The coping is to be of similar mixture to that in the base, plastered with regular finish, eight inches wide and the top six inches above the paving. The two-inch posts shall be placed along the center line of the coping. The coping shall be reinforced by two lines of one-fourth-inch reinforcing placed one inch from the surface on both inside and outside faces. At six-foot intervals two-inch drain pipes approximately eight inches long should be placed in the coping at the low end or ends of the court. Galvanized eyebolts three-eighths by six inches should be embedded in the coping at three-foot intervals and the galvanized half-inch pipe inserted therein.

Pipe posts. The posts should be of four-inch galvanized pipe made as per accompanying sketch, and embedded in a concrete block two feet square by three and one-half feet deep.

Lining. The lines should be painted with concrete, three inches wide on the ends and all others two inches wide.

The court as described has no reinforcing in the paving. The expansion and contraction due to temperature changes is accommodated by the cuts through to subgrade. The court if properly constructed is divided into independent blocks 12 feet square.

Clay courts. As in other types of courts, the construction of clay and dirt courts depends a great deal upon existing soil conditions. The amount of money available is another factor. The following are a number of suggestions taken from various sources:

Mr. Paul B. Williams, of the United States Lawn Tennis Association, states that "usually the best way to proceed in building a dirt court is to cut away the earth to a depth of about one foot. This space must be carefully leveled and about six inches of broken stone one to two inches in diameter put in. This layer should be thoroughly compacted, after which a three-inch layer of finely broken stone or crushed gravel should be added. For the top layer a mixture of sand and clay is used, but the proportions vary greatly. If the clay is sticky, one part of sand to four of clay is a good mixture. Usually, however, the proportion runs about eight of clay to one of sand. If the court seems very soft when finished, it needs more clay; if the surface is sticky, more sand is required. This top layer should be from three to six inches thick. After it is applied, the court should be well watered and rolled a couple of times daily for about two weeks before it is used. Every effort must be made to keep the surface free from hollows or humps, but by light raking, careful rolling and sprinkling, a true and firm surface can be obtained. In case it is not necessary to use a stone foundation, the process is to cut away the topsoil to a depth of several inches until the firm subsoil is reached. Then a true grade must be established. From two to four inches of top-dressing of clay and sand should be used, this being raked into the under soil. Unless this raking is carefully done, the top-dressing will form a distinct layer and the results will not be so satisfactory as when it is carefully worked into the subsoil."

According to a detailed statement by Albert D. Taylor, published in Spalding's *Tennis Annual* for 1923, in constructing clay courts all soil should be removed to a depth of one foot below finished surface. This should be rolled and four-inch tiles laid at right angles to the direction of slope. Upon the subgrade a layer of cinders is placed five inches in thickness after rolling. Upon this a layer of one and one-half-inch crushed light stone slag or coarse gravel is placed to be three inches in thickness after rolling. The voids in this surface are filled by spreading on crushed gravel, crushed stone or slag not exceeding three-fourths-inch dimension. At this stage, net posts and center iron should be placed. The next layer should be a stiff clay containing no loam or organic material, pulverized sufficiently to pass through

three-fourths to one-inch mesh screen. This should be spread to depth of not less than three inches. The finished surface, which should be one inch in thickness, should consist of equal proportions by weight of sand (to pass through ⅛-inch screen), pure clay (to pass through ¼-inch screen) and silt. One part of salt by weight to forty or fifty parts of surfacing material should be added. The finishing surface should be spread by use of wheelbarrow and planks and the entire surface of the court should be covered before any rolling of finished surface is undertaken.

Mr. J. B. McConaghie, landscape architect with the Pennsylvania Department of Internal Affairs, recommends the following procedure in constructing a clay court: "Upon a two-inch cinder foundation rolled hard seven or eight inches of trap rock one and one-half to two inches in diameter should be laid. On top of this should be placed two inches of trap rock one-half to one inch in diameter filled with pebbles to grade. All crevices should be filled with coarse sand, after which court is rolled damp and given half a day to harden. On top of this surface is added one inch of blue

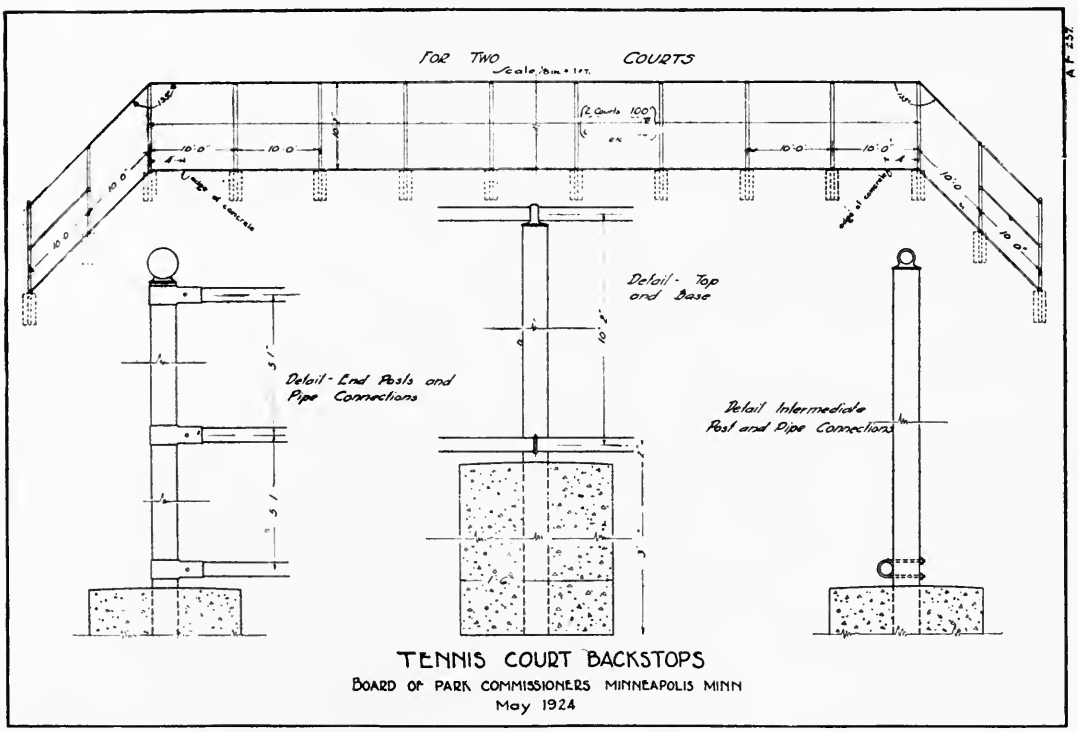


PLATE No. 136. PLAN OF CONSTRUCTION OF TENNIS COURT BACKSTOPS, MINNEAPOLIS

The following are the specifications for the above backstops with top and bottom rail. *End posts:* To be standard weight galvanized tubing three inches in diameter, 13½ feet long, fitted with a neat ball top ornament. *Line posts:* To be of standard weight galvanized tubing two and one-half inches in diameter, 13 feet long, fitted with malleable tops to carry top rail. Top rail, bottom rail and end posts braces to be standard weight galvanized tubing one and five-eighths inches in diameter. *Truss rods braces:* Used at each end of the fence, to be of three-eighths inches mild steel. *Fence fabric:* To be Armco, Cyclone or equivalent, No. 11 gauge, one and three-fourths-inch mesh. Bidder shall specify wire fabric contemplated, when submitting prices. Fence fittings and fabric to be galvanized.

clay well dampened, after which is added a light top-dressing, consisting of three parts sand and one part clay with 300 to 400 pounds of salt per court."

The following is a statement of the construction and estimated cost of a clay tennis court by the Park Department, Minneapolis, Minnesota. It provides for an area 50 x 120 feet, with a six-inch slope from the net line to the backstop for drainage.

A layer of six inches of sandy clay is rolled on a solid even sub-base. This clay should be constantly rolled when putting it in place and must be of the right dampness to pack readily. When the surface of clay is rolled to an even grade a fine layer of limestone screenings is rolled into it. These screenings should be spread on the clay about one-eighth inch thick when dry, and then moistened and rolled. Following is a rough estimate of the construction of a fairly level piece of property:

Labor:				
Subgrade	675 square yards at	$ .10	$67.50	
Place and roll clay	675 square yards at	.10	67.50	
Place and roll screenings	675 square yards at	.03	20.25	
				$155.25
Material:				
Sandy clay	115 cubic yards at	.75	$86.25	
Limestone screenings	2½ cubic yards at	2.00	5.00	
Pipe posts set two inches in concrete	2 cubic yards at	5.00	10.00	
Pipe and wire backstops	140 feet at	1.50	210.00	
				311.25
Total				$466.50

Dirt courts. It is possible to construct a dirt court at little expense, by removing only two or three inches of topsoil and covering area with a clay, sand and salt mixture. If the soil does not drain readily, special provision must be made for drainage. Such a court, although inexpensive to construct, requires a great deal of maintenance expense, and wears out much more quickly than a well-constructed court.

Fencing tennis courts. Galvanized iron pipe and wire mesh are commonly used in the construction of court backstops. Frequently it is desirable to enclose the entire court in order to control it better, but many cities use backstops similar to those in Minneapolis, the specifications for which are practically standard.

Volley ball. Volley ball may be played on any level surface; frequently the same area is used for both basket ball and volley ball. The following dimensions for volley ball courts are taken from the *Official Volley Ball Rules:*

"The playing surface shall be a rectangular court 60 feet long and 30 feet wide, free from obstructions and having a height of 15 feet or more which is free from apparatus or other obstructions or projections. The size of the court may be modified for either indoor or outdoor informal games, to accommodate larger or smaller groups to suit local requirements. It is

urged that the standard size court be used in all match games, where possible. The court shall be bounded by well defined lines two inches in width, and which shall be at every point at least three feet from walls or any obstructions. The lines on the short sides of the court shall be termed the 'end lines,' those on the long sides the 'side lines.' A center line, two inches in width, shall be drawn on the court immediately beneath and parallel to the net.

The net shall be three feet wide over all and of sufficient length to reach from side line to side line. It shall be made of a four-inch square mesh of black or dark brown No. 30 thread. The net shall be bound top, ends and bottom with one-quarter-inch rope. A double thickness of white canvas, two inches wide, shall be sewed to the top of the net through which shall be run a wire cable one-quarter inch in diameter. The net shall be tightly stretched by the four corners between walls or uprights which are entirely outside the court, and it shall cross the court midway between the end lines and parallel to them. The cable shall be drawn so as to permit as little sag as possible and the top of the net shall be level and measure eight feet from the center to the ground."

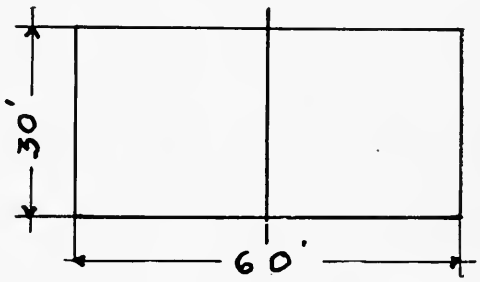


PLATE NO. 137. DIAGRAM FOR LAYING OUT A VOLLEY BALL COURT

It is recommended that for children and also for women, the size of the court be reduced to 25 x 50 feet, and that the top of the net be from seven to seven and a half feet from the ground, depending upon the ages of the players.

Running tracks. The running track is an essential feature of an athletic field, although on account of the space it requires, and the maintenance and construction cost, it is frequently omitted from neighborhood playfields. Among the most important considerations in track construction are temperature, rainfall and soil bed. Although these vary in different sections, the following suggestions should be helpful. Many of them are taken from the replies to a questionnaire sent out to more than fifty university track coaches and compiled by H. F. Schulte of the University of Nebraska.[1] "It appears to be generally accepted that a well-constructed running track should be put down in three layers or strata: (1) A coarse layer, consisting of coarse rubble, stone or clinkers. This should be leveled and heavily rolled. (2) A middle layer of straight-run cinders of rather coarse grade, but without heavy clinkers. This must be well rolled. (3) The top-dressing, a finely screened cinder mixed with clay, black loam or coal ashes."

For the rough fill crushed stone is generally preferred, although some

[1] See *Official Track and Field Guide*, N. C. A. A., published by the American Sports Publishing Company 45 Rose Street, New York.

believe that coarse cinders serve the purpose better. The depth may vary from three to ten inches, depending upon local conditions. The fill should be leveled and well rolled before the middle stratum is laid. This middle layer should be made of medium-sized to relatively fine cinders, the depth varying from five to twelve inches. This should be leveled and well rolled before the top-dressing is added.

Top-dressing. Each coach seemed to have his own particular depth, screen or proportion for the top-dressing. (1) Front or head end cinders have the preference. (2) These cinders to be run through a screen variously recommended at from one-fourth to one-half-inch mesh, with the preference nearer one-fourth inch. (3) The screened cinders to be thoroughly mixed with a binder, clay and black loam seeming to rank about even as the best for this. The selection of a binder should depend upon local conditions of weather, as well as peculiarities of soil. Too much soil robs the surface of resiliency; too little allows it to pack or roll. Experimentation only can solve the problem for any particular locality. (4) The mixture recommended ranged from three to five parts of cinders to one of clay or loam, with a four-to-one proportion having the preponderance of votes.

A quarter-mile track is strongly recommended for general use, and although it is not always possible to have a track of this length it is seldom desirable to build a longer one. The measurement of the track is 12 inches from the inner edge. If it is intended to use the track for official meets, it is suggested that the park or city engineer check the measurements and have his figures certified. If possible a 220-yard straightaway should be provided. It is recommended that the radius of the curve be from 95 to

RUNNING TRACK DIMENSIONS (1)

MILES	TOTAL LENGTH	LENGTH OF SIDE	CIRCUM' OF END	B-END RADIUS	SAME IN FT+IN	C-CURB RADIUS
1 "	5280'.0"	1320'.0"	2640'.0"	420'.169	420'-2 1/32"	419'-2 "
1/2 "	2640'.0"	660'.0"	1320'.0"	210'.084	210'-1 1/64"	209'-1 "
1/4 "	1320'.0"	330'.0"	660'.0"	105'.042	105'-1/2"	104'-1/2"
1/8 "	660'.0"	165'.0"	330'.0"	52'.521	52'-6 1/4"	51'-6 1/4"
1/16 "	330'.0"	82'.6"	165'.0"	26'.260	26'-3 1/8"	25'-3 1/8"
1/8 "	880'.0"	220'.0"	440'.0"	70'.028	70'-5/16"	69'-5/16"
1/6 "	880'.0"	180'.0"	520'.0"	82'.751	82'-9"	81'-9"

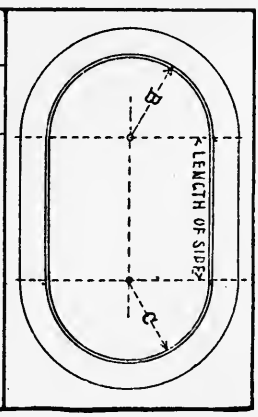


PLATE NO. 137A

TABLE OF RUNNING TRACK DIMENSIONS

Compiled by Narragansett Machine Company, Providence, Rhode Island.

A quarter of a mile track with B-End radius of 125 feet and a side 267.3 feet long is better than the track suggested in the table above if a baseball diamond is to be laid out inside the oval.

105 feet with a true semicircle for the curve. The width of the straightaway should be at least 18 feet, and of the turns and backstretch at least 12 feet. A greater width is preferable. It is not considered necessary or advisable to bank the track at the curves. The curb is generally of concrete four inches wide and set deep enough to be below the frost line. To conform to regulations, the height of the curb above the track should be two or three inches and its edge should be rounded. If a baseball diamond is to be laid out within the oval, however, it may not be wise to have a raised curb, especially if the track is less than one-quarter mile in length. Increasing the curve radius of the track makes the oval more suitable for baseball. If the running track is to enclose a football field, the long axis should run north and south.

Drainage. Catch basins should be provided along the edge of the oval and the outside edge of the outside curb to take care of surface drainage. Various methods are used in providing subdrainage, depending somewhat upon soil conditions and the track surface. Thorough subdrainage, however, is advisable. Water mains for sprinkling the track should be provided at intervals, and if a stadium is built, water outlets may be installed along the front edge of the stand.

The following diagram showing detailed construction of a running track and the layout of the oval was designed by Mr. Frederick W. Rubien of New York, secretary of the Amateur Athletic Union of the United States for the 1916 National A. A. U. championships:[1]

"An athletic field can be laid out on almost any level area and while no hard and fast rule can be laid down as to the selection of a plot, nevertheless if the ground is high and dry a better result will be obtained.

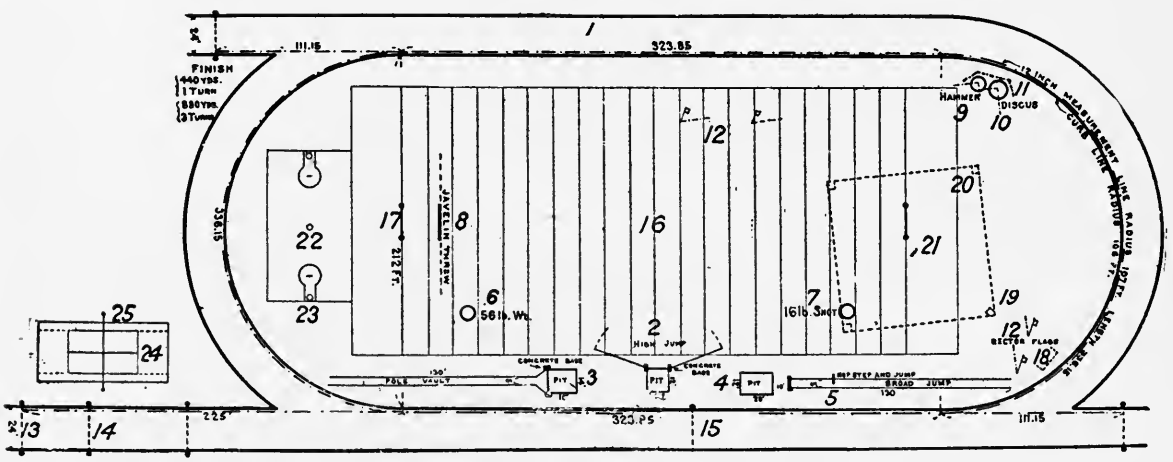


PLATE NO. 138

DETAILED CONSTRUCTION OF RUNNING TRACK

[1]Used by the courtesy of A. G. Spalding and Brothers.

"It is generally conceded that a running track measuring four laps to a mile is the most popular size for outdoor sports. In addition to the track events proper, pole vaulting and the jumps may be contested without interruption, while the field competitions — javelin, discus, shot, hammer and the heavy weight — can be carried on within sight of the spectators and with safety to contestants and officials. A very satisfactory baseball diamond can be laid out within the limits of the track, and the space is ideal for intercollegiate and soccer football. Outdoor basket ball is practicable, while permanent tennis courts also can be included.

"The expense of construction of a running track has deterred many establishments from attempting to build one, while others have been failures from the first, owing to faulty construction. A glance at the cross section will call attention to the inexpensive and light, springy nature of the track as against the heavy, macadam construction so often employed. An all cinder track is absolutely worthless. The cinders will not pack, they tear up easily, and it is the hardest kind of a track to keep in condition.

"The infield, from curb to curb, is 212 feet wide, about 30 feet wider than the track in the famous Harvard Stadium. The turns are not as sharp as in the latter and the tangents are about 108 yards long. The entire track, which is spirit level throughout, except for the slight banking on the turns, is 24 feet wide, permitting six lanes for the sprints and five regulation width hurdles. It has a 220-yard straightaway, the 440 yards was run with one turn and the 880 yards with two turns. The main seating accommodations are along the 220-yard straightaway. The jumping pits are located directly opposite the stand and about fifteen feet inside of the curb, affording the greatest number of spectators an excellent view. This arrangement is preferable to having all of these events crowded at one end of the infield. The locations of the weight events are distributed about the infield and do not

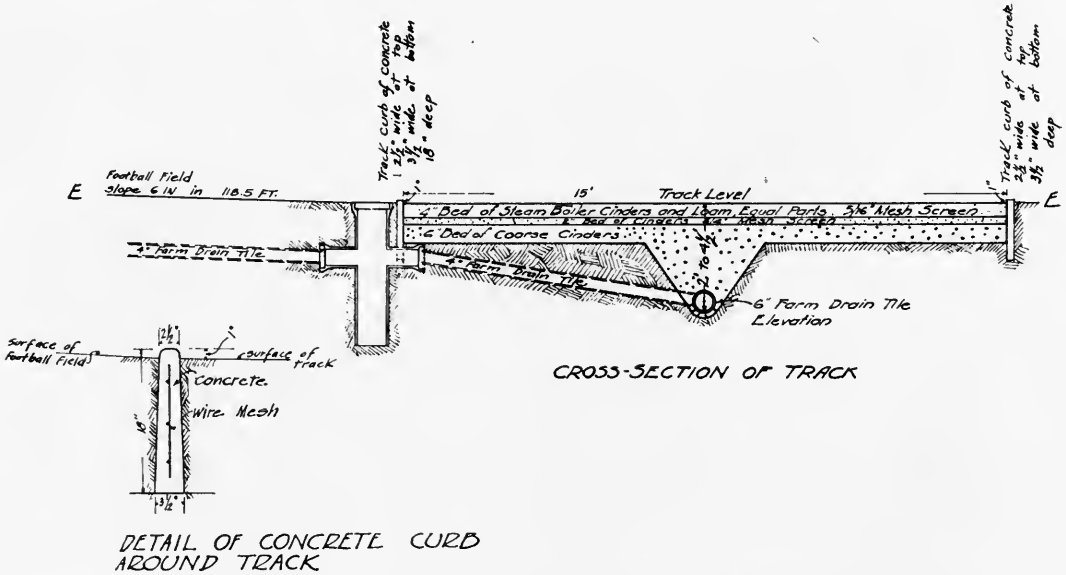


Plate No. 139. CROSS SECTION OF RUNNING TRACK, WAUKEGAN, ILLINOIS

interfere with each other or place the officials or spectators in jeopardy from miscalculated throws.

"After a track has been built it should not be allowed to run down, constant attention being necessary to keep it up to a high standard of efficiency. It is simply money wasted to build an athletic track and then expect it to keep in condition without any further attention. A groundsman should be employed, whose duty it should be to care for the track exclusively. In dry weather it should be sprinkled every day or two and gone over daily, scraped and rolled, and all uneven surfaces brought up to a level. The best made tracks will develop these depressions and the best way to discover them is to go out on the track immediately after a rainstorm and note where the puddles occur. Throw into each puddle a block of wood, to serve as a marker when the water has disappeared. These imperfections should have immediate attention. It is also a good plan to have several loads of the finest sieved cinders on hand, which should be worked in from time to time with the top-dressing, rolled, scraped and watered.

1. Track (quarter mile).
2. Running high jump.
3. Pole vault. Standard, vaulting poles, take-off board.
4. Running broad jump. Take-off board.
5. Running hop, step and jump.
6. Fifty-six-pound weight throw for distance. Official 56-pound brass shell filled weight, iron circle.
7. Sixteen-pound shot put. Official 16-pound brass shell filled shot, iron circle, stop board.
8. Javelin throw. Official javelins, toe board.
9. Sixteen-pound hammer throw. Official 16-pound brass shell filled hammer, iron circle, sector flags.
10. Discus throw. Official Olympic discus, iron circle, sector flags.
11. Protective cage, hammer and discus throws.
12. Metal sector flags for hammer throw and discus.
13. Start 220, 440, 880 yards run; 220 yards hurdle race. Sets (three or four) of ten combination official hurdles.
14. Start of 120 yards hurdle race. Use same sets of hurdles as for 220 yards hurdle race, adjusting to correct height.
15. Finish 100 yards run, 120 yards hurdle race, 880 yards run, one-mile run, five-mile run. Finish posts.
16. Football field. Use tennis marker for making whitewash lines.
17. Football goal posts.
18. Movable baseball backstop.
19. Home plate (rubber).
20. First base. Base bags, use tennis marker for making foul lines, etc.
21. Pitcher's plate (rubber).
22. Basket ball court.
23. Goal and backstop. Goal nets, use tennis marker for boundary lines.
24. Single and double tennis court. Marker for lines of court.
25. Net and posts. Single and double nets, adjustable posts.

Accessories. Platform (movable) for judge at finish, gong to attach to finish post to announce beginning of last lap, red worsted for finish line, stakes and cord to make lanes for sprints, whistle for officials, pistol for starter, megaphone for announcer, steel tapes for measuring, rake for jumping pits. Timers provide their own stop watches. It is also advisable to have a bench, with smooth board in front, securely nailed, to serve as a desk for reporters."

The plans for the Waukegan Township Athletic Field designed by Jacob L. Crane, Jr., Chicago, illustrate many of the features discussed in this chapter. The drainage plan is more elaborate than is usually required, since the field had a natural heavy clay soil. (See pages 338, 340, 341, 342.)

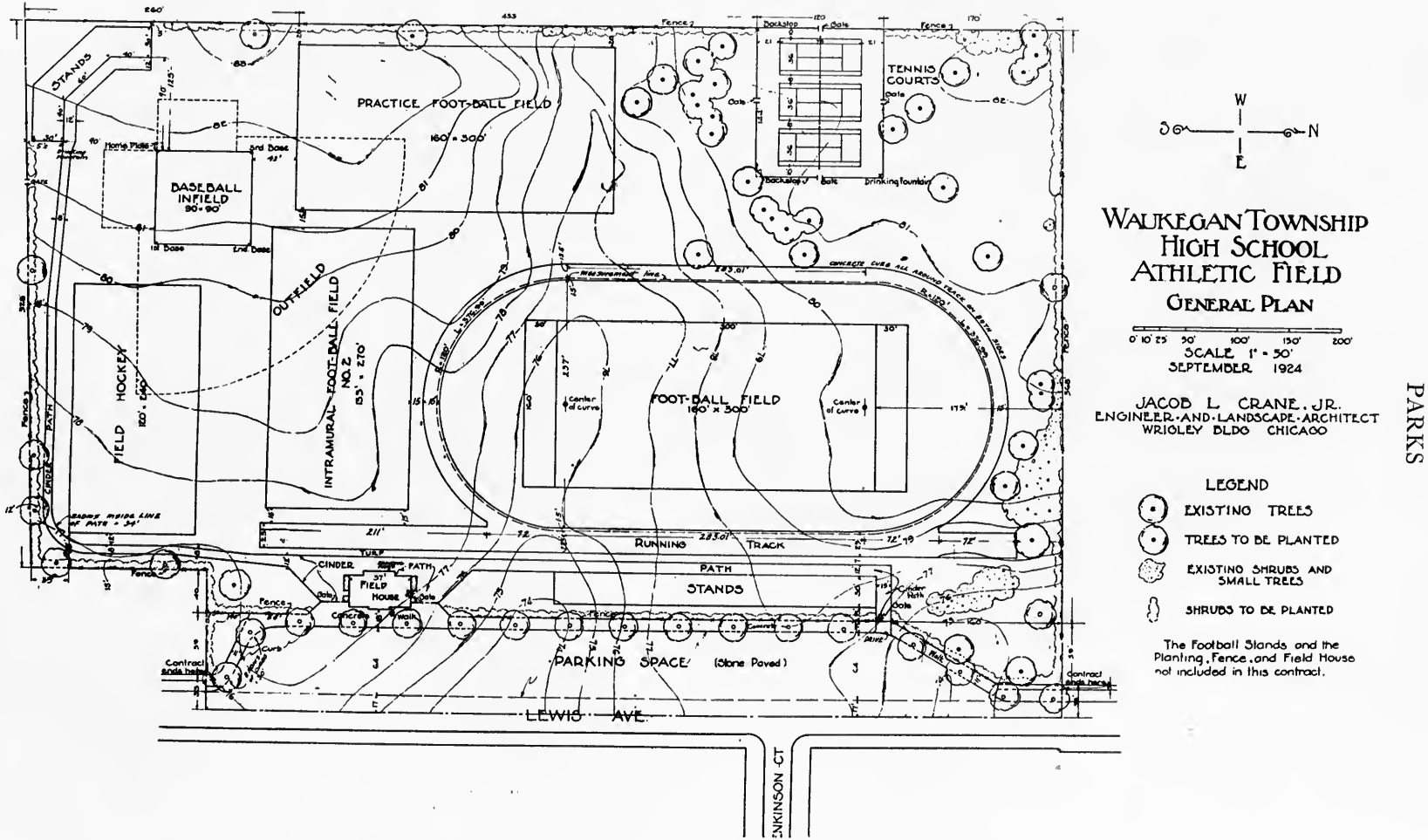


PLATE NO. 140. GENERAL PLAN OF FIELD, WAUKEGAN, ILLINOIS

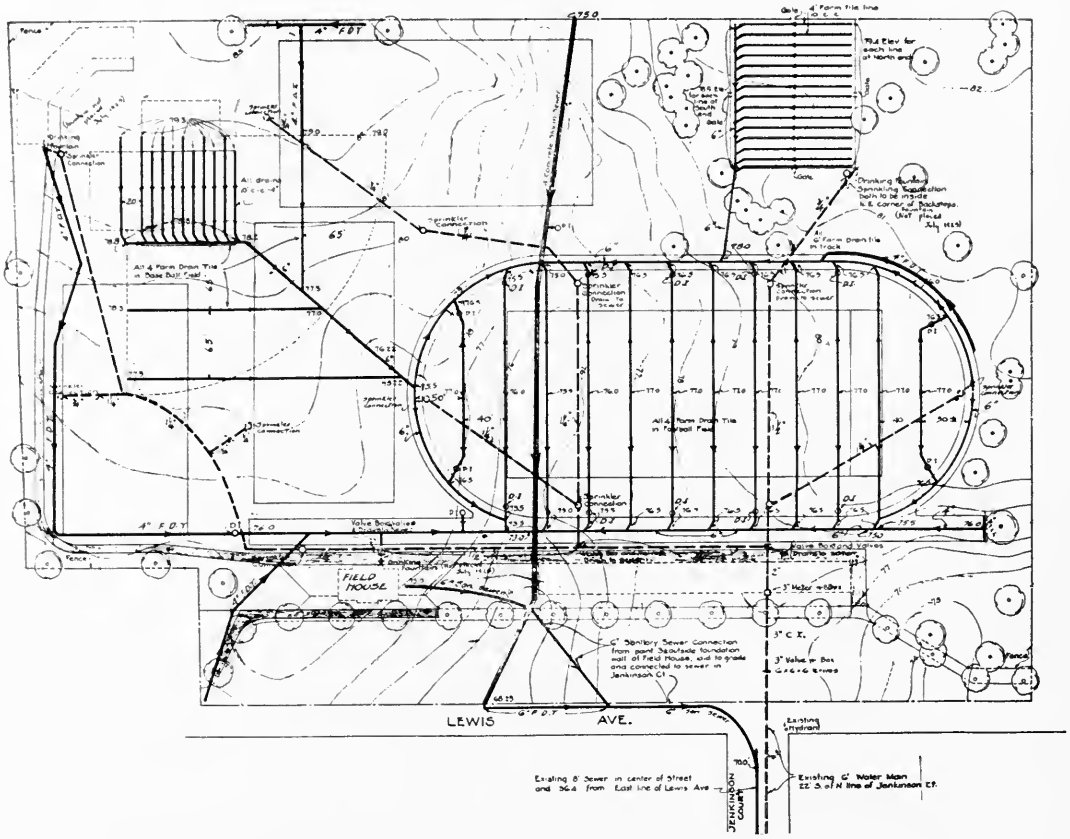


PLATE NO. 141. WATER AND SEWER PLAN, WAUKEGAN FIELD
——Drain Lines. O.D.I.—Drain Inlet. - - - - Water Lines.

The following diagrams of areas for a number of field events have been prepared by J. R. McConaghie, Landscape Architect.

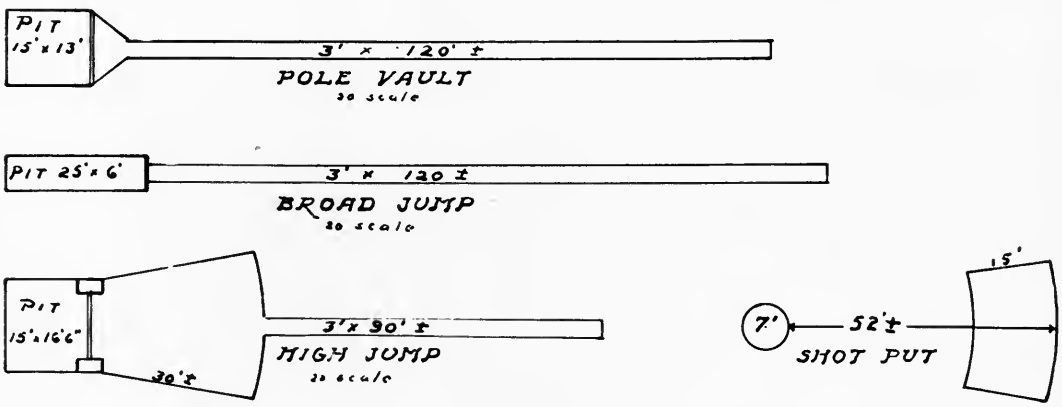


PLATE NO. 142

PARKING SPACE

In this day of keen interest in competitive games and sports, pageants, and other kinds of public activities which attract large crowds, provision

for parking motor vehicles adjacent to places of large assemblages has become a problem of major importance. In the construction of these places, drainage, grading to a reasonable level surface, and surfacing with gravel or asphalt are prime considerations. In the arid sections of the country it may be possible to use a turf-surfaced field and at certain seasons or times the same may be true in practically every section of the country. But on the whole, in all sections where there is liable to be considerable rainfall, the parking area should at least be covered with several inches of gravel.

Each of the ovals is approximately 60 x 210 feet, and is bordered by heavy boulders. The roadways between the ovals are 50 feet wide. Cars are parked perpendicular to the ovals. Roadways are surfaced with oiled gravel. Apparently the ovals are to be embellished with plantations and equipped with tables, water and some facilities for cooking. (See page 344.)

Construction of Pools[1]

Pools. The following pages of this chapter contain a discussion and illustrations and plans of various types of pools commonly found in parks and other recreation areas. Although the notes by Mr. Taylor pertain to various types of formal garden pools and informal pools and ponds, many

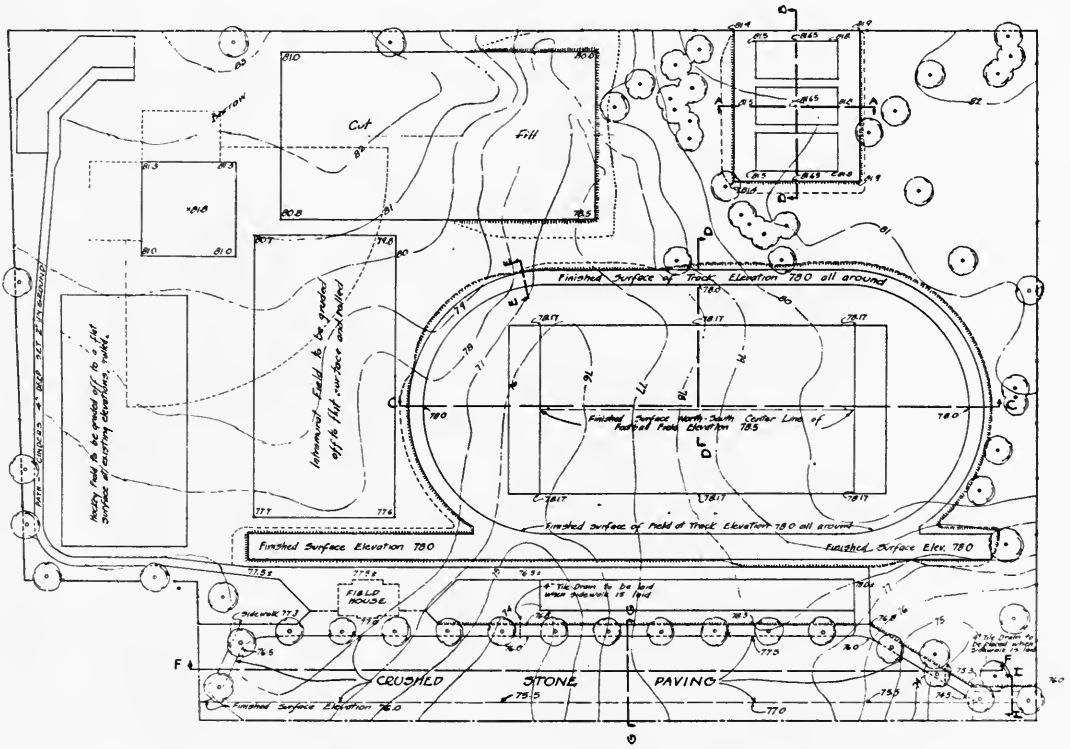


Plate No. 143. GRADING PLAN, WAUKEGAN FIELD

[1]Albert D. Taylor in *Landscape Architecture*, January 1924.

of the statements may be applied equally to pools intended primarily for wading and swimming.

General considerations. This discussion (with the exception of that portion relating to winter protection of pools) pertains specifically to the construction of various types of formal garden pools and informal pools and ponds. The problem of water supply should be thoroughly investigated as to the available quantity and the probable cost in order to be certain that the construction of any pool is practicable. In connection with larger pools, and especially pond areas which depend upon natural supply from springs or from surface drainage, there may be seasons of the year when, on account of the lack of adequate supply, the loss through excessive evaporation may create a stagnant and an unsanitary condition in any pool. Pools constructed where frost action is negligible, and especially in sandy soils, do not need the extent of drainage and reinforcing that is required elsewhere. It is very wise, however, in protecting any pool against action from frost, and especially under clay soil conditions, to provide a large factor of safety.

Bird baths, whether as shown on Plate 146, figure 1, or of the standard type, are usually constructed of concrete, or marble or other stone. Pools of the type shown on Plate 146, figures 1 and 2, are usually constructed of concrete (reinforced when under severe climatic and soil conditions). Such pools may be entirely of concrete or may be veneered on the inside of the pool with brick, stone or tile. Informal pools and pond areas, such as shown on Plate 146, figure 4, are usually constructed of concrete, reinforced where climatic conditions require this precaution. It is seldom that such pools of an informal character are veneered with any material.

Excavation for pools. The first step in the construction of any pool is to set stakes to indicate definitely the correct lines and grades for the location of the pool and for the proposed elevation at the top of the coping surrounding the pool. After stripping the topsoil over the site, the area of the pool should be carefully excavated to conform to the proposed lines of the finished subgrade as shown on Plate 146, figures 2, 3, 4. The depth of this excavation will vary with the water depth required in the proposed pool. The bottom of the side walls surrounding the pool should be below the line of normal frost action if permanent construction is desired. Oftentimes pools are constructed where this wall does not extend so deep, but this is not advisable. The area excavated for the pool should, in heavy clay soils and under severe climatic conditions, extend at least 10 to 12 inches beyond the outside face of the surrounding walls in order to allow for a proper back-fill of cinders to provide necessary drainage. The excavation for any pool should extend to a solid subgrade, and only in exceptional conditions

PLATE NO. 144

PARKING SPACE AT STADIUM, BROOKSIDE PARK, PASADENA, CALIFORNIA

Illustrating the extraordinary demand for parking space in connection with a facility which accommodates and attracts large crowds.

PLATE NO. 145

ILLUSTRATING THE PLAN OF LAYOUT OF PARKING SPACE, BROOKSIDE PARK, PASADENA, CALIFORNIA

should even a small portion of any pool extend over soil which has been recently filled or which is not thoroughly settled. The excavation for informal pool and pond areas which are to be lined with concrete on the bottom, should extend to the natural subsoil, thus removing all topsoil or soil with any root growth or humus contained in it.

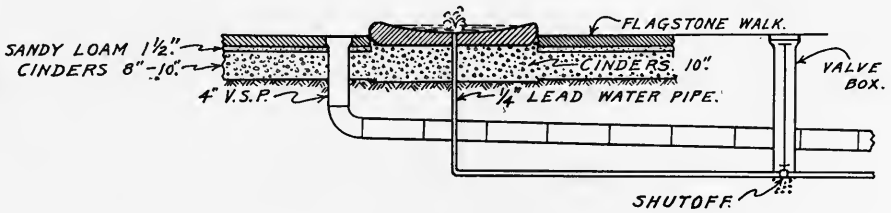
Drainage for pools. Drainage for pools is installed for two principal purposes: (1) To remove quickly all free surface water which might bring foreign material in suspension into the pool or which might cause undesirable soil conditions in the immediate area surrounding any pool (especially bird baths and small fountains). (2) To remove adequately all free water in the subsoil the accumulation of which under freezing temperatures might prove injurious to the bottom or to the walls of the pool.

When the coping is raised above the surrounding finished grade (Plate 146, figure 2, right) this surface drainage is not so essential. When the surface of the coping is flush with the surrounding finished grade (Plate 146, figure 2, left) it is very desirable that the surface water should be promptly removed. In the case of swimming pools where it is very necessary to keep all surface water away from the pool, a small gutter is often installed immediately behind the coping. In the case of formal garden pools where the surface of the coping is flush with the surface of the surrounding walk, the walk should be sloped slightly away from the pool in order to remove the surface water.

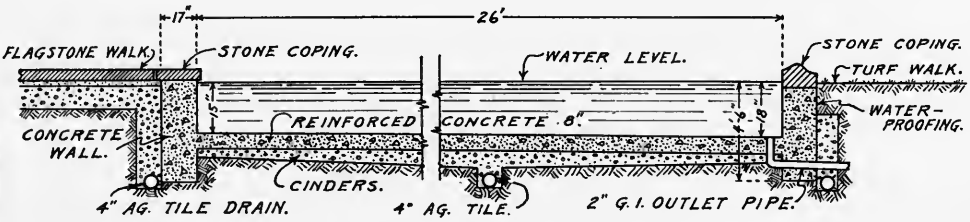
The area around bird baths (Plate 146, figure 1), due to the splashing of the water by the birds, often becomes soggy and soft unless a proper drain is installed to remove the surface water. The drainage necessary to remove the free subsoil water from the area under the bottom of any pool, and from the area immediately surrounding the walls, is provided as shown on Plate 146, figure 2. A four-inch agricultural tile drain should be installed at the base of, and immediately against the outside of the concrete wall surrounding any pool. This drain should be connected with some main drain which is easily accessible. This drain should have a fall of at least one-eighth to one-fourth inch per linear foot. The drain to remove water from the subsoil under the bottom of the pool should, in connection with the average small pool (ranging from 10 to 20 feet in width or diameter), be installed as shown on Plate 146, figure 2, and extend if possible parallel with the longest dimension of the pool. The subgrade should be sloped approximately one-eighth to one-fourth inch per foot toward the drain to prevent accumulation of free water.

Water supply. The problem of installing pipes for supply and control of water for any pool is illustrated on Plate 146, figure 1, and on Plate 147,[1]

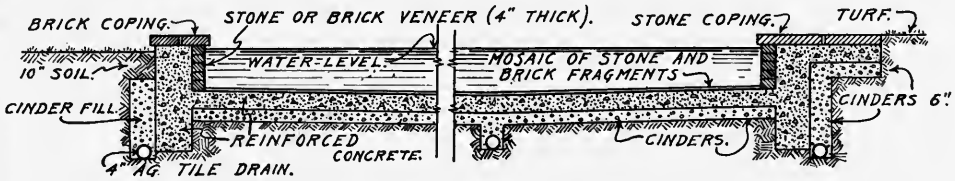
[1] See also the article "Landscape Architecture Pool Control," by Robert Wheelwright, in *Landscape Architecture*, July 1920.



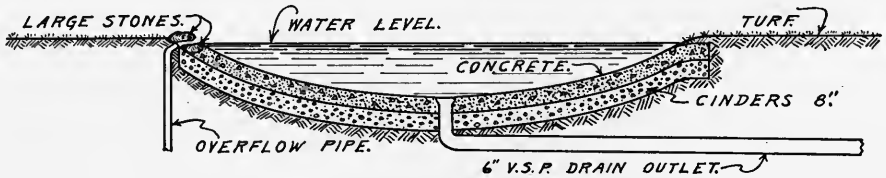
BIRD BATH.
FIG. 1.



CONCRETE POOL.
FIG. 2.



CONCRETE POOL VENEERED WITH STONE OR BRICK.
FIG. 3.



INFORMAL POOL.
FIG. 4.

GARDEN POOLS.

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CLEVELAND, O. DEC. 10, 1923.

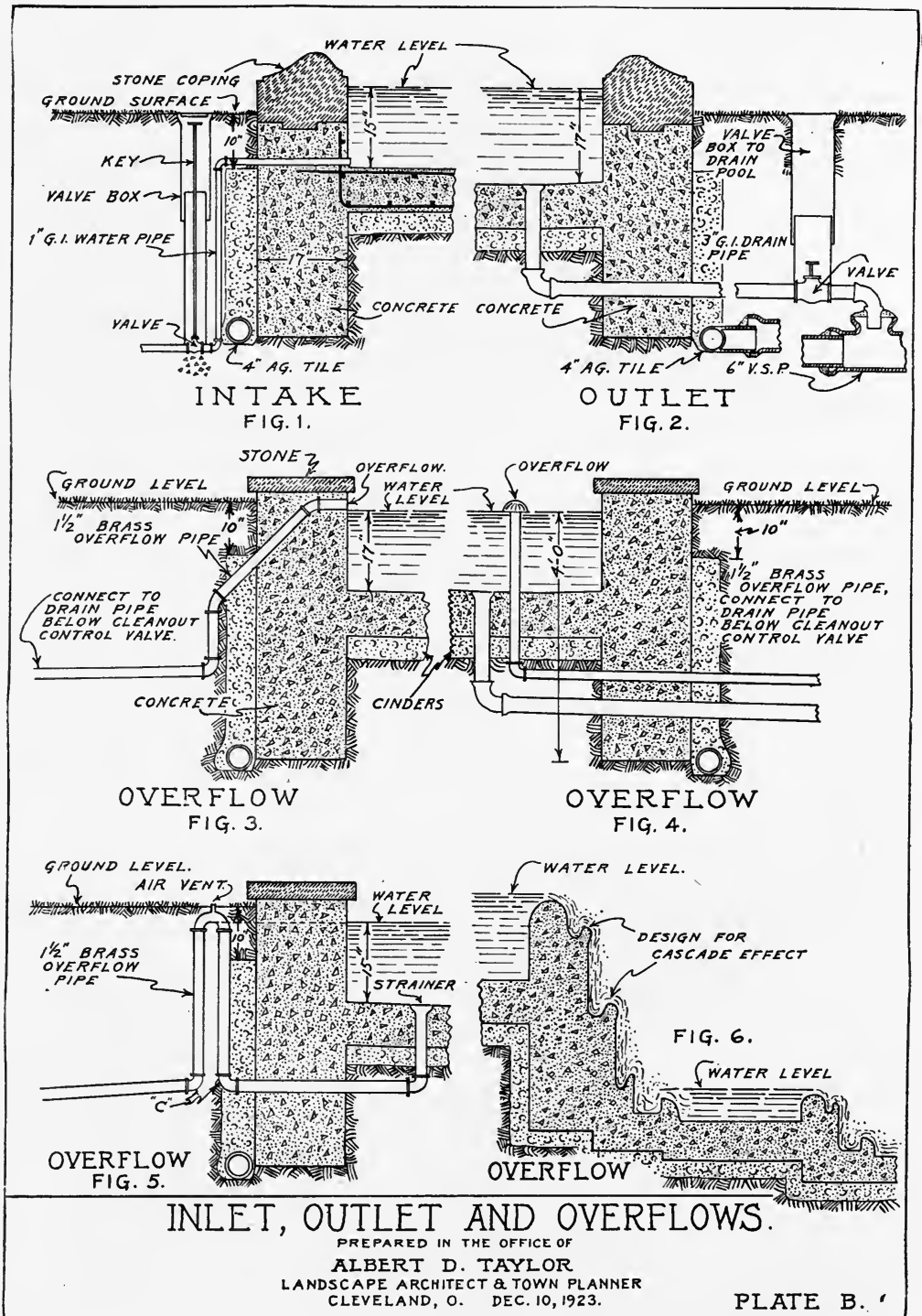
PLATE A.

figure 1. Water is often brought into the pool through various types of fountain arrangements located either at the end or at the center of the pool. The two important points to be kept in mind in the installation of water supply for pools are: (1) To provide a pipe of adequate size so that under the normal available pressure a sufficient supply of water can be easily obtained. (2) To arrange so that during freezing weather the water supply may be so shut off that those pipes containing water will still be below the line of normal frost action. (Plate 146, figure 1, and Plate 147, figure 1.)

Where limited supply of water is available it sometimes is advisable and economical to install an automatic electric pump in order to recirculate the water in the pool through some desired type of fountain. The pipes for water supply as well as the pipes for drainage should be completely installed, with the exception of nozzles or finished fountain features, before any cinder foundation or concrete foundation is put in place. Under no conditions should any cinders, used in the area surrounding the pool or under the pool, be allowed to come in direct contact with any water pipes. Whenever iron water pipes pass through a fill of cinders such pipes should be protected by a sleeve of terra cotta or tile.

Cinder foundation under pool. Whenever pools are constructed where there is no frost or in a sandy and well-drained soil, the cinder foundation under the pool and the cinder fill around the outside of the pool walls may be eliminated. Where frost action is severe and where the pool is constructed in a natural clay soil not easily drained it is very necessary to install a layer of cinders from four to eight inches in depth under the bottom of the pool (see Plate 146, figures 1 to 4). It is also necessary to install a layer of cinders from four to six inches in thickness entirely surrounding the pool as shown on Plate 146, figures 2 and 3, and Plate 147, figures 1 to 4. These cinders should preferably be screened in order to be free from ashes. The layer of cinders placed over the subgrade under the bottom of the pool should be thoroughly wet and tamped before the forms are built or any concrete put in place. The cinders around the walls of the pool should be put in place and thoroughly tamped in layers not exceeding six inches in depth after the forms have been removed.

Constructing floor and walls of pool. Under severe climatic and soil conditions the bottom or floor of all pools should preferably be reinforced with $\frac{3}{8}$-inch rods, 18 inches on center at the top of the floor, and 12 inches on center at the bottom of the floor. The bottom rods should be turned up into the inside face of the side walls. These rods should be at least two inches from the upper or lower face of the floor. The bottom rods should



INLET, OUTLET AND OVERFLOWS.

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CLEVELAND, O. DEC. 10, 1923.

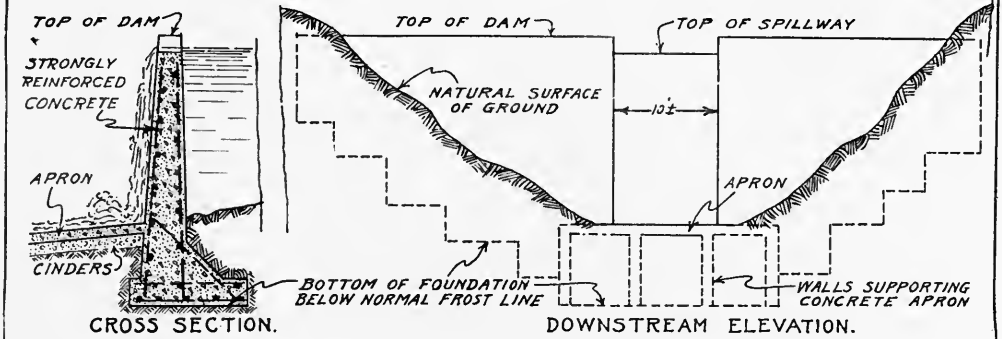
PLATE B.

extend in a direction perpendicular to the direction of the rods at the top of the floor. The depth of the concrete in the floor should approximate eight inches. The thickness of the side walls if reinforced will approximate 12 inches. If these side walls are not reinforced the thickness will approximate from 14 to 17 inches and may be affected by the width of the proposed coping. If the pool is more than three feet in depth it will probably become necessary to reinforce the side walls, otherwise in shallow pools, used mainly for reflection purposes, it is not necessary to reinforce the concrete.

The mixture for concrete should be one part cement, two parts sand and three parts screened gravel or crushed stone. In connection with shallow pools where the surrounding soil is of a sufficient texture to support itself in a vertical position, the natural soil may sometimes be used as a substitute for any outside form. Specially constructed forms will be necessary if any drainage of the surrounding soil is necessary. The problem of constructing forms for the inner face of walls is important. It is often necessary, especially where it is practicable to pour the bottom and the walls as a unit, to suspend the forms for the inside surface of the walls. Wherever the inside surface of the pool is to be veneered with any material such as stone, brick or tile it is quite necessary to place small ties in the inside face of the concrete wall in order to hold the veneering in place. This is not essential on the bottom of the pool. The use of any material to veneer the inner surface of the pool does not reduce the thickness of the proposed concrete walls.

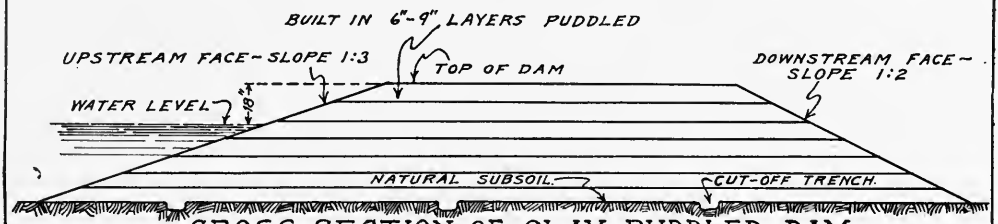
Coping. The coping may be installed as shown in the drawings accompanying this discussion. The two important points to be considered in the proper construction of the coping are: (1) To provide dowels for holding the coping permanently in place. (2) Wherever the coping overhangs the outer face of the wall a cinder fill should be provided so that the vertical action of frost will not dislodge the coping.

Outlets and overflows for pools. On Plate 147, figures 2 to 6, are shown various types of outlets and overflows for garden pools. The first principle of a correct overflow is that the overflow should remove the water from the surface instead of from the bottom of the pool in order thus to remove constantly a certain proportion of the dust and dirt which must collect on the surface water of any pool. (See Plate 147, figures 3 and 4.) The type of overflow shown on Plate 147, figure 5, is not desirable because it removes the water only from the bottom of the pool and thus it becomes necessary to clean the surface of the pool either by draining the pool entirely or by removing the scum of dust and dirt through other artificial methods. This type of overflow (Plate 147, figure 5) should always be provided with

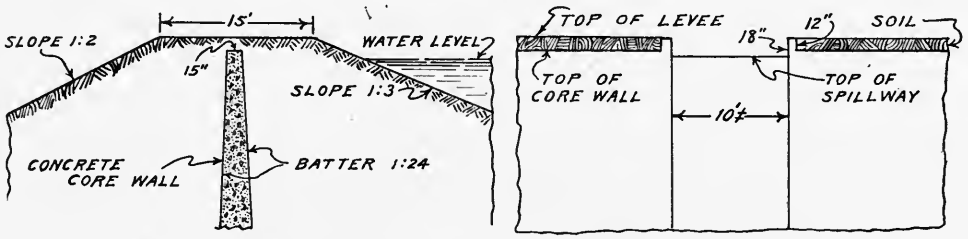


CROSS SECTION. DOWNSTREAM ELEVATION.

CONCRETE DAM.
FIG. 1.



CROSS SECTION OF CLAY PUDDLED DAM.
FIG. 2.



TRANSVERSE SECTION FIG. 3. LONGITUDINAL SECTION

CONCRETE CORE WALL.

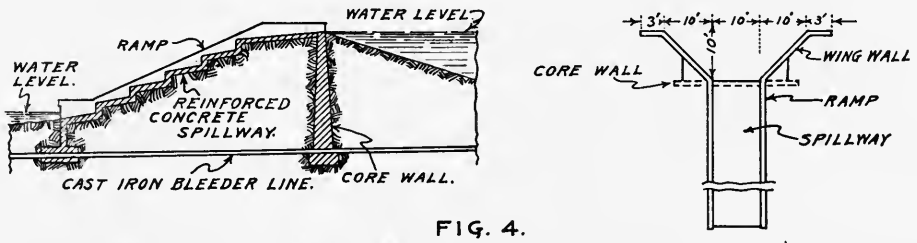


FIG. 4.

SECTION THRU SPILLWAY. PLAN OF SPILLWAY.

DETAILS OF SPILLWAY.

DAMS AND SPILLWAYS.

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CLEVELAND, O. DEC. 10, 1923.

PLATE C.

an air vent, otherwise the overflow becomes a siphon and will remove the entire contents of the pool. This type of overflow is desirable where the U-shaped portion of the pipes can be installed in a specially constructed pit and revolved on the joints at points "C" in order thus to control the depth of the water in the pool at certain times when the pool may be used for wading purposes by small children.

All outlets should be provided with a proper strainer in order to prevent large particles of foreign material entering and clogging the pipes. The outlet for completely draining the pool should be located at the lowest point at the bottom of the pool and connected with main drainage lines as shown in figures 2 and 4 on Plate 147. If in connection with the overflow from any pool where the supply of water is extremely limited it is desired to get considerable action and a small cascade effect, the type of overflow shown on Plate 147, figure 6, is very desirable.

Dams and spillways. Dams for informal pool and pond areas may be constructed in one of three ways as shown on Plate 148. (1) Complete reinforced concrete dam (Plate 148, figure 1). (2) Dam constructed of clay properly puddled and provided with a concrete spillway (Plate 148, figures 2, 5 and 6). (3) Earth dam provided with a concrete core wall and also provided with a concrete spillway (Plate 148, figures 3 to 6).

The type of concrete dam in figure 1 is constructed on the principles of the common practice in general engineering work. The type of clay puddled dam shown in figure 2, Plate 148, should be made permanent by a line of piles or by one or two cut-off trenches extending parallel with the long axis of the dam. Such a dam is constructed by using natural heavy clay in layers not exceeding eight to nine inches in depth. Each layer is distributed beginning at the point nearest to the borrow pit. The surface of the layer is first carefully gone over with a disk harrow and then thoroughly soaked with water. On the succeeding day the next layer is put in place, using a similar process, and this is continued until the full height of the dam is complete. Both the upstream face of the dam and the downstream face are then carefully graded on a proper slope. (See Plate 148, figure 2.)

Winter protection of pools. Winter protection is important in connection with the maintenance of any pool. The author believes that one of three ways as shown on Plate 149 is desirable. The following are the three ways: (1) (See Plate 149, figure 1.) To construct a complete roof over the entire surface of the pool. This roof to be made in sections easily removed and adapted for storage in any available place. The edge of the roof should extend beyond the outer edge of the coping. (2) (See Plate 149, figure 2.) To erect within the pool a series of two by fours between which may be

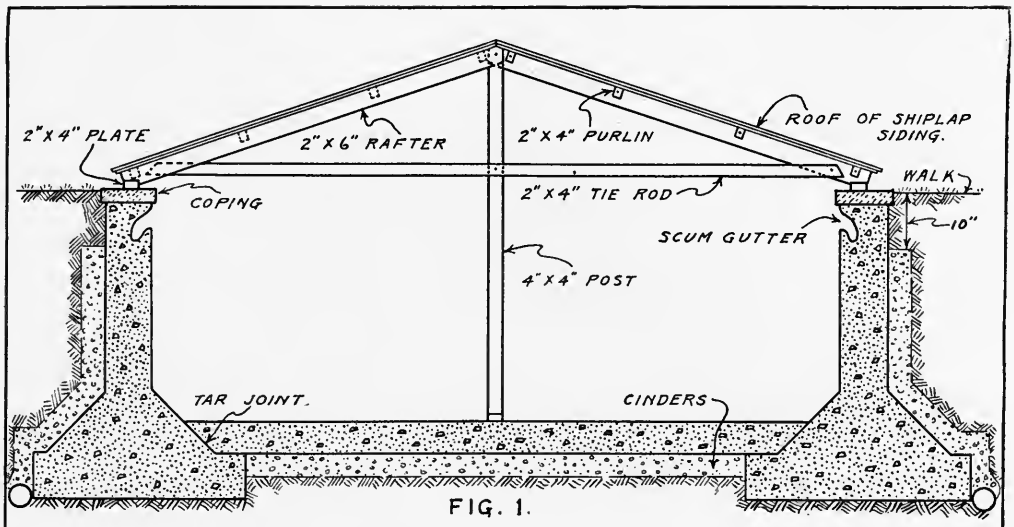

FIG. 1.

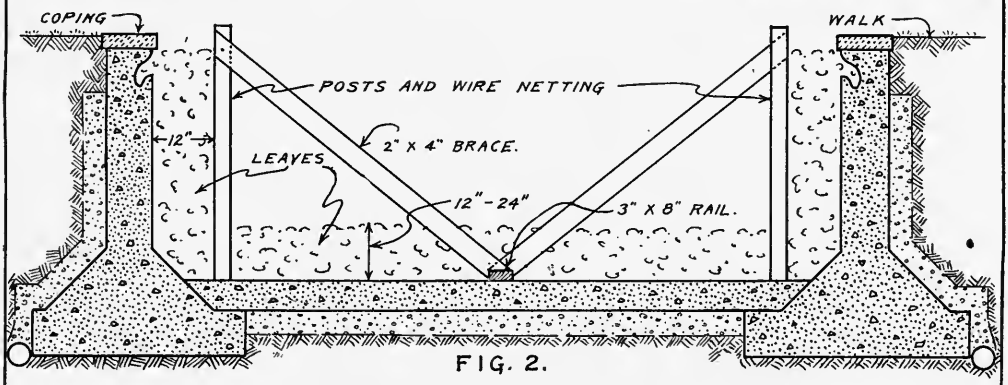

FIG. 2.

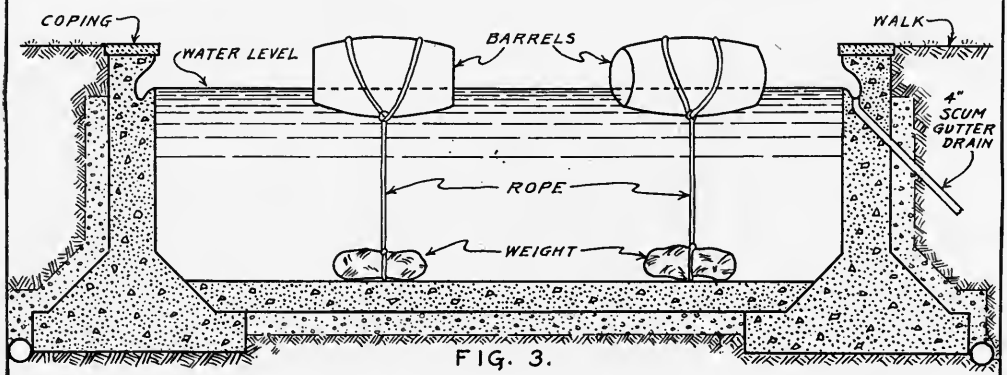

FIG. 3.

WINTER PROTECTION FOR POOLS.

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PLATE D.

PLATE NO. 149

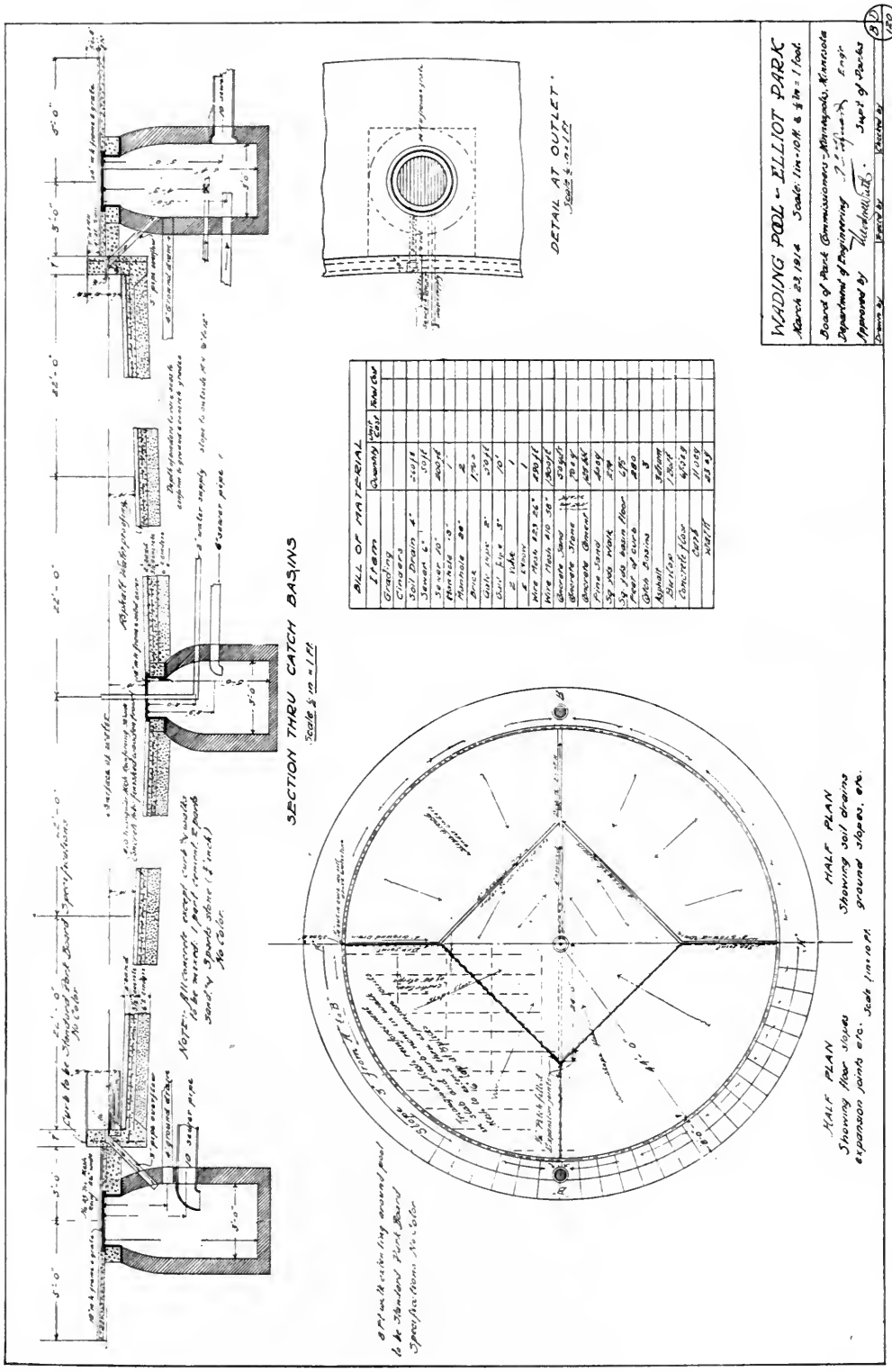


PLATE No. 150. WADING POOL, ELLIOT PARK, MINNEAPOLIS

This is a large and well constructed pool, with curb and surrounding walk provided with drains.

extended either wire netting or individual wires which will serve to hold in place a layer of cornstalks or hay or leaves. The bottom of the pool should be covered with a layer of leaves or hay. If the inner surface of the pool is tile lined, then to prevent the staining of the tile, it is sometimes

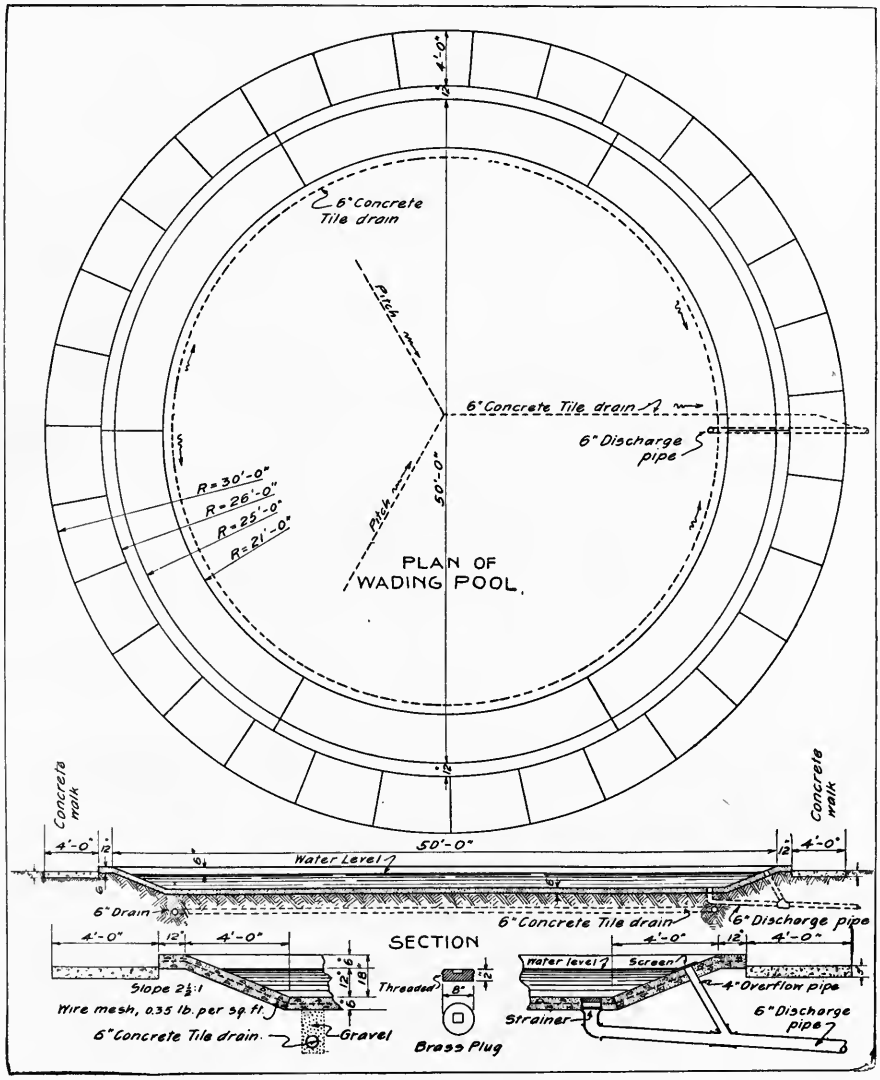


PLATE NO. 151. SUGGESTED DESIGN FOR CONCRETE WADING POOL
(Used through the courtesy of the Portland Cement Association.)

A suggested design for a wading pool is shown on this page. As planned, the maximum depth of water is uniformly 12 inches. This maximum can be decreased if desirable by placing the outlet lower, thus lowering the water level correspondingly. This pool has an over-all diameter of 50 feet. A sloping pavement permits easy entrance to the water. The construction throughout should be of 1:2:3 concrete, mixed and otherwise handled as recommended in the construction of swimming pools. On account of the sloping sides of the pool formed by the slabs that constitute its rim, there is little or no possibility of the pool being injured by allowing the water to freeze. For this reason the pool will form a safe skating pond during the winter months. An approximate estimate of the materials necessary to construct a wading pool of this plan and dimensions is as follows: Portland cement, 91 barrels; sand, 27 cubic yards; pebbles or broken stone, 41 cubic yards; reinforcement, 735 pounds of wire fabric (0.35 pound per square foot); concrete tile, 190 feet of six-inch.

desirable to use roofing paper or other paper which will prevent free water from coming in contact with the surface of the tile. (3) (See Plate 149, figure 3.) It may be desirable to leave the water, during the winter, within a deep pool. On the theory that water increases approximately one-eleventh of its volume when transformed into ice it then becomes advisable to anchor barrels or other similar materials on the surface of the pool. During periods of freezing conditions the ice will, under this arrangement, have a tendency to heave, and thus the lateral pressure on the walls of the pool will be greatly reduced.

The main object in the protection of any pool is not to prevent the walls from being subject to freezing conditions, but to prevent the sudden changes of temperature within the area of the pool. These sudden changes of temperature have a tendency to create conditions of expansion and contraction which may prove extremely dangerous to the concrete in the walls and bottom of the pool.

It is further very desirable to keep outlet drains of any pool open during the entire winter. If a quantity of water is allowed to enter the

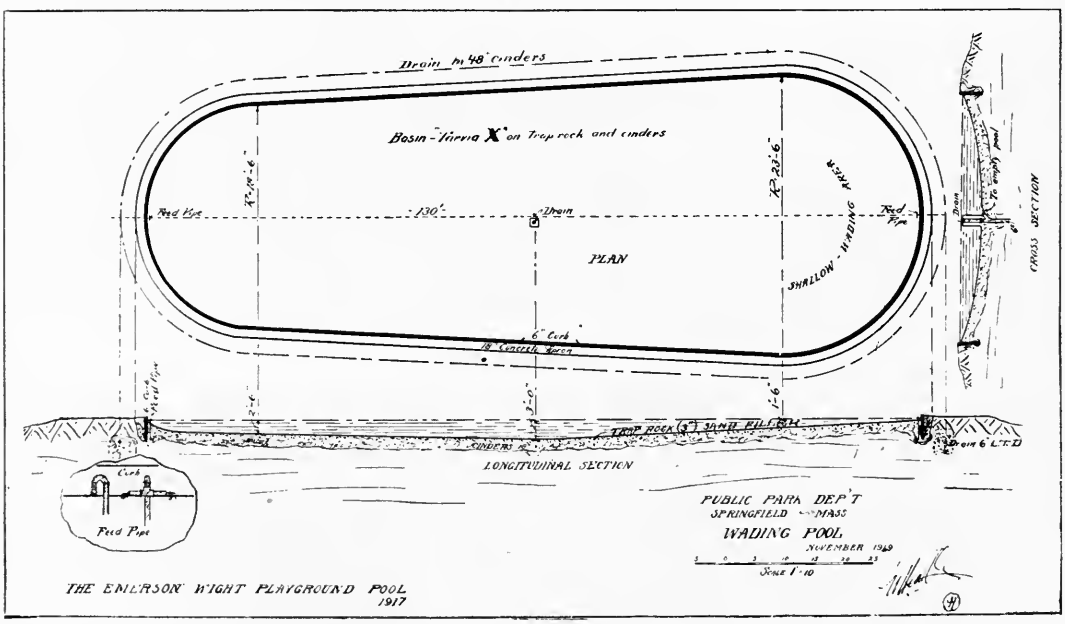


PLATE NO. 152

PLAN OF WADING POOL, EMERSON WIGHT PLAYGROUND, SPRINGFIELD, MASSACHUSETTS

This pool was constructed in 1917 at a cost of $1,200, all labor and supervision having been furnished by the Springfield Park Department. The 16-inch curb surrounding the pool extends six inches above the water line, and there is an 18-inch surrounding apron sloping two inches from the curb. The basin consists of two inches of trap rock, spaces between which are filled with sand, and which has a gallon of Tarvia X per square yard of surface, making a three-inch impervious bottom. The feed pipes are one inch in diameter. Around the pool is a six-inch pipe drain laid in 48 inches of cinders at a depth of five feet below the curb. The purpose of this is to prevent outside water from reaching the pool bottom. In the central pedestal six inches below the level of the curb, is a drain outlet, and a clean-out drain is placed at the base of the pedestal in a bowl-like depression three inches lower than the pool bottom. Since the maximum depth of this pool is three feet, it is really a wading-swimming pool.

pool from frequent rains during the winter it is also desirable to cover this outlet with a box arrangement so that any free water will be drained through a mass of salt, thus creating a saline solution. This will often prevent any ice forming over the drain outlet.

Cost Data

Clay lining for lily pond. This pond was long, narrow, irregular and about 90 square yards in extent. Some large stones were embedded in the bank after a layer of clay was placed. This layer was four inches thick after compacting. All work was hand labor and the materials were mixed dry in batches of one-half cubic yard on a platform 10 x 14 feet.

Item	*Hours per cubic yard*	*Hours per square yard*
Screening gravel twice	2	.2
Breaking up and screening clay	3	.3
Mixing clay, sand and gravel	1	.1
Wheeling and spreading	1	.1
Wetting and ramming	1	.1
Total	8	.8

Where a job was about 900 square yards in area and teams could be used the cost was as follows:

Item	*Hours per cubic yard*	*Hours per square yard*
Wheeling and spreading by hand	1	.111
Mixing by harrowing (two-horse teams)	.25	.028
Wetting, including laying and removing temporary pipe (160 feet)	.25	.028
Rolling with two-horse sectional roller (weight 3,400 pounds)	.25	.028
Total man hours	1.25	.139
Total team hours	.50	.056

Tile setting for pool linings. The following figures are for setting tiles on the walls and floor of an ordinary pool after a scratch coat has been applied and the surface trued up to receive the tile. Each tile setter has one helper and the tile must be unpacked and alongside the job.

Item	*Size of tile*	*Labor hours per square foot* *Tile setter*	*Helper*
Grueby faience in a repeating design and 3 or 4 shades	4 x 4 inches		
Curved walls		.4	.4
Straight walls		.2	.2
Floor		.08	.08
Grueby faience, one color	4 x 4 inches		
Curved walls		.264	.264
Straight walls		.132	.132
Floor		.053	.053
Ceramic tile	¾ to 1 inch square		
Straight walls		.16	.16
Floor		.05	.05
Ceramic tile	hex. ¾ to 1 inch		
Straight walls		.16	.16
Floor		.04	.04

Wading pools. Most wading pools on playgrounds vary in depth from zero at the shallow end or edge to eighteen or twenty-four inches at the deepest point. The size depends largely upon the area of the playground

and the number of children served. A circular pool of fifty feet diameter is a good size for the average playground. Most concrete pools are either rectangular or circular in shape, but a pool which follows the natural contours of an uneven area is more interesting and attractive, especially in a park. In the wading pool recently constructed in one of the Westchester County parks the bottom of the pool and the surrounding walk were sprinkled with small rounded pebbles soon after the concrete was poured. It is believed that the pebbles will prevent the children from slipping on the wet concrete. It is desirable to have a concrete walk around the pool to lessen the amount of dirt carried into it. If the walk is provided with drains, as in the pool on page 353, the muddy surface which surrounds so many wading pools can be avoided. One or more sand courts are frequently constructed close to the wading pool. Frequently wading pools are constructed adjacent to a swimming pool as a part of a swimming center plan.

PLATE NO. 153.[1]
AN ATTRACTIVE WADING POOL
IN A KANSAS CITY, MISSOURI PARK

PLATE NO. 154[1]
A TOY SEA FOR TOY SHIPS IN ONE OF THE
MINOT, NORTH DAKOTA, PARKS

Wading-swimming pools. In a number of cities, especially where outdoor swimming facilities are lacking or limited, wading pools have been constructed which have a section of sufficient depth to permit swimming. The depth of these pools generally slopes from about six to thirty-six or forty-two inches. Many park and recreation officials are

[1] These illustrations are used through the courtesy of the Portland Cement Association.

opposed to this type of pool, because of the problems of sanitation and administration which they develop. When filled, a pool of this sort must have constant supervision to ensure the children's safety. A bathhouse for changing of clothes, and equipped with showers, should be provided, and the same provisions should be taken for keeping the water pure as in the case of swimming pools. The cost of changing the water and fencing the pool area is another factor which must be considered.

In some cities the problem of providing wading-swimming pools is solved by having a pool of comparatively uniform depth, for example, three feet. The pool may be filled during part of the day for use as a swimming pool, after which the water is lowered to a depth of twelve to eighteen inches, when it is used by the small children for wading. This arrangement overcomes some of the objections to the type of pool described above, but it is not an ideal one. Because the wading-swimming pool has been used in many cities, it is given a place in this chapter, but the problems such a pool presents should be considered carefully before this feature is included in a park or playground.

Swimming pools. The problems involved in the design and construction of swimming centers are so many and varied that it will be impossible to enter into an intensive consideration of the subject in this manual. Among these problems, which vary with each individual pool, are layout, structural design, waterproofing, plumbing and mechanical equipment, fin-

PLATE No. 155.[1] ILLUSTRATING A TYPE OF WADING-SWIMMING POOL FOR CHILDREN (Used extensively in the system of children's playgrounds, Park and Recreation Department, Dallas, Texas.)

[1] Used through the courtesy of the Portland Cement Association.

ishing and decorating. The following statement concerning the nature of these problems was prepared by the Hasbrouck Company, swimming pool engineers and contractors, of New York:

"First there is the problem of planning the layout. The pool must be properly located in regard to other parts of the building or grounds, and in regard to structural conditions. Dressing rooms, shower baths, rest rooms, toilets, Turkish baths, galleries for spectators and such other conveniences as are desired must be properly grouped around the pool. The size and depth of the pool itself are important considerations; in many cases the A. A. U. and Intercollegiate swimming rules must be taken into account. The second group of problems is structural. Supports for the pool must be provided. The strength of the walls of the pool must be calculated. Usually these walls are built of reinforced concrete, but in many locations steel tanks lined with concrete may be necessary, and here experience must dictate. Closely allied to the structural problem is the problem of waterproofing. There are many methods of providing against leakage. In some cases the concrete shell is covered with a waterproofing membrane, and this in turn is covered with concrete waterproofed integrally. Occasionally the integral method alone is sufficient. On work below the ground level, pressure

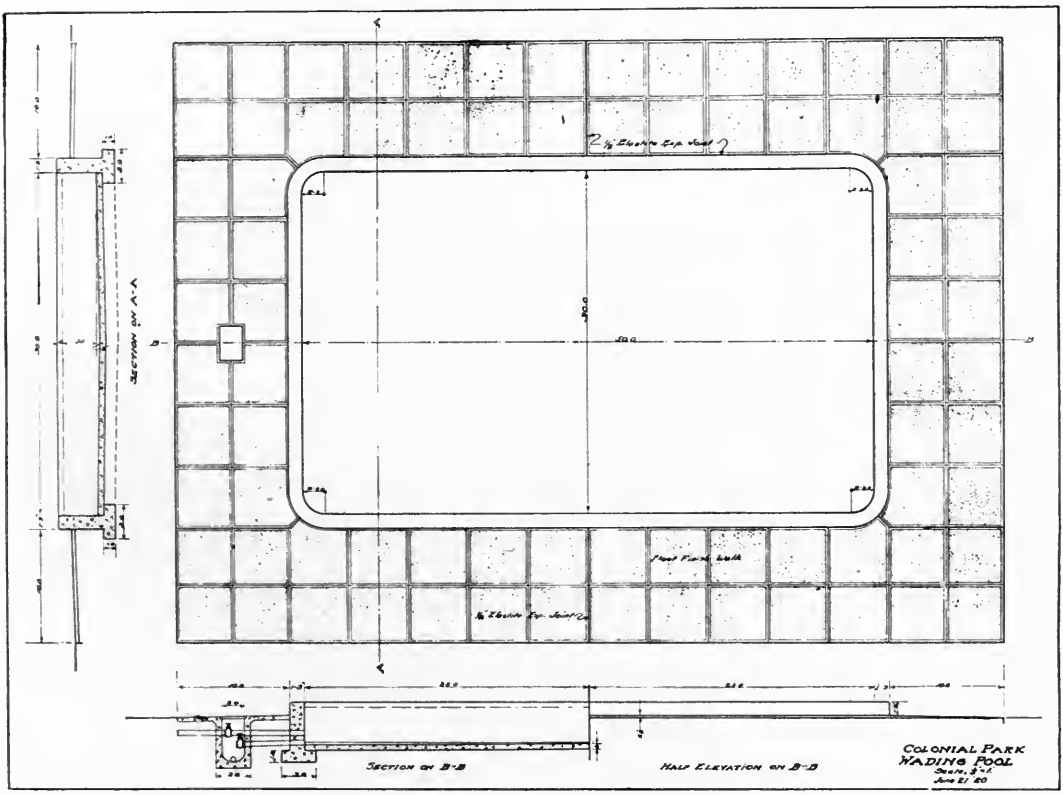


PLATE NO. 156

PLAN OF WADING-SWIMMING POOL USED IN THE PLAYGROUNDS OF DALLAS, TEXAS

The cost of these pools ranges from $2,500 to $4,500, depending on soil and building conditions.

plays an important part; in addition to keeping the tank water in, seepage water must be kept out. Architects without previous experience in waterproofing this type of work have difficulty in providing for all these considerations, which may result in a failure. The fourth problem is that of mechanical equipment. Water for the pool must be supplied, heated, sterilized, drained and recirculated. Owing to the complexity of the necessary equipment and to the fact that it must stand up under constant service, it should be designed and specified by engineers who are familiar with this type of work."

Swimming Pool Construction[1]

This article deals chiefly with the construction of an outdoor pool of reinforced concrete, designed especially to meet the demands of large attendance and at the same time to provide amply for conducting simultaneously a number of forms of aquatic activity. While economy in construction and operation are given careful consideration, none of the sanitary features necessary in a modern pool are omitted. The specifications here outlined were included in the design of a municipal pool for Fort Worth, Texas. Following are the main features and the reasons for including them:

1. Rectangular shape. Advantages: Uniform starts and turns for swimming events. Regulation field play for water polo, water basket ball, etc.

2. Size 75 x 200 feet. Advantages: (*a*) Width, being a multiple of five, provides 15 swimming lanes of regulation five-foot width, but is still narrow enough to ensure safety if the depths here given are used. (*b*) Length pro-

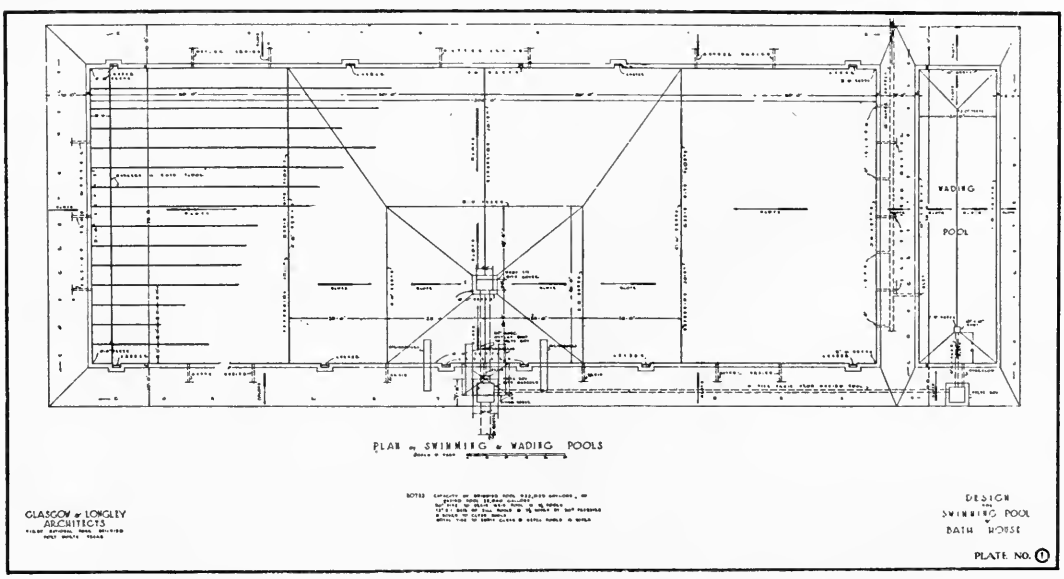


Plate No. 157. PLAN OF SWIMMING AND WADING POOLS

[1] By W. C. Batchelor, Superintendent of Recreation, Pittsburg, Pa. The plans used in this statement were prepared by Glasgow & Longley, Architects, of Fort Worth, Texas. Reprinted in part from *The American City*, April 1926. Copyright, 1926, by W. C. Batchelor. Drawings copyright, 1926, by Glasgow & Longley.

vides flying finish for all standard distances. (*c*) General size. A pool of this size, with the depths as indicated, solves the problem of conducting all the common forms of organized aquatic activity without interfering with the general use of the pool by those not enrolled in these organized groups.

3. Depths. Minimum depth of three and one-half feet at each end gradually sloping to a depth of five feet at a distance of 75 feet from each end. Area 40 x 50 feet at one side of the remaining 50-foot section with sharp slope from depth of five feet to maximum depth of 10 feet at sump 17½ feet from edge. Gradual slope from four and one-half-foot depth at opposite side of pool to five-foot depth at edge of this 40 x 50-foot deep area. Advantages: (*a*) Eighty-seven per cent of pool area is between three and one-half and five feet in depth and thus available for non-swimmers, beginners, and fair swimmers. (*b*) Area at one end, 50 x 75 feet, with depth from three and one-half to four and one-half feet (considered ideal depth for instruction and for beginners) will accommodate a class of maximum size (100 or more). An area of equal size and depth is available at the opposite end for free use. An area 50 x 75 feet, that is, one-half of the remaining center section, which is 100 x 75 feet, is sufficient for water polo or water basket ball (played across pool), while the other half of this section is available for the free use of swimmers and divers. A class in life-saving or the coaching of a swimming team could also be conducted and still provide ample opportunity for free use of this section of the pool. (*c*) Three and one-half-foot depth at ends is accepted by the A. A. U., the N. C. A. and the N. A. A. F. as sufficient for swimming starts and turns. (*d*) The

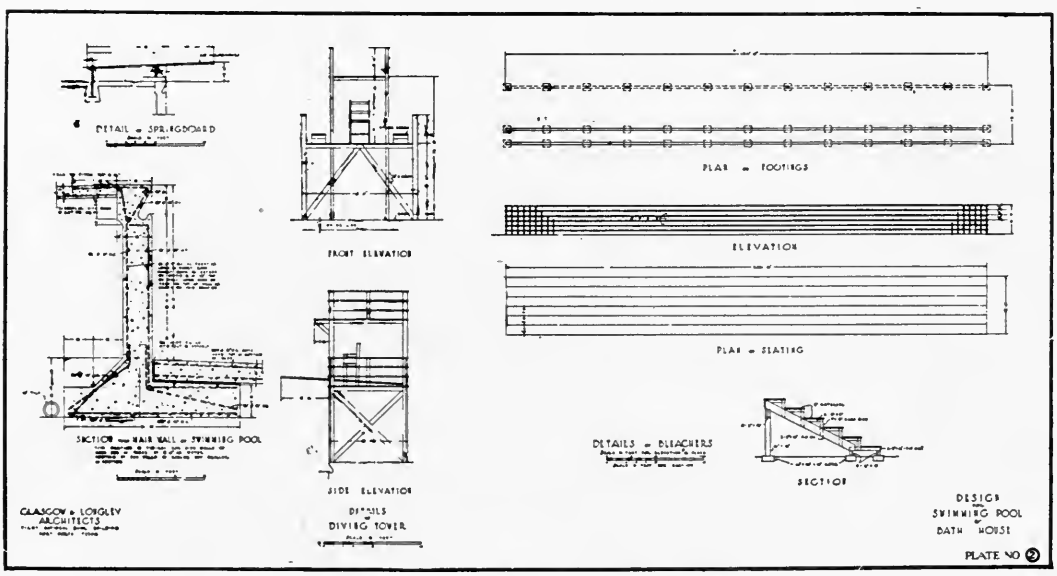


PLATE NO. 158. CONSTRUCTION DETAILS

five-foot maximum depth at any edge makes it impossible for a person to enter deep water except from springboards, but still gives sufficient depth for diving from edge. (*e*) The deep area is sufficient to accommodate divers from the four springboards and diving tower. Except for the purpose of diving, a few aquatic games and practice in life-saving, deep water has little utility, and, when sufficient areas at depths less than five feet are provided, is used very little. (*f*) Except in depths greater than five feet, slope of bottom is nowhere more than two per cent, thus eliminating all cause for slipping from this source. This slope is still sufficient to afford good drainage in cleaning bottom of pool. (*g*) With the entire area, 15,000 square feet, deep enough for swimming, and 87 per cent of it less than five feet in depth, the maximum of utility in proportion to water volume is secured.

4. Depths marked with 10-inch numerals of brass or mosaic tile at 12 points on edge of runway surrounding pool. Advantages: Shallow depth of greater area of pool makes it more important to place depth markings so as to be readily seen by persons approaching pool than in edge above scum gutter for information of those in the water, as is customary in the old-style pool.

5. On diving tower which is located adjacent to deep area, sign is placed reading as follows: "Seventeen and one-half feet from edge of pool opposite tower, water is 10 feet deep." At foot of each low springboard is sign reading: "Two feet from end of springboard water is seven feet deep." At each high springboard sign reads, "Five feet from end of springboard

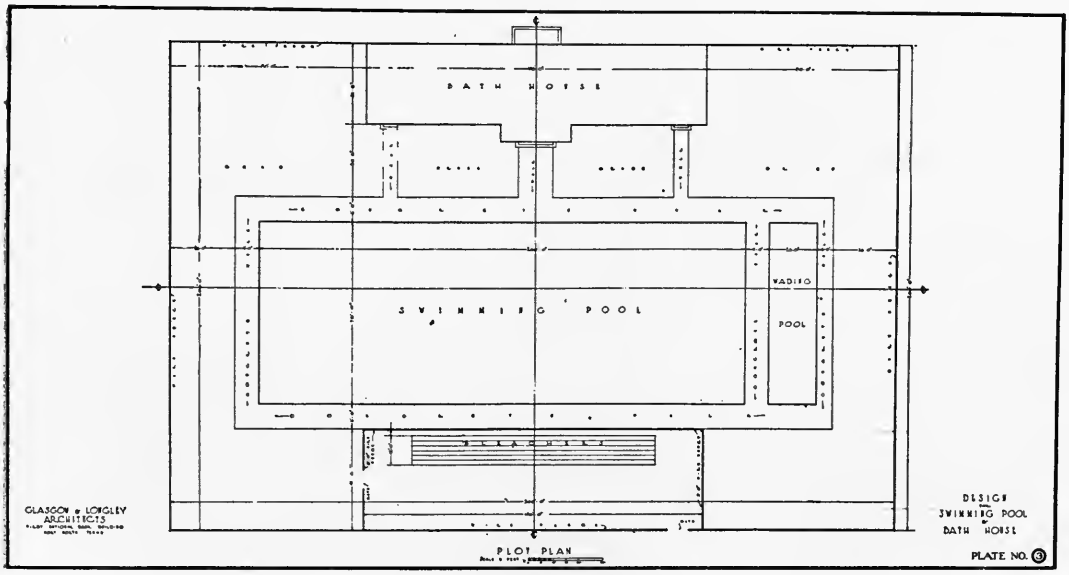


PLATE NO. 159. PLOT PLAN

water is eight feet deep." Advantages: With depth from edge varying, these signs, together with depth markings on edge, give adequate warning to divers.

6. Lines running entire length of pool at five-foot intervals across pool. These lines are four inches wide and start at upper edge of side of pool, continue to bottom, and end at edge at opposite end of pool. Lines on bottom to be of asphaltum set two inches in the concrete. Advantages: This is the standard method of minimizing interference in swimming races. The presence of lines is an incentive for swimmers to practice keeping eyes open under water and swimming in lanes or on lines. Asphaltum ensures permanency. Painted lines, while not permanent, would effect a saving of $300.

7. Lines across bottom of pool five feet from each end. No other cross-lines. Advantages: These act as a warning to swimmers approaching end of pool. Absence of other lines avoids the confusion caused when lines on bottom are used to mark distances.

8. Continuous scum gutter around entire pool, recessed in wall. Gutter to be broad and deep, and cross section a continuous curve. Advantages: Gutter around entire pool gives maximum of surface sanitation and provides handrail at all points. Broad, deep gutter prevents back splash into pool, and continuous curve facilitates cleaning.

9. All ladders at sides of pool. Advantage: Leaves ends unobstructed for swimming competition.

10. Ladders recessed flush with side of pool. Advantage: Eliminates all danger to swimmers from this source, and entire 15 lanes are clear of obstructions.

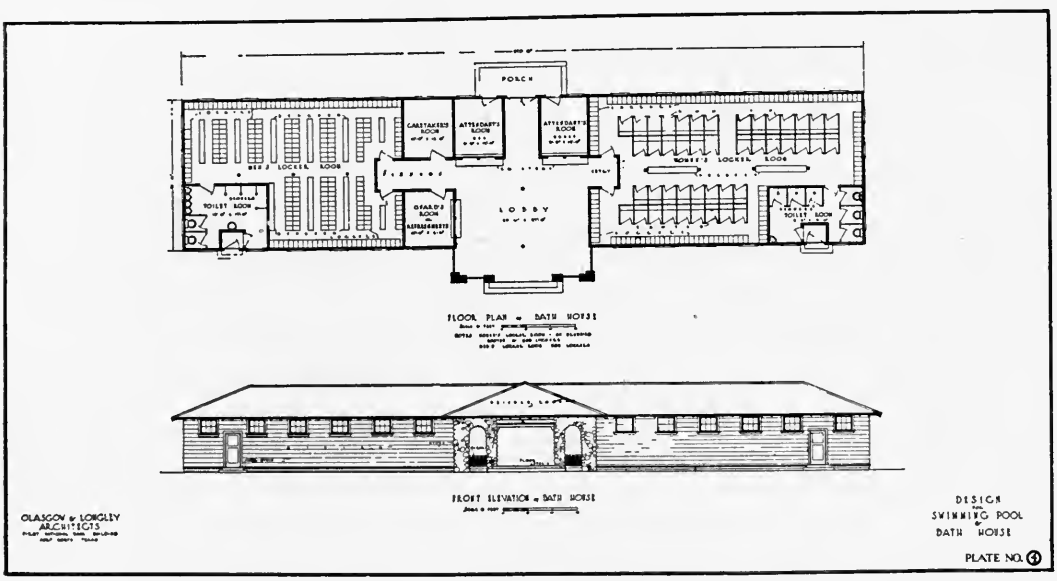


PLATE NO. 160. FLOOR PLAN AND FRONT ELEVATION

11. Flat treads for all ladders. Advantage: Reduces to minimum danger of slipping.

12. Four springboards, two three feet from surface of water (edge of scum gutter) and two 10 feet, and diving tower with platform 16 feet from water, meeting as far as possible all requirements of N. C. A., A. A. C., and N. A. A. F., centralized at deep area extending 50 feet at one side of pool midway of length. (See Plate 157 for location.) Advantages: Provides regulation equipment for all swimming meets. Concentration of springboards at one point in a large pool is an advantage from the point of view of supervision and safety. This arrangement also minimizes the danger of divers striking swimmers, the latter being free from this form of interference except at this one location. This concentration, however, must not approach the point of congestion. The proper location of ladders is important in avoiding this danger.

13. Diving tower 8 x 12 feet with platform 9 feet from water, providing station for life guard as well as base for two springboards (10 feet high), and second platform 6 x 8 feet, 16 feet from water, waterproofed. Advantages: Places life guard in most advantageous position to observe deep area of pool as well as to supervise diving. Second platform affords some protection from sun.

14. Bronze chain supported by wooden floats suspended across pool 50 feet from each end at depth of four and one-half feet. Advantages: Chain is superior to rope, which very soon becomes slimy and rots. Bronze chain is recommended for the purpose of permanency, but galvanized chain is quoted in the estimates submitted herewith.

15. Thirty-inch concrete drain and 12-inch supply. Local conditions must be considered in deciding on size of drain and supply pipes. Former should take available sewer connections into consideration, and latter is dependent on available water pressure and size of supply main. Advantages: If local conditions allow drain and supply pipes of sizes indicated, this makes possible emptying the pool in three and one-half hours and refilling in an equal length of time, with supply at 30 pounds pressure. Allowing five hours for cleaning pool, water can thus be changed in 12 hours.

16. Intake distributed at four points at one end of pool. Advantages: High pressure of large main is thus reduced before entering pool, minimizing erosion. If purity of water is maintained by continuous flow method, stirring up of sediment on bottom is reduced to minimum.

17. Concrete runway 10 feet wide entirely around pool sloping away from the edge at pitch of three-fourths inch in one foot. Advantages: Wide concrete runway reduces dirt and other impurities carried into pool. Slope prevents water from draining back into pool, especially when cleaning runway. This slope obviates necessity of raised edge around pool.

18. Separate pool 20 x 75 feet with water depth of one foot, six inches, at edges and sloping to two feet at center. Advantages: Provides swimming and wading pool for children, under eight years in particular, who will probably be brought by parents. Aside from greater safety, this obviates necessity of depths of less than three and one-half feet in main pool, which is considered minimum depth for practical swimming purposes for adults.

19. Rough finish for runway and bottom of children's pool. Advantages: Prevents slipping and is still capable of being cleaned by ordinary pressure from hose nozzle combined with scrubbing as conditions require.

20. Six-tier bleachers, 100 feet long, midway along side of pool opposite diving tower and bathhouse. Advantages: Adequate provision for spectators popularizes swimming as a sport and may be a source of revenue. Location suggested gives all spectators unrestricted view of all aquatic events.

21. Pools, bathhouse, and bleachers located on 200 x 300-foot area, and all unoccupied area grassed. Advantages: Provides area for active recreation while out of water and is a stimulus toward inducing people to spend more time exposed to the sun. For this purpose grass is superior to sand, the chief advantage of the latter being its association with a natural beach.

22. Eight-foot chain link wire fence enclosing the whole. Advantages: Limits use of pool to those authorized. Limits persons in bathing suits to immediate vicinity of pool. Provides absolute control in the collection of fees where desired.

23. Separate entrance for spectators and three-foot chain link wire fence separating them from swimmers. Advantages: Avoids dirt from shoes being carried into pool as a result of spectators on runway. Simplifies admitting spectators at lower fee than swimmers.

24. Pool designed to maintain hygienic conditions of water by combination of fill and draw and continuous flow methods. Pool to be refilled weekly and splash replaced daily. Advantages: Fill and draw method gives opportunity to clean inside of pool at frequent intervals. Size of drain and supply pipes incurs no loss of time in use of pool. Maintaining three parts per million of chlorine in the water would provide additional safety. If cost of water is so high as to compensate for the installation and operation of a filtration plant, recirculation might be considered. In case this were done, three 84-inch pressure filters, each with the usual capacity of 115.4 gallons per minute, would filter an amount of water equal to the total volume of this pool in approximately 24 hours.

25. Bathhouse provides for collection of fees, supplying of towel, suit, locker key, etc., by one for men and one for women. Advantages: This arrangement makes possible operation with a minimum of supervision, which can be further reduced during hours when smaller numbers are in

attendance. Arrangement of exits from locker rooms makes possible collection of towel, suit, and key by same attendant by whom distributed, when desired.

26. A locker is provided for each bather, a common dressing room for men, and booths for women; 494 lockers for men and 258 lockers and 44 booths for women ensure sufficient dressing facilities for maximum use of pool. However, it may be necessary at times to assign more than one person to a locker or dressing room. Advantages: The individual locker is recommended in preference to the basket system. The latter necessitates more help, and even then does not permit of handling large groups rapidly, since each basket must be handled four times for each bather.

27. All bathers must pass showers and toilets from locker room to pool.[1] Advantage: Added incentive to their use.

28. Three inches of water in vestibule at entrance from pool to locker room. Advantages: Feet of all bathers are thus rinsed upon entering and leaving locker room. Particularly valuable where area around pool is not completely turfed. None but bathers may enter locker room from pool. None but bathers may enter the pool enclosure. These basins are not unsanitary if properly cared for.

29. Bathhouse of stained shingles with rough stone porch columns; fence and grounds as well pleasing to the eye. Advantages: A swimming pool may be a beauty spot, and being such is an added incentive to patrons to maintain hygienic and sanitary conditions. Tapestry brick is conceded to be one of the most attractive of materials for a bathhouse, but the above is suggested as one of the most attractive of frame structures.

Construction costs for a pool embodying the foregoing specifications, based on estimates secured in Fort Worth, Texas, in 1925, follow:

Swimming and wading pools:		
Excavation		$3,400.00
Grading for floors		423.00
Concrete work		7,000.00
Sidewalks		1,569.00
Forms		1,450.00
Reinforcing		2,700.00
Tile drains		400.00
Concrete pipe		300.00
Sumps		300.00
Springboards		200.00
Asphalt markings		350.00
Water supplies		1,000.00
Ladders and galvanized chains		300.00
Diving tower		300.00
Miscellaneous iron		350.00
Total		$20,042.00
Brought forward		$20,042.00
Bleachers		450.00
Bathhouse:		
Foundations	$500.00	
Concrete floors	800.00	
Shingle roof	450.00	
Framing and finish	2,700.00	
Miscellaneous	500.00	
Stone porch	600.00	
Windows	600.00	
Plumbing	1,500.00	
Electrical work	500.00	
Painting	2,000.00	
Fence	1,000.00	
Total	$11,150.00	11,150.00
Total cost of project		$31,642.00

[1] In many pools, showers are so placed that persons entering pool are obliged to pass under them.

Park and recreation officials may find much valuable information in the publications listed in the bibliography at the close of this chapter. The report of the Committee on Bathing Places of the Conference of State Sanitary Engineers is especially recommended. The examples of swimming pools that are presented here are intended to be illustrative of various types of swimming centers.

This Philadelphia pool is an example of a type suitable for large cities with congested neighborhoods, and is well planned for the effective handling of a large number of bathers in a limited period. The Philadelphia Bureau of Recreation, Department of Public Welfare, operates approximately 36 of these swimming pools, 14 of which are located on recreation center areas and 12 on separate pieces of property at various places about the city. All the pools are constructed on a more or less standardized plan. The gross area of the swimming plant occupies approximately 100 x 130 feet. The pools are approximately 35 x 90 feet and are intended to care for approximately 100 bathers at one time. The building at one end of rectangular space provides waiting room, storeroom and office. There is a dressing booth space just beyond entrance building, which is usually provided with approximately 100 dressing booths, 4 x 4 x 7 feet. A brick wall, generally about 10 feet high, is placed on the sides and other end of entire area of swimming center. A small structure at the entrance of the pool contains toilets and shower baths. At all the pools the sexes bathe at separate times, three days a week being allowed boys and men and three days for girls and

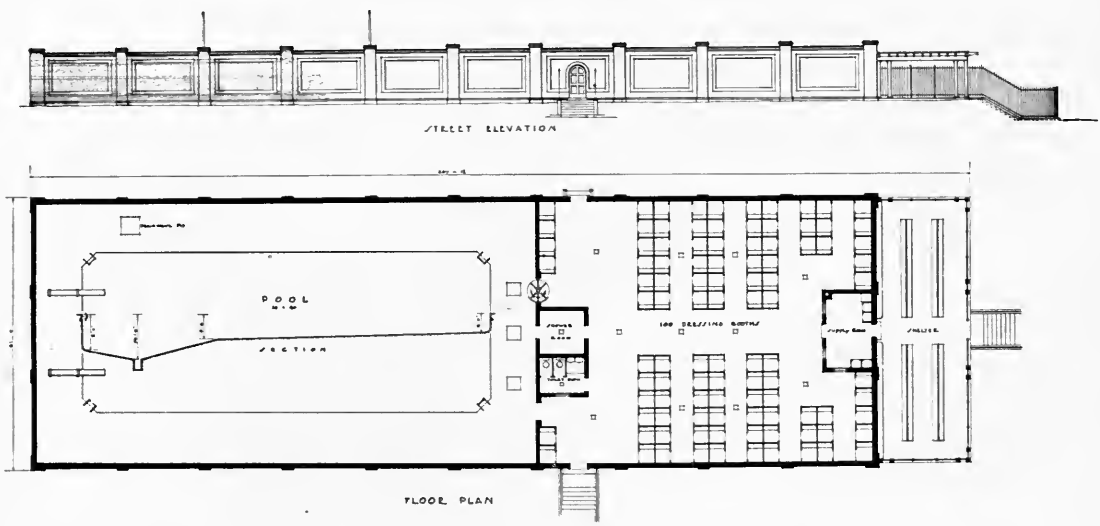


PLATE NO. 161

PLAN OF TYPICAL SWIMMING POOL, BUREAU OF RECREATION, PHILADELPHIA, PENNSYLVANIA

(John Molitor, City Architect.)

women. Pools are not operated on Sunday. No fees are charged. Cost items are: general construction, including bathhouse, $37,574; plumbing, $4,183; electrical work, $1,090; total cost, $42,847.

The following is a statement concerning the construction and cost of the Fort Worth pools. Eighty per cent of this 100 x 150-foot pool is wadable and 95 per cent is swimmable. It provides seven five-foot lanes with at least three and one-half feet of water, which makes possible the conducting of large official swimming meets. Three springboards, four, six and ten feet high, are set on a steel platform on the sidewalk, and two are anchored on steel platforms in the water. The top of these platforms extends one foot above water level. Two rigid boards are set over four and one-half feet of water for the use of beginners. Three slides are installed, one of them for children.

The pool is provided with a scum gutter and handrail, and chlorinators are used for purifying the water. It enters the pool through fountains which are placed over colored lights. Sand beaches with concrete bottoms two feet deep have drains every ten feet, permitting the sand to be washed and chlorinated. The entire pool area is fenced.

The bathhouse provides about 600 lockers, with dressing booths for women. A separate section for boys with lockers, showers and toilets has been wisely provided. On the whole the layout of the building is satisfactory, although in the men's section it would be advisable to move the showers into a separate compartment near the door leading to the pool so bathers would be obliged to pass through it on their way to the pool. It

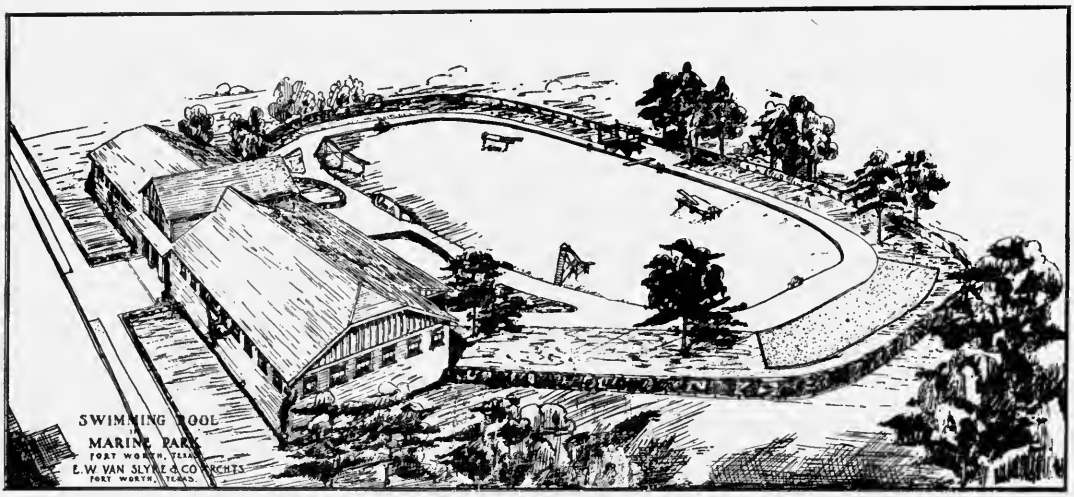


PLATE No. 162. SWIMMING POOL IN MARINE PARK, FORT WORTH, TEXAS

Although the facilities are differently arranged, this pool is similar in many respects to the Sycamore Park Pool in the same city. (See Plate 163.)

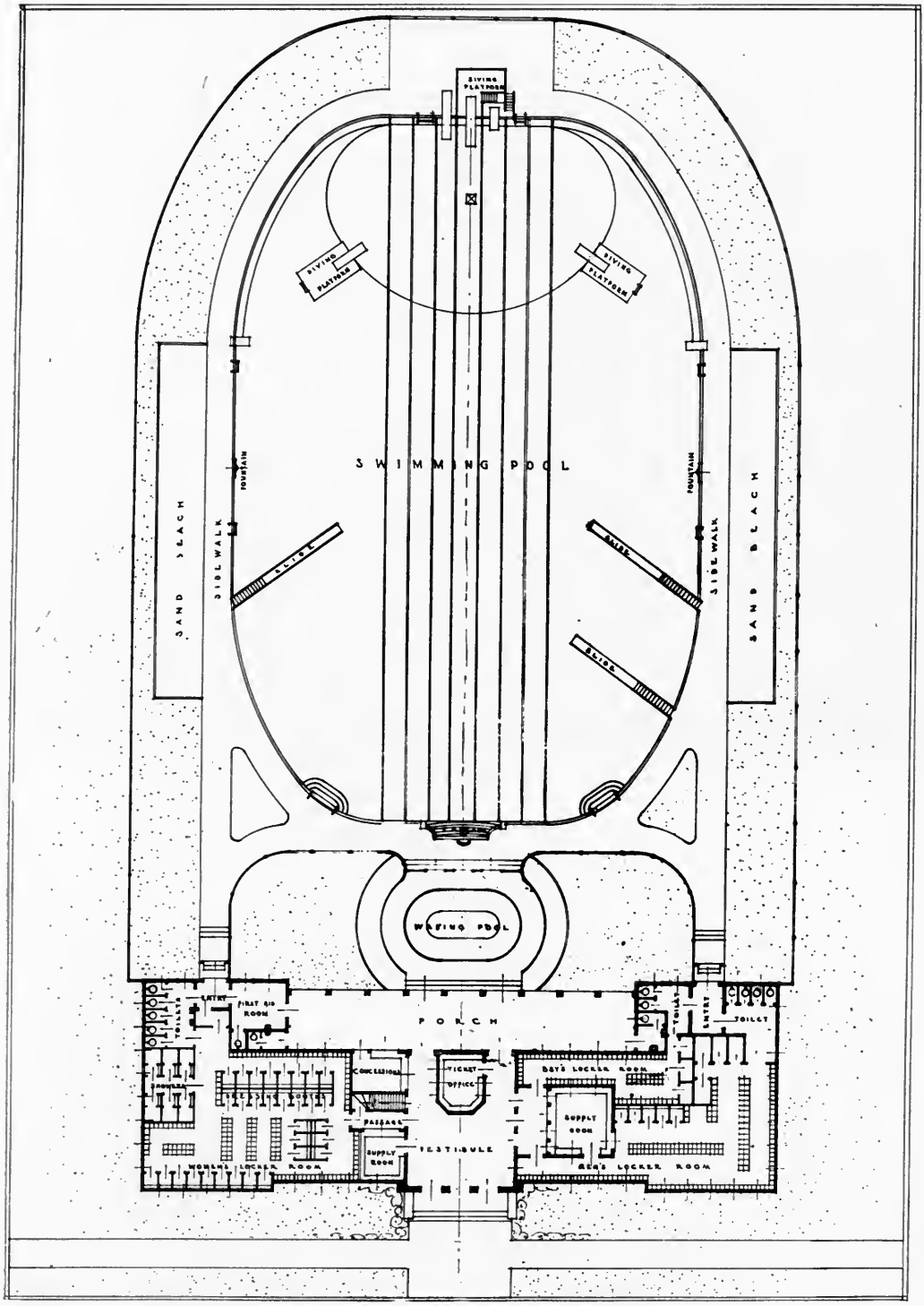


PLATE NO. 163

PLAN OF MUNICIPAL SWIMMING POOL IN SYCAMORE PARK, FORT WORTH, TEXAS

Designed by E. W. Van Slyke & Company.

should be possible, however, to reach the toilets without passing through the shower room. Cost of pools (constructed 1925):

Sycamore Park swimming pool:	
General construction	$23,949.74
Plumbing	6,153.15
Electric work	761.84
Water equipment	840.00
Locker equipment	2,038.50
Pump house equipment	5,399.57
	$39,142.80

Marine Park swimming pool:	
General construction	$24,358.40
Plumbing	5,640.00
Electric work	752.00
Water equipment	847.00
Locker equipment	2,038.50
	$33,635.90

The Brookside pool illustrates a type of double swimming pool found in a number of cities. One pool is intended for children and beginners, and its depth usually varies from two or three feet to four or five feet. The other pool is for expert swimmers and is of sufficient depth to permit high diving. One of the Brookside pools was built in the year 1914, and the other in 1923. The older pool has a width of 50 feet, a length of 100 feet, and a depth varying from two to four feet in a distance of 70 feet, 6 inches, at which point a baffle wall six inches thick is placed. The remaining 29 feet varies from four to eight feet in depth. The shallow portion of this pool is used primarily by young children, the deeper portion by those who are moderately good swimmers. In the accompanying picture this pool is shown in the foreground. It requires 155,400 gallons of water to fill it.[1] The newer pool has a width of 50 feet and a length of 150 feet. Its depth

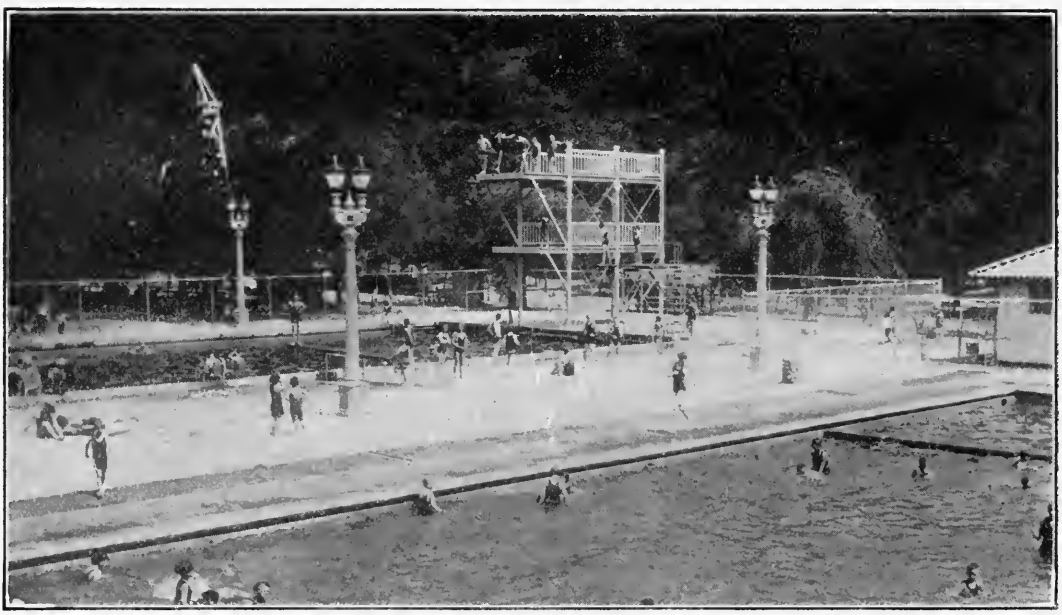


PLATE No. 164. BROOKSIDE POOL, PASADENA, CALIFORNIA

[1] From *The American City*, May 1927.

varies from four to five feet in the first 60 feet, thence from five to 12 feet in the next 40 feet, and from 12 to 12 feet, 6 inches, in the last 50 feet. There is no baffle wall or other obstruction inside of this pool. It requires 457,200 gallons to fill it. Alongside this pool are a three-foot and a ten-foot springboard and a diving tower having one platform 12 feet and another 22 feet above the water. In the photograph (Plate 164), this pool, as well as the three units of apparatus, appear in the background. In order to care for the large number of patrons, there has been built on the men's side 89 dressing rooms and 440 lockers, while on the ladies' side are 112 dressing rooms and 169 lockers. The facility has a Page woven-wire fence 84 inches high entirely around it.

The accompanying plate (No. 165) shows another type of pool. The pool proper is a 100 x 150-foot ovoid with square ends 40 feet in length, and its capacity is 400,000 gallons. The pool stands nine feet above the ground. It is equipped with scum gutters and a recirculating system for the sterilization and filtration of the water. It is also fully provided with diving platform, springboards, slides, electric fountain, guard ropes and floats, drinking fountain, etc. The concrete floor around the pool is 16½ feet wide and a handrail separates the bathers from the spectators. Separate stairways are provided for each group. Around the entire pool wall extends a bathhouse which is approximately 14 feet wide and 475 feet long. The room contains 307 steel lockers, and on the women's side are 54 changing rooms. Sixteen showers serve the men, and the women have 18 private showers.

PLATE NO. 165. BINTZ POOL IN FAIR PARK, DALLAS, TEXAS

There are four sets of toilets for bathers and spectators, providing thirteen toilets, eight urinals, six lavatories. An office and first-aid room are also provided. The lighting system consists of four 1,000-watt lights over the pool, nineteen 200-watt lights on the railing standards for lighting the concrete floor, and thirty-one 100-watt and sixty 60-watt lights for lighting the bathhouse. The entire cost of this structure including engineering fees is practically $70,000. The plan of this type of pool has been patented by Wesley Bintz of Lansing, Michigan.

Plate 166 illustrates a type of pool found in many parks, especially where large numbers of bathers must be accommodated. Sometimes circular pools are constructed. In this type of pool the deep water is in the center and most of the area can be used by non-swimmers. For the most effective use the minimum depth should not be less than fifteen to eighteen inches. An illustration and description of the mammoth swimming pool in Fleishhacker Playfield, San Francisco, will be found in Chapter IV, page 146.

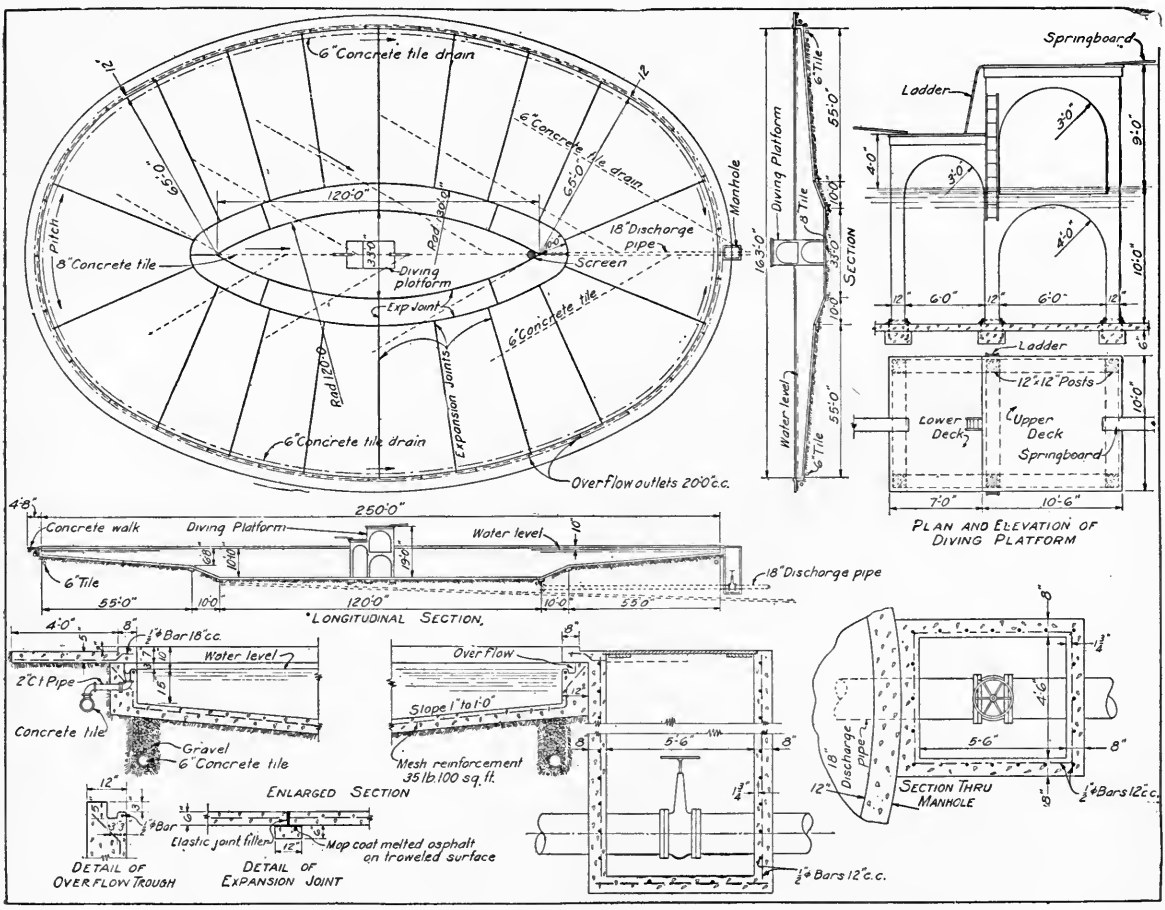


PLATE NO. 166. PLAN FOR LARGE OVAL POOL[1]

[1] Used through the courtesy of the Portland Cement Association.

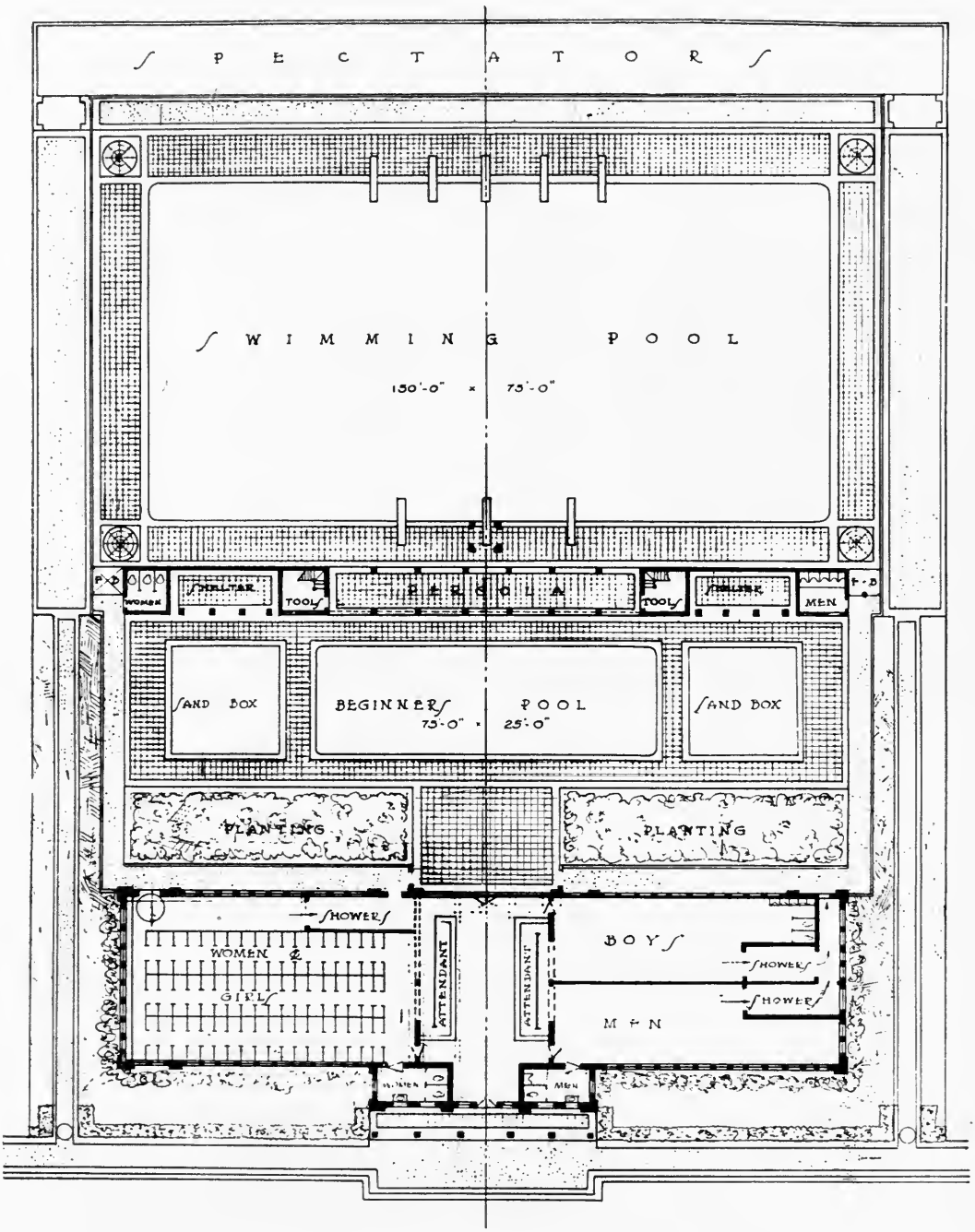


PLATE No. 167. McKINLEY HIGH SCHOOL POOL, WASHINGTON, D. C.

Plate 167 describes a pool which has been designed by the Hasbrouck Company of New York for the Department of Public Buildings and Grounds, Washington, D. C. The bathhouse features are well arranged, and special attention is drawn to the toilets which are provided near the pool proper; also to the foot baths at the entrances to the pool areas. A pergola is provided for the swimmers, and two shelters in connection with the wading pool. Underneath the pergola and tool rooms are the filters, pumps and chlorinating equipment. The plan calls for four flood lights at the corners of the pool enclosure, and three searchlights near the top of the diving tower where the life guard is to be stationed. This is a very attractive layout.

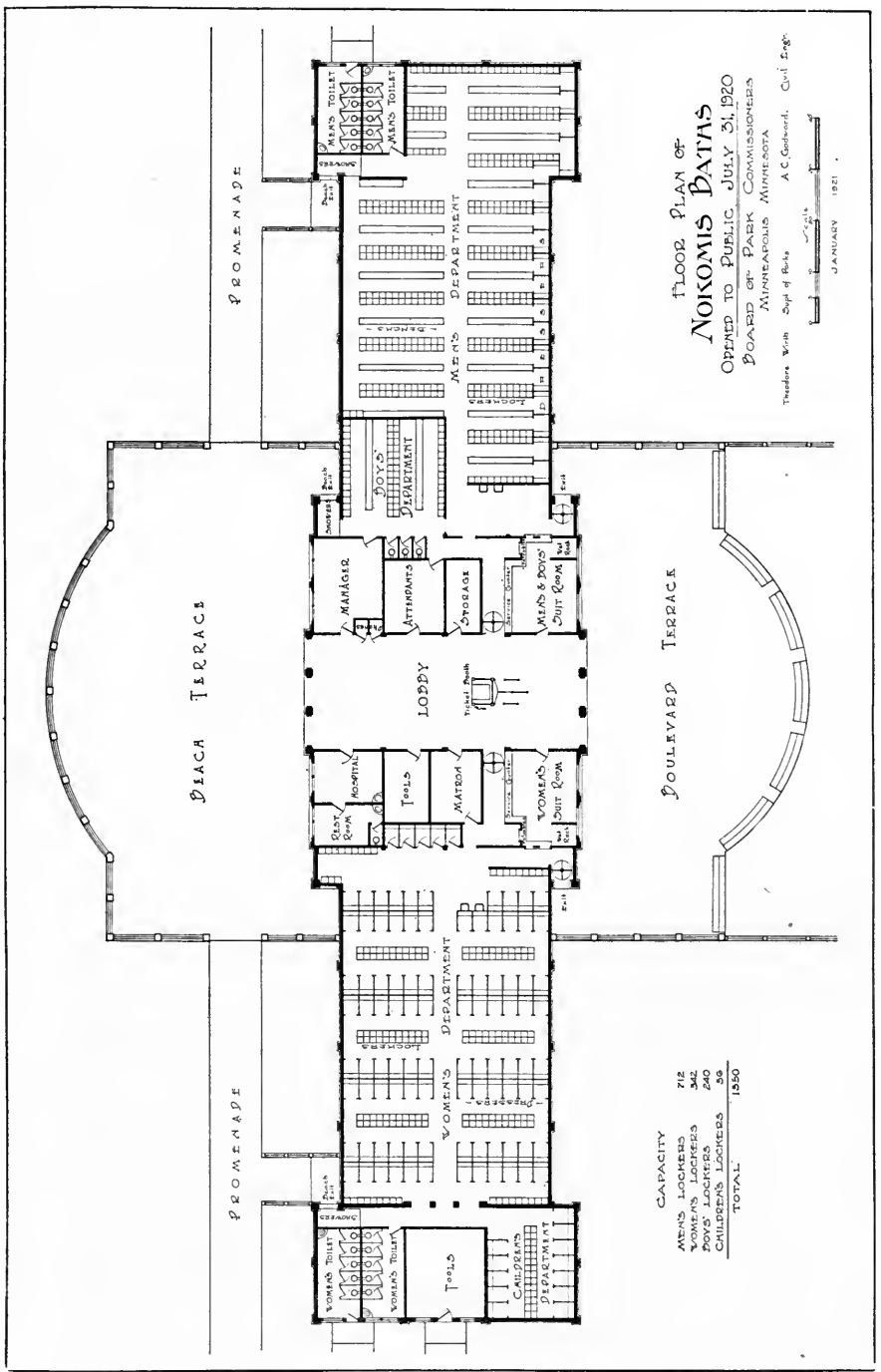


PLATE No. 168

FLOOR PLAN OF LAKE NOKOMIS BATHHOUSE, MINNEAPOLIS PARK SYSTEM, MINNEAPOLIS, MINNESOTA

An excellently planned bathhouse. Note special compartments for boys and for children. Double sets of toilets serve dressing rooms and beach. All bathers must pass under showers.

Bathing Beaches

Cities having lakes or beach frontage may not find it necessary to build outdoor swimming pools. Minneapolis maintains a number of lake bathing beaches, which are lighted for night use. The beaches are roped off at two different depths. One rope is stretched at the three-foot depth and the other at four and one-half or five feet. There is a small roped area especially for children.

COST ITEMS OF LAKE NOKOMIS BATHHOUSE (1919–20)

Foundations, concrete, 179 cubic yards	$3,019.63
Filling, 1,600 cubic yards	691.62
Concrete floors, 1,175 square yards	2,046.46
Framing, 32,700 board feet	2,276.56
Sheathing, 15,600 board feet	1,990.48
Tile walls, 16,500 tile	3,196.76
Brick coping, 24,000 brick	2,648.22
Plaster and stucco on tile, 2,350 square yards	3,987.41
Plaster and stucco on metal lath, 690 square yards	1,483.75
Dressers and toilet stalls, 129	5,335.52
Roofing, 46 squares	461.95
Millwork, ticket booth and benches	8,126.27
Plumbing and toilets	3,558.50
Water connections to building, 2,027 feet	1,470.14
Electric connection to building, 150 feet	372.00
Electric wiring and fixtures, 176 outlets	1,504.48

Plate No. 169

LAKE NOKOMIS BATHHOUSE AND FRONTAL GROUNDS, MINNEAPOLIS PARK SYSTEM, MINNEAPOLIS, MINNESOTA

Sheet metal work	$1,029.74
Painting and staining, 15,000 square feet	731.63
Gates, turnstiles, railings, etc.	415.53
Hardware	383.70
Lockers	6,087.37
Watching, insurance and miscellaneous expenses	1,520.68
Engineering and supervision	1,727.78
General administration expenses	1,046.77
Total cost	$55,112.95

Cost per square foot floor space, $5.19; cost per cubic foot capacity, 38 cents; cost per locker capacity, $40.82.

Facilities for Winter Sports

The increasing interest in out-of-door winter activities has resulted in a great demand for facilities for skating, tobogganing, skiing, ice hockey and other sports. The supplying of the facilities is largely a responsibility of park and recreation officials.

Ice Skating Rinks.

The following suggestions on the construction of ice skating rinks have been prepared by J. R. Batchelor, field secretary of the P. R. A. A.:

The ground and surface. The surface should be approximately level, because it takes longer to flood an uneven area. The best surface is of clay, but many playgrounds have a surface of gravel over clay, or some other foundation, and this is not hard to freeze. It is practically impossible to freeze a sand surface.

Banks. The best bank is one which has been plowed up and tamped before freezing weather. One furrow should be plowed around the rink and the dirt packed down to make it sufficiently solid to prevent air holes through the bank. If work is not started in time to do this plowing, a board bank may be constructed of two-inch planks ten or twelve feet long, laid on edge after the loose surface has been scraped to enable the plank to rest on a solid foundation. The planks are laid end to end around the rink; two by four-inch stakes about three feet long are driven one or more feet into the ground at each intersection and nailed to the planks. This prevents any moving of the planks. The dirt scraped from under them should be tamped around the bottom of the planks. If a heavy snowstorm should come before these steps are taken it may be necessary to make a snow bank. At best, these banks are not very satisfactory, and a great deal of time is consumed in making them, as the snow must be entirely frozen through before any attempt can be made to flood the surface of the rink.

The sprinkling and freezing process. After the bank has been made, the rink is ready for sprinkling and freezing. This process requires a great

deal of time and it must not be hurried. People often forget that water put on a bank or rink is much warmer than the ice formed by a previous flooding. Rinks should not be flooded except in extremely cold weather, and after a base has been thoroughly prepared. It is necessary to freeze the bank thoroughly, especially at the base. This may be done by using a regular garden hose without the nozzle spray, sprinkling the bank night after night until the possibility of leakage is eliminated. The surface should be frozen in the same manner as the bank; that is, by starting the sprinkling at the far end and working toward the water supply. This process should be repeated until the ice is from two to four inches thick. If the water then shows no sign of leaking through the bank it may be added more rapidly. A satisfactory method is to use a two-inch hose, applying the water at the far end of the rink and drawing the hose toward base of supply as the water approaches. A good hose to use is the mill hose, rubber inside and out, with regular hose coupling. It is well to have the connection through a building with a valve on the inside. If the rink is too large to flood in this way a special line of pipe may be laid along the edge of the rink below freezing line, with two or three flooding valves coming to the surface in boxes about four feet square, the shut-off cock being in the ground. This should be well protected from freezing by manure.

The shelter house. Where the weather is very cold it will be necessary to have a warming house. The knockdown type is very convenient and can be removed at the end of the season. It should be large enough to accommodate the attendance, but not so large as to encourage loafing. A house about twenty-four feet long and twenty feet wide makes a good size. A round oak stove in the center, which will burn either hard or soft coal, makes a satisfactory heating plant. The presence of a warming house makes supervision necessary. The workers selected to help clean the rink should be able to care for this supervision.

Care of the rink. If the rink is constantly used, almost as much ice will be shaved off during the day as was put on the preceding night. This ice must be scraped off before the rink is used and the process should be repeated several times during the day. The best scraper consists of sheet iron about four feet long and three feet wide, and is made like a dust pan on runners, the edge being about eighteen inches high at the back. It is not necessary to sweep the rink, as the water will absorb what is left. Where there are holes or cracks a little hot water may be poured into them. The sprinkling of the rink should be done at the coldest time of the day. The final scraping may be done at 10 p.m., after which the water is sprinkled on and left to freeze all night.

Lighting. A number of methods of lighting are used. Many people

prefer the flood lights placed where they will cover the surface. Five hundred-watt lamps are used for this, as many as are needed for the size of the rink. Good lighting effects have been secured with a cable strung at intervals of fifty feet across the rink, with a string of incandescent lights fastened to it.

Construction of Ice Skating Rink.

The following statement by George H. Browne of Cambridge, Massachusetts, published in *Landscape Architecture*, January 1915, describes a method of building up an ice surface: "To build up ice on the ground it must be sprayed up from the bottom. It cannot be gotten by flooding unless the pool is water-tight and at least two zero nights are in prospect. No matter how shallow the pool, provision must be made for draining off surface water that will inevitably run in during a thaw. This may be done by inserting a board in the clay bank or wall at the most appropriate place for drainage, through which a hole is bored to drain off the water. The process of spraying a smooth ice surface is analogous to electroplating, that is, it has to be done in the thinnest layers possible. Success may best be obtained from the intelligent manipulation of simple devices rather than from the use of mechanical sprinklers. A simple method is for one man

PLATE No. 170

ICE HOCKEY RINK, PARK AND RECREATION SYSTEM, WORCESTER, MASSACHUSETTS

The rink is 80 x 190 feet. The height of boundary wall is 3.5 feet. The two lower boards are removable for planing the ice.

to hold the sprinkler and hose not far from the ice, going back and forth, often on the run, so as to catch the previous strip of water before it freezes, and another man to keep the hose in proper position behind the man handling the sprinkler. When the entire area has been covered, go through the whole process again if the first coat is frozen. If not frozen, wait until it is. If more than the thinnest film of water is put on to the foundation surface it will soak through or out at the bottom and leave a white glassy shell. Warm water is better to spray with than cold water. The amateur notion that spraying into the air will cool the water and hasten its freezing is erroneous. Crystallization sets in more quickly if the water is warm. Warm water melts, levels and smooths better, but it must be put on thin. Any approach to flooding will produce shell ice. The ice must be kept clear of twigs, grass and dust, and must be swept clean before a frosty night, whether sprayed or not. Skate snow, if left to evaporate, rots the ice. With the thermometer about ten degrees above zero, the best time to spray is after sun-up, about seven or eight o'clock in the morning. A temperature much

PLATE NO. 171

SKI SLIDE, GORDON PARK, BOARD OF PARK COMMISSIONERS, MILWAUKEE, WISCONSIN

below five degrees above zero will cause the ice to crack badly. Cracks may be mended by pouring hot water into them. The equipment necessary for making such a rink and keeping it in condition consists of a hose connection four or five feet under the ground in the middle of one side, or within a near-by building properly located, fifty feet or more of three-fourths inch garden hose, a fine rose sprinkler, one Wimbledon scow (with a sharp two-steel edge), some snow shovels and heavy broom-corn brooms."

Ice hockey. This game requires an ice surface at least 112 x 58 feet. At each end of the rink a goal is placed, the uprights of which are four feet high and six feet apart. The goals are frequently provided with nets. It is advisable to surround the rink by a wooden fence or snow bank, which defines the boundaries and also protects other skaters in the vicinity.

Ski jumps. The following suggestions for the construction of a ski jump for amateurs have been prepared by Fred H. Harris, organizer of

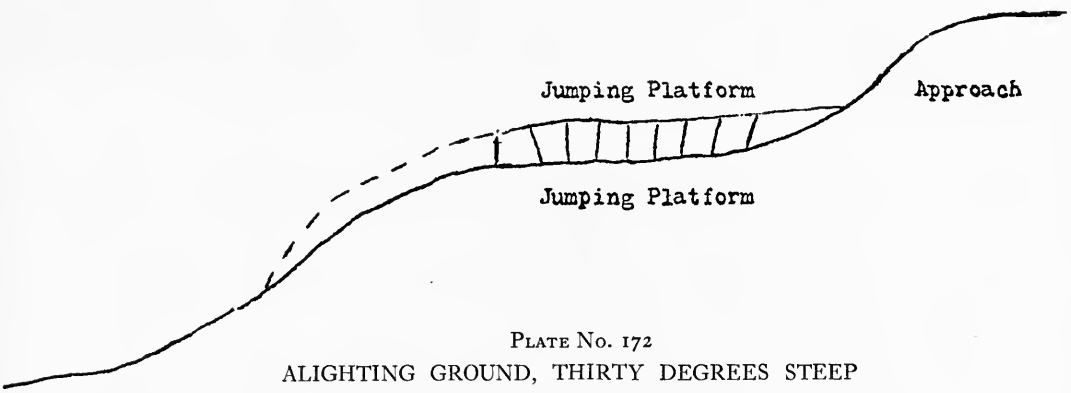


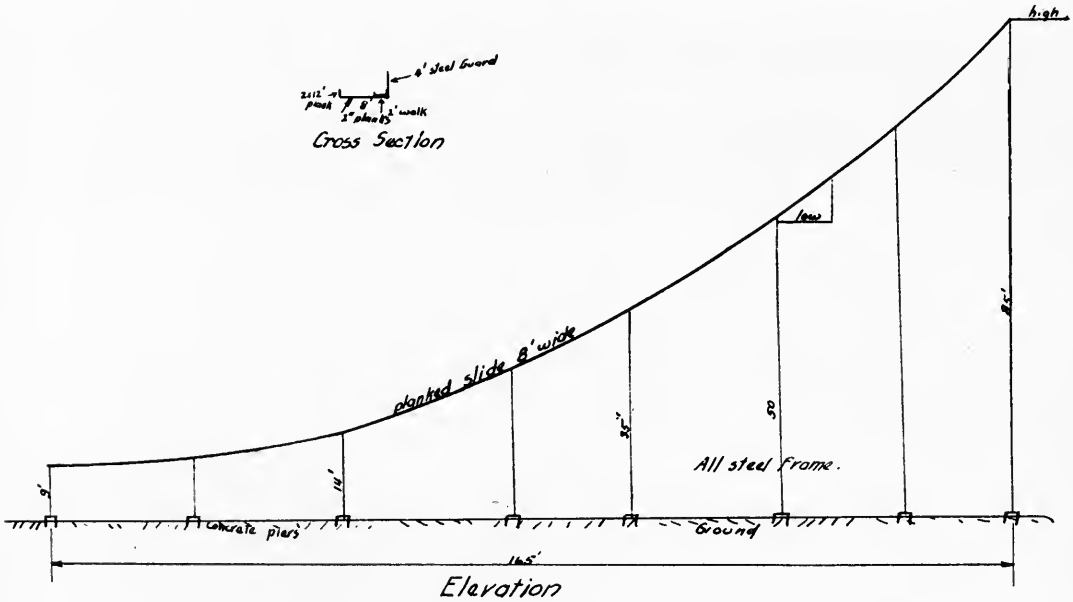
PLATE NO. 172
ALIGHTING GROUND, THIRTY DEGREES STEEP
Dotted line indicates flight of jumper.

the Dartmouth College Outing Club. "An ideal ski jumping course consists of the following: Approach, take-off, alighting ground, outrun. As to location, a hill sloping to the north or northeast is preferable to one sloping in other directions. Approach should give all speed necessary. Take-off should be level or sloping slightly down hill, and angle from approach to it should be gradual. Alighting ground should be thirty degrees steep. Measure this accurately, as it is important in making successful jumps and safe ones. Take-off can be made of piles of boughs covered with snow, or entirely of snow or of planks covered with snow. Take-off should be located back from edge of steep slope. Jumper should never land from take-off on level ground, but must land on the steep slope for safety. The alighting ground at the foot of the hill should gradually grow less steep, until it merges into a safe level outrun where jumper can swing or stop. If jumps of fifty feet are to be made, the take-off should be from three to four feet

high. The alighting ground should be about one hundred feet long for a fifty-foot jump, and should have the snow packed moderately compact."

Ski jumps for experts. In order to provide facilities for expert ski jumpers it is frequently necessary to construct a slide of steel or wood. A railing around the starting platform at the top and along both sides of the slide should be provided. Unless the starting platform is reached by climbing a natural slope, a walk may be provided along one side of the slide, furnished with cleats to prevent slipping. Beginners should not be permitted to use these jumps.

Sled and toboggan slides. Where natural facilities for coasting are limited or lacking, artificial slides should be constructed. A slide of only a few feet erected in a park or playground will provide healthful exercise and fun for hundreds of children. Few expenditures are more easily justified. In more than one city the roof of the shelter house is used as the platform or starting place for a slide. This may be used only in winter or throughout the entire year. Frequently chutes are constructed, using a grand stand or b eachers as a foundation. The sides of the trough are usually not more han one foot high, although in the Milwaukee Park slides the height of



85' Ski Jump
Gordon Park
Scale: 1"=20'

PLATE NO. 173

PLAN OF SKI JUMP, GORDON PARK, MILWAUKEE, WISCONSIN, ERECTED AT A COST OF APPROXIMATELY $5,000

the sides is three feet, four inches. Sometimes knockdown sled slides are set up on the playground in the winter (see Plates 174 and 177).

In Oak Park, Illinois, a double slide has been constructed, with one trough for toboggans and the other for sleds. The top of the auditorium bleachers, twenty-eight feet high, was used as the starting point of the slide, and the bottom rested on the ground at a point one hundred and fifty feet away, although the chute extended along the ground for an additional one hundred feet. The uprights used in the construction were four by four inches, and the total cost was $750. The slide is stored during the summer. Plate 175 illustrates a similar adaptation of a grand stand in Milwaukee, Wisconsin.

PLATE No. 174. ILLUSTRATING A TYPE OF KNOCKDOWN SLED SLIDE

Used for winter play on the public playgrounds conducted by the Extension Department of the Milwaukee Public Schools, Milwaukee, Wisconsin. See page 384.

In many cities it is possible to build toboggan slides using a natural slope, but frequently slides supported by framework have been constructed, which have a steep grade, making possible a terrific speed on the part of the toboggan. The following are several factors to be considered in toboggan slide construction:

(1) Make the trough of proper width; if too wide the toboggan may lurch from side to side and possibly jump the track. Twenty inches at bottom of trough is ample. (2) Make the outrun level, thereby preventing the toboggan from upsetting. It is a good plan to build banks of snow the same width as the trough or continue the sides of the chute on the outrun. (3) Use good wood in the construction of the toboggan, thus avoiding danger of slivers. (4) Make sides of trough high enough so that the toboggan will not jump the track. (5) Have trestle work strong and solid, thereby avoiding vibration. (6) Have crossbars near enough together to avoid vibration and strain on the bottom boards. (7) All woodwork in the slide should be painted each year with creosote, which preserves the wood and serves as a disinfectant. (8) Build entire slide straight. Curves in a toboggan slide

PLATE No. 175. SLED AND TOBOGGAN SLIDES
(Washington Park, Board of Park Commissioners, Milwaukee, Wisconsin.)
The pavilion is used for dancing during the summer months.

PLATE No. 176. TOBOGGAN SLIDES IN FRANKLIN PARK, BOSTON, MASSACHUSETTS

give a chance for the toboggan to go over the sides. (9) After leaving the wooden slide there should be a runway clear of trees, poles, fences, etc. (10) To prepare the ice, fill the chute with snow and beat it down firmly until a layer about two inches thick is formed in the bottom. If the temperature is favorable this should be sprinkled until it forms a keen icy surface. (11) Keep the ice in the chute from becoming worn. If holes form in the ice, they may be patched with snow sprinkled until it forms a slush, and beaten smoothly into the holes. (12) If the slide is too icy — therefore too speedy — mix equal parts of sawdust and sand and spread to slow speed.

The Manchester, New Hampshire, Park and Playground Commission has constructed a very fast slide with two parallel chutes, which has proved satisfactory. The slide is built of planed spruce boards in sections ten feet long, each length being in the shape of a trough; the inside width of each chute is nineteen and one-half inches at the bottom and thirty inches at the top, the side planks being twelve inches wide and set at an angle of

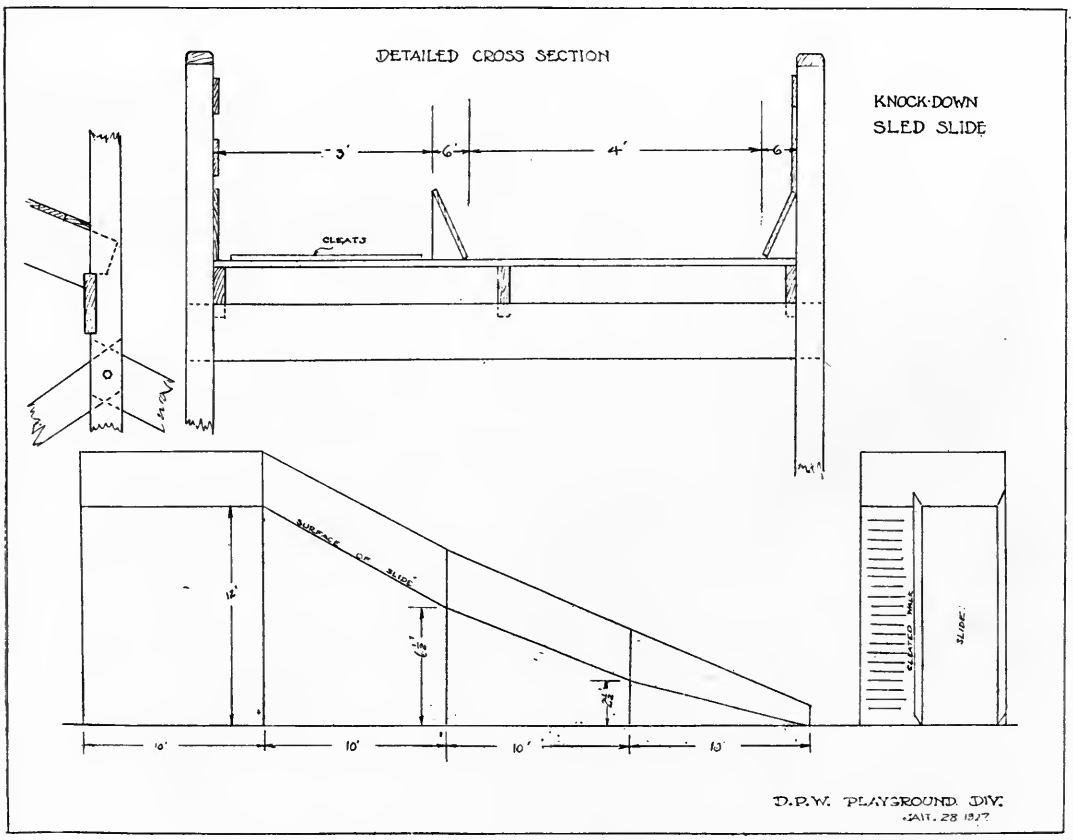


PLATE NO. 177. DESIGN OF THE KNOCKDOWN SLED SLIDE

Used for winter play on the public playgrounds conducted by the Extension Department of the Milwaukee Public School System, Milwaukee, Wisconsin.

twenty-two and one-half degrees. Four four by four crossbars are used to hold together the boards of each section. Each crossbar extends four inches beyond the bottom boards and to it are nailed brackets cut from the same timbers, to hold the sides in place. The upper crossbar is exactly at the end of the boards; the lower crossbar is four inches from the end. This allows each trough to lap four inches into the next. The end crossbars are so placed as to butt tightly against each other. The other two crossbars are evenly spaced. All edges and corners are planed off to prevent splinters. The troughs are thoroughly nailed together, but no nailing is done in putting the lengths together; they are simply placed in position on the ground, beginning at the lower end and fitting in each section, leveling under the crossbars as the ground may require.

Picnic Facilities

Perhaps no park facilities encourage family recreation as much as do picnic facilities, and they are being increasingly provided in large city parks, reservations, and especially in county parks. The following pictures and plans illustrate various types of fireplaces, picnic tables, shelters and other equipment which have been provided for the use of picnickers.

Plate No. 178

A TYPE OF LARGE ENCLOSED OVEN BUILT OF NATIVE STONE IN ONE OF THE RURAL PARKS OF THE ERIE COUNTY PARK SYSTEM, ERIE COUNTY, NEW YORK

PLATE NO. 179

A SIMPLE TYPE OF OPEN HEARTH OVEN IN ONE OF THE PARKS OF THE ERIE COUNTY PARK SYSTEM, ERIE COUNTY, NEW YORK

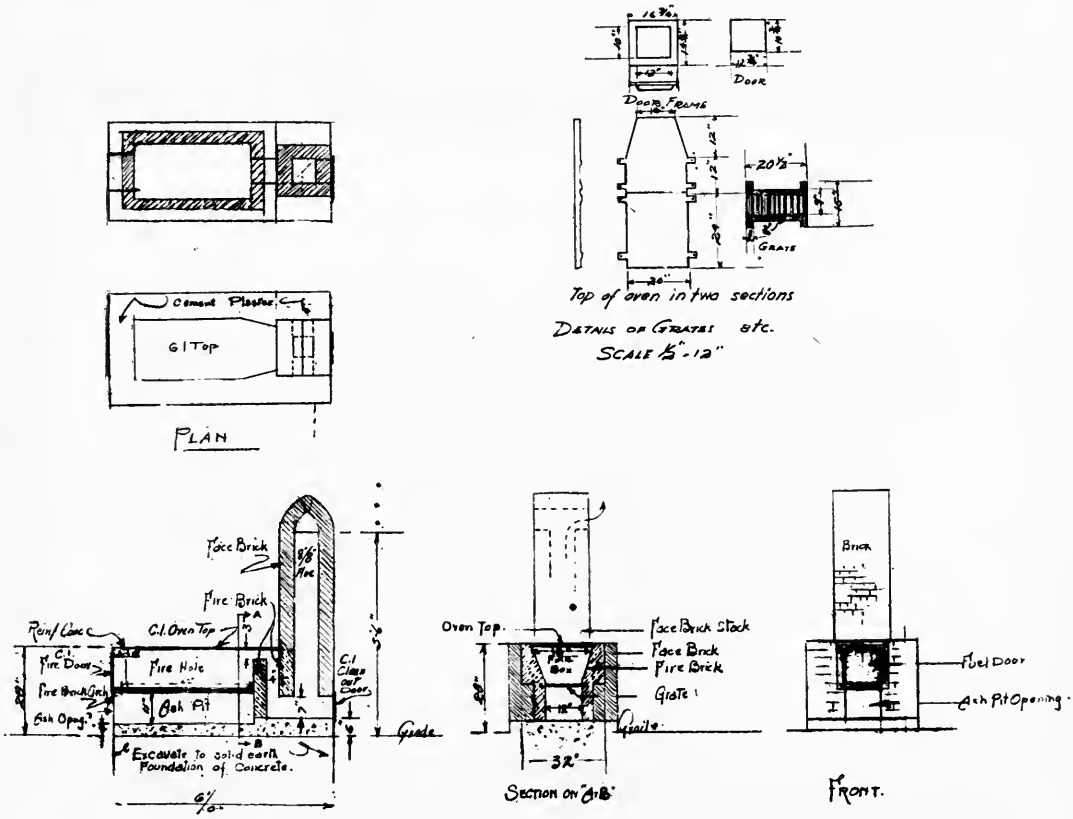


PLATE NO. 180

DESIGNS OF LARGE OVEN, ERIE COUNTY PARK SYSTEM, ERIE COUNTY, NEW YORK

Unless fuel is very plentiful this type of oven is not desirable. See Plate 178.

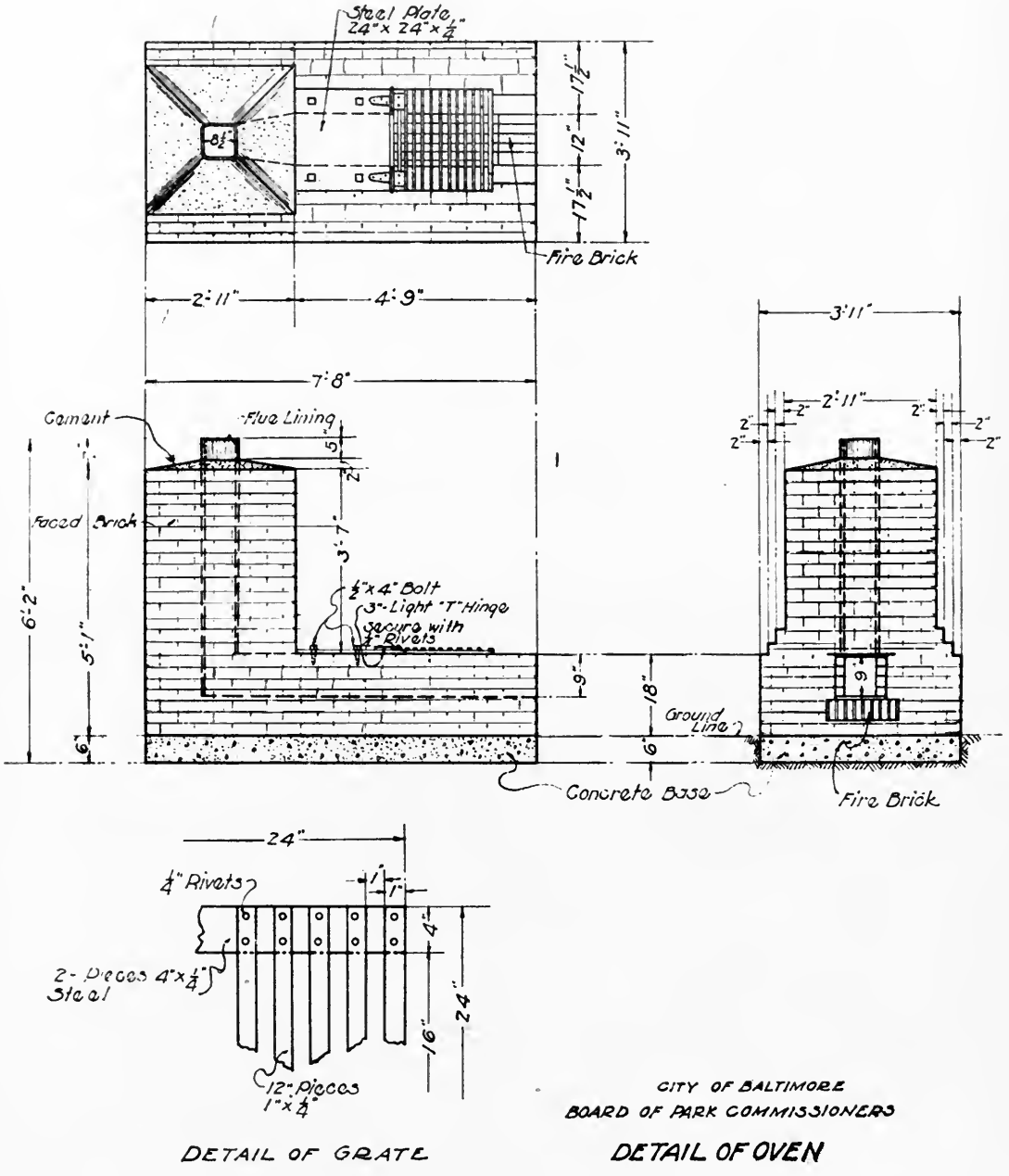


PLATE NO. 181

DESIGN OF OVEN USED IN BALTIMORE PARK SYSTEM, BALTIMORE, MARYLAND

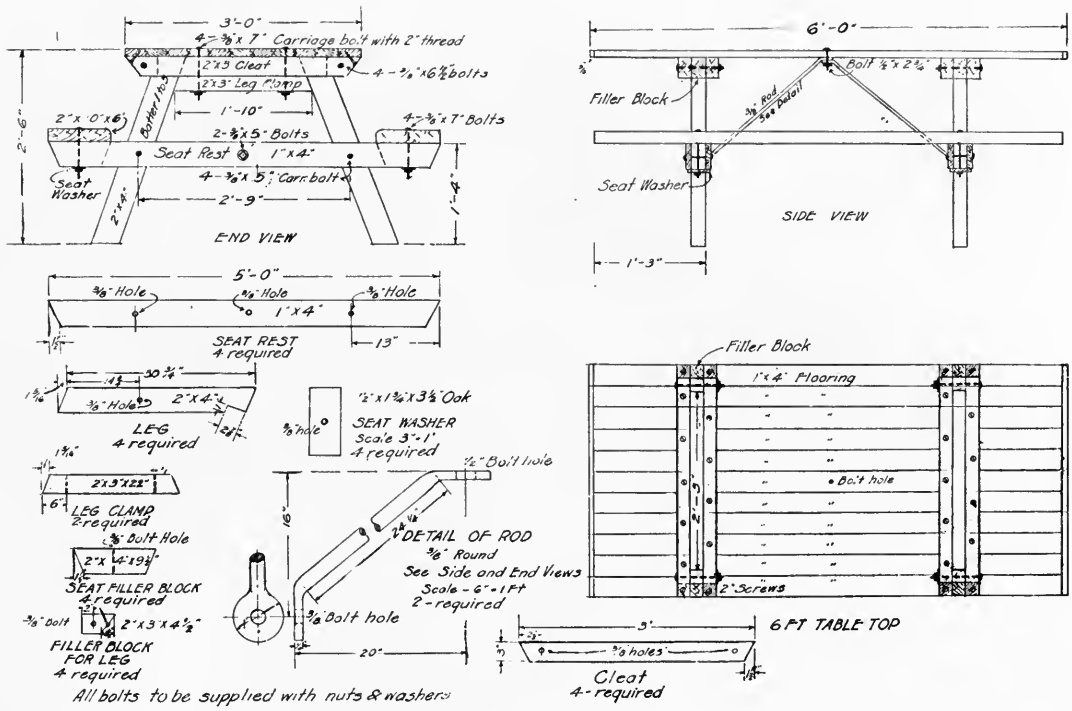


PLATE No. 182

DESIGN OF TABLE USED IN CLARKE COUNTY TOURIST PARK, CLARKE COUNTY, WASHINGTON

It was designed by United States Forest Service in Oregon, known as the Eagle Creek Camp Table. The particular feature of this table is that it can be knocked down by removing two bolts. This facilitates its storage at such times as it is not in seasonal use.

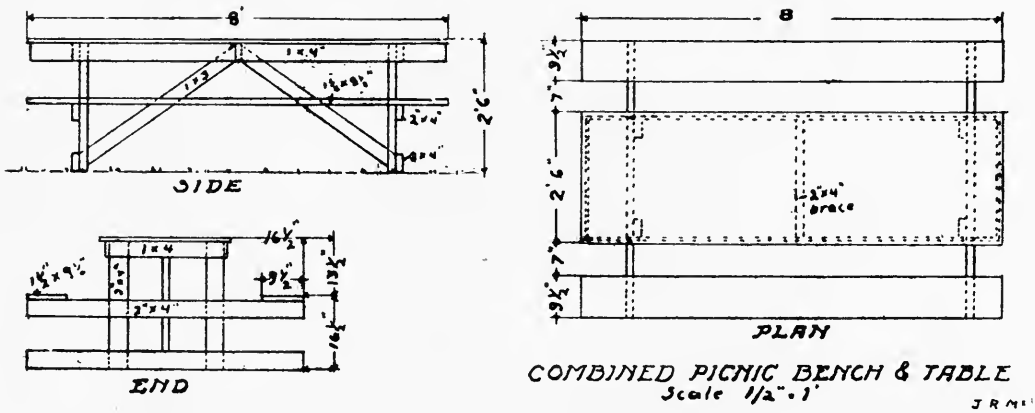


PLATE No. 183. DESIGN OF A COMBINED PICNIC BENCH AND TABLE

Design by J. R. McConaghie, Bureau of Municipalities, Department of Internal Affairs, State of Pennsylvania.

PLATE No. 184. A TYPE OF ADIRONDACK SHELTER

Used extensively in the rural parks of the Erie County Park System, Erie County, New York.

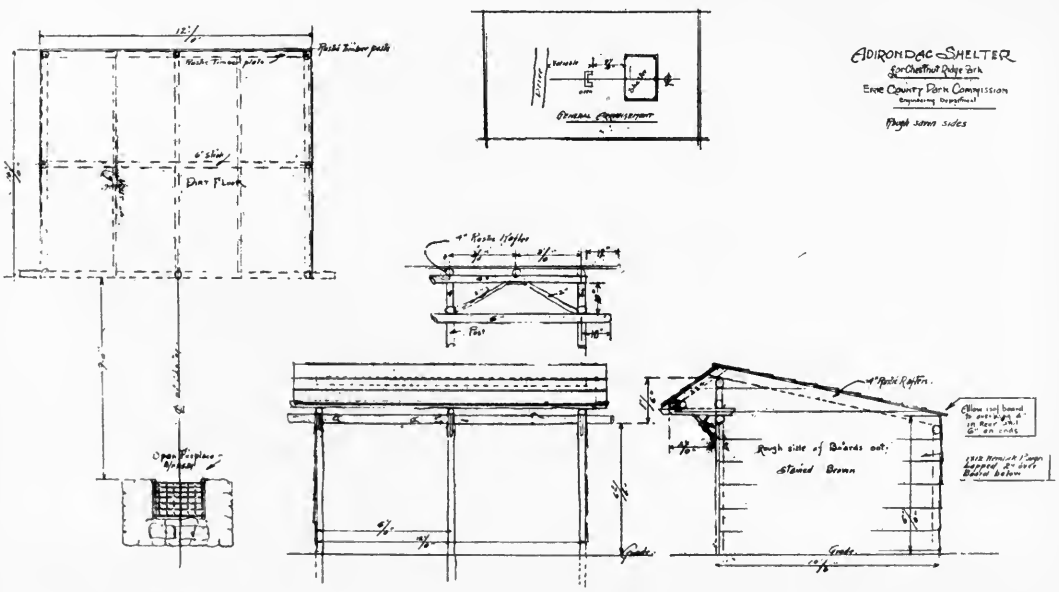


PLATE No. 185. PLANS OF ADIRONDACK SHELTER SHOWN IN PLATE 184

Erie County Park System, Erie County, New York.

PLATE No. 186
ONE OF SEVERAL PICNIC CAMP SHELTERS, HILLS AND DALES PARK, DAYTON, OHIO

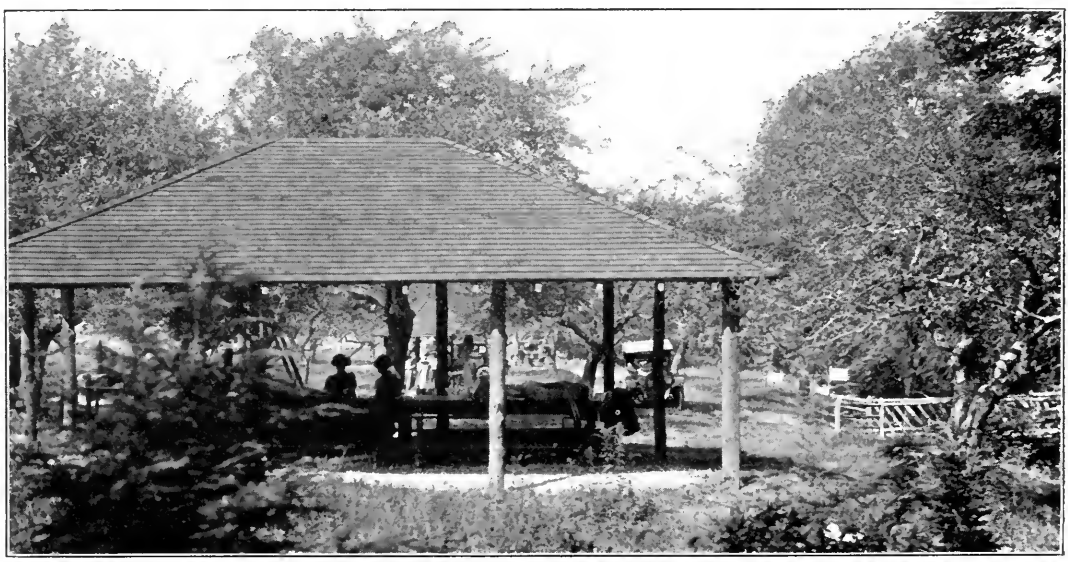


PLATE No. 187. A SIMPLE TYPE OF SHELTER

The simplest of all types of structures, consisting merely of a roof resting on poles set in the ground or on concrete. (Erie County Park System, Erie County, New York.) (See Plate 189 for plans.)

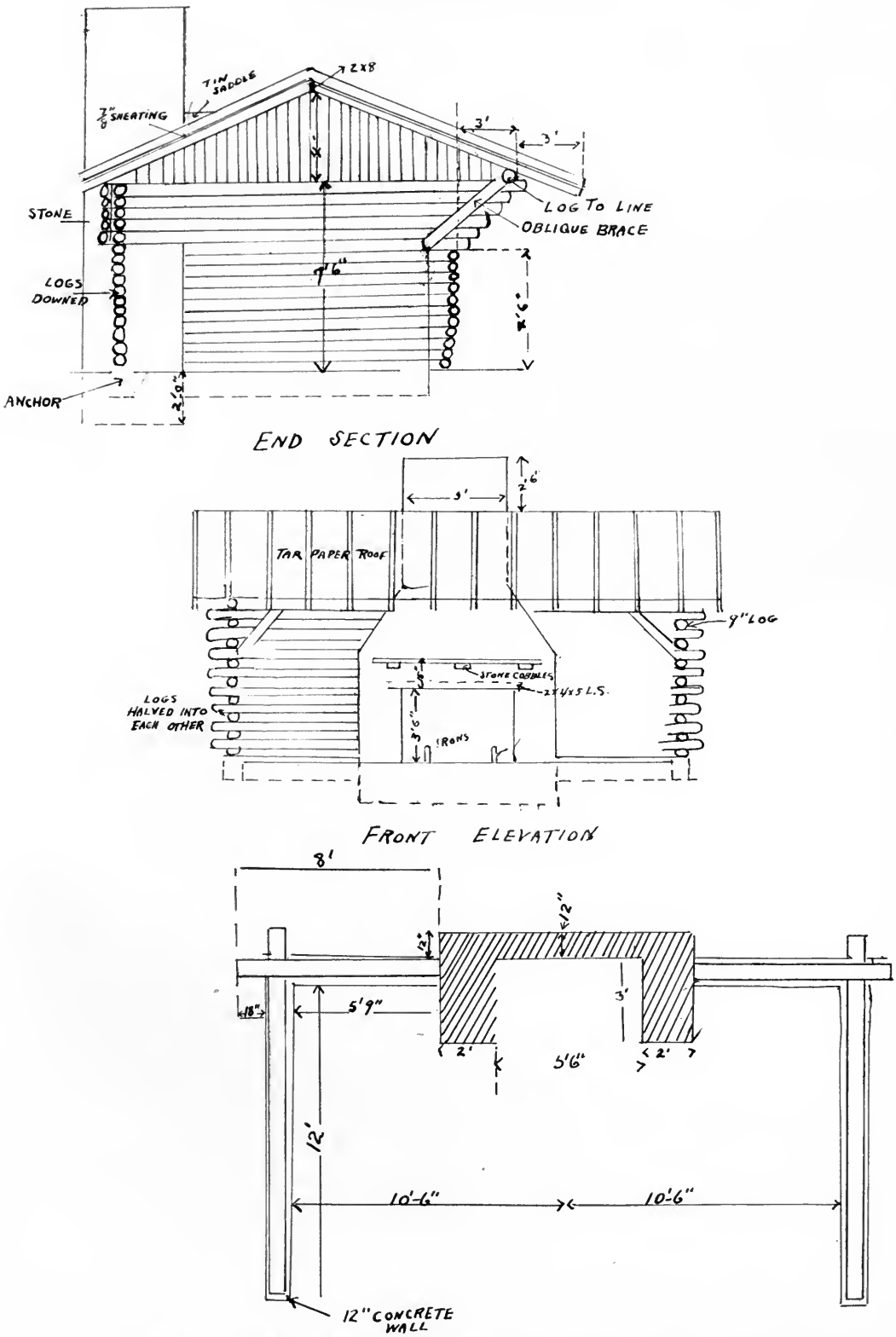


PLATE No. 188. END SECTION, FRONT ELEVATION AND FLOOR PLAN OF PICNIC SHELTER, HILLS AND DALES PARK, DAYTON, OHIO

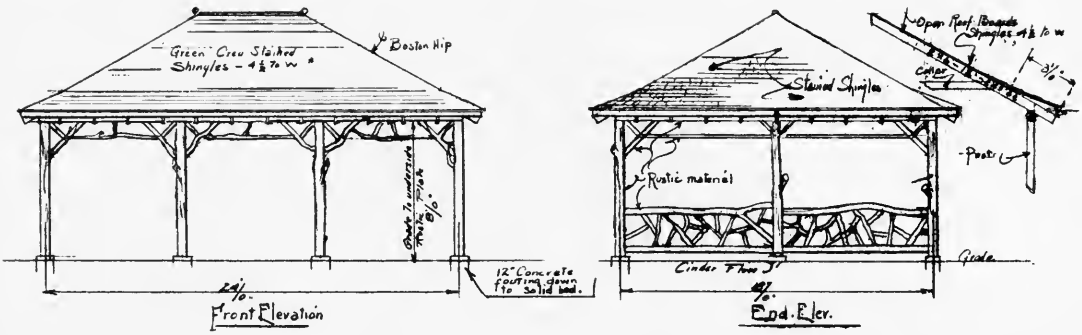


PLATE NO. 189. PLANS OF SHELTER SHOWN IN PLATE 187
Erie County Park System, Erie County, New York.

PLATE NO. 190
AN INTERESTING PICNIC CENTER AND SHELTER, BROOKSIDE PARK, PASADENA, CALIFORNIA

Poles, set on concrete foundation stones, support a thatched roof.

Park Buildings

In order to render the various services required of it, a park system must be provided with many different types of buildings. The design and construction of these buildings are important phases of park development. Not only should park buildings effectively serve a practical purpose, but they should also be "so designed that they seem to belong; that they seem indigenous." Careful study should be given to the uses to which each building is to be put, and it should be planned so as to give the maximum of service. The material in this section, describing various types of park and recreation buildings, has been grouped under the following general headings: Shelter and Comfort Buildings, Recreation Buildings, Golf Clubhouses, Outdoor Theatres, Miscellaneous Structures. Some simple buildings have previously been described under Picnic Facilities, pages 385–392. For bathhouse plans and illustrations, see pages 374–375.

Shelters and Comfort Buildings. Under this general classification are included buildings which are intended primarily to provide shelter and comfort facilities, rather than a place in which recreational activities are to be carried on. Many buildings of this type are used, however, for recreation, and in some instances certain recreation facilities have been included. It will be noted that shelter buildings generally provide toilets for both sexes, an office, storage space for supplies, and a large room or open area which serves as a shelter, and is also available for recreation use.

The type of building shown in Plates 191, 192 has been adopted for its playgrounds by the Bureau of Recreation of Evanston, Illinois. The building shown has a central office and comfort station and two wings which provide rooms for recreational use. On some of the playgrounds, buildings have been erected with only the center section. The wall panels used in the wings may

Plate No. 191. COMBINED SHELTER AND COMFORT BUILDING, EVANSTON, ILLINOIS

be removed to form open shelters during the summer months. These panels have four by four-inch posts and one and a half-inch sash, glassed with D. S. glass. They are fitted with stops, and at the foot of each post is an iron shoe with pin fitting into the concrete. Some of the Evanston buildings are similar to the one shown in Plate 191 except that they have only the central section without the wings. In the case of the smaller buildings, lattice screens are provided at the toilet entrances. The dimensions of the central unit are twenty by twenty and one-half feet and each of the end sections is approximately twenty by twenty-four feet, making the total length of the complete shelter sixty-eight feet. The height is sixteen feet. The construction is largely brick, with cut stone window sills and a roof of prepared shingles. The floors are cement. The building is heated by steam on the low pressure gravity system, and is provided with an Ideal Arco Heater. The shelter rooms are each heated by three radiators placed on the ceiling. The following is a detailed statement of the cost of the Evanston building in 1926:

Large shelter and comfort station with two wings:	
Masonry, concrete and carpentry work. . .	$6,100.00
Electrical work	140.00
Steam heating	829.00
Plumbing and sewers	746.00
Connecting to sewers	154.00
Total cost	$7,969.00

Small shelter and comfort station without two wings:	
Building	$2,900.00
Plumbing	625.00
Electric	105.00
Sewer and water	410.00
Total cost	$4,100.00

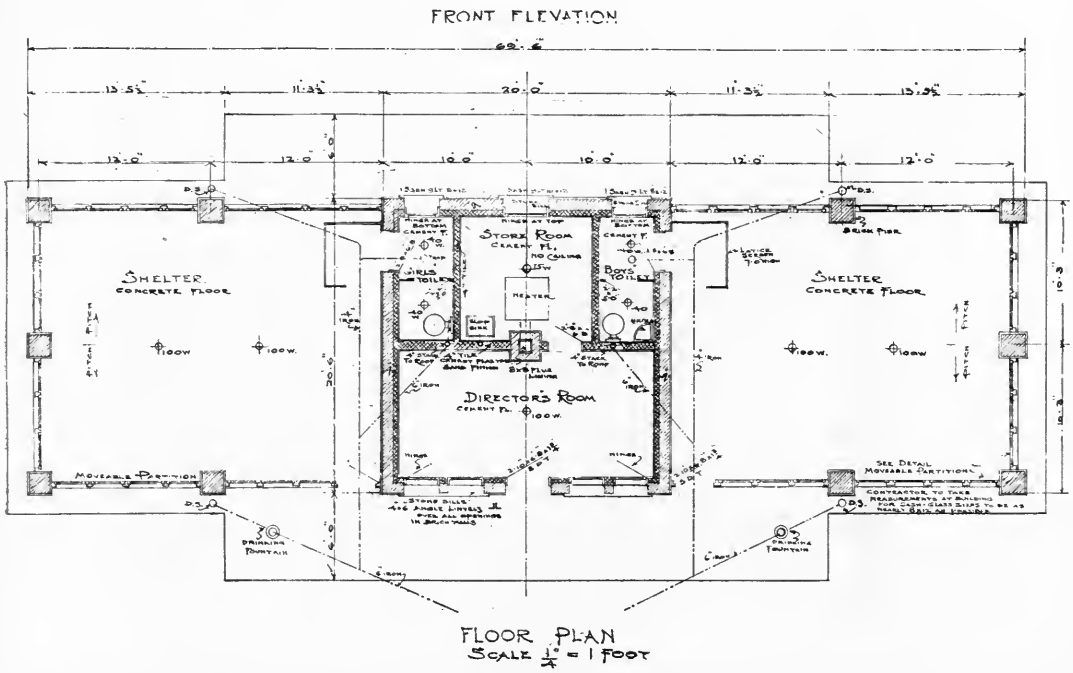


PLATE NO. 192. FLOOR PLAN OF EVANSTON SHELTER HOUSE

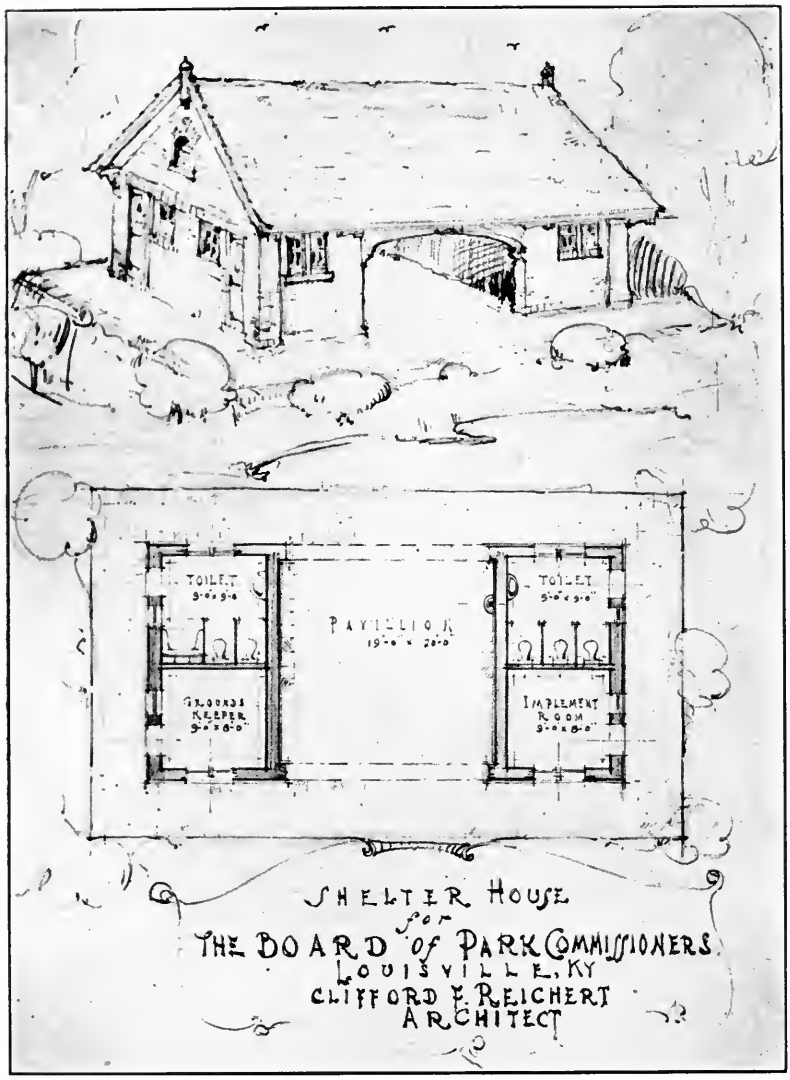


PLATE NO. 193

SHELTER HOUSE FOR THE BOARD OF PARK COMMISSIONERS, LOUISVILLE, KENTUCKY

At a cost of $5,695 each, the Board of Park Commissioners of Louisville constructed in 1924 two shelter houses of similar design and construction. Each house is built of brick laid on a foundation of concrete with all exterior walls of rough texture faced brick of mingled shades of brown. The doors and other outside half timber work are of rough cypress stained a warm brown, with frames and sashes of ivory tint. The roof is of red shingle tile and all gutters and outside metal of copper. This reduces the upkeep to a minimum. The toilets have tile floors and walls with cement plaster ceilings sand finished. All plumbing fixtures are of the best, and special attention has been given to the provision of adequate light and ventilation. The rooms for the grounds keeper and for implements are plastered, with cement floors. The floor of the pavilion is cement with borders of red mastic marked off to form tiles.

PLATE No. 194. A STANDARD TYPE OF COMBINED SHELTER AND COMFORT BUILDING

Used on recreation areas under control of Bureau of Recreation, Philadelphia, Pennsylvania. The cost of this type of structure ranges between $8,000 and $10,000.

PLATE No. 195

PLAN OF TYPICAL PLAYGROUND SHELTER, PHILADELPHIA, PENNSYLVANIA

Playground field houses similar to that shown in Plate 196 are constructed by the Extension Department of the Milwaukee Public Schools on the playgrounds conducted by this department. As in the Chicago school playgrounds it has been found desirable to have a structure especially designed for playground use, instead of using the regular school buildings. This type of building is equally suitable for park playgrounds. In the design of all these field houses in Milwaukee the following basic principles are involved:

(1) Girls' toilet on the girls' side of the playground, boys' toilet on the boys' side of the grounds. These are located, if possible, on opposite sides of the building. (2) Outside entrance to the toilets leading first into a vestibule. (3) Instead of separate closet for play material, spacious cupboards are built in these vestibules. The reason for this is to bring the play leaders into the vestibule as often as possible, so that frequent supervision of the toilets is possible. (4) Assembly room (warming room during the skating season) across the front of the building, with entrances into the vestibules. During the summer season these entrances leading from the assembly room are kept locked. During the winter, when the warming room is in constant use, the outside entrances to the vestibules are locked. (5) The field houses are entirely of brick with tile roof, giving a substantial sanitary and attractive structure. In the toilet rooms, tile and marble are used exclusively. The initial cost of these buildings is high, but because of the negligible upkeep costs it is believed that they are cheaper in the long run.

PLATE NO. 196
PLAYGROUND FIELD HOUSE, AUER AVENUE PLAYGROUND, MILWAUKEE, WISCONSIN

Recreation Buildings. This designation is intended to cover such park buildings as are designed primarily for general recreational use. They usually provide gymnasium, showers and dressing room facilities, and frequently include an auditorium with stage, game rooms and clubrooms for use of community groups. Before preparing or approving plans for a recreation building, a careful study should be made of the needs in various features in order to determine what facilities should be provided. Louis E.

Jallade, building consultant of the P. R. A. A., has suggested that the following five ideas be kept in mind in planning recreation buildings: (1) *Supervision.* This is important because of expense of maintaining a large staff. Different parts of building should be units which can be used separately if desired. Visibility is important from point of view of control, especially in gymnasiums, swimming pools, etc. If several points must be supervised, operation costs are high. (2) *Circulation.* The line of circulation of each person using building should be direct so other persons using building will not be disturbed. For example, people using the auditorium should not be obliged to pass through a game room, or people using the swimming pool should not be obliged to pass through from locker room into shower and back again into locker room before entering pool. (3) *Flexibility.* No one room should be dedicated to any exclusive use. For example, if the building contains a swimming pool and a gymnasium, it should be possible for men to use one and women the other at the same time. Rooms set aside for infrequent use by any special group are nearly as expensive to maintain as if constantly used. (4) *Upkeep.* This is most important. The building should be so constructed and materials selected that the item of yearly repairs is nearly nil. Otherwise the expense is great, as, for example, where plaster is used around shower rooms, or where one room, although not used,

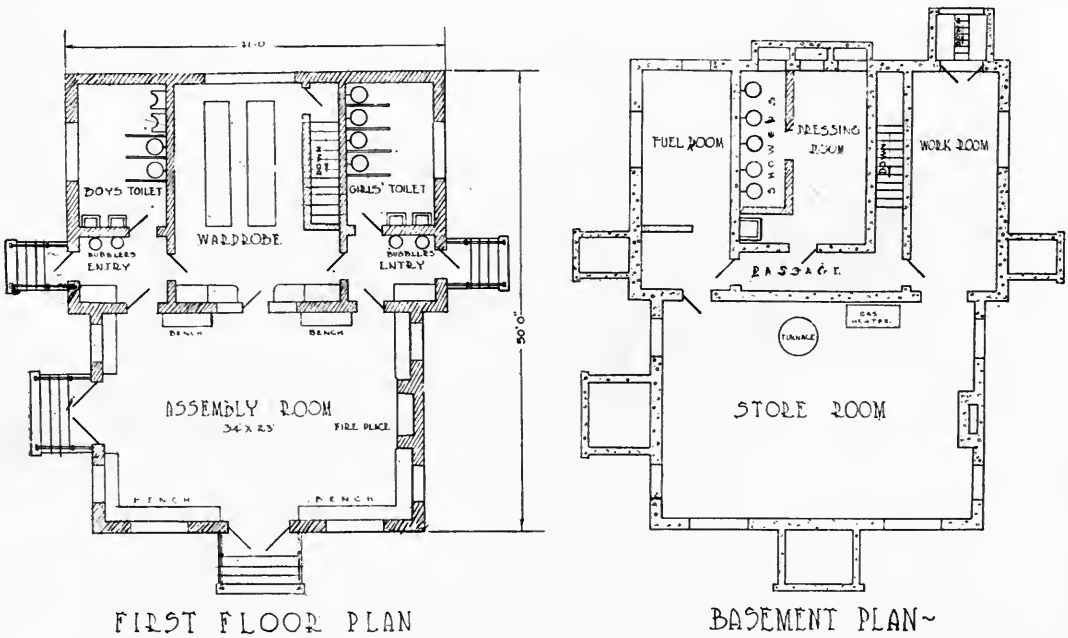


PLATE NO. 197

BASEMENT AND FIRST FLOOR PLANS OF THE AUER AVENUE PLAYGROUND FIELD HOUSE

Auer Avenue Playground, Milwaukee, Wisconsin.

(For illustration of this structure, see Plate 196.)

must be heated in order to heat another. Unnecessarily wide corridors are also expensive, not only because of original cost, but because they require added janitor service, heat, light, painting and insurance. (5) *Operating budget.* Before the building is constructed, an operating budget should be drawn up covering heating, lighting, water, insurance, supplies, janitor service, repairs and similar items. If fees are to be charged for the use of facilities, an income budget will also be prepared.

A Few Examples of Recreation Buildings.

The following plates show examples of a number of recreation buildings throughout the country. They include not only community houses and recreation buildings but golf clubhouses with social features, recreation pavilions and similar structures.

PLATE No. 198. SOUTH SIDE CLUBHOUSE, SACRAMENTO, CALIFORNIA

This attractive building, which was erected in 1925 at a cost of $9,110, is an interesting example of the multiple use of a small and inexpensive structure. Three groups can use this building at the same time without interfering with each other. Among the features provided are assembly hall, 28 x 36 feet, with stage and fireplace, two supervisors' rooms, girls' clubroom, kitchen, dressing rooms which can be made into a clubroom, tool room, showers, toilets and living quarters for the attendant. Perhaps there is no other recreation building erected at a cost of less than $10,000 which provides such a variety of effectively arranged facilities. The cost of constructing such a building would be greater in a part of the country having severe winters, since it would be necessary to provide a heating plant and more expensive construction.

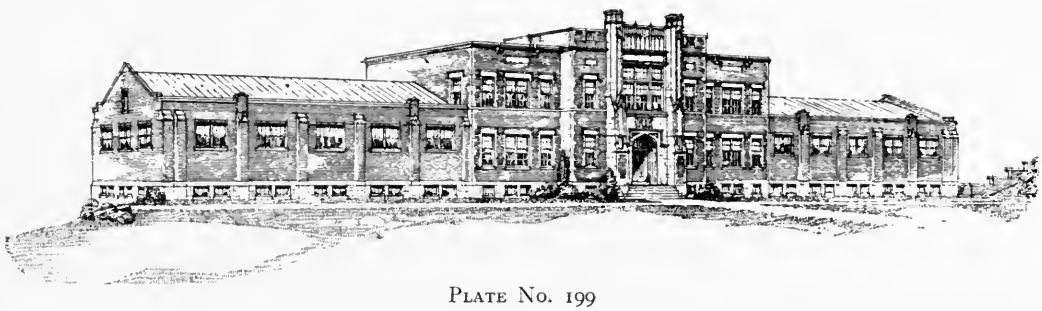


PLATE NO. 199

KENDRICK RECREATION CENTER BUILDING, BUREAU OF RECREATION, PHILADELPHIA, PENNSYLVANIA

As will be seen from the plans, this modern and excellently designed building provides facilities for a variety of community groups and activities. It is to be noted that the facilities for men and boys in the basement and first floor are completely isolated from the similar facilities for women and girls. This building was erected in 1927 at a total cost of $179,268, distributed as follows: General construction, $152,400; plumbing, $6,935; heating, $10,285; electrical, $9,648.

PLATE NO. 200

GROUP OF PARK BUILDINGS, CALUMET PARK, SOUTH PARK COMMISSIONERS, CHICAGO, ILLINOIS

This is a picture of one of the most complete and best equipped recreation buildings in America. The cost of the building unequipped was $380,000. The outside walls of the buildings are of rough concrete with tile center, and the roof is of tile. Marble trimmings are used throughout. The floors are of maple except in the shower and locker rooms, lounge and lobby, where terazzo tile has been used. Among the facilities provided are separate gymnasiums, lockers and showers for men and women, library, lounge room, lecture room, clubrooms and large assembly hall with stage. In the enormous basement are kitchen and banquet room, shops and workrooms for various types of crafts. For example there are rooms equipped with sewing machines and quilting frames for the use of women's classes. A feature of the building which can be seen in the illustration is the roof vents in the top of the gymnasiums and assembly hall. These vents help the dust to escape and also clear the air when the rooms are used by large groups.

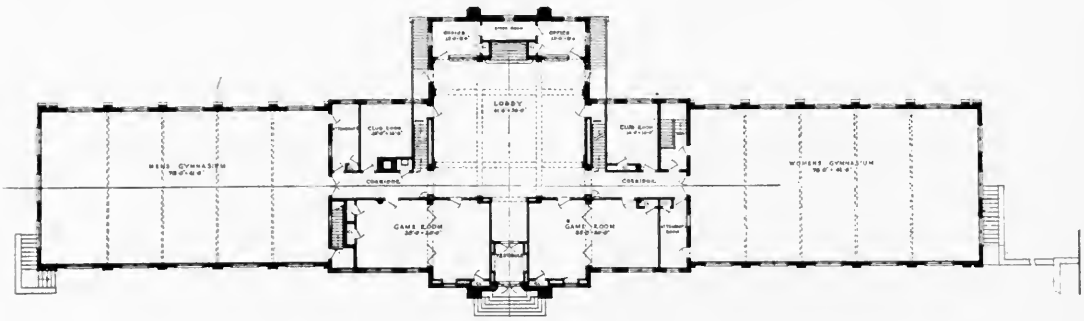


PLATE No. 201

FIRST FLOOR PLAN KENDRICK RECREATION CENTER BUILDING, BUREAU OF RECREATION, PHILADELPHIA, PENNSYLVANIA

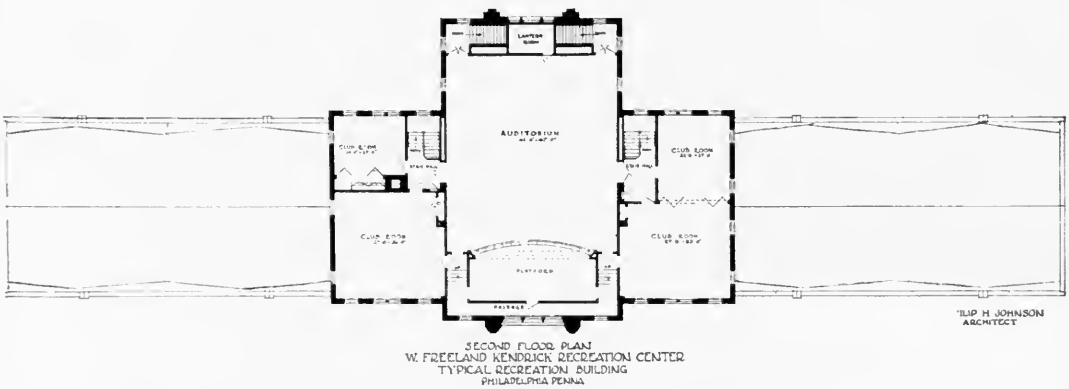


PLATE No. 202

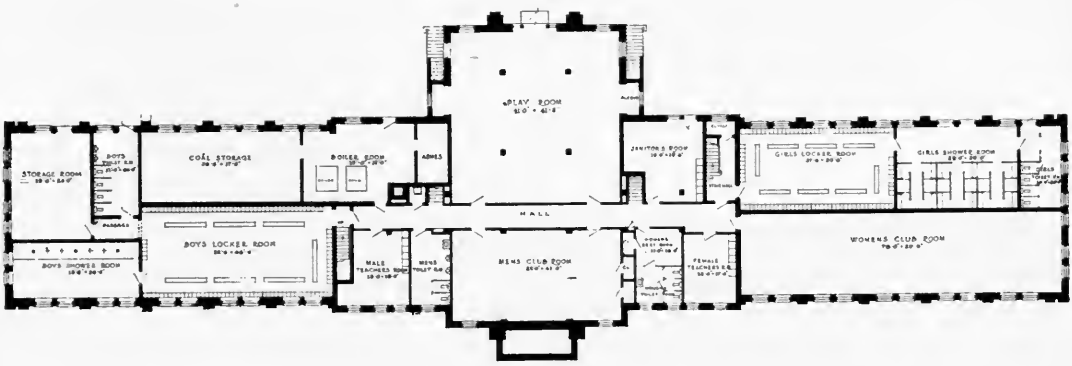


PLATE No. 203. BASEMENT PLAN

Many golf clubhouses provide social features which make it possible for them to serve as recreation centers. Minneapolis in its Columbia Park golf clubhouse has a splendid social center. (See Plates 205 and 206 for plans of building.) Plates showing a number of other golf clubhouses will be found in Chapter IV, pages 156–162.

Cost Report, Columbia Park Golf Clubhouse, Minneapolis, Minnesota, Erected 1924-25.

Contract work:	
General work	$51,114.54
Plumbing work	5,045.80
Hot air heat	4,100.00
Steam heat	800.00
Electric work	1,842.64
Basement:	
Excavation	2,408.90
Architects and supervision	3,421.23
Insurance, builders' risk, fire	600.00
Electrical service, installation	372.24
Electrical fixtures, special	913.75
Excess service, Gas Company	18.75
Flooring	78.89
Furniture and furnishings	4,766.68
Equipment for refectory	453.69
Shelving	49.05
Tee house	397.48
Tool house	63.66
Miscellaneous clubhouse	1,185.24
Total	$77,632.57

PLATE No. 204. COLUMBIA PARK GOLF CLUBHOUSE, MINNEAPOLIS PARK SYSTEM, MINNEAPOLIS, MINNESOTA

An excellent building serving both as a golf clubhouse and a recreation center. The social rooms and card rooms are in great demand.

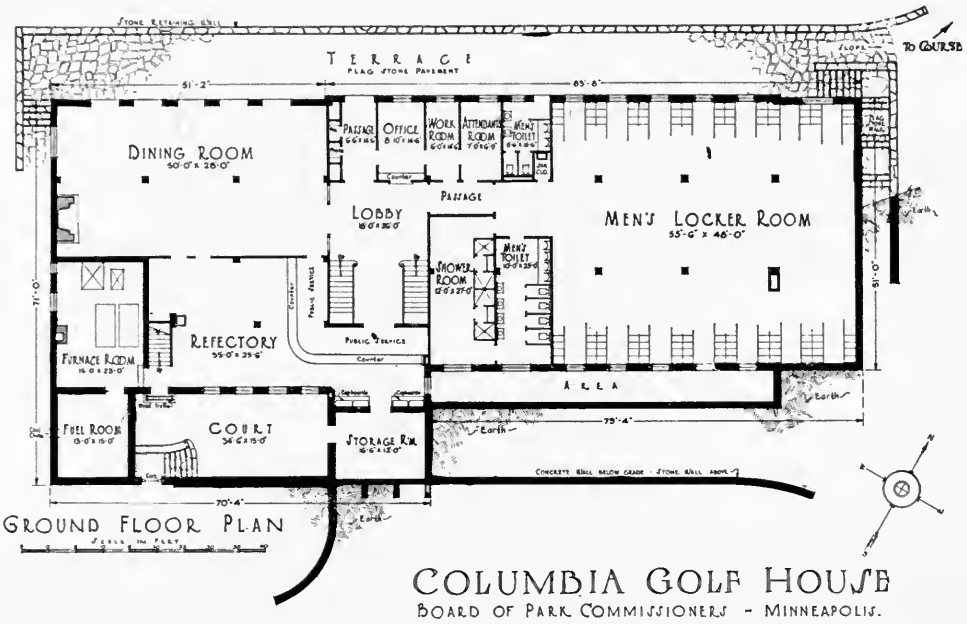


PLATE No. 205

GROUND FLOOR PLAN, COLUMBIA PARK GOLF CLUBHOUSE, MINNEAPOLIS, MINNESOTA

Note arrangement of showers, toilets, provision of closets for janitor and outside toilet.

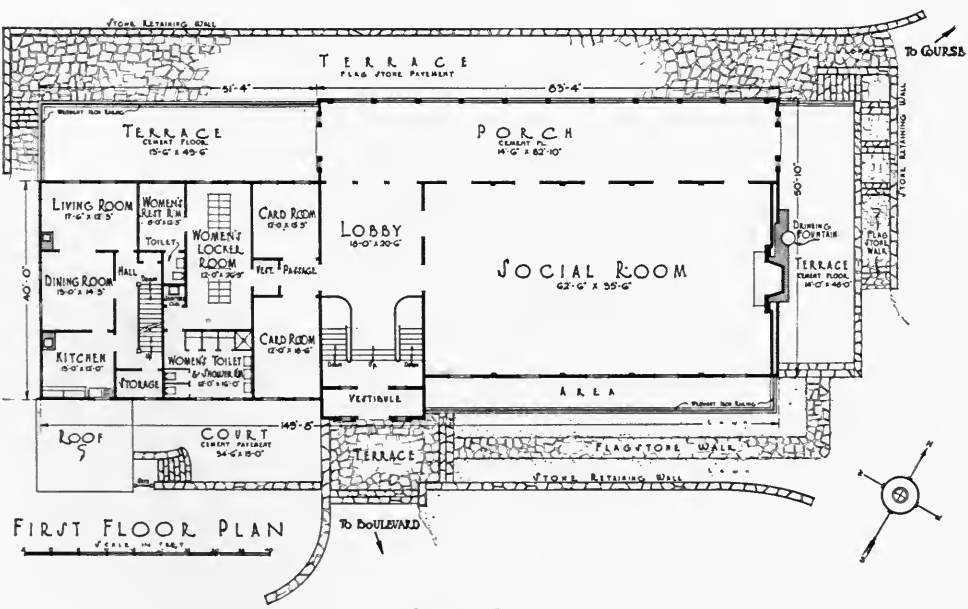


PLATE No. 206

FIRST FLOOR PLAN, COLUMBIA PARK GOLF CLUBHOUSE, MINNEAPOLIS PARK SYSTEM, MINNEAPOLIS, MINNESOTA

Note that living quarters for the golf course keeper are provided.

PLATE No. 207. RHODIUS PARK COMMUNITY HOUSE, INDIANAPOLIS

This building provides an auditorium with stage and dressing rooms, lounge, kitchen and a room 20 x 56 feet, which may be used for banquets and various meetings. It was constructed in 1926 at a cost of approximately $40,000, a moderate amount in view of the facilities provided. There is no excavation under the building except at the south end, where a kitchen 10 x 19 feet, toilets for men, coal storage space and a boiler room have been provided. Most of the building is only one story high, but at the north end of the building there is a second story, providing space above the stage and ample dressing rooms in either corner. At the south end of the building is a second floor providing a lounge and social room, 20 x 56 feet, and toilets for women.

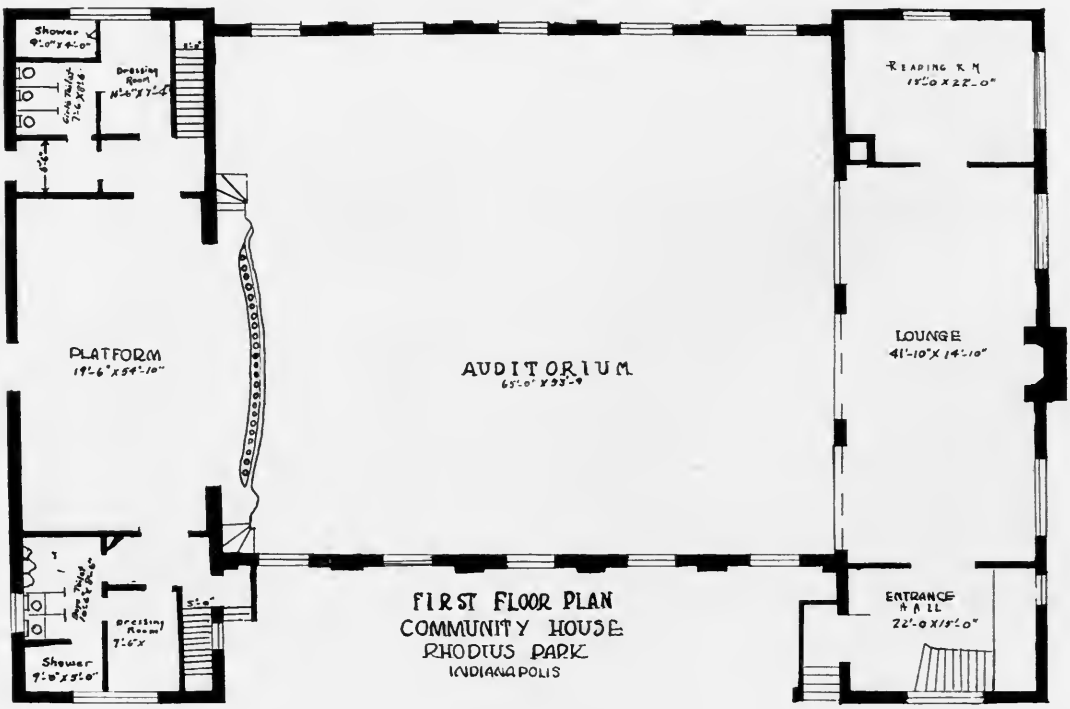


PLATE No. 208

PLATE No. 209. RECREATION PAVILION, HAMILTON PARK, WATERBURY, CONNECTICUT

The cost of this recreation pavilion, including complete equipment, was approximately $75,000 (1925). There is a four-acre athletic field immediately adjacent to the building. During the winter this field is flooded and used for skating. The center is therefore operated the year round. All receipts and activities are handled by the Park Department. (For the basement and first floor plans of this structure see Plates 211, 212.)

PLATE No. 210. INTERIOR VIEW OF AUDITORIUM-DANCE FLOOR, RECREATION PAVILION, HAMILTON PARK, WATERBURY, CONNECTICUT

Length of hall, exclusive of stage, 90 feet; width, 59 feet.

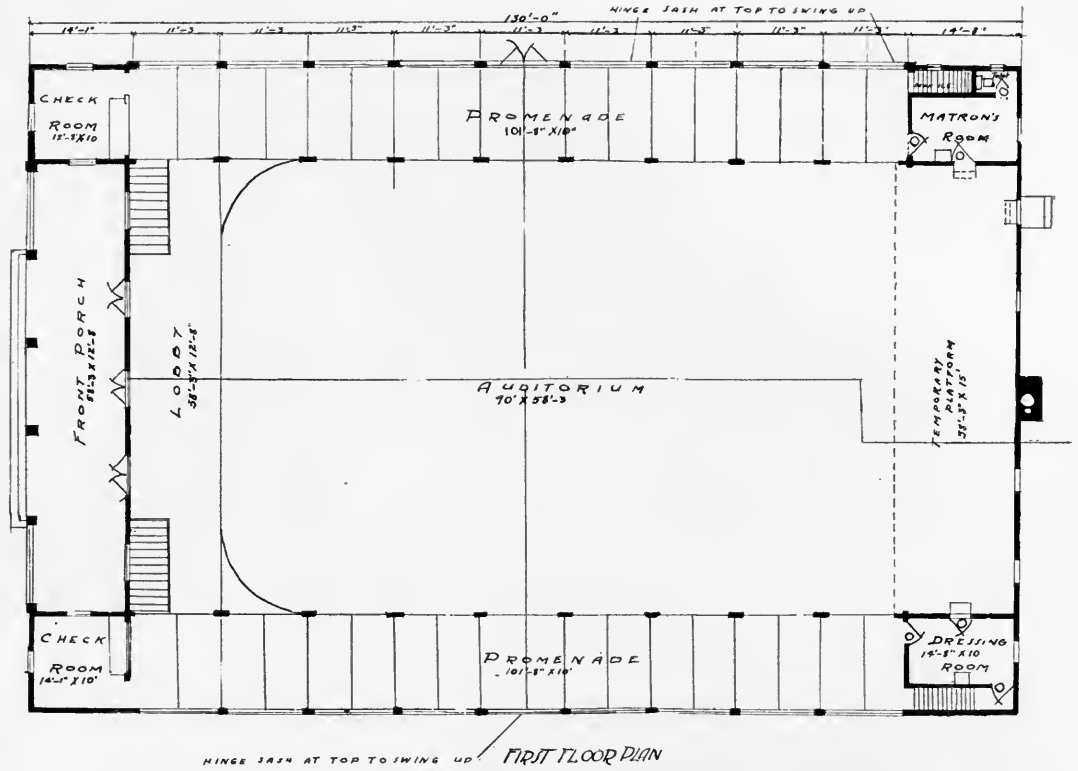


PLATE No. 211. FIRST FLOOR PLAN, WATERBURY PAVILION

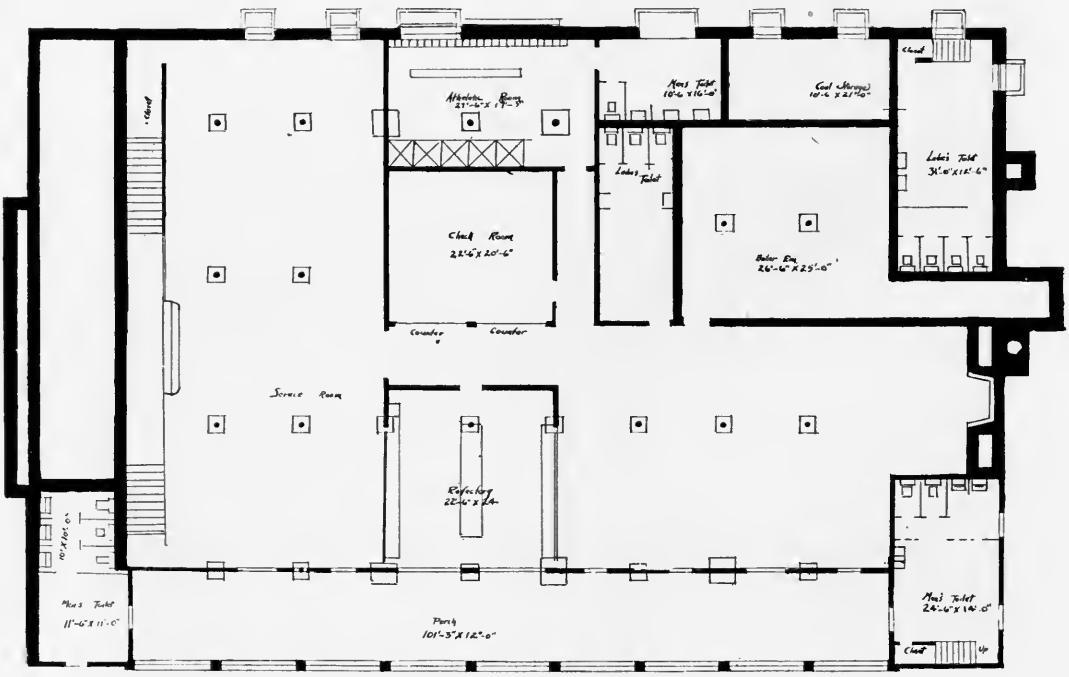


PLATE No. 212. BASEMENT PLAN, WATERBURY PAVILION

Outdoor theatres. It was in the open air theatre that first the Greek dramatists and later the Shakespearian masters gave expression to their great art. Today we are witnessing the third stage in the development of the outdoor theatre, and everywhere, from the well-known Greek theatre of Berkeley, California, to the natural, leafy, pageant theatre of Peterboro, New Hampshire, are to be found these beautiful open air theatres.

The examples which follow range from the effective naturalistic theatre to the elaborate structures built by a number of cities. No park system need be without a simple outdoor theatre.

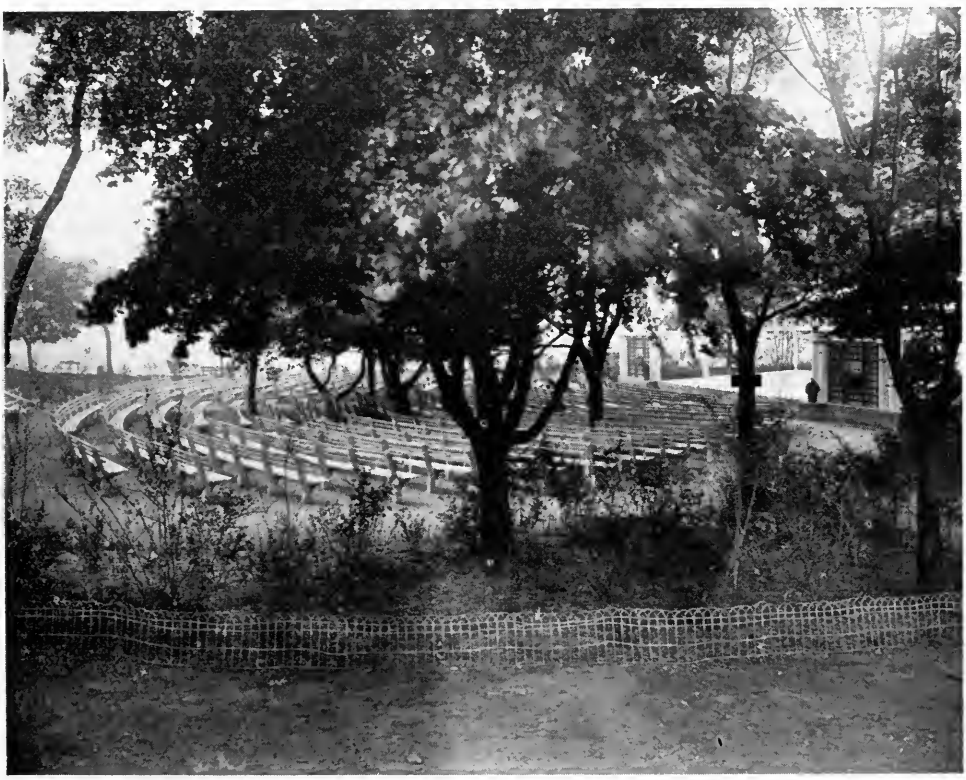


PLATE No. 213. OUTDOOR THEATRE, WILLOWS PARK, SALEM, MASSACHUSETTS

The stage is a concrete structure two feet above grade and twenty-seven feet deep by forty feet wide, with columns on back and sides, with flower boxes on the floor between them. The stage lighting is so arranged that no shadows can be cast on the stage by the performers. In addition to the overhead and sidelights, opportunities are provided for portable footlights and lights for music racks. The seating area, radiating from the stage in the shape of a horseshoe, accommodates a thousand people in its comfortable, permanent and roomy settees. The auditorium is lighted by neat ornamental poles with colonial lantern tops. The entire area is enclosed by a heavy mixed planting, and approached from the higher land surrounding it by rustic masonry steps, giving the theatre a most attractive setting. There are pavilions at the side which will seat five hundred people and the large hill in the rear, planted with maple and Scotch pines, will seat approximately two thousand people.

PLATE No. 214. OUTDOOR THEATRE, WILLOWS PARK, SALEM, MASSACHUSETTS

PLATE No. 215. OUTDOOR THEATRE, VASSAR COLLEGE, POUGHKEEPSIE, NEW YORK

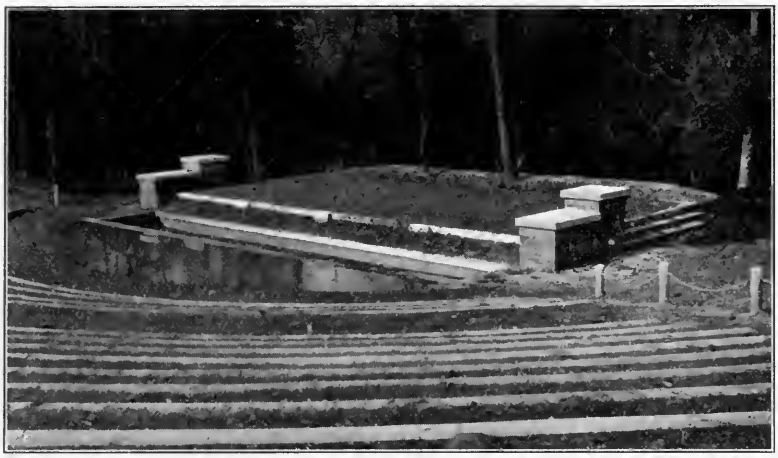


PLATE No. 216. OUTDOOR THEATRE, DARLINGTON, NORTH CAROLINA

The seating capacity of this theatre is two thousand. The stage, which has a grass surface, is slightly elevated and is easily visible from every seat. The wide entrances on either side provide for large pageant groups, and narrower ones lead to dressing rooms in the rear. In the front of the stage is a sunken orchestra pit, and in front of this is a reflecting pool which adds to the beauty and acoustic qualities of the theatre. Between each two rows of seats is a low brick wall capped with cement. Between the walls is a cushion of turf, obtained by sprigging in Bermuda grass on a well fertilized soil. The entire stage background will be screened by plantings. This attractive theatre, which was under construction when the photograph was taken, was designed by E. S. Draper, landscape architect, Charlotte, North Carolina.

PLATE No. 217

RANKIN MEMORIAL GARDEN THEATRE, COLD SPRING PARK, WOONSOCKET, RHODE ISLAND[1]

The theatre is built on the side of a hill of about three hundred degrees slope, so that an unobstructed view of the stage can be had from every seat. It has a seating capacity of about two thousand five hundred and the stage is of such size that as many as one thousand can appear on it at one time. What is believed to be an entirely new principle of construction was used in the erection of the theatre. Each seat is merely a terrace on the side of the hill, held in place by a reinforced concrete retaining wall cast in the shape of a T. These retaining walls were cast with movable forms. The ends of the seats are joined together with a reinforced concrete stringer surmounted by a rail, over which vines will trail. The four corners of the theatre end in concrete piers, on which flower pots filled with bedding plants will be mounted. The front of the stage has a field stone retaining wall. This will be covered with ivy and other climbing vines. The stage is finished with a turf surface, and privet and hemlock hedges outline the wings and act as screens for dressing rooms. The theatre is surrounded by a grove of fine old oaks and pines, which contribute a great deal toward the excellent acoustics. The complete cost of the concreting amounted to about $5,000; the grading about $2,000; the planting, landscaping, and finishing of the stage, approximately $3,000, making the total cost about $10,000. It had been hoped originally to finish the seating surfaces of the terraced steps with a turf, which when closely cropped would give an artistic parklike effect to the whole structure. The fact that the theatre was built on a gravel bank, however, made it impossible to raise a good stand of grass, so that it was deemed wiser to apply a top-dressing of bright-colored torpedo sand, rolled and packed. This will materially reduce maintenance costs. Spectators will sit on woven Japanese grass mats, which will be rented for a nominal sum, and the revenue thus derived will assist in financing entertainments.

[1]By Arthur Leland, designer of the theatre, *The American City*, June, 1926, pages 661, 662.

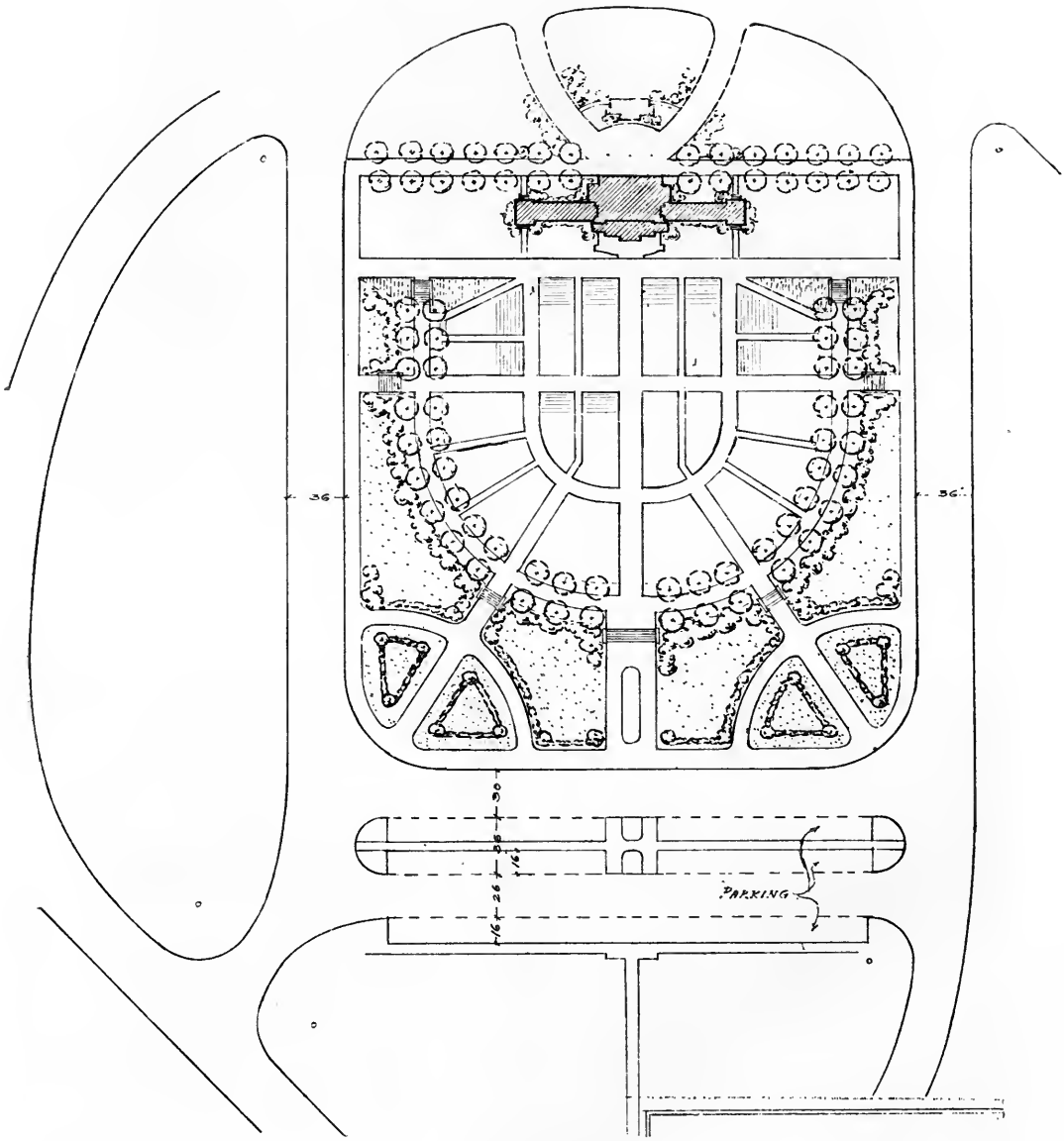


PLATE NO. 218

PLAN FOR THE DEVELOPMENT OF THE SEATING SPACE AT THE MILLER OUTDOOR THEATRE, HERMANN PARK, HOUSTON, TEXAS

The original topography was perfectly flat. The plan involves construction of a semicircular mound surmounted by a promenade walk, the inner slopes being used for seats and the outer slopes landscaped. Parking space is provided in the rear.

PLATE No. 219
MILLER MEMORIAL OPEN AIR THEATRE, HERMANN PARK, HOUSTON, TEXAS

PLATE No. 220
STAGE AND PART OF AUDIENCE AT THE MUNICIPAL THEATRE AT FOREST PARK, ST. LOUIS, MISSOURI

Seating capacity, 9,000

PLATE NO. 221. NIBLEY PARK WATER THEATRE, SALT LAKE CITY, UTAH

This little outdoor theatre is constructed over the water at one end of a park lake. The auditorium is formed by the semicircular, sloping shore line of the lake opposite the front of the stage. The illustration shows the orchestra, the cast and the stage setting for the opera, "The Fortune Teller," presented during the season of 1926.

PLATE NO. 222. PORTION OF THE AUDITORIUM OF THE NIBLEY PARK WATER THEATRE, SALT LAKE CITY, UTAH

Examples of Miscellaneous Types of Buildings.

Among recreation buildings on park properties will be found miscellaneous buildings of various types, such as dance platforms and pavilions, which contribute to the enjoyment of those coming to the park. A few examples of these buildings follow:

PLATE No. 223
THE CLAUS A. SPRECKELS MUSIC TEMPLE, GOLDEN GATE PARK, SAN FRANCISCO, CALIFORNIA

This dignified temple of music was donated by Mr. Claus A. Spreckels at a cost of $75,000. The outdoor auditorium, with a seating capacity of twenty thousand, is completely shaded by artistic plantations of trees. Throughout the year fifty-seven concerts are given in the Temple by a band supported by the Board of Park Commissioners. The design of the Music Temple is in the Italian renaissance. The chief material is Colusa sandstone, of an agreeable light color, and of great hardness. In elevation it presents a central feature, having a frontage of fifty-five feet and a height of seventy feet, flanked on either side by Corinthian columns. Within the high central structure is the niche or band stand, semicircular in plan, with ample capacity for one hundred musicians. Extending from the Corinthian columns on either side are colonnades fifty-two feet six inches by fifteen feet wide, each supported by sixteen Ionic columns. The columns are approached by steps from both the amphitheatre and park walks. The peristyle is indeed an architectural poem set to music. It is a thing of beauty in its pure simplicity, in the stately form of its columns and graceful outline. The bluish-gray tint of the stone is in harmony with the foliaged background.

PLATE No. 224. OPEN AIR DANCE FLOOR, COLT PARK, HARTFORD, CONNECTICUT

This structure, with a dance surface 87 x 128 feet, was built in 1916. The cost of the platform and seats was about $6,000. In 1917 the band shell was added at a cost of about $3,000. Booths have been erected for the checking of wraps and a stand where refreshments are on sale. The platform and surrounding park are well lighted and the absence of shrubbery in the immediate vicinity simplifies the problem of supervision.

PLATE No. 225

A COMBINED DANCE PAVILION, RESTAURANT AND REFRESHMENT CENTER AND GRAND STAND, WASHINGTON PARK, BOARD OF PARK COMMISSIONERS, MILWAUKEE, WISCONSIN

For view of other side of this pavilion, see Plate 175, page 383.

PLATE No. 226. DANCING PAVILION, MITCHELL PARK, BOARD OF PARK COMMISSIONERS, MILWAUKEE, WISCONSIN

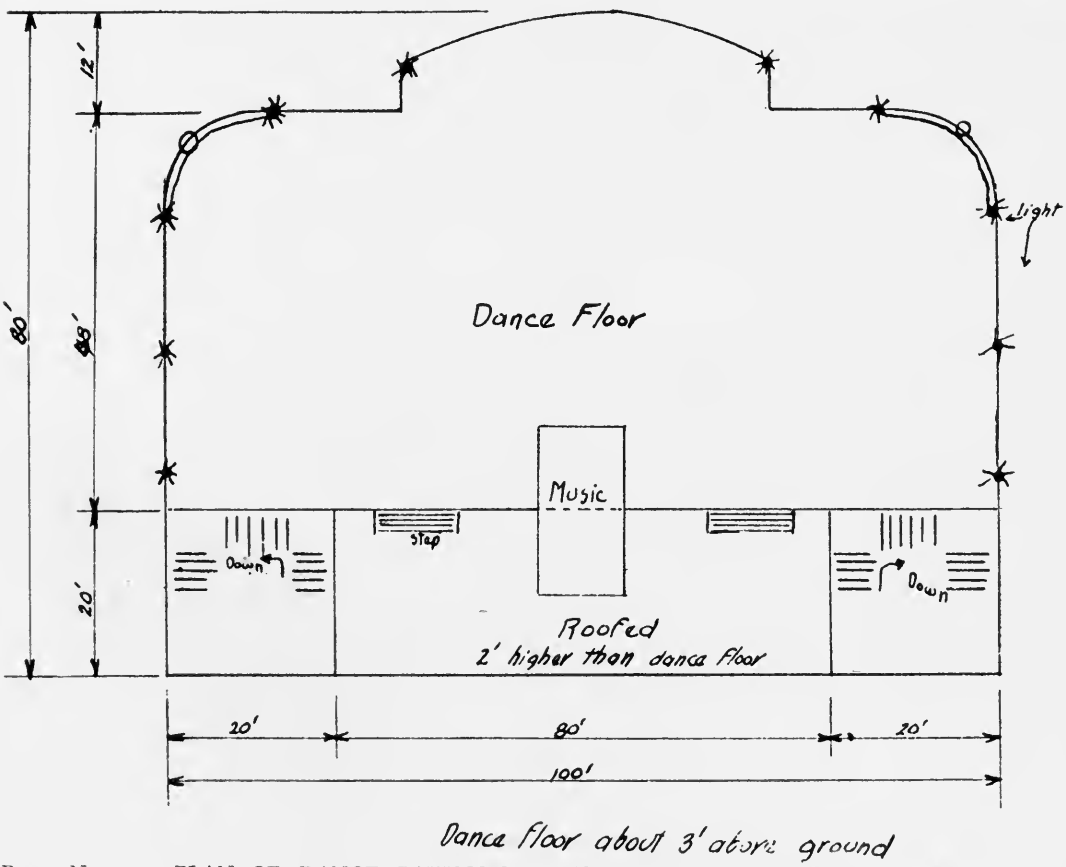


PLATE No. 227. PLAN OF DANCE PAVILION, MITCHELL PARK, MILWAUKEE, WISCONSIN

The cost of this dance pavilion was $20,000. Under the roofed over section is a basement containing check room and comfort facilities. Scale, one inch equals twenty feet.

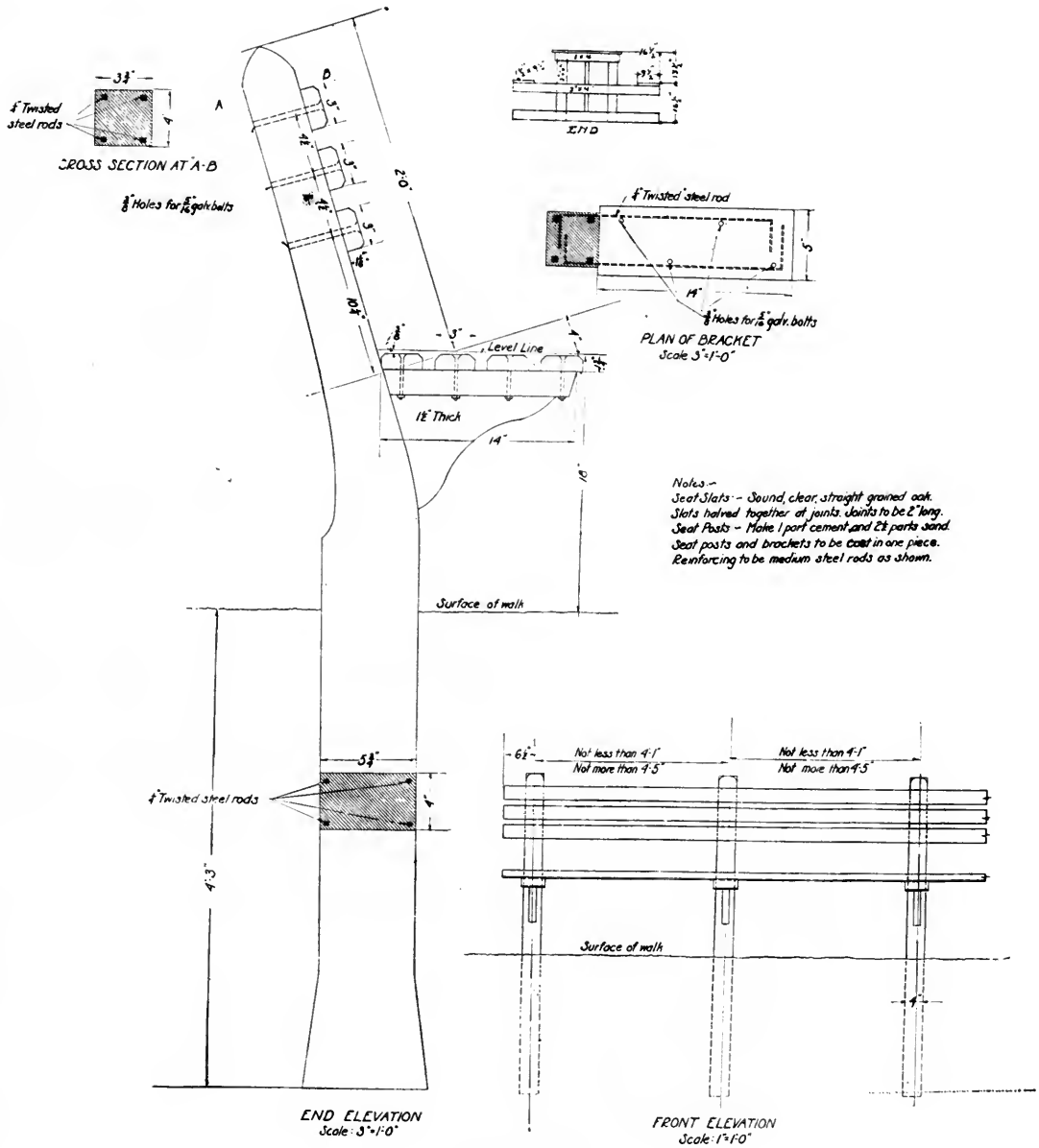


PLATE NO. 228

STATIONARY SEAT USED BY PARK DEPARTMENT, BOSTON, MASSACHUSETTS

This type of simple and durable seat is used in the parks of many cities. These seats are frequently made by employees of the park department. The following notes accompany the plan prepared by John J. Murphy, Engineer, Boston Park Department: Seat slats, sound, clear, straight grained oak; slats halved together at joints; joints to be two inches long; seat posts, make one part cement and two and one-half parts sand; seat posts and brackets to be cast in one piece; reinforcing to be medium steel rods as shown.

Playground Apparatus

Practically every type of playground apparatus desired for every type of playground can now be secured from playground equipment manufacturers. Plans and specifications for the installation of manufactured equipment can be secured from the manufacturers, and at a nominal charge they will generally send an expert to supervise installation if desired. In some communities, particularly small communities, it may be found advantageous to construct certain types of apparatus instead of purchasing it from the manufacturers. In the bibliography at the end of this chapter are listed a number of publications containing specifications and directions for making playground apparatus. It is fully realized that there are many construction problems which park and recreation workers must face that are not discussed in this chapter. The reasons for these omissions are lack of space, lack of adequate information, or the fact that literature dealing with the problems is readily available from other sources. Much valuable data will be found in the publications listed in the bibliography.

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"Highways and Highway Transportation." Bureau of Public Roads, United States Department of Agriculture, Bulletin No. 914, 1925. Contains section on modern methods and standards of road construction with discussion of grading, drainage and surfacing various types of roads.

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"Portland Cement Concrete Roads." Bureau of Public Roads, United States Department of Agriculture, Bulletin No. 1077, 1922. Detailed discussion of materials and quantities required, design, construction, organization, equipment, costs, maintenance, and resurfacing. Illustrated.

"Sea Walls, Groynes and Beaches," A. S. Wooton, Engineer Park Commission, Vancouver, B. C. *Parks and Recreation*, January–February, 1925, page 208. Illustrated.

"Stadiums." See bibliography, page 235.

Layout of Areas for Games and Sports

"Spalding's Athletic Library Series." Published by the American Sports Publishing Company, 45 Rose Street, New York. This series is the most up-to-date and authoritative source of information upon the major and minor games and field sports played in this country and England. The publications in this series contain official and commonly used playing rules and directions for laying out the various playing fields. Most of them are revised and reissued each year. The following publications in this series will be found especially helpful. The price of most of these publications is twenty-five cents per copy.

No. 43R. Lawn games: archery, croquet, roque, English croquet, lawn hockey, tether ball, clock golf, golf-croquet, hand tennis, hand polo, wicket polo, badminton, drawing room hockey, garden hockey, basket goal, pin ball cricket.

No. 86R. Quoits, lawn bowls, horseshoe pitching and boccie.

No. 113R. Official La Crosse Guide.

No. 100R. Official Baseball Guide.

No. 9. Official Indoor Baseball Guide.

No. 200R. Official Football Guide.

No. 55R. Official Soccer Football Guide.

No. 38R. Field Hockey Guide.

No. 700R. Official Basket Ball Guide.

No. 7A. Official Women's Basket Ball Guide.

No. 57R. Tennis Annual.

No. 90R. Official Ice Hockey Guide.

No. 3R. Golf Guide.

No. 31R. Polo Guide.

No. 114R. Official Handball Guide.

No. 13. American Game of Handball.

No. 100X. Spalding Official Baseball Guide.

No. 200X. Official Football Guide.

No. 108R. Official Intercollegiate Soccer Football Guide.

No. 700X. Official Basket Ball Guide.

No. 17R. Spalding Official Women's Basket Ball Guide.

No. 57X. Tennis Annual.

No. 91R. Official Intercollegiate Swimming Guide.

No. 3X. Golf Guide.

No. 38R. Official Field Hockey Guide.

No. 120R. Volley Ball Guide.

No. 1X. Official Athletic Almanac.

No. 112R. Official Handbook National Collegiate Athletic Association.

No. 115R. Official Handbook Women's Athletics.

No. 117R. Official Athletic Rules (A. A. U.)

No. 282. Roller Skating Guide.

No. 511B. How to Build a Tennis Court.

"Athletic Fields," Lefax, Ninth and Sansom Streets, Philadelphia, Pa. Pamphlets, diagrams and directions for laying out many kinds of play and athletic fields.

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"Preparation of School Grounds for Play Fields and Athletic Events." Government Printing Office, Washington, D. C. Physical Education Series No. 1. Bulletin containing diagrams and directions for laying out many types of play areas.

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"Tennis Courts for All-Year Sports." Portland Cement Association, 111 West Washington Street, Chicago. Contains valuable data on construction of concrete tennis courts. Illustrated.

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Swimming Pools, Baths, Bathing Beaches

"Concrete Swimming and Wading Pools." Portland Cement Association, 347 Madison Avenue, New York City. An illustrated pamphlet on the construction and sanitation of swimming and wading pools.

"Construction and Operation of Outdoor Swimming Pools," Alfred MacDonald, Director of Parks and Forestry, Wichita, Kan. *Parks and Recreation*, March–April, 1924.

"Construction of Swimming Pools," H. L. Flint. *Landscape Architecture*, October, 1921.

"Modern Baths and Bathhouses," William Paul Gerhard, C. E., The William T. Comstock Company, 23 Warren Street, New York City. An historical and technical treatise with 130 illustrations. (1908.)

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"Outdoor Swimming Pools," R. J. Gibb. *Parks and Recreation*, May–June, 1925. Diagrams and detailed costs for the construction and operation of an outdoor swimming pool at Edmonton, Alberta.

"Sanitation of Bathhouses," William Paul Gerhard, C. E., The William T. Comstock Company, 23 Warren Street, New York City. An illustrated pamphlet dealing with the sanitary features of swimming pools and public baths. (1922.)

"The South Park Swimming Pool," Harry S. Richards, Assistant General Superintendent, South Parks, Chicago, Ill. *Parks and Recreation*, July–August, 1927.

A statement of the experience of the South Parks System in swimming pool construction.

"Swimming Pools," Wesley Bintz, Lansing, Mich. *The Playground*, August, 1925.

"Swimming Pools and Bathhouses," E. C. L. Wagner, Consulting Engineer, Kansas City, Mo. *Kansas Municipalities*, June, 1923. A discussion of the methods of construction and operation, together with some data on financing them.

"Swimming Pools and Other Public Bathing Places." American Public Health Association, 370 Seventh Avenue, New York City. Report on the Joint Committee on Bathing Places of the American Health Association and the Conference of State Sanitary Engineers on the standards of design, construction, equipment and operation of swimming pools and other public bathing places. (1927.)

"The Swimming Pool and Its Sanitation," Jack J. Hinman, Jr. Iowa Health Bulletin, No. 4, Vol. I. Iowa State Department of Health, Des Moines, Iowa. A valuable discussion of the construction, management and sanitation of outdoor and indoor pools and their equipment. (1925.)

"Journal of the American Association for Promoting Hygiene and Public Baths." Has published many articles on baths and pools. For information concerning other publications of the Association, write to the Treasurer, Arthur M. Crane, care Paige and Jones Chemical Company, Hammond, Ind.

Beach and Pool. A monthly journal devoted to the interests and development of bathhouses, bathing beaches, natatoriums, swimming pools, etc. Published by the Lightner Publishing Corporation, 2721 South Michigan Avenue, Chicago, Ill. A list of pool equipment manufacturers may be secured from the P. R. A. A.

Structures

"Architecture of Memorial Community Houses." Bureau of Memorial Buildings, W. C. C. S. Available from P. R. A. A. Illustrated by photographs, designs and plans.

"Camp Buildings and Scout Shelters." Boy Scouts of America, 200 Fifth Avenue, New York City. Profusely illustrated pamphlet.

"Camping Out." A manual on organized camping, containing chapter on camp buildings with many illustrations and plans. Prepared by P. R. A. A.

"Educational Buildings." Perkins, Fellows and Hamilton, Architects, Chicago, Ill. Profusely illustrated with plans and photographs. Contains chapters on Park Buildings, Gymnasiums, Swimming Pools and Auditoriums. Published by the authors.

"Existing Community Houses." Bureau of Memorial Buildings, W. C. C. S. Available from P. R. A. A. Illustrated by photographs and plans.

"Floor Plans for Community Buildings," Guy Lowell. Available from P. R. A. A. Designed especially for rural and suburban communities.

"Modern Theatres," Irving Pichel. Harcourt, Brace and Company, New York, N. Y. (1925.) A discussion of theatre construction and equipment, with illustrations.

"Notes on Horticultural Buildings," L. W. C. Tuthill. A discussion of different types of buildings, with designs and illustrations. *Parks and Recreation*, July–August, 1925.

"Open Air Theatre," Sheldon Cheney. Out of print. Consult in libraries.

"Outdoor Theatres," F. A. Waugh, Richard G. Badger, Boston, Mass.

"Park Architecture." A series of illustrated articles by Horace W. Peaslee, Architect, Washington, D. C. Published in *The Park International:*

I. Bathing Establishments, July, 1920.
II. Field Houses, September, 1920.
III. Lodges, November, 1920.
IV. Refectories, January, 1921.
V. Greenhouses, March, 1921.
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"Plans of Rural Community Building." Farmers' Bulletin, No. 1173, Government Printing Office, Washington, D. C.

"Provisions for Art, Music and Drama in Memorial Buildings." Bureau of Memorial Buildings, W. C. C. S. Available from P. R. A. A. (Mimeographed.)

"Stadiums." See bibliography, page 235.

"Tourist Camps," Rolland S. Wallis. Bulletin No. 56 of the Engineering Extension Department, Iowa State College, Ames, Iowa. Profusely illustrated with photographs and plans.

Playground Equipment

"Athletic Fields," Lefax, Ninth and Sansom Streets, Philadelphia, Pa. Pamphlets, diagrams and directions for laying out many kinds of play and athletic fields.

"Homemade Equipment for the Home and for the Rural School." Cornell Rural School Leaflet, September, 1925, New York State College of Agriculture, Ithaca, New York.

"Homemade Play Apparatus," John Smith. Berea College, Kentucky. *The Playground*, October, 1923, page 403. Illustrated.

"Home Play," W. C. Batchelor. P. R. A. A. Pamphlet containing working plans and drawings for homemade apparatus suitable for young children.

"Layout and Equipment of Playgrounds." P. R. A. A. Handbook discussing the laying out of playgrounds and athletic fields, with plans, the selection and placing of apparatus and the construction of homemade apparatus. (Revised edition in preparation.)

"Playground Manual." Bulletin 30 of the Department of Public Instruction, Harrisburg, Pa. Contains plans and directions for making playground equipment.

"Playground Surfacing." P. R. A. A. General considerations and methods used in various cities.

"The Practical Conduct of Play," Henry S. Curtis. The Macmillan Company, New York City. Contains chapters on the construction of playgrounds and play equipment.

"Simple Playground Equipment." The American Red Cross, 17th and D Streets, Washington, D. C. Pamphlet with working directions and diagrams for making many kinds of playground equipment and athletic apparatus.

"Surfacing of Playgrounds." American Association of Park Superintendents, Bulletin No. 5, January, 1909, pages 18–19. Brief symposium by various park executives on the best surfacing for playgrounds.

"Unique Park Bench," C. L. Brock, Superintendent of Parks, Houston, Texas. *Parks and Recreation*, July, 1921, page 387. Illustrated.

Catalogues and other detailed information on play apparatus may be secured by writing to manufacturers of play equipment, a list of whom may be secured from the P. R. A. A., 315 Fourth Avenue, New York.

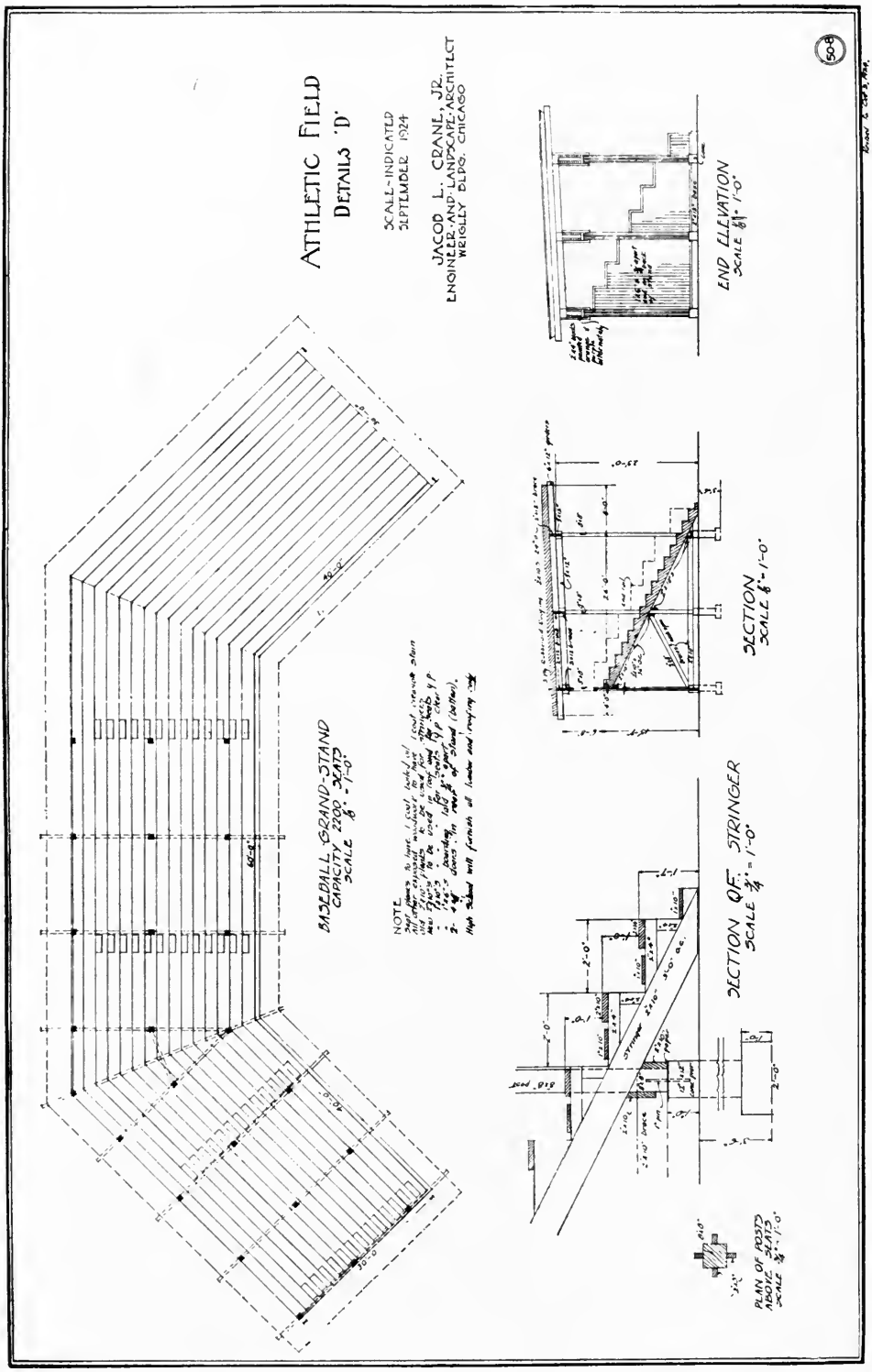

PLATE No. 229

DIAGRAM OF BASEBALL GRAND STAND, WAUKEGAN, ILLINOIS, ATHLETIC FIELD

(For the general plan of Waukegan Field, see page 340. For discussion of athletic fields and stadiums, see pages 151-155.)

CHAPTER VI

GENERAL ADMINISTRATIVE CONTROL OF PARKS

The general administrative control of parks in America follows no standard form. There is a marked difference in the plan of government in cities throughout the country, ranging from government by city council, the original type of control, to administration by park boards or commission, the form of government in use in the majority of cities.

SECTION I. TYPES OF GOVERNING AUTHORITIES

1. *City council or committee of council.* This is the earliest form of park government from the beginning of cities until well past the middle of the nineteenth century. It was the only form of control of certain types of properties now included in park systems such as commons, squares, triangles, plazas and monument sites. This form of government is still found in villages, towns and small cities, and exists even in a few large cities, of which Atlanta, Georgia, is an example.

2. *Commission governed cities.* The inauguration of the commission form of government in American cities ushers in a type of control of parks under a single elective commissioner usually known as commissioner of parks and public properties, commissioner of public works or commissioner of public welfare. The commission form of government exists in approximately four hundred ten towns and cities in the United States. In not all of these communities, however, are parks and recreation under the control of the commissioner, for in a few examples a park board has been retained or one has later been created to take charge of parks, or a recreation board established to administer the city's recreation.

3. *Federal plan governed cities.* This type of municipal government found in some cities comprises an elective council, a mayor who is the chief executive officer and functional departments, each in charge of a director appointed by the mayor with the approval of the council. This is really a modified form of the commission form of municipal government which brings into the administration of parks the same conditions existing in a true commission form of government except that the director of the department of parks and public property or the commissioner of parks is appointed instead of elected by popular vote. In a few instances in cities governed under the federal plan, parks are under the administrative control of the park board or commission type of government.

4. *City manager governed cities.* In city manager governed cities the

city manager appointed by and responsible to the city council has direct charge of all departments in the municipal government. In smaller cities the city manager may assume direct charge of parks, acting in the capacity of a superintendent; but in larger cities he acts under the general control of city council as the general governing authority, with an executive officer immediately in charge, appointed by him and responsible to him. Thus, in Sacramento, California, the city manager appoints a superintendent of parks and a superintendent of recreation. In a few city manager cities in this country the control of parks and recreation is not directly under the city manager, but under a park commission or a park and recreation commission. Thus in Fort Worth, Texas, and in Cincinnati, Ohio, there is a park commission and, in addition, a recreation commission.

5. *Government of parks by boards or commissions.* With the exception of a government by council or a committee of council, the park board or commission is the oldest and most generally approved of all the different methods of governing parks. Until the advent of the commission, city manager and federal plans of municipal government, control by board or commission was the prevailing form of park government and, as has been suggested, park commissions are still found in many cities under the councilmanic, the commission, the federal and the city manager forms of administration.

6. *Private park association performing functions of a public park commission.* There are several examples throughout the country in which park plans have been initiated and properties acquired, developed and administered by a private corporation duly organized under the laws of the state. A few examples of this type of general administrative control are Madison, Wisconsin, Quincy, Illinois, and New Orleans, Louisiana (in the case of City Park and Audubon Parks respectively). As a general rule the executive committee of a corporation performs all the functions of a legally constituted park commission. They receive and spend public money appropriated by the city government and in addition raise money privately through memberships and donations.

From the point of view of freedom from political control unwisely used, this form of general administrative control has much to commend it. The method has worked well, on the whole, in the instances where it has been tried, and especially so when applied to the general administration of such institutions as zoölogical gardens, botanical gardens, museums, art galleries and arboretums. However, because the principle involved is so contrary to the spirit of popular government in America it is not likely that this form of general administration of parks will be widely adopted except as a temporary expedient in individual communities.

7. *Boards of education and parks.* School boards, with their growing tendency to secure larger and larger grounds, are doing much to provide playgrounds for children of school age. They are important factors in contributing these areas and other facilities such as athletic fields, stadiums, swimming pools, gymnasiums and auditoriums. The function of the board of education in regard to recreation facilities is usually discharged through a division or department of the school administration, such as the physical education department, department of school extension or a recreation department. While there are a few instances in which school boards actually control parks, such as Revere, Massachusetts, and Winston-Salem, North Carolina, the chief function of the board of education in relation to parks is that of a coöperative working relationship, the schools often using the facilities of the park.

SECTION II

COMMENTS ON THE VARIOUS METHODS OF GOVERNING PARKS

1. *Government by council or committee of council.* In villages, small towns and cities possessing only a few park properties this method of government may be adequate, but in communities of any size initiating a plan for a definitely organized park service the method has a number of drawbacks, among them the following: (*a*) There can be little permanency of plan or policy, since most city councils are liable to change every two years; at the most, every four years. (*b*) The executive organization is likely to be uncertain, since the executive officer is not sure of his tenure of office if the majority of a new council are new members. It would be difficult to interest trained executives to accept service in park departments under such conditions. (*c*) With many different functions to engage their attention the council has a divided interest, with the result that parks are not likely to receive the attention necessary to a continuous carrying forward of plans. (*d*) This form of government is open to abuse of political power, especially in the appointment of park employees.

2. *Government by a commissioner in a commission governed city.* The commission form of government is acknowledged to have many points of merit over the old ward system of municipal government. In the administration of parks some of its advantages are as follows: (*a*) It fixes definite responsibility on a single individual so that the citizens may know where the responsibility for efficiency or inefficiency lies. (*b*) It provides for direct administrative and executive action, although in point of fact the city commission as a whole concerns itself with governmental policies and plans, so that the commissioner having charge of parks and recreation does not have an entirely free hand. (*c*) It is presumed to be more economical for the reason

that certain functional activities of a park department are handled by other executive departments of the city, thus preventing duplication of executive machinery.

On the other hand, the plan has certain undesirable effects in relation to the government of parks. (*a*) While there are, of course, examples of a commissioner being reëlected period after period because of efficient service, there is no assurance that a commissioner whose tenure of office is from two to four years will be reëlected or that his successor will carry out his policies. Hence it is exceedingly difficult to follow a specific plan through a long term of years. (*b*) It is improbable that a commissioner will be elected who has any technical knowledge of park functions, although he becomes the chief executive officer of the department. Hence a trained park executive will find himself under the executive control and direction of an untrained superior official. Moreover, his tenure of office will be very uncertain since a new commissioner will desire to appoint his own executive staff. In some commission governed cities the commissioners are elected at large and do not stand for specific positions in the city government, the assignment being made after election. Very often, therefore, people have no way of judging qualifications of the commissioner who will have charge of parks. In some cities, on the other hand, specific positions are announced by the candidates. (*c*) In practically all commission governed cities the commissioner in charge of parks has many other duties and responsibilities. Under such conditions it is next to impossible to develop and carry out any comprehensive, adequate community-wide system of parks. (*d*) It often happens that the commissioner elected does not have influence enough to focus public opinion sufficiently to carry out any comprehensive plan for parks, or because of the short tenure of office or other causes cannot conduct an adequate educational campaign. (*e*) The administration of parks is primarily a social service function and the governmental performances involved are quite different from those entering into municipal functions primarily fiscal in nature, such as water, light, and sewage disposal. It is unwise in the long run to intrust to a single individual, especially to an official with other functions to perform, a responsibility so varied in its nature as a park system.

3. *Federal plan of municipal government.* What has been said about the merits and demerits of the government of parks by a commissioner applies equally to their government under the modified form of the commission government plan known as the federal plan. There is, however, this vital difference: the mayor can, if he wishes, appoint a trained director or commissioner in charge of the department of parks — a condition that rarely prevails under the elective system of the pure commission form of govern-

ment. If the mayor does not appoint trained officials, the same conditions will usually prevail as exist under the elective system.

4. *The city manager plan.* This form of government is admirably adapted to handle public functions of a fiscal nature. There is much doubt as to the wisdom of this type of administration for public functions chiefly of a social and educational nature. As a general rule, however, if the city manager is himself a trained man, he is likely to select a trained official to head the park department.

5. *Government by board or commission.* The plan of government by barod or commission, which is the method of park administration in use in the majority of cities, is adaptable to all forms of city and county government. Park and city planners and other officials favor it strongly. Government by board is the form almost universally adopted for the administration of the public school system, institutions of higher learning, public libraries, museums and art galleries. It is the form of government that people naturally adopt when they organize themselves to promote a movement for parks or recreation. A scheme of government so universally adopted must have certain merits to commend it. Among the advantages of the park board form of control are the following: (*a*) The majority of the park boards in America consist of three or more members so appointed or elected that the entire personnel of the board does not change at one time. The usual method is to have one appointed or elected each year. In actual practice, however, the method of rotation varies widely in different cities. This plan secures as nearly as is humanly possible under the present scheme of municipal and county government continuity of plan and policy in the planning, development and operation of the park system. Under the rotation plan of membership there will always be some members of the board who are intimately acquainted with previous plans and policies and it generally happens that members of such boards serve several terms of office by reappointment or reëlection. In a few instances membership is practically perpetual through the fact that members themselves have the right of appointment upon the expiration of the term of any member. (*b*) In general, members of park boards serve without compensation, though there are some examples of payment of salary such as Louisville and Boston. In a few instances a small allowance is made each member (the Iowa park law makes this possible for Iowa cities). Non-salaried service usually attracts only men and women of a high type and has no lure for those to whom office holding offers merely an opportunity for personal gain. (*c*) It seems to be the general consensus of opinion that the appointing authority, usually the mayor, who acts with the approval and consent of council, will try to select outstanding men and women for service on the board. Even

in the case of the election of members by popular vote, outstanding citizens are usually more willing to stand for election because of an opportunity for unselfish service than is commonly true of officers more fully under political control. (*d*) Because of the possibility of a more secure tenure of office, well-trained executives are more ready to accept employment under park boards. As a rule such boards are keenly appreciative of the value of efficient technical service and more eager to secure trained executives than is true under some other system. (*e*) There is no division of interest under the park board plan of control and members are chosen for a definite service to the community. Occasionally the care of cemeteries and of street trees is placed under park boards, but the nature of the service required is more or less in harmony with certain features of park work. (*f*) Park interests are more likely in the long run to be better served through the community of minds of a park board than under government by a single commissioner or a city manager, especially since the attention of the commissioner or city manager is distracted by other duties. The weight of influence of a park board in completing their projected plans is likely to be more powerful than that of a single individual. (*g*) The planning, development, operation and maintenance of the modern park system is of such a character as to require a wide degree of coöperation between the park department and various public and private agencies such as the recreation commission, if one exists, the schools and local civic groups. This coöperation is especially essential in the use of properties adapted for organized recreation purposes which are under the control of different boards. By judicious selection of the members of the park board, it is possible to have on the board representatives of the more important agencies for the purpose of facilitating the community use of all material and recreational resources. Even if this plan is not followed — and it is not absolutely necessary — school boards and other public governmental agencies with properties of recreational value under their control are more likely to have greater confidence in a board of outstanding citizens than in a single individual.

In spite of the many advantages of the park board plan of control, there are features to be guarded against. It may sometimes happen that permanency in tenure of office, which is one of the great virtues of a properly constituted park board, may become a great weakness. It is quite possible for the members, or a majority of the members, to become so vitally interested in some particular phase of park planning and development that other important features necessary to a well-appointed system may be neglected. Moreover, members who because of previous valuable service have been retained year after year may outlive their usefulness. Similarly a superintendent may be continued too long in the service. There

is every prospect that the functions of park departments will be continually expanding. In such an evolutionary situation there is no place for the park board member or chief executive who lives entirely in the past and rests on laurels previously won.

A park board so constituted as to be wholly responsible in a political sense to the appointing authority or to the political organization back of the appointing authority is even more dangerous than an inefficient single elected commissioner, because further removed from the will of the people and because responsibility can be shifted. The park board form of government, in spite of these dangers, has thus far proved itself on the whole to be a satisfactory method of administration and one under which important progress has been made in the past few decades.

6. *Administrative control of parks by school boards.* As has been pointed out, except in very rare instances, the school board has no part in park administration and the relationship to the park department is a purely coöperative one. Schools, however, dealing as they do with children for eight or nine months of the year, the greater part of five days of the week, have an important responsibility toward the recreational life of the child, both in providing facilities and equipment, such as gymnasia, swimming pools, athletic fields, playgrounds and other play areas and in supplying leadership through special teachers in physical education, handcraft, music and drama. Increasingly the school is serving those beyond school age by making its plants available as neighborhood social centers.

SECTION III

EXAMPLES OF LEGAL PROVISIONS OF PARKS, VARIOUS TYPES OF GENERAL ADMINISTRATIVE CONTROL, TOGETHER WITH COMMENTS ON THEIR POWERS AND DUTIES

The city council form of general administration. The majority of the thousands of municipal corporations under five thousand inhabitants administer their parks and other recreation areas directly through the governing authority of the corporation — the council (cities) and boards (villages) — although various names are given in different states to designate the governing authorities. All of these municipal corporations derive their powers directly from the state. These powers as defined in state laws are usually comprehensive and quite ample for the performance of all necessary public duties.

Portland, Maine. "The members of the city council shall be and constitute the park commission and shall have the power and perform the duties given to and prescribed for the park commission of the City of Portland by the laws of the State of Maine but they shall receive no compensation as such commissioners." — Charter of the City of Portland, Article VI, Sections 11 and 15, respectively.

San Jose, California. "The department of parks shall consist of a superintendent of parks and such other employees as the council may provide. The superintendent shall have complete charge of the parks and reservations of the city, except as otherwise limited in this charter. The council shall make rules for the use of the parks and the preservation of the trees, shrubs, lawns, etc. The council may designate any of the employees of the park department as special police officers and as such they shall have the powers and duties within parks and reservations of the city as would be possessed by regular police officers." — Charter of the City of San Jose, California, Article XIV, Section 95.

Pueblo, Colorado. "The Council shall have power to provide for the maintenance and improvement of the parks, cemeteries and public grounds of the city and of the several Public Park Improvement Districts thereof, and to make necessary appropriations therefor; and in annual appropriation ordinance shall specify a certain sum for the maintenance and improvement of each park and cemetery, and in so doing shall take into consideration the revenues of each park and cemetery and give credit therefor. One park superintendent and such skilled employees as shall be provided by ordinance for the care of the parks, cemeteries and public grounds of the city and the several parts and districts thereof shall be appointed by the council under the rules and regulations of the civil service commission." — Charter of the City of Pueblo, Colorado, Article IV, Section 5, respectively.

Keene, New Hampshire. "There shall be elected in the month of January in each year, or when a vacancy exists, by the city councils in joint convention and by joint ballot, a park commissioner, who shall hold office until the first Tuesday of January next ensuing and until the appointment of his successor. It shall be the duty of the park commissioner to take entire charge of all the parks or lands held in trust by the city, unless otherwise provided; to expend, under the direction of the committee on public parks, appropriations or other incomes, in ornamenting and protecting said parks; to dispose of dangerous or objectionable trees; to fix bounds, repair fences against pastures, or other lands and to report to the city councils."—City Ordinances of the City of Keene, New Hampshire, Chapter XXIII, Section 2, as revised and passed November 20, 1924.

"The council shall provide by resolution or ordinance for the care, supervision, and management of all public parks, baths, libraries." — Ohio Municipal Code, Sixth Edition, Section 4356, page 720.

The majority of the thousands of municipal corporations under five thousand inhabitants in the United States handle their parks and other recreation areas directly by the governing authority of the corporation, *viz.*, the council (cities) and boards of trustees (villages), although various names are used in different states to designate the governing authorities. All these municipal corporations derive their powers directly from the state. The same may be said of townships and counties. These powers are defined in the state laws and are usually very comprehensive and quite ample for the performance of all necessary public duties. In Illinois the laws relating to the powers of councils and boards of trustees cover one hundred and one different powers, among which are the powers to control the finances of the corporation, to appropriate money for corporate purposes and to provide for the payment of debts and expenses of the corporation; to levy and collect taxes for general and special purposes on real and personal property; to borrow money on the credit of the corporation for corporate purposes and issue bonds therefor within limits of a certain percentum of the value of the taxable property; to refund bonds; to lay out, to establish, open, alter, widen, extend, grade, pave or otherwise improve streets, alleys, avenues, sidewalks, wharves, parks and public grounds, and vacate the same; to acquire, in the manner now or hereafter provided by law for the taking of private property for public use, private lands bordering upon the public or navigable waters, useful, desirable or advantageous for bathing beaches or

recreation piers; to pass all ordinances and rules and make all regulations proper or necessary to carry into effect the powers granted to cities or villages, with such fines or penalties as the city council or the board of trustees shall deem proper; to appoint officers not otherwise provided for by election; all such officers shall be appointed by the mayor with the advice and consent of the city council unless otherwise provided for. These are the essential powers needed in handling park problems in any incorporated community, and while the rights and powers of municipal corporations differ in different states these citations from the Illinois laws are more or less typical of such laws everywhere.

In the consideration of all the other plans and methods for handling parks, except in independent park districts which are generally clothed with corporate authority, it is important to remember that the ultimate authority resides in the governing body of the municipal corporation. Thus in city manager governed cities, commission governed cities, cities under the federal plan of government, and in most cities having park boards or commissions or park departments the ultimate authority is the council. In the last-mentioned case all that is usually done is to delegate certain of the original powers of the municipal corporation to another corporation dependent upon the municipal corporation.

The Administrative Control of Parks Under Commission Form of Government

San Antonio, Texas. "The executive and administrative powers, authorities and duties shall be distributed in and among five departments, as follows: (*a*) The Department of Public Affairs in General; (*b*) The Department of Taxation; (*c*) The Department of Sanitation, Parks and Public Property; (*d*) The Department of Streets and Public Improvements; (*e*) The Department of Fire and Police.—Section 7, Paragraph 2. The Commissioner of Sanitation, Parks and Public Property shall have under his special charge the care and maintenance of sanitation. He shall have control of all parks and pleasure grounds, watercourses and sewers, the City Hall and Market House, with the grounds adjoining the same, and all other buildings and grounds belonging to or controlled by the city (fire and police property excepted and streets and highways excepted). He shall have charge of and supervision of all cemeteries in or belonging to the city, and over all property belonging to or used in connection with cemeteries. He shall perform such other duties as may be prescribed by ordinance for the maintenance and protection of all public buildings and parks and other property under his jurisdiction."—Section 7, Paragraph 5, Charter, City of San Antonio.

Powers of Council: "To provide for the purchase, maintenance, regulation and improvement of public parks, plazas, grounds and cemeteries of the city; to direct and regulate the planting and preserving of ornamental and shade trees on the streets, sidewalks and public grounds, and to establish and maintain zoölogical gardens, and to provide musical concerts in the city parks and plazas."—Article II, Section 71.

"To appropriate private property for the use of the city for . . . avenues, boulevards, parks, public plazas and squares . . . or any other public purposes authorized by law, and in such event the Commissioners shall declare, by ordinance, the necessity for such appropriation, describing the property sought to be appropriated and stating the name and residence of the owner, if known, and if unknown stating that fact, and shall cause to be filed with the City Clerk a plan of the property proposed to be condemned, and such private property shall be condemned for the use of the city for the purposes expressed in the ordinance by the same proceedings and under the same rules, so far as applicable, as are now or may hereafter be provided by the general laws of this state for the condemnation of private property for the use of railroad corporations, save and except that the City of San Antonio shall deposit the exact amount of the award pending appeal, if it should desire to proceed with the improvement, and the city shall have the right to assess benefits to the owners of the

abutting property, upon such improvements for the opening of streets, plazas and parks, or in any other manner or by other proceedings authorized by the general laws of this state for the condemnation of private property for public use."—Article II, Section 98.

To acquire on behalf and for the use of the city by purchase, gift, devise or condemnation any private property or any interest therein, whether such property be situated within or without the limits of said city, which may be necessary or proper for the establishment and maintenance of, and for other corporate purposes. —Article II, excerpt from Section 97.

Other powers of the City Council which bear upon the subject of parks and recreation relate to the care, management and control of the city's property and finances; "to enact, alter, modify or repeat any and all ordinances not repugnant to this Charter and the Constitution and laws of the State" (Article II, Section 51); "to provide for the payment of the current expenses of the city" and limiting the current expenses to the amount of the income for any one fiscal year (Article II, Section 52); "to borrow money on the credit of the city and issue bonds therefor for permanent public improvements."—Article II, Section 53.

The above provisions of the charter of the city of San Antonio are typical of powers of cities governed under the commission plan in so far as they relate to parks and recreation. There are, of course, many variations among the charters of cities governed under this plan.

Under Federal Plan of Government

"In each city there shall be a department of public service which shall be administered by a director of public service. The director of public service shall be an elector of the city, shall be appointed by the mayor and shall serve until his successor is appointed and qualified. He shall make rules and regulations for the administration of the affairs under his supervision. The director of public service shall manage municipal water, lighting, heating, power, garbage and other undertakings of the city, parks, baths, playgrounds, market houses, cemeteries, crematories, sewage disposal plants and farms, and shall make and preserve surveys, maps, plans, drawings and estimates."—Ohio Municipal Code, sixth edition, Sections 4323 and 4326 respectively, pages 692, 693.

The following chapters (IX and XVIII) of the charter of the city of Detroit are given in full as illustrating the method of handling parks and recreation in a federal plan governed city. Detroit also presents an example of a functional division of the general field of parks and recreation in that the Department of Parks and the Department of Recreation is each a full department of the city government.

Commissioner of Parks and Boulevards

Section 1. *Appointment of commissioner.* There shall be a commissioner of parks and boulevards who shall be appointed by the mayor, and who shall have charge of the Department of Parks and Boulevards.

Section 2. *Qualifications, term of office, vacancies, compensation.* No person shall be eligible to appointment who is not a citizen of the United States and a resident of the city. The commissioner may be removed by the mayor at any time without cause assigned. Any vacancy in the office shall be filled by the mayor. The compensation of the commissioner shall not be less than five thousand dollars per annum.

Section 3. *Officers and Employees.* The commissioner shall appoint a secretary, and, in accordance with the provisions of the charter, relative to civil service, such superintendents, engineers, clerks and other subordinates as may be necessary. He shall prescribe the duties of such secretary, superintendents, engineers, clerks and other subordinates, and shall, subject to the approval of the common council, fix their compensations.

Section 4. *Accounts and records.* The commissioner shall cause to be kept proper accounts and a record of the proceedings of his department. All accounts, records and proceedings of the department shall be public.

Section 5. *General powers and duties.* The power and duties of the commissioner, which shall be exercised and performed in pursuance hereof and in accordance with the general ordinances of the city, shall be as follows: (*a*) He shall control and manage all parks, public grounds, except as otherwise provided, and boulevards, including bridges to Belle Isle Park and their approaches. (*b*) Shall erect, repair and maintain all buildings and structures necessary for the use of the department or provided under its supervision for the use of the public. (*c*) Shall macadamize or pave and keep in repair all roadways in the parks and the boulevards of the city.

(*d*) May establish all reasonable rules and regulations for the protection of the rights and property vested in the city and under the control of the department, for the use, care, maintenance and management of parks and their dockage, bridges on Belle Isle, public grounds, and boulevards: and concerning waters surrounding Belle Isle, subject to the control of the United States Department of War. (*e*) May call upon the police department to assist in enforcing all ordinances, rules and regulations governing parks and boulevards, and it shall be the duty of the police department to render such assistance when required. (*f*) Shall provide, through the purchasing department of the city, all necessary materials, supplies, horses, tools, implements and apparatus used in the management of the department. (*g*) Shall have authority to conduct at reasonable charges such facilities for the amusement, entertainment, refreshment or transportation of the public as are suitable to public parks, and may let privileges therefor but such privileges shall be subject to his supervision and direction. (*h*) Shall plant, set out, or place and protect and care for flowers, vines, shrubs and trees to adorn and improve the public squares, grounds, streets, avenues, alleys or spaces within the city, the cost of which or any part thereof to be provided for by general taxation or by special assessments in local assessment districts, or both, as may be prescribed by ordinance. Provided, that all original landscape work in parks and boulevards hereafter acquired shall be approved by the city plan commission. (*i*) May, with the approval of the common council, in the name of the city, take and hold, by purchase, gift, devise, bequest or otherwise, such real and personal property as may be needful for carrying out the intents and purposes of the department. (*j*) Shall recommend to the common council the institution of condemnation proceedings whenever, in his judgment, private property should be taken in the name of the city for purposes of the department. (*k*) May, with the approval of the common council, sell and convey or lease lands whenever required by the interests of the city. (*l*) May make, with the approval of the common council, all contracts to carry out the objects and purposes of the department as herein provided, and (*m*) Shall have such other powers and perform such other duties as may be necessary for the proper administration of the affairs of his department.

Section 6. *Monthly financial report.* The commissioner shall, on the last day of each month, file with the controller and city treasurer a report giving the date of collection or receipt and the amounts of all money so collected or received by the department, and shall daily pay into the city treasury all moneys collected. All disbursements shall be made through the treasury, except as herein otherwise provided.

Section 7. *Application of funds, annual estimate.* All moneys paid into the city treasury by the department shall apply exclusively on the payment of all expenses incurred by it. On or before the fifteenth day of January of each year, the commissioner shall transmit in duplicate to the city controller his estimate of the amount of money required for the purpose of the department for the ensuing fiscal year.

Section 8. *Annual report.* The commissioner shall, on or before the fifteenth day of January in each year, make a written report to the common council relative to the work of the department and the condition of the property in his charge. The report shall be certified by the commissioner, entered on record by the city clerk, and published in such manner as the council may direct. The commissioner shall also make such other reports as the council may, from time to time, require.

Section 9. *Complaints.* The commissioner shall promptly investigate and make report to the bureau of complaints concerning all complaints referred by such bureau to the commissioner relative to the administration of the department.

Section 10. *Members of board of supervisors.* The commissioner shall be *ex officio* a member of the board of supervisors of the county of Wayne.

Section 11. *Legislation by common council.* The common council shall enact such ordinances as may be necessary to carry out the provisions of this chapter.

Commissioner of recreation.

Section 1. There shall be a commissioner of recreation who shall be appointed by the mayor and who shall have charge of the Department of Recreation.

Section 2. *Qualifications, term of office, vacancies, compensation.* No person shall be eligible to appointment as such commissioner who is not a citizen of the United States and a resident of the city. The commissioner may be removed by the mayor at any time without cause assigned. Any vacancy in the office shall be filled by the mayor. The compensation of the commissioner shall be not less than five thousand dollars per annum.

Section 3. *Officers and employees.* The commissioner shall appoint a secretary and in accordance with the provisions of this charter relative to the civil service commission, such superintendents, clerks, and other employees as may be necessary. He shall prescribe the duties of such secretary, superintendents and other subordinates and shall, subject to the approval of the common council, fix their compensation.

Section 4. *Accounts and records.* The commissioner shall cause to be kept proper accounts and records of the proceeding of his department. All accounts, records and proceedings of the department shall be public.

Section 5. *General powers and duties.* The powers and duties of the commissioner which shall be exercised and performed as herein provided, and in conformity with the general ordinances of the city, shall be as follows: (*a*) The commissioner shall have the power to conduct playgrounds and indoor recreation facilities on the grounds and in the buildings in charge of the board of

education, subject to its consent; to supervise and equip playgrounds and playfields on property under the control of the commissioner of parks and boulevards; and to manage and direct such playgrounds, playfields, indoor recreation centers, debating clubs, gymnasiums, public baths, and other means of recreation as may be provided by the common council. (*b*) Shall have power to inspect all forms of commercial recreation, such as theatres, moving picture shows, pool and billiard halls, bowling alleys and other commercial recreation places for which license is required by the ordinances of the city, and such license shall be issued only on the written recommendation of the commissioner that such recreation place is furnishing recreation of a wholesome and moral quality; provided, that nothing in the section shall be construed to abridge the powers of the police department to enforce order in such commercial recreation places, or to abridge the powers of the building and safety engineering, lighting, health and fire departments to ensure the safety and sanitary conditions of the buildings where such commercial recreations are conducted. (*c*) Shall have the power, subject to the general regulative control of the common council, to call upon any other department of the city government for assistance in performing its duties, and it shall be the duty of such other department to comply with any proper request of said commissioner, and any question as to what shall constitute a proper request for assistance shall be decided by the council. (*d*) May, with the approval of the common council, in the name of the city, take and hold, by purchase, gift, device, bequest, or otherwise, such real and personal property as may be needful for carrying out the intents and purposes for which it is established. (*e*) Shall recommend to the common council the institution of condemnation proceedings whenever, in his judgment, private property should be taken in the name of the city for the purposes of the commissioner. (*f*) May, with the approval of the common council, sell and convey or lease lands whenever required by the interests of the city. (*g*) May make, with the approval of the common council, all contracts to carry out the objects and purposes of the commissioner as herein provided. (*h*) May establish all reasonable rules to regulate recreation and the means thereof, in accordance with the provisions hereof, and rules to protect the rights and property vested in the city and under the control of the commissioner. (*i*) Shall be charged with the duty of issuing permits for the use of grounds under its supervision, including playgrounds on Belle Isle. (*j*) Shall provide, through the purchasing department of the city, all necessary materials and supplies for the use of the department; and (*k*) Shall have such other powers as are herein prescribed or may be necessary hereunder for the proper discharge of his duties.

Section 6. *Care of buildings, grounds and apparatus.* All buildings and grounds and all apparatus under the control of any other department used by the commissioner hereunder for the purpose of furnishing recreation shall remain under the care of such other department, and the actual expense of such care, together with the cost of renewals, properly chargeable to the commissioner shall be paid by the commissioner on bills rendered monthly by such other department. Any question as to what shall constitute a proper charge hereunder shall be determined by the common council. The care of all buildings, grounds and apparatus shall devolve on the commissioner.

Section 7. *Annual estimate, taxes, bonds.* On or before the fifteenth day of January of each year, the commissioner shall transmit to city controller his estimate in duplicate of the amount of money required for the purpose of his department for the ensuing fiscal year. The city shall raise by annual tax the necessary funds to provide for the operation and extension of the recreation system through the use of facilities already owned by the city, and the common council may raise moneys by annual tax, or by the issue of bonds, for the acquirement of additional property, the erection of necessary buildings or the purchase of additional facilities.

Section 8. *Annual report.* The commissioner shall, on or before the fifteenth day of January in each year, make a written report to the common council of the work of the commissioner during the preceding year and of the condition of the property under his charge. The report shall be certified by the commissioner, entered on record by the city clerk, and published in such manner as the council may direct. The commissioner shall also make such other reports as the council may, from time to time, require.

Section 9. *Complaints.* The commissioner shall promptly investigate and make report to the bureau of complaints concerning all complaints referred by such bureau to the commissioner relative to the performance of his duties.

Section 10. *Commissioner ex officio member of board of supervisors.* The commissioner shall be *ex officio* a member of the board of supervisors of the county of Wayne.

Section 11. *Legislation by common council.* The common council shall enact such ordinances as may be necessary to carry out the provisions of this chapter.

An interesting feature of this law is the fact that the commissioner of recreation has the power to supervise and equip playgrounds on property under the control of the commissioner of parks and boulevards. A very

unique feature of the law is the provision given the department of recreation supervision over commercial recreation.

St. Louis, Missouri. Charter of the City of St. Louis, 1914. Extract from Section 14. Department of Public Welfare. "The Department of Public Welfare shall include divisions of health, of hospitals, of parks and recreation, and of correction. There shall be a division of parks and recreation, which, except as may be otherwise herein or by law provided, shall have supervision and control of all public parks and places and of all facilities provided by the city for recreation, amusement or instruction, and execute all ordinances of the city relating to the management or use thereof. It shall also exercise such supervision and control as may be provided by ordinance over recreative functions, amusements and entertainments not conducted by the city. The head of said division shall be known as the commissioner of parks and recreation. He shall appoint and control the city forester."

Legal Provisions Illustrating General Administrative Control under City Manager Form of Government

St. Augustine, Florida. "The city manager shall manage and control the use, construction, improvement, repair and maintenance of all recreation facilities of the city, including parks, playgrounds, public gymnasiums, bathhouses and social centers."—Charter of St. Augustine, Florida, Section 57.

New London, Connecticut. "The division of streets shall be in charge of a superintendent of streets, whose appointment shall be made by the city manager, subject to the approval of the council. Said superintendent of streets shall have the care *of all trees in the public ways, parks and other public places, he shall have charge of the repair and maintenance of the public ways, bridges, public grounds and parks.* He may engage such assistants and employees to assist him in the performance of his duties as may be necessary, to such number and at such rates of compensation as he may determine, subject to the approval of the city manager and the council, and may at his pleasure remove the same."—Ordinance Establishing Department of Public Works, Section 4, 1921.

Long Beach, California. "There is hereby created a Department of Public Parks, which shall consist of one superintendent of parks, and such landscape gardeners, landscape architects, stenographers, clerks and other employees, whether of the kind mentioned herein or not, as the city council may prescribe and authorize by ordinance. The city manager shall appoint the superintendent of parks to serve during his pleasure. All other officers and employees of this department shall be appointed by the superintendent thereof, subject to the approval of the city manager, and shall serve during the pleasure of said city manager."—Charter of the City of Long Beach, Article XII, Sections 295 and 296, respectively.

"There is hereby created a Department of Playgrounds and Recreation, which shall consist of one superintendent of playgrounds and recreation, and such assistants, deputies, engineers, playground directors, special and part time playground directors, janitors, stenographers, clerks and other employees, whether of the kind mentioned herein or not, as the city council may prescribe and authorize by ordinance. The city manager shall appoint the superintendent of playgrounds and recreation to serve during his pleasure. All other officers and employees of this department shall be appointed by the superintendent thereof, subject to the approval of the city manager, and shall serve during the pleasure of said city manager."—Charter of the City of Long Beach, Article XXII, Sections 301 and 302.

Cleveland, Ohio. The city code of Cleveland, Ohio, Division 6, Department of Parks and Public Properties, provides for a department of parks and public property to be controlled and administered by a director of parks and public property subject to the provisions of the charter and ordinances of the City of Cleveland and to be under the direction of the city manager. The director of parks and public property may appoint and employ a secretary and such other officers and employees as may be necessary for the operation of his office. The code further provides for the establishment in the department of a division of parks and forestry to be "administered and controlled by a commissioner of parks and forestry subject to the provisions of the charter and ordinances of the City of Cleveland and to the supervision and direction of the director of parks and public properties. Said commissioner to have charge of, maintain and operate all parks, park trees, gardens, nurseries, green houses and zoölogical gardens belonging to the city." The code further provides under the same conditions for a division of recreation, with a commissioner of recreation to manage, supervise and control the municipal playgrounds, ball grounds, tennis courts, dance halls, bathhouses, golf links and other recreational activities conducted by the city.

St. Louis, Missouri. The powers and duties of the commissioner of parks and recreation are specifically set forth in a series of municipal ordinances comprising Article LXVIII, Sections 1867–1932 inclusive, of the revised code or general ordinances of the City of St. Louis.

Legislation for Park Board or Commission Form of Control

This is the form of legislation, it has been pointed out, under which the great majority of cities operate their parks. In a few cities the functions of parks and recreation are combined under one commission, but in the majority of cases there is a separate park and a separate recreation board or commission.

Birmingham, Alabama.[1] Birmingham is an example of a city in which the park system and the public recreation system are administered by one body, the park and recreation commission. The city operates under a state law as follows:

An Act to provide for the establishment, conduct, development, equipment, improvement, and maintenance by cities having a population of one hundred thousand or more according to the last or any subsequent Federal census, of parks, park areas, park boulevards, playgrounds, park and playground systems, recreation centers, and other recreational facilities and activities; to define the powers and duties of such cities and their governing bodies in connection with all such matters; and to create a park and recreation board in all such cities, provide for the selection, terms of office, removal from office, qualifications and duties of the members thereof, and to define the powers of such board.

Be it Enacted by the Legislature of Alabama:

Section 1. That this Act shall apply to all cities of the State of Alabama now or hereafter having a population of one hundred thousand or more, according to the last or any subsequent Federal census. The term "such city" as used in this Act refers to and means all and only those cities of the State of Alabama having a population of one hundred thousand or more according to the last or any subsequent Federal census.

Section 2. That any such city in the State of Alabama may use for parks, playgrounds, recreational centers and other recreational purposes and activities, any public parks or park areas of such city, or any lands or buildings or both owned or leased by such city; and any such city may, by and through its park and recreation board, in such manner as may now or hereafter be authorized or provided by law by the acquisition of lands or buildings for public purposes by such city, acquire or lease lands or buildings or both within or beyond the corporate limits of such city for parks, park areas, park boulevards, playgrounds, recreational centers, and other recreational purposes and activities, and when acquired for any such purposes such city shall have full police jurisdiction thereover, whether within or beyond the corporate limits of such city, and such police jurisdiction shall also extend over any highway or highways connecting any such lands or places with such city, except as to such parts thereof as may lie within the corporate limits of some other municipality. Any such city may, by and through its park and recreation board, establish, provide, conduct, develop, equip, improve and maintain parks, park areas, park boulevards, playgrounds, recreation centers, and other recreational activities and facilities and for any or all such purposes or in connection therewith, by and through its park and recreation board, may employ engineers, architects, landscape artists, playground directors, play leaders, supervisors, recreation superintendents, or other such officers or employees as may be deemed necessary. Reasonable fees or charges for access to or use or enjoyment of any playgrounds, recreation centers, recreational activities, or other places of recreation so established, maintained, or conducted by any such city may be charged and collected, all funds received from such sources to be paid into and become a part of the park and recreation fund of such city.

Section 3. That any such city may, by and through its park and recreation board, accept any grant or devise of real estate or any gift or bequest of money or other property, or loan of personal property, or any donation to be applied, principal or income, or both, for either temporary or permanent use for parks, playgrounds, or other recreational purposes, and if any such gift, bequest, devise or donation or loan be conditional, the proper authorities of such city shall have authority to accept the same upon the conditions attached, and to comply with such conditions, if in the judgment of such authorities such condition or conditions be reasonable, and to the best interests of such city. Money received in any such manner unless otherwise provided by the terms of the gift or bequest, shall accrue to and become a part of the park and recreation fund of such city.

Section 4. For any or all of the purposes mentioned in this Act, any such city upon the recommendation of the park and recreation board may purchase on time or partly for cash with balance on time or deferred payments, or otherwise acquire any real property or interest in real property, within or without the limits of such city, securing the note or notes, claim or claims

[1]General Acts, Alabama, 1923.

for deferred payments and interest thereon, with mortgages or deed of trust on the land purchased, or with or by means of an instrument in writing retaining title thereto in the vendor, or enter into any other contractual arrangement whereby provision is made that such note or notes, claim or claims, or other instruments for deferred payments and interest thereon, and all lawful charges, shall not be a charge or charges against the general credit of the city or be a general liability thereof, but that the liability shall only extend to and be a charge against the land so purchased or acquired. Such method of acquisition provided for in this section shall not be considered or deemed exclusive, but cumulative and in addition to all other methods of acquisition of lands or interests therein for public purposes heretofore, hereafter or by other provisions in this Act provided.

Section 5. Any such city may, by and through its park and recreation board, join or coöperate with one or more other municipalities having like powers, or with boards of education, in providing, establishing and conducting parks, playgrounds, recreation centers, and other recreational facilities and activities.

Section 6. That there shall be within sixty days from the approval of this Act, in all cities now having a population of one hundred thousand or more according to the last Federal census, established and constituted in accordance with the terms of this section, a permanent "park and recreation board" for such city, and within sixty days after any other city reaches the class described in Section 1 of this Act and which is not now within said class, there shall be established and constituted in accordance with the terms of this section a park and recreation board for such city. The planning of a park system, administration, improvement, development, conduct and supervision of the parks, park areas, park boulevards, playgrounds, recreational centers and other recreational activities of each such city shall be vested in the park and recreation board of such city, which shall be composed of five members, who shall be residents of such city, and four of whom shall not be members of the city council or commission or other governing body of the city. The members of said board shall serve without compensation and shall be chosen solely because of their character and fitness. One member of the governing body of any such city selected by the governing body of such city shall at all times be a member of said park and recreation board, provided that if there be in such city a member of the governing body whose department of the city government has the supervision of the parks of the city, such member shall by virtue of his office be a member of the park and recreation board. Each of the other four members of the park and recreation board first selected shall be chosen by the governing body of such city. The term of office of each member of said board other than the one who is a member thereof by virtue of his membership in the governing body of said city shall be four years, except that the member of such first chosen by the governing body of such city shall be appointed for such terms as that the term of one member shall expire annually after the date of appointment, and the governing body of the city shall, in making such appointment designate the term for which each such member of said board is appointed, and which shall be shown in the minutes of the meeting at which the appointments are made. Thereafter as vacancies occur in the membership of said board by reason of the expiration of the terms of either of said four members, or for any other reason, such vacancies shall be filled by nomination upon a majority vote of the governing body of such cities, which nomination shall be certified to the park and recreation board and the remaining members of the park and recreation board shall, by majority vote of such board within ten days of the receipt of the certification of nomination, appoint or decline to appoint the nominee of the governing body of such city to fill the vacancy in the park and recreation board which will exist by reason of the expiring term or otherwise. If the park and recreation board of the city declines to appoint the nominee of the governing body of such city it shall forthwith certify or cause to be certified to the governing body of such city such fact, and the governing body of such city forthwith in like manner shall make and certify another nomination at the park and recreation board of such city, and in like manner shall continue to make and certify a nomination to the park and recreation board of such city until the park and recreation board of the city appoint a nominee of the governing body of the city to fill the vacancy, and it shall be the duty of the park and recreation board to act promptly on each nomination of the governing body of the city and appoint or refuse to appoint the nominee as a member of the park and recreation board, and each time the park and recreation board refuses to appoint a nominee of the governing body of the city as a member of the park and recreation board, that fact must be certified to the governing body as required in the first instance.

Section 7. The members of the park and recreation board, when such board is constituted in accordance with Section 6 of this Act, shall immediately meet and organize by electing one of the members thereof as president and such other officers as may be necessary. The governing body of any such city may, in addition to the powers directly vested in such board by this Act, confer upon and delegate to the park and recreation board of such city, when established and constituted. any other power or authority conferred upon such city by the terms of this Act or conferred upon such city by any other provision of law, with respect to or in connection with the establishment, conduct, development, improvement, equipment, and maintenance of parks, park areas, park boulevards, playgrounds, recreational

centers, and recreational activities, as fully and completely as any or all such powers may be constitutionally delegated to such board. The members of the park and recreation board of any such city may be impeached and removed from office upon the same grounds and in the same manner as is or may be provided by law for the impeachment or removal from office of the members of the governing body of such city. No member of the park and recreation board of any such city, and no person who has been a member of such board within six months from the time of making of any contract in behalf of the city by or through the agency of such board, shall be directly or indirectly pecuniarily interested in any contract or in the profits of any contract made through the agency of such board; and any and all contracts made in violation of this provision are and shall be held to be against public policy and void, except that such contract may be enforced by the city, and no such contract at the instance of the contractor or person or corporation claiming under or through the contractor, shall be enforced by any court, nor shall any contractor or person or corporation claiming under or through such contractor recover on a *quantum meruit* for any work or labor done, or material or supplies furnished when the work or labor done or material furnished was done or furnished under a contract which is void under the provisions hereof; and the city may sue for and recover all money paid under any contract which is void under the provisions hereof without statement on account of any work or labor done or material furnished under contract. No member of the park and recreation board of any such city, and no person who has been a member of said board within six months from the time of making of the sale, shall be directly or indirectly pecuniarily interested in the sale of any material or supplies of any kind or character for construction, betterment, or improvements in developing, beautifying or otherwise improving any park or other property by and through the agency of such board, or in the sale of any material or supplies to any contractor or subcontractor to be used on or in furtherance of work let by or through the agency of the park and recreation board, and no suit can or shall be maintained in any court by the seller or person or corporation claiming under or through the seller for the purchase price or value of material or supplies sold in violation of the provisions hereof, and the city may sue for and recover from the seller the amount of all money paid to the seller for material and supplies sold in violation of the provisions hereof, and no person who has been a member of the said board within six months from the time of the making of the sale or purchase shall be directly or indirectly pecuniarily interested in the sale to or purchase from the city by or through the agency or instance of said board of any land or interest in land, and any sale to or by the city made in violation of this provision shall, at the instance of the city, be held to be against public policy and void, and may be rescinded by the city. Provided however, that if any member of the park and recreation board is a stockholder in a corporation owning land or interest in land desired by the city for park and recreation purposes, or is the owner of an undivided interest in the land desired for such purposes, or if any member of the board is a stockholder in a corporation desiring to purchase land proposed to be sold by the city at the instance of the park and recreation board, such members may, in open meeting of the board, disclose his interest, which shall appear on the minutes of the meeting, and retire from the meeting of the board, and the other members of the board, if a quorum remains, may consider the matter and decide the same as they deem best; and any such sale shall be legal and valid. Provided further, that if any member of the park and recreation board is the owner of land which it is desired to acquire for the city for any such purpose, the same if acquired shall be acquired by the exercise of the right of eminent domain, and the petition or proceedings for condemnation shall set forth the facts in regard to the ownership by a member of said board.

Section 8. If, in the opinion of the park and recreation board of any such city, the funds available for such purposes be inadequate to provide ample, appropriate and suitable grounds, buildings, and equipment for all the needed parks, park areas, park boulevards, playgrounds, park and playground systems, recreation centers and other recreational facilities and activities of such city, the park and recreation board may petition the governing body of such city to call an election for the issuance of bonds on the credit of the city in an amount sufficient to provide the necessities of such city in these respects, subject to the limitations set out in the Constitution of the State, and the governing body of such city shall call or cause to be called the election at the time requested in said petition.

Section 9. The governing body of each such city shall cause to be set aside and kept and maintained a park and recreation fund, and cause to be kept an account of all receipts for and disbursements of such fund. Each year during which there is not levied and collected for such city a special tax to be devoted to park purposes, the governing body of each such city shall appropriate and cause to be paid into and credited to the park and recreation fund, a minimum amount of fifty thousand dollars, which appropriation shall be made at such time as appropriations are made for other departments of the city. The governing body of the city may from time to time make additional appropriations to the park and recreation fund and cause the same to be paid into or credited to said fund. The proceeds from sale of all bonds issued by any such city for park purposes shall be paid into and credited to the park and recreation fund. The park and recreation fund of each such city shall be kept with the funds of

such city in such depository to the credit of the city as the governing body of the city may direct, and all payments and disbursements from this fund as and when made shall be validated by the countersignature of the officer or person designated by the governing body of such city to countersign or validate checks drawn for other municipal purposes. The park and recreation board of any such city shall have no power or authority in behalf of or in the name of the city to contract any debts or obligations in any year in excess of the amount paid into or appropriated for the park and recreation fund during such year, and no debts or obligations contracted by such board in violation of this provision shall be or shall be held to be a personal or general obligation of the city, nor shall the general credit of the city be pledged for the purchase or acquisition of lands or buildings unless the same be authorized by a resolution of the governing body of such city. The limitations contained in this section shall be applicable to each and every power conferred by any provision of this Act upon the park and recreation board of any such city.

Section 10. That the establishment, conduct, equipment, and maintenance of parks, playgrounds, recreational centers and recreational activities by any such city shall each and all be public and governmental functions of such city.

Section 11. That if any part or provision of this Act is declared unconstitutional or inoperative by the courts, this shall only affect such part or provision, the remainder of the Act continuing in full force and effect.

Section 12. All laws and parts of laws, general, special and local in conflict with any of the provisions of this Act, shall be and the same are hereby repealed.

Approved September 29, 1923.

Fort Worth, Texas. Provisions of the city charter of Fort Worth. Relating to the board of park commissioners, 1924–25. These provisions illustrate the method of governing parks by boards in a city manager governed city.

CHAPTER VIII

Department of Public Parks

Section 1. *Organization of board.* Within thirty days after the adoption of this charter and the qualifications of the councilmen thereunder, there shall be appointed by the city council a board consisting of five members, composed of both men and women, to be known as the park board. No person shall be eligible to appointment on said board who is not a citizen of the United States or a resident of the city. The members of said board shall serve without compensation.

Section 2. *Term of office of members of board.* The term of office of the members of said board shall, subject to the provisions relative to their removal, be five years. The members of the first board created hereunder shall be appointed for the terms of one, two, three, four and five years respectively, and annually thereafter one member shall be appointed for the term of five years. The park board in existence at the time this chapter of the charter becomes effective shall pass out of existence as soon as the members of the new board provided for herein are appointed by the city council and have qualified as members of said board.

Section 3. *Removal from board — vacancies, how filled.* The members of the park board shall be subject to removal from office by the city council for any cause deemed by the council sufficient for their removal in the interest of the public service; but only after a public hearing before the city council on charges publicly made, if demanded by such member within ten days. Any vacancy in the membership of said board shall be filled by the city council for the unexpired term of the member whose place has by removal or otherwise become vacant.

Section 4. *Jurisdiction of park board—scope of activities.* The park board shall, subject to the authority of the city council, have the exclusive control, management and maintenance of all the public parks, parkways, lakes, water parks, municipal squares, improved or unimproved, and the grounds surrounding all municipal buildings (except school buildings) now owned or controlled, or which may hereafter be acquired by the City of Fort Worth, either within or without the corporate limits of the city. It shall have the management and control of the beautifying and parking of any ground, street or boulevard, or part thereof, or of any cemetery belonging to the city which the city council may designate to receive such improvements. Said board shall in addition exercise supervision and control over the planting and care of all trees, plants and shrubs of any kind in the public parks and other grounds under its jurisdiction, as well as on or in the streets and sidewalks of the city. It may in the name of the city take and hold by purchase, devise, bequest or otherwise such real and personal property as may be needful for carrying out the intents and purposes for which the said board was established; it shall recommend to the city council the institution of condemnation proceedings whenever, in its judgment, private property should be taken in the name of the city for the purposes of enlarging the park system of the said city; it may, with the approval of the city council, sell and convey or lease lands belonging to the said department, and all proceeds from such sales or leases shall be deposited in the city treasury to the credit of the public park fund; it shall have power for and on behalf of the city to receive donations, legacies or bequests for the improvement or maintenance of the public parks of the city, or for the acquirement of new parks, and all such moneys derived from such donations, legacies or bequests, be deposited in the city treasury to the credit of the public park fund, and same may be drawn therefrom and paid out only in the manner provided for the payment of moneys legally appropriated for the acquire-

ment, support and improvement of the public parks of the city.

Section 5. *Forestry division shall be established by said board.* The said board shall create a forestry division in said department, to be in charge of a college trained arborist, with two or more years practical experience, who shall direct the said division subject to the control of the park board.

Section 6. *Appointment of employees — rules and regulations for government of same — organization of board.* The park board shall have power to appoint and employ a superintendent and such other officers and assistants and laborers as it may deem necessary for the efficient administration of the affairs of said department; prescribe and fix their duties, authority, compensation and qualifications as to residence or otherwise. It shall have the management and disposal of all funds legally apportioned or received from any source for support and maintenance of the said public parks and grounds. It shall have power to establish rules and regulations for the conduct of its officers and employees, and may require adequate bonds from any or all of them, except laborers, for the faithful performance of their duties, in such amounts as may be fixed by it; such bonds to be approved by the city council and filed in the office of the city secretary. It shall have the power to formulate and adopt rules and regulations for the government of said parks and other grounds under its jurisdiction. The park board shall organize by electing one of its members president, one vice-president and one secretary. The board shall have authority to elect a secretary who is not a member of the board. The officers shall hold office for one year and until their successors are elected and qualified. The park board shall hold regular meetings at least once in every two weeks, and shall establish rules and regulations for its government and for the performance of its duties.

Section 7. *Funds for maintenance of department to consist of not less than nine cents annual ad valorem tax, receipts from operations of department, and such other sums as may be allowed in the annual budget — department to assume and pay off certain outstanding indebtedness created by former park board.* The city council, when levying the taxes for each fiscal year, shall levy an annual *ad valorem* tax of not less than nine cents on each one hundred dollars of assessed value of all real and personal property in the city not exempt from taxation by the constitution and laws of the state, for the use and benefit of all departments. In addition thereto, said department shall be allowed all the receipts and revenues arising from the operation of the various public parks and grounds within its jurisdiction, save and except the revenues arising from the swimming pools and from other forms of recreational activities set apart by this charter for the use and benefit of the recreation board; and the said *ad valorem* tax and said receipts, together with whatever further amount, if any, the city council may in its discretion set apart in the annual budget for the use and benefit of this department, shall constitute the appropriation to be annually set apart in the said budget for the operation, maintenance and upkeep of this department. The said tax when collected, together with the sums appropriated by the city council for this department, or received from other sources, to the credit of the public park fund, subject to the order and disbursement of the park board for the purposes and in accordance with the purposes of this chapter; the same to be paid out only upon warrants issued by the said board, signed by the president or vice-president, and countersigned by the commissioner of accounts and by the secretary of said board. All debts and liabilities created heretofore by the previous park board operating under the previous charter, save and except those debts incurred for swimming pools and other recreational activities taken over by the department of public recreation, shall be assumed by the park board here, created, and the funds arising to the said board from the sources hereinbefore specified or so much thereof as may be necessary, shall be used in the payment and discharge of the said debts and liabilities.

Section 8. *Conflicts between park board and other boards to be determined by city council.* In the event of any conflict of jurisdiction arising between this department and any other department of the city government, or in regard to any administrative detail thereof, the same shall be referred to the city council and its decision thereon shall be final.

Section 9. *Commissioner of accounts to prescribe forms and methods of accounting to be used by said board.* The commissioner of accounts shall prescribe and provide for the use of said board all forms for the keeping of its accounts and vouchers necessary to be used in the conduct of its business, which said forms and methods of accounting shall be employed by said board in conducting the business of said department, so as to conform as nearly as possible to the method of accounting instituted and enforced in the Department of Finance.

Section 10. *Providing for monthly audit of department.* The park board shall at the end of each month render to the commission of accounts a full and detailed itemized statement of all expenditures incurred or moneys paid out during said month, and the purposes of which the said expenditures were incurred or money paid out, and the accounts of the said board shall be submitted to a monthly audit by the said commissioner of accounts and checked against the appropriation set apart in the annual budget for the operation of this department.

Section 11. *Providing for annual audit of said department.* At the end of each fiscal year, the Department of Finance shall make a full and complete audit in duplicate of the accounts and business of this department for the year then ending, one copy of which shall be

filed with the city council, and the other copy with the park board.

Section 12. *Purchases of supplies to be made on competitive bidding by the commissioner of purchases and supplies.* All supplies exceeding fifty dollars in value shall be purchased for this department by the commissioner of purchases and supplies under the rules and regulations prescribed by the city council with respect to competitive purchases of supplies by said official: but purchases of fifty dollars or less may be made by the park board without competitive bidding.

Section 13. *Department to operate within budget allowance.* The park board shall not make any expenditure of money or incur any liability for its maintenance and upkeep for the current year beyond the amount of money set apart in the annual budget for such purposes, except as provided for in Section 11, of Chapter X, of this charter.

Section 14. *Approval of city council necessary to be obtained to authorize certain expenditures by department.* No expenditure shall be made or liability incurred by the park board exceeding five hundred dollars in amount, without first being authorized and approved by the city council; but this section shall not apply to employees that the said board may deem necessary to employ for the operation of the said department for the current year, where the salary of such employee does not amount to as much as two thousand dollars per annum; but all salaries of that amount or a larger amount shall be first submitted to the council and approved by it before such employment shall become effective.

Section 15. *Board to file annual report with council.* It shall be the duty of the park board, at the end of each fiscal year, to file with the council a full and detailed report of the business and operation of the said department for the year then ending and to make such recommendations to the council as they may deem advisable, looking to the improvement and betterment of the service of said department.

Legislation Controlling Metropolitan Park Districts

The Tacoma, Washington, and Cleveland, Ohio, laws are illustrative of legislation for cities having metropolitan park districts. The state law creating the metropolitan park district of Cleveland, Ohio, follows:

Section 2976–5. Upon the creation of such district the probate judge shall appoint three commissioners, who shall take office immediately and whose respective terms shall expire one, two and three years, respectively, from the first day of January next after the date of their appointment, and thereafter their successors shall be appointed by such probate judge for terms of three years. Before entering upon the performance of his duties, each commissioner shall take an oath to faithfully perform the duties of his office, and shall give bond for the faithful performance of the duties of his office in the sum of five thousand dollars. Such bond shall be approved by and filed in the office of the county auditor. Such commissioners shall serve without compensation, but shall be allowed their actual and necessary expenses incurred in the performance of their duties.

Section 2976–6. Such commissioners shall constitute the board of park commissioners of such district, and such board shall be a body politic and corporate, and shall be capable of suing and being sued as in this Act provided. Such board may employ a secretary and such other employees as may be necessary in the performance of the powers herein conferred, and shall keep an accurate and permanent record of all its proceedings.

Section 2976–7. Such board shall have power to acquire lands either within or without such district for conversion into forest reserves and for the conservation of the natural resources of the state, including streams, lakes, submerged and swamp lands, and to those ends may create parks, parkways, forest reservations and other reservations and reforest, develop, improve and protect the same in such manner as they may deem conducive to the general welfare. Such lands may be acquired by such board, on behalf of said district, by gift or devise, by purchase or by appropriation.

In case of appropriation, the proceedings shall be instituted in the name of the board, and shall be conducted in the manner provided for the appropriation of private property by municipal corporations in so far as such proceedings are applicable. Either the fee or any lesser interest may be acquired as the board may deem advisable and the provisions of this section shall apply to districts heretofore created.

Section 2976–8. Said board may also, by agreement with the council or other public authority in control of parks or park lands within any municipality in the district, assume control of all or a portion of any existing parks or park lands within such municipality; and in such event, such parks or park lands may be developed, improved and protected as in case of lands otherwise acquired by said board; provided, however, that nothing herein shall authorize said board to acquire or control any park, park lands, parkways, playgrounds, other lands or boulevards owned or controlled by any other public authority except by agreement as above provided.

Section 2976–9. In the development and improvement of the lands acquired by the board, such board

may assess such portion of the cost of such development or improvement as it may deem equitable, not, however, in excess of fifty per cent of such total cost, upon abutting, contiguous, adjacent or otherwise specially benefited lands, in an amount not in excess of and in proportion to the special benefits conferred upon such lands by such development or improvement. Such assessments shall be payable in not to exceed ten equal annual installments, and said board may borrow money in anticipation of the collection of such special assessments, and the proceedings had in the levying and collection of such special assessments, including the issue of bonds of such district in anticipation of the collection of deferred assessments, shall be as provided in case of the levy and assessment of special assessments for street improvements in municipalities, in so far as such proceedings shall be applicable.

Section 2976–10. Such board shall have power to levy taxes upon all taxable property within such district in an amount not in excess of one-tenth of one mill upon each dollar of the assessed value of the property in the district in any one year, subject, however, to the combined maximum levy for all purposes otherwise provided by law. After the budget commission of the county in which said district is located shall certify such levy, or such modification thereof they deem advisable, to the county auditor, it shall be by him placed upon the tax duplicate, and the board may then borrow money in anticipation of the collection of such tax, and issue the negotiable notes of such board therefor in an amount not in excess of seventy-five per cent of the proceeds of such tax, based upon the amount of the current tax duplicate. Such notes shall not be issued for a period longer than one year, and shall be payable out of the proceeds of such levy, and to the extent of such notes and the interest which may accrue thereon, such levy shall be exclusively appropriated to the payment of such notes, and shall be used for no other purpose whatsoever. Any portion of such notes remaining unpaid through any deficiency in such levy, shall be payable out of the next ensuing levy, which shall be made by said board in the next ensuing year in an amount at least sufficient to provide for the payment of said notes, not, however, in excess of one-tenth of one mill.

Section 2976–10*a*. All unexpended balances of funds heretofore levied, or collected, under the provisions of Section 2976–4 of the general code, shall be transferred to the credit of, and shall be available for expenditure by, the board herein provided for, to the extent that such funds shall have been collected, from territory included within such park district. Any balance of such fund not so collected, shall be transferred to the general fund of the county. All records, surveys and other property or information acquired pursuant to the provisions of Section 2976–2 to Section 2976–10 of the general code shall also be delivered to, and become the property of said board, to the extent that they relate to lands within such district. If such records, surveys, other property and information were acquired with funds produced in part from tax levies upon property located outside said district, the amount of such funds shall be ascertained and paid by said board into the county treasury to the credit of the general fund of the county.

Section 2976–10*b*. All funds under the control of said board shall be kept in depositories selected in the manner provided for the deposit of county funds, in so far as such proceedings are applicable, and such deposits shall be secured as provided in case of county funds. The treasurer of the county wherein said district is located shall be the custodian of the funds of the board and shall be an *ex officio* officer of said board. He shall pay the said funds out upon the warrant of the auditor of the county wherein said district is located. The auditor of the county in which said district is located shall be an *ex officio* officer of the board and no contract of said board involving the expenditure of money, shall become effective until the auditor certifies that there are funds of said board in the county treasury and otherwise unappropriated, sufficient to provide therefor. The auditor shall issue warrants to the treasurer to disburse the funds of the board upon order of the board evidenced by the certificate of the secretary in such manner as the bureau of uniform accounting may prescribe. The accounts of said board shall also be kept in the manner to be prescribed by said bureau.

Section 2976–10*c*. Each of said commissioners shall be subject to removal at the discretion of the probate judge, either upon complaint filed with such judge, or upon his own motion. No such removal shall be made, however, without giving such commissioner not less than ten days' notice and a full opportunity to be heard in his own behalf, which hearing shall be public. The order removing such commissioner shall state the reasons therefor and shall be entered upon the records of the probate court. In case of such removal, or in case of other vacancy in the office of commissioner, the vacancy shall be filled by the probate judge by appointment for the unexpired term.

Section 2976–10*d*. When conducive to the general welfare any territory adjacent and contiguous to an existing park district, whether located within or without the county in which such district was created, may be annexed to such park district as follows: Upon the filing with the board of park commissioners of a petition requesting such annexation, containing an accurate description of the territory proposed to be annexed, accompanied by an accurate map or plat of such territory, and signed either by a majority of the electors residing within such territory or by not less than fifty such electors, the board of park commissioners shall determine whether they deem it advisable that such annexation should be made. If they determine in favor of such annexation, they shall make application to the

probate court of the county in which such territory is located, setting forth the fact of the filing of such petition and the reasons why it is advisable that such territory should be annexed to such park district. Any such board may of its motion file such petition in such probate court. Upon the filing of such petition, like proceedings shall be had as are provided in Sections 2976–3 and 2976–4 of the general code upon application for the creation of a park district, except that the territory so annexed may include a part only of an existing township or municipality.

Section 2976–10*e*. In the event of the annexation to a park district of territory located in a county other than the county in which such district was created, the budget commissioners of the county in which such annexed territory is located shall exercise, with reference to such annexed territory, the powers conferred upon budget commissioners by Section 2976–10 of the general code, and the auditor and treasurer of the county in which such annexed territory is located shall exercise, with reference to taxes levied and collected by the park board upon such annexed territory, the powers conferred upon county auditors and county treasurers by Section 2976–10*b* of the general code.

Section 2976–10*f*. If the board of park commissioners shall find that any lands which they have acquired are not necessary for the purposes for which they were acquired by such board they may sell and dispose of such lands upon such terms and conditions as they may deem advisable, and may also lease or permit the use of any lands for purposes not inconsistent with the purposes for which such lands were acquired, and upon such terms and conditions as they may deem advisable. Provided, however, that no lands shall be sold without first giving notice by publication once a week for four consecutive weeks in not less than two English newspapers of general circulation in such district of their intention to sell such lands. Such notice shall contain an accurate description of the lands in question and shall state the time and place at which sealed bids will be received for the purchase thereof and such lands shall not thereafter be sold at private sale for less than the best and highest bid so received without giving further notice as herein specified. Provided, however, that no such lands shall be sold at either public or private sale without the approval of the probate court of the county in which such lands are situated.

Section 2976–10*g*. The board of park commissioners shall have power to adopt such by-laws, rules and regulations as they may deem advisable for the preservation of good order within and adjacent to such parks and reservations of land, and for the protection and preservation of the parks, parkways and other reservations of land under their jurisdiction and control, and of property and natural life therein, and such by-laws, rules and regulations shall be published as provided in case of ordinances of municipal corporations before taking effect. Whoever violates any such by-laws, rules or regulations shall be deemed guilty of a misdemeanor and upon conviction shall be fined in any sum not exceeding one hundred dollars for the first offense and not exceeding five hundred dollars for a second or further offense. All fines collected for any such violation shall be paid into the treasury of such park board.

Section 2976–10*h*. Such employees as the board of park commissioners may designate for that purpose shall have and may exercise all the powers of police officers within and adjacent to the lands under the jurisdiction and control of such board. Provided, however, that before exercising such powers, such employees shall take oath, and give bond to the State of Ohio in such sum as the board shall prescribe, for the proper performance of their duties in such respect.

Section 2976–10*i*. Upon or before the first day of September in any year the board of park commissioners, by resolution, may submit to the electors of the district the question of levying taxes for the use of the district. Such resolution shall declare the necessity of levying such taxes, shall specify the purpose for which such taxes shall be used, the annual rate proposed, and the number of consecutive years such rate shall be levied; and such resolution shall be forthwith certified to the board of deputy state supervisors and inspectors of elections in each county in which any part of such district is located, and the question of the levy of taxes as provided in such resolution shall be submitted to the electors of the district at the next ensuing general election. The ballot shall set forth the purpose for which said taxes shall be levied, the annual rate of levy, and the number of years of such levy. If a majority of the electors voting upon the question of such levy shall vote in favor thereof, such taxes shall be levied and shall be in addition to the taxes authorized by Section 2976–10 of the general code, and all other taxes authorized by law; provided that the rate submitted to the electors at any one time shall not exceed one-tenth of one mill annually upon each dollar of valuation. When a tax levy shall have been authorized as herein provided, the board of park commissioners may issue bonds in anticipation of the collection of such levy, provided that such bonds shall be issued only for the purpose of acquiring and improving lands; and such levy, when collected, shall be applied in payment of the bonds so issued and the interest thereon; provided further that the amount of bonds so issued and outstanding at any time shall not exceed one per cent of the total tax valuation in such district. Such bonds shall bear interest at a rate not to exceed six per cent per annum, shall be signed by a majority of the members of such park board and shall be sold in the manner specified by law for the sale of municipal bonds, except that before advertising such bonds for sale at public sale, it shall be necessary only to offer said bonds for sale to the industrial commission of Ohio as provided by law.

Legislation for County Park Systems

The law making possible the Westchester County, New York, system of parks follows:

Westchester County Park Law. Chapter 292, Laws of 1922. An Act to provide for the location, creation, acquisition and improvement of parks, parkways and boulevards in and by the County of Westchester, authorizing the borrowing of money and issuing of bonds therefor; providing for the management and maintenance thereof; creating a commission therefor, and defining the powers and duties of such commission. Became a law March 27, 1922, with the approval of the governor. Passed, three-fifths being present.

The people of the State of New York represented in Senate and Assembly do enact as follows:

Section 1. *Appointment and terms of commissioners.* The board of supervisors of the county of Westchester shall within thirty days after this Act becomes a law appoint nine citizens and residents of said county, who when so appointed shall constitute a board of commissioners under the name and style of Westchester County Park Commission. Three of such commissioners shall hold office for a term to expire June 1, 1923; three for a term to expire June 1, 1924; and three for a term to expire June 1, 1925. In case any of the persons so appointed shall not undertake the office of said commission, or in case of a vacancy occasioned by the expiration of term of office or otherwise, such vacancy shall be filled by a majority vote of the said board of supervisors and the persons so appointed shall hold office for the term of three years from the date of the expiration of the term of office of the commissioner whose office he is appointed in place thereof, except that when a person is appointed to a vacancy occurring before the term of office in which the vacancy occurs shall have been completed such person so appointed shall hold his office for the remainder of the said term not completed by his predecessor and until another shall be appointed in his place. No member of said commission shall receive any compensation for his services as commissioner, but each commissioner shall be entitled to receive his actual disbursements and expenses in performing the duties of his office.

2. Each commissioner shall before entering upon the duties of his office take and subscribe the oath prescribed by the constitution of the state, which oath shall be filed in the office of the county clerk of Westchester County. The clerk of the board of supervisors of Westchester County shall call a meeting of said park commissioners to be held at the courthouse, in the City of White Plains, New York, within ten days after their appointment for the purpose of organization. Such park commissioners shall thereupon proceed to organize and at such meeting, or at any subsequent meeting, select a president, vice-president, secretary and treasurer, who shall, except the secretary, be members of the commission. Such commission may adopt a seal and a majority of such commissioners shall constitute a quorum for the transaction of business. The commission may employ such counsel as may be necessary and may also employ experts and other assistants and incur such other expenses as may be found necessary within the amounts appropriated by the board of supervisors of said county. The commission shall keep a record of its proceedings which, together with its approved maps, adopted plans, documents and acts, shall be a public record and be open to public inspection at such times and under such reasonable regulations as the commission shall determine. The said commission shall maintain a suitable office where its maps, plans, papers and records shall be kept and for the purposes of this Act. Such commission is empowered to employ and at pleasure discharge such officers and employees as it may deem necessary and may determine their duties and fix their compensation to be paid as other county salaries are paid, provided, however, that the total of such salaries shall be within the amount appropriated by the board of supervisors for that purpose. It shall be a misdemeanor for any member of said park commission or any clerk, architect, engineer, superintendent or other assistant appointed by said park commission, or for any officer of said county to be in any way interested, directly or indirectly, in furnishing any of the materials, supplies or labor for the erection or construction of any building or improvement contemplated by the provisions of this Act, or in any contract which said park commission is empowered by this Act to make. Such employees shall include one or more persons who may be employed for the purpose of enforcing law, order and the observance of the ordinances established by said commission for the government and use of the public reservation under its care. Each person as and when so employed, and during the term of such employment, shall be designated as a Westchester County park patrolman and shall be a peace officer as defined by Section 154 of the code of criminal procedure, and shall have, within the limits of the cities, towns and villages containing territory included within such reservation all the powers of a constable, marshal, police constable, or policeman of a city, town or village in the execution of criminal process; and criminal process issued by any court or magistrate of a county, town, city or village containing territory included within such reservation may be directed to, and executed by any such patrolman, notwithstanding the provisions of any local or special Act, ordinance, or regulation.

3. Such commission is hereby authorized to control and manage any and all parks, which are now owned or have been acquired or may be hereafter acquired whether in fee or in trust by the county of Westchester and may consider, investigate and recommend for selection and location such additional real estate in the county of Westchester as may in its opinion be proper and desirable to be reserved, set apart, or acquired for one or more parks, parkways or boulevards, including the approaches thereto, streets connecting therewith and the relocation of existing streets. Such commission may for the purposes of this Act by its members, officers, agents or employees enter upon any real estate or interest therein for the purpose of making such surveys, examinations and investigations as it may deem necessary in the performance of its duties. Such commission may, if possible, make option agreements at a reasonable consideration for the acquiring by purchase of the real estate recommended or to be recommended for park purposes, but such option agreements shall not be exercised unless or until the board of supervisors has approved the taking of such real estate and made an appropriation therefor. Such commission shall from time to time report such consideration and investigations in detail with any optional agreements it may have made, including the estimated cost of such proposed parks, parkways or boulevards to the board of supervisors, together with any preliminary map or description showing the real estate to be selected and located for park purposes, together with any other data relating thereto. Thereafter the board of supervisors at any regular, special or monthly meeting may by resolution authorize the acquiring of any part or all of such property for one or more of the purposes of this Act. Said board of supervisors shall thereupon estimate the cost of same and make immediately available the necessary appropriation therefor and from time to time authorize the issuing of certificates of indebtedness for the same to be payable out of the proceeds of bonds to be issued as hereinafter provided. In case it is found that the actual cost will exceed such estimated cost the board of supervisors of said county may make such additional estimates of cost as it deems necessary and proper and shall appropriate and make immediately available any such additional estimates of cost in the same manner as the original estimate of cost. The term "park" or "parks" as used in this Act, unless specifically limited, shall be deemed to include all public parks, parkways, beaches, open spaces and boulevards; and also entrances and approaches thereto and streets, roads, docks and bridges between, to, in, through or connecting such park or parks or parts thereof and such other rights and appurtenances as the park commission shall utilize for the purposes of this Act, whether the same be now or hereafter owned or acquired in fee or otherwise by the county of Westchester.

4. The park commission after the approval by the board of supervisors, and before acquiring by condemnation any of the real estate, rights or interests therein for the purposes set forth in this Act shall cause to be prepared and shall approve a map or maps of such lands so to be acquired or taken as approved by the board of supervisors with a certificate, showing such approval endorsed thereon and signed by the president and secretary of the commission or by a majority of the commissioners and shall then cause such map or maps to be filed in the office of the county clerk of the county of Westchester. Any map or maps so approved and filed may be amended by a subsequent map or maps approved and filed as was the original and thereafter all proceedings shall be had in reference to the last amended map. Said map or maps or amended map or maps shall show the real estate to be taken or acquired and shall also distinguish between the parcel or parcels the fee of which is to be acquired, and the parcel or parcels wherein a lesser estate or an easement in perpetuity or for temporary use are to be acquired. The certificate of approval of the said map or maps by the said park commission shall be a sufficient determination of the estate to be acquired therein. The acquiring, improving and embellishment of parks under the jurisdiction of the park commission or lands acquired as in this Act provided, together with the maintenance thereof and all incidental proceedings in connection therewith for the purpose of carrying out the provisions of this Act are hereby declared to be for a county purpose.

5. The park commission may agree with the owner or persons interested in any real estate or easement laid down or shown on said map, or maps so approved, either for the acquiring of the fee thereof, a lesser estate or an easement therein as specified on said map or maps as to the compensation to be paid to such owner or owners or persons interested, for the taking or using and occupying such real estate or interest therein and the compensation so agreed upon shall be paid out of the moneys made available as in this Act provided. The title to said lands shall be taken in the name of the county of Westchester. The term "real estate" as used in this Act shall be construed to signify and embrace all uplands, lands under water, the water of any lake, pond or stream of water or mill rights or privileges and any and all easements and incorporeal hereditaments and every estate, interest and right, legal and equitable in lands or water, including terms for years and liens thereon by way of judgment, mortgage or otherwise and also all claims for damage for such property. It shall also be construed to include all real property or interest therein heretofore or hereafter acquired or used for railroad, railway, highway or other public or municipal purposes, provided that persons or corporations owning such property or claiming interest therein which is used as a public utility shall be allowed the perpetual use for such purpose, or of such other real

estate to be acquired for the purposes of this Act as will afford practical route or location for such railroad, highway or other public utility purpose and commensurate with and adapted to its needs and provided also that such persons or corporations shall not directly or indirectly be subject to expense, loss or damage by reason of change in such route or location, but such expense, loss or damage shall be borne in like manner as the expenses incurred in carrying out the provisions of this Act. In case an existing public highway under the jurisdiction and control of any municipality within the county is required for an approach or means of access to lands heretofore taken or hereafter to be acquired by the county of Westchester acting by and through its park commission, said municipality having the jurisdiction and control of said existing highway may dedicate it to the county of Westchester for the purpose of its park commission, as and for an approach or access, and the county of Westchester is authorized to accept the same as a part of its park system upon such terms and conditions as may be agreed to by the said municipality and the county of Westchester through its park commission.

6. If the said park commission shall be unable to agree with the owner or owners of or other persons having an interest in real estate shown on said map or maps so filed with the county clerk as aforesaid, or when by reason of legal incapacity, absence or inability of said park commission or its representatives to meet with or consider the question of the compensation to be paid to such owner or owners or other persons and no agreement can be made for the purchase of said real estate so deemed necessary for the purposes of this Act, the same shall be acquired by condemnation proceedings instituted by the park commission in the name of the county of Westchester in the manner provided by law for the condemnation of real property for public purposes, except as in this Act otherwise provided. In case commissioners to ascertain the compensation to be made to the owners of property to be taken in proceedings for the condemnation of real estate shall be appointed, the county of Westchester shall on the filing of the oaths of said commissioners in the office of the county clerk of the county of Westchester be and become seized of all those parcels of real estate described in the petition and which are on the map or maps shown as parcels that the fee or an easement therein is to be acquired in the proceeding in which said commissioners were appointed and the said park commission on behalf of the said county may immediately or at any time or times thereafter take possession of the same, or of any part or parts thereof and the said park commission, or any person acting under its authority may enter upon and occupy in perpetuity all the parcels of real estate described in such petition and shown on said map or maps wherein the fee is sought to be acquired and may enter upon, through or under such parcels so shown on said map or maps in which a lesser estate or an easement is to be acquired for the purposes as in this Act provided. In any such proceeding any municipal corporation may and it hereby is authorized by its governing body to consent to the taking of such property for a nominal consideration. The order confirming the report of such commissioners shall provide for interest on the awards from the date of the filing of the oaths of the commissioners and shall state the amount of costs and allowances, if any, to be paid. A copy of such report shall be filed with the park commission which shall within four months thereafter, or if appealed from, when within four months after the filing with the said commission of a copy of any final order or judgment entered on such appeal, authorize the approval of claims therefor, which claims shall be filed with the comptroller for payment by the county treasurer after audit by him out of moneys made available as in this Act provided. The commission at the time of authorizing the approval of such claims shall fix a date for payment, provide for interest on such claims to such date and give written notice to the party or parties to whom the award is payable, or to their attorney or attorneys, that the award with interest will be paid at a place certain on a given date and thereafter no interest shall be due or payable on account of such award. A complete statement as to the proceeding, parcel number, date of the order and such other information as may be necessary shall be set forth on each of such claims filed as aforesaid. All such drafts drawn as aforesaid shall be turned over by the comptroller to the park commission for delivery to the claimants upon receipt of the proper instruments therefor. Claims for awards to unknown owners, absentees, those under legal disability and those uncertain as to whom to be paid shall be verified by the president of the board of commissioners and the warrant for same shall be turned over to the county treasurer to be deposited by him, subject to the further order of the Supreme Court of Westchester County. In case of neglect or default in the payment of the same within the time aforesaid, the respective person or persons or bodies incorporate in whose favor the same shall be reported, his, her, or their executors, administrators or successors at any time or times after application first made by him, her or them to the treasurer of the county of Westchester for payment thereof may sue for and recover the same with lawful interest as aforesaid and the costs of suit in any proper form of action against the county of Westchester in any court having cognizance thereof and in such action it shall be sufficient to declare generally for so much money due to the plaintiff by virtue of this act for real estate taken or acquired for the purposes herein mentioned. The order confirming the report of said commissioners with proof of the right and title of the plaintiff and plaintiffs to the sum or sums demanded shall be conclusive evidence in such suit or action.

7. In all condemnation proceedings instituted pursuant to the provisions of this Act, each commissioner of appraisal, upon the confirmation of the report or other determination of the proceedings, shall be entitled to receive in full compensation for his services as such commissioner of appraisal, and in bar of all other claims for compensation and expenses, an allowance as may be fixed and awarded by the court as herein provided, not exceeding twenty-five dollars per day, upon which he attends a meeting of said commissioners of appraisal and is actually and necessarily employed in the performance of the duties imposed upon said commissioners of appraisal at the offices provided for such commissioners of appraisal, or at the meeting of the commissioners of appraisal to view the premises, provided that such compensation shall not be paid until it shall have been awarded and fixed by order of the court upon five days' notice to the park commission and to the attorney representing such park commission, and upon proof by affidavit showing the nature and extent of the services rendered, the dates of rendering services and the number of hours and parts of an hour necessarily occupied upon each date. A copy of such proof shall be served with the notice of taxation.

8. In all condemnation proceedings instituted pursuant to the provisions of this Act when an owner in whose favor an award shall have been made in a final order or in a report of commissioners of appraisal which has been confirmed by the court in under legal disability or absent from the county of Westchester and when the name of the owner shall not be set forth or mentioned in said final order or in the report of the commissioners of appraisal or when the owner although named in said report or final order cannot upon diligent inquiry be found, or where there are adverse or conflicting claims to the money or any part of it to be paid as compensation for the property taken, the county of Westchester shall pay so much of such award into court as the court may direct to be secured, disposed of, invested and paid out as the court may direct and the court may determine who is entitled to the same and direct to whom the same shall be paid and may in its discretion order a reference to ascertain the facts on which such determination and direction are made; and such payment shall be valid and effectual in all respects as if made to the owner; and in default of such payment into court, the county of Westchester shall be and remain liable for such award with lawful interest thereon from the day upon which title to the real property for which said award is made vested in the county of Westchester. When an award shall be paid to a person not entitled thereto, the person to whom it ought to have been paid may sue for and recover the same with lawful interest and costs of suit as so much money had and received to his order by the person to whom the same shall have been so paid. Payments of an award to a person named in the report or a final order as the owner thereof if not under legal disability shall in the absence of notice in writing to the comptroller of the county of Westchester of adverse claims thereto protect said county from any liability to any other person or persons. In case of the pledge, sale, transfer or assignment of an award by the person entitled to receive the same by virtue of the report of the commissioners of appraisal or by a final order of the court, or any other order of the court the instrument evidencing such pledge, sale, transfer or assignment acknowledged or proved as instruments are required to be acknowledged or proved for the recording of transfers of real property shall be filed in the office of the comptroller of the county of Westchester who shall endorse on the said instrument its number and the day, hour, month and year of its receipt and file a copy with the park commission. If an assignment of an award be contained in an instrument recorded in an office in which instruments affecting real property are by law required to be recorded, a certified copy thereof may be filed in the office of said comptroller in the place of the original and a copy filed with the park commission. Every such instrument not so filed shall be void as against any subsequent pledgee, or assignee in good faith and for a valuable consideration from the same pledgor or assignor, his heirs, administrators or assigns of the same award or any portion thereof, but assignment of which is first duly filed in the office of said comptroller. Payment to the assignee or pledgee shown to be entitled to the award by said record in the office of the comptroller shall protect the county of Westchester from any liability to any other person or persons.

9. In addition to any appeal or appeals which may be authorized by law to be taken from any judgment or order entered or which may be entered in any condemnation proceeding instituted herein pursuant to the provisions of this Act the county of Westchester through the park commission or any party or person affected by said proceedings and aggrieved by the order fixing the compensation of said commissioners of appraisal may appeal therefrom to the appellate division of the supreme court. Such appeal shall be taken and heard in the manner provided by the civil practice act and the rules and practices of the said court in relation to appeals from orders in special proceedings and such appeal shall be heard and determined by such appellate division upon the merits both as to matters of law and fact. But the taking of such appeal shall not operate to stay the proceedings under this Act with respect to the order entered on the motion to confirm the said report or reports of said commissioners of appraisal.

10. The park commission shall have the power from moneys or property on hand as in this Act provided, or moneys appropriated for that purpose by the board of supervisors to make available for use as a public park or parks all such real estate, easements and rights which are or may come under its jurisdiction as in this Act pro-

vided and to develop, improve and embellish such park or parks and erect, construct or build thereon structures and other improvements and appurtenances as to it shall seem proper for any one or more of the following purposes, all of which are hereby declared to be for a public and county purpose, namely: public health, public welfare, education, instruction, interest, pleasure, recreation, athletics or amusement.

11. The park commission shall have the right on behalf of the county of Westchester to take in fee or otherwise by gift or devise lands or rights and interest therein for the purpose of this Act, or to receive by gift, contribution or bequest, money or other property to be used in acquiring or improving such park or parks, all of which gifts, devises or bequests shall be to and in the name of the county of Westchester, which is hereby authorized by and through the park commission to accept the same for any one or more of the purposes as in this Act provided, or to reject the same. All such moneys so given or bequeathed shall, unless otherwise provided by the terms of such gift or bequest, be deposited with the county treasurer and be subject to the order of the commission.

12. The park commission on behalf of the county of Westchester may and it hereby is authorized to apply to the proper authorities of the State of New York for a grant or grants of land under water, adjacent to any uplands owned by the county of Westchester and under the direction and control of the park commission and the said land board, or other state officials authorized to make and execute grants of land under water for and on behalf of the State of New York shall and they hereby are authorized and directed to release to the county of Westchester any and all rights of the state therein, such grants to be subject to such conditions and restrictions as to it or them shall seem proper, but for a nominal consideration.

13. Whenever the county of Westchester shall become vested with the title of real estate pursuant to and for the purposes and provisions of this Act, it shall be lawful for the said park commission to let from year to year any buildings and the grounds attached thereto, which may be within the bounds of the real estate so taken and until the same shall be required for the laying out, regulation and improvement of the real estate so taken and the said park commission may sell any building, improvement and other materials within the boundary line of the lands so taken and belonging to the county, which in its judgment shall not be required for the purposes of said park or parks and the proceeds of such leases and sales shall be deposited with the treasurer of the county to the credit of the said county. Said park commission shall also have the right to construct, reconstruct, complete, alter or repair any buildings or structures, or demolish or remove the same to carry out the purposes of this Act. To carry out the public purposes as in this Act provided, the park commission notwithstanding the provisions of any general or special law to the contrary, shall have the exclusive right and authority to let, license or grant to any person or party for such period of time not exceeding three years such building or buildings, structure, or structures, rights, privileges or concessions in, to and upon any park or parks under its jurisdiction and under such rules, regulations and restrictions as to said commission shall seem just and proper. Unless the sum to be paid for such right, privilege or concession is paid in cash, the same shall not be granted except and until such person or party shall give such reasonable security in such amount as to the commission shall seem proper and reasonable. All income from licenses or leases received by the park commission shall be deposited with the county treasurer of Westchester county, to the credit of the county.

14. The park commission shall have the sole and exclusive control and management of all the streets and highways and bridges within the limits of any park under its jurisdiction, with the right and power to alter or discontinue any or all of such streets, highways and bridges and all streets, highways, parkways, or boulevards taken over as in this Act provided shall be built, maintained and kept in order and repaired by any under the direction of the park commission. No railroad, trolley road, bus line, telephone or telegraph line, or other public utility shall have the right to pass over, through, or under any property controlled by the park commission as in this act provided, except by a written consent granted by a majority of the members of such park commission, by resolution duly adopted and then only under such regulations and restrictions as to the park commission shall seem proper, but the commission shall have the right to grant to the county of Westchester, or any governmental agency thereof or to any municipal corporation therein, or any governmental agency thereof as the term "municipal corporation" is defined in the general municipal law, a license or an easement for any public purpose upon such terms and conditions and under such regulations and restrictions as the commission shall deem just and proper, and in addition thereto may grant licenses or easements to individuals, copartnerships and corporations, including municipal corporations, to construct sewers, lay water and gas mains and electrical conduits within and across such property.

15. The park commission shall make no contract for the performance of any work or for the supplying of any material, or both, unless there is money on hand applicable to such contract or money for that purpose has been appropriated by the board of supervisors, nor shall any such contract involving the expenditure of more than one thousand dollars be awarded unless bids or proposals therefor have been received, or the commission shall by a two-thirds vote determine that it is impracticable to receive bids or proposals therefor.

The commission shall have the right on the letting of any contract to reject any or all the bids. All contracts or purchases involving a sum of less than one thousand dollars shall be let or made in such manner as to the commission shall seem for the best interests of the county.

16. The park commission shall have the right and it hereby is authorized and empowered to bring or maintain in the name of the county of Westchester any action or proceeding necessary to carry out the purposes of this Act, also any action to recover damages for the breach of any agreement growing out of the management, improvement or government of the park or parks or for damages for injuries to any of the property appertaining thereto and it shall have the power and right to seize and impound cattle and other animals roaming in, on, or through such park or parks.

17. The park commission shall, notwithstanding the provisions of any general or special law to the contrary, have the exclusive power to adopt and enforce rules, regulations or ordinances governing the use of said park or parks as defined herein and traffic in and through the same and to provide that the violations of any one or more of such rules, regulations or ordinances shall constitute the crime of a misdemeanor and that on conviction a person so offending may be punished by a fine of not exceeding one hundred dollars, or by imprisonment not exceeding thirty days, or by both such fine and imprisonment, or it may enforce the observance of any one or more of such rules, regulations or ordinances by prescribing a penalty not exceeding fifty dollars in any one case to be recovered in a civil action in any court having jurisdiction thereof, which action shall be brought in the name of the county of Westchester. Such rules, regulations or ordinances, or any amendment or addition thereto shall not be effective until the same shall have been published in at least three newspapers printed and published in the county of Westchester once each week for three weeks. In any action or proceeding, such rules, regulations or ordinances, or any amendment or addition thereto shall be deemed sufficiently proved by presenting a copy thereof duly certified by the secretary or acting secretary of the commission to the effect that the same is a true copy as then in force by reason of being duly adopted by the commission and that there is on file in the office of said commission due proof of the publication thereof as in this section provided. Nothing in this Act shall be construed to abridge the right in any city or other municipality to perform its lawful functions of government within its boundaries or to pursue and apprehend as it lawfully may any person or persons who commit any breach of any statute, ordinance or regulation. Any court of special sessions having jurisdiction within any subdivision of the county of Westchester containing territory included within said park or parks shall have jurisdiction to hear and determine all charges involving the violation of any such rules, regulations or ordinances, or any of the provisions thereof, provided, however, that where such violation is committed on the boundary of two or more of said jurisdictions within said county, or within five hundred yards thereof, or is committed, partly in one such jurisdiction and partly in another within said county, or the Acts or effects thereof constituting or requisite to the consummation of the offense, occur in two or more such jurisdictions, the jurisdiction shall be in either of said jurisdictions comprising and being, respectively, jurisdictions of any such court of special sessions, or in that of any court held in and for the county of Westchester in which court persons accused of having committed a misdemeanor may be lawfully prosecuted by indictment and provided, also, that where any violations of said rules, regulations, or ordinances shall constitute a violation of any statute or of any ordinance, rule or regulation of any city, town or village, the offender may be prosecuted under either the provisions of such statute, ordinance, rule or regulation, or under the rules, regulations or ordinances adopted by said commission as aforesaid, but a conviction or acquittal under one shall bar a prosecution for the same act or omission under any of the other of said statutes, ordinances, rules and regulations; and provided, also, that the jurisdiction above given to said courts to hear and determine all violations of any such rule, regulation or ordinance adopted by said commission shall be subject to the right of removal, as provided by the code of criminal procedure to a court having authority to inquire by the intervention of a grand jury into offenses committed within said county.

18. The board of supervisors at any regular, special or monthly meeting upon the request or requisition of the park commission either at the time of estimating the cost of acquiring the property or at any one or more subsequent time or times may estimate or make additional estimates of the cost of the improvements to be made to any one or more of the parks under the jurisdiction of the park commission and make available the necessary appropriation therefor and from time to time authorize the issuance of certificates of indebtedness for the same, to be payable out of the proceeds of bonds to be issued as hereinafter provided. All claims lawfully incurred by the commission under and pursuant to the terms and provisions of this Act shall be first approved by the park commission and paid as are other county claims. The commission shall annually in the month of April, file with the board of supervisors a written report of its proceedings and a statement of all its receipts and disbursements.

19. The board of supervisors of the county of Westchester are hereby authorized and empowered to issue from time to time bonds of said county in the same manner as other county bonds are issued, to take up the certificates of indebtedness issued or authorized to

be issued as provided in this Act, provided, however, that such board may provide for the payment of any such bonds within fifty years from their respective dates of issue. All bonds and certificates of indebtedness authorized to be issued under this Act shall contain a recital that they are issued pursuant to this Act, which recital shall be conclusive evidence of their validity and the regularity of their issue. The board of supervisors of the county of Westchester may and they hereby are authorized and empowered to renew, extend, or issue new certificates of indebtedness to redeem any certificates of indebtedness issued under and pursuant to the terms of this Act.

20. It shall be the duty of the board of supervisors of said county to cause to be raised annually in each fiscal year from the time this Act takes effect by tax upon the taxable property in said county in the same manner as other taxes are levied and collected, a sufficient sum to pay the interest upon said certificates of indebtedness and bonds when and as the same shall become due and payable and also to raise by tax upon the taxable property of said county the moneys necessary to pay the principal of said bonds as the same shall become due. It shall also be the duty of said board of supervisors in like manner to cause to be raised annually in each fiscal year a sum sufficient to pay all charges and expenses legally chargeable against the county of Westchester, for the care, maintenance and operation of said parks in the manner and for the purposes for which the same are created as specified in this Act.

21. All acts and parts of acts in conflict herewith are hereby repealed. If any portion of this Act shall be declared unconstitutional, the remainder shall stand, and the portion declared unconstitutional shall be excluded.

22. This Act shall take effect immediately.

School Board Legislation in Regard to Recreation

In a few communities the Board of Education is exceedingly active in promoting recreation facilities and in coöperating with the park board. Wisconsin has a law for cities of the first, second and third classes which authorizes the school trustees to coöperate with the board in charge of public property such as the library and park boards and by agreement with such boards to provide equipment and supervision for educational and recreational activities in or on such other public properties.

The Bureau of Recreation of the Chicago Board of Education operates its playgrounds and community centers under the following law (see Chapter 24, paragraph 639):

Section 1. Be it enacted by the people of the State of Illinois represented in the General Assembly: That the board of education in any city having a population exceeding one hundred thousand inhabitants shall take control and management of all public playgrounds now owned or hereafter acquired by any such city, which are adjacent to or connected with any public school in such city and shall equip, maintain and operate the same for the moral, intellectual and physical welfare of the children and persons using them; the title to all lands occupied as such playgrounds shall vest in and be held by such city in trust for the use of schools: provided, however, that nothing herein contained shall prevent any such city from owning and operating parks, bathing beaches, municipal piers and athletic fields as is now or may hereafter be provided by law. The city can upon demand and under the direction of the city levy an annual tax not exceeding three tenths of a mill on each dollar of the excess value of all taxable property.

State Enabling Acts

Much of the legislation relating to parks and recreation is in the form of state enabling acts whereby the several states authorize the various political divisions within their borders (cities of different classes, counties, townships, school districts) to provide, within the limits of the act, or acts, parks and other recreation facilities and to operate the same. In fact, throughout the whole of the United States, except in home rule cities, all

local legislation on parks and recreation is based upon authority granted by the states in the form of enabling acts of general application. Many of the acts, however, while of general application, are limited to cities of a certain class or to cities above a certain population, or within certain minimum and maximum population limits. Some of the state laws authorizing counties to establish park and recreation systems are applicable only in counties above a given population.

In some sections of the United States direct legislation by the state for a local political division is practiced. The Alabama state law, under which the Birmingham Park and Recreation System is organized and conducted (pages 435–440), is an example of a state enabling act providing for the creation of a park and recreation system in cities above a certain population. The Ohio state law (pages 440–443) is an example of a state enabling act applicable to cities having metropolitan districts. The Westchester County park law (New York) is an example of direct legislation applicable to Westchester County alone. (See pages 443–449.)

During the past decade (1915–26) twenty-one states have passed enabling acts or so-called "home rule bills" authorizing cities, villages, counties, townships, school districts, to establish and operate systems of recreation and playgrounds. The acts in twelve of these states have referendum features. The following is the full text of one of these enabling acts as enacted by the state legislature of Florida in 1925. It is more or less typical of all of them.

A bill to be entitled an Act empowering cities, towns and counties in the State of Florida to provide, maintain and conduct supervised recreation systems and to acquire, establish, conduct and maintain playgrounds, recreation centers and other recreational facilities and activities and to vote bonds and an annual tax therefor; defining the powers of such municipalities and counties, their governing bodies, school boards and park boards in connection with all such matters, and providing for the creation of playground and recreation boards or commissions the election and the terms of the members thereof. Be it enacted by the Legislature of the State of Florida:

Section 1. This Act shall apply to all cities, towns and counties of the State of Florida. The term "such municipality or county" as used in this Act refers to and means any city, town or county of the State of Florida.

Section 2. The governing body of any such municipality or county may dedicate and set apart for use as playgrounds, recreation centers and other recreation purposes, any lands or buildings, or both, owned or leased by such municipality or county and not dedicated or devoted to another or inconsistent public use; and such municipality or county, may, in such manner as may now or hereafter be authorized or provided by law for the acquisition of lands or buildings for public purposes by such municipality or county, acquire or lease lands or buildings, or both, within or beyond the corporate limits of such municipality or county, for playgrounds, recreation centers and other recreational purposes, and when the governing body of the municipality or county so dedicates, sets apart, acquires or leases lands or buildings for such purposes, it may, on its own initiative, provide for their conduct, equipment and maintenance according to provisions of this Act, by making an appropriation from the general municipal or county funds.

Section 3. The governing body of any such municipality or county may establish a system of supervised recreation and it may, by resolution or ordinance, vest the power to provide, maintain and conduct playgrounds, recreation centers and other recreational activities and facilities in the school board, park board, or other existing body or in a playground and recreation board as the governing body may determine. Any board so designated shall have the power to maintain and equip playgrounds, recreation centers and the buildings thereon, and it may, for the purpose of carrying out the provisions of this Act, employ play leaders,

playground directors, supervisors, recreation superintendents or such other officers or employees as they deem proper.

Section 4. If the governing body of any such municipality or county shall determine that the power to provide, establish, conduct and maintain a recreation system as aforesaid shall be exercised by a playground and recreation board, such governing body shall, by resolution or ordinance, establish in such municipality or county a playground and recreation board which shall possess all the powers and be subject to all the responsibilities of local authorities under this Act. Such board, when established, shall consist of five persons serving without pay, to be appointed by the mayor or presiding officer of such municipality or county. The term of office shall be for five years, or until their successors are appointed and qualified, except that the members of such board first appointed shall be appointed for such terms that the term of one member shall expire annually thereafter. Immediately after their appointment, they shall meet and organize by electing one of their members president and such other officers as may be necessary; vacancies in such boards occurring otherwise than by expiration of term shall be filled by the mayor or presiding officer of the governing body only for the unexpired term.

Section 5. Any two or more municipalities or counties may jointly provide, establish, maintain and conduct a recreation system and acquire property for and establish and maintain playgrounds, recreation centers and other recreational facilities and activities. Any school board may join with any municipality in conducting and maintaining a recreation system.

Section 6. A playground and recreation board or other authority in which is vested the power to provide, establish, maintain and conduct such supervised recreation system may accept any grant or devise of real estate or any gift or bequest of money or other personal property or any donation to be applied, principal or income, for either temporary or permanent use for playgrounds or recreation purposes, but if the acceptance thereof for such purposes will subject such municipality or county to additional expense for improvement, maintenance or removal, the acceptance of any grant or devise of real estate shall be subject to the approval of the governing body of such municipality or county. Money received for such purpose, unless otherwise provided by the terms of the gift or bequest shall be deposited with the treasurer of such municipality or county to the account of the playground and recreation board or commission or other body having charge of such work, and the same may be withdrawn and paid out by such body in the same manner as money appropriated for recreation purposes.

Section 7. The governing body of such municipality or county may, pursuant to law, provide that the bonds of such municipality or county may be issued in the manner provided by law for the issuance of bonds for other purposes, for the purpose of acquiring lands or buildings for playgrounds, recreation centers and other recreational purposes and for the equipment thereof.

Section 8. Whenever a petition signed by at least five per cent of the qualified and registered voters in such municipality or county requesting the governing body of such municipality or county to provide, establish, maintain and conduct a supervised recreation system and to levy an annual tax for the conduct and maintenance thereof of not less than one-half of one mill nor more than one mill on each dollar of assessed valuation of all taxable property within the corporate limits or boundaries of such municipality or county, it shall be the duty of the governing body of such municipality or county to cause the question of the establishment, maintenance and conduct of such supervised recreation system to be submitted to the qualified voters who are freeholders to be voted upon at the next general or special election of such municipality or county; provided, however, that such question shall not be voted upon at the next general or special election unless such petition shall have been filed at least thirty days prior to the date of such election.

Section 9. Upon the adoption of such proposition by a majority of those voting on it at an election, the governing body of such municipality or county shall, by appropriate resolution or ordinance, provide for the establishment, maintenance and conduct of such supervised recreation system as they may deem advisable and practicable to provide and maintain out of the tax money thus voted. And the said governing body may designate, by appropriate resolution or ordinance, the board or commission to be vested with the powers, duties and obligations necessary for the establishment, maintenance and conduct of such recreation system as provided for in this Act.

Section 10. The governing body of such municipality or county adopting the provisions of this Act at an election and until revoked at an election by a majority of the qualified voters who are freeholders, shall thereafter annually levy and collect a tax of not less than the minimum nor more than the maximum amount set out in the said petition for such election, which tax shall be designated as playground and recreation tax and shall be levied and collected in like manner as the general tax for such municipality or county.

Section 11. The cost and expense of the establishment, maintenance and conduct of a supervised recreation system of playgrounds, recreation centers and other recreational facilities and activities shall be paid out of taxes or money received for this purpose, and the playground and recreation board or commission, or other authority in which is vested the power to provide, establish, conduct and maintain a supervised recreation

system and facilities as aforesaid shall have exclusive control of all moneys collected or donated to the credit of the playground and recreation fund.

Section 12. All laws and parts of laws in conflict herewith are hereby repealed, except as they apply to playground and recreation commissions, boards or systems which are now created or which may hereafter be created by special acts of the Legislature.

Section 13. This Act shall take effect upon its becoming a law.

SECTION IV

COMMENTS ON CONSTITUTION AND VARIOUS POWERS, DUTIES AND RESPONSIBILITIES OF GENERAL PARK GOVERNING AUTHORITIES

The Constitution of the Park Commission or Board.

1. *Number of members.* There is no commission about which facts have been secured numbering fewer than three members. Five, seven or nine form workable groups, although some cities are functioning efficiently with even larger numbers. The Minneapolis Park Commission has fifteen members; the Fairmount Park Commission, Philadelphia, fifteen; the Spokane Commission, eleven; the Audubon Park Commission and City Park Commission of New Orleans, twenty-four and twenty-one members respectively. In all cities of the United States of fifty thousand inhabitants or more having commissions of this type, the preferred number of commissioners is three or five, the majority having five members.

2. *Methods of selecting members.* The following are the methods in use for selecting members of park commissions or boards — appointment, election by popular vote, constitution of commission by *ex officio* members, life membership and service by commissioners elected for other offices.

(*a*) *Appointment by Some Superior Authority.*

Appointment by the mayor is the most common method of selecting the members. This is usually done with the advice and approval of the city council, although in some instances the mayor has sole authority.

Appointment by the judge of some court is practiced in a few instances. The commissioners of South Park, Chicago, are appointed by the judges of the Circuit Court of Cook County; ten of the fourteen commissioners in Wilmington, Delaware, by the resident judge of the State Court; five of the fifteen members of the Fairmount Park Commission, Philadelphia, are appointed by the judges in the District Court and five by the judges of the Common Pleas Court. In Essex and Union Counties, New Jersey, the commissioners are appointed by the justice of the Supreme Court presiding in the County Court; in Hudson County the judge of the Court of Common Pleas makes the appointment.

Appointment by the governor of a state is the practice in a limited number of cities. The commissioners of West Park District and Lincoln Park District, Chicago, five of the twenty-two commissioners of the Metro-

politan Park Commission of Providence Plantations, Rhode Island, the members of the commission controlling the Metropolitan Park System of Boston are appointed in this way.

Appointment of county commissioners (variously called Board of Supervisors, County Court) is the usual method of selecting the members of county park commissioners. The commissioners in Westchester County and Erie County, New York, and Milwaukee County, Wisconsin, are selected in this way.

Appointment by other members of the commission is the unique method followed in a few instances. In Bridgeport and Hartford, Connecticut, vacancies are filled by appointments by the remaining members, but the appointments must be confirmed by the common council and the board of aldermen respectively. In Colorado Springs, Colorado, the commission is a self-perpetuating body, as is also the case with the City Park Commission in New Orleans. In Birmingham, Alabama, nominations are made by the city council, but these may be approved or rejected by the remaining park commissioners. In the case of vacancy in the Nashville Park Commission, the remaining members make the appointment subject to the confirmation of the common council.

There are only a few examples of direct appointment of commissioners by city councils. In Providence, Rhode Island, for example, this method is used in the appointment of the park commission of three members.

(*b*) *Election by Popular Vote.*

In Illinois and Iowa there are many examples of the election of park commissioners by direct vote of the people. The five commissioners in each of the sixteen small park districts of Chicago are chosen in this way, one being elected every year in each district. In Louisville, Kentucky, six of the seven members are elected; in Minneapolis twelve of the fifteen members. Huntington, West Virginia, Rockford, Illinois, and Tacoma, Washington, are other examples of commissions following this plan of election.

(*c*) *Ex Officio Members.*

It is quite common to find in municipal park commissions one or more *ex officio* members. Five of the fifteen members of the Fairmount Park Commission are *ex officio*. In Minneapolis, the mayor, the chairman of the Council Committee on Roads and Bridges, and the chairman of the Council Committee on Public Grounds and Buildings serve in this capacity. In New Haven, the mayor and two aldermen, one Republican and one Democrat, are *ex officio* members.

In public recreation commissions this use of *ex officio* membership is still more marked. In Providence, Rhode Island, the *ex officio* members on

the Board of Recreation Commissioners are the mayor, the entire Park Commission and the president of the School Committee. In Houston, Texas, the president of the Park Board, the president of the School Board, the president of the Library Board, City Health officer and director of the Department of the Public Welfare are all *ex officio* members of the recreation commission.

(*d*) *Life Membership.*

In New Haven, Connecticut, three of the nine members of the Board of Park Commissioners are life members. Membership in Colorado Springs Park Commission is practically for life if the members desire to serve as long as they live.

(*e*) *Service as Park Commissioners by Commissions Elected for Other Offices.*

The general law in Illinois providing for the creation of forest preserve districts provides that when the boundaries of the district are coterminous with an established political division the governing authority of that division may serve as the governing authority of the district. In accordance with this law the Board of Supervisors of Cook County, who are elected by popular vote, serve as the Cook County Forest Preserve Commissioners. In Wayne County, Michigan, the Board of Park Trustees are the same as the Board of County Road Commissioners, who are appointed by the County Board of Supervisors.

General Comments on Formation of Park Commissions.

That plan of selecting park commissioners which most definitely removes them from the influences of recurring municipal and county elections and political control is believed to be most desirable to adopt in principle. On the whole the appointment by the mayor has worked satisfactorily in municipalities.

Appointment by the judges of courts in theory, at least, appears to be a method which has worked admirably.

Election by popular vote is perhaps more nearly in harmony with the theory and practice of popular government in America than any other plan, and in practice it has met with a considerable degree of success. Outstanding men and women of a community are usually willing to serve as candidates for park commissions because of the nature of the service, whereas they might be hesitant to enter the ordinary political contest.

Selection of members to fill vacancies by the remaining members without reference to any superior authority is so contrary to all theory and practice of popular government in the United States that it is not likely to be widely adopted. The plan is more acceptable when the appointees have

the approval of the mayor or the municipal council. The purpose of including *ex officio* members in park commissions is to tie up the department more closely with the superior governing authority of the given divisions (city or council) or to facilitate coöperation between the park commission and other public agencies that by reason of properties or functions are important factors in the community recreation program. While it is desirable and fundamental to have a high degree of coöperation between the park commission and other public agencies contributing to the service, it is not absolutely necessary, in order to secure such coöperation, to have representatives of these agencies on the park commission. As a general rule the members of these coöperating boards are non-salaried and have their spare time fully occupied with the duties of their own boards and cannot give the close attention to another public department which is needed. In actual practice, it has been found that non-*ex officio* members have to do most of the detail work. The plan of having a governing authority of a political division act as the governing authority of a park district is undesirable for the reason that the interest of the members is divided by many diverse duties and the entire machinery of park government is often subjected to the undesirable political practices which sometimes exist.

Important as the method of selecting members of park commissioners is, the efficiency of such commissions in the long run depends more upon the method of fixing the tenure of office, the powers granted the commissioners and the methods of financing — subjects dealt with later in this chapter and subsequent ones.

3. *Qualifications of members of park commissions.* Legal qualifications in general require that a member shall be a citizen of the United States and resident of the municipality, district or county as the case may be, and that he take an oath for the faithful performance of duty and give bond in some given amount. A few examples of such legal requirements follow:

"There shall be a board of park commissioners composed of five members, who shall have been *bona fide* residents and citizens of the city or town controlled by said acts, at least five years prior to their appointment . . . Each member appointed or selected to serve upon said board, before proceeding upon the duties of his office, shall qualify by making oath or affirmation before the recorder of such city as follows: 'I do solemnly swear that I will support the Constitution of the United States and the constitution of the State of Tennessee and will faithfully and impartially perform and discharge the duties of this office,' and in addition thereto, shall execute a bond payable to the mayor and the city council in the sum of ten thousand dollars conditioned that he will faithfully perform all duties incumbent upon him as a member of said board, which bond will be approved by the mayor and filed with the recorder."— An Act of the General Assembly of the State of Tennessee creating the Board of Park Commissioners of the City of Nashville, Chapter 117, Acts of 1901, amended 1903, 1905 and 1909, excerpts from Section 2.

"No person shall be eligible for the office of park trustee unless he shall have been for three years prior to the date of his appointment a *bona fide* resident and citizen of Seattle. Each trustee appointed or selected to serve upon said board before proceeding upon the duties of his office, shall qualify by making oath or affirmation before the city clerk."—Charter of the City of Seattle, Article XIII, excerpts from Section 2.

4. *Tenure of office.* In fixing the tenure of office of members of park commission, it is highly desirable to arrange the tenure in such a way that a majority of the commission at least shall be old members. This ensures a continuous line of experience in handling plans and policies which, in park planning, development and operation, must extend over a period of years. The most acceptable plan of fixing the tenure of office is to have one retire each year. Thus at the time of the appointment of a commission of five members one would be appointed for one year, one for two years, one for three years, one for four years and one for five years, and thereafter one would be appointed each year for a term of five years. The same plan may be used for commission of three, seven, nine or any other number, although other combinations of years of tenure might be fixed. In Oakland, California, the tenure of office of the park commissioners (three in number) is for six years, one being appointed every two years. In San Francisco the park commission of five members classified themselves so that one went out of office at the end of one year, one at the end of two years, one at the end of three years and two at the end of four years. In Hartford, Connecticut, in a board of ten appointive members, one is appointed each year, but that member who serves the full period of ten years is not eligible for reappointment.

The plan followed in some cities of appointing all the members for the same tenure with the possibility of an entirely new membership at the end of the tenure of office of the old commissioners is not wise in park legislation for the reason that under such a plan there is no reasonable assurance of stability in policies or executive organization and the affairs of the department may be thrown into the more or less complete control of whatever political faction happens to be uppermost in the community.

To secure overlapping tenure of office in elective commissions an arrangement is desirable whereby one or more of the commissioners shall be elected every two years as a minimum, so that the elections may coincide with some local, state or national election, thus avoiding the trouble and expense of conducting separate elections. In the small park districts of Chicago in the sixteen commissions of five members each, one in each commission is elected each year. In Minneapolis, out of a commission of fifteen members, twelve serving six years each are elected four at a time every two years. In Louisville, Kentucky, the six elective members in a board of seven serve four years, three being elected every two years. In some of the cities of Iowa having commissions of three members the tenure of office is six years, one being elected every two years.

In cities administering parks under a plan other than a board or a commission the tenure of office is fixed either by the length of time for which

the governing authority is elected, or, if appointed, by the length of time of the tenure of the appointing authority, or it is indefinite. Thus in commission governed cities the tenure of office of the commissioner having control of parks is usually for two or four years. Instances are known where a commissioner who has made a very favorable impression on the electorate by reason of the efficiency of his service has been returned period after period. In city manager governed cities the tenure of office of the city manager is usually indefinite and all appointments made by him would likewise be indefinite. In a city like Detroit where a commissioner of parks and a commissioner of recreation are appointed, the appointments are indefinite, depending upon the will of appointing authority, and of course may be ended with every change of the appointing authority.

Under none of these plans is there any assurance of stability, and this fact, as has been pointed out, constitutes one of the weaknesses of these types of organization for the administering of parks.

5. *Technical training as a membership requirement.* In San Francisco the law requires that one of the members of the Park Commission must be an artist. In Boston one of the members "shall be a landscape engineer or an architect of not less than five years experience, familiar with the theory and practice of designing, laying out and maintaining parks." Legal provisions of this kind are exceedingly rare and it is doubtful whether it is wise to make such a provision obligatory. The functions of a modern park department are so varied that it would be next to impossible to begin to include in the membership of boards technically trained persons for all the major functions. Moreover, a board is designed primarily to represent the lay point of view of a community and not the professional point of view.

6. *Salaried or non-salaried commissioners.* The majority of the laws creating park commissions in the United States specifically state that members shall serve without compensation. This is a wise provision in that it sets up a standard of public service which inevitably appeals to all community minded citizens, throws open a field of public service to the citizens who have the leisure to serve their community, and renders this particular field of public service less attractive to individuals with whom personal gain is a chief consideration. Another reason for adhering to the principle of non-salaried service is that members of commissions of this type are not so likely to engage in detailed executive activities. As members are not usually technically trained in park service, better results can be obtained if park commissioners confine themselves to making general plans outlining policies and having general supervision of the work, leaving the executive details to their employed executives. The few outstanding examples of salaried service on park commissions of this country involve executive

service by a certain member of the board, usually the chairman. This is true of Boston, Massachusetts, and Louisville, Kentucky. There are a few instances of park board members receiving the actual expenses incurred in the performance of their duties or a small annual allowance. For example, in Iowa the state law (Iowa Laws, Chapter 293, Section 5791) provides that "each of the commissioners shall receive such salary as shall be fixed by the city council, not to exceed in the aggregate annually, ten dollars for each thousand population or fraction thereof according to the last federal or state census, said compensation to be paid out of the park fund."

7. *Political representation on park commissions.* In a few instances the law specifically states that the board shall be so constituted that dominant political parties shall be represented. The obvious intention in such instances is to guard against too great political control of the affairs of the department. It is doubtful whether a provision of this kind will secure the desired end. An example of such a provision is as follows: "The members of said board (Board of Park Commissioners), with the exception of the mayor, shall be appointed in such a manner that no political party having representatives in the common council shall have more than one-half of said members . . ." (excerpt from the Charter of the City of Stamford, Connecticut, Section 147).

8. *Sex representation.* In some park legislation it is specifically provided that one or more women shall serve on the commission. Because of the intimate relation of park service to the welfare of children and young people and the contribution which women have to make to a movement of this kind, it is highly desirable to have the women of the community represented on a commission.

Powers Given by Law to Park Governing Authorities

In Relation to the Creation of the Executive Organization.

Practically all park laws (state enabling acts, charter provisions and ordinances) give specific directions for the organization of the governing authority and the creation of an executive organization.

1. *Selection of officers.* In municipalities and counties where parks are governed by board or commission, the laws frequently specify that annually or within a given time after the selection of the members of the board they shall meet and proceed to organize by the election of officers — usually a president, vice-president and a secretary, who may or may not be a member of the board. A few laws specify that a treasurer shall be elected. Examples of such legal provisions follow:

"The said board of park commissioners shall annually, in May, choose one of their number to be president of the board, and another as vice-president; and the said board shall elect a secretary, who, in the discretion of

the board, may be one of their own number."—Charter of the City of Hartford, Section 2.

"The commissioners shall, within ten days after their election, qualify by taking the oath of office and organize as a board by the election of one of their number as chairman and one as secretary, but each commissioner, before he enters upon the duties of his office, shall give a bond with sureties to be approved by the council, in the penal sum of one thousand dollars, conditioned for the faithful discharge of his office."—Iowa Laws, Chapter 293, Section 5789.

"As soon as they are appointed and have qualified, they shall meet and appoint one of their number president, another secretary of the board and a third treasurer of the board."—Rock Island, Illinois, Revised Ordinances, Chapter 37, part of Section 2.

In some instances the president of the board is designated by the appointing authority, as in Kansas City, or elected as president where the commissioners are elected by popular vote, as in the Cook County Forest Preserve District (Board of County Supervisors). The general park laws of Iowa specify that the city treasurer shall be treasurer of the board of park commissioners (Iowa Laws, Chapter 293, Section 5790). In the majority of cities under park board or commission the fiscal officer of the city handles the fund. In a few instances the city clerk is required to act as secretary of the park board.

2. *Committee organization.* General state enabling acts and city charters or ordinances providing for the creation of park government by a commission do not as a rule specify committee organization. The organization of standing and special committees is deemed an inherent right of such commissions and is made the subject of rules and regulations or by-laws.

Standing committee organization is often carried to an unnecessary degree by park commissions with the result that the chief executive officer is needlessly harassed by the interference of committees in executive details. Except in very large park systems there is no particularly good reason why all questions of plans and policies cannot be handled by the commission as a committee of the whole, especially where the commission membership does not exceed seven or nine. Special committees appointed from time to time to make investigation and reports on specific problems may be necessary and valuable in a commission of any size.

3. *Adoption of rules for conduct of the affairs of governing authorities.* Practically all legal measures setting up park board or commission form of governing gives specific legal authority to the commission to adopt such rules and regulations as are deemed necessary for the proper transaction of their business. The by-laws adopted by some commissions go into great detail as to the organization of the board and department, the duties of various officials and employees and the methods of procedure in the transaction of affairs of the department. In dependent park districts possessing corporate authority, by-laws are usually enacted in the form of ordinances.

4. *Executive organization.* The right to set up an executive organization for administering the details of the work of the department is exercised

by every type of park governing authority and is a power which as a rule is specifically stated in all legislation providing for park departments. (For a detailed discussion of executive organization, see Chapter VIII, page 507, on "Executive Organization of the Park Department.")

In Relation to the Legislative Functions of Park Authorities.

It is universally recognized that certain rules and regulations are necessary for the governing of the people in the use of park areas and facilities. Independent park district authorities possessing corporate authority have the power to formulate necessary rules and regulations for the governing of their properties and to enact them in the form of ordinances which have all the force and effect of ordinances enacted by the municipality. Park boards or commissions are usually empowered to adopt such rules and regulations, but almost universally these must be enacted into the form of resolutions or ordinances by the general governing authority of the municipality or county before they have the force and effect of laws. Under all other forms of park government the city council is the authority to adopt rules and regulations for the governing of the use of park property.

The power to adopt rules and regulations for the governing of properties involves also the power to enforce such rules and regulations, hence the importance of the police powers granted park authorities. Some laws clothe general administrative park authorities with police powers; others authorize the governing authority to have selected employees of the department sworn in as peace officers, such employees exercising police powers in addition to their regular duties. Still other laws make it possible for the governing authority to authorize a special police or guard force, while some specify that policing of parks shall be a function of constables (villages), sheriffs (counties) or the municipal police (cities). In the larger cities the growing tendency to use the regular municipal police for park policing has not, in most instances, proven satisfactory. Almost universally park executives prefer a special police force under their own control. (For a detailed discussion of park police, see Chapter XIV, pages 747–791, on "Park Policing.")

In Regard to Financial Phases of Park Control.

1. *Accountability for funds.* Park legislation almost universally requires park governing authorities not possessing corporate powers to keep accurate record of income and expenditure and render annually, sometimes monthly and annually, to the governing authorities of the municipalities and counties a detailed report of all financial transactions. The Boston Metropolitan District authorities and the Metropolitan Park District of Providence Plantations in Rhode Island are required to render financial reports to state authorities, or officers of the park and recreation department. The

following are examples of legal provisions respecting accountability for funds:

"Said board shall keep and make full detailed records of all sums appropriated for its department by the board of appropriationment and taxation, and of its proceedings, acts and expenditures, and monthly render to the court of common council a detailed statement of its acts and expenditures of public funds during the preceding month, and shall annually render to the said court of common council and to the board of apportionment and taxation a detailed statement and report of its proceedings, contracts and expenditures of public funds during the preceding fiscal year, the condition of its department and property in its charge, together with an estimate, in detail and under appropriate heads, of its required necessary expenditures from public funds for the ensuing fiscal year." — Charter of the City of Meriden, Connecticut, portion of Section 91.

"They shall make an annual report to the general assembly (of the state) of their proceedings, together with a full statement of their receipts and disbursements." — Rhode Island Public Laws, Chapter 1466, April 23, 1907. An Act defining the powers and duties of the Metropolitan Park Commission of Providence Plantations.

2. *Purchase of supplies, material, equipment.* Many park departments have legal authority to purchase their supplies, materials and equipment directly from commercial or industrial firms subject to certain limitations as to competitive bidding, but with the growing tendency to centralize like functions in municipal governments into a single department or bureau. A very large number of park departments are required by law to make their purchases through a centralized municipal purchasing department. (For examples of legal provisions regarding limitations on expenditures, see page 462.) The following is an example of legal provision relating to centralized purchasing departments:

1. "It shall be his (city purchasing agent) duty to purchase, subject to the supervision of the city council or commissioners all materials and supplies of any character whatsoever to be used by the City of San Antonio. All purchases shall be made on competitive, sealed bids, the contracts to be awarded to the lowest bidder, and in all cases where such supplies are not purchased from the lowest bidder, the contract for the purchase thereof shall not be let until the city council or commissioners approve such purchase from such bidder. All competitive bids shall be opened in the presence of the city council or commissioners and thereafter shall be filed in the office of the auditor subject to the inspection of anyone desiring to see them. In all cases where bids are not satisfactory it shall be the duty of the purchasing agent to reject said bids and readvertise for new bids; provided, however, in case of emergency, purchases, not in excess of one hundred dollars, may be made without advertising for bids, but in each case the written consent of the mayor must be obtained. The purchasing agent shall advertise in some newspaper published daily in the City of San Antonio for such a period as may be fixed by the city council or commissioners, but which shall not be less than five days. The City of San Antonio shall not be obliged to pay for any materials or supplies not purchased in accordance with the provisions of this section. The purchasing agent shall prescribe requisition blanks for the different departments and requisitions shall be made out and signed in quadruplicate, one copy of which shall remain with the office making such requisition, one to be filed with the city clerk, for the use of the city council or commissioners, and one to be given to the merchant furnishing the supplies, and another to be delivered to the auditor. The purchasing agent shall also prescribe forms showing that the officer or employee making the requisition has received all supplies so requisitioned, or if he has not received them, the reason therefore, and said report shall be made in quadruplicate and distributed as above provided for requisitions."—Article III, excerpt from Section 127, charter of the City of San Antonio, Texas.

In the making of contracts for supplies, material, equipment and labor most park authorities are subject either to specific regulations in the law or charter provisions creating them or to general regulations applicable to

all departments of the municipal or county government. Examples of legal provisions relating to contracts follow:

1. "And no member of said board shall be concerned in any contract with said board or any of its departments (board of park commissioners) either as a contractor, sub-contractor, bondsman, or otherwise."—Excerpt from Charter of the City of Stamford, Connecticut, Section 148.

2. "In the letting of contracts the board of park commissioners shall be governed by the same laws as govern the letting of contracts by the director of public service."—Ohio Municipal Code, Sixth Edition, Section 4063, page 541.

3. *Limitations of expenditures by park authorities.* As a rule these limitations are of two kinds. First, a general limitation whereby the authorities are expressly forbidden to make contracts of any nature whatever unless there is money on hand to meet the obligation, or they must stay within limits of the appropriation allowed by the municipal or county governing body as the case may be, or within the limits of the income from a special tax in instances where general park expenditures are financed by special taxes. Second, a limitation on purchase or contract without submitting the purchase or contract proposal to competitive bidding. It is common practice throughout the United States to place a definite limit upon the amount of money a park administrative authority can spend directly. In some instances this is as low as fifty dollars, ranging from this minimum through sums of varying sizes to one thousand dollars, which is usually the maximum. Because it is not always practicable to submit purchase or contract proposals to competitive bidding some laws provide for a means of setting this limitation aside in special instances. Thus in one park system governed by a park commission the commission may by a two-thirds vote set the limitation aside. Other authorities, not having a specific right to set the limitation aside, do so in practice by splitting contracts for supplies, tools, nursery stock, machinery and similar supplies, a practice that can have no possible legal defense, although practical necessity may make it highly desirable at times. A detailed discussion of park financing, methods of securing funds for the purchase of property and maintenance of park departments, will be found in Chapter VII.

In Regard to General Reports.

In addition to requiring a fiscal report, most park legislation requires that a detailed annual report of all the acts and doings of the authorities in charge of parks and recreation be made to the governing authorities of the municipalities, counties or states, as the case may be, under which the park and recreation authorities are operating. In general the publication of the reports is optional, although in a few instances the laws require publication for general distribution. For the education and information of the people, to expedite the answering of outside inquiries, and for general exchange

among park governing authorities, it is highly desirable that a summary at least of the reports of all park authorities be published annually.

In Regard to the Acquisition and Administration of Properties.

None of the powers delegated to park boards is more important than those having to do with the acquisition of property and the extent of territorial jurisdiction, with the attendant problems of planning for future development and of relationships and responsibilities with which other local groups are concerned.

1. *Acquisition of properties.* In all municipalities (villages, towns, cities and counties) where parks are administered by a plan other than a park board, the acquisition of properties is a power exercised directly by the governing body of the municipalities and counties and delegated to the municipalities and counties by the states. Under the park board type of governing parks, the board or commission usually is empowered to acquire properties in various ways on its own initiative, but even under this plan of park government the acquisition of properties is often subject to the supervision and control of the city council or the county board of supervisors or county commissioners. (For detailed consideration of various ways of acquiring properties, see Chapter VII on "Park Financing," Section on "Acquisition and Permanent Improvement of Properties," pages 471–491.)

2. *Extent of territorial jurisdiction of park governing authorities.* Every municipal park governing authority should have the power to acquire, develop and operate properties and facilities both within and without the incorporated limits of the municipality. There are a number of reasons for this extra territorial jurisdiction.

(*a*) The development of rapid transit lines and especially the widespread ownership of private motor conveyances have increased greatly the mobility of the population of every municipality. The effective radius of this mobility for week-end excursions is between fifty and one hundred miles from any given center of population, and for longer vacation periods, such as camping one or more weeks, the effective radius may be several hundred miles. For daily vacation trips the effective radius may be as far as fifty miles at least.

(*b*) The modern city environment lacks several elements vitally necessary to the very life of the people — elements that can be provided only through a more or less naturalistic environment. It is therefore important in park planning to provide, in addition to open spaces of a number of types within the city, both small and large outlying spaces where environmental conditions will be as completely opposite as possible to urban conditions.

(*c*) Because of the difficulty of changing fundamentally old built-up

sections of urban communities, the hope for constructive achievement in city building lies in unbuilt-up sections within the incorporated limits of cities and especially in suburban sections outside of city boundaries. Park planning which is so essential a part of city planning is badly handicapped unless the park authority has the power to go outside city limits. General powers of municipality include the right to acquire and develop property outside incorporated limits for such necessities as water supply and sewage disposal. In order to leave no doubt about the legality of this power as applied to park areas most park legislation now specifically includes the right.

Extraordinary Methods of Handling Extra Territorial Park Problems.

When the metropolitan areas of cities outside the city limits contain several or many different political divisions or extend into two or more states, the problem of acquiring, developing and operating a system of outlying parks and recreation areas may become too large a burden, both financially and operatively, for the local municipal park governing authority. Various methods have been adopted to handle this problem in the vicinity of large urban centers of population. Among these are the following:

(*a*) *Boston and environs.* Within a radius of fifteen miles of Boston are thirty-eight cities and towns (townships) forming the so-called Metropolitan District of Boston and in this case including the city of Boston. Obviously it was financially and administratively impracticable for the city of Boston alone to undertake the planning, development and operation of a comprehensive system of outlying parks and other recreation areas, centers that would inevitably be used by the people living in the region outside of the city limits and by many people coming from other parts of the state and from other states. Under the sovereignity of the state, through appropriate legislation, a Metropolitan District was created under a special Metropolitan Park Commission (now consolidated with the Metropolitan Water and Sanitary Commissions), clothed with extraordinary powers to deal with regional recreational problems.

(*b*) *New York City and environs.* In the Metropolitan District of New York City there has been no official unified, comprehensive, regional park and recreation planning and administration as in the region of Boston. The Regional Plan Committee, a private organization, has been working on such a plan for several years, but in actual practice the regional park and recreation problems are being handled by various existing political divisions such as the city (within its limits), outlying counties, and the state. In that part of the Metropolitan District of New York City lying in the state of New Jersey the counties of Union, Essex and Hudson have established park

systems and Bergen County has taken steps to do so. To the west and northwest of the city the states of New Jersey and of New York combined in establishing the very large Palisades Interstate Park (45,000 acres approximately). To the north of the city, Westchester County is developing a very comprehensive park and recreation system and the States of New York, Massachusetts and Connecticut to the extreme northeast are establishing a tri-state park. On Long Island the Long Island State Park Commission is establishing a comprehensive system of large metropolitan-state parks. Thus an extraordinary regional park and recreation problem is being worked out in a more or less uncorrelated manner on the basis of existing political divisions. In New York City itself there is no unity of administration, there being five separate park and recreation administrative organizations.

(*c*) *Cleveland and environs.* The acquiring, developing and operating of a system of outlying park and recreation areas in the metropolitan region of Cleveland is being worked out on a district basis under the authority of a general legislative act providing for the establishment of metropolitan park districts under metropolitan park boards or commissions.

(*d*) *Buffalo and environs.* Under the authority of a legislative act the County Board of Supervisors of Erie County has established a county park commission which is actively engaged in acquiring, developing and operating a system of outlying parks. The state, through the Niagara State Park Commission and the Allegany State Park Commission, is making a vital contribution to the regional park and recreation needs of this region.

(*e*) *Chicago and environs.* The metropolitan region of Chicago presents an unusual multiplicity of park and recreation governing authorities. Within the city itself there are nineteen independent park and recreation districts for the most part possessing the corporate powers of municipality; one general bureau in the municipal department of public works having charge of certain parks, playgrounds and bathing beaches over the city as a whole, and one Bureau of Recreation under the Board of Education. Outside the city limits there are eleven independent park districts possessing corporate authority; and operating both inside and outside the city limits, although chiefly outside the city, but confined within the limits of the county, is the Cook County Forest Preserve District (31,600 acres — 1926) under the Cook County Forest Preserve Commissioners, who are the same as the County Board of Supervisors. Part of the metropolitan area of Chicago is within the state of Indiana. In this section, in addition to the park systems of the local municipalities, the state of Indiana has provided, with some aid from private funds from citizens of Chicago, a large state park known as the Dunes State Park. A major weakness in the handling of the Chicago metropolitan park situation is lack of unity, and in the case of the

Cook County Forest Preserve District, the fact that its boundaries are coterminous with the county. The Boston and Cleveland district plan, which ignores existing political divisions, is the more flexible and far better adapted to planning and administration in metropolitan areas than is a county unit.

It is perhaps impossible to lay down a general principle regarding conditions under which a city is justified in setting up a special district authority to handle outlying park problems. It would appear, however, that in any urban community of five hundred thousand inhabitants and less the municipal park authority equipped with adequate legal powers should be capable of handling efficiently park problems both within the city and in outlying districts. The problem in an urban community of any size, however, becomes exceedingly involved when the metropolitan region is within two or more states or when there are a number of satellite municipalities within the region.

Comments on Division of Functions in Jurisdiction within Incorporated Limits of Municipalities

There has grown up, in a large number of municipalities in the United States and in a few counties, a division of function in the general field of parks and recreation represented by the existence of a park department and a recreation department in the same city, and also, in the cities, a division based on arbitrary or historical lines. A further division of authority in a few cities has arisen out of the conditions of gifts of property or money for park and recreation purposes held in trust.

(*a*) *Division in administration of parks and recreation.* In a number of cities the park department is administering the city's recreation through the department itself or through a special bureau or division of recreation, and in still other cities, fewer in number, there has been created a park and recreation department combining the functions of both. The separate park commission and the separate recreation commission or board still exist, however, in the majority of cities, and very successful results are being secured under this plan. In the great majority of cities very close coöperation exists between these two departments, the park interests being represented in many instances on the recreation commission and the recreation commission using the facilities provided by the park department.

(*b*) *Territorial division within the limits of a municipality.* Chicago and New York City are outstanding examples of a multiplicity of park and recreation authorities within the incorporated limits based on territorial divisions. Reference has already been made to the number and type of the different park and recreation authorities in Chicago, page 465. The present territorial jurisdictional division of parks and recreation in Chicago no doubt had its origin in the rivalry between or among geographical sec-

tions of the city. The first bill that was passed by the state legislature providing for the first independent park district (now included in the South Park District) was defeated when submitted to a vote of the people of the "towns" of South Chicago, Hyde Park and Lake (1868). The bill that resulted in the establishment of the West Park District was originally drafted to provide a system of parks and boulevards throughout the entire city. Because representatives from the south and north sides of the city had arranged at the same session of the legislature for the passage of bills to establish systems in those sections of the city, the proponents of the city wide bill limited the bill to include only the west side. Thus in 1869 the process of the division of the area of Chicago began. In 1895 a general enabling act was passed under which many additional independent park districts were established. The net result of all this legislation is that within the limits of the city of Chicago there are three large independent and sixteen small independent park districts (1926), and yet some sections of the city are without park and recreation service except that which may be provided by the city wide Bureau of Parks, Playgrounds and Bathing Beaches of the municipal Department of Public Works and the Recreation Bureau of the public schools.

Much noteworthy achievement along park and recreation lines in Chicago is recognized under the present system of administration. Nevertheless such a plan of operation is liable to involve unequal distribution of financial resources and of recreation areas in relation to the distribution of population, inequalities in efficiency of administrative service and difficulties in projecting and putting into execution comprehensive city wide park and recreation plans.

Another example of a city whose park administration is of historical and political origin is New York City, whose division of park districts corresponds to the old borough divisions. Each of the five systems of the city is under a single appointed commissioner whose tenure of office is subject to political changes in the head of the municipal government. These five commissioners constitute a general park board or commission, but the board has no administrative functions.

The argument has sometimes been advanced that in very large cities the administrative problems of a highly developed centralized park system may become too complex and burdensome to be handled from a central office under a centralized authority. In view of the fact that other large public services, notably the public schools, are handled effectively on a city wide basis under a central authority, it would appear that this argument has little to commend it. By proper division of the whole area of any city into functional districts there appears no good reason why a cen-

tralized authority could not handle any volume of administrative functions effectively and at the same time have the added advantage of constantly having under consideration the whole needs and problems of the city from a planning as well as an administrative point of view.

(*c*) *Jurisdictional division arising from terms of trust donations of property or property and money.* Occasionally the donors of park properties and trust funds, in order to be reasonably sure of the proper handling of the property or property and funds, stipulate in the terms of the gift that there shall be a special commission or a board of trustees created to develop and care for the property and to supervise the expenditure of the funds. Baconfield Park in Macon, Georgia, and Long Park in Lancaster, Pennsylvania, are examples, and for many years Keney Park in Hartford, Connecticut, was of this type. Tower Hill Park in St. Louis is another example. Unless trust funds for the development and maintenance of such park properties are large enough to provide forever for the needs of the property, there seems no good reason for setting such properties apart from other properties in local park systems, for inevitably in the case of insufficient trust funds their maintenance becomes a responsibility of the local authorities. Except under very exceptional circumstances, it is usually a better plan for these donations to come under the general administration of the local park authorities.

Not infrequently institutions of an educational-recreational character are to be found in park systems under the management and control of boards of trustees separate and apart from the general administrative authorities of the park systems. The Metropolitan Museum of Art, the Museum of Natural History, the Aquarium in Manhattan, the Botanical Gardens and the Zoölogical Gardens in the Bronx, all in New York City; the Brooklyn Academy of Science in Brooklyn; the Arnold Arboretum in Boston; the New Zoölogical Garden in Detroit; the Museum of the Buffalo Society of Natural Sciences and the Academy of Fine Arts in Buffalo, New York, and the Art Museum in Minneapolis are examples.

Most institutions of this character arose out of private initiative, later receiving public support and gaining the right to be located in public parks while the original form of their government was continued. As a general rule the governing authority of the park system in which they happen to be located is represented on the board of trustees or board of directors. This separate private-public management of institutions of this character seem to have been eminently successful.

In the Matter of Coöperation With Outside Agencies.

Because of the questions which have sometimes arisen regarding the legal right of park and recreation authorities to expend public funds and to organize and direct activities on properties not legally owned or controlled by them, there has been inserted in most modern legislation dealing with organized recreation, clauses giving the governing authority the specific right to conduct activities at public expense on properties belonging to other public agencies and private individuals and corporations. There is usually a proviso in the case of public agencies that such a right must be exercised with the consent of the governing authority of the coöperating agencies and that the powers of the coöperating agency over its own properties are in no wise lessened by their use by park, recreation or other governing authority. In relation to the use of private property the proviso usually reads, "by and with the consent of the owners." The following are examples of such provisions:

1. "Any two or more municipalities may jointly provide, establish, maintain and conduct a recreation system and acquire property for and establish and maintain playgrounds and recreation centers. Any school board or park board may join with any municipality in conducting and maintaining a recreation system."—Section 5 of an Illinois Act providing for the acquisition, equipment, conduct and maintenance of public playgrounds in and by cities, towns and villages having a population of less than one hundred and fifty thousand approved June 24, 1921.

2. "And may coöperate, by agreement, with other commissioners or boards having the custody and management in such cities of public parks, libraries, museums and public buildings and grounds of whatever sort, to provide the equipment, supervision, instruction and oversight necessary to carry on much public educational and recreational activities in and upon such other buildings and grounds."—Wisconsin Statutes, 1923, 43, 50, Use of School Buildings and Grounds for Civic Purposes, part of Section 1.

3. "The public recreation board shall have power and authority to equip, operate, supervise and maintain playgrounds, athletic fields, swimming centers, indoor recreation centers, municipal camps or other recreation facilities on or in any public grounds or buildings, either within or without the city, which the city council may from time to time, acquire, authorize, offer, designate or set apart for such use; it shall have power, with the consent of the school board, to organize and conduct play and recreational activities on grounds and in buildings under the control of the school board, provided, that nothing in this section shall be construed to abridge the power of the school board to refuse the use of any of its grounds or buildings; it shall have power to equip, operate, supervise and maintain playgrounds, athletic fields, swimming centers and other recreation facilities on or in properties under the control of the park board; it shall have the power to take charge of and use any grounds, places, buildings, or facilities, which may be offered, either temporarily or permanently, by individuals or corporations, or other person whomsoever, for playgrounds or recreational purposes." — Excerpt from Chapter XIX, Section 4, charter of City of Fort Worth, Texas.

4. "The county park laws of Michigan specifically empower the county boards of supervisors to contribute toward the improvement and maintenance of any park area owned or held in trust by any township, village or city within their respective counties or adjoining counties or for any public park owned or held in trust by two or more adjacent or adjoining counties. Park areas in this instance also include boulevards, and highways or streets laid out as boulevards." —Michigan Laws, Act 90, 1913, amended to 1925, Section 3.

5. "The jurisdiction and powers of said commission shall extend to and may be exercised in the cities of Providence, Pawtucket and Central Falls, the towns of East Providence, Cranston, Warwick, Johnston, North Providence, Lincoln, Barrington, and the voting districts numbers 3, 4, and 5 in the town of Cumberland; which cities, towns and voting districts shall constitute the Metropolitan Park District of Providence Plantations.''—Rhode Island, Public Laws, Chapter 410, Section 3.

"Any city or town within said metropolitan park district is hereby authorized and empowered to transfer the care and control of any open space owned or controlled by it to said metropolitan park commissioners,

upon such terms and conditions and for such period as may be mutually agreed upon; or to enter into an agreement in writing with said commissioners for the joint care, control, or preservation of open spaces within or adjacent to such city or town; and the metropolitan park commissioners may in like manner transfer the care, control, and preservation of any open space controlled by them to any city or town within the said metropolitan park district, with the consent of such city or town and upon such terms and for such period as may be mutually agreed upon."—Rhode Island, Public Laws, Chapter 1466, April 23, 1907, Section 6.

Comments on Modern Legislation as Affecting Scope of Activities.

The laws which have been quoted show something of the powers which are entrusted to park authorities in a number of cities. Nothing reflects more truly the tremendous expansion of the functions of modern park departments than a comparison of the statement of the scope of activities in some of the older and newer legislations. This expansion has been especially marked in two fields of activities — organized recreation and forestry.

A few references to modern laws stating the scope of the activities of the modern park department follow:

1. *Fort Worth, Texas.* Chapter VIII, Section 4, Charter of Fort Worth (see pages 438, 439). Fort Worth also has a separate recreation department with broad powers (Chapter XIX, Section 4). These two sections taken together constitute a most comprehensive statement of a scope of modern park and recreation department.

2. *Birmingham, Alabama.* General Acts of Alabama, 1923, part of Sections 2 and 6 (see pages 435, 436). This is an excellent statement of the scope of activities of a department in which the functions of a park department and a recreation department are unified in one body.

3. *Detroit, Michigan.* Charter of the City of Detroit, Chapter IX, Section 5 (Park and Boulevard Departments); Chapter XVIII, Section 5 (Recreation Department). (Pages 431–433.)

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CHAPTER VII

PARK FINANCING

Park financing falls into two distinct divisions: (1) the acquisition and permanent improvement of properties; (2) operation and maintenance.

I. The Acquisition and Permanent Improvement of Properties

The acquisition and permanent improvement of properties may be financed in one or more of the following ways:

1. Use of current funds of the park and recreation department or by direct appropriation of a municipal or county government.
2. Proceeds from the sale of bonds secured by general taxation.
3. Proceeds from the sale of bonds secured by special assessments.
4. A combination of the proceeds from the sale of bonds secured by general taxation.
5. Installment payments out of the net proceeds obtained from the operation of the particular project itself.
6. Proceeds from gifts, donations, devises and bequests.
7. Acquisition of properties through use of the principle of excess condemnation or excess purchase.

1. Acquisition and Improvement of Properties from Current Revenues.

The "pay-as-you-go" policy has been practiced by some park departments through the country and in many park systems. Both the acquisition and improvement of properties have been financed out of current revenues. On the whole, however, this is an undesirable method of acquisition and improvement of properties for the following reasons:

(*a*) Because of the tendency to hold the general municipal tax rate down to the lowest possible minimum practically every park department throughout the entire country has insufficient funds for efficient operation and maintenance and cannot afford to expend any of the meager income for capital outlays either for the acquisition of properties or for improvement. The most that departments can do, as a general rule, is to pay for minor improvements out of current revenues.

(*b*) Where properties are acquired either by direct payment of the complete cost or by a system of deferred payments extending through a period of years it usually results in these properties lying idle and unimproved for years and the people who pay for them get no benefit.

(*c*) If a considerable percentage of current revenues is expended for

permanent improvements each year the operation and maintenance of the remainder of the system is liable to be ineffective and people do not receive a maximum service for money already expended for properties and improvements. There have been some notable examples of acquisition of properties by direct appropriation of the municipal government, but as a general rule these governments are in exactly the same position with respect to current revenues as are park departments.

EXCERPTS FROM PARK LAWS RELATIVE TO THE USE OF CURRENT REVENUES FOR ACQUISITION OF PROPERTIES AND PERMANENT IMPROVEMENTS

Birmingham, Alabama. The state law, under which the park and recreation commission operates, provides for the purchase of properties on time or partly for cash and partly by deferred payment by the city government upon recommendation of the park and recreation commission, payments to be made out of current revenues.

Oakland, California. "The council shall, *for the purchase, development, equipment* and maintenance of parks, squares and public pleasure grounds, annually appropriate to the board of park directors such amounts as in the judgment of the council be necessary or proper, and the funds so appropriated shall be credited to the park fund, and the board of park directors shall have exclusive management and disbursement of the same." — Charter of the city of Oakland, Article XII, Section 69.

Sacramento, California. "In order to maintain the public parks of the city and to provide for the *development of the same* and for other expense to be incurred by the Park Department, the city manager shall include in his budget an amount estimated by him to be sufficient for said purposes, and the city council shall provide for the same in the levy, making such changes as it may deem proper. All money raised or acquired for park purposes shall be kept in the park fund and shall be devoted exclusively to said uses." — Charter of the City of Sacramento, Article XVI, Section 140.

San Francisco, California. "The supervisors shall provide all necessary money for the maintenance, preservation and improvement of said parks, squares, avenues and grounds, and to that end shall annually levy a tax on all property in the city and county not exempt from taxation, which shall not be less than seven cents nor more than ten cents on each one hundred dollars assessed valuation of said property. — As amended November 2, 1920. Approved by the Legislature, January 21, 1921. Statutes, 1921, page 1776." — Charter of the city and county of San Francisco, Article XIV, Section 11.

Provisions in other cities. The council of the city of Lincoln, Illinois, has the power by ordinance to provide annually by taxation a special fund not to exceed eighteen cents on each hundred dollars valuation of taxable property, for the purchase of land for parks and boulevards. In Muncie, Indiana, the ordinance creating the park board provides for a special levy, as a part of the general tax levy, of not less than five cents on each hundred dollars worth of taxable property for the maintenance and improvement of the public parks. The Iowa State Laws (Chapter 293) provides that, in addition to a special tax for general park purposes not to exceed two and one-half mills on each dollar of assessed valuation of property within the city subject to taxation, there may be a special tax levied in cities having a population of over twenty-five hundred, after being voted upon by the qualified electors, of not to exceed five mills, for the sole purpose of purchasing and paying for real estate and permanently improving the same for park purposes.

2. *Proceeds from the Sale of Bonds Secured by General Taxation.*

Practically every municipal and county corporation has authority to issue bonds for municipal or county purposes and under this general authority, subject to certain limitations as to the amount of bonded indebtedness, may issue bonds for the acquisition and permanent improvement of park and recreation areas. Park departments derive their powers to issue bonds either directly from the state or else secure them through the corporate powers of the municipality or the county as the case may be. In addition to certain limitations upon the amount of bonded indebtedness which a municipal or county corporation may issue, the issue of bonds is further

safeguarded by the requirement that proposals for bond issues must be submitted to a direct vote of the people. The same principle applies to those bonds issued for park purposes. The use of this authority to issue bonds for the acquisition and improvement of park properties is almost universally practiced throughout the United States, especially by the larger cities and by counties having park systems, but the practice is not uncommon among smaller municipal corporations.

Because the life use of a park or other recreation area is likely to be for several generations, it appears only just that the entire burden of acquisition should not be borne by the generation acquiring the area. It is sometimes asserted that future generations will have burdens enough to provide for their own needs, partly because of the things left undone by preceding generations and partly because as civilization develops each generation will have increasing needs that will have to be met, and that, therefore, it is unfair to project indebtedness onto future generations. There is much truth in this assertion where long term bonds have been used for improvements only, the term of life of which may not outlast the generation making the improvement; but in the acquisition of real properties such as park and recreation areas, the usefulness of which will likely continue for many generations, no such criticism can justly be made. However, because of this idea and because of the possible abuse of bond issuing powers, some communities have tried to adhere to the policy of "pay-as-you-go" mentioned in the preceding section.

Purposes for which bonding power may well be used. Most American communities have sadly neglected to provide themselves with the necessary recreation areas in times past, and the only practicable way of catching up, as well as of preparing for the future, is to mortgage their future to a greater or less degree, in order to meet their present and future needs. Considerable discrimination should be exercised, however, in the use of the bonding power where these bonds are secured by general taxation. It would appear that general bond issues might very well be used for the following purposes in relation to park and recreation areas:

(*a*) Acquisition and improvement of large parks. (*b*) Acquisition and improvement of outlying parks and reservations. (*c*) Waterfront properties providing general bathing, boating or other recreation facilities. (*d*) Site and building of a downtown community center that may be used by all the people of the community. (*e*) Site and structure for a municipal theatre, art gallery, museum, site and structures for a zoölogical garden, site and structure of a stadium and similar facilities. (*f*) Neighborhood playgrounds or neighborhood playfield-parks in rundown sections of cities where property values would hardly make possible the use of the district

assessment plan, and where the improvement in living conditions would represent general benefit as well as great advantage to the people living in the immediate section. (*g*) Acquisition and improvement of boulevards and parkways.

The principle involved here is that bond issues secured by general taxation should be used only where it can be clearly shown that the acquisition and improvement will be of appreciable benefit to the whole community and not chiefly for the benefit of some particular part of the community. Just what is of benefit to an entire community and what is not is often very hard to determine. It may be asserted that any improvement, although chiefly benefiting a part of the community, is a benefit to the entire community, and it is on this theory that general bond issues for the acquisition and improvement of all types of recreation areas are justified. However, there has developed another theory which is coming more and more into practice that there are certain kinds of recreation areas that should be acquired and improved entirely or partially by sections of cities that are chiefly benefited. This will be discussed in detail in a subsequent section.

In the issuance of general bonds there should be discrimination as to terms of the bonds. There should be a decided distinction between the terms of bonds for acquisition of properties and the terms of bonds for many of the usual so-called permanent improvements. Long term bonds, say for a maximum of fifty years, may be permissible for the acquisition of most real properties. But such long term bonds should not be considered in connection with landed properties where the legal status is not permanently fixed, such as children's playgrounds, neighborhood playfield areas, and many of the so-called boulevards having the legal status of streets. Bonds for improvements should never be issued to extend beyond the life of the improvement, and this expected life should be calculated on a minimum term of years. Instances have been noted where the people were still paying for an improvement long after the improvement was worn out or its use discontinued for some reason or other. The abuse of bond issues has been so great in this connection that some states now have laws limiting improvement bonds to specific numbers of years for different types of improvements. It would be wise if all states would adopt similar regulations. Regardless of whether such an obligatory law exists or not, all park authorities should work out and adopt a schedule as to terms of bonds for different types of improvements.

Many states also have laws prohibiting the use of the sinking fund type of bond and make the use of the serial bond obligatory. This is a very wise provision for the reason that there has been great abuse in handling sinking fund bonds whereby, through failure to make provision for pay-

ment and through a system of refunding, there often results, as one writer puts it, more "sink" than "fund." It is desirable that all park departments make use of the serial type of bond for both acquisition and improvement, and, for most improvements, short-term serial bonds should be used.

EXAMPLES OF BOND ISSUES IN SOME CITIES WITH POPULATION RANGING FROM 500,000 – 1,000,000

City	*Years Covered*	*Issues*	*Purpose*	*Total*
Baltimore, Md.	1860	$440,000		$2,440,000
	1894	1,000,000		
	1904	1,000,000		
Boston, Mass.	1893–1925			8,844,300

Note. Outstanding funded debt of Boston for Parks, Playgrounds and Bathhouses, report of the city auditor for financial year 1924–1925: For Playgrounds, $2,653,500; Parks, $6,084,300; Bathhouses and Gymnasiums, $106,600.

Note. Loans authorized by special statutes outside of debt limit, report of city auditor for financial year 1924–1925: 1886, Park Construction $2,500,000; 1887, Public Park Lands $400,000; 1888, Public Park Lands $600,000; 1890, Public Parks $200,000; 1891, Public Parks $3,500,000; 1894, Public Parks $1,000,000; 1896, Public Parks $1,000,000; 1898, Public Parks $500,000; 1899, Public Parks $500,000; 1902, Metropolitan Park Assessment $420,400.

Note. Loans authorized during fiscal year 1924–1925, report of city auditor: Playgrounds, $330,750; Parks, $183,000.

Boston Metropolitan Park District	1893–1923		Loan Appropriations with Accretions	25,547,361
Cleveland, Ohio	1874–1924		Park Bonds	10,522,000
	1915–1922		Playgrounds Bonds	90,000
Cleveland Metropolitan Park District	1924	1 issue		700,000
Los Angeles, Cal.	1898	10,000	Parks	
	1922	96,000	Parks	
	1923	60,000	Parks	166,000
	1923		Playgrounds	1,500,000
St. Louis, Mo.	1923	1 issue		2,500,000
				1,300,000

Note. These sums were part of a bond issue of approximately $83,000,000 for Public Improvements. The $2,500,000 was for new Parks and Playgrounds and the $1,300,000 for Improvements.

San Francisco, Cal.	1904	3 issues		1,360,000

EXAMPLES OF BOND ISSUES IN SOME CITIES WITH POPULATION RANGING FROM 250,000 – 500,000

City	*Years Covered*	*Issues*	*Purpose*	*Total*
Cincinnati, Ohio	1913–1921		Park Bonds	$2,107,946.97
	1919–1921		Park Assessment Bonds	46,120.00
Denver, Col.	1906–1912	4		3,571,200.00
Indianapolis, Ind.	1920–1924		Park District Bonds	3,058,000.00
Milwaukee, Wis.	1914–1924	10		4,380,000.00
Minneapolis, Minn.	1912–1925		Land and Improvements Bonds	7,694,565.82
Portland, Ore.	1907–1919	3		1,727,000.00
Rochester, N. Y.	1888–1918	5	Park Bonds	493,000.00
	1916	1	Playground	30,000.00
Seattle, Wash.	Previous to 1916			4,006,777.50
	1924			430,000.00

EXAMPLES OF THE EXTENT TO WHICH SOME CITIES IN THE POPULATION GROUP, 100,000 - 250,000 INHABITANTS, HAVE RESORTED TO BOND ISSUES FOR PURCHASE AND IMPROVEMENT OF PARKS AND RECREATION AREAS

City	*Years Covered*	*Issues*	*Purpose*	*Total*
Albany, N. Y.	1921–1925	5		$430,000.00
Bridgeport, Conn.	1916–1920	5		895,000.00
Camden, N. J.	1904–1925	14		783,500.00
Dallas, Texas	1913–1925	5		1,625 000.00
Dayton, Ohio	1916–1925	6		165,500.00
Grand Rapids, Mich.	1922	1		190,000.00
Lowell, Mass.	1909–1923	21		251,800.00
Nashville, Tenn.	1909–1913	2		65,000.00
New Haven, Conn.	1889–1924	10		2,037,000.00
Oakland, Calif.	1907	1		992,000.00
Paterson, N. J.	1888–1925	7	Parks	379,000.00
		1	Playgrounds	50,000.00
Providence, R. I.	1890–1923			2,329,758.76
San Antonio, Texas	1919–1926	6		1,300,000.00
Spokane, Wash.	1908–1912	2		975,000.00
Syracuse, N. Y.	1920–1925	5		675,000.00
Toledo, Ohio	1920–1924	12		1,756,000.00
Trenton, N. J.	1888–1916	26		429,210.00

Omaha, Neb. Under the law Omaha has the right to issue annually bonds amounting to $100,000 for purchase and improvement of parks. In 1925 there was a special issue of $50,000 for land purchase. *Kansas City, Kan.* From 1908 the city has had authority to issue $150,000 bonds annually, providing the total amount outstanding did not exceed one per cent of total valuation of property. *Providence, R. I.* In 1925 the total bonds outstanding was $1,574,960.66 of a total that had been issued since 1890 of $2,329,758.76.

EXAMPLES OF BOND ISSUES IN SOME CITIES WITH POPULATION RANGING FROM 50,000 - 100,000

City	*Years Covered*	*Issues*	*Purpose*	*Total*
Chattanooga, Tenn.	1912	1		$80,000.00
Davenport, Iowa	1925		Bonds Outstanding	185,000.00
East St. Louis, Ill.	1910–1926	10		1,287,000.00

Note. Park Commission can issue bonds up to five per cent of the taxable property in the Park District without vote of the people.

El Paso, Texas	1919–1924	3		345,000.00
Erie, Penn.	1914–1915			146,000.00
Evansville, Ind.	1922			100,000.00
Gary, Ind.	1913–1925	7		665,000.00
Lynn, Mass.	1889–1925			275,300.00
Mobile, Ala.	1924			21,000.00
Oklahoma City, Okla.	1909–1917	5		1,150,000.00
Passaic, N. J.	1925			40,000.00
Pawtucket, R. I.	1910–1912	4		92,000.00
Rockford, Ill.	1909–1911	2		200,000.00
Saginaw, Mich.	1908–1909	2		57,000.00
San Diego, Calif.	1911–1923	3		980,000.00
Schenectady, N. Y.	1920–1926	11		375,000.00
Sioux City, Iowa	1920	1		250,000.00

St. Joseph, Mo. No bond issues have been issued, but city has right to levy a special tax for new acquisitions. In 1921 a special tax was levied bringing in a revenue of approximately $950,000. About 630 acres were purchased with this or part of it in 1925.

Troy, N. Y.	1902–1925	10		645,000.00
Tulsa, Okla.	1909–1926	6		465,000.00
Waterbury, Conn.	1908–1921	2		400,000.00
Wichita, Kan.	1919–1925	11		801,991.48

Note. State law allows city to issue bonds for park purposes to the amount of $150,000 yearly without popular vote.

3. Acquisition and Improvement of Properties through Proceeds from the Sale of Bonds Secured by Special Assessments.

This is a device whereby the acquisition and improvement (or each of these actions separately) of such properties as large children's playgrounds, neighborhood parks, neighborhood playfield-parks, may be initiated and carried out by the people living within the use-radius of the properties, who pay the whole cost themselves through a system of special assessments on the property within the district benefited. The same principle, with certain modifications, has been applied to the acquisition and improvement of boulevards and parkways. When the district has been determined and the rate of taxation on each parcel of property fixed, bonds or certificates of indebtedness may be sold on the security of the income from the assessments. The advantages of this method of financing the acquisition of large children's playgrounds, neighborhood parks, and neighborhood playfield-parks are: (*a*) It enables the people living in any given neighborhood of a city to, on their own initiative, secure a needed property without having to wait for the slow process of securing a special appropriation from the municipal government or general bond issues. (*b*) It places the burden upon those who are to receive the most benefit from the improvement. (*c*) This type of bond does not lessen the general bonding power of the whole community. (*d*) It enables the people, especially in newer sections of cities, to perform a master stroke in fixing the character and quality of their neighborhoods before that character and quality become fixed in some undesirable manner, as frequently happens when such an improvement is long delayed, as it would likely be under all other methods of general financing. (*e*) The personal interest that every citizen in the assessment district has in the project creates an interest in its use and care that is a social asset of great value — an interest that might not have been felt so keenly if the project had been financed by the community as a whole.

Some of the dangers in this method of financing the acquisition and improvement of recreation areas are: (*a*) There is a great temptation to spread the assessments over too long a period of time so that people find themselves paying for something which has already been worn out. This is especially true with respect to improvements. This also "enables real estate manipulators to advocate an improvement, knowing that the benefits will be received as soon as the improvement is completed, whereas a very small percentage of their assessments will then have been paid and they can dispose of their property, pocket the entire benefits themselves, and usually the investor is so unwary that he does not realize that he will be paying over a period of years for the very attraction which caused him

to pay the realtor a fat sum for the property." In short, investors may be paying double for the privilege of having the improvement. (*b*) Extreme care must be taken in estimating the cost of an improvement. If the cost has been estimated too low and the rate of assessment fixed the resulting efforts of improvement may represent something that is neither attractive nor very useful and the district will be harmed more than benefited. (*c*) This plan might possibly be attempted in some neighborhoods where the resulting benefits to property values would in no way compensate for the outlay. In very congested sections of cities this would very likely always be the case. (*d*) The unlimited use of this method might result in so many projects of this character being carried through that the general revenues of the park department for operation and maintenance would be insufficient to properly care for these additional areas unless an additional maintenance and operation appropriation or tax could be secured. Where the park department controls the granting of petitions for the creation of assessment districts it can of course more or less harmonize its probable future revenues with the probable demand for increased operation and maintenance costs.

In general, levying of special assessments should be encouraged or permitted only in case there is a clear assurance that "special benefits are equal to or greater than the proposed assessments." These benefits are of two classes — tangible and intangible. A tangible benefit may be defined as a "measurable rise in real estate values unmistakably due to the project in question." Occasionally it happens that the people living in some given neighborhood may desire to secure a given piece of property and improve it — an action which in itself would not cause any appreciable increase in property values — but solely because they desire it for æsthetic reasons or to prevent its use for purposes they deem undesirable. This may be defined as an intangible value, although in the latter case it may be a negative-positive value. It is nearly always true, no doubt, that people who are willing to assess themselves for any of the types of active recreation properties previously mentioned may, perhaps, be thinking more of having a safe place for their children to play, and for good opportunities close at home for the recreation of their young people and of themselves than they are about the possible increase to the value of their property. All these are more or less intangible values in contradistinction to increase in monetary values of property and are often the underlying motive for the willingness of people to assess themselves for properties of this character.

Examples of the application of the special assessment method of financing acquisition and improvements of properties. This method has been used very extensively in acquiring and improving neighborhood playfield-park types

of properties in Minneapolis. The following are examples of the working of the plan:[1]

Sibley Field, when acquired, was a rank hole in the ground, a dump, situated in the south section of Minneapolis, the closest playground being about a mile from this location. There was one house on the two city blocks (10 acres) in question and the territory was about half settled with very modest and to a great extent, unattractive homes. Vacant lots sold for $400 to $600. The people of the vicinity had petitioned that this piece of property be acquired for park purposes and improved immediately, the whole cost of the acquisition and improvement to be assessed against the benefited district. The total cost of the acquisition was $23,000 and the improvements, as estimated by the superintendent, amounted to $75,000. The total cost was assessed against the benefited property in assessments ranging from $100 down to $14.60 per forty-foot lot. The total area affected was a little less than a mile and a half square. Lots around the park at the present time are worth in the neighborhood of $1,000. The assessments are collected in ten annual installments and, consequently, property facing the park having an annual assessment of $10 with interest on deferred payments, is seeing benefits from $300 to $500. The homes now being erected in that neighborhood are necessarily of a much better character than those which were built previously, and it is evident that the park has had a very beneficial influence on that section of the city.

The case of Chicago Avenue Field was a little different, although before the acquisition most of the ten acres involved were considerably below the street level. Its acquisition and improvement were carried on at different times and it is safe to say that the acquisition alone carried with it benefits in excess of the assessments which were levied, not because it changed the appearance of the property, but because it fixed the destiny of the area and consequently made it safe for the people to invest in good-looking homes. This field was located in a good, substantial neighborhood which was very anxious to get the field improved from a utility point of view more than from the fact that the property values would increase. The people of this neighborhood wanted a place in which their children could play and enjoy recreational facilities and they were willing to pay for such use; the anticipated rise in property values was only an incidental factor. The improvement was completed the past year and the assessments levied ranged from $120 to $20 per forty-foot lot over an area of about a square mile or a little less. On one side of the park is a paved street carrying street car tracks, and no more had the park been completed than four apartment

[1] Charles E. Doell, secretary of the Board of Park Commissioners, Minneapolis, Minnesota, in *Parks and Recreation*, Vol. IX, No. 1, September–October, 1925.

houses were erected on this street facing the park. The outlook is beautiful, interesting, and the recreational facilities are close at hand. It will be good rental property, much more so than if the park were not there, and this in spite of the fact that the people were not materially interested in the rise of real estate values. The value of homes became firmly established where before they tottered because of uncertain pending improvements.

The case of Mt. Curve Triangle was rather unique and unusual. This little tract of land, comprising two and one-quarter acres, is in the heart of what was at one time the finest residence section of Minneapolis. Still a very fine section, it was being threatened by apartment houses, and a movement was on foot to erect a very large apartment hotel on this very site. This was deemed very objectionable from the point of view of the people in the district and they appealed to the Board of Park Commissioners to acquire and improve it as a park. Condemnation proceedings were instituted and the property appraised at a little less than $75,000, with the improvements estimated at $23,000. The whole investment, including cost of proceedings, was a little over $100,000. The effect of the establishment of this park would necessarily be much restricted to the property immediately around the park, which, in turn, necessitated assessments of a very high nature, going as high as $20 per front foot. It was very difficult for anyone acquainted with the situation to see where any such rise in real estate values would obtain from the establishment of such a park and, consequently, they were very reluctant about recommending the assessments. The people in the district, however, were largely in favor of the establishment of the park. This case is cited as one in which the benefits were not measured by a rise in real estate value but one in which the neighborhood deemed the expense necessary to maintain the high standard of the residence district and were willing to pay dearly to prevent a depreciation in realty values. Whether the assessment was justified or not will never be determined. The special assessment method has been widely used in the acquisition and improvement of boulevards and parkways but usually in a combination method whereby part of the expense is borne by the community as a whole and part by the benefited property in the vicinity of the improvement.

Diagrams showing the method of arriving at assessment payments for playground and neighborhood playfield-parks, as practiced in Minneapolis, Minnesota.[1] These diagrams are intended to show a scientific method of arriving at payment, and are based on certain rules formulated from experience in Minneapolis. The theory on which these rules are founded is that distance from the improvement and frontage and depth of parcel assessed are the only factors to be considered in levying the assessment, which must

[1] Second Annual Report, City Planning Commission, Duluth, Minnesota, 1924, pages 41–42.

not be confiscatory nor exceed the benefit to be derived. Distance from the proposed improvement is divided into zones approximately a block wide as shown in Plate 238. But as shown in Plate 239, assessments are graded gradually from one zone to another, where a zone line occurs in the interior of a block. Condemnation commissioners determine how assessments shall vary from one zone to another. Plate 240 illustrates this: it may be noted that property in the second zone is shown as receiving almost as much benefit as that in the first, while in the third and fourth zones benefits decrease rapidly, and in the outer zones an added distance of a few feet makes little difference in benefits.

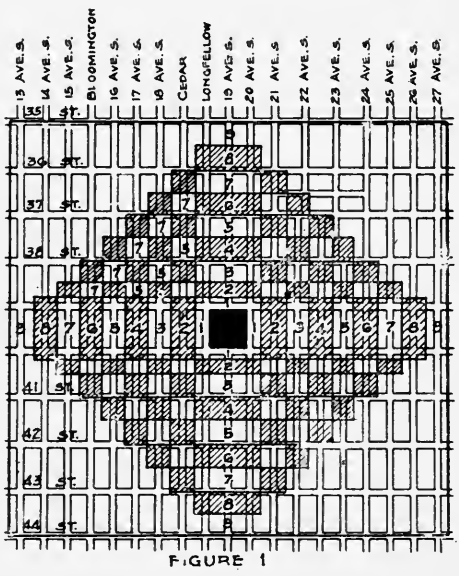

FIGURE 1

PLATE 238
TYPICAL ZONING PLAN OF ASSESSMENT FOR NEIGHBORHOOD PLAYGROUND

The "assessment unit" is in Minneapolis a tract having one foot frontage on a street 60 feet or more in width, and comprises an area of 125 square feet. Plate 241 illustrates the effect of lot depth on assessment, and it should be noted that the number of assessment units in a lot 200 feet deep is not twice the number in a lot 100 feet deep. The calculation of assessment units in lots of irregular area is by regarding the frontage. Plate 242 is a mathematical computation of factors frontage and depth, and gives the number of units in a tract, frontage and depth being specified. The actual assessment levied is the product of the unit assessment as determined from Plate 240 and the number of units as determined from Plate 242. To illustrate: here is a certain lot lying in the fifth zone, whose unit assessment is $1. It is 40 x 126 feet; therefore by Plate 242 it contains 40 units and its total assessment is $40.

4. Special Assessments and General Bond Issues Combined.

There are certain types of properties in a park system which are of general benefit to a community and also of special benefit to property immediately surrounding them. The most outstanding of these types of properties are boulevards and parkways, and sometimes large parks. While the acquisition and improvement of these properties are often financed from general bond issues entirely, in some cities the double benefit is recognized and a method of financing adopted combining both the district assessment and the general bond issue plans.

In several boulevard and parkway projects in Minneapolis, Minnesota, one-third of the total cost of the project was financed by general bond issue; the remainder was divided into thirds, one-third of which was assessed against the city as a whole and two-thirds against the benefited property. In other words the city as a whole paid five-ninths of the total cost and the benefited district paid four-ninths.

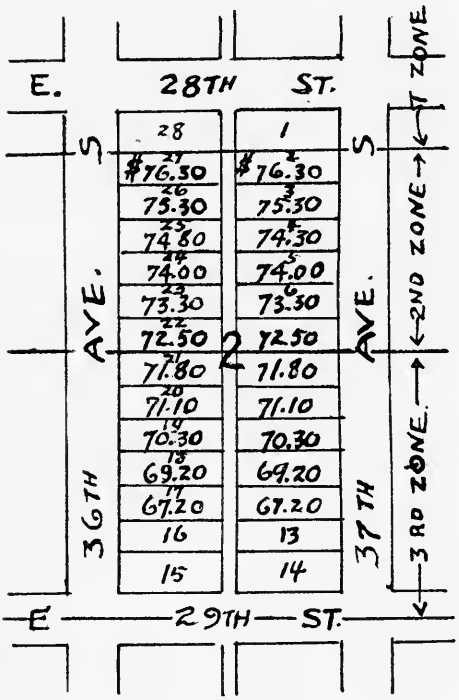

PLATE 239
SHOWING GRADED ASSESSMENTS ACROSS A ZONE LINE WHICH IS PARALLEL TO THE LENGTH OF THE LOTS

5. Installment Payment out of the Net Proceeds Obtained from the Operation of the Particular Project.

The operation of certain recreation facilities on the basis of an income producing utility for covering the cost, or partially covering the cost of operation and maintenance has been widely practiced in park systems for some years past, but the application of this method to the acquisition and improvement or to an improvement alone, as well as to cover the cost of operation and maintenance, is comparatively recent and is not yet widely attempted. Some excellent examples of the plan follow:

In Fort Worth, Texas, two projects are being financed out of the net revenues from operation. One of these, a large swimming center, is an improvement project alone; the other, a golf course, is both an acquisition and improvement project.

Forest Park Swimming Pool was constructed in 1922 with money borrowed by the park department on the credit of the city. The cost of the pool, which has a diameter of 125 feet, was approximately $40,000; of the bathhouse, with a locker capacity of 1,000 persons at one time, approximately $20,000. The debt was

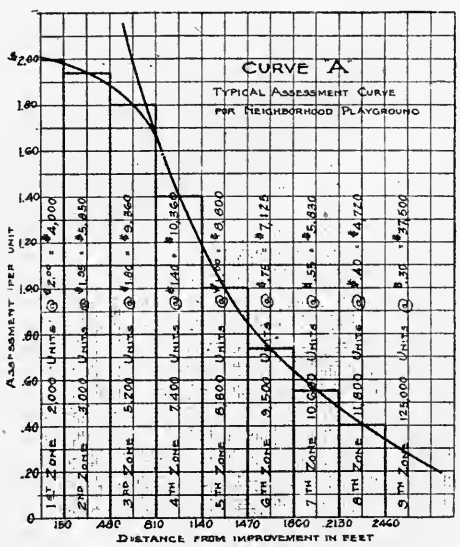

PLATE 240

arranged in the form of a series of yearly notes with interest at six per cent. The pool was opened on June 18, 1922, and from this date to September 15, 1924 the total net income, after paying for all operating and maintenance expense, was $34,561.28 — a sum more than sufficient to meet the yearly notes and interest. On September 15, 1924 there remained seven outstanding notes of $3,500 each, one falling due each year. From May 2, 1925 to September 15, 1925 the net profit from the operation of the pool was $6,103.56; and during the following season the net profit was $5,775.88, giving in both instances more than sufficient sums to meet the notes and interest falling due.

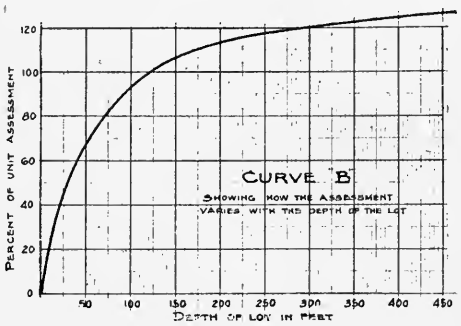

PLATE 241

Worth Hills Golf Course, comprising about 104 acres, is located about four miles from the center of the city. The costs entering into its construction were as follows: cost of land, $39,000; clubhouse, $11,603.53; construction of course, $12,120.56; equipment for clubhouse, $2,486.55; one mower and two trucks, $1,042.97. Total cost, $67,153.61. Of this total cost the sum of $66,900 was borrowed by the recreation commission on the credit of the city. This debt is in two parts, one of $59,900 and the other of $7,000. The former is arranged in a series of notes of $4,000, each bearing interest at six per cent, one note to be paid each year. It is expected to meet these notes plus the interest from the operation of the course as well as to pay the maintenance and operation expenses.

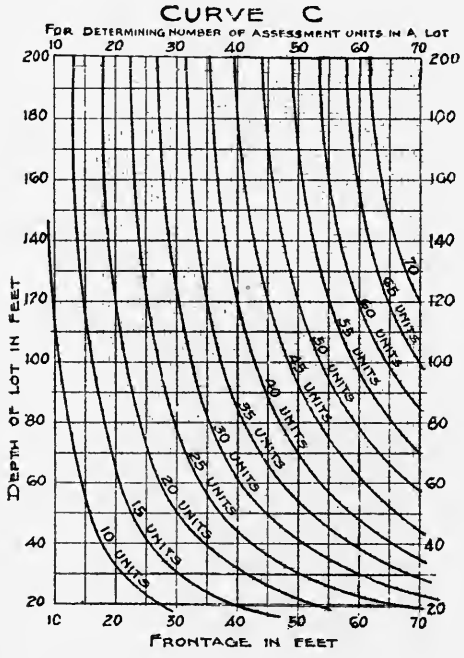

PLATE 242

In Minneapolis two public golf courses have been purchased under contract with the original owners by which the courses are to be paid for out of the net receipts of their operation. The first of these is the St. Anthony Golf Course of 154.8 acres, located four miles from the heart of the city. The contract entered into on March 6, 1924 with Armour & Company, the original owners of the property, provided for the following: (*a*) The Board of Park Commissioners shall take possession at

once and pay $1,000 per acre or a total of $154,000 for the land, payment to be made as hereafter provided. (*b*) Armour & Company shall advance the cost of constructing the golf course (after plans have been mutually agreed upon) to the extent of $45,000. (This was later increased by $10,000.) The board constructed the course from the money so advanced. (*c*) The total obligation of $209,300 and the interest thereon at four and one-half per cent per annum is to be paid to Armour & Company out of the net receipts of the course, which is operated exclusively by the board. Twenty years are allowed for the liquidation of the obligation.

The course was opened to the public on May 30, 1925, and after the first year will be operated on the following plan: greens fee, seventy-five cents per round; locker charge, $5.00, $7.00 and $9.00 per season per locker, allowing one, two or three persons per locker; rental of golf clubs, ten cents per club or bag per round, with appropriate deposit; refreshment stand to be operated by the Recreation Department of the Board of Park Commissioners. It is estimated that the net receipts will approximate $17,500 per year. Upon this basis a schedule of payments has been worked out which shows the course paid for "without cost to the tax payer" in nineteen years.

The second course, Meadowbrook Golf Course, comprises 207 acres, one and one-half miles west of the west city limits. The contract with the Atlas Realty Company contains practically the same provisions as that made with Armour & Company except that the total obligation is $130,000 — $80,000 for the cost of the land and $50,000 for construction cost. The contract also provides that the board shall operate the cost at least three years before it will be permitted to abandon the enterprise.

Another interesting instance of this method of financing is the Recreation Pavilion, Hamilton Park, Waterbury, Connecticut, erected in 1925, the cost of which, including equipment, was approximately $75,000. Funds were raised through a bond issue, but the plan involves the retirement of the bonds and the paying of interest out of the net profits of the operation of the pavilion, consisting of admissions to and rentals of the dance hall, checking of garments and sale of refreshments.

In 1925 a swimming pool was constructed at Pana, Illinois, the funds for which were secured by the Chautauqua Association through the sale of bonds in $50 denominations, redeemable in five years and paying interest at six per cent. The Chautauqua Association is responsible for their redemption through pledging not only the income from the swimming pool, but also the income from the sessions of the Chautauqua. The cost of the pool was approximately $17,000, all of which was secured through the sale of bonds in a three-day drive.

6. *Proceeds for the Acquisition and Improvement of Park Properties from Gifts, Donations, Legacies and Bequests.*

While the acquisition of property through gifts, etc., does not represent an actual financial transaction on the part of park authorities, this method of securing properties does involve an item of tremendous monetary importance because of the vast numbers of such properties so acquired throughout the United States. This method should not, therefore, be omitted in any discussion of park financing. Practically every park law or charter provision in every state and in every incorporated community of the states has a clause or section specifically empowering the authorities to receive gifts of land or other property for recreation purposes or money or other things of value that may be used for the acquisition of land or for making improvements on existing properties or new properties.

Fortunately it is becoming more and more common for public-spirited citizens to make such donations. Indeed, in some systems this has been the chief means of securing properties. The extent to which park and recreation properties have been acquired through gifts and donations is shown in the statistical report supplementing this manual. Gifts of land for park and recreation purposes may be made under varied conditions. Some of these different possible conditions are: (*a*) The gift may be in fee simple without any "strings" to it whatever except a general statement of the use-purpose intended. This is the most desirable kind of gift in land, for in cities where conditions frequently change rapidly it very often comes about that a property which has been given becomes so located that its original purpose no longer functions and the park authorities ought to have the right to act in the premises as they deem best. (*b*) A gift of land that may be conditioned on the municipality or park authority making certain improvements thereon within a given specified time. This kind of a gift should be scrutinized very closely, for it may happen that a private individual or corporation will derive vastly more benefit from the improvement outlay than the community as a whole. (*c*) A gift of land in trust, the control of which is specifically placed under a board of trustees, separate and apart from the local park governing authority, although the property may be used in all ways as a public recreation area. There can be no possible objection to this kind of a gift, providing the donor also endows the property with a sufficient sum to properly operate and maintain it; but where it becomes necessary for the local park and recreation authority to allocate funds for operation and maintenance there appears no justification for separate governing authorities. (*d*) A gift of land for park purposes with a reserving clause in the terms of the gift whereby, if the property is ever

diverted from the purpose of the gift, it reverts to the original owner or to his heirs. Before such a gift should be accepted it should be carefully ascertained whether the probable life-use of the property would continue through a long period of years — a period at least long enough that the benefits derived from its use will compensate for the expense of its improvement and operation and maintenance. (*e*) A gift of land on condition that the municipality or the park governing authority provide annually a specified amount for its operation and maintenance. This kind of a gift should be considered very carefully before acceptance.

Gifts of money for the acquisition of properties have not been so numerous as has been the actual donation of properties, but there have been many such examples. One very interesting example is noted in Hartford, Connecticut, resulting in the purchase and improvement of Keney Park. Mr. Henry Keney, by his last will, probated November 26, 1894, gave to four of his friends in the city of Hartford, as trustees, all the residuum of his estate, authorizing and directing them "whenever they shall find it expedient and practicable to purchase a suitable tract of land, situated in the northerly park of the city of Hartford and to lay out the same as and for a public park, beautifying and adorning said park according to their taste and judgment, and when completed to convey the same to the city of Hartford."— Sixty-fourth annual report of the Board of Park Commissioners of the city of Hartford, 1924, page 81.

For the improvement of properties there have been some notable examples, the most outstanding of which is the Parkman Fund in Boston, Massachusetts. Mr. George F. Parkman, on January 12, 1887, wrote a codicil to his will which read as follows: "I devise said residue (of my estate) to the city of Boston to constitute a fund, the income of which is to be applied to the maintenance and improvement of the Common and the parks now existing and is not to be used for the purchase of additional land for park purposes. Any portion of said income which may not be required for the above purposes in any year is to be added to and invested as a part of said fund."

Mr. Parkman died on September 16, 1908. On February 1, 1920, the principal of the fund in the custody of the city treasurer amounted to $5,214,277. From March 9, 1909 to January 31, 1920 the expenditures from this fund amounted to $2,024,772.06. This was used for both maintenance and improvement of the Common and the parks existing at the time of making the will. — Report of the Special Committee of the Parkman Fund Income, 1922.

Late in 1926 the following gift of money was made to the city of Canton, Ohio, for improvement of parks and playgrounds by a leading citizen of

that city. "The people of Canton, by voting at the November election (1926) a tax levy for recreation purposes, have manifested a commendable interest in the community activities long neglected in this city, the development and improvement of our parks and playgrounds system. It is estimated that the levy will produce approximately $22,000 a year, a sum which will be adequate for current recreation expenses but insufficient for much-needed permanent improvements in the parks, such as swimming pools, bathhouses, tennis courts, landscaping, road building, and the like. Impressed as I am with the benefits to flow from a popularization of the parks, and realizing that the acreage we now have cannot be utilized to the utmost unless there is more money to be had in addition to the proceeds of the levy so generously voted, I have decided to establish a fund of $200,000 to be expended immediately for the improvement and beautification of the park land of the city of Canton, under the direction of the present Board of Park Commissioners." — Extract from a letter by Mr. H. H. Timken to the mayor of the city of Canton, transmitting his gift of $200,000 to the city for the above purposes.

7. *Acquisition of Property through the Principle of Excess Condemnation.*

The principle of excess condemnation has not been widely used by park authorities partly because in many sections of the country legal power is lacking. This in turn is due largely to the prevailing system of private exploitation of land in American communities. Sufficient public sentiment has not been developed to support public authorities in its use. The powerful private interests that are engaged in the exploitation of land are likely to oppose strenuously any extension of the principle. Yet if this principle could be applied by park authorities, it would go far toward solving the question of how to finance the acquisition of land for several different types of park properties, especially in newer sections of cities. The principle merely involves purchasing more land than is needed for the particular park project and then disposing of the remainder on a commercial basis and applying the income thus derived to paying for the original investment. The influence of park areas of several different types on increasing land values in their immediate vicinity is very well known.

Perhaps no branch of a municipal or county government could so safely exercise the right of excess condemnation as park departments because of the influence of park areas and improvements increasing land values around them. The types of properties that would lend themselves admirably to the use of this principle are boulevards and parkways, especially parkways, large parks, neighborhood parks and neighborhood playfield-parks. Under some conditions the principle might be safely applied in connection with outlying reservations.

Examples of legal procedure for condemnation of land. The following are examples of provisions in state constitutions giving the legislatures the right to grant the power of excess condemnation to municipalities:

New York State. "The legislature may authorize cities to take more land and property than is needed for actual construction, in the laying out, widening, extending or relocating parks, public places, highways or streets, provided, however, that the additional land or property so authorized to be taken shall be no more than sufficient to form suitable building sites abutting on such park, public place, highway or street. After so much of the land or property has been appropriated as is needed therefor, the remainder may be sold or leased." — An amendment to the Constitution of the state of New York, adopted at the general election of 1913. Quoted from "The Planning of the Modern City," Lewis, John Wiley & Sons, Inc., 1923, Chapter XIX, pages 387–388.

Ohio. "A municipality, appropriating or otherwise acquiring property for public use, may, in furtherance of such public property use, appropriate or acquire an excess over that actually to be occupied by the improvement, and may sell such excess with such restrictions as shall be appropriate to preserve the improvement made. Bonds may be issued to supply the funds in whole or in part to pay for the excess property so appropriated or otherwise acquired, but said bonds shall be a lien only against the property so acquired for the improvement and excess, and they shall not be a liability of the municipality prescribed by law." — Constitution of the state of Ohio, Article 18, Section 10, adopted September 3, 1912.

"By this method the city may buy any desired area, improve it with grading and roadways, condemn for park purposes the section required and sell the excess land under the proper restrictions at a price for the excess land improved and abutting the park area that would cover the cost of both land and improvement. This method of financing has had its widest use in Germany and a large number of parks have been acquired and financed in this way at only a temporary cost to the municipality. The rapid increase in values of land, adjacent to park and boulevard areas, benefited by the improvement of land for park and boulevard purposes, has been well demonstrated in the development of almost every park area in Greater Cleveland." — A study and report on city parks and boulevards of Cleveland, September, 1923, by the Community Betterment Council of Cleveland.

A provision of the state law providing for the creation of a board of park commissioners for the city of Nashville reads as follows: "Said board of park commissioners shall have full power and authority to purchase any

land deemed by them suitable for park purposes, and to execute notes or bonds therefor, with interest payable annually or semi-annually, maturing at such time as may be agreed upon, signed by the chairman and secretary of said board; and to secure the purchase money dues for the same by mortgage or vendor's lien upon the property purchased, and may sell any portion thereof not needed for park purposes by direction of a majority of said board of park commissioners and apply the proceeds of any property so sold to the payment of the mortgage or vendor's lien given to secure the purchase money for the whole until said mortgage or lien shall be fully satisfied, whereupon any of said property remaining unsold shall immediately be conveyed by said trustee to the mayor and city council."— Act of the General Assembly of the state of Tennessee creating the Board of Park Commissioners of Nashville, Tennessee, Chapter 117, Acts of 1901, Section 3; Chapter 204, Acts of 1903, Section 1.

In Fort Worth, Texas, an instance is noted where the Park Department, desiring to secure a neighborhood playfield-park in a certain section of the city, purchased more land than was necessary for the park area. The entire tract was purchased for $12,500. Lots from the tract were sold for a total of $18,750, showing a profit of $6,250 in cash and a seven-acre neighborhood playfield-park in addition which really cost the public nothing.

In Lorain, Ohio, a group of public-spirited citizens purchased a large tract of land, and after reserving one hundred acres for a large park, sold the remainder for a sum sufficient to cover the entire cost of the original tract. The hundred-acre park was then deeded to the city. The experience in Lorain indicates what might be done by a group of public-spirited citizens in any community where the right of excess condemnation is not legally available to the public authorities or where the public authorities do not dare to exercise it if possessed. Such a group might form a financing corporation for the purpose of purchasing areas designed for park purposes, securing larger areas in each case than is needed for the particular park project, and by selling the surplus recoup the whole of their original investment, and then deed the property to the community. In some cases there would no doubt be a profit from such transactions which could go into a revolving fund for additional transactions. This would be a form of practical philanthropy that should appeal to citizens whose worldly possessions exceed their needs for the remainder of their lives, the philanthropy consisting largely in the giving up of personal profits and in giving themselves in a work of public service of far-reaching values.

It frequently happens that private individuals can buy lands more economically than public authorities. Every park department has had the

experience of realty values suddenly rising, upon it becoming known that a given property was being considered for a public park or other recreation area.

8. Acquisition of Park and Recreation Areas through Requiring a Given Percentage of All Subdivisions of a Given Size to be Set Aside for Park or Playground Purposes.

Obviously the most sensible and economical way to acquire land for children's playgrounds, neighborhood parks and neighborhood playfield-parks is to secure it before the land is fully developed for residential purposes. There were numerous examples of this method of reserving squares, commons, plazas and similar spaces in the early plans of many American cities, but subsequent generations failed to profit by the example of General Oglethorpe, William Penn, General Sutter, Brigham Young and numerous other early city planners and builders.

Several attempts have been made in the state of Washington to secure a law requiring subdividers to set aside a given percentage of subdivisions of a given size, exclusive of streets and alleys, for park or playground purposes. Such a bill was actually passed by the Washington legislature in 1907, but the governor vetoed it. Successive attempts to secure its passage have failed. The substance of this bill is as follows: "No plat of land of ten (or five) acres or more in area, any part of which is situated within or less than five miles outward from the boundary line of any city of the first or second class or within or less than one mile outward from the boundary line of any city of the third class, which contains lots of less than one acre in size, shall be filed or recorded by any public official, unless a plot or plots of ground containing not less than one-tenth of the land in the plat, after deducting streets and alleys, shall be dedicated to the public for use as a park, common or playground, with the like effect that streets and alleys are dedicated to the public."

A similar bill was passed by the state of Montana in 1919. This law, while allowing a measure of discretion, provides: "For the purpose of promoting the public comfort, welfare, and safety, such plat and survey must show that at least one-ninth of the platted area, exclusive of streets, etc., is forever dedicated to the public for parks and playgrounds."

The City of Bluefield, West Virginia, in its requirements for city plats presented for approval by the City Planning Commission, includes the following, adopted July 3, 1923: "Not less than five per cent of the area of all plats shall be dedicated by the owner for parks and playground purposes except in the case of a very small area."

In a few other cities throughout the country there is a working agree-

ment between the public authorities and subdividers whereby substantially the same results are attained without legal compulsion. The legal objections to such mandatory legislation is that it deprives private persons of property without due process of law and without apparent compensation. The practical objection is that in small subdivisions the areas reserved are likely to be too small for practical uses, and they may not be properly located. Moreover, in none of the legislation thus far advanced has the right of a subdivider to sell his lands by metes and bounds been denied, thus giving the subdivider a chance to nullify the legislative requirements.

A sound and practical manner of grappling with this problem would be to clothe municipal authorities, directly or through city planning and zoning commissions, with power to reserve on a master plan in all new residential areas, recreation areas of suitable size and properly located over the whole region to be developed, regardless of subdivision lines. If the legal right cannot be secured to take such reservations outright just as streets and alleys are taken, the plan of assessment districts can be evoked for their acquisition and improvement, thus distributing equitably among subdividers or investors the costs involved. Many subdividers through the United States are voluntarily setting aside areas for playgrounds, small parks and neighborhood playfield-parks, and a few have set aside areas large enough for golf courses and large parks. This is considered a good investment for the reason that the remainder of the subdivision is generally enhanced in value and is at the same time likely to be more readily salable.

II. Sources of Revenue for Operation and Maintenance

Some of the sources of revenue for operation and maintenance of park and recreation systems are as follows: (1) Annual appropriation by the city or county governing authority. (2) Special tax levy. (3) Special sources of income such as a certain percentage of the gross income of street railway system (Baltimore); percentage of a vehicle tax (Kansas City); percentage of gross receipts of city from fines, penalties and licenses (Seattle), etc. (4) Gifts, legacies, bequests. (5) Fees from the operation of different types of recreation facilities. (6) Miscellaneous sources.

1. Annual Appropriations by the Governing Authority of a City or County.

This is the most common method of providing current revenues for park departments throughout the United States. It is a method that is open to some serious objections. Among these are the following: (*a*) The uncertainty of the amount that is to be received from year to year and the consequent difficulty of formulating and carrying through well-organized plans for a period of years. This is a very serious weakness, for the very essence

of good park management is planning ahead, and if this cannot be done with certainty, at least on a minimum basis, the service is inevitably crippled. (*b*) Under this system it will often be necessary for park governing authorities or the executive or both to spend a great deal of time that might otherwise be better employed in maintaining political influence. This is generally very distasteful to park governing authorities and especially to good executives. (*c*) There is always danger of those who hold the purse strings interfering in the organization and conduct of the department, as in the selection and appointment of employees, or in bringing pressure for some particular improvement, or the institution of some particular activity, although more needful things ought to be done.

On the other hand, this method of financing the operation and maintenance of park and recreation systems is more in harmony with the general theory and practice in American municipal and county governments than any other plan of financing. Moreover, the possible ills mentioned above are not necessarily always present under this system. But, on the whole, park and recreation authorities prefer a more sure and stable method than this system makes possible. The extent to which this method is used in financing the operation and maintenance of park systems in the larger cities of the country is shown in the following table:

City Groups Census, 1920	*Number Cities*	*Number Deriving Chief Source of Revenue for Operation and Maintenance from Municipal Appropriations*
Over 1,000,000[1]	3	2
500,000 to 1,000,000	9	6
250,000 to 500,000	13	8
100,000 to 250,000	43	37
50,000 to 100,000	76	27

2. Special Tax Levies for Operation and Maintenance.

Largely because of the uncertainty of revenue for general park purposes under the annual appropriation system and the consequent inability of park authorities to plan their work effectively, there has developed the plan of allowing a special tax of a given number of mills on the dollar or a given number of cents on each one hundred dollars of assessed valuation of property within the limits of cities or counties. The special tax system is also used in metropolitan park districts on an apportionment basis as among the several incorporated communities within the district.

The advantages of the special tax system are practically the disadvantages of the annual appropriation system reversed. (*a*) It gives the park executive a definite assurance of at least a minimum amount of income.

[1] In Chicago the Bureau of Parks, Playgrounds and Bathing Beaches derives its operation revenue from municipal appropriations; independent park districts chiefly from special tax levies.

(*b*) It is not necessary for him to curry political favor to get it. (*c*) It frees him from possible political interference in handling the affairs of the department. (*d*) It allows him to plan his work ahead and be reasonably sure that he can carry out his plans.

The extent to which the special tax is practiced among the principal cities of the country is shown by the following facts given for cities of various population groups:

For cities over 1,000,000. There are three cities in this group. Of this number, one, Chicago, has a special tax in part. As the situation in Chicago is unusual, the facts regarding the special tax are given in some detail. The nineteen independent park districts[1] having corporate powers of a municipality have the right, within certain limitations, to levy taxes directly. The following table shows the tax rate levied for park purposes in each district at two different years:

Districts	*Tax Rate on Each $100 of Assessed Valuation*	
	1923	*1925*
South Park	$.57	$.69
West Chicago Park	.75	.82
Lincoln Park[2]	.83	1.03
Albany Park	.38	.39
Calumet Park	.35	.33
Edison Park	.53	.60
Fernwood Park	.41	.51
Irving Park	.32	.60
Jefferson Park	.34	.62
Norwood Park	.40	.53
North Shore Park	.46	.39
Northwest Park	.38	.41
Portage Park	.56	.76
Ravenswood-Manor Gardens	.41	.34
Ridge Avenue Park	.34	.46
Ridge Park	.48	.58
River Park	.32	.43
West Pullman Park	.59	.58
Hollywood (no levy yet)		

[1] Outside of the city of Chicago in Cook County there are nineteen local independent park districts and one general district including the entire county (the Forest Preserve District of Cook County). Each of the districts has direct tax levying powers. The rate of tax on each $100 of assessed valuation for the Forest Preserve District in 1925 was $.14. In the other districts the rate ranged from $.10 to $1.13 on each $100 of assessed valuation. The Board of Education of the city of Chicago has the right to levy a special tax for the maintenance and operation of playgrounds and recreation places, said tax not to exceed three-tenths of a mill on each dollar of assessed valuation.—Illinois Revised Statutes, Cahill, 1925, Chapter 24, Section 640.

[2] The tax rate for Lincoln Park District included in 1923 $.09 and in 1925 $.12 for the redemption of bonds.

	Number Cities in Group	*Number Having Special Tax*
500,000 to 1,000,000	9	3

1. San Francisco, Calif. (*a*) Park Department, a tax of not less than $.07 nor more than $.10 on each $100 of assessed valuation. (*b*) Playground Department, a tax of not less than $.05 nor more than $.07 on each $100 of assessed valuation.

2. Los Angeles, Calif. (*a*) Park Department, a tax of not less than $.07 on each $100 of assessed valuation of all real and personal property. (*b*) Playground and Recreation Department, a tax of not less than $.04 on each $100 of assessed valuation of all real and personal property. In both cases additional appropriations may be made by the city council.

3. Baltimore, Md. (*a*) Park Department, a tax of 9 per cent of the gross receipts of the street railway companies running over the streets of the city.

250,000 to 500,000	13	5

1. Indianapolis, Ind. (*a*) Special tax of from $.05 to $.09 on each $100 of valuation of property subject to taxation. The tax in 1925 was $.07. (*b*) Special tax of a maximum of $.02 on every $100 valuation for maintenance and operation of playgrounds and recreation in general. (*c*) Special tax levy to care for payment of principal and interest of bonds. This levy was in 1925 $.045 on every $100 of valuation. There is no maximum or minimum limit for this tax except the general bonding limit of the city for park purposes. This is one-half of one per cent of assessed valuation of city.

2. Seattle, Wash. (*a*) An annual tax levy of not less than three-quarters of a mill, and not to exceed one mill on the dollar. (*b*) In addition the Park Department receives 10 per cent of all fines, penalties and licenses.

3. Kansas City, Mo. (*a*) General maintenance tax: the city is divided into several park districts. All real estate in each park district, exclusive of improvements, is subject to a special assessment not to exceed 2½ mills on each dollar of valuation for the purpose of maintaining, adorning, constructing, repairing, and otherwise improving the parks, parkways, roads, boulevards or portions thereof. Special accounts shall be kept for each park district. (*b*) Front foot assessment: upon recommendation of the park commission. Council shall have power to levy for the purpose of maintaining, repairing and otherwise improving the boulevards, parkways, roads and other highways under the control of the park commissioners, an annual assessment on lots, tracts, parcels of land abutting on boulevards, parkways, roads and highways under control of the park commissioners, said assessments not to exceed the sum of $.10 per abutting front foot. (*c*) Vehicle license tax: All income from such taxes, subject to right of Council to appropriate not to exceed 3 per cent thereof to the firemen's pension fund, shall be appropriated and used exclusively for park purposes.

4. Minneapolis, Minn. (*a*) General park tax: maximum levy of 1.50 mills on each dollar of assessed valuation. (*b*) Playground tax of .25 mill. (*c*) Street forestry tax of .05 mill. (*d*) Park museum tax of .125 mill.

5. Milwaukee, Wis. (*a*) General tax of eight-tenths of a mill (Park Department). (*b*) In addition there may be special appropriations by city council. (*c*) Extension Department of the Board of Education is, under a special law, allowed 4 mills for school extension activities, said activities being largely a leisure time program.

	Total Number in Group	*Number Deriving Chief Revenue for Maintenance and Operation from Special Tax*
100,000 to 250,000	43	6

1. Kansas City, Kan. The law permits a special tax levy of not to exceed a maximum of one-half mill on each dollar of assessed valuation of property.

2. Nashville, Tenn. (*a*) Special tax of $.10 on each $100 of assessed valuation of property. (*b*) The Park Department also receives 3 per cent of the gross annual receipts of the Nashville Railway Company.

3. Dallas, Texas. Special tax levy of $.10 on each $100 of assessed valuation of property.

4. New Haven, Conn. The board of aldermen and the board of finance may annually assess upon the grand list one-third of a mill on the dollar for the maintenance and improve-

ment of the public parks. In addition to special tax the board of finance may appropriate money for purchase and improvement of properties.

5. Louisville, Ky. Special millage tax of not less than $.05 nor more than $.08 on each $100 of assessed valuation of property.

6. Des Moines, Iowa: There are a number of laws in the state of Iowa which the city of Des Moines may take advantage of for park and recreation purposes. Among these are: (*a*) Compiled Code of Iowa, Section 4423: When authorized by vote of the electors, cities have the right to levy *two mills on the dollar* of assessed valuation of property for the purchase, improvement and maintenance of parks. (*b*) Thirty-sixth G. A., Chapter 248: For the maintenance of playgrounds and recreation places cities have the right to *levy two mills*. This law also provides for the issuance of 15-year bonds with millage tax. Election at general or special election called by Council on petition of 15 per cent of electors. (*c*) Compiled Code of Iowa, Section 4250: City shall have the power to levy *one and a half mills* for the purpose of caring for and improving parks. (*d*) Iowa Statutes, Section 2823-u-1 (School Laws): For the establishment and maintenance of playgrounds and recreation places on or in school properties the board of education may levy a *maximum of two mills* upon vote of the people establishing the levy. Vote to be taken upon request of 25 per cent of qualified voters voting at last regular school election. (*e*) Thirty-seventh G. A., Chapter 51. The Community Center Law provides for the levying of a special tax of a maximum of *five mills* for maintenance. This law also provides for the levy of a special tax of *three mills* for purchase of ground and improvement. The law operates on the basis of district assessments and is not of general application. There are two other laws permitting cities to levy, in the discretion of Council, a total of one mill for the construction of swimming pools, bathing beaches, bathhouses, ice rinks, dance pavilions, shelter houses, wading pools (.5 of a mill) and for the purchase of real estate for parks, art and memorial purposes (.5 of a mill).

In Birmingham, Ala., while there is no special tax levy, the law provides that the minimum appropriation which the city governing authority must make for the Park Department shall not be less than $50,000 annually.

In Omaha, Neb., the Park Department, in addition to annual appropriation by city governing authority, receives 25 per cent of funds from county automobile licenses.

At Youngstown, Ohio, the principal park of the city is a township park under the control of a township board of park commissioners. For the maintenance and improvement of this park the township board of park commissioners receives the revenue from a special tax up to a maximum of one mill on each dollar of assessed valuation of property.

	Total Number in Group	*Number Deriving Chief Source of Revenue for Maintenance and Operation from Special Tax*
50,000 to 100,000	76	23

For the cities in this class, the tax ranges from one-half a mill on each dollar of assessed valuation to a maximum of sixteen cents on each $100.

1. Davenport, Iowa. The State Enabling Act under which the board of park commissioners is organized provides that a maximum of 2½ mills may be levied for park purposes; and that in addition to this maximum tax an additional tax of 1 mill may be levied for the sole and only purpose of purchasing and paying for real estate.

2. Peoria, Ill. (*a*) Board of trustees of pleasure driveways and park districts may levy a special tax not to exceed 4 mills on each dollar of assessed valuation of property in the district. (*b*) May levy, in addition to above special tax, a special tax sufficient to cover the interest and retirement of the principal of any bonded indebtedness contracted by the district. The bonded indebtedness must not exceed at any one time an amount equal to 5 per cent of the total value of property in the district subject to taxation.

Note. The pleasure driveways and park district of Peoria is organized under the Act of 1893, providing for the organization of pleasure driveways and park districts.

3. Portland, Maine. (*a*) Special tax of one mill on each $100 of assessed valuation. (*b*) Of the above tax 12½ per cent must be allocated to the use of the Recreation Department.

Similarly of the $.08 special tax allowed the city of Wheeling, W. Va., $.04 may be applied to park purposes and $.04 to playgrounds and recreation.

4. Rockford, Ill. (*a*) Board of park commissioners of the park district are directly authorized by law to levy as much as 2⅔ mills on each dollar of assessed valuation. (*b*) May levy as much as 4 mills if the question of making the greater levy has been submitted to a vote of the people and approved by a majority vote of the qualified electors. (*c*) May levy a special tax in addition to above to pay the interest and principal on any bonds that may be issued. The park district may contract indebtedness in an amount equal to 3 per cent of the value of the taxable property in the district. If approved by a majority vote of the electors of the district the amount of indebtedness may be increased to 5 per cent of the taxable property.

Note. The park district of Rockford is organized under the Act of 1895, providing for the organization of park districts and the transfer of submerged lands to those bordering on navigable bodies of water.

5. San Diego, Calif. San Diego has the distinction of having the highest special tax for any city in this group, providing as it does a minimum tax of $.10 and a maximum of $.16 on each $100 of assessed valuation of property subject to taxation.

6. Wichita, Kan. Special taxes may be levied as follows: ½ mill for park purposes; ¼ mill for forestry work — parks, streets, alleys, etc.; ¼ mill for playground and recreation purposes.

Other cities in this group providing for special taxes of various amounts are East St. Louis, Illinois, with the same taxing privilege as Rockford; Fort Wayne, Gary, South Bend and Terre Haute, Indiana — not less than five cents nor more than nine cents; Oklahoma City and Tulsa, Oklahoma, one mill; Lincoln, Nebraska; Racine, Wisconsin, one mill; St. Joseph, Missouri; Sioux City, Iowa, two and one-half mills; Springfield, Illinois; Tacoma, Washington — maximum of one and one-half mills on each $100; Tampa, Florida and Waterbury, Connecticut — one-half of a mill on the grand list of the second taxing district.

EXAMPLES OF COUNTY PARK SYSTEM HAVING SPECIAL TAX LEVIES FOR GENERAL PARK PURPOSES

Essex County, New Jersey. The Essex County Park Commission derives its chief income for general park purposes from an annual tax of not less than one-half of a mill nor more than three-fourths of a mill on each dollar of county ratables. The commission has the power to certify to the County Board of Freeholders a tax less than one-half mill if it desires, but the Board of Freeholders cannot of their own initiative levy a tax less than one-half mill.

Hudson County, New Jersey. The same conditions exist as in Essex County (see above).

Henry County, Indiana. For the maintenance, operation and improvement of the one county park a special tax of two and a half cents on each $100 is levied annually.

Milwaukee County, Wisconsin. The Milwaukee County Park Commission receives the income from a special tax of one-tenth of a mill on each dollar of assessed valuation of property.

Forest Preserve Districts, Illinois. "Provided, that the amount of taxes levied for one year shall not exceed the rate of *one mill* on each dollar of assessed value of the taxable property therein (within the district), as ascertained by the last equalized assessment for state and county purposes; provided, that in forest districts containing a population of two hundred thousand or more such commissioners may levy a tax of not exceeding three-tenths of one mill on the dollar of such valuation for general, corporate purposes, in addition to the taxes required for the payment of bonds and interest on bonds." — Illinois Revised Statutes, Cahill, 1925, Chapter 57a, excerpt from Section 14.

EXAMPLES OF METROPOLITAN PARK SYSTEMS HAVING SPECIAL TAX LEVIES OR GENERAL TAXING POWERS

Cleveland Metropolitan Park System. For the provisions relating to the powers of the metropolitan board of park commissioners to levy taxes, see Chapter VI, pages 440–441, Section 2976–10 and Section 2976–10*i*

of the law under which the metropolitan park commission operates.

Metropolitan Park System of Tacoma, Washington. "Said board of park commissioners are hereby authorized to levy, or cause to be levied, a general tax on all property located in said park district each year, not to exceed one and one-half mills on the assessed valuation of the property in such park district."

Metropolitan Park System of Boston. The law under which is determined the apportionment of taxes among the several cities and towns constituting the metropolitan park system (Chapter 443, Acts of 1920) provides that Boston shall pay as special assessment 16⅔ per cent of the money required to meet the interest, sinking fund and serial or other bond requirements for each year; the city of Cambridge 16⅔ per cent, the remaining 66⅔ per cent to be based uPon the respective taxable valuations of the property of other cities and towns of the district. The proportion in which each city and town shall pay is apportioned according to the average percentage of valuation and population determined for each city by adding together the percentage which the valuation of the same bears to the total valuation of the cities and towns of the district and the percentage which the population of the same bears to the total population of the cities and towns of the district and dividing this sum by two. In addition the amounts to be apportioned each city and town for the maintenance of Nantasket Reservation, the Charles River Basin, one-half the cost of maintenance of boulevards and any deficiency in the amounts previously paid in, shall be based on the respective taxable valuation of the cities and towns. The remaining half of the cost of maintenance of boulevards is paid by all the cities and towns of the district as a part of the annual state tax. The metropolitan district commission each year determines the proportion in which each of the cities and towns shall annually pay money into the treasury of the commonwealth and transmits its determinations to the state treasurer who estimates the amount required in accordance with the proportions determined by the commission, together with any amounts required by law to be specially assessed upon any particular city or town. The words "taxable valuations" of the properties of cities and towns shall mean taxable valuations of property last established next prior to such apportionment by the general court as a basis of apportionment for state and county taxes; and the words "population of the cities and towns" shall mean the population as determined by the latest census, state or national, next prior to such apportionment.

Illinois Park District. Under the Illinois park district law of 1895 the park commissioners have the right "to levy and collect a general tax on the property in the park district for the necessary expenses of said district, for the construction and maintenance of the parks, boulevards and other improvement of lands herein authorized to be purchased or acquired by any means provided for in this Act."— Illinois Revised Statutes, Cahill, 1925, Chapter 105, Section 314.

"Provided, the aggregate amount of taxes levied for any one year exclusive of the amount levied for the payment of bonded indebtedness or interest thereon shall not exceed the rate of two and two-thirds mills on each dollar of taxable property in said district on the aggregate valuation as equalized for state and county taxes for the preceding year, unless a petition, signed by not less than two per cent of the legal voters of the district, asking that the authorized tax levy be increased to not more than four mills on each dollar, is presented to the board of commissioners and such increase is approved by the voters of the district at an election held on the question, of which election thirty days notice shall be given by posting some at each polling place in said district."— Illinois Revised Statutes, Cahill, 1925, Chapter 105, part of Section 316.

3. Special Sources of Income for General Park and Recreation Purposes.

The few instances where cities have special sources of revenue have been mentioned under the section treating of special taxes. There are not many examples of such special sources and the probabilities are that this method of securing revenues will never be widely practiced. (Baltimore, street railway tax; Kansas City, vehicle tax; Seattle, ten per cent of gross receipts from fines, penalties and licenses.)

4. Revenues for Operation and Maintenance from Gifts, Legacies, and Bequests.

As a general rule, gifts, donations and legacies are not made to apply to the operation and maintenance of park and recreation properties. However, there have been some examples and there appears to be no reason why this form of gift should not be encouraged. These gifts, donations, legacies and bequests may take such forms as:

(*a*) *Outright donations of money for operation and maintenance.* On a subscription basis this was widely practiced throughout the United States in the early stages of the playground and recreation movement and in many sections of the country is still used as a supplement to meager public appropriations. This method of financing the operation and maintenance of public recreation is always considered a temporary measure to be given up as soon as public appropriations have grown large enough to take care of the need.

(*b*) *Trust funds.* The notable instance of the Parkman Fund in Boston has already been cited. Providence, Rhode Island, has had a number of interesting bequests. "All the rest and residue of my estate of which I shall die entitled, seized, or possessed to, both real and personal, I give, devise and bequest to said city of Providence, to have and to hold forever in trust as a fund, in such manner and form of investment as the said city may choose, and apply the net proceeds thereof to the support and maintenance of Roger Williams Park, now owned by said city, as a public park mingling said income with other moneys expended upon said park in such manner as to said city shall seem best." — Extract from will of Anna H. Man. Seventy-ninth annual report of the city auditor, city of Providence, Rhode Island, 1925, page 111. This fund in 1925 amounted to $232,875.

"Twenty-third. I give and bequest to the city of Providence $100,000 to be invested and held as a fund, the income thereof to be applied toward the purchase, improvement and maintenance of public parks and playgrounds, with the request that no part of the same be expended on speedways." — Extract from the will of Samuel H. Tingley. Seventy-ninth annual report of the city auditor, city of Providence, Rhode Island, 1925, page 112. In 1925 the capital of this bequest amounted to $104,646.50.

A number of other instances might be quoted. In Lancaster, Pennsylvania, Long Park, a tract of approximately 80.5 acres was donated to the city and endowed to the extent of $200,000. The income which now amounts to about $10,000 a year is used chiefly for the maintenance of the park. From $30,000 to $32,000 is the annual income which Springfield, Massachusetts, receives from the endowment fund of approximately $700,000 for park purposes established by Everett H. Barney. Johnson Park in Camden, New Jersey, is maintained by the Johnson Park Endowment Fund established for the purpose. On December 31, 1925 the fund amounted to $46,414.55. Snyder Park of about 237 acres in Springfield, Ohio, was donated to the city in 1900 and endowed to the extent of $200,000, the income of which is used for the maintenance and improvement of the park. The park is controlled by the board of trustees, appointed by the sinking fund trustees of the city.

(*c*) *Properties other than money held in trust whose revenues are applied to the operation and maintenance of parks.* Several of the instances of requests already cited involve properties of this character. Another interesting example comes from Morgantown, West Virginia, where a public-spirited citizen donated a tract of coal land valued at between one million and two million dollars, the income from which is to be applied to the purchase of parks and playgrounds, their improvement and operation.

5. Revenues Derived from the Operation of Certain Types of Recreation Facilities.

These revenues may arise under two forms: (*a*) Revenues from concessions either in the form of a lump sum or a certain percentage of the gross receipts resulting from the operation of the particular facility, the operating of the facility being conducted by a concessionaire, subject to general supervision of the park governing authority. (*b*) Revenues from the operation of facilities directly by the park governing authority. The practice of charging fees for the use of certain types of recreation facilities arose partly because of the constantly rising tax rate, partly because of inadequate public appropriations for public recreation, and partly because of a growing feeling that it was only just that the patrons of a given facility should pay for the operation and maintenance where the general public had provided the capital outlay. In recent years there is a tendency, as has already been noted, to extend the principle of charges to cover not only the cost of operation maintenance but also the capital outlay costs. Just how far this can be carried successfully remains to be demonstrated.

There is another reason, which is largely psychological, for charging fees for the use of a facility. People appear to have a much more direct feeling of responsibility for and an interest in a given facility or activity if they contribute directly something of monetary value than they do if the facility or activity is open to their free use.

Some of the public recreation facilities for the use of which fees are charged throughout the country are:

(*a*) *Swimming facilities.* Almost universally throughout the United States, where the municipality furnishes bathing suits, towels and soap, a fee is charged. In some instances an admission fee is charged whether the visitor uses the swimming facilities or not.

(*b*) *Boats and canoes.* In the very large majority of park and recreation systems, fees ranging from ten to fifty cents an hour are charged for the use of water crafts. Fees are also charged for launch rides.

(*c*) *Skates, sleds, skiis.* It is almost universal for a fee to be charged for the temporary rental of winter sports equipment, where such equipment is provided.

(*d*) *Tennis.* Charges for the use of tennis courts is not so widely practiced as yet, but the custom is growing and will likely become almost as widely practiced as fees for the use of golf courses.

(*e*) *Municipal theatres.* There are very few municipal theatres in the United States at the present time. In the few communities where they do exist it is customary to charge admission fees as in the case of theatres privately owned. In the few cities where operatic performances have been sponsored by park and recreation authorities, it is customary to charge admission fees. It is not uncommon to charge a small admission fee to moving picture performances in community houses or school buildings. Open-air movies have generally been free, as sufficient revenue may be secured from the advertising to cover the cost of operation and maintenance.

(*f*) *Art museums.* There is usually a small fee charged for admission to public art museums, although there are usually one or more days of the week when the general public is admitted free.

(*g*) *Zoölogical gardens.* It is the custom at some zoölogical gardens to have certain pay days for admission and certain free days. Most of the zoölogical gardens are, however, free to the general public.

(*h*) *Municipal dances.* Custom varies respecting municipal dances. In general a small admission fee is charged.

(*i*) *Refreshment stands and restaurants.* Charges for refreshments or for food served in restaurants in parks are universal. It has never been contended that refreshments and food should be served free to the public. The prices charged are generally current prices of average refreshment stands and restaurants.

(*j*) *Baseball.* Fees for the use of baseball grounds outside of highly developed athletic fields or stadiums have never been charged. In some cities, however, a registration fee is charged each team entering the municipal baseball league or leagues. Income secured from such fees is applied to the operating expenses of the league or leagues. Occasionally, the winning teams play a series of games to which an admission fee is charged, the income thus derived going to help pay the expenses of conducting the league or federation. Football may be handled much in the same manner.

(*k*) *Rental of public halls.* It is quite common to charge rentals for the use of public halls for certain kinds of activities, such as boxing exhibitions, concerts and theatrical performances conducted for profit by some individual or organization; dances conducted for profit by an individual or organization; for industrial exhibits and similar activities.

(*l*) *Amusement devices of various kinds.* Into a few park systems have been introduced certain devices commonly found in commercial amusement parks, and in a very few instances complete commercial amusement equip-

ment has been introduced. In general, however, such facilities include merely a merry-go-round or a carrousel, a pony track, miniature railroad, etc. Fees are universally charged for the use of these facilities.

(*m*) *Golf.* Next to fees for swimming facilities, the practice of charging fees for the use of golf courses is most widely practiced. These fees include green fees, locker fees, rentals of clubs, charges for refreshments and for food, charges for supplies and repairs and for lessons.

(*n*) *Rentals of camp sites.* In a few cities and counties this is a source of revenue of considerable importance.

(*o*) *Operation of bus lines.* Bus lines may be operated directly by a park governing authority or by a commercial company on a franchise granted by a park governing authority.

(*p*) *Commercial baseball park.* One instance is noted (Asheville, North Carolina) where the city owns a commercial baseball park and a franchise in a baseball league. This is reported to be quite profitable. This city also owns and operates a commercial amusement park.

EXAMPLES OF THE OPERATION OF VARIOUS TYPES OF RECREATION FACILITIES ON A REVENUE BASIS IN DIFFERENT CITIES

Swimming Pools and Beaches	*Year*	*Operating Cost*	*Income*	*Gain or Loss*
Baltimore, Md.	1918	$24,264.59	$11,046.84	$13,217.75 Loss
	1920	34,035.28	15,495.40	18,441.38 Loss
	1921	32,264.09	23,209.73	9,054.36 Loss
	1922	24,745.85	18,471.45	6,274.40 Loss
	1923	19,139.00	16,126.37	3,012.63 Loss
	1924	35,170.93	20,157.65	15,013.28 Loss
Dallas, Texas	1921	16,641.57	21,045.32	4,403.75 Gain
Cliff Park Pool	1922	17,586.20	17,837.64	251.44 Gain
	1923	16,183.48	19,265.80	3,082.32 Gain
	1924	18,617.36	21,698.05	3,080.73 Gain
	1925	17,214.22	21,751.07	4,536.85 Gain
Denver, Col.	1922	6,456.81	7,541.64	1,084.83 Gain
	1923	5,744.60	5,903.35	158.75 Gain
	1924	5,305.69	7,337.65	2,031.96 Gain
Elgin, Ill.	1924	2,500.00	2,500.00	
	1925	3,500.00	4,500.00	1,000.00 Gain
	1926	3,500.00	4,500.00	1,000.00 Gain
East St. Louis, Ill.	1922	7,302.32	9,224.94	1,922.62 Gain
	1924–1925	6,809.65	7,993.00	1,183.35 Gain
	1925–1926	7,580.81	8,998.50	1,417.69 Gain
Fort Worth, Texas	1922	3,409.31	18,610.00	15,200.69 Gain
Forest Park Pool	1923	6,366.60	17,277.61	10,911.01 Gain
	1924	4,102.97	12,552.55	8,449.50 Gain
	1925	6,587.94	12,688.50	6,103.56 Gain
Lake Worth Bathing Beach	Operating cost for four years ending April 15, 1925			99,474.91
	Income for four years ending April 15, 1925			128,962.91
	Net gain in four years			29,488.00
	Fees charged: 25 cents for adults and 15 cents for children.			

		Year	Operating Cost	Income	Gain or Loss
Glendale, Calif.		1923–1924	2,302.30	2,486.09	183.79 Gain
		1924–1925	1,648.27	1,779.11	120.84 Gain
Los Angeles, Calif.	1.	1924–1925	5,501.87	5,679.60	177.73 Gain
4 pools	2.	1924–1925	2,155.26	2,389.86	234.60 Gain
	3.	1924–1925	2,554.40	2,934.35	379.95 Gain
	4.	1924–1925	281.43	922.77	641.34 Gain
Minneapolis, Minn.		1919	20,358.99	17,978.81	2,380.18 Loss
		1920	25,288.00	25,083.62	204.38 Loss
		1921	30,828.77	31,629.90	801.13 Gain
		1922	30,286.37	20,658.83	9,627.54 Loss
		1923	25,036.82	21,305.87	3,730.95 Loss
		1924	31,181.97	14,202.57	16,979.40 Loss
		1925	.....	.....	.....
Pomona, Calif.		1921–1922	2,048.26	3,578.27	1,530.01 Gain
		1922–1923	2,196.45	3,400.90	1,204.45 Gain
		1923–1924	2,408.07	4,156.40	1,748.33 Gain
San Jose, Calif.		1917–1918	6,462.78	6,040.95	381.83 Loss
		1918–1919	6,106.25	5,990.15	116.10 Loss
		1919–1920	8,333.39	9,774.10	1,440.71 Gain
		1920–1921	8,704.16	8,585.75	118.37 Loss
		1921–1922	8,846.97	9,034.25	187.28 Gain
		1922–1923	8,401.33	9,581.65	1,180.32 Gain
		1923–1924	9,775.76	8,240.00	1,535.26 Loss
San Rafael, Calif.		1920	6,349.44	7,242.35	892.91 Gain
		1921	6,931.16	7,921.30	790.14 Gain
		1922	10,454.36	7,683.05	2,771.31 Loss
		1923	8,140.84	7,199.10	941.74 Loss
		1924	8,629.43	9,269.60	640.17 Gain
		1925	8,534.09	9,497.47	963.38 Gain
Louisville, Ky.		1923	7,418.58	7,104.05	314.53 Loss
Shelby Park Pool		1924	3,825.46	4,996.70	1,171.24 Gain
		1925	3,996.66	6,009.17	2,012.51 Gain
Golf Courses					
Cleveland, Ohio		1921	30,395.00	34,385.45	3,990.45 Gain
		1922	24,864.28	39,885.10	15,020.82 Gain
		1923	22,086.41	27,372.40	5,285.99 Gain
		1924	30,316.35	33,313.00	2,996.65 Gain
		1925	56,117.00 (Budget)		
Columbus, Ohio		1924	10,951.40	11,739.30	787.90 Gain
Denver, Col.		1922	6,392.47	8,903.40	2,510.93 Gain
		1923	14,483.24	13,972.00	511.24 Loss
		1924	20,584.09	17,847.50	2,736.59 Loss
	To December 1, 1925		16,500.00	20,161.00	3,661.00 Loss
Fort Worth, Texas		1923–1924	12,629.95	12,994.00	364.05 Gain
		1924–1925	9,600.00	11,600.00	2,000.00 Gain
Hartford, Conn.		1923–1924	4,683.58	11,335.25	6,651.67 Gain
		1922–1923	3,463.67	8,045.45	4,581.78 Gain
		1921–1922		1,479.15	
		1920–1921	254.92	1,051.30	796.38 Gain
		1919–1920	73.28	920.65	847.37 Gain
Los Angeles, Calif.		1923–1924	77,669.62	111,615.65	33,946.03 Gain
		1924–1925	121,792.39	127,323.89	5,531.50 Gain
Minneapolis, Minn. Glenwood		1923	17,509.00	27,178.00	9,668.00 Gain
		1924	29,221.00	46,819.00	17,598.00 Gain
		1925	35,543.00	44,751.00	9,208.00 Gain

	Year	Operating Cost	Income	Gain or Loss
Columbia	1923	8,545.00	14.364.00	5,819.00 Gain
	1924	6,417.23	21,350.00	14,932.77 Gain
	1925	19,214.00	27,600.00	8,386.00 Gain
Pittsburgh, Pa.	1924	15,000.00 (Average)	14,600.00	400.00 Loss
San Diego, Calif.	1922	8,018.16	9,114.90	1,096.73 Gain
	1923	5,460.99	8,484.50	3,023.51 Gain
	1924	5,159.86	8,074.50	2,914.64 Gain
Spokane, Wash.	1921	7,391.54	7,959.00	567.46 Gain
	1922	7,228.52	10,896.25	3,667.73 Gain
	1923	7,496.22	12,231.50	4,735.28 Gain
	1924	13,184.39	15,837.50	2,653.11 Gain
Omaha, Neb.[1]	1924	20,350.86	12,473.25	7,877.61 Loss
	1925	19,134.52	19,524.60	390.08 Gain
Oakland, Calif.	1923–1924	19,793.08	18,798.25	994.83 Loss
	1924–1925	33,335.64	26,431.30	6,904.34 Loss
Louisville, Ky.[2]	1923	3,830.34	7,069.95	3,239.61 Gain
	1924	15,030.71	11,836.10	3,194.61 Loss
	1925	13,152.15	12,212.50	939.65 Loss
Operation of Dance Halls				
Cleveland, Ohio[3]	1914	14,773.64	19,510.72	4,737.08 Gain
	1915	12,813.42	18,242.73	5,429.31 Gain
	1916	11,031.62	14,839.23	3,807.61 Gain
	1917	11,374.92	13,085.87	1,710.95 Gain
	1918	11,872.58	15,411.47	3,538.89 Gain
	1919	12,628.84	18,419.47	5,794.03 Gain
	1920	17,971.08	15,222.92	2,748.16 Loss
	1921	11,724.36	9,911.46	1,812.90 Loss
	1922	5,252.70	6,655.50	1,402.80 Gain
	1923	5,878.62	8,796.49	2,917.87 Gain
	1924	6,125.95	6,180.38	54.43 Gain
	1925	6,625.00 Est.	7,000.00 Est.	375.00 Est.
Hartford, Conn.	1923–1924	9,258.63	17,992.20	8,733.57 Gain
	1922–1923	12,045.24	19,389.25	7,344.01 Gain
	1921–1922	9,212.83	21,986.95	12,774.12 Gain
	1920–1921	14,503.15	18,343.50	3,840.35 Gain
	1919–1920	14,235.69	17,598.85	3,363.16 Gain
Refreshment Stands and Restaurants				
San Francisco, Calif.	1921	7,019.92	8,258.40	1,238.48 Gain
Beach Chalet	1922	7,723.76	8,276.10	552.34 Gain
	1923	6,509.89	9,270.75	2,760.86 Gain
	1924	9,242.40	10,458.70	1,216.30 Gain
	1925	11,299.94	14,677.82	3,377.88 Gain
Hartford, Conn.	1923–1924	29,947.18	36,358.84	6,411.66 Gain
Refectories	1922–1923	23,484.67	27,776.52	4,291.85 Gain
	1921–1922	27,681.82	34,489.10	6,807.28 Gain
	1920–1921	32,610.15	38,640.03	6,029.88 Gain
	1919–1920	35,591.20	36,737.58	1,146.38 Gain
Minneapolis, Minn.	1919	116.729.09	133,444.15	16,715.06 Gain
Refectories	1920	152,775.17	181,433.83	28,658.66 Gain
	1921	149,694.78	172,756.00	23,061.22 Gain
	1922	139,972.03	168,501.01	28,528.98 Gain
	1923	159,214.92	174,955.92	15,741.00 Gain

[1] It is probable that construction costs were included in operating costs for 1924.
[2] Fees for playing were first charged in 1923.
[3] Beginning with 1922 only one dance hall was operated. Previous to that date there were two.

	Year	Operating Cost	Income	Gain or Loss
	1924	101,999.76	$116,191.84	$14,192.08 Gain
	1925	.....	.....	.....

	Year	Profit or Loss on Operation	
Cleveland, Ohio	1913	Operated on concession	7,619.00 Gain
Refreshment stands	1914	Operated by city	18,669.32 Gain
	1915	Operated by city	12,623.99 Gain
	1916	Operated by city	23,661.28 Gain
	1917	Operated by city	11,113.39 Gain
	1918	Operated by city	13,259.47 Gain
	1919	Operated by city	5,676.00 Gain
	1920	Operated by city	4,227.14 Loss
	1921	Operated by city	2,757.35 Loss
	1922	Operated on concession	33,050.00
	1923	Operated on concession	32,875.00
	1924	Operated on concession	36,375.00

	Year	Income from Concessions	
Denver, Col.	1921	$18,180.94	No Outlays
	1922	20,892.40	
	1923	19,089.39	
	1924	19,578.74	
	1925	19,819.51	

	Year	Operating Cost	Income	Gain or Loss
Spokane, Wash.	1921	$4,406.82	$4,960.83	$554.01 Gain
	1922	3,372.20	4,403.46	1,031.26 Gain
	1923	3,149.66	3,976.62	826.96 Gain
	1924	3,549.59	4,612.76	1,063.17 Gain
Tourists' Camps				
Fort Worth, Texas	1924–1925	3,608.18	4,712.50	1,104.32 Gain
Denver, Col.[1]	1924	28,946.48	14,722.00	14,224.48 Loss
	1925	25,400.00	14,472.00	10,928.00 Loss
Spokane, Wash.	1923	3,174.17	4,932.00	1,757.83 Gain
	1924	3,338.83	5,228.00	1,889.17 Gain
Des Moines, Iowa	1925–1926	4,041.57	3,180.15	861.42 Loss
Omaha, Neb.	1923	2,238.26	2,122.50	115.76 Loss
	1924	3,950.66	3,900.50	50.16 Loss
	1925	4,205.16	3,896.00	309.16 Loss
Boats				
Minneapolis, Minn.	1919	12,964.05	21,213.10	8,249.05 Gain
	1920	15,344.83	26,215.76	10,870.93 Gain
	1921	15,634.77	25,624.85	9,990.08 Gain
	1922	13,469.72	23,619.20	10,149.48 Gain
	1923	14,940.08	25,017.90	10,077.82 Gain
	1924	15,643.81	19,835.05	4,191.24 Gain
	1925	.....	.....	.....
Oakland, Calif.	1921–1922	21,379.68	21,740.81	361.13 Gain
	1922–1923	16,123.42	17,986.41	1,862.99 Gain
	1923–1924	17,335.96	16,040.26	1,295.70 Loss
	1924–1925	14,296.66	14,021.71	274.95 Loss
East St. Louis, Ill.	1922	822.67	1,227.27	404.60 Gain
	1924–1925	1,009.97	1,238.50	228.53 Gain
	1925–1926	948.57	1,292.50	343.93 Gain
Tacoma, Wash.	1924	7,890.82	19,593.00	11,702.18 Gain

[1] Figures for 1925 to December 1 only.

Miscellaneous Revenue Bearing Facilities or Activities

	Year	Operating Cost	Income	Gain or Loss
San Francisco, Calif.	1921	65,362.39	75,372.39	10,010.00 Gain
Children's quarters	1922	76,505.46	72,088.10	4,417.36 Loss
	1923	56,003.37	76,241.06	20,237.69 Gain
	1924	84,675.88	86,676.76	2,000.88 Gain
	1925	60,863.89	69,979.16	9,115.27 Gain
Hartford, Conn.	1923–1924	2,548.66	4,035.45	1,486.79 Gain
Skating	1922–1923	2,017.39	3,358.68	1,341.28 Gain
	1921–1922	2,993.07	5,824.74	2,831.67 Gain
	1920–1921	.....	5,738.45	.....
	1919–1920	.....	613.85	.....
Sheepbakes	1923–1924	4,052.61	4,293.30	240.69 Gain
	1922–1923	2,939.08	2,557.50	381.58 Loss
	1921–1922	.....	1,017.05	.....
Picnics	1923–1924	15.33	23.75	8.42 Gain
	1922–1923	56.92	97.25	40.33 Gain
	1921–1922	.....	412.40	.....
Oakland, Calif.[1]	1921–1922	6,043.00	3,936.00	2,107.00 Loss
Summer camps	1922–1923	10,735.00	7,749.00	2,986.00 Loss
	1923–1924	15,551.00	16,099.00	548.00 Gain
	1924–1925	11,788.00	12,379.00	591.00 Gain

Concessions versus Direct Municipal Management.

It should be adopted, as a general principle, that all facilities and activities for which a fee is admissible should be operated by the municipal authority directly responsible for such service. The concession plan is wrong in principle for the reason that it capitalizes public properties and public good will for the personal profit of an individual or a corporation, and the concessionaire is more likely to be interested in the volume of the profits than in the quality of the service. The prime consideration in the handling of all kinds of facilities for which fees may be charged is to provide the best quality of service at the lowest possible cost. This can be done only when the element of profit for the sake of profit alone is more or less entirely eliminated. In general the only excuse for a public park authority charging fees is to cover the cost of operation and maintenance, although it would be quite proper to include extension of service, depreciation and replacement of structures and equipment, and, in some cases, capital outlays for landed properties. In any case there is no real justification for the public authorities to operate public recreation facilities on the profit theory and principle that governs the commercial and industrial world.

Retention of Revenues by Park Departments Desirable.

A great step forward in the development of the fee system in connection with the operation and maintenance of recreation facilities would be the universal adoption of specific authority for the park and recreation governing authorities to retain the revenues derived therefrom in the park

[1] For the first two years the operating cost includes cost of developing the camps.

and recreation fund. In a large number of cities the law requires that all such revenues must be deposited to the credit of the general fund of the city. There is no special incentive for an executive to make great effort to develop this phase of operation and maintenance where he not only loses the possible fruits of his labor but, in an unguarded moment, may have it count against him in the annual appropriation.

6. Miscellaneous sources of revenue. There are many different kinds of miscellaneous sources of revenue, none of which are of very great importance so far as volume of revenue is concerned. Some of these sources are: (*a*) Fines resulting from conviction for violating park ordinances. (*b*) Rentals from houses on undeveloped properties. (*c*) Charges for services rendered to outside parties. (*d*) Sales of obsolete or worn-out equipment. (*e*) Sales of produce, such as hay or other crops grown on undeveloped large parks or reservations. Dead timber is sometimes sold for fuel. (*f*) Sales of nursery stock — a practice that is generally frowned upon because of its possible competition with commercial nurseries. (*g*) Commissions on telephones, weighing machines, etc. (*h*) Interest on bank balances.

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