

LANDSCAPE DESIGNS FOR VARIOUS SIZE HOMES  
AT NEW DELHI, INDIA

by

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## INTRODUCTION

A desire to own a plot of ground and to erect a home thereon has been a ruling sentiment in the human hearts since mankind first emerged from the nomadic state. It is to these sentiments that the first rude ideas of a garden are ascribed; for the mind which coveted ownership could hardly refrain from the desire to improve and beautify this space. "The first ideas of garden were in connection with the comfort and pleasure of home, in all cases efforts were made to combine utility with beauty. Home grounds of modern cities even today show evidence of similar adaptation" (14).

During the last ten years New Delhi, India has almost doubled in its area. New colonies have sprung up as far as five to seven miles from the city itself. Residents of these colonies are interested in keeping up the tradition of "the Garden City of India" and improving the appearance of the expanding capital. In spite of this interest, attempts to improve home grounds in these new colonies have not been fruitful. This is due to lack of information for the common man as to the plant material to be used and the arrangement of different areas to provide comfort, beauty and utility.

Individual tastes are always different but, since the basic concepts are similar, the general problems of house planning are similar in every neighborhood. The landscape design for each lot may be different due to difference in soil, topography, existing trees and conditions in adjacent lots. Careful considerations must be given to the orientation of the house and location of the various rooms for circulation and efficient living. Plant material should be worked in first for the functional quality and

then for total effect, but all this has to be based on the inter-relationship of utility and beauty.

It is the purpose of this thesis to design specific landscape plans for different size homes in New Delhi, India.

#### REVIEW OF LITERATURE

In England, cottages had their gardens since early days. The gardens were close about the houses; they were small, hedged in, fitted to the topography, using local opportunity and material — often given over largely to the growth of vegetables and flowers. The grounds were arranged for out door living and active use, but there was no demarcation line between the areas. Later, gardens of Italy and France were imitated and ultimately adapted to sober naturalistic style (12).

On the contrary, the landscape tradition in China and Japan developed in which man and nature were considered friends and companions (8). Hubbard and Kimball (12) have described the Japanese gardens as "representative of a chosen expression of nature. The various compositions have definite relation to the places from where they are to be viewed. The symbolic use of objects as representing large natural form and as suggesting certain emotional effects has enabled the Japanese to compose on a miniature piece of ground a suggestion of a large natural landscape."

In the United States, however, prior to 1850 there was little landscape design of any kind (8). In eastern United States home grounds and estates were landscaped in European style. In the South gardens of Spanish character were dominant. With the growth of cities and industrial development there was a real need for beautification and landscaping. The works of Vaux (21) and Cleveland (6) and Charles Eliot (10) were responses to this demand.

During recent years, books by Eckbo (9), Church (5) and Rose (20) are considered outstanding works on home landscape design.

Until recently no work had been done on landscape design for home grounds in India. So far the home grounds at New Delhi are dominated by Moghul style. This style was founded by Persian invaders in India. Hubbard and Kimball (12) have described the basic characters of the style as "the enclosed gardens surrounded by walls for privacy, repose, magnificence and definite formality." The scheme was made to be lived in and often different portions were arranged for enjoyment at different times of the day. "They were planned in axial rectangular patterns of simplicity, clarity, restraint, discipline, and delicacy not to be found in the western tradition" (9).

The garden design was based primarily on the value of water and shade; flowers, fruits, fragrance, and pavings were prominent. The gardens were much greater than their prototypes in Persia. A large number of gardens grew under the Moghul dominion in India and some of them have lived to the present day so that their designs have been a source of inspiration and appreciation.

In general, garden designs in the plains of Delhi and Agra are more or less alike. Though the designs are simple and rigidly formal, planning seems to have been done to avoid monotony by designing divisions with different characters.

Quite recently Randhawa (18) in his book, "Developing Village India," has discussed some principles of planting trees around homes and farmsteads. In another book entitled, "Flowering Trees in India," (19) this author discussed ornamental trees for parks and avenues for cities in India. This work has been an attempt to develop the home grounds for space relation,

simplicity and beauty.

#### PHYSICAL CHARACTERS OF NEW DELHI, INDIA

Climate affects landscape design to a great extent. "Weather control is necessary to extend the period during which the garden and sitting area can be used. The earlier the sitting area warms up in winter, and the more it remains cool on hot days, the more the garden is used" (15).

Orientation of the rooms and development of various units of the garden area in a hot climate are quite different than that in a mild climate. Position of principal trees and plantation is governed by winter winds and summer sun. Precipitation affects plants even more directly than it does people. Temperature affects both plants and people; both need special treatment if temperatures go above or below the range in which they are most comfortable. Wind velocity during different months of the year controls the use of garden area and has a definite bearing on its design.

New Delhi with its latitude as  $28^{\circ} - 35^{\circ}$  North and longitude as  $77^{\circ} - 12^{\circ}$  East is situated 714 feet above sea level. Approximately 85 per cent of the average rainfall of 27 inches per year is received during June to September (Table 1). Maximum rainfall recorded in any one year during the last several decades is 60.36 inches in 1939, with the maximum for any one day as 10.48 inches on July 21, 1958. Maximum temperatures occur during May averaging  $105^{\circ}$  F. with the maximum of  $117^{\circ}$  F. recorded on May 29, 1944. Average minimum temperature for January is  $43^{\circ}$  F. with minimum record of  $31^{\circ}$  F. on January 16, 1935 (16).

Table 1. Showing normal monthly and annual maximum and minimum temperatures in shade (degrees F.) and average precipitation in inches at New Delhi (11).

Month	Maximum	Minimum	Precipitation
January	70.5	43.3	0.99
February	74.7	49.2	0.83
March	85.0	57.1	0.51
April	96.6	62.7	0.33
May	104.8	78.8	0.52
June	102.4	82.5	3.03
July	95.3	80.1	7.03
August	93.0	78.4	7.23
September	93.5	75.5	4.84
October	92.5	64.3	0.40
November	83.2	51.8	0.10
December	73.7	45.0	0.43
Yearly	88.8	64.5	26.24



Wind velocities in winter months average from 2.1 miles per hour in November to 2.9 miles per hour in February. In summer months, it averages from 3.7 miles per hour in March to 4.6 miles per hour in June (Plate I). Calm days range from 37 per cent in February to 71 per cent in November and from 36 per cent in March to 19 per cent in June. Direction of local winds for the winter months is north-west and summer months is south-east (Plate I).

There are four seasons in a year: the cold weather, November to February; the hot weather, March to mid-June; and the rains, mid-June to September; with October as a sticky transitional month. The cold weather is almost rainless except for occasional showers. Beginning in early March temperatures rise rapidly. By May it is over 105° F. with a mean of 90° F. Just before the monsoon breaks in June, temperatures reach the maximum.

All the above factors influence the selection of the lots and designing the specific landscape plans.

Lot sizes in New Delhi vary greatly. They fall roughly into five groups:

1. Very small	40 x 60 feet	1/16 acre approx.
2. Small	60 x 90 feet	1/8 acre approx.
3. Medium	85 x 120 feet	1/4 acre approx.
4. Large	120 x 180 feet	1/2 acre approx.
5. Extra large	200 x 200 feet	one acre or more

#### THE PROCEDURE OF STUDY

Two lots were selected in a colony about five miles from New Delhi city for specific design development. Since the colony is situated at a good distance from the city, it was planned as a self-contained unit in

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EXPLANATION OF PLATE I

Showing different seasons and directions of seasonal  
winds with their velocity in miles per hour.



respect to basic requirements of the residents. An area of over five hundred acres has been divided into about two thousand residential lots with provision for commercial lots, parks, schools, hospitals, and public buildings. The soil of the area is sandy loam and the subsoil water sweet and only 12 to 15 feet below the surface.

Two lots, one measuring 85 feet by 120 feet henceforth named Scheme A, and the other 60 feet by 90 feet named Scheme B, were selected. This clean and modern locality had facilities for transportation, electricity, drinking water and unfiltered water supply for the garden use. The two lots are situated in two different blocks in the colony. At the time of selection, space, exposure and topography were taken into consideration. Since the land of this colony is flat and the streets straight, no plot has any superiority over the other although a corner lot showed a little advantage in having a wider outlook. But, at the time of selection, most of the corner lots had already been sold. Selection had to be made from the remaining lots. The lot in Scheme A bordered a 50-foot wide street on the north-east and the lot in Scheme B bordered a 40-foot wide street on the west. It was realized that an early decision to select the lots would have been useful to take advantage of maximum choice, particularly in a new colony.

#### Landscape Design, Scheme A

This scheme was developed for a family with three children of school age. The family was interested in gardening and planned to have well landscaped grounds and a vegetable area. The family also maintained a car and preferred a car-port.

Planning. After the selection of the lot, planning was the next important step. The home builder does not give the same thought and consideration to the outdoor surroundings as he does to the interior decoration of the house. "A man's home is entered the moment one sets foot on the property and not when the threshold is crossed" (7).

Good planning will always result in better homes and gardens. Without a plan the garden will grow by trial and error. The plan on paper actually visualizes requirements and it has been rightly defined as "representing the conception of the designer committed to paper in a specific and comprehensive manner" (7).

The first step in planning was to survey the property showing property lines, existing features, and differences in elevation. All details were drawn to scale, one inch equal to five feet. All the requirements for the house such as various rooms, carport, storage, driveway, walks, patio, children's play area, flower beds, hedges, trees and vegetable areas were listed. Rough studies of these areas were made. Detailed plans of the house were drawn from these rough designs. Arrangements, construction details, plantings, enclosures, shelters, and irrigation facilities were all shown on the plans. Work proceeded in an orderly and economical manner with these preconceived specific plans. The complete plans still provided room for changes and adjustments as the work advances. While planning, all possibilities were considered to get maximum use from three dimensional garden space that is closely related to the house in forms which are comfortable, useful, and beautiful. It was considered best to plan the whole lot as a series of indoor outdoor spaces with special consideration given to their orientation and specific use.

EXPLANATION OF PLATE II

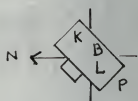
House may be oriented any way on the lot as long as the rooms are located with regard to sun, prevailing winds, and outdoor living area.

In Scheme A the house has been oriented as shown in Fig. h.

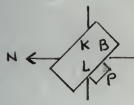
In Scheme B the orientation of the house is as shown in Fig. d.

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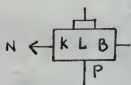
## PLATE II



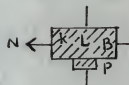
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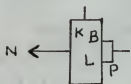
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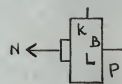
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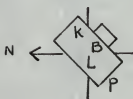
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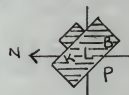
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f



g



h

Locating the House and Orientation of Various Rooms. In locating the house on the lot the topography, accessibility from the street, and the utilization of the various units of the grounds were considered. In Scheme A the house was set back 25 feet from the front as provided under building construction laws.

For maximum benefit the house could be oriented in any direction on the lot as long as the rooms were located with regard to sun, prevailing winds, and outdoor living area (Plate II). Since the placement of the house was governed by the street zoning laws, the principal rooms were located so that they would be protected from hot sun in summer but get maximum exposure to sun in winter months. Southern orientation of the living room was considered best. The kitchen was given an eastern exposure. Bedrooms were placed on the southeast side to take advantage of the summer breeze and winter sun.

Division of Lot into Various Units. After the house was planned, the area around the house was divided into four major functional units: (1) public access, (2) work space, (3) general living, and (4) private living (Plate III).

**Public Access.** Public access includes front yard, walk, driveway and the foundation planting. Since this portion of the house is subjected to public inspection, it was designed in such a way as to give the house an attractive setting. The general appearance of the house was kept simple, hospitable and harmonious by simple foundation planting and en-framing trees. The straight walk has a direct access to the living room. The driveway joins the kitchen, patio and work space (Plate IV).

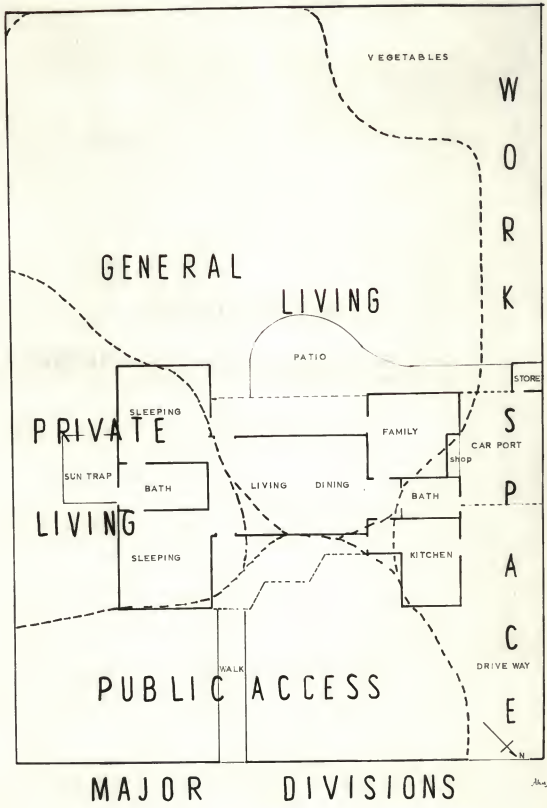
**Work Space.** Work space embraces the service yard, carport, play area, workshop, storage and vegetable area. The service yard was located out of



EXPLANATION OF PLATE III

Major divisions of lot into various functional units  
as designed in Scheme A.

PLATE III

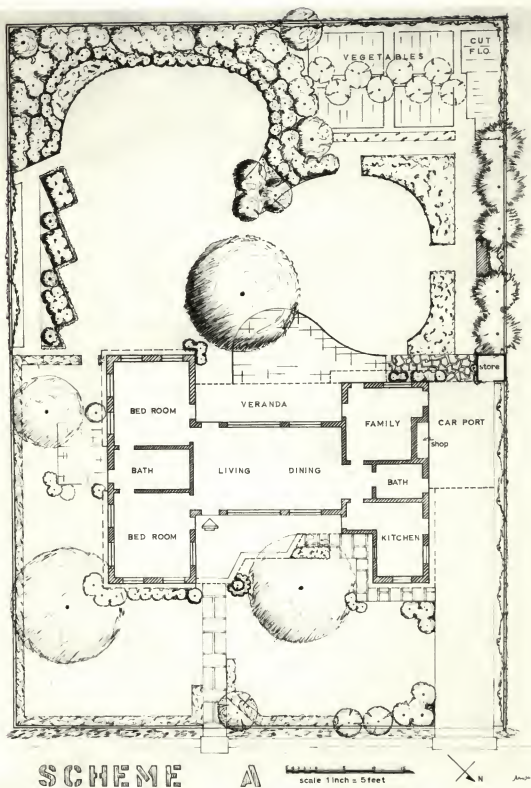


Scheme A  
CHISELYN ROAD  
ST. GEORGE'S HOME  
LANDSCAPE PLAN

EXPLANATION OF PLATE IV

A landscape plan of the entire home grounds in Scheme A.

## PLATE IV



direct view of the living room. The vegetable area was placed in a corner spot, not too far from the kitchen. This area also provided space for outflowers and fruit. Protection of the vegetable area was provided by barbed wire fencing on a low boundary wall. Direct access from kitchen to vegetable area is through the carport. The carport may also be used as a play area during the rainy season.

A small shop within the carport and a small godown adjacent to it would provide for storage of garden tools, materials, play equipment, and garden furniture.

**General Living.** The third functional unit to be developed was the outdoor living area. This area was located to the rear of the house in this scheme. It was designed to include at least three divisions: (1) the general garden, (2) the flower garden and (3) the patio or terrace.

The general garden area was surrounded by shrubs, trees, and fences in order that the family could enjoy the privacy of family life out of doors without being in full view of neighbors and passers-by.

Flower beds of annuals and roses were confined to areas especially set apart for the purpose. The beds merged well with the surrounding areas and provided balance and unity in an informal way. Transition from informal shrub borders to the formal rose beds showed an interesting blending and not an abrupt change. Covered veranda at the back and open terrace constituted the sitting area. This sitting area was placed adjacent to the living room. Maximum livability and pleasure were provided when built as a continuous indoor-outdoor unit. The more accessible this area is, the more the garden will be used. One door from the main living room and one from the family room were provided to open directly onto the sitting area. Going

from these rooms to the garden would be like stepping from one room to another. The terrace would serve just an extension of the veranda next to the living room. The terrace was given a gradual slope towards the lawn to facilitate washing off the terrace and prevent rain water from entering rooms in case of excessive rains.

The house, in turn, would act as a barrier against prevailing winds, block the sun in summer, and would reflect winter sun to warm the sitting area.

**Private Living.** The private living included a suntrap and the bedrooms. The area, located on the southeast side, would get morning sun in winter months and southeast breeze in summer months. The family would enjoy a view of the rose garden from the main area while enjoying the sunbath. This small space would also be used for out of door sleeping at night in summer in addition to the roof which is normally used for this purpose.

**Enclosure.** As is customary, a boundary wall on the property line was provided. This not only gave a feeling of ownership but also reduced chances of disputes on boundaries with the neighbors.

**Grading.** Since the land is nearly level, no grading was required on a large scale. However, it was necessary to provide effective drainage from patio to lawn and from the lawns to shrub area and then to the drains outside the lot. The house was graded to a higher level than the area around it. Top soil was saved for garden use. This facilitated preparation of beds for shrubs, roses and annuals and even the ground for lawn. Grade of the lawn sloped away from the house. The floor level of the house, patio, lawn, walk, and the outside drainage are shown in Plate VII. Special care was taken while grading so that road water would not flow

back to the house. This was accomplished by providing a berm at the entrance driveway and walk.

**Irrigation.** Irrigation water was taken from a public supply system. A distribution system was so designed that an adequate supply of water could be drawn from any outlet whenever desired. Safety valves were provided to lessen friction and guarantee ample supply. Hydrants were placed so that one rubber hose of 50 feet length would be enough to water all areas. Provision was also made to water all areas by sprinklers.

#### Landscape Design, Scheme B

The lot in Scheme B was developed for a family of a husband and wife and four children, two sons and two daughters, between the ages of five and twelve years. The family was interested in outdoor life and gardening but did not own a car.

The family, for whom this lot was designed, preferred to have the outdoor living area in front of the house instead of at the back. A second landscape plan was made for the same family with the outdoor living area to the rear of the house. Henceforth these two designs have been referred to as B-1 and B-2.

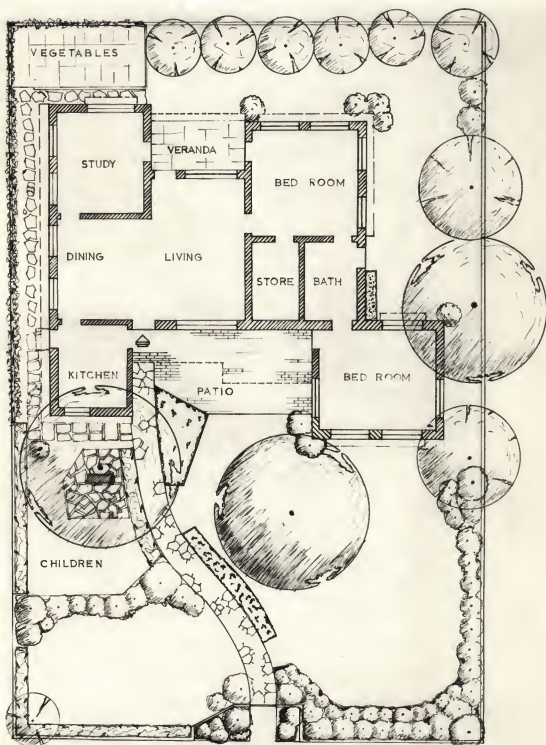
Scheme B-1. Under Scheme B-1 the garden or the outdoor living area was developed in the front. The house in this scheme was placed ten feet from the back boundary line. The bedrooms were placed to the southeast for summer breeze and winter sun. The study room for children was located to get the morning sun. This room also will be used as a bedroom for the two boys. The kitchen had to be located adjacent to the patio and it could not be given an eastern exposure.

EXPLANATION OF PLATE V

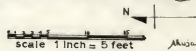
A landscape plan of the home grounds in Scheme B-1 where the outdoor living area has been developed in the front.



## PLATE V



scheme 131



The entrance door was set back to improve and emphasize the public access. The free flowing curved walk served to divide the area into two usable units. A part of one of these units was developed for children near the kitchen so the children could be supervised. A hedge along the walk and shrubs on the west of this area separated it from the garden area. Thus this play area, kitchen, study and vegetable area at the back constituted the work space.

The area on the right of the front walk was developed as the main living area. It was surrounded by trees and shrubs. A flower border along the walk enhanced the beauty of the terrace and added color to the garden. The terrace or patio itself is just an extension of the covered veranda. The large tree planted in front of the terrace would protect the sitting area from winter winds. The terrace has the additional advantage of getting winter sun in the afternoon when the garden would be used most.

The private living area constituted the bedrooms and the back veranda which will get morning sun in winter months. The trees along the southeast boundary line would channel the summer breeze to bedrooms. A small flower bed has been designed for this area.

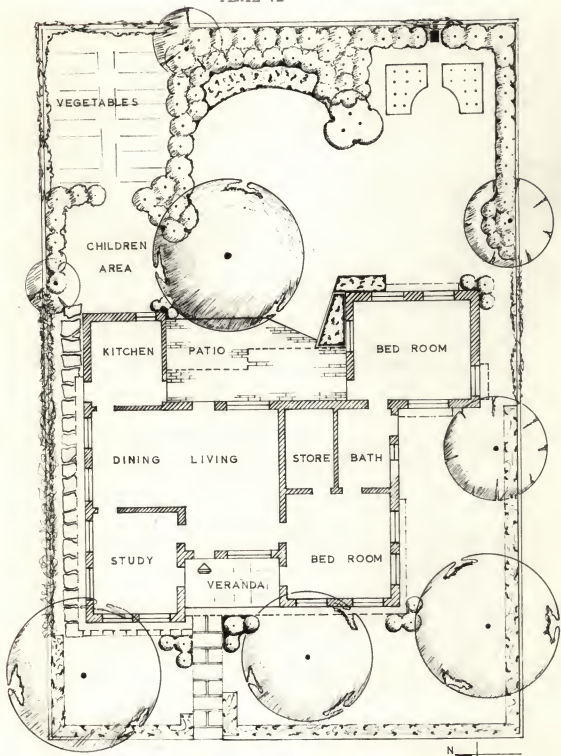
Scheme B-2. In this case the garden was developed at the back. The house design was the same as in Scheme B-1 except that it was reversed. Thus the kitchen faced East and the study West. The living room had the same exposure as in Scheme B-1. Bedrooms were not changed in their orientation.

A frontage of 15 feet had to be provided according to the zoning laws. Thus the public access consisted of a simple lawn, two enframing trees, a

EXPLANATION OF PLATE VI

A landscape plan of the home grounds in Scheme B-2 where the garden has been developed to the rear of the house.

PLATE VI



scheme 132

N  
scale 1 inch = 5 feet  
Anja

hedge along the boundary wall and simple foundation planting. A straight walk leads to the front door and creates a separate space for the children as a play area.

There was no change in the work space unit which embraced the kitchen, the study, the children's area, and the vegetable area.

The living area at the back consists of an informal unit enclosed by plantings. The patio which is an extension of the back veranda is adjacent to the living room. The patio would be protected from winter winds by a large tree planted near it. The rose garden, in one of the popular Moghul designs, and an annual border adjacent to the patio completed this unit.

Private living here also constituted the bedrooms and a small area outside. The trees along the boundary wall in this area would channel summer breeze to the bedrooms.

#### Planting Design

Plants are extremely gracious and lovely, persistent and adaptable, colorful and variable. They are sculptural and natural all at the same time.

Plants are kinetic and not static. Every plant changes in form and aspect from day to day and from season to season. Size is the basic organizing factor in plants. Plants should be kept in scale with the size of the area in which they are used and the objects they emphasize. Form is equally important in plant composition. Compactness, density, and habit of growth make a difference in the effectiveness of forms. Plant materials can be used simply or in groups or masses to accent, to define, to enframe or to beautify objects, areas and structures. Small trees have the advantage of proportion and scale and for attaining

maturity quickly. They add more dignity to the house. Shade trees are most important in all landscape work in regions of hot climate for their protection from summer sun.

Location and choice of the plant materials are closely related. If the outlook of a place is pleasant, only a small amount of plantation would do. If the surroundings be unattractive and the lot large enough, it is desirable to screen out the neighborhood by high border planting. Bay planting offer admirable location for flower beds while the promontories suggest the existence of something interesting beyond.

Shrub appearance improves, by introducing, at appropriate distances, accent points, tree-like shrubs or small trees. Hedges are used in many ways and serve many different purposes. A hedge may serve as an attractive background for other plantings, as a low ornamental border in front of shrub groups, or as an edging around formal flower beds.

A lawn is only of recent origin but has become a part of all landscape designs. It is the foreground or base of every landscape composition. A lawn gives continuity and unity to the garden. It gives a feeling of expanse to the property. It is pleasantly cool in hot weather and may be used as a sitting area or a play area.

Plant species were carefully selected for definite purposes and placed properly to achieve the best landscape composition. They were kept in scale with the area in which they were planted.

The plant materials used in the designs have been on the market for a number of years and are well adapted and somewhat resistant to diseases and insects. A large number of species of plants were used for variety and interest.

In Scheme A, the entrance was emphasized by planting a group of Acalypha, Achania and Cestrum nocturnum (Plate VII). This formed a simple foundation planting. An open lawn surrounded by Inga dulcis hedge on the southeast side, and a small hedge and a group of Murraya and Cassia shrubs on the northeast side provided attractiveness to the house and assisted in relating the building with the frontage. A Cassia nodosa tree planted in front would enframe the house when fully grown. A Jacaranda and a Cassia fistula tree on the southeast side of the house and a hedge along the boundary wall would reduce the effect of the hot winds to bedrooms and private area.

In winter the east side of the building would warm up earlier in the day, while the west side would stay warm longer in the afternoon. The north side would be cool in summer and the south side pleasant in cold weather. A Delonix regia tree planted adjacent to the patio, in Scheme A, would provide shade in summer months and warmth in winter months when it drops its leaves.

A multiple trunked tree of Callistemon next to the flower border would provide an artistic view from the patio and separate the flower garden from the remaining area. The way leading to the vegetable area has been lined with evergreen trees, Grevillea robusta. These trees would protect the patio from northwest winter winds. Clerodendron splendens has been planted to provide background to the stone seat from where the rose garden would be enjoyed. A dwarf hedge of Aerua sanguinea has been planted to enclose this seat on the back and sides.

Antigonon, Bougainvillea and Rhynchospermum have been planted along the driveway. Jasminum climbers were planted at the back of the vegetable area. These not only add beauty and variety to the area but eliminate the

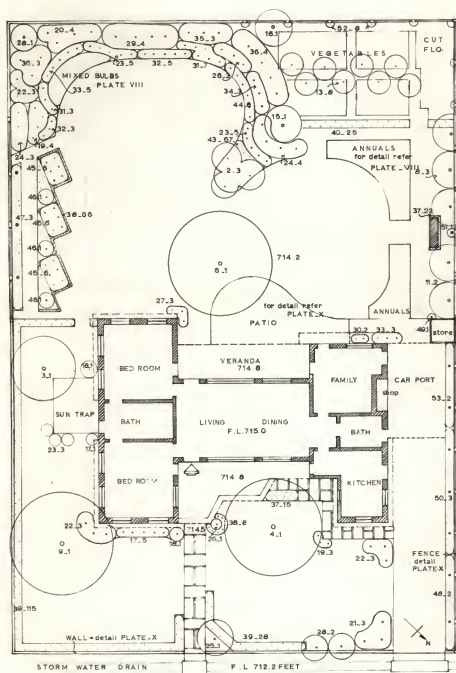
EXPLANATION OF PLATE VII

Planting plan of home grounds with plant key for  
Scheme A.

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## PLATE VII



## PLANTING PLAN SCHEME A

NOTE.- FIRST NUMBER INDICATES SPECIES, SECOND NUMBER INDICATES QUANTITY

## PLANT KEY

## TREES

- A.-ORNAMENTAL
- 1BAUHIA VARIABILIS
- 2CALLISTEMON LANCEOLATUM
- 3CASSIA FISTULA
- 4CASSIA NODOSA
- 5SCHORISIA SPECIOSA
- 6DELONIX REGIA
- 7EPYTHRINA 30' G.
- 8GREVILLEA R. BUSTA
- 9JACARANDA MIMOSAFOLIA
- 10LAGERSTRÖMIA THORELLI
- 11PLUMBICIA RENE
- Y SAPACA INDICA
- B.-FRUIT
- 13CINCA PAPAYA
- 14CITRUS AURANTIFOLIA
- 15CITRUS LIMON
- 16CITRUS PARADISI

## SHRUBS

- 17ACALYPHA MARGINATA
- 18ACHANIA CONZATI
- 19BARLERIA CRISTATA
- 20SALPINXIA FILICHERMA
- 21CASSIA ARTIMISOIDES
- 22CESTRUM NOCTURNUM
- 23DAEDALACANTHUS NERVOSUS
- 24EUPHORBIA PULCHERRIMA
- 25AMELIA PATENS
- 26HIBISCUS ROSA SINENSIS
- 27IXORA PARVIFLORA
- 28MURRAYA KOENIGI
- 29NERIUM OLEANDER
- 30PLUMBAGO CAPENSIS
- 31POLYGONUM CHINENSIS
- 32RUSSELLIA FLORIBUNDA
- 33RUSSELLIA JUNCEA
- 34SPIREA CORYMBOSA
- 35TABENAEMONTANA CORONARIA
- 36TECOMA STANS

## HEDGE PLANTS

- 37AERUA SANGUINEA
- 38ALTERNANTHERA
- 39INGADULCIS
- 40SISYRHUS TERRESTRIFOLIUS
- 41TECOMA STANS

## GROUND COVERS

- 42HEDERA HELIX
- 43TRADESCANTIA VIRIDIS

## ROSES

- 44 BUSH ROSES
- 45 HYBRID TEAS
- 46 STANDARD ROSES
- 47 CLIMBING ROSES

## CLIMBERS

- 48 ANTIQONAN LEPTOPUS
- 49 BIGNONIA VENUSTA
- 50 BOUGAINVILLEA
- 51 CLEMATIS VITICOLA SP. ENDOUS
- 52 JASMINUM PUBESCENS
- 53 RHYNCHOSPERMUM

Scale 1 inch = 5 feet

cost of construction of a high wall. They provide necessary protection and cut flowers for indoor decoration at different times of the year.

Seasonal flowers required a sunny location. Height and color combinations were considered carefully while planning the annual borders (Plate VIII, Fig. a). Tall annuals such as Dahlia, Cornflower and Antirrhinums were planted at the back, whereas Dianthus, Antirrhinums, Demorphotheea and Leptosyne were planted in the middle. Dwarf annuals such as Phlox, Alyssum, Brachycome, and Pansy were planted in the front. Transitional season annuals were more useful as they provided flowers at the time of dearth, i.e., September through October. Such plants would be grown in the vegetable area. This would facilitate normal cultural practices in beds for annual borders.

Perennials. Few perennials are grown in New Delhi, India, because a large variety of annuals are available in winter months, when the garden is really to be enjoyed. However, a few bulbous plants such as Narcissus, Spider Lilies, and Gladioli were planted in the south corner (Plate VIII, Fig. b.).

Roses. The situation for roses was selected away from the shade of trees and competitive tree roots. Rose beds could be arranged in several traditional ways, but a simple design as shown in Plate IX was considered more appropriate and well related to the garden design in Scheme A. A dwarf edging of Alternanthera around the rose beds provided an outline. Three standard roses were planted at the back of these rose beds. These, besides adding to the beauty, provided height to the planting. The climbers at the back of these standard roses provided screen and background display. Blue pansies planted in the beds of standard roses and climbers at the back would provide a pleasant combination

EXPLANATION OF PLATE VIII

Fig. a. A typical annual border used in Scheme A.

Fig. b. Mixed bulbs, Scheme A.

## PLATE VIII

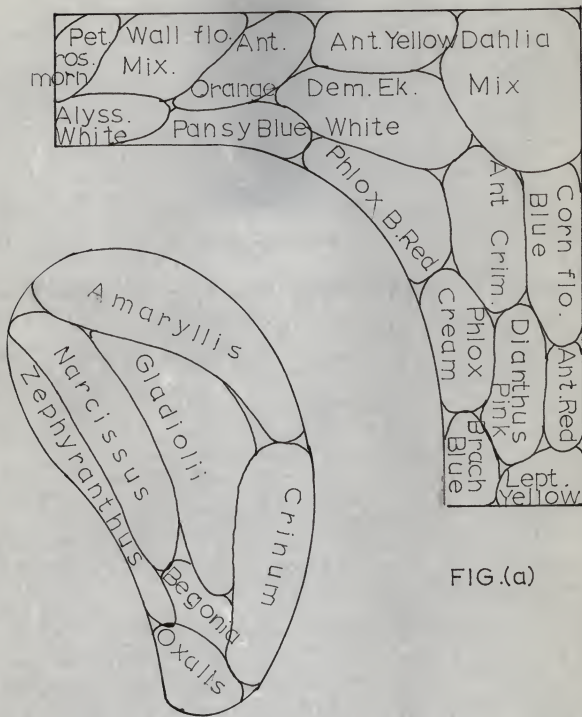


FIG. (a)

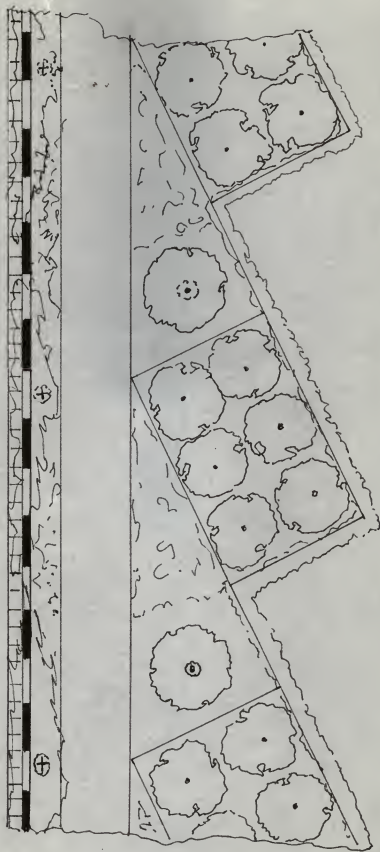
FIG. (b)

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MADE IN U.S.A.

EXPLANATION OF PLATE IX

Rose garden as used in Scheme A.

## PLATE IX



when in bloom.

#### PLANTING SPECIFICATION

All the plant material to be used shall be obtained from Government Sunder Nursery, New Delhi, India. The tree saplings will be obtained in earthen pots but the shrubs, roses, and vines may be obtained from ground or pots depending on the availability from the nursery. Ground covers shall be planted by obtaining cuttings from the nursery. Hedges may be planted by seeds. If plants are obtained for hedges, they shall be more or less uniform in height and age.

Grass roots shall be selected by scraping a lawn, that shows no mixture of any variety other than pure Cynodon dactylon, variety Bengal.

#### Trees

A circular tree hole four feet deep and four feet in diameter shall be dug. In digging, top soil shall be kept separate and used at the top while refilling the tree hole with a mixture of soil and well decayed manure in the ratio of one part of manure to eight parts of soil. A thorough watering shall be given to settle the filled tree hole. The sapling shall be planted two to three days after the watering has been given. A depression of about two inches shall be kept around the sapling to retain water. Care shall be taken not to bury the plant deeper than the original depth it had been in the container or soil.

In case the soil or ground where a tree hole is being dug turns out to be rocky, the rock shall be hauled out and replaced with good soil and manure. The dimensions of the tree hole then shall be increased to six feet in diameter and six feet in depth.

### Shrubs

The beds for the shrub borders shall be prepared by digging the soil three feet deep. Two feet of the dug soil shall be taken out and mixed with three inches of well decayed manure over the surface area before it is replaced. All stones over the size of half an inch shall be picked out during this operation. The beds shall then be irrigated for consolidation. When the soil is in workable condition, the beds shall be dressed and planted. The balled and burlap-wrapped plants shall be planted, leaving no air pockets.

Tall shrubs shall be planted six to eight feet apart, medium shrubs four to six feet apart, and dwarf shrubs two to three feet apart as shown in the planting plan (Plate VII).

### Hedges

The beds for hedges shall be prepared the same way as for shrubs except that the width of beds for hedges shall be two feet.

The plants shall be planted two feet apart in two rows. Make sure that no air pockets are left and plants are planted at their original depth. Casualties shall be replaced regularly. If seed sowing is to be done, seed shall be dibbled, end to end, in two rows, one foot apart. Thin and fill the gaps when seedlings are two to three inches high and ready for transplanting. Hoe and water at frequent intervals.

### Vines

Vines need pits two feet deep, prepared in the same way as tree holes except that the diameter of the pit shall be two feet. All vines



shall be planted near the posts and provided with necessary support for climbing. Soil shall be firmly packed around the plant by watering.

#### Ground Covers

One foot trenching shall be used for preparation of beds for ground covers. A small quantity of manure shall be mixed with the soil and cuttings planted six to eight inches apart.

#### Seasonal Flowers

Beds for seasonal flowers shall be prepared by digging the soil two feet deep and refilling the same mixed with two inches of well decayed manure over the surface area. All stones and bricks shall be picked out during this operation. Planting of seasonal flowers shall be done by seeds or seedlings depending upon their availability. The plan for seasonal flowers is shown in Plate VIII, Fig. a.

#### Roses

For preparation of beds for roses, the soil shall be entirely removed from the beds to a depth of three feet and stacked by the side of the beds. A six inch layer of well decayed manure shall be spread on the top of the stack. In refilling the beds the soil shall be cut away in thin slices and scraped into the bed to insure a thorough mixing. After the beds have been refilled, a good soaking of water shall be given for proper consolidation and to prevent sinking of the surface after planting. This should be completed at least five days before planting.

A careful watch shall be kept against the growth and encroachment of suckers which spring from the stock. They shall be severed at their origin as fast as they appear and not allowed to develop at the expense of the scion. Roses shall be pruned from mid-October to the end of October, when the temperatures are cool and there is no danger of a late shower. Care shall be taken to cut back close to a plump healthy eye. Dead wood, weak branches, and undesirable cross branches shall be cut.

#### Lawns

Ground for the lawns shall be prepared as carefully as that prepared for flower beds and borders. This shall consist in trenching the area to a depth of twelve to eighteen inches. Debris of all sizes shall be removed. The area, then left open to sun and air for a few days, shall be watered copiously so that soil may settle. After a week or so weeding of the area shall be done. This shall be followed by rough dressing and then the final dressing of the area. Manure at the rate of half an inch over the surface shall be spread onto the fine dressed area. Grassing shall be done by dibbling the roots of Cynodon dactylon, variety Bengal, three inches from center to center. Sprinkling of water shall follow immediately after planting and continued on alternate days in summer season till the roots have become established. The lawn having been established, careful and systematic attention shall be necessary for its upkeep. Care of the lawn shall consist in watering, mowing, weeding, and maintaining the fertility of soil. Fertility of the soil shall be maintained by top dressing the lawn with sludge manure or compost manure during March. If it is desired to apply ammonium sulphate an application of the fertilizer shall be given during November. Dry spreading and wet spreading

of this fertilizer shall be followed by watering.

## CONSTRUCTION SPECIFICATIONS

### Grading

Remove such bushes, masonry, and debris as shall be indicated.

The waste material, not of any monetary value in the execution of the work, shall be removed from the premises. Material from all abandoned roads, walks and walls shall be removed and used in the new foundation.

Top soil shall be removed to its full depth from all areas to be excavated or upon which a fill of more than twelve inches is to be made. It shall be spread on such areas as have already been subgraded. The depth of top soil to be spread on subgrade areas shall depend on plantings to be done on that area. It shall be at least six inches for lawns and groundcovers, eighteen inches for seasonal flowers, and two feet for hedges, shrubs and roses.

The level of the lawn shall be two feet higher than the floor level of the storm water drain outside the premises. The patio shall slope two inches to the lawn level. The level of the suntrap and walks shall be two inches higher than the level of the lawn around it.

### Boundary Wall

All brick masonry shall be laid in mortar. The foundation of the wall shall be fifteen inches deep under the wall but twenty-one inches deep under the post. Concrete in the ratio of 1:3:4 shall be used for the foundation which will extend three inches above the ground level as shown in Plate X, Fig. a. Broken bricks or crushed stones not exceeding

EXPLANATION OF PLATE X

**Construction details:**

- Fig. a. Boundary wall with fence.
- Fig. b. Floor plan of boundary wall.
- Fig. c. Angle iron post used in fencing.
- Fig. d. A typical section showing details of constructions for patio, suntrap, or walk.

PLATE X

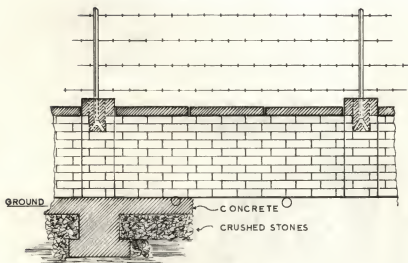


FIG.(a) BOUNDARY WALL WITH FENCE

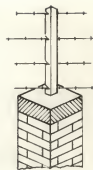


FIG.(c)  
ANGLE IRON POST

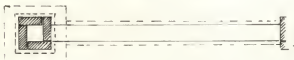
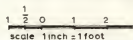


FIG.(b) FLOOR PLAN (a)



FIG. (d)  
TYPICAL SECTION FOR CONSTRUCTION  
OF PATIO, WALKS, SUN TRAP



CONSTRUCTION DETAILS

Alusa

one and one-half inch in size shall be used below the concrete layer under the wall throughout except under posts where concrete will be used. One foot square posts shall be constructed in the wall eight feet apart. Holes three inches in diameter shall be provided five feet apart at the ground level to facilitate runoff of excessive rain water. These holes shall be in that part of the wall that face the outside drains. A five strand barbed wire fencing supported by angle irons shall be provided as shown in Plates V, VI and VII.

Patio Suntrap and Walks. The ground shall be dug to a depth of six inches and compacted. Crushed rocks or broken bricks shall be used to a depth of four inches. A layer of two inches of river sand shall be spread over it to facilitate laying of flagstones (Plate X, Fig. d.).

#### CONCLUSION

It is the author's opinion that these landscape design plans presented for two lots should serve the ultimate purpose of providing a valuable guide for the average home owner in New Delhi, India. It is further hoped that this work will serve as a stimulus to other workers in landscape field for presenting more comprehensive and typical plans for different neighborhoods.

The author feels strongly that similar landscape plans should be prepared for release for the common man in every part of India.

ACKNOWLEDGMENTS

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## APPENDIX

THE STATE OF TEXAS,  
COUNTY OF DALLAS.I, \_\_\_\_\_,  
Notary Public in and for  
the State of Texas, do hereby  
certify that \_\_\_\_\_  
is the true and correct  
owner of \_\_\_\_\_  
and that \_\_\_\_\_  
is the true and correct  
owner of \_\_\_\_\_

## PLANTING KEY

Trees

## A. Ornamental

1. *Bauhinia variabilis*
2. *Callistemon lanceolatus*
3. *Cassia fistula*
4. *Cassia nodosa*
5. *Chorisia speciosa*
6. *Delonix regia*
7. *Erythrina indica*
8. *Grevillea robusta*
9. *Jacaranda mimosaeifolia*
10. *Lagerstroemia thorelli*
11. *Flumeria rene*
12. *Saraca indica*

## B. Fruit

13. *Cinea papaya*
14. *Citrus aurantifolia*
15. *Citrus limon*
16. *Citrus paradisi*

Shrubs

17. *Acalypha marginata*
18. *Achania conaxatii*
19. *Barleria cristata*
20. *Caesalpinia pulcherima*
21. *Cassia artimisioides*
22. *Cestrum nocturnum*
23. *Daedalacanthus nervosus*
24. *Euphorbia pulcherima*
25. *Hamelia patens*
26. *Hibiscus rosa sinensis*
27. *Isora parviflora*
28. *Murraya koenigii*
29. *Nerium oleander*
30. *Plumbago capensis*
31. *Polygonum chinense*
32. *Russelia floribunda*
33. *Russelia juncea*
34. *Spiraea corymbosa*
35. *Tabernaemontana coronaria*
36. *Tecoma stans*

Hedges

37. *Aerua sanguinea*
38. *Alternanthera amoena*
39. *Ingadulcis*
40. *Schinus terebinthifolius*
41. *Tecoma stans*

Ground Covers

42. *Hedera helix*
43. *Tradescantia viridis*

Roses

44. Bush roses
45. Hybrid teas
46. Standard roses
47. Climbing roses

Climbers

48. *Antigonon leptopus*
49. *Rignonia venusta*
50. *Bougainvillea*
51. *Clerodendron splendens*
52. *Jasminum pubescens*
53. *Rhynchospermum*

## LIST I. TREES SUITABLE FOR NEW DELHI, INDIA

A. Flowering Trees

<u>Botanical name</u>	<u>Common name</u>	<u>Flowering season and color of flowers</u>
<i>Bauhinia candida</i>	Kachnar	Dec. to March - White
<i>Bauhinia purpurea</i>	Kachnar	Sept. to Dec. - Purple
<i>Bauhinia variegata</i>	Kachnar	Dec. to March - Pink mauve
<i>Butea Frondosa</i>	Flame of the Forest	Jan. to March - Orange
<i>Butea monosperma</i>	--	Jan. to March - Brilliant orange
<i>Cassia Fistula</i>	Indian laburnum	Apr. to June - Yellow (deep)
<i>Cassia Grandis</i>	--	
<i>Cassia javanica</i>	Java cassia	May to June - Rose pink
<i>Cassia multijuga</i>	--	
<i>Cassia nodosa</i>	Pink "Mohur"	May to June - Bright pink
<i>Cassia renigera</i>	Burmese cassia	May to July - Pink
<i>Cassia Roxburghii</i>	Red cassia	May to June - Red
<i>Cassia siamea</i>	--	Summer and autumn - Yellow
* <i>Chorisia speciosa</i>	Mexican silk cottontree	Sept. to Oct. - Light yellow
<i>Crataeva religiosa</i>	Barna	April - Cream
<i>Delonix elata</i>	--	Apr. to June - White
* <i>Delonix regia</i>	Gulmoor	March to June - Orange red
<i>Dillenia indica</i>	Chalta	June, July - White pale
<i>Erythrina Blakei</i>	--	April - Bright scarlet

---

\* Rapidly growing trees.

Botanical name	Common name	Flowering season and color of flowers
<i>Erythrina indica</i>	Indian coral tree	Feb. to May - Scarlet
<i>Erythrina suberosa</i>	Indian coral tree	Feb. to May - Bright red
<i>Enterolobium saman</i>	Rain tree	Feb. to April - Lilac
<i>Gardenia</i> sp.	Champa	Feb., March Oct. to Nov. - White Yellow
<i>Gliricidia sepium</i>	Spotted <i>Gliricidia</i>	Feb. to March - Pale pink
* <i>Grevillea robusta</i>	Australian silver oak	April - Orange
<i>Guaiacum officinale</i>	--	March to April - Blue fading to pale
* <i>Jacaranda mimosaefolia</i>	Jacaranda	Feb. to May - Bright mauve
<i>Kigelia pinnata</i>	Sausage tree	April, May - Scarlet
* <i>Lagerstroemia Flos-Reginae</i>	Pride of India	May to Sept. - Pink
* <i>Lagerstroemia indica</i>	Crepe Myrtle	Apr. to Sept. - Pink, blue, white
* <i>Lagerstroemia Thorelli</i>	Queen's flower	June to Sept. - Pink mauve
<i>Milletia ovalifolia</i>	<i>Milletia</i>	March to April - Lilac
* <i>Milingtonia hortensis</i>	Indian cork tree	Aug. to Sept. - White Pink
<i>Peltophorum Roxburghii</i>	--	March to Apr. and Sept., Oct. - Yellow
<i>Plumeria</i>	Pagoda tree	Feb. to Oct. - White, Cream, Golden
<i>Saraca indica</i>	Asoka tree	Jan. to April - Bright orange
* <i>Spathodea campanulata</i>	Fountain tree	Mar. to Apr. - Orange crimson

---

\* Rapidly growing trees.

B. Shade Trees

<u>Botanical name</u>	<u>Common name</u>
* <i>Albizia lebbek</i>	The Siris
* <i>Albizia procera</i>	Safaid Siris
<i>Alstonia scholaris</i>	The Dita-bark tree
<i>Azedarachta indica</i>	The Neem tree
* <i>Cederla toona</i>	Toon
<i>Chukrassia tabularis</i>	The Chittagong wood
<i>Enterolobium timbouva</i>	Enterolobium
<i>Eugenia operculata</i>	The Jaman tree
<i>Ficus infectoria</i>	Pilkhan
<i>Ficus retusa</i>	Pilkhan
<i>Hardwickia binata</i>	Hardwickia
* <i>Melia indica</i>	Bakain
* <i>Peltophorum ferrugineum</i>	Peltophorum
<i>Pongamia glabra</i>	Bukh chan
<i>Putranjiva Roxburghii</i>	Putranjiva
<i>Schleitschera trijuga</i>	Kusum
<i>Tamarindus indica</i>	Imli
* <i>Terminalia Arjuna</i>	Bahera

C. Some Common Fruit Trees

<i>Cinca papaya</i>	Papaya
<i>Citrus aurantifolia</i>	Lime

---

\* Rapidly growing trees.

Fruit Trees contd.

<u>Botanical name</u>	<u>Common name</u>
Citrus aurantium	Sour orange
Citrus grandis	Pomelo
Citrus limon	Lemon
Citrus medica	Citron
Citrus mitis	Calamondin
Citrus paradisi	Grape fruit
Citrus reticulata	Mandarin and Tangerine
Citrus Sinensis	Sweet orange
Eriobotrya Japonica	Loquat
Ficus Benjamin	Fig
Punica granatum	Pomegranate

## LIST II. ORNAMENTAL SHRUBS SUITABLE FOR NEW DELHI, INDIA

A. Dwarf Shrubs

<u>Botanical name</u>	<u>Color of flowers and foliage</u>
Acalypha Hamiltoniana	Leaves green deeply margined with white
Acalypha marginata	Leaves margined with a thin line of coppery shade
Acalypha mosaica	Copper colored foliage
Alpinia rotundifolia	Pink flowers, leaves canna-like
Barleria cristata	Profusely flowering. White, yellow, crimson varieties available
Bryophyllum calycinum	Succulent. Propagates from leaves in moist condition

Dwarf Shrubs contd.

<u>Botanical name</u>	<u>Color of flowers and foliage</u>
Cestrum Parqui	Flower yellow all the year round
Daedalacanthus nervosus	Blue flowers in early spring
Eupatorium sp.	Pink flowers
Jacobinia sp.	Hardy plant with cream flowers
Jasminum sambac	Mogra double flowering
Lantana Sellowiana	Trailing sp. with mauve flowers
Mandina domestica	Graceful in shrub and as pot plant
Plumbago capensis	Pale blue flowers in profusion; likes semi-shady location
Polygonum	Flowers white in benches, leaves turn bronzy in winter
Rose (Bush)	Red color, free flowering
Russelia floribunda	Scarlet flowers
Russelia juncea	Scarlet tubular flowers through- out the year
Spiraea corymbosa	White flower in cluster during March
<b>B. <u>Medium size shrubs</u></b>	
Achandia Conasatii	Scarlet flowers are semi-open and hang downward
Alpinia Allughas	Pink; flower during rains
Buddleia asiatica	Silvery foliage, white flowers during Feb. and March
Buddleia Lindleyana	---
Caeslapinnia cristata	Yellow flowers
Cassia didymobotrya	Spikes of yellow flowers from Dec. to April



Medium size shrubs contd.

<u>Botanical name</u>	<u>Color of flowers and foliage</u>
<i>Cestrum nocturnum</i>	Flowers scented at night
<i>Duranta macrophylla</i>	White flowers borne in clusters
<i>Euphorbia pulcherrima</i>	Large red bracts from Nov. to Feb.
<i>Euphorbia pulcherrima rosea</i>	Pink form of the above
<i>Galphimia nitida</i>	Canary yellow flowers
<i>Gmelina asiatica</i>	Yellow flowers hanging downward
<i>Hamiltonia</i>	Pale lilac flowers
<i>Hibiscus schizopetalus</i>	Reddish flowers
<i>Hibiscus syriacus</i>	Double white flowers
<i>Holmskioldia sanguinea</i>	Brick red flower in cold season
<i>Jatropha pandurifolia</i>	Flowers scarlet
<i>Justicia gendarussa</i>	Orange scarlet flowers
<i>Myrraya Koenigii</i>	White flowers glossy leaves
<i>Tabernaemontana coronaria</i>	Chandni, deep green glossy foliage
<i>Tabernaemontana coronaria flora pleno</i>	Double white variety
<i>Tithonia tagetaeflora</i>	Single yellow flowers
<i>Vitex Negundo</i>	Purple flowers
<i>Woodfordia floribunda</i>	Free flowering in spring

C. Tall Shrubs

<i>Achania malvaviscus</i>	Bright scarlet shrubs
<i>Arundo Donax</i>	Handsome grass-like shrub
<i>Arundo Donax variegata</i>	Leaves ribboned white and green
<i>Bambusa aurea striata</i>	The golden Bamboo, stems ornamented with bright golden stripes

Tall Shrubs cont.

<u>Botanical name</u>	<u>Color of flowers and foliage</u>
<i>Buddleia hybrida</i>	Reverse of leaves silvery; flowers cream and scented
<i>Buddleia madagascariensis</i>	Orange flowers
<i>Caesalpinia pulcherrima</i>	Attractive orange flowers during hot weather and rain
<i>Callistemon Lanceolatum</i>	Bottle brush; crimson brush-like flowers. Branches drooping
<i>Caryopteris Wallichiana</i>	Blue flower at the end of cold season
<i>Cassia laevigata</i>	Bunches of yellow flowers
<i>Dombeya Gigiantia</i>	Pink flowers in late autumn
<i>Dombeya Mastersii</i>	White flowers in clusters
<i>Gardenia sp.</i>	--
<i>Hamelia patens</i>	Flowers tubular orange throughout the year. Foliage ornamental in cold weather
<i>Jasminum Pubescens</i>	White flowers throughout winter
<i>Lagerstroemia indica</i>	Pink, deep pink, white, mauve varieties. Flowers early summer to rainy season
<i>Murraya Exotica</i>	Cream flowers, glossy foliage
<i>Nerium Oleander</i>	Single or double - various colors
<i>Nyctanthus arbor tristis</i>	Sweet scented flowers
<i>Phyllanthus myrtifolius</i>	--
<i>Plumeria sp.</i>	Various colors
<i>Schinus terebinthifolius</i>	Foliage ever green
<i>Tecoma stans</i>	Yellow flowers
<i>Thevetia nerifolia</i>	Yellow flowers

## LIST III. PLANTS SUITABLE FOR HEDGES FOR NEW DELHI, INDIA

Botanical name	Description
<i>Aerua sanguinea</i>	Suitable for dwarf hedges
<i>Alternanthera amoena</i>	Suitable for dwarf hedges
<i>Clerodendron inerme</i>	Suitable for wide hedges
<i>Dodonea viscosa</i>	Quick growing, responds to over watering
<i>Duranta macrophylla</i>	Needs enough water
<i>Duranta Plumieri</i>	Needs enough water
<i>Haematoxylon</i> sp.	Thorny, quick growing
<i>Ingaduleis</i>	Thorny, susceptible to white ant attack, otherwise very good
<i>Lawsonia alba</i>	Quick growing
<i>Murryaya Koenigii</i>	Beautiful shining leaves
<i>Parinsonia aculeata</i>	Drought resistant
<i>Phyllanthus ayrtifolius</i>	A good hedge plant
<i>Prosopis</i> sp.	Thorny; drought resistant
<i>Schinus terbinthifolius</i>	A good hedge plant
<i>Tabernaemontana coronaria</i>	White flowering, shining leaves
<i>Tecoma stans</i>	Yellow flowering, fast growing
<i>Tecoma stans</i> var. <i>incisa</i>	Yellow flowering, fast growing
<i>Thevetia neriiifolia</i>	Not damaged by rats; drought resistant

## LIST IV. SOME CLIMBERS SUITABLE FOR NEW DELHI, INDIA

<i>Adenocalyma calycina</i>	Hardy climber; yellow flower
<i>Antigonon leptopus</i>	Vigorous growth; deep flower
<i>Antigonon Apearl</i>	Crimson Sandwich Island cree

## LIST IV. CLIMBERS Contd.

Botanical Name	Description
<i>Beaumontia grandiflora</i>	Large white flowers
<i>Rignonia Tweediana</i>	Hardy climber; yellow flower
<i>Rignonia magnifica</i>	Mauvy purple flowers
<i>Rignonia venusta</i>	Quick growth; orange flower
<i>Bougainvillea formosa</i>	Retains dead flowers
<i>Bougainvillea glabra</i>	Brooms throughout; mauve var.
<i>Bougainvillea H. C. Buck</i>	Most attractive, mauve pink
<i>Bougainvillea Lady Willingdon</i>	Rosy pink
<i>Bougainvillea Lord Willingdon</i>	Pale brick-red
<i>Bougainvillea Louis Wathen</i>	Rapid grower, orange flower
<i>Bougainvillea Mary Palmer</i>	White and pink mixed flower
<i>Bougainvillea Mrs. Butt</i>	Free-flowering, deep cerise
<i>Bougainvillea Princess Margaret R.</i>	Mauvy pink flowers
<i>Bougainvillea Enid Lancaster</i>	Yellow
<i>Bougainvillea splendens</i>	Foliage hairy; flowers purple
<i>Clematis paniculata</i>	Vigorous, creamy scented flowers
<i>Clerodendron splendens</i>	Beautiful climber, scarlet
<i>Cryptostegia grandiflora</i>	Vigorous, pink mauve
<i>Derris scandens</i>	Foliage glossy green
<i>Hiptage madhablota</i>	Quick growing, pale yellow
<i>Jasminum auriculatum</i>	Pure scented flowers
<i>Jasminum chrysantha</i>	Yellow flowers
<i>Jasminum pubescens</i>	Foliage hairy; flower scented
<i>Jasminum officinale</i>	White fragrant flowers

## LIST IV. CLIMBERS Contd.

<u>Botanical name</u>	<u>Description</u>
<i>Jacquemontia violacea</i>	Blue, free flowering climber
<i>Lonicera japonica</i>	Vigorous flower, light yellow
<i>Petreaea volubilis</i>	Vigorous violet blue flower
<i>Furana paniculata</i>	Rasplant grower; white flower
<i>Pothos aurea</i>	Yellow striped leaves
<i>Quisqualis indica</i>	Rapid growth; fragrant flower
<i>Rhynchospermum jasminoides</i>	Foliage glossy; white flower
<i>Smilax species</i>	Foliage ornamental
<i>Stigmaphyllon ciliatum</i>	Yellow flowers
<i>Tecoma grandiflora</i>	Orange red large flowers
<i>Tecoma radicans</i>	Orange red small flowers
<i>Thunbergia grandiflora</i>	Large mauve flowers

## LIST V. ANNUALS SUITABLE FOR NEW DELHI, INDIA

A. Winter Annuals

<u>Dwarf</u>	<u>Medium</u>	<u>Tall</u>
<u>White</u>		
<i>Alyssum maritimum</i>	<i>Acroclinium album</i>	<i>Ammimajus</i>
<i>Brachycome alba</i>	<i>Arctotis Grandis</i>	<i>Antirrhinum</i>
<i>Iberis umbellata</i>	<i>Cosmea bitinnata</i>	<i>Centaurea moschata</i>
<i>Verbena hybrida</i>	<i>Dianthus sinensis</i>	<i>Chrysan themum carinatum</i>
<i>Viola hybrida</i>	<i>Gypsophila elegans</i>	<i>Countesse De Chambourd</i>
	<i>Linaria Grandiflora</i>	
	<i>Methiolsa incana</i>	<i>Clarkia pulchela</i>

Winter Annuals Contd.

<u>Dwarf</u>	<u>Medium</u>	<u>Tall</u>
<u>White contd.</u>		
	<i>Patunia hybrida</i>	<i>Delphinium consolida</i>
	<i>Phlox Drummondii</i>	<i>Dimorphotheca Eklonis</i>
		<i>Nicotiana Affinis</i>
<u>Apricot</u>		
<i>Antirrhinum</i>	<i>Antirrhinum</i>	<i>Antirrhinum</i>
<i>Calendula</i>	<i>Dimorphotheca aurantiaca</i>	
<u>Yellow</u>		
<i>Antirrhinum</i>	<i>Antirrhinum</i>	<i>Antirrhinum</i>
<i>Calendula Officinalis</i>	<i>Calceolaria</i>	<i>Chrysanthemum carinatum</i>
<i>Phlox</i>	<i>Centaurea flava</i>	
<i>Tropaeolum Lobbianum</i>	<i>Collomia coronata</i>	
<i>Viola hybrida</i>	<i>Cercopsis</i>	
	<i>Leptosyne maritima</i>	
	<i>Lupinus luteus</i>	
<u>Red, Orange, Purple, Crimson, Scarlet</u>		
<i>Brachycome</i>	<i>Antirrhinum</i>	<i>Antirrhinum</i>
<i>Calendula</i>	<i>Cacalia coccinea</i>	<i>Helichrysum</i>
<i>Phlox</i>	<i>Cheiranthus cheirri</i>	<i>Linum</i>
<i>Verbena</i>	<i>Clarida</i>	<i>Nicotiana</i>
<i>Viola</i>	<i>Dosmos</i>	
	<i>Dianthes</i>	
	<i>Dimorphotheca aurantiaca</i>	

Winter Annuals Contd.

<u>Dwarf</u>	<u>Medium</u>	<u>Tall</u>
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Red, Orange, Purple, Crimson, Scarlet, Contd.

Linaria

Mathiola

Papaver

Petunia

Pink

Antirrhinum

Antirrhinum

Antirrhinum

Phlox

Clarkia

Centaurea

Collomia coccinea

Delphinium

Dianthus

Saponaria

Cypsophila

Linaria

Lupins

Mathiola bicornis

Poppy

Petunia

Blue, Violet, Lilac

Ageratum

Antirrhinum

Anchusa

Alyesum

Linum

Centaurea cyanus

Brachycome

Lupins

Delphinium

Cynoglossum

Mathiola incana

Echium

Nigella

Lupinus texanus

Petunia

Winter Annuals Contd.

Dwarf

Medium

Tall

Blue, Violet, Lilac, Contd.

Nemesia

Phlox

Viola

Mixed

Antirrhinum

Amaranthus

Althea hybrida

Nemesia

Antirrhinum

Antirrhinum

Phlox

Clarkia

Chrysanthemum  
  carinatum

Tropaeolum nanum

Coreopsis

Dahlia hybrida

Verbena

Dianthus

Delphinium

Viola

Linaria

Mathiola

Petunia

Poppy

Shade Loving

Cineraria hybrida

Salvia splendens

B. Summer Annuals

Name	Color of flowers
Gaillardia grandiflora	Orange, sulpher yellow mixed
Gomphrena globosa	Purple pink rosea white
Portulaca mixed	Mixed



Summer Annuals Contd.

<u>Name</u>	<u>Color of flowers</u>
Vinca	Rosea white
Zinnia hybrida	Mixed
Zinnia linearis	Yellow

C. Rainy Season Annuals

Cosmos sulphureus	Yellow and orange
Impatiens (Balsam)	Pink various
Toreniafourneri	Violet

D. Transitional Season Annuals

Callistephus sinensis	Various
Celosia plumosa	Mixed
Ipomoea rubros coerulea	Blue
Ipomoea versicolor	Orange
Tithonia speciosa	Orange

Perennials and Bulbs

Amaryllis	Crinum	Lilium trigrinum
Begonia	Dahlia	Narcissus
Canna	Gladiolus	Oxalis
Chrysanthemum	Geranium	Ranunculus
Caladium	Haemanthus	Zephyranthes rosea
Colocacia	Lilium longifolium	Zephyranthes yellow

Plants Suitable as Ground Covers

<u>Botanical Name</u>	<u>Common name</u>
Aerua sanguinea	Red leaved Aerua
Hedera helix	English ivy
Lantana sellowiana	Trailing Lantana
Oppiopogon intermedius	Grass like plants
Plumbago Capensis	Cape Plumbago
Tradescantia viridis	Wandering yew
Viola odorata	Sweet viola
Yucca Filamentosa	Asamsneedle yucca
Zephyranthes	Zephyranthes Lily

## LIST VI. POPULAR ROSES SUITABLE FOR NEW DELHI, INDIA, ACCORDING TO COLORS

<u>White Roses</u>	<u>Light Pink, contd.</u>	<u>Yellow</u>
Madame Jules Bouche	Madame Butterfly	Golden Dawn
White Ensign	Ophelia	Golden Glean
	Pharisaer	Goudvlinder
		McGredy's Yellow
<u>Cream Shades</u>	<u>Deep Pink</u>	<u>Maize and Buff</u>
Clarice Goodacre	Clovelly	Golden Ophelia
McGredy's Ivory	Picture	Lady Hillingdon
<u>Light Pink</u>	<u>Copper Shades Pink</u>	<u>Roselandia</u>
Admiration	Lady Pirrie	Trigo
Dean Hole	Los Angeles	
Gorgeous	McGredy's Wonder	
Lady Love		
Madame Abel Chatenay		

## LIST VI. ROSES Contd.

Orange and Apricot

Autumn

Girona

Lauda

Margaret McGredy

President Herbert Hoover

Talisman

Dark Red

Advocate

Bedford Crimson

Hadley

Hawmark

William Orr

Bright Red

General MacArthur

K. of K.

McGredy's Scarlet

Sir David Davis

The General

## LIST VII. PLANTS SUITABLE FOR INDOOR DECORATION FOR NEW DELHI, INDIA

A. Shade Loving Plants

Asparagus plumosus

Asparagus sprengeri

Coleus blumei

Cyperus alterifolius

Diplazium pictum

Eragrostis australis

Ferns

Gymnura aurantiaca

Kalanchoe fortunei

Monstera deliciosa

Ophiopogon intermedius

Pilea muscosa

Rhoeo discolor

Ruellia salicifolia

Tradescantia viridis

B. Sun Loving Plants

Aerua sanguinea	Cereus species
Agave America	Chlorophytum elatum
Agave santula	Furcraea gigantea
Aloe barbatus	Opuntia sp.
Cactus sp.	Ruscus hypophyllum

LIST VIII. VEGETABLES SUITABLE FOR AVERAGE HOME GROUNDS FOR NEW DELHI, INDIA  
(Common names only)A. Winter Vegetables

Beet Root	Mustard
Cabbage	Onion
Carrot	Peas
Cauliflower	Potatoes
Egg plant	Radish
Knol Khol	Tomato
Lettuce	Turnip
Methi (Fenugreek)	Spinach

B. Summer Vegetables

Arvi	Lady's Finger
Bottle gourd	Musk melon
Chilies	Pumpkin
Cucumber	Sag-Kulfa
Egg plant	Squash
Indian corn	Sweet potatoes
Karela (Bitter Gourd)	White gourd

LANDSCAPE DESIGNS FOR VARIOUS SIZE HOMES  
AT NEW DELHI, INDIA

by

KRISHAN GOPAL AHUJA

B. Sc., (Agri.) Punjab Agriculture College  
and Research Institute, Lyallpur, India, 1944

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AN ABSTRACT OF A THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Horticulture

KANSAS STATE UNIVERSITY  
OF AGRICULTURE AND APPLIED SCIENCE

1960

This thesis was designed to present specific landscape plans for different size homes in Delhi State, India.

Landscape designs of different countries of the world have a bearing on one another. These designs have developed under different conditions of climate, vegetation and topography. These are a source of inspiration to present day study.

The present study deals with landscape designs of two lots, one measuring 85 feet by 120 feet, named Scheme A and the other 60 feet by 90 feet, named Scheme B. The lots were selected in a colony that is situated at a good distance from New Delhi city. An area of over five hundred acres has been subdivided into about two thousand residential lots with provision for commercial lots, parks, schools and public buildings. The area is devoid of trees. The soil of the area is sandy loam and the subsoil water is fit for domestic use.

The two lots selected are located in different blocks. The landscape plans include planning and orientation of the houses on the lots with special emphasis on the division of the lots into various units such as the public access, work space, general living and private living. Consideration was also given to climate control, planting and grading. The public access is designed in such a way as to make the approach pleasant and give the house an attractive setting. The work space is strictly utilitarian. The general living and the private areas have been provided with garden accessories and comforts for outdoor living.

Scheme A has been developed for a family with three children of school age. The family is interested in enjoying the out-of-doors and gardening. The garden has been developed at the rear of the house. In Scheme B the garden has been developed for the average family with husband and wife and

four children between the ages of five and twelve years. This family does not maintain a car but is interested in outdoor life and gardening. Garden has been developed in two different ways referred to as Scheme B-1 and Scheme B-2. In Scheme B-1 the house was set back and the garden developed in front. In Scheme B-2 the garden has been developed at the back. In this case the house has been set back fifteen feet as provided under zoning laws.

Planting design for Scheme A has been worked out in detail.

Planting and construction specifications have been included.

Multipurpose lists of plant material suitable for various purposes and locations have been appended.