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JUNE, 1906

No. 6

House & Garden



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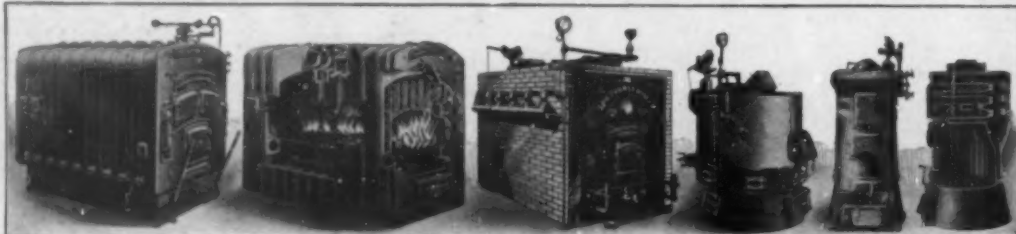
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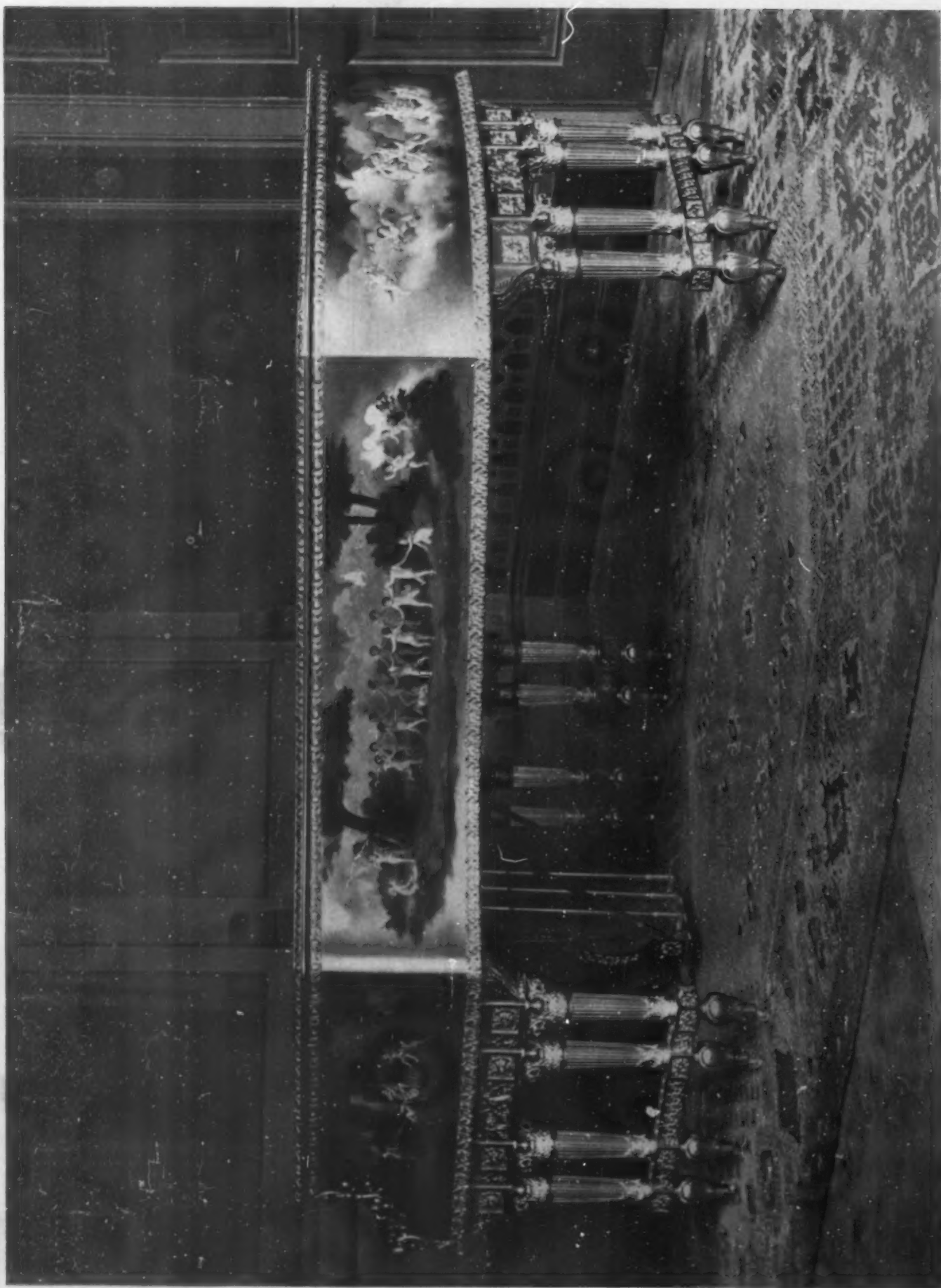


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CHICKERING GRAND IN GOLD CASE. PAINTINGS BY GENGOULT

House and Garden

VOL. IX

JUNE, 1906

No. 6

THE EVOLUTION OF THE PIANO

BY K. L. SMITH

THERE hangs in the splendid Crosby-Brown and Drexel collections of musical instruments in the Metropolitan Museum of Art, an odd-looking, discolored piece of bronze, battered and worn by time which at first glance has little significance. There is a handle, a rim and three pieces of old bronze held loosely in place. This modest affair, resurrected from some ancient city's site is a sistrum, used in the worship of Isis and is one of the earliest forms of musical instruments of which any record remains. From this primitive instrument to clavichords, virginals and spinets the road is a long one but man's inventive genius has bridged the way until now there is little left to suggest in the perfecting of instruments to secure notes.

In all ages the musical instruments, because expressing alike religion and passion, have possessed peculiar significance. The koto of Japan, the Celtic harp, the Italian violin, the cosmopolitan piano each is typical of the race which originally fashioned it. Since man first became a living soul he has been breathing the life that vivifies into his works and in none of the arts has he more nearly succeeded than in the piano.

The primitive instruments of the world were the whistle and rattle, later came a pipe with finger holes and the use of the bowstrings arose from the hunter's habit of fondling his weapon. The first savage who found his bowstring sound louder when attached to a block of wood than when simply stretched by his bow, crossed in one bound the chasm between barbarism and art and ever since a few basic principles have been applied by humanity at large. As a result, among modern inventions Italy has perfected the violin, France the harp, Spain and Italy the guitar and many countries the piano; for artisans, musicians and literati have all worked at the last. Whether Italy built on the German and the German on the French is not known; possibly the piano forte was invented in all these countries simultaneously, but the credit is given to Italy.

It seems probable that the immediate ancestor of the piano is the monochord of the Middle Ages, once used in training voices in convents. It is supposed that Pythagoras found the monochord in Egypt,

where its principle of a stopped string upon a finger board had been known, as monuments testify, long before his time and it may also have been known in Babylonia. Later the monochord became in Greece, where polychord instruments had prevailed and in Europe generally, the rule for the measurement of intervals. A long box of wood, bridged at either end, with a central movable bridge over which was stretched a catgut string—this was the monochord. Early historians say it is not known who invented the clavichord by adding keys to the monochord, but it is certain the latter instrument was gradually transformed into a polychord with four strings and a keyboard and the clavichord being a development of the monochord long bore the same name. As the early clavichords were strung with wires of equal lengths the instrument was long regarded as a set of monochords.

As all various instruments have in common the apparatus of levers and touch keys for eliciting sound, the applications of keys to shorten strings was attempted with instruments of the hurdy-gurdy class and in this monochord the interval measure was stopped by means of little bridges, up to A. D. 995. While the spinet, which was used later, followed the organ closely in the disposition of the keyboard, the clavichord adhered to the conception of its inventor Guido, who adapted the keyboard to a polychord stringed instrument. The oldest dated clavichord known is of Italian origin, inscribed A. D. 1547.

It was in the Elizabethan age that the clavier or clavichord began for the first time to play a part in the world. Circumstances seemed to favor it for a certain dependence upon art came upon the society of that day. The heavy churchiness of the organ and the light secularity of the lute needed to unite themselves in an instrument sufficiently flexible to represent and follow with some degree of ease the voice parts and embrace the whole tonic scale so as to expand the limits of the voice. The clavier offered itself for this and as a light and convenient instrument. It was in England that the clavier first recognized its mission for the orchestra and chamber music and in London we find the first clavichord books that were ever published. Among them is a virginal book of



CRISTOFORI PIANO IN METROPOLITAN MUSEUM OF ART, NEW YORK

the Earl of Leicester and another of Lady Nevil.

The clavichord does not admit of the delicacies of touch which delight us in the pianoforte but one could cite a long list of distinguished names of men who labored with success at this instrument. A hundred attempts were made to make it more impressive for here too the eighteenth century was the experimental preparation for the felicitous successes of the nineteenth. Many kinds of clavier were invented. Some with pedals are mentioned while others had two keyboards and a separate pedal board. In Germany the chromatic scale clavichord was used and boxwood preceded ivory as the material of the lower keys. In elaborate instruments tortoiseshell and mother-of-pearl inlays were not infrequent and this instrument has always been valued by musicians for its tender timbre. Excellent specimens can be seen in collections, notably in that of Mr. Morris Steinert of New Haven, Conn.

The clavier for which English musicians wrote was called a virginal or spinet, names which have been given to the same instrument. Virginal was the English name for spinet according to the definition of a plectrum keyboard instrument with no more than one string to a note. Inasmuch as the name was current during the reign of Henry VII. it cannot

be assumed that after the flattering fashion of the time it was so called in honor of the virgin queen. Possibly the name is due to the fact that the small size of the instrument made it especially suitable for young girls, for the same name prevailed in Italy. The origin of the name of spinet has been attributed either to the introduction of little quill points or to a Venetian maker, who signed his instruments Giovanni Spinette but the origin of the name is obscure, partly because of its age. In inventories of the instruments of Queen Isabella, spinets are reckoned as old. Queen Elizabeth was an accomplished player and her father, Henry VIII., not only played upon the virginal but had a professional vir-

ginist attached to his court. Mary Queen of Scots was proficient on this instrument. A virginal that was associated with Queen Elizabeth is now in South Kensington Museum and bears among its elaborate decorations the queen's coat of arms.

An enthusiastic admirer of Bach, who possessed a collection of musical instruments, contends that it is only upon the instrument for which a piece is written that a correct interpretation can be obtained. In the Vienna Conservatory of Music the Bach school is studied upon the instruments for which they were written. Many of these old style instruments have been exhibited in this country and Europe, among them the clavichord used by Mozart, formerly in the Mozarteum at Salzburg, and a harpsichord played by the fair Nellie Curtis has been exhibited at several Expositions.

Mrs. Crosby-Brown has provided the New York Metropolitan Museum with a Flemish spinet painted with the story of David's victory over Goliath. A spinet made by Haward can also be seen there, pathetic in its old timeliness and a double spinet by Grovvelus ornamented with paintings and inlays is also there. With the restoration in England the name virginal went out and the name of spinet was universally adopted. The wing form came in vogue

The Evolution of the Piano

and Haward and Hitchcock appear to have been eminent makers. The latter had the honor of supplying Samuel Pepys.

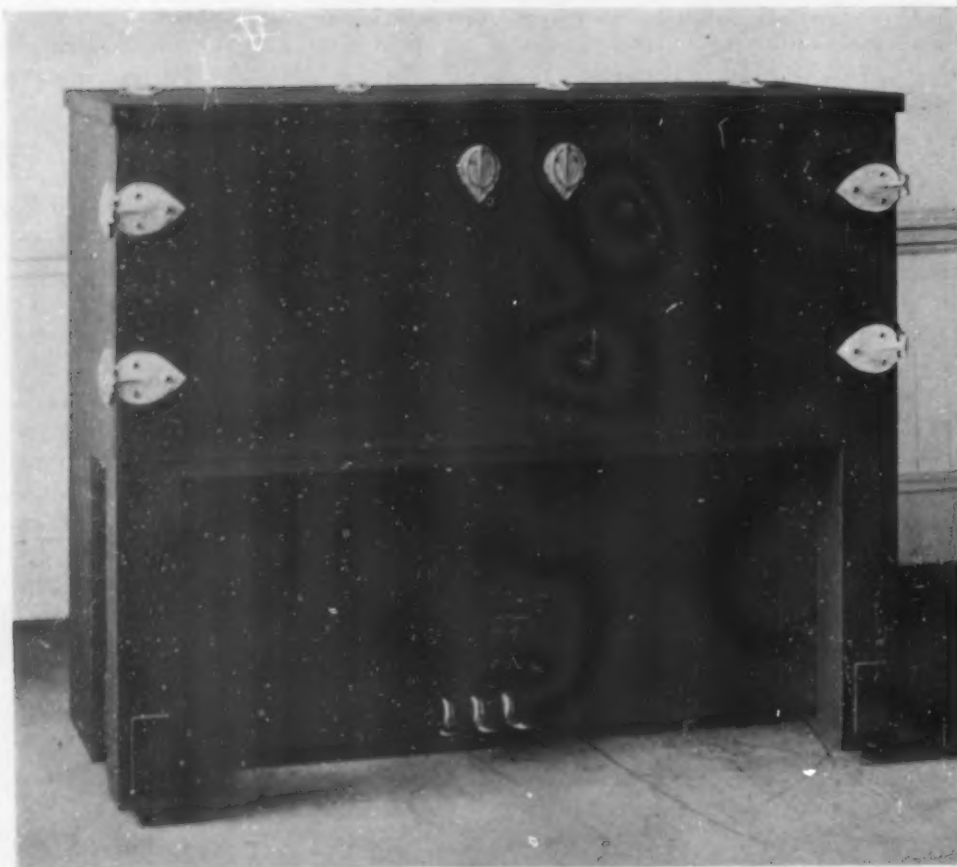
Coincident with the introduction of the spinet appeared the harpsichord. The harpsichord is in fact a double, triple or quadruple spinet, the sound being excited by a jack plectrum the same as in the spinet. During the two hundred years after its introduction the harpsichord underwent many changes and it was not uncommon to adorn them with elaborate designs. The palm for excellence in harpsichord making is due the famous Ruckers family of Antwerp. One of these harpsichords is preserved in Windsor Castle and is of interest from the fact that it is believed to be the instrument mentioned in Handel's will. Bach liked the harpsichord and used one with two registers. A harpsichord was made by

Clementi, the great pianist and predecessor of the Collard firm, as late as 1802, the last year that Beethoven's Sonatas were published for that instrument.

It was a harpsichord maker, Bartolommeo Cristofori, in the employ of the Duke of Tuscany who, in 1711, made the first successful piano—Marius of France and Schroeter of Germany producing less happy models after. Though the invention of this Paduan harpsichord maker had sonatas composed for it and it was called pianoforte because it could be played piano as well as forte, it was soon forgotten. Cristofori as curator of Ferdinand dei Medici had a splendid collection of Belgium, French and Italian instruments to look after, the study of which undoubtedly aided him in his invention. There are two grand pianos of Cristofori still existing. One decorated in gold and Chinese figures is in Florence,



THREE BANKED HARPISCHORD IN METROPOLITAN MUSEUM OF ART



PIANO CASE BY WILL BRADLEY, CLOSED

the other of four octaves in a simple case like the usual Italian harpsichords is in the Crosby-Brown collection. Cristofori's pianoforte although showing primitive technique was the forerunner of the present system, yet so unable was it to give desired results, that the inventor could never have dreamed that three hundred years later a monument would be erected to him in the Santa Croce of Florence.

A pupil of Cristofori made a piano in 1730 for the Queen of Spain but the merit of introducing the invention into Germany is due to Silbermann, the great clavichord maker of Dresden who worked so hard at the perfecting of the pianoforte that from him the gradual displacement of the clavichord may be dated. He had a good master for this difficult work—Sebastian Bach. When he brought the first model to Bach the latter found it too weak in the treble. Silbermann, who was stimulated by this criticism, sold no more but continued to work until the "old Bach" gave unqualified commendation.

Frederick the Great ordered five pianos for his royal palaces and there they remain at this present time undisturbed, as when the king left them. Heretofore only the grand piano had been made but to Frederici in Germany is accredited the invention of the square piano in 1768. The seven years' war temporarily put an end to Saxon pianoforte making and many of the workmen found their way to England. Bach, arriving in London in 1759, appears

to have played on a piano of English make. So energetic, however, had Germany been that the great piano manufactories of the world can all be traced back to German origin.

In the meanwhile various modifications were constantly introduced. Improvements were added by Backers and Johann Stein of Augsburg, whose daughter was an accomplished pianoforte maker and a friend of Beethoven, who had expressed a preference for these pianos. Indeed factories alone would never have brought out the final triumph of this instrument if there had not been virtuosos to play it. Clementi in England and Mozart in Germany really won the decisive victory, so that a piano has become an essential part of life, and an active musical centre that gives the stamp to one's whole conception of music. It is interest-

ing to note this interdependence of manufacturers and artists in all times. It was in Pleyel's concert-room that Chopin loved to play; in America the Handel and Haydn Society of Boston has been assisted by the Chickering; in New York, Steinway Hall was the home of our most famous orchestras and these firms have brought a long list of artists, Joseffy, Essipoff, Paderewski and others to this country, for without the assistance of the great piano manufacturers no artist can expect to make a successful tour. The history of this noble instrument is woven into the lives of many men and reaches from ocean to ocean. To-day Bechstein's factory stands at the head of German manufacturers but there are also Duesen, Bluthen and others; Bosendorfer in Vienna, Knabe in Baltimore and Steinway in New York have but added to the renown of Chickering in Boston. What a goodly array. In one hundred years the instrument has advanced to unexampled perfection and a network of factories is spread over the whole world. Although a large majority of the builders buy their actions ready made to save expense, the great houses make their own, and each possesses its own special features, usually the experience of generations.

All pianos without distinction as to period, country or maker have from necessity certain structural features. The strings, wrest pins, sound-boards or belly, bridges, keys, intermediate mechanism, ham-

The Evolution of the Piano

mers and dampers are all essential. The arrangement of keys is the sacred tradition of centuries, for it presents the tone system, as it were, lengthways. Our keyboards are constructed entirely on the C major scale, the tones outside this scale being thrown on the black keys. Attempts have been made to form a regular chromatic scale of twelve keys and a new keyboard invented by Paulson Janko has been sanctioned by some of the piano houses of Berlin and Leipsic.

When a man sets about making a piano he lays a sheet of paper the size of his projected instrument on a drawing table and outlines a plan. On that plan is shown every detail of the future instrument. In our best instruments there are as many as forty thousand different pieces and one instrument is months in the hands of the workmen after the seasoned wood leaves the lumber yards. The outside of a piano is usually veneered, concealing the solid wood which may be of mahogany, black walnut or oak. Steinway build their pianos out of continuous layers of maple and oak bent into form by metal processes. In order to obtain suitable wood this firm possess in Astoria, opposite New York, great estates, the timber of which covers more than one hundred and fifty acres. This firm also owns saw mills, and large stores, and water basins for keeping the logs from cracking. This care, with the matchless wood,

revolutionizes the system of building and allows the construction of cases in accordance with the laws of acoustics. Bechstein, for instance, in one of his latest models has twenty-two thicknesses of wood in the curved sides and end. He, too, has estates as well as factories and the wood passes through the yards to the dry room, in store cellar and finally in storehouse. Two important rooms are devoted to steam power where all the metal work is carried on. This firm largely supplies Europe and they make 2500 pianos yearly.

Up to 1820 pianos were made like spinets with the weakest part at the treble end. To obviate this a metal was added to the wood structure which was modified by successive makers. Jonas Chickering of Boston carried this invention further and patented a new iron frame for square pianos. Later came the grand piano of Henry E. Steinway combining the metal frame and overstringing. It is impossible to enumerate all the innovations. One can mention besides the iron frame and overstringing, the felting of the hammers, the third pedal and vertical stringing of upright pianos.

It has often been asked if the lines and curves of pianos cannot be changed to make them more pleasing to the eye. While it is comparatively easy to design lines which will be agreeable it will readily be seen that the problems of stress and strain, tone and



PIANO CASE BY WILL BRADLEY, OPEN



WEBER PIANO IN LOUIS QUATORZE CASE

quality have first to be solved. When the piano became a source of social pleasure its treatment as a piece of furniture was first considered. The square had only the lower extremities in which the style of a certain time could be expressed, and as a consequence, the legs have been "baroque" Empire or Renaissance as occasion demanded. The upright piano has sunk deep into domestic styles and offered a field for various experiments. The cases of grand pianos are

frequent to-day in which magnificent instruments have been carefully fitted up with ornamentation of all styles and to suit all decorative schemes.

Bechstein has pianos rich with rococo ornament and splendid instruments are painted in Germany by Max Koch. The Wagner and Rheingold pianos made by this German firm are wonders of art. The latter has the daughters of the Rhein for legs and carved bulrushes on the lid. A piano made for

The Evolution of the Piano



WEBER PIANO IN LOUIS QUINZE CASE

Carmen Sylva has legs of ivory, that ivory which is in such demand for the piano trade that thousands of tusks are imported every year just for the keys alone. In England Alma-Tadema is in demand as a piano painter. For Henry Marquand of New York, he painted a Steinway adorned with precious stones which is valued at fifty thousand dollars. His own piano is in

the style of mediæval mosaics, under the lid are figured parchment slips on which Liszt, Tschaiowski, Gounod and others have inscribed their names. Other artistic pianos have been painted by Blashfield and one of these is owned by the Drexel family of Philadelphia.

Quite as unique are the treasures of Steinway's



WEBER PIANO IN LOUIS SEIZE CASE

Art Rooms where can be found pianos decorated by Tojetti, Alma-Tadema and Blashfield. These instruments in particular deserve notice as creations of decorative art worthy of a place beside the treasures of the famous French epochs. There is a Louis XIV. grand, hand carved and embellished with cartouches containing exquisite groups of women and children dancing and playing musical instruments, in the Græco-Italian style. The case is enameled in that pale apple green so

congenial to the decoration of the French Renaissance. The groups are astonishingly graceful and charming.

Another gem is "a symphony in red," the suggestion of which is due to M. Jean de Reszke. The piano is mahogany. A female figure in the centre of the lid holds aloft a lamp, whose light shines upon and through the clouds of *amors* that are flying toward it, and radiates all the figures that adorn the case. One turns in this art

The Evolution of the Piano

room from the charming Lohengrin grand, decorated with wreaths of orange blossoms and designs from the opera and in which fancy seems to catch a resemblance to one of our noted prima-donnas in Elsa, to the countless other treasures and wonders where to stop. More and more the conviction forces itself that the piano forte is the greatest of musical instruments. Who can define its limitations or test its powers to the utmost? No sooner does one fancy that nothing further can be done to enhance its possibilities than some inventor gives it greater volume or sweetness of tone.

Piano making is becoming more and more of an art. Its wages keep alive the hearthstone of many nations for a piano contains valuables from every zone. Its ivory is a costly treasure, the tusk perhaps the cost of a human life; its ebony is the symbol of an old and little known people and tropical landscapes; its wood recalls jungles of Central America or the sublime forests of the Great Lakes. Such is the piano. Among the triumphs of art and science is this art of piano making in which we Americans have cause for pride for we have outstripped all other nations. Our pianos have graced every court from that of the Shah of Persia to the Grand Duke Vladimir, the great Russian connoisseur of music. A peculiarity about the piano builder is his devotion to his art, for every fine piano leads captive the mind who planned it. The devotion of the employees of our best piano firms is proverbial. Some of these men are sons of those who formerly worked for them. Another century will face new problems and fresh triumphs are awaiting an art whose brilliant promise seems limitless.

And so, as luxury has increased, the piano has become an object upon which sculpture and painting and the craftsmanship of the cabinet-maker have been expended to a degree hardly realized by those who have not followed the artistic side of the matter.

Have you a music-room with furniture and hangings in the Empire style? Behold an upright carried



THE WHITE HOUSE "GOLD" PIANO

out in the short-lived fashion that obtained in Paris during the heyday of Napoleon's triumph—shields and cupids and sphinxes in fire gilt or dull metal, garlands of silver applied to ebony or mahogany panels, eagles of France clutching the fire-bolt in their talons. Is the interior colonial? Here is a prim, white-winged baby-grand with quaint lattice-work designs between small fluted columns, just such a piano as ought to have been found in the old square houses with pillared porticos which still exist in the Atlantic States and are not unknown in the Central. Is your music-room paneled in natural woods? Observe what a variety you may choose from—staid, dull-glowing mahogany or brilliant satinwood full of little soft flames, Circassian walnut from the Caucasus, Abyssinian maple from northeastern Africa, which makes one think of zebras; strange, beautiful woods from the Philippines, which may be seen in the rough and the smooth at the Museum of Natural History.

House and Garden

It will go hard if you or your architect have not sufficient memory of color harmonies to pick some piano which completes in a higher or lower key the color scheme of your room.

At the exhibition rooms of the Æolian Company in New York are shown four splendid grands, three of which are here included. On the main floor, a Louis Quinze piano greets one, such as might have been the gift of a fellow-potentate to that king, had such instruments existed in his reign. It is treated in dull gold throughout. Carvings nearly in the round include sportive figures of nymphs, half-draped, which decorate the front to right and left of the keyboard, broadly carved figures with draperies in well-studied folds, the little faces peeping from under lowered brows.

This piano has very agreeable proportions; the legs are graceful in line, neither too heavy nor too slight for the bulky box they must support. The long sides, with their graceful traceries in relief, seem to call for delicate paintings, which would have a capital background in the dull gold. Very often, however, decorated pianos have too much in the way of paintings on them, figures and scenes too learned and labored. Here the problem would be for some artist of infinite taste, like Whistler, to enliven the sides with "harmonies" in one or two colors. But if that sort of artist were not to be had, the object as it stands is far better without further embellishment, since the more beautiful and complete a thing is, the greater the danger that another touch spoil all. The instrument costs as many thousands as an ordinary piano costs hundreds.

On one of the upper floors stands a Louis Quatorze grand, with dull and burnished gold cleverly contrasted. Its shape and decoration belong with the heavier architectural style of the older reign. The pedal is shaped like a solid lyre, the music-rack is like a screen such as one sees

in architecture. The massive effect of all this woodwork is strongly in contrast with the airier grace of the Louis Quinze instrument just described.

Such objects of art belong to certain interiors. Or, if one should acquire such an object, then it might be a delightful occupation to make it serve as the centre-piece round which gradually to accumulate the tapestries, paintings, clocks and furniture which belong to the epoch so bravely set forth in the fictions of Alexander Dumas, an epoch which has been exploited of late by the historical romances so popular to-day, notwithstanding the almost crushing superiority of Dumas.

Here, too, is a Louis Seize piano in the natural color of Circassian walnut, a beautiful wood from the Black Sea, whose markings throw the fantastic lines of art nouveau into the shade. The decoration is more discreet and reserved than that on the Louis Quinze instrument. Carvings in high relief are eschewed. The cover is treated with a leaf-ribbon ornament incised and gilt. The music-rack is solid and similarly treated, while the legs have small garlands in low relief with gilding prudently administered to avoid all suggestion of sumptuousness or the baroque. At the sides of the keyboard and at the end of the case are classic profile medallion heads carved in the walnut, set about with delicate carvings, gilded. All is refined in comparison with the preceding styles and that of the Empire of later date. One sees the result of studies by artist-artisans of the objects collected in the Musée des Arts Decoratifs at Paris, for although these "art pianos" were made in New York, none the less must their makers have had before them such examples of decorative art as one can only find in Paris. It is to supply such models here that the new administration of the Metropolitan Museum of Art has set to work under the directorship of Sir Purdon Clarke and Dr. Edward Robinson.



PORTRAITS OF AMERICAN TREES, NATIVE AND NATURALIZED

WITH A GUIDE TO THEIR RECOGNITION AT ANY
SEASON OF THE YEAR AND NOTES ON THEIR
CHARACTERISTICS, DISTRIBUTION AND CULTURE

BY CLARENCE M. WEED, D. SC.

Photographed from nature by Arthur I. Emerson



PART I

The White Pine—*Pinus Strobus.*

The Catalpa—*Catalpa catalpa. Catalpa bignonioides*

The Large-Toothed Aspen—*Populus grandidentata*

The Horse-Chestnut—*Æsculus Hippocastanum*

The Box Elder or Ash-Leaved Maple—*Acer Negundo*

The White, Paper or Canoe Birch—*Betula papyrifera*



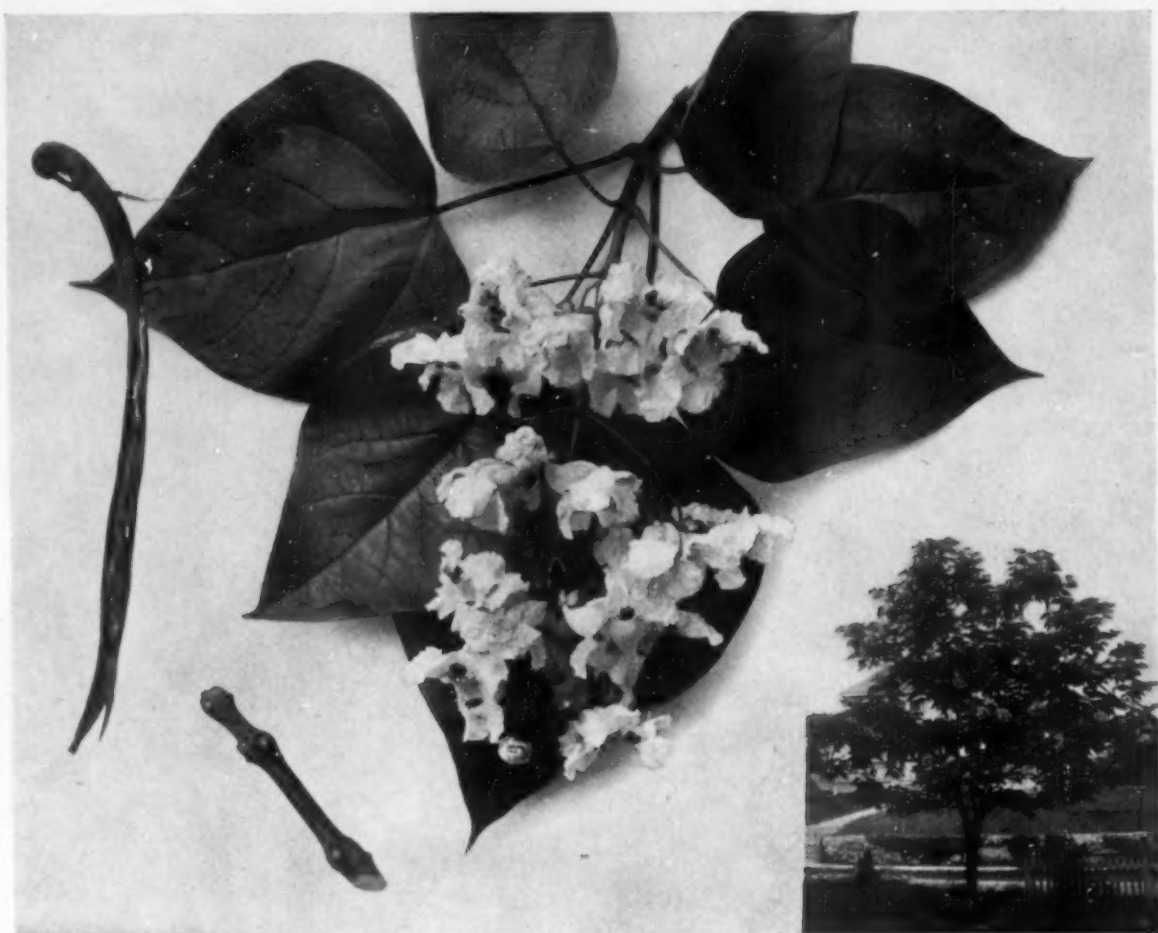
The White Pine—*Pinus Strobus*

IN many respects the White Pine is the most important timber tree which the American continent produces. It is pre-eminently the tree whose lumber has the qualities adapting it to the greatest variety of uses. During recent years, however, the available supply has become more and more limited so that the price has rapidly risen and the lumber can no longer be used for many of the purposes to which it was formerly applied. Original forests of this tree are becoming scarce and where they exist in centres of population they are places of pilgrimage, as in the case of the famous white pine grove at Carlisle, Massachusetts.

The White Pine has such distinctive characteristics that the tree is known to everyone who has paid the slightest attention to the plant world. It is at once distinguished at a distance from the Norway Pine and the Pitch Pine by the comparative fineness of its foliage, the slender needles, arranged in clusters of five, being borne along the sides of comparatively slender branches that sweep out horizontally with their tips commonly

curving upwards. As seen close at hand these needles show two or three distinct whitish lines on the lower surfaces as well as a finely serrated margin. The young twigs are brownish, more or less covered with a fine pubescence, while the older twigs are smooth and shining. The cones are very characteristic, being long and comparatively slender with their scales enlarged toward the outer end but rather thin at the tip. The winged seeds are light brown in color.

The White Pine is essentially a Northern tree, its original range extending from Newfoundland to Ontario and Southern Manitoba, thence going southward to Minnesota, Iowa, Michigan and Ohio and following the Allegheny mountains into Georgia. In many parts of this territory primeval forests of White Pine formerly covered vast areas, but these have been almost wholly cut down. Much attention has of late been given to reforesting some of these areas and the White Pine is deservedly popular for forest planting as well as for use in landscape gardening.



The Catalpa—*Catalpa catalpa*. *Catalpa bignonioides*

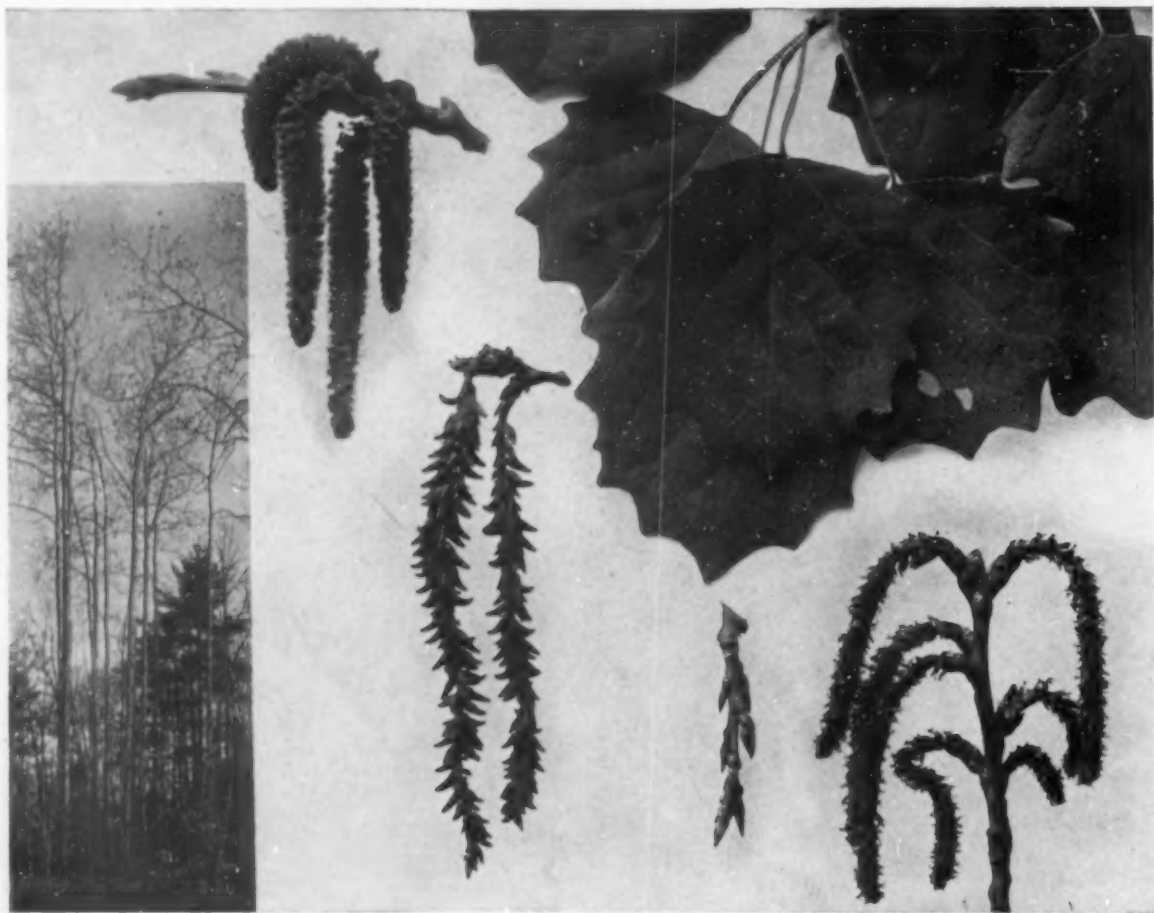
THE Catalpa is one of the few trees which rivals the horse-chestnut in glorious beauty during the period of blossoming. The great panicles of showy flowers borne on the ends of the branches against the leafy background of the newly developed foliage render the tree one of the most conspicuous objects in the landscape and serve to attract the attention of the most indifferent human observer as well as the eager presence of swarms of bumble-bees and other insects which cross-pollenize the flowers in return for the nectar and pollen.

The flowers are soon succeeded by the slender, thin-walled pods which slowly mature through the summer until autumn, when the leaves fall off. They reach a length of eight to twelve inches and serve as a ready means of identifying the tree during late autumn and early winter, as they hang from the tips of the smaller twigs.

Two distinct species of Catalpa are recognized by the best authorities. The Eastern Catalpa, as it is called, is the species represented on the plate. It has slender pods with

thin walls and the tips of the leaf are short-pointed; the inside of the flower is thickly spotted with reddish dots and the lower lobe is generally entire. The technical name of this species is *Catalpa catalpa*. The Western Catalpa has stout pods with thick walls and the tip of the leaf is long-pointed; the inside of the flower is not thickly spotted with colored dots and the lower lobe of the corolla is generally notched at the tip. The technical name of this species is *Catalpa speciosa*. The distinctions between these trees are not always easily made out by the amateur, as there is great variability in the special characters above mentioned.

The Catalpa is an extremely valuable tree for ornamental planting as well as for forestry purposes. During the last fifty years the Western Catalpa has been largely utilized in the middle West for the latter purpose and has proven a profitable crop. The tree is handsome at any season of the year, grows rapidly, is quite free from insects and fungus enemies and may be obtained in quantities from nurserymen.



The Large-Toothed Aspen—*Populus grandidentata*

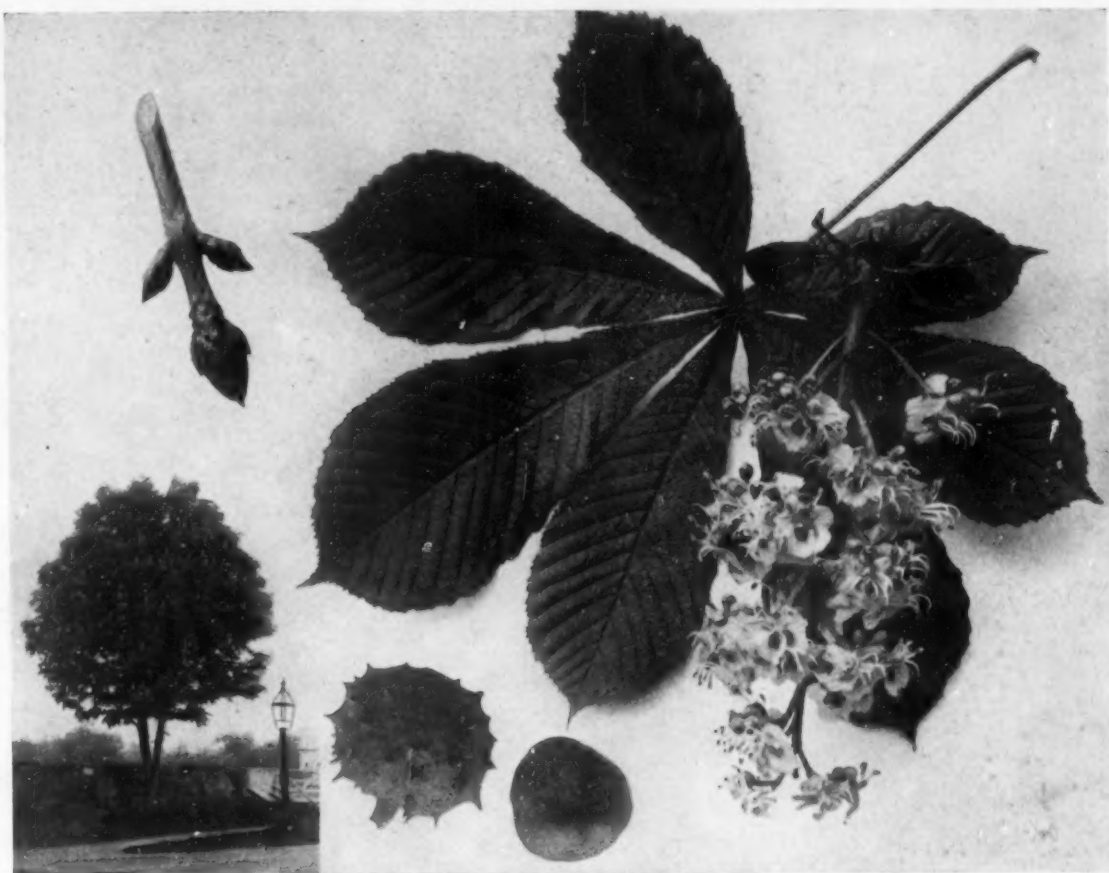
IN early spring the Large-toothed Poplar is the most conspicuous tree in the forest. The young growth is so thickly covered with a cottony down that the tree stands strongly revealed against the darker background of the neighboring branches. When the leaves are fully expanded much of this whiteness is lost and the tree resumes its normally inconspicuous position.

Before the developing leaves show themselves the tree sends out long, pendent festoons of greenish gray, or reddish odorless blossoms, those bearing pollen being reddish and upon one tree, those bearing pistils of grayish green upon another, the wind carrying the fertilizing pollen from the one to the other. These blossoming catkins resemble those of the aspen, but a close examination will show a hairy covering upon the scales at the base of the catkins instead of the varnish-like coating upon the bud-scales of the aspen. The seeds mature in May or June and are covered with a woolly down that enables them to float in the air.

In summer the Large-toothed Aspen is

easily distinguished by its good-sized leaves, coarsely dentate on the margins, with long, vertical, flattened petioles that give the blades great freedom of motion. The side margins of the blades are usually turned upward so that the upper surface of the leaf is concave, a circumstance which renders them much more likely to be constantly twisted by the wind than if the blades were flat. In autumn the leaves turn yellow before falling, some of those on the tips of the twigs assuming beautiful orange-red hues. The leaves on the suckers that spring up from underground roots or about the base of a stump are different from normal leaves of the species being larger, serrate rather than dentate, and commonly covered on the under surface with a cottony down.

The bark of the tree trunk is dark gray, marked with short vertical furrows which do not extend very far. The bark, as a rule, is darker than that of aspens of the same size, and there is not so striking a difference in color at the junction of the branches with the trunk as there is in the case of the aspen. The buds are pointed and downy.



The Horse-Chestnut—*Æsculus Hippocastanum*

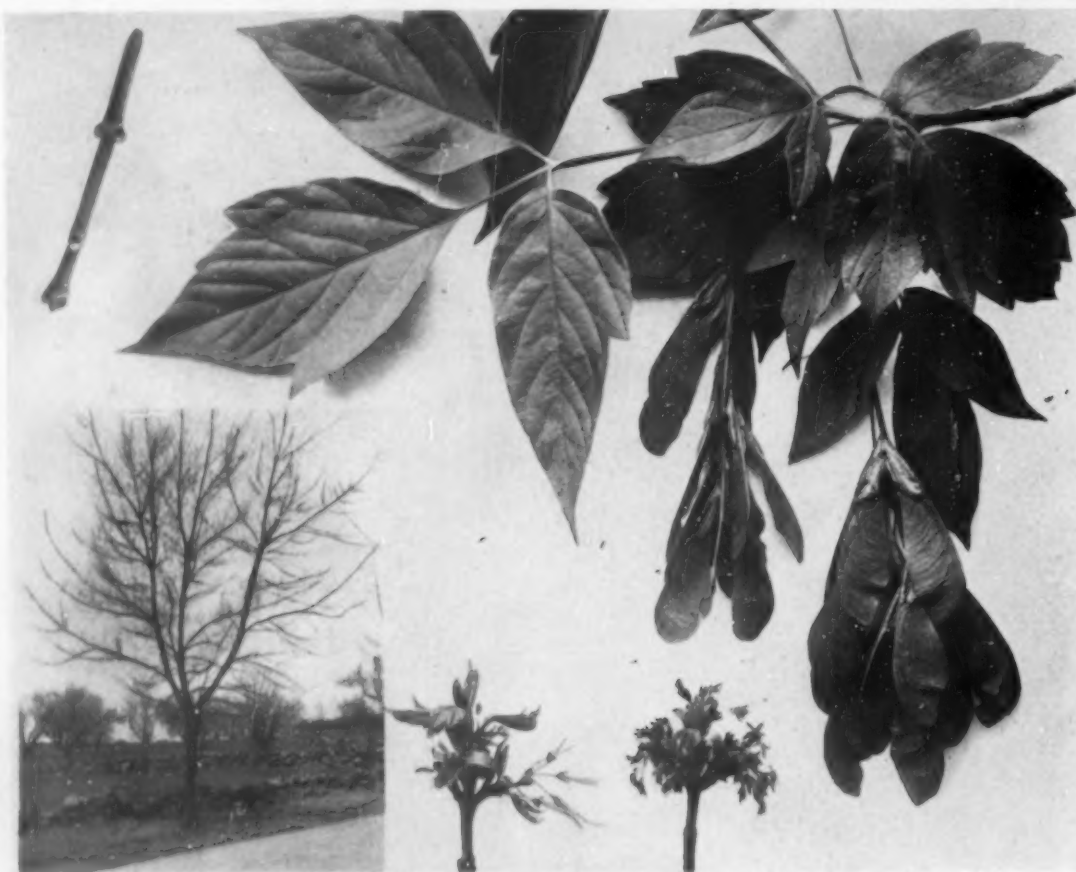
FROM its original home in the mountains of Greece the Horse-Chestnut has been carried by men over a large part of the habitable world. From the earliest settlement of North America by Europeans it has been planted for shade and ornament, and in some of the Eastern States it has spread spontaneously from the fruit of these planted trees.

The Horse-Chestnut has many qualities which make it desirable for ornamental planting. It grows sturdily and rapidly, has few insect enemies, gives a dense shade and has at all seasons a somewhat conventional beauty that is exceedingly attractive. Even in winter the straight trunks shoot up from the middle of the tree with an orderly arrangement of the branches and twigs, and the huge conical buds with their glistening brown hues are sure to challenge attention.

In early spring the trees have a very bizarre effect that cannot be neglected. A little later, when the gray, compound leaves have fully developed and the glorious erect panicles of white blossoms come to their perfection, the Horse-Chestnut is, as the artist Hamerton has said, "a sight for gods and men."

These wonderful blossoms, seem primarily intended by nature to attract the visits of the queen bumble-bees, which are abroad during the weeks when the chestnuts bloom. The expanded, recurved stamens, with projecting style and stigma, serve as a landing place for the bees, which are guided to the nectar by the spots of color at the base of the petals. This nectar is protected from the visits of ants and other wingless insects which would steal it without carrying the pollen from blossom to blossom, as do the bumble-bees, by the presence of numerous hairs upon various parts of the flower.

The leaf of this tree is an excellent illustration of a palmately compound leaf. There are usually from five to seven leaflets arranged on the end of the stout petiole, which is much enlarged at its base and which, when it falls off in autumn, reveals a most characteristic leaf-scar which has been frequently likened to a horse-shoe, a series of so-called bundle scars around the margin serving to represent the nails. Mrs. Dyson writes that in England the tree is sometimes called the Hyacinth tree and also the Giant's Nosegay, a suggestive name when the tree is in blossom.



The Box Elder or Ash-Leaved Maple—*Acer Negundo*

THE most attractive feature of the Box Elder or Ash-leaved Maple is found in the rich coloring of the twigs in autumn and winter. These are of a glorious olive green often covered with a glaucous bloom, one of the most satisfying hues in the world of trees. The broad buds are densely downy and generally greenish or brownish in color. The bark of the older branches is greenish or brownish, while that of the trunk varies from yellowish green on young trees to dark grayish brown on older ones.

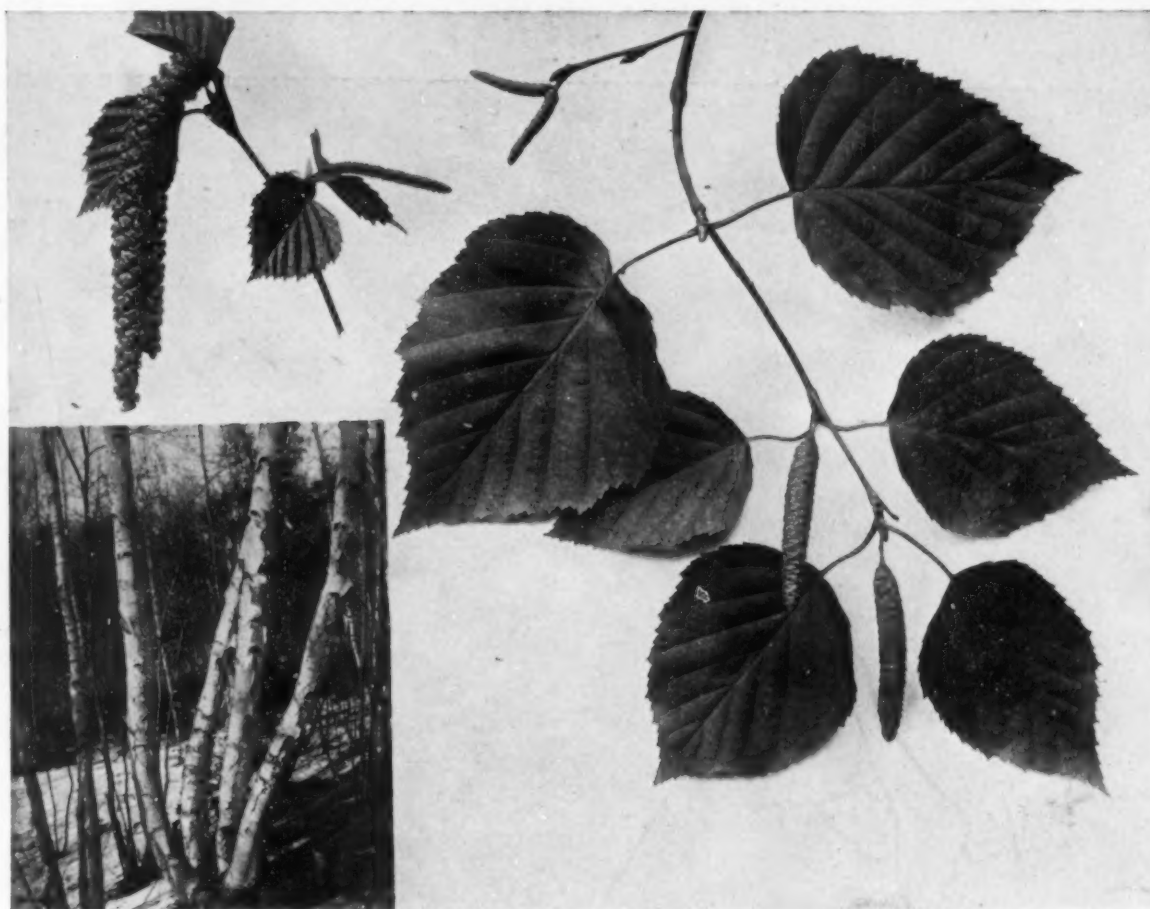
The pendent clusters of greenish yellow flowers appear in early spring, generally during the first half of April. The pollen-bearing and seed-bearing blossoms are on separate trees. The former are in simple clusters of long-stemmed flowers; the latter are in long racemes. The leaves begin to develop as the blossoms appear, and soon clothe the tree with a compound foliage of a tender green color. Each leaf has from three to seven leaflets, and is of a very characteristic form which is well shown in the accompanying picture.

As the leaves fall from the Box Elder in October the fruit-laden tree seems scarcely to miss them, so thickly is it clothed with the

long pendent racemes of graceful key-fruits. There are often ten or a dozen fruits hanging from a single stalk, the distance from the base of the stalk to the tip of the terminal samara being commonly nine or ten inches. Each pair of fruits is joined at nearly a right angle, the fruit being slender at the base with a rather broad wing. These key-fruits often remain upon the tree through part of the winter, being whipped off one at a time by strong winds that carry them far and wide, leaving behind the stalks attached to the twigs.

As a shade and ornamental tree the Box Elder has the advantages of rapid growth, dense foliage, good coloring, and comparative freedom from attack by insects and fungi. As it gets older, however, it often shows a certain lack of grace, and in some way it does not make the distinctive appeal that many of our shade trees do. It is variable in growth so that it is not desirable for planting in long rows where uniformity is desired. Of late years varieties with colored foliage have been developed and offered by nurserymen.

As a native tree the Ash-leaved Maple is distributed throughout most of the United States east of the Rocky Mountains. In California a special variety is indigenous.



The White, Paper or Canoe Birch—*Betula papyrifera*

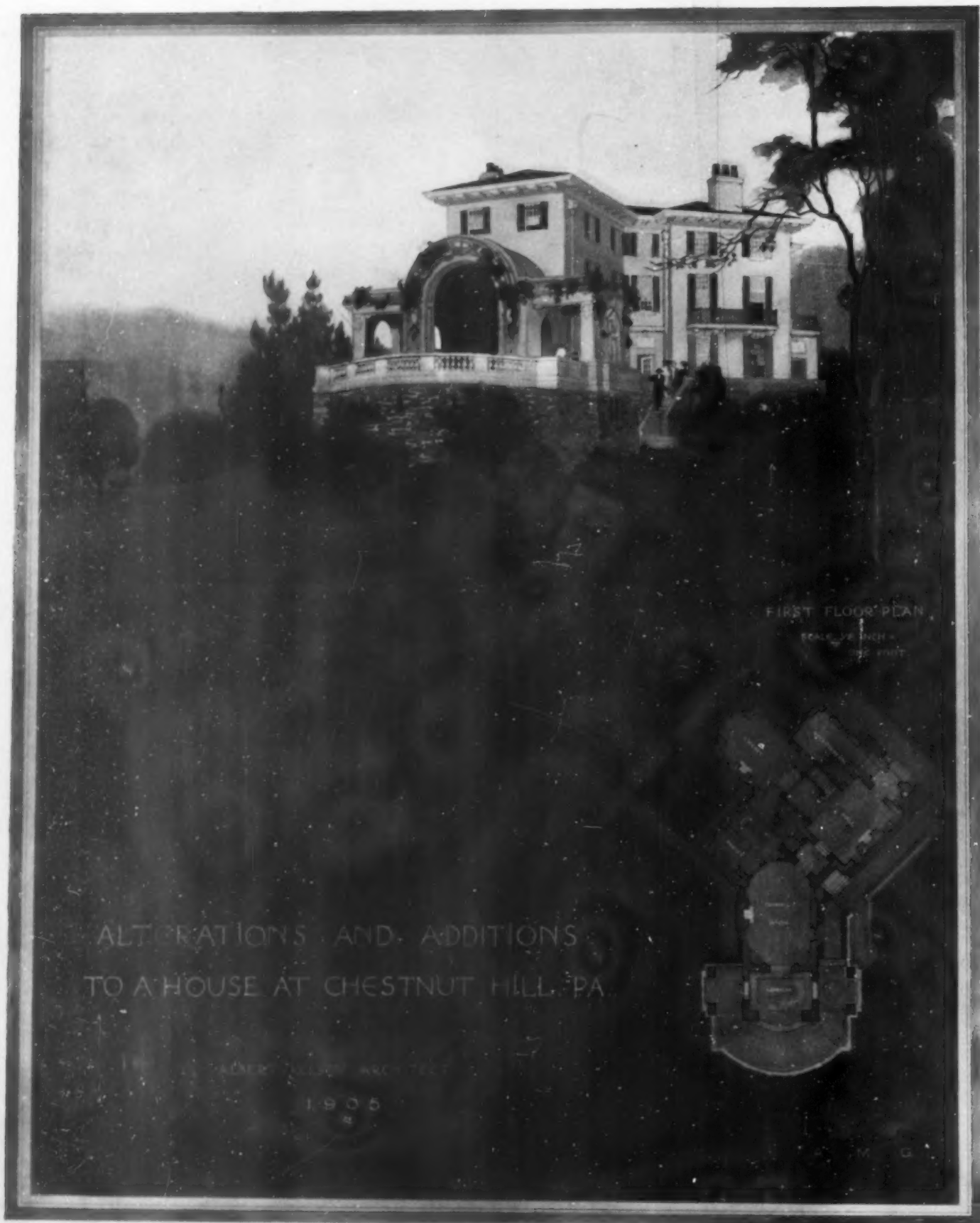
THE canoe birch or the paper birch is one of the best known trees throughout its range. It is closely associated with our history and literature and is one of the most beautiful of American trees. It is not so abundant in specimens as the gray birch but attains a much larger size and forms a much more striking feature of the landscape in which it grows. Seen against the dark background of a river or lake the glistening white trunks of these trees form so striking a picture as to awaken the interest of the most indifferent observer, while a group of young trees growing slenderly erect along the border of the forest form a picture which is sure to call to mind Coleridge's well-known phrase regarding "the lady of the woods."

Every schoolchild knows of the usefulness of the bark of this tree in building the canoes of the Indians and early American settlers, and everyone who has been so fortunate as to roam the woods where it grows has enjoyed the fascination of peeling off the thin, almost transparent layers of the beautiful bark. In these modern days the trees are largely used

in the making of paper pulp, as well as for various purposes in the manufacture of lumber products.

In addition to the loosely peeling, glistening white bark this birch may be identified by the broadly ovate leaves, less narrowly pointed than those of the gray birch, with short, stout petioles which are not hairy, and the broad catkins which are drooping rather than erect. The species is also often called simply the white birch and was named by Marsh, *Betula papyrifera*.

The Paper Birch is a northern species, occurring from Labrador and the Great Slave Lake region southward as far as New York City, Pennsylvania, Iowa, Nebraska and Dakota. It is especially abundant in the great wilderness region of Canada, northern New York and northern New England, where along the banks of lakes and rivers it is one of the beautiful and characteristic trees. An interesting form in which the base of the leaves is cordate is found upon the mountains of New England. This has been given the variety name of *cordifolia* by Sargent.



PERSPECTIVE VIEW FROM THE (UNFINISHED) GARDEN

ADDITIONS AND ALTERATIONS TO AN OLD HOUSE AT CHESTNUT HILL, PA.

ALBERT KELSEY, ARCHITECT

LARGE without pretentiousness—in fact, though the addition is larger than the old house, it is so much concealed from the road, and blends so well with the original, as to look like merely an old, comfortable country home. A modest new portico is all that has been added to the front, though much old jig-saw work has been removed.

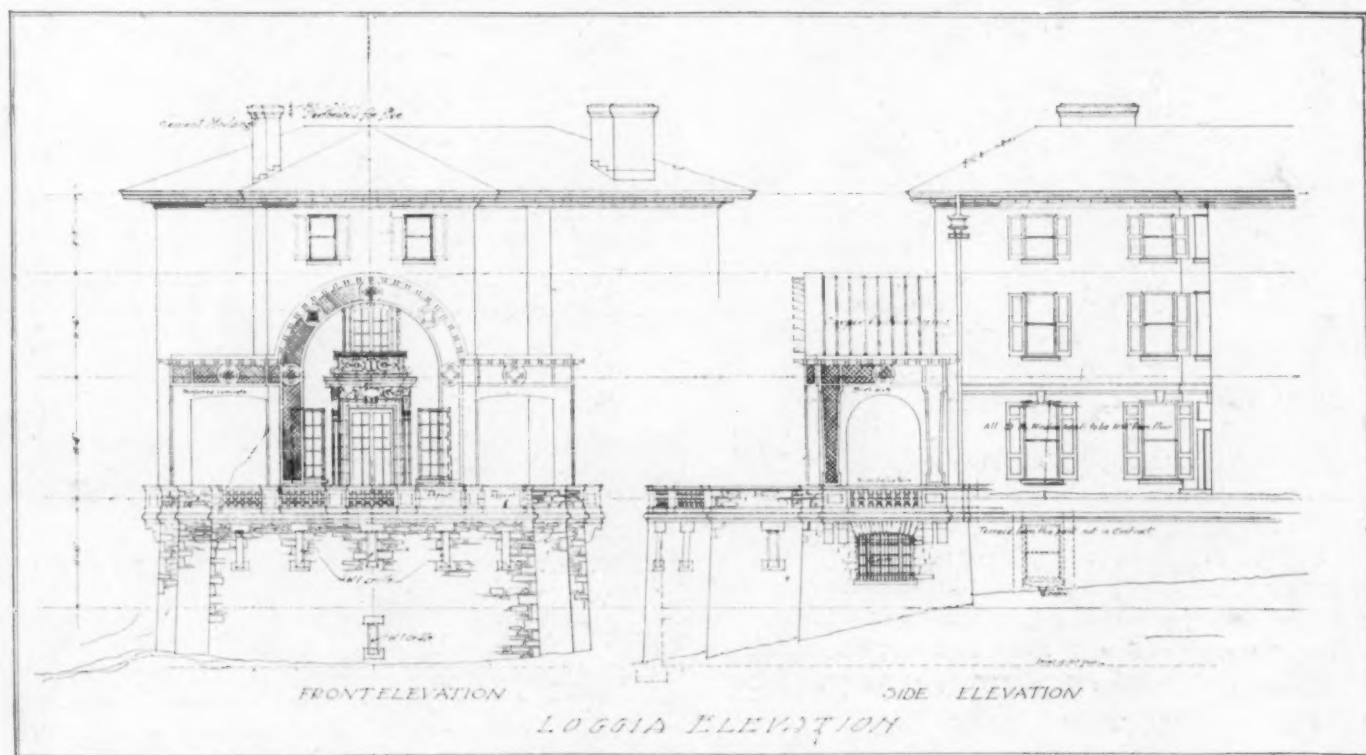
To bring a superb view into line and focus and comfort, were the two objects striven for. In achieving the former a strategic move has been aimed at. The property on which the house stands is of but scant acreage, but the owner's mother's large estate adjoins, and beyond property is also owned by the family. Here it is aimed some day to erect a house, which will also be planned to accuse a view, namely a view which shall terminate or be focussed on the loggia of the house we are now describing. In other words, a reciprocal treatment of the three places, treated as one estate, is ultimately hoped for; thus the striking loggia will count in a private landscape without flaunting itself to the public gaze, and some similar out-door treatment will mark the other end of the vista.

The terrace around the loggia being twenty-two feet above grade, and the loggia two feet higher still, an arrangement had to be made for planting on these levels. Concrete pits, with a separate drainage

system, have been provided for this purpose, and the trellises have been studded with an open cornice of outlookers from which vines will droop and sway, thus softening the lines of the great arch as seen from two storeys within.

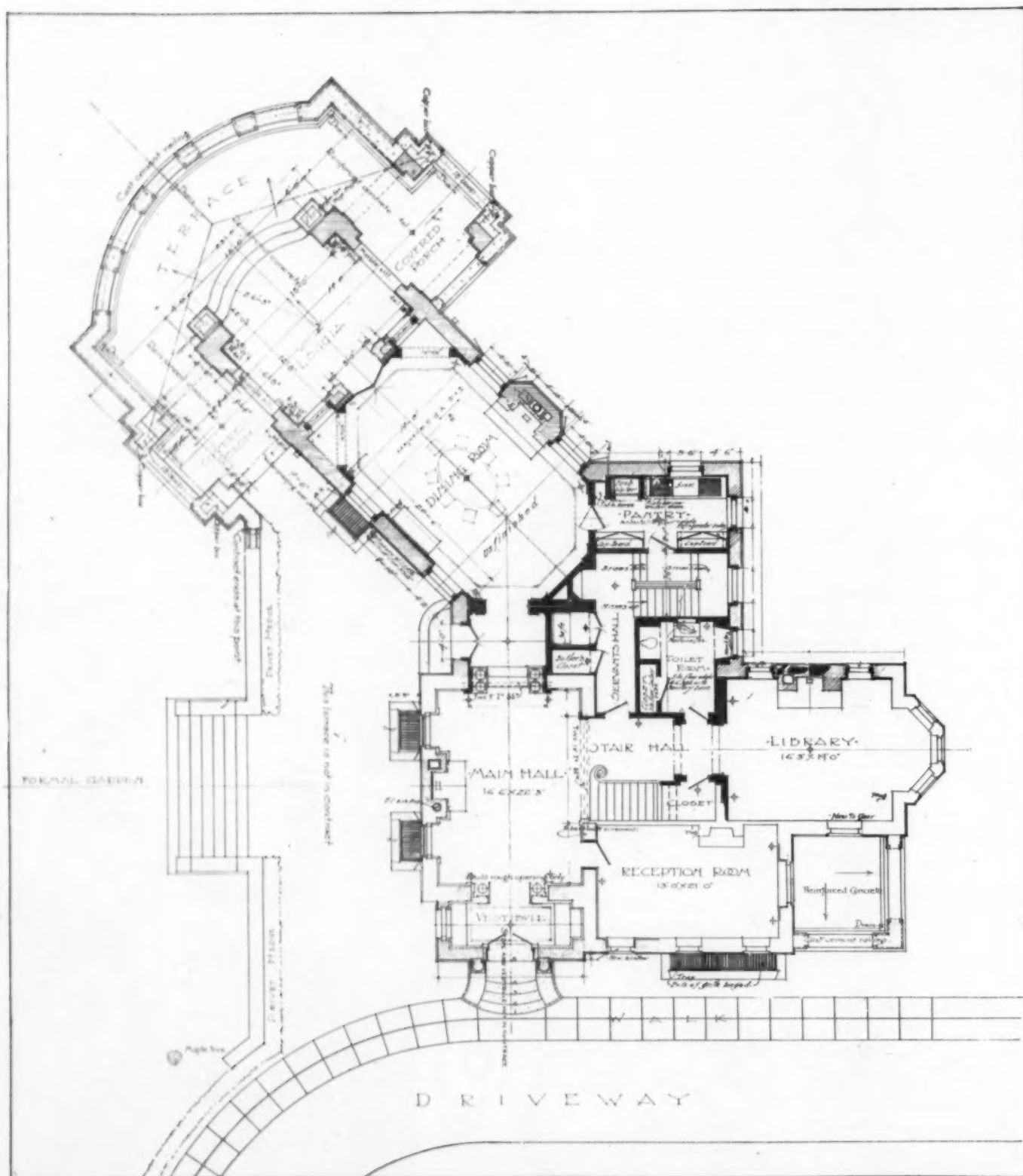
The dining-room, thirty-two by nineteen feet, and the main bedroom above, profit most by this arrangement, as both point to the view, the former with its casements opening wide enough to allow the dining-room table to be rolled out under the bowered loggia, and with two other long windows, sliding entirely out of sight, give an airiness to the room itself, which is wonderfully *al fresco*. Above, a commanding sheltered balcony with a rich wrought-iron rail, in front of wide casements, will offer a similar effect from the bedroom. A stone mantel over eleven feet high, in the dining-room, forms a focal point from the higher level of the entrance hall.

Turning to subjects of comfort, and waiving a description of the old parlor, now a spacious living hall, and such other features as a broad new stair, we start at the basement, where the arrangements are unusually complete. A large and lofty kitchen, with a spacious and well appointed kitchen pantry, a servants' dining-room and a servants' sitting-room will provide for the convenience and comfort of the domestics. A refrigerator room, or larder, is placed



SCALE ELEVATIONS

House and Garden



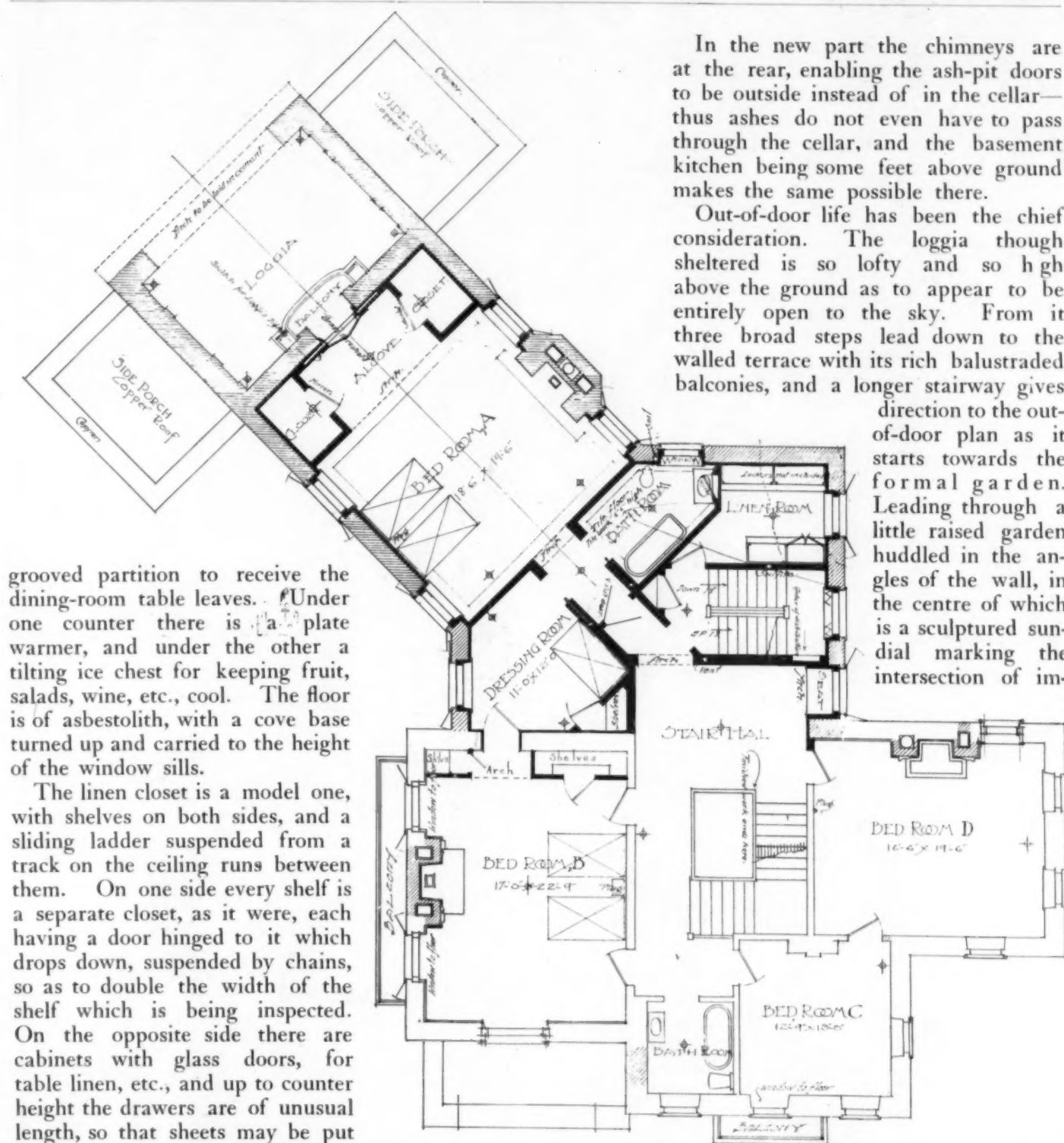
PLAN OF THE GROUND FLOOR

so that ice may be put directly into the refrigerator from the cellar, while egress to the room will be by a different route. Here a slate counter, on which to stand fruit, vegetables and game, is provided, and near the back stairs a similar counter is provided on which to clean lamps, and under which a limited amount of oil may be kept. A wide back stair

affords direct communication with every floor, from the basement to the trunk loft, and is at the same time entirely isolated, thus separating the associations of the kitchen from the house.

The dining-room pantry has counters and china closets on both sides. In addition, there is a closet in which to keep a step-ladder and brooms, with a

Additions and Alterations to an Old House at Chestnut Hill, Pa.



grooved partition to receive the dining-room table leaves. Under one counter there is a plate warmer, and under the other a tilting ice chest for keeping fruit, salads, wine, etc., cool. The floor is of asbestolith, with a cove base turned up and carried to the height of the window sills.

The linen closet is a model one, with shelves on both sides, and a sliding ladder suspended from a track on the ceiling runs between them. On one side every shelf is a separate closet, as it were, each having a door hinged to it which drops down, suspended by chains, so as to double the width of the shelf which is being inspected. On the opposite side there are cabinets with glass doors, for table linen, etc., and up to counter height the drawers are of unusual length, so that sheets may be put in them without unnecessary folding, and on account of the great weight of their contents, these run on ball-bearing wheels.

Another feature is a moth-proof closet for curtains, equipped with long round ash poles, which are placed at intervals of about a foot apart on overhead racks, so that it is possible to lay curtains over the poles in an adjoining room and then carry them into this closet on the poles, which are then set in the racks—thus enabling the curtains to be stored without folding.

In the new part the chimneys are at the rear, enabling the ash-pit doors to be outside instead of in the cellar—thus ashes do not even have to pass through the cellar, and the basement kitchen being some feet above ground makes the same possible there.

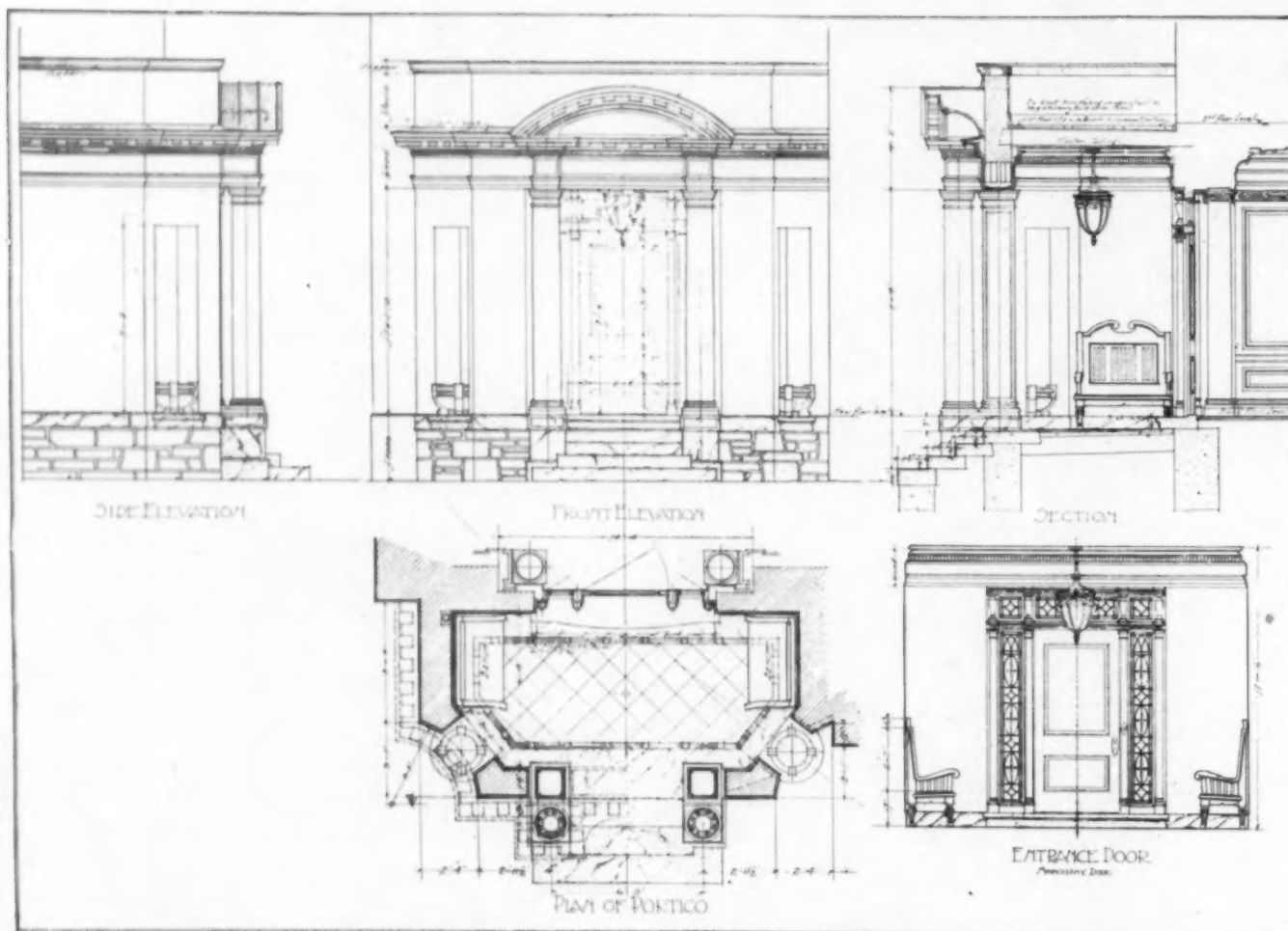
Out-of-door life has been the chief consideration. The loggia though sheltered is so lofty and so high above the ground as to appear to be entirely open to the sky. From it three broad steps lead down to the walled terrace with its rich balustraded balconies, and a longer stairway gives direction to the out-of-door plan as it starts towards the formal garden. Leading through a little raised garden huddled in the angles of the wall, in the centre of which is a sculptured sundial marking the intersection of im-

PLAN OF THE SECOND FLOOR

portant vistas, this place serves as a vestibule to the more elaborate garden on the hillside, whose pergola and two stone garden houses develop to the right and left of the main view line as seen from the loggia far above.

In the tight embrace of this smiling composition is a reflecting mirror, which some day may illumine the loveliness of the garden at night by means of an electric fountain. In the planting around the basin

House and Garden



DETAILS OF THE ENTRANCE PORCH

is a riot of bright flowers in little beds divided by brick paving, and from under the welcome shade of the vines festooning the pergola the best views of the house show in succession, while in other directions a pastoral vista up and down a beautiful mowed green

valley, leave a reposeful feeling upon the tired mind.

In short, the charm of the unexpected pervades the place. Its delights are not for those on the street as it does not entice by any bold appeal but has rather the true seclusion of an out-of-door home. A. K.

TESTING CHINESE INK

THE best method of testing the tinctorial values of the different inks is to grind up equal amounts with equal quantities of water, applying the liquids with a full brush to Whatman paper pinned on a sloping drawing board. When the first color strip is dry, a new one is painted over it, so that a small portion at the end of the first coating still remains untouched. This is followed by a third, fourth, and fifth coat, each falling short of the preceding one, until finally there is a color scale, one end of which has the faintest tint while the other end is strong black.

Comparative results thus obtained show that inks with the best reputation are actually the best in practice. The cheaper qualities have not nearly so

great a covering power, and often contain irregular particles of carbon, giving rise to streaks under the brush. They also lack the brilliancy and purity of tone possessed by the better qualities.

There is but little difference in the composition of the various grades of Chinese inks. Those examined by the writer all contained about 55 per cent. of carbon and about 9 per cent. of moisture, the remainder consisting chiefly of the glue. The differences in the results obtained in practice must be attributed to the degree of care taken in the collection of the lamp-black, and to the thoroughness of the incorporation of the pigment with the glue.—*The Art Workers' Quarterly*.

THE PLANNING OF OPEN SPACES IN THE CITY

By JOHN W. SIMPSON

A PAPER READ BEFORE THE ROYAL INSTITUTE OF BRITISH ARCHITECTS

IT may be stated, without fear of contradiction, that while such matters as public health, control and acceleration of traffic, improvement of ground values, restrictive Building Acts, and the like, have been exhaustively treated (and that to the public advantage), the artistic side of city planning has been almost entirely neglected in England, and I do not suppose that our authorities even realise its existence. The laying out of new streets and roads is nowadays looked upon as purely technical engineering. It was not thus that the cities were created which are still the wonder and delight of the civilised world.

The point of view of the artist is, therefore, that to which I invite your attention; and in doing so let me affirm our position by pointing out that art is a real and living force, demanding full recognition of all practical considerations which affect it. The finest art, then, is that which most completely and most beautifully solves the conditions of the problems presented to it. The leading canons of composition are common to all the arts, and chief among them is that which insists upon the subordination of parts in order to obtain vigour in the complete work. If your picture, your book, your drama, or your symphony, be throughout of equal force, the result is monotony. So with a city, we must husband our resources if we are to obtain an artistic whole. If we scatter indiscriminately the material which makes for beauty (and for our purpose this material is represented by

the public buildings and monuments) it will be swallowed up in the general mass and fail of its full effect. In this, as in many other matters of art, we have lost sight of that tradition from which all advance must be made, and without which none is possible.

The Greeks in the Acropolis, the Romans in the Forum, gave us a model for all time of the way to concentrate the forces at our disposal for the beautifying of a city. Contrast the effect of such spaces, enclosed by splendid edifices and adorned with countless masterpieces of plastic and architectural art, with the forlorn bronze figure stranded on its pedestal amid a tearing stream of traffic, which represents the modern idea of a public monument. Its very costume strikes a jarring note in such surroundings, instead of recalling grateful memories of a personality; none may pause to study it but at his proper risk of life; and, with a disgusting contempt of his dignity, the guardians of a hero's memorial have now discovered in it the incongruous site for a public convenience.

The "place" of mediæval and Renaissance times is the direct descendant of the antique Forum. I use the term "place" because our nearest English word "square" connotes quite other associations, and is inaccurate in its implied regularity. The ancient "place" was rarely either regular or square.

It is curious to reflect how entirely the "place" is ignored in our modern city plans for extensions and improvements. The shapeless and congested space where many arteries of traffic meet is accepted without protest as its successor. Granted that the changed conditions of public life render the "place" no longer necessary as a common centre of exchange and commerce, it may yet be well to examine our fathers' works and save of the artistic heritage what may be adapted to our circumstances. We cannot assert that Ludgate Circus is more beautiful than the Sig-

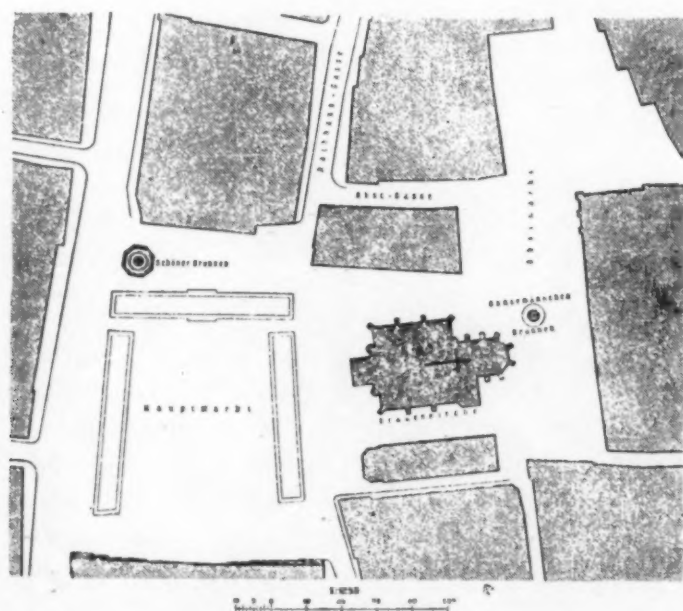


FIG. 1—NUREMBERG

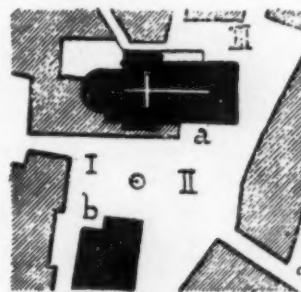


FIG. 3—PERUGIA
I—Piazza del Vescovato. II—Piazza di S. Lorenzo. III—Piazza del Papa.
a—Duomo. b—Palazzo Comunale

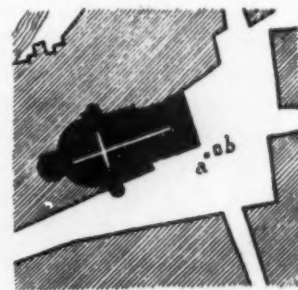


FIG. 4—PADUA
Piazza del Santo. a—Column. b—Statue of Gattemala

House and Garden

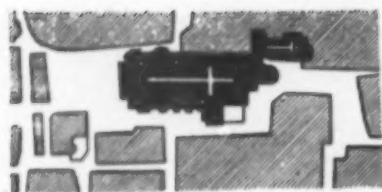


FIG. 5—VERONA
Piazza del Duomo



FIG. 6—PALERMO
S. Cita

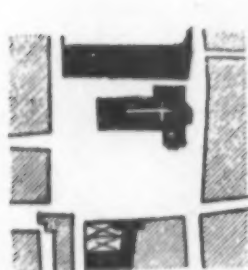


FIG. 7—LUCCA
S. Michel

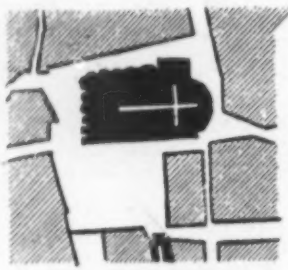


FIG. 8—VICENZA
Piazza del Duomo

noria at Florence! Is the fault entirely that of modern conditions? May it not lie with the absence of that artistic thought which went to the making of the former?

If we study the plans of ancient "places" we shall find that, despite their apparently aimless irregularity, they were in fact constructed upon definite principles. And first let us notice that the statues, fountains, and other monuments were placed, not in the centre of the space as now, but at the sides. That fountains should be placed beside the beaten track-

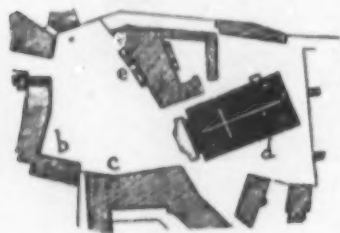


FIG. 9—PISA
b—Palazzo Vecchio, c—Palazzo del Podestà,
d—S. Stefano, e—Palazzo dei Anziani

way where animals may slake their thirst is natural; the Schönerbrunnen fountain at Nuremberg [fig. 1] is a well-known instance. They will be found similarly placed in the Signoria at Florence, in front of the Palazzo Comunale at Perugia [fig. 3] and many other places, but rarely or never in the axis line of the palace or square. The position of Donatello's equestrian statue of Gattemala beside the church of St. Anthony of Padua [fig. 4] is pointed to by Sitte as most instructive. "If," says he, "one at first observes with surprise how it differs from those advocated by our stereotyped modern systems, one is quickly struck by the superb effect of the monument so placed," and you no longer wonder at its orientation and other unconventionalities. As the Gattemala and the little column stand at the side of the entrance to the church, so the obelisks and statues of the Pharaohs rose beside the doors of the temples.

Another point to be noticed is that the ancient

churches in Italy were most often engaged on one or more sides with other buildings, and we shall see how this tended to produce those groups of open places which give such charm to the buildings. At Padua we find this in the plan just referred to, and you will note the large space formed in front of the entrance, giving value to the dominating façade and doorway. I give another instance at Verona [fig. 5], and one with the "place" at the side of the church, which is more unusual, at Palermo [fig. 6]. While on this point it is interesting to note that at Rome, out of two hundred and fifty-five churches forty-one are attached on *one* side only to other buildings, ninety-six abut on *two* sides, one hundred and ten are engaged on *three* sides, two on *four* sides, and six only stand entirely free. Of these six, two are modern Protestant buildings, and the other four are surrounded by narrow streets.

At Lucca [fig. 7], Vicenza [fig. 8], and Pisa [fig. 9] we have instances of churches standing free, but you will observe that the same rule is applied to them as to the monuments: they are not in the centre, but upon the sides of places of moderate size, and gain vastly in effect by their position. The modern taste is to strip these old masterpieces of their surroundings, to their infinite detriment: their frames were designed for them, and cannot be removed without destroying valuable qualities in the work so treated. Baumeister indeed enunciates as a principle: "Old buildings should be preserved, but they must, so to speak, be removed from their shells and restored!"

A most important feature in the plan of the old public place is that it was enclosed, and this is a principal element of its charm. No mere open space between streets will give it—the appearance of an unbroken frame of buildings is essential. I say

appearance, because the opening of side streets upon the old "places" was always most carefully contrived so as to avoid a gaping breach in the continuity of the frame.

Two typical instances are those of the Piazza Grande at Parma [fig. 10] and the Piazza del Duomo at Ravenna [fig. 11]. The latter illustrates very clearly a remarkable feature of the ancient "place,"

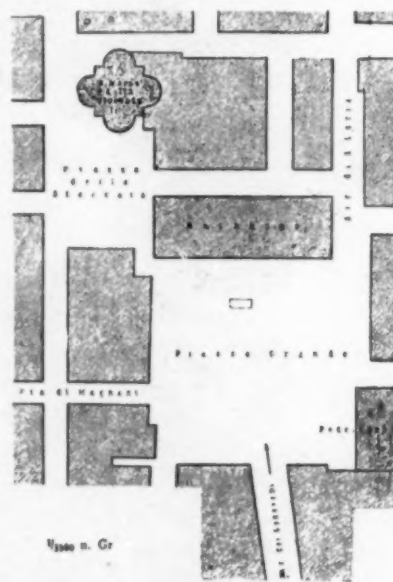


FIG. 10—PARMA
Piazza Grande

The Planning of Open Spaces in the City



ENTRANCE TO THE PLACE STANISLAS, NANCY

which Sitte calls the plan *en bras de turbine* [fig. 12]. It is repeated so frequently, more or less completely according to circumstances, that it may be considered one of the conscious or unconscious principles of the construction of ancient cities. The streets thus leading off perpendicularly instead of horizontally to the visual rays, the angle joints, so to

speak, of the frame are not obtrusive. The Piazza del Duomo at Pistoia [fig. 13] is another example.

The archway or colonnade is a feature employed with splendid variety of effect to complete the girdle of buildings in open spaces. The Piazza Signoria at Verona [fig. 14] is one of many instances, the hemicycle of the sixteenth-century Place de la Carrière at

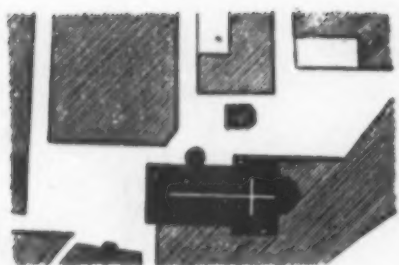


FIG. 11—RAVENNA
Piazza del Duomo

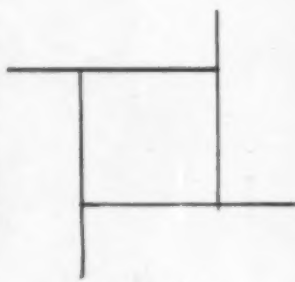


FIG. 12

Nancy another [fig. 15]; and you will notice the use of the great forged iron gates in the Place Stanislas (built from the plans of Héré in 1752-1756), close adjoining the last, to close the open angles which would otherwise have left the sides disconnected.

Here, then, are two leading principles of such plans. The monuments being placed at the sides, the centre of the square is left free, and the space is enclosed by a continuous frame of buildings. Next, the "place" must be proportionate in size and shape to the buildings to which it is to give value. Generally speaking, the space in front of a church or other vertical composition will be found to be *deep*, while that before a town hall or other building whose characteristic is length is usually *wide*.

The two piazzas at Modena [fig. 16] are typical and instructive. The Piazza Reale dominated by the Palace is wide and large, and the Piazza Domenico deep and small, and the effect of the one is enhanced by the contracting form of the other. The way in which the streets open upon them should be noted. The street passing in front of the church does not break the frame, since its direction is perpendicular to the visual rays of the observer, and those entering towards the façade do not destroy the effect, since they are at his back.



FIG. 14

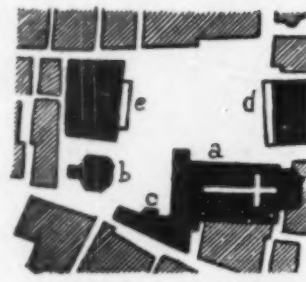


FIG. 13—PISTOIA
Piazza del Duomo. a—Duomo. b—Baptistery. c—Bishop's Palace. d—Palazzo Comunale. e—Palazzo del Podestà

Rome; and in the second place the idea of size in the square itself is not increased indefinitely by the increase of its proportions. Sitte remarks that if a narrow strip of ground be added to a small space the result is perceptible and often advantageous, but if the space be already large the addition is hardly to be noticed.

In connection with this subject of scale he gives a very striking illustration. "In architecture," says he, "the relation of proportions plays a far greater part than actual size. You may see in many public gardens statues of dwarfs over six feet high. There exist, on the other hand, statuettes of Hercules no higher than your finger; yet it is the larger of the two which is the pigmy, and the smaller the hero." The scale, then, of the "place" must be that of the chief buildings in it. We have all experienced the discomfort of the gigantic modern spaces across which we have hurried with our lives in our hands, a discomfort we never experienced in the smaller ancient squares. Yet the Piazza di San Marco gives an effect of space and grandeur quite lacking in modern examples, although its extreme length only equals the width of Russell Square.

The irregular plan of ancient "places" is a feature presenting some striking points of interest. Our forefathers did not design streets

The projection of the left wing of the Palace is not accidental. It serves to prevent the attention being lost in the side street, and to clearly separate the two squares. Too large a space is not desirable; in the first place, it reduces the apparent size of even a colossal building, as in the case of St. Peter's at

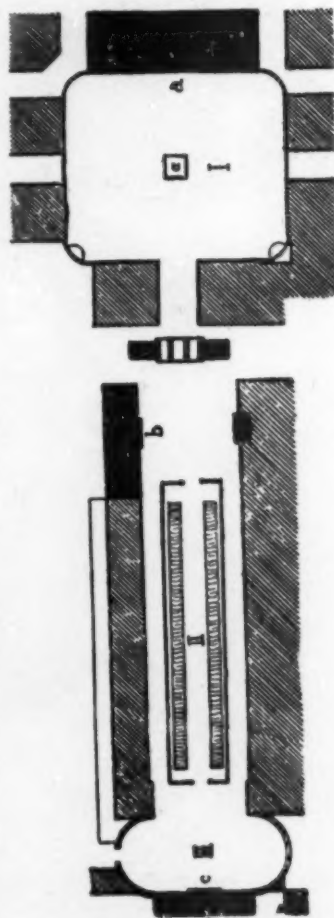


FIG. 15—NANCY
I—Place Stanislas. II—Place de la Carrière. III—Hémicycle. a—Hotel de Ville. b—Palais de Justice. c—Palais du Gouvernement

The Planning of Open Spaces in the City



SIENA

FIG. 17 FIG. 18 FIG. 19 FIG. 20
S. Pietro alle scale S. Vigilio V. d. Abadia S. Maria di Provenzano

in interminable right lines and squares of faultless regularity. Here are four squares in Siena [figs. 17, 18, 19, 20]. Yet these departures from our modern ideas of symmetry do not distress us in execution; they appear natural. There are sound optical reasons why these deviations from regular form, so obvious upon paper, escape our attention on the spot. The eye is disposed to disregard irregularities which are not forced upon it, and does not, even in the trained observer, calculate angles with exactitude. It is thus disposed to regard forms as more regular than they really are. The old plans were

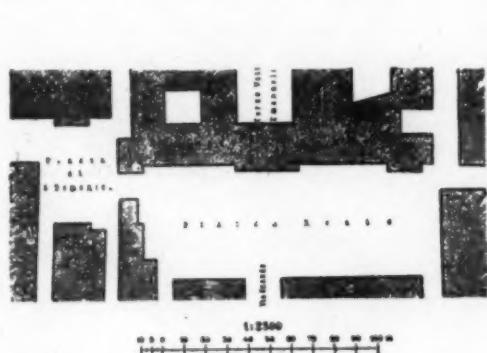


FIG. 16—MODENA
Piazze Reale and San Domenico

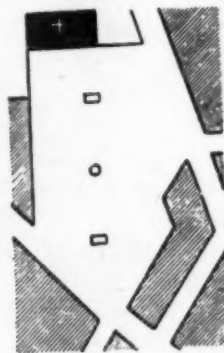


FIG. 21—FLORENCE
Piazza S. Maria Novella

not conceived with drawing boards and tee-squares; the builders did not, therefore, trouble about

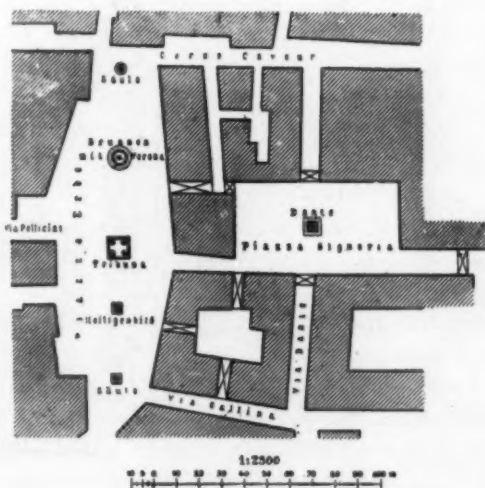


FIG. 22—VERONA
Piazze Erbe and Signoria



FIG. 23

theoretical symmetry, but they realised in practice what actually caught the eye.

Let us examine two well-known "places" and note the difference between their graphic representation and their real appearance. In the Piazza Santa-Maria Novella at Florence [fig. 21] the square has really five sides; but as we see but three sides at once in reality and the angle formed by the other two is always at our back, we conceive of it as having but four sides. The effects of perspective and the difficulty of judging the actual angle formed by the sides render it difficult to estimate the true form. The Piazza dell' Erbe at Verona [figs. 22 and 23] is another example of unnoticed irregularity. Nothing is really more difficult than to reconstruct in memory the plan of an open space from a perspective view.

I will not trouble you with a disquisition on the laws of symmetry, and the reference of Vitruvius to the "proportio quæ Græce ἀναλογία dicitur" (III. i.). Sitte says bitterly, "The idea of symmetry is spreading in our time with the rapidity of an epidemic. It is familiar to the least cultivated folk, and each thinks himself qualified to say his word in such nice questions of art as that of laying out cities,

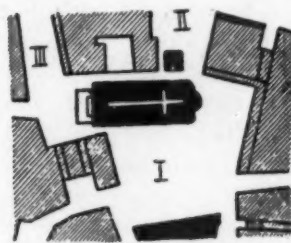


FIG. 24—MODENA
I—Piazza Grande. II—Piazza della Torre. III—Piazza della Legua

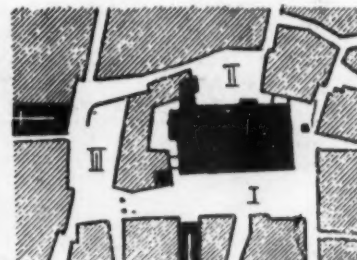


FIG. 26—VICENZA
I—Piazza dei Signori. II—Pescheria. III—Piazza della Biava

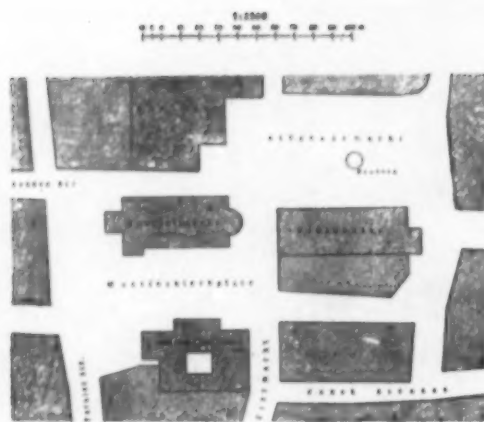


FIG. 27—BRUNSWICK

for he believes himself to possess the sole touchstone necessary—symmetry.”

The Bavarian law of 1864 has endeavoured to meet the artistic needs of the country by a direction to architects to “avoid in their designs all which may offend against symmetry and morality.” “It is not stated,” adds Sitte caustically, “which of the two misdemeanours is considered the more serious!”

I have already referred to the engagement of the old churches and palaces with other buildings, and to the resulting grouping of the “places.” Let me illustrate a few examples only. At Modena [fig. 24] the Piazza Grande opens up the lateral façade and apse of the Cathedral. It forms a complete design, and is connected to both the Piazza della Torre and the space before the west front, but without forming gaps in the frame. The former “place” is of course intended to give a perspective upon the beautiful campanile and enhance its effect. Remark, too, the street leading up to the principal entrance, a very favourite effect, of which the Église Notre-Dame at Bourg offers a well-known instance.

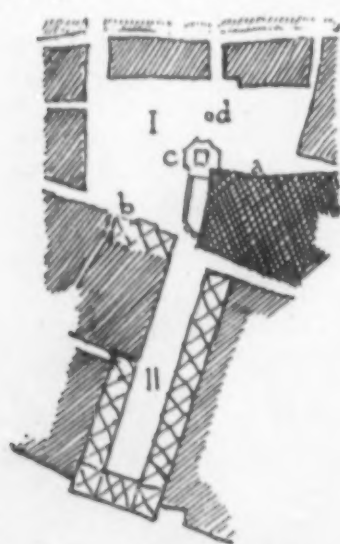


FIG. 28—FLORENCE
I—Signoria. II—Uffizi. a—Palazzo Vecchio. b—Loggia dei Lanzi. c—Fountain and statue of Cosimo I.

At Perugia we find the Piazza S. Lorenzo [fig. 3], at Vicenza the Piazza dei Signori [fig. 26], each with its characteristic secondary square. At Brunswick [fig. 27] there is a most interesting grouping of buildings and squares. The church of St. Martin rises on one side with a deep “place” before its principal façade and a wide one on its lateral elevation, while the old Town Hall abutting on other buildings dominates

the Market Place. The Cloth Hall is thus also surrounded by squares whose buildings harmonize with its design. This beautiful composition is formed of intimately connected parts, and the effect of each square and of each building gains immensely thereby.

Examples could be multiplied indefinitely. Permit me, however, before leaving the subject to refer you once more to the Signoria at Florence [fig. 28], which, as you will see, has also its secondary “place” in the portico of the Uffizi. This Signoria is, from an architectural point of view, the most remarkable square in the world. Its form and size, contrasting with that of the Uffizi adjoining it, the disposition of its monuments and buildings, the way in which the streets deliver into it, are all admirably studied. As Sitte well says, “No effort is apparent, and the superb composition is admired without disturbing thoughts

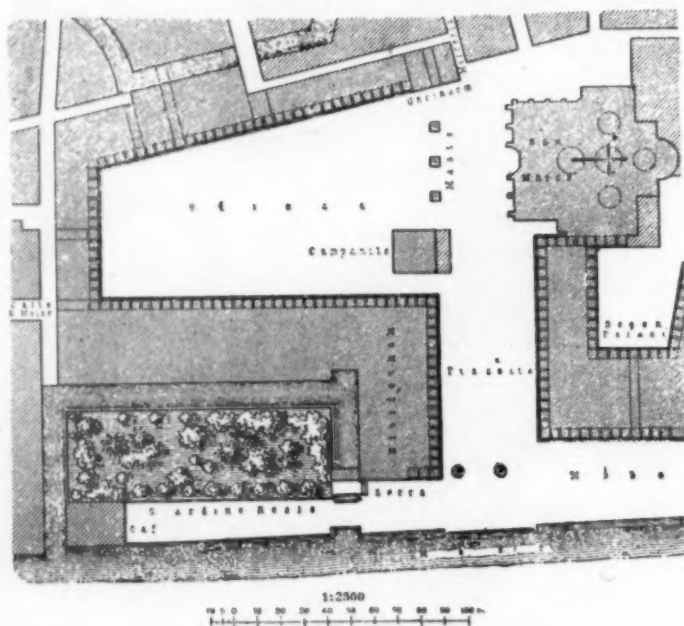


FIG. 29—VENICE
Piazza di San Marco and the Piazzetta

as to the causes of its beauty.” Yet generations of great artists have occupied centuries in the making of this masterpiece.

Lastly, I shall ask you, with the principles we have deduced before you—the placing of monuments, the freedom of the central space, the enclosed frame, the absence of geometrical regularity, and the value given to squares by their combination with others of varying form and size—to examine the plans of the Piazza di San Marco and the Piazzetta at Venice [fig. 29]. Here you will find these principles exemplified with the most refined art.

The Piazza is a deep space in relation to St. Mark's and wide in relation to the Procuratie. The Piazzetta is wide as regards the Doge's Palace, and deep with especial reference to the splendid view of the Grand Canal and S. Giorgio Maggiore in the distance. Before the north side of St. Mark's extends

The Planning of Open Spaces in the City

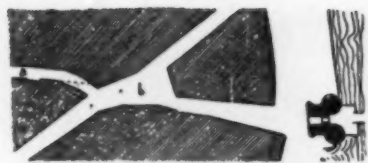


FIG. 32—BRUGES

a third little square. The Campanile, now, alas! fallen, mounted guard between the two chief places. Other causes than that of the actual plan have, of course, contributed to the extraordinary beauty of this combination: colour, sculpture, material have each inspired the scene. But you have only to imagine St. Mark's standing in the central axis of a large regular square, and the Library, the Procuratie, and the Doge's Palace, instead of being gathered in a single composition, distributed along a great street 150 feet wide, to realise that the masterly ordering of its parts is, above all, that which delights us in the splendid masterpiece we still enjoy.

I should have liked to put before you some examples of the great seventeenth and eighteenth century "places" showing the stately effects, though of a different kind, which are attainable by other methods than those we have studied. This pleasure I must forgo on this occasion, and the limits of time at my disposal allow me to offer you only one or two brief notes on street planning.

I will not trouble you with the theoretical systems which have each their advocates when a new city or the extension of an old one has to be planned. Rectangular, radiating, or triangular, they are one and all devoid of artistic interest; nor does such a consideration enter the minds of the engineers who design them. Their regular geometry even is only appreciable upon paper; it cannot be perceived by those who see the executed work. The one obvious idea

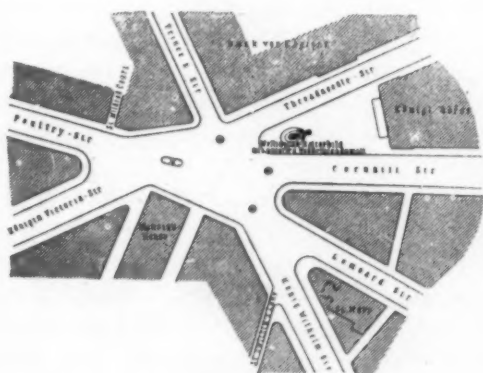


FIG. 31—LONDON
Mansion House

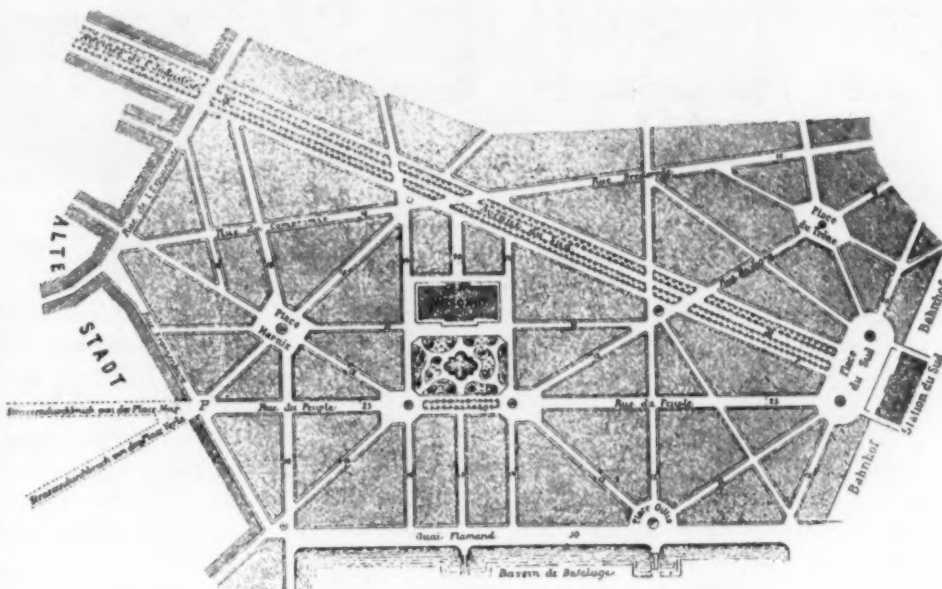


FIG. 30—ANTWERP
Quartier du Sud

is to construct the shortest route between any two points in order to save time in transit. Being, as I have said, inartistic, it follows also that they fail to solve even this practical problem in the best way. One example only by way of proof. In ancient towns you will find, first, that nearly all side streets enter main thoroughfares at right angles. In the modern triangulated and radiated schemes acute angles are inevitable, as may be seen by a glance at the plan of the contemporary "Quartier du Sud" at Antwerp [fig. 30]. In the second place the ancients avoided as far as they could the delivery of several arteries of traffic at the same point. This principle is now quite neglected, with the result that we obtain such hideous jumbles as the nameless space in front of the Mansion House [fig. 31].

Let us turn again to our forefathers whose work we may see pretty much as they left it at Bruges. Do not smile at the juxtaposition of the Mansion House and Bruges as incongruous; in its time Bruges was the commercial centre of Europe, with 200,000 inhabitants, and its streets and squares were planned for the requirements of a dense traffic. In the whole of Bruges you shall hardly find a street which forms an

acute angle with another, nor a crossing of more than one street with one other. Where a street approached another obliquely, or threatened a complicated intersection, its line would be curved so as to avoid acute angles and confusion [fig. 32]. Nowadays we should have carried a street (a) through in a straight line, and so have destroyed the little "place" (b), besides giving wasteful building blocks at the street corners.

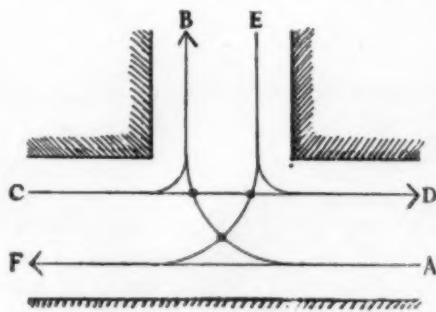


FIG. 33
Three directions from which carriages may arrive.
Three collision points

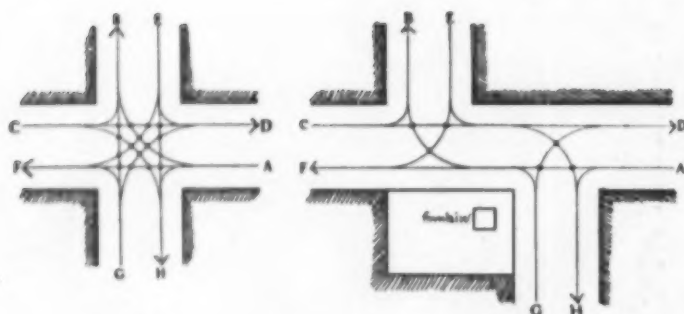


FIG. 34
Four directions from which carriages may arrive. Sixteen collision points

FIG. 35
Four directions from which carriages may arrive. Six collision points

If you consider that the chief object of modern street-planning is to save *time* in getting from one point to another, and not merely to construct the geometrically shortest routes between them, you will understand why I have taken you back to Bruges and the fourteenth century in search of guiding principles. Let me show you an instance [fig. 33]. Taking the first diagram of a side street opening into a main street, it will be seen that there are six possible routes for vehicles A B, A F, C B, C D, and E F, E D. There are three possible points of collision in these trajectories; three points where, if two vehicles approach at the same time, one must slow up or stop to allow the other to pass. If the first street is continued across the second [fig. 34], we obtain twelve different routes, three alternatives from each of the four possible directions, and this, you will see, gives no fewer than sixteen collision points. But let us break the axis line [fig. 35] and form a little "place" such as you will find by scores in old towns, and confess which is the more scientific scheme from the point of view of

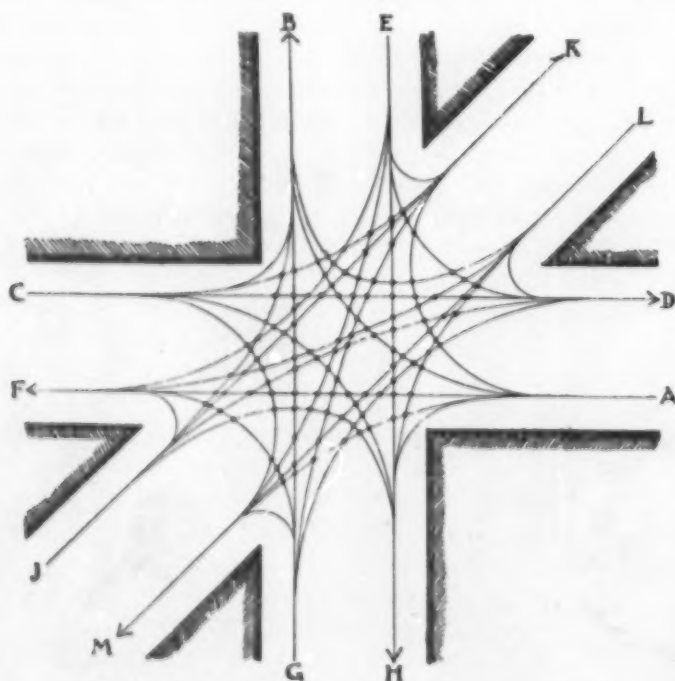


FIG. 36
Six directions from which carriages may arrive. One hundred and twenty collision points



FIG. 38—BRUGES
a—Halle. b—Cathédrale Saint-Sauveur. I—Grand Place. II—Rue des Pierres. III—Place Stevin. IV—Rue du Sablon

the traffic. Or, if this is not convincing, add but one more street to your crossing [fig. 36] and work out the result. Five possible routes from each of six possible directions and no fewer than one hundred and twenty actual collision points, apart from tangential accidents such as may well happen on such routes as L F, J D.

The principle of framing the view by enclosing it and preventing distracting perspective is carried out with as delicate an art in the plans of ancient streets as we have already seen it to have been in those of open places. The more limited the impression the more complete is its effect was the sound axiom of art which, consciously or by tradition, guided the old street builders. The gentle curvature of their lines closed in the perspective and offers to the eye fresh pictures at every step. Now, of course, at great and wasteful expense these windings are daily destroyed in order to obtain a mechanically regular alignment.

There is no reason, either practical or artistic, why our streets should have monotonous parallel sides. Take, as an example, the characteristic little "Rue St. Amand" at Bruges. Not only is such a varying line picturesque and advantageous to the buildings, but it affords exactly those spaces for the cab-stands, telephone and fire-escape kiosks, and other constantly increasing requirements which are difficult to provide for and cause obstructions in uniformly regular streets. Violent bends are not necessary; a slight curvature or displacement of the axis line will produce the happiest effects. The concave line of frontage is the most valuable in improving the appearance of a street, and it should be broken as little as need be; the convex side is less disturbed by openings in it, but is less favourable for important façades, as the field of vision is more limited in that direction. If the street must be straight it should not be too long, for the continued view of the same distant objects produces a sense of fatigue and failing interest. Excessive length, moreover, in a straight street leaves the wayfarer exposed to all the discomfort of sweeping winds and their consequent clouds of noisome dust.

Sitte has selected the "Rue des Pierres," also at Bruges [fig. 38], for an interesting analysis as illustrating the principles we have deduced. It leads, as the plan shows, from the Grande Place to the Cathédrale St. Sauveur, being continued thence to the station by the "Rue du Sablon." It is slightly undulating, and in the first part of the street the right side is concave.

The Planning of Open Spaces in the City

Beyond the Place Stevin, its direction changes to the right, and it is the left side which develops the concave line. The view [fig. 39] is taken going from the Grande Place before reaching the Place Stevin. This, conformably with ancient use, is situated at the side of the street, and is not, as is nowadays customary, traversed by it. A market or meeting can be held there without disturbance, for it is out of the line of traffic for carts or pedestrians. Its being placed on the concave side of the street is exceptional, for, as I have pointed out, the ancients interrupted the concave side of a street, where the buildings are well seen, as little as possible; the break in the frame is more apparent there than on the convex side. Here the effect of the break is minimised by the Tower of St. Sauveur which closes in and dominates the picture. Turning backward, the view of the spectator is arrested by the belfry of the Market Place marking the other end of the street.

The special character given to the street by these two towers is due in the first place to its curvature; each tower thrusting its height above the roof comes unawares upon our wondering vision. To-day it is thought fine to see, hundreds of yards ahead, a single tower, standing geometrical, at the end of a street which we despair of reaching. The desire to display a lofty edifice or a natural effect to advantage is the reason for many of the windings of old streets. Note also, by the way, the fewness of the side streets which open into the "Rue des Pierres" and the absence of any cross street. This may perhaps be impracticable nowadays, but there should be found some happy mean between this old-world ideal and the mangled thoroughfares of our modern towns.

Here, at "Bruges la morte," I must leave you, unable, as I forewarned you, to do more than touch on one or two outlying points of my fascinating subject. Is it hopeless to suppose that in time our authorities may perceive that mere pulling down, aligning, and widening of streets will never meet our traffic requirements, and that what is needed is artistic and considered planning? To the Institute students



FIG. 39

especially do I commend this problem. Let them not be content to continue by mere tradition the measurement and study of the individual building and its details, important though these be. There lies a rich reward for those who will consider the combination, construction, and grouping by which effect is gained; and our Prizes Committee might perhaps judiciously stimulate synthetic as well as analytic investigation.—*Journal of the Royal Institute of British Architects.*





The Garden Front

HOUSES WITH A HISTORY

WARWICK CASTLE

By P. H. DITCHFIELD, M.A., F.S.A.

FEW of the historic houses of England can compete with Warwick Castle in regard to either its natural beauty, or its wealth of historical associations. It possesses all the characteristics of a mediæval fortress of great strength and grandeur, and may be selected as one of the best examples in England of the castle of ancient days which played no inconsiderable part in the times of civil strife and in the political revolutions of our country's annals. Most of our castles are in ruins. They were held by Royalists in the great Civil War, and were "slighted" by Cromwell in order to prevent them from proving themselves thorns in the sides of the Parliamentary party. Warwick, having been held by Lord Brooke, who fought on Cromwell's side, was spared, and therefore retains to-day all the features of its former greatness, a delightful study for the student of the military architecture of the Middle Ages. It has an ancient lineage. Ethelfleda, daugh-

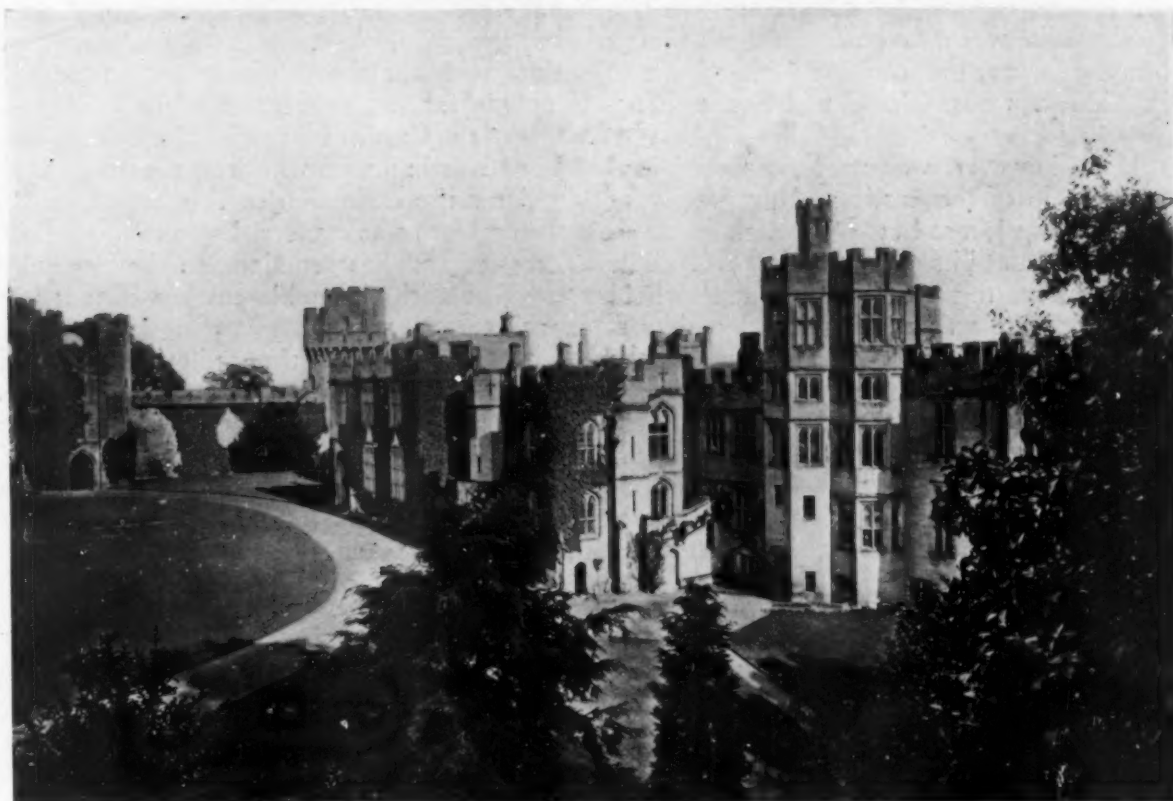
ter of King Alfred, (according to Dugdale) in the year 915 A. D., made a strong fortification here, called "the Doungeon" for the resistance of the enemy, upon a hill of earth artificially raised near the riverside. "The enemy"

were the Danes, who attacked Warwick in 1016, and well-nigh destroyed the fortress of Alfred's martial daughter. The Conqueror, who had a keen eye for positions of natural strength or military importance, ordered Turchel to fortify the town and castle of Warwick. Various sums were spent upon the repair of the walls and the maintenance of the garrison in the reign of Henry II., Richard I. and John; but Simon de Montfort paid a surprise visit to the castle held for the king by William Mauduit, Earl of Warwick, and wrought such effectual destruction that nothing of value was left save the herbage in the castle ditches. This earl, like several of his successors had no children, and the castle and title passed to the powerful Beauchamp family.



THE ENTRANCE—INTERIOR

Warwick Castle



THE CASTLE FROM THE MOUND

Guy de Beauchamp, with other barons, seized the much hated Piers Gaveston, favourite of Edward II., and brought him as a prisoner to the castle. This wretched person had dared to style the great baron "The Black Hound of Arden." The Black Hound caught his fox and lodged him in the dungeon of the Caesar's Tower. "Now you shall feel the hound's teeth," said the Earl to his prisoner who, after a mock trial, was beheaded at Blacklow Hill, where a monument marks his memory. To Thomas Beauchamp, Earl of Warwick and to his son, also named Thomas, who flourished in the 14th century, the castle owes much of its strength. The former erected Caesar's Tower. He fought on the bloody field of Crecy where the Black Prince won his spurs, and also at Poitiers, and became rich with the spoils of war and the heavy ransoms of French knights and princes which fell to his lot. He built the church of St. Mary, and sleeps his last sleep in its choir. His son Thomas built Guy's Tower. Another tower tells of his prowess, the Beauchamp Tower in the Tower of London, which marks the site of his incarceration during the wane of royal favour. Richard, the son of the second Thomas, was a mighty warrior, a powerful and successful baron, foremost in valour in the field, a prince among knights. Many tales could be told of his might. The cognizance of the family "the Bear and the Ragged Staff" was borne in many a fray, and dreaded by every foeman. His son Henry ac-

tually attained to regal rank, and was crowned King of the Isle of Wight by his grateful sovereign Henry VI. Like the leaves of the forest, great families have their day, then wither and die. The Beauchamps pass, and the Nevils enter the lordly castle, and make it famous in English history. Richard Nevil, Earl of Salisbury, married Anne, the heiress of the Beauchamps, and is better known as "the King-maker," the powerful baron who had six hundred armed retainers, made and unmade kings, and brought to his castle Edward IV. a prisoner in 1469. Again the pageant passes. Barnet Field seals the fate of the King-maker. Troublous times are in store for the Earls of Warwick. A butt of Malmsey wine finishes the career of the Duke of Clarence, created Earl of Warwick by Edward IV., and his wife died suddenly, it is said, by poison. Here comes the hunchback Richard and is joined by his gentle queen, Anne Nevil, and in the hall of the castle he receives the ambassador of Elizabeth of Castile, as well as the envoys of the King of France and the Duke of Burgundy, who come to congratulate him on his accession. The Dudleys enter into possession of the castle. Some were beheaded, and Ambrose, known as "the good Earl of Warwick," the last of the race, who entertained Queen Elizabeth, died in his bed in 1589, and having no children, the title died with him. The castle was granted by James I. to Sir Fulke Greville, Lord Brooke, a costly present, as the buildings were so dilapidated that the

House and Garden

new owner had to expend £30,000 upon their restoration. Sir Fulke was a favourite of both Queen Elizabeth and James I., the friend and biographer of Sir Philip Sidney, whose shade still haunts Penshurst.

The earldom, however, was no longer conjoined with the ownership of the castle and property, but was granted by King James I., to Lord Rich, in whose family it continued until its extinction in 1759. The Lords Brooke in the mean time, continued to hold the castle. Sir Fulke was assassinated by his servant in 1628 after he had restored and beautified the castle. Robert, I. Brooke, his successor, was a strong Puritan, who fell in the close at Lichfield when the Parliamentary forces were besieging the cathedral garrisoned for the king. On the site of the present orangery in the gardens of the castle stood an old timber framed house which was used as a Presbyterian chapel, where Lord Brooke listened to the discourses of Samuel Clarke the younger. Lord Northampton made a dash to seize the castle, the garrison of which was commanded by Sir Edward Peto of Chesterton. The king's forces were driven back. Sir Edward had hung woolpacks outside the gate house on great hooks, which still remain, to protect the walls from Lord Northampton's cannon-

balls. No royal standard waved on Guy's Tower, but a winding-sheet and a Bible in order to show to the enemy that the Puritan leader was ready to die for his faith. The Roundheads trembled for the fate of the Castle of Warwick; but it held its own, and Lord Northampton withdrew his troops discomfited.

After the extinction of the Rich family in 1759, the earldom was conferred on Francis Greville, Lord Brooke, and has remained in the family ever since, together with the noble castle which it is now our privilege to visit.

In the year 1634, three pilgrims set out from the city of Norwich on a tour through England. They are described as "the Captain, Lieutenant, and Ancient of the Military Company at Norwich," and they were wise enough to record their experiences. Happily their descriptions of the places visited have been preserved, and are now in the British Museum. Here is their impression of Warwick, "which for a fayre and stately castle may compare with most in England. It is most sweetly and very pleasantly seated on a rocke very high, upon that pleasant river, the Avon, that divides the shire in twaine: whether ye sumptuousnesse of the building with the richnesse of the furniture, the pleasantnesse of the seat, or the strengthe of the brave ancient high towers with her



GUY'S TOWER

Warwick Castle

own defensive situation, exceeds, it is hard to be determined. At our first ascending entrance we passed over a large bridge and then through a strong double gate into a fayre courte leaning on either hand, a strong and lofty defensible tower, namely, Julius Cæsar's on the left and Guy of Warwicke's on the right.

"The castle is seated on the sayd river Avon. By it a second Eden, wherein is a most stately mount, which overtops and commands a great part of her owne and some part of four adjacent shires; and the whole hill and declining brow is so planted and furnished with beech, birch, and severall sorts of plum-trees, as it is more delightful and pleasant to ascend.

"By this large and pleasant peece of ground, which is adorned with all kind of delightful and shady walks and arbors, pleasant groves and wildernesses, fruitful trees, delicious bowers, oderiferous herbes and fragrant flowers, betweene the river and the high rocky foundations of the Castle, on the south side thereof, there are many rare and curious fish ponds, all made and hewn out of the solid rock of free-stone, like cisterns of lead, which are levell with the river, and supply'd with great store of good fish.

"This sumptuous stately building, this most pleasant garden, and these most delightful fish ponds were made thus rare and excellent at the cost and charges of that worthy and famous knight, her late owner and inhabitant, Sir Fulke Greville. And as at the last Castle (Kenilworth), we met with the high armor of that warrior Guy of Warwicke for his body, so here we saw that for his horn, his fearfull sword and dagger, the larger rib and tooth of the wild bore, which they call a dangerous beast that frequented the woods, the hills, and the rocks thereabout, which he encountered withall, and slew, if report passe for credit."*

I make no apology for extracting this long quotation from the excellent observations of "the Captain,

Lieutenant, and Ancient" of the worshipful Norwich Company. Their descriptive powers were so good, that the picture they drew for us forms a very accurate sketch of what we see to-day.

Admirably adapted for defensive purposes is the site of this castle, which crowns a lofty hill. Passing the porter's lodge we ascend the steep slope of the carriage drive which has been cut through the solid rock and is overhung with trees. Suddenly, as we gain the outer court of the castle, we see before us a grand view of the stupendous walls of the fortress with its lofty towers. A deep moat adds to the strength of the fortifications, formerly spanned by a drawbridge. There is a noble double gateway clad with ivy, flanked by towers. The portcullis still remains, and the four holes through which heated sand or burning pitch could be poured upon inconvenient visitors to discourage their attentions.

Entering the courtyard, we see on the left Cæsar's Tower and the front of the habitable portion of the castle, somewhat modernised, an extensive restoration of the Great Hall having been necessitated by the disastrous fire which broke out in 1871. On the right stands Guy's Tower, the Bear and Clarence Tow-



THE CEDAR DRAWING-ROOM

ers and the strong walls guarding the inner bailey court. A beautiful stretch of greensward covers the courtyard, and in front is the mound or keep where once stood the Norman fortress, and where Ethelfleda, the daughter of Alfred, raised her Saxon stronghold.

These towers are worthy of close inspection. Cæsar's Tower has nothing Roman about it except its name. Nor can it claim Norman origin. It was built, as I have said, by Thomas de Beauchamp in the 14th century. Its plan is polygonal with curved faces and machicolated with overhanging battlements. Its height is 147 feet. The base projects widely. There are four storeys. Its most interesting feature is the strong vaulted dungeon, the walls of which

* The legends connected with Guy, Earl of Warwick, who lived in the 9th century, are full of romantic interest. The minstrels in the Middle Ages used to tell of how he fought the Danish chieftain Colbrand, went as a pilgrim to the Holy Land, slew the dun cow, a ferocious beast, and a huge wild boar, and retired from the world, ending his life in a hermit's cave, which still bears his name, Guy's Cliff.

House and Garden



THE ENTRANCE GATE—EXTERIOR

have several curious inscriptions and rude carvings scratched by the poor prisoners who have been confined therein. There are several votive crosses and crucifixes, and amongst others the following verses:

MASTER JOHN SMITH, GUNER TO HIS
MAJESTY HIGHNES WAS A PRISONER IN THIS
PLACE, AND LAY HERE FROM 1645 TELL TH
WILLIAM SIDIAE ROT THIS SAME
AND IF MY PIN HAD BIN BETER FOR
HIS SAKE I WOULD HAVE MENDED
EVERRI LETTER

Guy's Tower was built by Thomas de Beauchamp, the son of the builder of the former tower, in 1394. The Bear and Clarence Towers guard the entrance to the gardens; the former if not the latter, was erected by the notorious Richard, Duke of Gloucester, afterwards Richard III., and beneath it is a subterranean passage.

We must now "sound the warder's horn," or in

Warwick Castle

modern style ring the bell in order to gain entrance to the residential part of the castle. The whole of the eastern portion has been restored after the great fire of 1871. The main walls however, were too thick and strong to suffer greatly from the fire, which brought to light some of the old features of the chamber, disclosed some clerestory windows, and enabled the architect to reproduce with fair accuracy the design of the mediæval hall. The furniture, carpets, screens and flowers give it the appearance of a modern drawing-room rather than of the ancient hall which once witnessed the condemnation of Piers Gaveston, echoed with the sound of the feasting of the retainers of the Last of the Barons, and heard the snuffling, whining voices of the extreme sectaries of Cromwell's day. The whole castle is indeed a well-stored museum, replete with objects of antiquarian and historical interest, and abounding with paintings of important personages and family pictures by the great masters of the art. The hall contains many objects of supreme interest. There is some good Flemish tapestry of the 17th century, many suits of armour, the huge antlers of an Irish elk, measuring 10 ft. 9 inches, Queen Elizabeth's saddle on which she rode on her journey to Kenilworth, Cromwell's helmet, some crusader's armour, a Knight Templar's helmet, a doublet blood-spotted, in which Lord Brooke was slain at Lichfield in 1643, the mace of Richard III., Scottish claymores, a swivel gun taken from a French pirate off the Irish coast, armour worn by Montrose, some suits of armour of the 15th and 16th centuries, some horse armour of the 15th century, and that used by the "noble imp." Popular attention is always attracted to a huge cauldron made of bell-metal known as Guy's Porridge Pot. The large vessel holds 120 gallons, and is sometimes described as a punch-bowl. It is, however, conjectured that the pot was made for cooking the soldier's dinners by order of Sir John Talbot, who died in 1365. Guy's sword, a large weapon which really belongs to the time of Henry VIII., is also preserved, for the keeping of which William Hoggesson, Yeoman of the Buttery, received 2d. a day in the time of the last named monarch.

Before leaving the hall, we must glance through the deeply recessed windows, and see the magnificent view, the Avon flowing 100 feet below with its wooded banks, the remains of the old bridge over which Queen Elizabeth rode when she visited the castle, and the "new" bridge erected more than a century ago. It is a delightful prospect.

Then we traverse the fine suite of state apartments, first examining the red drawing-room, which contains Van Dyck's painting of Snyder's wife, the Marquis of Spinola by Rubens, Velasquez's *Gotama*, and the portrait of the present Countess of Warwick, a prominent lady in English society, socialistic politician, founder of the Ladies' Agricultural College at

Studley Castle, and an authoress whose history of her ancestral home is the standard work on the subject.

The cedar drawing-room, panelled with cedar-wood, beautifully carved by local workmen, and magnificently furnished, contains a series of portraits by Van Dyck, which includes the second Earl of Warwick of the Rich family (1642), Charles I., and his Queen Henrietta (the dress is said to have been finished by Sir Joshua Reynolds), James Graham, Marquis of Montrose, the Countess of Brignola and her son (brought here from the palace of the family at Genoa), the first Duke of Newcastle and Lely's Nell Gwynn. The mantelpiece of this exquisite room was designed by Adams and is said to be unique. There are valuable bronzes, Etruscan vases, and some beautiful cabinets.

The green drawing-room has a fine ceiling richly gilded. Here is the wonderful Grimani table which came from the palace of that family at Venice, portraits of Ignatius Loyola by Rubens, a Spanish warrior by Moroni, Robert Bertie, Earl of Lindsay, Thomas Wentworth, Earl of Strafford, and Prince Rupert, both by Van Dyck, and Lord and Lady Brooke.

Queen Anne's bedroom is hung with Gobelin tapestry, manufactured in 1604. The bed, hung with crimson velvet, and the furniture belonged to Queen Anne, and were presented to the Earl of Warwick by George III. Kneller's portrait of the Queen appropriately adorns the room. Queen Anne's travelling trunk is curious and interesting. There is a fine example of seventeenth century buhl work, consisting of silver and tortoise-shell inlaid.

We next pass into the Countess's boudoir, a charming little room which abounds with treasures of art and *vertu*. The walls are covered with silk tapestry and the ceiling was constructed in 1750. The pictures include Holbein's portraits of Henry VIII., Martin Luther, and Anne and Mary Boleyn, Lely's Barbara Villiers, Duchess of Cleveland, a boar-hunt by Rubens, and many others by well-known masters.

Lovers of ancient armour will find in the armoury passage many examples of supreme interest, including cross-bows, crusaders' armour, weapons from various countries, Moorish, Spanish, Indian, cedar brought from Palestine by the crusaders, Cromwell's mask, his armour and boots, a bugle taken from the battle-field of Edgehill, guns from the field of Waterloo, etc. Here is also a table which belonged to poor Queen Marie Antoinette.

The dining-room is a noble chamber, built by Francis, Earl of Warwick, about 1770. The furniture is French work, upholstered with appliqué embroidery, and there is a fine carving by Grinling Gibbons of the Battle of the Amazons. The pictures include the well-known equestrian portrait of Charles I. by Van Dyck, some Lions by Rubens, Augusta, Princess of Wales and George III. when an infant by

House and Garden

Phillips, Frederick, Prince of Wales by Richardson, Jansen's Duns Scotus and a portrait by Sir Philip Sidney. A rib of the fabulous dun cow slain by Guy of Warwick is preserved here.

The chapel has a very modern appearance. The Shakespeare room contains a collection of prints and works relating to the poet and the wonderfully carved Kenilworth Buffet representing in its panels scenes from Sir Walter Scott's romance on the visit of Queen Elizabeth to Kenilworth castle.

The visitor to the castle will retain a rare but perhaps confused vision of all kinds of rare treasures of art, "superb *garde-robres*, *encoignures*, cabinets, and tables of buhl and marqueterie of the most costly finish; splendid cups, flasks, and vases of ormolu, crystal, china and lava; Etruscan vases, marble and *pietra dura* tables; bronzes and busts displaying the utmost efforts of art; Limousin enamels, costly bijouteries and rare antiques," in addition to the price-less canvasses that adorn the walls.

Leaving the inner court, we pass through a port-cullised doorway across the moat to the gardens. The undulating ground of the moat has been laid out with much taste as a garden, and beyond are lawns girt with magnificent trees, oaks and elms, chestnuts, beeches and cedars of Lebanon. Then we come to the formal garden with its yews clipped into shape of divers birds, and flower beds lined with borders of box.

But the great treasure of the gardens is the famous Warwick Vase, made of white marble and preserved

in the huge greenhouse. It was fashioned by Lysippus, a great artist in the fourth century, B. C. The following appears on the modern base:

HOC PRISTINAE ARTIS
ROMANAEQ. MAGNIFICENTIAE MONUMENTUM
RUDERIBUS VILLAE TIBURTINAE
HADRIANO AUG. IN DELICIIIS HABITAE EFFOSUM
RESTITUTI CURAVIT
EQUES GULIELMUS HAMILTON
A GEORGIO III, MAG. BRIT. REX
AD SICIL REGEM FERDINANDUM IV LEGATUS
ET IN PATRIAM TRANSMISSUM
PATRIO BONARUM ARTIUM GENIO DICAUIT
AN. AC. N. CIC. DCCLXXIV.

From this lengthy inscription we gather that the vase was dug out of the ruins of the Tiburtine villa, the favourite abode of the Emperor Hadrian; that Sir William Hamilton, the ambassador of King George III. to Ferdinand IV., King of Sicily, took care that it should be restored and sent to England in 1774. It is a beautiful specimen of early Greek art, the carvings representing Bacchanalian symbols and vine leaves and grapes.

We might follow the dead earls to their last resting-place in the church of St. Mary's but time presses. Warwick Castle will live in our memories as a perfect example of a mediæval fortress, adapted to the needs of a modern mansion, and we are grateful that Time has dealt gently with its frowning battlements, and left us so much that recalls the historical associations that cluster around this fair mid-England stronghold.



FROM THE ISLAND

THE IMPORTANCE OF CEMENT AND ITS PRODUCTS IN HOUSE BUILDING—II.

By J. M. HASKELL

On the Farm IN the May issue of "House and Garden" attention was called to the value of concrete as a building material on the farm. In the accompanying pages further illustrations of its wide application for this use are shown. Indeed it may be said that it is entirely appropriate for every structure the farmer may have occasion to build from the house to the pigsty. This is especially so when an ample supply of stone is not at hand, for to build of concrete would be cheaper than quarrying.

Silos

See especially the illustrations of the silos and barn on pages 299 and 300 and of the interior of the cow stable on page 300.

Farmhouse

On page 299 is shown another excellent type of bungalow farmhouse, and one of the interiors is also shown on the same page.

Greenhouse

The greenhouse on page 298 speaks for itself, and in the beauty of its lines and general effect is an eloquent advocate for the cause.

Retaining Wall and Dam

The sterner use of concrete is well shown on pages 298 and 299. The former is a dam in process of erection at Sprague's Falls, Maine, and the latter is the high retaining wall built as a preliminary to the vast operations on the site of the new Grand Central Station in New York.

Cement Block Building

There is, however, another use of cement to be added to the versatile field of activity already illustrated but

which has not yet been mentioned. This is a method in which monolithic construction gives place to block construction. That is to say the concrete, instead of being used in mass and packed in successive shapeless units between plank molds, one after another, until the whole wall is formed of a homogeneous and monolithic mass, is cast in small, smooth molds of steel so as to form a series of blocks of moderate size.

These are allowed to harden, and when hard are taken to the building and there laid up with mortar in a similar way to cut stone. In short we have now to deal with blocks of artificial stone, and the laying of these concrete blocks is the duty of a stone mason with the same mortars and with the same methods as in ordinary masonry construction except that the blocks require no trimming to adjust them to their place, as they come to the work ready to set. The mortar used should be cement and lime mortar, and the outside joints may be repointed if desired, though this is not necessary. The cement blocks are made hollow to allow air spaces for drying the wall, and it is well not to fill entirely the bed joints so as to leave air spaces between the rows of blocks.

Surfacing the Wall

When the wall is built, any irregularities in color, if objectionable, may be overcome by a wash composed of cement water and lime paste in the proportion of one part of Portland cement to one-fourth part of lime paste, diluted with sufficient water to make a liquid wash.

This acts as a waterproofing agent also, increasing the impermeability of the blocks. The interior of the house and the floors are treated in the same way as where the monolithic system is used.

Making the Blocks

The concrete building blocks are, as I have said, not made by unskilled labor in wooden molds, but in special machines using polished steel molds to form the

blocks. An excellent machine of this description is shown on page XVII of the May issue of "House and Garden."

It has an abundant capacity for producing such blocks in quantity, and can make blocks of any special shapes or sizes up to three feet long or for columns up to seven feet.

Surface of the Blocks When concrete blocks were first introduced, the attention of makers was given

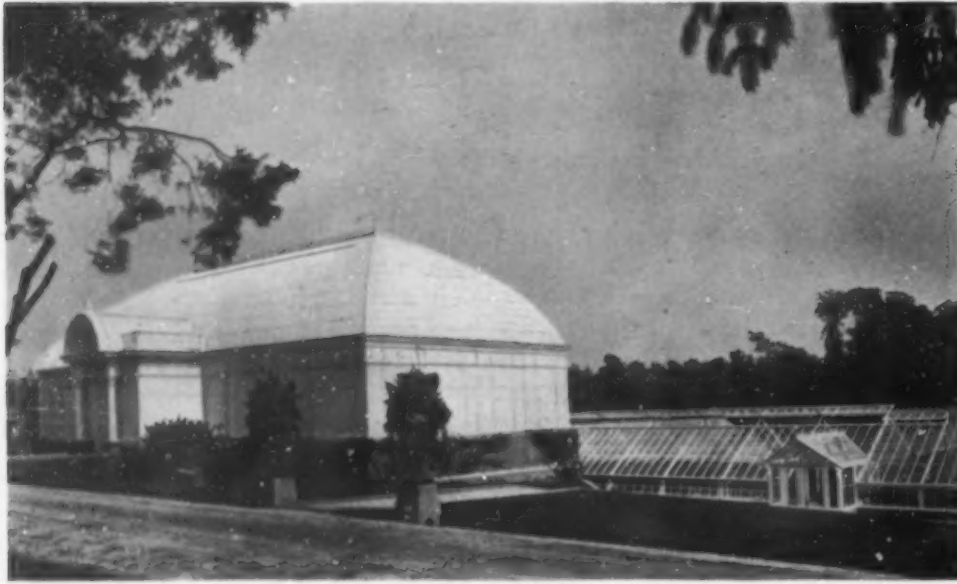


RESIDENCE BUILT OF CONCRETE BLOCKS AT CLEVELAND

Blocks Made by the Hayden Machine

Cement Age

House and Garden



CONCRETE GREENHOUSES

Atlas Portland Cement Co.

wholly to structural excellence. Solidity, hardness and smoothness of finish were the ends sought for. This led to an undesirable and quasi-lithic masquerade which brought the system into some disrepute for domestic work. Latterly, the concrete blockmakers, instead of endeavoring to simulate stone, have treated their product more sensibly and frankly so that the blocks, as they come from the manufacturers, are rapidly assuming a more normal and pleasing form. It only requires, on the part of the manufacturers, an entire willingness to meet the architects' views in this respect, to produce an effect which will be unobjectionable. Variations in the sizes and shapes of the blocks; variations, natural or sophisticated in the texture of the surface; and a careful study of the capabilities of the material in this direction, are all that is needed to bring about the desired result. This industry is still in its infancy and taking this fact into consideration, it is really surprising what sound progress has been made in the two or three years of its existence.

Fireproof
Qualities again

What was said in the preceding article on the excellent record of concrete when subject, to the severest

tests by fire is reinforced by the following testimony quoted from *The Municipal Journal and Engineer*:

"The heat-resisting properties of concrete are a prominent subject of discussion among engineers and fire-department officials. A recent fire at Duluth, which destroyed a part of the large Peavy elevator plant, has afforded a test on a large scale, and local reports show that the material came off with all the honors of the contest. Thirty-five circular bins, 110 feet high, with a capacity of 4,000,000 bushels, directly faced the 'crib' or working

elevator, the latter being completely destroyed by flames, whose heat broke glass in buildings half a mile across the bay. The bins were of steel framework, covered with concrete; they are entirely unharmed and the walls are not even blackened, the fierce heat having burned off the smoke."

Concrete Fence
Posts

A contributor to *Concrete* says, "The manufacture of concrete fence posts, along with other Portland cement products, has become a great industry. The consumption of cement posts in this country to-day is enormous and railroad companies, ranch owners, and



CONCRETE DAM AT SPRAGUE'S FALLS, ME.

Cement Age



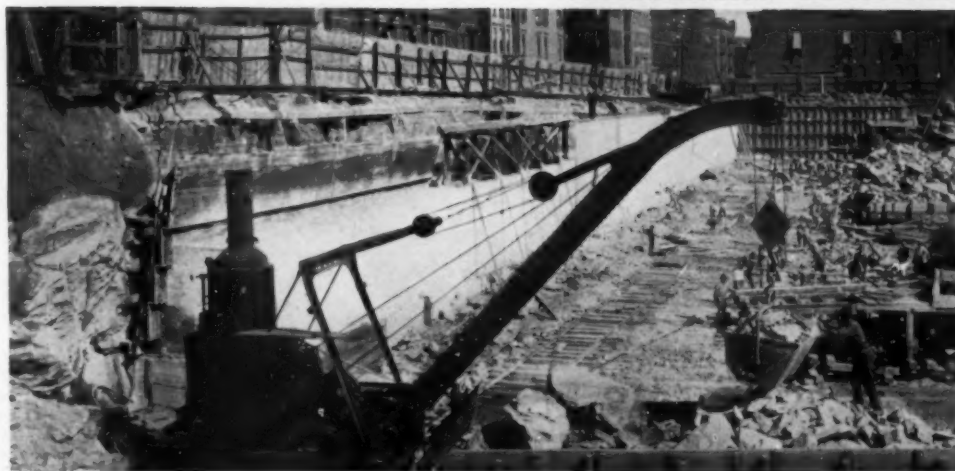
A Concrete Cottage erected near New York at a total cost of \$4,565
Cement Age



Room in Concrete Bungalow
Cement Age



Concrete Barns and Silo
Cement Age



Concrete Retaining Wall, New York
Cement Age

House and Garden



INTERIOR OF CONCRETE COW STABLE
Cement Age

farmers throughout the country are using cement posts in large quantities and the demand is rapidly increasing. Post timber in most every state is practically exhausted, with the exception of a few cedar and black locust, which retail as high as thirty and forty cents."

Concrete Cottages

In Broad Bay, Ireland, was recently discharged a cargo of Portland cement, to be used in the erection of cottages at Aignish fishing settlement. This is the fifth vessel that has discharged material for these houses to the order of the contractors, Messrs. E. and D. Stew-

art, Fort William. The erection of these houses commenced last summer, and has been energetically carried on with the result that eighteen of them are now under roof, and the remaining fourteen of the group are well forward in other respects. The houses, with a few exceptions (which are built of stone), are built of concrete blocks cast in constructed molds on the hollow wall system, viz., two parallel vertical walls with an air space of two inches between them, which should admirably answer the requirements of the climate of the Lewis. These neat and substantial buildings, which are built by the Congested Districts Board to relieve the congestion in the Point district, to-



CONCRETE FARM BUILDINGS
Cement Age

gether with four or five acres of land attached to each house, will doubtless be appreciated by the fishermen who are fortunately among the chosen. Mr. Weir, M. P., for the county, and Col. Gore Booth, consulting engineer to the Secretary for Scotland, visited the settlement recently.

It is fortunate, indeed, in view of the rapid deforesting of this country, that a material is at hand at once so simple, so natural, and above all so indigenous, to replace the native wood which was so lavishly used by our forefathers for their chief building material.

When the capacity and characteristics of concrete are not only acknowledged but frankly used as the basis for a sympathetic style of design, then it will largely replace the more expensive building processes.



BUILDING OF MOLDED CEMENT BLOCKS ERECTED FORTY YEARS AGO
Cement Age



Cottage at Branford
Short Hills N.J.

Rossiter & Wright Archts.
95 Liberty St. N.Y.



This is an excellent illustration of the distinctive style of medium-cost house of which the architects have produced so many examples in the suburbs of New York. In this case unusual value has been attained, and the house is in every respect modern and complete in its class. The first story is partly built of local stone, as shown, and the rest of the house is covered with shingles laid in double courses, twelve inches to the weather, stained light gray. The roof is covered with tiles. The exterior stone work has received a wash of La Farge cement and beach sand which gives an ivory white effect that is exceedingly agreeable. The trees shown in the illustration were sketched on the site and are in their proper relation to the house. The interior of the house is finished chestnut, stained dark brown (on the first story); painted wood work elsewhere throughout. Mantels of brick and cut stone. There are two tiled bath rooms, hot water heat and electric lights. A terraced garden (one side of which is shown in the sketch) faces the reception and living rooms. Cellar and terrace walls of concrete. The addition of the servants' dining room on the first floor is a distinct advantage to the house and fully justifies the slight increase in expense it has occasioned. The house, complete, was erected for \$8000.

GARDEN WORK IN JUNE

By ERNEST HEMMING

THE planting season is about over and work consists principally of cleaning up and caring for the growing plants.

Owing to the daily increasing heat of the sun and the liability to drouths planting that still remains to be done should receive a little extra care. In transplanting growing plants it is always well to select a cloudy day and move the plants with a little ball of earth attached to the roots if at all possible.

The lawn should now be looking at its best. New lawns will have more or less objectionable weeds in them, such as dandelion, plantain, etc. There is really no royal road to eradicate these pests except taking them out by hand which is usually a long and tedious job. A little persistence in beginning however will work wonders. A glazier's putty knife is an excellent tool with which to take them out. Push the knife under the plant so as to cut the root below the collar or point where the leaves spring from, the plants will then come out without destroying the turf and the grass will quickly cover the bare spaces and prevent other plants from establishing themselves. Grass is one of the fittest plants to survive, hence our beautiful lawns and pastures, so do not be disheartened, one hour or less a day will work wonders.

House plants that have been in the dwelling all winter will be in a more or less weakened condition and should receive attention. Now is a good time to repot them. Knock them out of their pots and take off all loose soil that can be removed with the fingers without disturbing the roots. If the ball of earth is dry, soak it in a pail of water before attempting to repot. Do not over pot; among amateurs this is a common error. A little observation among a professional's plants will reveal a certain proportion between pot and plant. The majority of house plants after being in the dwelling all the winter will not need a larger pot; where the plant is vigorous and the pot full of roots a size larger may be given them.

The best all-round soil for potting is old sod that has been left in a pile to rot for a few months, add to this some well rotted cow manure and a little coarse sand and you have a fine compost. It is full of fibre and may be packed firmly around the roots of a plant without danger of it becoming hard and will remain porous. The failure of many plants is caused by insufficient drainage. Use clean pots, and for sizes above six inches in diameter place fully two inches of broken crocks in the bottom, then sufficient soil to admit of the plant being the right depth in the pot, upright and in the centre. Work the soil

down the sides of the pot with a blunt stick a little at a time so that it can be packed firmly and leave no interstices. Do not fill the pot too full, one inch or more for large pots and tubs should be left so as to admit of a good watering without running over the sides. When a palm, azalea, rubber or such like is properly potted it should be possible to pick it up by the stem of the plant without the pot falling off.

After potting, plunge the pots up to the rim in ashes or sandy soil in some sheltered position where they will get sun at least a portion of the day and can be watered regularly during the summer months and you will have some nice plants to take into the house for the winter. The question is often asked; what must I do with my azalea that I got in flower for Easter? If treated as above it will form buds again during the summer and flower the following spring.

This is the month of roses. Observe how the flowers are borne on stems that spring from last year's wood. Keep this in mind and you will have mastered the law governing the pruning of a rose bush. Learn to know the roses by name and they will become like old friends and prevent disappointment should you wish to add to your collection.

On the new growth no doubt the green fly or aphid is in evidence, also the caterpillar. There are many remedies for these pests, perhaps the simplest is tobacco water. Procure some common plug tobacco or tobacco stems and place in a vessel and pour water over it, let it stand until the water looks like coffee, then syringe the bushes with it. If this is done at intervals of a few days it will keep the bushes clean.

For the flying beetles that get in the open flowers and spoil them there appears to be no remedy except hand picking and watchfulness, which is a pleasure as the roses are in bloom.

It is not yet too late to plant chrysanthemums to bloom the coming fall. If they are intended to flower in the open select only the earliest flowering varieties, and plant if possible where a temporary shelter can be given them against early frosts. It is always worth while to grow a few in pots for indoor decoration in the fall.

Work in the kitchen garden consists chiefly of general attention to crops such as hoeing, thinning, watering and cultivating.

Privet hedges will soon need their first clipping to keep them looking nice. The privet grows all summer long and may be clipped almost at any time when it is convenient to do it. Evergreen hedges should not be clipped until after they have

A Newport Villa and Grounds

made their growth which is a little later in the summer.

In most localities growing fruit is almost impossible without intelligent spraying. This is too broad a subject to be treated in notes of this kind, but constant attention should be given the trees so as to

take the different pests in time as soon as they make their appearance. Do not let young trees over crop. Peaches are especially liable to this. The fruit should be thinned out as soon as they get as large as the end of the thumb or when they have passed what is called the stoning period.

A NEWPORT VILLA AND GROUNDS

RESIDENCE OF MRS. RICHARD GAMBRILL, NEWPORT, R. I.

WADLEY & SMYTHE, Landscape Contractors. CARRÈRE & HASTINGS, Architects

THE accompanying illustrations show the laying out and planting of grounds, construction of roads, walks etc. of Mrs. Gambrill's new French villa at Newport, R. I., created from an open commons in less than two years.

The approach to the villa is seen through a charming vista of a double row of maples on either side of the broad drive; these maples were twenty years old when transplanted, were cut back to twenty-five feet in height, and show this fine effect after two years' growth. On either side of this driveway is a wide border of hardy ivy and specimen trained box trees. This illustration also

shows the driveway which was constructed of ten inches of rough stone laid on edge, four inches of chip stone, two inches of clay, three inches of small blue stone and one inch of screenings, all so thoroughly rolled as to result in a combination so permanent and satisfactory, that after two years of constant usage it has shown a shrinkage of less than half an inch.

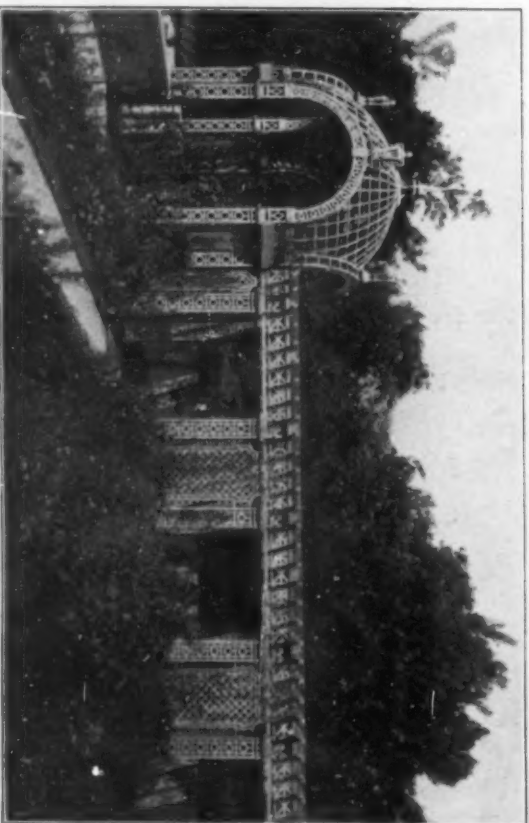
The formal garden from the marble terrace is a counterpart of the famous Hampton Court of London, England, showing the fountain and the screen of native cedars separating the avenue from the garden with a beautiful border of pink



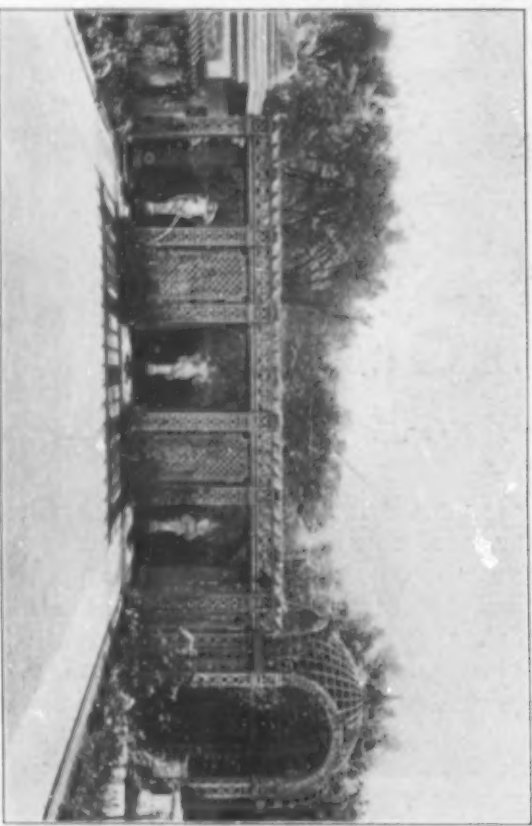
THE APPROACH TO THE HOUSE



VIEW OF THE SEA FRONT



SIDE VIEW OF THE PERGOIA



THE PERGOIA FROM THE LAWN



PLANTING NEAR THE BOUNDARY WALL

A Newport Villa and Grounds

anemone. This magnificent cedar hedge is twenty feet high and every tree was carefully selected in Massachusetts and brought a distance of seventy miles. The heavy border of pink anemone is strikingly beautiful against the dark green foliage of the cedars. The view of the garden itself shows the double terrace—and the whole forms one of the handsomest developments of horticultural achievement in New England.

The illustration of the French garden gives but a faint idea of its charm and beauty. The outlook is from the north loggia and shows the planting of hardy perennials whose color scheme has been the subject of careful forethought as to color effects. A fine view of the rose arbor is also obtained from this point, which is thickly covered with the choicest varieties of climbing roses.

A beautiful group of large trees in a corner of the lawn, with a sixty-foot taxodium tree in the

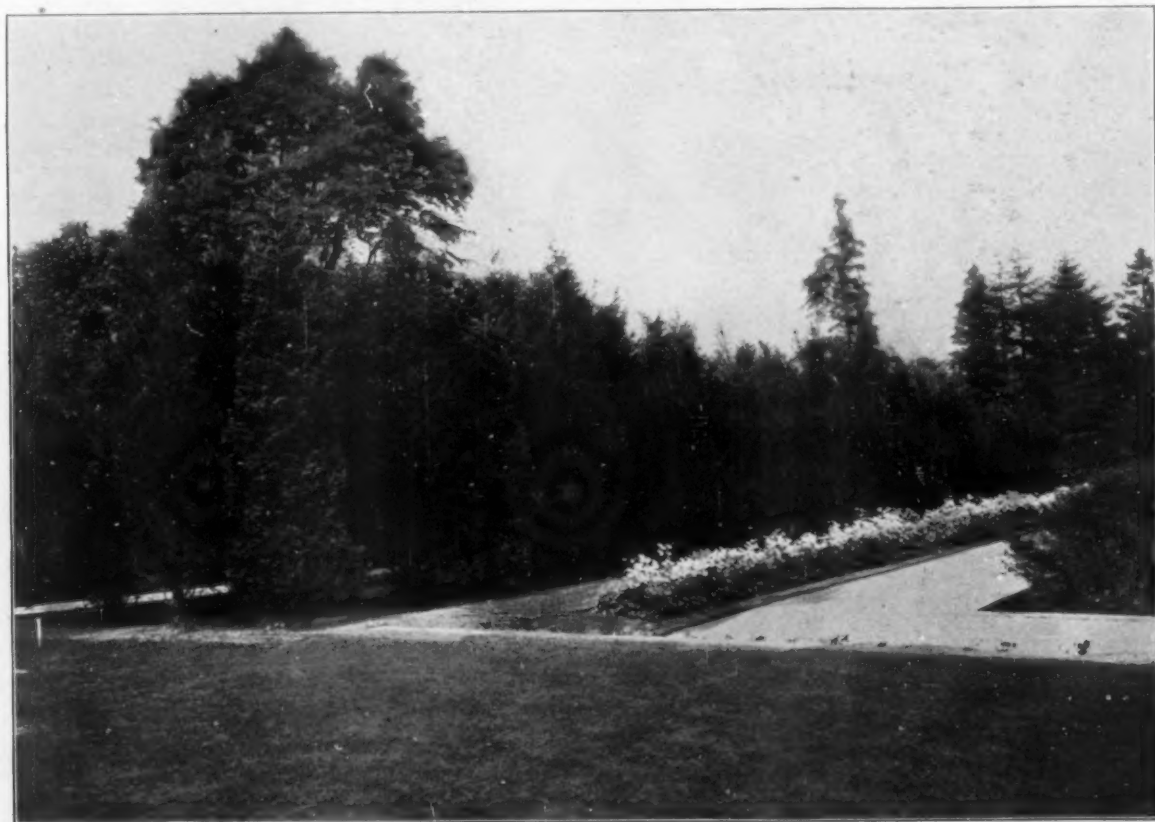


THE GRAVEL WALK

centre, which was moved from the side of a wall 800 feet distant and has been growing steadily since the transplanting, form a very interesting feature of the grounds. In this group are catalpas, ginkgos, plane-trees and maples; the whole bordered with assorted evergreens.

An excellent view of the velvety lawn is shown with its richness and beauty and the fine ornamental trees, splendid specimens of the fern-leaf beech, the large copper beech and the native oak. The beautiful walk of white pebbled gravel surrounds the entire grounds for thousands of feet. Masses of tall perennials hide the wall on the opposite side. Both of these smaller views illustrate the effect from opposite directions and are equally picturesque.

This whole operation is a striking illustration of the rapidity with which the most finished and permanent effects in landscape gardening can be produced by skilled direction and modern methods.



SOME OF THE LARGER TREES. (EVERY ONE OF THESE WAS TRANSPLANTED).

THE FIRST COUNTY PARK SYSTEM IN AMERICA—I

BY FREDERICK W. KELSEY*

THE inauguration of a great system of public improvements is usually preceded by a general discussion, more or less public agitation, and sometimes, in the effort to obtain the requisite legislation, by party divisions. This has been not infrequently the case in the selection and acquirement of lands for public parks, which, owing to the great cost usually involved, becomes at once an important factor within the community or the areas affected.

The experience in the establishment of the Essex County, New Jersey, parks has been unique in the history of large public undertakings. Unlike similar enterprises, no hindrances obtained or objections were raised. The first recommendations were in favor of direct application and early action, and were of such comprehensive scope, that they were especially open to attack by a disaffected press, party or public. As a matter of fact the reverse conditions prevailed. So smoothly and rapidly did events culminate that comparatively few persons not directly interested apparently appreciated the significance of the movement, or what it meant for the future. Now

that nearly twelve years have elapsed since the inception of the enterprise, there are very many who know little as to the details of the original plans for the acquirement and development of the parks, and many more who know even less about the causes and conditions which have led to the present status of the county park movement. But the fact that this system has now cost more than \$5,000,000 is conclusive evidence of the generosity of the people in favoring the appropriations for a scheme, whose general principles they understood and approved.

The comprehensive scope of the plan included a scheme or chain of parkways for the entire county, including Franklin parkway in the northeast and the South Mountain reservation on the southwest, with Montclair park on the northwest and the Weequahic reservation and East Side park, Newark, on the southeast.

The legislative coast was apparently all clear for favorable action, all that was needed, therefore, was a concise, easily understood plan that would conserve and unify all interests.



BRANCH BROOK PARK

* Courtesy of the J. S. Ogilvie Publishing Company, 57 Rose Street, New York

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Fully appreciating these underlying conditions, the Orange committee went quite exhaustively into the subject, endeavoring first to ascertain how the desired results could best be accomplished. The formulative plans and accompanying legislation of established park systems were considered. The intent was to select the more desirable features of each, based upon practical experiences elsewhere, to simplify those commending themselves to the committee as the most effective and practicable, and then to formulate a general plan that would be in every way adaptable to the municipal, taxable and topographical conditions, of Essex County.

As this communication and plan soon became the foundation upon which the superstructure of the movement for a county park system and the favorable legislation that soon followed rested, the letter is here given in full. It is as follows:

"Agreeable to the understanding at our meeting Saturday evening, fourteenth instant, I note below the principal features of the plan unanimously approved by all the members of both committees then present, as being the most feasible for establishing a system of parks and parkways:

"First—That action be taken by a special commission, authorized by legislative enactment applicable to Essex County.

"Second—That such commission be composed of five members appointed by the resident judge of the Supreme Court, and that an appropriation be provided by a direct charge upon the county for requisite expenses, surveys, plans, etc., the commissioners to serve without compensation.

"Third—That the commission be strictly non-

partisan, its members selected for fitness, with the object of devising the best scheme for a system of parks that is practicable for the entire district.

"The more we consider this plan the more simple, direct and effective it appears. It provides for immediate action. It admits of comprehensive treatment for the whole section from the Passaic River to the Second Mountain, without complications

or delay incident to so many local governing bodies attempting to solve the problem. The method of appointment, free from political or speculative interference, should at once enlist the confidence and support of the community favorable to the enterprise. A bill, simple in its provision for the carrying out of this plan, and affecting only counties of the first class, could hardly meet with reasonable objection in the Legislature. Every one recognizes that a well-devised public park system for this great Essex County population would be not only of great benefit and value to every locality, but of immense importance to the State as well. Every home in the entire section would be made more attractive and valuable; every piece of property would share in the improvement as a whole; and the cost



HEMLOCK FALLS—SOUTH MOUNTAIN RESERVATION

be largely compensated in this way."

The plan met with immediate popular approval. The leading papers favored it. Various civic organizations passed resolutions commending it, and public-spirited citizens in many different portions of the county wrote strong personal letters favoring its prompt adoption.

No opposition of the slightest weight or significance appeared in any quarter of the territory involved.

HOUSE AND GARDEN CORRESPONDENCE

TERRACING OF GROUNDS

As a regular subscriber to your valuable periodical from its very beginning permit me to request you to give me some understanding as to the proper methods to pursue for successful terracing of grounds. Last year I had four terraces constructed, 140 ft. long, 16 ft. high and about 16 ft. deep which gave me a space about 28 ft. deep on top of each terrace. At first I graded the tops to pitch forward one inch in 5 ft. and even though every sod was staked on the front slope, I had extensive washouts. Then I pitched the tops backwards and had a gutter in the rear of each terrace that directed the water to the sewer on one side. After that all went well and the terraces were the delight of the neighborhood for the past six or eight months. After a recent heavy rain I found to my horror that enormous land slides of the sod and earth about 1 ft. back of it had taken place on a part of each terrace and I am now seeking advice as to the best method of saving that which remains and building up the old to prevent recurrence.

A. E. S. (M. D.)

The nature of the soil of which terraces are constructed has most to do with their stability. This you do not state, but from the experience you have had I should judge it to be of a free or sandy nature.

However, terraces properly constructed of the dimensions given should be able to stand all the rain that falls upon them, providing the water shed above and around them is properly taken care of.

Your first method of construction giving the top levels a slight pitch forward was the better one: the washouts you experienced were no doubt caused by poor workmanship, the lines of the terrace being so graded as to collect the water at certain points, during heavy rains instead of having it spread evenly over the entire length of the terrace before following the slopes.

Pitching the tops backward towards the terrace above is a fault in construction, as it really collects the water where it is not wanted, and not being able to drain away rapidly enough finds its way to hard-pan and starts a landslide of the newly filled portion. This method, however, might have given no trouble had there been a large enough pipe laid with open joints to take both surface and subsurface drainage, sufficient catch basins being placed at regular intervals. The pipe of course would have to be carefully laid with ample fall and with sufficiently large and graded outlet.

We would suggest lifting the sod on the top of the terraces and returning to the original pitch of one in. in five ft. or less and grading the terraces along their length level if possible, following the recommendations as above suggested with pipe and basins in a slightly depressed gutter at base of slopes. The pipes should be laid on well tamped or water-tight bottoms.

E. H.

A NEW VEGETABLE

Mr. David Fairchild, Agricultural Explorer in charge of Foreign Explorations, U. S. Department of Agriculture, is introducing a new vegetable to the American table that will be appreciated by many. Mr. Fairchild found in Japan a herbaceous representative of the genus *aralia*, the stalks of which are edible. Our best known species of the *aralia* is *Aralia spinosa*, the Devil's walking stick, or Hercules' club.

There are two varieties known in Japan as "Kan Udo" and "Moyashi Udo." The first is raised from seed, planted out in rich soil in rows four feet apart and eighteen inches in the row. It is allowed to grow until early September when it should reach a height of four to five feet. It is then cut to the ground, and the soil mounded over the row some eighteen inches high. In forty to sixty days blanched shoots twelve or more inches long will be forced up through the soil, which are then ready for the table. This plantation, being perennial should last, with increasing strength ten or more years.

The "Moyashi Udo" is treated differently, being grown from roots only, which are propagated from root cuttings, and is intended for winter forcing. The roots are planted out in the spring and allowed to grow until the frost cuts down the foliage, when the roots are taken up, stored in dry straw in a cool place free from frost, until wanted for forcing.

In the warmer portions of the United States this forcing may be done outdoors in a trench, but as a general rule hothouse treatment will be required. As an experiment I forced a dozen roots in my greenhouse using two ten inch pots and inverting over them similar sized pots filled with leaf mould. In twenty-four days the blanched shoots, some twelve inches long, were ready for the table.

This is called a Japanese salad plant, but in the absence of knowledge as to how to prepare it for a salad, I concluded to have it boiled in water and served in a cream sauce on toast, the same as asparagus is often served. The result was a most delicate dish, pleasing to the palate of all who tried it. The flavor is so delicate that I can't describe it. If confined to this method of preparation alone, it is worthy of cultivation, but undoubtedly our cosmopolitan American cooks will devise many ways to serve it.

W. C. E.

We have received the following communication from Professor Goodyear which we gladly make room for:

"The reprint in your number for April of Mr. Edward S. Prior's comments on the recent exhibition of Mediæval Architectural Refinements at Edinburgh has come to my notice.

"My reply to Mr. Prior's article will shortly appear and I hope you will find it worthy of as much space as you have given to that article. Meantime by publishing this letter you will greatly favor

Respectfully yours,

Wm. H. Goodyear,

Curator of Fine Arts in the
Brooklyn Museum."

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