

ARCHITECTURE

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The
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And
Building News

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E. R. DENMARK, Editor.

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THE EDITOR'S PAGE

Summer Tour for Architects.

AMERICAN students of architecture will be interested in the opportunity offered to them by the Institute of International Education to study the development of architecture in Europe next summer under Professor Albert C. Phelps, professor of architecture in the College of Architecture, Cornell University. Professor Phelps will be a member of the faculty of the Art Students' Tour which has been organized for the summer of 1923 under the sponsorship of the Institute; other members will be Miss Edith R. Abbot of the Metropolitan Museum of Art, New York City, as a lecturer on the history and appreciation of painting and sculpture, Mr. John C. Tidden of Rice Institute, Texas, as instructor in painting and lecturer on the fine arts from the standpoint of the creative artist, and others whose names will be announced later.

The group will sail from New York on June 30th, 1923, on the Cunarder "Saxonia." Professor Phelps will lecture during each day of the trans-Atlantic voyage, as a means of sketching in the broader outlines of the development of architecture and of preparing for the more specific lectures during the land portion of the trip. His lectures on shipboard will be illustrated by stereopticon slides from the collection of the Cornell College of Architecture.

After landing at Cherbourg, the group will visit Paris and Versailles, Rome, Perugia, Assisi, Florence, Venice, Milan, Ghent and Bruges, Brussels and Antwerp, the Dutch cities of Amsterdam, Haarlem and the Hague, and finally England. The return voyage will be by the "Saxonia," due to arrive in New York, September 4th.

The Institute of International Education, under whose auspices the Art Students' Tour has been organized, has for many years been carrying on an important work characterized by such activities as exchange scholarships, exchange professorships, etc. During the last two years it has been extended to include also European travel for college students, organized so as to permit students to travel more inexpensively, more conveniently, and with greater educational return, than they could do otherwise.

Complete information may be secured from the Institute of International Education or from Irwin Smith, 30 East 42nd Street, New York City.

ARCHITECTURE 100 YEARS FROM NOW.

Mr. Thomas Hastings, distinguished Eastern architect, in a symposium recently published by the San Francisco Chronicle of what we may expect 100 years from now, pictures the building of edifices of stateliness and power, such as we have only dreamed of. To quote Mr. Hastings:

"Architecture expresses the life of each period. Will life a hundred years hence be freer, cleaner, saner? Inevitably the architecture of 2022 will register that. Will civilization relapse, perhaps through the medium of another world war, into semi-barbarism? Then barbaric will be the architecture of that time.

There is this much to be said: Steel construction frees architectural design from limitations which masonry necessarily imposed. Thus far the result has been confusion—the one and only real confusion that has ever occurred in a continuous history of architectural developments.

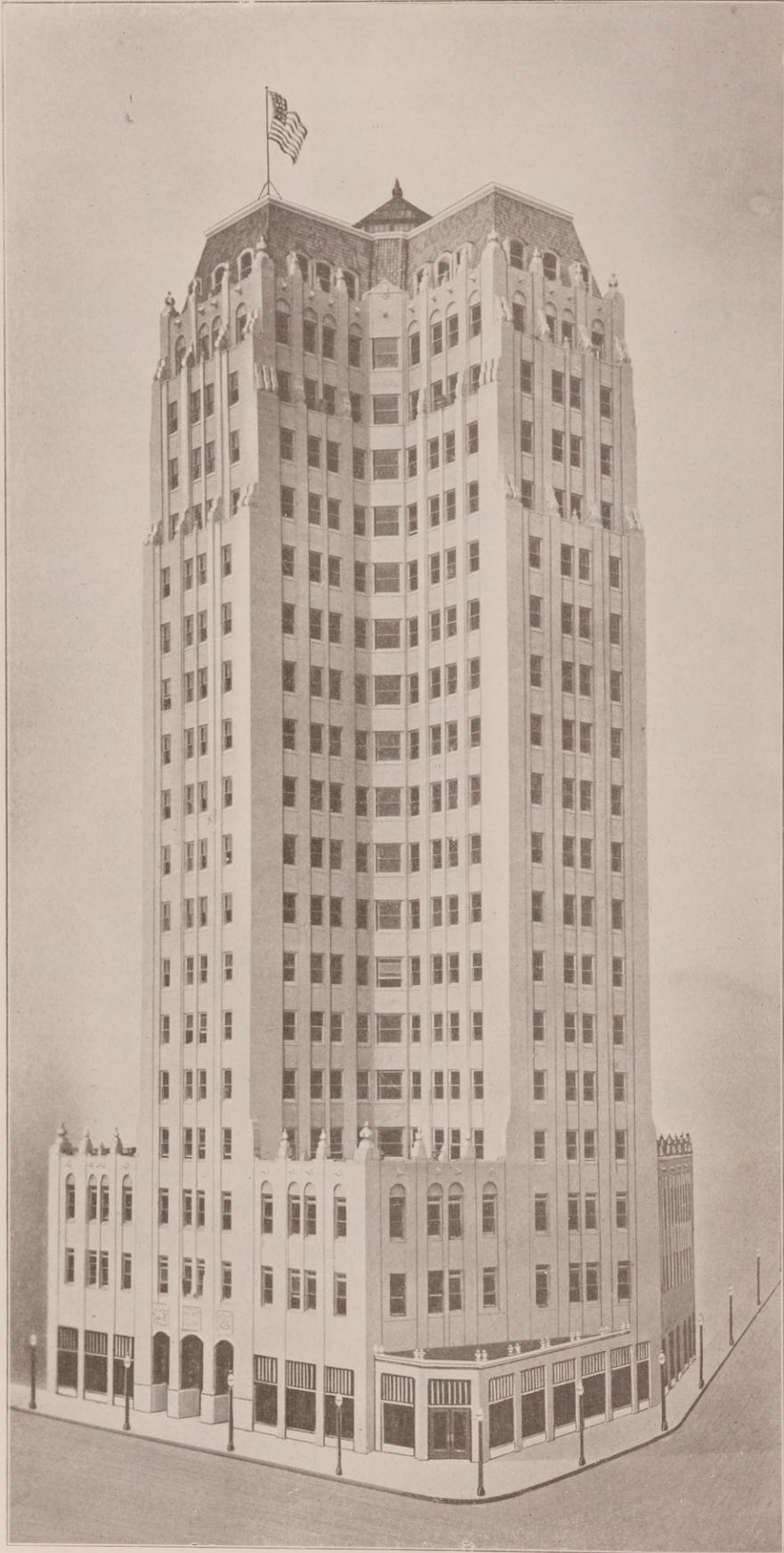
Granted a broadened intellectual horizon (and the probability of revolutionizing inventions—even the discovery of forces which we know nothing about now), the architects of 2022, we can imagine, will be busying themselves with edifices of a stateliness and power such as we have only dreamed of hitherto.

THE FRONT COVER DESIGN.

THE insert on the Front Cover of this issue is a pencil sketch of an Italian villa, by J. Scott Thomas, a Senior in the Architectural School at the Georgia School of Technology.

SCHOOL BOARDS SHOULD HEED THIS.

The Wisconsin Industrial Commission recently said this to taxpayers who object to the cost of fireproof schools: "There are only two classes of buildings where attendance is involuntary—schools and jails. If the house or flat in which you live is a fire-trap, you are at liberty to move out. If you believe that a certain hotel or theater is unsafe, you need not patronize it. But if your school is in constant danger of becoming a fiery furnace, the law compels your children to attend, just the same."



MEDICAL ARTS BUILDING, DALLAS, TEXAS.

C. E. BARGLEBAUGH OF BARGLEBAUGH & WHITSON, ARCHITECTS.

April
1923



Vol. XLIX.
No. 4

Medical Arts Building, Dallas, Texas.

Largest Concrete Building in U. S.

By H. C. Schumacher.

ON March first the dream of the doctors and dentists of Dallas, Texas, was finally realized, when 200 physicians and thirty-five dentists moved into the Medical Arts Building in this city.

The building constructed according to plans by C. E. Banglebaugh of Banglebaugh & Whitson, architects, Dallas, Texas, is of the monumental design, giving at a distance the impression of a gigantic obelisk or "needle." Colors in the finishing brick, a delicate shade of cream, and in the roofing material, which is in variegated shades of green, were prescribed to bring out the monumental features of the structure, and to add to the tone of dignity which it commands.

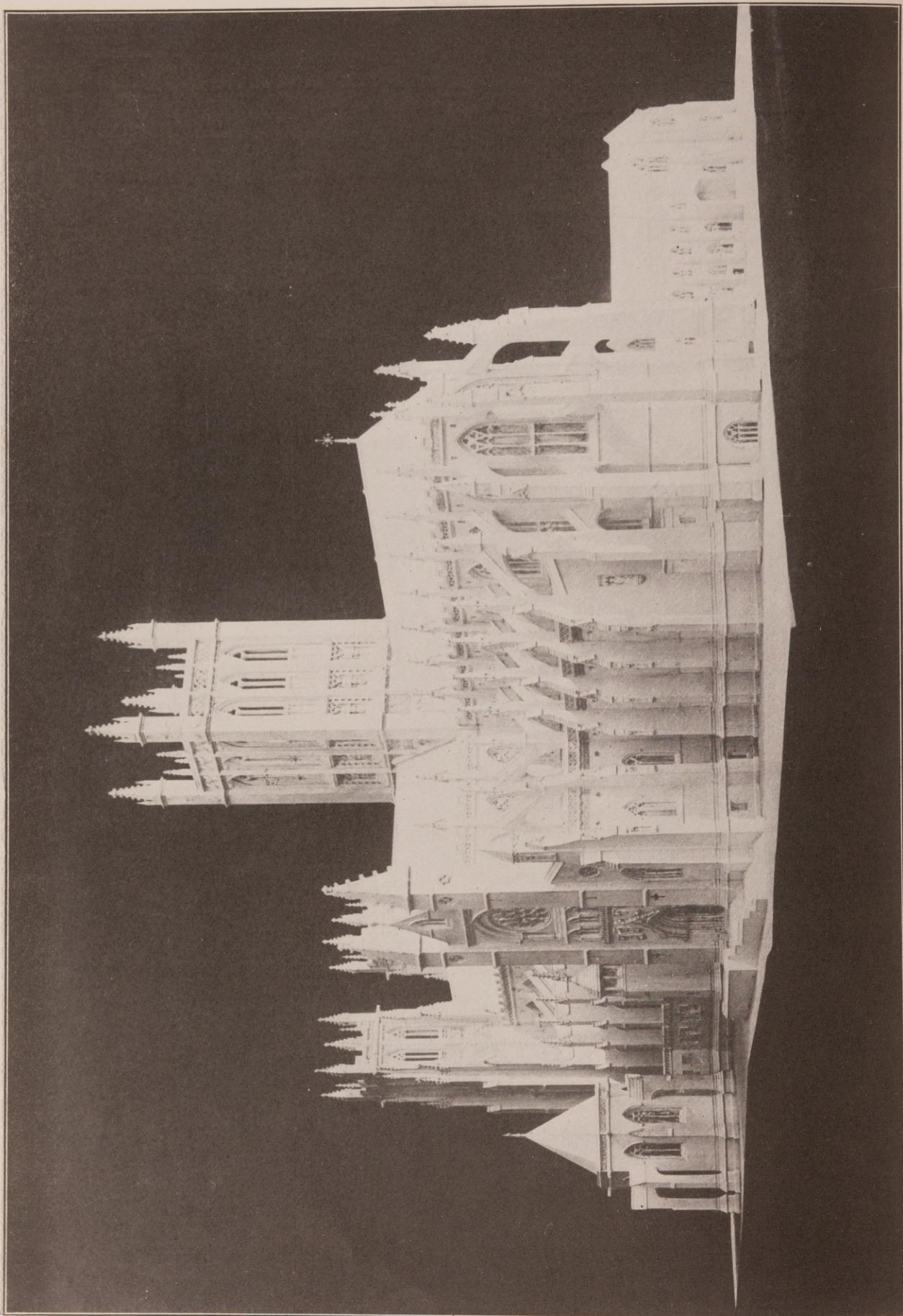
A unique variation of the ancient cross as a floor plan in buildings is seen in the New Medical Arts Building. The Maltese cross, emblem of the medical profession, forms the floor plan of this structure, four symmetrical wings projecting at right angles, carrying out the scheme through-

out the entire nineteen stories. Various forms of the cross were used extensively in the building of gothic cathedrals and large public structures in Europe through the middle ages. Many Egyptian temples are of similar floor plan.

Excellent lighting and ventilation are two of the principal advantages of this design, in addition to the value of the wings in strengthening the building.

With nineteen stories, reaching a height of 265 feet, this is the tallest reinforced concrete office building in the world, according to the architect. There is a radio tower at Funabashi, Japan, which is 660 feet high, but its construction is in the form of a pillar. There is one all reinforced concrete building in America larger than this, the Bevo plant at St. Louis, but it reaches a height of only about one hundred feet. Next to the Medical Arts Building in altitude is the First National Bank building at El Paso, with sixteen stories.

(Continued on page 74.)



F.G.A. Photo.
This is a model of the great National Cathedral that will rival Westminster Abbey which is to be erected by the Episcopal Church in the National Capital. This structure was designed by one of the greatest English architects, the late Henry Baughan.

America's Great National Cathedral.

Washington, D. C.



PLANS for immediate completion of a great American National Cathedral, larger than Westminster Abbey and rivaling the celebrated structures of Europe, were announced at the annual convention of the Episcopal diocese of Washington.

Costing \$10,000,000, and with its great central tower rising above the Washington monument, the great edifice is planned to take in the hearts of Americans the place which the old Abbey occupies among the British nation; to probably become the final resting place of America's celebrated dead and as "a witness for Christ in the capital of the nation."

The plans contemplate more than a diocesan cathedral; they embrace a national shrine.

Although the construction of a cathedral on the heights of Mount Saint Alban, in the northwest section of Washington, has been going on slowly for some time, it was not until very recently that it was decided to raise the funds to complete the edifice immediately as a national undertaking.

Making the announcement, the Rt. Rev. Alfred T. Harding, bishop of Washington, pointed out that at the last general convention of the Episcopal church both houses unanimously adopted a resolution which "commends the erection without delay at the capital of the nation of a great cathedral to witness to the spiritual ideals of America."

"This," said Bishop Harding, "is the basis of the appeal we are now making to the churchmen and church women of our land. We are convinced that this witness for Christ in the capital of the nation will be a potent agency in lifting the minds of men to spiritual realities and thus counteract the trend so evident in our time toward materialism."

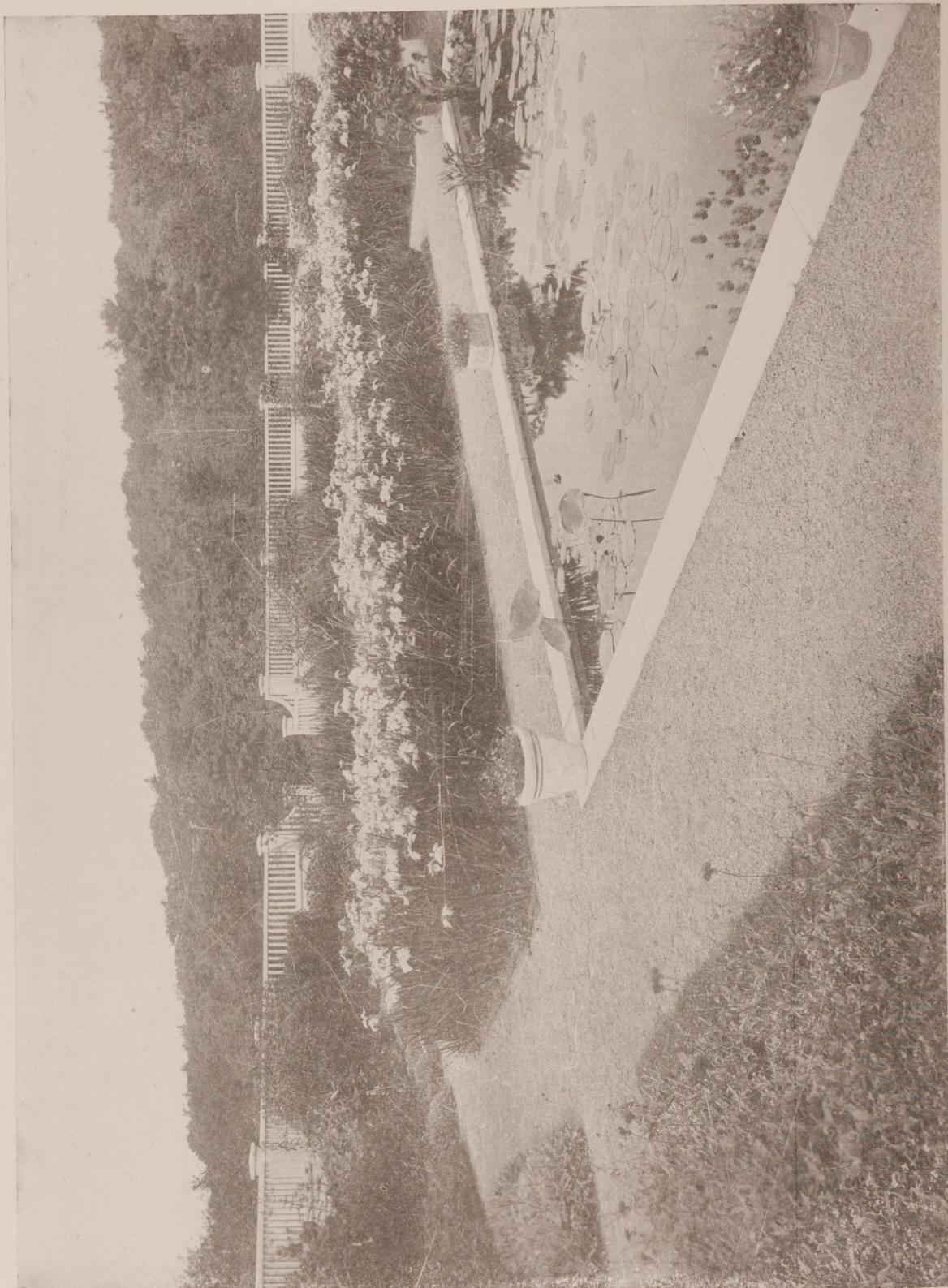
Beginning in a comparatively small way, the first bishop of Washington, the late Dr. Henry Yates Satterlee, made it his life's work to acquire and pay for the site, which has grown until now it comprises sixty-four acres, on the heights of the northwest section, overlooking the Potomac, and with the national capital spread below in panorama. Already on the property is a school for girls; its building the gift of the late Mrs. Phoebe Hearst. There is also a boys' school, the building for which was given by Mrs. Harriet Lane Johnson, niece of President Buchanan in memory of her two sons, James Buchanan and Henry Elliot. The bishop's home which stands

in the cathedral close was the gift of Mrs. Susan Evelyn Hurray. In the little sanctuary stands an exquisitely carved stone pulpit which ultimately will be placed in the completed cathedral. It was presented by the archbishop, dean and chapter of Canterbury cathedral, England. A great stone peace cross, also stands in the grounds, erected at the close of the Spanish-American war and dedicated by the late President McKinley.

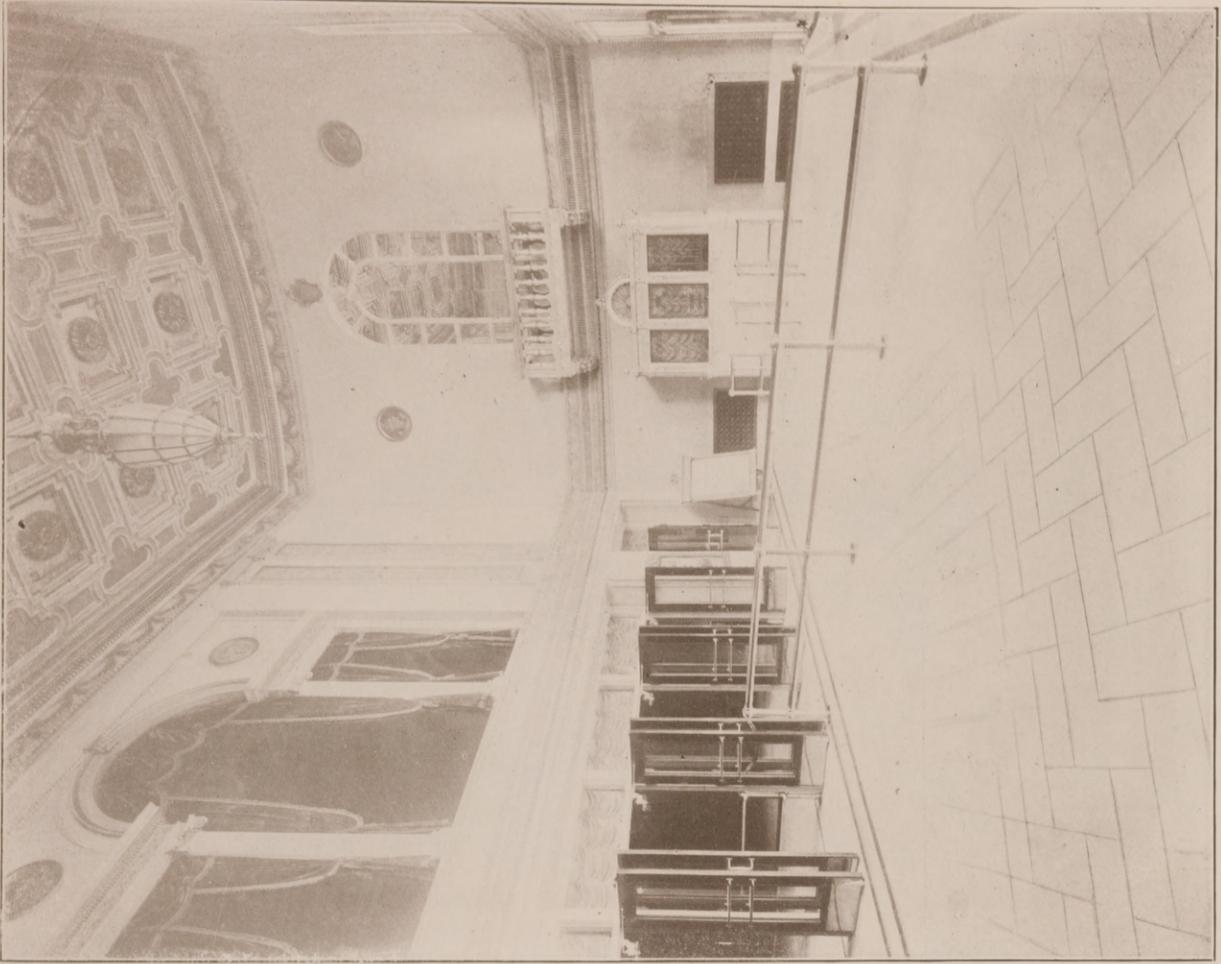
The cathedral has been designed by one of the greatest English architects, the late George F. Bodley and his American associate the late Henry Baughan. It has been pronounced one of the most beautiful in the world. It will be seen that in its great proportions the cathedral will be larger than Westminster Abbey, for its whole length, outside measurement, will be 500 feet; its width 135 feet. Its great central tower will rise to 260 feet, and its twin front towers will be 195 feet tall. The massive central tower erected on the great eminence will have an elevation of 644 feet above the city of Washington, making it the most conspicuous and commanding object in the capital.

The Apse, already erected, was the gift of the late Mrs. Archibald D. Russell, in memory of her mother, Mrs. Percy R. Pyne. The Bethlehem chapel, beneath the Apse, is at present used for services. A considerable portion of the choir already is in process of construction, largely through the gift of a Washington layman whose name is withheld, and the foundations of the entire structure, also in process of construction, will be completed within the coming year. The present value of the property with its endowments and investment funds has been conservatively estimated more than \$4,000,000 of which the largest single gift was \$500,000 by the late John A. Kasson, one-time United States minister to Austria.

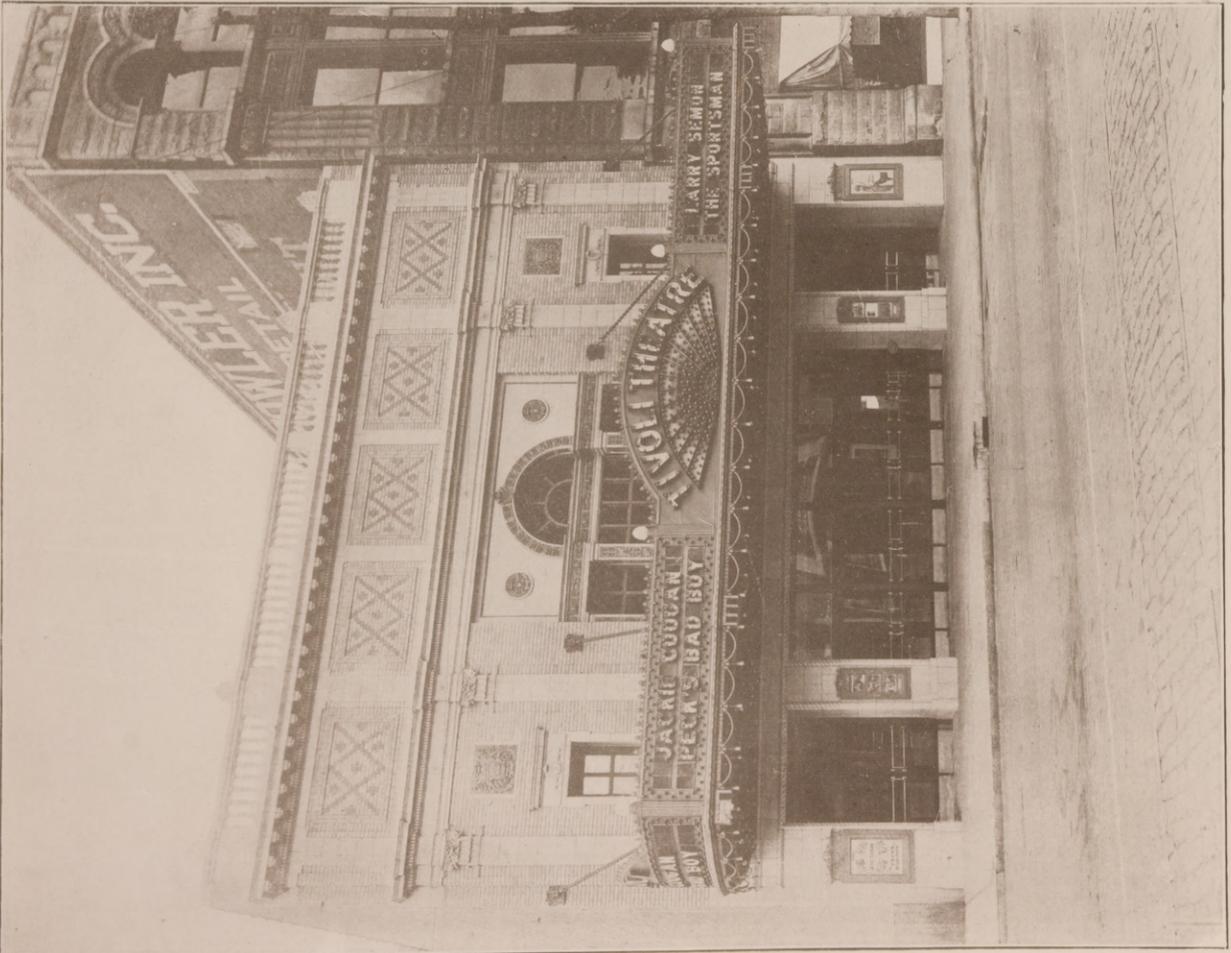
Behind the present national movement are to be numbered some of the best known Americans. Among those who are taking an active part are the following members of the Cathedral chapter: Charles C. Glover, chairman of the board of the Riggs National Bank, at whose home in 1893 a meeting was held which resulted in the character of the Cathedral foundation; Henry White, former American ambassador to France; Charles J. Bell, president of the American Security and Trust company; James Parmele, trustee of the Carnegie foundation fund and others.



Garden in the Rear of House, With Pool in Center.



LOBBY AND BOX OFFICE
 TIVOLI THEATRE, CHATTANOOGA, TENN.
 C. W. & GEO. L. RAPP, ARCHITECTS, CHICAGO, ILL.



TIVOLI THEATRE, CHATTANOOGA, TENN.
 C. W. & GEO. L. RAPP, ARCHITECTS, CHICAGO, ILL.



INNER LOBBY SHOWING STAIRWAY TO MEZZANINE FLOOR



TUNNEL, MEZZANINE FLOOR
TIVOLI THEATRE, CHATTANOOGA, TENN.
C. W. & GEO. L. RAPP, ARCHITECTS. CHICAGO, ILL.



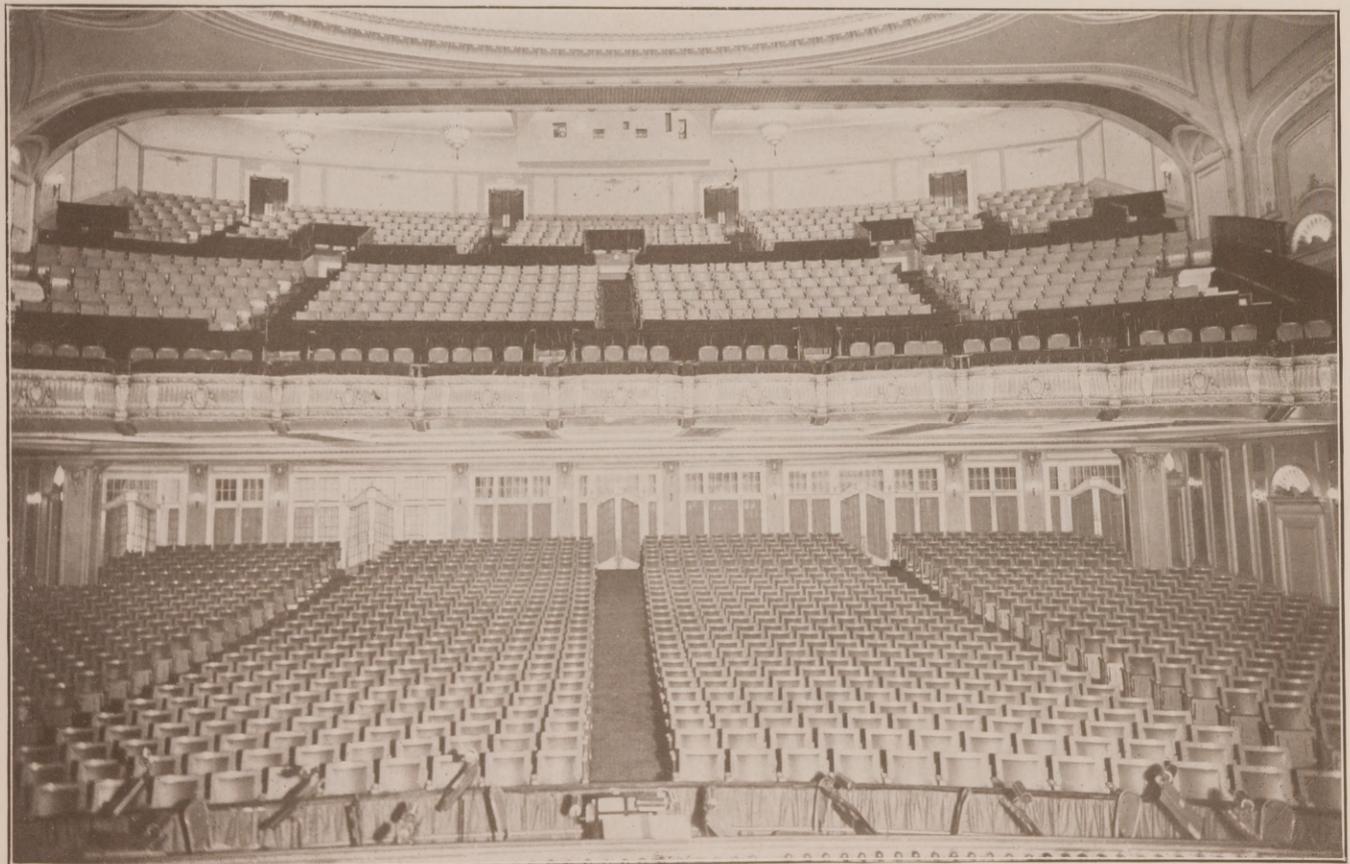
ENTRANCE TO AUDITORIUM.



REST ROOM FIRST FLOOR
TIVOLI THEATRE, CHATTANOOGA, TENN.
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VIEW OF STAGE



VIEW OF AUDITORIUM AND BALCONY

TIVOLI THEATRE, CHATTANOOGA, TENN.

C. W. & GEO. L. RAPP, ARCHITECTS, CHICAGO, ILL.



HULL APARTMENTS, MEMPHIS, TENN.
MAHAN & BROADWELL, ARCHITECTS.



SECURITY BUILDING, MEMPHIS, TENN.

McKIM, MEAD & WHITE, ARCHITECTS, NEW YORK, N. Y.



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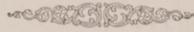


SHRINE BUILDING, MEMPHIS, TENN.

BARBER & CAIRNS, ARCHITECTS—JONES & FURBRINGER, ASSOCIATES



BEAUTY IN HOME GROUNDS



THE movement at the present day to improve popular taste in ornamental planting, so-called, for small estates and house-lots assumes to speak with authority because it professes to be based on recognized artistic principles. These principles, however, are merely certain elementary rules of pictorial composition applicable to the problems of planting, and the observance of them indicates nothing regarding other and more significant aesthetic attitudes. Thus it must be said that the expounders of the artistic method unfortunately share the false notion of the public at large as to what is or should be the main pur-

pose of the planting for private grounds. As a natural result they seem, like most people again, not consciously to appreciate some of the deeper and more moving aspects of beauty which may mark the old matured planting of domestic surroundings, writes Herbert E. Millard, in *The House Beautiful*.

According to this mistaken view, planting is nothing more than a means of decoration; and hence people debate what varieties of plants they will buy in much the same way that they debate what color they will paint their houses. The very term "ornamental planting" proves this; for, in



Effective Uses of Garden Pottery.



the popular mind, it denotes all planting not belonging to such specifically commercial or utilitarian forms as forests, orchards, wood-lots, and the like. The average suburban resident adds even the shade trees on his lawn solely from an

impulse to adorn his property.

How narrow and absurd this conception is becomes evident if we try to speak similarly of ornamental building. Even if we say "artistic building" we take for granted the utility of the thing

which is built. The reason why people never regard planting, as they do building, in this double aspect, is that they have come to be unmindful of the fact that planting, especially in connection with the home, may have any distinctly useful purpose. And this indifference or neglect is in turn due largely to a social cause—the dying out of certain wholesome traditions and ideals of living, with their accompanying refinements of taste, that were common enough in this country at earlier periods in its history. Let us attempt to trace these connections.

Perhaps the most important way in which planting can serve a practical purpose in domestic life is in securing privacy and retirement, whether for the house itself, or for the surrounding

(Continued on page 78.)



Garden Terminal Figure: "Winter."
Henry Hering, Sculptor.

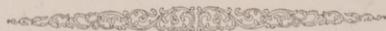


Garden Terminal Figure: "Spring."
Henry Hering, Sculptor.



COLUMBIAN LIFE BUILDING, MEMPHIS, TENN.
BOYER & BAUM, ARCHITECTS, ST. LOUIS, MO.

An English View of High Buildings



The Town Planning Institute have had under consideration proposals which have been made in reference to the height of buildings in London, the relaxation of restrictions on such height, as at present administered by the London County Council. Particular attention has been given to the experience gained in regard to this subject in American cities, where the greatest use has been made of unrestricted opportunities to erect high buildings, both for residential and commercial purposes, and some notes upon this experience are attached.

It may be remarked that the agitation in London for the relaxation of restriction on the heights of buildings comes at a time when a number of American cities have found it necessary to impose, and many others contemplate imposing, restrictions as drastic as possible in view of the increased height of buildings that has already been permitted. Anybody who knows the objection of the American citizen to any regulations limiting his freedom to build as he likes will realize how generally recognized and how serious must have been the evils springing from the absence of such restrictions before their adoption could have been carried by general consent. It must be recognized, moreover, that in the majority of American cities the conditions are such that the evils arising from excessively high buildings are much less apparent than they would be in London; the streets and the footways are generally wider and capable of dealing with a greater volume of traffic and the atmosphere is clearer. On Manhattan Island, which forms the central area of New York, there are eleven "avenues" running from one end of the Island to the other, each 100 feet wide, and the latitude of the city is the same as that of Rome or Constantinople, so that the sun attains a higher average altitude, and consequently its rays have greater opportunity to penetrate into narrow streets or spaces; there is also greater intensity of light.

The Town Planning Institute have arrived at the following general conclusions on the matter:

(1) In considering restrictions on the height of buildings in London, full account should be taken of the climatic conditions there prevalent, of the winter height of the sun, the general intensity of light, the prevalence of mist, and the humidity of the atmosphere. They should also be considered in reference to the general width and direction of existing streets; to the policy that is likely to be adopted in the future in regard to the

development of Greater London and its outer regional area; to the existing congestion of traffic, and to the practicability of providing increased transport facilities; and, in particular, regard should be had to the effect of any proposals on the general health and well-being of the occupants and users of the buildings, and the convenience of the public generally.

(2) It is clear that an increase in the height of buildings must add to any existing congestion of traffic and must throw a greater strain upon all public services. The volume both of pedestrian and vehicular traffic must be greater, and the capacity of drainage, water supply, and other conduits may need to be increased, as well as the public transport services, both for passengers and goods.

(3) Experience shows that it is extremely difficult to secure adequate circulation of air and sufficient light to the lower rooms where high buildings are adopted. It is common experience that in American cities a vastly greater proportion of rooms, both those in tenement dwellings and those in business premises, require artificial light to be burned throughout the day than is the case in London. So important is this effect in America that frequently a high building standing alone and benefiting by the light over the area of adjacent property is so seriously depreciated in value when the adjacent owners also increase the height of their buildings that the rent received falls to little more than enough to pay the local rates.

(4) It is by no means clear that the concentration of increasing volumes of retail trade in a few centralized establishments, or the concentration of general commerce on more restricted areas, which is the chief reason for the demand for increased height of buildings, is itself generally desirable in the public interest. In a city like New York, where the central area consists of an island surrounded by wide rivers, reasons of economic necessity may exist which are quite absent in the case of most towns, like London, where there is an unlimited area over which expansion can take place; and in view of the serious disadvantages arising from development by increased height, it is considered that some overwhelming public advantage and not merely a benefit to a limited number of prosperous businesses would need to be established to justify the



MAULKIN APARTMENTS, MEMPHIS, TENN.
HANKER & CAIRNES, ARCHITECTS

A Record of Building Achievements in Memphis, Tenn.

By Paul Renshaw.

MEMPHIS enjoyed a phenomenal building program throughout the year 1922. Evidence of this is seen in the figures of the building permits, which, for the year, reached the total of \$20,041,896.00, as compared with the twelve months of 1921, which was a record-breaking year, when the permits aggregated \$9,377,025.00.

Included among the projects for which permits were taken out in 1922 were several large office buildings, a new hotel, a municipal auditorium with seating capacity of 12,500, a new municipal water pumping station as an adjunct to the water supply system, in which \$2,500,000.00 is being spent; numerous fine residences, and an exceptionally large number of apartment buildings, ranging from the ordinary two story duplex up to ten-story structures of concrete and steel.

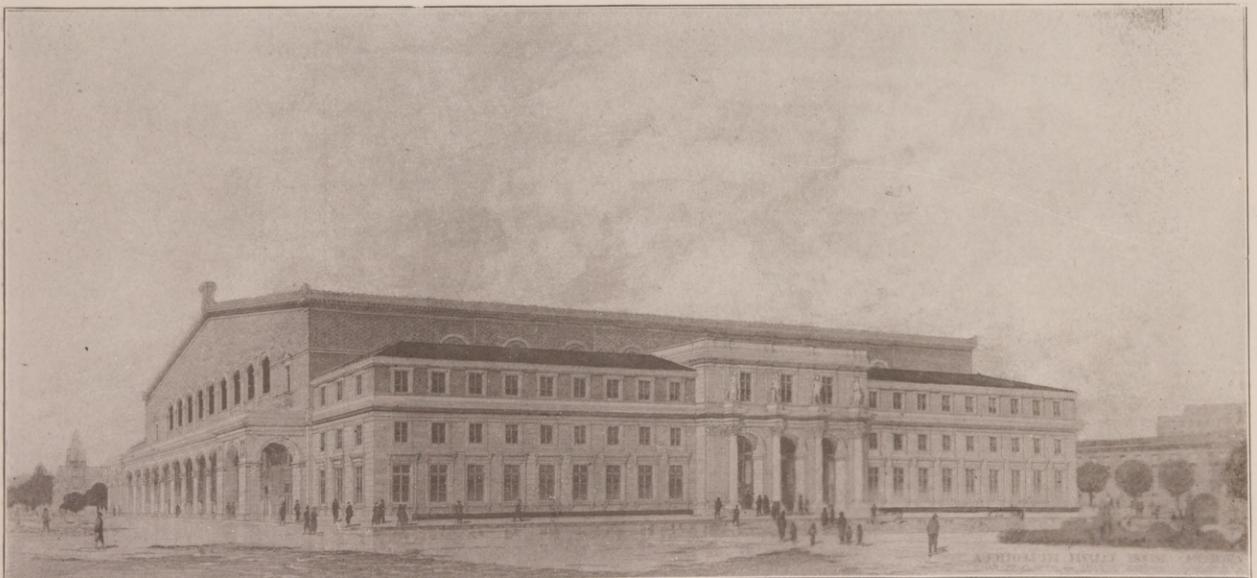
One of the office buildings, to be the home of the Columbian Mutual Life Insurance Society, is

to be twenty-two stories in height; another, which is being promoted by our Al Chymia Temple Shrine, is to be twelve stories, with a roof garden; another, the Security Building, is also to be twelve stories; and a fine new hotel, with 358 rooms, each of which is to be provided with running water, will be fifteen stores high, with glass-ed-in roof garden. The foundation is now being laid for the hotel building.

Foundation has been laid for the Municipal Auditorium, which will cover a block; and work on the superstructure is now in progress. It is expected to be completed by January 1, 1924.

Foundation for the Shrine Building, twelve stories in height, is now being laid, and eight or ten months will probably be required for erecting the superstructure.

Work is to begin at an early date, according to announcements, upon the Columbian Mutual Building and the Security Building.



AUDITORIUM MARKET HOUSE, MEMPHIS, TENN.
CHAS. C. PFER & GEO. AWSUME, ARCHITECTS

Contract has been let for the pumping station of the Municipal Water Supply System and it will be in operation by the first of January, 1923.

The City of Memphis, jointly with the War Department of the government, is constructing a municipal river and rail terminal, for the convenient interchange of freight between water and rail carriers; and \$1,000,000 is being spent on the project, which will be completed and fully in operation by March 1, 1923. The terminal is so constructed that its floating dock, for loading and unloading, rises and falls with the high or low stages of water; and thus provides for convenient handling of shipments at any season of the year.

Several large industrial plants have been completed within the past year or more, and work on others is now in progress, either for expanding the capacity of present institutions or building entirely new ones. Conspicuous among the integral plants that have been built are the new Memphis Packing Corporation, completed about two years ago and representing an investment of about \$2,500,000; and that of the Iten Biscuit Company, costing approximately \$1,000,000.

The operations of the packing plant during the past year have tended to increase the growing of live stock throughout this territory and thereby prompting farmers of this section of the South to diversify crops more. It is calculated that diversification of crops will do more toward making the South independent in a financial way than any other one factor and, for this reason particularly, the packing plant at Memphis is regarded as a very important institution. It is interesting to note that about 92% of all the stock in the concern is owned by individual planters

and stock growers, and less than 8% of it is owned by city dwellers.

The plant of the Iten Biscuit Company, to which reference was just made, is the largest such institution in the South devoted to the making of cakes, crackers and biscuits. Its daily capacity, with all nine ovens running is 400 barrels of flour.

Among the industrial plants that are extending their capacities through additional buildings are the Clover Farm Dairy, which is building an addition to its plant costing approximately \$100,000.00; James E. Stark Lumber Company, which is expending \$175,000.00 in improvements, which are approaching completion, for the enlargement of its plant; Nickey Brothers, a large lumber company, expending approximately \$80,000.00 in building a new flooring plant to cost about \$75,000.00; and the Kelsey Wheel Company, perhaps one of the largest manufacturing institutions with plants in the South, now operating a saw mill and automobile wheel plant, has given announcement of plans for enlarging its automobile body building plant, in which it expects to expend about \$150,000.00.

Public spirited citizens are now raising funds with which to erect a \$275,000.00 Episcopal church building, which shall be a Memorial to Bishop Thomas F. Gailor, whose residence is in this city. Sufficient funds have already been subscribed to assure the project and plans have been approved for the structure. Work on it, according to announcement, will begin within a few months.

Perhaps the finest new estate of any private individual in the South is now being constructed just on the eastern border of Memphis by Clar-

(Continued on page 76)



PUMPING STATION, MUNICIPAL SUPPLY SYSTEM, MEMPHIS, TENN.

JONES & FURBRINGER, ARCHITECTS—FULLER McCLINTOCK, ENGINEER



EDITORIAL COMMENT

New Method of Measuring Sand Makes Concrete More Reliable.

The reliability of concrete construction is likely to be increased, and the cost in some cases reduced, by the application of a newly developed method of measuring sand, which is now being tested at the Bureau of Standards of the Department of Commerce. The method has been termed the "inundation method" and consists of measuring sand in a container which has been partly filled with water before the sand is put in, so that when the sand is in, the water is up to the top and the sand completely soaked.

The volume occupied by a given amount of sand when shoveled into a measuring device varies with the moisture content of the sand; the difference in measured volume between dry and moist sand being usually from 10 to 15 per cent and occasionally running as high as 50 per cent. But it is found that if the sand is completely soaked or "inundated" uniform measuring results can be obtained no matter how much the original moisture content may have varied.

In making concrete the proportions of cement, sand stone, and water are so chosen as to get the required strength and workability with a minimum of cement, since the cement is the chief factor in the cost. Inaccurate measurement of the sand may result in too large a proportion of sand, in which case the concrete is too weak; or in too small a proportion of sand and hence a concrete too rich in cement.

But this rich concrete is not necessarily stronger than the concrete the contractor intended to make, for the sand has brought in some water in addition to that which is added on purpose; and if this extra water is not allowed for and the amount of water added correspondingly decreased the concrete will contain too much water. It will be sloppy and when set will not be dense enough to give the necessary strength. The contractor therefore is merely wasting cement and doing good to no one.

It is hoped that with the inundation method it may be possible to specify concrete by the strength required rather than by arbitrary proportions. The contractor can then find the proportions of the materials he is using that will give the requisite strength and can adhere close-

ly to these proportions. The result will be a concrete whose proportions are more nearly what they were intended to be, and with which a lower factor of safety can be used.

BUILDING WITH SAFETY.

How to check plans and specifications for safety is told in a pamphlet just issued by the National Safety Council, Chicago, containing a check list of several hundred items which must be considered if serious hazards are to be avoided.

The pamphlet, which has been prepared under the supervision of the Council's Safe Practices Committee of 75 safety engineers, points out that proper precautions are taken when drawing plans and specifications for new buildings or equipment, many accident hazards can be forestalled—an important matter to the plant engineer in these days of increasing pressure from Government and insurance inspectors, compensation laws, and plant safety departments. Such engineering revision removes at little or no cost, hazards which later could be corrected only at heavy cost if at all, and insures compliance with both Government and insurance demands, the latter resulting in premium reduction.

For detailed information on each of the points covered, the contractor is referred to various standards and handbooks, a list of the principal authorities being given, with cross references from the check list.

This is a valuable pamphlet for contractors to have.

Publisher's Statement

Of the ownership, management, etc., of the Southern Architect and Building News, published monthly at Dalton, Ga., Business Office at Atlanta, Ga., required by the Act of August 24, 1912.

H. E. HARMAN, Business Manager, Publisher and Owner, Atlanta, Ga.

R. E. DENMARG, Editor, Atlanta, Ga.

No bondholders or other security holders.

(Signed) H. E. HARMAN, Owner.

Sworn to and subscribed before me this the 23rd day of March, 1923.

A. W. CRENSHAW,

Notary Public, Georgia, State at Large.
My Commission expires April 18, 1925.

PERSONAL MENTION

Jones & Roessle, New Orleans, and Clarence E. Olschner, formerly of Neild & Olschner, Shreveport, La., announce the formation of a co-partnership and will continue the practice of architecture under the firm name of Jones, Roessle & Olschner, architects, with offices in the Maison Blanche Building, New Orleans, La., and in the Ardis Building, Shreveport, La.

Pendleton S. Clark and Walter R. Crowe announce the formation of a partnership for the practice of architecture under the firm name of Clark & Crowe, architects, with offices in the Krise Building, Lynchburg, Va. Manufacturers' catalogs and samples are requested.

Hoit, Price & Barnes, architects, have moved their office to 800 Davidson Building, Seventeenth and Main Streets, Kansas City, Mo.

Henry T. Barnham has opened new offices at 819 Franklin street, Richmond, Virginia, for the practice of architecture and engineering. Mr. Barnham was formerly in the Chamber of Commerce building, that city.

Herman F. Brandenberger, architect, is now practicing his profession under his own name at 517 Massachusetts building, Kansas City, Mo. The partnership known as Martling and Brandenberger has been dissolved.

P. E. Robinson, architect, announces the removal of his offices from 205 Hippodrome building to 439 Guardian building, Cleveland.

San Antonio Architectural Club.

In fifteen months the San Antonio Architectural Club has grown from fifteen charter members to about one hundred members. During the past year much good work has been done and seed has been sown that will, we are sure, make 1923 a fruitful year. Among the most important pieces of work accomplished by the club has been the overcoming of a spirit of jealousy and mutual disrespect that was all too prevalent in San Antonio, as it is felt to be in other cities of states where no license is required for the practice of architecture. The bringing about of a better spirit has been largely due to the efforts of the club.

The club successfully arranged and presented an entertainment for the Texas State Chapter of the American Institute of Architects during the

recent convention of that organization. Features were a dinner, impromptu table talks, reading of verses by E. B. Hays, president of the Club, and a minstrel performance.

The Architect as Antiquarian.

In 1920 Professor Fiske Kimball delivered a course of lectures at the Metropolitan Museum of Art, New York City, on the evolution of the early American house. These lectures have been elaborated and now appear in book form.

It is a book for antiquarians and of interest to architects in the degree that they may be interested in tracing the development of styles in building from the earliest forms. There are other works more useful to architects who appreciate measured drawings and properly presented details. Well illustrated, copiously annotated and written in pleasing style the book is a real contribution to the architectural history of America.

Domestic Architecture of the American Colonies and of the Early Republic. By Fiske Kimball. New York, Charles Scribner's Sons. 314 pp. 219 Figs. in text. Cloth. 9 x 11½ in. \$12.00.

Clarence J. Stinson, architect, has removed his offices from 503 to 627 Inter-Southern building, Louisville, Ky.

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Building Construction

Strength of Built-Up Wooden Columns

F. E. Giesecke, Professor of Architectural Engineering and Head, Engineering Research Division, University of Texas.

IN order to accommodate some 20,000 persons present in Austin, Texas, to witness the annual football game between Texas University and A and M College, held on last Thanksgiving Day, it was necessary to erect a temporary wooden stadium. The writer was asked to inspect this stadium shortly before its completion and to direct any reinforcing which he might consider necessary.

During the inspection and consequent reinforcing of the framework, it developed that several of the mechanics employed on the work believed that columns built up of several pieces spiked or bolted together were stronger than columns of equal size but consisting of single timbers.

The reason for this belief seemed to be that in a column composed of several members the direction of the grain would vary to such an extent as to produce a column of greater strength than can be secured in a column of equal size but consisting of a single timber.

In order to prove the fallacy of this seemingly quite common belief, the following two series of tests were conducted by the Engineering Research Division under the direction of the writer.

First Series:

Two columns, A and B, each $3\frac{1}{6}'' \times 5\frac{3}{8}'' \times 5'-6''$ were secured from a well seasoned piece $4'' \times 6'' \times 12'-0''$, and of fairly uniform quality throughout its length.

Column A was fashioned by sawing the $4'' \times 6'' \times 5'-6''$ into two slices approximately $2'' \times 6'' \times 5'-6''$ and actually $1\frac{17}{32}'' \times 5\frac{3}{8}'' \times 5'-6''$ inches in size, the two slices were then thoroughly spiked together with 16d nails which were clinched alternately on opposite sides, one of the slices had been turned so that the direction of its grain was the reverse of the original direction.

Column B was fashioned by dressing the $4'' \times 6'' \times 5'-6''$ until its dimensions were exactly the same as those of Column A.

The columns were tested in a Riehle Universal Testing Machine as "pin and square" columns, i. e., with the lower end of the column bearing uniformly against a flat steel block and the upper end against a spherical bearing block which per-

mitted deflection by means of a 2-inch steel ball.

Column B, when tested to failure, supported a maximum load of 95080 pounds; with this load the lateral deflection at the middle of the column was about 2 inches and the wood crushed on one side.

Column A permitted loading up to 59540 pounds when it very suddenly deflected about 2 inches at the middle and could support no additional load. The column was then removed from the machine, the nails holding the two slices together were driven up, and the column tested again; during that test the column supported a maximum load of 30,000 pounds and the deflection was so large that no additional load could be applied, during a third test the load was applied about $\frac{5}{16}$ inch eccentrically so as to have it as nearly as possible in line with the strongest grain in the column, under this condition the maximum load supported by the column was 36,650 pounds.

Second Series:

Two columns, C and D, the former $3\frac{1}{4}'' \times 5\frac{5}{8}'' \times 5'-0''$ and the latter $1\frac{5}{8}'' \times 5\frac{5}{8}'' \times 5'-0''$, were secured from a piece $1\frac{5}{8}'' \times 5\frac{5}{8}'' \times 16'-0''$, selected, on account of its uniform quality throughout its length, from the material on hand for the erection of the temporary stadium.

Column C was fashioned by spiking two pieces $1\frac{5}{8}'' \times 5\frac{5}{8}'' \times 5'-0''$ together as described above for Column A.

Column D was a single timber $1\frac{5}{8}'' \times 5\frac{5}{8}'' \times 5'-0''$ and consequently exactly as wide and long, and one-half as thick as Column C.

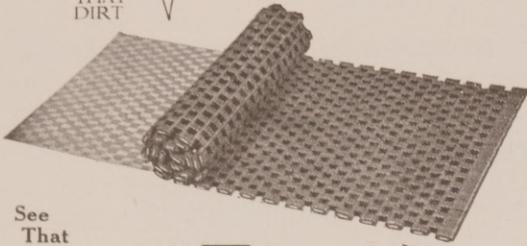
Column C and D were tested as described above for Columns A and B, the maximum load supported by Column C was 32,610 pounds; the maximum load supported by Column D was 15,770 pounds, or practically one-half as much as that supported by Column D, in both columns failure was due to excessive deflection.

Conclusions.

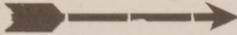
The tests of the first series prove that a column consisting of a single timber is much stronger than a similar column built up of several pieces. In this particular test, the strength of

Underfoot versus Overhead

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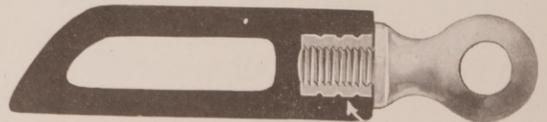
The cross section view, below, shows the hollow construction of the "Luzerne" Seat and the manner in which the metal hinge insert is moulded into solid rubber.

For hotels and other places where public toilet rooms make up-keep cost of toilet seats a real factor, the "Luzerne" Seat will prove its worth, because their first cost is the only cost.

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the single timber was about $2\frac{1}{4}$ times that of the built-up column of equal size.

The tests of the second series prove that spiking two columns together in order to form a large column added very little to the strength of the resulting column. In this particular test, the strength of the double 2 x 6" column spiked together was only $3\frac{1}{2}\%$ more than twice that of the single 2 x 6" column.

To calculate the safe strength of a long, built-up, wooden column, the slenderness ratio used in the calculation should be that of one of the slices composing the column and not that of the composite column.

With this value of the slenderness ratio, the ultimate unit strength of the two "pin and square" columns, A and B, is approximately, 9100-143 $\frac{1}{d}$ pounds per square inch.

Columns C and D, being of green timber, i. e., not well seasoned, were proportionately only about one-half as strong as Columns A and B.

AWARD BOARD TO DECIDE MAY 21.

Completes Taking Metal Trim Testimony— Awaits Transcript for Decision.

On February 19, 1923, The National Board of Jurisdictional Awards met in Washington, D. C., to conduct a rehearing of the metal trim award. The testimony of persons in the industry who favored both the carpenters and sheet metal workers was heard during the sessions of February 19, 20, 21, and during the first part of the day of February 22.

Most of this evidence, in summarized form, was published in the February 24 issue of *The American Contractor*.

On the last days of the session only two witnesses were heard. The first was Joseph T. Nester, business agent of the Cleveland local of the sheet metal workers union. The other was John Wallace, who is a member of the same union. Both testified to having worked for the Dahlstrom Company on various jobs on which Dahlstrom doors were installed. They stated that no difficulty had been experienced in getting all the sheet metal workers that were needed, but they claimed that it was impossible to get proper cooperation from the Dahlstrom Company.

In answer to a question by Colonel Wiggin, William O'Brien explained why he thought the Dahlstrom Company made a job cost more than it should. He said that the manufacturers gave a lump sum bid for doors furnished and erected. When the owner insisted on working under the terms of the decision of the Board, it was claimed that the Dahlstrom Company would name a fig-

ure much below actual cost of erection simply in order to make the cost of the work done by sheet metal workers appear excessive.

Colonel Root, in rebuttal of this statement, told of how miles of trim had been erected, but he admitted under cross examination that on the jobs mentioned he had been the general contractor and the Dahlstrom Company had installed the doors and trim.

John J. Hynes, president of the Amalgamated Sheet Metal Workers' International Alliance, and a member of the National Board of Jurisdictional Awards, sprang the sensation of the meeting when he presented his resignation from the Board and requested immediate action upon it. He pledged his organization to abide by the decision of the board whatever it might be.

Mr. Russell, chairman of the board, answered Mr. Hynes in a talk in which he said that he hoped that the building trades' department of the A. F. L. would refuse to accept this resignation. He stated that the building industry should attract the best minds and that all concerned should cooperate for the benefit of the industry.

Hope Thompson summarized the evidence that had been submitted by the carpenters favoring their claim to the work. Mr. O'Brien summed up for the sheet metal workers' union.

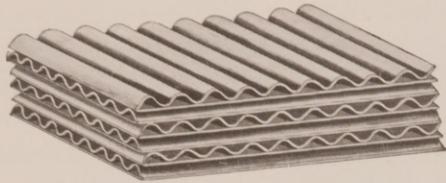
The Board went into executive session at 3:10 p. m. Thursday, February 22. At 11 p. m. it voted to take no final action in making a decision until a full transcript of the evidence could be prepared.

Since a transcript of the testimony could not be had for several days, it decided to postpone a decision until a careful study of the testimony could be made. The earliest date on which all the members could attend, was chosen for reconvening the board. This date has been set for May 21, 1923, at Washington, D. C. A final decision will then be rendered.

Fort Sumter Hotel.

A new hotel is to be erected in Charleston, S. C., to be known as the Fort Sumter Hotel. The owner is the Fort Sumter Hotel Company, of which Edward J. Murphy is president. The structure will face the west end of Battery Park at the foot of King Street. When completed, the property is appraised at \$811,225. To finance the building, an issue of \$515,000 First Mortgage Bonds has been underwritten by G. L. Miller & Company of New York and Atlanta, Ga.

Asbestos Air Cell Blocks

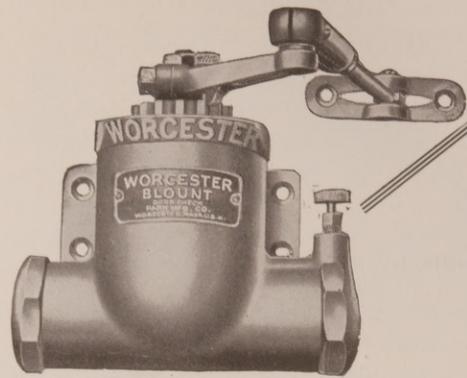


For lining ceilings, covering boilers and other hot surfaces these blocks have proven to be very efficient. They are made of corrugated asbestos paper which leaves small spaces for confining of air.

Whenever in need of Pipe and Boiler Coverings or kindred articles, remember that there is a "Diamond N" product that is built for that particular purpose. If a job puzzles you, ask us what we have for it.

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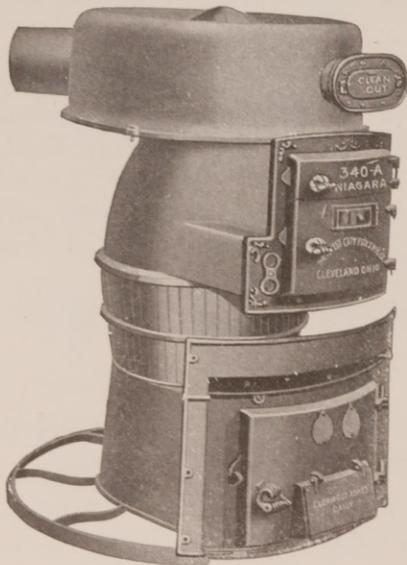
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Abstract of Printed Report on Recommended Requirements for Small Dwelling Construction

By Building Code Committee, U. S. Department of Commerce.

Investigations by a Congressional Committee during 1919 and 1920 disclosed that existing building laws, through variations and inconsistencies of their provisions, and through unduly restrictive or expensive requirements, were operating to prevent needed activity in the building industry. That these conditions might be remedied, a committee of experienced architects and engineers was organized by Secretary Hoover, to investigate building practice and latest and best information which might be recommended to cities and states adopting or revising building codes.

The first report of this Committee presents recommendations for the construction of one and two-family dwellings having exterior walls of solid or hollow masonry, concrete, and frame, the latter including veneer and stucco surfaces.

In order that its recommendations might have sound bases of information and opinion, the committee obtained the cooperation of nearly one hundred architectural and engineering societies, builders exchanges, and industrial organizations producing building materials. Special questions also were referred to large groups of individual engineers, architects, building officials, the Bureau of Standards, and others whose experience qualified them to discuss such subjects. Tentative recommendations were drafted and submitted widely for discussion and criticism by those interested in the work, and the final report reflects the influence of this consideration.

The Committee recommends that building codes permit 8-inch solid brick and 6-inch solid concrete walls for 2½ and 3-story dwellings accommodating not more than two families each; that 8-inch hollow building tile, hollow concrete block, or hollow walls of brick (all rolok) shall not exceed 20 feet in height to the gable; and that frame construction be limited to 2½ stories. Metal lath and plaster on wood studs properly fire-stopped is approved for party and division walls, but at least every alternate wall in row houses must be 8-inch solid brick or concrete, or 12-inch hollow building tile, concrete block, or hollow wall of brick.

Requirements for quality of hollow masonry units agree fairly well with present practice, but those for brick are somewhat below the medium

grade established by the American Society for Testing Materials. The report recommends revised working stresses for timber used in dwellings, based on investigations of the U. S. Forest Products Laboratory. Live loads to be required as bases for design are 40 pounds per square foot for floors of wood, and 30 for those of monolithic type, or of solid or ribbed slabs. Foundation walls of brick are required to be 12 inches thick for excavated enclosures, and similar concrete walls shall be as thick as the walls they support but not less than 8 inches. Special hollow building tile 12 inches thick is permitted for foundation walls of frame buildings.

Detailed recommendations are given for fire-stopping chimney construction, also for treatment of built-in gables.

The recommended requirements are followed by a lengthy appendix containing explanatory material and much educational matter for the guidance of builders, with particular reference to the merits of 8-inch and 12-inch masonry walls, use of lumber, stucco construction, plastering, and other important subjects.

The report comprises 100 pages, including 30 illustrations. Copies may be obtained by application to the Superintendent of Documents, Government Printing Office, Washington, D. C., enclosing 15 cents, money order or cash.

Southern States Expect Big Year.

Total contracts awarded during January in the southern states (the Carolinas, Georgia, Florida, Alabama, Mississippi, Tennessee, Louisiana and Arkansas) amounted to \$25,189,000, according to reports of the F. W. Dodge Company.

Included in the January total were \$10,908,000, or 4 per cent, for residential buildings; \$5,232,000, or 21 per cent, for business buildings; \$2,956,000, or 12 per cent, for educational buildings; \$2,713,000, or 11 per cent, for public works and utilities; \$1,208,000, or 5 per cent, for industrial buildings; and \$2,172,000, or 8 per cent, for other classes of structures.

Contemplated new work reported during the month amounted to \$124,961,000, nearly five times the amount of work actually started during the month.

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The "Universal" Sanitary Systems provide a method of sewage disposal to those isolated from the city or town sewer system.

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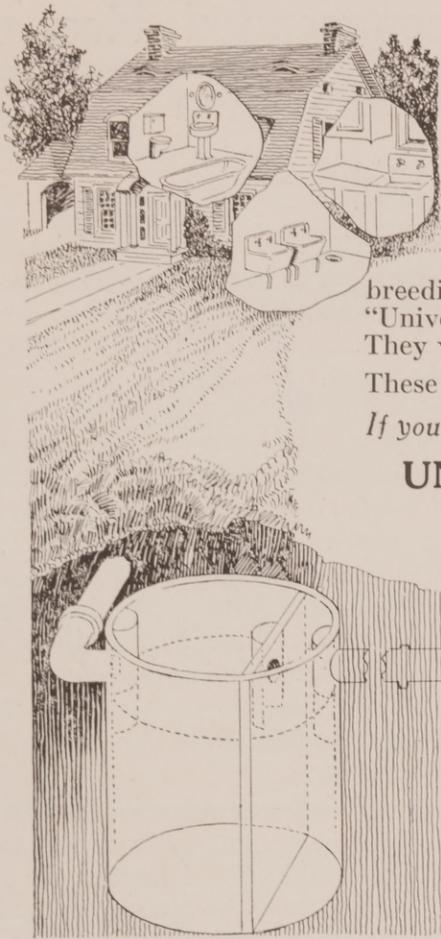
It is recognized by all health authorities that the disease breeding, soil polluting, unsightly outhouse must go. The "Universal" Septic Tanks solve the problem in a satisfactory way. They will operate with or without running water.

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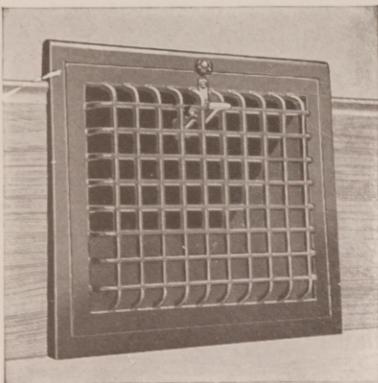
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NEW MOULDING STANDARDS.

The Southern Pine Association, New Orleans, La., announces that the new standard moulding book is ready for distribution.

The adoption and publication of the new moulding designs marks the completion of an important task jointly undertaken by the American Institute of Architects and the National Lumber Manufacturers Association. To quote from the announcement of the Southern Pine Association:

"In the former standard moulding book there were approximately 900 different patterns, but the architects' committee has reduced the number of new patterns to 149. The old designs of moulding were criticized from the standpoint of excessive numbers and artistic form. The new patterns are pronounced artistically perfect by the architects, they having changed the lines and forms of the mouldings to serve the purpose for which mouldings are designed, to create light and shadow.

"For example, where there were reverse curves in the old moulding patterns the concave and convex curves usually were of equal length. The architects hold that in the case of reverse curves one must dominate the other, that the eye is rested more by a short concave and a longer convex curve than by curves of equal length. According to the architects the new patterns are decided improvements over the old forms in simplification, notable reduction in number of designs and in being artistically correct.

"The Association's new moulding book contains the old standard patterns as well as the new, inasmuch as many dealers still have more or less stocks of the old pattern mouldings on hand and time will be required to eliminate their use and secure the general adoption by architects, builders and the public of the new forms. Ultimately, however, it is expected that the new patterns will entirely replace the old and the forms designed by the architects' committee will be adopted as standard by all the lumber manufacturers throughout the country."

Nashville Contractors Organize.

The local contractors of Nashville, Tenn., have just organized with the following officers.

President, George Phillips; vice-president, Charles McInturff; secretary, Charles W. Akers.

Directors, Joseph Murray, Charles McInturff and Charles Fuller.

The members are George L. Phillips & Co., R. E. Cooper & Co., Charles C. McInturff & Co., Fuller-Cunningham & Co., H. E. Parmer & Co., E. T. Murray & Co., Robertson Roofing Co., and Uncle Hiram Roofing Co.

FIRE-SAFE FRAME CONSTRUCTION.

Underwriters Permit Timber Protected by Metal Lath and Gypsum Plaster.

As a timely contribution to the fire protection campaign, the Underwriters' Laboratory has authorized the following report:

"On the anniversary of the Chicago fire, after years of testing by the fire prevention engineers of Underwriters' Laboratories, their fire council announces a classification hitherto unrecognized in the protection of construction with wood structural supports. By the use of metallic lath and gypsum plaster applied to ordinary wood construction, the engineers have found protection sufficient to resist an unusually severe fire for periods greater than one hour, and have accorded the remarkably high rating of 'one hour' upon floors and bearing partitions so constructed. This report is a monumental piece of work and gives a new significance and practical solution to one of the serious economic menaces which faces the American public. Fifty-one years ago, October 9, the Chicago fire wiped out, in a short time, 19,000 residences, and since then, very little, if any, improvement has been made in fire resistive construction of the ordinary dwelling. The use of metallic lath to protect the timbers provides the least expensive means of giving such extreme protection and puts safe construction in the hands of the average home owner. Seventeen thousand (17,000) lives are lost each year through carelessness and through fires quickly obtaining a foothold in structures of the usual form of construction. Few have been able to adopt the more expensive so-called 'fireproof' methods. However, by the form of construction now developed, people need go to no further expense than the ordinary wood structural supports, if protected in the manner that the underwriters have reported on. Much comment is expected in housing circles from the appearance of this report. Its release on Fire Prevention Day, after many months' testing and investigation, is so timed as to be a distinct contribution to the national campaign against fire waste, which is being conducted throughout the country this week."

This demonstrates that good frame construction, when protected in an approved manner, is sufficiently fire-safe for modern urban development. The findings of the laboratory are in line with the recommendations of Hoover's building code committee.

FOREST SERVICE TO ATTEMPT SOLUTION OF STAIN AND MOLD PROBLEM.

Losses to the lumber and woodworking trade amounting to 10 million dollars through degrade of lumber by sap and stain mold were recently estimated by the U. S. Forest Service and the Bureau of Plant Industry, based on a survey of the southern pine and hardwood field. The survey is preliminary to a study to be made by the Forest Products Laboratory, Madison, Wisconsin, on sap stain and molds as they affect the wood industries throughout the United States.

Price reductions based on blue stain degrade have varied from \$10 to \$27 per M feet in the sash and mill work field alone, according to figures obtained in the survey. In the cooperage industry the annual losses due to blue stain is estimated at \$800,000. The prices received for stained sap lumber were decreased in amounts varying from \$1.50 to as high as \$15 per M board feet. Continued calls made by manufacturers upon the Forest Products Laboratory for suggestions as to means of controlling stain indicate that the problem cannot be completely solved by any method now used.

Further details of the stain and mold problem in every branch of the wood-using industry are now being gathered by the Forest Products Laboratory by means of questionnaires. The facts so collected will provide a basis for a broad study in cooperation with the various associations of stain control methods in all stages of the manufacture of wood products. Both dipping and air seasoning methods will be studied.

It is anticipated that this work will assume major importance and that the demands on the Laboratory will be much greater than can be met from the government funds available. The affected by sap stain troubles will be needed.

HORIZONTAL vs. DIAGONAL SHEATHING FOR STUCCO HOUSES.

In many sections it has been common practice for years to place sheathing boards for stucco houses diagonally over the studs. The principal argument for placing sheathing boards in this fashion was that it acted as diagonal bracing for the frame work and gave a very stiff structure. The full size stucco panel tests conducted by the Bureau of Standards have apparently proved that horizontal sheathing is preferable to the older diagonal form. The following is an extract from the report of the Committee on Treatment of Concrete Surfaces of the American Concrete Institute:

"When sheathing is used, it should be laid horizontally and not diagonally across the studs. The stucco test panels erected at the Bureau of Standards in 1915 and 1916 have demonstrated

conclusively that diagonal sheathing tends to crack overlying stucco by setting up strains in the supporting frame. This result is undoubtedly due to the shrinkage of the sheathing, and whatever benefit might be anticipated from the more effective bracing provided by diagonal sheathing appears to be more than offset by the shrinkage effect. Diagonal sheathing is also less economical than horizontal sheathing, both in material and labor."

Of course when sheathing is laid horizontally adequate diagonal bracing should be provided at the corners. A good form of bracing is a piece notched into the back faces of the studs, each brace being continuous and having no joints.

New Apartment in St. Louis.

The Worthington Apartment Building, six stories and basement in height, containing 36 apartments of five and six rooms, will be erected at once in St. Louis, at the corner of Belt and Waterman Avenues. Owner of the property is the Worth Investment Company, of which E. N. Worthington is President and A. D. Gates Secretary and Treasurer. G. L. Miller & Company, with offices in New York, St. Louis and other cities, are financing the structure, having underwritten an issue of \$450,000 first mortgage 6½% bonds. The property when completed is appraised at \$704,325 and annual net earnings are estimated at \$57,105.

Contract for \$219,000 School in New Orleans.

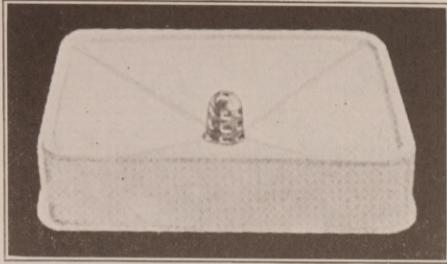
New Orleans, La.—The New Orleans Parish School Board has awarded contract to the O. M. Gwin Construction Co. of this city for erection of a grammar school building to cost \$219,000 without equipment. Dimensions of the building are 150 by 300 feet. It will be of steel and concrete foundation and asbestos built-up roof. E. A. Christy is the architect and T. A. Montz, the engineer.

In addition to the general contract, other awards were to be the American Plumbing & Heating Co., for plumbing and heating and to the Union Electric Co., for electric lighting equipment.

Gillis and Geoghegan, 558 West Broadway, New York have just issued a pamphlet No. 280, which illustrates and describes the equipment used with the G. & G. Telescopic Hoist to save labor and make a safe hoistway.

Of special interest to architects will be the half size section through the G & G Sidewalk Door frame. This shows an unusual and superior design of a door which is watertight.

Copies may be obtained addressing them as above.



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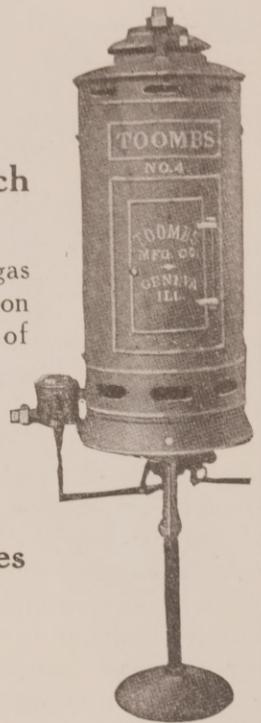
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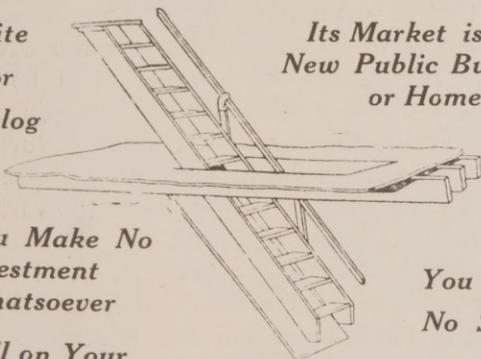
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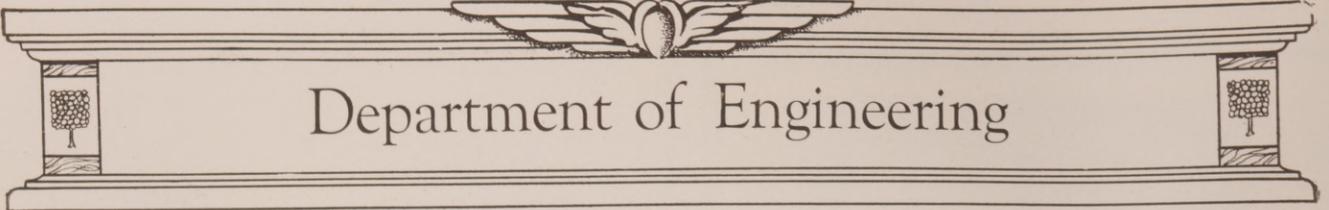
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Department of Engineering

An English Method of Figuring Heat Losses

A method of figuring heat losses from buildings, which varies somewhat from that in common use, is described by W. W. Nobbs, a past president of the (British) Institute of Heating and Ventilating Engineers, in a paper presented by him before the National Association of Super-
vising Engineers.

According to the method followed by Mr. Nobbs, the total interchange is separated into "diffusion" and "leakage" losses. The heat loss due to the former, which consists of the air which percolates through the pores of the material, is covered by the coefficients of transmission and therefore need not be considered further. The "leakage" losses include the air passing up ventilating or chimney shafts, the infiltration through window and door crevices and the like.

"The fundamental source of air movement," Mr. Nobbs points out, "is the difference of pressure within and without the building. The constant cause which produces this effect is the difference in temperature maintained between the inside and outside of the building, while wind and such weather effects are inconstant causes. For the purpose of the schedule, given hereinafter, the conventional temperature difference of 30° is assumed to be maintained between the interior and exterior of the building; this conforms to what may be considered standard conditions in this country (England). The wind pressure is assumed to be constant, and at a velocity of 20 ft. per second as being the average for the winter, and thus more nearly approaching actual conditions than it would be to assume still air outside; the latter would require a supplement for every practical condition and "supplements" are apt to be disregarded.

Features Common to All Buildings.

The principal features common to all buildings which should be considered in relation to their effect on the natural air interchange are:

- (a) The height of the room and its elevation to the rest of the building.
- (b) The window leakage, number of external walls, ratio of cubic contents to exposed wall surface.
- (c) Whether provided with either, or both, open fireplace and ventilating duct.

(d) General conditions as to exposure and tightness of construction.

It is necessary to consider the height and relative elevation of a room by reason of the aspirating effect of the warm building. Thus this effect is greater on a ground floor room than on the top floor; the "pull" is likewise stronger than it is on the same floor of a three-story house. The upper floors, on the other hand, are not so protected from winds as those near the street level.

Selection of "Datum" Room.

In selecting a "datum" room, two courses appeared to be open. The first and most obvious was to follow the lines that would be adopted if the interchange were to be experimentally determined, i. e., it would be necessary to select or build the room before starting the test. Consequently, to follow this procedure in theory, the rate of interchange would have to be calculated from a room of given dimensions. That has the advantage that the interchange for the datum room would almost certainly be a fractional quantity. The alternative, which was adopted, was to fit the lock to the key, and select a room in which, under the standard conditions, the interchange would be unity. This has the practical advantage that in comparing the rooms in which the leakage is to be computed with the datum room, the allowances for variance will be expressed as a direct proportion of the cubic contents of the room under consideration. A further advantage is that the datum, as already selected, is as nearly as possible a composite of the various rooms it is intended to measure.

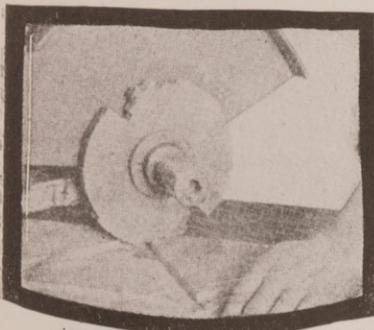
The datum room was arbitrarily selected as having a leakage of one interchange per hour, a theoretically top-floor room, 12 ft. high, 18 ft. deep, one long line exposed, having neither vent nor fireplace, normal tightness of construction, average exposure with wind velocity at the average winter velocity of 20 ft. per second, 30° F. outside and 60° F. inside the room, the said interchange being in addition to the portion taken care of by the transmission coefficient. By a "theoretical" top-floor room is meant one which has no column of warm air above it to influence the air movement through the room, but which, on the other hand, is not subject to heat loss

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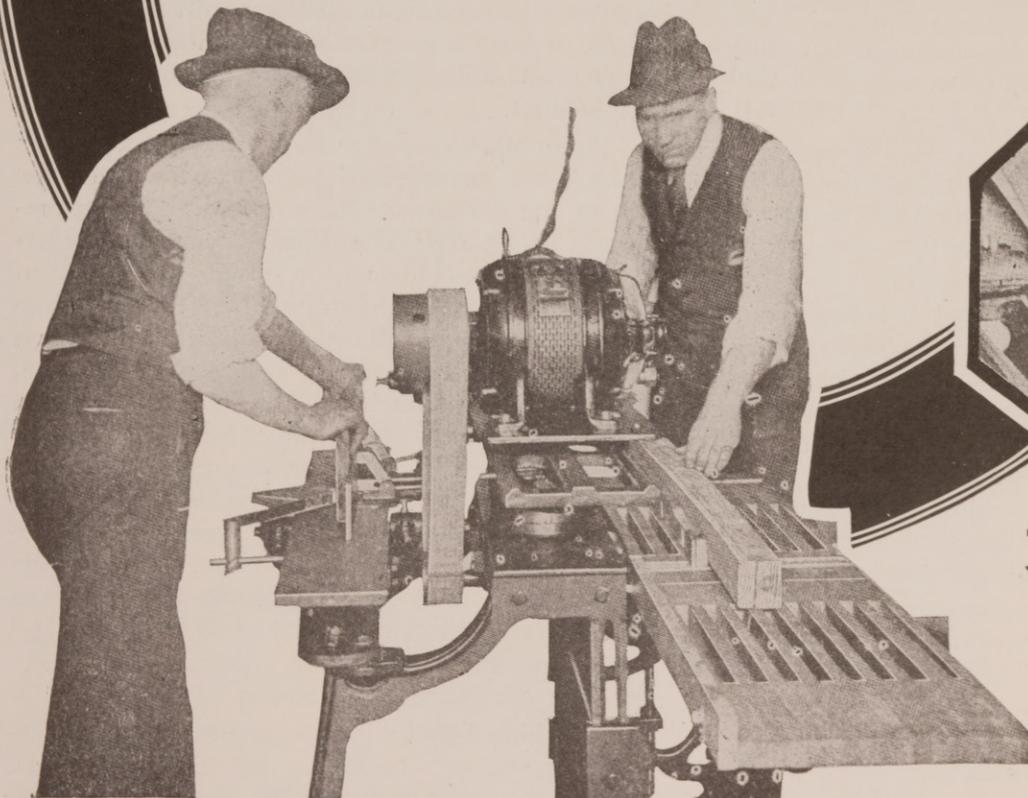
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through the ceiling, as would be the case in an actual top-floor room; thus the datum room can be used in comparison with a normal room on any floor.

Determining Air Interchanges Under Different Conditions.

The interchange of the datum room under average or standard conditions having been thus decided upon, the next step was to apportion values or fix the problematical interchange of the same room when under the influences of sources of leakage common to most rooms, and which must be considered in any estimate having rational foundation. The first of these is the relative height or elevation with regard to the aspiring effect of the building.

Other conditions being equal, the interchange would vary as the square root of the height of the column of warmed air, but in practice other conditions are not equal; the upper floors through staircase and lift wells; the influence of more free exposure to wind effect on the upper floors also has a counter effect, which tends to equalize the interchange in upper and lower rooms. In view of such consideration, and assuming for general purposes 12 ft. floor to floor as nearest to the average height of all the rooms coming within our survey, the factor for relative height was apportioned as follows:

	Interchange.
Datum room on top floor -----	1.00
“ “ one floor below top floor	1.10
“ “ two floors -----	1.18
“ “ three “ -----	1.25
“ “ four “ -----	1.31
“ “ five “ -----	1.36
“ “ six “ -----	1.41
“ “ seven “ -----	1.45

A similar and equally consistent factor for a building of different height, floor to floor, can be obtained by taking 25% of the increased difference theoretically due to height.

Effect of Exposed Walls and Window Leakage.

The next source of leakage considered was the effect of exposed walls and window leakage. The amalgamation of these important sources of leakage into one factor cannot be made without sacrifice of accuracy, but it is essential to make some concession to the time available and the information given on the average set of architectural drawings, if the schedule is to be of any practical use. The allowances made in respect of these considerations are:

	Interchange.
1 side exposed = datum room =	1.0
2 sides “ increase 30% =	1.3
3 sides “ increase 50% =	1.5

For similar reasons, the ratio of cubic con-

tents to exposed wall area is reduced to noting the **depth** of the room. The depth is the distance from the exposed wall to the back of the room in the cases of rooms having one outer wall, while in the case of rooms with two outer walls the depth would be measured back from the longer of the exposed walls. This “short cut” is made on the assumption that the third dimension, i. e., the height, is a fixed one, namely, 12 ft. The depth of the datum or unit room was taken at 18 ft. as most nearly conforming to the average depth of room with which the engineer has to deal. Generalization was carried further in dividing all rooms into three categories of depth, namely, 12, 18 and 24 ft. deep. Thus small living-rooms and offices varying from 8 to 14 ft. deep would come in the 12 ft. class; rooms 15 to 21 ft. deep into the 18 ft. or datum class, and those between 22 and 26 ft. deep into the largest denomination. The allowances made in the schedule in this respect are:

	Inter- change.
Rooms 24 ft. deep, decrease normal by 20% =	0.80
“ 18 ft. deep, datum or normal =	1.00
“ 12 ft. deep, increase normal 25% =	1.25

The influence of a chimney or ventilating extract duct depends on the area or same as well as on the height and temperature which are already allowed for in other conditions, but it would entail too much consideration if in practical computations the area of each air extract duct and fire-place had to be considered. The existence of one or the other or both is recognized by making a general all-around allowance of 15 per cent. increase for each fireplace (fire not lit) or duct.

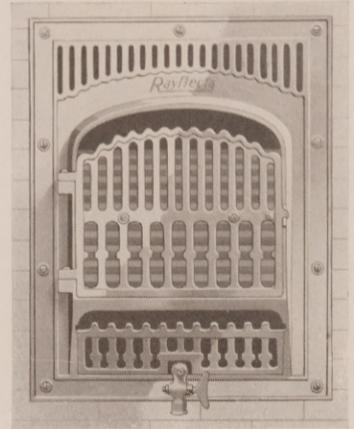
These allowances for the main sources of air leakage are summarized and tabulated ready for use in the accompanying schedule. Its application is as follows: The usual particulars for arriving at the transmission losses having been tabulated, to get at the interchange the draughts-notes mentally as follows: 1st, what floor of the building is he dealing with; assume, for example, it is the second floor of a four-story block, then the factor will be in a column headed “1st floor below top floor.” The next point to look for is the number of external walls; assume the same to be one outer wall, which will restrict the factor to the first nine lines. Next, consider the depth, which will further confine the factor to three lines, and the actual line is finally found by noting whether neither, either, or both fire-place or duct exist in the room.

It is hoped that with the schedule of air interchanges which summarize these considerations, members will be in possession of data and meth-

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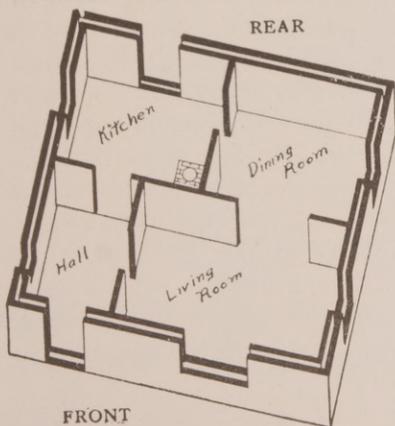


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Forms removed from house after first pouring, showing how partitions are poured with outer walls.

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ods which conform to modern practice in estimating the amount of heat lost from a room or building under a steady state of heat flow. It is recommended that particulars taken on a visit to the building or read from the plans should be entered on a standardized form for the future when comparing with actual results.

Exposure Factors.

It is the author's practice to make an addition to the foregoing to cover different exposures, of 5% for rooms or houses having little exposure, such as town houses or country houses well protected by trees, 10% addition for houses having abnormal exposure. The further customary factors for aspect are 10% addition for rooms facing E. or N. W., and 10% to 15% addition for N. and N. E. aspects. These factors are necessarily empirical and should be applied judiciously.—“Heating and Ventilating.”

SOUNDPROOF ROOMS.

The engineers of the Western Electric Company have recently constructed four rooms in the Bell Telephone Laboratories in New York that are as thoroughly soundproof as ingenuity can make them. Their design was based on principles and data published by the late Prof. W. C. Sabine of Harvard University.

To shut out the vibrations which would be transmitted by the floor, the rooms are built on foundations of three alternate layers of one inch thick special all-wool felt and sheet iron. The maple flooring, which is individual for each booth, is laid on top of this foundation and covered with battleship linoleum. The idea of the alternate layers of felt and sheet iron is that the sound vibrations, which are not damped out in passing through the felt, will be reflected by the sheet iron.

The walls are double and the inner one is built on top of the maple flooring. The framework for this inner wall is made of 2 by 3 inch timbers making a 3 inch air space. Nailed to the inside of this framework is a layer of sheet iron. Over the sheet iron is a 1 inch layer of felt and this is finished off with burlap. Nailed to the outside of the 2 by 3's is a layer of felt; outside of this is the outer wall. This rests on the main floor of the room in which the booths are built and is entirely free from the inner wall and its resilient foundation. The outer wall consists of a framework of I-beams, and built up between these is a wall of gypsum blocks. The booths are entered from the outside world by double doors, one door mounted on the door frame of the inner shell and the other mounted on the door frame of the outer gypsum block wall. The doors are provided with heavy glass panels set in felt.

The booths are ventilated by a small ventilating fan which has been mounted on a wall at a distance of about 15 feet so as not to convey any vibrations to the wall of the booth. The pipe carrying the air to the booth is lined with felt and terminates in a felt lined box equipped with felt baffle plates through which the air escapes into the booth practically free from sound vibrations. The air also escapes from the booth through one of the baffle boxes. Where it was necessary that sprinkler pipes or conduits pass through the booths they were wrapped with felt.

It is said that the feelings of one who has been accustomed to city noises, when first entering one of these booths, is that of almost suffocating stillness, such as might be experienced out in the woods on the stillest of nights.

MEDICAL ARTS BUILDING, DALLAS, TEXAS.

(Continued from page 31.)

Probably no building ever erected is more impervious to fire. Practically the only parts of the Medical Arts Building which would burn are the window and door finishing and similar finishings, most of which are inside the suites and entirely separated from the other sections. The exterior is of terra cotta and Kittaning impervious brick from Pennsylvania.

Each of the four elevator shafts is separated from the other parts of the building by concrete walls. Wired glass doors are used to prevent smoke from passing into the elevator shafts in case of fire on one floor.

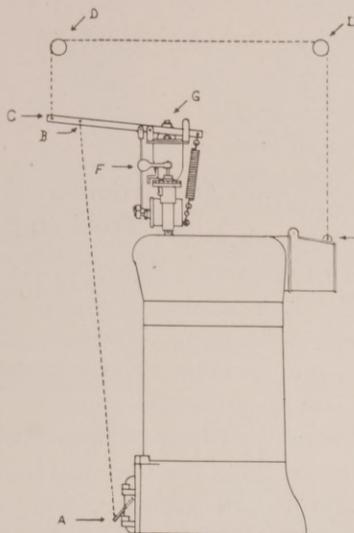
Stairways likewise are enclosed in concrete passages, and anti-panic doors, which open outward toward the stairways, have been placed at the foot of each flight of stairs. These fireproof partitions also render the service of cross-bracing the building. High-pressure fire mains with fire hose have been installed on each floor.

Viewed from the outside the Medical Arts Building is one of the most beautiful in the southwest. Three offsets about five stories apart tend to draw the building to a narrow needle-like point. Special attention is being given these offsets to beautify them and to utilize them in adding to the comfort within. The offset nearest the ground even with the fourth floor has been prepared to receive dirt and a flower garden will be grown here. This will prevent the sun's heat from being radiated into the windows.

The narrowing of the structure toward the upper stories is in accord with the most modern designs for furnishing proper lighting for streets below or for other buildings which might be erected on the adjoining property. It corresponds to the ordinance in New York and Chicago in this respect.

A Mansard roof—one which approaches a

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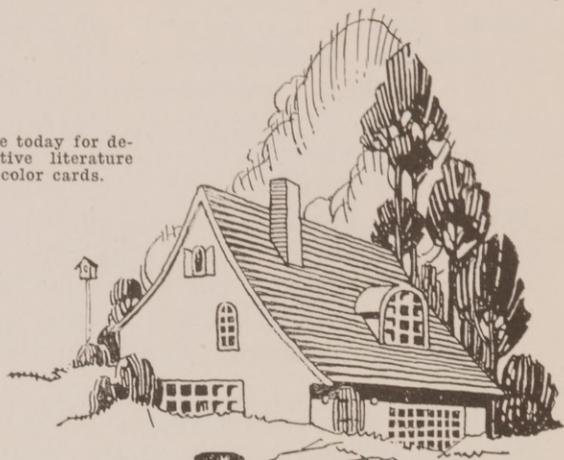
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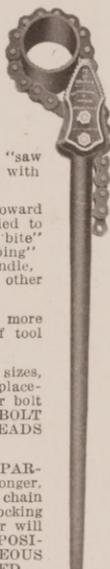
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JAWS: Drop forged tool steel, hardened and "saw tooth tempered," permitting resharpening with a file.

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pyramid point but is flattened off near the top—crowns the building, carrying out the monumental design. It is covered with Spanish tile in variegated shades of green.

The building is accessible from all sides and entering from any one of these approaches one is carried directly into the lobby, which is elevated several feet above the level of the street. The lobby and hallway are finished in Tavarnelle marble imported from Italy—the same material used in finishing the interior of the Magnolia building, (a 32 story building recently finished). This opens into a rotunda finished in ornamental plastering.

In the center of this domed rotunda is one of the most striking features of the entire bit of construction. It is the round shaft of light, falling from the skylight nineteen stories above and throwing a soft glow over the interior of the building as in a temple. This shaft also is invaluable to the ventilating system.

Iron grills spanning the central shaft but not obstructing the light or vision have been placed at every third floor to protect the "innocent bystander" on the lobby floor from anything which might by accident be dropped from above. High iron railings surround the opening at each floor.

On the third floor will be an auditorium arranged specifically for doctors and dentists. It will seat about 250 persons and will be used by the Dallas County Medical Association, medical conferences and conventions and other gatherings of this nature. Also a very complete medical library will be installed in this auditorium.

The rapid growth of Dallas, which, according to recent city directory census has been estimated at 250,000 population, has presented a problem not only to the doctors and dentists, but also to other business locations in the past, to find suitable ones. In fact there has been objection for one reason or another, to the renting of offices to physicians and dentists by some of the landlords here.

So it remained for Dr. E. H. Carey, a prominent physician of Dallas, Texas, for many years, to conceive and bring about the final completion of a building to be used exclusively by physicians and dentists and kindred mercantile concerns, and in which there is incorporated all the ideals of the medical profession as they are interpreted by the intelligence of a great leader, Dr. E. H. Carey, and by the best minds of those who direct the destinies of the Dallas County Medical Society and the Dallas County Dental Society.

It contains facilities for further research and development work with scientific apparatus heretofore barred from the medical profession in Dallas by limitations in electrical energy and its control.

It affords groups of scientific operations in their proper classifications so that the combined

knowledge and skill of several may be available for patients.

The location of the building, corner of Masten, St. Paul and Pacific avenue is practically a central one. The ground, buildings and contents will easily represent an investment of \$2,000,000.

Carey-Snyder Investment Company are the owners and builders and George W. Hewitt is the general contractor. Banglebaugh & Whitson are the architects. The mechanical equipment was designed by Mr. R. F. Taylor, of Dallas; Blue & Cope of Dallas, had the contract for the plastering; Mr. J. R. Sanford of Dallas, executed the painting and interior decorating contract. Mr. W. J. Knight was the structural engineer in charge.

The University Woman's Club will have commodious quarters on the third floor of the building. This organization will conduct a lunch room for the physicians, surgeons and dentists in the building, so that they need not leave the building for their noon refreshments.

The third floor will also have a great fireproof vault in which the tenants will be able to store their valuables.

A RECORD OF BUILDING ACHIEVEMENT IN MEMPHIS, TENN.

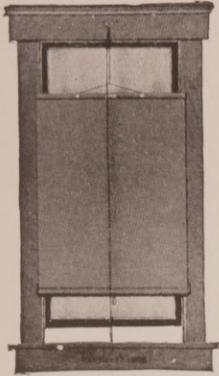
(Continued from page 56.)

ence Saunders, head of the Piggly Wiggly Corporation, who will occupy the new building as a residence. The site of the estate embraces about 154 acres. Some features of it will include an artificial lake with an island on which shall be some of the holes in the private golf course, which is to be laid out. A private gymnasium will be built, tennis courts will be constructed and an order has been given for installing plumbing for a private swimming pool and 86 baths. The entire project will be carried out somewhat along the lines of old English estates and an estimate of cost is \$1,250,000.

About two years ago, Memphis experienced an acute shortage in residences and apartments and, as a result, the city witnessed intense activity in the building of residences and apartments. A total of 4,442 permits were issued for the year. The residences ranged from the modest cottage up to the fine estates such as the one mentioned above; and the apartments from the duplex up to the ten story type exemplified in the Almadura Apartment, costing \$750,000.00 and the Hull and Maulkin Apartments, both of which offer very fine, modern arrangements for the apartment dweller.

Indications are that the activities in building, which have been going on throughout the past year, will continue, and that the year 1923 will equal, if not exceed, the permits issued during 1922.

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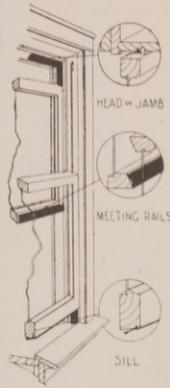
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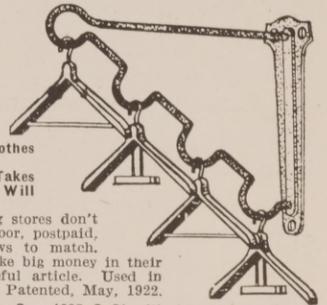
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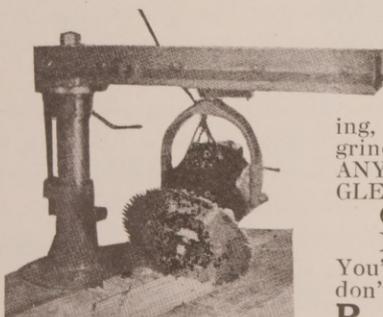
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(Continued from page 36.)

grounds, so that some of the activities of family life may be carried on out of doors. In this case planting does for the property as a whole what, in one way, the walls and roof do for the house. But the mode of life implied by this procedure makes no appeal to the great majority of people today. On the contrary, it seems to suggest confinement and a dull existence apart from the world. The common desire everywhere is to live so as to be able to see and be seen by passers-by, and to seek all recreation away from home. Hence the invariable habit of considering the house primarily from the point of view of its effect from the street—in other words, regarding it as an object of display. Hence, also, the natural attitude of viewing planting about the house only as so much additional decoration.

This general abandonment, under the pressure of modern life, of the former custom of maintaining gardens and enclosed grounds for family pleasure and recreation, is doubtably one of the most disintegrating influences in American life today. With its social and moral significance we are not here concerned. But there is also an aesthetic import to the situation which does concern us, and which is closely linked to the other, in striking accord with our modern sense of the solidarity of the entire life of the community and the absolute interdependence of all its activities, through the doctrine which expounds the aesthetic connection is an old one. That doctrine is the fundamental teaching of all the applied arts, among which the art of planting belongs; and, as will now be explained, it shows clearly how the idea of what constitutes beauty in planting must, in the case of functional planting, be radically different from that which is associated with merely decorative planting.

According to this underlying principle of the applied arts, beauty is conditional on the effective adaptation of the material means to the practical end. As the old phrase runs, "that which is fit is fine." A wayside tree transplanted to shade a doorway or a well-curb creates a scene of beauty that is not enhanced in its essential quality if the tree proves to have lovely flowers. It is the sight or thought of the pleasant shade in a spot where it affords comfort that impresses the mind with a sense of delight. And wherever any such device or work of man, existing as a prevailing type, is perceived to be conspicuously adapted to the manner or needs of life of its creators, and in accordance with natural laws and the conditions of the physical and social environment, there the eye and the imagination will always recognize the presence of a peculiarly fine and impressive type of beauty. In the language of designers, this

is the organic beauty that attends the "expression of function," meaning the simple straightforward meeting by natural means and methods of the actual facts, conditions or purpose involved in the work.

Thus it would be ridiculous, in this country, to plant rows of trees along our fields and then trim off all the side branches except a small portion of the top, because no conditions here suggest such a course; but in Normandy and many similar parts of Europe, where intensive agriculture everywhere prevails and population presses, such treatment of the trees, being necessary for the fullest use of the land, has created a typical feature in the landscape which is one of the enchantments of those lands of beauty.

As appropriate American examples, consider the homes of Longfellow and Lowell in Cambridge, which impresses thousands of tourists year after year with their stately dignity and beauty. If we seek to discover the source of their perpetual charm we find that it lies chiefly, not in "ornamental" planting at all, for there is none; but simply in the rows of fine old trees and the plain, tall lilac hedges that border the street and enclose the lawns. These, in each case, by enclosing and overshadowing the place, impart an atmosphere of delightful retirement and repose, and suggest the tranquil domestic life within. Moreover, by a well-known psychological effect, they stir the imagination of the beholder into wondering what pleasant regions, of which he now and then catches fair glimpses, may lie beyond those agreeable barriers. Not in spite of the fact that the place is not arranged for outward display, but precisely because it is so largely shut in, does it acquire power to charm the observer and tempt him to linger. Curiously enough, few people seem to apprehend the cause of this familiar effect, and probably most visitors would be dismayed at the thought of similarly enclosing and shading their own grounds. Just that personal application, however, is obviously the logical procedure. And until the American householder comes to appreciate and act on this principle, our small suburban estates and house lots can never rise above mere prettiness and attain that real distinction of character which alone can yield lasting satisfaction.

It may be well to enumerate some other practical needs besides the enclosing of a place as a whole that must or can be met by planting. Most of these constitute examples of enclosure to a greater or less extent; for instance, planting for tempering the extremes of heat and cold; for protection from the dust and noise of the street; for the screening of unpleasant views or objects; for the separation of service portions of the grounds

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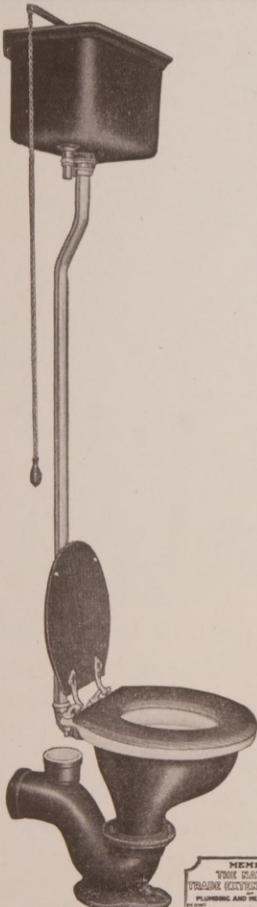


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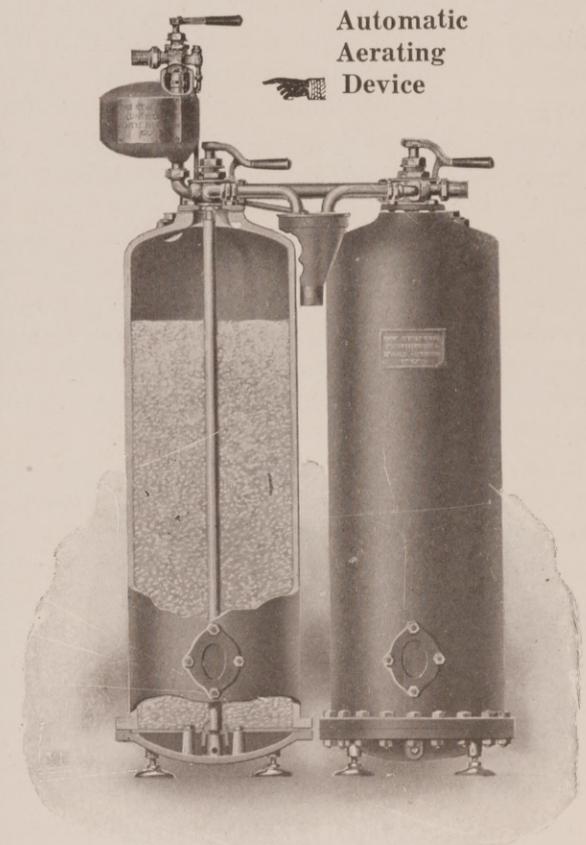
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from those devoted to the pleasure of the family; and for providing, as needed, various other distinct sub-divisions of the property for particular purposes, such as vegetable and flower gardens, tennis courts, and so on.

In all these ways the many advantages to be secured by proper planting have everywhere been ignored. In all of them, nevertheless, there are latent aesthetic possibilities of the finest sort. For it is a significant fact that in simply meeting these different practical needs everything tends to work together for good in the matter of the resultant artistic effect. Thus the trees planted as a protection from northern winds turn out to form in time a dark, restful background for the house, in contrast with the warmth and cheeriness of its southern aspect and the relatively sunny, open lawn or garden in front; the lawn, kept free of plants for convenience in using it, becomes a broad, effective fore-ground for the entire scene; the screens or hedges between service areas and lawn and garden, together with the neighboring trees in general, agreeably perform their aesthetic function of binding the house to its natural surroundings; and the trees planted primarily for shade or shelter, together with the hedge for keeping out intruders and giving privacy, impart a pervading sense of repose, and also ensure the fundamental artistic element of unity by enclosing as in a frame the picture of which the house is the center. The general principle here involved is pungently expressed, from a negative point of view, in one of those racy maxims which Meredith attributes to his inimitable Old Buccaneer, Captain Kirby: "Ugly is only half way to a thing"—as deft a characterization of the aesthetic working principle as it is a vivid stroke in the delineation of the captain.

From the preceding discussion it may be seen that the principle of fitness not only affords a searching test for judging the aesthetic merits of any planting scheme designed to be serviceable, but forms one of the best guides for the amateur planter in selecting and arranging his material. Recall the case of the man who "improves" his property by planting a few "ornamental" shade trees (term of the nurseryman used impartially of all kinds of deciduous trees grown). With only vague notions of what is the proper location for his trees, he probably chooses positions somewhere in the middle of the lawn, because that seems to be the place where they will appear most conspicuous. Here, as a matter of fact, they look, to the competent eye, quite in appropriate; and are only abused by the children at play, so that they either promptly die or maintain a feeble existence. But let our improver plant a tree close to his house, and he shall in

time have a roof-tree; or near his door, and he shall gain an inviting door-yard; or on the outskirts of his lawn, and he shall have presently a favorite shady retreat. Nor is any ornamental value lost by this procedure. And with a series of such features added, house and grounds may rapidly take on the completeness of a picture.

It should also be said that in competent hands the converse procedure—that is, arranging plants according to the principles of artistic composition (such as conceiving and developing the whole property as a picture; keeping the lawn open as the center or foreground of the picture; confining the planting chiefly to the margins as a frame; and so on)—will likewise lead, under the restraint of the practical limitations of each case, to a good result from the practical point of view. A skilled designer of course works instinctively from both points of view simultaneously, but for an amateur who must follow principles in a somewhat mechanical way, the former method is much more likely to yield consistent results. Such must always have been the procedure of unspoiled village folk in building their homes; they work frankly and unconsciously for practical ends, but the effects they produce we now recognize to be preeminently beautiful. The evolutionary process here proves to have been at work. Generations of constant experiment and improvement have tended to bring about agreement on certain general principles to procedure, thereby bringing about the development in community or nation of a certain traditional type of home perfectly adapted to the daily life of the people. And in this "survival of the fittest" there has likewise been attained the perfection of beauty.

In conclusion, it may be said for the benefit of those who insist on having the usual open treatment and decorative planting for their property, that if they will arrange their plants according to the principles of composition partly enumerated above, they will obtain a much broader and more dignified effect than results from dotting a lawn with specimen plants in detached groups; though as has been said, this effect will in no wise have that finely expressive quality which marks planting done with a constructive purpose.

That there is such a difference in degree of effectiveness between random planting and coordinated planting is readily apparent to any observer of the two methods. What is more important to recognize, however, is that there is a vast difference in the character of the effect in the two cases. The unorganized planting has no dominating effect as a whole. It is simply a series of separate units, each demanding equal attention and possessing interest only by reason of some individual element of attractiveness. The

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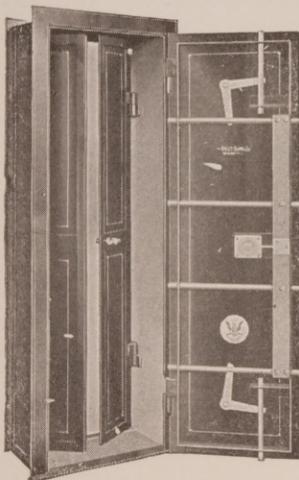
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composed planting, on the other hand, is not in any way dependent for its essential effect on the decorative value of the individual plants, and it is in large measure as interesting in winter as in summer. For its distinguishing quality results from the pleasing relations between the component parts, which are so placed that they do not attract the eye individually, but rather contribute to a single impression of the scheme as a whole. A particularly interesting thing about such planting, from the point of view of the present discussion, is that it usually has features that give just a suggestion of certain of the finer effects that are found only at their best in larger planting. Thus there will always be the possibility that it may furnish the incentive to adopt the more substantial forms.

AN ENGLISH VIEW OF HIGH BUILDINGS.

(Continued from page 54.)

relaxation of existing regulations, and the institute are of opinion that no such general public advantage has been established.

(5) It is, of course, recognized that there may be situations so advantageously placed as regards open space about them, and so well served by existing roads and other services, that in these cases a reasonable increase of height might be permitted without public disadvantage. The institute are of opinion, however, that it is not possible to provide for anything further than the existing discretionary powers of the London County Council without incurring great danger, unless and until a comprehensive plan for dealing with building development and traffic problems throughout the whole of London is prepared; and that any such exceptional increase should then only be allowed in the case of specific sites fixed upon such a plan, agreed with owners, generally conforming with the requirements of comprehensive planning, and subject to special rating to compensate upon all public services.

The Institute therefore recommended:

(1) That no relaxation at present be made in the regulations dealing with the height of buildings.

(2) That so soon as the form of the future government of Greater London, now under consideration, has been determined, a development plan of the whole of the area should be prepared, and zoning regulations on the lines of those recently enacted for the city of New York, but adapted to the special conditions prevailing in London, should be framed and given effect to. These regulations would deal with the height, density, use and character of buildings generally, and the zoning plan can provide for those exceptional sites, if any, where some increase of the general limit of height could wisely be permitted.

Consideration has been given to the conditions

in American towns where an unrestricted limitation as to height has obtained, and more particularly to the report which has recently been made in New York by a commission charged with the duty of investigating existing conditions and of drafting regulations as to restrictions. The committee consisted of representatives of the different boroughs, who were assisted by a technical staff. The final report of this commission was submitted on December 23, 1913, and, after holding a series of public hearings resulting in certain modifications, was finally approved in the year 1916.

In considering this report in its reference to the requirements of London, the Town Planning Institute have had in mind the peculiar conditions of New York as regards its wider streets and intenser light. The subsoil of London for the foundations of high buildings is in no way so suitable as is the solid rock upon which the city of New York rests, and not only is the question of cost of foundation one to be considered in the erection of such heavy buildings, but there is also the question of interference with existing drainage schemes and disturbance to buildings on adjacent sites.

Even having regard to these natural advantages for the erection of high buildings in New York, the report referred to states that: "There is an intimate and necessary relation between conservation of public health, safety and general welfare; throughout the city the areas in which values have been depressed by the invasion of inappropriate uses or lack of building control as to height, courts and open spaces, are the areas in which the worst conditions as to sanitation and safety prevail and where there is the greatest violation of the things essential to public comfort, convenience and order."

Another point that is brought out in the report is that, after high buildings are erected in sufficient number so as to prevent adequate light and air being obtained for each building, they do not pay.

One of the elements which prevent high buildings from paying is the great cost of providing lifts and the great area of the most valuable floor space taken up by the lift service. It is claimed by authorities that it takes three times the lift capacity in car mileage for the second flight of ten stories as for the first flight of ten stories.—Abstract from the Surveyor, London, in Engineering and Contracting.

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