

THE AMERICAN ARCHITECT

VOLUME CIV.

WEDNESDAY, OCTOBER 29, 1913

NUMBER 1975



A WELL DESIGNED ELEVATED RAILWAY STATION IN BERLIN, BÜLOW STREET STATION

AMERICAN CITY PLANNING—PART VIII

By FRANK KOESTER *Consulting Engineer*

TRAFFIC AND TERMINALS

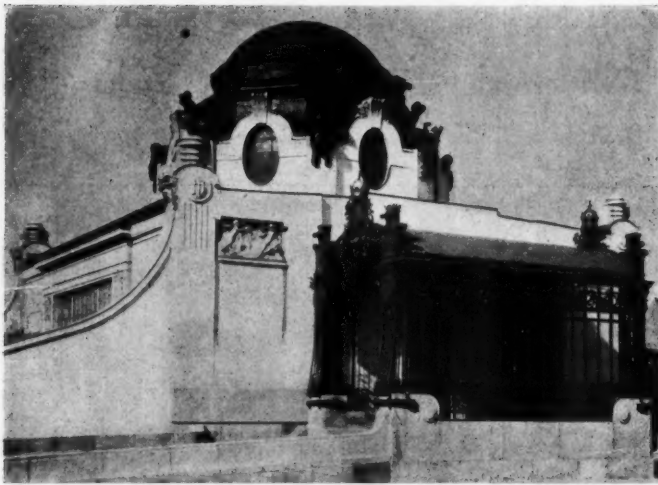


IN the designing of the plan of a city, one of the most important of the practical problems is the laying out of terminal sites and routes of travel and traffic. Present and future needs must both be considered and this is especially true of cities in which congestion due to lack of zone and building regulation exists.

In towns and villages, transportation facilities are unnecessary, as the citizens live within easy walking distances of each

other, but as the community grows, its area becomes so extended that artificial means of transportation are necessary. It is no longer possible for the citizens to transact their business a foot, and the larger a city grows, the more numerous and speedy must its transportation facilities become. The effect of transportation is thus to reduce the time necessary for the citizens to visit each others places of business and residence; to maintain for the city the convenience of the village.

The street car, in one or more of its various forms, has been widely adopted, since the introduction of electricity as



SCHÖNBRUNN COURT STATION ON VIENNA BELT LINE

motive power has increased its speed and carrying capacity.

The electric street car, though in wide use for less than a generation, has proved one of the most important factors in the growth of cities and suburban communities. The demands for quicker street transportation produced in large cities the cable car and elevated steam railroads, but both were more or less unsatisfactory. The horse car remained for transporting the greater part of the traffic of the large cities and for the whole of that of the smaller, as the best available means.

Electric traction, however, has superseded both the cable car and the steam elevated road, and has made possible the subway and river tunnels. Electric transportation has made surface travel as speedy as is consistent with safety, and it has enabled business to be concentrated in the centers of cities and the homes to be located in the outlying districts. Electric traction has thus in a few decades released cities from the bondage of slow transportation and has stimulated urban growth in a manner that would have been impossible under former conditions.

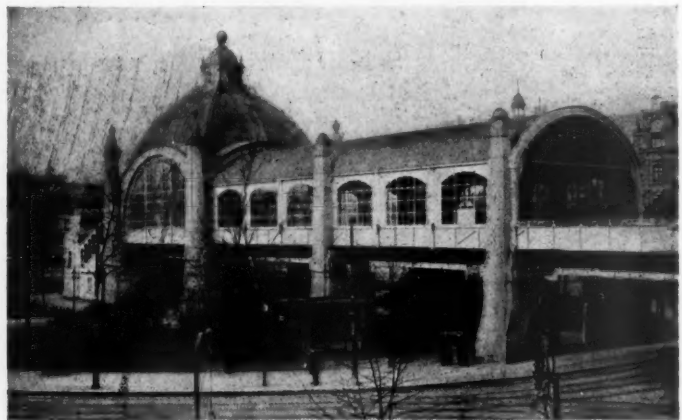
The only rival of electric

traction is the automobile. In the form of coaches or busses, it is used to a great extent in London and New York and to a lesser degree in other cities, but it seems quite unlikely that it will ever become a serious rival of electric traction in the form of cars on rails.

As a civic problem, therefore, transportation reduces itself mainly to the best method of laying out street car routes and subway and elevated systems and the proper regulation of vehicular traffic.

The transportation system of a city should be so arranged as to furnish as direct a

means of transportation as can be obtained, from every point in a city to every other point, at a single fare, and to furnish ample facilities without creating congestion. A highly desirable object, in the transportation system of a city is to have the cars reasonably filled at all times, since this reduces the cost of operation. In cities in which the residential districts are at one end and the business and manufacturing districts at the other, this cannot be accomplished, as the cars must run empty away from the business districts in the morning and empty towards them in the afternoon. If, however, the business district is in the center of the city, the street car traffic may be arranged to



NOLLENDORF PLAZA STATION OF BERLIN ELEVATED RAILROAD



KIOSK OF SUBWAY AT BUDAPEST

much better advantage, as routes of cars may be laid out to traverse the city from end to end, passing through the business districts or transferring to lines that do.

One of the best systems of transfers is that in which a loop or belt line runs around and just outside of the civic center, with all cars passing over the loop or portions of it and transferring to all other cars. For example, in a city laid out on a radial plan, eight lines double tracked, will serve to traverse sixteen of the radial avenues, each line on reaching the loop passing around half of it in a semi-circle and continuing on out the radial avenue directly opposite the one by which it entered the loop. Each line would thus have seven transfer points from each of which the passengers would proceed in either direction over the seven other lines covering the other fourteen radial avenues. A number of transfer points would serve to distribute the

traffic with less congestion than if the transferring were all done at a single point.

If the traffic of the city is heavy, it is advisable to have the loop constituted of several sets of parallel tracks, in order that the cars of the one line may not be subject to delay by those of another. An example of the necessity of ample loop facilities is seen in the Brooklyn Bridge Terminal in New York, where eight fish hook shaped loops are needed to handle the cars which stream across the bridge over a single track in either direction.

In connection with such a system of radiating car lines or lines intersecting at the center of the city, circumferential or belt lines at different distances from the center of the city, transferring

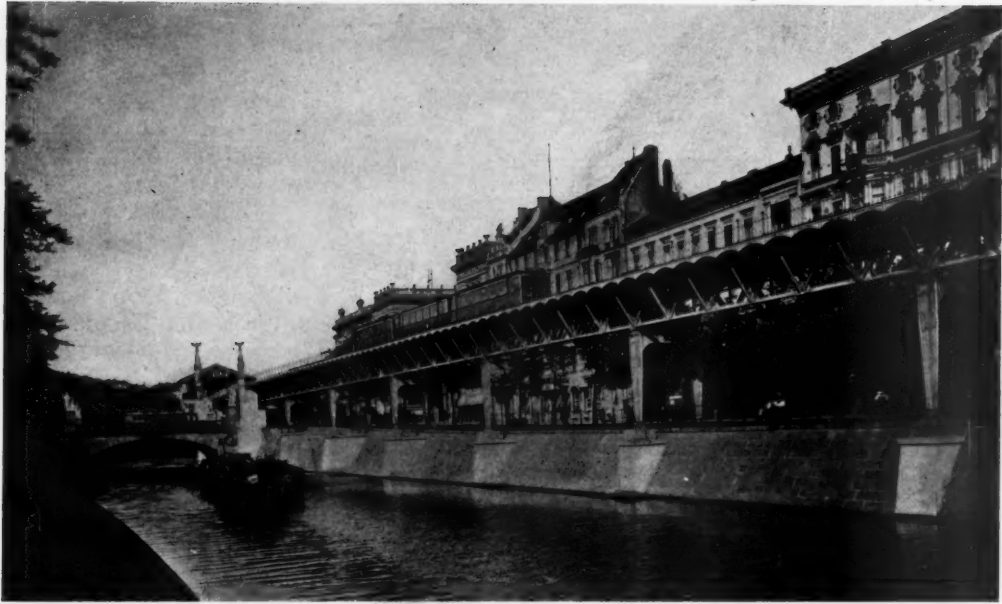
to all the lines intersected, will serve to make the transportation facilities complete.

In cities in which the plan is such that a loop cannot conveniently be laid out, a system which obtains much the same result is that in which all the lines converge and pass through a traffic square or avenue, which may contain a number of tracks with the transfer points for



A NOVEL EXPEDIENT ON THE ELEVATED RAILWAY IN BERLIN
The elevated structure, after passing through a building, bridges the Landwehr Canal over the Anhalter Railroad Bridge. The canal, street, railroad bridge and elevated bridge were built successively as the city developed.

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ELEVATED RAILWAY ALONG THE LANDWEHR CANAL, BERLIN

Owing to narrowness of street this elevated structure is built along the canal bank. Note artistic and well-kept condition of elevated structure, canal, etc.

transferring to all lines conveniently arranged.

Street cars in cities are principally useful for short haul traffic, since speed is not possible in the congested districts and long hauls are both unprofitable to the operating companies and wasteful of the time of the passengers. Only when the trolley car reaches the outlying districts, where greater speed is permissible, can it be regarded as a means of real rapid transit.

For the purposes of transporting large numbers of persons over considerable distances, recourse must be had to trains of cars, having the right of way and making but infrequent stops. This condition can only be obtained on elevated or subway roads, or by means of railroads with their suburban traffic lines running into terminals well within the heart of the city. Such lines should be laid out with the idea of distributing traffic from the main arteries of the city to the outlying districts, and should be so arranged as to accommodate both local and express traffic, that is local lines with stops of every five or ten blocks and express lines with the fewest possible number of stops between terminals.

Elevated roads, though cheaper in first cost than subways should not be constructed if they can be avoided, as the depreciation to property due to their presence, and other features of a disagreeable nature, more than offset in the long run, their relative cheapness.

Subways have proved a very popular form of rapid transit in all the principal cities of the world. They do not spoil the appearance of the streets and when properly designed and operated, are a quick and pleasant method of transit. By means of three or more tracks, they can easily be arranged to accommodate express traffic.

Subways should preferably be located as near the street level as possible, to be readily accessible without recourse to elevators or escalators. However, between the ceiling of the subway and the street surface, sufficient space should be left for the proper gas and water mains and sewer pipes. In addition, this will furnish sufficient soil for the growth of shrubs and small trees in the grass plots along the sidewalks. Public opinion abroad demands that subways and elevated roads receive

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the proper treatment from an artistic standpoint, especially in order that a sense of harmony may be obtained in a given locality.

An instance of this was seen in connection with the construction of the elevated and subway road in Berlin, some fifteen years ago. There was, to begin with, decided opposition and prejudice to such a structure, and although the plans, when presented, incorporated designs and artistic features which are wanting in the elevated structures of New York and Chicago, the promoters of the undertaking were forced to call further upon the talents of the country for competitive plans, for the purpose of securing designs, not only of stations, but of the entire structure, including viaducts, etc., which would be acceptable from an artistic point of view. It was further required, in order to do away with monotony of effect, that no two stations should be of the same style of architecture.

After plans were finally accepted by the commission and portions of the road were actually completed, important changes were ordered to further satisfy public criticism. For example, the Bülow Street Station, with its ornate iron work, massive stone terminals and well studied grill work resulted. The heavy stone pillars take the place of original steel columns which were removed in compliance with a strong public sentiment for something more pleasing to the eye.

The station itself is well worthy of remark, furnishing an interesting solution of the combination of stone and iron in a manner appropriate to both, especially noticeable in the adoption of acroteria at the peak of the gable and at each side, forming a gutter fully explained by the otherwise uninteresting leader pipes.

An especially successful combination of architecture and engineering is found in the Nollendorf Place Station, which marks the dividing line between the elevated and underground sections of the road. The station itself is a rather severe design of iron and glass, supported by massive stone pillars. Other stations along the elevated portions of the route are to be commended for their beauty and artistic treatment, mediæval in type to harmonize

with surrounding buildings in certain locations, and always, even where there is no special architectural feature, the manner of the treatment of the steel columns is a tribute to the art of the engineer. A problem of an interesting nature is solved at the point where the elevated road crosses the Anhalter railroad bridge, which itself spans the Landwehr Canal.

Before construction began, experimental sections were put up, in order to test various forms of roadbed, with a view to adopting the type over which the trains could be operated with the least noise. Rubber and felt layers were tried, between ties and rails, all of which proved more or less unsatisfactory. Rails placed directly on the iron structure or on ties, produced greater noise than when placed on wooden stringers. Pure lattice girder construction produced more noise than plate girder type. However, to erect pure plate girder construction in a city elevated road where such a persistent demand for artistic effect is made, is practically out of the question. To reduce noise with the lattice type of construction and to furnish at the same time, a more satisfactory roadbed, the iron cross beams surmounting the main girders are embedded in concrete. The roadbed ballast consists of gravel. A more or less solid, noise absorbing construction is thus produced, which approximates an embankment, the form of elevated construction in which there is the least noise.

Of interest in this connection is the point where the elevated structure crosses the Landwehr Canal above mentioned. Here its course is through an old building, remodelled for the purpose. It was intended to utilize it for storage purposes after the erection of the road, but the noise problem was so successfully met, that it is occupied by tenants for dwelling purposes.

Much discussion prevailed at the time of the opening of the New York subway and many complaints found vent in the columns of the daily press as to the unsightly kiosks of the system, several of which are not only inconveniently and dangerously situated, but are also the quintessence of ugliness.

Seemingly no consideration was given to the harmony of the surroundings, the

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stations reminding one of small barns rather than of structures forming parts of residential districts. Although European underground railways were already in operation at the time subways were proposed here, and a subway commission had been sent to Europe for the purpose of studying the installations there, the public did not seem to profit by the pleasing designs of the foreign stations, when our own came to be erected.

The New York subway system has been held up as being the foremost in the world, but the well informed portion of the public, familiar with other systems, is aware of its architectural inferiority, to say nothing of the inferior ventilation and service as compared with systems abroad.

As a means of connection between subways, terminals, bridges and the like, moving sidewalks are used with great advantage. They should be run in three parallel divisions at speeds of some three, six and nine miles an hour, enabling pedestrians to step from one platform to another without danger or inconvenience. Such sidewalks may either be provided with seats or left bare, for walking, as with the additional speed of walking, from eleven to twelve miles an hour can be made on the highest speeded platform.

Such platforms are highly useful, in fact a public necessity in certain places, for connecting terminals where it is not feasible to put in cars.

A highly important feature in laying out rapid transit lines is the convenient and

quick transfer at stations and terminals to local transit lines. Such transfer should be made with as few steps as possible, and with the greatest ease and safety. This is a feature much neglected by rapid transit companies in America, long stretches of walking being necessary at terminals, greatly to the delay and inconvenience of the public.

In congested traffic districts and merchandise freight districts, underground highways or double decked streets could with great advantage be employed. Such underground highways could contain, in addition to tram cars for freight, wagonways and footways or moving sidewalks. A somewhat similar system, where it is desired to avoid excavation, would be a double decked street, in which a complete street is built above the first street, in the form of elevated structure. On the upper street could be handled light traffic and pedestrian traffic and on the lower one, freight and heavy traffic.

In many cases where it is impracticable or too expensive to span rivers with bridges, a feasible method of communication and one involving much less cost, is that in the form of tubes or tunnels, such as the Rotherhithe and Blackwell tunnels under the Thames. These tunnels are lighted and used just as streets, and a great volume of traffic passes through them. Similar tubes are used under the Hudson for electric trains from New York to New Jersey towns, and additional tubes are in contemplation for vehicular traffic, owing to the



WHARVES FOR NORTH SEA TRAFFIC OF THE HAMBURG-AMERICAN LINE AT HAMBURG

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difficulty of finding suitable foundations for bridges over the Hudson.

The proper distribution of vehicular traffic is a problem which demands consideration from the very outset of city planning. The presence of congestion at any point is the result of improper planning and nothing else. Either the streets are not wide enough or numerous enough, or the districts to and from which the traffic is passing are not properly laid out with reference to each other. Congestion may be relieved by cutting through proper channels, giving traffic new directions, or by scattering the sources from which it arises.

Vehicular traffic and street railway traffic should be planned to be kept apart as far as possible, and vehicular traffic should always be subjected to the strictest regulations. Heavy trucks should be confined to certain streets and delivery wagons restricted to deliveries at certain hours. The use of the streets for cab stands should be restricted and trucks or automobiles of more than certain sizes subject to a heavy license tax, increasing rapidly with their bulk. Street cars should be restricted, in size, and maintain a more frequent service.

The convenience of the public and the self respect of citizens demands a suitable and dignified street nomenclature. Trivial and commonplace street names should be avoided, since the householder gains no prestige, for example, through living on Cat Street. On the other hand, the naming of streets should not be carried out in too high-sounding a manner, especially in suburbs, but names looming in prominence in about the proportion of the prominence of the street, relatively, should be selected.

The custom of naming streets and avenues by numbers while of a certain convenience in very large cities, is monotonous and uninteresting. Naming streets by letters of the alphabet is even worse. The city of Washington is particularly afflicted in this respect, since the names carry as appendages, letters indicating the geographical location of the streets.

Where a number of similar streets of a gridiron plan are to be named, a good system to indicate their succession without naming them by numbers would be to give

them names, the initial letters of which would by their alphabetic order indicate the location. With a hundred streets to be named, the first four would be named with names beginning with the letter A, as Abbott, Allen, Arkwright and Atchison. These would be followed by four streets beginning with B and so on, the general location of the streets thus being ascertainable by the alphabetic initial. The second letter of the name would indicate the divisions in the letters of the alphabet. Allen street thus coming before Arkwright street, the second letter l preceding r.

American cities have even acquired almost a habit in the use of certain names for streets. Perhaps the worst is Main street, a name which abounds in great numbers. Market street is a close competitor, while Springs, Broads, Broadways and High streets flourish. Some cities name their streets after the various states in the Union, which may be complimentary but is certainly without much other meaning, while the trees of the forest are often similarly complimented.

The naming of streets is of much more importance than is usually understood, as it has a considerable psychological effect. A street name full of dignity or of a unique character often makes a street famous, which would otherwise be lost in obscurity. A street of prominence, however, may often overcome the handicap of its name and cause the name to have a meaning far greater than the words imply. Thus Fifth Avenue in New York though possessing a name in itself of the most commonplace nature, has given to its name a considerable significance. No street, however, named by a letter of the alphabet alone, has ever made itself famous, the nearest perhaps being Avenue A in New York, a notably mean street, and the same is true of streets named by numbers, although a numbered street may acquire a certain value, just as numbers used for trademarks lose in ordinary usage their significance as numbers, and become units of identification. Fifth Avenue is thus not the fifth avenue, as we think of the word fifth, nor is Broadway, a broad way, but all are trade-marks so to speak or units of designation, names in fact rather than descriptions.

THE RELEASE OF SURETIES FOR BUILDING CONTRACTORS

By JOHN SIMPSON

I. CHANGES IN PLANS AND SPECIFICATIONS



ORIGINALLY the surety for a building contractor was a voluntary and uncompensated surety, and the contract was universally governed by the ordinary rules of law governing contracts between principal and surety. The surety's contract was strictly construed in his

favor and he was entitled to stand upon its very terms. Since the advent of the paid surety, however, several of the courts have inclined to distinguish the status of the paid surety from that of the voluntary surety, and to apply to the contracts of the former the rules applicable to the ordinary contract of insurance, which is construed as far as possible in favor of the assured and against the insurer. How far this has been done will appear in the following articles dealing with the question of the release of sureties by the actions of the owner subsequent to the execution of the bond.

One of the principal sources of litigation has been the alteration of the plans and specifications. It is rare that a building of any consequence can be erected without some departure from the original plans and specifications, and the courts have been very frequently called upon to decide whether such alterations have been of such a nature as to release the surety from his obligation under his bond.

A fundamental rule is that where, in the absence of a provision therefor, the owner and contractor agree upon and make a material change in the plans and specifications without the consent of the surety the latter is discharged. What is a material alteration? In a case where the cost of the building, originally agreed to be \$10,300, was increased by \$315 without the surety's assent, the court found the surety released by the alteration, as a greater length of time was thereby required within which to finish the building, and a greater amount

of labor and of expenditure incident thereto than that for which the surety had agreed to indemnify the owner. The court said: "The expression found in the opinions in some cases that the surety is discharged by any 'material' alteration of the contract has reference to such an alteration as will increase the obligation for which the indemnity was given. In *O'Neal v. Kelly*, 65 Ark. 550, 47 S.W. 409, the increased cost of the alteration was \$25, and in *Beers v. Wolf*, 116 Mo. 179, 22 S. W. 620, where the contract price was \$31,000, the cost of alterations was \$231. It cannot be said that an alteration which cost upwards of \$300, as in the present case, is not material." *Alcatraz etc. Assn. v. U. S. Fidelity & Guarantee Co.*, 3 Cal. App. 338. In *O'Neal v. Kelly* the alteration consisted in adding fifteen feet to one story of the building, no extension of time being provided for. The surety contract appears to have been a voluntary, uncompensated one. Deepening foundations at a cost of \$88.80 has been held a material change. *Fullerton Lumber Co. v. Gates*, 89 Mo. App. 206. In a comparatively recent case *Beers v. Wolf* was followed and sureties in a bond for \$1,000 held discharged by changes in the plans increasing the cost about \$40. *Utterson v. Elmore* (Mo. 1911), 136 S. W. 9. An increase of \$18.75 was held sufficient to release the surety in *Reissaus v. Whites*, 128 Mo. App. 135. The same court decided that the deduction by the contractor of \$1,000 from the price he was to receive on account of using old brick, and on account of the owner inducing the pressed brick company to cheapen the price of the brick which it let the contractor have to use in the work, was a material alteration of the contract, releasing the surety. Here nearly one-fifth of the price was deducted, thus weakening the contractor's ability to meet his obligations and increasing the surety's risk. *Swasey v. Doyle*, 88 Mo. App. 536. During the progress of the reinforced concrete work on a building the contract price for which was \$13,506, a screen partition in the dining room, called for in the specifications, was omitted under a verbal agreement, in consideration of which the contractor agreed to allow the owner a credit of \$30. This was held a slight and immaterial change

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which would not release the surety. *Aetna Indemnity Co. v. Waters*, 110 Md. 673. In *Leppert v. Flaggs*, 101 Md. 71, where a surety company was concerned, it was held that the surety must allege in its pleas in what respect the contract was changed, so that the court might be enabled to decide whether the change was material or not.

Changes in drawings and specifications rendered necessary because of technical errors or omissions of the architect, such as the changing of the location of a stairway, may be corrected without written order on mere oral direction. *Nowell v. Mode*, 132 Mo. App. 232. And a change in the specifications made by the architect, without the owner's knowledge or consent, would not release the surety. *Consaul v. Sheldon*, 35 Neb. 247, 260. *Fullerton Lumber Co. v. Gates*, 89 Mo. App. 201.

A contract may permit alterations to be made in a certain way, say upon written order of the architect. In such a case it may be altered *in that way* without discharging the surety. If made in any other way some cases hold that it would be an alteration without his assent and would discharge him. *Fullerton Lumber Co. v. Gates*, 89 Mo. App. 201. *Beers v. Wolf*, 116 Mo. 179, 185. But changes made in accordance with the provisions of the contract will not discharge the surety, though he had not expressly assented to them. His assent is implied. This rule has the support of numerous decisions. The fact that the change had been agreed upon but not endorsed on the contract at the time of the execution of the bond, no wrongful concealment being shown, was held not to release the surety in the case of a trivial change—a variation of twelve inches in the location of a partition wall. *Getchell & Martin Lumber Co. v. National Surety Co.*, 124 Iowa 617.

A provision for "any necessary or desired changes" cannot, it has been held, be construed to contemplate an entire departure from the original plans; but the substitution of frame for brick in one story and shingling for weather-boarding on the frame portion of a house, increasing the cost of a contract for \$2,000 by over \$20, were held to be within such a provision. *Higgins v. Quigley*, 23 Ind. App. 348. And a general provision that the owner might make

changes in the plans was held to authorize changes which were reasonable and did not materially increase the cost of the building. *Consaul v. Sheldon*, 35 Neb. 247. *Hayden v. Cork*, 34 Neb. 670. A bond itself provided for alterations without notice to the surety. Heavier foundations than the contract called for were found to be necessary, and the street line would not allow of a parallelogram, so that the building had to be altered to a rhomboid. It was held that the changes fell within the stipulation in the bond, which covered not only changes compelled by the owner, but also those which might be agreed on by the owner and contractor, and the surety was not released. *Hax-Smith Furniture Co. v. Toll*, 133 Mo. App. 404.

Where the contract provided for computation by the architects of the cost of changes and their order for the same, and the bond provided for alterations on such computation and order, not to exceed \$200, but the surety's company was bound *unconditionally* for alterations within such limit, it was held that the terms of the bond overrode those of the contract and the sureties were not released by alterations within the \$200 limit, though made without the architects' computation and order. *Bagwell v. American Surety Co.* 102 Mo. App. 707.

In a case where changes were provided for in the building contract it was stipulated that the character and valuation of any or all changes, omissions, or extra work should be fixed in writing "upon the demand of either the contractor, owner or architect." Changes at an aggregate cost of \$130 were made without writing, and the surety company claimed to be released thereby. It was held that the plain terms of the contract made writing necessary only when demanded by contractor, owner, or architect, and, no such demand having been made, the surety company was not released by the absence of writing. *Wolf v. Aetna Indemnity Co. (Cal.)*, 126 Pac. 470.

It has been held, moreover, that even if alterations, allowed by the contract, are made without the written order of the architect, as therein provided for, the surety is not discharged. *Hohn v. Shideler*, 164 Ind. 242. "The interposition of the

architects," it was said, "was exclusively for the protection of the owner, by whom, as the contract expressly states, they were employed, and for whom they were the agents. The builder was competent to take care of his own interests, and if the owner of the property saw fit to make changes in his plans, he had the right to do so without aid or authority from the architects. This condition of the contract being exclusively for his benefit, he could waive it, and such waiver would not affect the liability of the surety, unless the changes so made materially altered the contract price or cost of the building."—"Extra work was performed by the contractor without a written order or agreement for it. The contract contained provisions which show that the possibility of extra work was contemplated, but provided for a written agreement therefor. This was not such a departure from the contract as relieved the surety from liability." *Brandrup v. Brazier* (Minn.), 127 N. W. 424. To the same effect is *Bartlett & Kling v. Surety Co.* (Iowa), 119 N. W. 729. But in *Northern Light Lodge v. Kennedy*, 7 N. Dak. 146, the words "on the written order of the architect" were construed to mean "on the owner's written order, through its agents, the architect," and it was held that the requirement of writing in ordering extra work could not be waived by the owner alone, so that the owner's order by parol released the surety.

After the contractor has abandoned the work and the owner has taken possession of it and undertaken its completion, changes thereafter made by him at his own expense are not prejudicial to the surety and will not discharge him. *American Fidelity Co. v. Velie*, C. C. A., 196 Fed. 190. And in *Prescott Nat. Bank v. Head* (Ariz.), 90 Pac. 328, it was held that changes made wholly at the owner's expense, which did not add to the surety's liability, did not discharge the latter, even though made before abandonment.

A subsequent independent agreement of the contractor, to do other and different work for the owner, would not discharge the surety. In such a case the surety's contract would remain the same. *Beers v. Wolf*, 116 Mo. 179, 22 S. W. 620.

It is sometimes difficult to say when a

certain work constitutes a change in the original contract, or is a subsequent disconnected contract, having no bearing on the original. In *Fullerton Lumber Co. v. Gates*, 89 Mo. App. 201 a contract for a retaining wall was held to be an independent agreement, while an agreement to deepen the foundations was merely a change on the original contract discharging the surety when made without his assent and in an unauthorized manner.

It has been said above that lately there has been a tendency in several courts to construe the contract of suretyship more favorably toward the owner. In *American Surety Co. v. San Antonio Loan & Trust Co.* (Tex.), 98 S. W. 387, 403, it was held by the Texas Court of Civil Appeals that a surety company's bond must be construed like any other contract of insurance: if it is susceptible of two constructions, that which is more unfavorable to the surety company must be adopted. This ruling, however, was reversed by the Texas Supreme Court, *Loneyan v. San Antonio Trust & Loan Co.*, 104 S. W. 1061, 1067, following the rule that any material change will release the surety whether it is for his benefit or not.

The Missouri courts have unqualifiedly taken the view that the contract should be construed like one of insurance. "The general rule," it is said, "is that a surety has the right to stand on the strict terms of his contract. This rule is expressly applicable to voluntary sureties who have no interest in the subject matter of the contract. Where, however, the surety has received a consideration in the way of hire the contract is somewhat in the nature of an indemnity. Having enjoyed compensation for his undertaking, it is the policy of the law, when properly interpreted, to disregard technical and immaterial departure from the letter of the contract on the part of the obligee." While not strictly insurance, the obligations of a surety company partake more or less of that character. *Boppart v. Surety Co.*, 140 Mo. App. 675. In *Rule v. Anderson* (Mo.), 142 S. W. 358, it was held that alterations of the plans and specifications involving a net diminution of the contract price of about \$33 could not have an appreciable effect on the risk of

(Continued on page 172)

THE AMERICAN ARCHITECT

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Founded 1876

PUBLISHED EVERY WEDNESDAY BY

THE AMERICAN ARCHITECT (INC.)

No. 50 Union Square, New York
(Fourth Avenue and 17th Street)

G. E. SLY, PRESIDENT

E. J. ROSENCRANS, SECRETARY AND TREASURER

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SINGLE COPIES (Regular Issues), 25 CENTS

CHICAGO OFFICE, Hearst Building
Page A. Robinson, *Western Manager*

Entered at the Post-office, New York, as Second-class Matter

VOL. CIV OCTOBER 29, 1913 No. 1975

A CITY ARCHITECT

A NEW ENGLAND capital is considering the advisability of establishing the post of city architect. Those who advocate the impending measure apparently contemplate an office wherein all city buildings will be designed, and urge that such an institution would result in a saving of several thousand dollars a year to the city and that there would be an equal or corresponding saving of time in procuring and deciding upon plans and specifications for all city work. These reasons may have a superficial plausibility to the layman, but when analyzed they show little understanding of true economy, either of money or time.

Is it always economy to substitute an article at a hypothetically less cost of effort and dollars? The citizens of the capital in question have repeatedly given evidence of public-spirit and civic pride in aesthetic matters, and it seems likely that they would consider an inferior standard of municipal architecture a very expensive proposition, without much regard to the money saved or expended.

When one man is paid a definite salary, and one small enough to justify the claim of economy, to design every variety of structure required by an important state

capital it is almost inevitable that the artistic standards will be comparatively low. Even assuming that the city could and would employ an architect of the highest ability, willing to expend that ability for obviously inadequate remuneration—according to current professional standards—the proposition does not commend itself to those conversant with present conditions. The field of architectural endeavor has become so broad that no one man should attempt to design every variety and style of work when the services of what might be termed specialists are readily at hand. When specialists or those especially fitted by training and experience to design a particular class of buildings are ignored and their competition is eliminated, the spur of endeavor is removed.

It too often happens however, that only a man of mediocre talents will accept a position clearly less remunerative and generally less pleasant than the practice of a competent free-lance would be. Therefore the city in question is confronted with the possibility that all its municipal architecture in the future shall be the product of mediocre ability operating under conditions which do not urge it to its best efforts. The experience of communities which have tried similar experiments is such as should discourage a similar course of action in other cities.

If the city referred to, instead of employing a man of moderate talents to design all its improvements, would appoint a competent architect to act merely in an advisory capacity in conducting competitions for new work and supervising repairs to existing municipal buildings, the result would probably be highly successful from an artistic standpoint, and true economy of both time and money would undoubtedly be effected.

IMPROVING THE TENEMENTS

A REPRESENTATIVE sent from Austria-Hungary to investigate the housing of the poor in New York City was incredulous when told that he was being shown the worst conditions that existed in this city, so superior were they to the corresponding conditions in his own country. His expression of opinion is, of course, gratifying to us and par-

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ticularly so because in the light of present tendencies America seems likely to continue to hold the lead in bettering the housing conditions of her city poor.

A recent experiment in this city gives much promise of success. Aside from the mechanical excellence of equipment of the tenement referred to, particular interest attaches to the requirements for admission of tenants. Probably the owner realized that the combination of low rent and semi-luxurious appointments would attract a class of thrifty applicants whose incomes were more than sufficient to secure similar accommodations elsewhere. For that reason, acceptable tenants must have not more than a stated income. Grievous days, these, for the man of wealth! The character and family history of applicants is also investigated and only the chosen few are accepted. Thus it becomes a coveted privilege to be a member of this particular tenement *family*,—a word which we use advisedly, for there is a rumor, and the ample provision for play-space and go-carts gives it credence, that children are as essential as good character in the qualification for tenantry.

England's "garden cities" are the solution of a similar problem, which is being

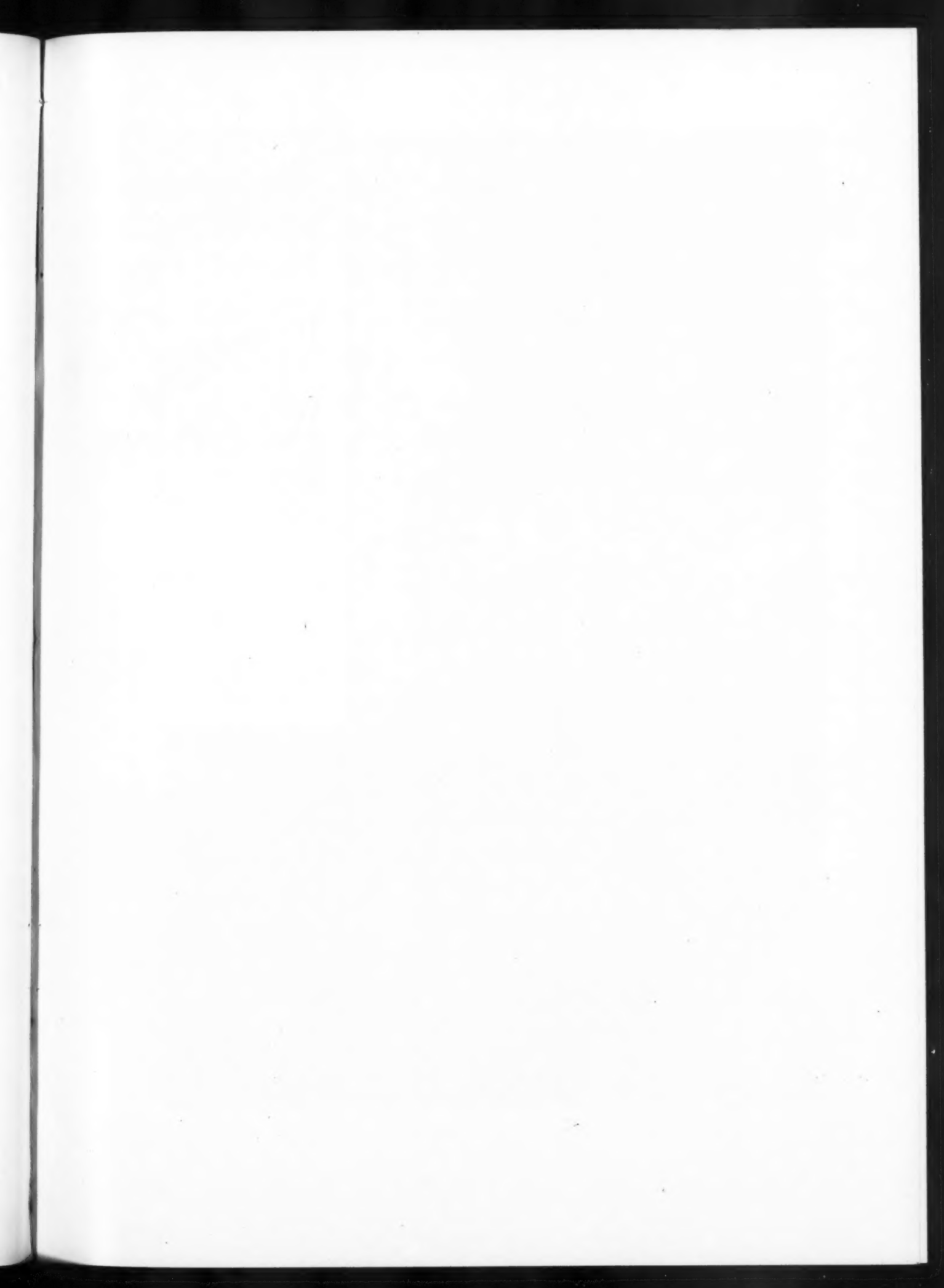
worked out on philanthropic lines. Possibly, we shall follow their example sometime, though the more prosperous condition of the American workmen and our system of land tenure are likely to make this action unnecessary in rural districts where land is comparatively cheap, and the demand for labor fairly constant. The proper housing of laborers in the city, however, is a problem that must be solved by someone other than the workman, for he has but little control over his environment. It has been proven that "model" tenements can be made self-supporting and even yield a small return on the investment. At the same time, the tenant is enabled to house his family in comfortable, sanitary quarters at a price he formerly paid to live in conditions which no American should endure. However favorably our "slums" may compare with those of European cities, we have no reason to be smugly satisfied with them at present. Our ideal is not Europe, but social justice, the right of the worker to live in decent conditions. Certainly no more worthy or practical philanthropy can claim the attention of social workers than this endeavor to conserve "the fibre of the nation" in our cities.

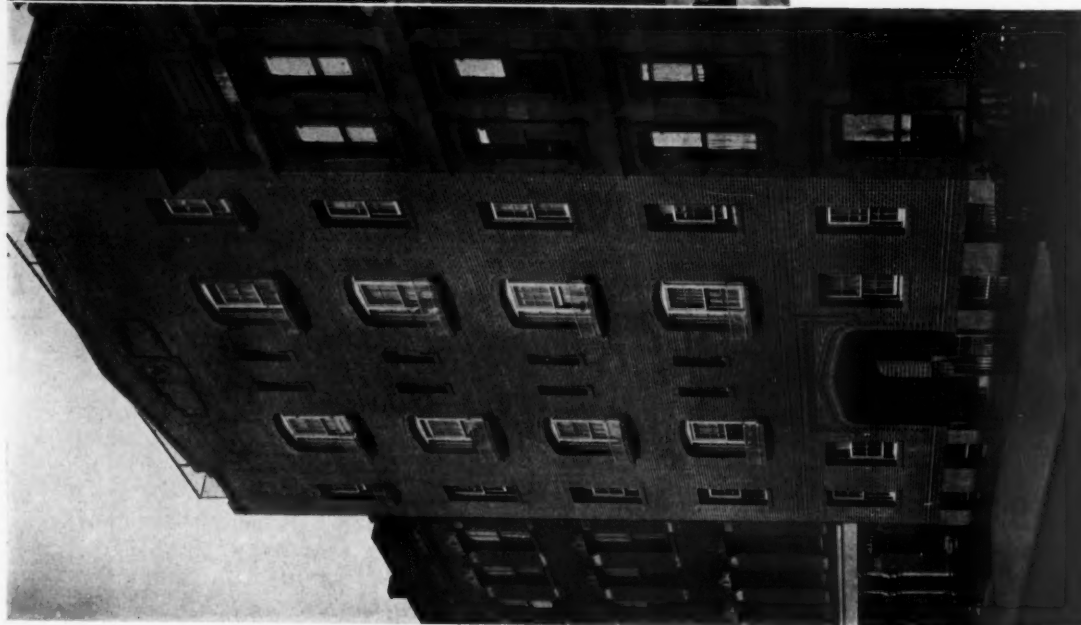
THE RELEASE OF SURETIES FOR BUILDING CONTRACTORS

(Continued from page 170)

the surety. The court added, "We come to the question of whether or not the surety may invoke the rule frequently applied in cases of voluntary suretyship, that, where changes made without the consent of the surety affect the identity of the contract, the surety will be discharged notwithstanding the fact that such changes did not increase or diminish the risk of the surety. That rule, we are persuaded, should obtain only in cases of voluntary suretyship, and not in such cases as the present, where the surety is engaged in the business of suretyship for hire. The deep solicitude of the law for the welfare of voluntary parties who bound themselves from motives of friendship without monetary consideration never comprehended the protection of pecuniary enterprises organized for the express purpose of engaging

in the business of suretyship for profit. To allow such companies to collect and retain premiums for their services, graded according to the nature and extent of the risk, and then to repudiate their obligations on slight pretexts that have no relation to the risk, would be most unjust and immoral and would be a perversion of the wise and just rules designed for the protection of voluntary sureties. The contracts of surety companies are contracts of indemnity, and, as such, fall under the rules of construction applicable to contracts of insurance. Since they are ordinarily prepared by the companies and generally abound with conditions and stipulations devised for the restriction of the obligation assumed by the company, such stipulations must not be extended to favor limitations providing for forfeiture of the contract. They must be strictly construed, and no reasonable right of forfeiture allowed."

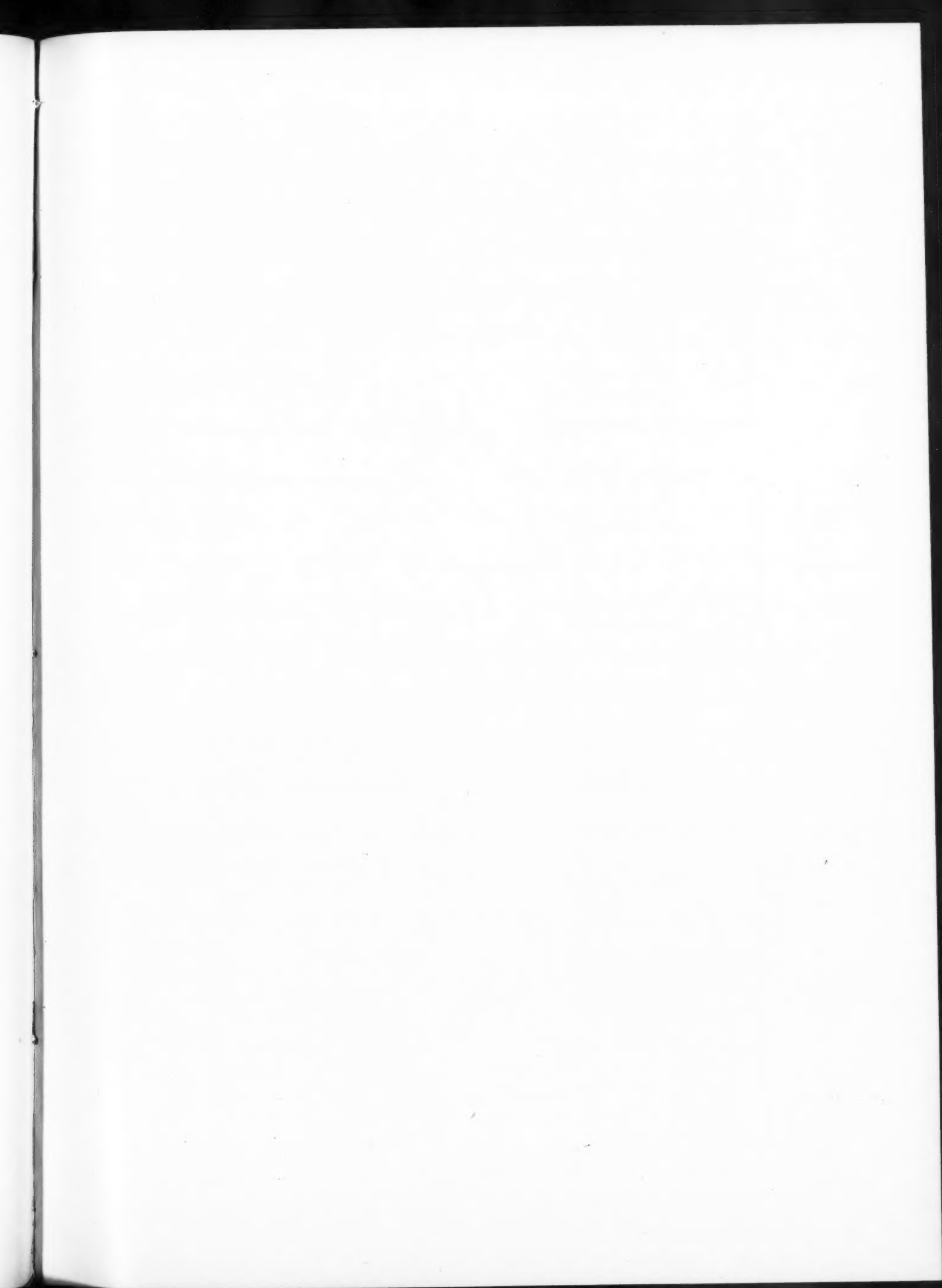


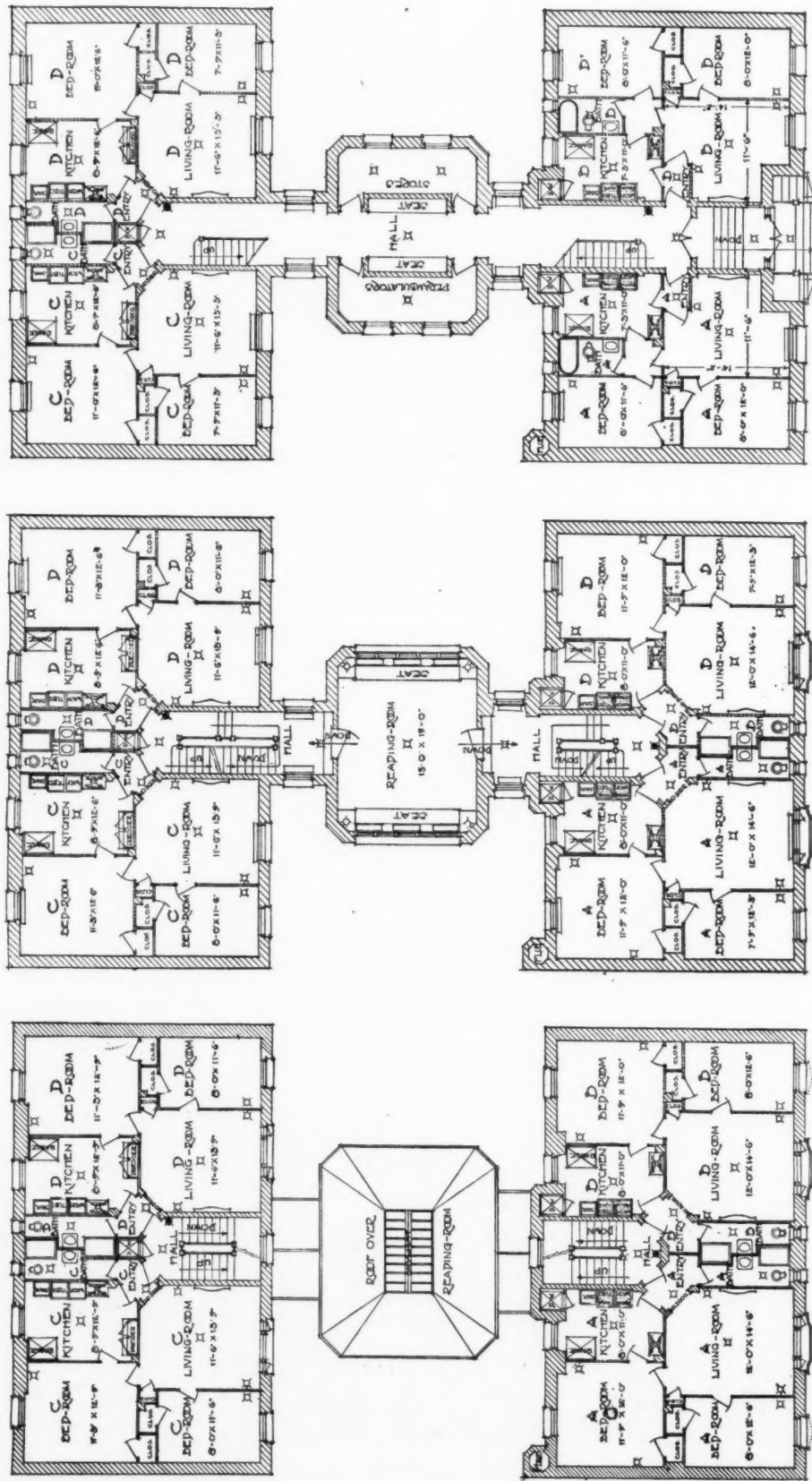


This brick building is of fireproof construction. The brick walls are furred with terra cotta and the floors are reinforced concrete. There are 20 apartments each one consisting of a living room, two bedrooms, a kitchen and a bathroom. Steam heat is supplied by the owner for each apartment, and also hot and cold water for kitchens and bathrooms. Every kitchen has a gas range, set tubs and a sink. Lockers are provided in the basement for storage of articles belonging to tenants. One-half of the roof space of the front and rear sections of the building is devoted to an open-air playground for children and the use of tenants in general. The remaining half of roof space of both sections is utilized for the drying of clothes.

ROGERS MODEL DWELLINGS, WEST 44TH STREET, NEW YORK

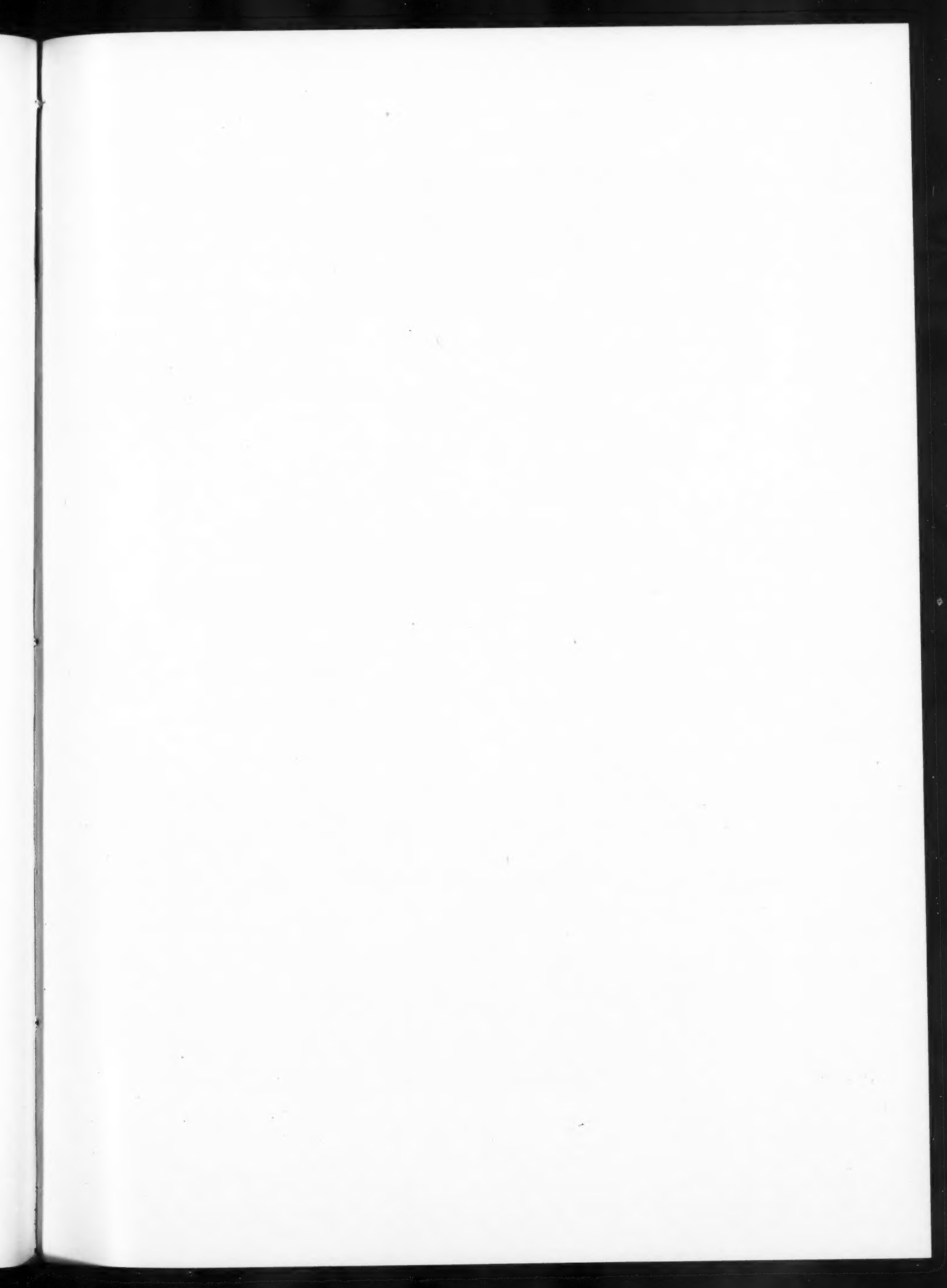
MR. GROSVENOR ATTERBURY, ARCHITECT





ROGERS MODEL DWELLINGS, WEST 44TH STREET, NEW YORK

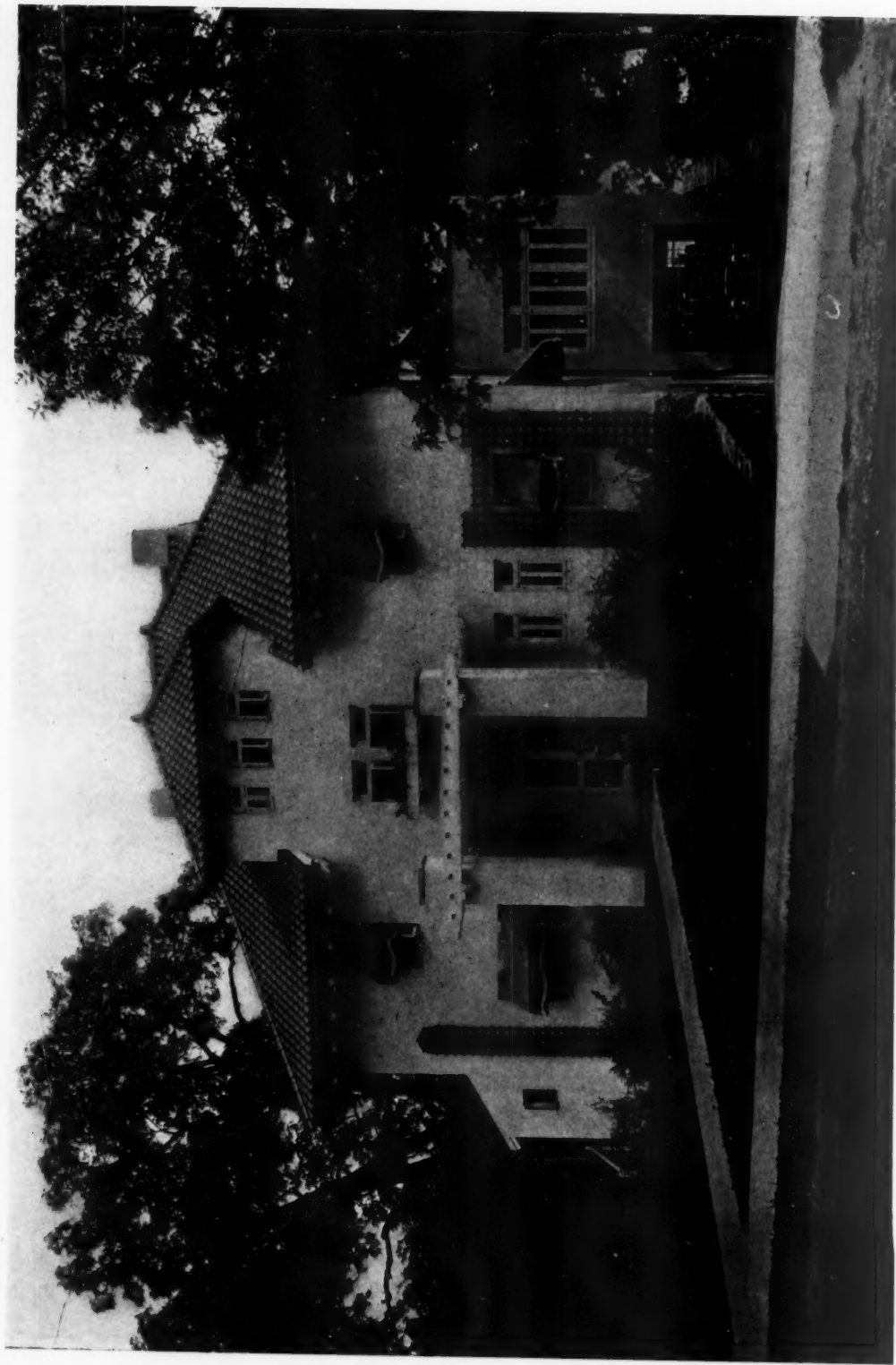
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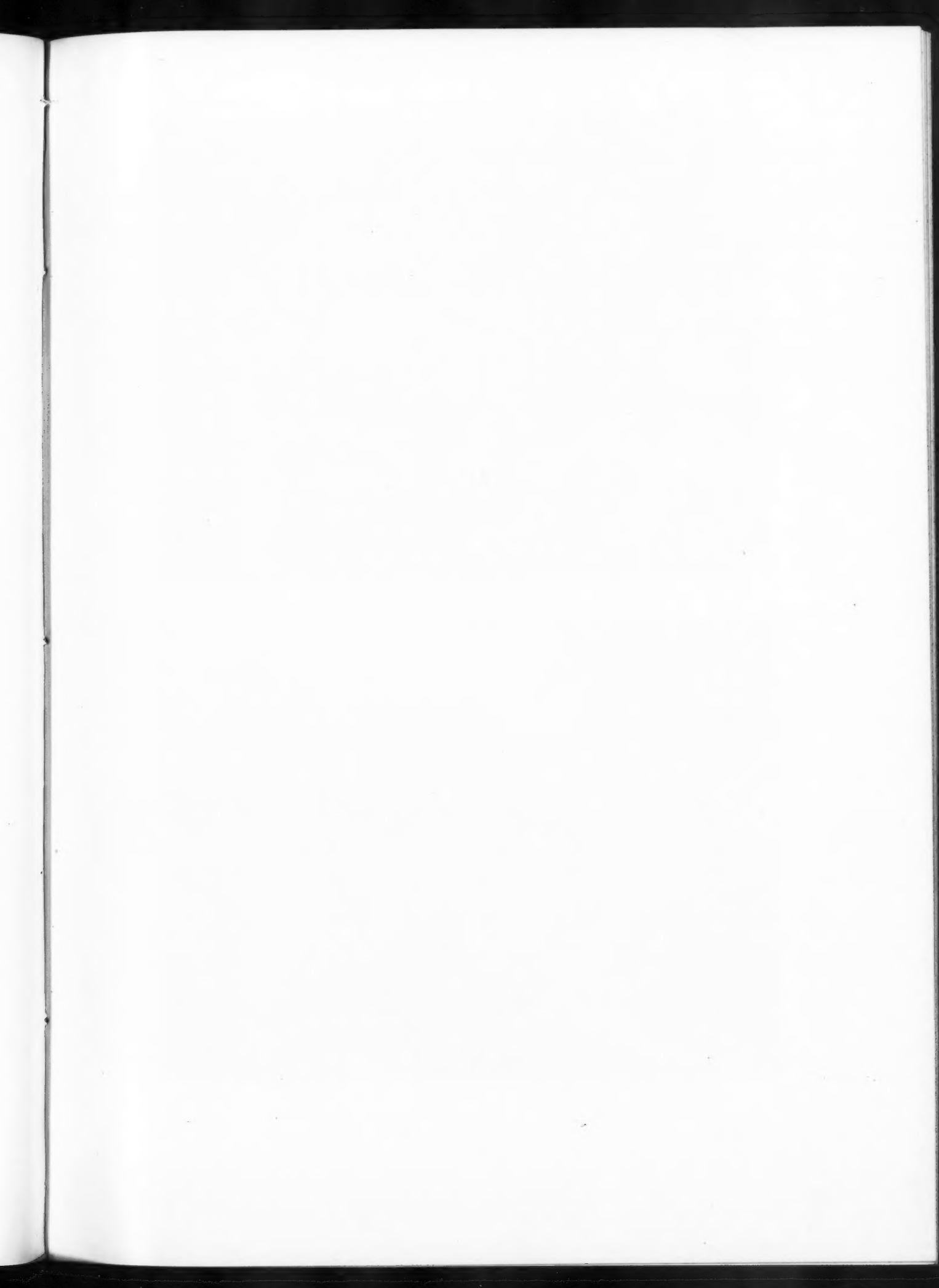
THE AMERICAN ARCHITECT

VOL. CIV, NO. 1975

OCTOBER 29, 1913



HOUSE OF MR. C. J. WARREN, WINCHESTER, MASS.
MR. C. J. WARREN, ARCHITECT



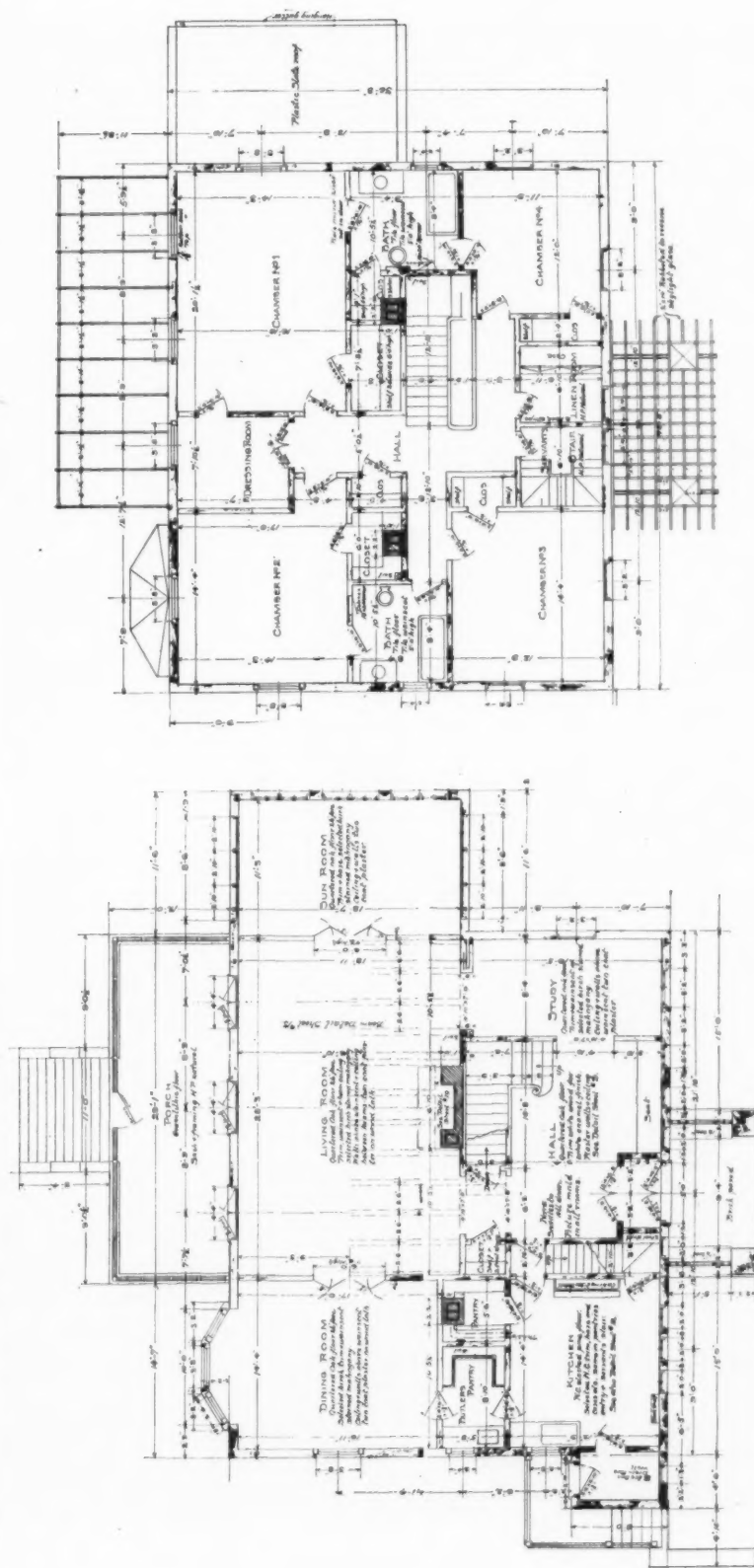


THE GARDEN



REAR VIEW

HOUSE OF MR. C. J. WARREN, WINCHESTER, MASS.
MR. C. J. WARREN, ARCHITECT



HOUSE OF MR. C. J. WARREN, WINCHESTER, MASS.
MR. C. J. WARREN, ARCHITECT

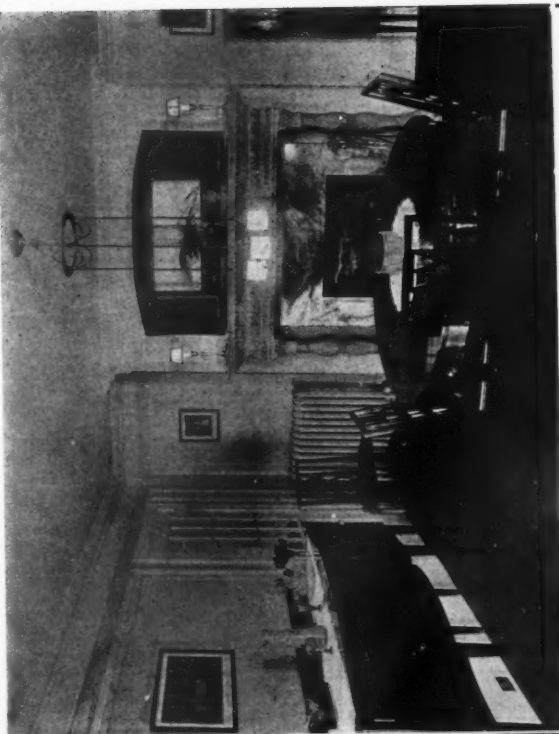
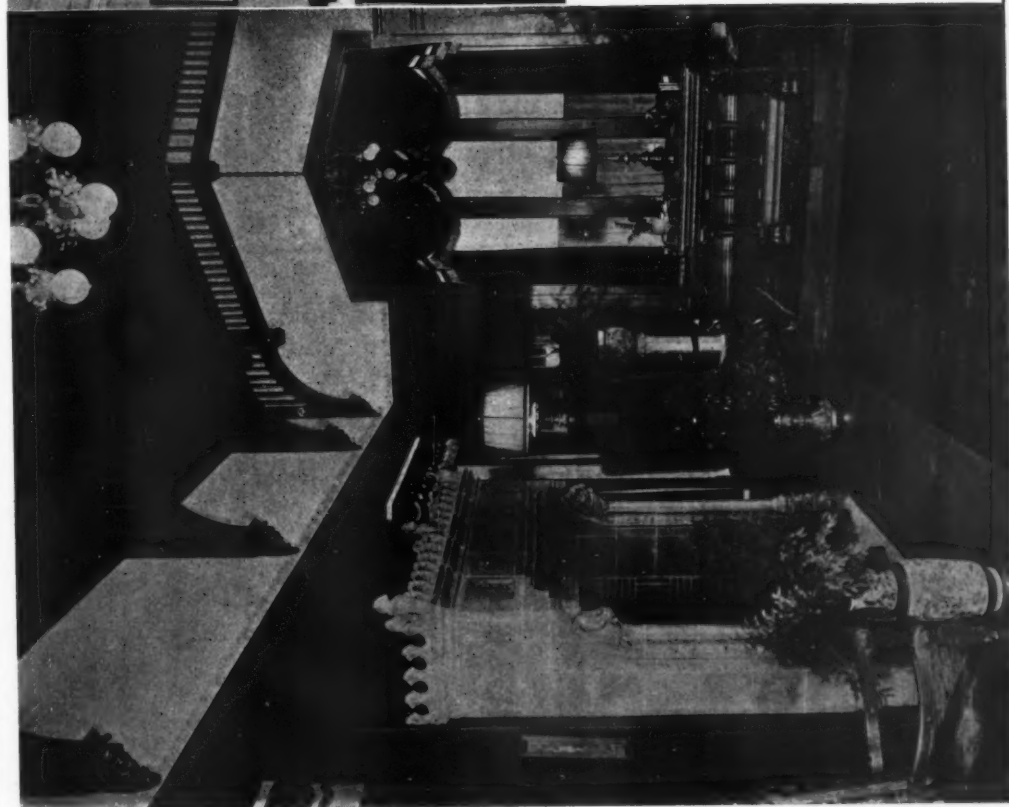




HOUSE OF MR. FERDINAND WITT, HASTINGS-ON-HUDSON, N. Y.

MR. FERDINAND WITT, ARCHITECT





HOUSE OF MR. FERDINAND WITT,
HASTINGS-ON-HUDSON, N. Y.

MR. FERDINAND WITT,
ARCHITECT





HOUSE OF MR. FERDINAND WITT, HASTINGS-ON-HUDSON, N. Y.

MR. FERDINAND WITT, ARCHITECT

CURRENT NEWS AND COMMENT

COMMUNICATION

Editor AMERICAN ARCHITECT:

SIR: The query in THE AMERICAN ARCHITECT of Oct. 15 with regard to "Quantity Surveying" leads me to believe that a brief statement of "Quantity Surveying" as practiced in England may prove interesting.

The English architect receives 5 per cent. commission for plans and superintendence, and $2\frac{1}{2}$ per cent. for specifications and "quantities" when these two items are combined. These fees are paid by the owner. When the quantities are taken off by a quantity surveyor as distinct from the architect the quantity surveyor receives $1\frac{1}{2}$ per cent. for the survey and the architect 1 per cent. for specifications. In this case the specifications are necessarily more elaborate than when the two items are combined.

If on the completion of the work the owner or contractor is doubtful of the actual quantities used he may hire the architect or quantity surveyor to remeasure the work, for which the party requiring it pays $1\frac{1}{4}$ per cent. In the north of England it is customary to remeasure the entire work, in the south to ascertain the quantities by deductions and additions to the original quantities. This remeasuring more than pays for itself or it would not be undertaken.

The English builder bases his estimate on the specifications and quantity survey. In some cases he does not see the plans.

In the English system the quantities are taken off once. In the American each contractor takes off the quantities independently. The average number of contractors to figure a job in the United States is estimated at ten, the cost to each contractor of estimating the job is about $\frac{1}{2}$ of 1 per cent. of the contract price of the work. This would be a total cost of 5 per cent. for each building, which sum is ultimately paid for by the owners, since it increases the cost of building. This cost of taking off quantities is $3\frac{1}{2}$ per cent. more than the cost in England. The annual amount of building in 145 cities of the United States of America is estimated at about \$900,000,000. Three and one-half per cent. of this means \$31,500,000 wasted annually in 145 cities of the U. S. A. Since a great many buildings are estimated and never built, the total cost of estimating is probably much greater and this excess is necessarily borne, not by the prospective builders who cause it, but by the owners who do build.

Another injustice of the American system is manifest in the statement of a member of the organiza-

tion of one of the largest contracting firms in Boston, that the firm was awarded less than 3 per cent. of the jobs they figured on.

The English system gives a uniform basis for bids, while the American is open to variation through the care with which the individual contractors measure, through the obscurity of drawings, through questions of doubt and through "blanket clauses."

Conservative bidding is assured in England since the separate items are readily comparable.

An American draughtsman working in London, England, writes me: "Every one here seems to have a clear idea of an architect and the reason for his existence." Is this not due to the fact that the architect in the English system is clearly indispensable?

While the English system throws more responsibility on the architect, it allows him much more freedom in the study of his problem. We all realize that it is often possible greatly to improve designs by a slight modification in full sizing; but it is rarely expedient to vary from American contract drawings. In the English system there is only the question of quantity.

American architects make numberless elaborate drawings to insure themselves against omission of quantities. These drawings often bind down and cramp the design. The English architect can sometimes let his contract before the drawings are traced.

In the settlement of additions to or omissions from the contract the English system has inestimable advantages since the unit prices are in the hands of the architect.

In England it often happens that a contractor having done one house, will agree to do another of the same type, but different design, on the basis of the unit prices submitted in the former quantity survey, and the work can proceed while the architect is left free to study his problem.

The English way necessitates much closer superintendence on the part of the architect, and he is held responsible for the work being carried out according to law.

The English system satisfies the impatient owner and saves him money, relieves the conscientious architect from the necessity of building unstudied work, and assures the contractor that he will be paid for the quantity of work he puts in.

Very truly yours,
FRANK J. ROBINSON.

THE AMERICAN ARCHITECT

FUTURE EXTENSION OF METROPOLITAN MUSEUM OF ART

PUBLIC SENTIMENT NOT UNANIMOUS AS TO FURTHER ENCROACHMENT ON CENTRAL PARK

Referring to the late Benjamin Altman's gift of his art collection to the city, and the further fact that that of the late Mr. Morgan has been placed in the keeping of the directors of the Metropolitan Museum of Art, the inference being that it will eventually become the property of that institution, the assertion that the question of park invasion is not to be seriously considered in extending the museum buildings to provide space for these collections, has evoked many expressions of opinion.

The already large space occupied by the museum and the nature and location of the various wings or extensions, has produced an architectural effect probably never contemplated in the original plan.

In the comparatively short time since its incorporation this institution has grown to a size not originally contemplated. Its founders doubtless never realized that in little more than a quarter of a century it would grow to rank among the largest and most important museums of the world.

Of course, at present only the two collections, those of Mr. Morgan and Mr. Altman, need be considered, still it is reasonable to suppose that their generous examples will be followed by other donors and that this department of the museum will be very materially increased before many years have elapsed.

It therefore seems to be the part of wisdom to carefully consider not only present conditions, but to anticipate as far as possible future contingencies.

The existing sentiment against further encroachment on our parks and the necessity for increasing the museum space has resulted in a feeling in favor of the erection on another site, not in the park, of an annex to the present museum. The city, it is urged, can afford to be as public spirited as its citizens, and should set aside, in addition to the amount that would be appropriated for the proposed extension, a further sum sufficient to build an annex of size sufficiently large to meet all possible future accessions.

To erect a building that would house the Fine Arts, leaving undisturbed in the present museum those departments of antiquity, archaeology and kindred subjects that formed in earlier years the more important part of the museum exhibits, is a plan that has been suggested.

Any distribution of the articles in the Altman and Morgan collections to their respective departments throughout the museum cannot be made, as under the conditions of their gift these collections must remain intact. Could a distribution be made the need for additional space would not, it is claimed, be so pressing.

PROVIDENCE, R. I., TO CONSIDER APPOINTMENT OF A CITY ARCHITECT

A resolution calling on a committee on ordinances of the city of Providence, R. I., to investigate and report relative to the advisability of creating the office of City Architect was passed at a recent meeting. The local press is heartily in favor of such an appointment, and it is stated that the views expressed by members of the council would seem to indicate favorable action.

A CITY PLANNING EXHIBITION IN NEW YORK

CITIES OF 10,000 INHABITANTS OR OVER INVITED TO EXHIBIT

A city planning exhibition, promoted to educate the general public to the meaning and scope of the subject, will be held in New York during November and December, the exact dates not yet being announced. The work of collecting and installing this exhibition has been placed in charge of the American City Bureau, 93 Nassau street. The committee of the Board of Estimate and Apportionment is directing the work.

After being shown in New York it is proposed to make this exhibition available for other cities.

NEW YORK'S RAILROAD TERMINALS AS VIEWED BY A LAYMAN FROM ABROAD

MR. H. HAMILTON FYFE LAUDS OUR METHODS

Mr. H. Hamilton Fyfe, a London journalist, has recently visited this country, and in common with many of his countrymen, has on his return discussed us with much frankness. He has seen many things in this country that have met with his hearty approval. He describes our new post office as "a public building fit to be set beside the finest of ancient or modern times." He is no less enthusiastic of our railway stations.

"In them both," he writes, "there is a largeness of conception, a shaking of the bondage of 'good enough,' a bold soaring toward a great aim. The men who planned and built them must be men with a passion for harmony and color. The people who pass daily through them cannot but feel its influence, and live in a finer and freer air. The mind is soothed by the spacious calm of the halls, the quietly perfect organization, the neat, spick-and-span convenience of ticket and baggage counters, dining rooms, buffets, bookstalls, information offices. * * * the most excellent railway stations the world has yet seen. Stations where there is no opening for the scramble and rush which usually disturb the traveler. Stations for supermen who move calm and certain to their appointed ends."

THE AMERICAN ARCHITECT

LASTING EIFFEL TOWER

GREAT IRON FRAMEWORK IS FIRM AFTER QUARTER CENTURY

As the Eiffel tower approaches the twenty-fifth anniversary of its construction Parisians are reminded of the storm of abuse that broke when the tower was first proposed, says the *Boston Transcript*.

"To realize what we are planning to do," one artist wrote, "we have only to imagine a tower vertiginously ridiculous dominating Paris like a black and gigantic factory chimney, crushing with its barbarous mass Notre Dame, the Sainte-Chapelle, the Tower of the Saint Jacques, the Louvre, the dome of the Invalides, and the Arc de Triomphe. All our monuments humiliated, all our buildings dwarfed! Everything disappearing before this stupefying nightmare! And for twenty years we shall see stretched out over the whole city, still bright with the genius of so many centuries, the ink-black, odious shadow of this odious tower of bolts and iron!"

Nothing more damning was ever written, even of the cubists. Yet the Eiffel tower has long stood as one of the most attractive units in all of the civic architecture of Paris.

Twenty years this gloomy prophet sets as the limit of the tower's life. Already it has withstood the winds of twenty-four winters. How much longer its swaying mass will remain a safe structure the engineers are not prepared to say. Built of iron lattice work, before the days of steel construction, the Eiffel tower annually costs thousands of dollars for painting and repairs. Men are forever crawling over it, tightening bolts, fighting rust and welding chains. Thrice important as a wireless station, a meteorological observatory, and a thing of beauty, the Eiffel tower will not fall as it was built, amid a chorus of anathema.

RUINS OF ANCIENT MEXICAN PUEBLOS UNEARTHED

IMPORTANT DISCOVERIES BY SCHOOL OF AMERICAN ARCHAEOLOGY

The School of American Archaeology at Santa Fé has been conducting extensive excavations on the site of the ancient Spanish mission at Quarai, New Mexico, and has secured unexpectedly rich scientific returns. The ruins at Quarai have been an object of interest and speculation for many years. The walls of the old mission established by the Spaniards early in the seventeenth century still are standing. On every hand are evidences of occupation long antedating the Spaniards. Mounds show the existence of ruined houses and kivas, and there has existed no doubt in the minds of scientists that Quarai at one time was the center of a large settlement of

Indians, belonging to the Tigua branch of the Pueblos. The truth of this theory has been borne out by the preliminary excavations this fall. Further work is being rushed, and it is expected that when the work is completed Quarai will yield as rich scientific returns as the ruins of Tuyonyi and Puyc, extensive Pueblo settlements in the Rio Grande valley, completely excavated by the school.

At Quarai a number of skeletons have been found, the first Tigua bodies to be studied scientifically.

BROOKLYN COURT HOUSE SITE

PRESENT SITE FINALLY RECOMMENDED

After thorough study of a report of a committee of ten appointed by the Brooklyn League to pass upon the proposed site for the Brooklyn Court House, the previous approval of a site on the plaza has been withdrawn and the present courthouse site, with necessary extensions for the larger building is now urged.

There is no inconsistency apparent in this change of opinion. On the contrary, it would seem to indicate a very careful and thoughtful consideration of the subject from every possible angle. It seems reasonably certain that when Brooklyn has finally worked out its civic problems there will be no glaring errors to correct as the result of hasty action.

POLITICS IN BUILDING ORDINANCES

DENVER BUILDING TRADES TAKE EXCEPTION TO A PROPOSED ENACTMENT

A special committee of the Building Trades Council of Denver, Colo., has made strenuous objection to the adoption of a proposed building ordinance, prepared, it is stated, in the office of the Deputy Building Inspector of that city.

The ordinance, which provides for the licensing of contractors, is regarded by the committee as making it possible for certain political elements to control in a large measure future building operations in Denver, and create a system that would eliminate small contractors and prevent even independent day labor except at the pleasure of the building inspector.

WASHINGTON, D. C., ARCHITECTURAL CLUB ELECTS OFFICERS

At a recent meeting of the Washington, D. C., Architectural Club, the following officers for the ensuing year were elected: B. C. Flourney, president; A. L. Blakeslee, vice-president; W. B. Cash, secretary, and M. F. Moore, treasurer. Bedford Brown was chosen director and C. O. Stevens and R. S. Bubb, auditors.

THE AMERICAN ARCHITECT

PERSONAL

Thomas Bond Owings announces that he has opened an office for the practice of architecture at 347 N. Charles street, Baltimore.

Mr. Oscar C. Gottesleben, Architect, Detroit, Michigan, has opened offices in the Dime Bank Building. He desires manufacturers' samples and catalogues.

Mr. J. G. Ingham and Mr. George S. Veazie, Architects, Elmira, N. Y., have formed a co-partnership for the practice of their profession, under the firm name of Ingham-Veazie, with offices at 114 Baldwin street. They desire to receive manufacturers' samples and catalogues.

INDUSTRIAL INFORMATION

AN ELASTIC FLOOR TILING

David E. Kennedy, Inc., No. 2 West 45th street, New York City, have issued a pamphlet illustrating Arrowlock Elastic Tiling in a form that will be appreciated by architects. This catalogue can be taken apart without mutilation, and its leaves placed in the appropriate divisions of the specification files for easy accessibility.

Arrowlock Elastic Tiling, the makers state, is a utility floor that is distinctly structural in character. These tile are made from a composition of which cork is said to be the basic ingredient, and, it is claimed, possess the advantages of a cork floor with unusual decorative features. In shape these tile can be supplied square, oblong or interlocking, and in many colors and shades.

It is further stated that these tile have long-wearing qualities, are non-absorbent, and when used with Arrowlock cove base are a thoroughly sanitary floor covering.

The pamphlet referred to, together with sample tile, will be sent on request.

METAL MOULDINGS AND SHAPES

A book of sections, reproduced actual size, of drawn metal mouldings and shapes issued by Dahlstrom Metallic Door Co., Jamestown, N. Y., will be found a helpful guide to architects in designing metal finish for interiors.

Efforts of manufacturers have enabled architects to introduce decorative features in all-metal construction, that eliminates that austerity of appearance previously marking the fire-proof interior.

The metal mouldings or trim and the metallic door can now be made to present all those agreeable contours of line and form that heretofore were only possible in wood construction.

This pamphlet, which measures 10 x 14 inches and bound by the loose leaf system, will be mailed to architects on request.

THE INSULATION OF CONCRETE ESPECIALLY BELOW GRADE AND ITS PROTECTION AGAINST ELECTROLYSIS

Electricity in the various uses to which it has been adapted, is not always so thoroughly controlled as to prevent its insidious and covert attack in directions least expected. To what extent the predatory current that has left those lines of conductivity supplied for its passage may work damage and ultimate disaster is very clearly shown in a pamphlet on "The Insulation of Concrete," especially below grade, and its protection against electrolysis, issued by the Hydrex Felt & Engineering Co., 120 Liberty street, New York.

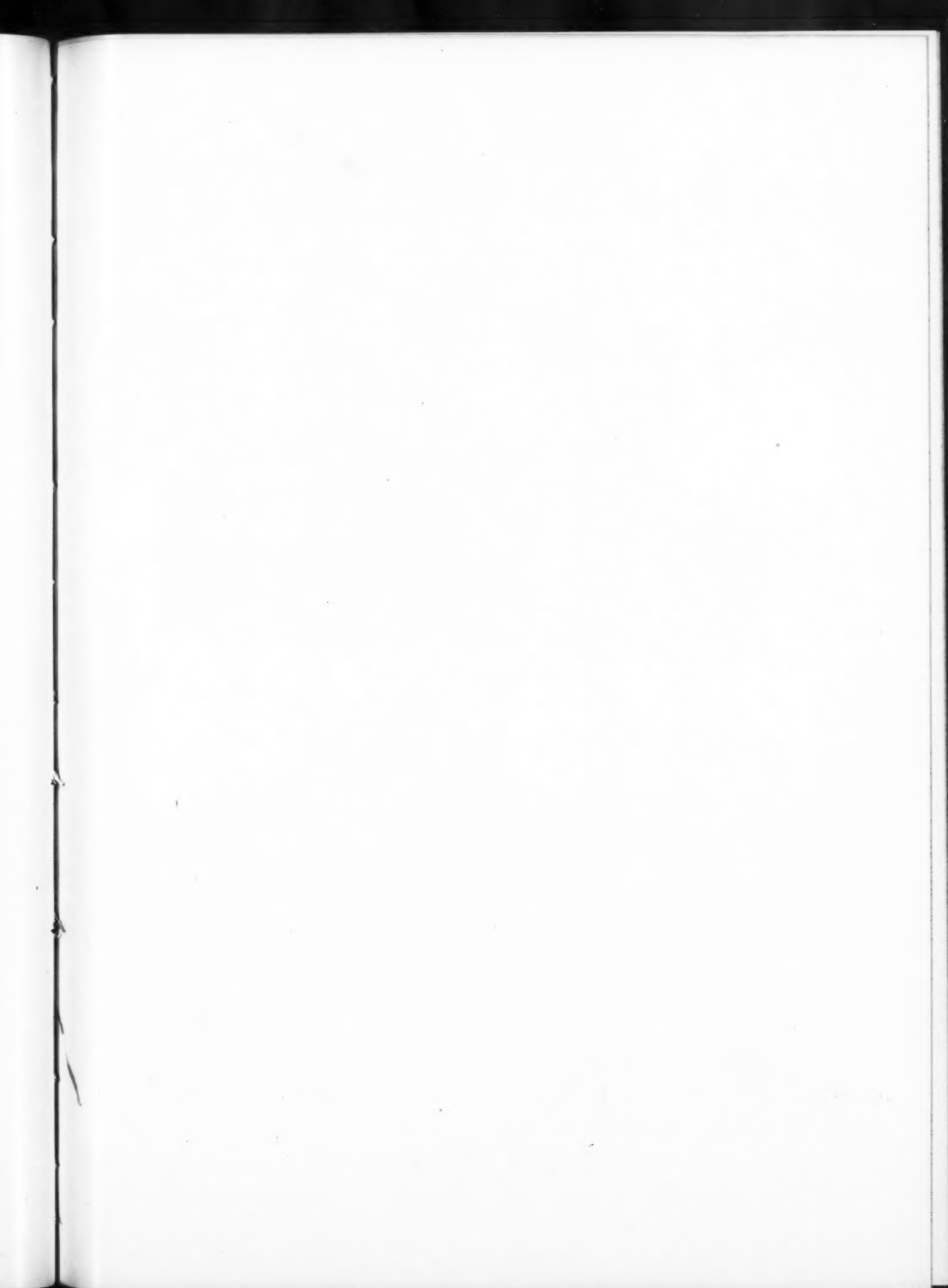
Quotation is made at some length from an address by Mr. Edward W. DeKnight, before the seventh annual convention of the National Association of Cement Users, and this quotation is made of further interest by means of a series of illustrations of experiments as to the effects of electrolysis and moisture on steel embedded in concrete.

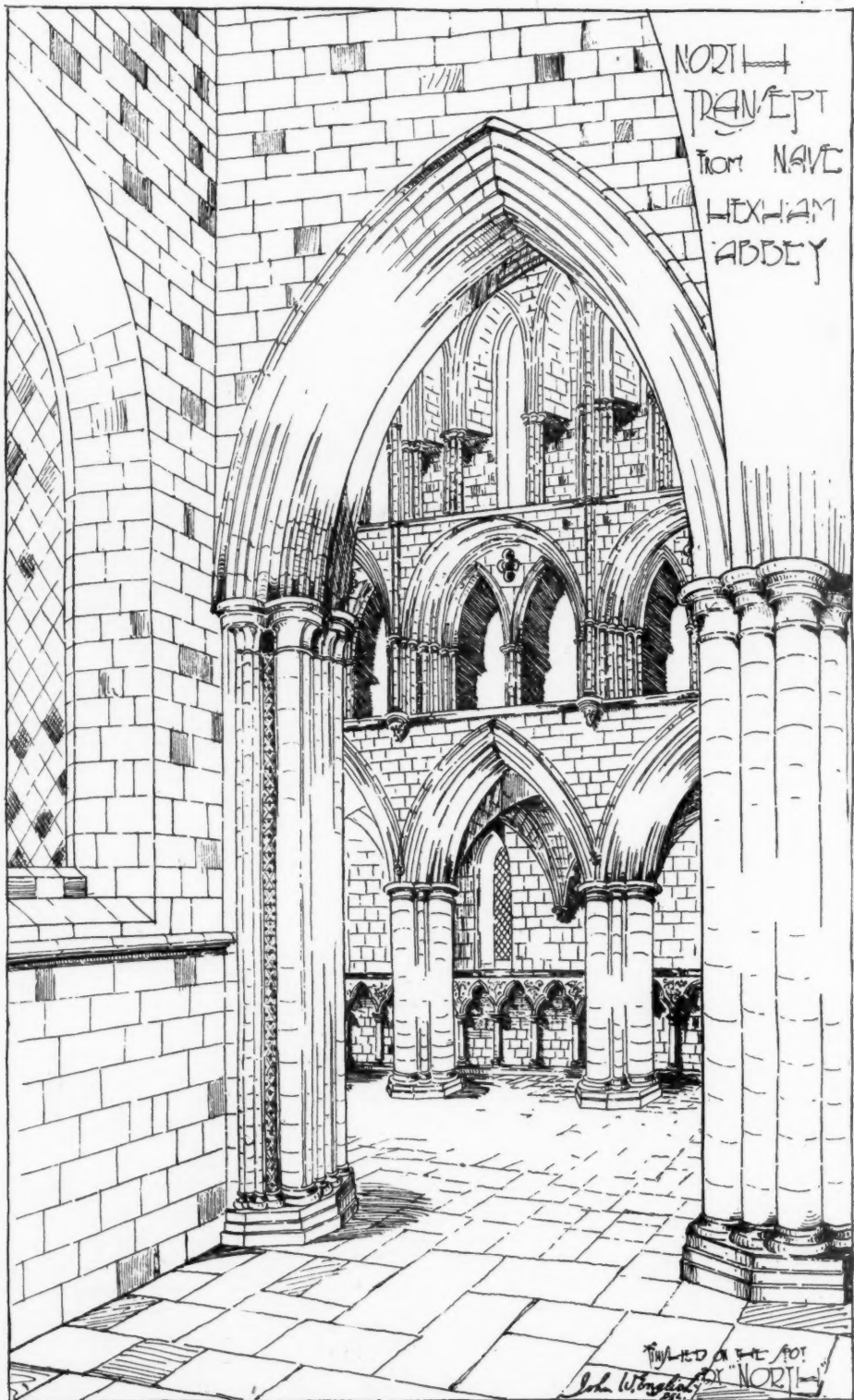
With reference to the danger from electrolysis later experiments would seem to demonstrate that non-reinforced concrete is practically immune from electrolysis troubles, but that reinforced concrete is at all times liable to attack by the electric currents.

It is to safeguard the structures from these menaces that the Hydrex system of waterproofing and insulation is recommended.

In spite of the fact that the pamphlet under discussion is intended to demonstrate the value of one of the Hydrex products, it must be conceded that the large amount of material on waterproofing and insulation it contains makes its contents of unusual value to the architect, as it presents educational matter not ordinarily to be found in text books.

A copy of the pamphlet will be sent free to architects or engineers upon request.





NO. 2 OF A SERIES OF MEASURED DRAWINGS BY MR. JOHN W. ENGLISH, ENTERED
IN THE GLOVER GOLD MEDAL STUDENTSHIP COMPETITION. MR. GLOVER'S
DRAWINGS WERE PLACED SECOND