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THE GROTTO

"PEMBROKE," ESTATE OF THE LATE CAPTAIN J. R. DE LAMAR, GLEN COVE, L. I.,
NEW YORK

C. P. H. GILBERT, ARCHITECT

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VOL. CXVI

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THE TEA PAVILION FROM THE ENTRANCE PORCH

“Pembroke”

Estate of the Late Captain J. R. De Lamar, Glen Cove, L. I., New York

C. P. H. GILBERT, *Architect*

THE country gentleman in the United States who builds him a house and sets it in the center of broad acres has by now, fortunately, come to the realization of both the artistic and commercial value of good architecture, and as a rule entrusts to competent hands the designing and planning, and the general landscape treatment of the large area he proposes to improve. When this country gentleman combines with the most æsthetic taste a very well developed hobby for rare and beautiful plants, an opportunity is afforded to secure the maximum of artistic effect; one that will appeal even to the most sordid and matter-of-fact beholder.

“Pembroke”, illustrated in this issue, is a splendid example of what may be accomplished by the in-

telligent designing, placing and planting of a pretentious country house. It is not possible by mere snap shots adequately to convey a correct impression of the beauties of this project, the well balanced placing of the plot, the grouping of the dependent buildings, and the wonderful natural planting that surrounds them, all selected and supervised with the most cultured and intelligent taste. Large greenhouses and also a palm garden house a collection of tropical and other plants that constitute a most unusual horticultural museum, and serve to provide a beautiful suggestion of tropical surroundings.

“Pembroke” is one of the largest and most beautiful residences on Long Island. The entrance to the estate is through a well designed gateway with

THE AMERICAN ARCHITECT

an ornamental iron arch and gates, flanked on either hand with smaller gates of equally well designed iron work.

At the very approach to the entrance to this estate, the visitor will become impressed with the planting and the excellence with which it has been carried forward. On either side of the long sweeping entrance driveway there are grouped rare and handsome trees which create a landscape effect that prepares the visitor for the many other excellent motifs in architectural and landscape design that are later to be found. Particularly will the expert be impressed with the large number of catalpa trees, and he will probably acknowledge them to be the largest and the handsomest in this section of the United States.

Approaching the house at its easterly front, the drive leads up to a splendidly planned forecourt, intelligently laid out, bordered by flower beds and threaded with walks, the central feature being a rectangular pool, with a fountain in which the rarest of aquatic plants are brought to the utmost perfec-

tion. In this forecourt there has been placed, in a most restrained and artistic way, a certain amount of statuary and marble garden furniture, all in correct period style, and with the artistic perception as to fitness that characterizes the entire treatment of the grounds. At one end of the forecourt there is a tea house pavilion, which, with its red tile roof and archway, makes a dignified and well placed ending to this important feature, as well as an attractive spot of color. The westerly forecourt located between the house and the Sound is equally well and attractively planned, the architectural feature being the balustrade.

Everywhere about the exterior of this house the evidence of the trained lover of flowers and plants is always apparent. No matter at what season of the year the visitor may approach this place, he will find that the color scheme is in absolute harmony, and accentuates in a most beautiful way the general ensemble.

From the main terrace and leading to the southwest, a very handsome flight of steps and a pathway



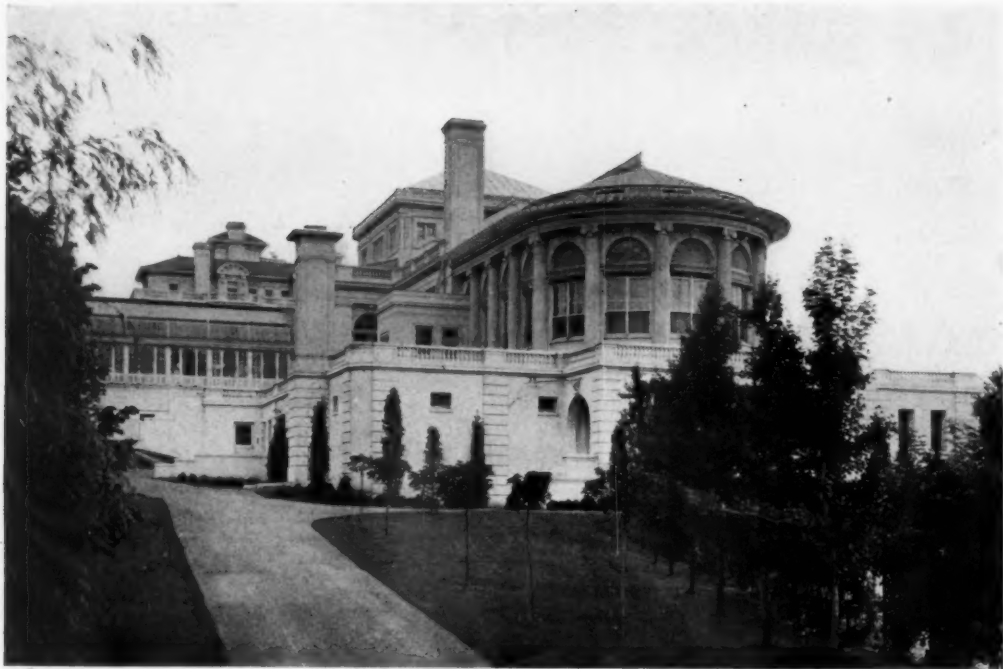
VERANDA ON WEST FRONT, OVERLOOKING THE SOUND

THE AMERICAN ARCHITECT



THE SWIMMING POOL IN THE TROPICAL HOUSE AND PALM GARDEN
"PEMBROKE," ESTATE OF THE LATE CAPTAIN J. R. DE LAMAR, GLEN COVE, L. I., NEW YORK
C. P. H. GILBERT, ARCHITECT

THE AMERICAN ARCHITECT



VIEW OF TROPICAL HOUSE AND PALM GARDEN

lead the visitor to the bathing pavilion and the private dock.

On the north side of the estate and outside the palm garden, there is a spacious tennis court and also a well cared-for apple orchard.

As will be noted in the ground plan of the building, illustrated on another page, the driveway entrance to the house is on the easterly side. This entrance is protected by a well designed iron and glass marquise. One enters the house through a marble vestibule, with a niche on either side, in which are placed handsome statues illuminated by concealed electric lights. Leading from the vestibule is a spacious living hall, the dominating feature of which is a large French Renaissance mantel. A handsome staircase, broad and spacious, located on the easterly side of the hall, leads to the second floor. This flight is broken halfway by a wide landing, on which the console of a large pipe organ is placed, the whole feature being illuminated by a series of splendidly designed stained glass windows. An elevator located near the stairway lands on all floors.

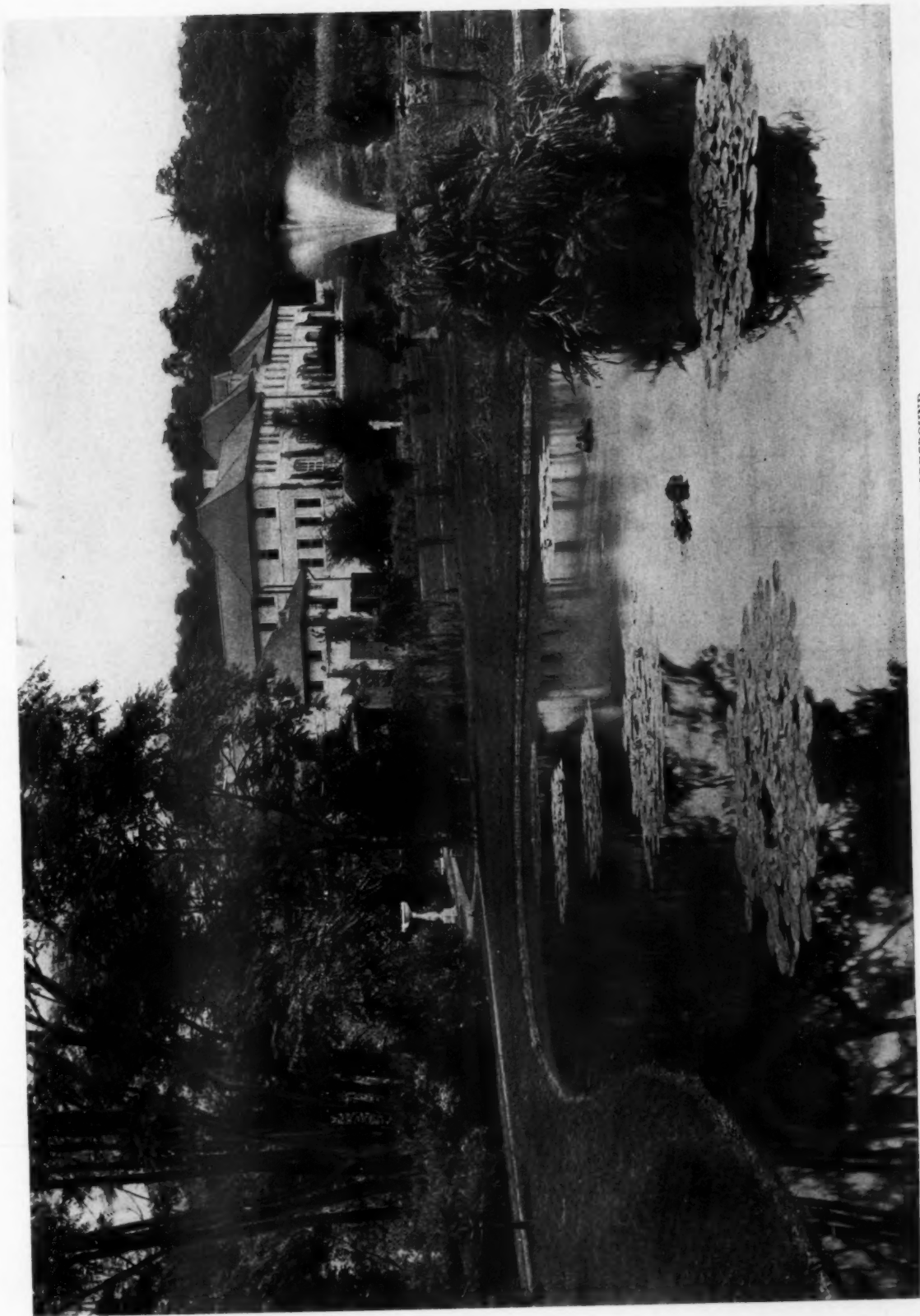
From the south end of the living hall, one approaches the den, solarium, billiard room, and reception room, while the dining room is reached from the north end. These rooms are all French Renaissance in their treatment.

A feature that is particularly attractive in a country house is the breakfast room adjoining the dining room. This has a well treated ceiling of leaded glass; while on the westerly side of the room there is an unusually large window of clear glass through which one obtains a comprehensive view of the grounds of the estate, and from which the eye easily carries over the broad reaches of Long Island Sound. On either side of this window is a most attractively designed picture window of leaded glass. From this breakfast room there is a splendid vista 80 feet in length along a corridor banked with tropical plants, which connects the house with the tropical building and palm garden. On the east, west and south sides of the house spacious porches and terraces of most unusual size afford a place for quiet and shady retreat at all hours of the day.

In the southeast corner of the first floor and throughout the second floor are grouped the bed rooms, singly and en suite, each with its special bath room and all those conveniences which have become a necessary part of the modern country house.

At the south end of the second story corridor one passes through a double sliding door which opens into a smaller corridor. This connects a suite of rooms consisting of two bed rooms, two dressing rooms and two baths, with unusually large closets.

THE AMERICAN ARCHITECT



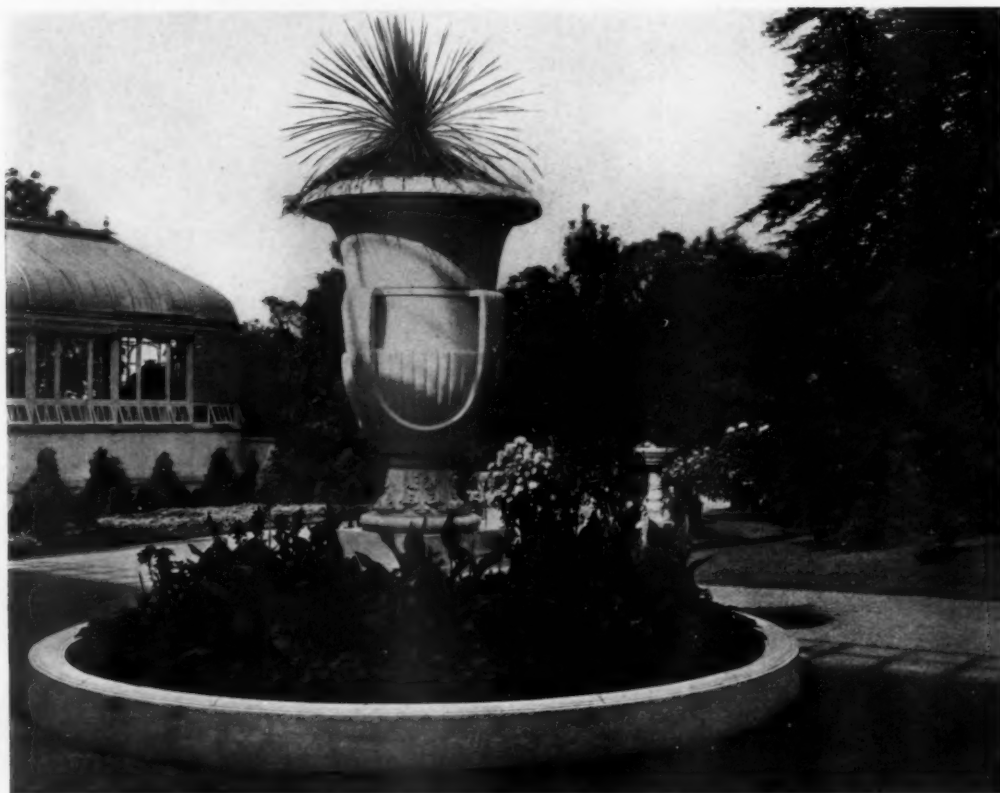
FARM BUILDING AND GARAGE WITH LILY POND IN FOREGROUND
"PEMBROKE," ESTATE OF THE LATE CAPTAIN J. R. DE LAMAR, GLEN COVE, L. I., NEW YORK
C. F. H. GILBERT, ARCHITECT

THE AMERICAN ARCHITECT

At the northerly end of this corridor there is a similar group, but of three rooms, with separate baths and closets, while on the west side of the corridor and opposite the main stairs is located a guest's bed room and maid's bed room, each with its separate bath. The main bed chambers on this floor are attractively designed in Renaissance style in keeping with the general motif throughout the house. These rooms have panelled walls with moulded and orna-

that are not to be exceeded in this part of Long Island.

In the basement further accommodations are provided for the large staff of servants and employees necessary in the proper maintenance of so large an estate, and here also are to be found the domestic utilities of laundry, trunk and storerooms, wine cellars, refrigerating plants, coal storage and heating apparatus.



A VIEW IN THE GARDENS

mental cornices, parquet floors and well considered decorative treatment.

On the third floor are located guests' bed rooms with separate baths, housekeeper's room, and a sewing room with ample closet space; the remainder of this floor is given over to large and well appointed servants' quarters.

A somewhat unusual accessory in a country house is the location on the roof of a sun parlor of large dimensions, which, together with the pergolas and a handsomely planted and decorated roof garden, presents a very attractive feature, and affords views

The tropical building and palm garden, containing palm trees 35 feet in height, located to the north of the house, and connected by the corridor previously referred to, are features so seldom met with on so large a scale that they warrant somewhat extended reference. The building, very large in size, and harmonious in design, together with the house forms a frontage toward the Sound of more than 400 feet. In the center of this tropical building and palm garden is located a swimming pool, lined with tile of attractive design, and in the center of the pool is a pavilion formed of ornamental metal

THE AMERICAN ARCHITECT

work and glass. This pavilion is connected by a beautifully designed metal bridge with the walks outside of the pool. This feature is one of unusual attractiveness, and with the wonderful collections of plants that surround the pool's edge the bather may easily imagine himself in the jungle of some tropical country, where the luxuriant foliage and the well-tempered water afford an opportunity for relaxation and recreation such as is rarely to be found in any large house in this country.

At the northerly end of the building are located the grotto and cascade, the water from which flows in a stream that wends its way through all parts of the building. This water circulates through a tank and pump located in the basement.

In the center of the building, directly over the pool, is a circular gallery, protected by a metal railing and decorated, as is every place where possible, with the most beautiful and luxuriant vines and plants.

The main floor, throughout, is covered with about 3 feet of earth, into which the tubs containing the plants are sunk, thus giving the effect of plants growing directly out of the soil.

In a separate building surrounding the northerly half of the tropical house and palm garden tropical fruit is grown, such as grapefruit, oranges and bananas.

A feature of not only this building, but of the

entire house, is the elaborate system of electric illumination controlled by numerous switches located throughout the entire group.

In the basement of this tropical building there has been located a moving-picture gallery, squash court, and a shooting range. In another section are located the heating apparatus and other mechanical equipment, coal storage and storerooms.

Particular reference to the architectural excellence of this building has not been made for the reason that it is believed the architectural observer will be able satisfactorily to inform himself by means of the very full illustration that is made in this issue.

The tendency of men of large wealth to build for themselves homes of such stately proportions has not been to create a surrounding that was so formal in character as to divest them of the evidences of domestic occupancy. This house, while combining all the conveniences of the most formal estate, possesses at the same time a certain livable domestic atmosphere that attracts and meets the approval of the visitor. Consequently, he will not be surprised to learn that it is not merely a place for summer occupancy and retreat, but a home throughout the twelve months in the year, where, by reason of its excellent treatment and the wonderful horticultural decorations, he will never tire of surroundings so thoroughly restful.

Specification Clauses

By FRANCIS W. GRANT

IV—Warrantys and Guarantys

WARRANTY.—The contractor shall and hereby does warrant that all material and workmanship shall be of the quality, quantity and character specified and shown and that any defect due to the use of any improper workmanship or material, discovered and made known to him within one year of the final completion of the structure, shall be made good by him without additional expense to the owner.

GUARANTYS.—The several guarantys covering specific materials of workmanship hereinafter required shall be furnished the owner in writing consistent with the terms specified in each instance and in form satisfactory to the architect. The delivery of such guarantys shall be deemed a condition precedent to the issuance of the final certificate for payment of the contract sum.

A very common error in specification writing is the misuse of the terms "guaranty" and "warranty." Particularly, this usually occurs while attempting to provide for the maintenance of the structure in proper condition and for the rectification of defects due to the use of improper staple materials and labor which may become apparent within some fixed period of time. The term proper to use covering such engagements is "warranty" and not "guaranty," which latter refers to the assuming of responsibility by third parties who agree to make good for and instead of the contractor.

Agreements by the manufacturers of articles used in the erection or equipment of a building that such articles shall function in this, that or the other manner, subject to rectification by said manufacturer in the case of failure so to function, are

THE AMERICAN ARCHITECT

properly referred to in the specifications as guarantys when it is the expressed intention to hold the manufacturer as well as the contractor as warrantys when the entire responsibility is put upon the contractor without reference to the manufacturer.

While warrantys can with propriety be blanketed by a paragraph in the general conditions of the specifications, it is impracticable to pursue this course in the case of guarantys. Guarantys should be mentioned and conditioned in connection with the particular clause in the structural conditions of the specifications naming the article or process sought to be protected by the manufacturer's guaranty. A clause should, however, occur in the general conditions covering the matter of form in which guarantys must be furnished and rendering their actual delivery certain.

It is common practice merely to require in the specifications that the contractor shall furnish certain guarantys, or perhaps warrantys under that name. A slight change in phraseology and the specifications (the contract) becomes itself the warranty. It being only necessary to state that the contractor "shall and hereby does warrant" as in the above suggested clause. This leaves only the guarantys obligating third parties to be secured.

Many materials and processes used in building operations are promoted and to a large extent made popular by the offer of specious guarantys, and it is no more than fair to the producers of materials displaced by these, and to the owner, that all such guarantys be demanded and exactly as promised in the manufacturer's advertisements.

Warrantys and guarantys are justifiably demanded only when the parties of whom they are sought are in undisputed control of the factors making for the success or failure of the thing guaranteed. They should under no circumstances be exacted of a contractor to merely protect the owner against the delinquency of his architect. If proper material has been specified and the work efficiently superintended no guaranty should be necessary except to cover the functioning of material or processes adopted on the strength of manufacturer's promised guarantys as before mentioned, and to cover possible oversight in supervision.

The contractor should not be required to give warranty that what the architect has designed and computed shall prove successful and satisfactory in practice. To require a warranty, for instance, that cracks shall not appear in the plastering of a building is to place responsibility for examining into and computing the bearing capacity of subsoils and the strength of structural parts in the wrong place. Plaster cracks may be due to im-

proper work and material and they may also be due to improper architectural service.

A guaranty or warranty exacted for work specifically shown or specified in all its details is entirely useless. The contract itself is warrant that the contractor shall furnish just what is described, but beyond that he is not responsible and cannot be made so. Unless the contractor is given a sufficient degree of discretionary power to introduce ideas and methods of his own, his responsibility for results is nil, except upon a showing of improper workmanship or materials or of a material deviation from the requirements of the drawings or specifications in which event, of course, he would be held liable without recourse to any specific warranty. A New York State decision on this point is in the following language: "The owner having assumed to say by the specifications what was to be done, the contractors were relieved so far as they complied therewith. They guaranteed, not the sufficiency of this to produce the desired result, but merely the effectiveness of what they themselves did under it."

In theory and law all warrantys and guarantys are given for a money consideration. It will be found in many instances that the expense involved is out of proportion to the necessity and value of such supplementary agreement. A general warranty is recommended in all specifications, but guarantys should be few in number. If the specification writer demands numerous guarantys he is likely to create the suspicion that he is somewhat unfamiliar with materials and on this account alone he should avoid recourse to them as much as possible.

A matter apart from the discussion of this subject as specification data is the validity of the guarantees when secured. The surety, when properly bound, undertakes to see that all guarantys are made good, but does not undertake to secure them or be responsible for their legal covering qualities as applied to any specific object or outcome.

A guaranty that really guarantees is sometimes hard to get. The forms used by manufacturers are frequently drawn with intent to dodge the obligation by the insertion of unreasonable and impracticable conditions, such as that the roof shall never be walked on by any but the guarantor.

As before stated, the guarantor is justly and legally entitled to control of the factors upon which success of the guaranteed article depends. A careful analysis of the phraseology of the guaranty is suggested however that under cover of this perfectly proper allowance he does not inject matter tending to nullify the document. This is for

(Continued on page 377)

Editorial Comment

State Societies and the Engineering Profession

ENGINEERING NEWS-RECORD in a recent issue refers to the successful organization of the New York Society of Architects, and strongly urges that the profession of engineering perfect in the various States, organizations whose aims and objects should be on similar lines.

Cause for favorable comment is found by *Engineering News-Record* in the fact that the Institute, the principal governing body of the architectural profession, is not affrighted by the new organization, but actually is encouraging the formation of similar organizations in other States. It is further stated that "Engineers may draw inspiration from the breadth of vision displayed by the architects." It is extremely satisfactory to learn from a representative publication of a profession that has always been regarded as well organized that in the New York State Society is presented an example which might with good results be followed by the engineers.

If an almost unanimous response is an indication of a well developed plan, then those who have framed the plan of organization of the New York Society, have reason for self-congratulation. It is learned that a great many architects' offices are 100 per cent represented in the New York Society and that throughout the State the enrollment of membership may be said to include practically every desirable man. An organization that meets such general approval among a class of men who in the past have not always shown a purely democratic attitude toward organizations of this class, conclusively proves that it is born of right principles and is assured of future success.

If such an organization is meeting with the most satisfactory success in New York, it is fair to assume that it would be equally successful in all of the States. And, as it has in New York State received the unqualified endorsement of the majority of Institute members, it is logical to assume it would be welcomed in all the States in a similar way. No good reasons have as far as is known been advanced that State Societies would in any way usurp the dignities of the Institute. On the contrary, it has been many times stated that such Societies would uphold the dignity of the Institute and aid it in carrying forward its reforms.

It is not desired to forestall the forthcoming report on State Societies of the Post-War Committee,

but there will be no breach of confidence in the statement that this report will be of a character that those of the Institute who desire to keep that organization a select and moribund body will have no good ground for any argument in opposition to the Post-War Committee Report.

Fire Losses During 1918

THE fire losses during 1918, but recently completely tabulated by the National Board of Fire Underwriters, present a surprising and disturbing group of figures. The disturbing element lies in the fact that despite propaganda carried forward in the most thorough and intelligent manner, and regardless of the framing and enforcement of codes that would tend to largely eliminate the fire hazard, there was in 1918 an increase in fire losses over previous years.

For example, cities of 20,000 population and over in which fire losses exceeded \$5 per capita number 35 in 1918 as compared with 29 in 1917 and 23 in 1916. For the entire United States in 1918 the average per capita loss was \$2.76, and in 1917, \$2.42. These figures show an economic waste that constitutes a national reproach for the reason that the statistics disclose that a large proportion of this loss is due to carelessness.

THE AMERICAN ARCHITECT when referring to fire losses has at one time and another urged that a closer responsibility should be laid upon owners and tenants of buildings where fires occur. They do these things better in European cities and the result is an annual fire loss that, compared with the enormous totals rolled up each year in the United States, is very small.

What is of even greater moment than the loss in cold dollars and cents is the total loss of human life. It is a travesty on justice to permit a man whose carelessness has caused a fire to escape the penalty that should attach, especially if there has also occurred loss of life.

Further, it is not pleasant to contemplate that a nation that has during the past five years demonstrated its right to be classed as the leader of the world, should permit conditions to exist that add each year to such an enormous economic loss. This waste is indefensible. At a time while we are earnestly engaged in solving problems of the high cost of living, why not take some measures that will prevent a waste that placed a tax of almost \$3 on every person in the United States during 1918?

Recreating Old Traditions and Creating a New Memorial

A SUGGESTION, made by a correspondent to the *New York Sun*, that the most fitting monument that could be erected to the honor of the "Liberty Boys" of 1918 would be the full restoration of City Hall Park to its former beauty and spaciousness and the erection in the newly cleared space of a monumental liberty pole, is one that should meet with unanimous approval. Many good purposes would be served. It would clear City Hall Park of the Court House, a building of most unsavory record and soon by reason of the erection of the new court house to become obsolete; it would rid New York of the unsightly post office; and it would renew in the minds of the people, prone to ignore traditions of old New York, some historical features that cling to City Hall Square.

More than one hundred and fifty years ago a band of young patriots, calling themselves the "Liberty Boys," reared on the "Common Lands" by which name the present City Hall Square was known, a liberty pole as protest against their British rulers and the depredation of the soldiers quartered on the Colony. Many times was this pole taken down by the authorities and as many times it sprang up in the night, that sunrise might disclose that there was no slackening of purpose.

Erecting in 1919 a new liberty pole of monumental proportions on a City Park that held but the beautiful Georgian City Hall would create a memorial that should imbue with sentiments of the purest patriotism every beholder. It would revive the memory of an historic incident and restore to its former beauty a location now disfigured to an extent nothing short of vandalism.

New Yorkers should with one accord express approval of a memorial that has so many good reasons to support its acceptance and erection, and urge that an opportunity so excellent be fully availed of.

Misusing Old Landmarks

AN opportunity is presented to architects to perform a valuable service in checking the spread of inaccurate information by societies that group and support so-called historical exhibitions in historic landmarks throughout the country. Taking for example a house that has an interesting and important colonial history, one that was the manor house of a family prominently identified with that epoch-making period, we find that an unrestrained and unchecked effort has turned a dignified mansion into a museum of what may be called simply junk.

The Van Cortlandt Manor House in New York may be cited as an example. This dignified old mansion is visited daily by many scores of people. They roam about its rooms and find a hodgepodge of furniture, so-called relics and utensils that represent almost every period since the Manor House was built. Most of these things are not relevant to the house or its history and are misleading in suggestion. It would be better if they were removed.

The highest educational value to the general public of a house of this type would be to restore its structure and its furnishings as nearly as possible to conditions of its period. To fill it full of the poorly selected stuff that encumbers this Manor House serves no good purpose.

An interesting comparison to be found is the Philipse Manor House at Yonkers. Here all the refinement of detail inside and out have been correctly restored. Only sufficient furniture has been placed and that accurately "in period" to give a feeling of occupancy to the rooms and accent the beauty of their excellent proportions.

While the Van Cortlandt House is neither so large nor so stately as the Philipse Manor at Yonkers, it possesses certain architectural charms now concealed or destroyed by the poorly selected lot of things that are crowded into it.

THE AMERICAN ARCHITECT

Specification Clauses

(Continued from page 374)

the architect to handle in the course of the performance of his duties in the supervision of the work, however, and not in the writing of the specifications.

Better than dependence on a guaranty is a knowledge of materials so intimate and comprehensive that the owner can safely buy the material specified without buying a guaranty too. Some very good architects are temperamentally disqualified for acquiring that knowledge and others, also good, have it yet to acquire. For such the guaranty may be a wise alternative.

Philosophy in Architecture

IF we are to get the laymen interested in architecture he must see it as more than a technical pursuit; we must relate it to something deeper than his material desires, says H. Barnes in *The Architects' Journal* of London. As long as architecture presents itself as merely a more or less weatherproof shelter he will probably regard it as being only proportionately more important than his Burberry because the building lasts a little longer and costs a little more.

If one dared to advise a professor of architecture, he should be counseled to present his subject, occasionally at least, in a wider aspect than even that of æstheticism. He should be encouraged to adventure once in a while the deeps of philosophy, where his floundering, if they were nothing better, would at least attract attention, and might excite curiosity. There is philosophy in architecture, but that is to say nothing more than might be said of most things. No doubt Ruskin has said, with exquisite felicity, all that can be said on such a subject, but, dare it be whispered, who reads Ruskin now?

Let us adventure the subject. The foundation of philosophy is the clash of the opposites—good and evil; bitter and sweet; life and death—these are the fundamentals out of which we construct the dismal science. Architecture has its opposites; let us select a pair—the Solid and the Void. Our professor would have this as a text for at least one lecture, and on this he would keep the attention of any ordinary audience, if by some miracle they had been induced to enter his lecture-room. All architecture may be interpreted in these terms. Our journey through space and time would take us from the Pyramid of Cheops, sunk in Egyptian sands, to the latest haberdashery shop in Oxford Street. Opposites conflict, and architecture is a history of con-

flicts, the Solid and the Void perhaps the greatest of all. See the pyramid with no Void to break its mass, the entrance to it a rabbit burrow scooped in the rock perhaps 100 yards away. See the first insidious attack of the Void, an opening high up the pyramid face. Watch the attack develop; the doorway through the pylon, its first point of vantage, follow on to the Greek temple, where the Void has entrenched itself and become a feature in the design. Firmly planted now, ever asserting itself, Roman architecture more and more its subject, the all-conquering Void. Let us leap a few centuries, and watch its progress from the Norman solidity of Durham to the airy fancy of Henry VII's chapel, and how far behind we have left the pyramid. Happy if we could have stayed there, or even if "Hardwick Hall, more Glass than Wall," had been our terminus; but it may not be. Vice is virtue in excess, and the demand for display that leaves us with an architectural support of plate-glass is the flower run to seed of the blossom of the Void, without which we should have had no architecture at all.

If our professor (a purely hypothetical abstraction, let it be clearly understood) wants another text, let him take as his theme the struggle between the wall and the roof. In India, the native home of philosophy, the Hindu says the Arch never sleeps; it is the continual enemy. What is a roof but an arch? And if you would see a building as a living thing, realize it in this continual state of antagonism, the Roof against the Wall and so interpret architecture. Let your hearers who over the last five years have studied the campaign in France and Flanders, have seen it first of all as a long line of trench held from Sea to Alp in continuous strength, then seen it broken at points by concentration of enemy force, to be recovered by opposing concentrations of our own—let them realize that the history at least of Gothic architecture is the same story; show them the Norman front with the low flat buttress, hardly distinguished from the main wall, so constructed because the long roof came with nearly equal pressure on all points; let them watch the changing line through all the periods century after century, until they realize how the concentration of the roof-thrust on particular points led to the counter-assembly of the deep projecting buttress of the thirteenth century—thenceforth, assuredly not only their memories, but their intellects, will retain what they have been told.

Then Free-will and Destiny, the eternal fascinating twin problems of philosophy: Are we free, are we controlled, are we determined or self-determined? That is the question. No one can understand the true theory of moldings who is not concerned with this philosophic point. What is a mold-

THE AMERICAN ARCHITECT

ing? A line from point to point, but not necessarily a straight line. Why not a straight line? Because a straight line is the path of necessity, and who would tread it who might avoid it? True you are fixed at the beginning and held at the end; but the way between—what variety may it not contain? This is the true story of the curve; and the story of the curve is the history of the molding. It is man's escape from necessity symbolized in stone. But the curve may be fixed, and will be, if it depend on the compass; only the hand, with its human possibility of error, can give freedom, and no one is penetrated by the spirit of Greek art who does not appreciate this.

Compare the ovolo in Greek and Roman cornices, the volute in Greek and Roman capitals, the Roman curve fixed, immutable, inevitable as Roman Law, the Greek free, unfettered, flexible as the Greek spirit. Greek architecture is the architecture of Free-will, Roman that of Destiny, and to realize this is to have a hold on architecture that no memorizing of modules can ever give.

Last, but not least, evolution and involution, the passage from the one to the many, from the many to the one, unity and variety; concentration, decentralization; co-ordination and dispersion. This great interplay of opposites which is the source and being of life, it, too, has its solidification in marble and in brick. Classic architecture, Gothic architecture, what are these but the monumental impress of these antagonisms? Classic architecture, with its symmetry, its balance, its axial lines, its repetition, its imprint of common purpose and plan; Gothic architecture, with its variety, its individualism, its willful waywardness, its spire to Heaven, its mocking devil on gargoyle and turret, what is it but the outward and visible sign of that inward and invisible spirit which rejects all control, which insists on individual expression, which goes where it wills? So let us model our architecture for all public purposes, all those purposes which are common in their character, and in which all share and function on Classic tradition. Our domestic work, those shelters which the individual man builds up for his individual life in which to work out that single purpose to which his main energies are devoted, let these be touched with the spirit of diversity which is enshrined in our native art. So let divine philosophy speak to us not alone through printed page, but also through carved stone. Sermons in stones bespeak the preacher; let the philosopher also have his place.

Thus one would have architecture drawn into that stream of inquiry which flows through the mind of

every man, bearing on its bosom thoughts of time and space, queries of being and becoming, wonders of what and wherefore; and it may be that with this added perception of the purpose and place of architecture in human life may come an added respect for its practice and its profession.

Ships of "Puffed Brick"

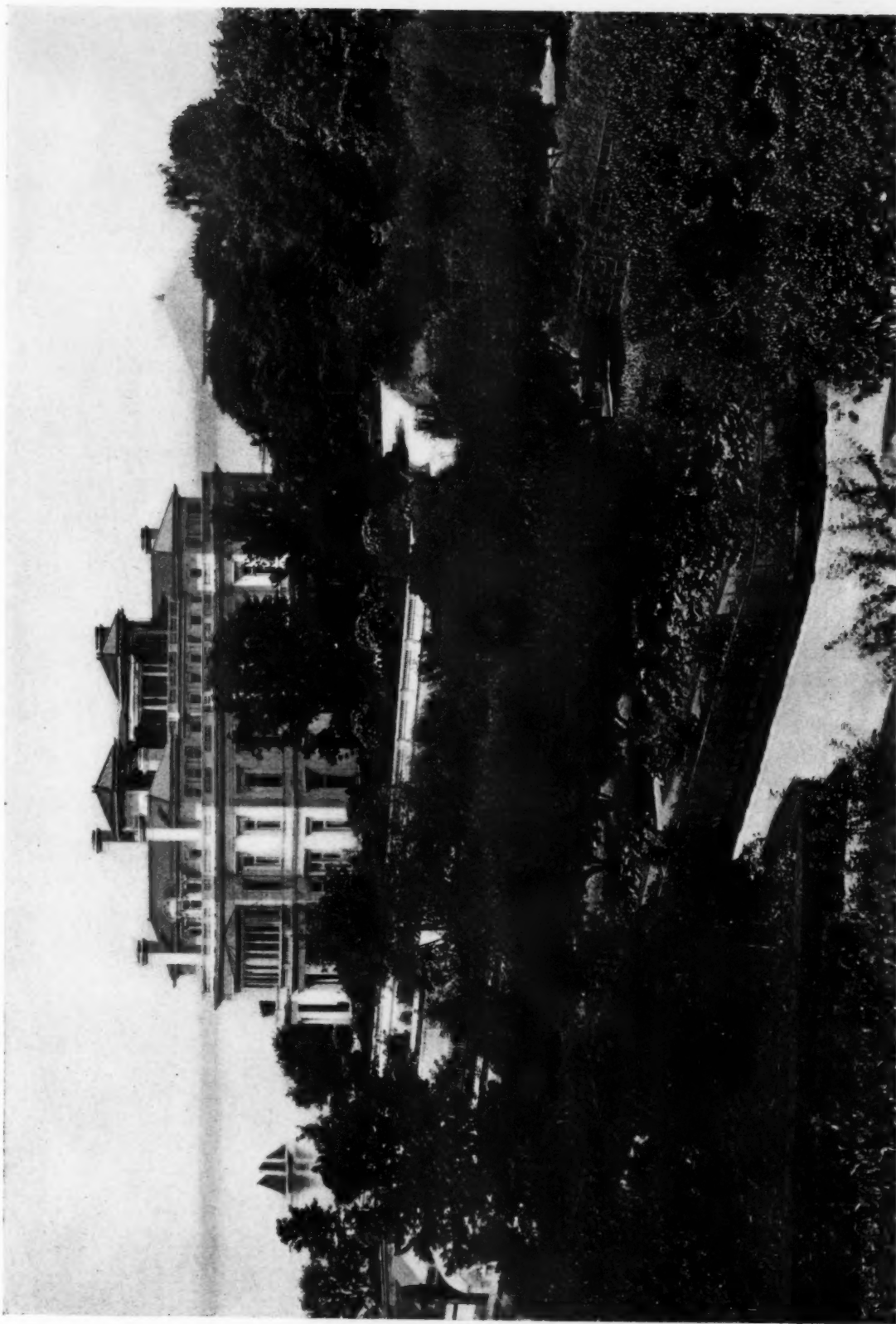
The world was sceptical when engineers announced as a win-the-war measure that they would build sea-going concrete ships. Who ever heard of a rock floating, anyway? The same sort of talk confronted the man who made the locomotive. He was told the wheels would simply spin and that there would be no traction. But the locomotive walked away with itself and its load, just as the concrete ship floated as gracefully as a swan.

But when the engineers tell us they are building a ship of "puffed brick" they are carrying things, it would seem, to a foolish extreme. Yet this, says the *Scientific American*, is what marine engineers are doing out on the Pacific Coast. Two puffed-brick ships are soon to be launched at San Francisco. Bricklayers are not employed in building this peculiar type of boat, because with the mortar used, a trowel-wielding laborer is not required.

The "puffed brick" used is made, like ordinary brick, of a peculiar clay containing a low percentage of silica. Subjected to an intense heat, the brick puffs up like popcorn. The product looks something similar to coke and is about as light. Once puffed the bricks are ground to a dust and mixed with cement. This process, it is claimed, makes for a gain of about 40 per cent in the lightness of the ship's walls, without losing any of its strength.

The ship's forms are built in standardized sections and are hinged with bolts so they can be forced up and put out of the way when the concrete hardens. After launching, the forms are quickly put back into place, steel reinforcing rods installed, and the pouring of another ship can be begun.

According to experts in concrete shipbuilding, this system makes it possible to turn out a 7,500-ton vessel every three months, and only about 25 per cent of the lumber in the forms is wasted. The first two ships built of this material at San Francisco, each 7,500-ton oil tanks, are ready to be launched. They resemble steel ships in their lines and are a big improvement over the "Faith," the first concrete ship built. They are to be launched broadside to the water, as this method spreads the strain over a larger surface.



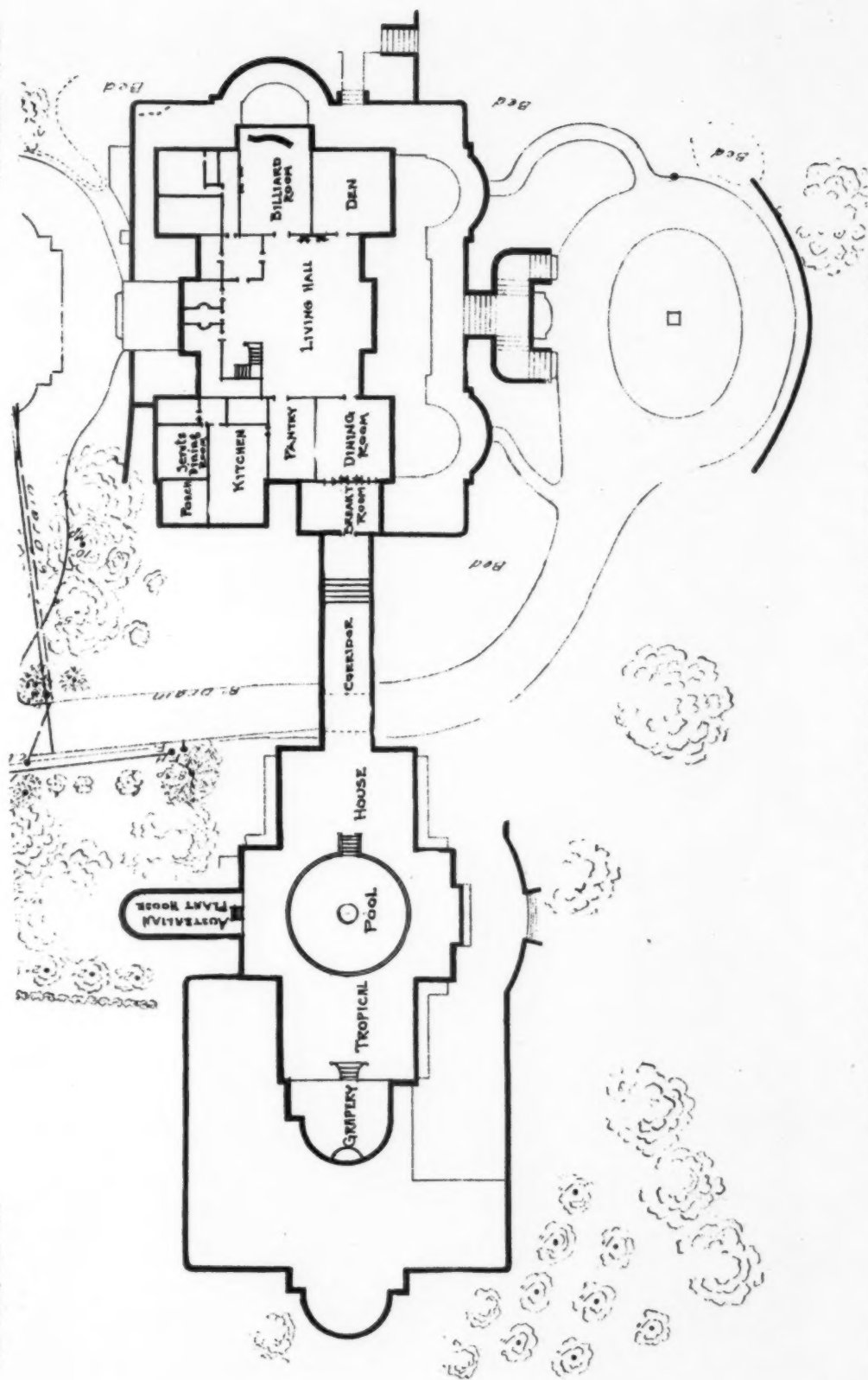
VIEW OF HOUSE FROM THE OBSERVATION TOWER

"PEMBROKE," ESTATE OF THE LATE CAPTAIN J. R. DE LAMAR, GLEN COVE, L. I., NEW YORK
C. P. H. GILBERT, ARCHITECT



THE AMERICAN ARCHITECT

SEPTEMBER 17, 1919



"PEMBROKE," ESTATE OF THE LATE CAPTAIN J. R. DE LAMAR, GLEN COVE, L. I., NEW YORK
C. P. H. GILBERT, ARCHITECT

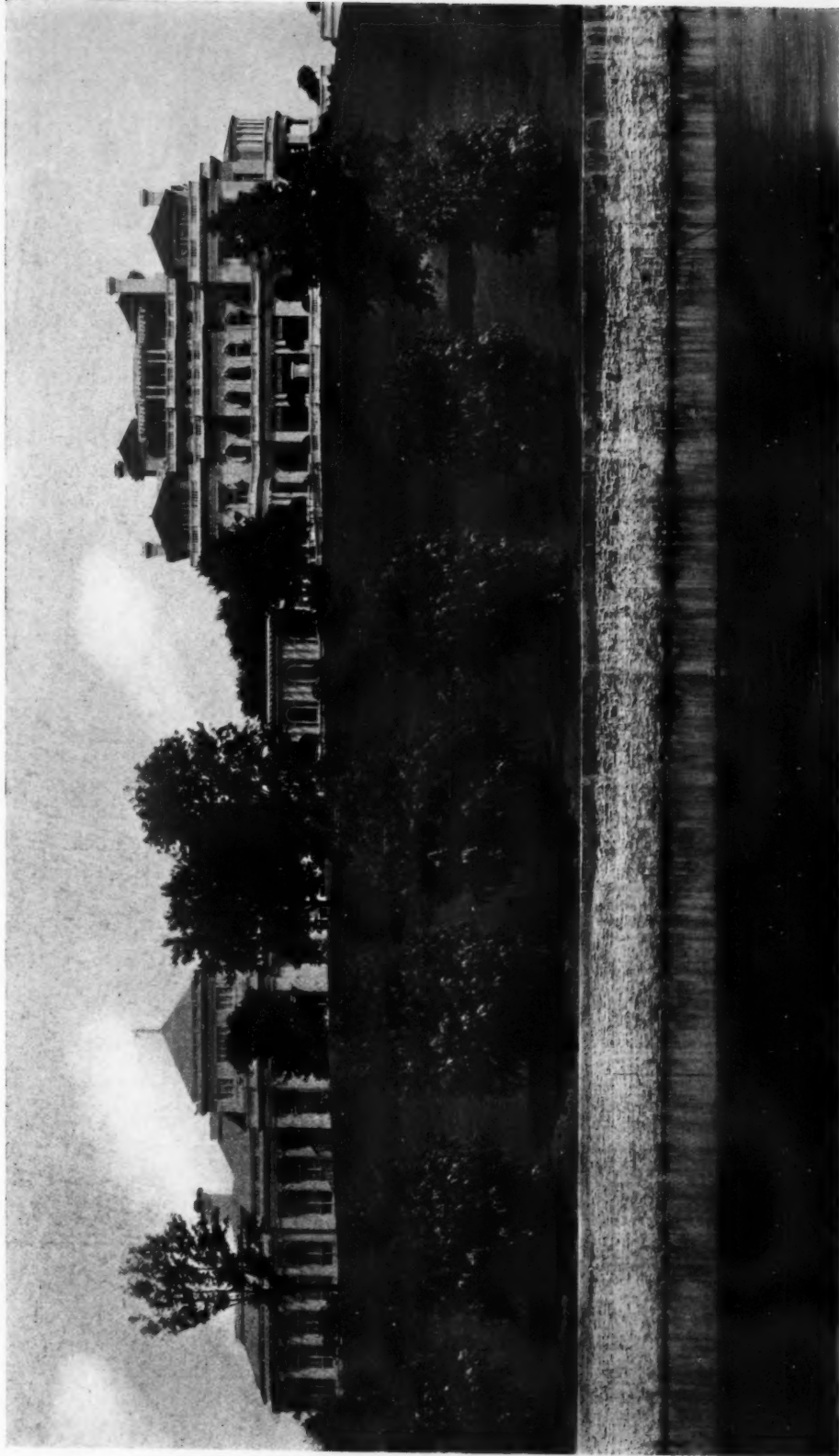


PLATE 105

WEST FRONT, FROM LONG ISLAND SOUND, SHOWING THE HOUSE, PLANT CORRIDOR AND TROPICAL HOUSE

"PEMBROKE," ESTATE OF THE LATE CAPTAIN J. R. DE LAMAR, GLEN COVE, L. I., NEW YORK

C. P. H. GILBERT, ARCHITECT



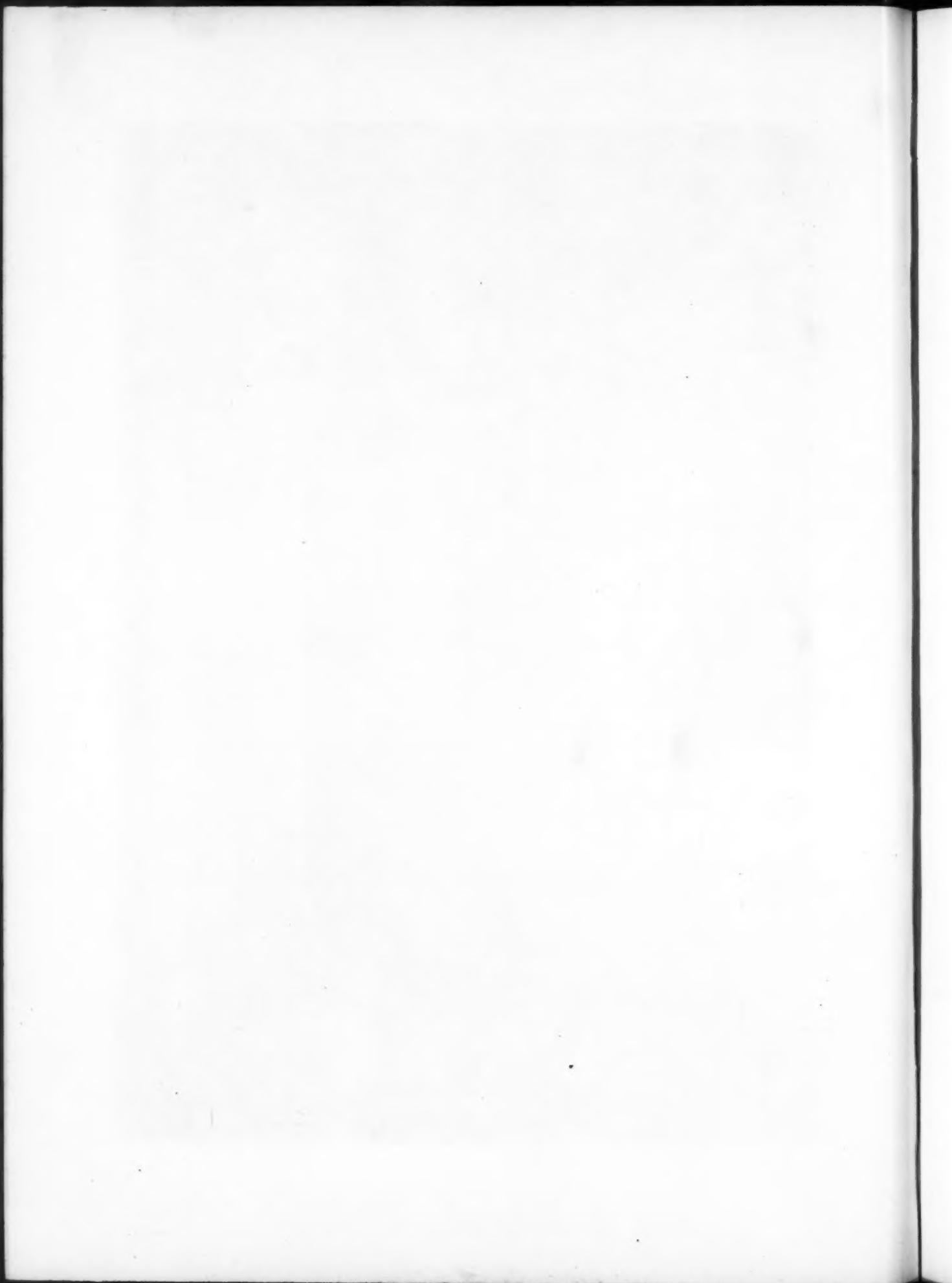


PLATE 106

THE FORECOURT FROM SOUTHWEST

"PEMBROKE," ESTATE OF THE LATE CAPTAIN J. R. DE LAMAR, GLEN COVE, L. I., NEW YORK

C. P. H. GILBERT, ARCHITECT





THE FORECOURT FROM THE TEA PAVILION

"PEMBROKE," ESTATE OF THE LATE CAPTAIN J. R. DE LAMAR, GLEN COVE, L. I., NEW YORK
C. P. H. GILBERT, ARCHITECT

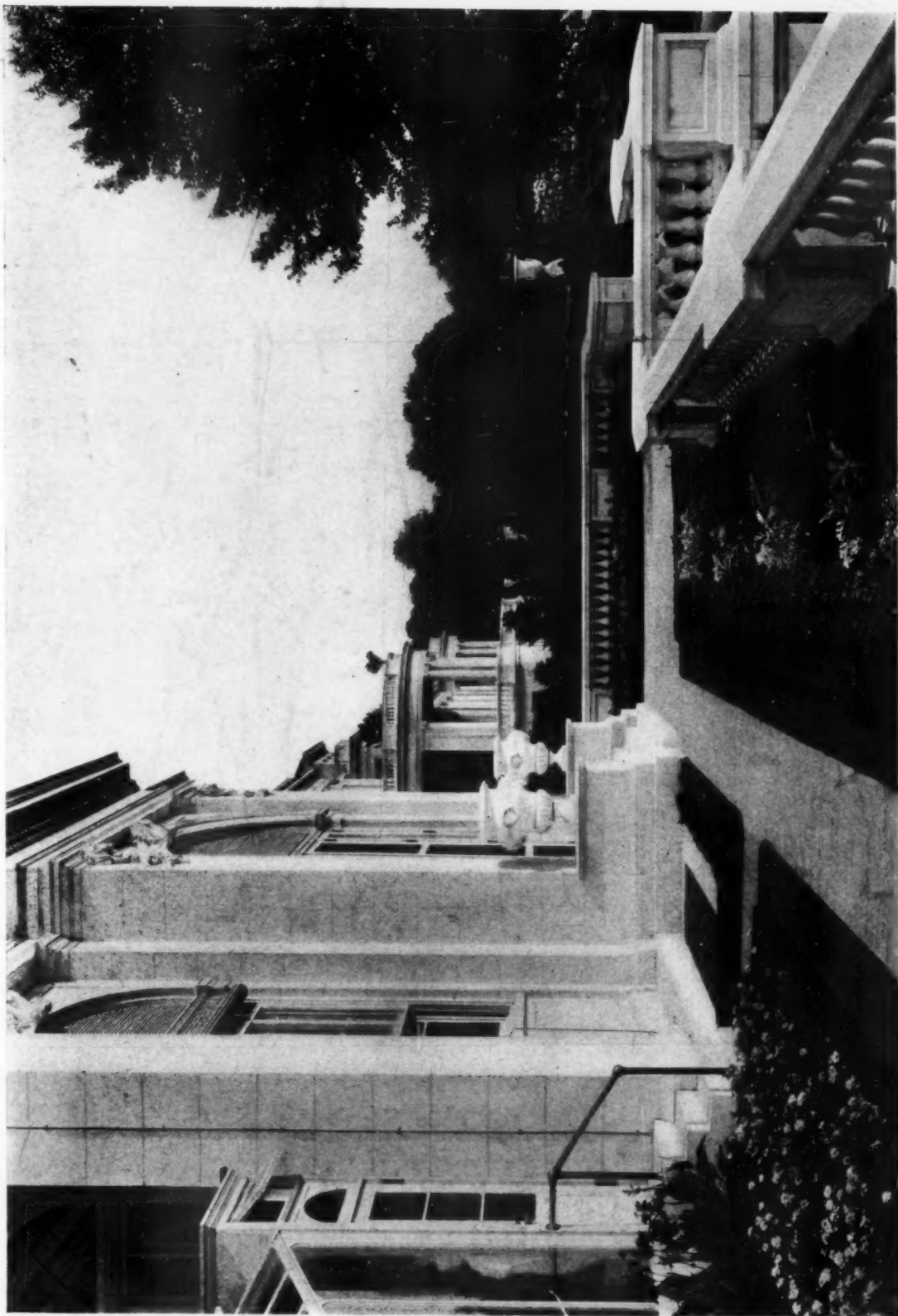




WEST TERRACE

"PEMBROKE," ESTATE OF THE LATE CAPTAIN J. R. DE LAMAR, GLEN COVE, L. I., NEW YORK
C. P. H. GILBERT, ARCHITECT





VIEW FROM NORTHWEST

"PEMBROKE," ESTATE OF THE LATE CAPTAIN J. R. DE LAMAR, GLEN COVE, L. I., NEW YORK
C. P. H. GILBERT, ARCHITECT



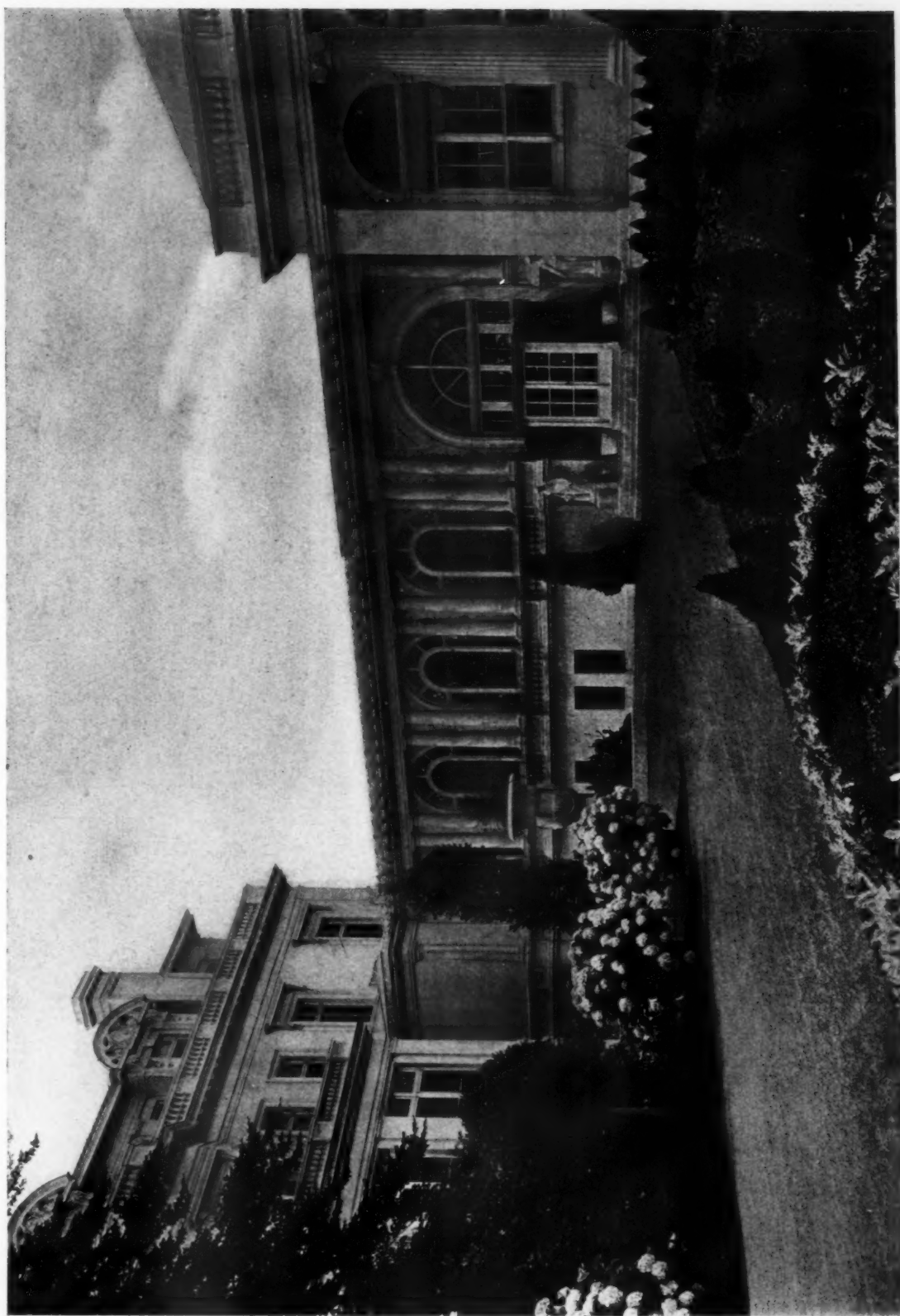


PLATE 110

NORTH END OF HOUSE, WITH ENTRANCE TO PLANT CORRIDOR, TROPICAL HOUSE AND PALM GARDEN
"PEMBROKE," ESTATE OF THE LATE CAPTAIN J. R. DE LAMAR, GLEN COVE, L. I., NEW YORK
C. P. H. GILBERT, ARCHITECT





PLATE 111

DUFFIELD BRANCH LIBRARY, DETROIT, MICH.
MARCUS R. BURROWES, ARCHITECT



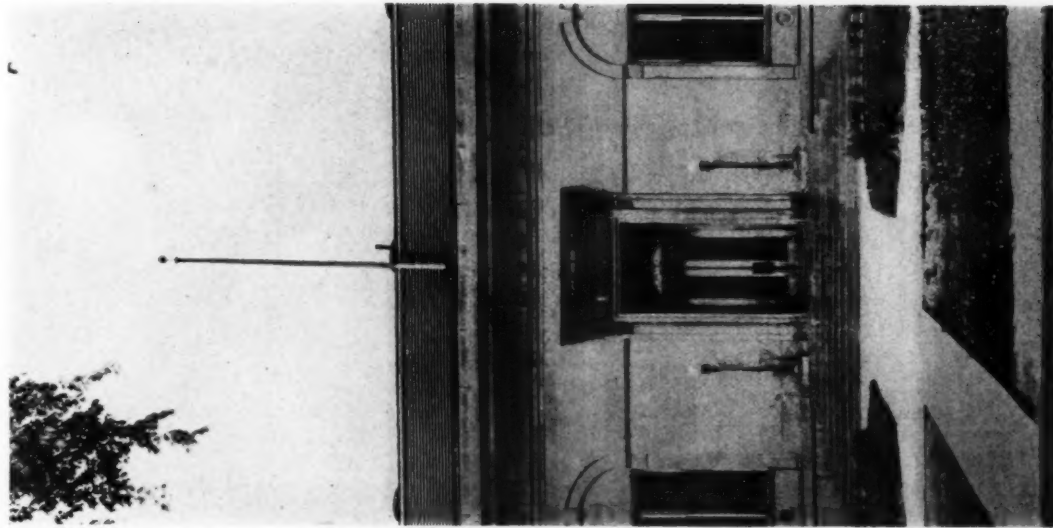
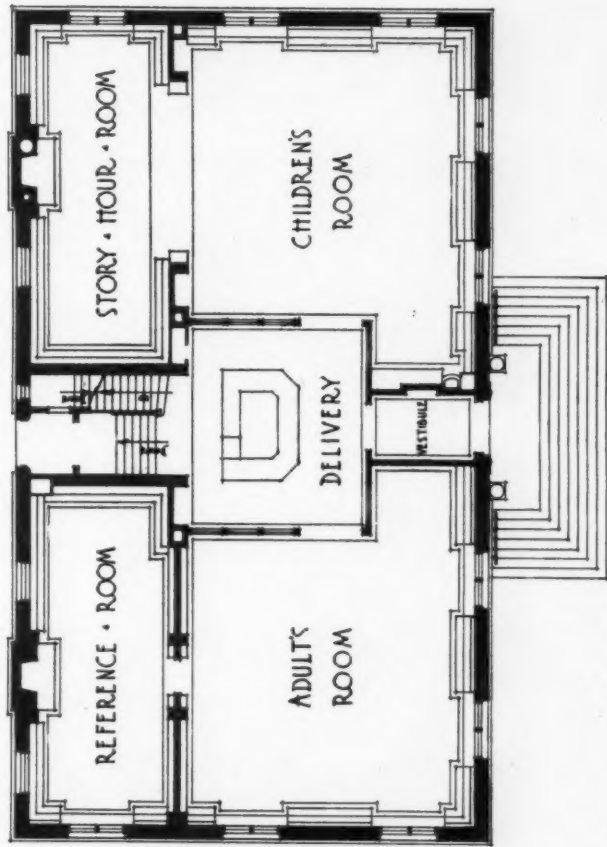
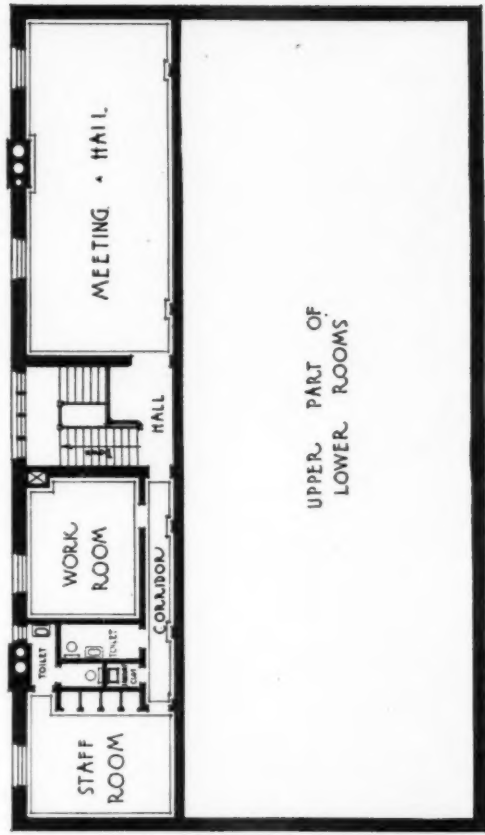


PLATE 112



DUFFIELD BRANCH LIBRARY, DETROIT, MICH.
MARCUS R. BURROWES, ARCHITECT



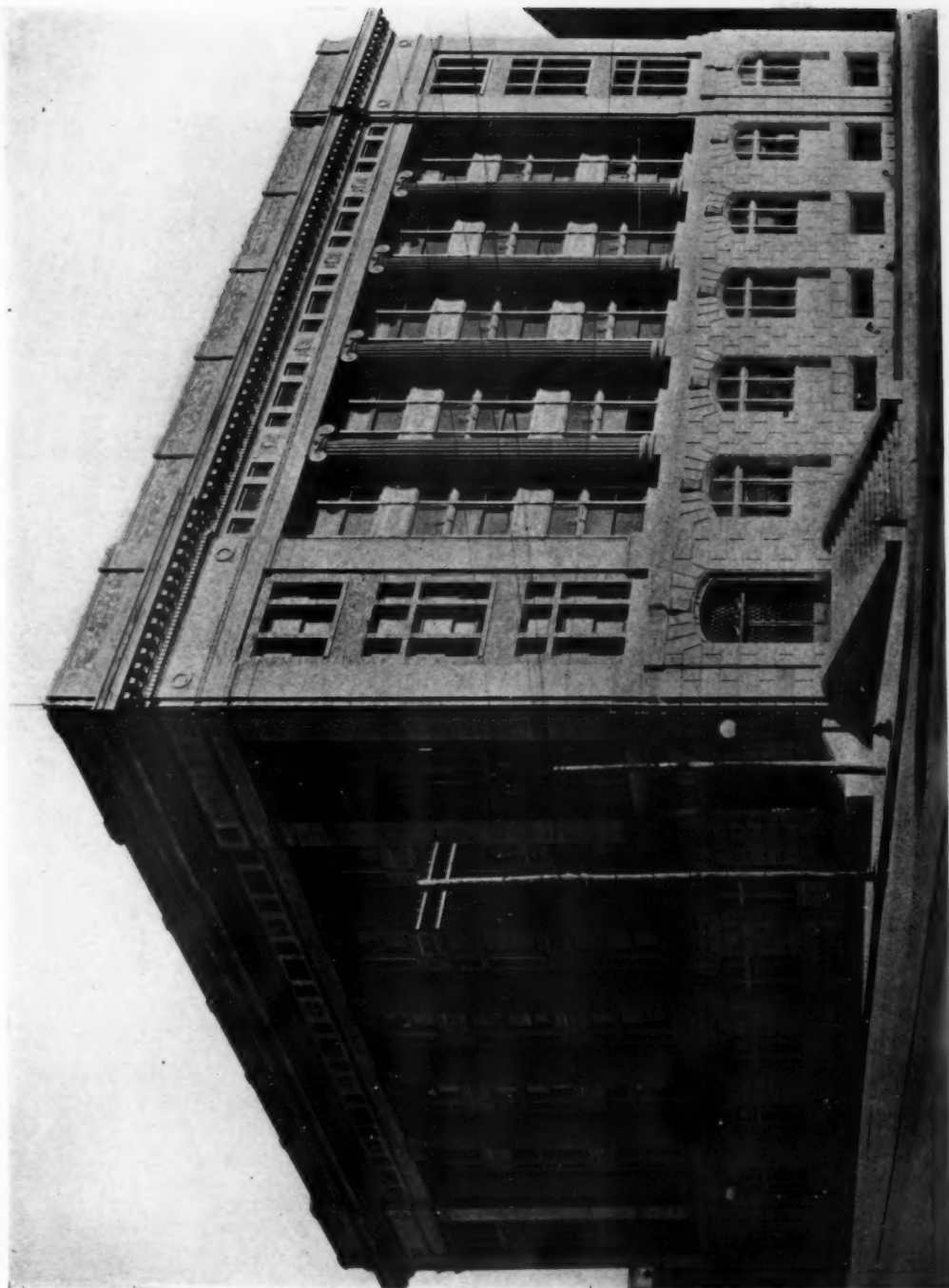


PLATE 113

LAND OFFICE BUILDING, AUSTIN, TEXAS
ATLEE B. AYRES, ARCHITECT



Current News

Late Happenings and Comment in the Fields of Architecture and the Allied Arts

Report on Standardization of School Building Measurements

The following report of the Committee on Standardization of School Building Measurements and Cubical Contents was adopted at the meeting of the National Association of School Accounting and Business Officials of Public Schools, recently held at Cleveland, Ohio.

The Committee was appointed by the National Association of School Accounting and Business Officials of Public Schools.

The following rules are submitted to obtain a method by which school buildings may be measured, first, in regard to educational utility; second, as to construction; third, for cubic contents, and fourth, for measuring subdivision of cost items.

Educational Classifications: School buildings shall be classified educationally as

Lower Elementary
Upper Elementary
High or Secondary

Lower Elementary: Shall be defined as a building containing class and kindergarten rooms, together with the usual accessory rooms, such as principal's office, teachers' rooms, play rooms, toilets, etc., and used for the lower elementary grades only.

Should a school building of this type be provided with assembly room, gymnasium, or other special rooms, it shall fall into the next classification.

Upper Elementary: Shall be defined as a building containing lower or upper elementary grades, and in addition to the regular class and accessory rooms, an assembly hall, gymnasium, and such special rooms as may be included for upper grade or special work, which may include elementary science, elementary industrial training and household arts.

This classification would thus include the Junior High School, the Elementary Industrial or other types of special elementary schools.

High or Special: Shall be defined as a building containing class rooms, recitation rooms, laboratories, and such special rooms as are necessary for classical, technical, commercial, industrial, household arts, normal, agricultural or other special purposes required for secondary or junior college education.

CONSTRUCTION CLASSIFICATION—

Type "A" Schoolhouse: A building constructed of fire-resistive material, including its roof, windows, doors, floors and finish.

Type "B" Schoolhouse: A building of fire-resistive construction in its walls, floors, stairways and ceilings, but with wood finish, wood or composition floor surface, and wood roof construction over fire-proof ceiling.

Type "C" Schoolhouse: A building with masonry walls, fire-resistive corridors and stairways, but with ordinary construction otherwise—i.e., partitions, roof and finish.

Type "D" Schoolhouse: A building with masonry

walls, but otherwise ordinary or joist construction and wood finish.

Type "E" Schoolhouse: A frame building constructed with wood above foundation, with or without slate or other semi-fireproof material on roof.

RULE FOR OBTAINING CUBIC CONTENTS

Cubic Contents: To obtain the cube of a school building, multiply the area of the outside of the building at the first floor level by the height of the building from six inches below the general basement floor to the mean height of the roof. Parapet walls, stacks and other projections beyond the mean height of the roof, as well as balconies and porches not contributing to the actual usable floor area of the building, are to be ignored. Where portions of the building are built to different heights, each portion is to be taken as an individual unit and the rule as above applied.

COST ITEMS

The cost of School Buildings shall be divided into four general items:

1. Cost of Land and Grading.
2. Cost of Building Construction.
3. Cost of Furniture.
4. Cost of Architects, Engineers, Brokers and Supervision Services.

Cost of Land and Grading: Should include the cost of the site and the necessary grading to place it in condition to receive the building. Should the site be abnormal and require piling, filling, quarrying or other unusual expenditures to place it in normal condition to receive the building, such costs are also to be charged up against the site and not the building.

Cost of Building: Should include (a) General Contract and any sub-contracts pertaining to the general construction of the building, as for example, excavating, masonry, fireproofing, steel construction, carpentry, cabinet work, sheet metal work, roofing, painting, etc.; (b) all contracts for electrical work, plumbing, vacuum cleaning, sewage disposal, heating and ventilating, clock systems, elevators, or any other contract for any part of the building not included above necessary to complete the same, ready for occupancy; (c) the cost of all site improvements, such as walks, drives, yard paving, fencing and landscape gardening.

Cost of Furniture and Equipment: (a) Should include cost of all portable furniture and cabinets, all laboratory and shop equipment, and all other equipment which would not be classified as "Educational Supplies"; (b) all decorations, including special painting or decoration of any kind that may not be included in the general painting contract; hangings, rugs, pictures, casts and other forms of decorations furnished at the time of the occupancy of the building which are not classified as "Educational Supplies".

Cost of Architects, Engineers, Brokers and Supervision Services: Should include the cost of all plans and specifications, architects, engineers, landscape gardening and supervision and all other experts' services and expenses.

THE AMERICAN ARCHITECT

Cost per Cubic Foot: To obtain cost per cubic foot of building, divide the cost of building by the cubic contents, both as obtained above.

Cost Per Pupil: The divisor to be used to determine the cost per pupil shall be determined by the number of pupils normally accommodated in rooms designed for classes only. In arriving at the number of pupils, special rooms are to be figured at the actual number of pupils accommodated for one class period only. Auditorium or assembly rooms are to be ignored, but gymnasiums may be figured for one or two classes, as the accommodations may provide. No gymnasium, however, shall be accredited with two classes if below 40 by 70 feet in size.

(Signed) HERBERT L. PATTERSON, *Chairman*;
EDWARD C. BALDWIN, and WILLIAM B. ITTNER.

Richard E. Schmidt Urges Increased Production

Outlining his convictions on the topic of high building costs, Richard E. Smith, F.A.I.A., of Chicago, states that if everyone does not produce as much as he did when prices were lower than they are now, the cost of living will never approach the old level. In the latest bulletin of the Illinois Society of Architects, Mr. Schmidt states:

It is obvious that the current high cost of living is due to a general advance in the market price of probably every natural and manufactured product required by all of the human activities, and the failure of wages and income of large numbers of people to increase in the same ratio. The advance is most noticeable to the mass of the population in everything required for the three most necessary elements of existence, viz.,—food, clothing and shelter. Inasmuch as architects are particularly interested in the production of the latter, I will confine my remarks to this element of living costs.

It does not seem to be appreciated that almost every article requires shelter of some kind for its production or storage before it is consumed, so that the increased cost of factories, warehouses, elevators, stores, etc., must enter in the cost of such products. Rent or interest for such buildings, as well as taxes, up-keep, fuel, light, water, insurance, etc., are large factors.

We who are better acquainted with the increases in cost which have taken place in buildings in the past few years will find these understandable and a fruitful subject for examination.

Many remember that good carpenters fitted and hung ten ordinary hardwood doors in eight hours when they were receiving 35 cents per hour in the early nineties; at the same time they mortised the lock, applied bolts and thresholds in one-half hour on each door and some of the best carpenters would even hang as many as 12 to 14 ordinary hardwood doors, with three cuts to each door, in a day.

The writer remembers that carpenters hung as many as eleven heavy flush veneered hardwood doors in eight hours in a large building he designed and supervised in the middle nineties. At the same time rough lumber was obtained at \$15.00 per thousand, including the siding for frame buildings. Maple flooring, scraped slightly, was figured at \$22.00 per thousand and oak flooring laid, scraped and sand papered, \$30.00 per thousand. Those were fair figures which left the contractor a little gain on each item.

It is well within the recollection of builders in this city that it was customary for masons to lay 2,000 and some-

times 2,500 brick in a working day of ten hours; for cement finishers to finish 2,000 square feet of floor in a day's work.

To-day we find that only about one-third of this amount of work is performed by the journeymen in eight hours. The decrease of work performed was gradual for a long time, but has grown more rapidly in the last ten years.

Carpenters' wages have advanced from 35 cents to 80 cents per hour and it may be almost three times as great as the first figure when the current strike is settled. The wages of bricklayers, laborers, stone cutters, etc., have not increased to as great an extent, but have almost doubled.

To-day, when none of the craftsmen will do as much work as they did at that time, the same amount of work is costing almost three times as much.

If everybody does not produce as much as he did when prices were lower than they are now, the cost of living will never approach the old level again. Large numbers of people cannot reduce their output without affecting themselves and all others, and it is obvious that the effect of shorter hours, which are demanded almost universally, and the reduction of work performed has reduced the total volume to such an extent that the demand has exceeded the supply and increased the cost.

In view of reduced production and higher wages of building mechanics, also the labor cost of preparing and transporting materials, which has increased in a similar ratio, the cost of shelter of the same quantity and quality has probably increased upwards of 100 per cent in a few years.

Many people who are suffering the most, the laborer, mechanic and other persons of small or moderate income who are raising the loudest objections, generally by striking for higher wages, do not seem to appreciate, or are not willing to admit, if they do appreciate it, that these very acts are, to a considerable extent, the cause of the constant rise in prices, affecting them as well as all other people.

Undoubtedly, profiteering in its generally accepted meaning is also a big factor, but it is afforded a secure screen by the actual increase in the cost of production.

The demands made by the state, in the form of excessive conveniences in plumbing, lighting and ventilation of work shops, largely due to lobbying labor and its biased representatives, supported by illogical requirements made by health officers, antiquated building ordinances, and other code requirements which were seemingly worded to protect a particular set of building material dealers or journeymen, also add to the cost of every building in order that the occupant may obtain a proper return and obviously are also large elements of higher costs.

It must be remembered that in addition to reduced production the economic effects of the war will stay with us, perhaps, for a long time, and that the cost of living cannot and will not recede until Europe is restored as a producer of food and all other forms of wealth.

New Building for Treasury Department

WASHINGTON, D. C., Sept. 15.—The Treasury Department proposes to enlarge the quarters of the Liberty Bond department. Congress has been asked to appropriate \$300,000 for the construction work. The building will be located south of the new Bureau of Engraving and Printing.

Paris Housing Problem Acute

The housing problem in Paris is probably more desperate than in any city in the world, as recently indicated in Associated Press correspondence describing the situation. There has been going on a pitiable struggle between renters and Parisian landlords who were seeking to double and treble the income from their properties. Tenants resisted and were ordered to vacate. That they could not do, for there were no apartments to rent at any price. They stuck to their rented homes, and some property owners hesitated to evict them, owing to the dangerous situation that would be brought about by thousands of homeless people.

The fight finally resolved itself into a deadlock. According to the Associated Press, house owners still refuse to extend leases and refuse to advertise for rent apartments that had been vacated. Tenants, in the predicament that they were unable to find new quarters, refused to move at the behest of the landlords, while the courts ceased to entertain applications for writs of expulsion, there being not enough process servers to handle those already issued.

Fifty thousand notices to vacate were served on tenants for the end of the second quarter of this year. Such notices were received by all the tenants of some apartment houses, showing how generally landlords have sought to increase rents. The extents of the movements provoked the passage by the chamber of deputies of a bill extending for two years all verbal leases at the beginning of the war. Leases made prior to the war already were protected by decrees and previous legislation.

Housing Conditions as Affecting Present Labor Situation

The housing problem lies at the root of much of our present labor trouble, writes the Boston *Transcript*. In the crowded industrial districts it is inevitable that factory laborers, for their own convenience and economy, live close by the place of their work. Frequently the sites available for homes in such districts are decidedly unsatisfactory. Sanitation and drainage are often bad. The houses, in most cases built by real estate speculators, are of the cheapest and worst sorts. Crowding is common. But in such houses laborers must live if they are to do their work and gain a living. In many cases no effort is made to combat grime or filth, and no steps are taken for civic betterment or improvement.

Just as the laborer is powerless to change these conditions of his own volition, so likewise is the employer. The finances of his factory in most cases will not permit him to purchase land or erect homes of a suitable sort. Thus the sole recourse of a laborer wishing to better his own condition is to demand more money. It is the only method by which he can increase the sum total of his happiness. The employer, as a result of these higher wages, is more powerless than ever to remedy the existing conditions. Thus by the excessive overhead rent, demands for inferior property, the employee suffers, the manufacturer suffers, and eventually the general public suffers.

The only relief from this intolerable condition lies in a definite stand by the State or National Government. England has faced the problem, and a definite housing policy has been formulated and put into action by the Lloyd George régime. The United States, either by national or State action, must also face the situation, and at once, if

the present labor unrest is to be alleviated. Steps should be taken toward the institution of a definite and satisfactory building program that will include temporary improvements and prevent profiteering in rentals. Later an opportunity can be afforded to encourage the workingmen to own their own homes.

Profiteering in industrial rents means increased wages, increased costs, and inevitably increased prices to the general public. But deeper than this lies the fact that only a contented workman is a good workman. The present unsavory living conditions breed discontent. We must go to the root of the question if we are to readjust our national life along satisfactory lines.

Investigate Government Plant Construction

WASHINGTON, D. C., Sept. 15.—Multiplication of construction costs has been revealed in the congressional inquiry into the erection of the government shell-loading plant at Fort Delaware. The House sub-committee which is investigating expenditures in the Ordnance Department has made public testimony taken at recent hearings to show that the uncompleted plant has cost the government to date \$14,000,000 though the contract was let on the cost-plus basis with estimates from \$1,250,000 to \$1,500,000. The exposé was brought about by a request of the War Department for an additional appropriation of \$185,000 for the purchase of land.

Industrial Training Helps Solve Industrial Unrest

Colonel Arthur Woods, Assistant to the Secretary of War, is urging 20,000 factory owners and industrial corporations throughout the country to undertake industrial training for their workers at the same time that they pay them a sufficient living wage during the period of their apprenticeship.

With the cost of living soaring daily higher, the question of efficiency in production and manufacture has come to the front as the issue of most fundamental importance in the solution of the living problem. It is becoming clear that some remedy must be found for a situation in which thousands of American workers, earnest, respectable men who are doing their best every working day of the week, are nevertheless attaining an output of not over 35 per cent of their best human capacity.

American factories are to-day using six million or more workers to do what four and one-half million men could do as well if they were fairly trained. This means that American manufacturers are paying the wages of one million and a half workers who are really adding nothing to the total output of the industrial system. In the manufacturing section of New England—and a few portions of the United States are more important in the production of our daily necessities—factory experts have stated that the factories are not more than 60 per cent efficient in output, merely for want of more skilled and intelligent man power. This does not compare very well with a pre-war Germany, in which individual industrial training was so successfully operated that 65 per cent of the managerial and technical force consisted of men who had started work as unskilled or semi-skilled labor.

In aggravation of the high cost of living, the entire question has been brought to a head just now by the large

numbers of soldiers returning to civilian life from the military service. Many of these men went to war unskilled workers, but because of their experience have come back with greater ambitions and larger vision. They have the psychological start for better things. They have the desire to improve their condition and their earning power. But they have neither the skill, nor the means for developing the skill, without which their ambitions cannot possibly be realized. They must have industrial training immediately and on a sufficiently large scale to offer an opportunity for advancement to every man who wants one and deserves it. These men must earn a living wage while they are learning, and must be taught intensively enough so that in a short time they will be able to realize their ambitions and to increase their earning powers.

That greater production means lower prices is axiomatic. That this result can be accomplished with those very men who are at present classed as unskilled laborers is abundantly proved by the experience of a number of factory owners. The superintendent of one of the biggest metal working establishments in the country states that mechanics who had been with them for two years were given one week of training, as a result of which they doubled their individual production. In another plant a worker returning from the training department by eleven o'clock did what has been estimated formerly to be a day's work. In a shoe factory in Brooklyn, sixty soldiers were recently employed who had had no previous training in shoe production, and who were taken on with the avowed intention of being put through the training course in order to be taught their trade. The men started at fifteen dollars per week and after a training varying from three to six weeks some of these men are earning as high as seventy dollars a week.

Bearing in mind these random illustrations of the possibilities of industrial training, what is the country doing today to accomplish the same result on a larger basis? The answer can be given briefly without noticeable inaccuracy. It is doing just exactly nothing at all. The United States spends seven hundred million dollars annually on general education. It spends five thousand dollars of public money on anyone who has sufficient means to live without wage-earning in the years between sixteen and twenty-one. But it seldom spends a single dollar on making a mechanic. Where millions are spent for a few thousand professionals, nothing is spent for the millions who produce our necessities. So long as this condition persists, no remedy for the high cost of living can be successful, because it is only by going to this fundamental feature of the problem that anything can be accomplished.

A Question of Nomenclature

The owner of a villainous residence once asked my opinion, writes "Aero" in *The Architects' Journal*, regarding the garden elevation of his treasure. It was a strange jumble of sticks, bricks, plaster, and tiles. "What style would you call it?" he remarked, "rough-caste?" With dignity I gazed at the catalogue of materials in situ, and said coldly, "Half-caste would be more appropriate."

Correction

In our issue of May 28, page 746, the cut of the Antwerp Branch, London County, Westminster and Paris Bank was attributed to *The Architect*. Credit should have been given *The Builder*.

Townsend Bill Would Create Federal Highway Commission

To establish a national highway policy, to create a Federal Highway Commission which shall locate, construct and maintain entirely at the expense of the United States a national highway system, and to encourage efficient and economical highway transportation, is the purpose of the Townsend Bill, a measure now pending in the Congress of the United States. This measure was introduced by Senator Townsend, chairman of the Senate Committee on Post Offices and Post Roads, on June 2, 1919, read twice and referred to the proper committee on June 3, where it now awaits further consideration following the disposal of other important legislation.

Taking up its provisions in more detail, the purpose of the Townsend Bill is to enlarge and concentrate the administrative powers of the government in its relation to road building. It proposes to do this by creating a special body having exclusive charge of the administration of Federal highway affairs. It proposes to concentrate this enlarged power by laying out a certain definite policy of highway construction, and setting the newly created power to the accomplishment of that task.

The Townsend Bill is not an expedient. It is framed to provide for the future. It recognizes the fact that the increased use of the public highways of the United States has brought about a condition which requires all hands on the job—not one waiting for the other, but each assigned to a certain definite part of the logical connections at the boundary lines of each state, and the state highway departments on the other hand developing the main markets routes within state jurisdiction.

It is the purpose of the Townsend Bill to clothe the Federal Highway Commission with initiatory powers in order to insure the economical location and development of the national system. It will be in no wise dependent upon the other factors outside of itself. In the location of the proposed national line it will take counsel with the states. Having taken counsel, it will proceed with the construction of the system along lines that will render the greatest good to the greatest number.

The one great purpose of the Townsend Bill is to get somewhere in fitting the roads to modern use in response to modern demands. It seeks to get the work done and put cost reducing roads into full operation throughout the entire country at the very earliest date possible.

The Townsend Bill makes certain provisions as to mileage. It proposes that the national highway system shall comprise not less than 2 per cent nor more than 5 per cent of the total mileage actually used as such in any state. To this extent each state will be relieved of future construction and maintenance of whatever mileage may be embraced in the national system. Each state therefore will benefit to the extent of having its financial burden lifted in the construction and permanent maintenance of its heaviest traffic lines, leaving it free to develop connecting lines within its own borders.

In proposing the creation of a Federal Highway Commission for the construction and development of American highways upon a scale commensurate with the needs of the present, and to make adequate provision for the future, the Townsend Bill is proceeding upon the logical lines of national growth.

Public highways have reached a degree of importance in public service which calls for a broadening of administrative powers, and the placing of such administration upon an equal footing with other departments of the gov-

THE AMERICAN ARCHITECT

ernment. This the Townsend Bill proposes to do without taking from, but adding to the functions of the state highway departments. It proposes to do this by establishing a definite permanent policy of practical and effective cooperation, to the end that a complete system of county, state and national highways may begin serving the public within the present decade.

Castles vs. Homes

The new German constitution specifically lays down the principle that a man's house is his castle, a principle that has found acceptance among Anglo-Saxon peoples for centuries, says a Decatur, Ill., daily. Within his home a man is safe from intrusion. He is at liberty to guard it from marauders with force of arms if necessary.

Indeed so long did the "castle" idea prevail in England that it shaped the architectural design of houses long after feudal days. The heavy front door with its oak frame and iron cleats was a survival of the cattle gate. Comfort was sacrificed to tradition. The servants' quarters were retained in that portion of the house so difficult of access that they might as well have been in separate dwellings. A story is told of a British maid servant who was regularly obliged to walk nearly a mile to make a pot of tea.

English families of wealth continue to live in houses where steam heat is unknown and where coal must be laboriously lugged to every room. The dearth of servants which resulted from changed economic conditions brought on by the war has caused such positive hardships to families accustomed to a wealth of service that a London newspaper has offered prizes for the best suggestions for revolutionizing the interiors of antiques designed houses. They must be made labor saving.

America has taken the longest step of any country in this direction for the servant problem has been with us for years. In comfort, convenience and labor saving qualities the average American home far surpasses anything in Europe. The "castle" idea died early in America.

Wants Municipal Art League

There is something more to city building than the mere construction of edifices and houses. There is something more in this enlightened age to real civic progress than mere expansion. The men and women of to-day are surfeited with bigness; they demand a little symmetry of construction, a little art of fashioning. The age to come will demand more and New Brunswick must prepare for that age now, says the *Home News* of that city.

Many cities have seen the wisdom of forming Municipal Art Leagues, and there is abundant field for such an organization here. There are too many blighted districts which need the touch of intelligent handling—too many shaggy, crumbling structures that form a fringe about the city's best endeavors in the construction line.

There is much room for improvement in New Brunswick. We have expanded thoughtlessly, and there is no use hiding the fact. We need a little art in our progress. Other growing cities have taken this into consideration, and are not only building fast, but well. The town should dress up a bit, as it's getting to be a big person now. Let's have a Municipal Art League and do something to remedy one of our few municipal ills.

Architects and Business Enterprise

Recent incidents have raised the rather delicate question whether an architect is justified in taking a prominent part in the formation of public utility societies, or in identifying himself publicly with any sort of commercial interest in the housing movement, states the *Architects' Journal*. Our advice having been sought in this matter, we very willingly give it for what it is worth. Apparently the "capping" by Queen Elizabeth of a courtier's timid advance holds good. To his amorous line, "Fain would I climb, but that I fear to fall," she replied, it is alleged, with the frigid comment, "If thine heart fail thee, do not climb at all," and the argument applies rather aptly to the timorous architect who would trade if he felt quite sure it was not an incorrect thing to do. While quite agreeing that, as a rule, a professional man should hold himself aloof from every form of trading, we admit that there are exceptions—that there are instances in which an architect possessing unusual business capacity should certainly employ it, whether in housing or in any other enterprise. This is surely a matter in which he need "ask no questions for conscience' sake." All that need be added to this opinion is that the architect with business capacity who thinks of joining the board of a public utility society or of any similar undertaking should be scrupulously careful to ascertain its soundness and bona-fides before lending his good name to it; but that is a common-sense precaution on which advice should be superfluous.

Art Gems Oddly Preserved

A rare survival of a bit of painting by Tintoretto, in all its original color, is sometimes shown to visitors in the studio of Nicholas Lokhoff, a Russian artist in Florence, Italy, who has become famous for his ability to create duplicates of the paintings of the old masters, states *The Christian Science Monitor*.

The fragment of canvas was a part of the border of a Tintoretto painting and had been turned in behind the frame on which the canvas was stretched, where it remained for centuries, well protected from the effect of light and time on the pigments, until Mr. Lokhoff noticed the overlapped piece of canvas and recovered the specimen of Tintoretto's painting.

What he found was a group of three large, rosy apples, clear and brilliant in coloring against a background of foliage; a bit of painting quite different from the rest of a picture which had been aged and dulled by time, varnishings and restorations. The entire picture, one must believe, was at first equally brilliant.

Determining the Strength of Wood by Its Density

A comparatively simple method of estimating the strength properties of timber from the density, or specific gravity, is set forth in Bulletin 676 of the Department of Agriculture, "The Relation of the Shrinkage and Strength Properties of Wood to Its Specific Gravity," which has just been issued. By the analysis of over 200,000 tests on wood of many species, the Forest Products Laboratory of the Forest Service has definitely established the relations between the specific gravity of wood and its strength properties. Equations for these relations have been worked out and have been reduced to such simple form that they

THE AMERICAN ARCHITECT

may be solved by arithmetic and without the use of higher mathematics.

In selecting timber for any given purpose, in comparing various species of wood, in estimating the properties of any particular wood, the equations should be found useful. To supplement the equations in determining in what way a species is exceptional and to what use it is best adapted there is a tabulation showing the variation from the average equation of each property of the various species tested. This variation from the average equation is often what determines the usefulness of a species for a special purpose.

Motor Transport Corps Most Popular Army Branch

The motor transport corps leads all other branches of the United States army in rate of recruiting in proportion to its authorized strength, according to official figures received at corps' headquarters. Since the beginning of the intensive campaign March 1, 8,600 men have been accepted and sent to camps, an average of 400 a week.

The reason for the decided preference being shown by new recruits and by old men re-enlisting for the motor transport corps is to be found in the plan of vocational training schools at the great M. T. C. base shops, the first of which, at Camp Holabird, was opened Sept. 2.

Under this plan a man may learn a basic trade from expert instructors in the finest shops of their kind in this country and at the same time receive good pay and free clothing, shelter, medical and dental attention, altogether more than equivalent to \$100 per month in civil life. After completion of the basic course men of ambition who grade above the average will have the opportunity of receiving post-graduate instruction in special lines for which they may be fitted, and finally it is planned to send men who stand out above their fellows in post-graduate work to a high-grade technical school for a year of special work which will fit them for commissioned rank in the motor transport corps, to become instructors in the M. T. C. schools, or to occupy responsible positions in the automotive industry.

Houses or Homes

The Cincinnati Better Housing League is an organization whose purpose is fully made clear by its title. The first report, now off the press, is an interesting summary of slum conditions, and only emphasizes the fact that poor housing in all its ramifications makes for bad conditions wherever its effect is noted. Cincinnati's experience is that of every large city, and the League for Better Housing is bravely going forward in the hope of achieving a result in the elimination of slums that will have a wide influence and a beneficent outcome.

Peace Statue for President Wilson

WASHINGTON, D. C., Sept. 15.—A statue representing the Goddess of Peace has been presented to President Wilson by Guillermo Tolentino of Malolos, Bu'akan province, Philippine Islands. The presentation was made at the White House. The sculptor conceived the inspiration for his work in the recent visit of the Philippine mission, pleading for the independence of the archipelago. The statue was completed in this city.

Redfield Favors Metric System

William C. Redfield, Secretary of Commerce of the United States Government, has declared himself in favor of the adoption of the metric system of weights and measures by the United States. His study of world conditions, as a manufacturer and as a Government official, has led him to this conclusion.

Secretary Redfield declares that to obtain world trade or to hold that which we have, we must adopt metric standards, because our customers demand it. It is easy to make the change, he says, and once adopted, the metric system, because of its simplicity, would prove invaluable.

"I think you will find that the view I have expressed is daily more representative of those who control the resources and credit of U. S. America," declared Secretary Redfield. "I would not cause needless expense to any American concern nor advocate that even necessary changes be made too suddenly, but I would point out to them that we can not think in 1919 the thoughts of 1914 (to our safety and advantage), because we are living in a different world. One of the problems involved in our adjustment to the new world is this matter of simplified weights and measures, and we may as well prepare at once gradually to make the changes necessary."

Research Reveals New Uses for Wood

A pair of green silken socks woven from fine fibers made from spruce and a coil of stout binder twine spun from twisted strands of fir are two of the typical products of Western woods displayed on a panel just sent out by the Forest Products laboratory at Madison, Wis.

The exhibit has been arranged as a demonstration of the practical results obtained through the research work at the Madison laboratory and merely goes to illustrate once more and to emphasize that sawn and finished lumber is the crudest commercial product of the trees.

Among the other interesting specimen products included in the exhibit are furniture reed and braid, used in making "wicker" furniture; paper rug yarn, extensively used in making bathroom mats and small household rugs; linoleum, with attractive patterns, made from wood flour and linseed oil; paper bagging that can be used in place of the jute bags now commonly employed in sacking grain; paper absorbent, which was quite generally used during the war as a successful substitute for absorbent cotton; artificial lath produced from a mixture of wood flour and used as a substitute for wood lath; basket braid, made from twisted strands of paper; insulating rods and tubes, binder twine, paper cloth, glue tissue wrapping twine, paper webbing and rope, all produced from paper which in turn has been produced from native wood.

The basis for products such as phonograph records, insulating tubes and artificial lath is wood flour, which consists of spruce wood chemically treated and ground into a fine powder. The versatility of this flour is demonstrated by the fact that it is used in the peaceful art of making toys as well as in the more violent purpose of manufacturing dynamite. A case containing gunpowder made from wood flour is included in the exhibit.

Manufacture of clothing from artificial silk, produced from spruce, presents wonderful possibilities. The pair of socks on display is a mere sample. A strip of silken cloth, tied with a silken cord—all made from spruce—show what can be done in this direction.

News from Various Sources

British estimate places number of houses required in United Kingdom to meet demands within next few years to be from 300,000 to 500,000.

It is announced in New York that French Government has notified New York engineering firm that it has been awarded contract for building 2,000 houses in devastated regions of France.

War Department announces that a report of A. E. F. Art Training Center for the quarter, March-June, 1919, has been received. States that a copy of report is available at Bureau for Consultation.

Premier David Lloyd George, in a recent address before the British House of Commons said: "In every direction we are spending more. We are earning less. We are consuming more, and we are producing less. These are facts. It cannot last."

Gov. W. P. G. Harding said in a recent address that he was opposed to embargo on exports to Europe, "inasmuch as we have \$10,000,000,000 of debt coming to us, which is dependent upon the industrial rehabilitation of Europe. We must help Europe or we won't be paid," he said.

Comptroller of Currency states to-day that deposits of national banks exceed by \$21,000,000 highest ever recorded. Ratio of loans to deposits June 30, 1919, 66.4 per cent, against 68.6 per cent June 29, 1918. Holdings of U. S. bonds and certificates shrink 856 millions since May 12, 1919.

J. J. Mitchell, President of the Illinois Trust Co., says: "We have reached the peak of the present strike situation and within a few weeks conditions will have materially cleared up. There is nothing to suggest a nation-wide disorganization of industry. Drift is now decidedly toward improvements."

Announced from Chicago that a budget of household expenses, purporting to show that \$1.918 is the minimum on which a family of five can live for one year, was introduced Aug. 12 by Chicago packing house employees appearing before Federal Judge Alschuler, Federal mediator, with demands for increased wages.

Dispatch from London states that Sir A. Geddes, discussing in House of Commons effects of increased coal prices, compared British iron and steel prices with those prevailing in U. S. Steel rails in England, he said, cost \$85 a ton, while in U. S. they were \$50, and steel plates for shipbuilding \$86.50, and in U. S. \$70.

Department of Agriculture announces that it has extended to foreign governments an invitation to appoint delegates or representatives to International Farm Congress at Kansas City, Mo., Sept. 25, 26 and 27, next. At this Congress there will be discussed farming methods and apparatus for tilling, planting and harvesting, care of orchards, raising of cattle and live stock, distribution and markets, and other subjects looking to better facilities and results to farmer.

Col. H. M. Tory, executive head of Khaki University of Canada, which has been carrying on educational work among Canadian soldiers in England and France, says: "My two years' work with soldiers has firmly convinced me that we have hitherto neglected a most important phase in educational question, namely, that of adult education."

Chairman Wadsworth, of Military Committee, has introduced an administration bill proposing acquisition by War Department of certain sites now being used as aviation fields. Bill, which was referred to Military Committee, would appropriate \$1,250,000 to continue permanent construction at Rockwell Field, Cal., and at Langley Field, Va.

Evidence that returned soldiers, particularly those who saw service overseas, are going back into civil pursuits better fitted for work is furnished by one of the largest employers in U. S. States that of more than 600 returned soldiers who have been employed by this corporation 43 per cent have proved more efficient than they were before military experience.

Cable from Rotterdam to Philadelphia *Public Ledger* states that its correspondent has heard that German government recently received proposals from certain American industrial associations, offering to carry out reconstruction in France and Belgium with American labor, machinery and material, provided that Germany was willing to bear expense of undertaking.

Charles Booth, Chairman of Bank of Liverpool and Martins, Ltd., addressing annual meeting of that company recently, said: "Chief financial problem of year has been course of foreign exchanges, and especially of American exchange. American exchange, being no longer artificially maintained, is gradually finding its natural level, and fact that pound sterling is now worth in America not more than \$4.50 is striking indication of huge indebtedness of this country and of other Allies to U. S."

Summary of British government's program, as set forth in recent speech of Premier Lloyd George in House of Commons, proposes establishment of a Department of Standards to promote and assist standardization in technical trade matters which he regards as increasingly important to British industry. Another point is his intention to introduce legislation to secure adequate measures permanently to protect public from harmful effects of trusts and combinations, should such protection become advisable.

Report on traffic conditions throughout the country for week ended Aug. 18 made to Director General Hines shows that strike of railway employees retarded movement of both freight and passenger business during period mentioned. Effect of strike on transportation business was especially noticeable in New England district and Pocatontas, Southern, Northwestern and Central Western Regions, statistics showing that in each of these regions there was a decided falling off in freight movement. Noted that with ending of strike conditions were rapidly returning to normal.

Financial and Commercial Digest

As Affecting the Practice of Architecture

Wilson Urges Increased Production to Reduce Living Costs

Persistent industry and steady, conscientious saving must be depended upon to avert the "national disaster" which lurks in the cost of living issue, according to President Wilson. Only increased production and real thrift, he said, can be effective in reducing prices and bringing conditions back to a point where wages and the cost of necessities will be properly balanced.

Increasing wages will not meet the situation, the President said. Wage increase in the great industries of the country under present conditions will only tend to push prices further and further out of reach, and the President asserted that wage re-adjustments must wait upon the outcome of the government's fight to pull down prices.

"Demands unwisely made and passionately insisted upon at this time menace the peace and prosperity of the country as nothing else could," said the President, "And this contributes to bring about the very results which such demands are intended to remedy."

The President, emphasizing the seriousness of the conditions which confront the country, said:

"We are face to face with a situation which is more likely to affect the happiness and prosperity, and even the life, of our people than the war itself. We have now got to do nothing less than bring our industries and our labor back to a normal basis after the greatest upheaval known to history, and the winter just ahead of us may bring suffering infinitely greater than the war brought upon us if we blunder or fail in the process. An admirable spirit of self-sacrifice of patriotic devotion, and of community action guided and inspired us all the time the fighting was on.

"We shall need all of these now, and need them in a heightened degree if we are to accomplish the first tasks of peace. They are more difficult than the tasks of war—more complex, less easily understood and require more intelligence, patience and sobriety. We mobilized our man power for the fighting; let us now mobilize our brain power and our consciences for the reconstruction. If we fail, it will mean national disaster. The primary first step is to increase production and facilitate transportation, so as to make up for the destruction wrought by the war, the terrible scarcities it created, and so as soon as possible relieve our people of the cruel burden of high prices."

Pointing out the thrift remedy for the situation now before the people, the President said: "Only by keeping the cost of production on its present level, by increasing production and by rigid economy and saving on the part of the people can we hope for large decreases in the burdensome cost of living which now weighs us down."

National Bank Officials Believe Price Stabilization Is Approaching

Due to the continued operation of the factors which resulted in the present high prices, stabilization of prices at new levels is approaching, is the opinion expressed by officials of the National Bank of Commerce in New York. The bank statement follows:

"It is the conviction of the business world that high, or at least rising prices, are evidences of a satisfactory situation. This conviction has a basis in fact, in that high or rising prices stimulate increased productive and commercial activity. Our high prices are unquestionably the product of a world-wide curtailment of production and increase of consumption, as a result of the war, of those goods necessary to a peace-time life; of an increase in the circulating medium and an expansion of credit which the conflict through which the world has just passed rendered inevitable; and of the increased margins of profit deemed necessary to meet the risks involved in a period of rising prices. The era of extravagance which has followed the restrictions of war has also been a factor in raising prices. When the buying public seems not only willing but anxious to purchase, regardless of cost, prices respond as a result of what appears to be a shortage of stocks when measured by demand.

"Even though actual hostilities are now ten months behind us, the causes which have resulted in present prices are largely operative and it seems likely that stabilization at a new price level is approaching.

"In periods of rapidly rising prices, the commercial and financial activity resulting is likely to increase out of proportion to the growth in productive activity on which it must ultimately be based. Although the actual physical adjustment of American production to post-war demands has been more rapid than the most optimistic could have hoped, production has not yet expanded to what must be its normal post-war level.

"Prosperity has but one possible basis. That basis is production. Volume of business in tons and dozens and bales is its true measure. There is now no fundamental reason to deter production and not until it has increased to its new peace-time proportions can we rest in the assurance that as far as its effects on our economic life are concerned, the war has passed into history. To this end, every man and woman industrially or commercially employed must produce to capacity. Not only is production essential, but capital must be accumulated at a rate rapid enough to offset the destruction which took place during five years. The consuming public must recognize that it cannot continue indefinitely the scale of expenditure which followed as a reaction from the self-denial of war, but that thrift for personal benefit is as essential as thrift for one's country. Only at that time when every individual capable of gainful employment is producing to capacity and spending conservatively, our economic adjustment will be complete."

Financing Home Building Is the Problem of To-day

Various Cities Have Worked Out Practical Methods of Aiding Construction Projects—Some Plans Have Been Highly Successful in Overcoming Serious Shortage of Homes in Many Sections of the Country

IN the nation-wide own your own home campaign, conducted in co-operation with the United States home registration service, Department of Labor, the problem of how best to finance building operations has been solved somewhat differently by various cities, according to their special needs.

A few weeks before the armistice was signed a company was organized in Seattle, Wash., to aid the small investor and to make possible the proper housing of workers engaged in war industries. Its scope included the buying, leasing and acquiring of real estate and personal property, the erection of dwellings and other buildings and the making of improvements of any kind on its properties. Its objects, as announced, are comprehensive, and it obtained power "to loan money on real estate secured by first or later mortgages, leaseholds, sale or purchase contracts, construction contracts or other interests in land and buildings, or other securities, and to negotiate, buy, sell or hypothecate all such mortgages or evidences of indebtedness or interest, whether by note, bond, debenture or other form, and whether as a whole or individual fractional units." The organization of a company authorized to deal in second mortgages and in real estate contracts where the lien is a secondary lien was intended to aid house builders who had no market for real estate contracts.

The corporation is enabled to advance to owners of vacant lots the difference between the cost of the house and the amount of money that could be loaned by insurance companies or other loaning agencies. The capital stock is \$200,000, divided into 2,000 shares of \$100 each. The company was organized as a patriotic and civic duty.

St. Paul, Minn., worked out a plan for the organization of a financing corporation, the object of which is "to assist wage-earners to the ownership of their homes and to that end to advance to them not to exceed 80 per cent of the value of the property" on which a loan is made, such advances to be repaid in monthly or other installments and to be secured either by mortgages, land contracts or obligations and evidences of indebtedness. The company may borrow upon notes, bonds and debentures such sums of money as may be necessary for the carrying on of business. Provision is made for a loan committee, consisting of the president, vice-president and three members of the board of directors appointed by the president. This committee must pass upon all applications for money, and, upon approval of an application, the form of security to be taken is determined. Provision is made for the appointment of a transfer agent and registrar of transfers.

South Bend, Ind., has outlined another plan. A committee of citizens, appointed to suggest a method of relief for the serious housing situation, reported in favor of a company to be organized under the voluntary association act, the object being the "borrowing and loaning money, buying and selling promissory notes, bills of exchange, accounts, choses in action, fees and all other evidence of indebtedness, and buying, holding, owning, mortgaging, leasing and selling real estate and personal property."

Provision is made for the buying and selling of stocks and bonds, directly or indirectly, on commission or other-

wise, to the same extent as an individual engaging in such business might do. The company can loan money to individuals, partnerships and to incorporated societies to assist in the improvement of real estate. It has a capital stock of \$500,000 divided into 10,000 shares of \$50 each; 4,000 shares are common stock and 6,000 preferred.

The company will be able to stimulate building on a scale which will be sufficient to cover the urgent needs of the time. The plan was proposed with a view to simplicity of method and with an idea of causing as little interference as possible with regular organized business, whether financial, construction or real estate. The purpose has been to leave the proposed owners and builders of property free, within reasonable limits, in the design of the houses to be erected, and to advise usual methods of financing as largely as possible through the banks and other institutions. It is stipulated that homes to be constructed by this company shall be upon real estate owned by the organization, such real estate to be purchased at fair values and to be accepted at such value in exchange for common or preferred stock in the company. It is the desire of the organization to build homes in lots of approximately twenty and to borrow approximately 50 per cent of the total investment upon 6 per cent first mortgage loans, such loans desirably to run for a period of five years, with privilege of reducing at any semi-annual interest-paying period.

While the company is prepared to build houses, the most important function of the proposed organization will be the financing of independent construction by individual citizens. Inasmuch as there are a large number of vacant lots scattered through portions of South Bend, the committee desires to encourage owners of these lots to take action in the line of immediate improvement.

Janesville, Wis., decided on the organization of a housing corporation, its three objects being—first, to provide attractive homes for the citizens of Janesville upon such terms as will enable them to live comfortably at moderate cost; second, to create a means by which manufacturing concerns can provide housing accommodations for employees, and, third, to encourage and foster building improvements of a character that will cause rapid and substantial growth of the city.

Subscriptions to the capital stock were made payable as follows: Twenty per cent upon organization, 40 per cent upon order of directors, at least thirty days later than first payment; 40 per cent at least sixty days later than first payment. The directors are empowered to employ a general manager and such other employees as may be necessary. The president also appoints the executive committee, finance committee and various other necessary committees, the personnel of which includes men specially fitted for the tasks assigned to them.

Niagara Falls, N. Y., found a serious shortage of dwellings at the close of the war. According to estimates, 10,000 houses will be needed within ten years. To meet present and future emergencies it empowered its industrial housing committee to study conditions and make recommendations. The committee's report, which was adopted, recom-

THE AMERICAN ARCHITECT

mended the organization of a housing corporation and presented three methods of financing building:

First, by a straight loan from a bank or individual, secured by first mortgage, the corporation taking a second mortgage for the difference between the loan and the cost of the dwelling, the second mortgage to be paid in monthly installments; second, a loan from a loan association, secured by a first mortgage, payable in installments, on which the company would take a second mortgage, payable at the end of a term of years and maturing when the first mortgage is sufficiently reduced to absorb the second mortgage; third, a loan for the full value of the building, the borrower giving back a first mortgage for an amount which would render it marketable at once, this mortgage being payable at the end of a term of years, the balance of the loan being secured by a second mortgage, payable by monthly installments.

Under any of these principles the corporation would take up the difference between the first mortgage and the cost of the dwelling. It was recommended that the capital stock of the corporation would be \$250,000, all of which would be common stock, with a par value of \$100 a share.

A plan that has been tested a number of years is that of the Billerica Garden Suburb, Inc., of Massachusetts, incorporated in June, 1914, with a capital stock of \$50,000. The scope of this company included the building of desirable homes at a moderate cost or rental, the purchase of real estate, the remodeling and repairing of dwellings and the management of houses or other buildings. The 5,000 shares of common stock at \$10 a share were issued in small blocks, provision being made for dividends at the rate of 5 per cent per annum, accumulative on all shares outstanding at the time. The property, affairs and business of the corporation are managed by a board of directors.

Late Building Material Reports

(From Our Special Correspondents)

Labor Willing to Stabilize Wages to Offset Lockout

While a complete lockout of construction activity in New York City has been expected the past few days, a recent conciliatory conference between financial interests and members of the Board of Business Agents of the New York Building Trades Council brought out the fact that labor was willing to stabilize wages, and assurance was given by the agents that they would agree not to strike to offset the lockout.

With the approval and co-operation of architects, many of whom were present at the meeting, the supervision of the job was arranged to be provided by men selected by the Board of Business Agents. Overtures were made to the board to man all building jobs closed by the master builders at a uniform rate of \$8 a day for all craftsmen, except bricklayers, who demanded \$1.25 an hour, or \$10.00 a day, on the allegation that their work is affected by weather conditions, and with an agreement not to go out on strike for a certain specified time covering the completion of all building work now actually under way.

This plan, it is believed, is already for final settlement and will go into operation as soon as the expected lockout of all building trades was promulgated by the employers.

Manufacturers Unable to Supply Demand for Building Materials

CHICAGO, ILL., Sept. 15.—Business in this city is satisfactory, notwithstanding the fact building is at a standstill, due to the refusal of the carpenters to accede to the agreement of the other trades to resume work and leave settlement of the wage question to an umpire. In practically all lines the one complaint is the inability of the producers of the basic commodities to supply the demand. In consequence of this shortage of materials factories are behind on orders, and there is a growing sentiment that

the labor question is the one problem requiring immediate Government regulation.

Interesting information concerning conditions is given in a report issued by Harris, Winthrop & Co., investment bankers of New York and this city. The pamphlet is a tabulated summary of the replies received to a questionnaire sent to 5,000 business men in all sections of the country. It is described as a "Cross Section of Facts and Feeling in Business America as Reported by Men of Affairs".

"It is evident that credit, the life-blood of business, is in abundant supply throughout the country, that savings bank deposits are increasing despite the high cost of living and the alleged insufficiency of wages, that business is prosperous almost everywhere and that merchants' stocks of goods are not abnormally large," says the report.

"It also is evident," continues the report, "that crops are upon the whole above the average, that they will be readily sold at present prices, that the Liberty bonds bought by the people are being generally held except where the smaller investors have found it necessary to sell them, and that in at least two cases out of three the returning soldiers are going cheerfully to work as employment is offered them."

The answers show that opinions seem to be evenly divided as to the permanence or impermanence of the present prosperity and the high prices and wages that are incident to it. Of the 1,687 who answered this question there are 1,624 who believe that it will be an average of at least two and one-half years before we will get any serious reaction.

The answers show that public dissatisfaction with government administration of the railroads is nearly unanimous. Out of a total of 1,650 correspondents reporting on the subject there are 729 who discern some "indications of Bolshevism or radical socialism present or prospective", but, says the report, this is not at all surprising, when we consider how widely Bolshevism has been advertised, and the willingness that our foreign-born citizens have always shown to toy with political novelties until they were Americanized in the process of the melting pot.

(For Building Material Price Table see page 398-A)

Department of Architectural Engineering



POWER PLANT—ERIE LIGHTING CO., ERIE, PA.
DAY & ZIMMERMANN, INC., ARCHITECTS AND ENGINEERS

Perspective view of the ultimate development of the plant. The section in the foreground is that completed. Note prospective garden and harbor development.

New Power Plant for Erie Lighting Co.*

DAY & ZIMMERMANN, INC., *Architects and Engineers*

POWER, that subtle force the grasping after which by Central Europe plunged the world into five years of terrible warfare, is the great agent by which the successful reconstruction of the nations will be accomplished. Not, however, individual, but industrial power, exemplified by the whirling machinery of mighty factories, as they produce articles essential to the well being of humanity.

This age in which we live places a "dollar" value upon all such products, yet we might more logically substitute a "power" value therefore, since the production of each requires the expenditure of a measurable amount of energy. Carrying this logic a step further, it is reasonable to conclude that the permanent prosperity of any community depends not upon the value of the possessions of its inhabitants, but rather upon the sum total energy they can

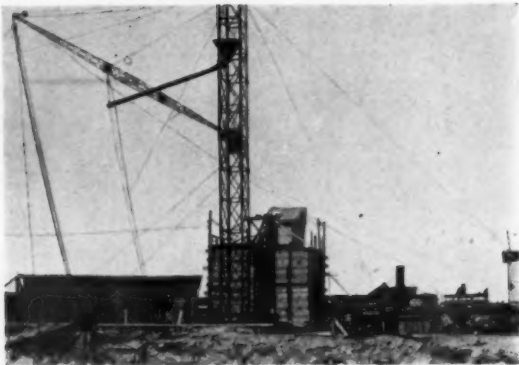
exert in the production of useful material. This has always been true, but to-day not physical, but mechanical energy is our medium, and electricity often our agent in accomplishing this end. Because of its extreme importance to the entire community the modern power house wherein this energizing agent is generated has been classed as a public utility.

To attempt to divorce the story of a city's development from the story of the development of its public utilities, or vice-versa, would resemble an attempt to describe a war without mentioning the armies or navies involved. The growth of a community is so thoroughly dependent upon the expansion of the industries which serve it, and particularly upon its public utilities, that the one might almost be said to be identical with the other.

The geographical position of the city of Erie, Pa., from an industrial point of view, is an important

*The editors are indebted to Messrs. Day & Zimmermann, Architects, and Mr. Fred B. Hoff, Vice-President, Erie Lighting Co., for information furnished in the preparation of this article.

THE AMERICAN ARCHITECT



No. 1. Getting ready to pour concrete.



No. 2. Early days of construction.

one, owing to the fact that it is near the tremendous coal fields of Pennsylvania, and enjoys the cheap freight rates of lake transportation for its influx of iron ore from the mines of Duluth and of other materials from the North and Northwest. The excellence of its land-locked harbor was recognized by Commodore Perry during the war of 1812, for it was at Erie that he built his famous fleet, from there that he sailed for action, and there returned on October 23, 1813, with the captured British squadron.

Surveyed in 1795 by William Ellicott, who completed the plan of the city of Washington, Erie was settled the following year and took its place at once as a port of commerce. The pioneer days were fraught with danger from Indians and wild beasts and the hardships that accompany "frontier" life, for at the time of its first settlement Erie was one of the far outposts of civilization. The growth of the population was at first slow, but gathered momentum with the increase in importance of Erie both as a port and as an industrial center. In the last twenty years its growth has been phenomenal—

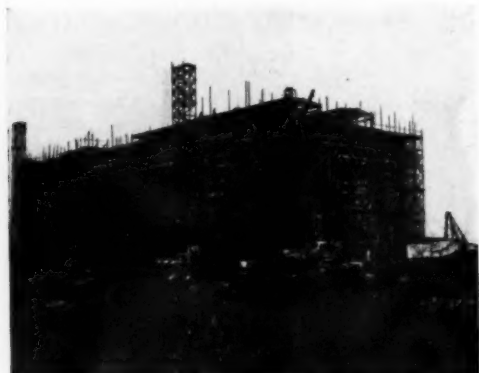
in 1900 the census granted it less than 53,000, while the latest statistics put the number of its citizens at over 100,000—an increase of nearly 100 per cent.

This recent rapid growth has been due to a number of causes, one of the chief of which was the development of its electric power plants. Electricity first made its appearance in Erie in 1888. From that date this new agent began to take its hold upon the city, as it has upon nearly every city in the world. The Erie Lighting Company, whose development has kept pace with the industrial growth of the city, is a reorganization of an electric company, named "The Erie Company," which in turn had taken over the property of the Merchants & Manufacturers Electric Light & Power Company, one of those speculative ventures which were common in the early days of electricity.

The reorganization of the Erie Company, with its change of name to the Erie Lighting Company, was undertaken primarily for the erection of a new and up-to-date plant, at the foot of Peach Street. The demand for electric power to operate manufacturing plants grew rapidly, and at the commence-

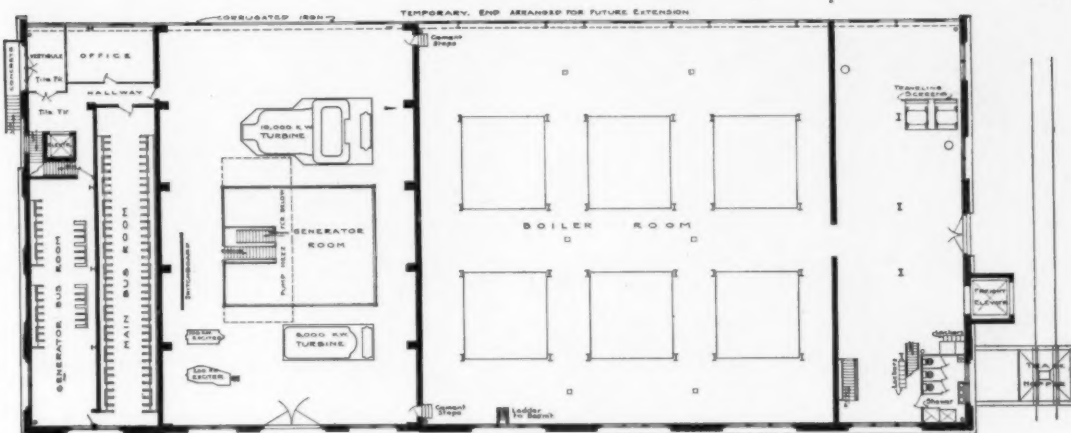


No. 3. A corner of the plant six weeks later.



No. 4. Seven months after ground was broken.

THE AMERICAN ARCHITECT



Main floor plan. Note railroad siding and track hopper for coal delivery.

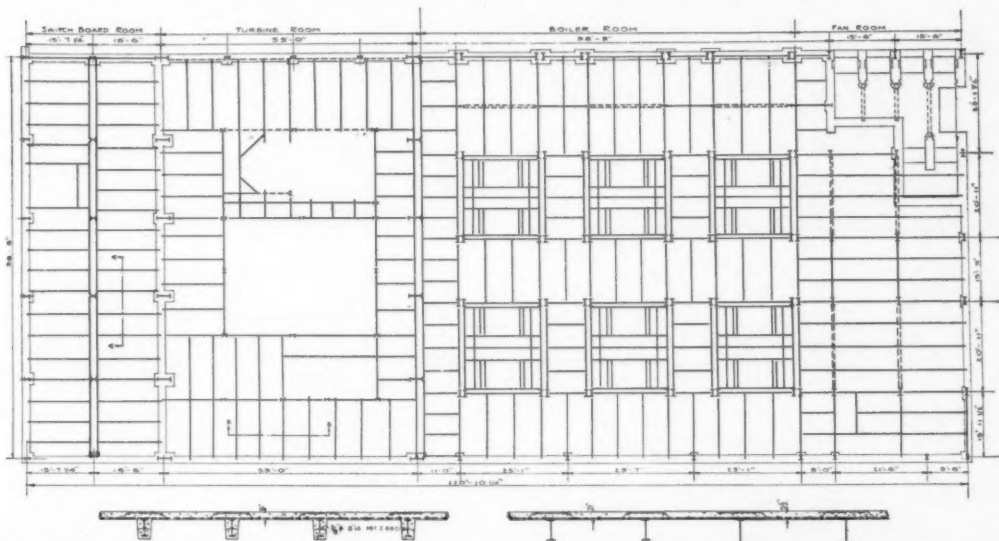
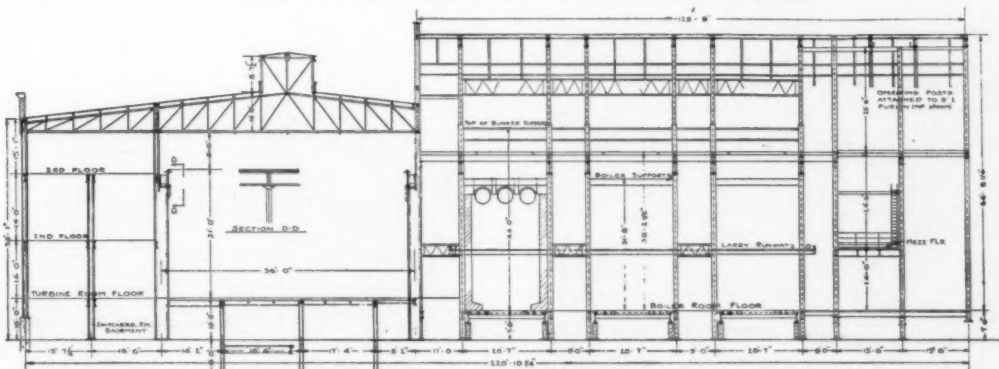


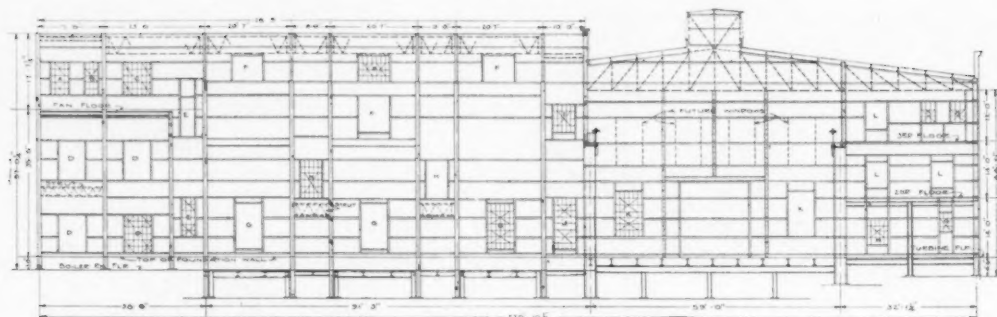
Diagram of steel framing for main floor. Floor construction shown to the left is typical for switchboard rooms, and that to the right for turbine, boiler and fan rooms.



Longitudinal section.

POWER PLANT—ERIE LIGHTING CO., DAY & ZIMMERMANN, INC., ARCHITECTS AND ENGINEERS

THE AMERICAN ARCHITECT



Elevation of north or temporary wall.

ment of European hostilities in 1914, the Peach Street Station was already embarrassed with the problem of supplying the amount of power required.

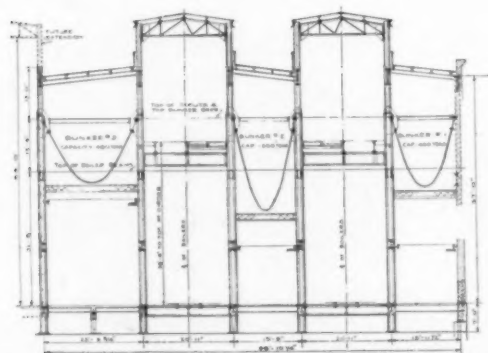
In the fall of 1915 The American Brake Shoe & Foundry Company secured a large contract from the British Government. The contract was of such size that it required the erection of a new factory. Owing to its geographical and industrial advantages, the city of Erie was considered as a possible location. The problem of power, however, was an important one, and at first seemed a stumbling block owing to the immense amount of power already required in the city. Steps were taken to meet these conditions, and an additional six thousand horsepower unit and two new boilers were installed at the Peach Street Station. Two and a half miles of heavy transmission line was also erected and, as soon as the Foundry Co.'s plant was complete, ample power was available for its operation.

However, it soon became evident that if Erie were to procure her share of war contracts, which her other facilities warranted, arrangements would have to be made to provide yet more power. The directors of the Erie Lighting Company took this

matter under consideration, and owing to the fact that the Peach Street Station did not lend itself economically to a large expansion, decided to build an entirely new and much larger plant in a better location, which could operate either independently of, or in conjunction with, the older plant. An option was secured on a large plot of ground on the shores of Presque Isle Bay (the harbor at Erie), with excellent railroad and water facilities, and Day & Zimmermann, Incorporated, of Philadelphia, were engaged as architects and engineers to prepare a layout for the new station, carry out the design, purchase materials and equipment, and supervise the construction.

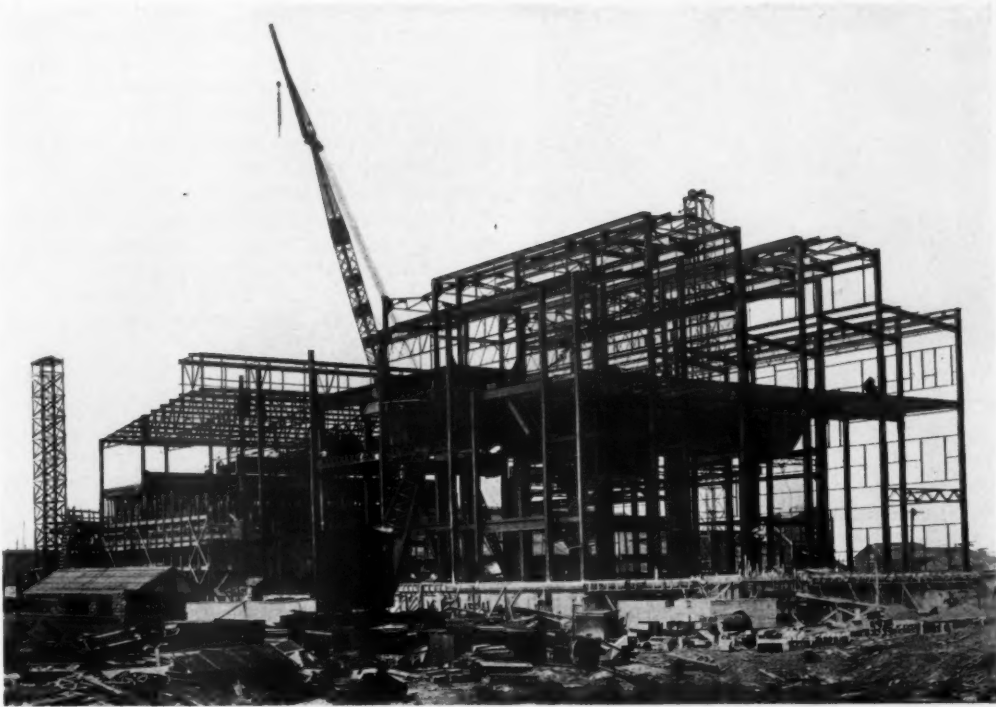
At noon on March 9, 1917, the day on which the option expired, the land was purchased, and at four o'clock that same afternoon construction was commenced. Shortly after this the United States entered the war against Germany, and owing to the insistent demand for power caused by the impetus given to manufacture, and the natural desire on the part of the lighting company to be in a position to assist the country to the best of its ability, everything possible was done to rush the work on the new plant regardless of extra expense. The architects established a complete organization in Erie, so that all of the designing and engineering work in connection with the plant could be carried out directly on the ground. The owners, contractors and material supply companies co-operated to such an extent with them that on January 10, 1918, just ten months after ground was broken, the plant was in operation and the first power delivered to the consumers.

The plant completed embodies many interesting features—and during construction presented many problems which taxed the engineers' skill to the utmost. During the time that the work was being carried on both the labor and material markets were, to put it colloquially, "shot to pieces". The Government was calling for the best in each for its avalanche against the Germans, and although the de-



CROSS SECTION THROUGH BOILER ROOM
Showing location of coal bunkers, which have a combined storage capacity of 1440 tons of coal.

THE AMERICAN ARCHITECT

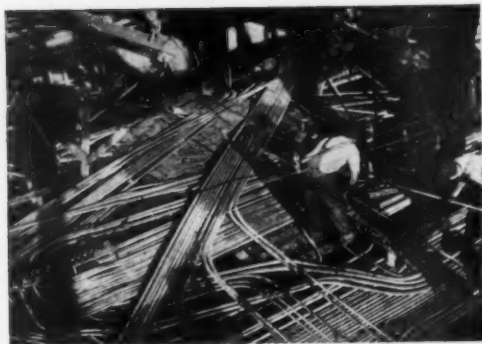


View during construction—Steel erection almost completed.



The Erie Lighting Company's Plant just after completion.
DAY & ZIMMERMANN, INC., ARCHITECTS AND ENGINEERS

THE AMERICAN ARCHITECT



Laying conduit in a room 30 ft. by 96 ft.
24,000 feet laid to templates in 22 hours.

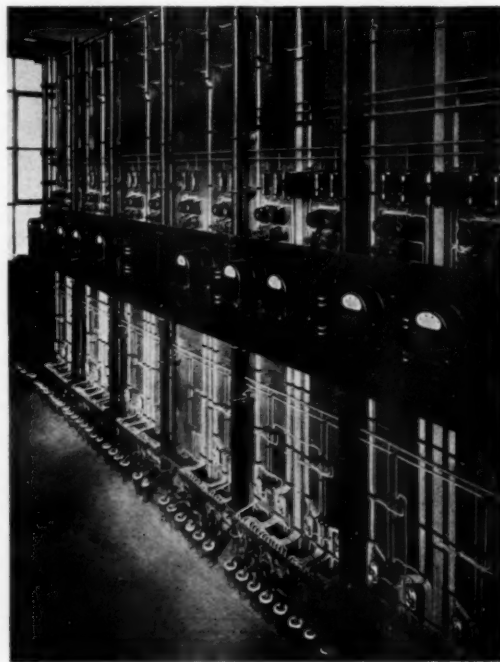
velopment of power at Erie was important for the manufacture of war materials, and the Government was willing to co-operate insofar as possible, the problems of the day were so tremendous that any project at that time not directly connected with our military preparations had to suffer. Despite these handicaps, or perhaps because of them, problems were met and disposed of in a manner which in ordinary times would have been considered impossible. The men themselves seemed imbued with that spirit of "Pike's Peak or bust", which accomplishes the superhuman. An instance or two may serve as examples: In a room 96 x 30 feet it was required to lay 24,000 feet of electric conduit—over and under, back and forth—furthermore, for accuracy it had to be laid to templates—that is, the ends of the conduit had to be fitted exactly to a certain form of pattern made for the purpose. The job was started at seven o'clock one morning and finished at five o'clock the next—twenty-two hours for work that ordinarily requires five days. Some idea of what this meant may be gathered from the photograph above, which shows only 3000 feet of conduit laid. Again, to supply the plant with water, it was necessary to tunnel underneath some fifteen tracks of the Pennsylvania Railroad to lay the intake conduit, and throughout the operation to keep the tracks open for traffic. Finally, when the time came for the installation of the "oil switches", that type of switch to-day in use in all up-to-date electric power plants, the Alberene stone required for the bases was not forthcoming. On inquiry it was learned that delivery had been delayed on account of the war and could not be made under four months. It was decided to substitute reinforced concrete, a new experiment. The installation was made, time saved, and the concrete base proved satisfactory in operation.

These are but individual examples of the variety of problems that were met at every turn. Much

could be written without exhausting the topic, but we must turn to a consideration of the completed plant, or rather the completed first section of the plant, as it is to-day. It must be remembered that the plant was designed primarily for reliability of service and operating economy, and for the purpose of delivering power, for the most part, to manufacturing plants; furthermore, the problem of future expansion was considered (the ultimate development to be as shown in the illustration on page 389, and the rear wall of the building designed and constructed so that it can be moved back step by step as successive additions are made. The building is of brick, steel and concrete, with metal sash, and contains the most recent improvements in power-plant design.

The plot on which the building is erected consists of filled-in ground, and it was therefore necessary to carry the foundations, which are of concrete, down to bedrock. The general excavation was carried down about 10 ft. below grade, steel sheet piling being used, which was later removed. The building here illustrated and described, constituting the first section of the complete plant, covers a ground area of approximately 22,000 sq. ft., being 223 ft. front by 99 ft. deep.

The structural framework is of steel. This construction is plainly shown in the photograph on



The back of the main switchboard.

THE AMERICAN ARCHITECT

page 393, taken during erection. The turbine room has a clear height of 40 ft. to the lower chords of the roof trusses, with crane rail located 31 ft. above the floor level. The floor arches are of reinforced stone concrete. The main floor layout, steel framing plan and longitudinal section are shown on page 391, and the cross section on page 392. These show the location of the boilers and coal bunkers, which adjoin the turbine room to the east, while the main and generator bus room containing the oil switches, adjoin it to the west.

might expect—just a low whining, and a rushing sound like wind. And yet, in the high-ceilinged, broad-beamed, quiet generating room of this plant, enough power is being produced and distributed to raise a dreadnought out of the water—the number of horses required to produce its equivalent would, if hitched in tandem, stretch from Trenton to Philadelphia.

The power and electrical equipment of the plant, which, after all, is the most vital part, was designed for the greatest ultimate economy. The



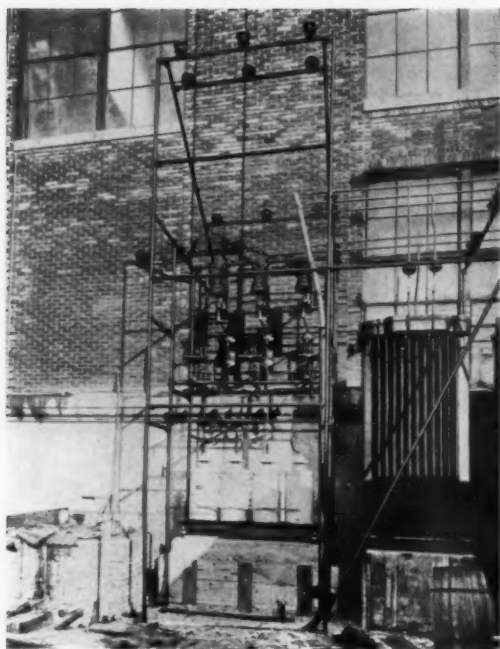
A corner of the boiler room, showing overhead coal bunkers, coal chutes, weighing carry; stoker hoppers and underfeed stokers.

The north elevation shows the temporary wall construction, which permits of future expansion at this end. The metal framework is covered with corrugated sheet metal. The other sides of the building are constructed of brick, the facing consisting of a rough, dark red brick, with wide, white joints. The trim is of limestone.

It is hard to imagine anything more impressive, provided one realizes just what is going on there, than to stand in the generating room of a big power plant and simply look and listen. Before you are huge contrivances of steel and iron, but no sign of motion; they look almost like mastodons asleep—no noise to speak of, none of the clash and roar one

entire purpose of the building is to properly house this equipment, designed to deliver electric current at the lowest possible rate, and at the same time to stand up under the constant wear to which it must be subjected. Six 846-hp. Babcock & Wilcox longitudinal drum boilers have been installed, set singly, with brick settings. Each boiler is equipped with 2-7 retort underfeed stokers, set one in front and one in rear of the boiler, with 15-ft. furnace height. A drop-leg header construction and a horizontal baffle above the first row of tubes permit the radiant heat from both stokers to impinge on these tubes along their full length. The boilers are designed for 250 lb. working pressure and 200 deg.

THE AMERICAN ARCHITECT



Lightning arresters and transformer.

F. superheat. Three forced-draft fans are provided, one of which is a spare. The flue gases from each boiler pass through unit economizers, or may be passed directly into one of the two main flues. Each main flue is provided with duplicate induced draft fans and a short steel stack. Each boiler is equipped with a complete set of indicating and recording instruments mounted on panel boards conveniently located for the observation of the firemen. Recording thermometers are also provided for temperatures of feed water entering and leaving the feed-water heater. The make-up supply for the feed water is treated by a Sorge-Cochrane hot process purifier, so that no raw water can enter the boilers at any time. The boiler feed pumps are of the centrifugal type. The pressure in the feed lines may be adjusted to any desired amount by means of an excess pressure regulator and governor.

The first unit section of the ultimate plant contains one 6000-kw. and one 10,000-kw. (maximum rating) turbo-generators at 80 per cent power factor. Each turbine unit represents practically a complete independent power plant in itself, from coal bunkers to outgoing feeders, but cross connected at vital points with the adjoining main unit. Practically all the auxiliaries for each turbine are in duplicate, most of which are divided between steam and electric drive. By this means the heat balance

of the plant may be adjusted and the maximum over-all station economy maintained under varying conditions of load.

Surface condensers are installed with each turbine, the centrifugal circulating pumps being located several feet below mean lake level, hence the pumps start up under a positive suction head. The ends of discharge lines were submerged, forming siphons. The circulating water system, as a whole, is an exceptional one; the intake is at the docks of the Anchor Line Steamship Company, where a mean depth of over 20 ft. of water is available. Coarse racks to prevent the entrance of floating timbers are provided at this point. The water is conducted through a reinforced concrete conduit 5 x 6 ft., approximately 500 ft. in length. Finer racks are provided in a clean-out well just outside of the power plant, and traveling screens for removing the smaller sizes of debris are located inside the plant, where the operators are protected from exposure in severe weather. Chain hoists allow the screens to be raised for inspection and repairs. For removing the finest debris from the hurling water of the centrifugal air pumps, twin suction strainers of $\frac{1}{8}$ -in. mesh are provided.

The generator air intakes are provided with individual air washers having movable louvres operated by thermostat-controlled motors, so that the



Portion of turbine room, looking north; 10,000 K.W. turbine is to the rear. Temporary north wall construction shown in background.

THE AMERICAN ARCHITECT

possibility of freezing the spray in severe weather is avoided. The heated air from the generators is discharged in close proximity to the intakes of the forced-draft fans for the boilers, thereby utilizing a portion of the heat which would otherwise be wasted, and reducing the amount of cold air drawn into the boiler-room basement in severe weather. The switchboard equipment is contained in a three-story bay entirely separated from the turbine hall. The switchboard is entirely electric remote control. All oil switches and high-tension busses are in brick cells with asbestos-board doors. In addition, each phase of each bus is protected by a vertical barrier of "transit board".

All coal is delivered by rail, the best available supply coming from the Pittsburgh district. Ample provision is made for outdoor storage and reclaiming, for which a 20-ton, 8-wheel locomotive crane is provided. The coal supply throughout is handled mechanically, the equipment comprising a track hopper located at the easterly end (shown on the main-floor plan), apron conveyor, crusher, and pivoted bucket elevator and conveyor. The latter discharges upon three belt conveyors, which distribute the coal along the suspension type bunkers above the firing aisles of the boiler house. From the bunkers the coal is distributed to the stoker hoppers through motor-operated weighing larries.

Ashes are dumped from the stokers into brick-lined steel hoppers, and from thence discharged into industrial railway-tip cars, elevated to the yard level, where they are used for filling low ground surrounding the property. When this ground has been filled an elevated concrete bunker will be constructed, for which the present elevator will be

available, and the ashes will be discharged into railroad cars for shipment to other localities.

The following, while not the lowest operating results which have been obtained at the Erie plant, show the results which are standard there:

Steam per kw. h., station rate.....	13.65 lb.
Coal per kw. h.....	1.81 lb.
Actual evaporation water per lb. coal..	7.54 lb.
Factor of evaporation.....	1.22
Equivalent evaporation.....	9.20 lb.
Boiler efficiency.....	70.34%
Coal	12,691 B.t.u.

Perhaps the point most worthy of mention in connection with operating results is the extreme economy of steam consumption per kilowatt hour, so far as it has been possible to determine the lowest in any plant of its size in this country.

The directors of the Erie Lighting Company have not been content with the erection simply of a power plant representing an investment of approximately two million of dollars, but their designs contemplate transforming the present surrounding waste into a park, constructing driveways, walks and wharves, and co-operating with other companies and the leaders of the city of Erie in developing the entire bay front into a delightful "garden spot" for its citizens and visitors.

Such, briefly, is the story of the Erie Lighting Company up to the present day. Not "a house builded upon sand," but one whose foundations start from the rock of sound business principles, logical development, and sane preparations for the future.

ERIE
LIGHTING COMPANY
PLANT
ERIE, PA.



DAY & ZIMMERMANN,
INC.
ARCHITECTS AND
ENGINEERS

First section completed ten months after breaking ground.

Efficiency in Drafting Room Increased by Use of Symmetrical Scale

By J. T. TUBBY, *Architect*

EXPERIENCE teaches us that there is a "just right" size in scales as well as in the handle of a tennis racket or the size of a pencil.

It is with the hope that the result of some experiments conducted by the writer and described below will save time for other draughtsmen and stimulate discussion that I venture to give my own experience.

Many years ago I used a $\frac{1}{4}$ -in. scale subdivided the entire length into inches. This proved quite trying to the eyes and also resulted in frequent errors. Subsequent trials with various scales indicated the best scheme to be the usual $\frac{1}{4}$ -in.

it without moving the scale. Again, if the scale is moved successively to each of the subordinate axes so that the "zero" coincides with this new axis, the widths of windows, blinds, casings, panels, etc., may be laid out symmetrically without moving the scale.

The symmetrical feature of the scale is also useful in finding the center of a panel, bay, or façade. An approximation of this center can be estimated, then if the reading on the left is say 17 ft. 0 in. and that on the right 20 ft. 0 in. a shift to 18 ft. 6 in. proves its own accuracy by the reading in the new position, and any possible arithmetical mistake is eliminated. The same point applies to doubling or halving the scale, since a measured dimension between axes on a $\frac{1}{8}$ -in. scale has the same reading on each side of "zero" as a $\frac{1}{4}$ -in. scale.

The longer markings on the 4 in. divisions have

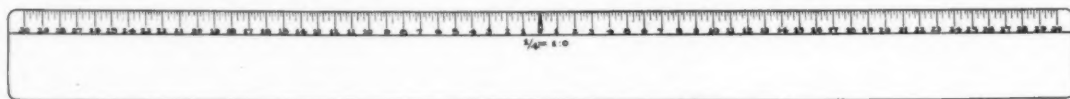


FIG. 1.—SYMMETRICAL SCALE

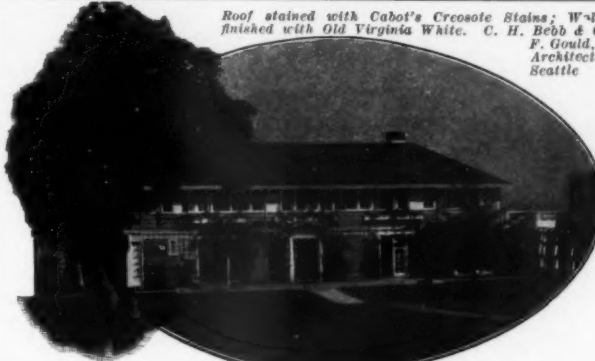
scale with 1 in. sub-divisions at the end of the scale only. This, however, had several disadvantages and about four years ago I tried the scheme of constructing a scale as shown in Fig. 1, laid out with $\frac{1}{4}$ in. main divisions and 2 in. sub-divisions. This proved very satisfactory both as to reading and spacing and has been in constant use in my office since that time.

Later, as an experiment, I designed this scale with the "zero" at the center, so that it was possible to read from a vertical axis in both directions. This feature proved the greatest convenience of all, since it saved the time of continually shifting the scale. For instance, if a main vertical axis is established in the center of the sheet the subordinate vertical axes for window centers can be laid off on each side of

proven convenient for brick sizes and it is of the greatest gain to have the 2 in. sub-divisions marked the entire length of the scale. This feature alone eliminates many shifts.

The thought that there must be an "exactly right" scale in scales as well as for any other instrument but recently occurred to me and consequently I tried both 3 in., $1\frac{1}{2}$ in. and 2 in. sub-divisions all at $\frac{1}{4}$ -in. scale. In every case the 2 in. reading was found to be by far the most satisfactory for general use. A closer reading at $\frac{1}{4}$ -in. scale with less strain to the eyes can be had with the 2 in. reading than with any of the others.

May increased efficiency in the drafting room be brought about by the improvement of our "tools" wherever this is found possible.



Roof stained with Cabot's Creosote Stains; Walls finished with Old Virginia White. C. H. Bebb & C. F. Gould, Architects, Seattle

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Late Quotations in Building Material Markets

(Price quotations now current on building materials and supplies as quoted by dealers and jobbers for delivery in New York and Chicago follow. The quotations set forth are placed before readers of THE AMERICAN ARCHITECT to afford an accurate review of market conditions rather than for use as a basis for actual purchase. They will not only provide knowledge of the exact state of the market as to items quoted, but will also present a basis to judge conditions as affecting correlating materials. Items marked (*) indicate an advance over last week, while those marked (†) record a decline. Other prices did not fluctuate during the week.)

BRICK		New York	Chicago
Face brick (delivered on job):			
Common (Delivered at job in Borough of Manhattan only), per thousand.....	\$17.85	\$12.00	
Rough red	37.00	40.00	
Smooth red	38.00	40.00	
Rough buff	42.00	40.00	
Smooth buff	42.00	40.00	
Rough gray	45.00	42.00	
Smooth gray	47.00	42.00	
Colonials	26.00	30.00	

BROKEN STONE		New York	Chicago
(Delivered on job):			
1½ in. per cu. yd.....	\$2.75	\$2.50	
¾ in. per cu. yd.....	2.75	2.50	

BUILDING PAPER		New York	Chicago
Roa'n sized sheathing, 500 sq. ft. rolls, 36 in. wide:			
25 lbs. to roll.....	85c.		
30 lbs. to roll.....	\$1.00		
40 lbs. to roll.....	1.35		
Deadening felt, 50 sq. yd. rolls, 36 in. wide:			
Per ton	85.00		

BUILDING STONE		New York	Chicago
Indiana limestone, per cu. ft.....	\$1.23	.83	
Kentucky limestone, per cu. ft.....	1.35		
Brier Hill sandstone, per cu. ft.....	1.50		
Gray Canyon sandstone, per cu. ft.....	.95		
Buff Wakeman, per cu. ft.....	1.50		
Buff Mountain, per cu. ft.....	1.50		
North River bluestone, per cu. ft.....	1.05		
Seam-face granite, per sq. ft.....	1.00		
South Dover marble (promiscuous mill block), per cu. ft.....	2.25		
White Vermont marble (sawed), New York, per cu. ft.....	3.00		

BURNED CLAY		New York	Chicago
(Delivered on job)			
Block partition:			
3 in., per sq. ft.....	.13	.10	
4 in., per sq. ft.....	.15	.11	
Chimney tops:			
12 x 12 for 8 x 8 flues.....	\$3.50	\$2.25	
Flue lining:			
4½ ft. x 13 ft., per lin. ft.....	.24	.12	
4½ x 8½, per lin. ft.....	.18	.16	
8½ x 8½, per ft.....	.24	.16	
8½ x 13, per ft.....	.35	.20	
13 x 13, per ft.....	.60	.45	
8½ x 18, per ft.....	.60	.50	
13 x 18, per ft.....	.95	.75	
18 x 18, per ft.....	1.25	.85	
Wall coping (double slant):			
8 in., per lin. ft.....	.18	.14	
12 in., per ft.....	.33	.26	
18 in., per ft.....	.54	.30	
Wall coping (single slant):			
8 in., per lin. ft.....	.16	.14	
12 in., per ft.....	.26½	.30	
18 in., per ft.....	.54	.30	
(Corners and angles four times the price of one foot of coping the same size.)			

Hollow Tile		New York	Chicago
(Delivered at job, in New York below 72nd St.)			
2 x 8 x 12 partitions, per 1,000 sq. ft.....	\$70.15		
3 x 12 x 12 partitions, per 1,000 sq. ft.....	102.00	\$67.90	
4 x 12 x 12 partitions, per 1,000 sq. ft.....	114.75	72.50	
6 x 12 x 12 partitions, per 1,000 sq. ft.....	153.00	99.60	
8 x 12 x 12 partitions, per 1,000 sq. ft.....		135.80	
10 x 12 x 12 partitions, per 1,000 sq. ft.....		167.50	
12 x 12 x 12 partitions, per 1,000 sq. ft.....		194.60	
2 x 12 x 12 split furring, per 1,000 sq. ft.....	63.75	45.30	

CHIMNEY TOPS		New York	Chicago
Revolving	40%	40%	

CEMENT		New York	Chicago
Per bbl. in 15 cent bags (Rebate 60c. per bbl. for bags in New York), 15 cent bags in Chicago (Rebate 60c. per bbl.).....			
	\$3.25	\$3.00	

CONDUCTOR PIPE		New York	Chicago
Galvanized steel	5 & 10 & 5%		
Galvanized charcoal iron.....	44¼%		
Copper	40%		
Elbows (all sizes to 6-in.)			
Galvanized steel	70%	70%	
Squares	60%	60%	
Copper	30%	30%	

COPPER SHEETS		New York	Chicago
At the mill, hot rolled, 16 oz. base-price, per lb.....			
	33½c.	33½c.	
(From jobber's warehouse add 2 to 3 cents.)			
Cold rolled per	35½c.	36c.	
From stock in 100 lb. lots and over.....	35½c. to 37½c.	37½c.	
For less than 100 lb. lots 2c. per lb. advance			
Polished, 20 in. wide and under, 1c. per sq. ft. extra; over 20 in. wide, 2c. per sq. ft. extra. Planished, 1c. per sq. ft. more than polished.			
Bottom, pits and flats, 1 oz. and heavier, per lb.....	44c.	44c.	
Tinning one side, per sq. ft.....	.06c.	.06c.	

CORNER BEAD		New York	Chicago
Per foot	.05	.05	

EAVES TROUGH		New York	Chicago
(Discounts from list):			
Galvanized steel	60 & 10%	60 & 10%	
Galvanized charcoal iron.....	55¼%	55¼%	
Copper	40 %	40 %	
(Also note Conductor Pipe.)			

FIBRE		New York	Chicago
Per bushel	.36	.30	

FINISHED IRON AND STEEL		New York	Chicago
(Mill Shipments)			
Bar iron, refined grade.....	2.77c.	2.62c.	
Bar iron, double refined.....	3.77c.		
Soft steel bars.....	2.62c.	2.62c.	
Shapes	2.72c.		
Plates	2.92c.	2.65c.	

GALVANIZED SHEETS		New York	Chicago
Nos. 12 and 14 gauge, per lb.....	6.35c.	6.20c.	
No. 16	6.50c.	6.30c.	
Nos. 18 and 20	6.65c.	6.62c.	
No. 22 and 24	6.80c.	6.75c.	
No. 26	6.95c.	6.92c.	
No. 27	7.10c.	7.07c.	
No. 28	7.25c.	7.23c.	
No. 30	7.75c.	7.60c.	
(No. 28 and lighter, 36 in. wide, 20c. higher.)			

GLASS		New York	Chicago
(Discounts from manufacturers' price lists)			
Single strength, A quality, first three brackets.....	77%	77%	
Single strength, B quality.....	77%	77%	
Double strength, A quality.....	79%	79%	
Double strength, B quality.....	81%	81%	
Plate—up to 5 sq. ft.....	82%	80%	
Plate—over 5 sq. ft.....	84%	80%	
Plate—up to 10 sq. ft.....	80%	80%	
Plate—over 10 sq. ft.....	80%	80%	
Polished plate glass (commercial run of thickness and quality) sizes to 5 sq. ft., inclusive.....			
	80%		
Sizes over 5 sq. ft.....			
	82%		

GRAVEL		New York	Chicago
1½ in. (Borough of Manhattan only), per cu. yd.....	\$3.25	\$2.50	
¾ in. (Borough of Manhattan), per cu. yd.....	3.50	2.50	

GRIT		New York	Chicago
Delivered at job in Borough of Manhattan.....	\$2.25	\$2.00	
Delivered in the Bronx.....	2.50	2.25	

GYPSUM		New York	Chicago
Plaster Board:			
Delivered at job, Boroughs of Manhattan and Bronx.			
27 x 28 x ½.....	37c.		
27 x 48 x ½.....	34c.		
32 x 36 x ½.....	22c.	20c.	
32 x 36 x ¾.....	22c.	21½c.	
32 x 36 x 1.....	24½c.		

Plaster Blocks:		New York	Chicago
Delivered at job, Boroughs of Manhattan and Bronx.			
2 in. solid, 12 x 30, per sq. ft.....	11c.	10c.	
3 in. hollow, 12 x 30, per sq. ft.....	11c.	10c.	
4 in. hollow, 12 x 30, per sq. ft.....	12½c.	11c.	
6 in. hollow, 12 x 30, per sq. ft.....	18c.	13c.	

LATH		New York	Chicago
Eastern spruce, per thousand.....	\$8.50		
No. 1 white pine, per thousand.....	8.25	\$8.00	
No. 1 hemlock, per thousand.....	7.50	7.00	
No. 1 yellow pine, per thousand.....	8.25	6.00	

LEAD		New York	Chicago
American pig, per lb.....	6½ to 7c.	6¼ to 6½	
Bar, per lb.....	8 to 9c.	6½ to 6¾	

LIME		New York	Chicago
Common, 200 lb. bbls., per bbl.....	\$2.50	\$1.50	
Finishing, 300 lb. bbls., per bbl.....	3.70		
Hydrated, in paper bags, per ton.....	18.50	17.50	
Hydrated, in cloth bags, per ton (Rebate per bag 10c.)	22.60	24.00	

LUMBER		New York	Chicago
(Retail prices per M, delivered.)			
Yellow pine, 2 x 4.....	\$70.00	\$55.00	
Yellow pine, 2 x 6.....	70.00	55.00	
Yellow pine, 4 x 4.....	75.00	61.00*	
Yellow pine, 8 x 8.....	72.00	64.00	
Yellow pine, 12 x 12.....	83.00*	70.00	
Yellow pine, No. 1 boards, 1 x 6.....	100.00	85.00	
Yellow pine, B and better flooring (plain).....	100.00	95.00	
Yellow pine, B and better flooring (quartered).....	125.00	110.00	
North Carolina pine, flat flooring, No. 2 and better	97.00	85.00	
North Carolina pine, flat flooring, No. 3.....	85.00	75.00	
North Carolina pine, rift flooring.....	125.00	110.00	
Norway pine, 2 x 4.....	72.00*	65.00*	
Norway pine, 2 x 12.....	85.00	76.00*	
Douglas fir, 6 x 6 to 12 x 12.....	75.00	67.50	

(Continued on page 398-B)



Photo by permission Ordnance Dept., U. S. A.

That's what the chief engineer told his president—

They were figuring on Depreciation of Equipment.

The engineer was saying, "Some fellow the other day was knocking our '85% Magnesia' pipe coverings. So I wrote to W. A. Macan, Chairman of the Magnesia Association. He has been in the pipe-covering business for over 30 years, and I wanted his straight experience. He says *there's no such thing as '85% Magnesia' Depreciation*. Here's part of his letter:"

Time-proof—Usage-proof— Not Fool-proof

You can soak "85% Magnesia"—and it dries out as good as ever. You can hold "85% Magnesia" on a shovel over a fire till the shovel gets red-hot—and it isn't hurt. You can give "85% Magnesia" all the tremendous vibration of a locomotive—and it does not disintegrate.

But it isn't a concrete sidewalk for workmen to tramp on; nor a stone wall to bump with heavy ladders. Nobody but a fool would subject any cellular insulation to such ill usage.

Indeed, if any pipe covering does not crumble under heavy walking, or heavy blows, it is a certain sign that it is lacking in the dead-air spaces which give it its real insulation value.

We invite specific questions on the durability as well as the efficiency of "85% Magnesia." The Engineers of the members of this Association, as well as the experts of the Mellon Institute who have been specially investigating pipe-coverings for three years, are at your service through our Committee. Send for our literature. Also for Specifications for the proper application of "85% Magnesia," compiled and endorsed by the Mellon Institute of Industrial Research of Pittsburgh University, which are furnished to Engineers and Architects on request.



MAGNESIA ASSOCIATION of AMERICA
721 Bulletin Building, Philadelphia, Penna.

EXECUTIVE COMMITTEE. Wm. A. Macan, *Chairman*
George D. Crabbs . . . The Philip Carey Co. . . Cincinnati, Ohio
Alvin M. Ehret . . . Ehret Magnesia Mfg. Co. . . Valley Forge, Penna.
J. R. Swift . . . The Franklin Mfg. Co. . . Franklin, Penna.
R. V. Mattison, Jr. . . Keasbey & Mattison Co. . . Ambler, Penna.
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From a Veteran's Experience in "85% Magnesia"

"While it is a common practice to charge up each year a percentage of the cost of a plant for depreciation, in the case of '85% Magnesia' this is not necessary.

"Thus in the Niagara Power Station, '85% Magnesia' covering has been in service nearly twenty years; when recently a section and block of this '85% Magnesia' were analyzed and tested, it showed a depreciation after all those years of approximately 3%—so small that it could hardly be figured.

"Again, the Mellon Institute of Industrial Research of Pittsburgh University has on file many letters from Operating Engineers who have had '85% Magnesia' in service for ten years to twenty-five years, stating that those coverings are as efficient today as when first placed in service.

"As long ago as 1888 Mr. J. J. DeKinder was a Consulting Engineer in Philadelphia, having the Pennsylvania Railroad among his numerous clients. A short time ago he wrote me:—

"I have specified '85% Magnesia' covering for a great many years, in fact, during all my active practice. I have used it under all procurable temperatures, and under all conditions that stationary and locomotive service furnish, and can recall *no time* in which it failed to render efficient service."

"It may become soaking wet through steam-leaks, floods, sinking of a vessel, or any similar cause, not only once but several times, and when steam is turned on the boilers again, it dries out without shrinking or warping, and continues saving heat units just the same as it did before.

"I challenge anyone to give good evidence of any case where '85% Magnesia', properly applied and properly treated, has failed to give maximum and satisfactory service through any inherent defect."

WM. A. MACAN

Chairman Magnesia Association of America

THE AMERICAN ARCHITECT

Building Material Market Reports

(Continued from page 398-A)

	New York	Chicago
Douglas fir, 12 x 12 to 14 x 14.....	\$85.00	\$78.00
Hemlock, 2 x 4.....	63.00	56.00*
Hemlock, 2 x 12.....	65.00	58.00
Oak, quartered, 1 in., F. A. S.....	250.00	235.00
Oak, plain, 1 in., F. A. S.....	175.00	160.00
Oak flooring, 13/16, quartered (white).....	275.00	238.00
Oak flooring, 13/16, quartered (red).....	275.00	225.00
Oak flooring, 13/16, plain (white).....	200.00	175.00
Oak flooring, 13x16, plain (red).....	205.00*	178.00
Maple, 1 in., F. A. S.....	100.00	95.00
Maple flooring, 13/16, clear.....	150.00	140.00
Maple flooring, 13/16, select.....	140.00	135.00
Maple flooring, 13/16, No. 1 factory.....	110.00	98.00*
Basswood, 1 in., F. A. S.....	120.00	100.00
Mahogany, 1 in., F. A. S.....	320.00	315.00
Sap gum, 1 in., F. A. S.....	85.00	75.00
Red gum, 1 in., F. A. S.....	125.00	115.00
Chestnut, 1 in., F. A. S.....	110.00	105.00
Poplar, 1 in., F. A. S.....	150.00	130.00
Birch, 1 in., F. A. S.....	125.00*	85.00
Spruce, random, 2 in.....	70.00	65.00
Spruce, wide, 8 in.....	75.00	70.00
Spruce, 10 in.....	75.00	70.00
Spruce, 12 in.....	80.00*	70.00
Cypress, 1 in., F. A. S.....	105.00	90.00

METAL LATH

Under 100 sq. yd., per sq. yd.....	40c.	35c.
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MORTAR COLORS

Red, per lb.....	.05	.05
Brown, per lb.....	.05	.05
Buff, per lb.....	.05	.05
Chocolate, per lb.....	.05	.05
Black, per lb.....	.06	.05
Pompeian buff, per lb.....	.07	.07
Moss green, per lb.....	.07	.07
Colonial drab, per lb.....	.07	.07
French gray, per lb.....	.07	.07
Royal purple, per lb.....	.07	.07
Yellow, per lb.....	.07	.07

(These prices are for mortar colors in bbls. or kegs of more than 200 lbs. each. In kegs of less than 200 lbs. each add 1c. per lb. In 25 lb. cans add 2c. and 12 1/2 lb. cans add 2 1/2c. per lb.)

NAILS

Wire nails and brass, miscellaneous.....	75%	75%
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OILS

Linseed, city, raw.....	\$2.25	\$2.48
Linseed, boiled, advance, per gal.....	.01	.02
Out of town, American seed, at.....	2.25	2.48

PAINTS

Leads:		
American white, in oil, kegs; lots over 100 lbs.....	13c.	13c.
White, in oil, 25-lb. tin pails; add to keg price.....	14c.	14c.
Red, bbl., 1/2 bbl. and kegs; lots over 100 lbs.....	13c.	14c.

Dry Colors:

Red Venetian, American, per 100 lbs.....	\$2.00 to \$4.50	\$2.00 to \$4.00
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Metallic Paints:

Brown, per ton.....	\$32.00 to \$36.00	\$24.00 to \$32.00
Red, per ton.....	35.00 to 40.00	24.00 to 32.00

PIPE

Cast Iron:		
6 in. and heavier.....	\$54.30	\$53.80
4 in.....	57.30	56.30
3 in.....	62.30	68.80

(and \$2.00* additional for Class A and gas pipe.)
(Discounts to jobbers for carload lots on the Pittsburgh basing card; freight rates from Pittsburgh to New York, and also from Pittsburgh to Chicago, in carloads, per 100 lbs., are 27c. An additional 5 per cent discount is allowed to large jobbing interests over those listed below.)

Wrought:	F.O.B. Pittsburgh	F.O.B. Chicago
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Steel:		
Black, 3/4 to 3 in.....	50 1/2 to 57 1/2 %	42.6 to 49.6 %
Galv., 3/4 to 3 in.....	24 to 44 %	14.6 to 34.6 %

Iron:		
Black, 3/4 to 1 1/2 in.....	29 1/2 to 34 1/2 %	19.6 to 29.6 %
Galv., 3/4 to 1 1/2 in.....	2 1/2 to 23 1/2 %	9.4 to 11.6 %

Steel:		
Black, 2 1/2 to 6 in.....	53 1/2 %	45.6 %
Galv., 2 1/2 to 6 in.....	41 %	31.6 %

Iron:		
Black, 2 1/2 to 6 in.....	34 1/2 %	24.6 %
Galv., 2 1/2 to 6 in.....	21 1/2 %	9.6 %

Steel:		
Black, 3/4 to 3 in.....	46 1/2 to 56 1/2 %	33 to 43 %
Galv., 3/4 to 3 in.....	29 to 44 %	10.6 to 18 %

Iron:		
Black, 3/4 to 1 1/2 in.....	28 1/2 to 39 1/2 %	
Galv., 3/4 to 1 1/2 in.....	11 1/2 to 24 1/2 %	

Steel:		
Black, 2 to 6 in.....	48 1/2 to 50 1/2 %	35 to 37 %
Galv., 2 to 6 in.....	37 to 39 %	10 to 12 %

Iron:		
Black, 1 1/4 to 6 in.....	25 1/2 to 34 1/2 %	
Galv., 1 1/4 to 6 in.....	10 1/2 to 22 1/2 %	

PIPE-VITRIFIED SEWER

(Standard pipe and fittings, F.O.B., carload):

	New York	Chicago
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3 to 24 in.....	67%	67%
27 to 30 in.....	66%	66%

PLASTER

Rebate for bags 15c.....		
Neat wall cement in 15 cent bags, per ton.....	\$21.30	\$19.00
Finishing plaster.....	24.00	19.00

	New York	Chicago
Lath mortar, in cloth bags, per ton.....	\$15.05	\$12.50
Brown mortar, in bags.....	15.05	14.00
Finishing plaster, per bbl. (250 lbs.).....	3.50	3.00
Finishing plaster, per bbl. (320 lb. bbl.).....	4.35	

PUTTY

In bladders, per 100 lb.....	6.25	4.25
In 1-lb. to 5-lb. tins, per 100 lb.....	6.75	6.50

RADIATION

New York reports a 45% discount on standard heights.

Chicago reports a 55% discount on standard heights.

REGISTERS

Cast iron semi-steel or steel, in black or white japan or electro plate and small faces and borders....	30%*	30%*
Wall frames.....	30%*	30%*
Large faced, 14 x 14 in. and larger.....	50%*	50%*
Base board registers.....	30%*	30%*
Base board intakes.....	30%*	30%*
White enameled goods.....	5%*	5%*
Solid brass or bronze goods, except grilles.....	net	net
Grilles in black and white japan or electroplate in cast iron, plain lattice design—smaller than 14 x 14 in.....	30%*	30%*
—Larger than 14 x 14 in.....	50%*	50%*

REINFORCING BARS

High carbon steel from mill.....	\$48.50	\$49.50
Medium steel from mill.....	48.50	49.50

ROOFING MATERIAL

Tarred Felt Paper:		
No. 1—25 lbs. to 100 sq. ft., per ton.....	\$62.00	\$75.00
No. 2—16 lbs. to 100 sq. ft., per ton.....	63.00	75.00
No. 3—12 lbs. to 100 sq. ft., per ton.....	64.00	75.00
Rosin sized sheathing, per ton.....	60.00	65.00
Corrugated roofing, galvanized, 2 1/2 in. corrugation, over flat sheets, 30c. per 100 lbs.....		

Rubber, 108 sq. ft. rolls, 32 in. wide, per roll:

First Quality:		
1 ply—35 lb. rolls.....	\$1.90	
2 ply—45 lb. rolls.....	2.30	
3 ply—55 lb. rolls.....	2.85	
Second Quality:		
1 ply—35 lb. rolls.....	1.45	
2 ply—45 lb. rolls.....	1.75	
3 ply—55 lb. rolls.....	2.20	

ROSIN

Common to good, strained (wholesale), 80 lb., per gal.....	\$17.25†	
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SAND

Mason, per cu. yd.....	\$1.80	\$2.50
Torpedo, per cu. yd.....	1.80	2.50
White sand, per cu. yd.....	4.00	

SHINGLES

Red cedar, 5 to 2, clear, per thousand.....	\$11.00	\$7.00
White cedar, extra star, A star, per thousand.....	11.00	7.00
Cypress, 6 x 18, No. 1 hearts per M.....	17.00	14.00
Cypress, 6 x 18, No. 1 prime per M.....	15.00	12.00

SLATE ROOFING

	F.O.B. cars, Quarry Station	F.O.B. Chicago
Pennsylvania:		
Best Bangor.....	\$7.75 to \$9.00	\$10.20 to \$11.45
No. 1 Bangor Ribbon.....	6.75 to 7.00	9.20 to 9.70
Pen Argyl.....	6.50 to 7.25	9.70 to 10.45
Peach Bottom.....	10.50 to 12.50	12.45 to 14.45
No. 1 Chapman.....	6.25 to 7.25	8.70 to 9.95
Vermont:		
No. 1 Sea Green.....	4.25 to 6.75	5.95 to 9.00
Unfading Green.....	9.00 to 10.50	9.40 to 12.50
Mottled Green Purple.....	9.00 to 10.50	
Red.....	12.00 to 20.00	14.80 to 22.80
Maine:		
Brownville, U'f'g Black, No. 1 12.00.....		14.10 to 15.10
Slaters felt, 30 lb. roll.....	.92	
Slaters felt, 40 lb. roll.....	1.22	

SPIRITS TURPENTINE

	New York	Chicago
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Per gal. in machine bbl.....	\$1.75 to \$1.77 1/2	
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STONE SCREENINGS

Lime, per cu. yd.....	\$2.35	\$2.50
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STRUCTURAL STEEL

Beams and channel, 3 to 15 in., per lb.....	2.72c.	3.47c.
Beams and channel, over 15 in., per lb.....	2.72c.	3.57c.
Angles, 3 to 6 in.....	2.72c.	3.47c.
Zees.....	2.72c.	3.47c.
Tees.....	2.77c.	3.52c.
Steel bars, half extras, from mill.....	2.35c.	3.37c.

STUCCO

In cloth, per ton (white, mixed).....	\$22.50	\$19.50
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STUCCO BOARD

Medium weight stucco board, plain, per M sq. ft.....	\$42.50	\$45.00
Medium weight stucco board, creosoted, per M sq. ft.....	50.00	50.00
Heavy weight stucco board, plain, per M sq. ft.....	55.00	55.00
Heavy weight stucco board, creosoted, per M sq. ft.....	60.00	60.00
Medium weight stucco board, plain, narrow key, per M sq. ft.....	50.00	50.00
Medium weight stucco board, narrow key, creosoted, per M sq. ft.....	55.00	55.00
Insulating board, heavy felt background, per M sq. ft.....	50.00	50.00

SHEATHING BOARD

Heavy weight sheathing board, per M sq. ft.....	\$50.00	\$50.00
Medium weight sheathing board, per M sq. ft.....	46.00*	45.00
Stucco or plaster board, sheathing board and insulating board are in rolls containing one sheet 25 ft. long and 4 ft. wide (100 sq. ft.)		

WALL BOARD

Wall board, shipped any length, 4 ft. wide, per M.....	\$45.00	\$40.00
Packed flat in cars if ordered in less than car lots. Add \$5.00 per M ft. for crating.		