

The AMERICAN ARCHITECT



INTERIOR, THE VATICAN, ROME

PUBLISHED WEDNESDAYS IN NEW YORK—FOUNDED 1876

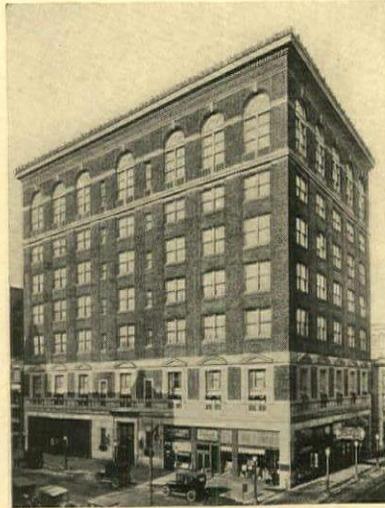
VOLUME CXIV

JULY 10, 1918

NUMBER 2220

Entered as second class matter January 6, 1909, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Publication office, 243 West Thirty-ninth Street, New York, N. Y. Subscription price in the United States and Possessions, \$10.

*Recreation
Building,
Detroit*



*Architects,
Smith, Hinch-
man & Grylls*

*Equipped with two (2) Direct Cur-
rent, Single Screw Worm Geared
Traction Elevators.*

OTIS ELEVATORS

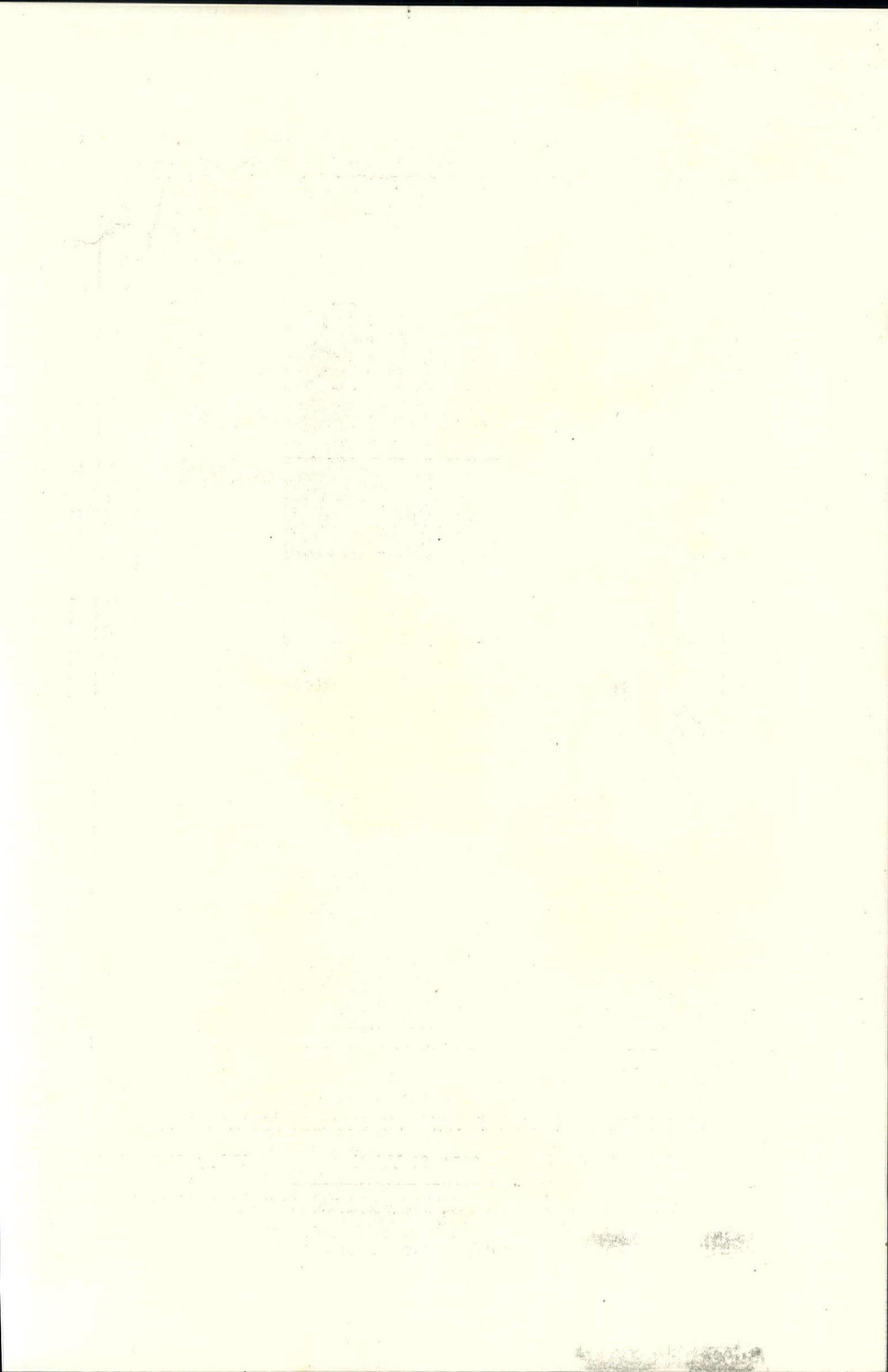
Nothing more forcefully attests the dominance of Otis Elevators than the fact that this company is invariably called upon when unprecedented building conditions have to be overcome.

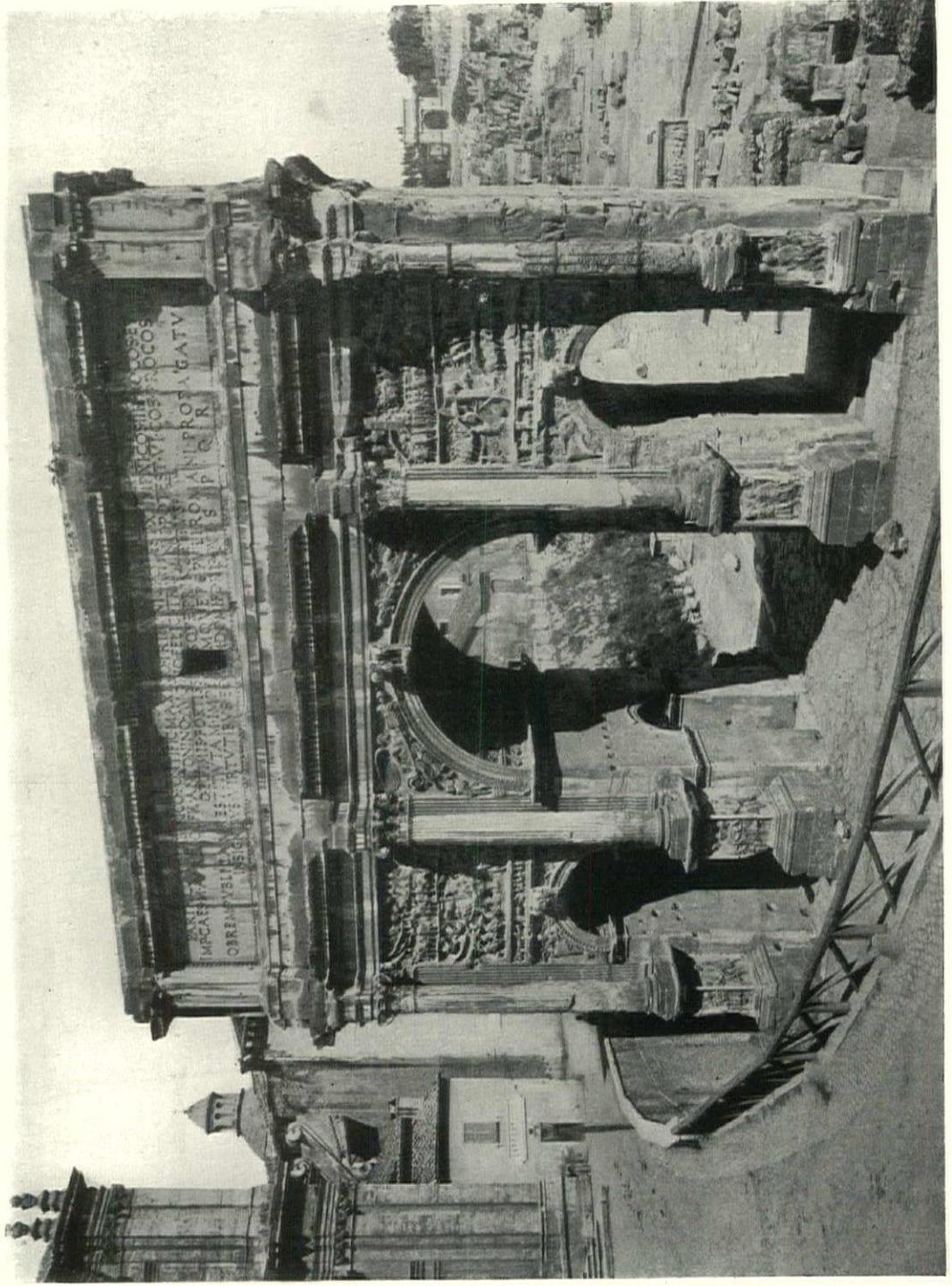
From the simplest installation to the most intricate developed by modern structural engineering, the basic thoroughness and reliability of Otis designing, the long-proven quality of Otis materials and the inflexible ideals of Otis manufacturing are the accepted essentials of utmost achievement.

OTIS ELEVATOR COMPANY

ELEVENTH AVENUE AND TWENTY-SIXTH STREET
NEW YORK

Offices in All Principal Cities of the World





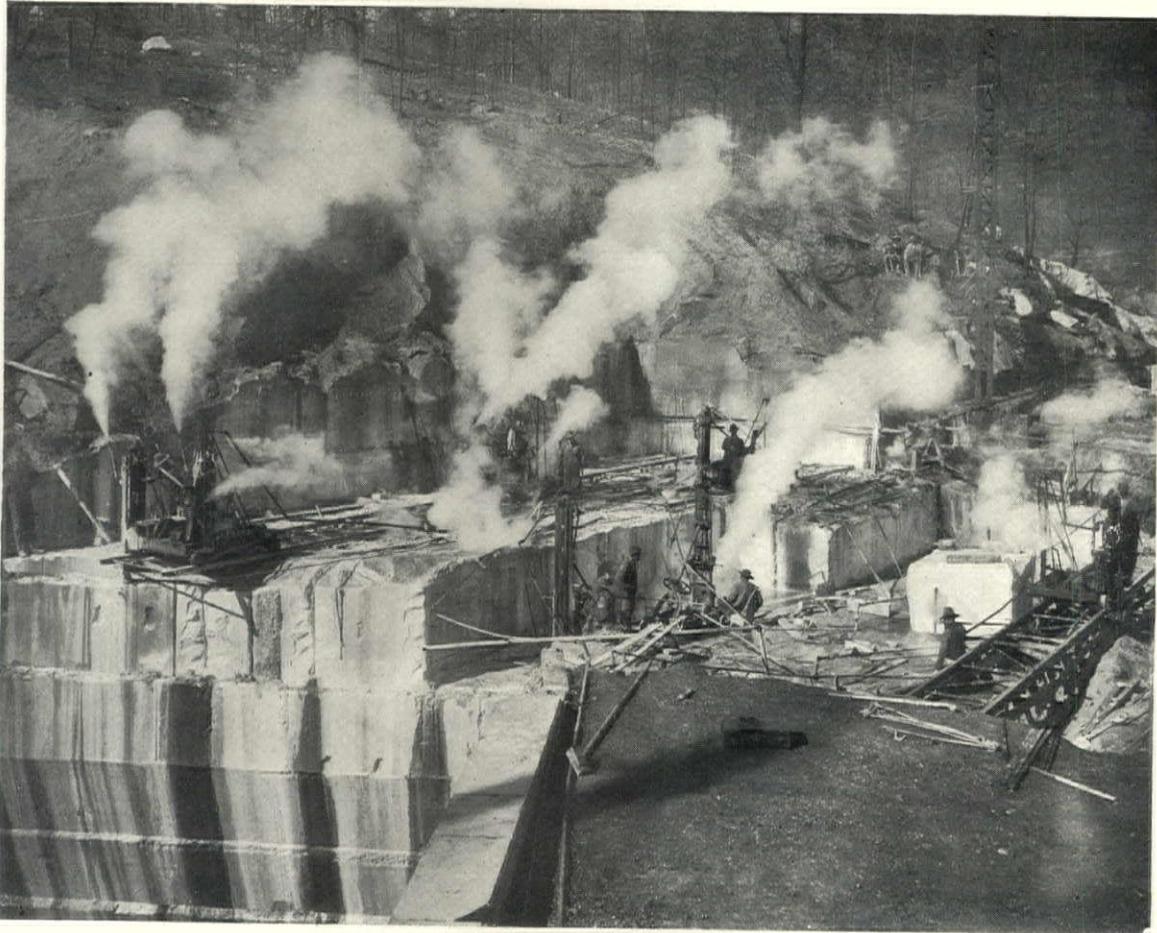
ARCH OF SEPTIMUS SEVERUS, ROME

THE AMERICAN ARCHITECT

VOL. CXIV

WEDNESDAY, JULY 10, 1918

NUMBER 2220



A GEORGIA MARBLE QUARRY IN OPERATION

MARBLE

As a building stone, marble has been known and used from remote antiquity. Its beauty of texture and the high polish that it could be made to assume appealed to the ancient builders, whose barbaric ideas of splendor led them to adopt every material that would lend permanent color and brilliancy to their buildings. Marble was used not only as a main structural material, but also for many decorative purposes, inside and out. Tessellated floors, high wainscots, paneling and in the

many places where stone could be employed marble was the one selected and used as far as it was available in the locality.

Among the ancients the most widely used marbles were Parian and Carrara. Just when these two famous quarries were first opened we have no certain means of knowing, but we do know that the supply has been almost inexhaustible, as the same quarries that furnished the Parian marble for Grecian sculptures, among them the famous Melos

Copyright, 1918, The Architectural & Building Press (Inc.)



MARBLE DETAILS, MCKINLEY BIRTHPLACE MEMORIAL,
NILES, OHIO

McKIM, MEAD & WHITE, ARCHITECTS

Venus and the Pentelic marble of which the Parthenon was constructed, are being worked now.

Another well known marble, Cipolino, was also equally well known to the ancients. The Temple of Jupiter Serapis, near Naples, was built of this marble. It is a grey-streaked micaceous marble with unusual decorative qualities.

The use of the many different marbles that have been imported into the United States has been confined more generally to decorative elements of architectural construction. Each of these various marbles possesses some well defined characteristics of color or texture, and certain possibilities of polish or carvings as well.

The principal marbles imported are as follows:

Siena. This is a yellow marble. It is found near the town of that name, the ancient Siena Julia on the Via Clodia. Patches of a delicate grey or purple are often present in this marble, pieces of which

are much sought after, as their decorative value is considerable.

Skyros is found on an island in Greece in the Ægean Sea. The brecciated examples, those whose granules are angular and not round or water-worn, are the most sought after. Breccia may always be distinguished by the angularity of its particles.

"Black and Gold" is an Italian marble found in Porto Venere, near the Gulf of Spezia. This is a limestone marble. The presence of brilliant yellow veining on a black ground gives it its present name. It is sometimes known as "Portor" marble, a corruption of the Italian Port d'Oro.

Brocatelle. This marble is found in the Pyrenees; it is a light yellow marble with red cloudings.

Carrara, the well known white marble quarried near the city from whence it takes its name, is used by sculptors everywhere on account of its beautiful texture and for its purity of color.

Giallo Antico. This marble was much sought after by both Greek and Roman builders. It is yellow in color.

Nero Antico. A serpentine marble, greenish black.

Numidian, from Africa, not constant in color but more usually yellow.

Parian, a white marble, largely used by the ancient Greeks. It is found on the Island of Paros.

Pentelic, also used by the ancient Greeks. It is quarried near Athens.

Rosso Antico, a red marble.

Marble is chemically a carbonate of lime, more or less pure, according to the locality or situation of its origin. Lee, in his admirable work, "Marble and Marble Workers," referring to the geological origin of marbles, states:

"With lime as a base or matrix, the different ingredients with which it has become associated are legion. They have been drawn from the animal, vegetable and mineral kingdoms, from land and sea. Fossil marbles are found full of the remains of once living creatures, now cemented together and hardened into blocks of stone. The marine origin of much of the marble found in Ireland and Belgium is to be traced to the shells of the crustacea found

THE AMERICAN ARCHITECT

imbedded in the mass. The native crystallized lime, known as Iceland or felspar, is very similar in its chemical constituents to the nearly pure carbonates which are known as statuary marble."

In this we see the varied origin of marbles, and are able to read in their polished surfaces some of the details of the development and the causes that have resulted in the markings and veinings that make marble the most decorative of all building stones.

The physical properties of marble, as set forth by Dale in his work, "The Commercial Marbles of Western Vermont," are stated as follows:

Marble, besides possessing the qualities of hardness, cohesiveness, compressive strength, porosity, expansiveness under heat, thermal conductivity, sonorousness, translucence and flexibility, is polishable and can be deformed in confinement under powerful compression. Its color, texture, specific gravity, hardness and porosity will be considered under other heads.

Tests made at the Watertown Arsenal give the white dolomite marble of Lee, Mass., an ultimate compressive strength of 18,047 lb. to the square inch; the calcite marbles of West Rutland and Proctor a compressive strength of 11,525 to 14,397 lb. to the square inch, and the coarse calcite marbles of South Dorset an ultimate compressive strength averaging 11,300 lb. when placed on bed and 9100 lb. when placed on edge.

Tests of the dolomite marble of Lee give it a shearing strength of 2052 lb. to the square inch and a maximum fiber strength of 1585 lb. to the square inch.

Vogt gives the compressive strength of a Norwegian dolomite marble as 24,891 lb. to the square inch, of Carrara marble as 6329 lb. and of Tyrolese statuary marble (Laas) as 16,036 lb.

Geikie in an interesting petrographic study of Edinburgh gravestones describes some slabs of white marble, presumably from Italy, firmly set into sandstone monuments, which in consequence either of their porousness and the freezing of interstitial water or else of their greater expansiveness than sandstone, or from both causes, had bulged out $2\frac{1}{2}$ in. from their original vertical position and showed a series of rents along the crest of the bulge.

The Watertown Arsenal tests referred to above give the coefficient of expansion of dolomite marble from Lee as only 0.00000562 under a difference of temperature of 156° F. Bartlett found the expansion of marble to be 0.00005668 in. to the foot for each degree Fahrenheit.

Yamagawa determined the thermal conductivity of marble as averaging 0.00728 centimeter a second. A previous determination by Depretz was 0.0077 centimeter.

Thin slabs of ordinary Carrara marble have a marked sonorousness when struck with a hammer. The Vermont calcite marbles are only feebly sonorous, but on the other hand the dolomite marbles of Lake Champlain possess more sonorousness than the Carrara marble.

White marbles become transparent or nearly so in thin sections prepared for the microscope, but differ considerably in translucence on the rough or polished face. Some have a waxy look, which is probably attributable to the greater transparency of their grains; others are milk-white and opaque. Lepsius in connection with his study of Greek marbles determined that the best Pentelicon marble admits light to a depth of 0.59 in., and the Parian to 1.37 in. Upon this feature largely rested the reputation of Parian marble. Lindenmann gives the translucence of Carrara statuary marble as from 1.18 to 1.57 in. The coarse calcite marble formerly quarried at Adams, Mass., is unusually translucent.

The flexibility of marble has long been known. It probably depends largely on the shape and cohesion of its grains.

The important experiments of Adams, Nicholson and Coker show that marble when tightly inclosed can be deformed—that is, it flows. They fitted cylinders of Carrara and Vermont marble tightly into steel tubes and applied great pressure to the ends of the cylinders, which caused them to bulge out on the sides, distending the inclosing tube. When the deformed marble was sliced and examined microscopically it was found to be solid, but many molecular changes had taken place in the individual crystalline plates, such as slippage and twinning. They also found that the marble if deformed at ordinary temperature was stronger under slow than under rapid deforma-



MARBLE DETAILS, MCKINLEY BIRTHPLACE MEMORIAL,
NILES, OHIO.

McKIM, MEAD & WHITE, ARCHITECTS

THE AMERICAN ARCHITECT

tion, that the deformed marble was stronger when the experiment was tried at a higher temperature than at ordinary temperature, and that when deformed in the presence of moisture (water gas) and a high temperature the deformed marble was actually stronger than the original marble.

The difference in texture between granite and marble is that in marble the grains are all crystalline, with rhombohedral cleavage, mostly twinned and more or less interlocked, but never in such an intricate way as they are in granite. To this fact

marked by certain peculiarities of color and texture, and in all of them the wide range of possibilities for structural and decorative purposes is constantly being demonstrated.

It is interesting to study the peculiarities of color and texture as found in these different and widely separated quarries, and that each location may receive its proper description and thus make such information as may be herein conveyed to



MARBLE PERGOLA IN A GARDEN AT CANANDAIGUA, N. Y.

ALLEN & COLLENS, ARCHITECTS

and the marked cleavage of calcite and dolomite the generally lower cohesiveness of granite is largely due.

MARBLE IN THE UNITED STATES

While marble has been found in many widely differing geological formations, it is obtained in the United States chiefly from the Paleozoic rocks. The larger and best known deposits are in the Eastern States, but later developments have uncovered large deposits in almost every section of the country.

In Vermont there are quarries that have been worked from Colonial days, and to the depth, unusual in this country, of 400 feet. There have also been developed equally important quarries in the southern States, more particularly in Tennessee and Georgia, and in the West in California and Colorado. Each locality, as will be inferred, is

the reader plain and comprehensible, the various sections will be treated separately.

Vermont Marble. The largest deposit of marble in Vermont is found in the western part of the State. As perhaps the oldest quarries worked in the United States, Vermont marble may properly be considered first. Many grades are quarried in Vermont, ranging from purest white, or "statuary marble," to grey, or what is technically known as the "true blue" variety. Grey and green banded marbles have been found in recent years in some sections. These have found wise use for decorative purposes.

The history of Vermont marble dates from 1785 when the first quarry was opened at Dorset. In 1838 the quarries in Rutland were opened, and subsequently the quarrying of marble was extended to Danby, Proctor and Pittsford. In 1790 the first

THE AMERICAN ARCHITECT

marble headstones were erected in Vermont. Mention is made of this fact as many of these old stones are in place to-day and are silent witnesses to the weathering qualities of the marble quarried in this section.

Vermont marble has been found by laboratory tests to possess an average crushing strength of 18,125 pounds to the square inch.

Many grades and colors suitable for exterior and interior building are quarried throughout Vermont.

of calcium carbonate is in the blue marble 99.15 per cent, and in the white 98.75 per cent. In the Proctor district this analysis shows 96.30 per cent for the light marble and for the dark 98.37 per cent.

As to heat-resisting qualities, a feature that very largely influences the selection of marble as a building material, Vermont marble, in tests conducted by the Underwriters Laboratories, was subjected to 1200 degrees Fahrenheit without injury.



MARBLE DETAILS, HOUSE AT CANANDAIGUA, NEW YORK
ALLEN & COLLENS, ARCHITECTS

For exterior building the best known grades are the Mountain White, Imperial, Highland and Plateau, quarried at Danby and Dorset; the Corona and Eureka, quarried at Proctor and Pittsford, and the widely known grey building marble from the West Rutland quarries. Of marble suitable for interior use there is a wide range of selection to be found in Vermont. No less than thirty-six varieties are listed, and among these are a number so nearly like the well known Italian marbles in color and texture as to provide in many instances a satisfactory substitute.

An analysis of Vermont marble, as recorded in a bulletin of the United States Geological Survey, shows that in the Rutland district the percentage

Alabama Marble. The following extracts from an article on Alabama marbles written by Colonel Stephen Sewell afford a comprehensive idea of marble found in that State:

"There are known to be considerable deposits of marble in Alabama, of various kinds. There is at least one large deposit of a very handsome warm grey marble, similar in appearance to the darker grades of imported Tavernelle; there is also known to be a large deposit of strikingly handsome fancy marble, presenting various shades of red, orange and yellow, with white and greenish veins. Neither of the above deposits is developed at all. The only deposit in Alabama which is developed is the white marble in Talladega County. The marble belt here is known to extend from a point in the northwest corner of Coosa County, in a generally northeasterly direction, to the vicinity of Talladega, a total distance of at least forty miles. This

THE AMERICAN ARCHITECT



MARBLE BASE OF THE REPLICA OF THE COLLEONI STATUE IN NEWARK, N. J.

deposit varies more or less in thickness and character at different points along the belt, but its salient characteristics at points where it is best known is the existence of a large proportion of white marble. By white marble is meant a marble with a white background, but not necessarily free from veining and clouding. The white marble of Talladega County is extremely fine-grained, hard and impervious; it takes a very high polish and is almost chemically pure. Selected samples analyzed over 99½ per cent calcium carbonate. The run of the quarry, including all impurities, after being passed indiscriminately through a crusher and analyzed for fluxing purposes, shows a little over 98 per cent calcium carbonate. The clouding and veining in all white marble is, of course, due to foreign matter occurring in greater or less amount. In the Talladega County deposits the foreign matter is concentrated at intervals in distinct veins or beds of a thickness varying from ½ in. to 3 in. or 4 in. In these beds it takes the form of a sort of greenish mica-schist. The marble lying between the schist

veins gives an available thickness of from 18 in. to 5 or 6 ft.

"In using the fancy marble from the Alabama deposit, just as in the case of fancy marbles from other well-known American deposits, architects should remember that the color is distributed through the original blocks in more or less wavy, parallel veins, parallel to the bed of the marble. The distribution of color is different on all three faces when the marble is sawed parallel with the three principal dimensions of the block. When used in thin slabs, this marble could be sawed either directly or else it should be sawed diagonally so as to spread the color in a diagonal pattern across the face of the slab. The green veins are invariably made up of the same material which constitutes the schist beds; they are softer than the marble and, of course, present some difficulties in the matter of a finish. The body of the marble itself, in the case of these fancy marbles, may be creamy white or it may exhibit any shades of yellow or orange, running often into a deep pink.

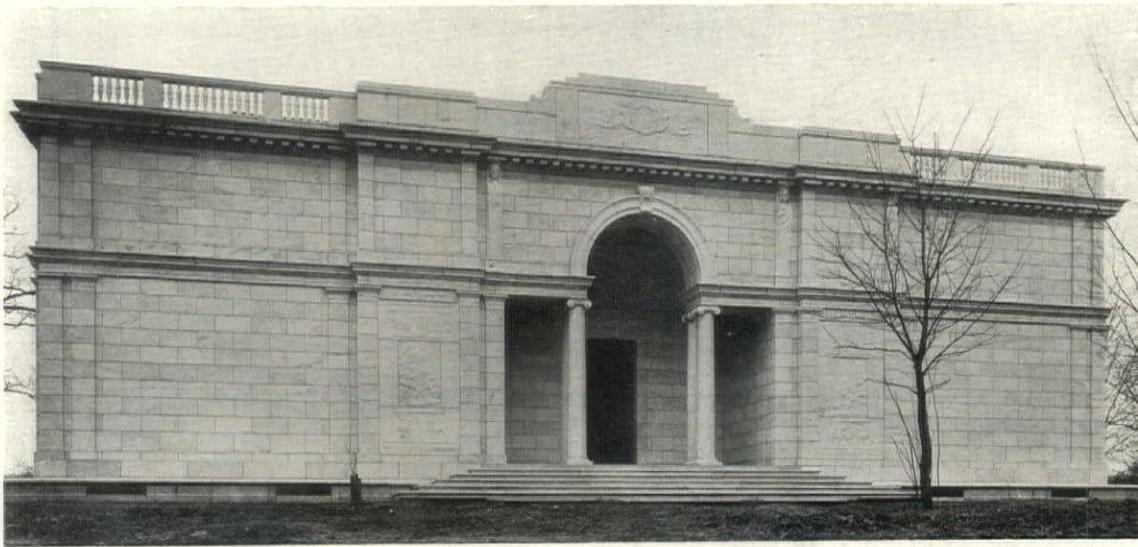
"The geological formation to which Alabama marble belongs is an old one, and it has proved to be a valley-making formation as contrasted with the adjacent rocks in its vicinity. The deposit at the present time, therefore, lies under the floor of the valley. It has been deeply eroded by the underground waters, and the various superficial agencies which are at work in all stone deposits to break the stone up have caused many superficial cracks, extending through a considerable depth, which the quarryman calls by the general name of 'unsoundness.' The underground waters, gaining access to the cracks, have resolved the marble, as they do all limestones, and have deeply eroded it. The result of this is that the development of the Alabama quarry is quite a tedious and expensive process; but the finished material is of superior quality.

"The principal quarry in Alabama is at Gantts Quarry. In addition to Gantts Quarry there is one other opening



KIMBALL MONUMENT, CHICAGO, ILL.
McKIM, MEAD & WHITE, ARCHITECTS

THE AMERICAN ARCHITECT



BROOKS MEMORIAL, MEMPHIS, TENN.
JAMES GAMBLE ROGERS, ARCHITECT



CLEVELAND, O., MUSEUM OF ART
HUBBELL & BENES, ARCHITECTS



MARBLE PANEL, BROOKS MEMORIAL, MEMPHIS, TENN.

JAMES GAMBLE ROGERS, ARCHITECT

on the marble deposit which is being operated at the present time, located about a mile northeast of Gantts Quarry.

"In addition to the white marble of the various grades which constitute the bulk of the output, Alabama contains some layers in which cream veins with orange and yellow tints are so distributed through the marble as to produce a handsome fancy marble for ornamental purposes. It also produces a small amount of marble in which the marble is partly blue and partly white, or almost wholly blue."

Georgia Marble. While the presence of extensive marble beds in Pickens County, Georgia, was known from the earliest days of the State, it was not until 1840 that any effort was made to develop what has since been found to be a very important deposit of marble. Quarrying was carried on in the most primitive way, and an itinerant vendor went about the State selling marble slabs for use as tombstones.

In 1883 capitalists and scientists, attracted to this section (Pickens County) by reason of its undoubted marble richness, began the work that has resulted in the development in Georgia of the marble industry on the largest scale.

It is claimed for Georgia marble that it is almost pure, containing by chemical analysis nearly 99 per cent of carbonate of calcium. Test of its strength has demonstrated that it will withstand a crushing pressure of approximately 15,000 pounds to the square inch. It is practically uniform in texture. Several varieties and colors are now being quarried. These are:

Kennesaw, a white marble with a slight amount of veining. Owing to its crystalline structure, the surface presents a glistening appearance. This marble has been used successfully in interior work, and many sculptors have found it a satisfactory substitute for imported white marble.

Cherokee. While not so white as the Kennesaw, it may yet be classed among the "white" marbles. It has a light grey clouding with a very light grey, almost white, background. This marble has been found to be well adapted for both exterior and interior work.

Silver Grey. This marble is in color exactly what its name implies. It is free from veining or clouding. It has been used successfully for slab work, and is quarried in unusually large sizes.

Creole. This marble has a white or very light grey background with black or bluish black veining or figures. It is found in three shades, light, medium and dark, and can be successfully used where "white, strongly veined marble" is specified.

The survey of Georgia marbles made by the United States Geological Survey showed that of a number of cubes placed in water at 60 degrees Fahrenheit, each was found to have absorbed less than six-one-hundredths of 1 per cent of moisture. The actual strength of the quarried Georgia marble is set forth as follows:

	<i>Per Sq. In.</i>	<i>Per Sq. Ft.</i>
Cherokee	13,900 pounds	992 tons
Mezzotint	13,100 pounds	935 tons
Creole	13,200 pounds	943 tons
Silver Grey	13,200 pounds	943 tons
Kennesaw	12,540 pounds	896 tons

Colorado Marble. The most important marble deposits in Colorado are located along Yule Creek, near the town of Marble, in Gunnison County. This marble is principally pure white, of medium-fine grain with occasionally recurring bands of green stained deposits. These Yule Creek beds are claimed to be the largest deposits of white marble in the world.

In Pueblo County small deposits of colored marble have been quarried, but these quarries are not now worked. There have also been uncovered deposits of black and dark-colored Breccia marbles near the town of Pitkin, in Gunnison County. Breccia marble also is found near Boulder, and a choco-

THE AMERICAN ARCHITECT

late-colored marble has been found near Fort Collins, in Larimer County.

As far as its commercial production may be considered, the only important quarrying of marble has been confined to that from the Yule Creek section.

Post-Bellum War Problems

The labor problem will be one of the gravest after the war. The immediate effect of peace will be the cessation of war industry, and the shutting down of plants will throw many, at least temporarily, out of employment. As demobilization proceeds this army of unemployed will be considerably augmented unless business activity in other directions is stimulated. Immigration from Europe may still further aggravate the situation, unless there are restrictions on emigration from European countries or conditions there that will induce labor to remain at home. This question need not cause us serious concern, however, as we have the remedy in our own hands through our immigration laws.

At the time of the Civil War we had vast tracts of undeveloped territory, and the migration to the West that followed the war solved the problem of surplus labor. To-day conditions are different and, although our need for increased agricultural production is great, it is more likely to be obtained by improved agricultural machinery than by large additions to farm labor. With improved means of transportation the whole world is now as readily accessible as our hinterland was after the Civil War. To maintain and develop our foreign trade emigration will be necessary, and to some extent that should act as a corrective of our labor troubles.

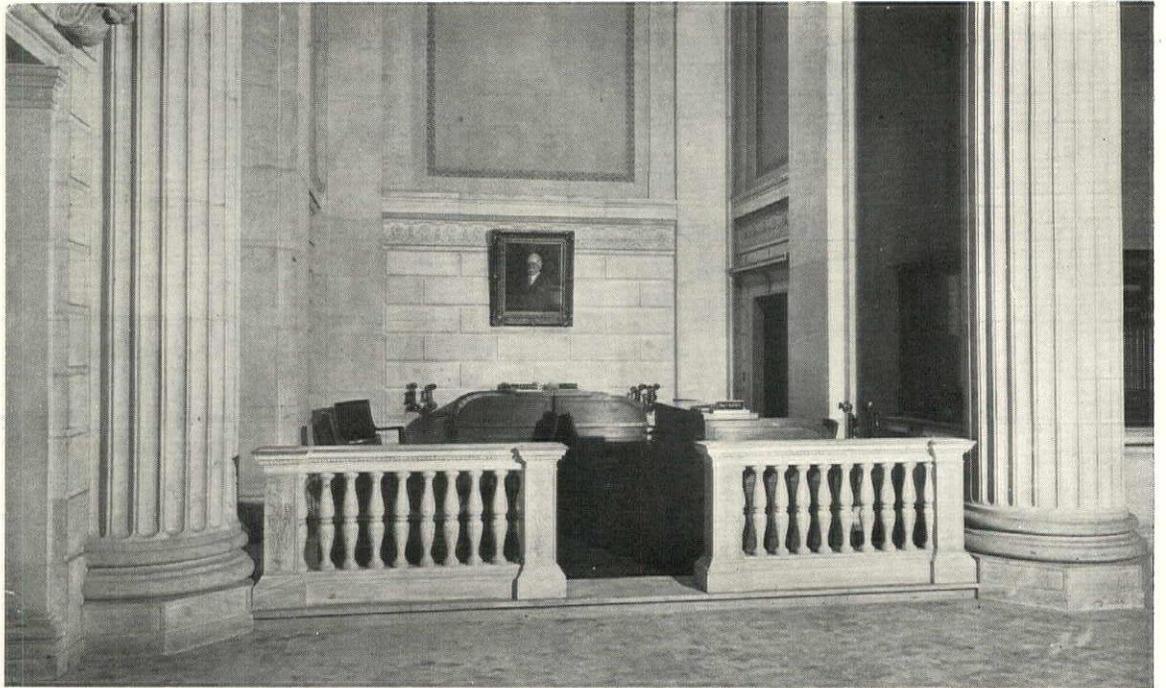
Reserve stocks of all commodities have been depleted, and the necessity for production will be the real solution of our labor problem. There must, of course, be a period of readjustment, but much of the plant that has been provided for war purposes can be adapted to the requirements of peace, and if our plans are properly laid, the period of readjustment can be materially shortened.

Extract from an address by James Rattray of The Guaranty Trust Co., New York.



MARBLE BRIDGE AT PROCTOR, VERMONT

HARRY LESLIE WALKER, ARCHITECT



MARBLE COLUMNS AND RAILING, GUARDIAN TRUST CO.'S BUILDING, CLEVELAND, O.
WALKER & WEEKS, ARCHITECTS

Marble, Its Specification, Installation and Subsequent Care

By HARRY H. MILES

WITH the ever-increasing use of marble for utility and decorative purposes, and with the great number of marbles on the market, it is important that architects give the subject careful thought and study, in order to get the best results without extravagant expenditure.

ITS SPECIFICATION

Architects often get into difficulties by specifying marble work from small samples found in their offices, some of which have been in their files a long time and do not fairly represent the marbles available at the time of writing the specification. Often these samples are too small to show the color and marking in the marble, even when the sample is not an old one.

In considering marble it must be understood that this is a variable product of nature, and the best results can be obtained only by extreme care in selection. Rarely, if ever, are two blocks of marble, even out of the same quarry, perfectly uniform in color and marking; and when you consider that, in the market, marbles bearing the same trade name

often come from several different quarries, the wide variation encountered can readily be understood.

In working out his color schemes and specifying marbles that will harmonize, the architect could save trouble for himself and others by consulting with reliable marble contractors, to obtain information about marbles available to carry out his ideas. Changes are constantly taking place in the marble industry as well as in other fields; new varieties are coming in and others disappearing from the market. This is especially true at the present time, on account of the conflict in Europe, which has cut off the supply of certain kinds of marbles entirely, and limits the supply of others. A constant development is taking place in America, which brings new kinds and colors of native marbles into the market. If a little more investigation were made, architects might find in this country, readily obtainable, marbles which would carry out their color schemes just as effectively as the foreign varieties, at less cost and with saving in time.

Specifications should be made as explicit as possible in regard to kind and quality, to avoid mis-

THE AMERICAN ARCHITECT

understanding and confusion. High-sounding names are frequently used to confuse the architect, and imitations are often sold under a name similar to that of some other variety of marble which is popular.

In the best practice the architect does not name one particular marble to the exclusion of all others, but describes the kinds preferred to indicate the type of marble desired for the different parts of the work, and gives the bidder the opportunity of offering any other kinds similar in character. In this way the owner and architect obtain more competition and secure at a minimum cost the marble best suited for the work.

In specifying by samples good-sized pieces should be referred to, and where possible reference should be made to completed work on other buildings. The use of small samples to designate the kind and quality of marble desired is dangerous, both for the architect and for those who are to carry out the work, as it is impossible to indicate in a small piece the variation in color and veining that will occur in large slabs.

The effect of the marble on the lighting scheme is a matter which architects would do well to consider when selecting marble for any particular piece of work. Some marbles have a considerable reflective power; and the finish used also makes a difference—the duller the finish the less the reflection. Where there is an abundance of light the finish should be rather dull; where there is a scarcity of light a high polish and a light marble can be used with good effect. Even in rooms having considerable light dark marbles should not be used too freely.

INSTALLATION

The method of securing marble in place and care in its erection are matters of importance, since thereby loose and broken pieces are made as few as possible.

In the setting of tile floors, ample allowance should be made above the rough concrete for about one inch of mortar bed under the marble tiles; that is, where one inch thick marble tiles are to be used, the rough concrete should be brought, as uniformly as possible, to within two inches of the finished floor line. Even two and one-half inches is not too much, as there must be some allowance for variation. Where an attempt is made to bring the concrete up closer to the finished floor line, and to use less

mortar bed under the marble, the usual result is that there is not sufficient room to bed the marble tiles evenly and properly, which results in the appearance of loose and broken tiles after the work is completed.

A joint of reasonable size should be used between tiles, instead of setting them close and with practically no space between. There will then be room for the grout, which on hardening supports the edges of the tiles and keeps them from chipping at the edges and working loose.

In the jointing of floor work, long, narrow strips should be avoided as much as possible, since it is exceedingly difficult to get them evenly bedded; and unless they are a crack will appear across the center. It is also wise, where possible, to use border strips dividing large floors into panels, having a joint over girders running between columns. If this is not done, some slight settling is likely to cause cracks across the floor over the girders. These cracks are frequently seen in terrazzo floors installed in large sheets, and without this precaution in jointing.

The most approved method of securing wainscoting, wall facings, etc., is by concealed anchorage, using heavy brass or copper wire, each anchor being bent by the setter for its particular place. The setting of interior marble finish is a craft in itself, and should not be entrusted to carpenters and other mechanics who are sometimes allowed to install marble. Large slabs should be well backed up with plaster and a sufficient number of anchors used so



MARBLE INTERIOR, GUARDIAN TRUST CO., CLEVELAND, O.
WALKER & WEEKS, ARCHITECTS

THE AMERICAN ARCHITECT

that the usual amount of jarring, due to slamming of adjacent doors, will not loosen them. The use of very long, narrow strips is to be avoided in wall work as much as in floors. In toilet room enclosures, for example, the end stile, coming against the wall, is often found to be made extremely narrow, and secured against the wall slabs with angles. These narrow strips cause no end of trouble due to breakage when the door slams against them, and should be avoided by making the strip of marble sufficiently wide to have some strength, and where possible extending it into the wall to make it more secure.

CARE OF MARBLE

The fact that the interior marble finish of a building is so easily kept clean may account in a measure for the fact that it is so often neglected. It would seem that a beautiful and costly piece of polished marble work would certainly warrant as much attention as is ordinarily given to washing plate glass windows; but in many buildings it does not receive reasonable care and attention. To keep marble clean and bright requires only warm water, soap and a soft cloth. All preparations containing acid or grit of any kind should be avoided, as they harm the delicate surfaces, which are honed or polished. Ordinary soap powder and warm water used frequently will keep marble work clean and bright, without danger. Stiff bristle brushes can be used on floors and stair treads to scrub them clean. There is no material used for the interior finish of a building which requires less attention than marble to keep it looking well. Plaster walls and iron work must be painted frequently; woodwork must be varnished and rubbed down; and every other finishing material used in a building requires more or less attention in maintenance. Marble requires the least of any. It is important that the joints in interior marble work should be gone over occasionally and any open joints thoroughly filled and pointed. If this is not done the open joints, where pointing has dropped out, will collect dirt; and as the raw edges of the marble in these joints will not resist staining like the polished surfaces, stains will penetrate the marble on either side of these open joints.

Sometimes one sees a beautiful piece of marble work damaged beyond repair—the corners chipped off, a slab cracked, or a deep scratch left in the surface. This damage is generally caused by hand trucks, safes or large pieces of furniture bumping against the walls and corners. Guard rails and protections should be utilized more frequently in the protection of marble work where the handling of trucks and other such objects is unavoidable. The breaking of a large slab of marble which has been

matched to the adjoining slabs is a much more serious matter than the breaking of a large plate glass window. In replacing the broken slab of marble it is almost impossible to match those adjoining it, while all plate glass is alike. Thin or sharp edges should be avoided as much as possible; slightly rounded arrises give a wonderful protection against chipping.

Substitutes and imitations are continually being offered to take the place of marble. These usually



BANKING ROOM, GUARDIAN TRUST CO., CLEVELAND, O.

WALKER & WEEKS, ARCHITECTS

have one or two talking points which are dwelt upon until the owners or architects consent to use them, but almost invariably they regret this decision later on when time has shown up the defects. No mixture of cement and coloring matter has yet been found to stand the test of time like nature's most beautiful product, marble.

While the initial cost of marble compared with other materials appears rather high to an owner, if the cost of up-keep and the enhancement to utility and appearance of the building are considered, it will frequently be found the most economical material to use. The free but carefully considered use

of marble for floors, steps, wall facings, etc., in the public spaces of buildings, probably adds more to the character and renting value per dollar of invest-

ment than a like expenditure in any other way. This accounts for the constantly increasing employment of marble in the better class of buildings.

Planning an Industrial Zone

An interesting and extremely instructive paper on planning in an industrial district, submitted by the Philadelphia Chapter of the American Institute of Architects, was read during the Pennsylvania housing and town-planning convention, recently held in Philadelphia.

The value of this paper does not rest solely on the fact that it presents a thoughtfully considered solution of certain problems affecting Philadelphia and its relation to other nearby towns and cities, but also for the reason that it presents in many phases plans and ideas that can be used to advantage by any city.

This paper emphasizes the fact that the basic ideas that are involved in the planning of a house or a town differ little, if any, from the broader application of ideas in the planning of a country. The difference is simply one of scale.

The paper follows:

A few months ago the Philadelphia Chapter of the American Institute of Architects initiated a study of local industrial housing conditions, moved to this action by the lack of proper living quarters for a considerable fraction of our population. It was assumed to be a merely local problem and in that spirit the task was undertaken. But no sooner was the work commenced than this was seen to be a false conception, and soon we were visualizing our task from a much broader point of view, knowing full well that in no other way could a permanent solution of local difficulties be effected. For it is entirely reasonable that the location of one village can only be suggested after careful survey of the neighboring factories and towns, actual or projected. Whenever possible workmen should have access to several, not to one industry. The value of a park system, such as is being developed for Philadelphia, can be largely nullified by a neglected street plan, and by the uncontrolled growth of communities. These were a few of the many reasons why it was felt that it would be merely wasting time to devote study to any one division of the subject, unless it was first made plain what its relation might be to the problem as a whole.

A significant fact was at this time brought to our attention. Owing to inadequate railroad facilities much freight in less than carload lots, shipped to Philadelphia, was being unloaded at Easton and Reading, and from there brought to the consignee by motor truck. An examination of the map will show that a quadrilateral of approximately sixty miles square, the four corners of which are Reading, Easton, Trenton and Wilmington, form a district, separate and distinct, both in a geographical and economical sense.

Accepting the situation frankly, we treated it as a metropolitan area and sought and immediately found other reasons for this action. Motor traffic has developed to such an extent, both in number of units and average weight of load, that the use of the city streets for anything in the

nature of through routing can no longer be tolerated. And even when city streets, such as the Delaware Avenue Boulevard, are especially constructed to bear these enormous loads, the congestion incident to a vast wharfage front forbids their employment for anything but short hauls.

We were thus forced to consider the main lines of communication, studying in detail only the highways. In examining the geography of the district we clearly perceived that the great diagonal highways connecting Bethlehem and Wilmington, Reading and Trenton, and Coatesville and Trenton should be made to meet at a point on the left bank of the Schuylkill River near Conshohocken, and furthermore, all through traffic on the New York, Trenton, Chester, Wilmington, Baltimore line, in by-passing Philadelphia would traverse this distributing center. The economy of operation and the saving of time and money incident to the establishment of such a distributing center can best be understood by reference to the accompanying maps. Truckloads of explosives are now passing through the most crowded parts of Philadelphia. The grave risk to lives and property, the loss of time in the carrying of materials, is due to the fact that there is not a bridge across the Schuylkill River between Phoenixville and Girard Avenue available for the passage of a five-ton truck. An astonishing situation confronts us.

The safety of our armies in France depends in a large measure on the speed with which ships may be built, loaded with munitions, largely by local manufacture, and sent to Europe. And the district where these essentials are produced is divided into two almost equal portions by a river gorge, which in the thirty miles of its length most important to commerce is unspanned by any highway bridge strong enough to carry 10,000 pounds.

The cost of establishing a crossing at Conshohocken, the cost and extent of new road and the repairing and putting in condition of old roads and bridges necessary to establish the system shown on the maps has been investigated and a copy of the estimate accompanies the report. It is hard to believe that so small a sum of money and such a trifling amount of work can be deemed an obstacle to the execution of this project, the benefits of which will be immediate and vast.

The vital need of workmen's houses, the lack of which is seriously hampering our industrial activities, can only be studied in relation to highway transportation. There are not two problems. There is but one problem! It is not possible to determine the location or even the necessity of a village until after a thorough and far-seeing survey of the lines of communication, both major and minor, has been made. The narrow lanes straggling in from the surrounding country bearing their slow-moving loads of farm products, the roads for light travel connecting one group of houses with another and with the factories, the location of factories themselves, the heavy-duty trucking roads, the railroads and navigable streams, should be harmoniously arranged in their proper relations to each other. This can be accomplished economically, logically and beautifully for the benefit of capital and labor alike, only by setting our faces against the ignorant and casual methods that have hitherto prevailed.

For it must be realized that there is such a thing as the planning of a country and that it differs in scale alone

from the methods employed in the planning of a house or of a town. Let us employ this knowledge as a mighty and benign influence in attempting to solve the social and industrial problems now demanding our attention.

Housing Conditions in Capital Improved

Housing conditions for Government employees in Washington have greatly improved during the last few months so that in six weeks or two months a complete solution of the problem will be reached. The housing bill, appropriating \$10,000,000 for the accommodation of war workers, has passed Congress and been signed by the President.

Plans for dormitories for the young women workers are complete and the Government will begin their erection soon.

The room registration office, organized under the District of Columbia council of defense, has located suitable rooms for workers. In a report for May to the civil service commission there were 4500 rooms available. Most of these are double.

Statistics collected by the housing and health division of the war department show that room and board of two meals a day can be secured for \$40 a month.

The Government has taken steps to provide for the recreational needs of war workers.

Over 40,000 new workers have been added to the Government payroll in Washington since war broke out. This increase has caused a severe congestion in the housing of workers.

New Navy Building in Washington Said to be Largest in World

The building now being erected near the Lincoln Memorial for the use of the navy is the largest office building in the world. It covers forty-two acres of ground, is three stories high, built of reinforced concrete, and will house 15,000 persons. Because of objections made by the Fine Arts Commission, the heating plant for the building is being built near the Potomac River, 400 ft. distant. The entire enterprise is costing \$5,750,000. A small part of the structure will be used by the War Department.

In building the structure the Bureau of Yards and Docks has used 107,299 barrels of cement, 38,100 tons of sand, 81,507 tons of gravel, and 4,507 tons of steel. There are eight acres of window glass in the structure.

Important Changes Made in Government Housing Policy

CREATION OF TWO NEW DIVISIONS AND ADOPTION OF CERTAIN POLICIES ANNOUNCED

The Department of Labor authorizes the following:

A memorandum from Secretary of Labor Wilson to Director of Industrial Housing and Transportation Otto M. Eidlitz announcing important changes in the Government's housing policy is in part as follows:

The plan of organization approved by me May 4, 1918, shall continue in effect until otherwise directed, except that there shall be associated with the director a representative of the War Department, a representative of the Navy Department, and a representative of the Shipping Board, who shall be known as associate directors. They shall advise the director on behalf of their respective departments or board.

There shall be organized a management division, which shall undertake the management of the properties erected by the Government, and also a division of existent housing, which will deal with the question of utilizing all of the housing and boarding facilities of each community in order to reduce to a minimum the need for Government housing.

The Government will build, own, control and rent the houses until after the war.

The houses erected in established communities shall be of a permanent character, except where Congress has otherwise stipulated.

Houses erected in communities that are not likely to continue in existence after the war shall be of a temporary character, but such temporary buildings must, of course, provide for the comfort of the occupants.

Loans will only be advanced for the erection of dormitories to responsible corporations or associations not organized for profit, and then only after most careful consideration of the advantages to be gained thereby.

In fixing rentals the following factors will have to be taken into account:

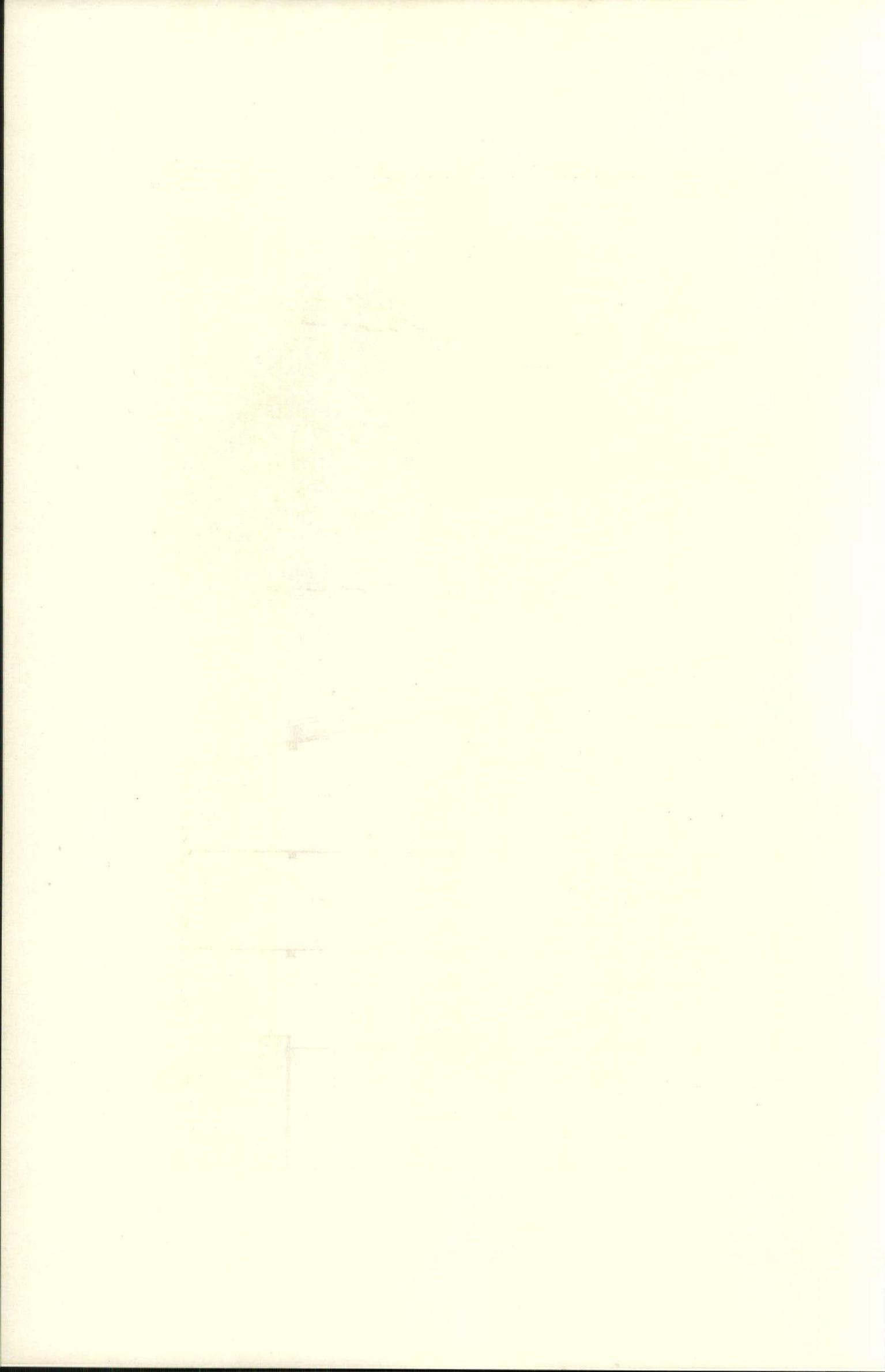
1. Fixed charges.
Interest on investment.
Insurance.
2. Reserves for upkeep of rented houses.
Repairs.
Renovating and redecorating.
3. Reserve for loss in case of non-occupancy.
4. Overhead expenses of administration.
5. Depreciation.



PLATE 9

RECREATION BUILDING, DETROIT, MICH.

SMITH, HINCHMAN & GRYLLS, ARCHITECTS



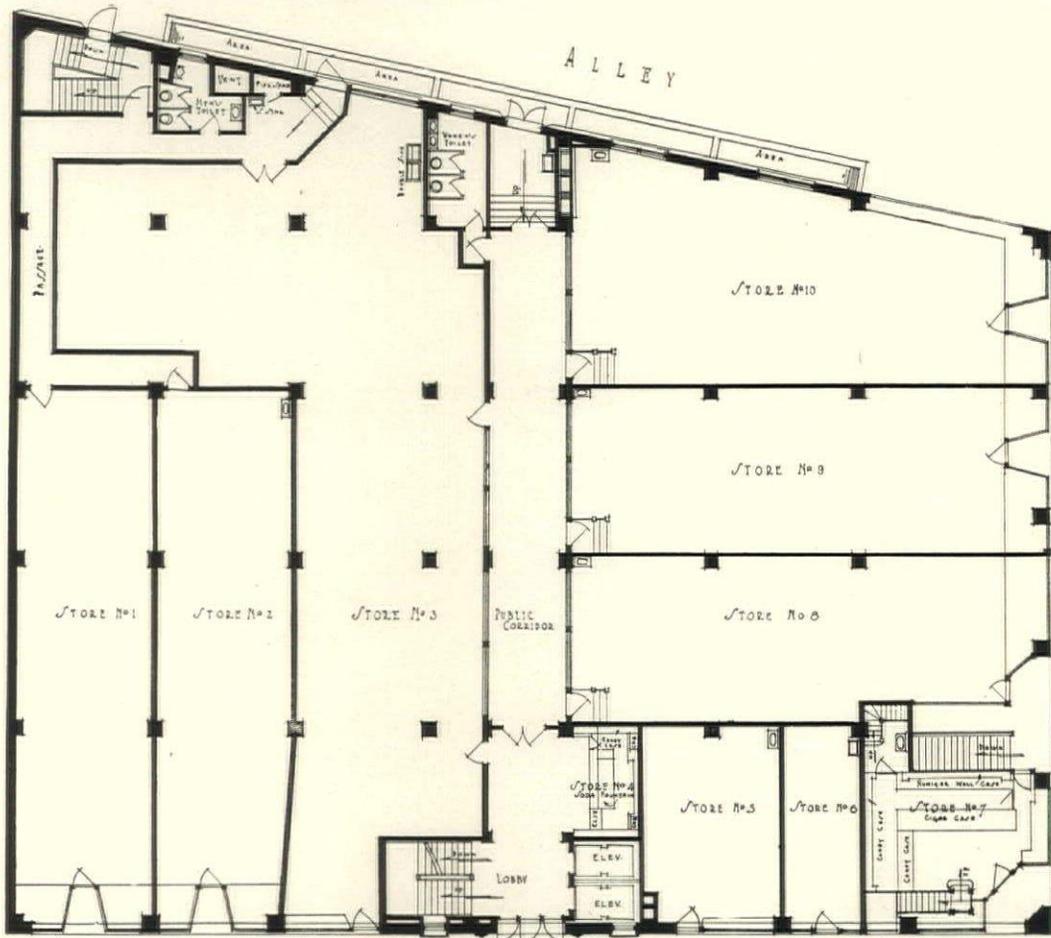
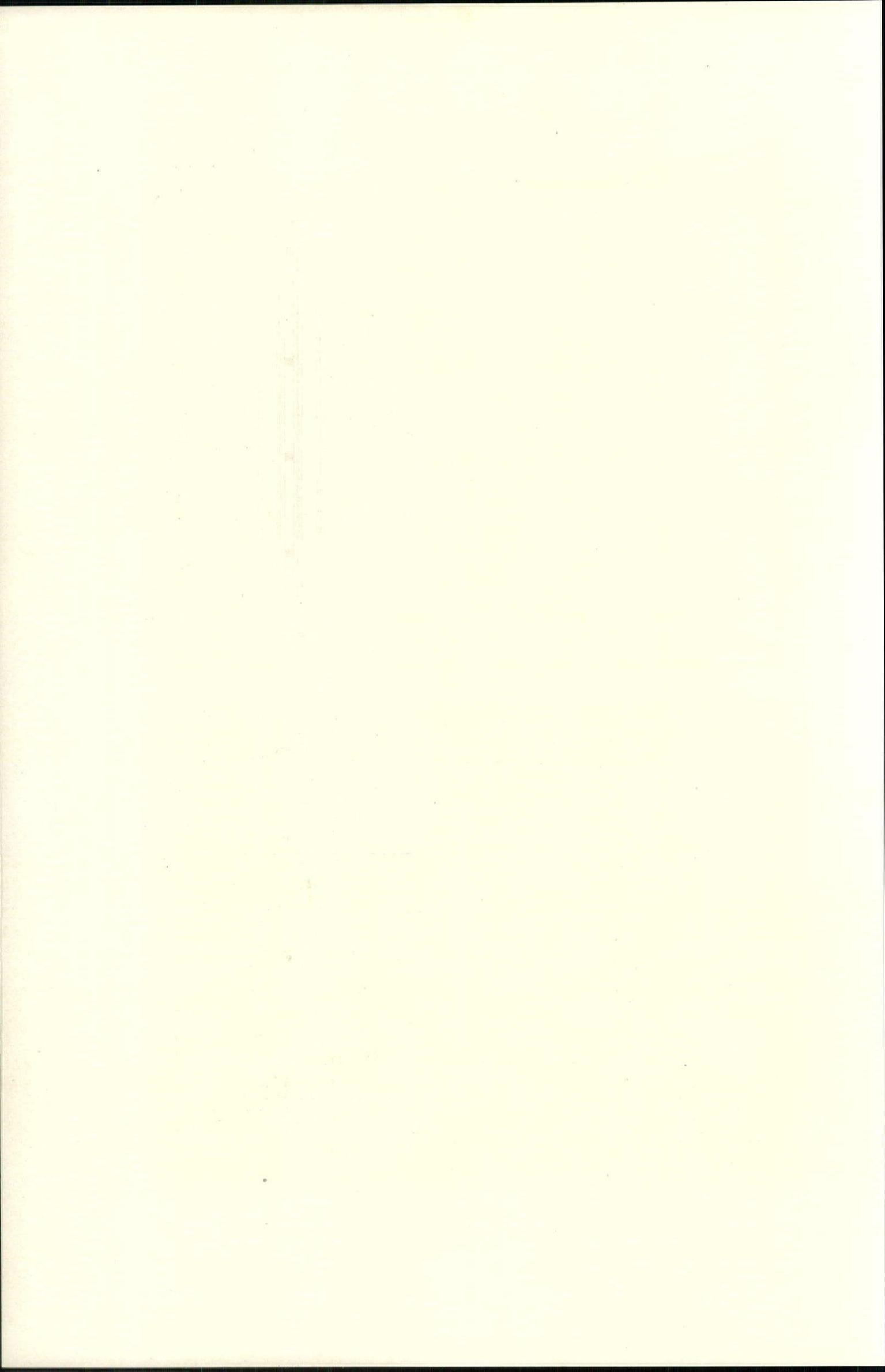
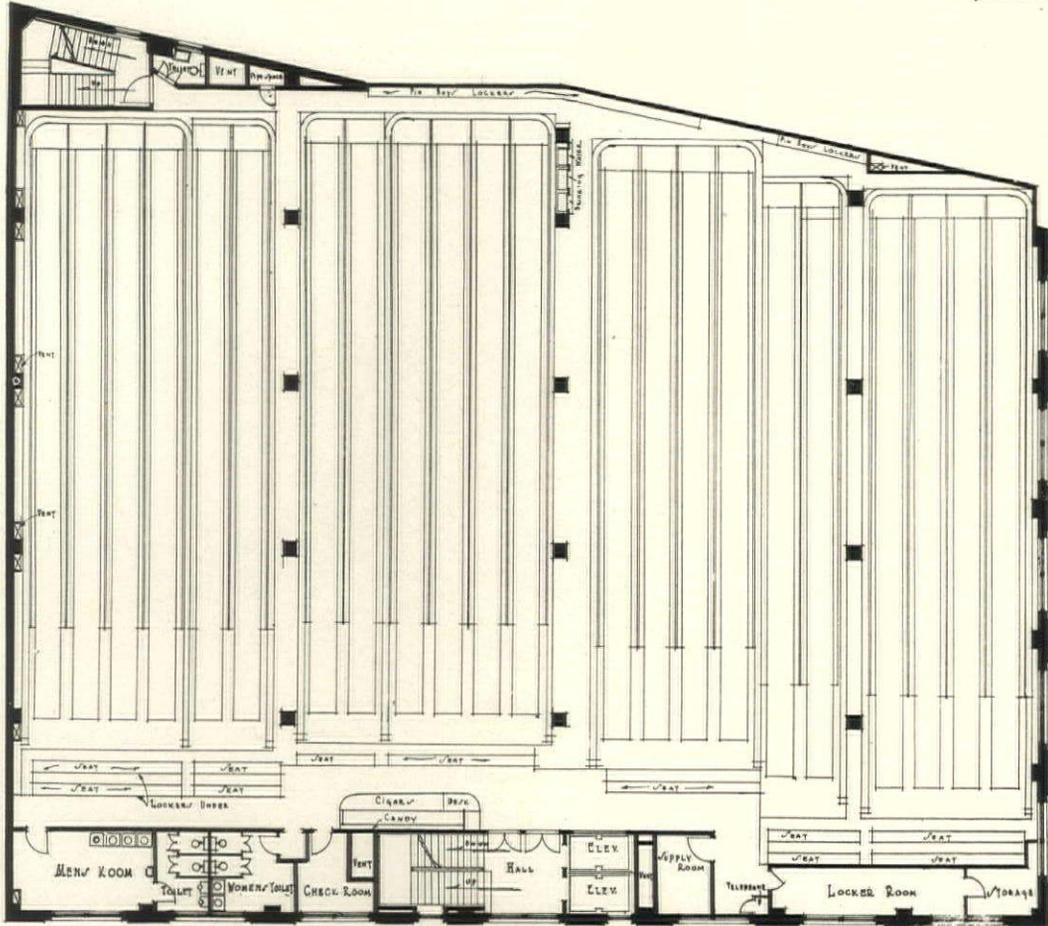


PLATE 10

GROUND FLOOR PLAN

RECREATION BUILDING, DETROIT, MICH.
SMITH, HINCHMAN & GRYLLS, ARCHITECTS





BILLIARD ROOM, FLOOR PLAN



PLATE 11

RECREATION BUILDING, DETROIT, MICH.
SMITH, HINCHMAN & GRYLLS, ARCHITECTS

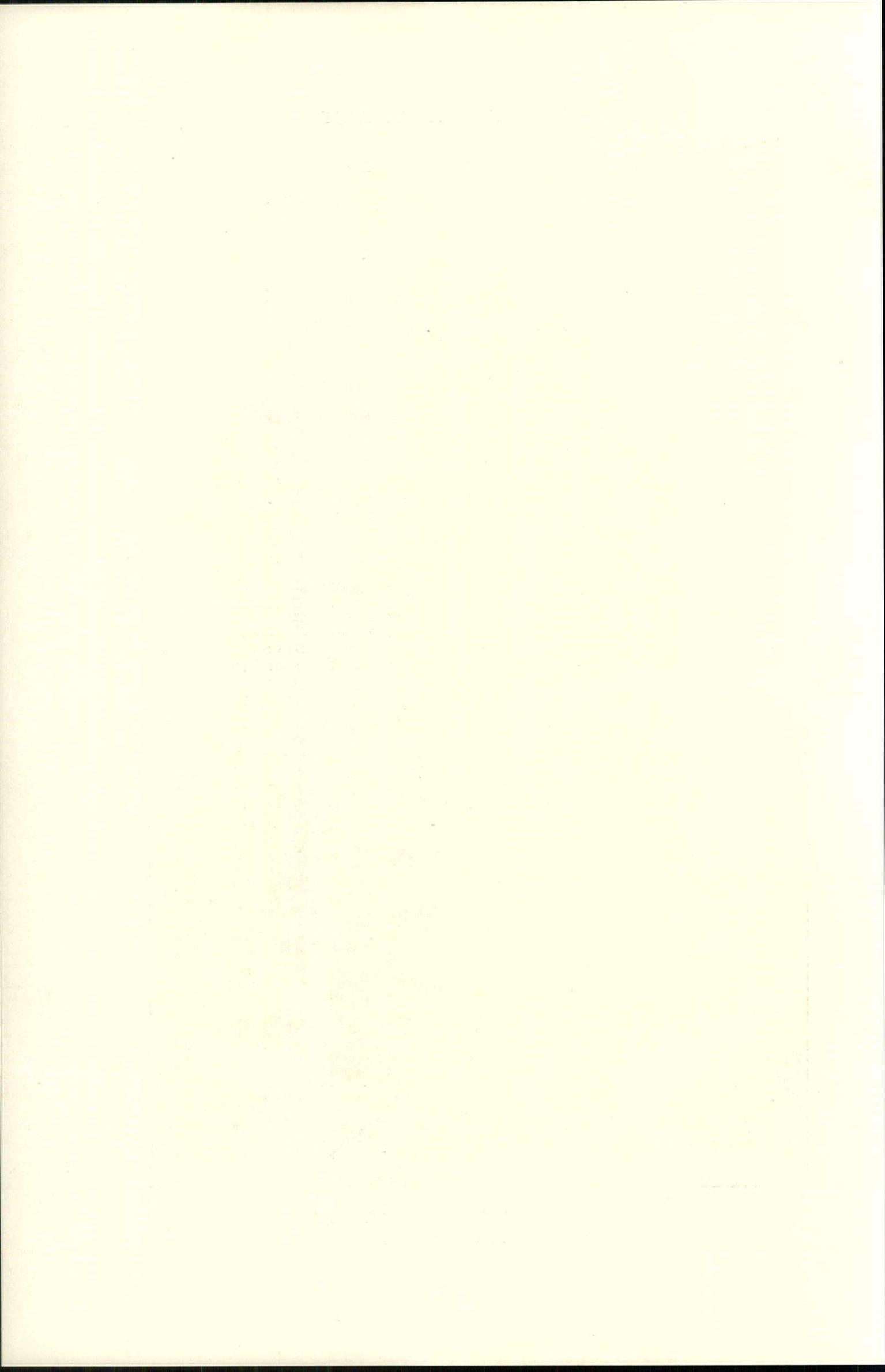




PLATE 12

METROPOLITAN BANK BUILDING, MINNEAPOLIS, MINN.

HEWITT & BROWN, ARCHITECTS





PLATE 13

DETAIL OF UPPER STORIES

METROPOLITAN BANK BUILDING, MINNEAPOLIS, MINN.

HEWITT & BROWN, ARCHITECTS

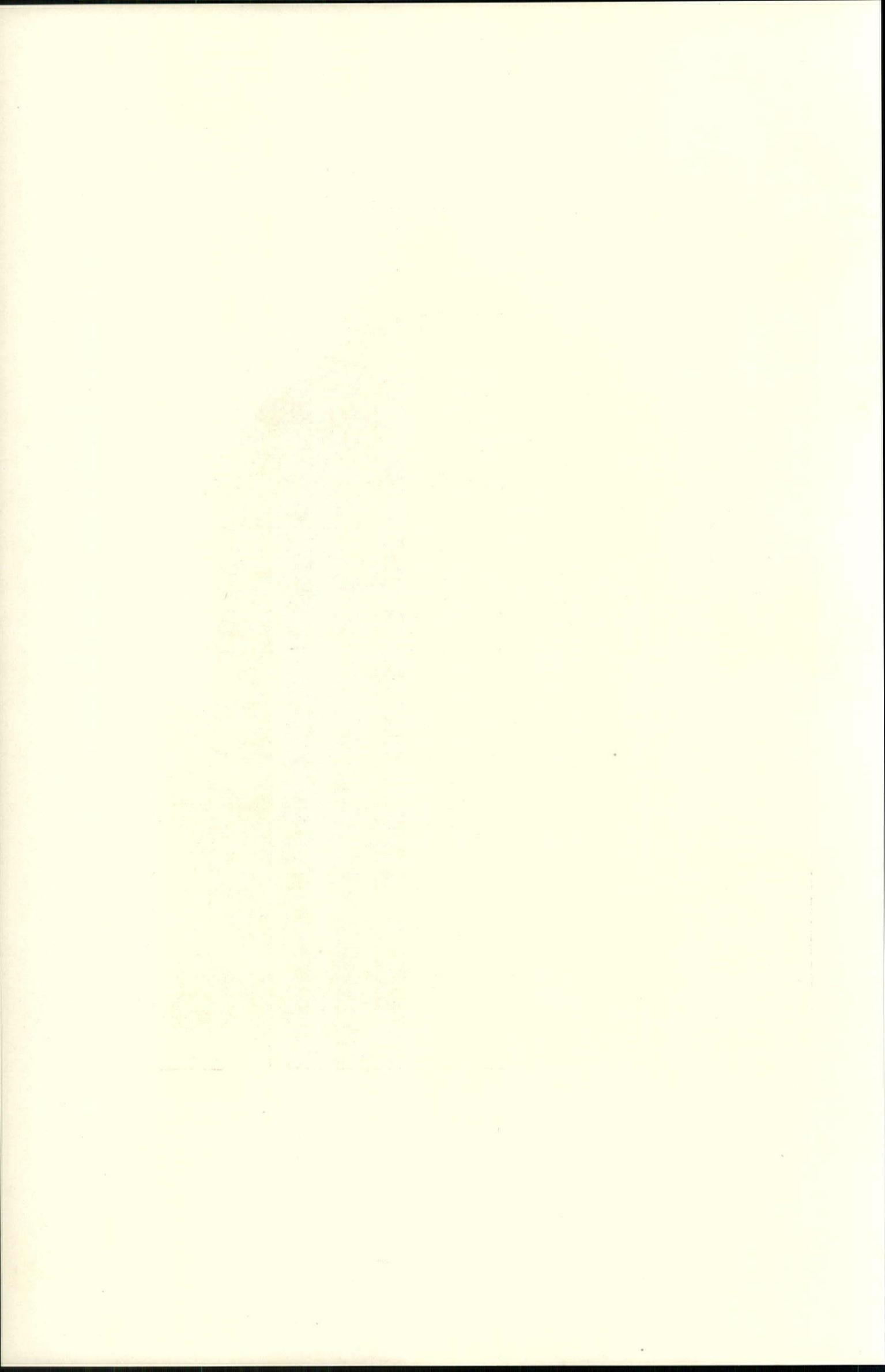




PLATE 14

McKNIGHT BUILDING, MINNEAPOLIS, MINN.
HEWITT & BROWN, ARCHITECTS

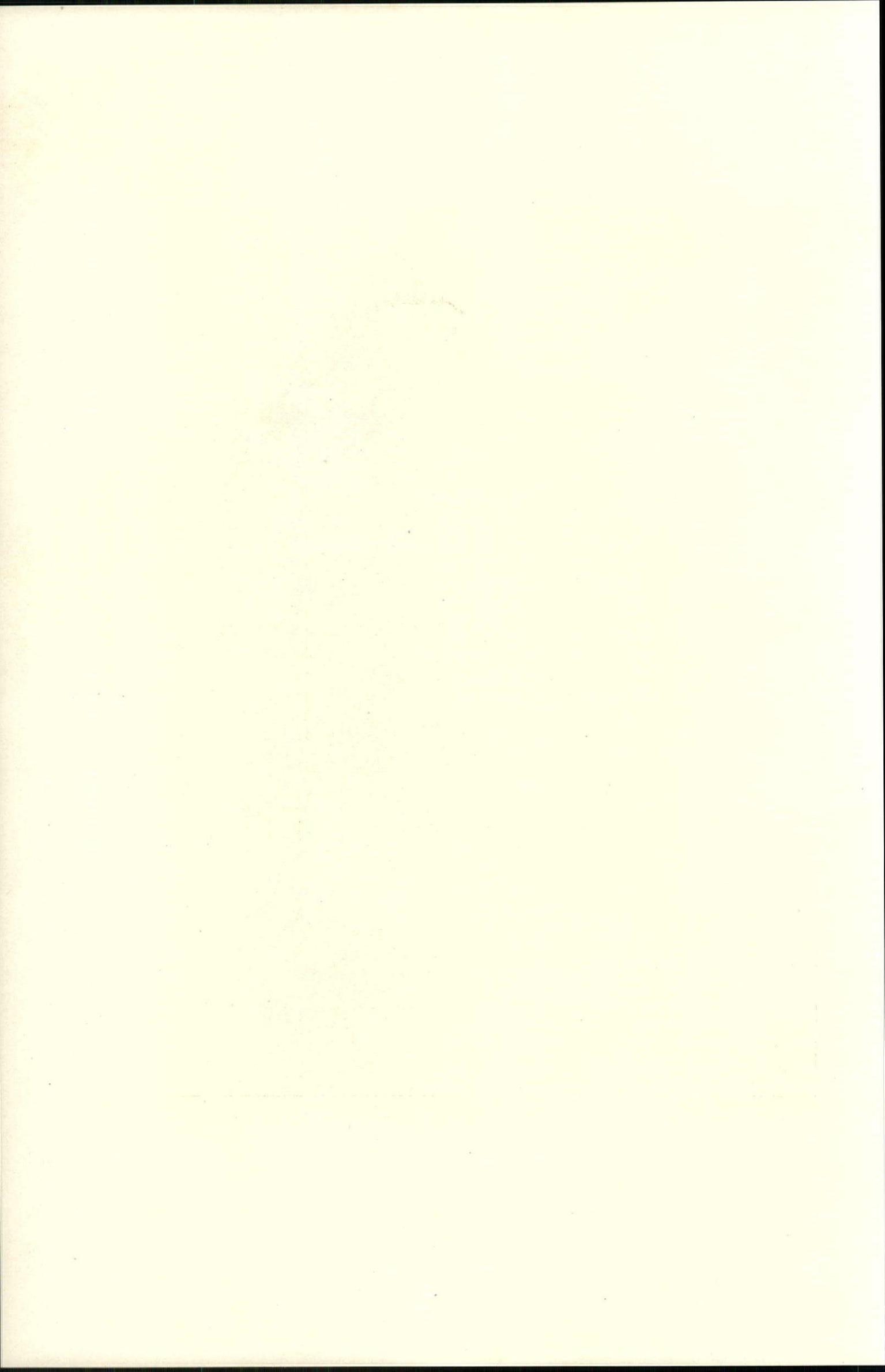
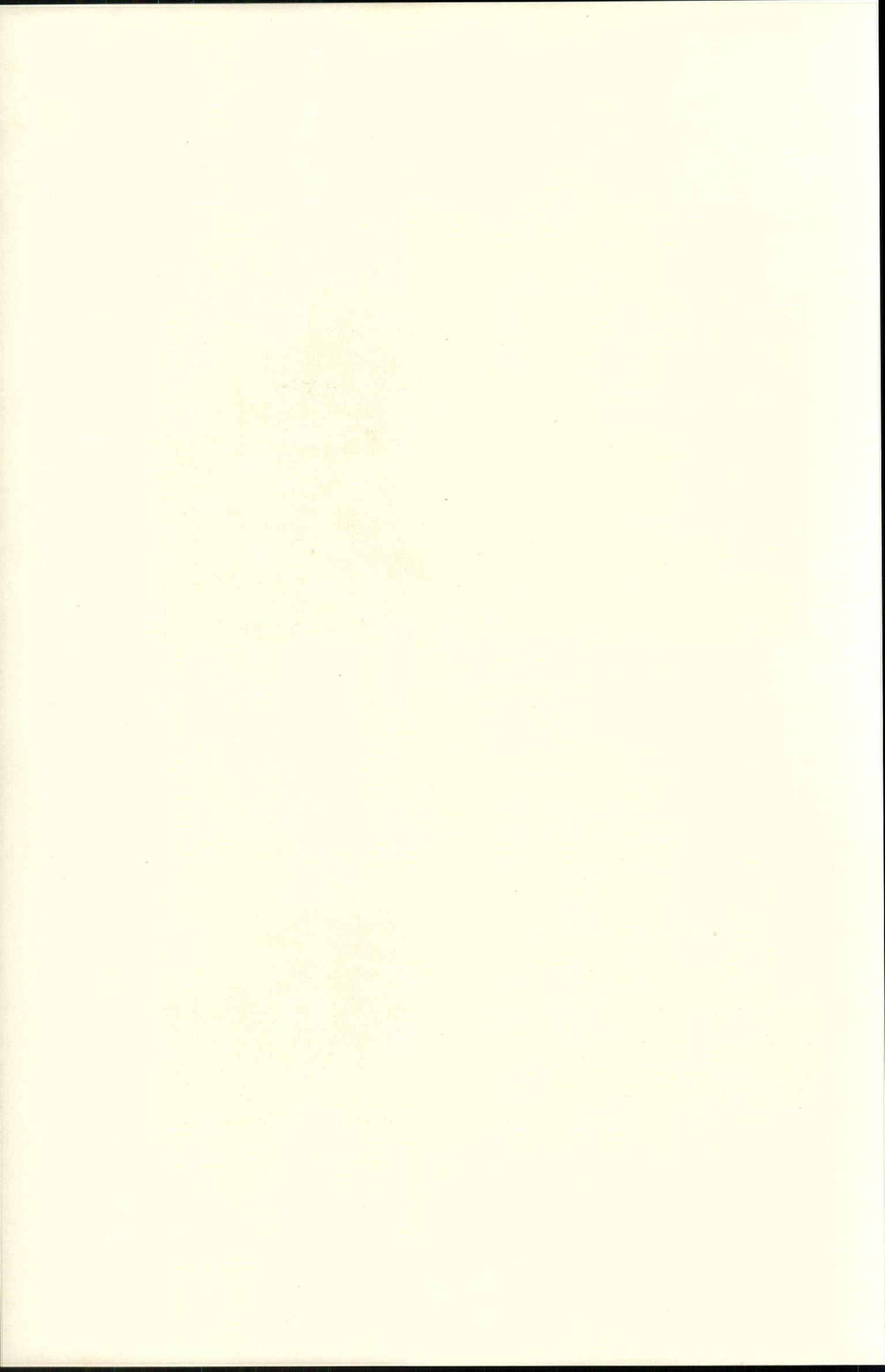




PLATE 15

HOUSE OF CHARLES E. SEXTON, MINNEAPOLIS, MINN.
HEWITT & BROWN, ARCHITECTS





HOUSE OF J. L. RECORD, MINNEAPOLIS, MINN.
HEWITT & BROWN, ARCHITECTS

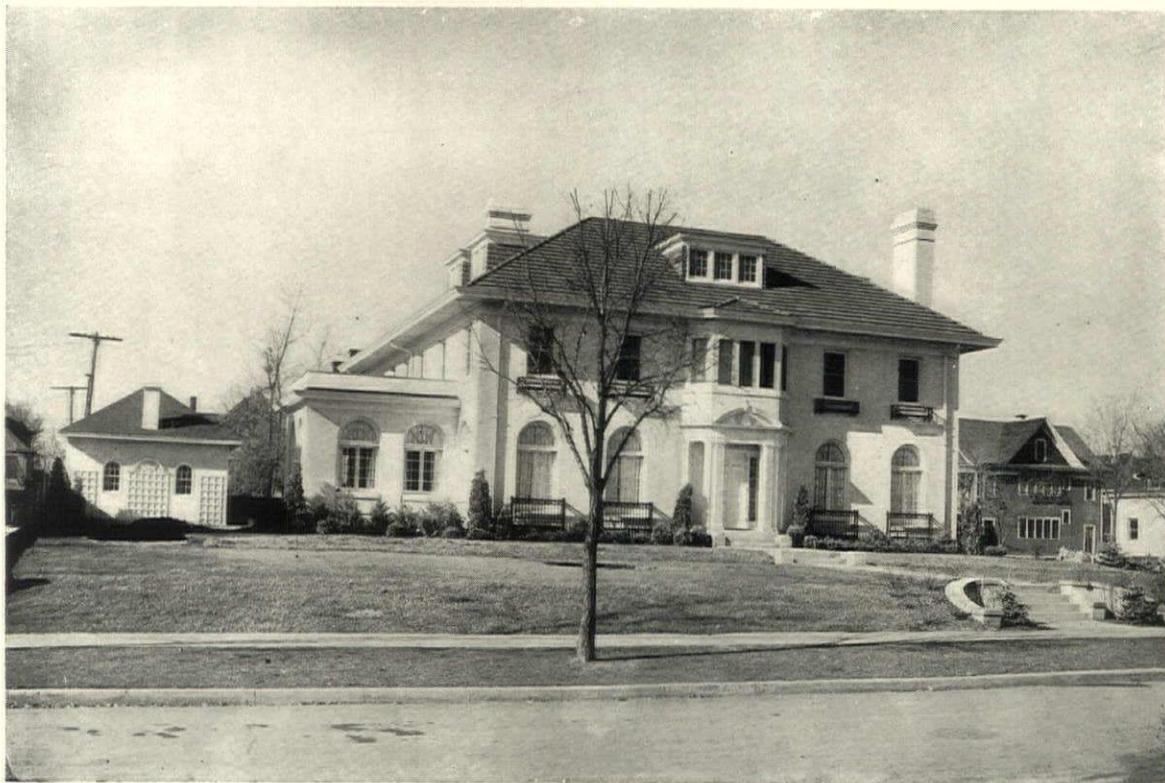


PLATE 16

HOUSE OF W. G. HUDSON, MINNEAPOLIS, MINN.
HEWITT & BROWN, ARCHITECTS



THE AMERICAN ARCHITECT

THE AMERICAN ARCHITECT

Founded 1876

PUBLISHED EVERY WEDNESDAY BY

THE ARCHITECTURAL AND BUILDING
PRESS, INC.

No. 243 West Thirty-ninth Street, New York

E. J. ROSENCRANS, PRESIDENT AND TREASURER
WILLARD C. HOWE, VICE-PRESIDENT

JAMES KNOX TAYLOR—WILLIAM H. CROCKER
Editors

ARTHUR T. NORTH, Engineering Editor

Subscriptions in the United States and Possessions,
Mexico and Cuba, TEN DOLLARS. Other Countries,
TWELVE DOLLARS

SINGLE COPIES (Regular Issue) 25 CENTS

CHICAGO OFFICE, Mallery Building
PAGE A. ROBINSON, Western Manager
ST. LOUIS OFFICE, Wright Building
CLEVELAND OFFICE, Guardian Building
SAN FRANCISCO OFFICE, 320 Market Street

Owned by United Publishers Corporation—H. M. Swetland, President;
Charles G. Phillips, Vice-President; W. H. Taylor, Treasurer;
A. C. Pearson, Secretary. Entered as second-class matter January
6, 1909, at the Post Office at New York, New York, under the Act of
March 3, 1879.

VOL. CXIV JULY 10, 1918 No. 2220

To Build or Not to Build

THESE be parlous days for the architectural fraternity. Although we, on this side of the water, are not yet menaced by actual contact with warfare, yet that which is transpiring on the other side has created conditions here which will require co-operation and effort, as well as personal sacrifices by every architect, if we are to prevent a worse state of affairs than already exists.

The first factor that confronts one who is contemplating construction work is the extremely high cost of labor and materials, to which is added the probability in the very near future of its being impossible to obtain either at any cost. These conditions alone would be sufficient to demoralize active operations, but difficult as they are, careful attention would very largely minimize their effect.

However, at this point the National Government intervenes and while it does not specifically say, "Thou shalt not build," by pulling the purse strings and limiting transportation facilities it practically places an embargo on all but industrial projects.

No loyal citizens will raise any complaint to these things, for they are solidly behind the feeling that nothing, no matter what personal sacrifice it entails,

should interfere for one instant with the prosecution of war preparations and the production and transportation of necessary supplies.

What measures, then, can be taken to meet and overcome these difficulties? Is one of the great industrial branches of the country to sit idly and see the organizations that it has taken years to assemble disintegrate from lack of use, or shall it actively combat these conditions? Neither course appeals strongly to any patriotic man. He has, on the one hand, a personal interest at stake, and, on the other, his sense of patriotism. Everything in this life worth having is attained through compromises; it is believed that such compromises can be reached in this case as will solve the problem in a satisfactory way.

Let us, therefore, analyze the subject as though acting for a client. The first factor, as already stated, is the high cost of work. It cannot be denied that the cost of construction is much higher than it was even five years ago, but the costs of anything should be judged relatively, the true basis of consideration being not so much the first outlay as what that outlay will bring in return.

With the higher cost of everything concerned with living, and the great falling off of new construction in the past two years, has come increased demand, higher rentals and a much greater certainty of continuous occupation, all conditions that would surely go far to offset the higher first cost. The client, however, would probably not be satisfied and would, without doubt, suggest the postponement of work until after the cessation of war activities, in the hope of lower prices. Anyone familiar with the selling end of business will agree that all the evidences are strongly contrary to any such condition, as it is a recognized principle of business that supply and demand are the ultimate governing factors in arriving at the cost of an article. Smaller production and larger demand send the cost higher, and vice versa.

Applying this principle to the building situation after the war will surely convince the skeptical that little, if any, relief can reasonably be expected for a period of years, depending largely on how rapidly the industries of peace, both in this country and in Europe, can rehabilitate themselves and reorganize for the resumption of the arts of peace. At present all the branches of manufacture in the warring countries of Europe ordinarily devoted to the production of materials used in construction are completely wiped out, their plants turned into munition factories, their trained employees either in the trenches or scattered in other places where their services would be more valuable in supplying war needs. It must, then, necessarily be some time be-

Claude Bragdon Objects

fore these organizations can reassemble their forces, refit their factories and once more reach a working basis.

The demand for structural material will not, nor can it, wait on this rejuvenation, as housing facilities and machinery are the first requisites on the return to normal conditions.

From where, then, except this country, can the large supplies of materials come? The demand will undoubtedly tax our manufacturing facilities to the utmost; and when to this are added our own requirements to complete work now held in abeyance and the inevitable shortage of labor due to restricted immigration, the problem is further complicated. It is fairly certain that if those remaining in European countries, from which we have drawn our labor forces largely in the past, should desire to emigrate, they would not be allowed to do so by their governments. Nor will the return to civil life of men now in the army materially affect this labor condition.

From all these causes it is reasonable to believe that the supply of structural material cannot be commensurate with the demand, and consequently no reduction in the cost of construction can be looked for in the near future. The question resolves itself into one for individual decision. Whether to deprive ourselves of the comforts and conveniences that might be secured from the proposed structure or to proceed with it at once?

At this point the compromise earlier referred to is of importance. Indications point to an era of unprecedented volume of construction following the close of the war. Those who have by foresight taken advantage of the opportunities will receive the greater benefits.

In any project of building that move is a well-considered scheme of procedure which includes the planning and design. As has already been pointed out in previous articles on this subject, many architects, engineers and clients are now less busy than normally and can devote more time and better attention to a problem than would be possible during a period of great activity. There would be time to consider better arrangements, better and more economical materials and methods of construction. "First come, first served," holds good here even more strongly than ordinarily. Those who are first in the market for estimates will, without doubt, secure material advantages, not only in attention to their needs but also in increased financial returns.

Every tale has its moral. Plan now; get your preliminary troubles out of the way and you will be in a position to take advantage of the most favorable opportunities for new work. Planning now will save much anxiety, and many dollars later

IN a letter to the editor of the *New York Times*, Claude Bragdon, architect, criticizes the method of using the terrace of the Public Library in New York for war exploitation purposes.

No patriotic person will object to the use of the Library for the purpose of stimulating recruiting or the encouragement of subscriptions to the Liberty Loans and the sale of War Savings Stamps. Neither would any patriotic person be restrained from commenting on the untidy manner in which this work is carried forward.

Each night this terrace is left littered and disfigured with the cheapest and most tawdry form of temporary booths.

As the busiest section of any city in the United States, the Public Library is an ideal location for the Government to carry forward its work in certain directions. There can be no lack of patriotism in asking that this work be done in a dignified and orderly way. Mr. Bragdon's letter states:

"Can you tell me why the great and proud City of New York, having spent some millions on a monumental marble library, should exercise no esthetic jurisdiction over its fore-court and approach? This has by now come to resemble something between the outside of a circus sideshow and a tenement house backyard. Barring the open air canteen at the south end, which is orderly, and shows some semblance of style, there has been no thought of beauty in this welter of cheap bunting, torn posters, and painted boards.

"To most persons, I suppose, the sacred name of Patriotism absolves it of all sin; but Patriotism should find concrete embodiment and expression other than through cheap ugliness such as this. Great ideals demand the sacrament of beauty; we may not wantonly desecrate the altars at which men are asked to serve.

"On occasions of great public ceremonials New York has always been able to command the finest artistic talent and there is a permanent art commission of distinguished personnel and wide discretionary powers. Why is it, then, (I ask again,) that here, on city property, at a corner where more people pass, I am informed, than in any other place in the world, their eyes should continually be affronted by such a condition of arrant unsightliness?"

This criticism might be extended to the placing of posters on the public buildings, railway stations and other large structures. The majority of these posters are the work of artists of national reputation. So good are they that collectors the country over are seeking them.

On the base courses of the large buildings bill posters have placed these posters in a haphazard, unsightly manner. There they remain, defeating in most cases, the very purpose of their display, until a heavy rain washes them off in part. There is no effort to renew them, and the result is an undignified and inartistic exploitation of a most serious matter.

Has the Municipal Art Commission no jurisdiction over these things, and if it has are any mistaken ideas of patriotism holding up their action?

THE AMERICAN ARCHITECT

The Recreation Building, Detroit, Mich.

SMITH, HINCHMAN & GRYLLS, *Architects*

AMONG the many types of buildings designed to afford opportunity for athletics and sports, the Recreation Building in Detroit is in a sense unique, as it is the only building in this country designed to meet solely the demands and conveniences of the two games, billiards and bowling. While many buildings afford space for these two games, they have not been specially designed for the purpose, and the area set apart has never before covered the floor space that is to be found in this structure.

The building illustrated in this issue is of fire-resisting, skeleton type, consisting of complete steel frame with concrete fire protection and concrete floors, constructed on a system of metal tile and concrete joists.

Because of the spacing required by the billiard tables and bowling alleys, the spans are exceptionally large, with extra heavy beams and large columns.

The building was planned particularly to meet the purposes of its use, and less regard was paid to economic conditions than is usual with a building of this size and general purpose.

The floor loads were figured at 100 pounds per square foot, in addition to construction weight, with the reduction of 30 per cent to the columns. Those of the first floor have a capacity of 125 pounds.

Steel sections were used throughout the construction, with 30-in. girder beams for floors and 14-in. "H" columns, reinforced with cover plates in lower sections.

The building as shown is seven stories in height and covers an area of 140 ft. on Lafayette Ave., 92 ft. on Shelby St., 120 ft. on the west and 143 ft. on the north sides. The exterior is of tapestry brick, with limestone on first story and terracotta for balance of trim, including the main cornice.

In the basement there are located the necessary rooms for boilers and machinery, and in addition a barber shop, with facilities for twenty and the necessary toilet accommodations. The basement story is 11 ft. in the clear.

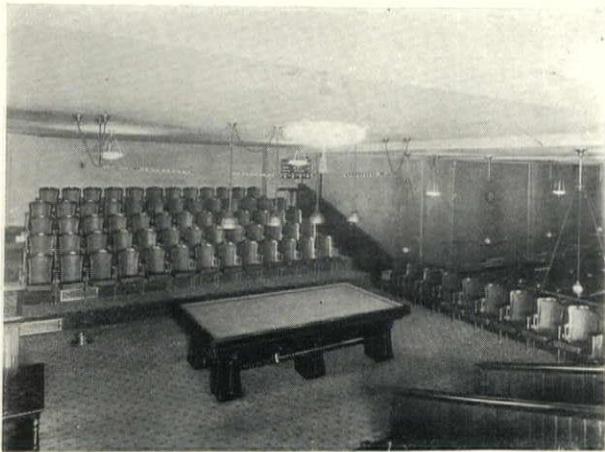
The first story has a ceiling height of 18 ft.

The second story, 21 ft. in the clear, is used solely for billiards. There is space for fifty-three 5 x 10 ft. carom tables. In this story there is a mezzanine floor with small amphitheatre for exhibition and tournament games. There is also lo-

cated on this mezzanine a lounge or gallery overlooking the main billiard floor; offices, repair rooms, toilet and check rooms are also provided.

The third floor, also used solely for billiards, has a ceiling height of 13 ft. There are thirty-nine pocket tables, twelve tables for English billiards and a large gallery in one corner that may be used by spectators during exhibitions.

The arrangement of these two billiard floors is particularly commended. The devotees of the more scientific game of billiards are segregated from the equally enthusiastic and often nerve-distracting pool players, who affect more often the social than the scientific phase of the game. Each class of player finds his surroundings most favorable for the thorough enjoyment of the game.



ROOM ON MEZZANINE FLOOR FOR EXHIBITION GAMES

On the upper floors are the bowling alleys, the front being set apart for women, and it is cited as an evidence of the increased athletic activities of the sex that approximately one thousand women use the billiard tables and bowling alleys daily.

On the seventh floor there is a mezzanine with gallery.

It is a source of satisfaction to be permitted to illustrate a building of this type. It shows that there is a real and healthy tendency in our cities toward the better class of recreation all the year round, and that there is afforded an opportunity, among the most favorable surroundings, to become proficient in games requiring skill and the training of the eye and nerves.

These things are necessary as an offset to the monotony of the daily lives of dwellers in cities, and afford a recreative element as well the value of which is very great.

Government Control of Steel

The authority of the Government in the control of steel is now complete. The action of the War Industries Board, as covered by its order of June 6, leaves no doubt as to just what the Government will do in every case when steel is required other than that needed in war preparation. The various papers in the field of the metal industry have not been in full sympathy with the action of the Government and its absolute control of the production and distribution of steel.

Iron Age comments on the uncertainty that surrounds the exact steel requirements of the Government, and as to what will govern the action of the War Industries Board in the distribution of any production in excess of the Government's needs. It says:

In an order dated June 6, that no one in the steel trade fully understands, the War Industries Board has put in the hands of J. L. Replogle, director of steel supply, the distribution of the entire iron and steel output of the country. Starting with the sweeping provision that no pig iron or steel products shall be shipped except under priority certificates, the order provides that after all priority requisitions have been filled producers may supply their customers if the latter are on a preferred list, which, as revised, is to be sent out later.

As yet no direct notification of the new order has come to producers, nor has the operation of Government priorities as carried on for many weeks been changed. Requests for interpretations have poured in upon Washington, but thus far no official answer has been given to the urgent requests of various industries to know whether they will have much, or little or no steel from this time forth.

The fact is that to-day no accurate estimate exists or can be made of the Government's steel requirements. Only this week various departments have sent to the director of steel supply additions of not less than 3,000,000 tons to the estimates previously submitted, and the programs of the Shipping Board and the Ordnance Bureau are still expanding.

It is believed that various users of pig iron and of finished steel who have had full or partial supplies up to this time will get none in the remainder of the year, but no information can be had as to their identity, for no man in Washington has such information.

Reviewing the iron and steel situation, the *Iron Trade Review* says:

Washington's dominion of the iron and steel industry is complete. The final and historic chapters written by the War Industries Board June 6 is in full effect. Not a ton of mill or furnace product now is moving except in strict accord with Federal rule or dictate. The small remaining vestige of a free market has been wiped out. There has been some hesitancy, but no confusion. Producers have received the new conditions with something of relief. They have accepted the agreement as establishing a definite and all-inclusive plan of procedure for the period of the war. The literal significance of the agreement between the producers and the Government is that it formally transfers from the manufacturer into the hands of the War Industries Board and the Steel Director the full responsibility for the shaping of production and distribution. The list of non-priority purposes which the Government has set ahead of any non-war distribution in effect gives the Government an elastic control over such excess production as may appear from time to time.

Portland Cement on Priority List

In the matter of supply of materials Portland cement, through conferences held in Washington by the War Industries Board, has been placed upon the priority list until August 1. After that date there will be another conference to determine whether the priorities shall be continued still further. This industry has been on the essential list since April 30, but owing to shortage of labor production in Zone 1, at least, has not exceeded 55 per cent of normal. In the meanwhile consumption of this commodity, mainly for war purposes, has been so great that the supply is endangered and the conference at Washington resulted in the foregoing.

The Board before which the conference was held was reluctant to extend the period to a date later than August 1, because it was not certain just what the fuel situation will be then. The industry has practically been on the priority list by enjoying the privileges usually accorded commodities under such classification. The importance, therefore, of this decision to the general building material and construction interests is that it is the first official indication that the Federal authorities have recognized in basic building materials the importance accorded to such commodities as steel, iron and similar products. Other commodities are to have similar consideration, it is announced, where conditions warrant.

Street Widening in New York Deferred

The Broadway Association of New York has forwarded a set of resolutions to Mayor Hylan urging that violations on buildings affected by the widening of streets in the Times Square section be not enforced during the war.

While this proposal will no doubt be approved for economic reasons by most dwellers in New York, they will certainly not regard with satisfaction a future tearing up of Broadway or a continuance of the conditions as affecting that thoroughfare that have existed during the past three years of subway operations.

Broadway, particularly that part from Fourteenth to Fifty-ninth Streets, has been so disfigured and restricted by subway building as to cause much inconvenience to surface traffic, and what is perhaps of greater importance, has seriously affected retail trade.

These conditions have been endured with more or less patience in the belief that we were soon to have our streets cleared of contractors' buildings,

our pavements relaid, and that conditions would soon resume their normal state.

If we are to experience again all the tearing down and building up necessary to adapt the great number of building encroachments to the new street lines, we shall need all our patience to meet this future condition of untidiness.

Conserve Our Fiscal Strength

At the beginning of the war we were debtors to the extent of from \$5,000,000,000 to \$6,000,000,000 to foreign countries. Since August, 1914, we have acquired more than one-third of the world's gold coin and bullion, and have purchased abroad between two and one-half and three billion dollars' worth of American securities. We have loaned through private channels approximately \$2,000,000,000 to other countries and through the Government have advanced \$5,000,000,000 to our Allies. America will also soon have its own merchant marine and we shall then pay to ourselves our own freights.

In contemplating our tremendous fiscal strength, however, we should not lose sight of the necessity for conserving it, and also for holding our present supremacy in the world's money market. Let us prepare likewise to hold and further to expand our new foreign trade against the resumption of normal conditions. In brief, I am convinced that the general use of bank and trade acceptances will be one of our greatest national assets not only in the present crisis, but also in the economic struggle which will follow the cessation of hostilities on the battlefields of Europe.

From an address by Albert Breton, Vice-President of the Guaranty Trust Co.

Contract for Nitrate Plants

GOVERNMENT MAKES AWARD TO AIR NITRATES CORPORATION FOR BUILDING

Contracts have been let by the War Department for the construction of two plants to make nitrates from the air, according to an announcement made in Washington recently. The announcement stated:

"Contracts have been made with the Air Nitrates Corporation for the construction and operation of nitrate plant No. 3. The two half units of this plant will be located, one near Cincinnati and one near Toledo, Ohio. Construction will be started immediately. It is believed that the plant, when in operation, will engage the services of some 1700 operators at each location."

Shipping Board Orders 40 Concrete Ships

Contract for building 40 concrete ships of 7500 tons each in five Government yards, one at Jacksonville, Mobile, Wilmington, N. C., San Diego and San Francisco respectively, have recently been awarded by the Shipping Board. The first shipway at Wilmington will be completed in July, and shipbuilding will begin immediately thereafter. The yard at San Francisco is already in operation, and preparations for construction of the three others are well under way.

The concrete ship *Faith*, first of the big experimental concrete vessels, has completed successfully a trip from San Francisco to Vancouver, and has sailed for Seattle to take on cargo for the return trip to San Francisco.

The Fire Menace

Wilbur F. Mallalieu, general manager of the New York Board of Fire Underwriters, speaking at Little Rock, Ark., stated that it was important that the American people should be aroused to the importance of becoming a careful nation if it would hasten the end of the war.

Stating that the fire menace is definitely hindering our war efficiency, and that the wealth destroyed last year would have been sufficient to pay interest on six billions of Liberty bonds, he urged that every possible effort be made to arouse the country to a knowledge of this danger. Continuing, he said:

"One of these demonstrable facts is that we are receiving records of more than fifteen hundred fires, upon an average, each day throughout the year. This means slightly more than one for every minute during the twenty-four hours. There probably never is a day when the aggregate destruction does not run well up into the hundreds of thousands of dollars; there are days when it reaches into the millions."

Project of Tunnel Under English Channel Revived

One of the enterprises which will be taken up and carried to completion after the war will be a tunnel under the English Channel. Sir Arthur Fell, chairman of the House of Commons Channel Tunnel Committee, speaking at a recent meeting in London, explained the importance of such a railway between England and France. He thought it would be practicable for the line to run from Lon-

don to Constantinople without break or change of cars. Eventually, he said, when normal conditions are restored, the line might be extended from London to Calcutta, to Capetown and Peking.

A Terminal in New York for the Barge Canal

It has been learned that the United States Government is about to requisition several piers in the vicinity of Fifty-fifth Street and North River for the purpose of a barge canal terminal. In connection with the plan will be either the commandeering or building of a large structure to be used as a warehouse for handling freight. The Government already has three piers at this point, but the impression prevails that the project includes other property. The idea is to have a terminal along the North River waterfront in order to obviate the necessity of canal boats going farther down the bay to discharge their cargoes. Moreover, many of the deep sea vessels are berthed in the vicinity of Fifty-fifth Street and much of the freight coming from the Great Lakes by way of the barge canal will be transferred to these vessels for transatlantic shipment.

Sanitation in Shipyards

Through the United States Shipping Board's Department of Health and Sanitation every shipyard is being supervised by sanitary experts, as are the communities adjacent to the shipyards.

In most cases this means radical reforms in health regulations, and consequently largely increased community spirit.

One of the most notable works in this line is at the Hog Island yard, where \$250,000, it is stated, is being spent.

Government Control of Labor Supply

A general nation-wide direction and control of the labor supply and of the many things affecting industrial relations is intended to be exercised by the Government through the administration of the War Labor Bureau. There has been appointed an assistant to the Secretary of Labor, who will be in charge of the Labor Administration and who will also be chairman of the War Labor Policies Board. The National War Labor Board has announced the rules that will govern in the adjustment of industrial disputes.

Red Cross Gets Historic Building

The American Red Cross has taken over the Palais Eynard, one of the most historical and beautiful buildings in Geneva, which has been loaned to them by the local authorities. The local committee of Americans will aid all sick and wounded Allied soldiers and Swiss citizens, and later American officers and soldiers being repatriated will be cared for.

London Theatre to Lodge Americans

One of London's largest theaters has been rented by the American Committee of Engineers for a rendezvous and hotel for sailors and soldiers. The building will accommodate several hundred persons. Lodging and American food will be provided for men passing through London or who are in the city on leave. While the enterprise is primarily for Americans, men of the Allied forces will be welcomed.

City College, New York, Gives Hospital to Nation

The main building of the College of the City of New York, on St. Nicholas Terrace, has been offered to the Government for a war hospital. Although the offer has not been officially accepted, it is expected that the building will be taken over, as Government representatives who recently inspected it pronounced it well suited for a hospital. The building has a frontage of more than 600 feet, wide corridors, spacious rooms and modern facilities, and stands high above the city, remote from noise, and surrounded by a park.

A Sacred Road Memorial in France

Already the French government has decided on a memorial that will worthily represent to the ages to come the grandeur and the horror of the present world war. It is to take the form of a "sacred road" stretching 400 miles, from the coast of Flanders to far Alsace, along the line on which for three years and more the contending hosts have faced each other in grim battle.

Planted on each side with forest trees, the memorial road is to grow year by year, century by century, into an undying and perpetual monument which nature herself shall raise in everlasting commemoration of the war.

In the woods at either side the men who have given up their lives for humanity will be buried.

THE AMERICAN ARCHITECT

Within this long and narrow woodland belt will be preserved a memorial and a lesson to the generations to come.

Already active preparations are being made for the commencement of the scheme. By direction of the French Government, aided by the co-operation of patriotic societies and individuals, a million young trees have been collected, and when peace at last comes to the world this "sacred road" will spring quickly into being.

Memorial Steps for Columbia's Campus

Another memorial to beautify the campus of Columbia University in conformance with the architectural and artistic plans of McKim, Mead & White has been proffered by Mrs. Sara Whiting Rives in memory of her husband, George Lockhart Rives, who was a member of the Board of Trustees of the university from 1882 until his death, on August 18, 1917.

Plans for the memorial, as drawn by the architects provide for a balustrade, stone parapet, steps and terrace extending along the south side of 116th Street to complete the artistic effect of the stone steps and the plaza leading to the library, which is set back from the north side of the street as the central figure in the architecture. The terrace will extend more than 300 feet between Broadway and Amsterdam Avenue. The only piece of architecture to be left complete on that side of the street is the Sun Dial, presented to the university as a class memorial.

Southern California Chapter, A. I. A.

The regular meeting of the Southern California Chapter, A. I. A., was held June 11, 1918.

As guests of the Chapter were present Mark Cohn, chairman of the State Bureau of Housing and Immigration, and J. E. Kienle, secretary of the Los Angeles Housing Commission.

Under "Committee Reports," the secretary read a communication from Elmer Grey, outlining briefly a plan of holding an architectural exhibition in connection with the California Liberty Fair, from the first to the fifteenth of September, supplemented with the request that the president appoint a new member to the educational committee to take the place of D. C. Allison, who is leaving for Government service in France, also asking for the appointment of a jury of award for said exhibition.

Under "Unfinished Business" the secretary presented a resolution condemning the practice of

dividing commissions with realty brokers, as it may exist. It was moved by Mr. Morgan, seconded by Mr. Martin, and unanimously carried, that the same be adopted.

Under "Papers and Discussions," President Backus read a detailed report of his trip to the Philadelphia convention.

Mark Cohn was then introduced and spoke at some length relative to the State housing laws, suggesting that if the Chapter felt that any of the provisions of the laws were not as they should be, recommended revisions be submitted to the Housing Commission.

Mr. Bergstrom, chairman of the Los Angeles Housing Commission, spoke briefly of the activities of the commission, followed by the introduction of Mr. Kienle, who gave in detail a report of the housing conditions as they are found in extreme cases, and the difficulty the commission is meeting with in its attempt to correct the evils as they exist. The members participated in a further discussion of the subject of housing and revision of laws.

Jury in California State Library Competition

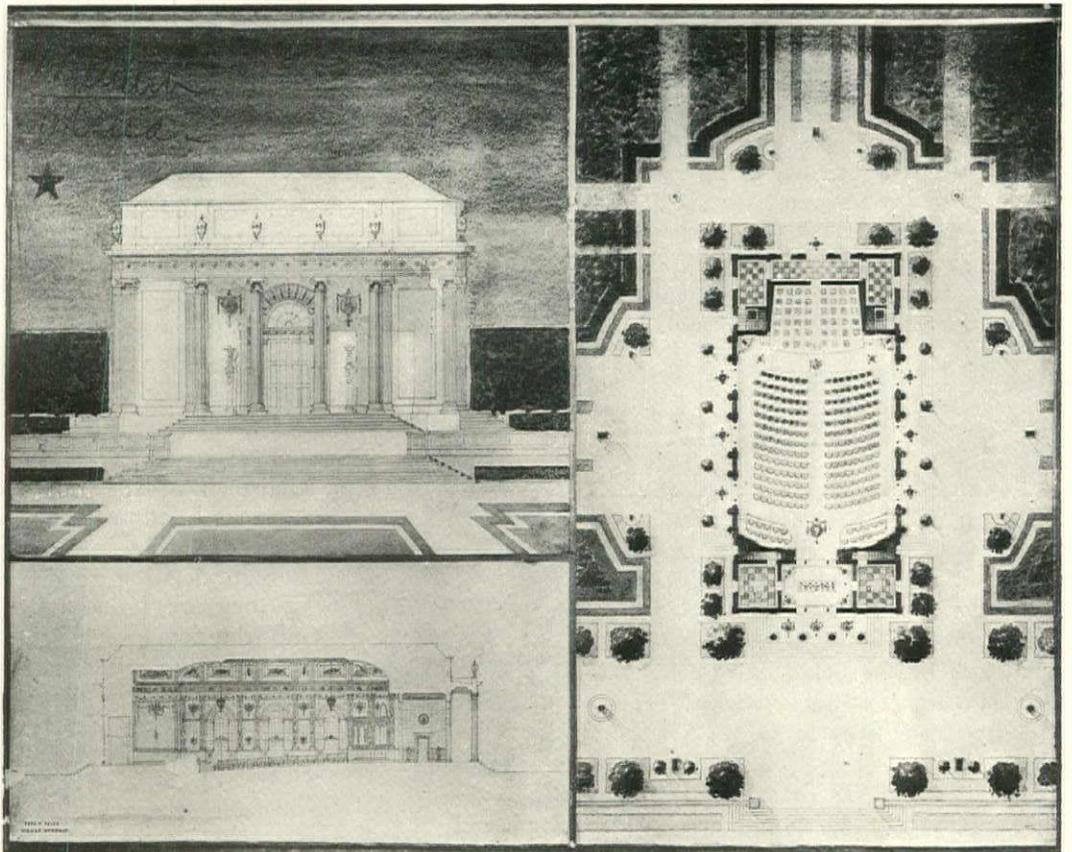
Henry Bacon and William Mitchell Kendall, New York architects, and Sylvain Schnaittacher, San Francisco architect, have been named to serve with Governor William D. Stephens, Chief Justice F. M. Angellotti of the State Supreme Court, the State Librarian and chairman of the State Board of Control, as a jury of award to select the architect who will design and superintend the construction of the State office building and the library and courts building to be erected at Sacramento, Cal.

Dallas Society of Architects

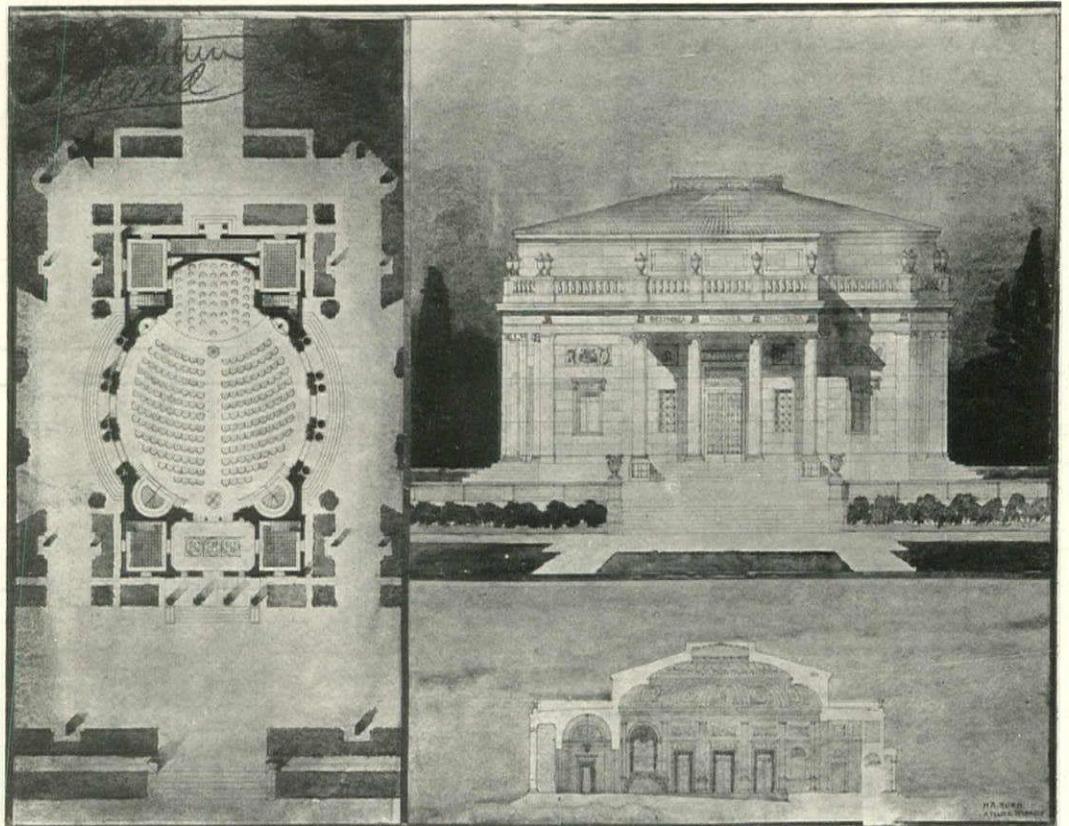
At a recent meeting of the Dallas Society of Architects the following men were installed as officers for the coming year: C. C. Bulger, president; H. D. Thompson, vice president; D. S. Coburn, second vice-president, and F. J. Werner, secretary-treasurer.

Phoenix, Arizona, Capitol Competition

The first prize, \$1,000, in the competition for the new addition to the State Capitol building at Phoenix, Arizona, has been awarded to Lescher & Kibbey, Architects, Phoenix.



T. F. PRICE—FIRST MENTION PLACED, ATELIER WYNKOOP



H. A. HORN—FIRST MENTION PLACED, ATELIER WYNKOOP
 CLASS "B"-VI PROJET—A CONCERT HALL IN A PRIVATE PARK
 STUDENT WORK, BEAUX-ARTS INSTITUTE OF DESIGN

Beaux-Arts Institute of Design

DIRECTOR OF THE INSTITUTE, LLOYD WARREN

DIRECTORS OF DEPARTMENTS

ARCHITECTURE, FREDERICK A. GODLEY

SCULPTURE, LLOYD WARREN

MURAL PAINTING, ARTHUR CRISP

Official Notification of Awards Judgment of June 18th, 1918

PROGRAM

CLASS "B"-VI ANALYTIQUE

The Committee on Architecture proposes as subject for this Competition:

"A MONUMENT COMMEMORATING THE ARRIVAL OF AMERICAN TROOPS IN FRANCE"

The Commemorative Monument is to be erected at the port of arrival of the first American soldiers in France, and it is to take the form of a classic column, similar in conception to Trajan's column in Rome, the Column of July in Paris, or Nelson's Monument in London. From the time of the Romans, this type of monument has been used to commemorate events of great importance, and the arrival of American troops on European soil for the first time in history, to fight for the world's freedom, is an event that may well be perpetuated in this durable form.

The column is to be erected in a public square or on a boulevard, and will face the port. It is to be placed upon a low terrace or some other treatment. The monument itself will be composed of a pedestal or base, and a classic column of the Corinthian order, which may be surmounted by a symbolical figure or other decorative mass.

The total height of the monument shall not exceed 100 feet and the entire space occupied by the terraces shall not exceed 80 feet in either direction.

JURY OF AWARD: F. A. Godley, L. Warren, H. R. Sedgwick, R. M. Hood, L. E. Smith, A. L. Noel, F. B. Chapman, J. H. Freedlander, M. J. Schiavoni, F. C. Hiron, H. W. Corbett, J. A. Gurd and J. T. Hanemann.

This jury also served as jury of award for Class "B"-VI Projet.

Number of drawings submitted: 22.

AWARDS

FIRST MENTION: R. W. Craton, George Washington University, Wash., D. C.; M. Jaeger, Jr., Atelier Hiron, N. Y.; E. C. K. Schmidt, "T" Square Club, Philadelphia; L. J. Ellis, University of Oregon, Eugene.

MENTION: H. V. Murphy, Beaux-Arts Atelier, Wash., D. C.; W. Perkins, Carnegie Inst. of Technology, Pittsburgh; H. Johnston, University of Oregon, Eugene; L. Soxman, University of Kansas, Lawrence; C. V. Rueger, W. S. Chinn, W. A. Streng and E. W. Granstrand, University of Washington, Seattle; A. Witschard, Atelier Wynkoop, N. Y.

PROGRAM

CLASS "B"-VI PROJET

The Committee on Architecture proposes as subject for this Competition:

"A CONCERT HALL IN A PRIVATE PARK"

A patron of music desires to erect upon his suburban estate a concert hall where can be given entertainments to his numerous friends and where young artists of promise may have an opportunity of showing their talents. It is to be small in size—accommodating about 200 auditors—allowing 6 square feet per person—and is to be treated in a rather intimate and domestic manner, and is not to be too much in the character of a public theater. The approach is through a long avenue of trees and across a sunken garden on one side of which, with a suitable terrace in front, it is to be placed.

The building should contain, beside the auditorium, three or four boxes for the patron and his most intimate friends, a stage for an orchestra of fifty musicians, with the necessary dressing rooms, toilets, etc.

The auditorium is entered through a small lobby from which will give off a retiring room for ladies and a smoking room with the necessary toilets for each (these may be in the basement if desired).

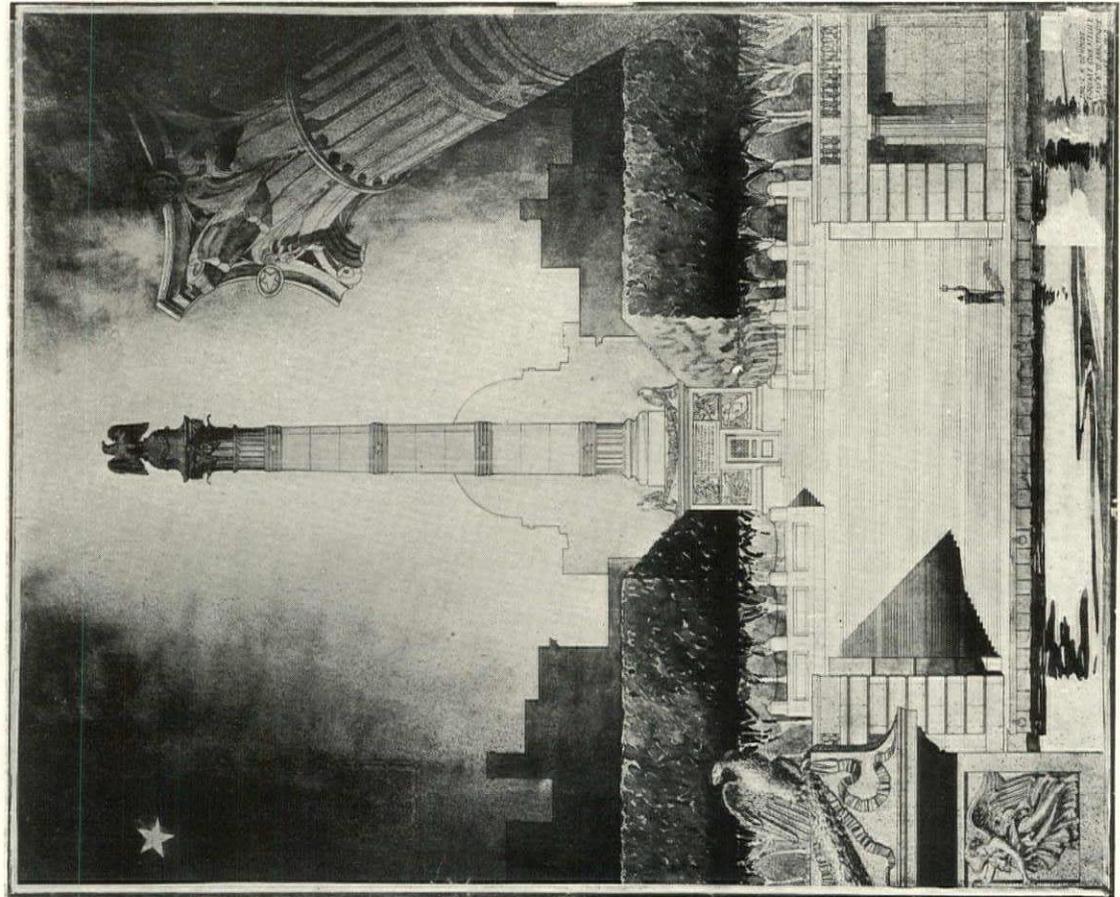
Number of drawings submitted: 16.

AWARDS

FIRST MENTION PLACED: T. F. Price and H. A. Horn, Atelier Wynkoop, N. Y.

FIRST MENTION: R. Fisher and E. T. Benham, Carnegie Inst. of Technology, Pittsburgh; W. M. Icenhower, University of Kansas, Lawrence.

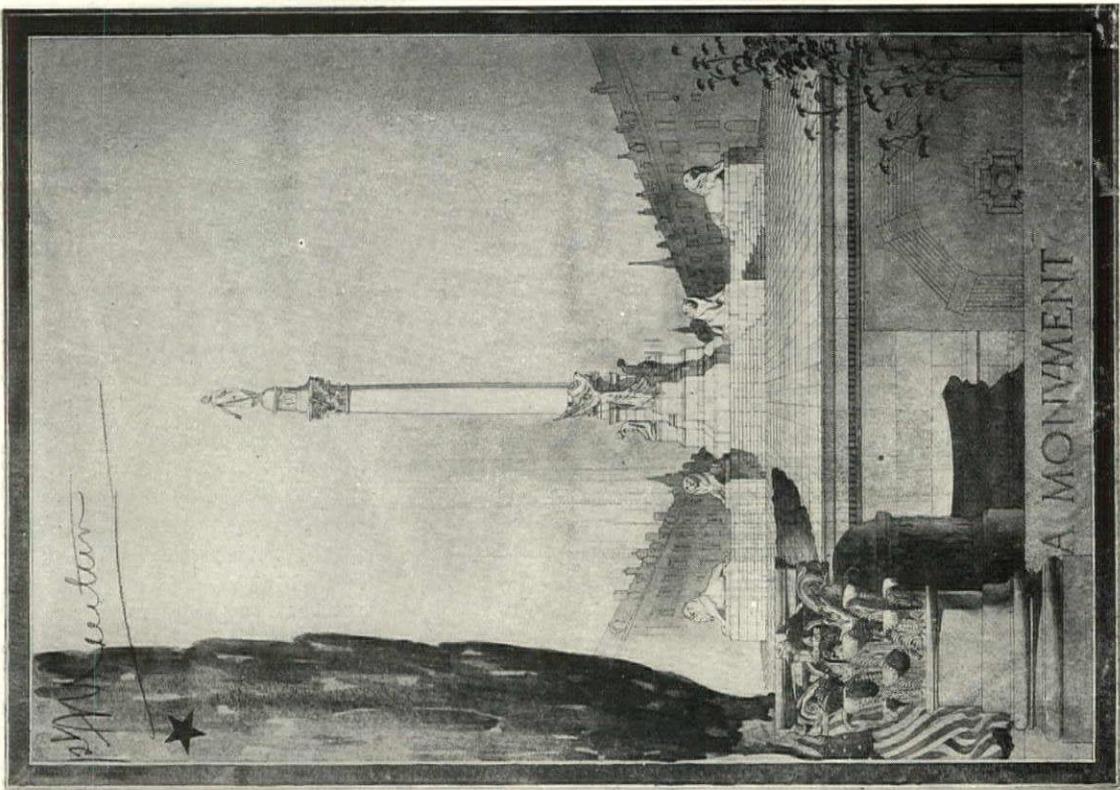
MENTION: I. S. Stark, E. H. Brown, C. M. Stotz and B. A. Pipinos, Carnegie Inst. of Technology, Pittsburgh; P. J. Bittermann, Jr., Columbia University, N. Y.; J. W. Hershey and P. M. Whitfield, John Huntington Poly. Institute, Cleveland; F. Monhof, Los Angeles Archtl. Club, Los Angeles; R. Goldberg, "T" Square Club, Philadelphia.



E. C. K. SCHMIDT—FIRST MENTION, T SQUARE CLUB, PHILADELPHIA

CLASS "B"-VI ANALYTIQUE—A MONUMENT COMMEMORATING THE ARRIVAL OF AMERICAN TROOPS IN FRANCE

STUDENT WORK—BEAUX-ARTS INSTITUTE OF DESIGN



L. J. ELLIS—FIRST MENTION, UNIV. OF OREGON, EUGENE

Department of Architectural Engineering



A CLOTHING FACTORY

White walls and ceiling lamps mounted high with bowl reflectors, giving good intensity and uniform diffusion on the horizontal working plane. Illumination of vertical surfaces not required in this kind of work.

Nightlighting the Factory

In Three Parts—Part III

THE calculations involved in determining the amount of light required to accomplish a specified result are quite simple. The greater judgment is required in selecting the mounting height, spacing of units, the type of reflector and the lamp. The ratings and performance of lighting units are listed and published by the various manufacturers and are the result of careful investigation and accurate measurement. The actual performance of an installation can be easily ascertained by photometric readings and compared with the requirements of the specification.

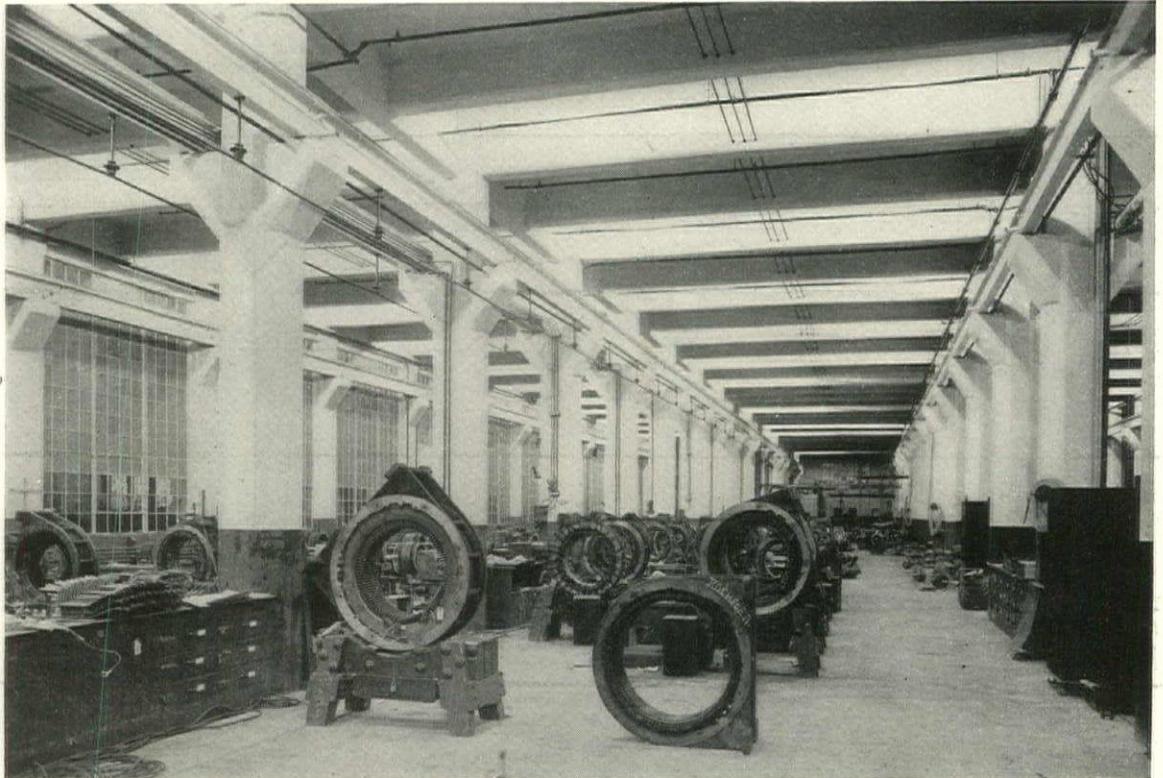
Aside from the coefficient of utilization, which is the ratio between the quantity of light which

reaches the working surface and the total flux of light generated by the bare lamp, another important factor in these calculations is the "depreciation factor." This factor is the measure of the light loss between the initial amount of light delivered by the new installation and that available after a period of use. The average light output of a lamp during its rated life will be about 6 per cent less than its initial output. The accumulation of dust on the lamp and reflector causes a much greater loss of light and the elimination of this loss is only overcome by proper maintenance. As the effectiveness of the maintenance is unknown, this probable loss must be included in the calculations.

THE AMERICAN ARCHITECT

This loss is well illustrated* in the case of lighting an office. Complaints were made of the amount of light received from the lighting units, which consisted of indirect silvered-glass units. The results of the investigation and subsequent action are interesting.

for the usual conditions. In occupancies where there is a rapid and heavy accumulation of dust, as in foundries, trainsheds or other places where smoke is present, a depreciation as high as 40 per cent is an entirely reasonable assumption. Therefore a factor ranging from 1.20 to 1.40 is used to compen-



AN ASSEMBLING SHOP WITH WHITE WALLS AND CEILINGS

Lighting units are 250-watt lamps with 20-ft. mounting and above the traveling crane. Lamps are placed one bay apart and above the bottom of the transverse beams. Excellent distribution of light and freedom from glare.

	Foot Candles	Per Cent
Before cleaning reflectors	3.75	100
After cleaning reflectors	4.68	125
Cleaned reflectors—new lamps.....	5.26	140
Cleaned reflectors—new lamps—re- painted ceiling	6.78	181

The original finish of the ceiling was a yellowish-cream paint on a sand finished plaster and two years old. The ceiling was refinished with a paint of somewhat lighter tone with a good reflection factor. In this case dust alone caused a depreciation of 25 per cent. Although this type of lighting is only used in the office and sales portions of an industrial plant as a rule, it well illustrates the necessity of constant maintenance. It is customary to allow a depreciation of 20 per cent to cover both the decrease in lamp output and effect of accumulated dust

*E. A. Anderson, Trans. Illuminating Engineering Society, Vol. XI, No. 9.

sate for the decrease from the initial intensity and the accumulation of dust, maintaining the intended light values.

The formulas used are few and with the following notation we have:

a = area to be illuminated, square feet.

d = depreciation factor, 1.20 to 1.40.

i = average intensity, foot-candles.

l = lumens per outlet or lamp.

n = number of outlets.

u = coefficient of utilization.

Then

$$i = \frac{lu}{a} \tag{1}$$

$$l = \frac{ai}{u} \tag{2}$$

$$i = \frac{unl}{ad} \tag{3}$$

$$l = \frac{ida}{un} \tag{4}$$

THE AMERICAN ARCHITECT

Equation (4) is used to calculate the lumens required to furnish the desired intensity of light and equation (3) when it is desired to compute the amount of work done by a given installation.

Assume that it is desired to light a paint shop where a good grade of finishing is to be done and the calculations to be based on the following data:

system with steel-dome porcelain-enamelled reflectors. In this case the ratio of room width to ceiling height is 4 and the ratio of the length to height exceeds 5, hence we will have from Table I a coefficient of utilization of 0.69. As a finishing shop must be as dustproof as possible, the depreciation from dust is small and a depreciation factor of 1.2



A HIGH MACHINE SHOP WITH SIDE BALCONIES

40 200-watt lamps, spaced 15 feet apart, mounted above the traveling crane 35 ft. 6 in. above the floor. On the balconies 56 100-watt lamps spaced 15 feet apart. See THE AMERICAN ARCHITECT of April 10, 1918, page 449, for a daylight view of this shop. A good 24-hour shop.

A room 47 ft. \times 111 ft. \times 12 ft. high, floor to ceiling, color of walls and ceiling white.

In this case an intensity of light as noted in classification (f),* of 4 to 8 foot-candles at the work, is recommended. As some of the colors used in the work are dark an intensity of 6 foot-candles will be sufficient, considering the class of finish desired. As the articles to be finished set on the floor, the floor will be considered as the working plane, although some smaller parts will be finished on benches at the wall.

The light will be secured from a direct lighting

will be used. The area to be lighted is 5217 square feet. From Table II we have for steel-dome porcelain-enamelled reflectors a ratio of $1 \frac{2}{3}$ for the spacing distance. In this case, as the working plane is on the floor, the mounting height will be about $10 \frac{1}{2}$ feet. The maximum allowable spacing distance is then $17 \frac{1}{2}$ feet. As it is necessary to furnish bench lighting, the first row of lamps should be about $3 \frac{1}{2}$ feet from the walls, and to use three rows of lamps would exceed the allowable spacing across the room, hence four rows will be used and spaced 10 feet apart in the transverse direction. In the longitudinal direction a spacing of about 14 ft. 10 in. will be used, giving a total of 40 lighting units to be used.

*See Parts I and II, Nightlighting the Factory, THE AMERICAN ARCHITECT, June 19 and 26, 1918.

THE AMERICAN ARCHITECT

Substituting these values in equation (4) we have:

$$l = \frac{6 \times 1.2 \times 5217}{0.69 \times 40} = 136 \text{ lumens per unit.}$$

Again, given a chipping shop alongside an iron foundry which is 24 feet wide, 150 feet long and 15 feet high. The castings being cleaned by sand blast in another place, the work to be done consists of chipping by pneumatic tools and patching by acetylene torches. The walls and ceiling will be classified as dark. The material is finished on low trestles, making the working plane about 2 feet above the floor. In this case the required intensity—classification (d)—would range from 2 to 4 foot-candles. The finished product is not high grade and a light intensity of 3 foot-candles will be sufficient. A porcelain-enameled steel-bowl reflector will be used and from Table I the coefficient of utilization is found as follows:

$$\text{Ratio, } \frac{\text{Room Width}}{\text{Ceiling Height}} = \frac{24}{15} = 1.6 \text{ (use } 1\frac{1}{2}\text{)}$$

$$\text{Coefficient of utilization} = 0.40$$

$$\text{Ratio, } \frac{\text{Room Length}}{\text{Ceiling Height}} = \frac{150}{15} = 10 \text{ (use } 5\text{)}$$

$$\text{Coefficient of utilization} = 0.54$$

$$\text{Final coefficient} = 0.40 + \frac{1}{3}(0.54 - 0.40) = 0.44$$

From Table II we have for this type of equipment a spacing ratio of $1 \frac{2}{3}$ for the type of equipment used. As the work plane is about 2 feet above the floor and the lamps are hung quite high, the

mounting distance is about $12\frac{1}{2}$ feet, which spaces the lamps at 18.8 feet centers. As there is an industrial track through the building adjoining the wall of the foundry, one row of lamps will be used with a spacing of 16 ft. 8 in. This will require nine



A GARMENT FACTORY

White walls and ceiling, lamps mounted high, semi-enclosing system of lighting. Excellent diffusion and good intensity of light on the work plane.

units, the first of which is spaced 8 ft. 4 in. from the ends and the center line of the row being 9 feet from the outer wall. As no work is done within 2 feet of the wall to allow for passage of the workman about his work, this distribution will afford ample light as needed and at the same time sufficiently illuminate the track. The area of the floor to be illuminated to the required intensity is $18 \text{ ft} \times 150 \text{ ft.} = 2700 \text{ sq. ft.}$ The factor of depreciation will be 1.4.

Substituting in equation (4), we have:

$$l = \frac{3 \times 1.4 \times 2700}{0.44 \times 9} = 2864 \text{ lumens per unit.}$$

From these applications of the formulas it will be seen that the factors requiring special consideration are the coefficient of utilization, factor of depreciation and the spacing of the lamps. Judgment must be used in properly classifying the reflection value of the walls and ceiling and in selecting the type of reflector to be used. Reliable information concerning the work performed by the various types of reflectors is furnished by the manufacturers. When the number of required lumens per outlet is calculated, the selection of the lamp can also be made from data furnished by the manufacturers.

Lighting systems are divided into three general classifications—direct, indirect and semi-



AN IRON FOUNDRY

High mounted lamps with reflectors, producing excellent diffusion of light extending well into the side aisles.

THE AMERICAN ARCHITECT



A WEAWE SHOP

Poor light due to insufficient number of lamps, their style and location. Very bad glare.

indirect. Direct lighting systems are those in which the light is sent directly to the surface to be illuminated. This is accomplished by the use of reflectors which project all of the light to the lower half of the circle of distribution. The angle of distribution is determined by the shape of the reflector and when the maximum light is desired on a horizontal plane a bowl-shaped reflector is desirable and when vertical surfaces are also to be illuminated the wide angle dome-shaped reflector is suitable. If it is not possible to place the lamps high enough above the line of vision to avoid glare from the lamp, the lower portion of the lamp is frosted to overcome this difficulty. This same effect has been accomplished by placing a narrow ring made of sheet metal over the lower portion of the globe, the inside of which is enameled, to serve as a reflector. Direct lighting systems are the most suitable for industrial plants, as their efficiency is less influenced by the condition and color of the walls and ceiling and the units offer less possibilities for the lodgment of dust.

Indirect lighting systems are those in which all of the light is projected into the upper half of the circle of distribution by means of an opaque bowl containing the lamps and lined with a reflecting surface, depending on the ceiling and walls to redirect and diffuse the light. In this case the ceiling acts as the light source and directs the light downward with an absence of shadows and glare. Sometimes this absence of shadows is so pronounced as to make it impossible to distinguish slight irregularities in surfaces. This system is not adapted to many manufacturing processes and is highly susceptible to de-

preciation from accumulation of dust.

Semi-indirect lighting systems combine the features of the direct and indirect systems. This is accomplished by the use of a translucent bowl, which permits the passage of a portion of the light through it directly to the lower portion of the circle of illumination and the balance passing to the upper half is reflected and redirected by the ceiling. The density of the bowl material controls the transmission of the light, permitting such a degree of bowl brightness such

as may be desired and avoiding glare. The accumulation of dust also affects this type of lighting. A direct semi-enclosing fixture overcomes this difficulty to a considerable degree.

The spacing of the outlets is of importance and they should be placed close enough together so that the areas of projected light overlap to some extent. By this means the light at the work will come from several directions, which is a most desirable condition, and affords a better diffusion of light and eliminates dark, sharp shadows. Ordinarily the division of the floor space by the column arrangement regulates the spacing to some extent, but this influence will be regulated to a great extent by the character of the work to be done. In any event a more desirable result is obtained by a spacing more closely than calculated.

Ordinarily it is good practice to make the distance between the lamps $1\frac{1}{2}$ times their height above the work, but better results obtain when these distances are equal. In all cases, the lamps should be located well overhead, which arrangement affords good



A WEAWE SHOP

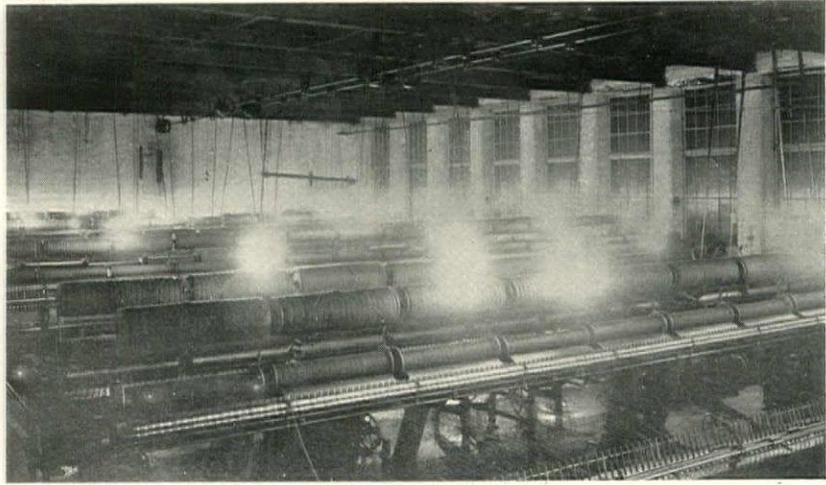
The same shop, as above, with the proper number of units, well located and the right kind of lamp equipment.

THE AMERICAN ARCHITECT

diffusion of light and removes the lamp from the line of vision and thus obviates glare. Local lighting should be carefully shaded to overcome glare affecting the operator and those nearby.

It is important in lighting work-places to have a system of emergency lighting which is operated with the main system but on a separate service. The purpose of this emergency system is to afford sufficient light in the work-spaces and passages to permit the safe egress of the operatives in case the main lighting system becomes temporarily inoperative. This also affords the operatives protection from injury due to coming in contact with the machinery or other contents of the place. It is advisable to locate the switch control of this system in such a manner that the night watchman can use it in making his inspections. This will afford him greater safety from injury and afford a better opportunity to inspect the premises.

The great progress made in the art of artificial illumination is due to the improvement in the means



A TEXTILE FACTORY

Bare lamps hung too low and causing sharp shadows, unequal distribution of light and bad glare.

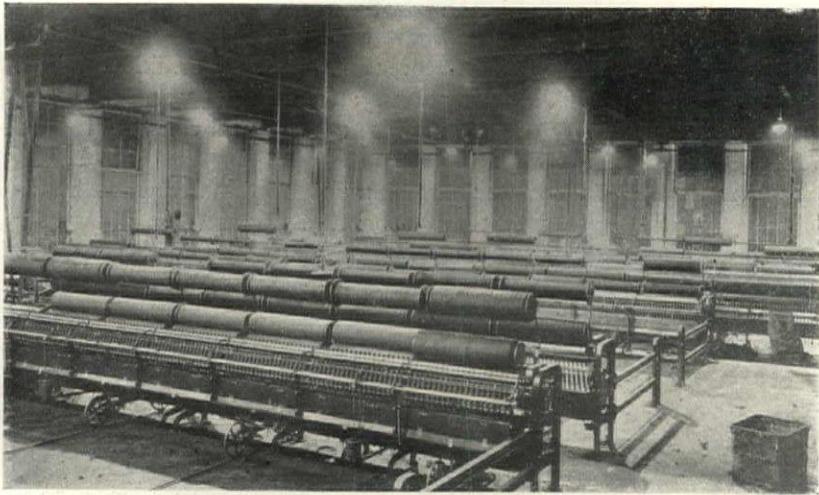
afforded, both in electric and gas lamps. The manufacturers have made great efforts to this end and have been able to accomplish much by attacking the problem in a scientific way. These improvements in the means of illumination have necessarily developed a scientific method of applying and using them. The available knowledge on this subject is becoming greater as the necessity for better lighting is forced by the state regulations already re-



AN UPHOLSTERY SHOP

High mounted lamps comparatively close together afford uniform distribution of light, absence of glare and shadows and good intensity of light. Note the influence of light colored goods.

THE AMERICAN ARCHITECT



A TEXTILE FACTORY

The same factory as shown above. Shaded lamps mounted high, affording freedom from glare and uniform distribution of light.

cessory equipment and the illuminating engineer.

The trade literature on this subject is of a very scientific character and well worth careful study and the engineering literature, developed largely through the Illuminating Engineering Society, is of great value, although limited in extent. The rapid development and importance of this art makes it essential for the successful architect to understand the general principles of the subject. This is necessary, as the best results can only be obtained by planning with the complete project well defined, under both natural and artificial light conditions. Too

ferred to. The literature on the subject is produced often the building is planned without reference by two interests, the producer of the lamp and ac- to the artificial lighting equipment and the illumi-



A METAL WORKING SHOP

Bench work at the walls, assembling and storage on the floor. White walls and ceiling with lamps in bowl reflectors mounted high. Good light and absence of glare and shadows.

nating engineer is handicapped and unable to accomplish the desired and often necessary results.

While these articles have only treated of the lighting of work-places, the factors that enter into the satisfactory illumination of all other places are fundamentally the same. It is apparent, however, that the requirements and means of satisfying them vary greatly and that each type and project must be considered individually. The art of illumination is so developed that it is possible to secure any reasonable result and will necessarily have an important influence on the building art.

The Detroit Code

The Editors, THE AMERICAN ARCHITECT:

YOUR article on the stairway and exit section of the proposed Detroit Building Code, published in *THE AMERICAN ARCHITECT* July 3, appears to be a fair presentation of a fairly well digested code; but to say more of the code, without careful study of the entire document itself, would hardly be advisable, except on a few points.

The system of occupancy classification is admirable, but the working out of the details has produced some curious incongruities, notably in the 15 and 50 sq. ft. per person classifications mentioned in your article. Possibly Detroit has a number of occupancy classes that fall within these limits but which may not be duplicated in any other large city. In that case these should be classified in accord with the basic hazard as generally recognized, rather than in agreement with possible local conditions.

The table of safety values for construction of building also includes some assumptions which are hardly borne out in experience. Assuming that 60 points is the approximate safety value for fireproof (fire-resistant) type of construction and with 30 points allowed for sprinkler protection, we obtain by adding the sprinkler credits to the construction credits, the following totals:

	Safety Points	Total Points
S1—Fireproof type	60	+ 30 = 90
S2—Mill or slow-burning type...	20	+ 30 = 50
S3—Ordinary type	15	+ 30 = 45
S4—Frame type	10	+ 30 = 40
S5—Skeleton type	25	+ 30 = 55

Now a mill constructed building, built according to accepted standards, is substantially as safe as a so-called fireproof building. It is not that buildings burn so much but that contents are destroyed, and contents are virtually as well protected in the former

as in the latter. If the former is completely sprinklered with standard equipment, they are safer than the so-called fireproof building unsprinklered. The sprinklers constitute an added guarantee of the safety of the building, even from a conflagration of magnitude.

Yet this tabulation makes a sprinklered mill building worth only 50 points as against 60 points for the unsprinklered "fireproof" building. My own judgment would support a table revised somewhat like this:

	Safety Points	Total Points
S1—Fireproof type	50	+ 40 = 90
S2—Mill or slow-burning type...	40	+ 40 = 80
S3—Ordinary type	15	+ 40 = 55
S4—Frame type	10	+ 40 = 50
S5—Skeleton type	25	+ 40 = 65
S6—Complete approved sprinklers	40	

It is even likely that modifications of S3 and S5 would be advisable, for I doubt if there is so much difference in safety value between the ordinary type and the skeleton type of construction. Probably it would require considerable discussion to measure and balance the advantage points of the skeleton type to show wherein they may fairly equalize each other. My own judgment is that if the ordinary type is to be credited with 15 points, the skeleton type should not be credited with more than 20 points. It might be better to let the skeleton type remain at 25 points and raise the ordinary type to 20 points, as there are certainly 10 points of difference between either of them and the frame type.

Your analysis of this phase is much more acceptable than that outlined in the code, but I think it doubtful if a frame building unsprinklered is one-third as safe as a "fireproof" building without sprinklers. Or that, if both are sprinklered, the frame is seven-ninths as safe as a "fireproof" structure.

However, you have very clearly restated and re-emphasized the position *THE AMERICAN ARCHITECT* has so long maintained with respect to automatic sprinkler protection, and I feel sure that its presentation in this manner will go far to strengthen the growing understanding of the public as to the scope and function of automatic fire control. Such presentation will aid municipal and state legislators in the proper methods of formulating building codes.

PAUL MASON,

Associate Editor, *Fire Protection*.

New York.

Industrial Information

Modern Furnace Heating

A handbook on furnace heating is published by the Hess Warming & Ventilating Company, whose sales offices are at 5 North La Salle Street, Chicago, Ill. This book contains a description of the Hess steel furnaces, pipeless furnaces and circulating room heaters, together with illustrations of their registers, pipes and other fittings. The purposes and possibilities of each of these types of heating apparatus are described at length in this bulletin, in connection with what is said of the construction of each product. Illustrations of these furnaces and of interiors of stores, churches and dwellings accompany the text matter.

Front Rank Furnaces

Various types and sizes of furnaces are shown in the catalog of the Haynes-Langenberg Mfg. Company of St. Louis, Mo. In an introduction the company states that the development of the Front Rank furnace has been studied carefully for the last twenty-eight years. Furnaces to meet different needs have been developed, and this company now has on the market Front Rank furnaces of many different types and sizes, Winner furnaces and hot air and hot water combination heaters.

Practical information regarding the construction of these furnaces accompanies the illustrations. Explicit directions are given for setting them, suggestions are made as to location and cuts showing houses in section make plain the work the furnace actually does.

Metal Stools and Chairs

Among the many products of the Manufacturing Equipment and Engineering Company of Boston, Mass.—works and mail address, Framingham, Mass.—are various types of metal stools and chairs. These stools, which are manufactured to meet varied industrial needs, are available in a number

of styles, sizes and in three colors: black, green and maroon. Most of these types are all metal; others have laminated wood seats.

This company's production covers a great range of sanitary and fireproof equipment for factories, gymnasiums, hospitals and other such buildings. Catalogs will be sent upon request to the manufacturers.

Fireproof Doors and Windows

The A. C. Chesley Company, Inc., 277 Rider Avenue, New York City, are manufacturers of fireproof doors and windows. In their catalog Kalamein stock doors are shown, in photograph and detail. Hollow metal windows, of the vertical sliding or double hung type, standard pivoted and stationary windows, and vertical sliding and pivoted windows, are all shown in this booklet. They are all Underwriter labeled.

Structural Gypsum

Structolite, the structural gypsum manufactured by the United States Gypsum Company, 205 West Monroe Street, Chicago, Ill., is a material with many good qualities. The manufacturers claim for it that it meets every roof deck requirement, and that it makes cold weather construction possible. This company publishes a condensed report of flexure tests made upon several types of Pyrobar roof tile at Columbia University by James S. MacGregor, M.S., in 1917. Briefly, the results of these tests showed that freezing and thawing do not affect Pyrobar roof tile.

Structolite, which is poured on the job, sets in fifteen minutes, can be removed from moulds or forms in 30 minutes, and in 12 hours attains full strength to carry calculated safe load. From the standpoint of steel economy and speed of construction, resistance to fire and gases, low conductivity and non-condensation, Structolite is an exceedingly interesting and valuable building product.

Lower Construction Costs

In a folder descriptive of Fenestra Underwriters' sash, the Detroit Steel Products Company, 2250 East Grand Boulevard, Detroit, Mich., presents four items contributing to low construction costs in the use of this product. They are as follows:

1. The concrete encased "I" beam mullions, which often cost more than the windows, are no longer necessary.

2. For single openings, units can be secured in widths up to 7 ft., and in heights up to 12 feet.

3. For wide openings, multiple units are combined by means of standard mullions.

4. Installation details are the same as on standard sash.

Because of the standardization of sizes and the large production of Fenestra sash, it is stated that prompt shipments can be made, and that detailed information regarding type, sizes and prices will be of interest to the prospective builder.

Builders' Hardware

The National Mfg. Company of Sterling, Ill., has issued a large catalog illustrating their builders' hardware. In a foreword on Method of Distribution they present certain information as to the company's policies in this matter—in selling its products only through retail dealers; in co-operation in advertising and selling; in the quality of service given, and in the quality of the products themselves.

Attention is called to the time-saving methods of packing adopted by this company. All small sizes of butts and hinges, for example, are packed one pair in an envelope with screws. Attractive boxes and cartons contain larger quantities of these materials. Illustrations accompanying this statement bear witness to the fact that these products are assembled for distribution in a most convenient way.

Door hangers, latches, garage door sets, bumpers, hinges, hasps and staples, foot scrapers, push plates, sash lifts and a great many other useful

things of like nature are manufactured by this company, and amply illustrated in the catalog under discussion.

Standard Painting Specifications

The Voltax Company, Bridgeport, Conn., has issued a book of standard specifications for painting, varnishing and enameling in various types of buildings. These specifications, while thoroughly complete and explicit, have the added charm of simplicity. All departments of interior and exterior finish are dealt with in detail, the many different types of painting, varnishing and enameling being taken up in a practical, concise manner.

Recent Delivery of Lighting Fixtures for Industrial Housing

In connection with the recent completion, three months ahead of contract time, of the huge smokeless powder plant near Nashville, Tenn., for the Government at a profit of \$1.00, the du Pont officials have expressed their appreciation of the efficient services rendered by co-operating concerns, including Mitchell Vance Co., Inc., of New York. This company manufactured and delivered in six days' time complete lighting fixtures for the housing of this plant.

Smokeless Watertube Boilers

Smokeless heating, as developed through their smokeless watertube boilers, is advertised by the Hart & Crouse Company, Utica, N. Y. This company publishes a book on this subject and a Fitters' Manual and Illustrated Price List as well. They also manufacture the Atwood vacuum cleaner. The latter is a stationary plant, adapted in various sizes for every sort of building. The wide range of sizes and capacities makes the selection of a proper machine a simple matter. The company's catalog covering this product contains much valuable information about vacuum cleaners and the requirements of various types of buildings in this respect.

Stained Shingles

The Warmest, Most Artistic and Most Economical of All House Finishes

Wood shingles are two or three times warmer than the gummed-paper substitutes, and they are cheaper, last longer and are incomparably more artistic and attractive. When stained with the soft moss-greens, bungalow-browns, tile-reds and silver-grays of

Cabot's Creosote Stains

they have a richness and beauty of tone that no other finish can equal, and the creosote thoroughly preserves the wood. Use them also on siding, boards, sheds and fences. Anyone can apply them, with best results, at least expense.

You can get Cabot's Stains all over the country. Send for samples and name of nearest agent.

Samuel Cabot, Inc., Manfg. Chemists, Boston, Mass.

1133 Broadway, NEW YORK 24 West Kinzie Street, CHICAGO

Cabot's Quilt, Waterproof Stucco and Brick Stains, Conservo Wood Preservative, Damp-proofing, Water-proofing 5-4



*Stained with Cabot's Creosote Stains
Montague Flagg, 2nd, Architect, N. Y.*

Roofing Slate for Industrial Housing

Offers the advantage of a low cost, permanent roof without the deadly sameness and flat monotony of artificial preparations. Is fireproof, too.

Cheap as shingles, repairs and staining considered, and for temporary structures has a high salvage value.

Let us work out a complete roofing scheme: The attractiveness and low cost will surprise you.

RISING & NELSON SLATE CO.

Miners of Roofing Slate, including the Tudor Stone group of Architectural slates.

Main Office and Quarries, West Pawlet, Vermont

Architects Service Department, 101 Park Ave., N. Y. C.

BOSTON

CHICAGO

WASHINGTON



CRITTALL STEEL CASEMENTS

for

Artistic Residences
and other substan-
tial buildings

Made in varied designs
to meet all conditions



Crittall Casement Window Co.
Detroit

Manufacturers of Steel Casements and Windows

BUILDING NEWS

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

ALABAMA

SHEFFIELD, ALA.—Southern Bell Telephone Company, 1814 Second Avenue, Birmingham, will build a \$60,000 exchange on Nashville Avenue and Fourth Street, Sheffield, two-stories, 50 x 120 ft., brick.

CALIFORNIA

LONG BEACH, CAL.—Members of the East Side Christian Church contemplate the erection of a new edifice at Seventh and Obispo Avenues, which will entail an expenditure of \$10,000.

OAKLAND, CAL.—V. K. Sturges, will erect a one-story concrete factory to cost \$100,000, for manufacturing tires.

SAN DIEGO, CAL.—Louis J. Wilde, Mayor of this city, and associates, contemplate erecting a steel shipbuilding plant at Beaumont, Tex.

SAN FRANCISCO, CAL.—J. R. Miller, Lick Building, is drawing plans for office and cafeteria for the Risdon Iron Works, 208 Illinois Street, to cost \$100,000.

COLORADO

DENVER, COL.—The Altitude Oil Company will erect a \$5,000 oil filling station at 800 Speer Boulevard. Brick and cement construction. Plans prepared by George F. Harvey, 407 Commonwealth Building.

STERLING, COL.—L. Spelts, 125 N. Front Street, will erect a \$50,000 garage, reinforced concrete, two-stories, 75 x 135 ft. Wilson & Wilson, Commonwealth Building, Architects.

CONNECTICUT

BRIDGEPORT, CONN.—A \$2,000,000 fourteen-story concrete hotel is to be erected on Broad Street, near Fairfield Avenue, by the New England Hotel Company, in accordance with plans prepared by Davis & Dane, Commercial National Bank Building.

HAMDEN, CONN.—R. W. Foote, 185 Church Street, New Haven, has been commissioned to prepare plans for the church to be erected for the Hamden Plains Methodist Church, Rev. F. A. Wells, 995 Dixwell Avenue. Estimated cost, \$50,000.

HARTFORD, CONN.—Whiton & McMahon, 36 Pearl Street, Hartford, are preparing plans for a new school costing \$250,000.

STAMFORD, CONN.—Emmens & Abbott, 1 Bank Street, have completed plans for a residence for J. Alfred Trolle, 30 Clarks Hill Avenue. The structure will be frame.

DELAWARE

WILMINGTON, DEL.—Bids will be received by R. C. Tindall, Architect, 914 Orange Street, for alterations and additions to a three-story residence at 1411 North Van Buren Street, owned by Ralph Derr.

WILMINGTON, DEL.—W. E. Hance, 204 West Twenty-fourth Street, has been commissioned to prepare plans for a three-story storage warehouse to be erected at a cost of \$15,000.

DISTRICT OF COLUMBIA

WASHINGTON, D. C.—The Bureau of Yards and Docks, Washington, D. C., is taking bids for two one and two-story ammunition buildings at Fort Mifflin, near Philadelphia.

GEORGIA

MACON, GA.—City of Macon will build a one-story clinic ward at City Hospital, to cost \$75,000.

WYNNTON, GA.—A school building to cost \$25,000 will be erected here. Plans for the structure are being prepared by T. Firth Lockwood, Columbus, Ga.

ILLINOIS

CHICAGO, ILL.—S. Jacobson, Sangamon Street, will build a two-story bakery costing \$25,000. Ottenheimer, Stern & Reichert, 220 South State Street, Chicago, Architects.

CHICAGO, ILL.—Chicago Public Library, care of C. B. Roden, Washington and Michigan avenues, has engaged A. S. Altschueler, 28 East Jackson Street, to design a two-story, \$75,000 building.

CHICAGO, ILL.—Perkins, Fellows and Hamilton, 814 Tower Street, are preparing plans for a one-story grade school to be erected at Elmhurst, Ill. The architects will take bids about July 6. The building will cost \$89,000.

ELMHURST, ILL.—Perkins, Fellows & Hamilton, 814 Tower Court, have plans in progress for an \$80,000 school.

GIDDINGS MOUND, ILL.—Plans have been completed by H. B. Doe, 201 Appoll Theater Building, Peoria, Ill., for a church to be erected here. Owner, St. John the Baptist Catholic Church, care Rev. L. P. Sandreth, Carthage, Ill. Cost, \$10,000.

MONMOUTH, ILL.—Monmouth Plow Company, S. Main Street, will construct a warehouse and salesroom costing \$40,000.

OAK PARK, ILL.—First Baptist Congregation plans to build a \$150,000 church on Ontario Street and Oak Park.

PEORIA, ILL.—Hotchkiss and Harris, 229 South Jefferson Avenue, are preparing plans for a two-story brick and veneer apartment building which will cost \$20,000.

RUSHVILLE, ILL.—Methodist Episcopal Congregation is retaining L. F. W. Steube, Adams Building, Danville, to design a \$50,000 church.

SPRINGFIELD, ILL.—The Hicks Fire Clay Products Company contemplate the erection of a plant to cost between \$60,000 and \$75,000. The location has not been decided upon.

INDIANA

INDIANAPOLIS, IND.—Adolph Scherrer, 415 Indiana Trust Building, is one of the eight successful competitors in the elimination contests for plans for a \$3,000,000 addition to the state capital group at Sacramento, Cal.

LAFAYETTE, IND.—Plans are being prepared by Riedel & Zink, Ball Block, for a one-story and basement brick, hollow tile and concrete grade school, to be erected near Marshfield. Structure will entail an expenditure of \$30,000.

SHELBYVILLE, IND.—Plans for the Shelby County Infirmary have been submitted to the Board of County Commissioners. They call for a building estimated at \$60,000.

IOWA

DES MOINES, IOWA.—The Board of Education will erect a new high school to cost \$500,000.

DES MOINES, IOWA.—C. E. Eastman, 400 Observatory Building, is preparing plans for a three-story and basement apartment building which N. A. Cruzen, 909 Walnut Street, contemplates erecting. Estimated at \$25,000.

INDIANOLA, IOWA.—Simpson College plans to rebuild at a cost of \$100,000.

Barrett Specification Roofs

Guaranteed for 20 Years

Mason City, Iowa, makes a Record—

In Mason City, Iowa, 22,000 population, \$4,000,000 was spent in new buildings and commercial and civic development in 1917 in spite of war conditions! They built three public schools, a heating-plant, a handsome new eight-story office-building, two churches, and a Y.W.C.A. building, and all of them have Barrett Specification Roofs.

The public library and telephone-building, and many smaller buildings, likewise have Barrett Specification Roofs. In fact, of the thirty-one business-, industrial-, and municipal-buildings started or completed during the year, twenty-seven have Barrett Specification Roofs or roofs of Barrett materials.

Practically all of these roofs have been constructed by the local contractors, the Mica Insulating Co., inspected by our inspectors, and guaranteed free of repairs for twenty years by Barrett 20-Year Guaranty Bonds.

For permanent buildings Barrett Specification Roofs are so much better, so much cheaper per year of service, and offer so much more in fire-protection, that they cover more of such structures than any other kind.

A copy of The Barrett 20-Year Specification, with roofing diagrams, sent free on request.

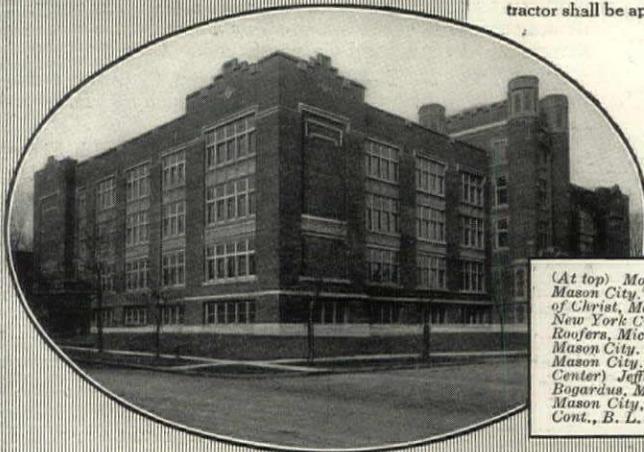
Guaranteed for 20 Years

We are now prepared to give a 20-Year Surety Bond Guaranty on every Barrett Specification Roof of fifty squares or over in all towns of 25,000 population and more, and in smaller places where our Inspection Service is available. This Surety Bond will be issued by the United States Fidelity and Guaranty Company of Baltimore and will be furnished by us without charge. Our only requirements are that the roofing contractor shall be approved by us and that The Barrett Specification dated May 1, 1916, be strictly followed.

The Barrett Company

- | | | | | | |
|-------------------------------|-----------------|----------------|------------|---------------|-------------|
| New York | Chicago | Philadelphia | Boston | St. Louis | Cleveland |
| Cincinnati | Pittsburgh | Detroit | Birmingham | Kansas City | Minneapolis |
| | Nashville | Salt Lake City | Seattle | Peoria | |
| THE BARRETT COMPANY, Limited: | | | Montreal | Toronto | Winnipeg |
| Vancouver | St. John, N. B. | Halifax, N. S. | | Sydney, N. S. | |

(At top) Modern Brotherhood of America Bldg., Mason City, Iowa. Roofers, Mica Insulating Co., Mason City, Archs., Bell & Bentley, Minneapolis. Cont., W. S. Kingsley, Faribault, Minn. (Below) Church of Christ, Mason City, Ia. Roofers, Mica Insulating Co. Mason City. Archs., Geo. W. Kramer & Son, New York City. Conts., Wm. O'Neil & Son, Faribault, Minn. (In oval) Mason City High School, Ia. Roofers, Mica Insulating Co., Mason City. Archs., J. H. Felt & Co., Mason City. Cont., H. F. Jones, Mason City. (Bottom at left) Markley-Smith Bldg., Mason City, Iowa. Roofers, Mica Insulating Co., Mason City. Arch., E. Broaten, Mason City. Conts., P. E. Wells & Sons, Mason City. (Bottom in Center) Jefferson School, Mason City, Iowa. Roofers, Mica Insulating Co., Mason City. Arch., E. R. Bogardus, Mason City. Conts., Henkle & Brown, Mason City. (Bottom at right) Y. W. C. A. Bldg., Mason City, Ia. Roofers, Mica Insulating Co., Mason City. Archs., Shattuck & Hussey, Chicago, Ill. Cont., B. L. Stratton, Mason City.



KANSAS

ARKANSAS CITY, KAN.—Bids will be received by W. L. McAtee, Architect, this city, for a one-story and part basement church to be erected at Blackwell, Okla. Owners, Roman Catholic Church, Rev. H. Kicks, Blackwell, Okla., \$25,000.

BONNER SPRINGS, KAN.—Smith, Rea & Lovitt, Finance Building, Kansas City, Mo., have prepared plans for a two-story brick and stone school for the Board of Education in Bonner Springs, \$50,000.

COLUMBUS, KAN.—Board of Education will erect a \$50,000 school in Columbus. Maxwell & Maxwell, Pittsburgh, Architects.

LEAVENWORTH, KAN.—T. W. Williamson & Co., Central National Bank Building, Topeka, have designed an \$80,000 school for the Leavenworth Board of Education.

LOUISIANA

LAKE CHARLES, LA.—St. Patrick's Sanitarium has had plans drawn for a \$70,000 addition.

MARYLAND

BALTIMORE, MD.—Benjamin F. Frank, 328 North Charles Street, has completed plans for a two-story and basement, brick and frame, store building to be erected at a cost of \$30,000, at Huntington, W. Va., for S. & D. Gideon, Huntington.

MASSACHUSETTS

NEW BEDFORD, MASS.—An addition will be erected to the Nashawena Mills, Belleville Avenue, at a cost of \$450,000.

NEWTON, MASS.—Bids will be received by F. H. Gowing, Architect, 18 Tremont Street, Boston, for alterations to a garage and dwelling owned by Paul J. Richards.

STOUGHTON, MASS.—A three-story brick reinforced concrete and steel building is to be erected for the Perfection Cooler Company, Summer Street. Structure will be erected in accordance with plans prepared by W. P. Hatch, 60 State Street, Boston.

WORCESTER, MASS.—Plans are under way for alterations costing \$8,000 to a two-story church owned by the Greek Orthodox Church Society, care N. Peterson, 56 Orange Street. H. S. Demoorjian, Architect, 340 Main Street.

MICHIGAN

DETROIT, MICH.—J. G. Kastler, 524 Chamber of Commerce Building, is completing plans for a one and one-half story and basement church to be erected at a cost of \$50,000 for the Ukrainian Catholic Church, Rev. Frank Guryansky, 281 Clippert Street.

MUSKEGON, MICH.—A home for the aged will be established at a cost of \$200,000, by the Muskegon-Holland Home Association, care of H. E. Langeland, Muskegon Avenue and Cedar Street.

MINNESOTA

ST. PAUL, MINN.—Two new buildings costing \$750,000 will be erected by the Central Warehouse Company of St. Paul on its property in the Minnesota Transfer district, C. P. Bratnober, president, announces

MISSOURI

CAPE GIRARDEAU, MO.—Plans for the new passenger station to be erected at Frisco have been completed and placed in the hands of Mayor Haas. A council will be held soon to consider the plans, looking to their approval, so the work may be started at once.

JOPLIN, MO.—Connor Investment Company, Miners' Bank Building, will erect a \$30,000 addition. A. C. Michaelis, Miners' Bank Building, Architect.

KANSAS CITY, MO.—H. A. Drake, Reliance Building, Kansas City, Mo., has prepared plans for a moving picture theater for F. L. Newman, care of Theater Royal, costing \$250,000.

KANSAS CITY, MO.—Federal Reserve Bank plans to build a \$750,000 structure on Tenth Street and Grand Avenue, Kansas City, Mo.

NEBRASKA

FALL CITY, NEB.—J. W. Salmon, 113 South Thirteenth Street, has plans for a four-story brick hotel for Nebraska Building and Investment Company, F. E. Shaf, president, \$165,000.

FILLEY, NEB.—A \$50,000 school building will be erected here, according to State Superintendent Clemmons.

OMAHA, NEB.—Through the agency of J. H. Dumont & Co. the L. V. Nicholas Oil Company purchased a site on Twenty-fourth and Hickory Streets for the erection of a new building in connection with its oil refinery.

OMAHA, NEB.—W. H. Baumer purchased a site of the George F. Gilmore Estate and is having plans prepared for a residence to be erected in the near future.

STANTON, NEB.—Jesse B. Miller, 324 Little Building, Lincoln, has completed preliminary plans for a two-story and basement hospital to be erected here for Dr. Stewart, Stanton. Cost will be about \$15,000.

NEW JERSEY

BLOOMFIELD, N. J.—Frederick L. Pierson, 160 Bloomfield Avenue, has completed plans for two residences to be erected on Williamson Avenue for Joseph Garbrant, Williamson Avenue. Structures will be frame construction and the cost is estimated at \$7,000 each.

HARRISON, N. J.—Henry R. Worthington Company has acquired property adjoining its plant at Ann Street and Ogden Avenue.

JERSEY CITY, N. J.—Hector McIntyre, 355 Union Street, has had plans prepared for a one-story brass foundry at 877 Communipaw Avenue.

JERSEY CITY, N. J.—A one-story brick garage will be erected at 18-21 Whitman Avenue, in accordance with plans prepared by Chris Ziegler, 75 Montgomery Street, for Mrs. Henry Smith, 941 West Side Park. Estimated cost, \$5,000.

NEWARK, N. J.—The E. I. Du Pont-De Nemours and Company, H. C. Cowley, superintendent, 256 Vanderpool Street, have had plans prepared for a color grinding and lithophone manufacturing building, the cost of which will be in the neighborhood of \$30,000.

PASSAIC, N. J.—A new one-story brick and steel power house will be erected here by the New York Belting & Packing Company.

PATERSON, N. J.—The American Shell Company, 250 Twenty-first Avenue, has acquired property for extensions to its plant.

NEW YORK

BROOKLYN, N. Y.—The Standard Oil Company, 26 Broadway, will erect a one-story brick pump house at Kingsland Avenue and Calyer Street. Cost, \$10,000.

BROOKLYN, N. Y.—Plans have been filed for a one-story brick addition to a theater owned by J. H. Ward, 111 Broadway. Cost, \$29,000.

BROOKLYN, N. Y.—M. Wolsk, 1414 Forty-fifth Street, has had plans prepared for a two-and-one-half story frame dwelling to be erected at Forty-sixth Street and Fifteenth Avenue, at a cost of \$15,000.

BROOKLYN, N. Y.—Cohn Brothers, 363 Stone Avenue, have filed plans for a one-story brick garage to be erected for A. Benjamin, 1460 Eastern Parkway. Structure will cost \$20,000.

BROOKLYN, N. Y.—H. Goldstein, Broadway and Tenth Street will receive bids for a two-story brick garage. Plans have been completed by H. J. Nurick, 957 Broadway, and the building is estimated at \$75,000.

BROOKLYN, N. Y.—A one-story brick garage will be erected at Calyer and Russel streets for the Motor Truck Drayage Company in accordance with plans prepared by G. Eida. Cost, \$15,000.

BROOKLYN, N. Y.—C. B. J. Snyder, care of Board of Education, Fifty-ninth Street and Park Avenue, N. Y. C., has prepared plans for a \$500,000 school at 54 Nostrand Avenue, Brooklyn.

BROOKLYN, N. Y.—C. Alexander, 2992 West Twenty-ninth Street, is having plans prepared for two two-and-one-half story frame dwellings which will be erected at Mermaid Avenue. Cost, \$15,000.

BUFFALO, N. Y.—The Donner Steel Company has had plans prepared for a new \$7,000,000 coke oven to be erected on Abby Street. The plant will be one of the largest in the country.

Industry Builds in Concrete

In these times when production and conservation are so important, every factory, warehouse or cold storage plant should be built of fireproof, repair-proof, time-proof reinforced concrete. Architects are contributing by making these permanent, economical buildings, whether for industry or housing industry's workers, good to look at and safe to work or live in.

We will gladly furnish architects with information on concrete for industrial buildings and workmen's homes and cooperate, on request, in the development of designs.

Use the coupon below.

The Atlas Portland Cement Company

Member of the Portland Cement Association

New York Chicago Philadelphia Boston St. Louis
 Minneapolis Des Moines Dayton Savannah

*Sprague Electric Works of General Electric Co.
 Bloomfield, N. J. John W. Ferguson Co., Contractors*



ATLAS CEMENT

THE ATLAS PORTLAND CEMENT CO., 30 Broad St., N. Y., or Corn Exchange Bank Bldg., Chicago. Send book on Industrial Buildings and information about Atlas Service to name and address written on margin, particularly subjects checked: . . . Industrial Housing . . . Warehouses . . . Factories . . . Lofts . . . Cold Storage . . . Terminals . . . Hospitals . . . Schools . . . Business Garages . . . Stables.

If you will state kind of business for which building is intended _____ special information will be furnished

BUFFALO, N. Y.—The Automatic Transportation Company, 2933 Main Street will erect a three-story reinforced concrete and brick warehouse and factory. Cost about, \$75,000.

JAMESTOWN, N. Y.—The Art Metal Construction Company has had plans drawn for a boiler house extension.

LONG ISLAND CITY, N. Y.—The Interstate Land & Holding Company has filed plans for a \$50,000 brick factory to be erected on the southeast corner of Harris Avenue and Marion Street.

NEW YORK CITY, N. Y.—Plans have been filed by the Queens Realty Company, 51 Chambers Street, New York City, for a \$28,000 three-story brick factory building, to be erected on the north side of Queens Street, east of Jackson Avenue, Long Island City, N. Y.

NEW YORK CITY, N. Y.—E. & J. Bass, 610 Broadway, have purchased a site at 114 Commerce Street, Newark, N. J., and are planning a three-story plant.

NEW YORK CITY, N. Y.—McDonagh Memorial Hospital is having plans drawn by V. W. Tandy, 1931 Broadway, for a six-story building, to cost \$100,000.

NEW YORK CITY, N. Y.—The Standard Shipbuilding Company, 44 Whitehall Street, has had plans prepared for additions to its shipbuilding plant at Shooters Island, Staten Island, to cost about \$60,000.

NEW YORK CITY, N. Y.—E. H. & C. N. Whinstone, 509 Willis Avenue, have completed plans for the alterations to be made on Hotel Monterey, at Ninety-fourth Street and Broadway. Owner, West Eighty-second Street Realty Company, 2520 Broadway. The improvements will entail an expenditure of \$5,000.

NEW YORK CITY, N. Y.—Mowbray & Uffinger, 56 Liberty Street, will take bids soon on revised plans for the alterations and additions to a bank and office building owned by the Fall River National Bank, Wendell E. Turner, president, 59 North Main Street, Fall River, Mass. Approximate cost of improvements, \$125,000.

NEW YORK CITY, N. Y.—Amelia A. Mayhorn, 17 East Thirty-seventh Street, has had plans prepared for a five-story garage to be erected at a cost of \$100,000.

ROCHESTER, N. Y.—Plans are being completed by R. L. Taylor, Cutter Building, Rochester, N. Y., and Engineer A. B. Austin, Cutter Building, for a munition plant for the T. H. Symington Company, Cutter Building. Structure will cost \$6,500,000.

ROCHESTER, N. Y.—Plans are being prepared by J. F. Warner, Granite Building, for a two-story reinforced concrete, brick and steel plant for the Wottensak Optical company, 1415 Clinton Avenue, North. About \$75,000 will be expended on this structure.

ROCHESTER, N. Y.—J. M. Platt, Butler Building, has been commissioned to prepare plans for a two-story reinforced concrete and brick hospital building which will cost between \$55,000 and \$66,000.

ROCHESTER, N. Y.—The Bridgeport Tool & Machine Works is planning the construction of a new power house at its plant on Winton Road.

SENECA FALLS, N. Y.—The Seneca Falls Mfg. Company, Bridge and Water Streets, has had plans prepared for brick and steel extensions estimated to cost \$40,000. Elliott Kiffey is president.

WATERTOWN, N. Y.—The International Paper Company, A. H. White, chief engineer, 30 Broad Street, New York City, has plans in preparation for rebuilding its sulphite factory at Watertown.

WATERTOWN, N. Y.—The Government will spend \$1,200,000 for the construction of homes for workmen engaged on war contracts in this section. Sites for the structures have not been acquired as yet.

NORTH CAROLINA

GASTONIA, N. C.—The Gastonia Bonded Warehouse Company will erect a \$250,000 reinforced concrete structure. A site is being considered as the company proposes to have the building ready for storage by Oct. 1.

RALEIGH, N. C.—C. E. Hutchinson, president of the Adrian Manufacturing Company and associates have applied for incorporation papers for the American

Processing company with an authorized capital of \$500,000. A plant will be erected immediately on the site of the Mountain Island Mill, which was destroyed by fire in 1916.

OHIO

ARCADIA, OHIO.—A one and one-half story and basement church will be erected here for the Methodist Episcopal Church, Rev. F. B. Osborn, Arcadia. Plans have been completed by W. W. Burk, Forest, Ohio. Cost, \$25,000.

CLEVELAND, OHIO.—The National Screw & Tack Company, will erect a seven-story addition, for general manufacturing purposes.

CLEVELAND, OHIO.—Frank Gronck, 3608 East 131st Street, has about completed plans for a one-story auditorium to be erected at 3597 East 131st Street at a cost of \$16,000.

CLEVELAND, OHIO.—The Osborn Engineering Company, 2848 Prospect Avenue, is completing plans for a one-story brick and steel warehouse to be erected for Fishel & Marks, 3013 East Fifty-fifth Street. Cost \$100,000.

DAYTON, OHIO.—Pretzinger & Musselman, Reibold Building, are preparing plans for heightening and general enlargement of the Callahan Bank Building, at the northeast corner of Third and Main Streets. The cost of the proposed improvement, it is estimated, will be approximately \$200,000.

SPRINGFIELD, OHIO.—Plans submitted by R. C. Gotwald, Architect, Gotwald Building, and Edward Bayer, heating engineer of Toledo, for the remodeling of the East school building in Bellefontaine, were approved by the school board.

TOLEDO, OHIO.—A special session of the City Council is called to consider the expenditure of between \$100,000 and \$160,000 for new buildings at the Government motor repair camp. Dr. A. Monroe Stowe, president of Toledo University, with which the camp is affiliated.

OKLAHOMA

BLACKWELL, OKLA.—W. L. McAtee, Arkansas City, Kan., has prepared plans for a one-story and basement stucco bungalow for Miss Balentine, Blackwell. Cost \$7,500.

SHAWNEE, OKLA.—City of Shawnee is calling an election to vote on \$65,000 bonds for additions to the present municipal hospital.

PENNSYLVANIA

BRADFORD, PA.—R. Auerheim is having plans prepared by E. F. Brickell, Wagner Building, for a two and one-half story brick residence.

HARRISBURG, PA.—In all probability the temporary mess hall and bunk house, which were erected some time ago along Keystone Avenue on the Government Reservation, will be removed to make way for a permanent hospital and mess hall. Plans have been approved by the War Department at Washington.

HARRISBURG, PA.—Arnold W. Brunner, 101 Park Avenue, New York City, the architect for the Capital Park improvements, and J. E. Greiner, the bridge engineer, have been commissioned to prepare plans for a bridge which will form the eastern end of the Capital Park extension. Estimated cost, \$300,000.

PHILADELPHIA, PA.—J. Ethan Fieldstein, 211 Hall Building, has plans in progress for a five-story brick and stone building.

PHILADELPHIA, PA.—Plans are being prepared by Le Roy B. Rothschild, Bulletin Building, for alteration and additions to a store building at 908 Walnut Street for Jack Lischutz.

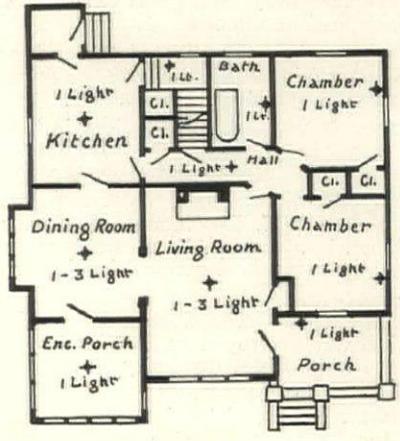
PHILADELPHIA, PA.—Alterations and additions will be made to an apartment house at Broad and Norris streets for the estate of Anna Moore. Plans are being prepared by Le Roy B. Rothschild, Bulletin Building.

PHILADELPHIA, PA.—Plans are being estimated for alterations and additions to the buildings at Twenty-fifth and Spruce streets, for the Vulcan Mill. Plans were prepared by Day & Zimmerman, 611 Chestnut Street.

POTTSTOWN, PA.—The Montgomery Foundry & Mfg. Company has been incorporated, with a capital of \$100,000, by J. F. Sevison and others.



Vanco Bronze Lighting Fixtures For the Bungalow



\$26.00 WILL FULLY EQUIP A SEVEN ROOM HOUSE

Living Room	1-3 light	Chamber	1-1 light
Dining Room	1-3 light	Chamber	1-1 light
Kitchen	1-1 light	Bath	1-1 light
Porch	1-1 light	Hall	1-1 light
Porch	1-1 light		

This remarkable low cost due to efficiency methods and our use of Vanco Bronze, the New Metal, that revolutionizes lighting fixture manufacturing, includes cast and spun fixtures wired complete with glassware and tripods ready to hang (no insulating joints); also a choice of six beautiful and permanent finishes.

**To Meet Emergency Housing Demands We Will Deliver,
On 10 Days' Notice
Lighting Fixtures Up to 1000 Houses Weekly**

For the House or Bungalow of \$4,000 or less, Vanco Bronze Lighting Fixtures will average as low as \$2.50 an outlet.

Let Our Special Builders' Service Have Your Blue Prints to Figure On

We offer the same guarantee on Vanco Bronze as on all our fixtures produced through sixty years of noteworthy service to the trade and unexcelled for conception of design, faithfulness to period styles and high quality of workmanship.

In our more elaborate selections for the city house, estate or public building, are all the standard finishes and many others that are unusual. We will also match any given scheme of decoration.

Quantity Prices Quoted on Application.

MITCHELL VANCE CO., INC.

Sole Producers of VANCO BRONZE, the New Metal. Offices, Factory and Display Rooms:
503-511 West 24th Street New York City



RHODE ISLAND

PROVIDENCE, R. I.—An addition is contemplated for the Fall River National Bank on property recently purchased.

SOUTH CAROLINA

COLUMBIA, S. C.—The Trozer Engine Company, recently incorporated with a capital of \$50,000, has perfected its organization and is planning the construction of a plant.

TEXAS

BEAUMONT, TEX.—Watson & Steinman, Temperance Building, have designed a \$60,000 building for the Beaumont Elks.

BROWNWOOD, TEX.—A site has been selected by the Brownwood Hotel Company for the new hotel which they contemplate erecting. Harry Knox is president.

DALLAS, TEX.—With the recent donations, it is understood that the teaching plant at the College of Medicine and Pharmacy of Baylor University will be increased by the erection of a six-story building to cost approximately \$75,000 in the near future.

HOUSTON, TEX.—Capt. R. A. Blair, camp construction quartermaster at Camp Logan, has received instructions to add three more of the large two-story barrack wards to the base hospital group which are estimated at \$20,000 each. Work will be started at once.

HOUSTON, TEX.—The Universal Tire & Rubber Company has purchased a site on which it will erect a plant.

MERCEDES, TEX.—Westgrove & Co. contemplate erecting a large precooling and ice plant.

SAN ANTONIO, TEX.—The Lone Star Truck & Tractor Association has purchased a site on which it will erect a plant. A. O. Sairis is district manager.

UTAH

OGDEN, UTAH.—Dee Memorial Hospital will erect a \$50,000 addition from plans drawn by L. S. Hodgson, Perry Building.

VERMONT

RICHFORD, VT.—The Quaker Oats Company, Whitehall Building, New York City plans to erect a \$100,000 addition to their plant at this place.

VIRGINIA

BATTERY PARK, VA.—Bloxom Brothers have been incorporated with \$50,000 capital stock. O. A. Bloxom is president.

ROANOKE, VA.—A nurses' home is to be erected for the City Hospital in accordance with plans being prepared by H. M. Miller, 3½ Campbell Avenue. Approximate cost, \$12,000. J. B. Lacey in charge.

WASHINGTON

SEATTLE, WASH.—John Carrigan, Epler Block, has completed plans for the construction of a machine shop at 1410 Dearborn Street for P. J. Appleton, 1111 First Avenue.

SEATTLE, WASH.—Plans have been completed for the new machine shop to be built by the Acme Forge Works at Spokane Street and East Marginal Way.

SEATTLE, WASH.—The Erickson Engineering Company will erect two new buildings at its shipbuilding plant, at a cost of \$10,000.

WALLA WALLA, WASH.—Walla Walla Meat & Cold Storage Company, 216 E. Main Street, plans to rebuild packing plant. Cost, \$75,000.

WISCONSIN

MILWAUKEE, WIS.—The American Realty Service Company, care A. L. Richards, 437 Broadway, has had plans prepared for a three-story brick and veneer apartment building to be erected at Twenty-sixth Street and Prairie Avenue. Cost about \$20,000.

MILWAUKEE, WIS.—Dix Investment Company, 215 Graham Street, had plans drawn for a \$25,000 garage. S. F. Kadow, 451 Mitchell Street, Architect.

RACINE, WIS.—The Lavine Gear Company, Keefe Avenue and Booth Street, proposes to erect a one-story fireproof brick building. Cost estimated at \$40,000.

RACINE, WIS.—The Gayety Theater is to be remodeled at a cost of \$25,000. Plans have not been prepared.

RACINE, WIS.—Plans were prepared for a \$100,000 brick factory to be erected by the Peifer Radiator Company, Racine, Wis.

SUPERIOR, WIS.—F. A. Johnson, Alworth Building has plans under way for a \$150,000 school. L. A. Nichols, secretary Board of Education.

FIRE LOSSES

Reports of fires published in this department include only cases in which the magnitude of losses sustained and the surrounding circumstances indicate the probability of restoration or reconstruction.

ALGONAC, MICH.—Damage of \$35,000 resulted from a fire which destroyed the greater part of the Star Island House, located on an island bar in Lake St. Clair.

ALLIANCE, OHIO—A fire in the hardware store of Brown-Bennett Company resulted in a loss of \$10,000.

BRISTOL, TENN.—The McCrory five and ten cent store at State Street was severely damaged. Loss, \$40,000.

BROOKLYN, N. Y.—A loss of \$10,000 was sustained when the plant of the Keystone Paint & Varnish Company, 71 to 79 Otsego Street, was damaged.

BROOKLYN, N. Y.—The Government Gas Mask Factory at 556 Jackson Avenue, was partly destroyed. The loss is estimated at \$50,000.

BROWNVILLE, PA.—The Grand Opera house and four business establishments were totally destroyed by fire. The damage is estimated at \$200,000.

DALKENA, WASH.—A \$20,000 loss is the result of a fire at the plant of the Hedlund Box & Shingle Company. D. C. Hedlund, the owner, expects to rebuild immediately.

EAST NEWARK, N. J.—Thomas E. Gleason, Inc., 411 John Street, is planning the reconstruction of its two-story factory recently destroyed by fire with a loss of \$15,000.

LINCOLN, N. H.—The Flume House, in the White Mountains, was destroyed by fire. It was owned by the Profile & Flume Hotel Company and the loss amounts to about \$75,000.

MARSHALL, TEXAS.—Fire destroyed the main machine shop of the Texas and Pacific Railway System, entailing a loss of \$300,000. Adjoining wings of the destroyed building were slightly damaged.

MARTINS FERRY, OHIO.—The Superior Glass Company's plant was destroyed by fire, the loss being estimated at \$200,000.

PORTLAND, ORE.—The planing mill of the Rice-Kinden Lumber Company was completely destroyed by fire. The loss is estimated at \$50,000.

SPRINGFIELD, MASS.—A fire in the six-story building owned by the Dwight O. Gilmore estate, on Post Office Square, caused a loss of \$170,000.

ST. LOUIS, MO.—The Thomas L. Horn Trunk Company factory at Eighth and Howard streets has been damaged. The fire caused a loss of \$35,000.

ST. LOUIS, MO.—A \$1,000,000 fire occurred in the plant of the Werthan Bag Company, St. Louis, Mo.

ST. LOUIS, MO.—The plant of the Medart Pulley Company at Potomac and De Kalb streets, has been damaged, and the loss is estimated at \$150,000.

TAYLORVILLE, ILL.—The Corn Belt garage on West Market Street was damaged in a \$20,000 fire.

WINSTON-SALEM, N. C.—The Meyers Brothers Company's department store, on West Fourth Street, was practically destroyed by fire. Owner, G. W. Hinshaw. Loss estimated at \$55,000.

WOLCOTT, N. Y.—The Wolcott House, a hostelry owned by W. Randall Shaw, was partly destroyed. The loss is placed at \$20,000.

WOONSOCKET, R. I.—Fire caused approximately \$85,000 damage to the Longley Building, at Depot Square and Main Street. Owner, C. E. Longley & Co.

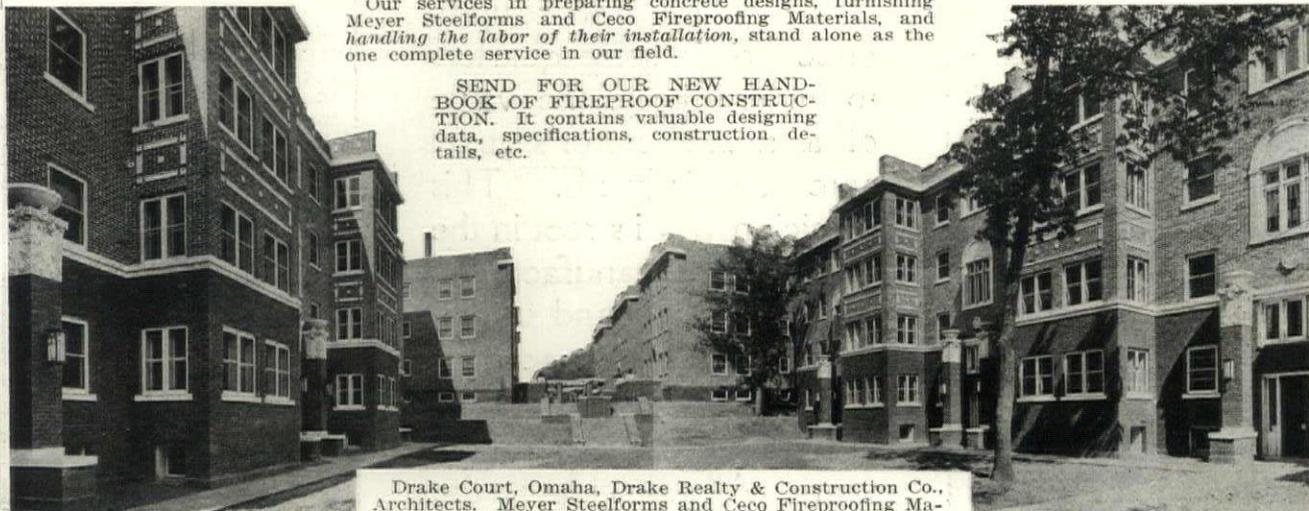
Does the Man from a Happy Home Do Better Work?

He certainly does, and not only better work *but more work*. In improving living conditions, and making home life more pleasant for the workmen, thus insuring maximum production in return, the architect and builder who are today planning the industrial housing project are fully awake to the necessity of building these community groups of materials which will effect a sanitary, soundproof, fireproof and permanent residence for their workmen.

Meyer Steelform Construction, our system of concrete joist floor construction, using removable Steelforms, and our standard lath furring constructions using our Ceco Fireproofing Materials, are peculiarly suited for the industrial housing project. They are admirably adapted for use in the standardized unit plan of building, effecting efficiency and economy, in a degree not obtainable elsewhere.

Our services in preparing concrete designs, furnishing Meyer Steelforms and Ceco Fireproofing Materials, and handling the labor of their installation, stand alone as the one complete service in our field.

SEND FOR OUR NEW HANDBOOK OF FIREPROOF CONSTRUCTION. It contains valuable designing data, specifications, construction details, etc.



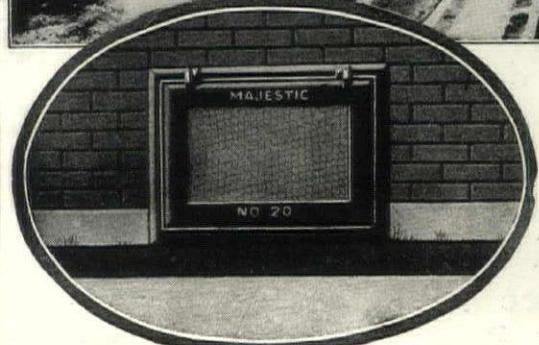
Drake Court, Omaha, Drake Realty & Construction Co., Architects. Meyer Steelforms and Ceco Fireproofing Materials used in eight buildings.

CONCRETE ENGINEERING COMPANY

OMAHA

CHICAGO — KANSAS CITY — SALT LAKE CITY
Warehouses: OMAHA — KANSAS CITY — CHICAGO

NEBRASKA



These Homes Protected By *Majestic Coal Chutes*

A Town of Workmen's Homes—erected by The Morgan Park Co., of Duluth.

In a very short time, every *Majestic Coal Chute*—in every building pictured above—will have paid for itself in actual protection of property from damage and in the saving of repair bills.

More than that—from the minute the *Majestic Coal Chute* is installed—it increases the value of the property.

A *Majestic Coal Chute* in the building you are planning would protect the ground, shrubs, lawn, sidewalks and particularly the sides of the building from coal smudge and damage by the careless coal man. It would improve the looks and add to the value of the property.

A large glass window gives ample light to the basement—when closed it is absolutely burglar-proof.

Write now for Catalog

of the complete line of *Majestic Coal Chutes*—that describes the great variety of styles and sizes—to suit every building's need. Get this catalog for your files NOW.

The Majestic Co., 851 Erie Street, Huntington, Indiana

At the Architect's Service

Guarantees

There is an unfortunate disposition in some quarters to underestimate the value of a manufacturer's guarantee on his goods. This suspicion has its root in the old idea that manufacturers were dishonest and unreliable, and takes no account of the wonderful advance in business ethics in recent years. All suspicions to the contrary notwithstanding, the vast majority of manufacturers today do stand back of their goods—their guarantee is indeed a guarantee. They consider that, in the last analysis, character is the greatest asset a man can have. Legitimate business is built upon the character of business men. A failure to back up a guarantee is an index to a defect in character. And bold indeed will the manufacturer be who will sacrifice his one greatest asset by failure to support the guarantee he puts on his product. Rare exceptions only emphasize the rule that business today is honest business—that manufacturers as a class are reliable.

American Elevator & Machine Co., Inc.	28
American Lead Pencil Co. (o.a.m.)	
American Pressweld Radiator Corp. (e.f.w.)	
American Radiator Co.	30
American Rolling Mill Co., The (e.f.w.)	
American Sheet & Tin Plate Co.	31
American Steel & Wire Co.	31
Associated Tile Mfrs., The (e.f.w.)	
Atlas Portland Cement Co.	19
Automatic Refrigerating Co. (e.f.w.)	
Barrett Co. (e.f.w.)	17
Benjamin Elec. Mfg. Co. (e.o.w.)	
Berger Mfg. Co., The	29
Best Bros. Keene's Cement Co. (e.o.w.)	35
Bishopric Mfg. Co., The	31
Bostwick Steel Lath Co. (e.o.w.)	34
Boyle, John, & Co., Inc.	
Buffalo Forge Co.	29
Cabot, Samuel, Inc.	15
Cahill Iron Works, The	30
California Redwood Assn. (o.a.m.)	37
Campbell, Walter M.	
Carey, Philip, Co., The (e.f.w.)	
Carrier Air Conditioning Co. of America	
Carter, Ralph B., Co.	30
Carter White Lead Co.	32
Chase & Co., L. C.	29
Cheney Bros. (o.a.m.)	
Concrete Engineering Co.	23
Corbin, P. & F.	30
Corrugated Bar Co. (o.a.m.)	
Crampton-Farley Brass Co. (e.o.w.)	
Crittall Casement Window Co. (e.o.w.)	15
Detroit Steel Products Co.	30
Dixon Crucible Co., Jos.	28
Dunham, C. A., Co. (o.a.m.)	32, 33
Edwards Mfg. Co.	28
General Electric Co. (e.o.w.)	
General Fireproofing Co.	
Gillis & Geoghegan (e.o.w.)	
Glidden Varnish Co.	
Globe Automatic Sprinkler Co. (e.o.w.)	39
Hart & Hegeman Mfg. Co., The (e.o.w.)	
Hart Mfg. Co. (e.o.w.)	
Hartmann-Sanders Co. (o.a.m.)	
Hartshorn Stewart Co. (o.a.m.)	
Hawley Down Draft Furnace Co.	30
Hemlock Manufacturers, The (o.a.m.)	
Higgins & Co., Chas. M. (e.o.w.)	31
Hoffman Specialty Co.	35
Imperial Paint Co. (e.f.w.)	29
Indiana Limestone Quarrymen's Ass'n (o.a.m.)	
Jenkins Bros.	28
Johns-Manville Co., H. W.	28
Kimball Co., W. W.	29

Lupton's, David, Sons Co. (e.o.w.)	40
Magnesia Assn. of America (e.f.w.)	
Majestic Co., The	23
Mfg. Equipment & Engineering Co.	
McCray Refrigerator Co.	
Midland Terra Cotta Co. (e.o.w.)	
Mississippi Wire Glass Co.	33
Mitchell Tappan Co. (e.o.w.)	32
Mitchell Vance Co., Inc.	21
Muller F. R., & Co.	29
Murphy Varnish Co. (o.a.m.)	
National Building Granite Quarries Association, Inc.	31
National Kellastone Co., The	28
National Metal Molding Co. (e.f.w.)	
North Carolina Pine Association (o.a.m.)	
Northwestern Terra Cotta Co. (o.a.m.)	
Okonite Co. (e.o.w.)	30
Otis Elevator Co., The	2
Patching, John F., & Co. (e.f.w.)	
Patton Paint Co.	
Permutit Co.	
Pierson U-Bar Co.	31
Pittcairn Varnish Co.	
Pittsburgh Lamp, Brass & Glass Co.	32
Pomeroy, S. H., Co., Inc.	31
Raymond Concrete Pile Co.	28
Richards-Wilcox Mfg. Co. (o.a.m.)	
Rising & Nelson Slate Co.	15
Samson Cordage Works	29
Society of Beaux Arts Architects	30
Southern Pine Assn. (o.a.m.)	
Square D Company (e.o.w.)	
Standard Oil Cloth Co., Inc., The	30
Stanley Works	29
Stearns & Co., E. C. (o.a.m.)	
Thorp Fire Proof Door Co.	30
Trenton Potteries Co. (e.o.w.)	
Trus-Con Laboratories, The (o.a.m.)	
Truscon Steel Co.	38
United Lined Tube & Valve Co.	29
United States Rubber Co. (o.a.m.)	
University of Michigan	30
University of Notre Dame	30
Vendor Slate Co., Inc. (e.o.w.)	
Weisz, G. A.	30
Western Brick Co. (e.o.w.)	34
Wilson, J. G., Corp., The	
Winslow Bros. Co.	31
Wolf, L., Mfg. Co. (e.o.w.)	
Wright Wire Co. (o.a.m.)	36
Yale & Towne Mfg. Co. (o.a.m.)	
Yale School of Fine Arts	30
Zouri Drawn Metals Co.	

Ads. marked E.O.W. appear every other week

Ads. marked E.F.W. appear every fourth week

Ads. marked O.A.M. appear once a month

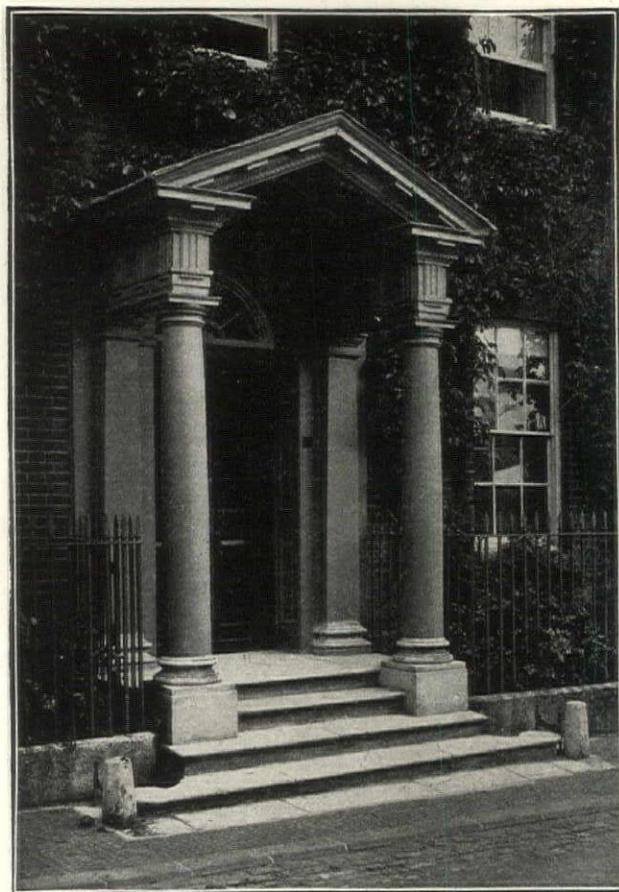
The Student's Edition of the Georgian Period Is of Great Benefit to Architectural Draftsmen and Students

FROM this Portfolio, the Student can acquire a keen insight into the principles and details of the Georgian Architecture of the United States.

There are few matters of greater importance to the Architectural Designer in this country, than a thorough acquaintance with the Colonial.

There are no other sources of information regarding Colonial Architecture comparable in value to our monumental work, *The Georgian Period*, edited by Wm. Rotch Ware.

From the great mass of material in this parent work, there have been taken, to form the *Student's Edition of the Georgian Period*—



One hundred (100) plates of illustrations, size of page 10" x 14½". These are perspectives, elevations, details, etc., reproducing many of the best examples in the larger work.

The drawings are measured with the greatest care and, to the Student as well as the practising Architect, are illuminating and educational to a very high degree.

Twenty-four (24) pages of illustrated text, of high value, are also included in the Student's Edition.

Price of Portfolio (transportation charges prepaid), **\$15**

(Our Special Payment plan makes it easy for the draftsman or beginner to acquire this invaluable work. Write for particulars.)

U. P. C. BOOK COMPANY, Inc.

Successor to The American Architect Book Dept.

241-249 West 39th Street

New York

DIGEST

Of Manufacturers' Data

ARCHITECTS' OFFICE EQUIPMENT

INKS:

Higgins, Chas. M., & Co., 271 9th St., Brooklyn.

PASTES:

Higgins, Chas. M., & Co., 271 9th St., Brooklyn.

PENCILS:

Dixon Crucible Co., Jos., Jersey City, N. J.

BRICK

Western Brick Co., Danville, Ill. Producers of Doric, and Gothic stippled and standard face brick. Doric shades range from black and brown to tan and olive buff; Gothic shades from brown to red.

CASEMENT WINDOWS

METAL:

Crittall Casement Window Co., Detroit, Mich. Crittall metal casement windows for office buildings, banks, public buildings, churches, university buildings, hospitals, residences, stores, factory offices, etc.

Pomeroy Co., Inc., S. H., 30 E. 42d St., N. Y.

CEMENT AND PLASTER

CEMENT:

Atlas Portland Cement Co., The, 30 Broad St., New York. Manufacturers of Atlas Portland Cement and Atlas-White Portland Cement. Sales Offices: Chicago, Philadelphia, Boston, St. Louis, Minneapolis, Des Moines, Dayton, Savannah. Mills: Northampton, Pa.; Hudson, N. Y.; Hannibal, Mo. Sales Manager: C. A. Kimball.

PLASTER:

Best Bros. Keene's Cement Co., Dept. C. Medicine Lodge, Kans., New York, Chicago. "Regular" for base and finish coats, general plastering; "Fine" for all ornamental plastering; Caen stone, etc.; "Coarse" and "Superfine" for art marble.

National Kellastone Co., The, Chicago, Ill.

SPECIALTIES:

Truscon Steel Co., Dept. 68, Youngstown, Ohio. Representatives in principal cities. Corner beads, "Kahn" curb bars, "Trus-Con" slotted inserts; "Kahn" adjustable inserts; "Trus-Con" National socket inserts; "Kahn" elastic filler and armor plates for expansion joints.

STUCCO:

National Kellastone Co., The, Chicago, Ill.

COAL CHUTES

Majestic Co., The, Huntington, Ind.

CONCRETE REINFORCEMENT

REINFORCEMENT:

American Steel & Wire Co., Chicago-New York. Berger, The, Mfg. Co., Canton, Ohio.

Bostwick Steel Lath Co., The, Niles, O.; 135 N. 22d St., Phila., Pa. Bostwick "Truss-V-Rib" for all light concrete work without forms or stiffening channels.

Concrete Engineering Co., Omaha, Neb.

Truscon Steel Co., Dept. 68, Youngstown, Ohio. Representatives in principal cities. "Kahn" System reinforced concrete; "Kahn" bars; "Rib" bars; "Rib" lath; "Florestyles," "Floredome," etc.; flat and beamed ceilings of all types.

DAMP-PROOFING

(See Water and Damp-proofing)

THIS department is intended to assist our subscribers in readily determining the names and addresses of manufacturers of products in which they may be interested together with brief data about their material.

The headings and sub-headings are arranged alphabetically and have been selected in accordance with the intent of meeting the architect's thought in preparing his specifications.

If the information desired is not found here, it will gladly be supplied by the Service Department of THE AMERICAN ARCHITECT.

DAYLIGHTING

Berger, The, Mfg. Co., Canton, Ohio.

DOORS AND TRIM

FIRE PROOF DOORS:

Thorp Fire Proof Door Co., 1600-1616 Central Ave., Minneapolis, Minn. Representatives in all principal cities. "Thorp-Richardson" fire proof metal covered doors and trim—all finishes—grained and plated. Bronze and copper entrance doors.

HOLLOW STEEL DOORS:

Interior Metal Mfg. Co., Jamestown, N. Y.; Bankers Trust Bldg., 501 Fifth Ave., N. Y. C. Hollow steel doors in all standard sizes.

STEEL ROLLING DOORS:

Edwards Mfg. Co., The, 319-349 Eggleston Ave., Cincinnati, O. Send specifications for estimate.

DUMB WAITERS

Sedgwick Machine Wks., 159 W. 15th St., N. Y.

ELECTRICAL EQUIPMENT AND SUPPLIES

CONDUITS AND FITTINGS:

National Metal Molding Co., 1111 Fulton Bldg., Pittsburgh, Pa. "NATIONAL" metal molding for surface wiring; "SHERADUCT" Sherardized and "ECONOMY" enameled conduit; "FLEXSTEEL" flexible conduit and armored cable and a complete line of fittings. Youngstown (Ohio) Sheet & Tube Co. "BUCK-EYE" rigid conduit. "REALFLEX" armored conductor.

RECEPTACLES:

Hart Mfg. Co., Hartford, Conn.; N. Y. C., Boston, Chicago, Denver, San Francisco, Detroit, Toronto.

SWITCHES:

Hart Mfg. Co., Hartford, Conn.; N. Y. C., Boston, Chicago, Denver, San Francisco, Detroit, Toronto. "Diamond A" Push Button; Rotary and Snap; Remote Control; Hotel Door.

WIRES AND CABLES (Insulated):

Okonite Co., The, 501 Fifth Ave., N. Y. C. Cauder potheads. "Mauson" and "Okonite" Tape.

ELEVATORS AND HOISTS

CONVEYORS:

Otis Elevator Co., 11th Ave. and 26th St., N. Y. C. Gravity spiral.

ELEVATORS:

American Elevator & Machine Co., Louisville, Ky.

Otis Elevator Co., 11th Ave. and 26th St., New York. Offices in principal cities of the world. Electric, hydraulic, belt and hand power, inclined freight elevators and escalators.

ELEVATORS (Hand Power):

Sedgwick Machine Wks., 159 W. 15th St., N. Y.

ELEVATOR CABLE:

American Steel & Wire Co., Chicago-New York.

HOISTS (Ash):

Otis Elevator Co., 11th Ave. and 26th St., N. Y. C. Automatic coal and ash hoists, blast furnaces and ship hoists.

FIREPROOFING MATERIALS

Johns-Manville, H. W., Co., N. Y. C.

CAGING OR FORMING:

Mitchell-Tappen Co., 17 John St., N. Y. C. "Standardized Metal Caging" for locking soffit protection on steel members.

METAL LATH:

Berger, The, Mfg. Co., Canton, Ohio.

Bostwick Steel Lath Co., The, Niles, O.; 135 N. 22d St., Phila., Pa. Bostwick "Truss Loop" and expanded metal in three types: "Diamond A" and "Lock."

Concrete Engineering Co., Omaha, Neb.

Truscon Steel Co., Dept. 68, Youngstown, O. Representatives in principal cities. "Hy rib," "Rib" lath; "Diamond Mesh" lath. Wright Wire Co., Worcester, Mass. Wire lath.

FIRE PROTECTION

FIRE EXIT DEVICES:

Corbin, P. & F., New Britain, Conn.

FIREPROOF DOORS:

Thorp Fire Proof Door Co., Minneapolis, Minn. Thorp Fire Proof Doors in all styles for every protective purpose.

FLOORS

COMPOSITION:

Burrett Co., The, 17 Battery Pl., New York. Branch offices in all large cities. Johns-Manville, H. W., Co., New York City. Franklyn R. Muller & Co., Waukegan, Ill. National Kellastone Co., The, Chicago, Ill.

FLOOR COATING:

Imperial Paint Co., 76 Tenth St., Long Island City, N. Y. "Impaco" cement coating.

FOUNDATIONS

PILES:

Raymond Concrete Pile Co., 149 Cedar St., N. Y. C. "Raymond" concrete piles are made by driving a reinforced steel shell which is left permanently in the ground. This shell is then filled with concrete.

ALPHABETICAL INDEX OF ADVERTISERS ON PAGE 24

FURNITURE AND DECORATIONS**CHURCH:**

Kundtz, The Theodor, Co., Cleveland, O.

DRAPERIES, UPHOLSTERIES, WALL COVERINGS:

Chase & Co., L. C., 89 Franklin St., Boston, Mass. "Chase" Mohair Velvet Coverings.

Patching, John F., & Co., 20-24 East 20th St., New York City. Panels and lace curtains furnished in all varieties of real laces.

Standard Oil Cloth Co., Inc., The, 320 Broadway, New York. "Sanitas" Tinted, Decorative and Glazed. Fast colors, sanitary.

For private homes, hotels, auditoriums, institutions, etc.

METAL:

Canton Art Metal Co., Canton, Ohio.

GARDEN ACCESSORIES

Mathews Mfg. Co., The, Cleveland, O. Seats, arbors, pergolas, gateways, etc., of wood.

GREENHOUSES

King Construction Co., No. Tonawanda, N. Y.
Pierson U-Bar Co., 1 Madison Ave., New York City. Greenhouses and conservatories for private residences and public institutions.

HARDWARE**BOLTS:**

Corbin, P. & F., New Britain, Conn.

BUILDERS' HARDWARE:

Corbin, P. & F., New Britain, Conn.
Stanley Works, The, New Britain, Conn.

BUTTS AND HINGES:

Corbin, P. & F., New Britain, Conn.
Stanley Works, The, New Britain, Conn. (Ball-Bearing)—steel, brass, bronze.

DOOR CHECKS:

Corbin, P. & F., New Britain, Conn.

GARAGE HARDWARE:

Stanley Works, The, New Britain, Conn. Garage door holders and garage door hinges.

HEATING, VENTILATION, PLUMBING**AIR WASHING EQUIPMENT:**

Carrier Air Conditioning Co. of America, Buffalo, N. Y.

BOILERS:

American Radiator Co., Chicago, Ill.

DRINKING FOUNTAINS:

Cahill Iron Works, The, Chattanooga, Tenn.

FURNACES:

Hawley Down Draft Furnace Co., Easton, Pa.
Majestic Co., The, Huntington, Ind.

LAVATORIES:

Cahill Iron Works, The, Chattanooga, Tenn.

PIPE (Iron):

United Lined Tube & Valve Co., 173 Franklin St., Boston, Mass. Lead, tin or brass lined iron pipe.

PIPE (Steel):

National Tube Co., Pittsburgh, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

RADIATORS:

American Radiator Co., Chicago, Ill.

SINKS:

Cahill Iron Works, The, Chattanooga, Tenn.

SINKS (Slop):

Cahill Iron Works, The, Chattanooga, Tenn.

TANKS (Closet):

Cahill Iron Works, The, Chattanooga, Tenn.

TRAPS (Steam):

Jenkins Bros., 80 White St., N. Y. C.

HEATING, VENTILATION, PLUMBING—Continued**TUBS (Bath):**

Cahill Iron Works, The, Chattanooga, Tenn.

TUBS (Laundry):

Cahill Iron Works, The, Chattanooga, Tenn.

URINALS:

Cahill Iron Works, The, Chattanooga, Tenn.

VALVES (Air):

Hoffman Specialty Co., 130 No. Fifth Ave., Chicago, Ill. Siphon Air Valves; Siphon Air and Vacuum valves; "Air Lines" valves; Junior Quick Vent Air valve; Quick Vent "Float" air valve; Quick Vent "Float" Air and Vacuum valve; Return Line valve for vapor, vapor vacuum, modulating and vacuum heating systems; vapor vent valve.
Jenkins Bros., 80 White St., N. Y. C.

VALVES (Radiator):

Jenkins Bros., 80 White St., N. Y. C.

VALVES (Steam):

Jenkins Bros., 80 White St., N. Y. C.

VALVES (Water Line):

Jenkins Bros., 80 White St., N. Y. C.

VAPOR HEATING SYSTEMS:

American Dist. Steam Co., No. Tonawanda, N. Y.

VENTILATORS:

Burt Mfg. Co., The, 77 Main St., Akron, O. Manufacturers of all types of ventilators, both stationary and revolving.

HOISTS

(See Elevators and Hoists)

INSULATION (Sound and Heat)**BUILDING:**

Barrett Co., The, 17 Battery Pl., New York. Branch offices in all large cities.
Cabot, Samuel, Inc., Boston. "Cabot's Quilt."
Johns-Manville, H. W., Co., New York City.

LIGHTING FIXTURES**GLASSWARE:**

Mitchell Vance Co., 503 W. 24th St., New York City.
Northwood, H., Co., Wheeling. Lighting Glass.
Pittsburgh Lamp, Brass & Glass Co., Pittsburgh, Pa.

METAL:

Mitchell Vance Co., 503 W. 24th St., New York City.
Pittsburgh Lamp, Brass & Glass Co., Pittsburgh, Pa.

MUSICAL INSTRUMENTS**ORGANS:**

Kimball, W. W., Co., Chicago, Ill.

ORNAMENTAL BRONZE AND IRON

Polachek, John, Bronze & Iron Co., 480 Hancock St., Long Island City, N. Y.
Winslow Bros. Co., 4600 W. Harrison St., Chicago, Ill.
Wright Wire Co., Worcester, Mass. Ornamental iron fence and gates and grille work.

PAINTS, VARNISHES, STAINS**LEAD (Red):**

Carter White Lead Co., Chicago, Ill.

LEAD (White):

Carter White Lead Co., Chicago, Ill.

LITHARGE:

Carter White Lead Co., Chicago, Ill.

PAINTS, VARNISHES, STAINS—Continued**PAINT:**

Patton Paint Co., Milwaukee, Wis., Newark, N. J. Patton's "Velumina" Oil Flat Wall Paint.

PAINT (Steel Protective):

Barrett Co., The, 17 Battery Place, New York. Branch offices in all large cities.
Dixon, Joseph, Crucible Co., Jersey City, N. J.

STAINS:

Barrett Co., The, 17 Battery Place, New York. Branch offices in all large cities.
Cabot, Samuel, Inc., Boston. "Cabot's" Creosote Stains, Stucco Stains, Brick Stains, Old Virginia White and Old Virginia Tints.

VARNISHES:

Barrett Co., The, 17 Battery Place, New York. Branch offices in all large cities.
Pitcairn Varnish Co., Milwaukee, Wis.

PARTITIONS**METAL:**

Berger, The, Mfg. Co., Canton, Ohio.
Interior Metal Mfg. Co., Jamestown, N. Y.; Bankers Trust Bldg., 501 Fifth Ave., N. Y. C. Interchangeable Hollow Metal Partitions.
Pomeroy, S. H., Co., Inc., 30 E. 42d St., N. Y. Hollow metal sectional construction.

PLASTER

(See Cement and Plaster)

PLUMBING

(See Heating, Ventilation, Plumbing)

REFRIGERATION**REFRIGERATING APPARATUS:**

Johns-Manville, H. W., Co., New York City.

ROOFING**ASBESTOS:**

Johns-Manville, H. W., Co., New York City.

BARRETT SPECIFICATION ROOFS:

Barrett Co., The, 17 Battery Place, New York. Branch offices in all large cities.

SHEET METAL:

American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.

SLATE:

Rising & Nelson Slate Co., West Pawlet, Vt.; 101 Park Ave. Special slate to architect's design.

TILE (Reinforced-Cement):

American Cement Tile Mfg. Co., Pittsburgh and New York. "Bonanza" roofing tile.

SAFETY TREADS

Am. Mason Safety Tread Co., Lowell, Mass.

SASH

(See Window)

SASH CORD

Samson Cordage Works, 88 Broad St., Boston.

<p>SHEET METAL American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.</p> <p>FORMED PRODUCTS: American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa. Berger, The, Mfg. Co., Canton, Ohio.</p> <p>METAL CEILINGS: Berger, The, Mfg. Co., Canton, Ohio. Canton Art Metal Co., Canton, Ohio.</p> <p>STAINS (See Paints, Varnishes and Stains)</p> <p>STONE GRANITE: National Building Granite Quarries Association, Inc., 33 State St., Boston, Mass.</p> <p>STRUCTURAL STEEL PLATE WORK: Mitchell-Tappen Co., 17 John St., N. Y. C.</p> <p>PRESSED STEEL CONSTRUCTION: Berger, The, Mfg. Co., Canton, Ohio. "Metal Lumber." Pressed Steel Joints and structural members. Truscon Steel Co., Dept. 68, Youngstown, O. Representatives in principal cities. "Kahn" pressed steel beams, joists, studs, plates etc.</p> <p>STUCCO AND WALL BOARD PLASTER BOARD: Bishopric Mfg. Co., 744 Este Ave., Cincinnati, O. Bishopric Stucco or Plastic Board. The dove-tailed key locks the plaster. Made of creosoted lath, asphalt-mastic and heavy fibre board.</p> <p>STUCCO: National Kellastone Co., The, Chicago, Ill.</p>	<p>TERRA COTTA TERRA COTTA (Architectural): Midland Terra Cotta Co., 1515 Lumber Exchange, Chicago, Ill. N. Y. Arch. Terra Cotta Co., Tel. Astoria 700.</p> <p>TILE (See Flooring and Roofing)</p> <p>VACUUM CLEANERS American Radiator Co., Chicago, Ill.</p> <p>VARNISHES (See Paints, Varnishes, Stains)</p> <p>VENTILATION (See Heating, Ventilation, Plumbing)</p> <p>WATER AND DAMPPROOFING Barrett Co., The, 17 Battery Place, New York. Branches in all large cities. Cabot, Samuel, Inc., 141 Milk St., Boston.</p> <p>WALL BOARD (See Stucco and Wall Board)</p> <p>WELLS Carter, R. B., Co., 152 Chambers St., N. Y. C.</p>	<p>WINDOWS, METAL Crittall Casement Window Co., Detroit, Mich. Solid steel and bronze windows for office buildings, banks, public buildings, churches, university buildings, hospitals, residences, stores, factory offices, etc. Detroit Steel Products Company, Detroit, Mich. Fenestra Solid Steel Windows: Standard side wall horizontally pivoted—Counterbalanced vertical sliding sash—Center pivoted and top hung continuous sash for monitor. Immediate shipment from warehouse on standard sizes. Representatives in principal cities. Lupton's, David, Sons Co., Philadelphia, Pa. Pomeroy, S. H., Co., Inc., 30 E. 42d St., N. Y. Hollow metal fibre retardant windows in 27 standard types. Truscon Steel Co., Dept. 68, Youngstown, O. Representatives in principal cities. "United" steel sash in all types; horizontal and vertical pivoted sash; counterbalanced and counterweighted sliding sash; center pivoted and top hung continuous sash; steel and glass partitions; sliding and swinging doors; casement sash of all designs. Winslow Bros. Co., 4600 W. Harrison St., Chicago, Ill.</p> <p>WIRE FENCE AND GATES Wright Wire Co., Worcester, Mass.</p> <p>WIRE GLASS Mississippi Wire Glass Co., 216 5th Ave., N. Y. C. Polished Wire Glass—"Romanesque," "Syenite," "Maze," "Pentecor," "Ribbed," "Rough." Figured Wire Glass—"Apex," "Romanesque," "Syenite," "Maze," "Florentine," "Figure No. 2," "Ondoyant," "Pentecor," "Ribbed," "Rough."</p> <p>WOOD REDWOOD: California Redwood Association, 721 Call Bldg., San Francisco, Cal.</p> <p>WOOD PRESERVATIVES Barrett Co., The, 17 Battery Place, New York. Branches in all large cities.</p>
---	---	---

EDWARDS ROLLING DOORS

LARGE AND SMALL
SINGLE AND IN GROUPS
BLACK AND GALVANIZED
CORRUGATED AND INTERLOCKING
ALL GRADES AND ANY KIND OF GEAR
Send Specifications for Estimate.

THE EDWARDS MFG. CO.
LESTER C. WILSON, Consulting Engineer
319-349 Eggleston Avenue
Cincinnati, Ohio




Section of Interlocking Slats Section of Corrugated Sheet

BE INSISTENT. Demand the original JENKINS BROS. VALVES for every purpose. You'll be protected by 50 years of valve experience.



KELLASTONE COMPANY
CHICAGO

EXTERIOR STUCCO
INTERIOR PLASTER
COMPOSITION FLOORING

The National Kellastone Co.
1318 Mallers Building, Chicago, Ill.



Raymond Concrete Piles

Made in place with protecting steel shell which remains in the ground.

RAYMOND CONCRETE PILE COMPANY
NEW YORK: 140 Cedar Street CHICAGO: 111 W. Monroe Street

Service and use determine the value of protective paints.

DIXON'S Silica Graphite PAINT

has been in use for over Fifty Years. It is known as the Long Service Paint. Send for Booklet 14-B.

Made in JERSEY CITY, N. J., by the
JOSEPH DIXON CRUCIBLE COMPANY
Established 1827.



JOHNS-MANVILLE SERVICE

J-M Asbestos Roofings J-M Pipe Coverings
J-M Mastic Flooring J-M Electrical Devices
J-M Arch. Acoustics J-M Waterproofing

TO THE ARCHITECT



AMERICAN ELEVATORS **AMERICAN ELEVATOR and MACHINE CO. INCORPORATED**
Louisville, KY.

Built by

Buffalo Heating and Ventilating Equipment is standard from coast to coast.

Write for Catalog 198-11

Buffalo Forge Co.,
Buffalo, N. Y.



KIMBALL
PIPE ORGANS

For Churches Auditoriums Residences Correspondence invited.

W. W. KIMBALL
CO.
Kimball Hall, Chicago
Established 1857

W. B. MILNER, Eastern Sales Agent
507 Fifth Ave., New York

STANLEY means the largest and oldest maker of wrought steel hardware in the world—and the right hardware for the garage.

The Stanley Works New Britain, Conn., U. S. A.



BERGER METAL BUILDING MATERIALS

See Digest of Manufacturers' Data in this magazine, also our display advertisements. Our catalog in Sweet's as follows:

Metal Lumber.....244-250	Steel Ceilings.....31
Reinforcing Plates.....216-217	Sidewalk Lights.....834-837
Corner Beads and Metal Lath. 253	Steel Lockers, Steel Bins, and Shelving and Steel Cabinets.....1703-05
Cores and Expanded Metal...195	

Prompt attention given requests for special information.

THE BERGER MFG. CO., Canton, Ohio

Branches Boston, New York, Philadelphia, Chicago, St. Louis, Minneapolis, San Francisco

CHASE
MOHAIR VELVETS

THE LUXURIOUS UPHOLSTERY

L. C. CHASE & CO.
New York City Boston Detroit Chicago

Seventy years leadership in manufacturing

For Fine Appearance Rich Texture Wearing Qualities



SAMSON SPOT SASH CORD



SAMSON CORDAGE WORKS, BOSTON, MASS.

UNITED LEAD TIN BRASS LINED PIPE

Longest-lived, most economical pipe made. Also "United" acid-proof pipe and fittings.

UNITED LINED TUBE & VALVE CO.
178 FRANKLIN ST. BOSTON, MASS.

ESTABLISHED 14 YEARS AGO
Its quality breeds imitations. Its superiority upheld by our guarantee.

For full details refer to Sweet's Index, Page 335

F. R. MULLER & CO.,
WAUKEGAN, ILL.



MULLER ASBESTONE COMPOSITION FLOORING

A NEW BOOK

THEATRES and Motion Picture Houses

By **ARTHUR S. MELOY,** Architect

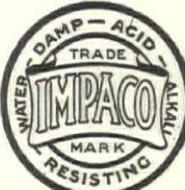
THIS is a concise, thoroughly practical, up-to-the-minute book, covering all the problems of the modern theatre, and giving particular attention to plans, sight lines, stage requirements, and fire protection.

LIST OF SUBJECTS

Selection of Site, Planning a Theatre, Design, Construction, Sight Lines, Projection Lines, Pitch of Floors, Boxes and Loggias, Lobby, Stairs, Fire Escapes, Exits, Aisles, Seating, Rule for Estimating Approximate Seating Capacity, Proscenium Arch, Fire Curtains, Floor Loads, Ceilings, Stage Ventilators, Elevators and Escalators, The Stage, Stage Dimensions, Fly Galleries, Pin Rails, Paint Bridge, Scenery, Projection Room or Booth, Screens, Theatre Fires, Panics in Theatres, Table of Building Codes, Heating, Ventilation, Auditorium Lighting, Stage Lighting, Electric Wiring, New York Building Code, Sprinkler System, etc. **Price, Postpaid, \$3.00.**

U. P. C. BOOK COMPANY, Inc. Successor to The American Architect Book Dept. 241-249 W. 39th St., New York

"IMPACO" INTERIOR FLAT FINISH



Contains no white lead and will not chalk or rub off. It dries flat with a soft and rich finish. Made in any shade desired. Our line of specialties covers every requirement for concrete coating and general technical paints.

Write for sample cards.

IMPERIAL PAINT COMPANY, New York and Philadelphia, Pa

RATES for Classified Advertisements

243 W. 39th St., New York

Positions Wanted, 75 cents for 25 words or less and 2 cents for each additional word; **Help Wanted, Special Notices, Competitions, Proposals, etc.,** \$1 for 25 words or less and 3 cents for each additional word. Ten lines or more 30 cents per line. Copy received until 12 m. Friday. **PAYMENTS STRICTLY IN ADVANCE.**

GRADUATE civil engineer, thoroughly proficient in structural design and construction, heating and ventilation and mechanical equipment for buildings, working drawings, specifications, estimates and contracts, good executive, desires working interest with architectural firm, or general contractor, having business enough to warrant the employment of an all-around high-grade man. Address 53-A, care The American Architect. (tf)

POSITIONS WANTED

ARCHITECTURAL Draughtsman and Designer, broad experience and college training. Capable of taking charge of office. Will submit samples of water colors, pen and ink sketches, and photographs of executed work. Address 219-A, care The American Architect. (2219-20)

SPECIAL NOTICE

ESTIMATING, by Edward Nichols. Containing invaluable information for the use of Architects, Contractors, Builders and others interested in building. This handbook tells how to go about the task of making an estimate intelligently. 140 pages, 35 illustrations. Cloth binding. Price, \$1.00. U. P. C. Book Company, Inc., successor to The American Architect Book Dept., 241-249 West 39th Street, New York.

School of the Fine Arts Yale University

Department of Architecture

1. A four-year general course in Architecture leading to the degree of Bachelor of Fine Arts (B.F.A.). Students may specialize in the above course (a) in Design; (b) in Construction.
2. Special students properly qualified are admitted to the courses in the Department of Architecture. Students of the Department of Architecture may avail themselves of general allied courses in Painting and Modeling. For special catalogue of the Department of Architecture address Secretary of the School of the Fine Arts, Yale University, New Haven, Connecticut.

MODERN SCHOOL HOUSES

Part II

This volume gives the latest phases of School House Design, Construction and Equipment in the United States; 170 pages of Plates; 80 pages of Illustrated Text; Price (postpaid), \$7.50.

U. P. C. Book Company, Inc., Successor to
The American Architect Book Department
241-249 W. 39th Street, New York

BEAUX-ARTS INSTITUTE OF DESIGN

126 East 75th Street New York City

Free Courses in Architectural Design, in Sculpture and in Painting in their application to Architecture

Architectural Design Sculpture
Modelling of Ornament Mural Painting

These courses, conducted in co-operation with the Society of Beaux-Arts Architects, the National Sculpture Society and the Society of Mural Painters, respectively, are modeled on the principles of teaching of the Ecole des Beaux-Arts of Paris, and are intended for the instruction of students of Architecture, Sculpture and Painting, and of apprentices and workmen in the artistic trades allied to Architecture. Any course may be entered at any time during the year. The courses in Architecture and Painting may be followed outside of New York City under representatives of the Institute. For the courses in Sculpture and Ornament Modeling, instruction is given in the Studios at the Building of the Institute. Circulars of Information concerning any of the courses will be mailed to those applying for them.

Rendering of Perspectives in any Medium

Drawing of Perspectives

G. A. Weisz, 15 East 40th St., N. Y.
Telephone Murray Hill 3659

UNIVERSITY OF NOTRE DAME NOTRE DAME, INDIANA

COLLEGE OF ARCHITECTURE

Four-year courses in Design and Architectural Engineering with degrees. Graduate courses with Master's Degree. Two-year course in Design with certificate.

Catalogues on application.

COLLEGE OF ARCHITECTURE UNIVERSITY OF MICHIGAN

Ann Arbor

SUMMER COURSES

for men and women

July 1 to August 23

AMERICAN & IDEAL —for all sizes and
RADIATORS & BOILERS kinds of buildings
Catalogs sent
AMERICAN RADIATOR COMPANY
Sales offices in most large cities



CORBIN BALL-BEARING CYLINDER

The Master-Key System appeals to the architect because of its adaptability to the most complicated requirements without impairing the security or duplicating changes. See any Corbin Agent for particulars.

405

HAWLEY DOWN DRAFT FURNACES

Are Smoke Consumers and Fuel Savers
and have stood the test for 25 YEARS.
They are imitated, NOT EQUALLED.

THE HAWLEY DOWN DRAFT FURNACE CO.
(Formerly of Chicago) EASTON, PENN.

STYLES
FOR
EVERY
ROOM

SANITAS

MODERN
WALL COVERINGS

WIPE
OFF
THE
DIRT

Made of cloth finished in durable oil colors that can't fade, crack or peel. Tinted, Decorative and Glazed styles for every room in the house. Booklet and samples on request.

THE STANDARD OIL CLOTH CO., Inc. 320 Broadway, Dept. F, New York 4-1

WATER SUPPLY

ARTESIAN WELLS DRILLED
COMPLETE PUMPING PLANTS INSTALLED

Engineering and contracting service for
isolated water supply from any source.

RALPH B. CARTER CO., 152 Chambers St.,
NEW YORK 2-2

Every modern factory is an advertisement for

Fenestra

SOLID STEEL WINDOWS

Made where most of America's steel windows are made—at the
Detroit Steel Products Company, 3909 East Grand Blvd., Detroit, Mich.

THORP FIRE PROOF DOORS

Make Each Room a Separate Building

THORP FIRE PROOF DOOR CO.
MINNEAPOLIS, MINN.

“Southern Beauty”
Enameled Ware

Manufactured by
THE CAHILL IRON WORKS
CHATTANOOGA, TENN.

Okonite Insulated Electric Light Wires

Are pronounced by leading Architects to be SAFE, DURABLE and EASILY ADJUSTED for the inside wiring of PUBLIC and PRIVATE BUILDINGS.

THE OKONITE CO., 501 Fifth Ave., cor. 42d St., NEW YORK
Sole Manufacturers
CENTRAL ELECTRIC CO., Chicago, Ill., General Western Agents
Novelty Electric Co., Phila., Pa. Pettigell-Andrews Co., Boston, Mass.
F. D. Lawrence Electric Co., Cincinnati, O.



TRADE MARK

REG. U. S. PATENT OFFICE

WINSLOW WINDOW

(AUSTRAL BALANCE)

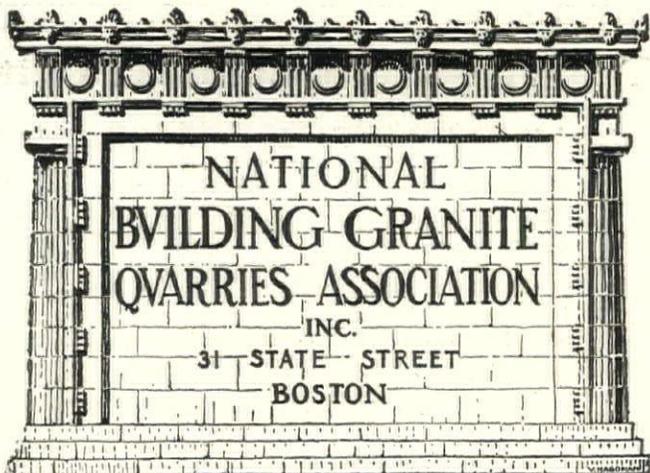
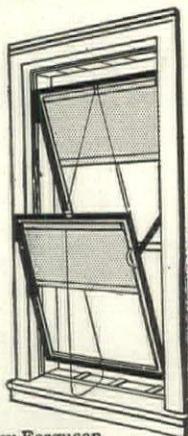
- Solid rolled steel
- Welded throughout
- Admits more light
- Ventilates without drafts
- Makes awnings unnecessary

Send for Catalogue

Winslow Bros. Company

Main Office and Works: 4600-4700
W. Harrison Street, Chicago
Mailing Address: P. O. Box No. 803

BRANCH OFFICES: 8 W. 40th St., New York City; Ferguson Bldg., Pittsburgh, besides Agencies in Principal Cities



TRIANGLE MESH

Concrete Reinforcement

For Pavements and Roadways, and Building Construction

Made by

American Steel & Wire Company

Chicago New York Cleveland Pittsburgh Worcester Denver

Export Representative: U. S. Steel Products Co., New York
Pacific Coast Representative: U. S. Steel Products Co.
San Francisco Los Angeles Portland Seattle



HIGGINS'

- VEGETABLE GLUE, Etc.
- DRAWING INKS
- ETERNAL WRITING INK
- ENGROSSING INK
- TAURINE MUCILAGE
- PHOTO-MOUNTER PASTE
- DRAWING-BOARD PASTE
- LIQUID PASTE
- OFFICE PASTE

ARE THE FINEST AND BEST GOODS OF THEIR KIND
Emancipate yourself from the use of corrosive and ill-smelling inks and adhesives and adopt the Higgins' Inks and Adhesives. They will be a revelation to you, they are so sweet, clean and well put up, and withal so efficient. They are specially adapted for use in Architects' and Engineers' offices, as well as for general home and office use.

AT DEALERS GENERALLY

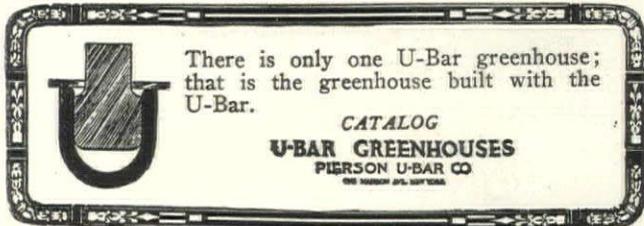
Chas. M. Higgins & Co., Manufacturers

Branches: Chicago, London 271 NINTH ST., Brooklyn, N. Y.



Before you plan another building write for free sample and book entitled "Wisdom."

The Bishopric Manufacturing Co.
200 Este Avenue
Cincinnati Ohio



APOLLO-KEYSTONE Copper Steel Galvanized

Sheets

Highest in quality and resistance to rust. Unequaled for Building Construction, Roofing, Siding, Spouting, and all forms of exposed sheet metal work.

We manufacture a complete line of Sheet and Tin Mill Products of every description, including Black and Galvanized Sheets, Corrugated and Formed Sheets, Roofing Tin Plates, Bright Tin Plates, etc. Write for full information.

AMERICAN SHEET AND TIN PLATE COMPANY, Pittsburgh, Pa.



SIXTEENTH EDITION THE NEW KIDDER 57TH THOUSAND

Architects' and Builders' Pocket-Book

By the late FRANK E. KIDDER 16th Edition Rewritten
THOMAS NOLAN, F.A.I.A.
Professor of Architectural Construction University of Pennsylvania
EDITOR-IN-CHIEF

The following Associate Editors and Contributors personally prepared various articles

- | | | |
|-----------------------|-------------------|-----------------|
| R. C. CARPENTER | THOMAS NOLAN | A. P. STRADLING |
| J. J. COSGROVE | EMIL G. PERROT | W. H. TIMBIE |
| F. H. KINDL | N. A. RICHARDS | MALVERD A. HOWE |
| GRENVILLE T. SNELLING | HERMAN C. BERRY | |
| RUDOLPH P. MILLER | DANIEL E. MORAN | |
| WALLACE C. SABINE | CHARLES P. WARREN | |
- 1856 pages, 4 1/4 by 7 Morocco, \$5.00 Net

U. P. C. BOOK COMPANY, Inc.

Successor to The American Architect Book Dept.

241-249 West 39th Street New York

POMEROY FIRE RETARDANT WINDOWS



Not Made to Meet a Price, But To Set a Standard of Service

Send for our literature on Windows and Partitions

S. H. POMEROY COMPANY, Incorporated
30 East 42nd St. NEW YORK

The Pittsburgh Lighting Unit

A New Fixture

Specially Adapted To Large Installations

Made in three sizes

as follows

No. 2242½

Bowl, 6¾" Diam. 5" Deep
Reflector, 11" Diam. 2½" Deep
Equipped with Edison Keyless
Socket for 75 Candle Power
Nitrogen Lamp.

No. 2243½

Bowl, 8¾" Diam. 6" Deep
Reflector, 13" Diam. 3" Deep
Equipped with Edison Keyless
Socket for 200 Candle Power
Nitrogen Lamp.

No. 2244½

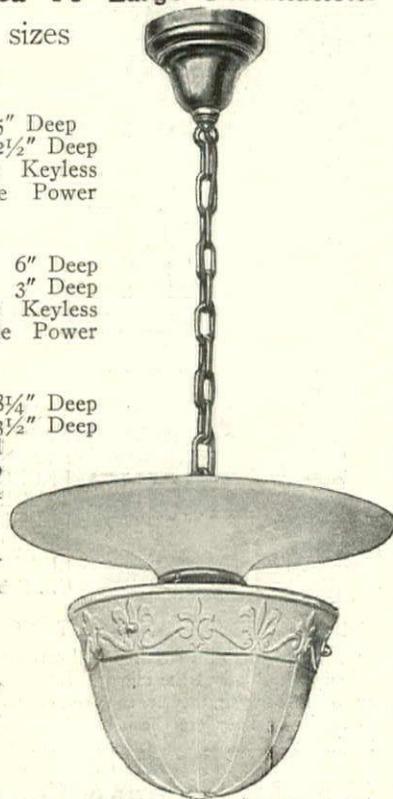
Bowl, 12" Diam. 8¾" Deep
Reflector, 18" Diam. 3½" Deep
Equipped with Mogul
Socket for 500 to 1000
Candle Power Nitrogen
Lamp.

Handsome folder illus-
trating this fixture upon
request.

Pittsburgh Lamp,
Brass & Glass Co.

DEPT. 20

PITTSBURGH, PA.



ALL worth-while paints contain some white lead. The better kinds are chiefly white lead. The best kind is pure white lead.

You are not likely to choose paint which doesn't contain some white lead; the more the better, the better the lead the better the paint. "Carter" is the last word in pure white lead and the one you will choose by every test.

An
Economical
Investment



The Slight Additional Cost
of S. M. C. is more than offset
by the saving in cost and
time in application

If you wish to insure the permanency of your steel construction—if you want your buildings to be protected from fire and corrosion they should be thoroughly protected by concrete positively locked to the steel with S. M. C. All sizes in stock.

MITCHELL TAPPEN CO.
15 JOHN STREET NEW YORK

American Churches

In Two Volumes

Price Per Set \$15.00 Postpaid, or \$7.50 Per Volume

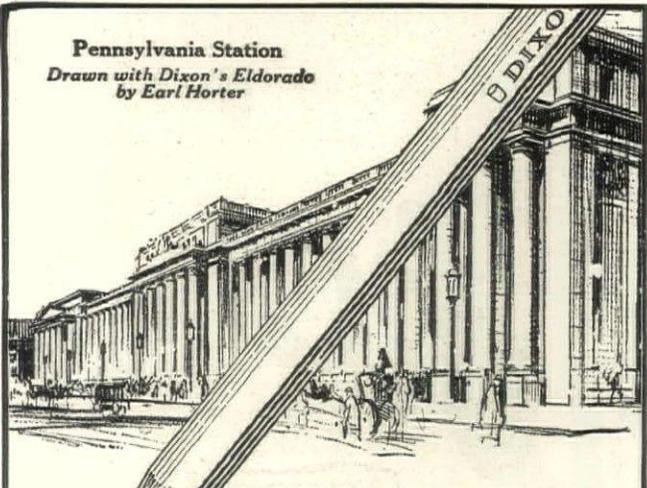
AN authoritative and im-
portant exposition of
AMERICAN CHURCH
WORK

Contains nearly 500 illus-
trations; also text articles of
especial authority on different
phases of Church Design and
Construction

U. P. C. Book Company, Inc.

Successor to The American Architect Book Dept.

241-249 West 39th Street New York



Pennsylvania Station
 Drawn with Dixon's Eldorado
 by Earl Horter

A Pencil Built This Gigantic Terminal

The finest plans, the most delicate drawings, are needed to build a magnificent structure like the Pennsylvania Terminal.

First of all, the *pencil* must be right. A crumbly, gritty or unresponsive lead makes good work impossible. Architects, engineers and draftsmen everywhere are using

**DIXON'S
 ELDORADO**
"the master drawing pencil"

because it is always the same—the best. The leads are smooth and strong, evenly graded and true to specifications. Each of the seventeen degrees is the best for its purpose that can be made.

Write us on your letter head for full-length samples of your favorite degrees.

JOSEPH DIXON CRUCIBLE COMPANY
 Dept. 14-J, Jersey City, N. J.

DIXON'S BEST WHITE N° 352
writes white on blueprints



SPECIFY

**MISSISSIPPI
 WIRE GLASS**

(The Recognized Standard)

FOR

**Fire Protection
 Breakage Protection
 AND
 Quality Protection**

PEOPLES GAS BUILDING
 CHICAGO
 equipped with Wire Glass made by
Mississippi Wire Glass Co.
 216 Fifth Avenue
 CHICAGO NEW YORK ST. LOUIS

The House That Specializes on Fire Resistive
Building Metal Goods

Distinctive Types

TRUSSLOOP LATH

TRUSS-V-RIB

Bostwick

TRUSSLOOP
METAL LATH

WEIGHT 4½ LBS. PER SQ. YD.
SIZE OF SHEET 13½" x 96" and 24" x 96"
GIVES
WEIGHT, STRENGTH, RIGIDITY, PERMANENCY,
WITH LARGE UNBREAKABLE PLASTER
SEND FOR CATALOGUE

THE BOSTWICK STEEL LATH CO., Niles, Ohio

BRICK FOR FACTORIES

WESTERN BRICK COMPANY

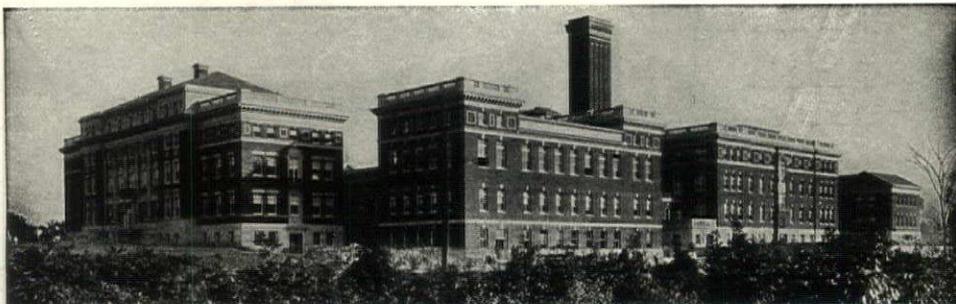
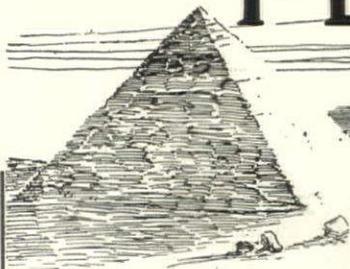
DANVILLE, ILL.

SPECIALIZING ON BRICK AND TILE FOR
INDUSTRIAL AND HOUSING ENTERPRISES

ANNUAL PRODUCTION OVER 100,000,000

WRITE FOR PRICES REGARDLESS OF YOUR LOCATION

PERMANENCY



*Passing years
cause no
deterioration in*

Best Bros. Keene's Cement

"The Permanent Interior Plaster"

Age only increases its hardness and durability. The one interior plaster that can be used to wonderful advantage for general plastering or for ornamental work—a plaster with permanency as one of its chief char-

acteristics. Experienced architects know it—hence their recommendation and constant specification for buildings of any size or purpose. *Our Free Book sent postpaid on request.*

The Montefiore Home, Gun Hill Road, New York. Arnold W. Brunner and Buchman & Fox, Architects. *Best Bros. Keene's Cement* used for interior plastering.

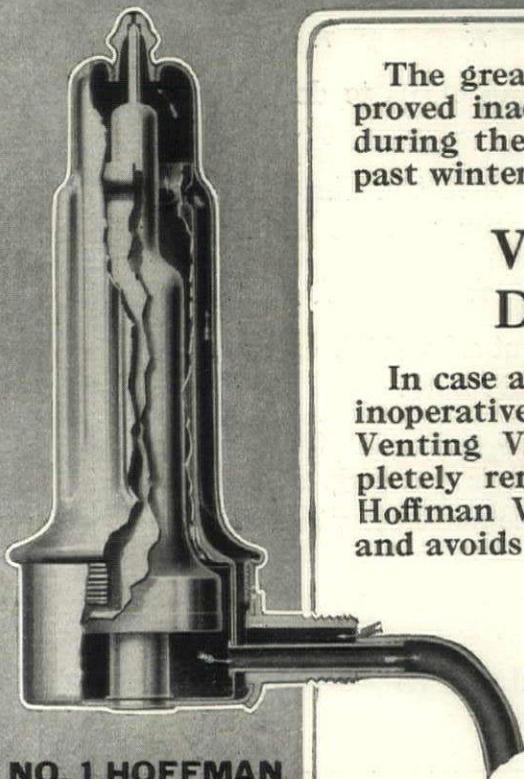
The Best Bros. Keene's Cement Co.

NEW YORK

Established 1889

MEDICINE LODGE, KANSAS

CHICAGO



**NO. 1 HOFFMAN
SIPHON
AIR VALVE**

The great number of steam-heating systems that proved inadequate to the demands made upon them during the severe and protracted cold weather of the past winter demonstrated conclusively that

Venting Valves Must Be Dependably Operative

In case after case the whole trouble was found to be inoperative venting valves. The installation of Hoffman Venting Valves—always dependably operative—completely remedied the difficulty. The specification of Hoffman Venting Valves in the first place anticipates and avoids such troubles.

There is a Hoffman Venting Valve for Every Service.

HOFFMAN SPECIALTY CO.

128 North Wells Street, Chicago

NEW YORK

512 Fifth Avenue

LOS ANGELES

215 West 47th Street

PUTTING PATRIOTISM INTO ACTION ★ ★ ★

There is no turning back. This nation of ours is in the war against autocracy and militarism *to the end*—until the fight is won and peace is restored for all time.

This is not the time to count the cost. But whatever the price may be, it will be worth it. Hundreds of thousands of our noblest young men of all ranks are today on the firing line OVER THERE. Hundreds of thousands more are waiting and eager to go. And millions more will respond to any call that comes to uphold the principle of righteousness and peace in world affairs.

We who perforce must stay behind “to keep the home fires burning” have a duty no less important to perform. This duty is right at hand—in factory and office and shop and field and home.

Words and good intentions accomplish nothing.

ACTION and action alone will win the war.

★ ★ ★ ★ ★

It devolves upon each and all of us to do our part, willingly, gladly, quickly.

Buy Liberty Bonds.
Help the Red Cross.

Invest in Thrift Stamps.
Support the Y. M. C. A.

★ ★ ★ ★ ★

Do whatever your Government asks at this crucial time and do it with a firm faith in the future.

In the measure that we today serve our Government and the holy cause to which it is pledged, we shall in future reap the benefits of peace and liberty and justice.

WRIGHT WIRE COMPANY ★ ★ ★
WORCESTER, MASSACHUSETTS

*The Many-Sided Appeal
of Redwood Exteriors*

The handsome residence below shows but one of innumerable distinctive exteriors offered by combinations of California Redwood with other building materials.

This battened effect is a typical California use of Redwood, as are also Redwood shakes (36-inch shingles), and both are coming into wide favor, especially for suburban and country houses. Redwood siding and half timbering have been in universal use for years.

For *all* purposes, from mudsills to roof, California Redwood stands pre-eminent, for two unusual and important reasons: it *resists fire*, it *resists rot*.

Hard to ignite, slow burning, easily extinguished — the fire resistance of this remarkable lumber makes it the *safest* wood that can be used.

Redwood's remarkable rot resistance is due to a *natural* preservative which permeates every fibre. Redwood resists decay even when in contact with the ground. Not affected by rain, sun or change of temperature.

Write for stained samples and free booklets—“California Redwood Homes,” “How to Finish Redwood,” “Redwood for the Engineer,” and “Specialty Uses of Redwood.”

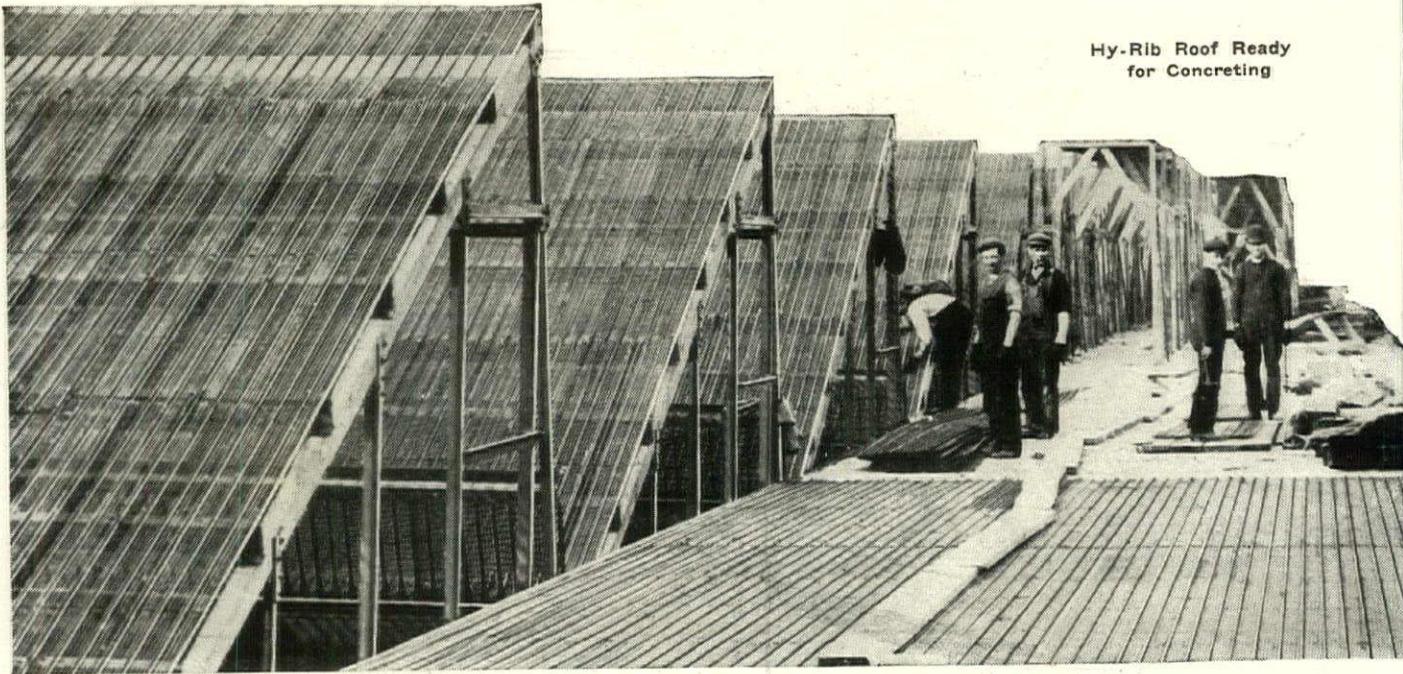
CALIFORNIA REDWOOD ASSOCIATION
721 Exposition Building, San Francisco

Residence of Mrs. A. Covhead, Berkeley, California. Finished throughout in California Redwood. Maybeck & White, Architects.

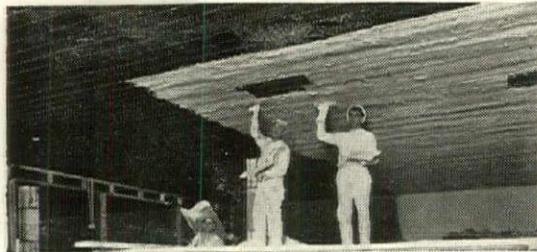


California Redwood

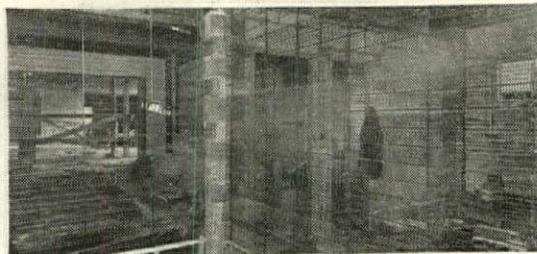
Resists fire and rot



Hy-Rib Roof Ready for Concreting



Also for Ceilings



Also for Partitions, Etc.

The Quick and Economical Way to Build Fireproof Roofs and Sidings

Build with Hy-Rib—insure having structures that are fireproof and permanent, yet economical and quickly built. Hy-Rib builds concrete roofs and sidings which need be only two inches thick and require no form work—thus saving labor and material.

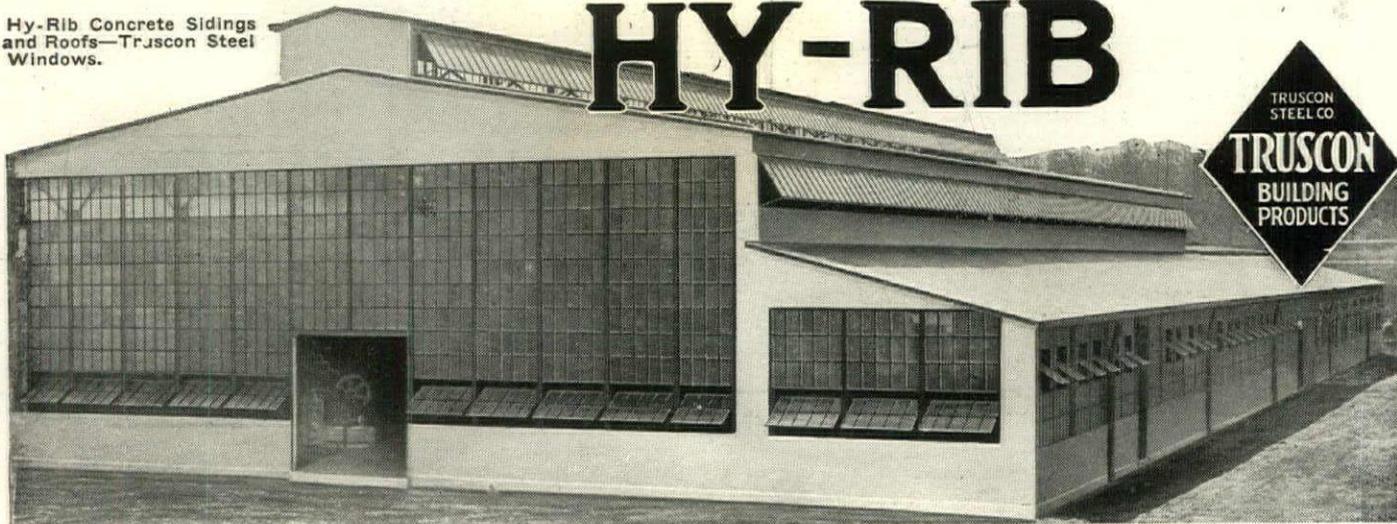
At about half the cost of other permanent constructions, Hy-Rib produces monolithic sidings. Roofs of Hy-Rib are light in weight, fireproof and economical. Hy-Rib is also widely used with concrete, stucco and plaster for partitions, ceilings, walls, floors, etc.

Hy-Rib is a steel-meshed sheathing with stiffening ribs. Furnished in all types, weights, thicknesses of metal lath; also channels, corner beads, etc. All products are so designed and built as to save time and labor on the job.

Stocks of Hy-Rib products are carried locally in all parts of the country, avoiding delays and the need of waiting for material. The Hy-Rib way of building is quick as well as economical and fireproof. Send for useful Hy-Rib book. Return coupon, indicating size and use of proposed building.

TRUSCON STEEL COMPANY
(FORMERLY TRUSSED CONCRETE STEEL CO.)
YOUNGSTOWN, OHIO.
WAREHOUSES AND REPRESENTATIVES IN PRINCIPAL CITIES

Hy-Rib Concrete Sidings and Roofs—Truscon Steel Windows.



HY-RIB



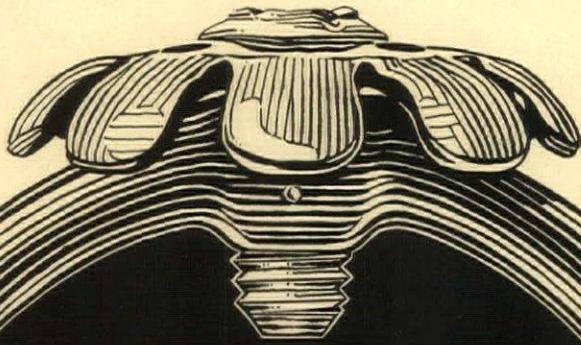
Truscon Steel Company.

Send free Hy-Rib book and suggestions on a building size...x...

to be used for.....

Name

Address



Bricks and Mortar Cost More

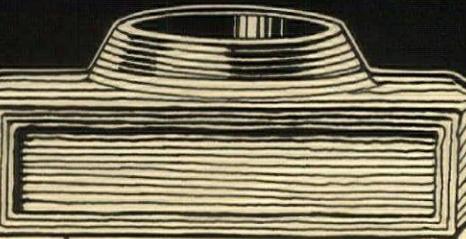
So your property's worth more today than a year ago and if your insurance doesn't cover this increase you're not fully protected. Insure fully, yes, but save the added premium by installing Globe Sprinklers. They pay for themselves.

Globe Automatic Sprinkler Co.

2019 Washington Avenue, Philadelphia, Pa.
Sales and Engineering Offices in all Principal Cities



*Hess-Bright's Philadelphia Factory
is protected by Globe Sprinklers*



GLOBE

SPRINKLERS

POND OPERATING DEVICE

Saves the Oil Can

That applies to the transmission as well as to the gear.

The transmission rods sustain tension merely—not lateral thrust. Being carried by the bell-crank levers, they require no lateral guiding and no lubrication.

Between the “power” and the idler pulley or spiral the only friction is that of the bell-crank levers, which convert the sash load into a lengthwise pull on the transmission rods. These levers have bronze bearings; their duty is moderate, and they never need oiling.

The “power” has a cut steel worm and gear, in a dust-proof case packed with grease. It needs no attention. The idler or spiral at the end of the line has a bronze bearing: oil makes little difference with it.

Details show tension rods and compound levers of Pond Operating Device. Three positions: closed, partly open and fully open. Note increasingly direct thrust as sash is opened.

DAVID LUPTON'S SONS
COMPANY
Tulip and Janney Sts.
PHILADELPHIA, PA.

Full
description
in catalogue
No. 9.
Have you
a copy?

