THE AMERICAN ARCHITECT
The ARCHITECTURAL REVIEW

VOL. CXXIII WEDNESDAY, FEBRUARY 28, 1923 NUMBER 2414

Masks over Proscenium Arch
Ulysses Ricci, Sculptor

EASTMAN THEATRE AND SCHOOL OF MUSIC

GORDON & KAELBER, Architects — McKIM, MEAD & WHITE, Associate Architects

THE new Eastman School of Music, in Rochester, is a practical solution of a purely idealistic conception. Mr. George Eastman, whose many benefactions to Rochester are well known, believed that Music is the most satisfying and enjoyable relaxation from the grind of the average American's life. He, therefore, determined to give a thoroughly equipped School of Music to the University of Rochester; but he realized that only a small number of the population could be reached by such a school, while he wished to benefit the public at large. With a stroke of pure genius, he hit upon motion pictures, in the development and betterment of which he was also greatly interested, as the most practical and popular means of presenting good music to the people of Rochester.

Therefore, adjoining the Music School proper, is a large theatre seating over three thousand people, where the best possible motion pictures will be produced in conjunction with the best possible music for six days a week; while Wednesday evenings will be devoted entirely to music. Thus it is hoped that the profit derived from the motion pictures will support the Music School and the orchestra, making an endowment fund unnecessary.

The peculiar shape of the lot and the complex nature of the problem required an unusual plan, which was worked out to the last detail by Messrs. Gordon and Kaelber, in Rochester, under the constant supervision of Mr. Eastman. After the plan had been determined, Messrs. McKim, Mead and White, of New York were called in to design the exterior of the building, and the interior of the more important rooms.

The exterior is built of limestone in a free adaption of the Italian Renaissance style. The dignity of a public institution is emphasized rather than the gaiety of a theatre. An order of Ionic pilasters, broken at the two entrances by engaged columns of Vermont marble (by a curious coincidence, known to the trade as "Eastman Green") serves to give unity to the main façade.

The Music School proper which was opened on March 2, 1922, marks the highest development in America in musical equipment. There are organ studios, with openings in the ceilings to allow passage for the sound from the organs above. In addition there are piano studios, class rooms, rest rooms for the students, studios for the principal members of the staff, and the Sibley music library containing many rare manuscripts, besides a full working library.

On the ground floor, a wide corridor runs the whole depth of the lot, forming a connecting link between the School of Music and the Auditorium. It has, therefore, been given a monumental treatment, with a Roman Doric order supporting a segmental barrel vault with occasional penetrations. At the Swan Street end is an imposing staircase giving access to a corridor on the floor above, which, though of the same area as the one below, is lower, with a flat ceiling supported by an Ionic order. This corridor also connects with the Auditorium at the Balcony Foyer level. Its walls are lined with grey cloth forming an excellent background for exhibitions of paintings, which will be changed from time to time, to afford young artists an opportunity to show their work without charge.

Detail of entrance Lobby
The wall paper panel was originally made for Napoleon I

Central Chandelier in Main Auditorium
The largest ever made

From the upper and lower corridors, access may be had to Kilbourn Hall, a beautiful room for Chamber Music, seating 512, given by Mr. Eastman in memory of his mother, Maria Kilbourn Eastman. An effect of grandeur was not desired in this room, but rather one of intimacy, so that the attention of the listener would not be distracted from the music by too assertive decoration. Therefore, the polychrome ceiling and frieze of cupids and garlands, though rich in color and gold, are subdued in tone. These decorations were designed by Mr. Ezra Winter, the frieze having been modelled by Mr. C. P. Jennewein. The room is further enriched by six blue velvet hangings, stenciled in gold by the Hewlett Studios, and the lower part of the walls is panelled in walnut. The organ is located above the stage and speaks through a gilded grille in the Proscenium Arch.

The entrance to the large auditorium is on the corner of Main and Gibbs Streets, where the curve in the façade occurs. This curve affords sidewalk space inside the building line for the sale of tickets, though they can also be bought from the other end of the ticket booth, which projects into a large elliptical lobby, finished in Botticino marble, with black-and-gold marble columns. In the center, on a marble table, are two aquariums. Two circular panels on the ceiling are painted by Mr. Ezra Winter and Mr. Barry Faulkner, and on the walls are reproductions of the famous "Cupid and Psyche" decorations which were painted by the French artist, Lafitte, for the great Napoleon. These are printed by hand from the original wood blocks, of which over one thousand five hundred were required.

From the lobby, access is had through a secondary vestibule to the rear of the auditorium, which has a capacity of over three thousand. There are no boxes, but a small mezzanine gallery, with an ample foyer in the rear, which will provide the choicest seats. The spectators in the large gallery above will, however, have a much better view of the great mural paintings which are the most interesting decorative feature of the room. Groups of figures, representing different kinds of music, are depicted against an Italian landscape background, seen, as it were, through openings in the side walls. The paintings on the left of the stage are by Ezra Winter, and represent a music festival, lyric music, martial music and sylvan music. The corresponding decorations on the right are by Barry Faulkner, illustrating sacred music, hunting music, pastoral music and dramatic music.

The entire color scheme of the interior of the two auditoriums was selected and supervised by Mr. Ezra Winter. The success of the building is largely due to him, and it is hoped that this precedent of selecting an artist of national reputation in this capacity will be followed elsewhere.

Balcony Foyer, with mural painting by Maxfield Parrish

The walls are of a tawny yellow, enriched with Corinthian pilasters. Over the two doors near the stage are heroic busts of Bach and Beethoven, and fifteen medallions on the face of the balcony rail contain portraits in relief of famous musicians. The ceiling is slightly domed and treated with coffers enriched with color and gold. From a gilded sunburst, in the center, hangs one of the largest chandeliers in existence, from which a flood of light is thrown upon the ceiling. It is not, however, entirely an indirect fixture as there is also enough direct illumination to produce brilliancy in the crystal on the fixture itself. A completely wired full-size model of this fixture, which is fourteen feet in diameter, was made for experimental purposes.

The stage set for motion pictures continues the principal architectural lines of the room itself. It represents a garden wall and terrace, on which a gay tent has been erected, thus forming a stage within a stage. For concerts, there is another set representing the interior of an Italian room, with walls hung with red brocade over a walnut wainscot, and a grilled triple arcade expressing the great organ behind.

Beneath the large gallery is the Balcony Foyer, a long curved room which is reached by stairs and ramp. At one end is a painting by Maxfield Parrish, and nearby are a fountain with a figure of a cupid and dolphin, after an original by Giovanni de Bologna, and a beautiful allegorical painting of the Renaissance period, formerly in a well known collection.

Ample and luxurious smoking rooms and women's rooms are provided on all floors; in fact, every detail of comfort and convenience, as well as perfection from an operating standpoint, has been provided.

Find Buried City in South America

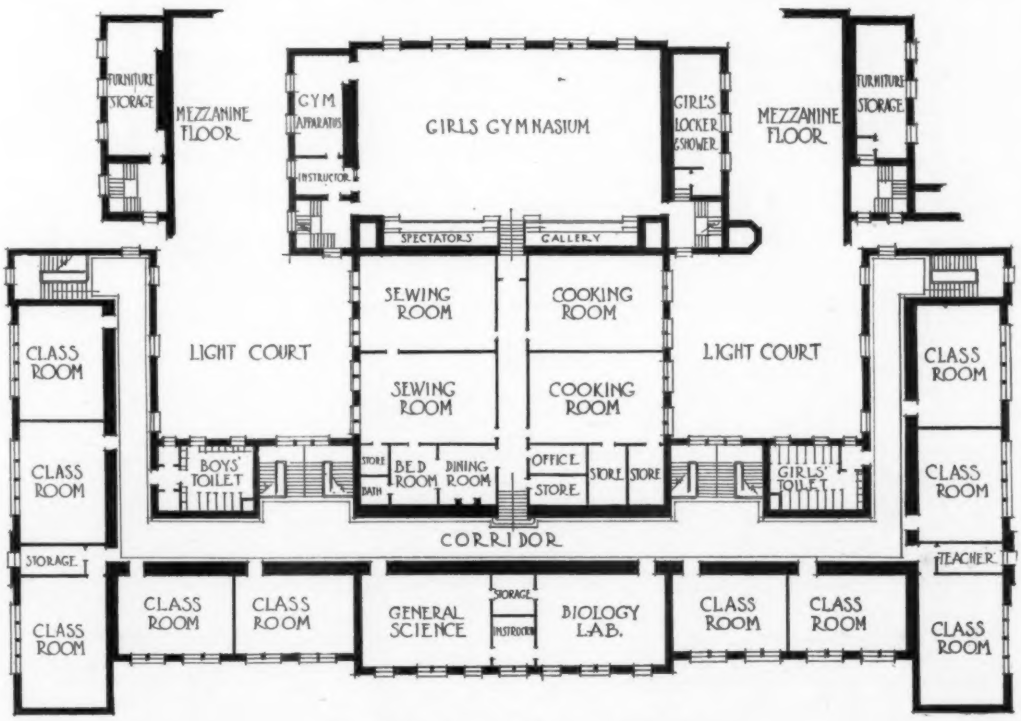
RUINS of an ancient city of great size, hitherto unknown, have been uncovered in Colombia by the South American Archæological Expedition of the Field Museum of Natural History, Chicago, working under the leadership of Dr. J. A. Mason. The ruins of the city, or a collection of villages, are in the Province of Magdalena, forty miles from the Caribbean coast, and twenty miles south of Santa Marta, a region now uninhabited, and almost unknown to science. It is evident, the museum authorities announce, that this was once one of the great centers of population of the world, but today even its name is unknown. The region is very mountainous, and the houses, which were of wood, were built on terraces, made with retaining walls. In the center of each terrace there are entering steps of beautifully cut stone, and if the main path is far below, other steps are built to connect the terraces with it. On the side of almost every house there can still be found the metate, or grinding slab, on which the family ground its corn. In all the villages were found quantities of broken pottery, mostly fragments of large undecorated jars. Some were decorated with relief ornaments, and there is one sort of very fine black pottery which is incised or carved. The inhabitants decorated themselves with gold ornaments and buried these with their dead. Specimens already received at the museum include gold bells, small, beautifully made gold figures, and ornaments of shell, cornelian, and agate. The most valuable acquisition is a set of ornaments worn by a native priest.

Upper Corridor, A gallery available for Art exhibitions
Eastman Theatre and School of Music, Rochester, N. Y.
Gordon & Kaelber, Architects—McKim, Mead & White Associate Architects

THE NEW JUNIOR AND ELEMENTARY SCHOOLS OF NIAGARA FALLS, NEW YORK

BY WM. B. ITTNER, F. A. I. A., St. Louis, Mo., Consulting Architect

LESS than three years ago, under the leadership of Supt. J. B. Laidlaw, Niagara Falls, New York, voted $3,000,000 in bonds to care for a comprehensive school building program. The development of this program was placed under the immediate supervision of the writer who was retained by the Board of Education as consulting architect. Following an investigation of needs, the program determined upon included two large Junior High Schools, an extensive addition to the Senior High and two Elementary Schools.

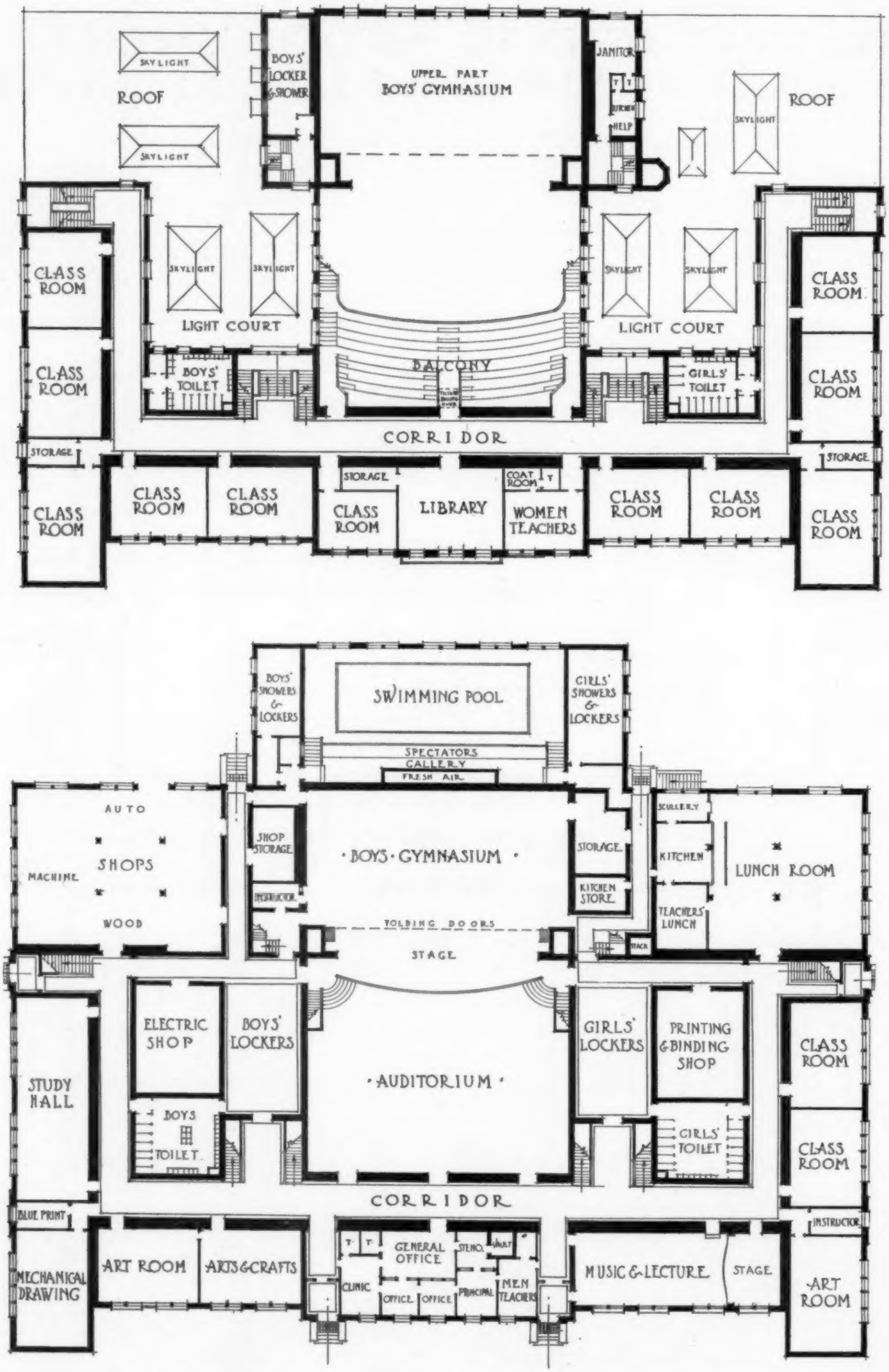


Second Floor Plan, Typical Junior High School

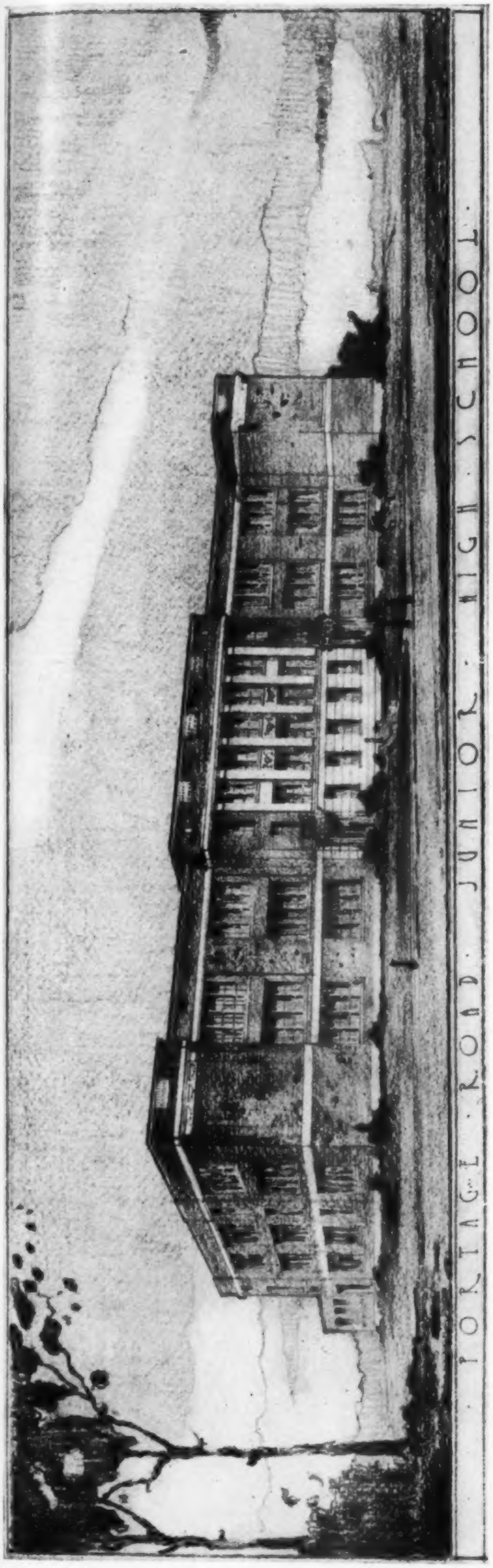
The laboratories for General Science and Biology are placed on this floor. Instructors' rooms and storage space are included in the Laboratory group

Six local registered architects incorporated under the name of Associated Architects, Niagara Falls, were charged with the preparation of the plans, and the execution of the buildings. These architects formed an organization, elected officers and maintained a central office for their own meetings and for consultations with the Board of Education, its Building Committee, and the Consulting Architect. An equal amount of work was allotted to the various members of this architectural group. All preliminary studies were furnished by the consulting architect. From these the local architects prepared working drawings, specifications and details which were submitted to the consultant's office for criticism and approval. Drawings and specifications for heating, ventilating and electric work, were prepared in the consulting architect's office or under his direct supervision. As to the desirability of this method in the planning and execution of an extensive building program, we are permitted to quote from a letter written by Simon Larke, President of the local organization:

"The local architects without exception consider that association with Mr. Ittner in this work, has not only been very pleasant, but exceed-

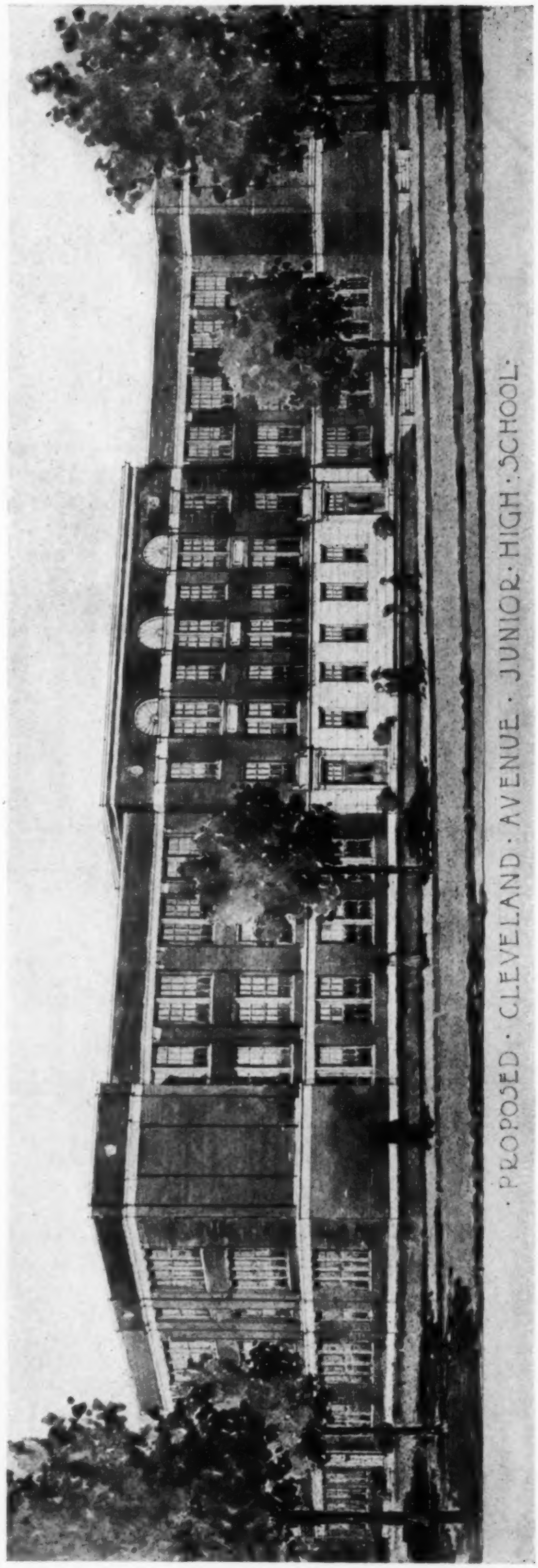


Typical Ground and First Floor Plans, Junior High School, Niagara Falls, N. Y.



Lacy & Kirkpatrick, Architects

Wm. B. Ittner, Consulting Architect



Lanke & Obenhack, Architects

Wm. B. Ittner, Consulting Architect

While the Junior High Schools were developed from the same typical plan, the exterior treatment of each has been individualized ingly profitable to themselves, and believe that most excellent results have been obtained for the educational interests of the city."

The Typical Junior Plan

The two new Junior High Schools were developed from a typical plan, although each school has its own individual exterior treatment. Each building is three stories in height with its first floor level slightly above grade. Each building has a working capacity of 1,000 students with its educational content diversified as follows:

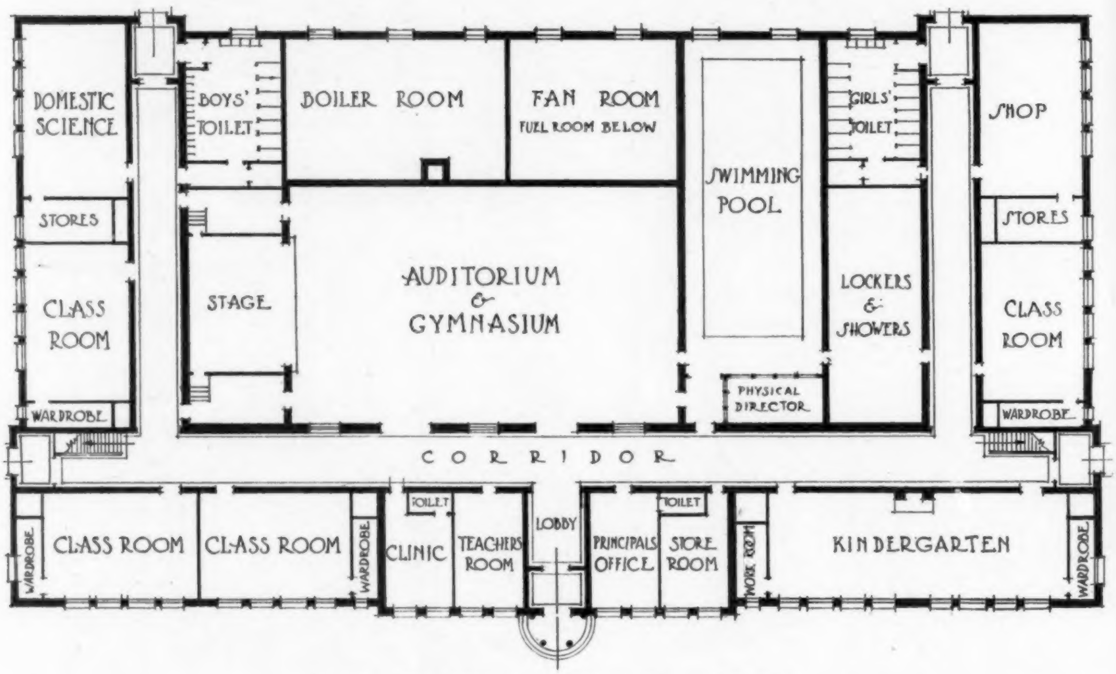
Twenty class rooms
Two gymnasiums
A swimming pool
Two laboratories connecting with a laboratory lecture room
Three commercial rooms
Three art rooms
Four home economic units for girls
Seven shop units for boys
One library
A music-lecture room
An auditorium arranged for 1,000 seatings
An administrative group consisting of a general office, offices for principal and vice-principal, clinic, and quarters for heads of departments

Correlations

The arrangement of the health quarters represents a departure from the usual. The auditorium-stage and the boys' gymnasium are on the same level and separated by folding partitions. The enlarged stage may thus be secured. The swimming pool (21'x60') adjoins the boys' gymnasium to the rear. It includes its own set of lockers and showers, but the physical education instructor's office is arranged so that it commands all the health quarters. The pool is brilliantly top-lighted and is provided with a spectators' gallery which is reached by corridors from two rear entrances. The girls' gymnasium and accessory rooms are immediately above, and located in close proximity to the home economics group of four units, comprising two food laboratories and two sewing rooms, each approximately 24'x36'. An office and a model apartment are provided for the group. Both the boys' and girls' gymnasiums are equipped with ample storage space for apparatus when the gymnasium floor needs to be cleared for games.

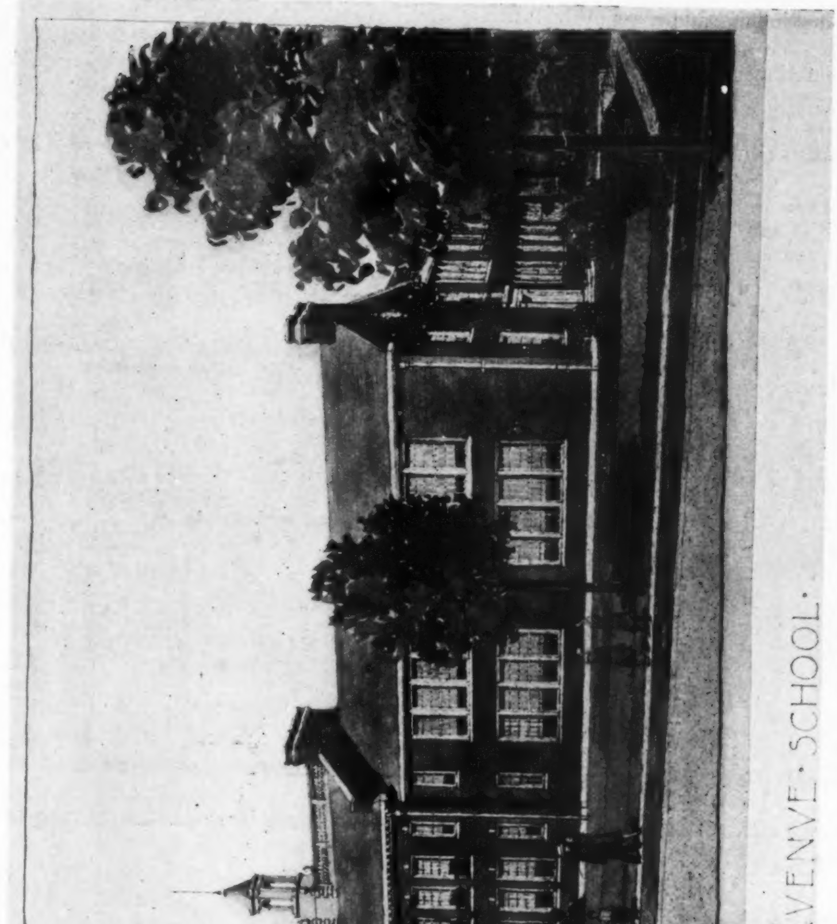
The auditorium occupies a central location and includes 1000 seatings. But its stage-gymnasium permits of an expansion of its capacity at periodic times. A small auditorium designated as a music-lecture room is also provided. It has accommodations for 150, a sloping floor and a small stage. It serves as a music room for the Junior students and as a community room for small gatherings.

On a level with the auditorium and gymnasium and correlating with these are the general lunch



First Floor Plan, Maple Avenue School, Niagara Falls, N. Y.

W. A. Cannon, Architect — Wm. B. Ittner, Consulting Architect



W. A. Cannon, Architect

The Maple Avenue Elementary School is Colonial in its Architectural Expression

Wm. B. Ittner, Consulting Architect

room, the cafeteria kitchen, and a separate lunch room for teachers. This arrangement constitutes an aid in the promotion of the social features of the school.

The workshops are all located on the ground floor. These units include rooms for printing, mechanical drawing, electricity and a large undivided area for machine, auto mechanics and woodworking. The partitions installed in the large area will be portable.

The art rooms constitute a distinct group on the ground floor. There are two units for drawing and design, one for arts and crafts and connecting these, an instructor's office and store room.

The Typical Elementary School

The new Maple Avenue School is a typical 1000-pupil elementary school. It is located near a small park which insures adequate out-of-door space for play. Its architecture is Colonial.

The plan is an open one on the second floor giving unlimited light and ventilation to the corridors. The width of the main corridors, 12 feet, permits of their use for educational purposes.

The Health Provisions

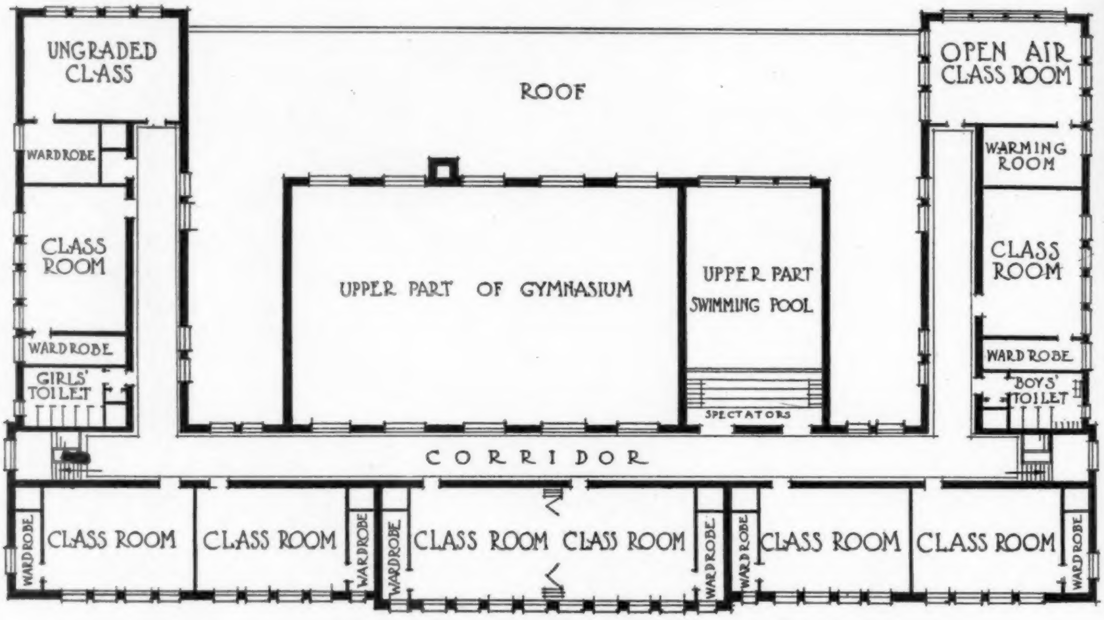
A 50'x80' gymnasium equipped with a stage so that it can also serve auditorium purposes, takes the place of the separate gymnasium and auditorium. A swimming pool adjoins and a complete set of showers is installed, accessible both to the gymnasium and pool. As in the Junior school, the physical director's office is arranged so that a view of the gymnasium, swimming pool and showers is possible at all times. The administrative group contains the medical room.

The Class Rooms

Sixteen Class rooms, each 22' x 32', with wardrobes 5' 6" x 16' are provided. Outside light penetrates the wardrobes and their entrances lead directly into the class rooms. On the second floor directly over the office group, two class rooms are united by a folding partition in order that a smaller assembly room might be available. This space could also be equipped for library purposes. On this floor provision is also made for open air quarters with adjoining warming room.

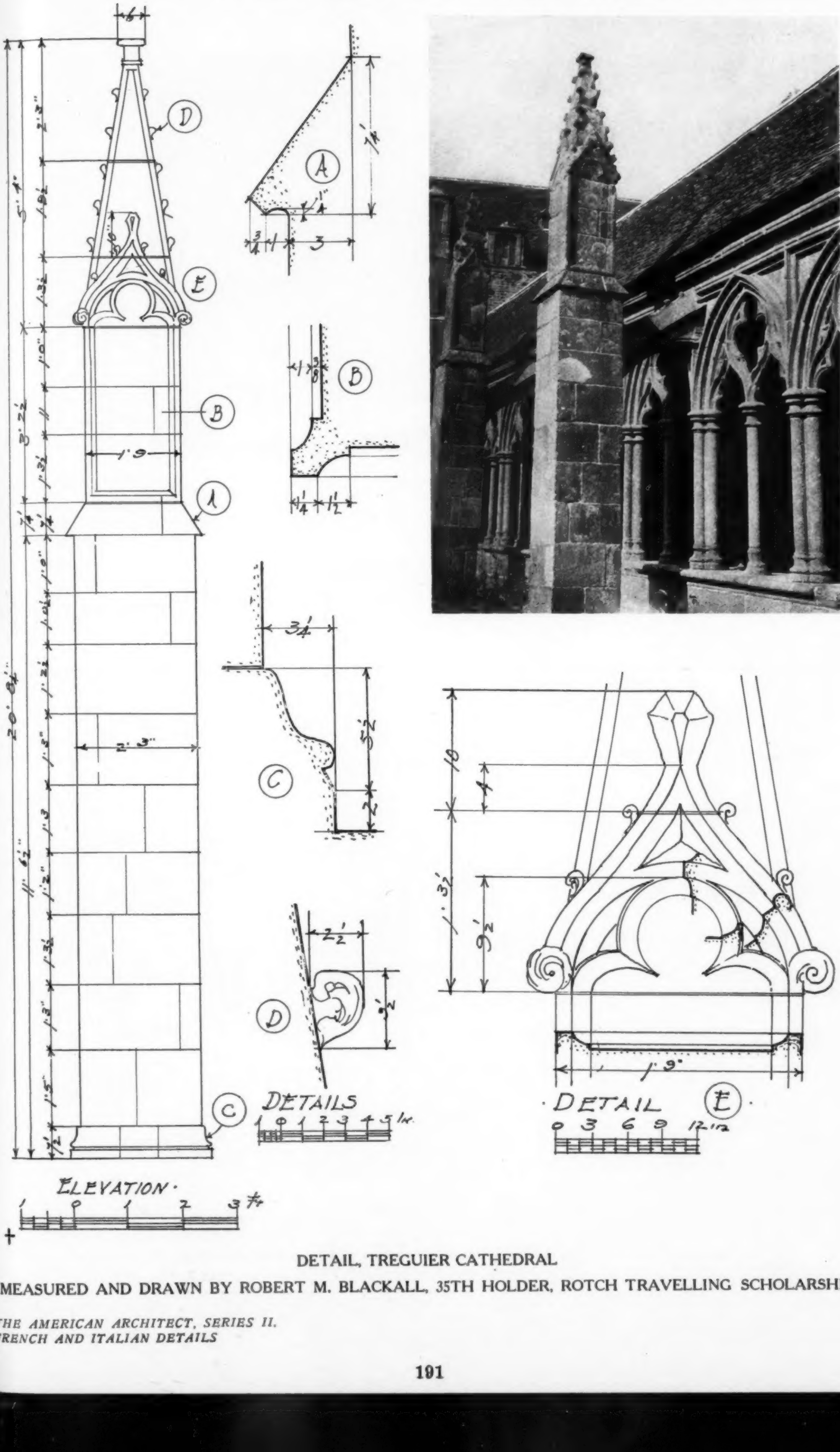
Costs

The cost of the elementary school is $306,608, or $306.60 per pupil. With the equipment estimated at $30,000, the complete cost will approximate $336,608. The cost of the North Junior or Cleveland plant will approximate $613,290 and the South Junior or Portage Road school $563,077. The equipment will add $125,000 to each building.



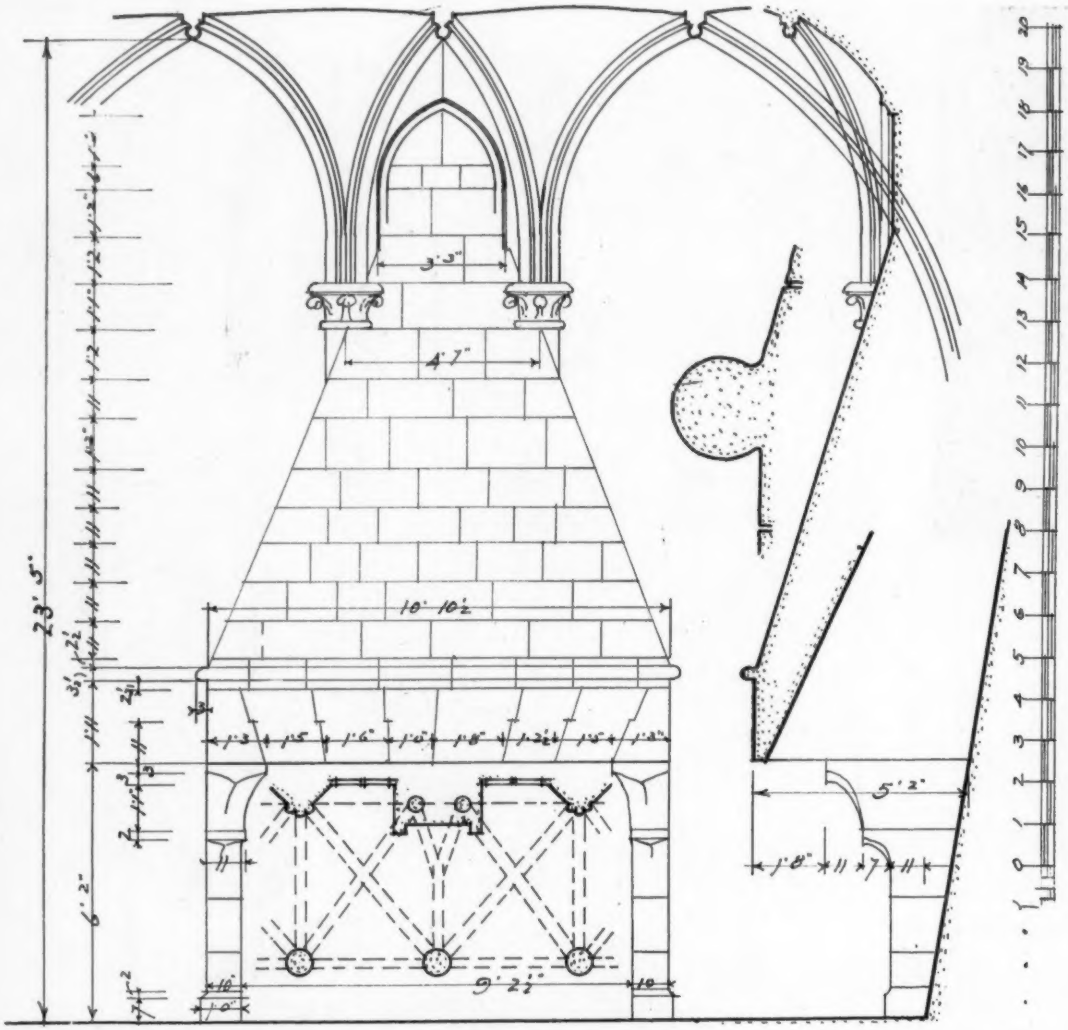
Second Floor Plan, Maple Avenue School, Niagara Falls, N. Y.

W. A. Cannon, Architect — Wm. B. Ittner, Consulting Architect



DETAIL, TREGUIER CATHEDRAL

MEASURED AND DRAWN BY ROBERT M. BLACKALL, 35TH HOLDER, ROTCH TRAVELLING SCHOLARSHIP



CHIMNEY PIECE
SALLE DES CHEVALIERS, MONT ST. MICHEL

MEASURED AND DRAWN BY ROBERT M. BLACKALL, 35TH HOLDER, ROTCH TRAVELLING SCHOLARSHIP

·EDITORIAL·COMMENT·

THE WASTEFUL PLANNING of public schools is indefensible, especially in the face of deplorable conditions which confront school authorities throughout every part of this country. Hundreds of thousands of children who have a right to public school instruction are deprived of that privilege owing to lack of schoolhouses. The statement made by Mr. George M. Hopkinson, appearing in the Engineering Section of this issue is a severe arraignment of those responsible for wasteful planning of Cleveland schools. There is reason to believe that the Cleveland condition is common to American cities and towns. The total waste must be staggering.

There are two parties to every construction project, the architect and owner. Perhaps some of this waste is due to the demands of school building committees who are often not only incompetent purchasers of architectural service, but impose arbitrary and unnecessary conditions upon the designers. Should not the errors of the past be avoided in the future and a basis of design evolved, the use of which will prevent the continuance of present conditions?

* * *

THE FAILURE of the Building Guild in England seemed at the very outset to be inevitable.

Clear thinking people in this country regarded with doubt the ability of labor in England to advance the Guild methods to any reasonable measure of success and were equally insistent that such a system could not be put into practical operation in this country.

Commenting on the moral of the Building Guild failure in London, *The Architects' Journal,* in its issue of January 24, states that "as an idealistic experiment, it naturally failed under adverse conditions."

"To carry on a great business successfully in these competitive days," comments the *Journal,* "it is necessary to have not only a band of skilled, enthusiastic workers, but ample capital and an efficient organization." During its life the Guild secured contracts totalling two million pounds and this, we learn, on a capital of £100, only £19 of which had been issued.

No American "get-rich-quick" speculator ever conducted his financial operations on so short a "shoe string." In view of this, the wonder is that the Guild was ever able to exist as long as it did.

The irony of the situation lies in the fact that the salvage of this speculative wreckage may be taken over by a successful Scotch builder who has put forward a plan to operate the Guild on accepted modern lines at his own risk.

In November, 1920, at a meeting of the New York State Association of Architects, the question, "What Is the Matter with the Building Industry," was discussed at some length. Mr. Ordway Teal, the principal speaker at that meeting, warmly advocated the merits of the Guild System in England with reference to its adoption in this country. As we recall Mr. Teal's argument, the principal reason for favoring a Guild System in this country was the failure of the private profit motive to interest the laborer in his work. The efforts in England to permit the laborer largely to share in the profit of his work have resulted in absolute failure.

Commenting on these theories, it was editorially stated in these columns December 22, 1920,—"Under methods as established and practiced in this country, building has become the second largest of our industries. Its basic methods are efficient and its results are those of efficiency. From time to time we may have to 'clean house' by calling on legislative and other investigating committees. And these investigations clearly show in what direction labor takes the greatest interest in its work, particularly when thoroughly organized. Building without profit, Guild Systems or any of the impractical things that are the play toys of visionists and theorists, may be tried in Europe, and we shall watch the progress of the experiment with considerable interest. But it is not believed that the building industry in this country will seek to overturn our social and economic systems merely to provide opportunity for experimentation."

Writing now more than two years later, and having before us the fact of the utter collapse of the Guild System in England, there appears to be no necessity for modification of this point of view. In fact, it seems logical to emphasize it more strongly than ever.

* * *

THE MAN WHO FINDS he has made a mistake in the selection of his life work, cannot get out of his present occupation too soon. This world is full of misfits. Why increase the number?

Hundreds of men graduated from Annapolis and West Point have not followed the sea nor stuck to army life. They have found, when actually in contact with the real elements of the work, that the appeal has failed. Every profession has its misfits. There are quite a few in architecture. The main characteristic that distinguishes the man out of place is, of course, lack of success. This the misfit often seeks to explain by contending that he suffers from want of appreciation. Some even claim they are ahead of their times.

The poet is born, not made. So are architects, engineers, lawyers and doctors. You cannot make a silk purse of a sow's ear. You cannot make an architect out of a man whose mental aspect does not soar beyond the problems that surround construction. Observation has shown examples where men trying to practice architecture had no vision beyond the carpenter's bench.

Mental laziness is the real cause of lack of success in many walks in life. When combined with physical laziness, the case is hopeless.

In a chemical laboratory in one of our large universities, the writer once saw this sentence prominently displayed. "Everything comes to him who hustles while he waits." Some men can work, some men can think. Few men can do both at the same time. Professional activity can only be successfully carried forward by men who "hustle while they wait"—who can work and think.

Architecture is an art, the oldest art. Architecture is today also a business. The pose toward architecture is so often wrong. Particularly the pose of the misfit. Talking art, growing a Van Dyck beard, parading before clients in an atelier gown will not convince a thinking person. That's simply a veneer, easily scratched to show the soft wood underneath. The misfit is not always hopeless. If he learns to work, to find the place in architecture where he is best fitted and will work toward perfection, he may redeem himself. But he must take off his "spats," roll down the cuffs of his gloves, forsake his tortoise shell rims, and work, and then work. But, brutally speaking, he had best get out. Better find something that meets his limitations and then work to the limit of his physical and mental ability. It doesn't follow that the misfit in any profession is necessarily a failure as a man. If he gets out and gets in the right job, he may succeed beyond the expectations not only of himself, but certainly of his associates who have felt sure he was altogether a failure.

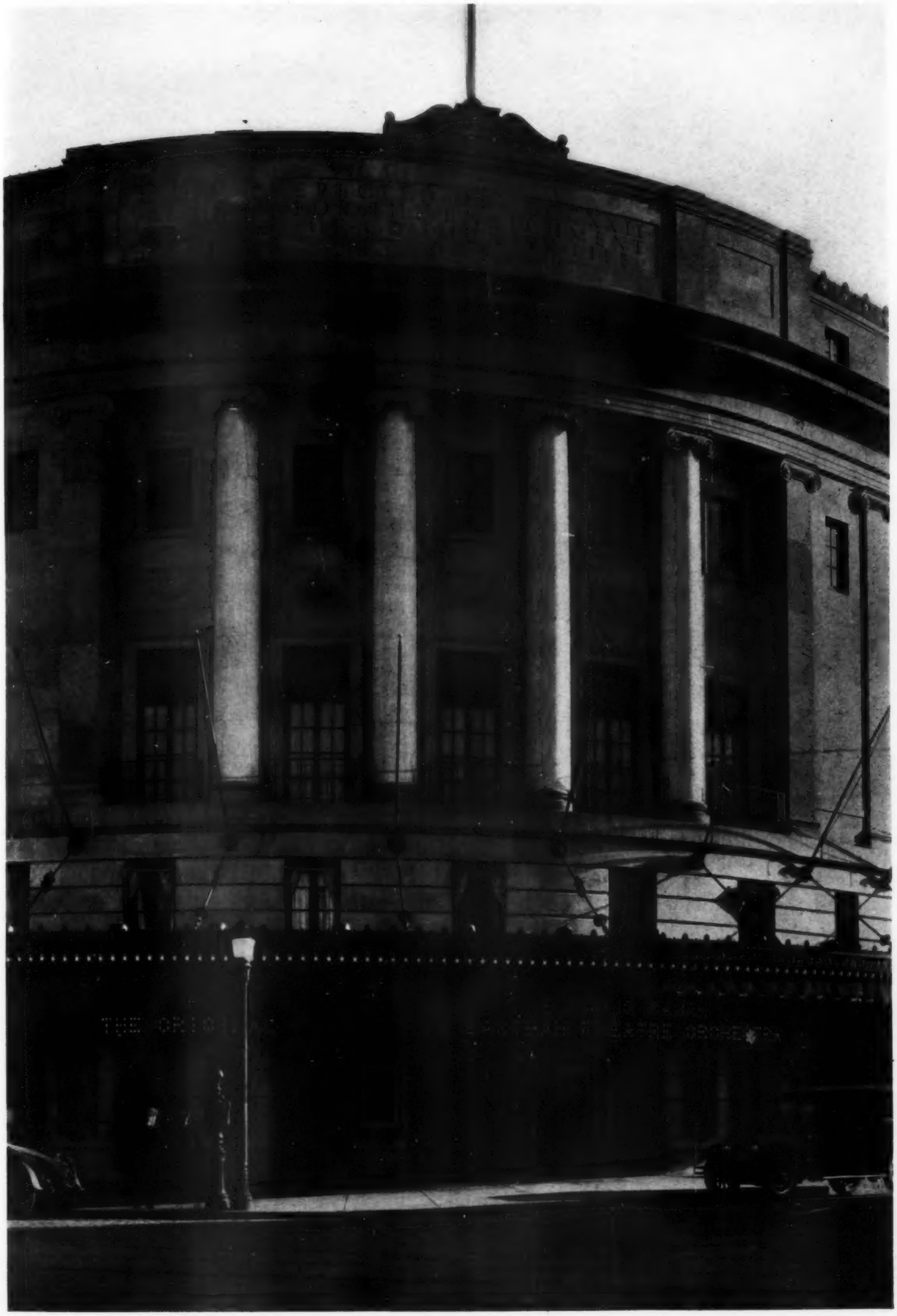
* * *

THE PRESERVATION of a bit of fine architecture is a worthy act the performance of which is deserving of note. A clock tower designed by Charles Bulfinch graced old Boylston Market in Boston for many years. When the market was torn down a brewer purchased the tower and erected it on his brewery in Charlestown. Recently the brewery buildings were sold and the owner, Mr. A. G. Van Nostrand whose name should be preserved because of his gracious act, gave the tower, clock and bells to Calvary Methodist Episcopal Church in Arlington, Mass. On January eleventh the gift was placed and on Sunday the fifteenth appropriate dedicatory services were held. The newspaper columnists were quick to realize their opportunity for space filling material in the transfer of a tower from a brewery to a church. The devotees however of architecture, the mistress of all the arts, see a deeper significance in the preservation of some of the work of a man who was a leader in American architecture.

An artificial pool, Utica, N. Y.

William Pitkin, Jr. & Seward H. Mott, Landscape Architects

(From the Thirty-eighth Annual Exhibition, The Architectural League of New York)



MAIN ENTRANCE

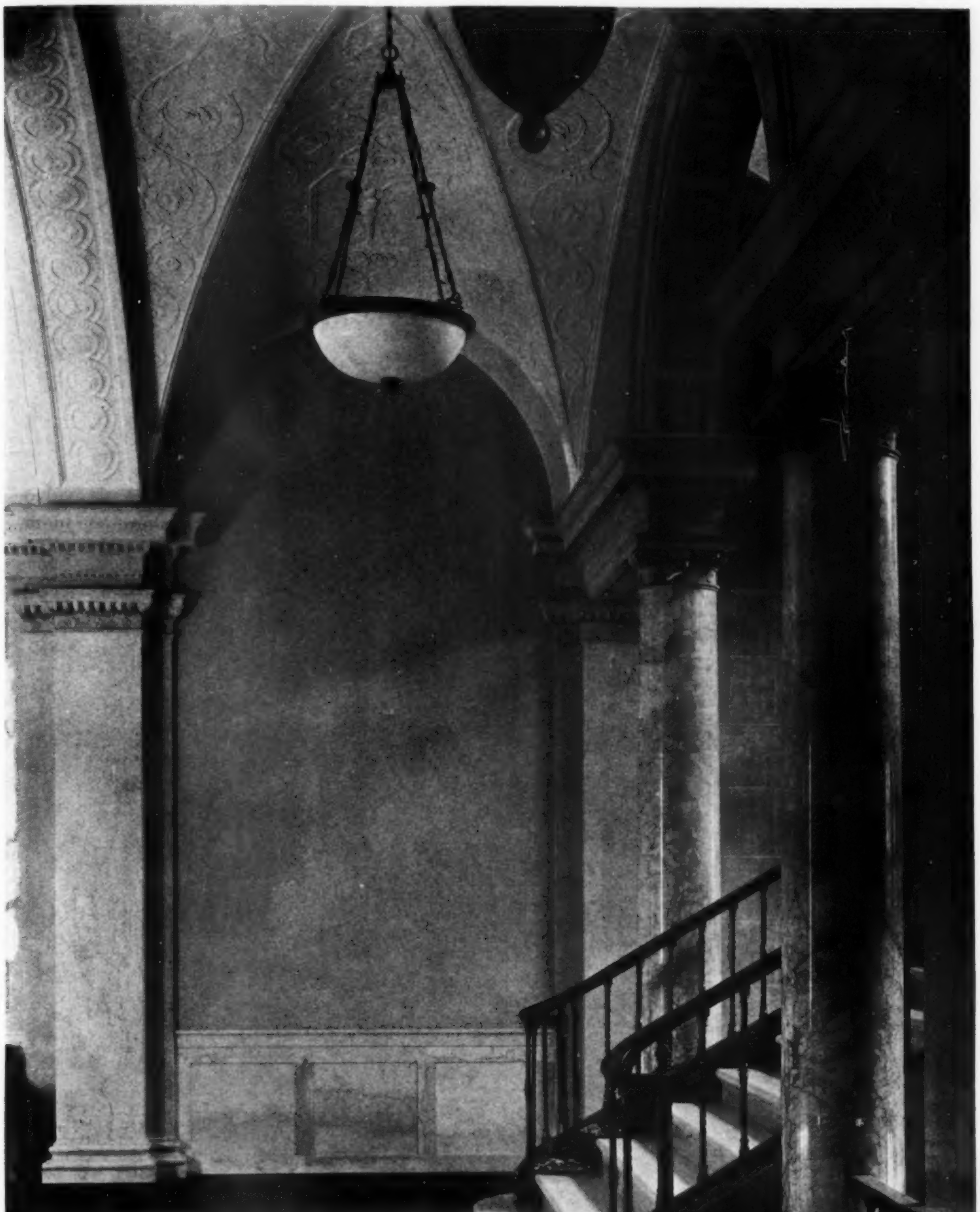
EASTMAN THEATRE AND SCHOOL OF MUSIC, ROCHESTER, N. Y.

GORDON & KAELBER, ARCHITECTS—McKIM, MEAD & WHITE, ASSOCIATE ARCHITECTS

ENTRANCE LOBBY

EASTMAN THEATRE AND SCHOOL OF MUSIC, ROCHESTER, N. Y.

GORDON & KAELBER, ARCHITECTS—McKIM, MEAD & WHITE, ASSOCIATE ARCHITECTS



STAIRCASE FROM LOWER CORRIDOR

EASTMAN THEATRE AND SCHOOL OF MUSIC, ROCHESTER, N. Y.

GORDON & KAELBER, ARCHITECTS—McKIM, MEAD & WHITE, ASSOCIATE ARCHITECTS

KILBOURN HALL, VIEW OF STAGE

EASTMAN THEATRE AND SCHOOL OF MUSIC, ROCHESTER, N. Y.

GORDON & KAELBER, ARCHITECTS—McKIM, MEAD & WHITE, ASSOCIATE ARCHITECTS

REAR OF MAIN AUDITORIUM AS SEEN FROM STAGE

EASTMAN THEATRE AND SCHOOL OF MUSIC, ROCHESTER, N. Y.

GORDON & KAELBER, ARCHITECTS—McKIM, MEAD & WHITE, ASSOCIATE ARCHITECTS

VIEW IN MAIN AUDITORIUM, SHOWING MURAL PAINTINGS BY EZRA WINTER

EASTMAN THEATRE AND SCHOOL OF MUSIC, ROCHESTER, N. Y.

GORDON & KAELBER, ARCHITECTS—McKIM, MEAD & WHITE, ASSOCIATE ARCHITECTS

MURAL PAINTING BY BARRY FAULKNER, IN MAIN AUDITORIUM

EASTMAN THEATRE AND SCHOOL OF MUSIC, ROCHESTER, N. Y.

GORDON & KAELBER, ARCHITECTS—McKIM, MEAD & WHITE, ASSOCIATE ARCHITECTS

MURAL PAINTING BY BARRY FAULKNER, IN MAIN AUDITORIUM

EASTMAN THEATRE AND SCHOOL OF MUSIC, ROCHESTER, N. Y.

GORDON & KAELBER, ARCHITECTS—McKIM, MEAD & WHITE, ASSOCIATE ARCHITECTS

UPPER CORRIDOR

EASTMAN THEATRE AND SCHOOL OF MUSIC, ROCHESTER, N. Y.

GORDON & KAELBER, ARCHITECTS—McKIM, MEAD & WHITE, ASSOCIATE ARCHITECTS

MAIN AUDITORIUM STAGE, SET FOR CONCERTS

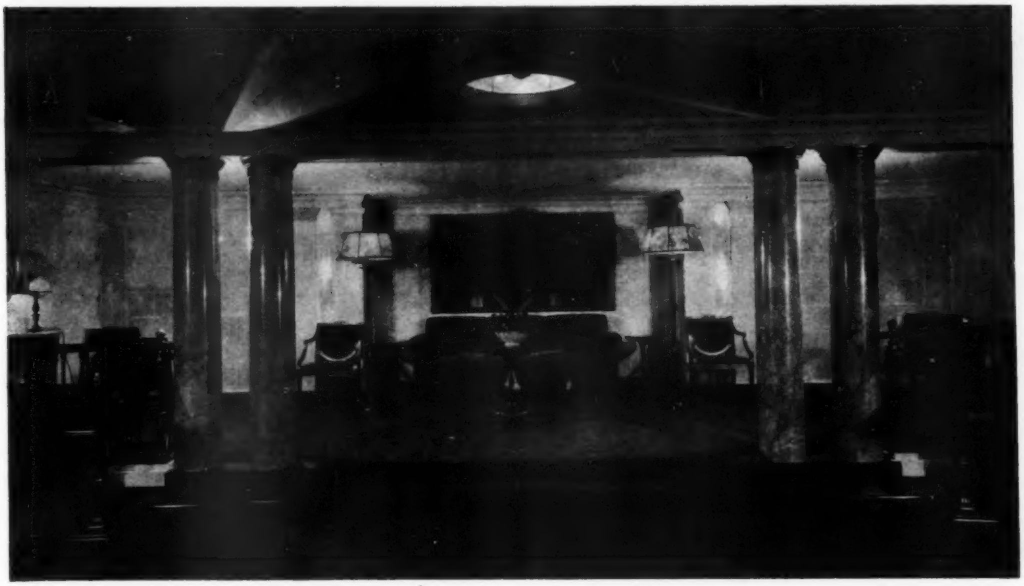
EASTMAN THEATRE AND SCHOOL OF MUSIC, ROCHESTER, N. Y.

GORDON & KAELBER, ARCHITECTS—McKIM, MEAD & WHITE, ASSOCIATE ARCHITECTS

KILBOURN HALL, GENERAL VIEW

EASTMAN THEATRE AND SCHOOL OF MUSIC, ROCHESTER, N. Y.

GORDON & KAELBER, ARCHITECTS—McKIM, MEAD & WHITE, ASSOCIATE ARCHITECTS

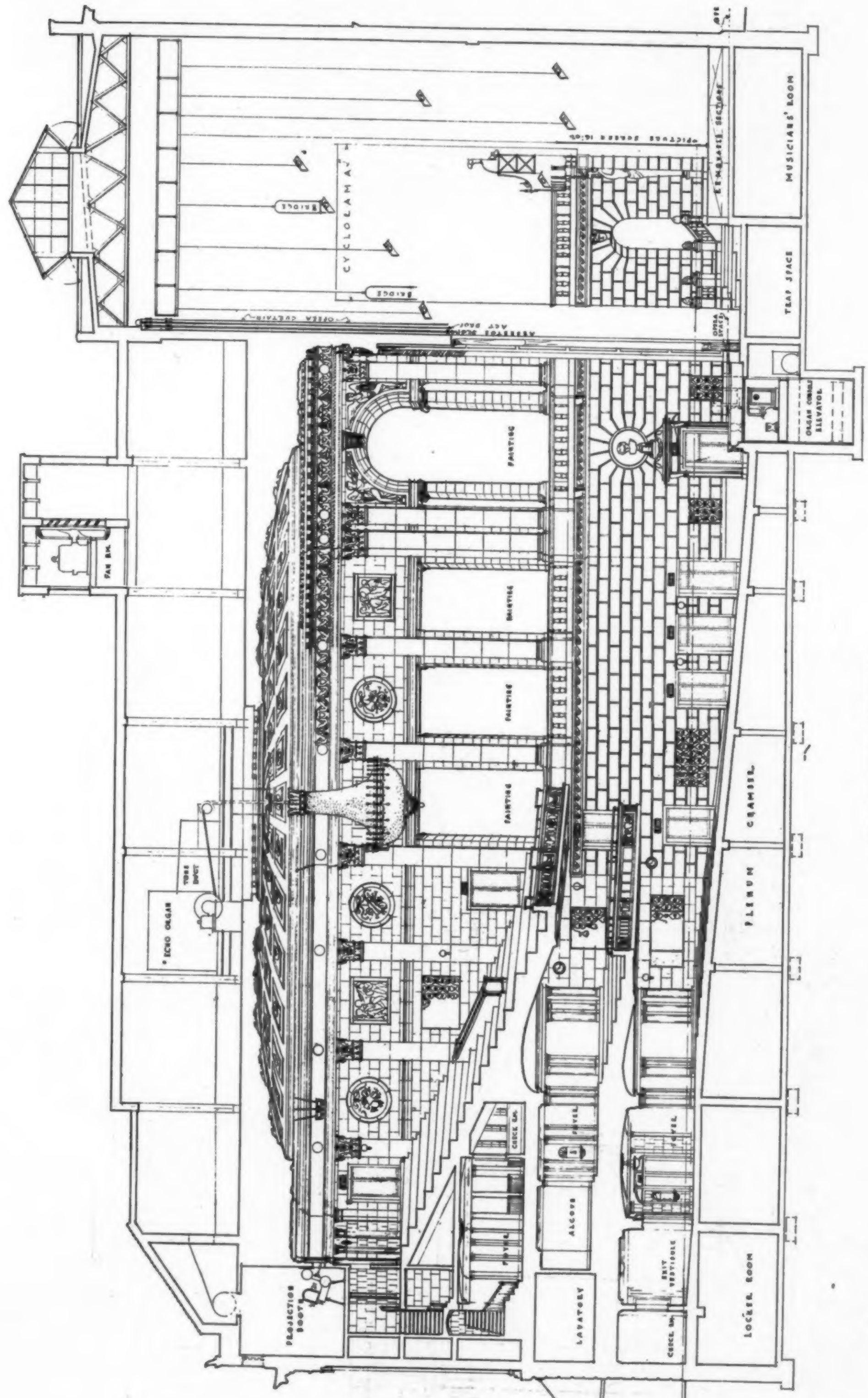


FOYER AT REAR OF SUBSCRIBERS' MEZZANINE GALLERY

SUBSCRIBERS' MEZZANINE

EASTMAN THEATRE AND SCHOOL OF MUSIC, ROCHESTER, N. Y.

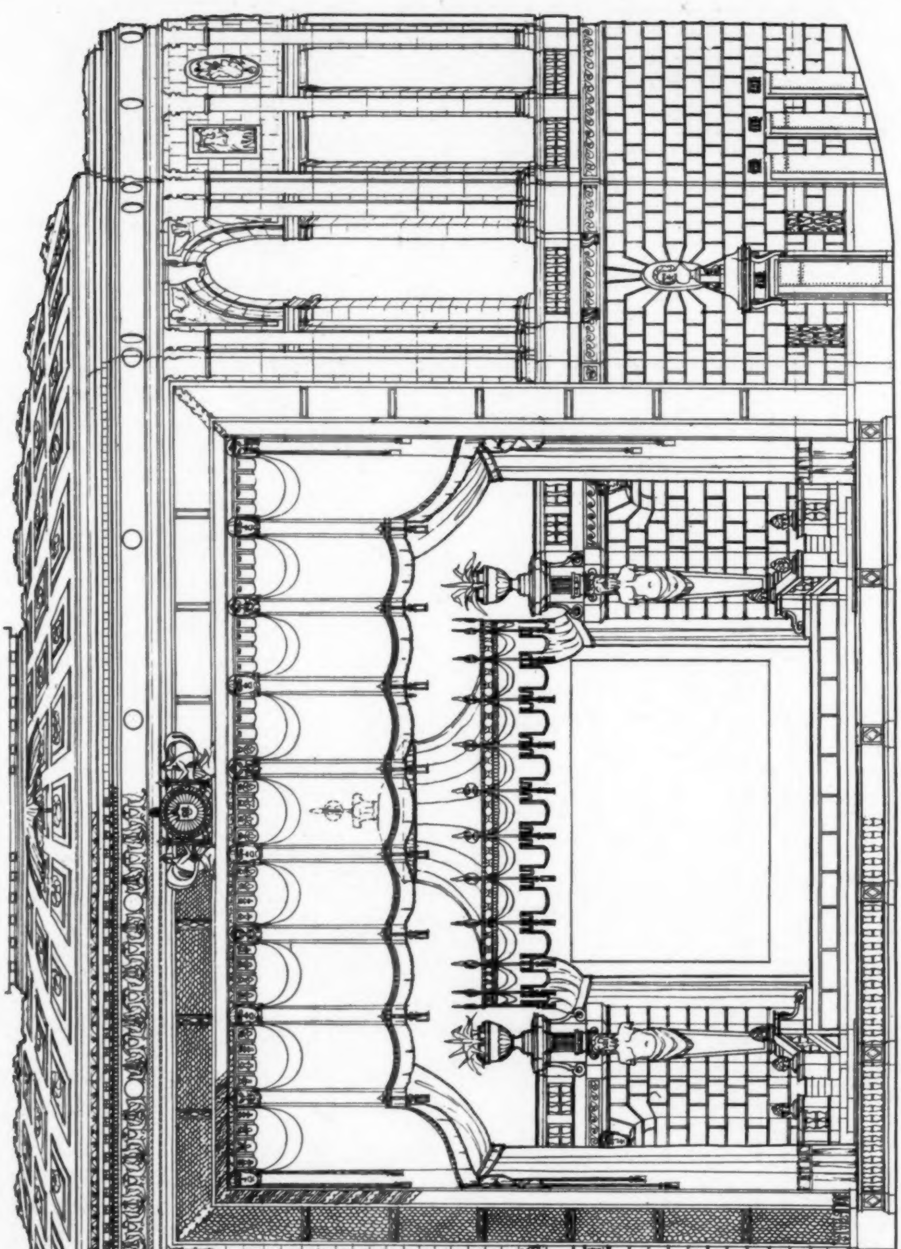
GORDON & KAELBER, ARCHITECTS—McKIM, MEAD & WHITE, ASSOCIATE ARCHITECTS



TRANSVERSE SECTION

EASTMAN THEATRE AND SCHOOL OF MUSIC, ROCHESTER, N. Y.

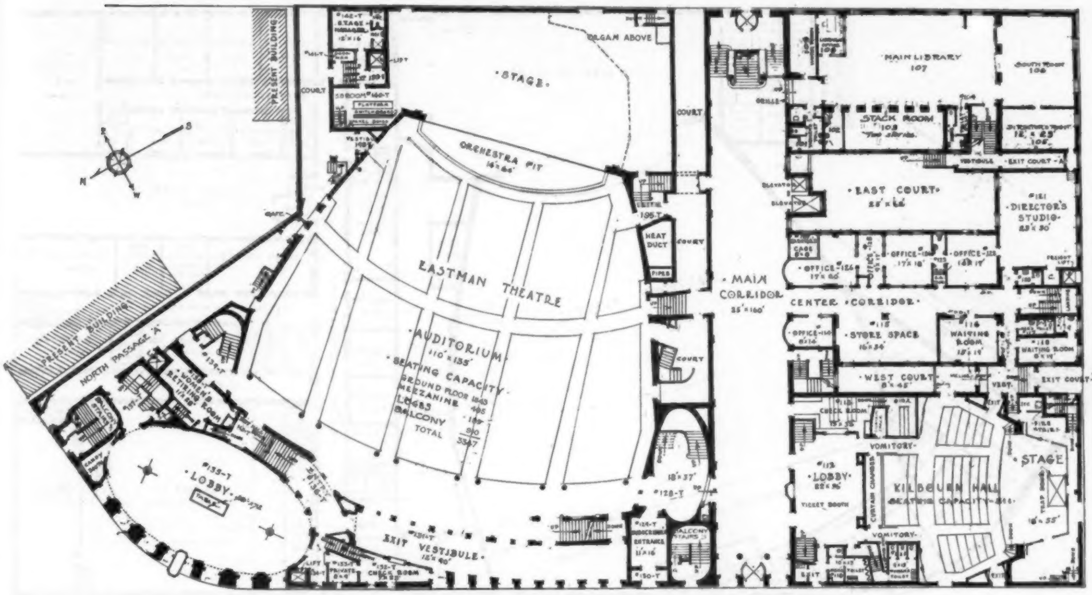
GORDON & KAELBER, ARCHITECTS—McKIM, MEAD & WHITE, ASSOCIATE ARCHITECTS



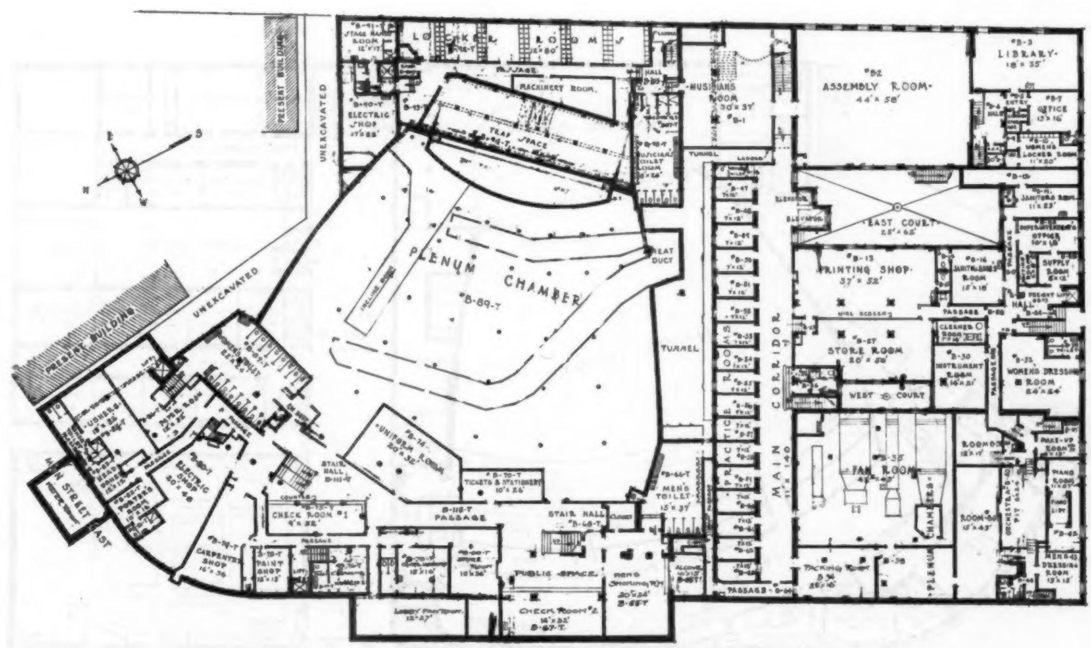
LONGITUDINAL SECTION

EASTMAN THEATRE AND SCHOOL OF MUSIC, ROCHESTER, N. Y.

GORDON & KAELBER, ARCHITECTS—McKIM, MEAD & WHITE, ASSOCIATE ARCHITECTS



FIRST FLOOR PLAN

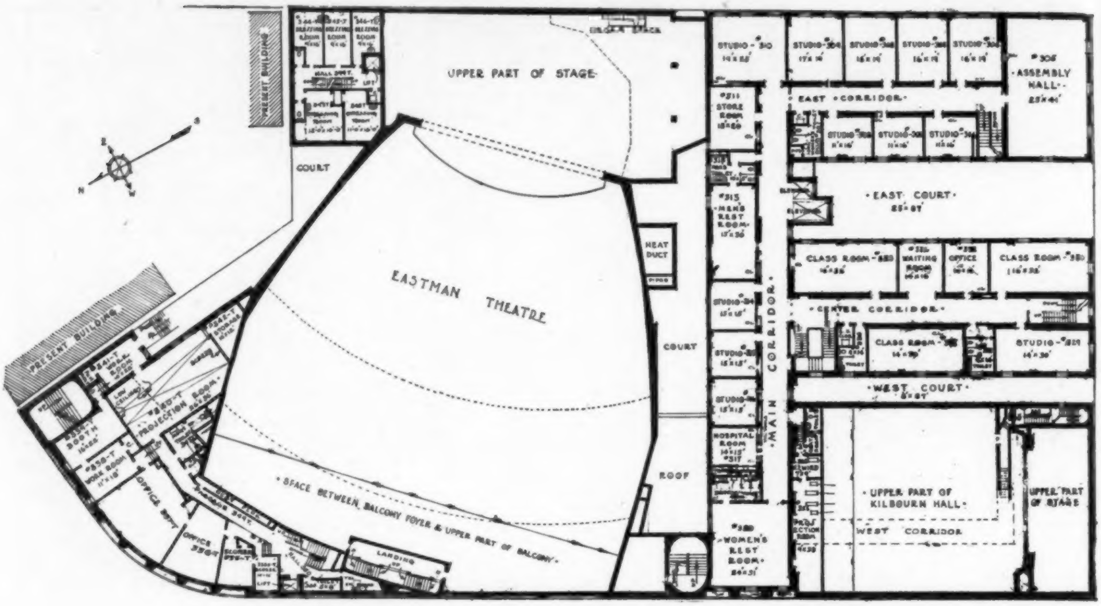


BASEMENT PLAN

EASTMAN THEATRE AND SCHOOL OF MUSIC, ROCHESTER, N. Y.

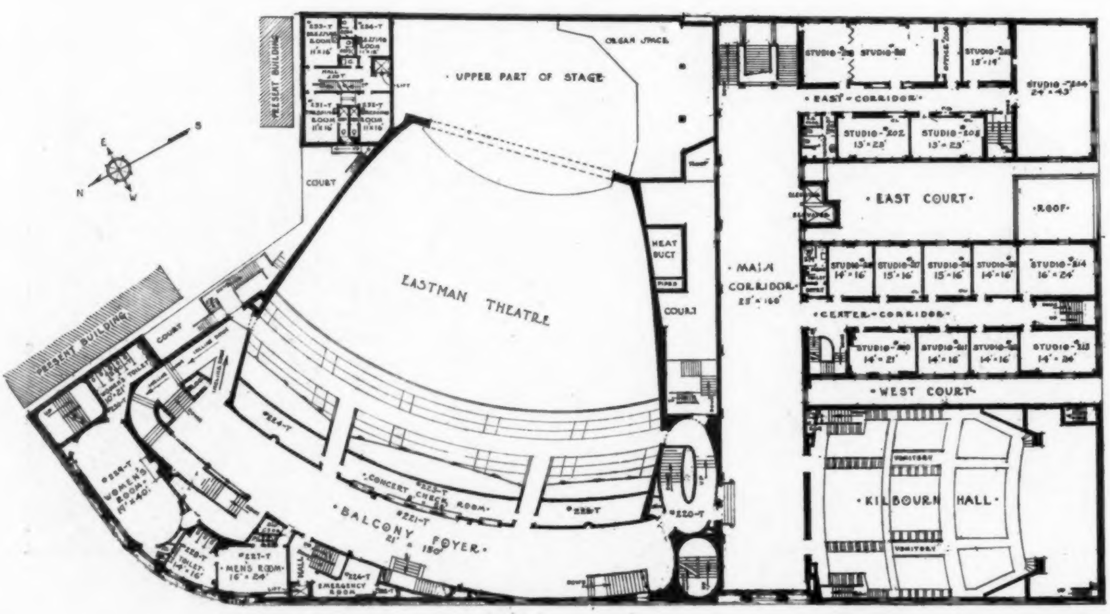
GORDON & KAELBER, ARCHITECTS

NOTE: The plans were worked out to the last detail by Gordon & Kaelber; after their determination McKim, Mead & White became associated



PROJECTION ROOM PLAN

THIRD FLOOR PLAN

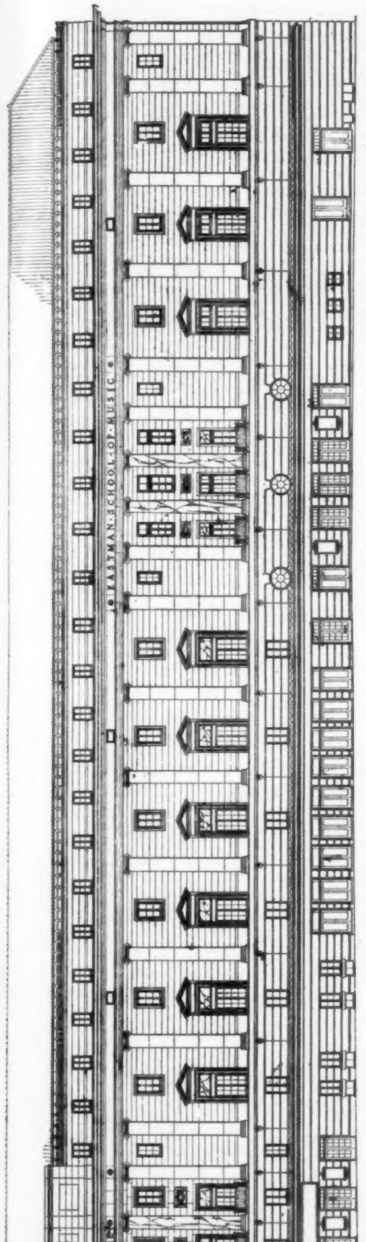


BALCONY FOYER PLAN

SECOND FLOOR PLAN

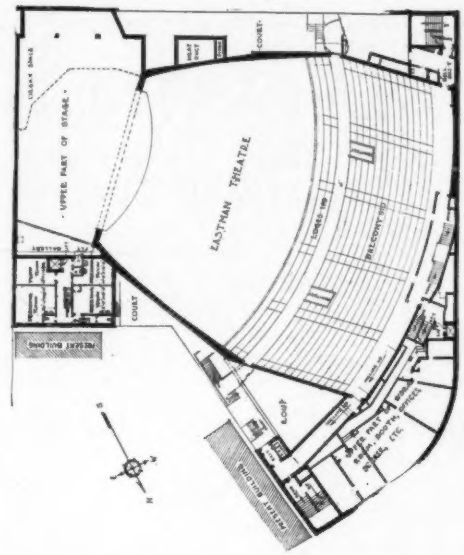
EASTMAN THEATRE AND SCHOOL OF MUSIC, ROCHESTER, N. Y.

GORDON & KAELBER, ARCHITECTS



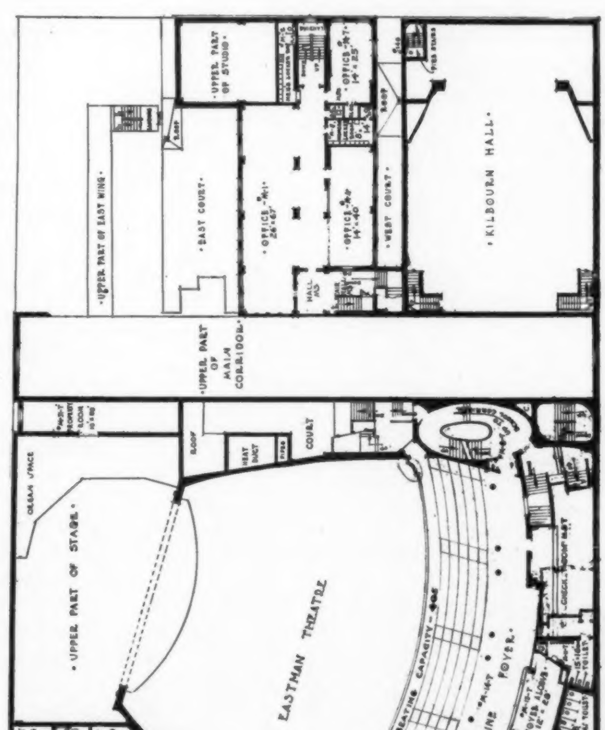
DEVELOPED ELEVATION, MAIN AND GIBBS STREET

GORDON & KAELBER, ARCHITECTS—McKIM, MEAD & WHITE, ASSOCIATE ARCHITECTS



ABOVE: BALCONY PLAN

AT LEFT: MEZZANINE FLOOR PLAN



EASTMAN THEATRE AND SCHOOL OF MUSIC, ROCHESTER, N. Y.

GORDON & KAELBER, ARCHITECTS

DEPARTMENT OF ARCHITECTURAL ENGINEERING

THE HEATING AND VENTILATING SYSTEM AND SOUNDPROOFING FOR THE EASTMAN THEATRE AND SCHOOL OF MUSIC

BY ALLEN S. CROCKER, M. E.

THE portion of the building known as the Eastman School of Music is four stories and basement in height with structural provisions for eight additional stories. It contains an assembly auditorium and stage seating 535 persons, known as Kilbourn Hall. The balance of this section contains about seventy-five studios, seventeen piano practice rooms, class rooms, music library, offices, printing shop, dressing rooms and hospital. This section is an E shaped building in plan.

The theatre portion is known as the Eastman Theatre. The theatre has a mezzanine and balcony floor in addition to the main auditorium floor and seats about 3,500 persons. The stage is about 40 x 90 ft. with a ceiling height of 93 feet. The main auditorium has a floor area of about 14,000 sq. ft. with a cubic contents of about 1,000,000 cubic feet. The theatre is very liberally provided with foyers, lobbies, vestibules, check rooms, offices, dressing rooms, rest rooms, a complete series of mechanical shops, try-out projection room and other elements that constitute a complete theatre plant.

The power plant is located in a detached building on the opposite side of Swan Street and is connected with the buildings by a tunnel 12 ft. wide by 10 ft. 6 in. high. The boiler plant consists of three 400 h. p. and one 210 h. p. water tube boilers, equipped with extended arches of a flat extended type and automatic stokers. Steam soot blowers are used for cleaning the tubes. The boilers have capacity for a 50 per cent overload. Natural draft is obtained by a 7 ft. by 150 ft. radial brick chimney.

Coal is delivered by teams and can be deposited by chutes to the top of the stokers or it can be dumped through coal holes to the bins. From these it is removed by shoveling into a 900 pound bucket which is handled by a power hoist and traveling crane. The bucket is of the bottom dump type and is emptied into the stokers by the operator on the floor.

Steam is distributed from a 12 in. and a 6 in. auxiliary high pressure main. A vacuum system is applied to the entire heating system and returns to two 12 x 18 x 20 in. vacuum pumps located in the boiler room. These discharge into a vented receiver 3 x 7 ft., to which are attached two 12 x 8 x 12 in. boiler feed pumps.

An engine room is provided, but power is supplied by an outside service at present. The current is 220 volts, A. C., 3 phase, 60 cycle, which is transformed by a motor generator set in engine room to a 220 volt D. C.

All fans run at low speed and have direct connected variable-speed motors, supply fans having 50 per cent reduction by armature control and 10 per cent increase in speed by field control. Regulating rheostats are provided with no load and overload relays. Vent fan motors do not have field increase.

All of the air supplied by the fans is washed. Washer, as well as fan casings, is made of heavy galvanized rust-resisting iron. The nozzles are of bronze, non-clogging medium type, spray and overhead flooding for scrubber plates. All washer pumps have direct connected commutators, interpole type motors, slow speed for quiet operation. Humidity control is used in connection with all supply fans as uniform humidity is essential throughout the buildings to maintain uniformity of tuning. This is especially necessary in the main tuning room for the theatre which is partly located in the basement of the School of Music. The degree of humidity is regulated by the joint action of control of steam tempering coils and temperature of washer water. The heating of the washer water is secured by a noiseless type of steam ejectors supplied through reverse action diaphragm valves on steam line which prevent overhumidification in event of water supply failure. The fans deliver conditioned air for ventilating purposes only except as hereinafter noted. All fans are factory tested and balanced at speed in the factory, to eliminate noise. The intakes and discharges have canvas throats as an added noise eliminator.

The ventilating system of the School of Music includes five supply fans and three exhaust fans, one of which serves the Boston vent fixtures. Two of these supply fans and exhaust fans are located in the attic and serve the offices and studios. The distributing ducts for both the supply and exhaust are located in the attic. Each of these supply and exhaust fans has a capacity of 34,000 c. f. m. The supply fans discharge into plenum chambers from which distribution is made. The object of these chambers is to give area for duct attachment and make the air distribution as quiet as possible. As a further precaution against noise the fans are mounted on plank frames, cork, lead machinery mats and other insulating materials. All vertical masonry ducts for air supply are metal lined to protect the musical instruments from mortar dust. All supply and exhaust ducts in the attic are separated by special hair felt which is also placed on the outside of the metal lining of the vertical ducts as a noise preventative. The metal distributing ducts have a broken joint where they enter the masonry flue lining to avoid a continuous metal circuit.

All of the studios have double windows to serve as sound stops and this makes mechanical ventilation necessary.

The large corridors on the first and second floors of the School of Music are used as promenades and are ventilated by a fan located in the basement with a capacity of 22,000 c. f. m. These corridors are 25 x 182 feet in size. The seventeen piano practice rooms and the main tuning room in the basement are heated and ventilated by one fan having a capacity of 13,000 c. f. m. Each room has an intermediate thermostatic control at the plenum chamber of this fan.

Kilbourn Hall, stage and dressing rooms are ventilated by a fan with a capacity of 20,000 c. f. m. and which is located in basement under the hall. The air from this fan is delivered through an expanding cone into a brick plenum chamber and a series of galvanized iron ducts distributes the air uniformly into a furred space under the auditorium. Dampers are provided in these ducts for balancing the supply at the different parts of the furred space. The air from this space passes out through 5 in. adjustable mushroom ventilators under each seat or through screened slots in risers where they occur.

The theatre has one main supply fan, an auxiliary fan for heating entrance and exit vestibules and one toilet vent fan. This main supply fan has a capacity of 122,000 c. f. m. and is located over a group of dressing rooms and at about the level of the auditorium ceiling. The air is distributed through horizontal ducts in the attic and thence through vertical ducts to spaces under the floor of the auditorium, balcony and mezzanine floors. From these spaces the air is delivered through 6 in. mushroom ventilators under each seat or through screened slots in risers where they occur. The main vertical flue serving the auditorium floor is connected to concrete tunnels, with dampers, for even distribution under this entire floor area.

Thermostats are located in the seating space, but as an additional precaution three distant reading thermometers are located in various parts of the house and reading in the fan room. This permits the engineer to read the temperatures without entering the theatre.

The fan which heats the vestibule secures its air from the space under the auditorium floor, this space being filled constantly with tempered air by the main fan and the necessity for an additional air washer and cold air inlet for the small fan is eliminated. This fan is also to be used before the auditorium is occupied and by leaving the inside vestibule doors open, the air will be taken from the theatre, reheated and recirculated from the vestibules back to the main auditorium. This serves to aid in heating the auditorium before the main fan is put in operation. There is a certain amount of direct radiation throughout the theatre but none in the entrance and exit vestibules owing to lack of available space. The stage is heated by direct radiation.

Grilles are provided in the ceiling of the auditorium through which air is exhausted and two 108 in. disk fans are installed in a pent house on the roof for this purpose. These fans discharge into the outside through what might be called weatherproof sheds. The air discharge is controlled by air dampers operated by switches located in the main fan room.

A comfortable temperature is secured by the liberal supply of 35 c. f. m. per person and objection to the usual cold blast from mushroom ventilators is obviated. Often where mushroom ventilators are used a too small supply of air is provided and as a crowded house tends to aver heat, it is necessary to deliver colder and colder air which is unpleasant.

All supply fans have two banks of vent radiation for tempering and three for reheating except for piano practice rooms. Temperature control is applied to one bank each of tempering and reheating radiation.

The heating is done by direct radiation and is under automatic temperature control. The steam supply and return risers are concealed, insulated and installed in chases which are well packed for a certain distance each side of the connections to room radiators to prevent the transmission of noise from room to room.

The soundproofing of the studios in the School of Music is rather complicated. The building is of steel skeleton frame construction with flat reinforced concrete floor slabs. Over these slabs were placed two thicknesses of ½ in. deadening material with joints broken in the two layers. On this was placed a bed of cinder concrete to which a ½ in. cork tile floor was applied. The ceiling under the slab was of metal lath and plaster suspended by metal hangers in which was placed a special separator, breaking the metal to metal contact with a fibre insert.

It is generally thought that air spaces in partitions have value for soundproofing. In this case the consultant on acoustics and soundproofing, Dr. Floyd R. Watson of the University of Illinois, advised that solid partitions were better sound deterrents than those of like thickness which contained air spaces.

The soundproof partitions were constructed of two thicknesses of 3 in. solid gypsum blocks. One thickness of 3 in. blocks having been erected, light furring strips were attached, to which were applied two thicknesses of ½ in. deadening material, the joints being broken. The second thickness of 3 in. blocks was then erected against the deadening material, completing the partition for plastering.

All gypsum blocks were started at the bottom on a ½ in. course of machinery cork and were finished against the ceiling slab and walls at each end with deadening felt. All partitions were carried to underside of floor slabs and suspended ceilings hung between them, thus positively separating each room.

All steam pipe risers and returns, plumbing lines and electric conduits leading from one room to another were packed with asbestos sponge for a distance of one foot above and below the slab. Heating and ventilating ducts were carried from the plenum chambers to each room separately and not taken from a trunk line as is usual.

All of the studios were equipped with a soundproof door made by Mr. Irving Hamlin, Dean of the School of Music at Northwestern University, who developed these doors for use in the piano practice building at that institution and used them with satisfactory results.

The rooms as built are not soundproof in the literal sense of the term, but are far superior to any previously observed by the designers. In a still room a sound can be heard from an adjoining room, but it is unheard as soon as a slight sound is made, which is practically all that is required.

WASTEFUL SCHOOLHOUSE PLANNING

In a recently published article written by Mr. George M. Hopkinson, Assoc. M. A. S. C. E., the economics of schoolhouse planning was discussed. Among the various topics considered was the relative space occupied by corridors and stairs. A survey of every building in the Cleveland school system resulted in finding 1,250,000 sq. ft. of floor space devoted to stairs and corridors. It is estimated that 40 per cent of this area could have been saved and devoted to educational uses. This represents the equivalent of 625 class rooms, with seating accommodations for 250,000 pupils, costing at present-day prices (1922) $10,000,000 to build.

A survey of a large number of school buildings made by the Committee on Schoolhouse Standards, N. E. A., some years ago developed the fact that about 16 per cent of the total area of the buildings, measured at all of the floor levels, was devoted to stairs and corridors. This simply established the average percentage and there is no particular reason for accepting this distribution of space as satisfactory simply because it is an existing condition. This naturally leads to the question—what is the minimum requirement for stairs and corridors in schoolhouses?

The primary purpose of stairs and corridors is to afford ingress and egress to and from the various rooms or units and circulation of pupils from one room to another. The imperative essential is that they be so arranged as to afford safety in their use, and any space in excess of this should be justified by some evident necessity.

The areas devoted to stairs and corridors will naturally vary in the three kinds of school buildings—the elementary or grade school, the intermediate or Junior High School and the Senior High School. In the elementary school the pupil works in one room only and has no reason to go to other rooms except the toilets, playrooms and gymnasium or auditorium when these are provided. The principal circulation of pupils takes place when they enter and depart from the building. It is a flow that is capable of definite measurement. The pupils can enter the building at will and as individuals, but their departure can be under a disciplined control.

The entrance to or departure from the higher schools is made as individuals and not under mass control. This is due to the pupil's age and to the fact that the lockers are usually recessed along the corridor walls. The location of the pupil's locker has no particular relation to particular class rooms. As the pupil may attend several class rooms, laboratories and shops during the day, there is an inter-room traffic that is not found in elementary schools. The placing of lockers recessed along the corridor walls of necessity demands more space than where the wardrobes are placed in the rooms as in elementary schools. The space added to corridors due to such location of lockers would not equal the space devoted to locker rooms, in fact, it could be much less per locker. If these corridors are not used as lounging places or for social intercourse, they should be in excess of elementary school corridors only as required by the lockers and the larger size of the pupils.

Stairs are usually located at or near the ends of the corridors. The width of the stairs is often fixed by law, but in the majority of schools this only obtains where state codes are in effect. It is usually found that the corridor is from two to two and one-third times the width of the stairs. This does not seem to be a reasonable condition. Travel on stairs is always more slow and dangerous than travel on level floors. It would, therefore, appear that the relative width of stairs and corridors should be governed by the danger point—the stairs. It is only by use of the duplex stairs used in New York City that the effective width of the stairs is doubled and made equal to the corridor width. This is a consistent design.

It is admitted that spacious corridors give a pleasing effect to a school building, but such planning entails increased initial cost which is carried over into the interest paid on bonds, increased cost of heating and lighting the space and increased cost of cleaning and maintenance, which constitute a perpetual expense.

The design of the stairs and corridors must be made together and their disposition and extent are controlled by the number of persons to be served. Various codes limit the design of stairs, but it is doubtful if they are based on any accurate analysis of the flow of people. To determine this, a study should be made by actual experiments in school buildings. Possibly this has been done but any records of such investigations are not commonly available. Undoubtedly superintendents of schools would be willing to secure data on this subject if architects would call their attention to the matter and explain its importance.

The width and size of the corridor are not its only important characteristics. It should serve the greatest possible amount of floor area and to do this, all of its walls should adjoin rooms for instruction, except adjoining rooms used for toilets and special purposes.

It appears that the subject of stairs and corridors is sufficiently important, from every aspect, to justify a careful and logical analysis of their purpose and requirements.

Moisture-Resistant Coatings for Wood

SHRINKING and swelling and internal stresses causing warping and checking are brought about in wood by changes in the moisture content. Such changes are occurring continually when wood is exposed to changing atmospheric conditions, and the only way to prevent or retard them is to protect the wood from the air with some moisture-resistant finish or coating.

In order to determine the protection against moisture afforded by various coatings, a series of tests is being conducted by the U. S. Forest Service, at the Forest Products Laboratory, Madison, Wisconsin. No coating or finish which is entirely moisture-proof has yet been discovered, but several have been found which are very effective.

Linseed oil, although it is probably recommended more frequently than most of the other materials for moisture-proofing wood, was found in the absorption tests to be quite ineffective. Five coats of hot oil followed by two coats of floor wax failed to give any great protection.

Oil paints form a film over wood which is very durable even in exterior locations. Laboratory tests show, however, that such a film, although it may be continuous, does not prevent moisture changes in wood. Graphite paints and spar varnish are about as effective as the ordinary oil paints with the heavier pigments.

Cellulose lacquers rank somewhat higher than the foregoing in moisture-resistance. Considerable improvement can probably be effected in them by the addition of solids. They have the advantages that they are fast drying and that the films they form over the wood are very elastic.

Rubbing varnishes afford considerably more protection against moisture than do spar or long oil varnishes. The larger amounts of gum solids present in rubbing varnish probably account for their greater moisture resistance.

Enamel coatings made by the addition of pigments, such as barytes, to ordinary varnish are about as effective as rubbing varnish.

A bronze coating composed of a cheap gloss oil and aluminum powder proved in tests to be superior in moisture resistance to any of the coatings mentioned above. This mixture is very fast drying; three coats can be applied in the course of half an hour.

The aluminum-leaf coating developed at the Forest Products Laboratory particularly for the protection of airplane propellers, is highly efficient in preventing moisture changes in wood. Such a coating can best be applied to large, unbroken surfaces. The laying of the leaf on small intricate parts or assemblies is less practical.

Some asphalt and pitch paints are highly moisture-resistant. They are rather cheap and may be applied almost any place where their color is not objectionable. Attempts to discover a means of covering asphalt and pitch paints with lighter-colored materials have thus far met with little success.

For temporary protection against moisture changes, vaseline smeared over varnish is one of the most moisture-resistant coatings yet tested. Another temporary protection, a heavy coat of paraffine, is about as effective as rubbing varnish. Neither of these temporary coatings could be used on surfaces subjected to wear.

The following table gives the results of moisture absorption tests on panels coated with the different preparations. The percentages are based on average amounts of moisture absorbed per unit surface area by coated and uncoated panels subjected to a humidity of 95-100 per cent for 14 days.

TREATMENT	Percentage efficiency
Aluminum-leaf process—asphalt paint base	98
Three coats spar varnish coated with vaseline	98
Three coats of asphalt paint	96
Aluminum-leaf process—spar varnish base	95
Aluminum-leaf process—cellulose lacquer base	94
Aluminum-leaf process—oil paint base	93
Three coats of aluminum bronze (quick drying)	92
A heavy coating of paraffine	91
Three coats of rubbing varnish	89
Three coats of enamel	88
Three coats of orange shellac	87
Three coats of cellulose lacquer	73
Sheet pyralin 5/1000 inch thick glued to wood	68
Three coats of graphite paint	61
Three coats of spar varnish	60
Three coats of white lead oil	54
Five coats of linseed oil applied hot and two coats of wax	38
No coating	00

Running Automobiles With Wood

WESTERN larch or tamarack may yet keep the jitnies and more impressive motors of the country going. The Forest Products Laboratory of the United States Forest Service has developed a method of extracting ethyl alcohol from the sugars obtained from Western larch. It has been found that a ton of dry larch will yield 33 gallons of alcohol, which is about 50 per cent more than any other wood hitherto examined.—*National Lumber Manufacturers Association Information Bureau.*

Wholesale Prices of Building Materials

BUREAU OF LABOR STATISTICS FIGURES

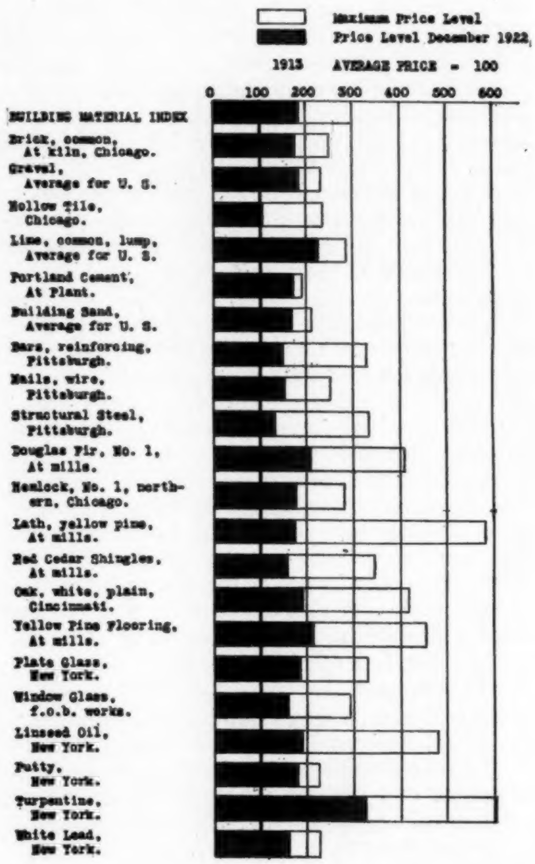


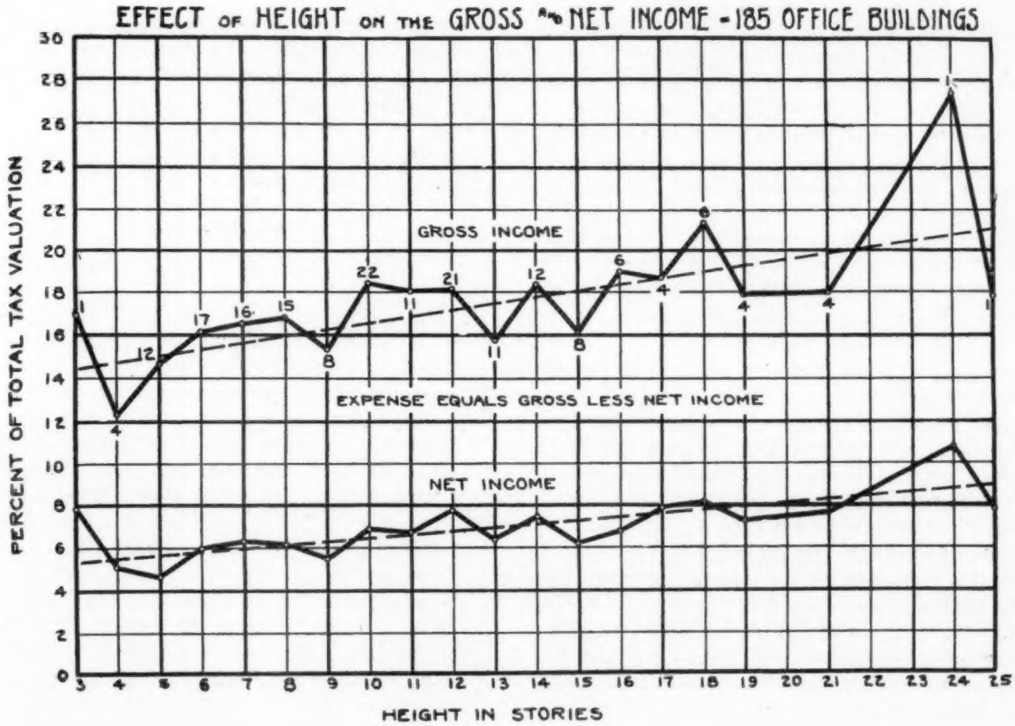
Chart Prepared by Department of Commerce, Division of Building and Housing of Bureau of Standards

Commodity	At Peak Date		At Peak Index	Index Numbers Oct., 1922 Index	Nov., 1922 Index	Dec., 1922 Index
Building material index	Apr.	1920	299.7	183.4	184.6	184.7
Brick, common, at kiln, Chicago	Oct.	1920	251.1	181.7	176.2	177.2
Gravel, average for U. S.	Jan.	1921	233.7	182.7	179.4	185.2
Hollow tile, Chicago	June	1920	236.9	126.3	126.3	105.3
Lime, common, lump, average for U. S.	Oct.	1920	286.0	220.5	227.7	228.2
Portland cement, at plant	Sept.	1920	192.9	173.1	173.1	171.2
Building sand, average for U. S.	Jan.	1921	209.6	162.1	162.6	168.1
Bars, reinforcing, Pittsburgh	July	1917	327.1	154.5	150.8	150.8
Nails, wire, Pittsburgh	Jan.	1920	252.9	153.9	153.9	153.9
Structural steel, Pittsburgh	June	1917	331.0	140.7	135.7	132.4
Douglas fir, No. 1, at mills	Jan.	1920	407.3	211.8	211.8	211.8
Hemlock, No. 1, Northern, Chicago	Mar.	1920	282.1	177.8	177.8	177.8
Lath, yellow pine, at mills	Feb.	1920	582.0	202.0	187.2	176.3
Red cedar shingles, at mills	Feb.	1920	346.8	179.0	183.0	161.7
Oak, white, plain, Cincinnati	Mar.	1920	419.0	187.8	189.2	192.5
Yellow pine flooring, at mills	Feb.	1920	455.3	216.4	213.9	215.7
Plate glass, New York	Aug.	1920	329.5	185.9	185.9	185.9
Window glass, f. o. b. works	Aug.	1918	295.2	156.2	162.7	162.7
Linseed oil, New York	Aug.	1919	480.4	190.4	189.4	191.7
Putty, New York	Jan.	1920	226.4	179.2	179.2	179.2
Turpentine, New York	Apr.	1920	601.8	357.6	368.7	327.8
White lead, New York	Mar.	1920	229.3	155.3	162.7	164.2

BUILDING HEIGHT AND INCOME

THE preliminary study given by architects and owners to office building projects pertains more to cost and revenue than to any other thing. The cost is quite easily determined, but the things which influence revenue are not so well established. Disregarding the effect of the location, the size of the ground and height of the building are the controlling factors. When the question of zoning and limiting the height of information here given is from the 1921 Experience Exchange issued in 1922.

The relation between height, gross and net income is given in Section XVIII, The Effect of Height on Income. The information is based on the experience of 185 office buildings in over forty cities in the United States. These buildings have been grouped according to their heights and, for each height, averages have been obtained for the



buildings is being considered, we hear many diverse opinions. Those who favor a law height limit frequently assert that a building of more than twelve to sixteen stories in height is not a profitable investment. Contrary assertions are made and generally the entire discussion is based on opinion rather than fact.

Authentic information on this subject is welcome and valuable. A very complete experience of a large number of office buildings is reported annually to the National Association of Building Owners and Managers and published in their Experience Exchange. A vast amount of data of particular interest to the owner and manager is given in detail. We present here data relating to those matters which concern architects. The gross income, net income and expense of the buildings in each group. On the accompanying chart the results are indicated. The upper line represents the gross income for each height group. The figures at the several points in this line indicate the number of buildings of each group. The second line represents the net income; the difference between this and the gross income represents expense. The income is represented in terms of percentage of total tax valuation.

An inspection of this chart shows that both the gross and net incomes increase with the height of the building throughout the full extent of the curve, which is twenty-five stories. As the gross income increases faster than the net income, it indicates that expense increases with height. It is probable that a limit might be reached at which the increase in expense would offset the increase in income.

The influence of the size of the ground area should not be overlooked. For a very tall building on a small lot, the economic limit would be lower than for a building erected on a large lot. The space required for the larger columns and elevators is a much larger proportion of the entire floor area in buildings on small lots than in buildings on large lots.

The relation which obtains between height and land value is important. The average office building has about 0.7 of a square foot of rentable area per floor for each square foot of ground on which the building stands. The 1921 statements show an average of 0.685. A one-story building would have only 0.7 of a square foot of rentable area to produce revenue from one square foot of ground area occupied by the building. In a ten-story building there would be seven square feet of rentable area for each square foot of ground area. In a sixteen-story building the ratio would be 11.2:1; twenty stories 14:1. Increasing the height of the building materially increases the earning power of the land on which it stands. From the foregoing it is evident that the greater height produces the greater profit up to limits exceeding twenty-five to thirty stories, considered in connection with land value. It is the opinion of the Association that the height of an office building can be increased, providing the lot is of sufficient size, to a great extent before the added investment in building per rentable square foot of office space could by any means absorb the corresponding reduction in land investment per rentable square foot.

Four of the buildings included in the above are on land valued at $150.00 or more per square foot.

From a section devoted to investment analysis of 152 buildings it is found that 68.5 per cent of the occupied ground area is rentable area. This being an average, a variation from this percentage represents the comparative efficiency of the building layout. The amount of building investment per rentable square foot is $6.60. This indicates the quality of construction and character of the building. A higher building investment would indicate a better structure which would necessitate an increased amount of rent per square foot to yield a proper return on the investment. The building value is found to be 1.29 times the land value. If this value is less than one, the land is under-developed. The total land and building value per rentable square foot of building is $9.95. This average indicates the general type of property and is used as a basis for all comparisons in this report. If this amount is much above the average ($9.95) more capital has been invested in the property than the income can pay a proper return. All values are based on the tax valuations.

In this report the buildings are also grouped by cities in which they are located, and the data should be of value to those seeking investment in such properties and also to architects in the localities in which they operate. The data is given in detail and is invaluable because based on facts rather than assumptions.

What Comes Out of a Barrel of Crude Oil

A DIGEST of oil figures compiled by the American Petroleum Institute for 1921 shows that 405,000,000 barrels of oil were used in the form of petroleum products other than gasoline.

There are forty-two gallons of oil in a barrel. Of these 25.6 per cent goes into gasoline; 9.7 per cent kerosene; 47.9 per cent fuel and gas oil; 4.3, lubricating oil; 2.4 wax, coke and asphalt; 6 per cent miscellaneous and 4.1 per cent loss.

Examination of recent figures showing that of over half a billion barrels of crude oil produced for use in America only 123 million barrels of gasoline were made from it develops the fact that it takes nearly four barrels of oil to make one barrel of gasoline. Yet the crude oil of the United States and Mexico is produced primarily for gasoline.

REVIEW OF RECENT ARCHITECTURAL MAGAZINES

BY EGERTON SWARTWOUT, F.A.I.A.

THE *Journal of the Society of Architects*, London, has been reborn, reclothed and renamed. A noteworthy group of eminent practitioners have assisted at the first named event, and the infant, now three months old, is doing himself remarkably well. His outer garment is of simple and pleasing design, and of a terra cotta color that is not quite orange, or of an orange that is not quite terra cotta. Within, the paper is good, the type excellent and the illustrations well selected and well printed. As to the name, the paper is now known as *Architecture*.

One of its main objects is to be the promotion of a better understanding between the architect and the public, and a better appreciation of architecture by the client as well as by the man on the street. This general interest in things architectural is growing according to the leader in the November number. "Not since the eighteenth century has the ordinary human citizen shown an interest in the art of architecture remotely approximating that with which he regards it today. It was little in evidence before the war, and will probably be found to date only a few years back; how it arose no one appears to be able to tell. The housing shortage may have something to do with the matter; a contributory cause will probably be traced to an eminent novelist's close acquaintance with a no less eminent architect: an acquaintance that has resulted in more than one sympathetic page." And a little further on there is an announcement of another object, a "reasoned criticism of the architecture of today." "We have just mentioned by name one of the elements that has a greater share, perhaps, than any other, in the ideal picture of this journal as its conductors have perceived and will attempt to consummate it. We refer to the reasoned criticism of the architecture of today. We are convinced that, whatever buildings may find a place within the ordinary man's circle of preoccupation, and whatever their merit, it will be the architecture produced in his lifetime rather than the treasures of the ages that invites his intellectual sympathy. There is a difference between the wholly admirable curiosity of the antiquarian and the vital concern of a man in contemporary things; one is action, the other contemplation. There is no doubt which of these has shown itself once more, and the phenomenon, we may rest assured, augurs good and nothing but good for architecture. The idea of a journal very largely occupying itself with the formulation of critical standards and comment seems to flow fairly naturally from the foregoing observations. *Architecture* will be illustrated (and the present number may be taken as typical in that aspect), but the illustrations will in every case be made subservient to the writings which they accompany. Photographs are necessary to all but the ubiquitous architect. They are as indispensable to them as an art student's perusal of the work of his fellow-students; but they are not a succedaneum for critical expression. It may be argued that their purpose should be to excite to examination and comment; that they are useless without such comment, and that the mind of the man who merely 'knows what he likes' may easily lack the precision, the certainty, without which good work cannot be produced. It may be argued, in fine,—and we should declare ourselves in full agreement with such a view—that criticism has a creative function to perform for architecture no less than for the other arts, a function as strictly connected with the processes of expression, as unavoidably influential, in its best and freest manifestation, for good or ill."

In the three numbers that have appeared, there are several very interesting examples of the freedom of criticism indulged in by writers in the British Press. To an American this freedom is quite remarkable. The critic says what he thinks in a fashion which would appear brutal over here, and yet apparently the object of this criticism goes blithely on his way and no heads are broken over it. I refer, of course, to the criticism of current architecture. Now it is really very hard to criticize modern work; work that is done by men that you know, some of them intimately; or work done by younger men who are trying to make a success of it, and a name for themselves, and who are not succeeding and probably never will succeed, not all of them. A man who has produced a design is proud of it, no matter how poor it really is, and I don't think it does him much good to see a condemnation of it in print, or to be told the windows are too big or that the cornice is too small. And if it doesn't do him any good, it certainly does no one else good, for in most cases the thing is of very little consequence anyway. I have this feeling strongly for the architect, for the designer, for the real producer, for the individual. I have no such feeling at all for the profession in general when it comes to a question of policy, or of practice, or of methods; I have no such feeling at all for those mistaken groups of individuals who, being in temporary control of the policies of an Institution, proclaim loudly their own policies as being the only correct policies of all right thinking people; I have no such feeling at all for those middlemen who call themselves architects and who, by modern business methods, acquire a large practice, and build up a reputation upon the work and design of hired employees; and I have no such feeling at all for the writers on architectural matters who, through ignorance or for a few, a very few dollars, fill the pages of our magazines with false and misleading statements. For all these there is great need of criticism; and as the need of it is great, so that criticism has to be harsh, if it is to be of value at all.

But I find I am writing of our own magazines and our own policy and not of that of the London paper. They not only, as I have said, criticize their own work as architects but they also get very distinguished laymen to do it for them. Mr. George Bernard Shaw in a letter to the Editor suggests "sending a competent young man around London to suggest improvements in existing public buildings and marking hopeless ones for demolition," an idea which has much to recommend it over here; and Mr. St. John Irvine in writing of The Architect and the Theatre seems chiefly concerned, not with the theatre, but with the lax and highly impractical methods of the architect who designed his flat, and most inconsiderately let sunlight into his pantry. It does seem to the casual stranger that anyone who could let sunlight into any room in a London flat would be deserving of the highest commendation, but to Mr. Irvine the whole profession is anathema thereby. Mr. Hilaire Belloc, another distinguished layman, writes of the Return of A Norm. Mr. Belloc says in his opening sentence, "The characteristic of our time in architecture is chaos. There never was in any civilization a period so completely marked by this negative mark: the absence of a canon. The great buildings which modern science enables us to erect rapidly and at will, in almost any fashion and upon almost any scale, follow at best some one of a dozen canons laid down in the development of some past civilization: at worst they attempt a mixture of these styles. Or again, more rarely, they attempt to achieve—and conspicuously fail to achieve—something novel. But in this country, and still more in America, the general result is chaos.

"The French still preserve, for official buildings, a certain traditional style, the roots of which go back to the Renaissance and the spirit of which was fixed with Mansart at the end of the seventeenth century. The Prussian and the German which he controlled attempted a sort of barbaric horror which had a repulsive unity about it. We need not delay on this development, for the philosophy lying behind it has suffered defeat in war; and that upon a scale and with a conclusive result which most people (in this country at least) are as yet far from appreciating. This abortive effort at a Prussian style, timid imitations of which you may see here and there in London (and even one or two in Paris), affirmed itself strongly wherever the German culture spread, but its day —its happily short day—is done. In England and America, and to a less extent upon the continent of Europe, the note is still chaos."

This state of things cannot last, says Mr. Belloc, and unity will come. "Mankind will never accept chaos. In the very force of things a civilization, however degraded, restores some central authority and achieves some common philosophy, and sooner or later, perhaps in our time, *one style will establish itself and will spread and will become the norm.*" This uniformity may come, Mr. Belloc thinks, by the acceptance of a common religion, which "is the most obvious avenue of approach," or it may come by way of material influence; concrete, for example, built as it should be built, and not by copying old masonry forms; or it may come through the action of one mind or the adoption of some foreign, say Oriental model; but in some way and in some form it must come.

Now, a great many of us, architects as well as laymen, have felt as Mr. Belloc feels, and have cherished the hope that he cherishes, but those of us who are architects and not laymen know that this chaos we all complain of is born of one of the very things he holds out as an avenue of relief, material. For the true cause of this chaos is the modern method of building construction—iron, steel and reinforced concrete. All architecture is the logical expression of construction in a manner that is convenient and beautiful; all styles, all great developments, are based on this expression of the construction; and the construction was the architecture itself. The Egyptian temple, the Parthenon, the Roman basilicas, the Renaissance domes and the Gothic cathedrals, all were a logical expression of construction, and the design was a beautified construction. But who can express adequately and beautifully the lattice skeleton of a modern tall building? Or who can make real architecture in reinforced concrete? There is no way of beautifying such devilish construction, and the result is that they remain and I'm afraid they will always remain, simply as construction; and our architects will continue to clothe them with forms taken from Grecian temples and from Gothic chateaux.

I would like to feel with Mr. Belloc that the return of a Norm, or the return to "Normalcy" will come through the general acceptance of a common religion, or better, of a general revival of religion. Undoubtedly under such an influence architecture would take a higher form than it does now, but unless some way can be found to revivify that logical development from the construction which is the only sure basis of architecture, I can see little hope of the end of chaos.

One of the largest and certainly one of the most widely advertised competitions of recent years, was that for the Chicago Tribune Building. Open to anyone who wished to compete, and attracting an unusual number of competitors because of the large cash prizes for the premiated designs, it offered an ideal opportunity to those eager young men who have complained so loudly and so bitterly of the closed or invited form of competition. And yet the dark horses who came under the wire were few. John Mead Howells is not unknown in the competition world and his chapel at Columbia is enough in itself to establish his architectural reputation, and his associate Raymond Hood has had long experience in Beaux-Arts work. Holabird and Roche are one of the oldest and best known firms in the West, and no well-ordered competition would be complete without the mention of James Gamble Rogers, Guy Lowell and Bertram Goodhue. The nearest approach to a dark horse perhaps was Eliel Saarinen of Helsingfors, Finland, who took the place, as I believe the pink sheets put it, but then Mr. Saarinen is not very dark even in this country. In his own he is a bright and shining light and has done a great deal of large and important work, some of which has been published lately in our magazines, a Railroad Station in Helsingfors and a Parliament Building, I believe, or a design for one.

The competition was an extremely interesting one in many ways. The Chicago Tribune wanted to get the best office building in the world and they were willing to pay a considerable sum to get it, and they cheerfully charged off that sum to advertising. And it was advertised most extensively. I suppose that to the average Chicago resident John Mead Howells is as familiar a character as Bath House John, and as well known in Archey Road as the immortal Dooley himself.

The premiated drawings have been published in all the magazines. Speaking only from the standpoint of the exterior, which seems to have been the main feature considered, the winning design seems the best. Some may question, in fact some have questioned, the use of Gothic for an office building, in spite of the fact that some of our most successful high buildings are Gothic in detail at least. To venture a personal opinion, I don't think myself it is very appropriate. There is a certain accentuation of verticality in perpendicular Gothic that appears to lend itself to the expression of the fenestration in a tall building, but it seems to me that that expression could be obtained without borrowing the pointed arches, canopied niches and buttresses that we generally consider part of a church. A good deal of this extraneous detail has been omitted in the winning design but I think the building would be better if more of it was. The buttresses at the top are unnecessary but still something had to break the line and the buttresses may do it, if they will not be too confused in execution. I should think a model would be an absolute essential. The upper part of this building was, I believe, one of the most difficult parts of the problem. The height available for offices was restricted and the top became a mere ornament, a top piece that enabled it to overtop the Wrigley building opposite. Still, buttresses or no buttresses, the scheme is good and when built will be the best high building in Chicago and compare with any, elsewhere.

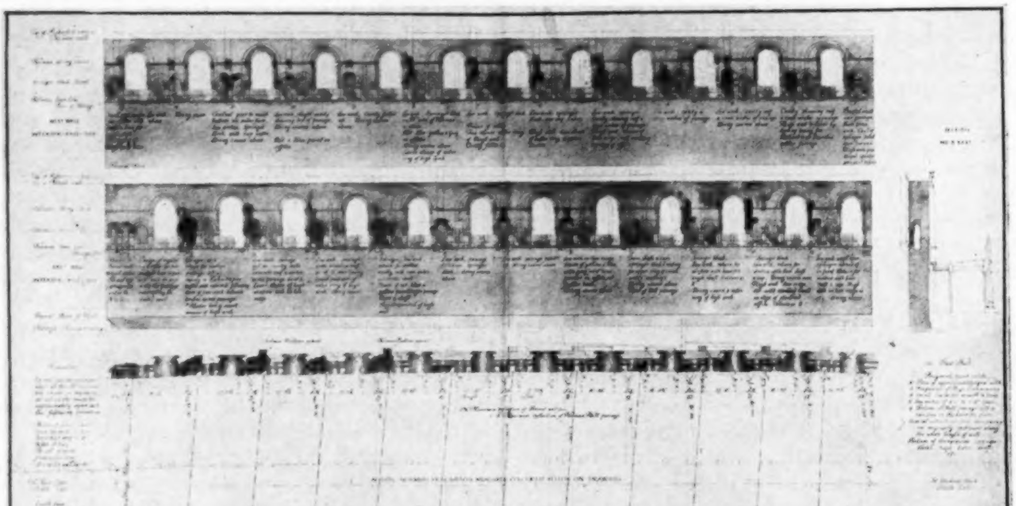
The design of Mr. Saarinen is very characteristic of him. He has consistently endeavored to achieve verticality in his work and has strenuously endeavored always to make a three story building look like six, and so here has attempted to make a thirty story building look like sixty. But it seems from his perspective that the striations alone do not fulfill all the requirements in a high building, and the design suffers from the absence of horizontals. The scheme is practical and very interesting, but the silhouette would be better if there were fewer breaks in outline. There has been a good deal of fulsome praise given this scheme. It has been haled as the best thing since Amiens, and as establishing a new epoch in high building design, etc., etc. Now, I can't see that the solution of the high building is any nearer by reason of the Tribune Competition. In point of fact, as I have said elsewhere in this article, I can't see that there is any solution. In the present case, I think, that for the purposes of the Chicago Tribune, the accepted scheme is much better than the second. The Chicago Tribune wanted a building which would be of constant commercial value as an advertisement. It wanted something novel, something that would provide an interesting and dominant silhouette. It will be seen generally from a distance, from down Michigan Avenue or from the Lake. It should count as the Woolworth tower does here in New York. Mr. Saarinen's design would be at a distance just a square tower, one of many. The winner, with all its illogical buttresses, will be a remarkably picturesque and noticeable object. It will be popular.

Now, a great deal has been said about the lack of logic and structural truth in putting great masses of masonry on top of a thirty story office building carried on steel columns, but what is the use in falling back on logic when there is no logic in a tall building anyway. The walls in Mr. Saarinen's design are carried on steel at every floor; all the masonry in all the designs is only a sham, arches that are not real arches, buttresses that buttress nothing, masonry forms glued on to a backing with as little real structural quality as a cardboard model backed up with little wooden strips, and yet what are you going to do? The steel must be covered with some kind of fireproofing, and masonry, if only 4 inches thick, has to be treated as masonry, I suppose. There is one instance that I can recall of a logical high building and that was the Marlborough Blenheim Hotel at Atlantic City. It was, as I remember, reinforced concrete and the exterior was cement. It had a very pleasing silhouette; there was a touch of color in the roofs and in the inlaid tile that was characteristically modeled in sea forms. It was inexpensive, as was undoubtedly demanded, it was appropriate to the location and it was pleasing. It would be highly inappropriate for the Chicago Tribune but it was, as I have said, one of the few logical high buildings that I have seen.

But to return to the Competition. It was an interesting one and apparently well conducted. I think that too many and too elaborate drawings were called for in the program, but that is quite the general rule in competition programs. The jury composed of laymen with the addition of its Professional Advisor, have done their work impartially and well, and most of the designs that have been published are of high quality and well presented, particularly Mr. Rogers', Mr. Goodhue's, Mr. Lowell's and Mr. Rebori's.

In *The Builder,* London, January 5, there is an interesting account of the discovery of the remains of an old Norman arcade hidden in the thickness of the walls of Westminster Hall in London, which were discovered when the recent repair work was done to the great wooden trusses of the roof. Enough has been found to make it certain there was originally an arcade open on the room side, running completely around the Hall at a level of the spring of the great roof trusses, and that this arcade was left open until the end of the improvements made by Richard II, when the present roof was put on. As can be seen from the plan, this arcade and the original windows behind it did not center perpendicularly with the axis of the Hall, but diagonally across it, and it was not until the Richard II improvements were put in that the Hall became symmetrical. Some traces of the Norman work were found when the Hall was refaced by Sir Robert Smirke but the extent and character of the arcade have only recently been revealed.

From "The Builder," London



ECONOMIC FACTORS WHICH UNDERLIE CONSTRUCTION ACTIVITY

Prepared for The American Architect by the American Chamber of Economics, Incorporated*

THE ability to build banks, office buildings, industrial structures, halls, museums, and memorial buildings depends very largely upon the trend of the earning power of corporations, and the power to tax and collect voluntary contributions from both industries and people. Granted, for the moment, that the money is forthcoming from any one of these sources, in the absence of urgent and pressing requirements for space accommodations, that demand will be shaped for the most part by the trend of building costs—and as the urgency in the situation recedes the considerations of cost and financing will become more and more paramount. Now building and construction costs are made up of two factors chiefly, the price of building materials and the wages paid to labor. A third and extraneous influence, the cost of credit facilities at banks, is another consideration which usually plays a significant part in the decision to approve a building scheme.

COST OF BUILDING MATERIALS
Department of Labor Index
(1913=100)

	1918	1919	1920	1921	1922
Jan.	161	176	274	192	157
Feb.	161	173	293	280	156
Mar.	164	171	297	173	155
Apr.	169	169	300	167	156
May	170	173	293	165	160
June	172	189	275	163	167
July	177	209	269	160	170
Aug.	179	226	265	156	172
Sept.	179	229	255	156	180
Oct.	177	229	240	159	183
Nov.	177	232	215	163	185
Dec.	177	248	204	158	185

Four factors, then, determine the demand which underlies the activity of the whole building and construction industry:

(1) the ability of corporations to earn sufficiently to finance expanding needs for space accommodation, and, as a supplementary factor, to increase the earnings of stockholders and salaries of employees so that they in turn can
  a—pay increased taxes which will go for governmental building,
  b—subscribe more fully and generously to construction of a community character,
  c—invest in mortgage bonds and thus finance new building enterprises;

(2) the course of the prices of building materials;

(3) the trend of wages; and

(4) the direction in which interest rates are moving.

Earnings and Purchasing Power of Corporations

A glance at each of these four factors will afford the architect some conception of the extent of the potential demand for new construction which is likely to assert itself in the future. In the first place, the improvement of the earning ability of corporations is rapidly passing from the stage of expectation and intangibility to one of concrete demonstration and positive performance. Stock prices during all of 1922 foretold the impending improvement. Yearly income statements and balance sheets have confirmed the forecast of the stock market, and the indications are that, in the absence of grave and dramatic developments abroad, the amelioration of business started in 1922 will be carried further in months immediately ahead.

The betterment in corporate earnings and purchasing power suggests a period of industrial expansion, which is sure to be attended with an advancement in the financial position of the stockholding, bondholding, and salaried public. The income of this class is measured largely by the earning power of corporations. The capacity of this class to pay taxes toward expanding governmental buildings, to invest in or subscribe to a construction scheme in the community is contingent upon the corporation's ability to do the same thing.

The trend of wages paid the working man is capable of more accurate determination. The report of the Department of Labor of New York State shows that the working man's competency to contribute toward a building program either by way of subscription or taxation is growing increasingly greater.

Unfortunately, all of this financial strength has its limitations and conforms to geographical

**The American Chamber of Economics conducts a consultation and educational service for executives, in economic principles. Its Supervising Director is George E. Roberts, Vice President of the National City Bank of New York. Co-operating with the Chamber are James B. Forgan, Chairman of the Board of First National Bank, Chicago; Frank A. Vanderlip, Financier and Economist, New York; Samuel Insull, President, Commonwealth Edison Company, Chicago; Joseph H., Defrees, Ex-President, United States Chamber of Commerce; Henry S. Pritchett, President, Carnegie Foundation; Edward J. Nally, Managing Director, International Relations, Radio Corporation of America.*

areas. The city public, dependent for its livelihood upon the industries of the land, is in easier financial circumstances than the rural public, whose products in the world's and nation's markets receive less favor than the output of most urban enterprises. Some faint tendencies toward a more equitable distribution of patronage and benefit in this regard are seen by the optimistic.

Prices in the Materials Market

The trend of prices in the building materials market, the second factor, is a buoyant, advancing one. A rise of 28 per cent (using 1913 as a base) occurred in 1922, when there was an increase in the general price level of 18 per cent. The trend of January and February prices does not foretell a halt in this sort of movement. The gradual rise in prices is apparently inevitable and inescapable as long as general commodity prices are rising, wage scales advancing, and demand and inquiry active and insistent. It is the sincere and commendable desire on the part of producers and distributors of building materials to control the trend of prices within reasonable limitations, to avoid a meteoric rise, and to conserve the demand by the maintenance of prices at a level which affords reasonable profit. The urgency of immediate delivery and the pressure of an early and heavy demand upon the capacity of mills and factories have resulted in a very strong undertone to the entire building and construction list. New business has appeared in volume too heavy for producers and manufacturers to handle. Prices have been boosted, in many instances, in resistance to this demand, but it is hoped that such persistency on the part of those in the market for building materials will only be temporary. Any industry is healthier in an advancing market if seasonally moderate readjustments in price lists are necessary to encourage business. Over-extension is then minimized.

WAGES NEW YORK FACTORY WORKERS
(average weekly earnings)
(Department of Labor Reports of New York State)

	1918	1919	1920	1921	1922
Jan.	$16.81	$23.03	$26.52	$27.61	$24.43
Feb.	17.66	22.07	26.47	26.77	24.17
Mar.	18.71	22.20	27.87	26.96	24.57
Apr.	19.25	22.11	27.80	26.20	24.15
May	19.91	22.23	28.45	25.86	24.59
June	20.44	22.51	28.77	25.71	24.89
July	20.78	23.10	28.49	25.26	24.77
Aug.	21.23	23.85	28.71	25.43	25.10
Sept.	22.31	24.83	28.73	25.07	25.72
Oct.	22.34	24.41	28.93	24.53	25.59
Nov.	21.60	25.37	28.70	24.32	26.04
Dec.	23.18	26.32	28.35	24.91	26.39*

*Tentative.

Wages and the Cost of Labor

The direction of the underlying movement of wages, like that of building materials, does not favor a stimulation of the demand for additional building and construction. Wages are moving upward, as the report of the New York State Labor Department reveals. Such a movement is to be expected in combination with advancing commodity prices, a scarcity of labor and the outlook for what appears to be a period of increasing industrial expansion. As usual, retail prices have been lagging behind wholesale prices, and the recent rise in the latter has yet to be reflected in the former. When it is, the cost of living will draw out repeated demands from workers for wage increases. Labor disturbances similar to those which occurred in the inflationary period just past, may be repeated, for past experience with union labor outlines rather distinctly what to expect when a given combination of economic influences presents itself.

The Trend of Interest Rates

And money, the last of the four principal factors having a bearing upon the trend of demand for building and construction, in its probable course, does not hold a great deal of hope for support if the other factors already mentioned fail. Interest rates invariably rise, when artificial restraints are withheld in a period of active business. As long as there is in prospect a period of expanding industrial enterprise it generally follows that there is in prospect a period of rising interest rates. If the situation in France and Germany, and in the Near East could be suddenly transformed into a condition of peace, contentment, industry, and thrift, there isn't the slightest doubt that the industrial and commercial demands in the United States would in a reasonable time absorb the rather large supply of money which is now on the market, raising the rate at which these funds are loaned. Domestic consumption is self-sufficient to such a degree that unless business is paralyzed by unusual developments abroad, money rates will show greater firmness and strength in the next month or two, in spite of the foreign situation, for the reason that rates invariably increase with the assertion of commercial demands, which are very apt to be made after the seasonally quiet months of January and February. The investment builder will find that the passage of time will not accrue to his benefit as far as the cost of credit is concerned.

Summing up the underlying economic influences at work in the present construction situation, their apparent interpretation is that for a number of months the unusual demand, which was asserted so strongly last year will prevail with equal intensity and with similar imperial domination as in 1922. But there is in the situation a growing tendency which will be increasingly insistent in its emphasis of costs, and costs in the building and construction industry, as in almost every other industry, are rising.

Building Costs

Short stocks, poor deliveries, and an early resumption of active building have been responsible for the distinctly upward slant in lumber prices. Douglas fir has been noticeably strong, prices rising in the face of a persistent and insistent array of new orders. Both hardwoods and softwoods are experiencing good demand and the undertone of the markets for both is a firm to advancing one. In the latter part of January orders were about 25 per cent above normal, and shipments about 5 per cent greater than normal. Production, on the other hand, is running some 20 per cent under the usual production record for this time of year. Both shipments and orders, according to the January statements of the National Lumber Manufacturers Association, have been running at more than 100 per cent of current output. Mills are reported to be turning down some immediate business, for their capacity is sold well ahead.

Steel makers are experiencing a similar demand. Producers are reported to be sold up during the first quarter of the year, and prices are advancing on structurals and bars as mills contract for the business of the second quarter. December structural steel sales, as published by the Department of Commerce, were 20 per cent ahead of November business, and while January sales records have not yet appeared, every indication points to the fact that they will repeat an advance. The heavy tonnage demand from the railroads, builders and contractors, oil-field equipment makers, and the automobile manufacturers has given to price trends a strength which is likely to carry quotations higher as the requirements of the coming months are realized.

The output of cement has about passed its seasonally low period. A recent readjustment of prices, together with a tendency on the part of dealers to replenish depleted stocks have been mentioned as the causes for a quickening movement in the trade, and in the face of probably heavy and surely active Spring business, further price readjustments are not in immediate prospect.

The scurrying about for stocks to cover prospective business has sent the price of brick to slightly higher levels. Dealers' stocks have been low, and buyers are experiencing difficulty in getting popular shades and textures. The inability of railroads to make prompt deliveries has resulted in a premium on face brick in many localities. Manufacturers' stocks are also reported low, and producers who have been accustomed to resting during the colder months are finding this Winter a surprisingly short one. An active demand, which will possibly last well up into the Summer months, will militate against any noticeable readjustment in brick prices, unless this market should get wholly out of line with that of the other materials.

If immediate trends of building materials, wages, and money rates are any guide, they appear to spell higher building costs for the coming months of 1923.

Uses Necessary to Conservation

IT may seem paradoxical, states the Information Bureau of the National Lumber Manufacturers Association, that the consumption of lumber in the United States is gradually decreasing and the lumbermen are seeking to extend their markets at a time when there is a great demand for reforestation and forest planting. There is, however, really no paradox in this situation. Except as governmental bodies may do it for sentiment and general welfare reasons at the tax-payers' expense, there will be little systematic growing of timber by private owners until there is a public forestry policy. There must be a sufficient volume of demand and a satisfactory price, to induce owners of forest lands to treat their lands as capital from which to draw interest, rather than as a store of wealth to be drawn on until exhausted. It is only within recent years, with the increasing average price of lumber, that lumbermen have begun to consider forestry operations as even remotely practicable. There is, therefore, no incongruity in the stimulation of the lumber export trade, even though there is a probability that this country may suffer severely in the next ten or fifteen years for lack of certain kinds of wood.

PROFESSOR WILLIAM H. GOODYEAR

PROFESSOR WILLIAM H. GOODYEAR, for many years Curator of the Department of Fine Arts of the Brooklyn Institute of Arts and Sciences, died at his home in Brooklyn on February 19. He was 78 years old. Mr. Goodyear was born in New Haven, Conn., and was the son of Charles G. Goodyear, the inventor of the rubber vulcanizing process. After graduating from Yale in 1867 he went abroad and studied under Professor Carl Friedrichs in Heidelberg and Berlin. In the third year of his European stay he accompanied Professor Friedrichs on a trip to Cyprus, Syria, and this incident led to his later interest in Cypriote art. He also visited in Southern Europe and the Holy Land, and, coming back by way of Greece and Italy, he studied the monuments on the way. In 1881, he became Curator in the Metropolitan Museum of Art, where he remained until 1888. He visited Egypt in 1891 to study lotus ornamentation and he returned to Egypt in 1914 for further study of Egyptian architecture. He surveyed and made a study of the great cathedrals of Europe, and his written works are standards in the architectural field.

What was really Professor Goodyear's life work began with the remarkable series of architectural researches and discoveries with which his name will be for all time connected. Just what these were, and just how important, is very clearly set forth in a report of a special committee of the New York Chapter of The American Institute of Architects. This report stated in part:

"Professor Goodyear's investigations began in 1870, with measurements at Pisa. The fact that horizontal curvature existed in certain classical buildings was then known; the full extent of those departures from right lines and equal spacings which we now know to have been commonly practiced during the classical period, has since been developed. That similar refinements existed in later work, had been noticed by the sensitive eye of Ruskin, and was suspected elsewhere; but the enormous extent of these refinements ranging from the classical all through medieval times and even into the Renaissance period, their complexity, the structural skill required to produce them, their possible significance, the light they cast upon qualities felt but not understood—all these remained to be discovered, and it is not too much to say that it is Professor Goodyear who has discovered them.

"Certain obvious departures from dry geometrical uniformity and rigidity were plain enough; but these, when accounted for at all, were loosely assumed to be due to carelessness or to settlements. Plain as these seem, though, their nature and extent are no less than amazing to one who compares his own visual observation with the facts as recorded in photographs and measured diagrams. And a whole world of such facts exists which was never noticed at all, even by trained experts intimately associated with the great monuments displaying them.

"The work of Professor Goodyear has been to ascertain, to record, to determine these facts; to do so in such a way as to afford irrefragable proof that they are not accidental in any sense. This he has done, partly by a series of careful measurements, partly by photographs. His photographs are in the nature of surveys, showing by the use of plumb-lines and horizontal right lines, the various curves, widenings, leanings, and other divergences.

"To determine, with any precision, the significance of Professor Goodyear's researches, is manifestly impossible. Their meaning, their value, their potentiality to the curious mind, are not yet fully revealed to us and must, in any case, depend upon individual temperaments and sensibilities; upon uses yet to be made."

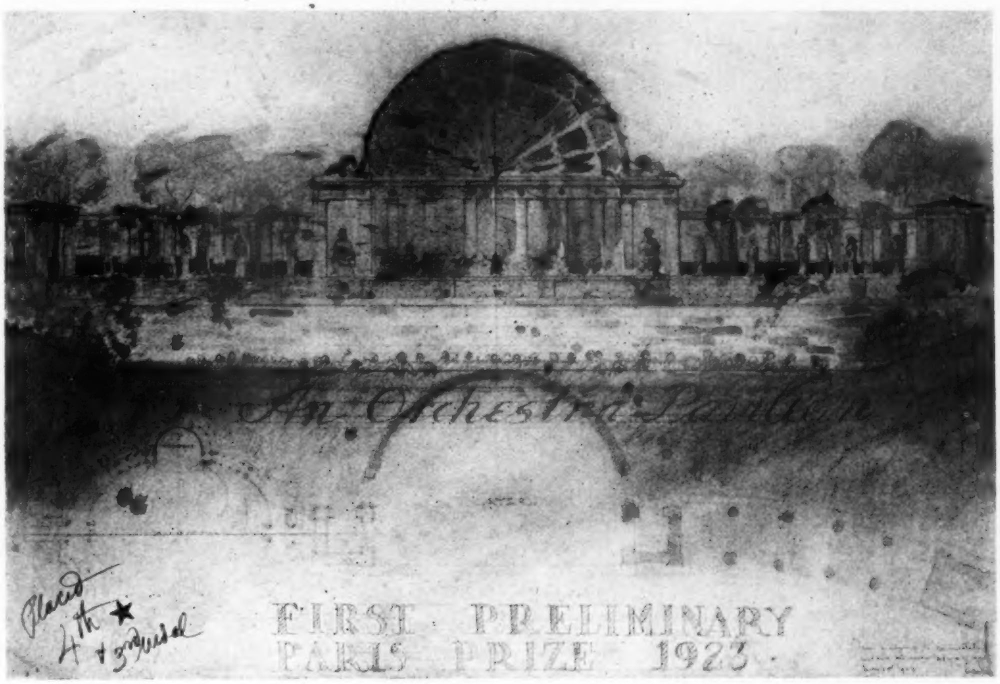
A complete presentation of Professor Goodyear's research and discoveries was made in a series of articles contributed by him to THE AMERICAN ARCHITECT in 1910-11, and at various periods subsequently. It was this series and their controversial aspect that led to the appointment of the special committee of the New York Chapter, and the very complete report, part of which is quoted above.

Recent revivals in this country of the use of medieval refinements as the result of Professor Goodyear's research, have been many. Among those of importance are the Swedenborgia Church at Bryn Athyn, near Philadelphia, the Nevins Memorial Chancel in the First Church at Methuen, Mass., designed by Heins & LaFarge. This chancel narrows in plan a foot. A series of refinements was introduced into the Cathedral of St. John the Divine in New York by the same architects. Refinements are also being incorporated in the new Episcopal Cathedral at Washington.

With regard to secular architecture, curves in elevation are found in the roof lines of the buildings of the Massachusetts Institute of Technology at Boston. Messrs. Green & Wicks of Buffalo, introduced curves in elevation in the upper lines of the Albright Art Gallery, giving credit at the time to Professor Goodyear's research. Bliss & Faville in their State Building at San Francisco, also introduced horizontal curves in elevation.

BEAUX-ARTS INSTITUTE OF DESIGN

Architecture, RAYMOND M. HOOD, Director—Sculpture, JOHN GREGORY, Director
Interior Decoration—ERNEST F. TYLER, Director
Mural Painting—ERNEST C. PEIXOTTO, Director



R. W. SCHMERTZ — CARNEGIE INSTITUTE OF TECHNOLOGY

PLACED FOURTH—3RD MEDAL

FIRST PRELIMINARY COMPETITION FOR THE SIXTEENTH PARIS PRIZE
AN ORCHESTRA PAVILION

Official Notification of Awards
Judgment of Jan. 23rd, 1923
FIRST PRELIMINARY COMPETITION FOR THE
16th PARIS PRIZE
OF THE
SOCIETY OF BEAUX-ARTS ARCHITECTS
"AN ORCHESTRA PAVILION"
(Illustrated in this issue)

In a great city park is a thick woodland left in its natural state, except for a few broad paths cut through it. These paths radiate from a clearing which is naturally depressed about 10 ft., and suggests treatment as an amphitheatre. A straight, wide approach from the park also centers on this site.

It is proposed to use this site for Summer concerts. The audience will sit on the slope (which may be terraced in grass) and the orchestra will be in a raised and covered stand on the axis of the wide approach. The only architectural construction will be the pavilion and a wall, balustrading, or some similar treatment which will enclose the space and facilitate control of the public at concerts. At other times the pavilion will, by the quality of its architecture, make a fitting focal point for the vista from the park.

This covered pavilion, providing 1,000 square feet for the musicians, shall be raised 10 ft. above the lowest point of the amphitheatre. Marble or cut stone shall be used in order to make of it a permanent and dignified building. The whole pavilion shall not cover more than 1,500 sq. ft. of ground area.

JURY OF AWARDS:—H. O. Milliken, J. H. Hunt, C. Butler and W. Van Alen.

NUMBER OF DRAWINGS SUBMITTED:—77.

AWARDS:—

PLACED FIRST AND FIRST MENTION (Class B):—P. O. Davis, Los Angeles Archtl. Club, Los Angeles.

PLACED SECOND AND FIRST MENTION (Class B):—F. W. Clarke, Univ. of Pennsylvania, Phila.

PLACED THIRD AND FIRST MENTION (Class B):—A. Strom, Univ. of Minnesota, Minneapolis.

PLACED FOURTH AND THIRD MEDAL (Class A):—R. W. Schmertz, Carnegie Inst. of Technology, Pitts.

PLACED FIFTH AND THIRD MEDAL (Class A):—H. F. Neville, Univ. of Kansas, Lawrence.

PLACED SIXTH—(FIRST ALTERNATE) AND MENTION (Class A):—C. J. Pellegrini, Carnegie Inst. of Technology, Pitts.

PLACED SEVENTH—(SECOND ALTERNATE) AND MENTION (Class A):—E. Albright, Columbia Univ., N. Y. C.

MENTION (Class A):—P. G. Lee, Columbia Univ., N. Y. C.

SECOND MENTION (Class B):—A. Kruse, Boston Archtl. Club, Boston; J. M. Hodgdon, Atelier Parsons-Chicago Archtl. Club, Chicago; W. Bonsall, Univ. of Minnesota, Minneapolis.

H. C.:—V. H. Proetz, O. F. Cerny and E. Fuhrer, Chicago Sch. of Archt., Chicago.

CLASS "B"—II ANALYTIQUE

"A BRIDGE CONNECTING TWO BUILDINGS"

(Illustrated in this issue)

Two municipal buildings on opposite sides of a narrow street are to be connected at the level of one of the upper floors by a bridge one story in height. The street is 40'-0" wide and the passage inside the bridge should have a width of 10'-0". Both buildings are built of stone in the classic style, and it is essential that the bridge should correspond in character with them. The use of orders on the exterior of the bridge is optional, and entire freedom is allowed in the use of decorative motives, such as clocks, etc.

The Bridge of Sighs in Venice is a famous bridge of this sort, and many others have been built which can furnish a precedent for the subject of this problem.

JURY OF AWARDS:—H. O. Milliken, W. Warren, J. H. Freedlander, E. P. Casey, F. C. Hirons, A. E. Flanagan and O. Faelton.

NUMBER OF DRAWINGS SUBMITTED:—132.

AWARDS:—

FIRST MENTION PLACED:—P. Sanfilippo, Jr., Atelier Corbett-Koyl, N. Y. C.; G. V. D. Cortelyou, Atelier French Curve, Trenton; G. Kirkpatrick, Atelier Hirons, N. Y. C.

FIRST MENTION:—T. H. Dreihs and J. L. Hautman, Cincinnati Archtl. Society, Cincinnati; R. V. Merwin, A. I. MacDonald, L. Rome and W. T. Anderson, Columbia University, N. Y. C.; W. Ferrari and H. W. Swenson, Atelier Hirons, N. Y. C.; B. Krinsky, John Huntington, Poly. Inst., Cleveland; G. B. Briney, Los Angeles Archtl. Club, Los Angeles; H. R. Astheimer, Atelier Licht, N. Y. C.; J. F. Jackson, C. F. Ward, W. E. Clark and F. Petrillo, "T" Square Club, Phila.

SECOND MENTION:—H. Rosenberg, Atelier Blum, N. Y. C.; J. E. DeRocco, A. G. Schwarz and W. Packtman, Atelier Corbett-Koyl, N. Y. C.; G. Franz and T. J. McCormack, Cincinnati Archtl. Soc., Cincinnati; J. N. Linn, S. F. Abrahms, S. Goldstone, C. J. Kidder, I. Adelsohn, A. D. Barthomew, J. G. Reiss, S. F. Edson, H. H. Rabin, H. C. Loney, N. R. Mastrangelo, J. H. Williams, J. L. Wilson, Jr. and H. G. Schoenthal, Columbia Univ., N. Y. C.; Edith C. Fisher, R. M. Hovanetz, E. M. Wilson and W. E. Munn, Cleveland Sch. of Art, Cleveland; T. H. Locraft, Catholic Univ., Wash., D. C.; Mary McCullough, J. J. Burke, F. O. Kellman, W. G. Jamieson, G. McKenna and M. J. Slack, Atelier Denver, Denver; O. Getzlaff, Atelier DeGelleke, Milwaukee; A. E. Davis, Jr., C. H. Kulp and W. G. Kafes, Atelier French Curve, Trenton; H. H. Fisher, Atelier Fulton, Uniontown, Pa.; J. M. Leonte, Atelier Fougner, Newark; J. H. Jeffery and E. Moore, Geo. Washington Univ., Wash., D. C.; J. J. Murno and S. Baum, Atelier Hirons, N. Y. C.; V. Galier and N. S. Zajack, John Huntington Poly. Inst., Cleveland; Julie Crossman, Atelier Licht, N. Y. C.; R. Lucas, Los Angeles Archtl. Club, Los Angeles; Rose Connor, 526 La Loma Road, Pasadena, Cal.; F. G. Rice, E. D. Woods and J. M. Longmire, Atelier Memphis, Memphis; J. F. Mullins, Atelier Penn State, Pa. State College, State College; D. S. Nelson and H. F. Bossert, Atelier Parsons-Chicago Archtl. Club, Chicago; H. T. Anderson, J. Devitt and F. Kruger, San Francisco Archtl. Club, San Francisco; Henrietta E. Schmandt, Atelier Spangenberg, Buffalo; K. A. Marvin, W. D. Edgarton, E. M. Allewelt, C. S. Harder and E. G. Wheeler, Syracuse Univ., Syracuse; E. Cacchione, W. F. Ziegler, S. F. Gaudelli, H. M. Saunders, W. A. Thom and S. J. Gritti, "T" Square Club, Phila.; H. B. Collins and G. L. Kennard, Thumb Tack Club, Detroit; W. Kleine, J. F. Bruenz, H. Steinbomer and A. Fehr, Univ. of Texas, Austin; R. J. Pearce, Univ. of Washington, Seattle; B. Eckberg, Univ. of Minnesota, Minneapolis; E. C. Johnson, C. Paulsen and G. L. Geery, Univ. of Kansas, Lawrence; H. M. Munger, F. C. Johnson, S. C. Haight, W. H. Schilling, and P. S. Graham, Yale Univ., New Haven.

CLASS "B"—II PROJET

"THE INTERIOR OF A PRIVATE THEATRE"

(Illustrated in issue of March 14)

Attached to the main body of a private residence, the owner wishes to build a wing containing a private theatre for the entertainment of his guests. The theatre is to accommodate approximately one hundred and fifty people and the stage, although slightly smaller than the stage of a professional theatre is, nevertheless, to be perfect in every detail. The problem differs from the problem of an ordinary theatre, in that the arrangement should be spacious and intimate, and the freedom from the exigencies of the commercial theatre permits of a rich, architectural development. The audience room should not exceed 60'-0" in any dimension; its height is left to the discretion of the competitors. The stage opening should not be less than 24'-0" wide. The orchestra may be hidden or occupy space in the audience room.

The problem is the interior arrangement and decoration of the audience room only. It should be borne in mind that the residence is of a luxurious character, but the choice of material and manner of decoration is left to the discretion of the competitors.

JURY OF AWARDS:—H. O. Milliken, W. Warren, B. W. Morris, W. E. Shepherd, Jr., J. W. O'Connor, F. A. Godley, H. W. Corbett, O. Faelton and G. M. Simon.

PRESENT BUT NOT SERVING ON JURY:—G. S. Koyl and E. I. Blum.

NUMBER OF DRAWINGS SUBMITTED:—86.

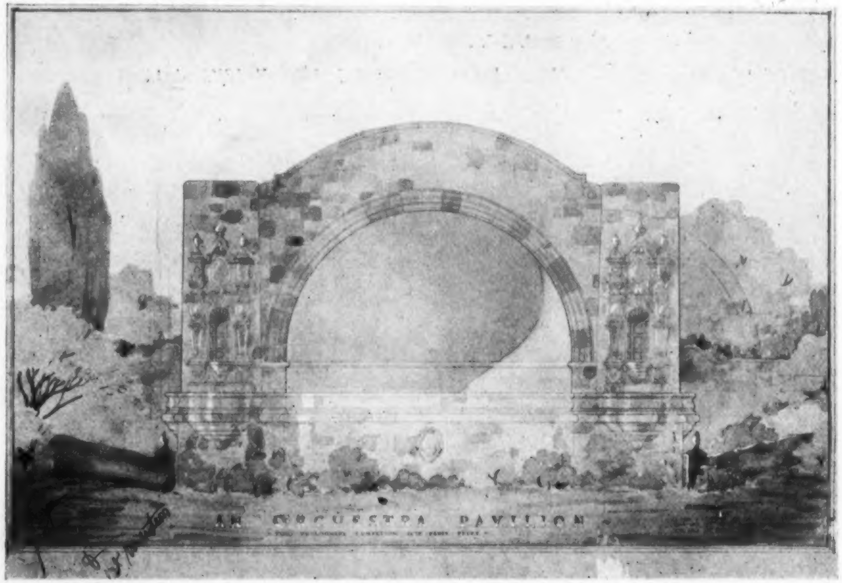
AWARDS:—

FIRST MENTION PLACED:—F. Martinelli, Atelier Corbett-Koyl, N. Y. C.; K. McLeary, Univ. of Texas, Austin; W. Faulkner, Yale Univ., New Haven.

FIRST MENTION:—J. A. Fernandez, S. Whinston, G. M. Burch and T. Kuniyoshi, Columbia Univ., N. Y. C.; R. E. Stiffler, Atelier Denver, Denver; W. P. Graydon, L. C. McClure, J. S. Thomas, Jr. and R. Brantley, Georgia Sch. of Tech., Atlanta; A. Schablik and L. V. Martin, Atelier Hirons, N. Y. C.; F. Sakata and F. J. Schlosser, John Huntington Poly. Inst., Cleveland; I. Horton-III and H. P. Staats, Yale Univ., New Haven.

SECOND MENTION:—L. Perry, C. L. Douglas, S. M. Shaw, J. H. Robb, E. C. Morris, M. G. Maybeck, E. Pollak, F. E. Gilson, B. Schlanger and R. Gottlieb, Columbia Univ., N. Y. C.; R. Frazier and F. A. Fredericks, Jr., Cleveland Sch. of Art., Cleveland; J. E. Miller and J. J. McNamara, Catholic Univ., Wash., D. C.; F. L. Soars, C. W. Jones, F. A. Elliott, M. C. Hobson, J. F. Wolfe and J. H. Lapish, Geo. Washington Univ., Wash., D. C.; J. B. Gill, H. L. Ellerbe, H. R. Weeks and F. W. Manning, Georgia Sch. of Tech., Atlanta; J. Gambaro and H. B. Hays, Atelier Hirons, N. Y. C.; A. J. Broadstone, A. E. Shrimpton and A. B. Mitchell, John Huntington Poly Inst., Cleveland; R. R. Bridges, H. A. King, A. F. Eldridge and W. P. Crabtree, Jr., Syracuse Univ., Syracuse; W. R. Harer, "T" Square Club, Phila.; M. Doak and R. H. H. Hugman, Univ. of Texas, Austin; A. D. Wills, Univ. of Minnesota, Minneapolis; J. Radotinsky, Univ. of Kansas, Lawrence; R. H. Blatter, Atelier Wynkoop, N. Y. C.; C. F. Ferrari, R. W. Ramsdell and H. O. Williams, Yale Univ., New Haven.

H. C.:—C. H. Dornbusch, H. Pruyn and A. J. Waldeier, Columbia Univ., N. Y. C.; C. M. Woodward, Geo. Washington Univ., Wash., D. C.; P. E. T. Silvius, Univ. Southern Cal., Los Angeles.



PLACED FIRST—FIRST MENTION

P. O. DAVIS

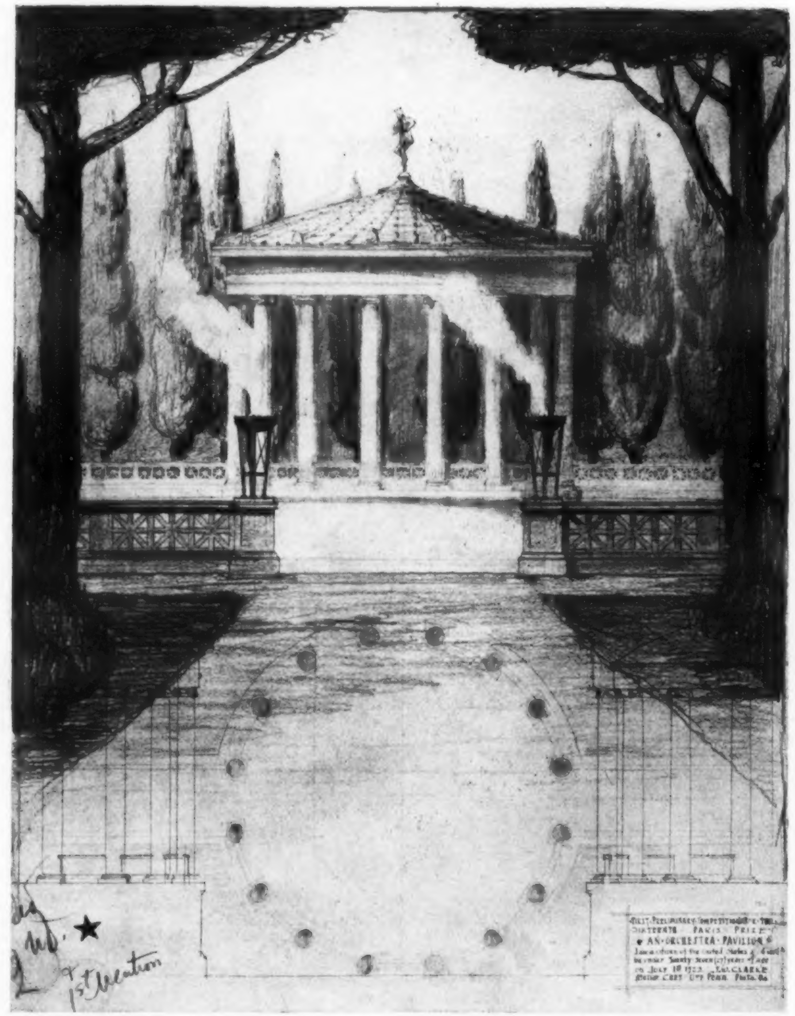
LOS ANGELES ARCHITECTURAL CLUB,
LOS ANGELES, CALIF.

FIRST PRELIMINARY COMPETITION FOR

SIXTEENTH PARIS PRIZE

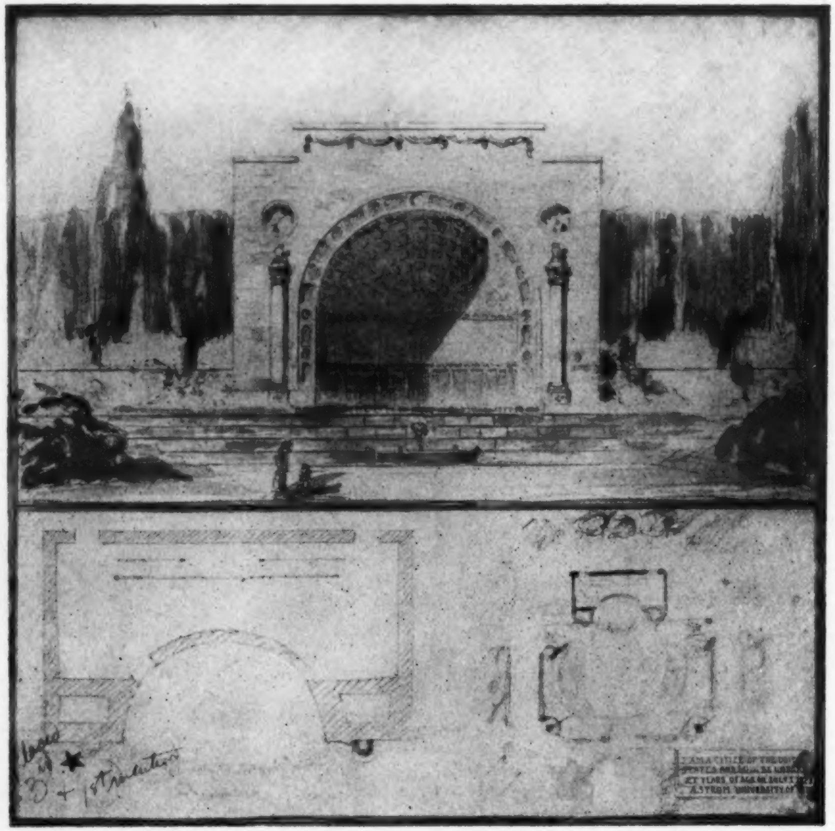
AN ORCHESTRA PAVILION

STUDENT WORK, SOCIETY OF BEAUX-ARTS ARCHITECTS



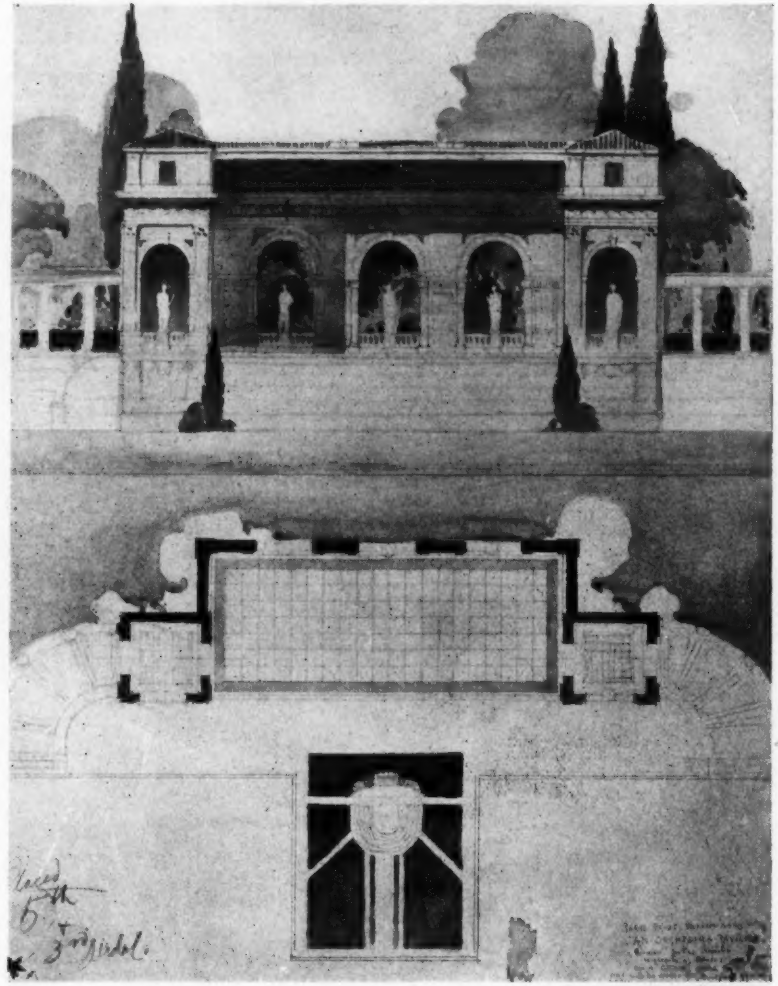
F. W. CLARKE — UNIVERSITY OF PENNSYLVANIA

PLACED SECOND—FIRST MENTION



A. STROM UNIVERSITY OF MINNESOTA

PLACED THIRD AND FIRST MENTION



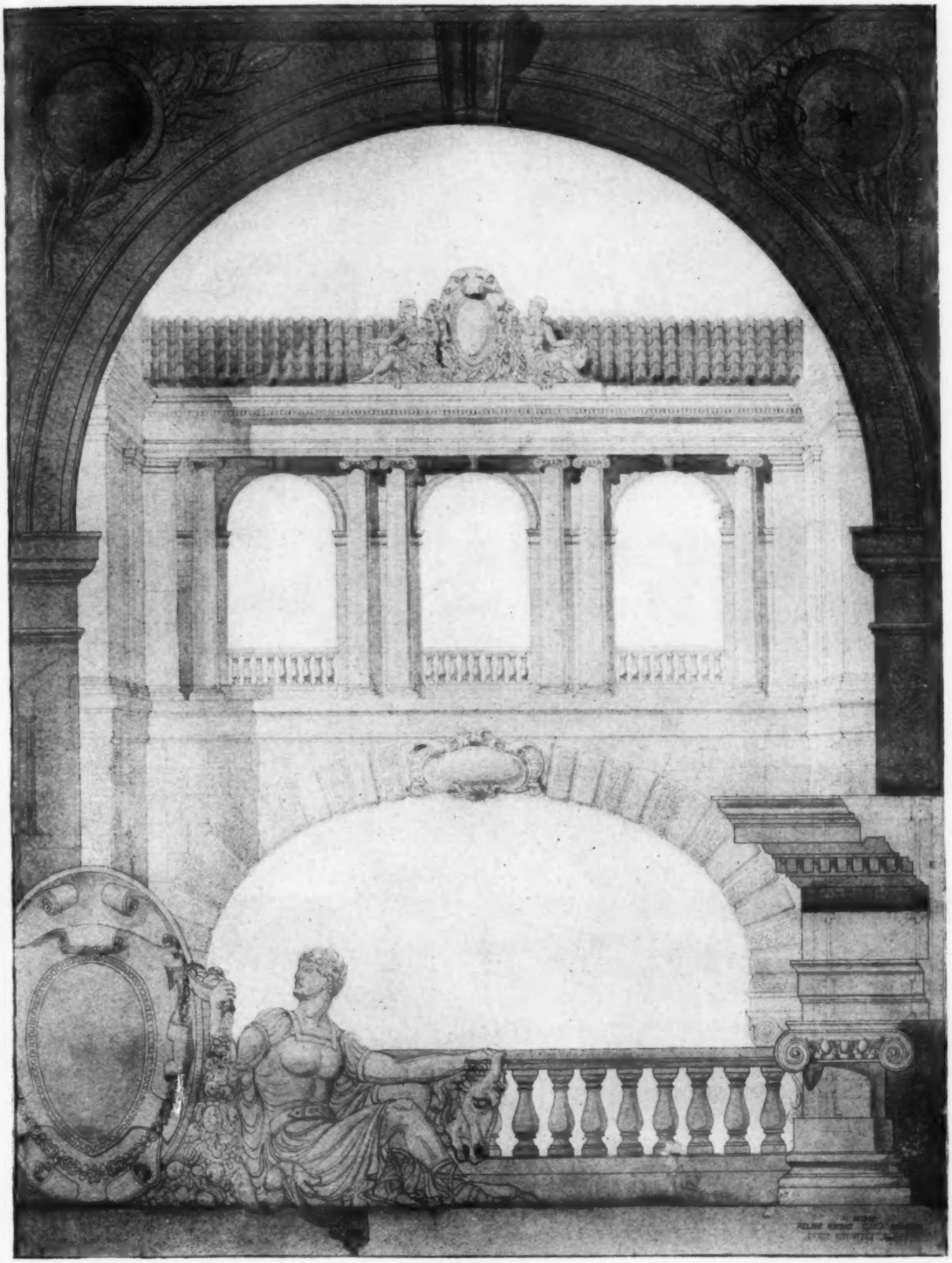
H. F. NEVILLE UNIVERSITY OF KANSAS

PLACED FIFTH AND 3RD MEDAL

FIRST PRELIMINARY COMPETITION FOR SIXTEENTH PARIS PRIZE

AN ORCHESTRA PAVILION

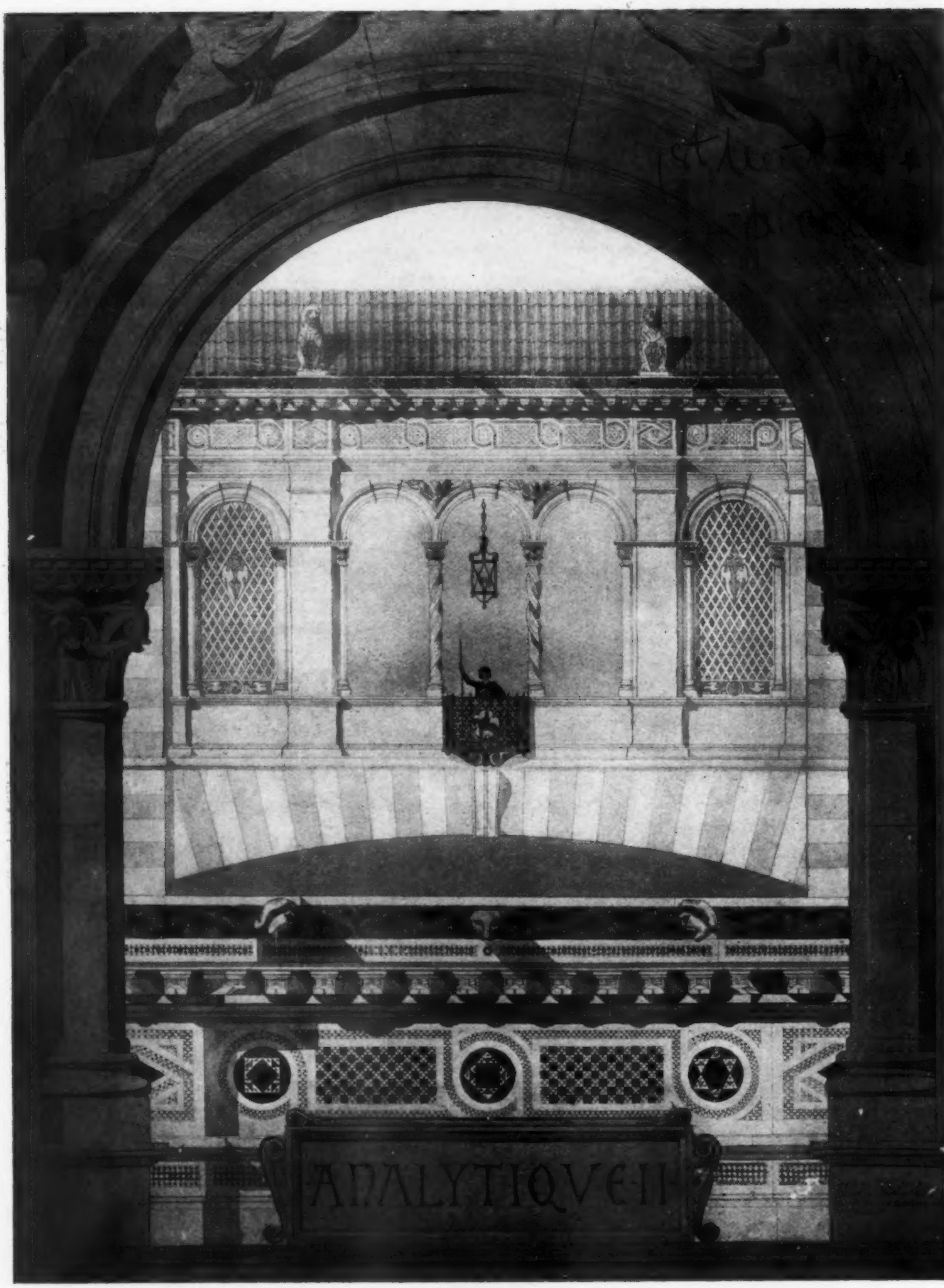
STUDENT WORK, SOCIETY OF BEAUX-ARTS ARCHITECTS



G. KIRKPATRICK — FIRST MENTION PLACED — ATELIER HIRONS, N. Y. C.

CLASS "B"-II ANALYTIQUE—A BRIDGE CONNECTING TWO BUILDINGS

STUDENT WORK, SOCIETY OF BEAUX-ARTS ARCHITECTS



P. SANFILIPPO, JR. FIRST MENTION PLACED ATELIER CORBETT-KOYL

CLASS "B"-II ANALYTIQUE—A BRIDGE CONNECTING TWO BUILDINGS

STUDENT WORK, SOCIETY OF BEAUX-ARTS ARCHITECTS

G. V. D. CORTELYOU FIRST MENTION PLACED ATELIER FRENCH CURVE, TRENTON

CLASS "B"-II ANALYTIQUE—A BRIDGE CONNECTING TWO BUILDINGS

STUDENT WORK, SOCIETY OF BEAUX-ARTS ARCHITECTS

BOOK NOTES

Structural Detailing

THERE are three important steps in structural steel designing and drafting. The first is determining the stresses in frames which, for ninety per cent of such work, is somewhat elementary and fully treated in many books. The second is the design and proportioning of details and connections; a point seldom given the treatment warranted by its importance. The third is the making and checking of shop drawings; a greatly neglected item of tremendous importance.

To meet the needs of his students in structural drafting and structural design at Yale University, Professor Bishop, himself a structural draftsman before taking up teaching, wrote a book on the subject the first edition of which appeared in 1920. Because of extensive changes in the standards of the Association of American Steel Manufacturers a new edition has just appeared. The author availed himself of this opportunity to make other changes and connections in order to keep the book up to date.

It is divided into three parts: Part I is inserted primarily to give readers a conception of the relation between the drafting room, steel mill and fabricating shop. Part II deals with the making of shop drawings, checking, ordering, billing, etc., many practical examples being given on forms in daily use. Part III is a practical treatment of the designing of details and connections, with a quite valuable chapter on rivets. The book deserves high praise.

Structural Drafting and The Design of Details. By Carleton Thomas Bishop, C.E., Asst. Prof. of Structural Engineering, Yale University. 352 pp. 169 fig. 36 full page tables and diagrams. 10½ x 7⅝ in. Cloth. New York, N. Y. John Wiley & Sons, Inc. $5.00.

The Cost of Construction

NEW books on estimating the cost of construction appear with considerable regularity. The reason for revisions of old books and for the production of many new books is that estimators, especially amateur and young estimators, want "up to date" costs.

Seventeen years ago Mr. H. P. Gillette presented technical men with a Handbook of Cost Data. Five years later it appeared in a new edition, considerable new matter making it bulky; but with no revisions. Now a second volume has appeared with the title, Handbook of Construction Cost, that contains 1734 pages.

The author in the preface and two chapters shows that for work in the doing of which no great changes in method take place, the costs are always of value. Reliable data gathered by government bureaus are available in which changes in rates of wages and prices of materials are given over terms of years. When information is so presented that wages and material costs can be separated it is easy to use old cost data provided dates are given. Some compilers of cost estimating books have made revisions by cutting out dates, so it is refreshing to read the common sense remarks of Mr. Gillette.

Wages in old cost data are modified by his wage level formula and commodity prices by his commodity price level formula, in both of which the lapse of years is given consideration. Provided no considerable change in processes has taken place all cost data are of value. It is comforting when an estimator has costs varying by several years for certain classes of work and can make comparisons.

Chapter I, Engineering Economics and Chapter II, Prices and Wages should be read by every estimator. The book contains 25 chapters, of which one (pages 1510-1615) deals with building construction. The other chapters cover every class of civil engineering work. In practically every chapter general building estimators will find items of value. Dates being given in every instance insures a long life of usefulness for the book.

Handbook of Construction Cost. By Halbert Powers Gillette M. Am. Soc. C. E., Editor, Engineering and Contracting, etc. 1734 pp., Ill., 4¾ x 7 in., thin paper, flexible binding. New York, N. Y. McGraw-Hill Book Company, Inc. $6.00.

The Architect as Antiquarian

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

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

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

THE AMERICAN SPECIFICATION INSTITUTE

Member of The American Society for Testing Materials

19 South LaSalle Street, Chicago, Illinois

BOARD OF GOVERNORS

THE Board of Governors represent memberships in the following national societies: American Institute of Architects; American Society of Civil Engineers; American Society of Mechanical Engineers; American Institute of Electrical Engineers; American Society for Testing Materials; American Concrete Institute; American Iron and Steel Electrical Engineers; indicating the scope and activities of The American Specification Institute.

The American Architect and the Architectural Review *has gratuitously set apart this section for use by The American Specification Institute. The Editors and Publishers assume no responsibility for any statements made, or opinions expressed.*

The purpose, simply stated, is to afford an organization which, it is believed, will become a most important element in architectural practice and building operations, a medium through which it may, without expense to itself, reach a class of readers that are most intimately identified with the field of the activities of The American Specification Institute.

Publishers, The American Architect and The Architectural Review.

Bulletin No. 5, Serial No. 0.2, Analysis of Specification

Revised January 20, 1923

AN ANALYSIS OF A SPECIFICATION

Definition

A specification is a definitive, qualitative and or quantitative document descriptive of materials and or methods which, when conformed with, will produce the required material, construction or equipment.

Purpose

A specification enables competitive bids, serves to record restrictions, co-ordinates correlative agencies and provides for the successful accomplishment of the desired result.

Elements of a Specification

Every specification expresses a consideration of the following phases: legal, economic, descriptive, materials, design and construction, schedules, results.

These phases may be sub-divided as follows:

I. Contract and Legal
- Parties
- Drawings
- Agreement
- Terms of payments
- General Conditions
- Regulations and Codes
- Standards
- Patents

II. Economic
- Scope of Contract
- Methods of Analysis and Comparison of Bids
- Conditional Payments

III. General Descriptive
- Characteristics
- Service Conditions
- Ultimate Requirements

IV. Preliminary Preparation
- Field Measurements
- Shop Drawings
- Samples
- Models

V. Materials
- Properties, Chemical and Physical
- Sizes, Weights, Gauges
- Quantities

VI. Design and Construction
- Shop Work
- Field Work
- Finish
- Protection of Work

VII. Schedules
- Shop Production
- Field Operations
- Shipment and Delivery

VIII. Results
- Inspection and Performance
- Guarantees
- Tests
- Rejection

Note: In the development of detailed specifications it often seems advisable to omit some of the above headings because of their irrelevancy.

PRECEPTS FOR SPECIFICATION WRITERS

1. Use The American Specification Institute outline. The use of this outline will help to avoid repetition, contradiction, omission or illogical arrangement.
2. Specify or omit. Eliminate all clauses that reflect indecision or lack of knowledge. Do not put anything in the specifications that will not be enforced to the letter.
3. Use simple words. Do not use big words. The language of specifications must be within the comprehension of the ordinary foreman. Use technical words in their exact technical meaning. Do not use words that are subject to ambiguous interpretation.
4. Use nouns. Do not use pronouns. It is better to repeat the nouns, even at the sacrifice of elegance.
5. Use short sentences. Do not write long and involved sentences.
6. Use commas sparingly. Do not construct sentences in such form that the omission, addition or misplacement of a comma will alter the sense.
7. Make the language a clear and concise expression of just what is meant. Do not try for the effect of a flow of words.
8. Give directions, not suggestions. Tell the Contractor what shall or shall not be done.
9. Do not attempt to conceal obligations or to place all the risks on the Contractor. Warn the Contractor of all complications that may be encountered.
10. Specify either results desired or methods to be used.

Maidstone Club House, Easthampton, L. I., N. Y.

Roger H. Bullard, Architect

(From the Thirty-eighth Annual Exhibition. The Architectural League of New York)

After 467 YEARS

FOUR and one half centuries find the terra cotta work upon this magnificent Italian building in as perfect condition throughout as when first erected.

Modern terra cotta has been still further perfected in time-defying permanence. When correctly detailed and properly incorporated in good construction it will last for ages and require but the minimum of attention in proper building maintenance.

DETAIL of terra cotta window architraves, exterior of Ospedale Maggoire, Milan, Italy, erected 1456 A.D. and still standing. (Reproduced from "Color in Architecture," published by the National Terra Cotta Society.)

Send for our literature illustrating the right methods, the wide range of ornamental effect and artistic use of color. Address **National Terra Cotta Society,** 19 West 44th Street, New York City.

TERRA COTTA

Permanent *Beautiful* *Profitable*

PERSONALS

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

Emilio Levy, architect, wishes to announce the removal of his office from 17 East Forty-ninth Street to 366 Madison Avenue, New York City.

F. W. Seidensticker, consulting engineer, announces the opening of offices at 64 East Van Buren Street, Chicago, Ill.

Fitch H. Haskell, architect, has moved to 65 North Raymond Avenue, Pasadena, Cal., where he will practice the profession of architecture in association with Cyril Bennett, architect.

Floyd A. Naramore, A. I. A. and A. Frederick Menke, A. I. A. announce the formation of a partnership for the practice of architecture under the name of Naramore & Menke, architects, 631 Central Building, Seattle, Wash.

Frank A. Randall, formerly of Berlin, Swern & Randall, architects, announces that he will continue the independent practice of structural engineering at 19 South La Salle St., Chicago, Ill. Manufacturers' samples and catalogs are desired.

Norman O. Searle, of Searle & Searle, architects, Paternoster House, London, announces that subsequent to the death of S. Cecil Searle, Leonard Keir Hett, F. R. I. B. A. and Arthur Frank Allen, Licentiate R. I. B. A., have joined the firm as partners.

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

Harold S. Kaplan, architect, formerly with Stevens & Lee, is now practicing architecture at 298 Dundas Street W., Toronto, Ontario, in association with A. Sprachman under the firm name of Harold S. Kaplan & A. Sprachman, architects. They desire to receive building literature and catalogs.

Announcement is made that Walter Webber, William Field Staunton, Jr. and Sumner Maurice Spaulding have formed a partnership for the general practice of architecture and engineering under the firm name of Webber, Staunton & Spaulding, architects and engineers, 1017 Hibernian Building, Los Angeles, Cal.

Frank M. Andrews, architect, has re-established his offices at 221-223 West Fifty-seventh Street, New York City, having associated with him Harry M. Prince, and Major D. Gutman, the latter being in charge of the structural and mechanical engineering departments. Manufacturers' catalogs and samples are requested.

It is announced that the co-partnership existing between Robert L. Kane and Monroe R. Sandel, architects, 64 W. Randolph Street, Chicago, Ill., has been dissolved. Mr. Sandel is now associated with Arthur Foster, architect, Room 608, 56 E. Randolph St., Chicago. Mr. Kane will continue the practice of his profession at the old address.

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

In our issue of January 17, it was inadvertently stated that Byron H. Edwards, architect, opened a branch office at 34 South Seventeenth Street, Philadelphia, Pa., his main office being located at 1410 Atlantic Avenue, Atlantic City, N. J. We are now pleased to call attention to the fact that Mr. Edwards' Philadelphia address is his main office, the Atlantic City address being only a branch office.

In announcing the dissolution of the partnership existing between Duncan & Barron, architects, and the fact that C. Errol Barron will continue the practice of his profession alone, it was incorrectly stated in our issue of January 31 that Mr. Barron's address was 607 Guaranty Bank Building, Alexandria, Va., his Post Office Box being No. 287. This should have read "Alexandria, Louisiana."

Wilbur T. Mills, architect, wishes to announce that he has sold his interest in the Mills, Millspaugh & Carmichael Company, architects and engineers, Columbus, Ohio, and has organized the Prudential Building Finance Company. Mr. Mills is forming a new architectural organization whose activities will be devoted exclusively to the work of this company which will finance, design and construct buildings, particularly of the housing type, such as single and double homes, apartments and hotels. He will be pleased to receive manufacturers' data and samples at the address of this newly organized company, 193 East Broad Street, Columbus, Ohio.

COURT OF CHARLES V, THE ALCAZAR, SEVILLE

(From the photograph by Francis Howard)