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Quadrangle, University of Virginia
Designed by Thomas Jefferson

An ARCHITECTURAL RAMBLE in VIRGINIA

BY CARL A. ZIEGLER, *Architect*

"SAUNTERING," as Thoreau tells us, "is the art of walking and seeing," but modern life with its multiplicity of more strenuous activities has practically discarded so simple a pastime.

As the modern architectural designer is bewildered by the great variety of architectural forms, which we have inherited from the past, so that great genius is required to become even a first rate copyist, so also the average man of today is confused in selecting from our effervescing civilization that mode of thought which will be most conducive to his spiritual and bodily welfare.

To the casual soul it is no doubt intriguing simply to contemplate the material progress of the age, but the observing man needs must pause when he senses the trend of modern thought, ere he charts his course on the sea of modern life. It is indeed something as Kipling says:

"If you can talk with crowds and keep your virtue,
Or walk with Kings—nor lose the common touch."

In the early days of our history when the foundations of a new democracy were being laid and when illiteracy was common, it was the custom to designate places of business by the use of sign boards. The feeblest mind could comprehend that at the sign of the "Golden Ball" the goldsmith could be found or that flour was to be had at the sign of the "Wheat Sheaf."

These signs, very simple at first, grew to be of great artistic value and many were painted by well known artists of the day. Hogarth, Moreland and Paul Potter all have signs attributed to them and in Philadelphia there are a number done by Benjamin West. Ibbettson is said to have paid his reckoning at an inn by painting a sign for the landlord and many interesting stories

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are told of celebrated signs painted to win a wager or as the climax of a jovial carouse at one of the numerous wayside inns.

With the progress of education and the numbering of houses the necessity for sign boards diminished, but many are still retained as trademarks, especially by old established houses.

Simple and direct as the early sign board was, it became confused and misleading in time and in the end became quite absurd.

It was the custom for the young tradesman at his first "setting up" to add to his sign that of his master. This led to such signs as the "Eagle and Child," the "Shovel and Boot" etc., etc., until Addison writing in *The Spectator* of 1710 protested, "I would forbid that creatures of jarring and incongruous natures should be joined together on the same sign, such as the 'Bell and the Neat's Tongue,' 'The Dog and the Gridiron,' 'The Fox and Geese' may be supposed to have met, but what have the 'Fox and Seven Stars' to do together? And when did the 'Lamb and Dolphin' ever meet except upon a sign post?"

Many of the meaningless names seen upon old sign boards are the work of illiterate sign painters, who were employed to repaint old weather-beaten signs on which the lettering had become practically obliterated and under their careless hands "The Bacchanalians" became "The Bag o' Nails" and "St. Catherine's Wheel" became "The Cat and Wheel." By a stroke of genius a sign bearing the inscription "God encompasseth us" flashed upon an

unsuspecting world as the "Goat and Compass."

Thus from a very simple and straightforward beginning came great confusion and misunderstanding and no less misleading are the signs of today.

When the finger posts are false it behooves the traveller to take heed and hie him back to the sign posts that are truthful despite the march of progress.

If one will slip quietly away from the thousand and one cares that are the daily portion of the business man of today and will saunter along the byways and hedges, even for a day or two, he will find that the architectural sign boards have become no less confused and absurd, for in the quiet eddies, far removed from the great whirlpools of our cities, he will find signs that have not yet suffered under the heavy hand of the illiterate sign painter.

To anyone who finds pleasure in the

study of the early architecture of this country there is perhaps no more pleasant experience than the privilege of observing for the first time a new expression of the work of the Colonial period.

Study as one may the volumes that have been published upon the subject, it is only by close personal observation, not of the important structures alone, but of the surrounding country with its minor buildings, that one is able to feel the true atmosphere of the work. As these small buildings are mainly of wood, they will soon have vanished from the architectural record of early American work.

The much abused term "Colonial architecture"



Detail of main building of the University of Virginia



"Estouteville," near Esmont, Va.
The lane leading to the house



An early Spring view on a Virginia plantation



Entrance Front, Monticello



Garden Front, Monticello

Over the central doorway in the entrance front is a clock Thomas Jefferson made with his own hands. The weights are suspended from pulleys in the corner of the hall. Note the sodded ramp up to the portico in the illustration of the garden front on the right

is generally considered sufficient to cover all the buildings erected in this country up to the decadence, which began at about 1820, but to the diligent observer the opportunity to study at first hand the many phases of its development in the different states brings the realization that the subject has never really been adequately covered by any publication.

Few have had the opportunity of carefully studying the early buildings from Maine to Georgia and most architects have been obliged to confine their personal observations to one particular locality on which they are prone to base their judgment of all things Colonial, whereas, so versatile were the early designers that it is possible to find a precedent for almost anything that one

might want to do, even though the solution is sometimes very droll.

It was the privilege of the writer to wander through Virginia recently for the first time and although he has had the pleasure of studying and writing on the subject of Colonial architecture in New England, Pennsylvania, Delaware, Maryland, and the far South, the reaction which he experienced on first beholding the quadrangle at the University of Virginia made him feel that hitherto he had known nothing of the larger possibilities of the style.

It is impossible by description or by photograph to convey an adequate expression of the grandeur of this group of buildings and it is only by standing within the enclosure that one may



Monticello
Designed by Thomas Jefferson

grasp the fact that this is one of America's finest architectural monuments, noble in massing and strong and virile in detail.

The University which is situated at Charlottesville, Virginia was founded by Thomas Jefferson and it is common knowledge that the buildings were also designed by him. But the mental calibre of that great man will never be fully com-



An out-building at Monticello
The walk in the foreground is the top of the underground passage to the slave quarters

prehended until one has wandered through the University and Monticello, and experiences, as the writer did, a feeling of reverence at the material evidence of the over-plus of intellect possessed by Jefferson, who as the "Pen of the Revolution" gave us the Declaration of Independence.

It would seem that The American Institute of Architects would honor itself by conferring upon Thomas Jefferson honorary Fellowship in its society.

As in the early architecture of New England one feels the Puritanic instinct and in New York the quaintness of its Dutch pioneers, so in Virginia one senses immediately the Patrician. The signs still remain true and the spirit of the Cavalier is yet evident in its buildings.

Here is none of the repression of the Puritan, no quaint low gambrel roofs of the Dutch, of brick like Penn's "Red City," yes, but not so modest in conception are the classical houses of Virginia.

Long lanes with white porticos in the distance, as shown in the views of Estouteville, are characteristic of the Virginia estates. These photographs taken in the early Spring do not adequately show

the foliage, but give perhaps clearer views of the architecture. Anyway, it is a much mooted question whether trees are more beautiful with or without leaves. Clustered about the estate are the numerous out-buildings, one for every conceivable purpose, for the old plantations were self sustaining and besides the usual barns, buildings were required for the storage of ice, preparing and spinning of flax, meat curing, candle making, etc., and everywhere the old slave quarters.

Many interesting stories might be told of Monticello with its stairways eighteen inches wide so made, it is said, because Jefferson forgot about the stairways until the structure was nearly



"Estouteville," near Esmont, Va.

completed; the underground passage by which he escaped from the British dragoons sent to take him, curious port-holes near the ceiling of his bed chamber, from which his body servant is said to have guarded his master's slumber, or the buildings illustrated might be described by the usual bromidical references to the bond of brickwork or the proportions of the orders used in their construction but of vastly greater importance is the atmosphere they create and the impression they make upon the lay mind. It is no exaggeration to say that they indicate a mode of living that expressed the high water mark of gentility in this country and although the signs of the times today appear to point "thumbs down" to aristocracy, one must admire the aristocracy of brains as expressed in the architecture of Virginia.

LETTERS FROM *an* ARCHITECT to HIS SON ABOUT to BEGIN PRACTICE in a SMALL CITY—II

BY FRANK E. WALLIS, F. A. I. A.

My dear Dick:—

THE practice or the business of architecture, as I much prefer to label it, is the most important and the most engrossing business in the world today as it always has been. Its influence begins in the cradle, its continuity enwraps one through life, for the streets and avenues of the world are lined with architectonics—the grave covers one with architecture. Tourists swarm Europe and the cities of Europe to look at architecture, knowing neither language nor history, nor reasons for things and this world sleeps on the mattress of architectonic thought.

Now, son, what are you going to do with it? You must consider taste, that consideration of fitness. You must consider self respect, that consideration of your personal placement in the community. You must consider service, that communistic thing which you owe to the other people for these reasons and some others. I am certainly sure that you have chosen wisely in selecting your small city or large town, as you please to label it, for your business baptism.

Taste is always a matter of education and of environment. Taste will of nature vary according to its placement, but your taste and good art will ever recognize a place as its separate and distinct own, being universal and human. There is here no necessity for us to go into the higher analysis, both of us being human and both of us creators, architects and builders; we would no doubt get muddled with the gabble of the highbrow, the exclusive, the separatist, but when facts will marry fantasy the babies must be facts with dream desires.

I am likely to pester you to death with my old world advice, but inasmuch as advice is never taken, it's always given, I will risk this and flood you, hoping that you will smile always and never grouch, perchance pick out now and then some thought useful to you.

You have several things to consider aside from design and building. You have overhead, you have proper and considerate advertising matters, you have money facts, rates of payment for services, and your standing as a business man in your city. Then and above all you must get business. Somebody has quoted H. H. Richardson as saying that the three great necessities of the architect are first to get a job, second to get a job, third to get a job. Of course, without doubt he is absolutely correct, but the ability to attract and to land a client, is a different essence from that which holds

his friendship and turns him into an unpaid advertising agent. You may attract him because he thinks that you are an artist. I beg of you always to decline this honor, I do this for the reason that the word artist coming from the brain and thought of the client usually presupposes an erratic temperament, unpaid bills, velvet coats with dandruff and dirty fingernails and, of course, a man who is not at all practical, neither businesslike in his methods.

While it remains a fact that the architect must know and does know that his brick wall will carry its superimposed load, that his wooden beams or his steel beam can and will not only carry themselves with a minimum amount of deflection but will as well support without complaint the live load imposed upon it, the architect deals in facts, designs with facts, risks his reputation and in some cases not only his own life but the life of other people on his acute knowledge and sensible control of facts. His fantasy will show in his use of these undeniable facts. His fantasy will show itself in his knowledge of color, and in its proper placement, in his knowledge of texture and of proportion, the value of window opening to pier or wall and many other things of that sort, which separates him from the men who are not called upon to take iron, steel, mud, timber and stone and so transform them that they become pleasing to the eye and satisfying to the senses, so to transform them that they become fit for the housing of God or for the resting place of the dead, for the birth of a baby or the protection of the best beloved. His fantasy does all of these things, but fantasy alone and unsupported, fantasy without fact and a supreme knowledge of fact without a king control of fact, will wobble on its hind legs and leave dandruff not only on your velveteen coat but in your soup.

You will be saturated with gushing advice not only from that type who studied ART but from the supposedly well balanced business man, the man who goes to Paris on business and honeycombs his self respect with a fake night life, sandwiched in with visits to the Cathedral, visits to the Louvre, to Sacre Coeur and Sainte Chappelle, of course straddled between the Rue de la Paix and the Moulin Rouge or the Quatier Latin. He must and does visit the devastated district and the Chateau country. Then, son, God help you when he comes to you for a house or a home, for an Elks Club, a Rotary building, or a Church!

All the knowledge of history sits under his hat; you are to be the—Artist—to put it across. He will sit on the plans and hatch out an addled chicken for you, the architect, and the irony of it all is that if you fail to assert yourself as a practical building man and a dealer in facts, you and your name and placement will yell and smell yellow. Yellow is a nasty color to rub out. I prefer red ink.

You must remember old Joe Sawyer's aphorism, "I would rather sit on the steps of the Lord than to dwell in the house of the mighty."

Along with the finished and assured knowledge of the facts which are concealed in the product of iron furnaces, of brick kilns, stone quarries, and standing timber, there are other facts, paramount facts, the dominating one being money. Cash, payments, commissions for services rendered,—it's vulgar for an artist even to think of the filthy stuff. He must never allow "commercialism," a poor devil of a word and a much abused one; he must never allow his fantasy to be as much as breathed upon by this sordid thing. I remember here one of my experiences with a church committee. The minister in denying payment on a legitimate certificate from the architect to the builder, remarked with his pulpit and stentorian voice, "But this is the Lord's money, Mr. Lawyer." "Yes," said the lawyer quietly, "but the Lord must pay his bills as other folks do."

I am now going to shock you seriously and if you read this to your friends, they also will be shocked. A Sherlock Holmes am I, son; after at least two generations as generations go, after close to fifty years fighting both big and little wolves and holding them off from that fabled door, I have made a discovery, without the aid of double breasted hat, Dr. Watson or microscope. I will whisper it to you—architects have never been, are not and never will be properly and sufficiently paid in cash or money for the services which they offer in exchange.

By this unholy statement I do not mean the type of men who are promoters and the factory factors, of which the big cities are full. I do, however, mean that the average, well trained, and sincere man who engages himself, with his two magic wands,—fact and fantasy,—that the man who engages himself in this business or profession of architecture, either will become so engrossed in his job, in its solution and execution, working always as he will and must work, for the honor of the job, that he pays overhead and underhead, unthinkingly and unconsciously, his net return being out of all proportion to his labor and decidedly lopsided.

In the old days the Royal Institute of British Architects established a rate of 5% for complete service. Our American Institute of Architects more than fifty years ago accepted and adopted this basis for computing payments. Approximately, and by the use of that word I am minded to think of the surface area of the seven seas,—

approximately—this thereabout method goes, plays, basks in the sun of summer and shivers under the icy scrutiny of the men clients, who have visited Paris in their own Main Street method.

They hold the club, the job, the check book, and the poor devil of an architect, does, do'es and does, he spills his brain, his soul and his fantasy, he thumb tacks them to his nightly drafting table along with his supreme and superior king control and knowledge of facts, falls for it, turns over his result to the pseudo king—then he goes home to get his wife to patch a new patch in the seat of his trousers. If you develop into such a damnfool architect as that, I shall, with a band of trumpets, disown you and cut you off with a cancelled postage stamp.

Some twenty years ago, when you were shedding short pants, I discovered that though I might work for forty-eight hours a day, Sundays and holidays, I discovered that the difference in cost between short pants and proper leg coverings was so great and so serious that I, your dad, got and was seriously worried. So I humped myself and doubled the then rate of 5% to 10%, saying to myself between cigarettes that I, of course, would lose business, but at least that I should have more time to study my work and perchance cut the union day from forty-eight hours to perhaps forty-two hours, which would give me time to teach you how to shoot straight.

Much to my surprise, my business grew not only in volume but in character, and though some of these idiotic relatives of Job predicted and prognosticated dire results to me, like the troubles of your old man friend,—they never happened. You had much better sit on your south elevation and read the Bible than to give the bloom of a peach or the odor of a rose for a plugged dollar,—think seriously on that, boy.

You remember, of course, the old chap in Boston who was so enamoured of the habit of pitching pennies that he had pennies cast with heads on both sides. Did he ever call "Tails?" I don't think so; he should have had four heads on sides and edges and then he should have shown his entire bag of tricks to his competitor. You remember, of course, that this old Boston man died. He died from being hit with a brick. And that reminds me that in addition to these other virtues, those of old Vitruvius and of this new Vitruvius, "me," there must be added another facet to the jewel. Surely you have room, move "moral philosophy" off and substitute "honesty" in its place.

There is no question here about the necessity of an architect still retaining his youthful honesty. He can't help it. It is absolutely impossible that he be an architect otherwise; as my old Norman fisherman Duclos frequently and often said, "The good God made you, he made you

an architect and therefore you have all the virtues." That sounds well, but it has never gone to my head. An architect must have his fourteen points, or rather his few commandments or set of principles in order to practice his business successfully, and I rather think that our old friend Vitruvius has overloaded us. You don't remember your natal town in Jersey, but at about the time when you were born that town had only one policeman and he had only one eye. I can't see that the town has improved since that time with its Mayor, Board of Selectmen and its large police force, with Chief Gallagher looking like an ancient Russian Admiral in his gold lace, nor do I believe that you will grow and succeed as an architect if you overload yourself with too many codes and rules pertaining to business ethics or good taste esthetics.

You will need, of course, always in addition to the special knowledge which belongs to you and to your work, to know the history of people, a great deal of which you will absorb from your reading, the reading of novels and the so-called classics. The reading of historical books and chronicles, such as Froissart, will give you some

grasp on the movement of nations and of races. You should learn to pipe dream from this effort, so that you may visualize somewhat, in the case of any special work which you may be engaged to carry out. You will be better able to conclude a successful job provided your general and specific knowledge covers well the requirements of the job.

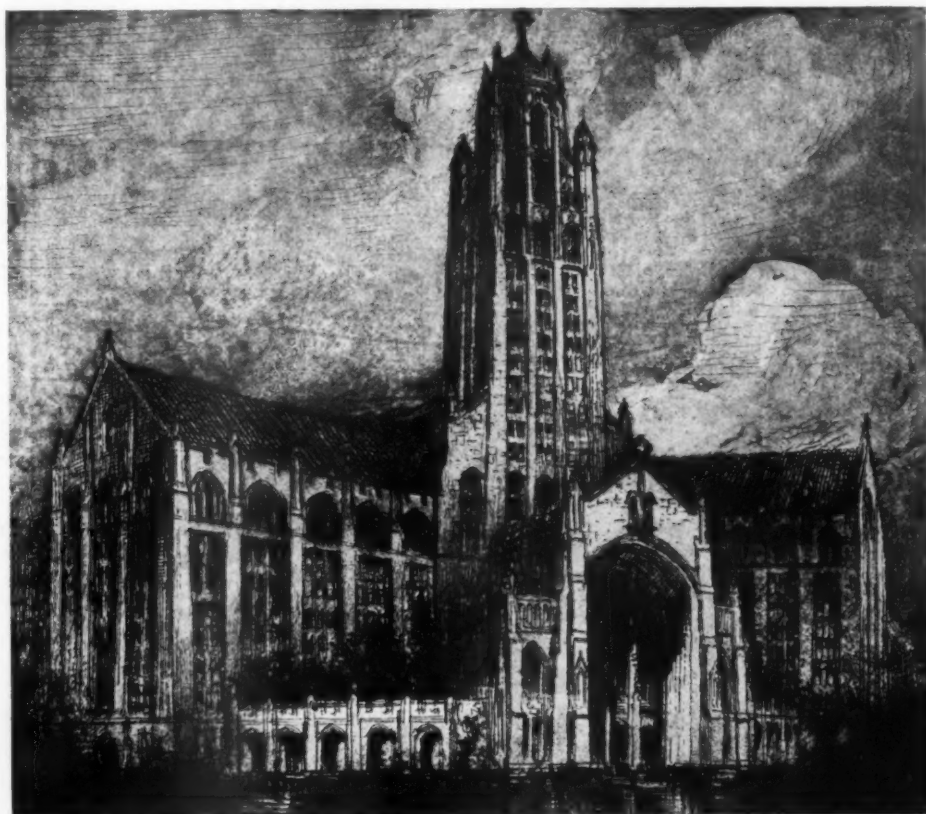
I am going to slam several types at you with some personal experience relating thereto; laugh as you will but always remember:

"Those endowed with a happy disposition are warned by the anecdotes and precedents of former generations, so as not to become themselves a warning to those who follow them.

No bird will settle on the grain,
That sees another bird already snared;
Take warning then from others' pain
Or else to point a moral be prepared."

SADI THE PERSIAN

NOTE: This is the second of a series of letters by Mr. Wallis. The third will appear in a later issue.



Suggested Cathedral Building for Protestant Episcopal Diocese of Chicago

Alfred Granger, Architect

(From the 1923 Chicago Architectural Exhibition)

FORTY YEARS AGO

Excerpts from THE AMERICAN ARCHITECT, June 2-9-16, 1883

THE Building Inspector of New York City is charged by the *Commercial Advertiser* with being a victim of the "fire-escape mania" inasmuch as he had ordered escape-ladders to be placed on fireproof buildings. The Inspector says, it is faulty planning that makes fire-escapes necessary. If his strict enforcement of the law should lead to a demand for some improvement in the dull and brainless design common to a certain class of structures in our cities, the architects will have no reason to regret it.

* * *

A Cincinnati court has decided that one of the owners of a party wall can rebuild the wall without the consent of the adjoining owner who has no right to prevent his neighbor from using his property as he might think best.

* * *

An electrical railway is nearly ready for operation in New Jersey. The Newark and Bloomfield railway will use motors as a substitute for horses. A current of very low tension, using the rails as conductors, will be employed. The cost of operating the line by electricity is estimated at about one-third that of using horse power, and although for some time annoyance may be experienced from mischievous boys, who, by short-circuiting the current with a crowbar laid across the tracks, can stop all the cars, the officers of the company believe that this amusement will soon lose its novelty, and interference will cease.

* * *

A committee of the Franklin Institute consisting of C. John Hexamer, C. E., Thomas Shaw, M. E., and Henry R. Heyl, presents a report on the prevention of fires in theatres. The report contains thirty-eight recommendations.

The Royal Institute of British Architects offers suggestions for the conduct of architectural competitions.

* * *

An informal notice has been given that the seventeenth annual convention of The American Institute of Architects will be held in Providence and Newport, R. I., on the 29, 30 and 31 of August next.

* * *

The Commissioners of the Territory of Dakota will, on July 5, 1883, receive plans and estimates for a capitol building, which building shall be designed as the main or central part of a larger edifice, and the architect must enclose his bill for the plans independent of superintendence, also to specify the price of superintendence if employed for that service. The Commissioners reserve the right to reject any and all bids and will only pay for such plans and specifications as are accepted. Every one knows that no proposition, however mean or insulting, is regarded by the average public officer as too degrading to be offered to persons who are willing to work for nothing, but it is hardly conceivable that any architect with honest intentions should think of advertising his lack of employment and low opinion of his own ability by noticing such an announcement.

* * *

Illustrations: Skiles & Lindley Block, Minneapolis, Minn. Wilson & Kimball, architects, Minneapolis; House for E. K. Rossiter, Esq., Washington, Conn. Rossiter & Wright, architects, New York; House for N. F. Baker, Esq., Walnut Hills, Cincinnati. Charles Crapsey, architect, Cincinnati; Design for a Receiving Tomb. C. B. Atwood, architect, New York.

EDITORIAL COMMENT

WE ARE INFORMED that Glenn Brown is a candidate, for appointment by the President of the United States, as Architect of the United States Capitol, to fill the vacancy caused by the death of Elliott Woods.

Mr. Brown's "History of the Capitol," which was first published as a serial in *THE AMERICAN ARCHITECT*, then enlarged and published as a Public Document at the request of the Senate, has become the standard work on this building. His knowledge of the traditions and architecture of the building makes him a fit man to undertake its upkeep.

A Fellow of The American Institute of Architects, because of his disinterested service to the profession, and his exhaustive monograph on the Capitol, he was made Honorary member of the Royal Institute of British Architects, Société Centrale des Architectes Français and the National Societies of Italy and Belgium. This gives him the international standing which should be demanded for the architect of our most historic building.

Mr. Brown's intimate association for years with Charles F. McKim, Frank D. Millet, Cass Gilbert, D. H. Burnham, Augustus Saint-Gaudens and Paul W. Bartlett, has impregnated his mind with the highest standards of our art, and well fitted him to advise committees who have the purchase and acquisition of works of art for the Government. His intimacy with the members of the Park Commission would enable him to give valuable advice on the development of Washington, with full knowledge of what these big men intended and desired.

His long service as Secretary of The American Institute of Architects has proved his capacity for dealing diplomatically with men and affairs.

Mr. Brown, for twelve years was the watch dog who guarded the site selected by the Park Commission for the Lincoln Memorial, and raised a disturbance whenever a move was made to locate it on some other site or change its character to some other form. These movements with strong influence backing them were constant and persistent. The most persistent opponents of the Park Commission plans, if they honor Lincoln's name, we feel well assured are now pleased that they did not succeed in their efforts when they see the Memorial in its simplicity and dignity as a part of a composition, honoring him with George Washington and U. S. Grant.

Mr. Brown is eligible to this position not only because of his knowledge of the building and

standing in his profession, but because of his disinterested zeal in working for high ideals and standards in architecture and the fine arts. He should receive the endorsement and assistance of all who believe in these branches of culture.

While the President makes the appointment, the legislative branch of the Government will have a strong influence in the appointment, as it is their building as representatives of the people, and for this reason those who believe Mr. Brown should be appointed to this position, should impress upon senators and representatives of their state his fitness and value to the public if he is appointed.

* * *

W. W. SCOTT-MONCRIEFF, F. R. I. B. A., in an article in a recent issue of *The Architects' Journal* of London, makes a strong plea for an exhibition of arts complementary to architecture.

It is strange that a custom that has been so long and successfully pursued in this country should not have been adopted in England. It is at least ten years ago since The Architectural League of New York conceived the idea of including in its annual exhibition a very large and dignified presentation of the arts and crafts allied to architecture. This fine example has been followed by all the leading architectural societies in their annual exhibitions, and the result has been to encourage in the strongest manner possible, the best development of craftsmanship in this country.

In making his plea for the proposed exhibition, Mr. Scott-Moncrieff states:

"Hitherto the arts have been represented by many and various scattered bodies and institutions, and none of these has seriously made an attempt to bring them all together as a living force in the community. This organization has stood for the easel picture; that for water colors; another for this art or that craft; but not one has made a genuine and unselfish attempt to unite them in endeavor in the cause of the One Art."

Continuing, he states:

"We have, in the past, been too prone to speak of architecture as the Mother of the Arts, not really wishing to convey any real meaning, but rather by way of voicing a catch phrase or an ideal too remotely idealistic ever to be accomplished as a fact."

It was the presence of exactly similar conditions in this country that led The Architectural League to start out as a pioneer in the form of exhibitions

that each year become increasingly more popular, so that our annual architectural exhibitions vie in interest with the major art exhibitions in this country.

We believe that if we are to exploit the development of better craftsmanship in this country, it is only by dignifying it in just exactly this way and letting the craftsman see and know that his work, when executed in its best form, can worthily take its place in any exhibition of architecture and the arts allied to it, that we shall make progress.

* * *

WE HAVE RECEIVED from the Publicity Department of the General Electric Company at Nela Park, Cleveland, a pamphlet which sets forth the architectural development of this interesting group, illustrates its landscape development and extols the conditions with which the worker at this industrial center has been surrounded. In going carefully through this pamphlet we are unable to discover anywhere any mention of the name of the architect through whose skill and artistic ability this fine result has been achieved. To have kept the record straight and to have given proper credit where due, it might have stated that Frank E. Wallis, F. A. I. A., was the architect.

* * *

AN INTERESTING STATEMENT published by the Department of Agriculture, dealing with the agricultural population of rural districts of the United States, shows that that population decreased approximately 460,000 persons in 1922. This estimate is based on a survey of 10,000 representative farms and groups of farms. Not merely agricultural workers, but men, women and children are included in the estimate.

We learn from this report that the movement away from the farm was relatively strongest in the Pacific states and the percentage of loss was greater than the average for the United States in the West, South central and New England states as well as in the Pacific group.

This movement from farms to towns and cities

is estimated at about 2,000,000 persons, partially offsetting which was a movement of approximately 880,000 persons from cities and towns to farms.

This very pronounced exodus from the farms is a menace to our agricultural development. In spite of the efforts in practically all the agricultural states to develop a better type of farm building and to make the domestic surroundings more attractive in every way, it seems to be impossible to keep the younger generation on the farm. The allurements of town and city life is apparently greater than the more healthful and independent occupation of farming.

* * *

THE ANNUAL REPORT for the year 1922, of the Fifth Avenue Association is a decidedly interesting pamphlet and one that may be studied with considerable profit by municipalities endeavoring properly to restrict and artistically to develop their leading thoroughfares.

Fifth Avenue, often referred to as "the finest shopping street in the world," has reached its present satisfactory state through the efficient efforts of the Fifth Avenue Association. Everything that might be done to encourage public conditions has been efficiently carried forward. The result is a very pronounced enhancement of real estate values, satisfactory rentals and the most perfectly safeguarded streets of any city.

The pamphlet reviews the activities of the Association, illustrates the proposed improvements, and outlines laws and legislations. The illustrations are interesting. For example, there is a view of a block showing sign restrictions, and of another with signs whose placing and character are unrestricted. The great value of restricting signs is at once apparent.

The zoning regulations as affecting Fifth Avenue are set forth and thoroughly explained.

The membership list is practically a record of every reputable dealer along Fifth Avenue and indicates what excellent results can be achieved when a group of merchants set about in a business-like manner to accomplish things.



The NEW COLONIAL HOTEL, NASSAU, BAHAMAS

KENNETH M. MURCHISON, *Architect*

NASSAU, Bahamas, has always been a scene of romance and adventure. Its history is interesting. Many nations took turns owning it, including even the United States, as during the war of the Revolution it raised the Stars and Stripes over Nassau for twenty-four hours. It was the center of piratical operations, the home of Captain Teach, known as "Black-beard," the roughest and most cruel of all the buccaneers. Even today runners, of perhaps a slightly different character, infest the shores and ship their contraband away to arid lands. The Spaniards took the island in 1683 and the pirates ousted them in 1701. Then the French and the Dons wiped out the entire buccaneering brotherhood a few years later. The pirates went to New York and Massachusetts, buried the hatchet and started good old American families.

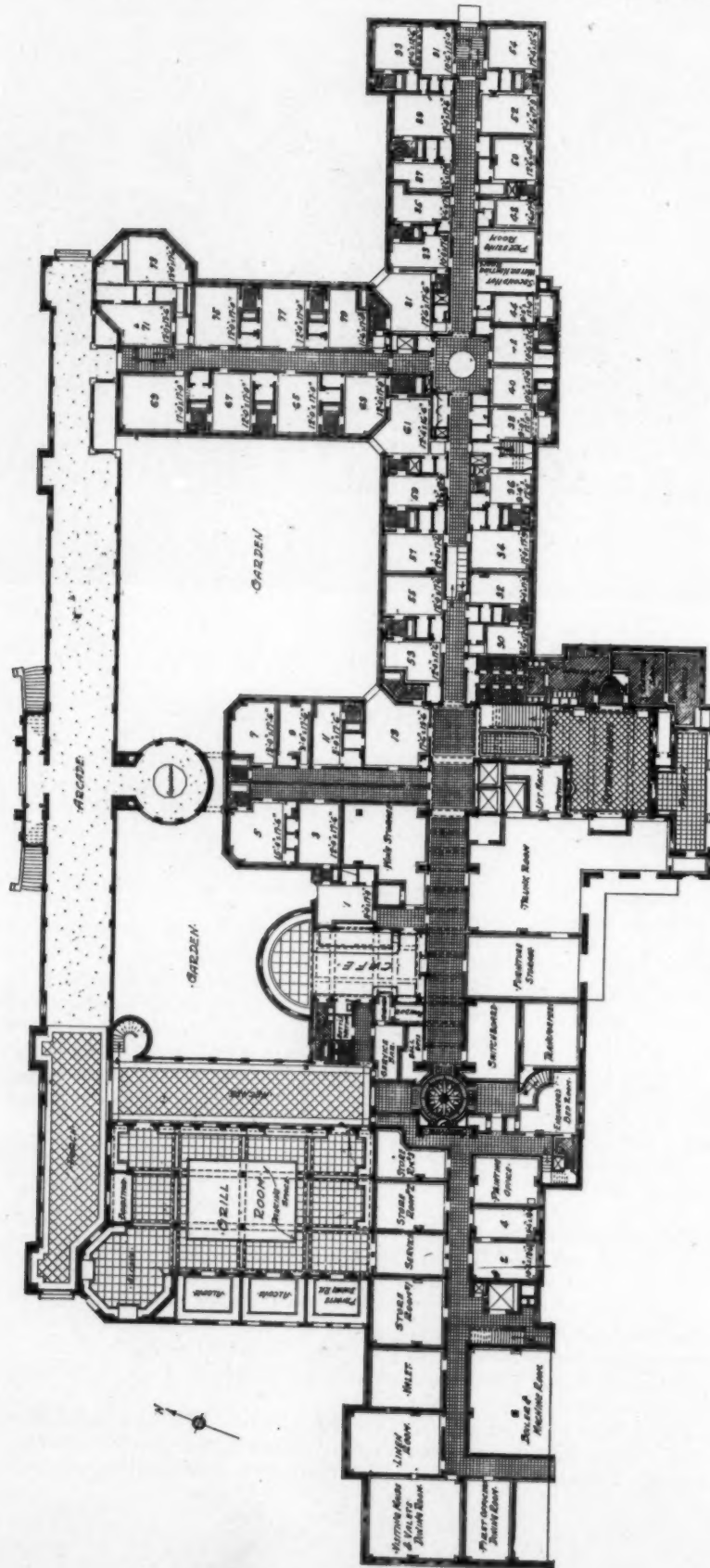
After the destruction by fire of the old Colonial Hotel in March, 1922, arrangements were made to build a new hotel but it was not until the first of July that the matter was consummated and contracts let for the construction of the New Colonial Hotel. On August first the first shipload of steel arrived. The first guests were admitted to the hotel on February ninth, 1923. This is perhaps a record-breaking piece of construction for the tropics. It was attended by difficulties of all sorts. Skilled labor was brought into Nassau from as far North as Montreal, Canada, and from as

far South as Jamaica and Cuba. Practically all the materials were transported by sea from New York. Strikes were numerous; a race riot threatened to break up all the proceedings; the concrete mixers were never still day or night; the pneumatic riveters woke the peaceful Bahamas up to a state of frenzy.

The finishing of the various parts of the hotel was on so close a margin that there actually were times when painters were working on the walls, cement men were putting in bases, carpenters were hanging doors and the chambermaids were making up the beds! Plaster, paint and cement seemed to dry thoroughly in three or four hours in that climate and this fact undoubtedly aided in the quick completion of the building.

The structure is fireproof, the exterior walls, floors and partitions being of terra cotta blocks. The entire surface is covered with waterproof stucco into which was mixed oxide of iron, resulting in a beautiful pink tone over the entire structure. The ornamental terra cotta is of varying bright-hued shades, the window trim is emerald green and the iron work indigo blue. With the varying lights and shadows of the Southern sun the building presents an ever-changing mass of color.

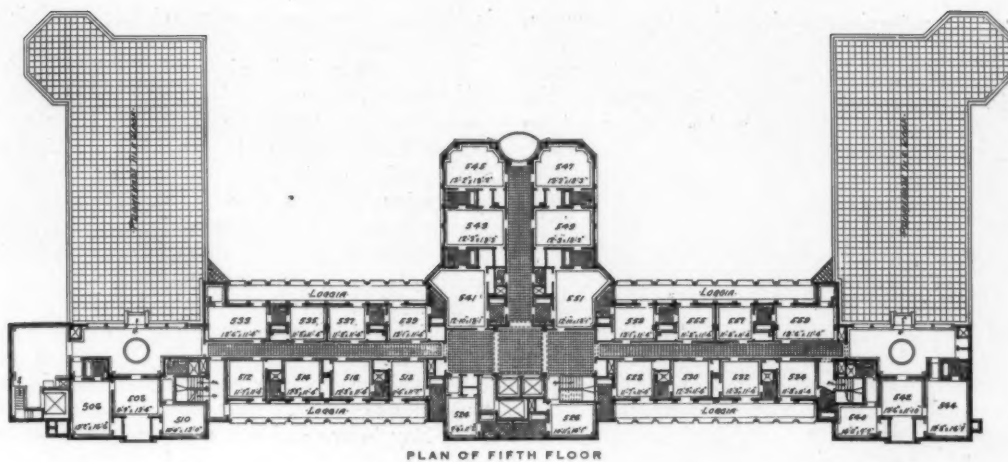
The exterior is Colonial Spanish, a style which seems best adapted to the tropics. The many flat roofs form roof gardens on practically every



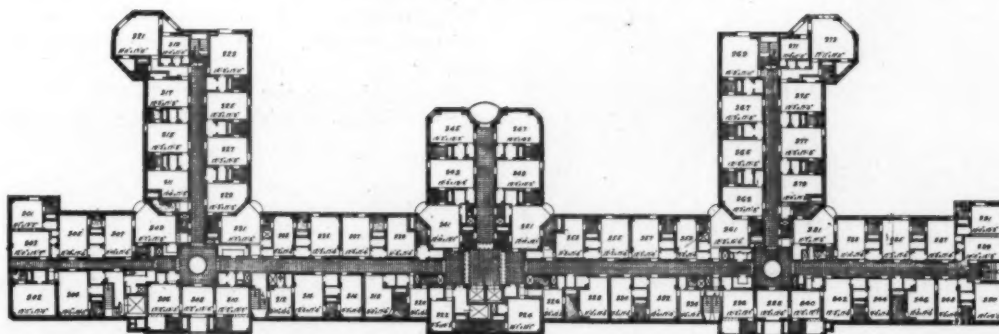
PLAN OF GROUND FLOOR

THE NEW COLONIAL HOTEL, NASSAU, BAHAMAS

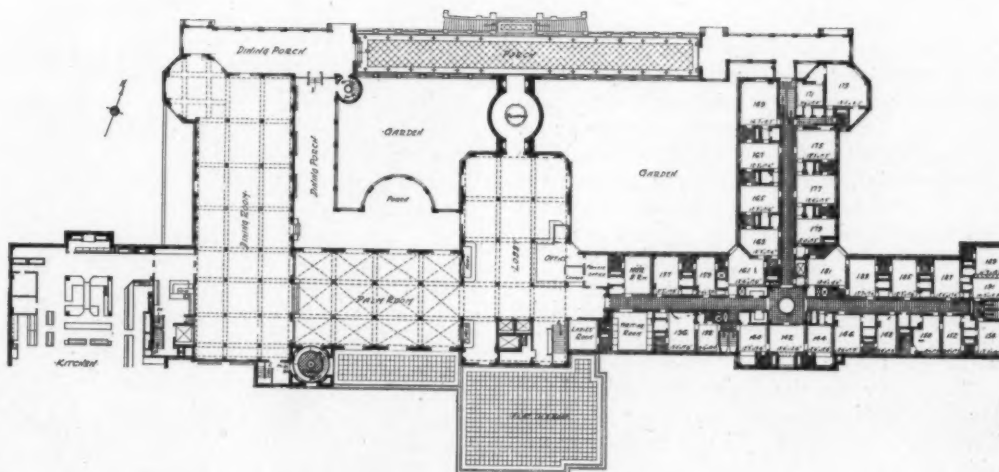
KENNETH M. MURCHISON, ARCHITECT



PLAN OF FIFTH FLOOR



PLAN OF THIRD FLOOR



PLAN OF FIRST FLOOR

THE NEW COLONIAL HOTEL, NASSAU, BAHAMAS
KENNETH M. MURCHISON, ARCHITECT

floor, where tea is served during the afternoon.

The plan is of such shape that seventy per cent of the rooms face the sea and the prevailing trade winds. The kitchens are located in the rear. The front porch of the hotel forms the backstop of the

is lighted from inside, thus giving a miniature stage effect.

Edward Trumbull painted the large murals in this room, the most striking of which is "Columbus Leaving the Santa Maria to First Set Foot on the New-found Land." A very amusing map of the Bahamas, in the ancient style, was painted by Stephen Haweis, who also did the decorations for the aquarium. The aquarium is in the form of an undersea cave with the aquarium itself, eight feet in diameter, in the center of the room.

The walls of the lobby were done in a form of colored liquid cement plaster giving a mottled surface effect.

The palm room has a vaulted ceiling with a very rough plaster effect. This room is lighted entirely by X-Ray lamps and has a covered porch on each side.

The dining room, raised three steps above the palm room, is done in blue and white and is a large airy room with windows on all four sides. The dining porches on three sides overlook the gardens and tennis courts. The furniture is blue and yellow.

Downstairs on the ground floor is the café, a stone-walled room with a slate floor. Over the bar



Detail of Cupola

tennis courts, where the championship of the Bahamas is held every year. The backstops on the ocean side are entirely covered with vines and flowers, making a beautiful setting for the game.

The gardens of the New Colonial Hotel are famous for their tropical beauty and between the gardens and the tennis courts are located the tea gardens and dancing pavilion. These gardens have been for the past twenty years in charge of Mr. Maurice Clavel, a Frenchman who went to Nassau twenty years ago and who has never since that time left his plants and flowers for a day.

On the main floor of the hotel are located the lobby, the palm room, the dining room and dining porches. In the lobby some very interesting decorations have been placed. The sculptured group, "Blackbeard Burying his Spanish Gold," is by Dwight Franklin, a New York sculptor whose pirate groups are attracting a great deal of attention. The figures are about fourteen inches high and are in full relief. The back drop represents the ocean and the pirate ship and the whole group



Central Detail. Tennis Courts in foreground



ABOVE: MURAL PAINTING DEPICT-
ING COLUMBUS LEAVING
THE SANTA MARIA
BY EDWARD TRUMBULL

IN CENTER: MURAL IN LOBBY—
THE BURNING OF A SPANISH
GALLEON
BY EDWARD TRUMBULL



LIBRARY

THE DETROIT EDISON CO.

BELOW: A SCULPTURED GROUP
JUN 26 1922
SHOWING BLACKBEARD BURYING

HIS SPANISH TREASURE

BY DWIGHT FRANKLIN

DECORATIONS IN THE NEW
COLONIAL HOTEL, NASSAU
KENNETH M. MURCHISON,
ARCHITECT



is another Trumbull decoration depicting "Davy Jones' Locker," with Davy himself sleeping in the foreground surrounded by mermaids and inquisitive fish.

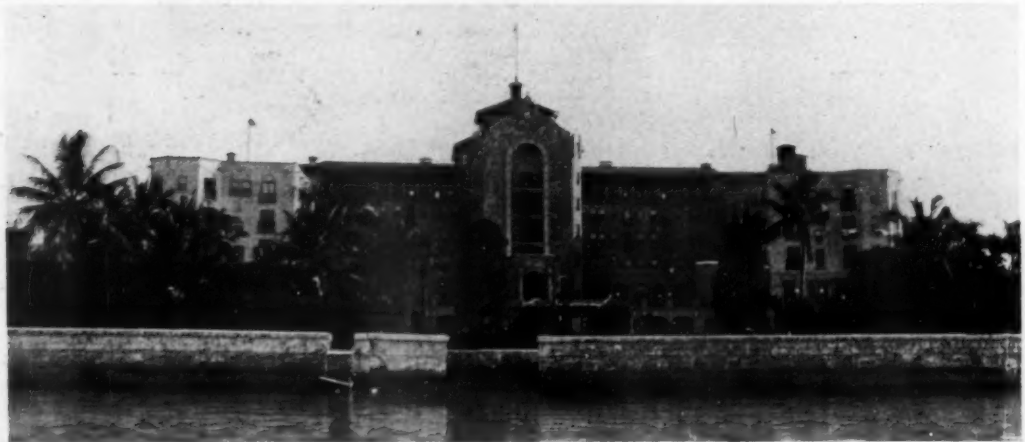
The grill room on the same floor is treated in very much the same manner as is the café and has a slate floor with dancing space and rough stone walls. There are four alcoves opening off this grill room which are also used as private dining rooms. These are known as the flamingo room, the turtle room, the shark room and the tap room. The decorations of the grill are of stencil work with many amusing designs. The sculptural decorations depict natural history exhibits treated in a humorous vein. These were done by John Roudebush, of New York. On the outside of the grill room are gardens in which guests may dine. Vivid striped umbrellas shelter them from the tropical sun, or the moon, as the case might be.

On the main axis of the building toward the ocean is a huge niche six stories high with painted tile work and balconies on every floor. The niche is in blue and light green, contrasting with the pink cement walls of the building and is topped with a great plaque in the center of which is

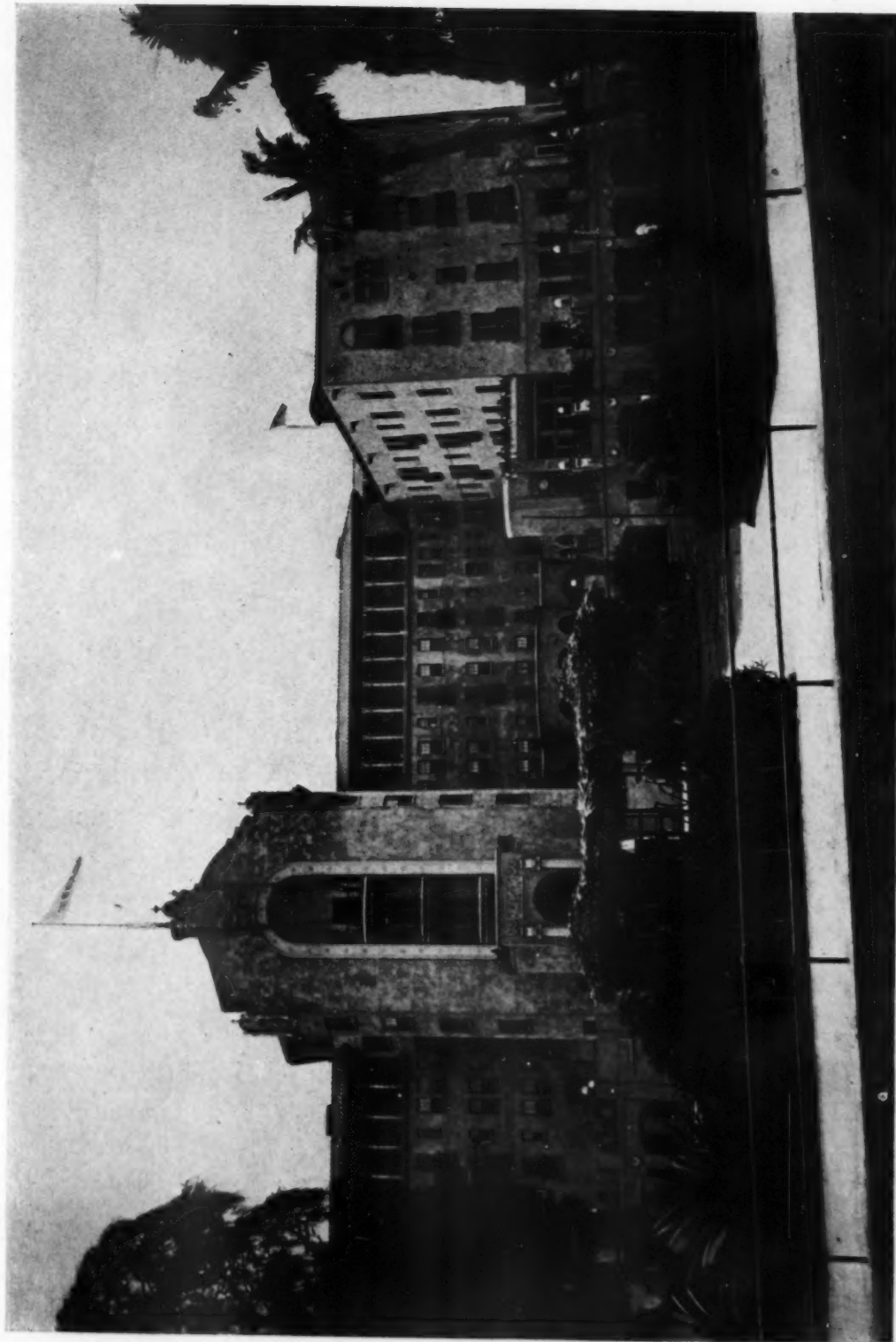
shown the head of Columbus. In this niche is hung a five hundred watt lamp dipped in pale green. This gives a most extraordinary effect of moonlight at night thus making the hotel entirely independent of the calendar.

The walls of the bedrooms are of rough plaster with yellow ochre mixed in, thus eliminating all delays of painting in the bedrooms. The floors and base are of light green cement, the trim and doors of cypress stained gray-green. These rooms are attractively furnished with painted furniture. Many of the bedrooms have balconies and porches and all of the rooms are of generous size. Each one is equipped with a bath room of the most modern description. All the rooms on the two upper floors have large private balconies overlooking the ocean.

Ample ventilation is secured by means of a new type of corridor door to the bedrooms. The upper panel of this door consists of fixed slats and on the bedroom side of the door is hung a solid panel which can be opened at will. The occupant of the room can therefore have complete privacy or as much ventilation as he desires.



View from Ocean



THE NEW COLONIAL HOTEL, NASSAU, BAHAMAS

KENNETH M. MURCHISON, ARCHITECT



ENTRANCE TO DINING ROOM FROM PALM ROOM



VIEW FROM THE GARDENS

THE NEW COLONIAL HOTEL, NASSAU, BAHAMAS

KENNETH M. MURCHISON, ARCHITECT



OFFICE



END OF THE GRILL ROOM

THE NEW COLONIAL HOTEL, NASSAU, BAHAMAS

KENNETH M. MURCHISON, ARCHITECT





A DINING ROOM



A DINING ROOM

THE NEW COLONIAL HOTEL, NASSAU, BAHAMAS

KENNETH M. MURCHISON, ARCHITECT



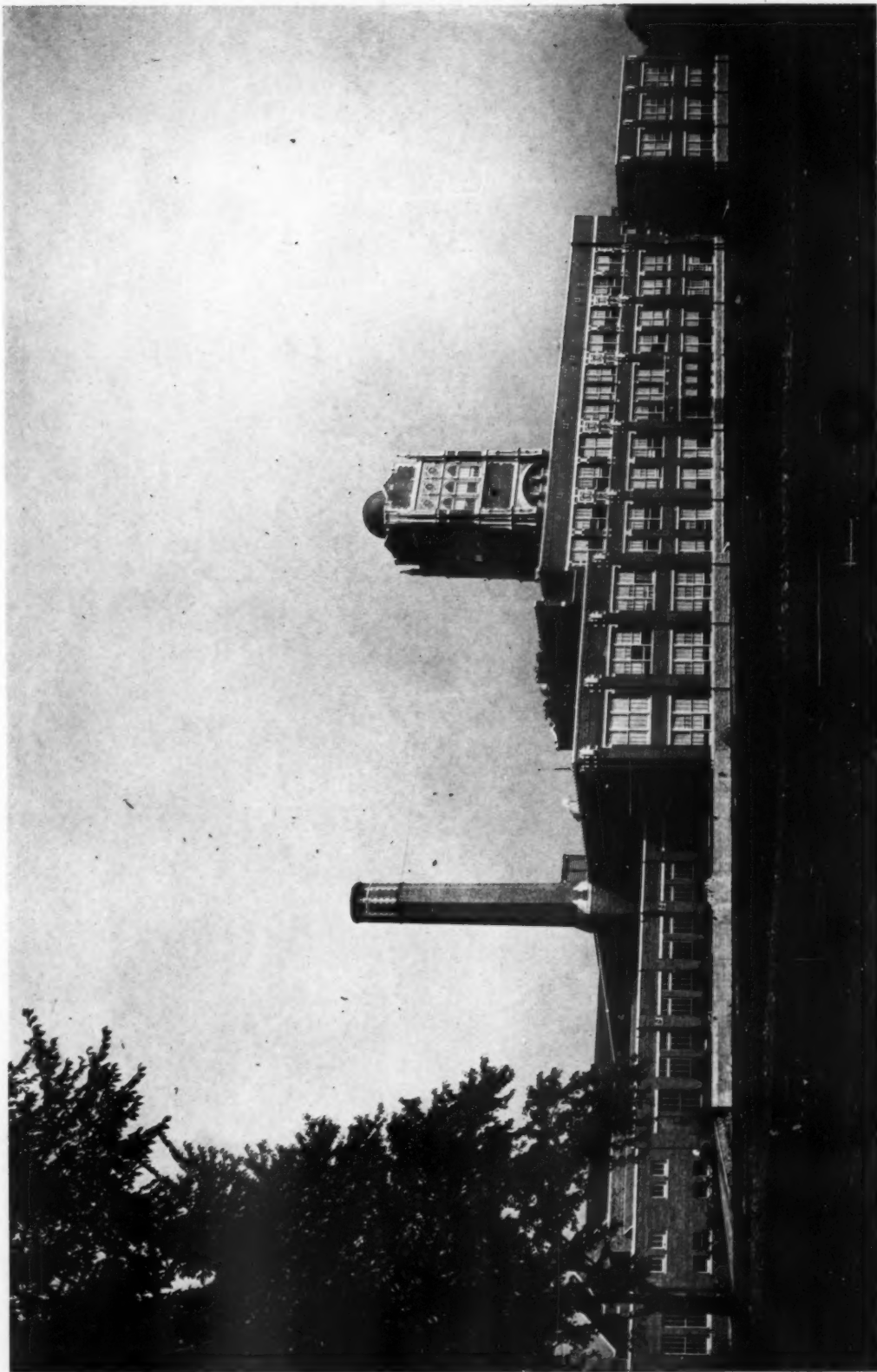
THE PALM ROOM



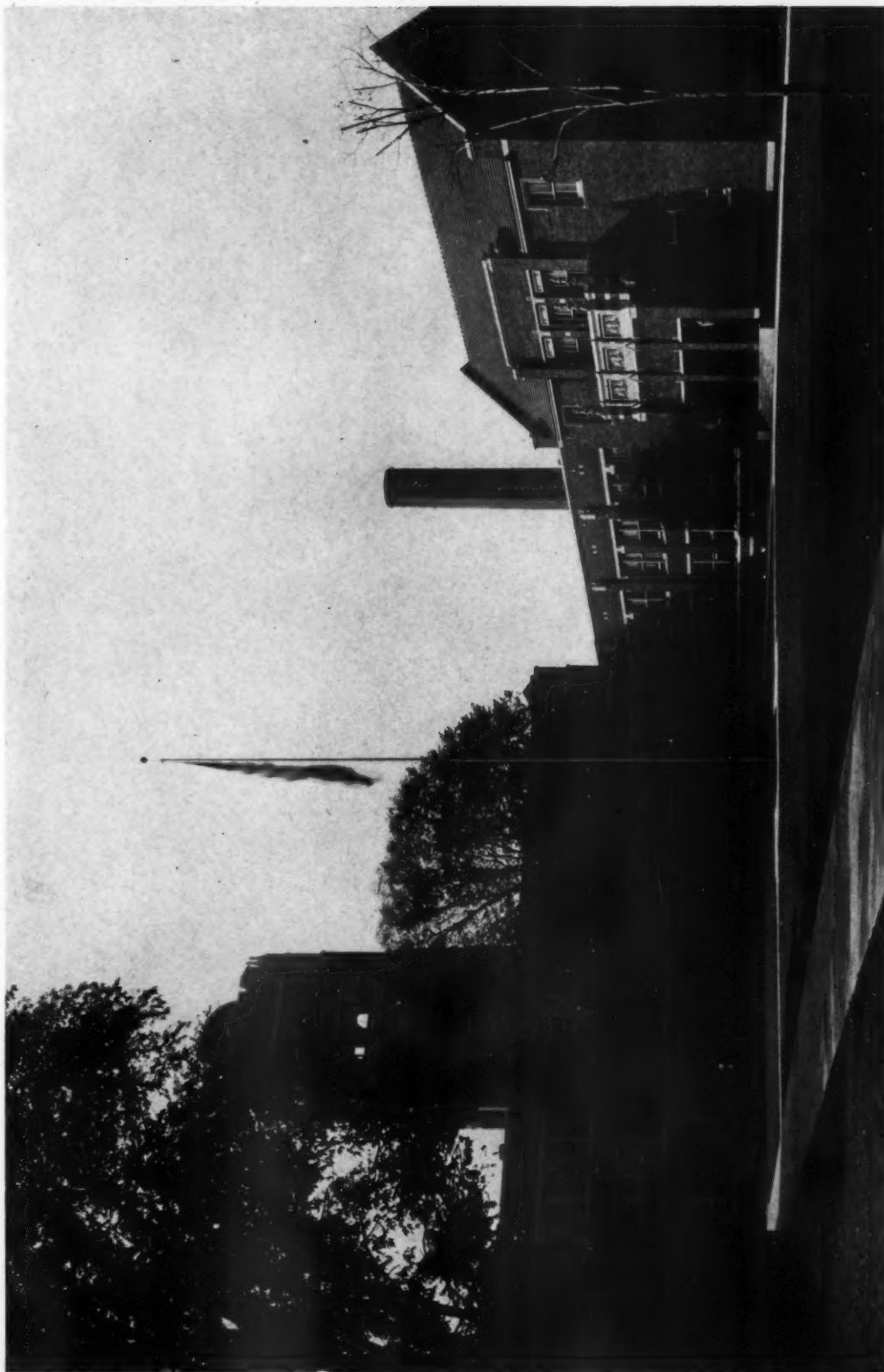
THE CIRCULAR PORCH

THE NEW COLONIAL HOTEL, NASSAU, BAHAMAS

KENNETH M. MURCHISON, ARCHITECT



VIEW FROM SOUTHWEST ACROSS ATHLETIC FIELD
SENIOR HIGH SCHOOL, BAY CITY, MICH.
PERKINS, FELLOWS & HAMILTON, ARCHITECTS
(For Floor Plans of this School, see Pages 550 and 551)



COURT VIEW
SENIOR HIGH SCHOOL, BAY CITY, MICH.
PERKINS, FELLOWS & HAMILTON, ARCHITECTS





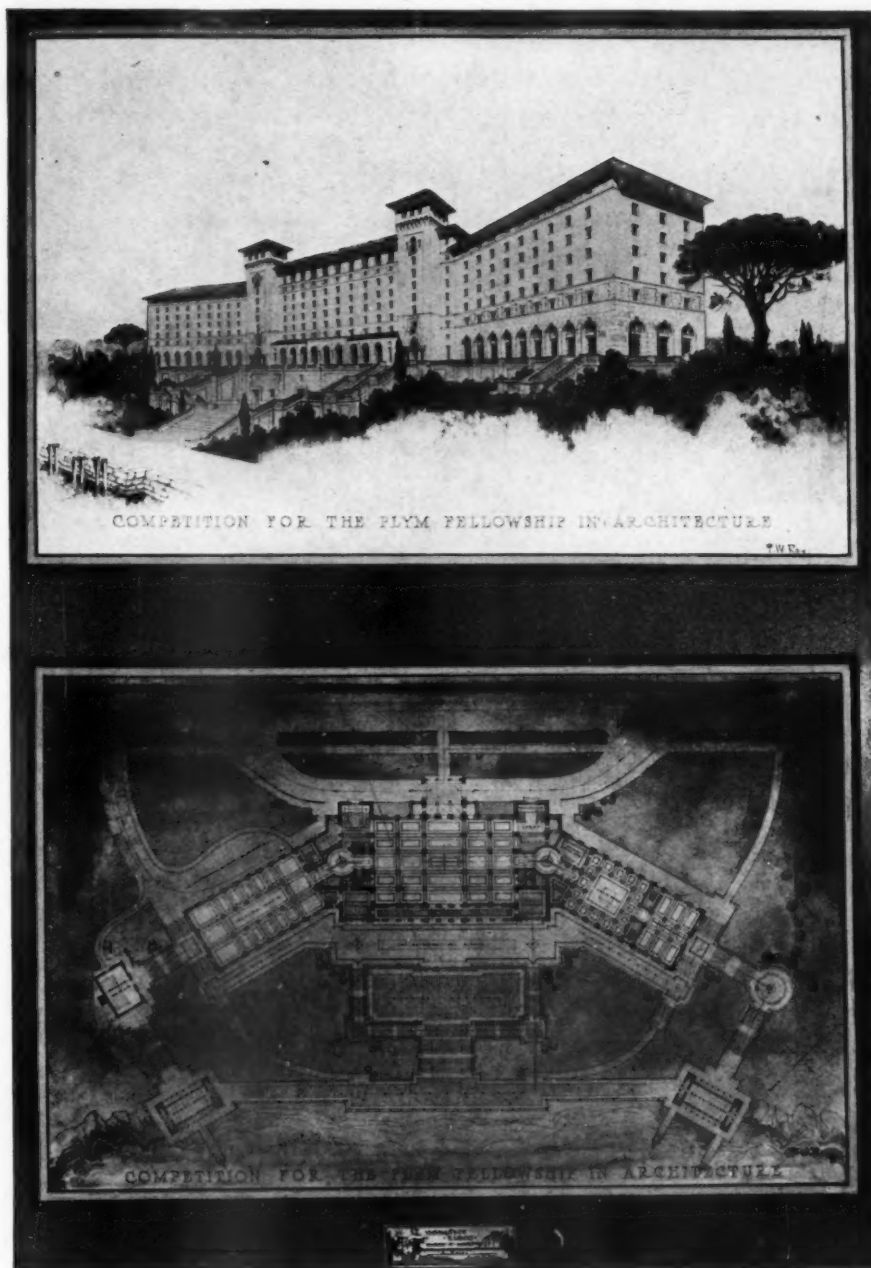
VIEW OF TOWER AND ENTRANCE
SENIOR HIGH SCHOOL, BAY CITY, MICH.
PERKINS, FELLOWS & HAMILTON, ARCHITECTS



VESTIBULE AND LOBBY UNDER TOWER
SENIOR HIGH SCHOOL, BAY CITY, MICH.
PERKINS, FELLOWS & HAMILTON, ARCHITECTS



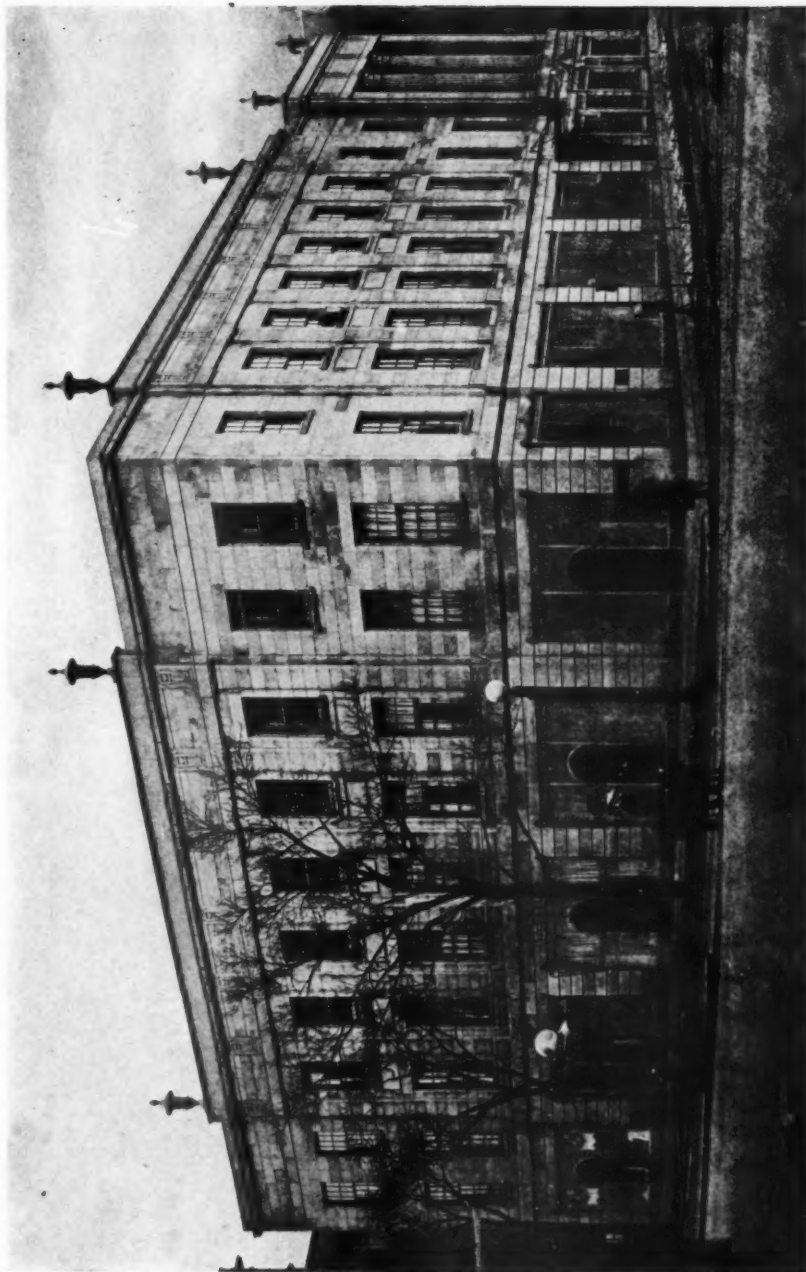
ENTRANCE TO AUDITORIUM, FROM COURT
SENIOR HIGH SCHOOL, BAY CITY, MICH.
PERKINS, FELLOWS & HAMILTON, ARCHITECTS



WINNING DESIGN, PLYM TRAVELING COMPETITION,
DEPARTMENT OF ARCHITECTURE, UNIVERSITY OF ILLINOIS

SUBJECT: "A HOTEL," BY FLOYD W. RAY

(From the 1923 Chicago Architectural Exhibition)



PALMER SHOPS BUILDING, CHICAGO, ILL.

HOLABIRD & ROCHE, ARCHITECTS

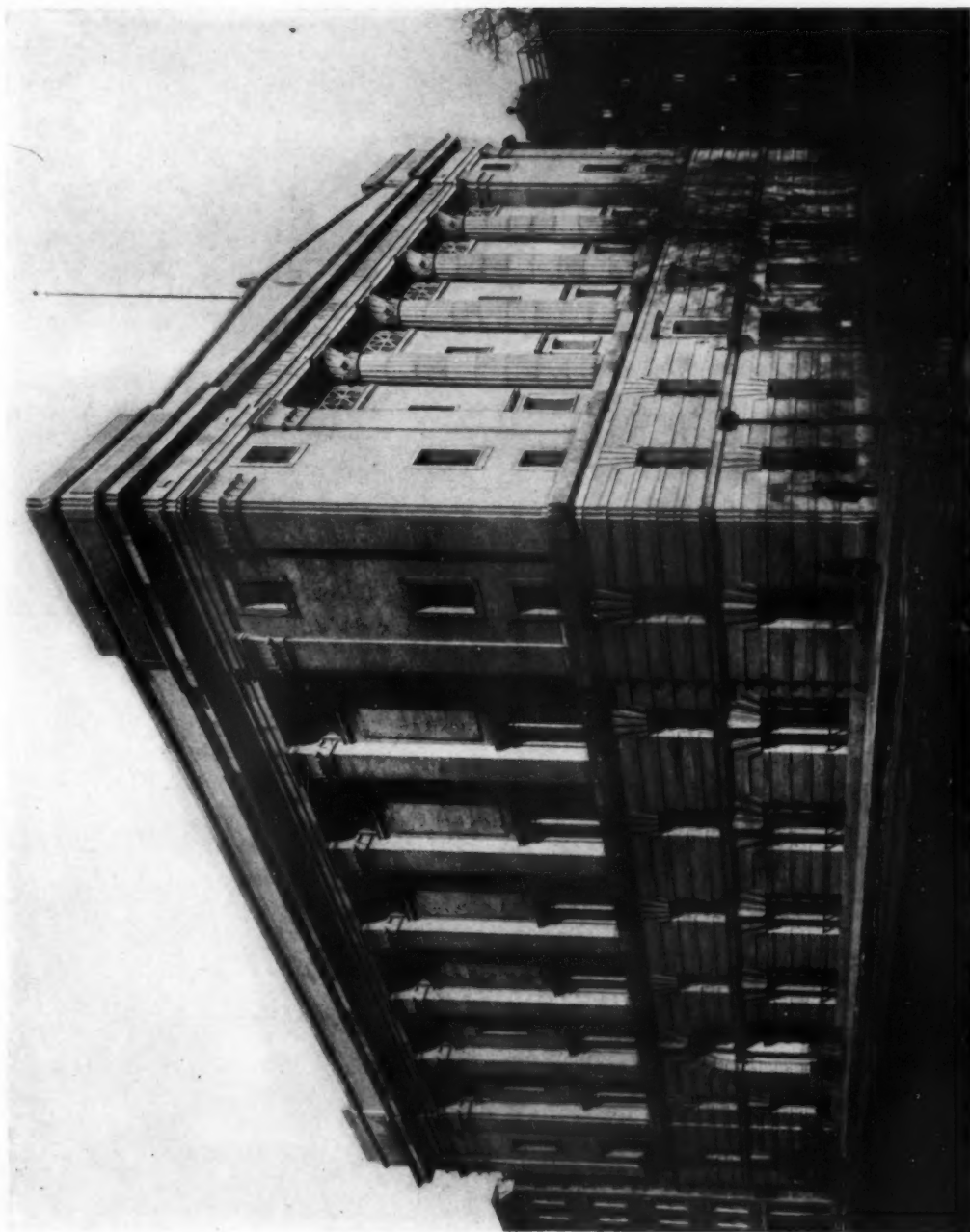
(From the 1923 Chicago Architectural Exhibition)



HOUSE OF C. E. MAXWELL, JR., ESQ., WINNETKA, ILL.

RUSSELL S. WALCOTT, ARCHITECT

(From the 1923 Chicago Architectural Exhibition)



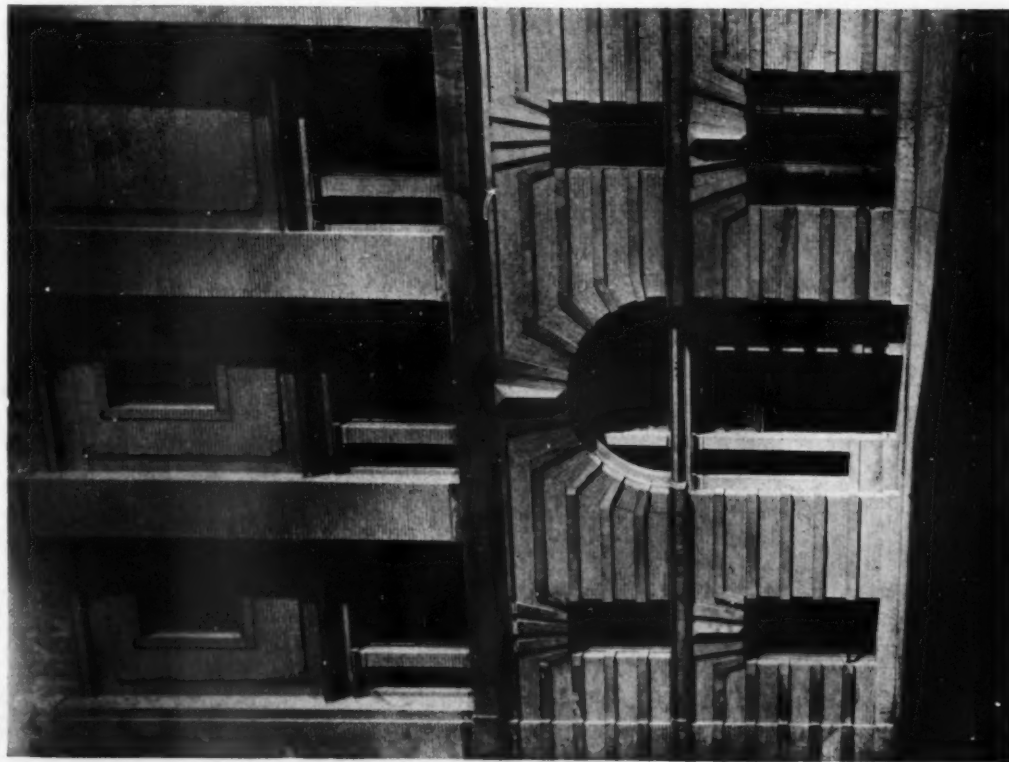
MUNICIPAL BUILDING FOR THE CITY OF BOSTON
J. A. SCHWEINFURTH, ARCHITECT



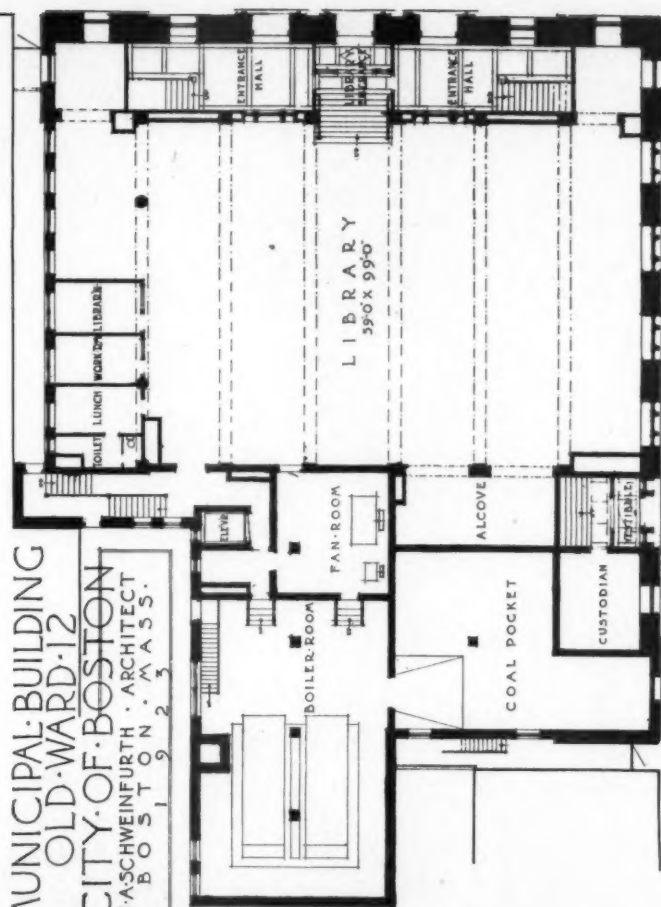
MUNICIPAL BUILDING FOR THE CITY OF BOSTON

J. A. SCHWEINFURTH, ARCHITECT

JUNE 20, 1923

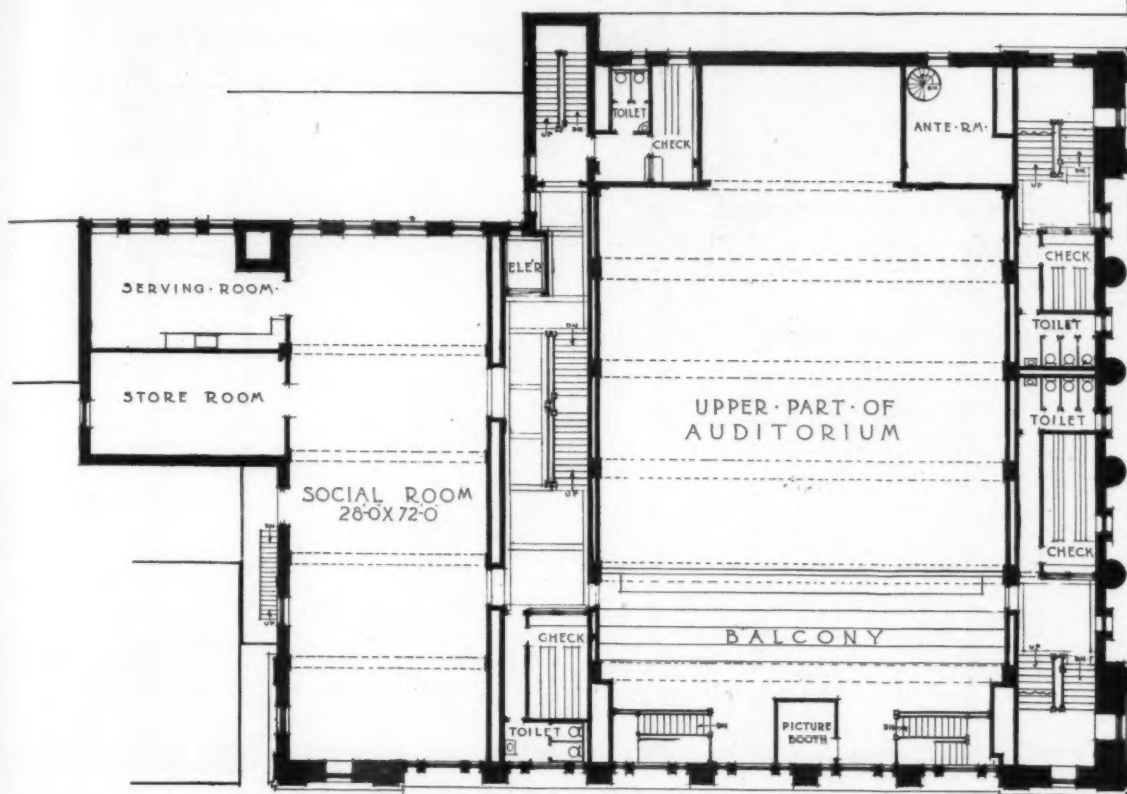


MUNICIPAL BUILDING
OLD WARD 12
CITY OF BOSTON
J. A. SCHWEINFURTH, ARCHITECT
BOSTON, MASS.
1923

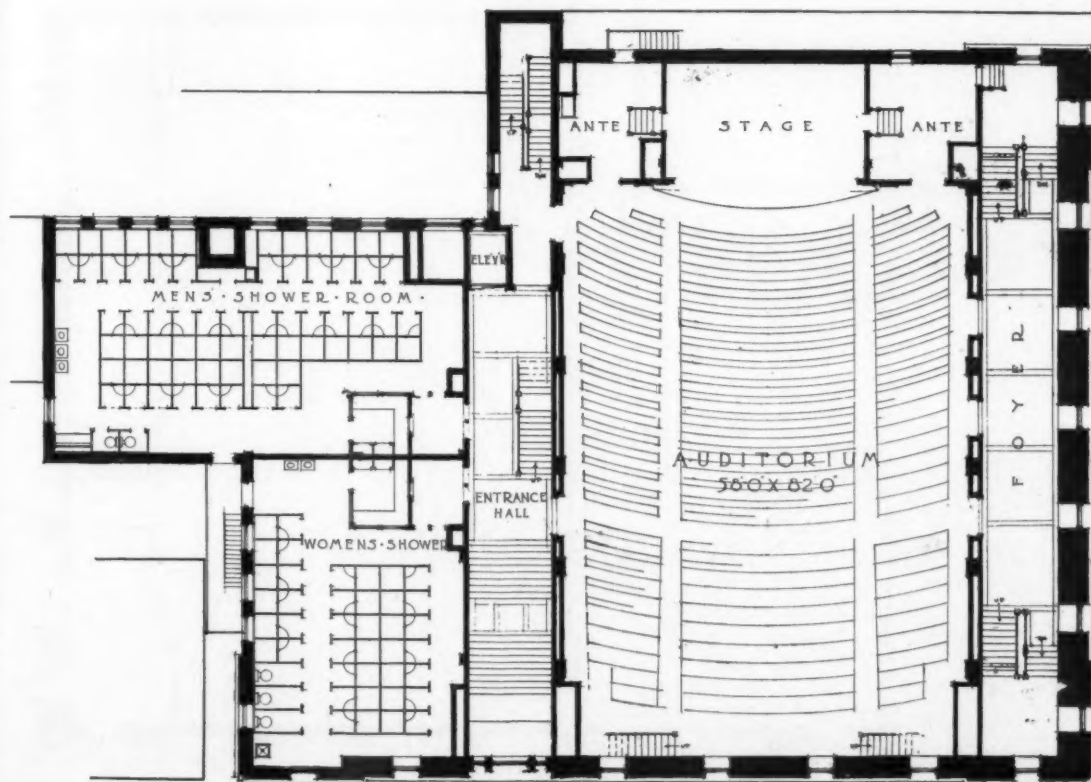


BASEMENT PLAN
MUNICIPAL BUILDING
FOR THE CITY OF BOSTON

J. A. SCHWEINFURTH, ARCHITECT



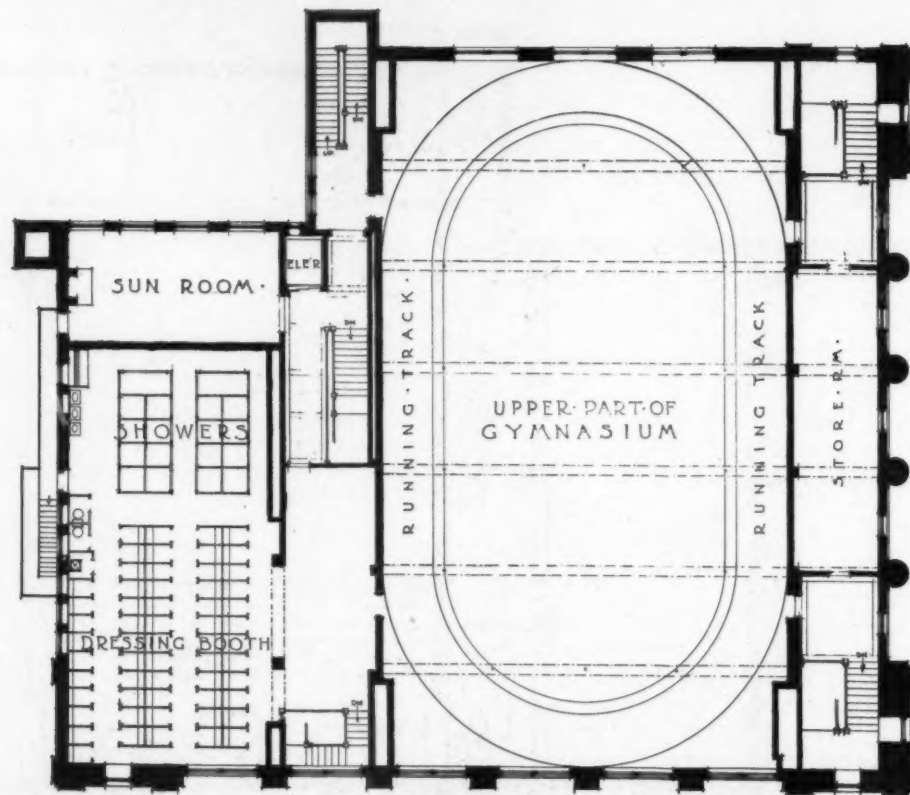
SECOND FLOOR PLAN



FIRST FLOOR PLAN

MUNICIPAL BUILDING FOR THE CITY OF BOSTON

J. A. SCHWEINFURTH, ARCHITECT



FOURTH FLOOR PLAN



THIRD FLOOR PLAN

MUNICIPAL BUILDING FOR THE CITY OF BOSTON

J. A. SCHWEINFURTH, ARCHITECT

The NEW SENIOR HIGH SCHOOL, BAY CITY, MICH.

PERKINS, FELLOWS & HAMILTON, Architects

AS one approaches Bay City from the South, a tower of goodly size becomes a prominent feature of the landscape. The proportions and details of the tower would render it as noticeable in a congested district of a large city as it is on the Southern border of this city of 50,000 population. The tower is the architectural feature of the new Senior High School. This school is designed to accommodate the tenth, eleventh and twelfth grades with a present normal capacity of 1,200 pupils. Provision is made for third story additions with a capacity of 600 pupils. The Junior High Schools are operated for the seventh, eighth and ninth grades.

The building is located on a fourteen acre tract of ground on the Southern edge of the central Eastern section of the city. This site was selected in preference to several more centrally located places available, by reason of its ample area. The extreme dimensions of this building are 545' x 262'. The building is of the "U" shape plan with an open end quadrangle 164' x 175'.

The type of plan adopted is what might be called a symmetrical arrangement of attached units, each unit providing for the accommodation of special departments having requirements of size, shape and accessibility peculiar to themselves. The whole is arranged in a manner so as to produce a symmetrical architectural composition on all four frontages. This scheme makes possible an exterior architectural expression of each of the various departments of the institution as well as the possibility of future extensions of these departments.

The academic section of the building is the central "U" shaped feature of the plan with the tower at the central axis. At the ends of the "U" are located the gymnasium and auditorium which makes them more accessible for public entertainments. The wings which are occupied by the girls' gymnasium and lunch room on the East and the boiler room and mechanical drawing room on the West form projections which balance the auditorium and gymnasium wings on the East and West elevations. Between these projecting wings on the East elevation is the low natatorium structure and between the projecting wings on the West elevation is the low manual training structure. A one story warehouse for school supplies is located on the West, beyond the boiler room.

At present the side wings of the academic section are constructed two stories high with provision for a third story when the growth of the city demands it.

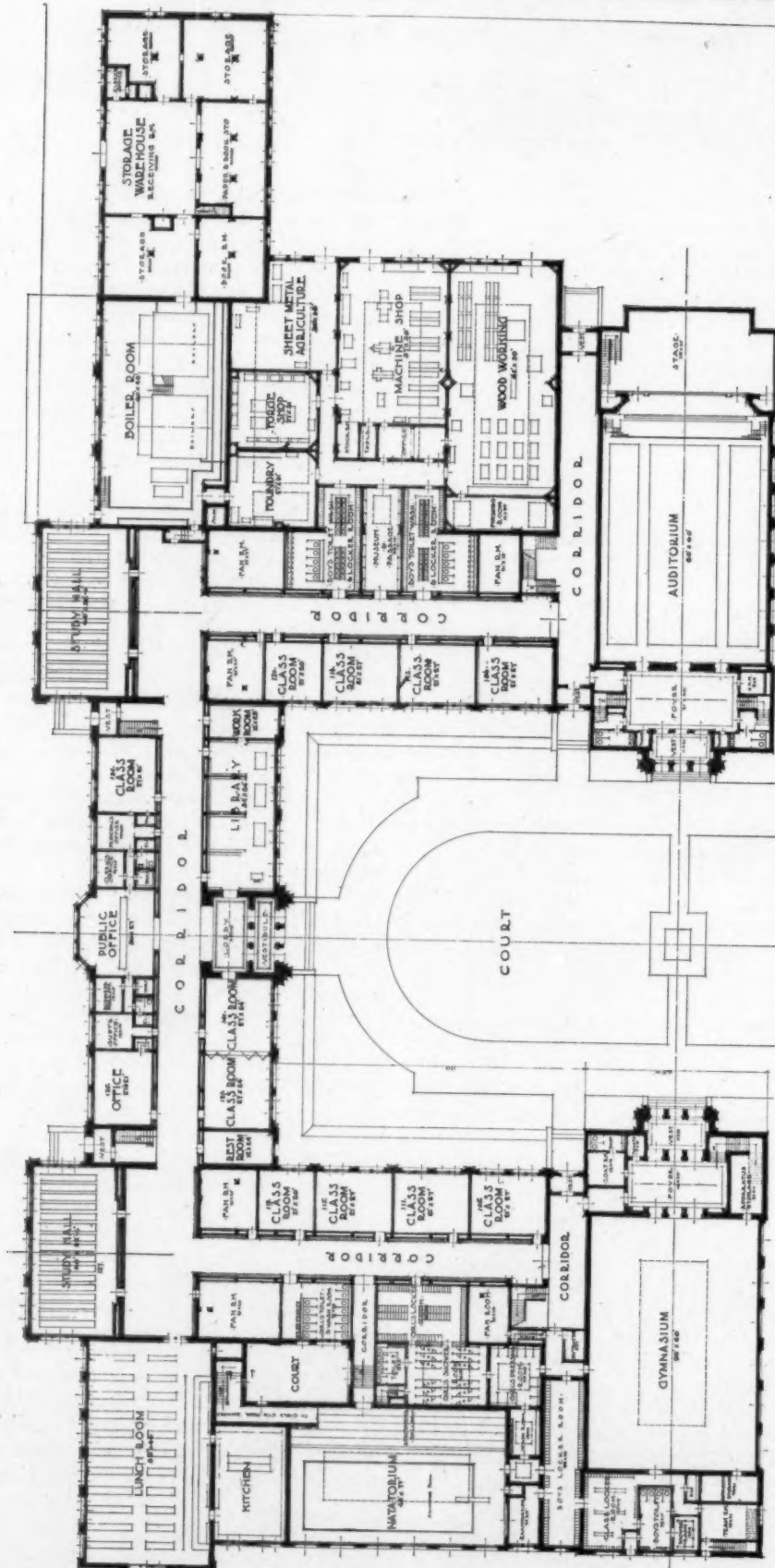
The auditorium, with its gallery, has a total seating capacity of 1,300 persons exclusive of the stage. The stage is of ample size and is equipped for theatrical use. A projection booth in the gallery is equipped for motion picture exhibitions. The gymnasium has a working floor 60' x 90' in size with galleries at each end with total seating space for 500 spectators. The gymnasium floor can also be viewed through the large openings leading to the second story corridor. The boys' locker, shower and toilet rooms are accessible to both the swimming pool and the gymnasium. The girls' gymnasium is on the second floor of the Southeast wing with the shower, dressing, locker and toilet rooms accessible to the swimming pool and their gymnasium. The girls also have access to the main gymnasium from their quarters. The swimming pool is of standard size and dimensions and finished in mosaic tile. The spectators' gallery has a seating capacity for 200 persons.

The manual training department consists of a woodworking shop and finishing room, a machine shop with tool and store rooms, a sheet metal and agriculture shop, a forge shop and a foundry. These shops are one story high, lighted by skylights or skylights and windows. Extensive locker and wash rooms adjoin the shops. Metal lockers are arranged along the corridor walls on all floors of the building.

The business offices are located in the center of the building adjoining which are the principal's, superintendent's and business manager's offices with vaults, storage and toilet rooms. The office of the Board of Directors is also located in this section. The library is centrally located on the first floor. The laboratories, special departments and study halls are located in the central portion of the building with the classrooms in the wings.

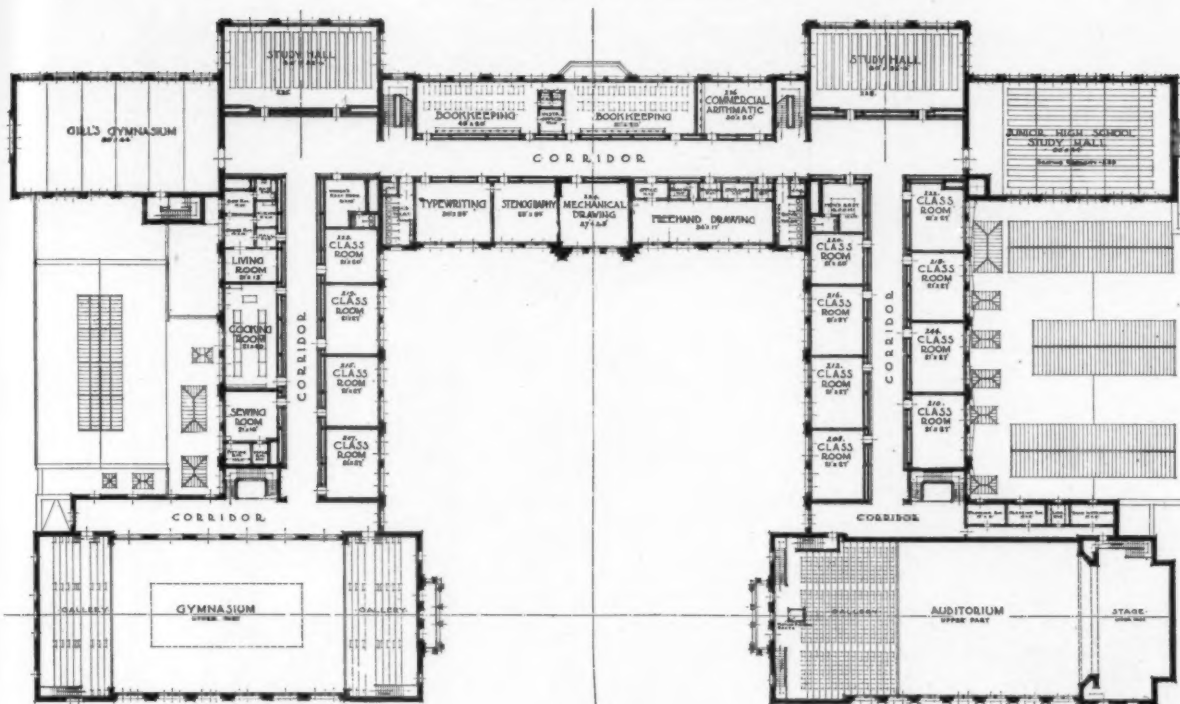
The heating and ventilating plant is designed as a "split system," having direct radiation throughout capable of caring for the heat losses from exposure. The mechanical ventilation provides the required changes of warm fresh air. Thermostatic control is provided for both systems throughout the building. A driveway extends about the quadrangle, giving access to the main entrance of the academic building as well as to the gymnasium and auditorium.

The building is designed in a rather free adaptation of the Gothic style and is trimmed with architectural terra cotta of interesting detail. The total cost of the building, under present conditions, would be about \$1,000,000, the walls, floors, ceilings and roofs being of fireproof construction.

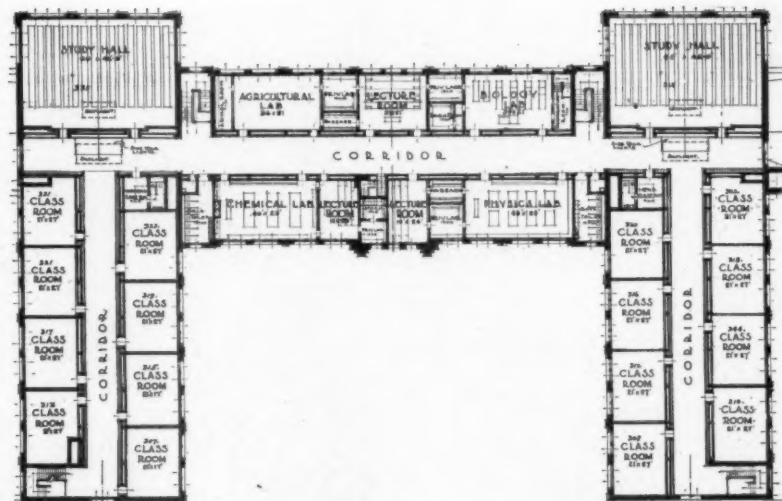


FIRST FLOOR PLAN

SENIOR HIGH SCHOOL, BAY CITY, MICH.
PERKINS, FELLOWS & HAMILTON, ARCHITECTS
(For illustrations of this School, see Plate Section)



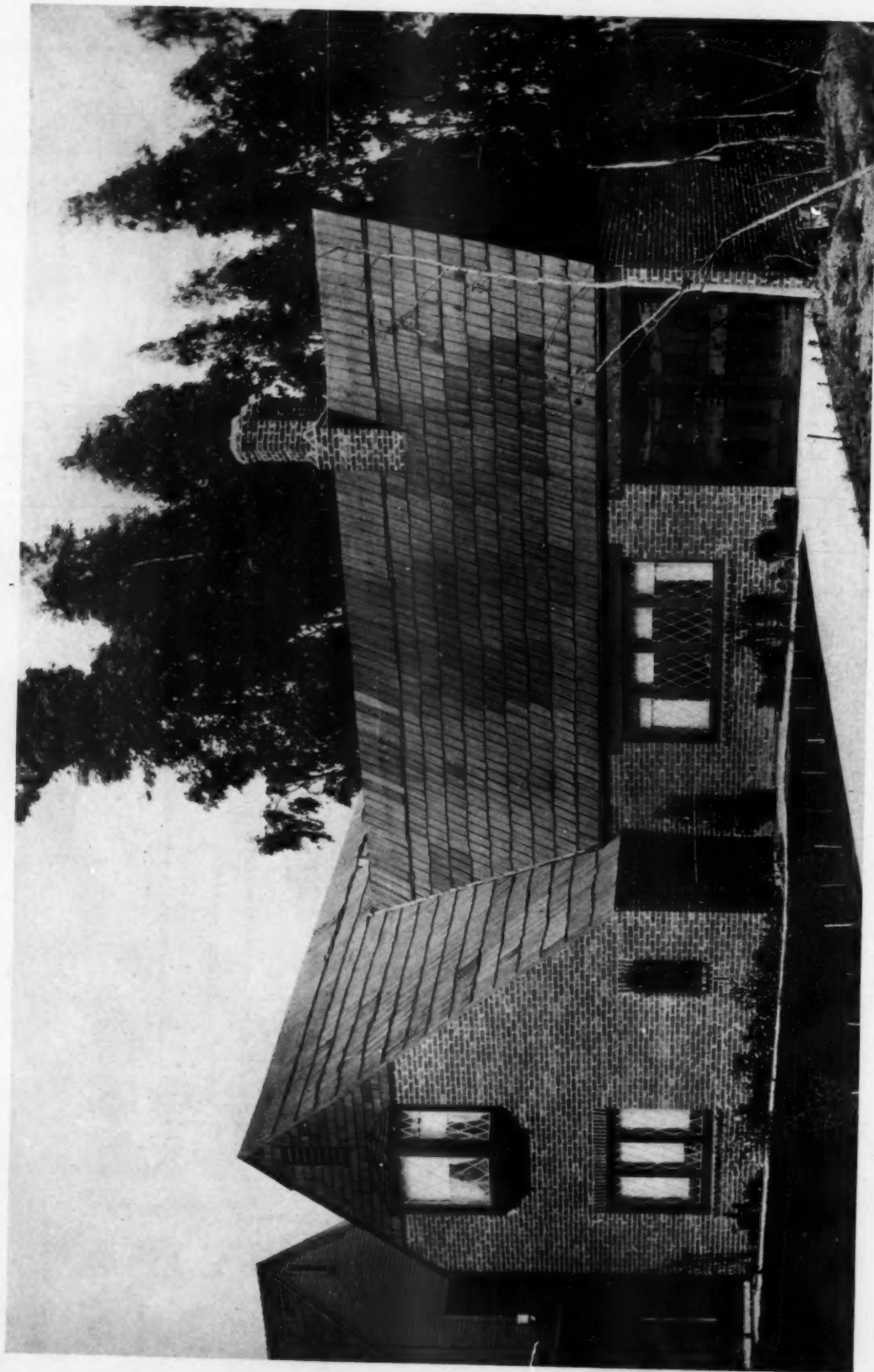
SECOND FLOOR PLAN



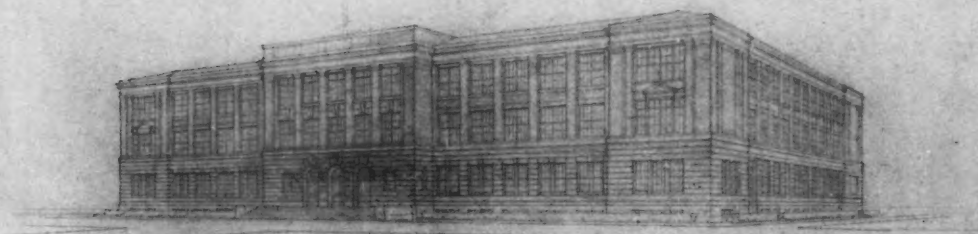
THIRD FLOOR PLAN

SENIOR HIGH SCHOOL, BAY CITY, MICH.

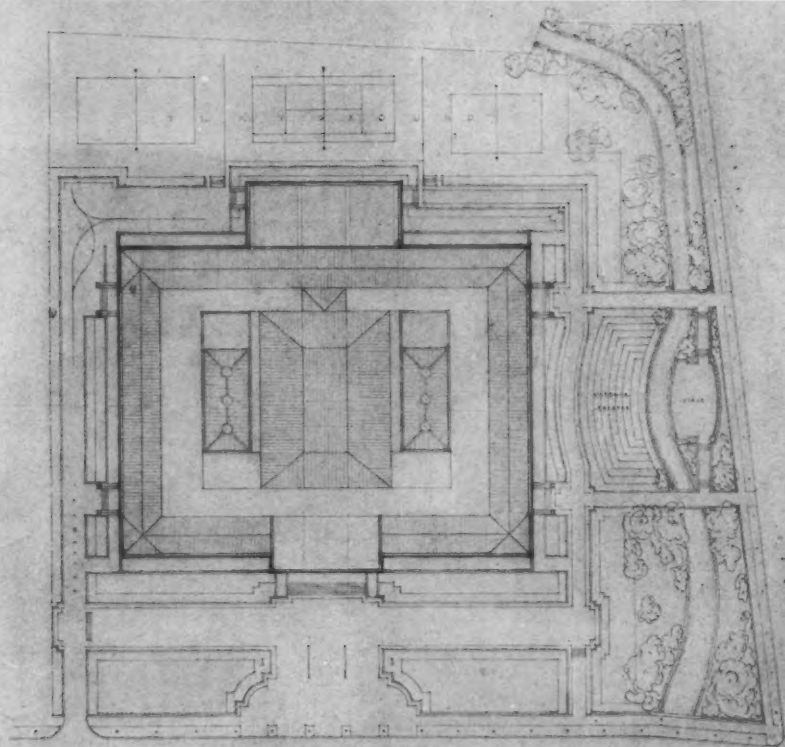
PERKINS, FELLOWS & HAMILTON, ARCHITECTS



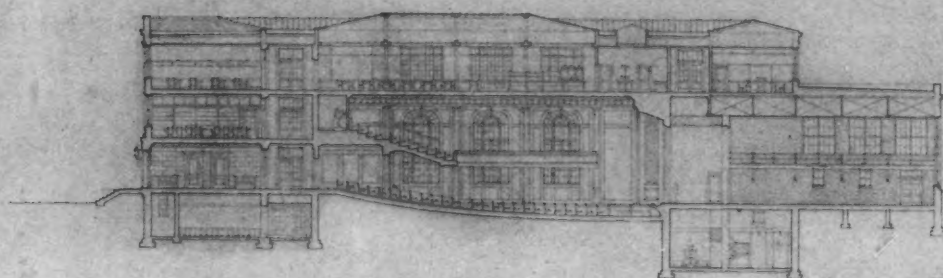
HOUSE ON ESTATE OF THOMAS NICKOLS, ESQ., LOS ANGELES, CAL.
PIERPONT & WALTER S. DAVIS, ARCHITECTS



PERSPECTIVE

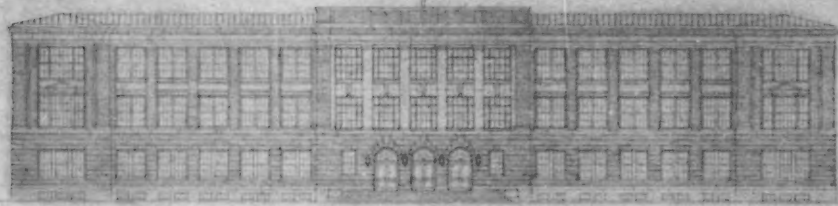


BLOCK PLAN

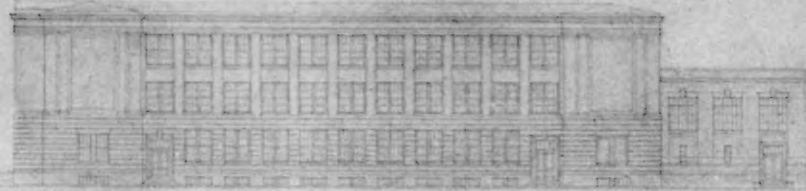


LONGITUDINAL SECTION

WINNING DESIGN
COMPETITION FOR A PROPOSED HIGH SCHOOL, IRVINGTON, N. J.
DONN BARBER, ARCHITECT



FRONT ELEVATION



EAST ELEVATION

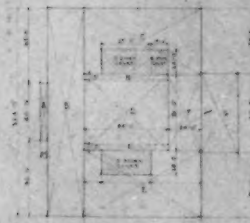


WEST ELEVATION



NORTH ELEVATION

NOTE
ALL STUDY ROOMS, 10' x 12' FROM THE TOP OF THE
STAIRS TO THE TOP OF THE ROOF. THE STUDY ROOMS
SHALL BE 10' x 12' FROM THE TOP OF THE STAIRS TO
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STORAGE

STORAGE PLAN

DIAGRAM



STORAGE SECTION

SCHEDULE

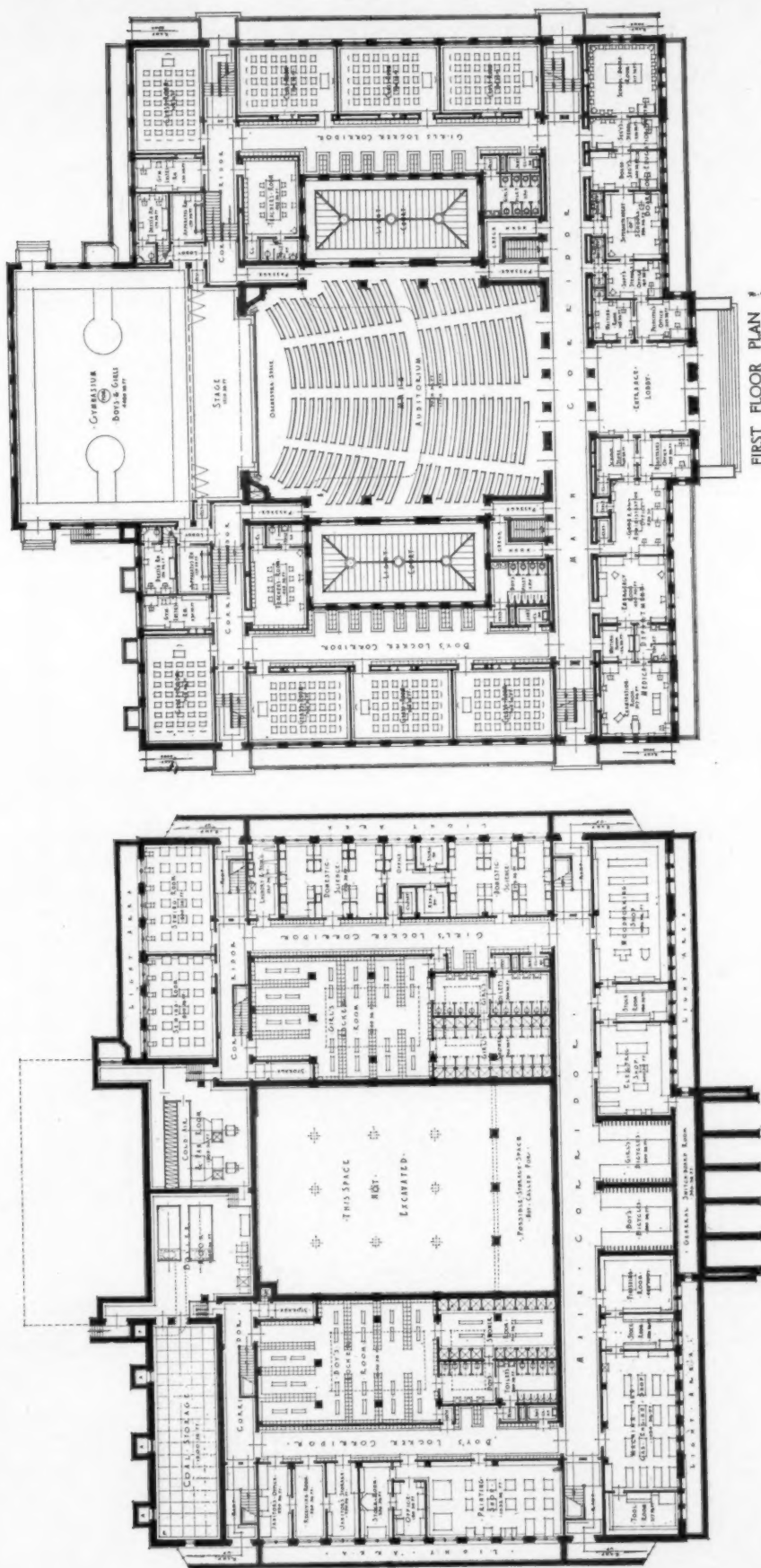
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100	STUDY ROOMS	1,140	1,140

TOTAL VOLUME 1,140,000

WINNING DESIGN

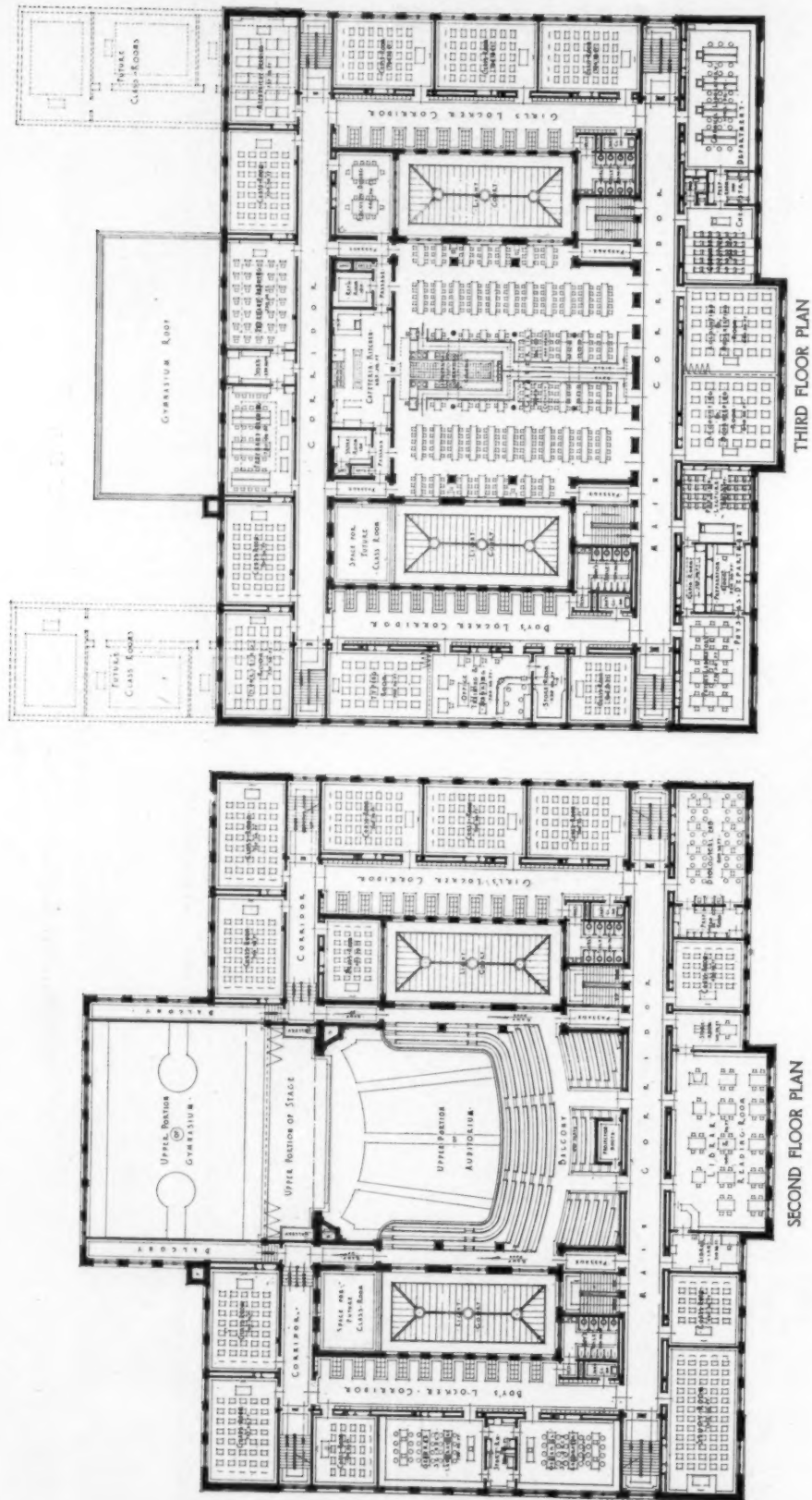
COMPETITION FOR A PROPOSED HIGH SCHOOL, IRVINGTON, N. J.

DONN BARBER, ARCHITECT



FIRST FLOOR PLAN

WINNING DESIGN
 COMPETITION FOR A PROPOSED HIGH SCHOOL, IRVINGTON, N. J.
 DONN BARBER, ARCHITECT



WINNING DESIGN

COMPETITION FOR A PROPOSED HIGH SCHOOL, IRVINGTON, N. J.

DONN BARBER, ARCHITECT

BEAUX-ARTS INSTITUTE of DESIGN

ACTING DIRECTOR OF THE INSTITUTE—WHITNEY WARREN

ARCHITECTURE, RAYMOND M. HOOD, DIRECTOR—SCULPTURE, JOHN GREGORY, DIRECTOR

INTERIOR DECORATION—ERNEST F. TYLER, DIRECTOR

MURAL PAINTING—ERNEST C. PEIXOTTO, DIRECTOR

OFFICIAL NOTIFICATION OF AWARDS

JUDGMENT OF APRIL 24, 1923

CLASS "B"—IV PROJET

"A PRIVATE LIBRARY"

A man who has spent all his life collecting a library of American history, has given it to a university, with sufficient funds to erect a special building on the campus. The library consists of approximately ten thousand volumes and a great many original manuscripts, maps, prints, etc. Many of these are of such value that they should be in glass cases where the public may see them without damaging them. The whole building should naturally be fireproof.

As this is not a public library but has such a special character that it will be used only by real students or writers, the little building should be arranged to make access to the treasures of the collection as easy as possible. This means that the books should be placed in open shelves, according to subject, in some such arrangement as a series of alcoves with study tables in them.

The interior arrangement will therefore not be specified except in this general way. It is possible to arrange the whole library in a single room or in several rooms. The only space which need necessarily be partitioned off from the library proper is a librarian's private office and a small work room. Ample space for storage and other non-public services will be provided in the basement.

The building shall not exceed 75 ft. in any dimension.
JURY OF AWARDS:—R. M. Hood, H. O. Milliken, J. H. Freedlander, J. W. O'Connor, J. M. Howells, A. Phillips, D. Barber, R. H. Pearce, E. S. Hewitt, H. M. Woolsey, H. W. Corbett, F. C. Hirons, and F. C. Hitchens.

NUMBER OF DRAWINGS SUBMITTED:—219.

AWARDS:—

FIRST MENTION:—H. L. Carter and B. G. Martin, Carnegie Inst. of Tech., Pitts.; R. W. Ramsdell, C. F. Ferrari and H. P. Staats, Yale Univ., New Haven.

SECOND MENTION:—F. J. Taylor, E. M. Gearhart, L. Cousins, J. W. Everhard, W. W. Hibbs, A. K. Goehring, P. H. Sload, H. H. Thayer, A. M. Ham, M. B. Parker, J. F. Taylor, G. B. Allison, J. D. Mawhinney, A. H. Rousseau, W. F. Koppes, E. M. McMillin, J. S. Douglass, W. C. Pyle, A. F. Muhl, A. S. Vincent, G. A. Deacon, H. I. Lynch, C. P. Zimmers, V. A. McGowan, A. D. Reid, R. M. Trimble, Jr., G. D. Schade, J. R. Reed, K. O. Sonnemann and E. M. Plant, Carnegie Inst. of Tech., Pitts.; A. O. Angilly, G. M. Burch, A. E. Klueppelberg, G. F. Trapp, H. H. Rabin, A. Grossman, D. E. Milone, S. M. Shaw, E. C. Morris, R. V. Merwin, D. D. Streeter, R. J. Young, J. H. Robb, E. H. Collicutt, Myrtle P. Dyke, R. M. Pott, L. Perry and F. DeRosa, Columbia Univ., N. Y. C.; G. S. Brock, Jr., C. J. Keller, J. J. McNamara and J. P. Bills, Catholic Univ., Wash., D. C.; M. J. Slack, W. G. Jamieson, R. E. Stiffler, J. J. Burke and A. W. Butt, Jr., Atelier Denver, Denver; J. M. Leonte, Atelier Fougner, Newark; J. F. Wolfe, M. C. Hobson and J. H. Lapis, George Washington Univ., Wash., D. C.; W. Ferrari, S. Minoli, J. J. Wallwork, H. Swenson, J. Gambaro and H. B. Hays, Atelier Hirons, N. Y. C.; F. J. Schlosser, C. J. Poiesz, A. E. Shrimpton and F. Sakata, John Huntington Poly. Inst., Cleveland, D. R. Lundberg, Los Angeles Archtl. Club, Los Angeles; F. Bellini, Atelier Lewis, Scranton; S. Arnvig and I. L. Johnson, Atelier Parsons-Chicago Archtl. Club, Chicago; W. F. Goertz, R. T. Allison, R. D. McClelland, A. E. Hansen, F. B. Chambers, F. W. Gloege, W. Pemberton, A. M. Johnson, Louise Russell, F. C. Hageman, R. R. Stadelman and F. A. Pilmer, Southern Branch-Univ. of California,

Los Angeles; S. E. Chambers, E. Weiner and A. F. Eldridge, Syracuse Univ., Syracuse; J. H. Geering, San Francisco Archtl. Club, San Francisco; F. Raudenbush, J. E. Jackson and W. R. Harer, "T" Square Club, Phila.; K. McLeary and H. S. Gannaway, Univ. of Texas, Austin; A. K. Arai, W. B. Glynn, T. Jacobsen and H. B. Hoover, Univ. of Washington, Seattle; N. L. Low and G. C. Andersen, Univ. of Southern California, Los Angeles; J. W. Radotinsky, Univ. of Kansas, Lawrence; I. Horton-III, H. O. Williams, and W. Faulkner, Yale Univ., New Haven.

H. C.:—D. C. Doig, V. G. Tilbrook and A. B. Lowstuter, Carnegie Inst. of Tech., Pitts.; H. C. Loney and S. F. Abrahms, Columbia Univ., N. Y. C.; A. Connors and J. D. Miller, Southern Branch-Univ. of California, Los Angeles; C. R. Gaskill, Univ. of Texas, Austin.

CLASS "B"—IV ANALYTIQUE

"AN ENTRANCE TO A MUSEUM"

JURY OF AWARDS:—R. M. Hood, R. H. Pearce, H. O. Milliken, C. H. Aldrich, B. G. Goodhue, E. S. Hewitt, F. C. Hirons and F. C. Hitchens.

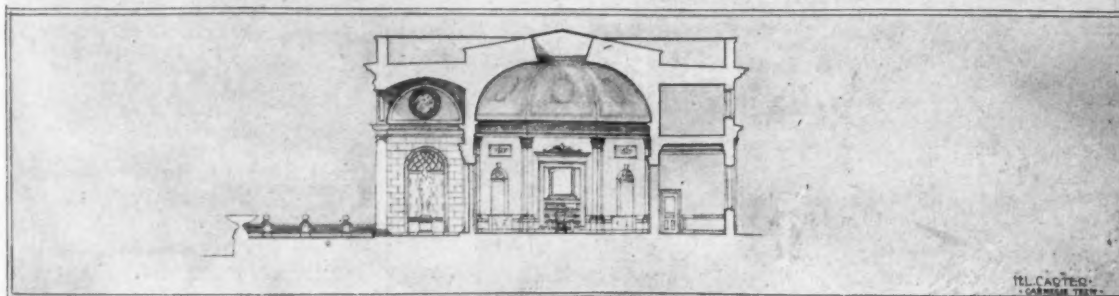
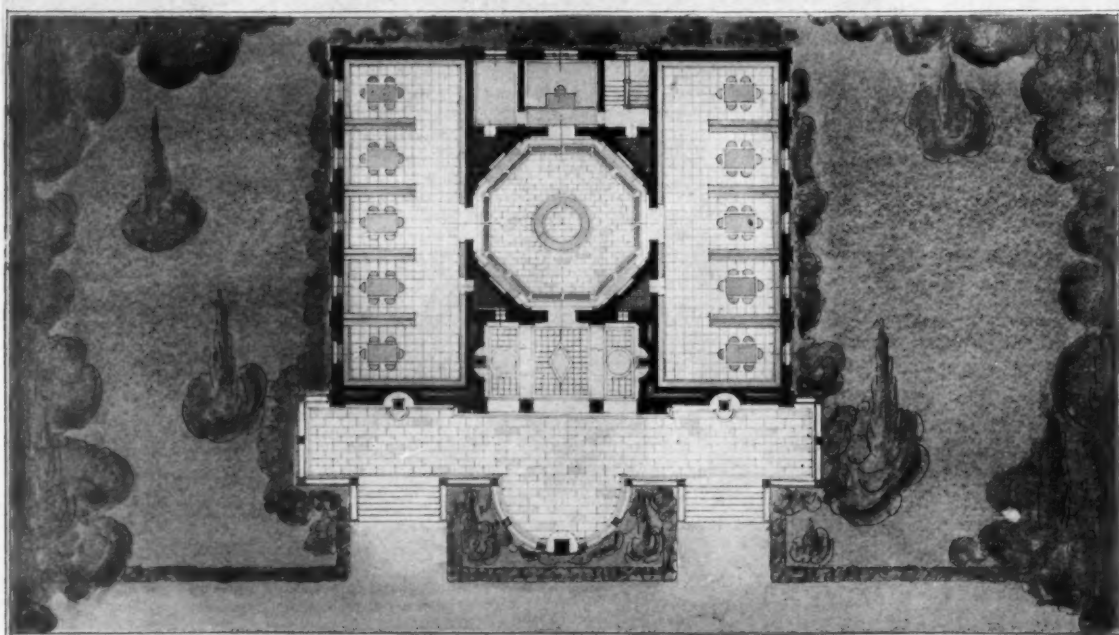
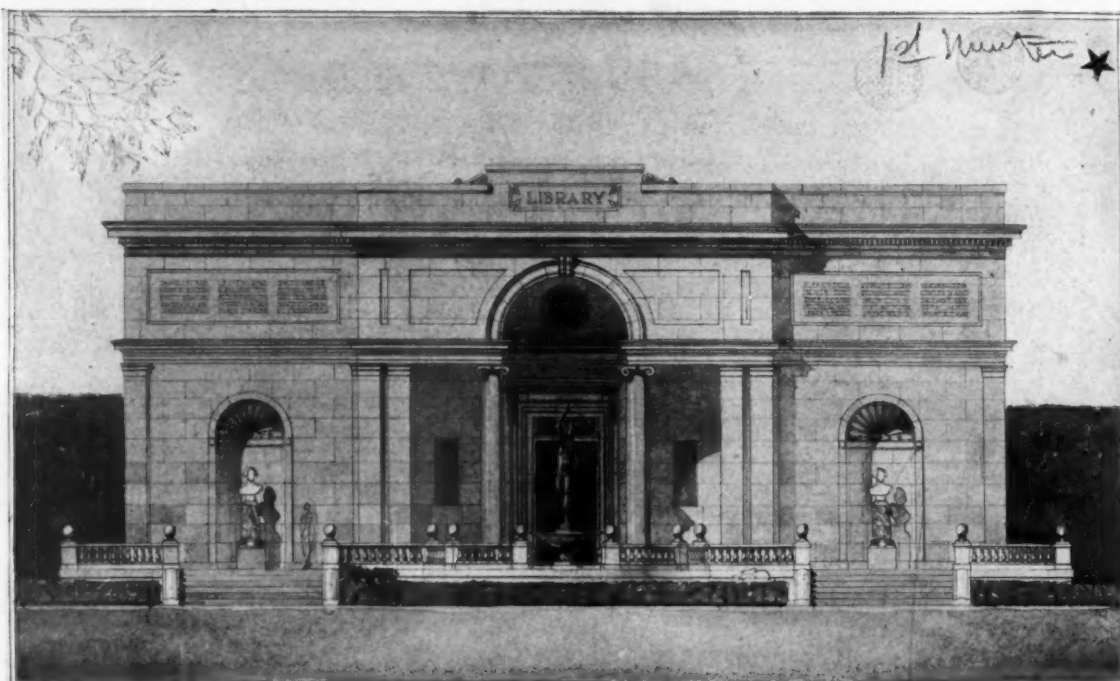
NUMBER OF DRAWINGS SUBMITTED:—175.

AWARDS:—

FIRST MENTION PLACED:—W. G. Eichler, Atelier Corbett-Koyl, N. Y. C.; Betty Barber and P. Obninsky, Columbia Univ., N. Y. C.; J. G. Meem, Atelier Denver, Denver; E. Cacchione, "T" Square Club, Phila.

FIRST MENTION:—A. G. Schwarz, Atelier Corbett-Koyl, N. Y. C.

SECOND MENTION:—C. VanKeuren and E. D. Hodges, Atelier Adams, Kansas City; F. J. Ryan, Atelier Corbett-Koyl, N. Y. C.; C. F. Hart, W. B. Tubby, Jr., E. H. Stillman, A. I. MacDonald, L. Highton, C. M. Cowan, H. S. Konold, N. H. Gotthoffer, A. Lueders, J. P. Fay, W. H. Deitrick, B. Boetum, J. Krendel, P. N. Youtz, Marie Brandt, L. V. Schelski, Sara Leenhauts and L. K. Morrissey, Columbia Univ., N. Y. C.; J. B. Bell, T. H. Dreihls, L. H. Mollenkopf and V. J. Gerdes, Cincinnati Archtl. Soc., Cincinnati; R. J. Kredel, E. G. Good, Jr., L. C. Osborn, G. E. Pope, S. Fiordelise, H. H. Schmidt, U. Schoenberger and H. W. Damon, Jr., Carnegie Inst. of Tech., Pitts.; M. A. Tellotson, Cleveland Sch. of Art, Cleveland; H. Raichart, Atelier Denver, Denver; C. H. Kulp, J. Welsh and D. G. McDevitt, French Curve Atelier, Trenton; Jessica C. Adams, C. A. Hough, D. Sutton and M. Peele, George Washington University, Wash., D. C.; O. Wiggins, Atelier Hirons, N. Y. C.; E. L. White, T. V. Nichols, B. Krinsky, C. Schiring, E. Cain, L. J. Jaeger, L. M. Faber, R. B. Alecy and R. W. Pearson, John Huntington Poly. Inst., Cleveland; R. A. Spencer, R. Lucas and J. G. Beckman, Los Angeles Archtl. Club, Los Angeles; C. Tatore, Patron-H. V. K. Henderson, N. Y. C.; E. A. Salmon, Patron-J. G. Rogers, N. Y. C.; J. M. Longmire, Atelier Memphis, Memphis; L. I. Duhat and C. N. Diffin, Pratt Institute, Brooklyn, N. Y. C.; F. Ahlson, Atelier Parsons-Chicago Archtl. Club, Chicago; R. H. Burden, M. B. Ehrlich and J. A. Britton, Syracuse Univ., Syracuse; J. C. Ehrlich, Atelier Sibley, Palisade; H. E. Johnson, Jr., C. F. Ward, R. F. Fletcher, W. A. Thom, W. E. Clark, and W. E. Haskell, "T" Square Club, Phila.; H. B. Collins and F. L. Kennard, Thumb Tack Club, Detroit; H. L. Chastain, H. Petersen, G. H. Duffield, W. P. Cunningham, R. Jenks and R. P. McArthur, Univ. of Kansas, Lawrence; W. T. Whiteside, Jr., Univ. of Texas, Austin; F. E. Morhead, A. L. Taranin, L. W. Pidgeon, T. L. Pletsch, J. M. Savage and G. B. Webb, Univ. of Southern California, Los Angeles; R. J. Pearce and G. M. Shigaki, Univ. of Washington, Seattle; B. Eckberg, Univ. of Minnesota, Minneapolis.

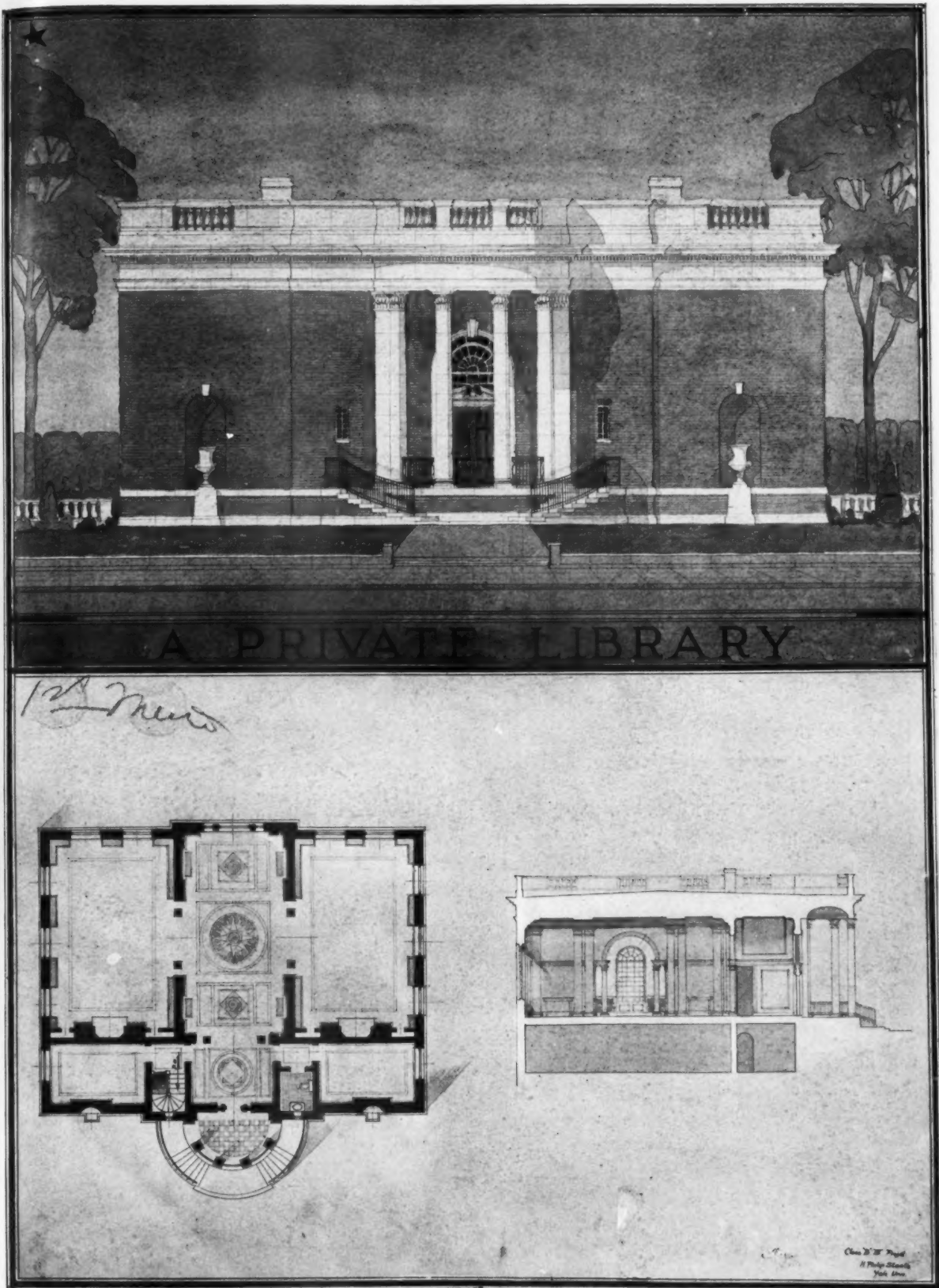


H. L. CARTER

FIRST MENTION

CARNEGIE INST. OF TECHNOLOGY

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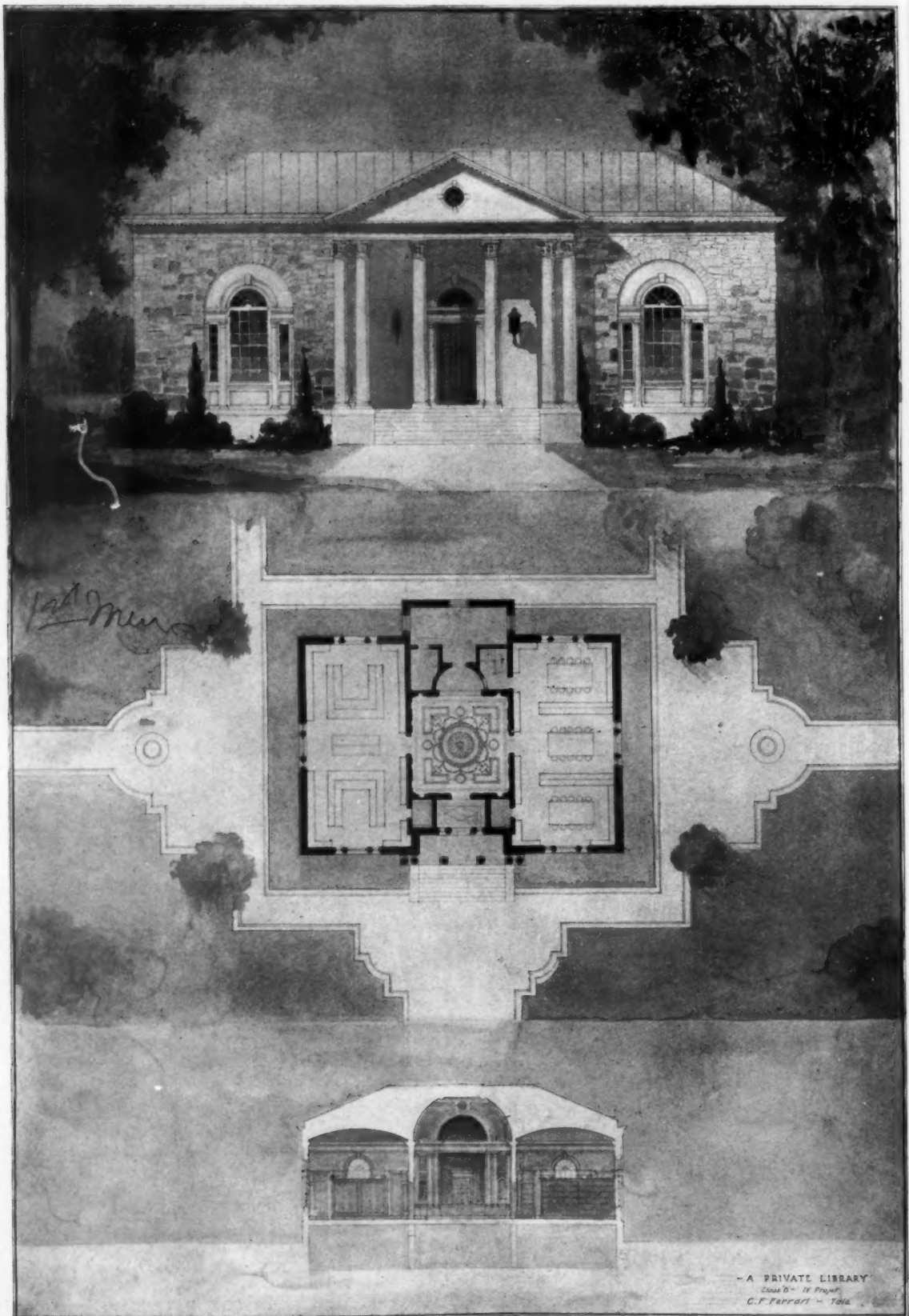


H. P. STAATS

FIRST MENTION

YALE UNIVERSITY

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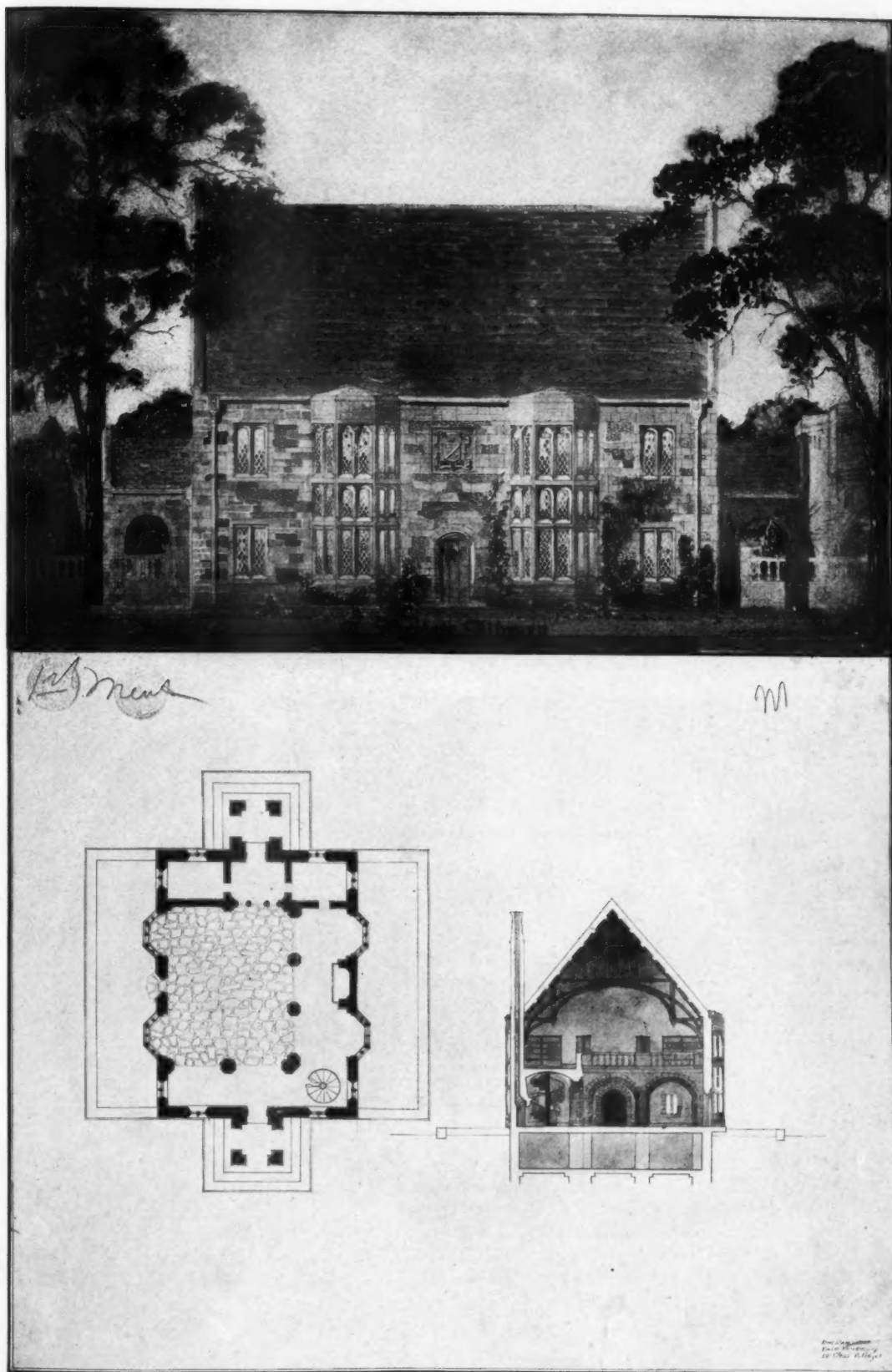


C. F. FERRARI

FIRST MENTION

YALE UNIVERSITY

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STUDENT WORK, BEAUX-ARTS INSTITUTE OF DESIGN

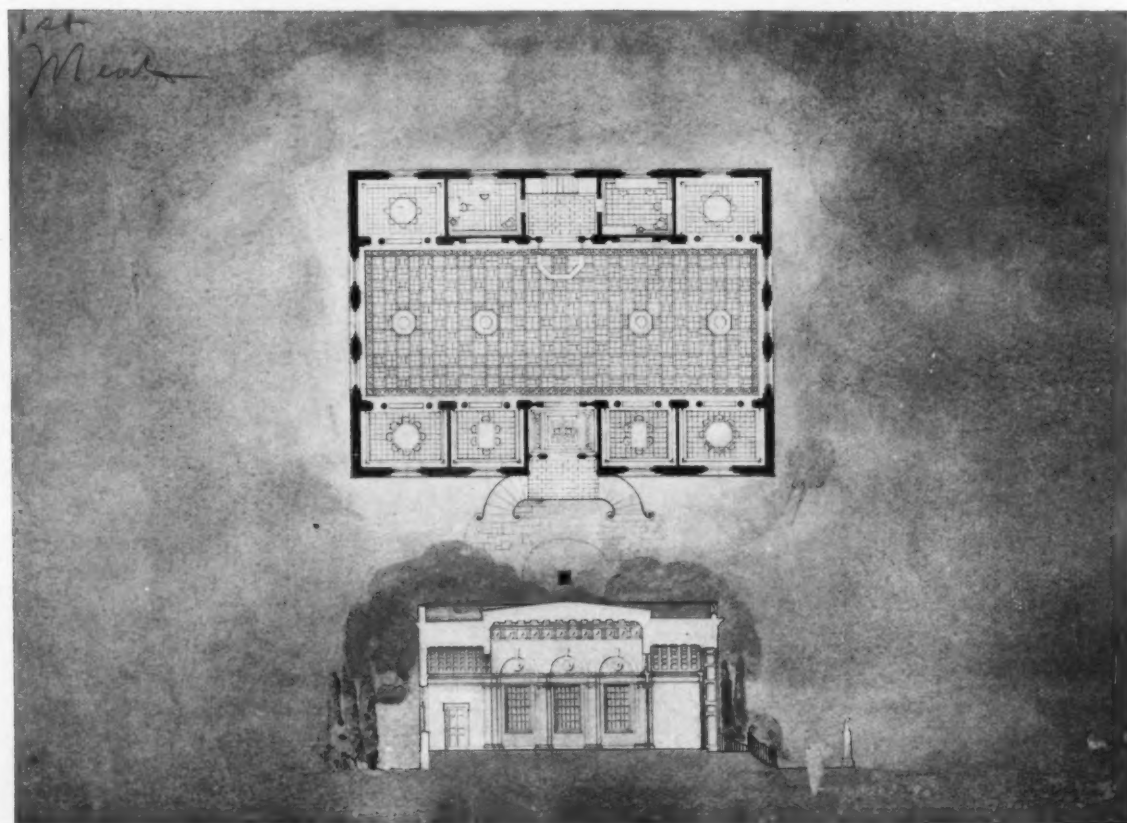
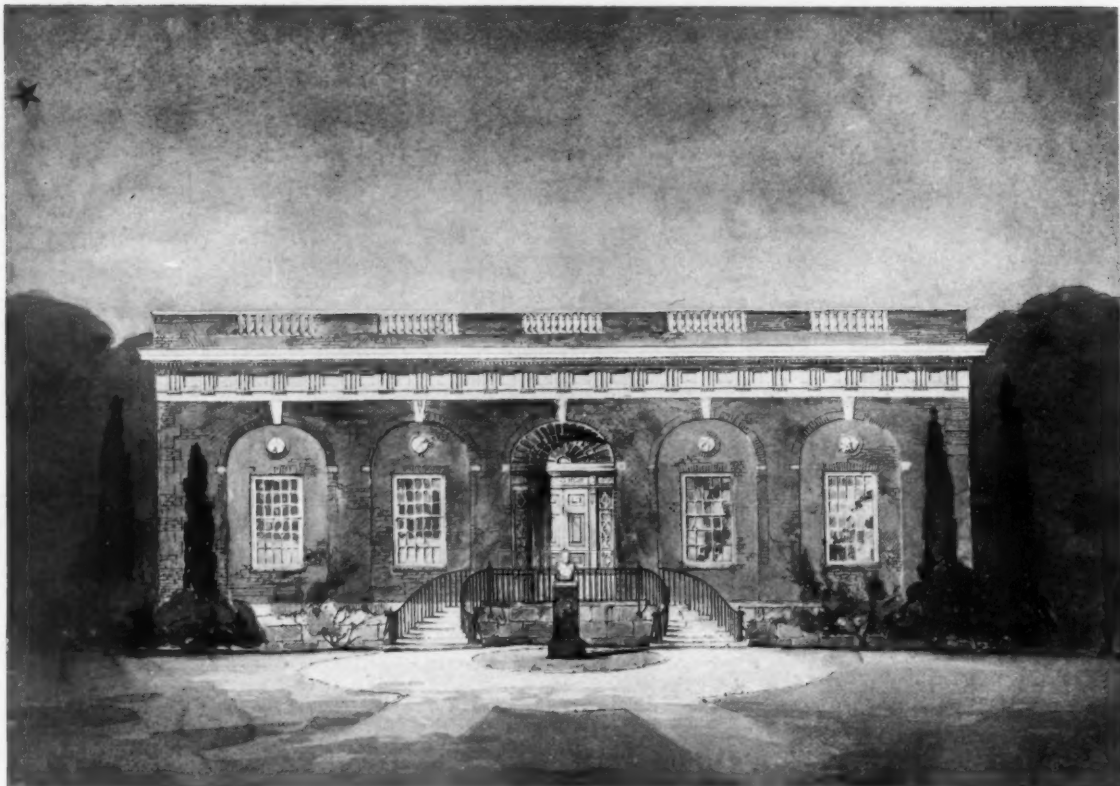


R. W. RAMSDELL

FIRST MENTION

YALE UNIVERSITY

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B. G. MARTIN

FIRST MENTION

CARNEGIE INST. OF TECHNOLOGY

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DEPARTMENT of ARCHITECTURAL ENGINEERING

FINANCING INVESTMENT BUILDING PROJECTS

The Relationship between the Plan, Structural Design and Income

BY F. S. MARLOW, Architect, S. W. Straus & Co.

AN investment building can be defined as one that, when used, yields a monetary income. Practically every kind of building except dwellings, public and ecclesiastical buildings and those erected for sentimental reasons are investment buildings. The construction of the vast majority of these buildings is made possible by their being accepted as security for funds advanced to pay, in part, for their erection. The necessity for their acceptance as security introduces certain requirements which must be met. These requirements are a correct relationship between the plan, structural design and income. THE AMERICAN ARCHITECT is pleased to present to its readers a series of articles by F. S. Marlow, architect, who has made an analysis of the elements of investment buildings and a determination of their relationship to a successful building project. The correctness of this analysis has been demonstrated by actual use.

There is no reason why these demands cannot be complied with and the building possess architectural merit. There is no necessity for dissociating art and dollars. It follows that certain styles of architecture, originally developed in connection with monumental buildings, are not applicable to investment buildings at all or at least without modification. It is not necessary to use them. Unless a beautiful and appropriate design is made satisfying the demand, then architecture, as such, is indeed a dead art.

Another phase of this relationship of plan, structural design and income, is that of code requirements. These cannot be avoided and they do in many instances entail a waste of labor and material. This is evident in the matter of live floor loads alone as shown in THE AMERICAN ARCHITECT of May 9. With these legal handicaps to economical construction overcome and a more careful planning of buildings on the part of architects and a better comprehension of the architects' service and its monetary value by owners, there will be little difficulty in financing investment building projects.—THE EDITORS.

THE building situation, always of paramount importance to general business, is especially so today for many reasons. It is, moreover, a condition replete with economic, financial and social complexities. Hence the greater need for any helpful elements that may be added and investors, architects and builders should redouble their efforts in obtaining maximum efficiency in planning and building, as each step in this direction invariably reduces cost and increases income. The investor, by administering the development of his project so as to obtain the maximum skill of his architect, engineer and builder, will gain advantages in terms of rentable area, architectural and structural design and cost of material and equipment which will in most cases

produce a safe ratio of income to cost and thus release for investment a project which might otherwise be abandoned or indefinitely postponed. From a general economic standpoint this efficiency should be expected at all times, no matter what the value of the land or cost of labor and material. Unfortunately, however, a careful survey of almost any group of completed buildings will develop the fact that a great loss is recorded annually through improperly studied architectural plans and wasteful structural design, as well as inefficient superintendence of construction.

Lack of co-operation and a proper understanding by the investor of the architect's and builder's duties and responsibilities, accounts for much of this inefficiency which ultimately manifests itself in the excessive construction cost and decreased income through loss in rentable space. Architects should be selected with care by investors and when chosen, they should be properly recompensed and allotted sufficient time to solve and develop the problem. Underestimating the value of good architectural services, together with inadequate compensation and unfair time allowance usually results in poorly developed plans and subsequent loss, through excessive cost and low income. Generally, the ultimate loss in cost and income, not to mention the intrinsic and artistic value loss in the architectural design, is out of all proportion to the saving in commission and time. For instance, in a ten story building of 2,000,000 cu. ft. contents, originally requiring 128,600 sq. ft. of curtain wall, the wall is reduced to 100,000 sq. ft. by obtaining the proper plot solution and general layout, thereby saving 28,600 sq. ft. of curtain wall. Such a saving alone, would account for approximately half an architect's full commission. Again, if one hundred rooms are added, the additional income obtained for one year, at \$480 per room, would nearly cover a full commission. It is generally conceded that a policy, which does not recognize these facts, is responsible for the plans of a number of apartment houses in current construction having been so poorly solved, that their costs have been increased from ten to fifteen per cent,

while their income possibilities have suffered a loss of from fifteen to twenty-five per cent in rentable space.

This condition is not new. Unfortunately, it has obtained for years. Acute contrasts in percentages make a study of facts imperative. As a typical example, a fireproof apartment house built and leased last Summer at prices then prevailing, shows a ratio between income and cost sufficient to produce a good investment, but today, the original plans of that same building would hardly show an income sufficient to justify its construction. However, by carefully studying and revising the original plans so as to give proper consideration to minimum structural cost and maximum rentable area, a building on the same site and of the same cubic contents, with approximately the same exterior design could be built now with the ratio of income against cost relatively maintained without an increase in rent. A comparison follows:

	ORIGINAL	REVISED
Cubic contents	3,000,000	3,000,000
Number of rooms	770	900
Unit price—net	50c	60c
Cost—net	\$1,500,000.	\$1,800,000.
Average cost per room—net	1,950.	2,000.
Income @ \$480. per room	369,600.	432,000.
Increase in Costs Revised over Original	300,000. or	20.0%
Increase in Income Revised over Original	62,400. or	16.9%
Per cent Gross Income of Net Cost—Original		24.6%
Per cent Gross Income of Net Cost—Revised		24.0%
Per cent Income against Cost—Original at today's prices		20.5%

As an example of how inefficient planning is affecting contemplated work, let us consider the case of a suburban, semi-fireproof apartment where the results of lack of study and improper conception of the problems involved did not produce sufficient possible income to justify the prospective investor in going ahead. The investor blamed this condition entirely on the high market, little realizing that his own policy of obtaining inadequate architectural services was the principal factor in defeating his purpose. A revised plan properly studied is now available and the investor is amazed to find a plan calling for a building

with 57% more rooms at a gain of only 28.8% in estimated cost. In other words, for an expenditure of an additional \$87,600, he obtains 100 extra rooms and, incidentally, a much better layout as to individual apartments, location of rooms, traffic conditions and other essentials of economic modern apartment house planning. Where the original plan provided an unsafe ratio, the new layout shows not only a safe one but gives every indication of an excellent investment. The following analysis is typical of many plans now in the hands of possible investors, which are being held up, not because of the present market, but because inefficiency will not produce in this market:

	ORIGINAL	REVISED
Cubic contents	708,000	890,000
Rooms	176	276
Unit cost—net	43c	44c
Estimated cost—net	\$304,000.	\$391,600.
Average room cost—net	1,727.	1,420.
Income @ \$300 per room	52,800.	82,800.
Increase in Cost Revised over Original	87,600. or	28.8%
Increase in Income Revised over Original	30,000. or	56.8%
Per cent Gross Income against Original Net Cost		17.4%
Per cent Gross Income against Revised Net Cost		21.2%
Net Gain in Ratio		3.8%

Since maximum efficiency is one of the principal factors today in the conduct of our most successful industries we cannot but take this opportunity to call the attention of all those interested in the building industry to the present necessity for the exercise of the utmost care and intelligence in the development of new building projects. It is not only important but imperative that those who propose building for investment purposes should retain capable architectural, engineering and building service and co-operate to the end that there is obtained a profitable investment. If the investors and their associates will recognize the importance of this policy of securing the utmost efficiency in the development of their projects and act accordingly, there will be not only less shelving of hastily conceived plans and less blaming of the labor and material markets for low ratios, but an increased production of commercially sound buildings.

(To be continued)

ELECTRICAL EQUIPMENT and ILLUMINATION of a MODERN THEATRE—PART II

BY FREDERICK A. MOTT and LOYD A. JONES

ILLUMINATION AND BRIGHTNESS MEASUREMENTS

SOME time before the building of the theatre, the Research Laboratory of the Eastman Kodak Company at the request of Mr. Eastman took up the problem of finding how much general illumination could be tolerated in a motion picture theatre without injuring the quality of the projected picture. Other questions relative to the most suitable conditions of illumination in the motion picture theatre were also considered. The results obtained were published in a paper by one of the authors* and it may be well to review briefly the conclusions reached.

An intelligent treatment of the illumination problem involved adequate knowledge of the fundamental visual processes. The relation between the sensation produced when radiant energy falls upon the retina and the stimulating radiation is extremely complicated and even a brief resumé of the subject would require many pages. In this particular problem we will be concerned chiefly with the way in which the retina responds to brightness and brightness differences. From the theoretical standpoint, therefore, the treatment of this theatre illumination problem must be based upon the knowledge of the brightness sensibility of the human eye. There are three types of brightness sensibility: (1) threshold sensibility, which is measured by the least brightness perceptible; (2) contrast sensibility, which is measured by the least brightness difference perceptible; and (3) glare sensibility, which is measured by the brightness just sufficient to produce discomfort or an appreciable lowering of visual acuity.

These visual sensitivity curves have been determined by Nutting†, Blanchard‡ and others, and for a detailed account of this work and its significance, the reader is referred to the original articles. The eye may be considered as an instrument of variable sensitivity. The sensibility to brightness, contrast (brightness differences), and glare depends upon the conditions at the particular time the determination is made and that condition in turn depends on previous stimulation. It is necessary, therefore, to specify the condition of the retina at the time the measurement of sensibility is made. This is done by specifying the brightness to which the eye is adapted and is termed "adaptation level" of the retina. For

instance, after an observer has looked for ten to thirty minutes at a uniformly illuminated surface large enough to fill the visual field, a condition of equilibrium in the retinal process is reached. The observer's eye is then said to be adapted to the brightness of the field and his adaptation level is specified by stating the brightness of the illuminated surface. This term "adaptation level" will be used later in the discussion of illumination measurements and it is hoped that this brief definition will make the term easily understood. From the curves (*loc. cit.*) relating the three brightness sensibilities to adaptation level, it is possible to draw many conclusions relative to the visual sensations resulting from a specified condition of illumination.

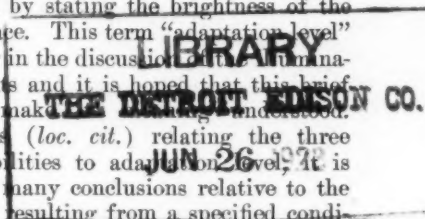
The experimental work was done in a small projection room with a screen mounted directly on one of the end walls. The room illumination was obtained by a fixture suspended in such a way as to illuminate the ceiling surfaces. This was so arranged that the ceiling near the rear of the room was illuminated to a fairly high level while the illumination decreased gradually toward the front of the room. By this arrangement it was found possible to obtain illumination on the table plane (horizontal plane 30 inches from the floor level) varying from 0.1 foot candle near the front of the room up to 0.25 foot candle at the rear without any perceptible injury to the quality of the projected motion picture. The following recommendations for the illumination of motion picture theatres were made. These were based not only upon the results obtained in the experimental work done at that time, but also upon a consideration of the fundamental nature of visual processes and the requirements of vision.

1. The illumination on the table plane should vary from 0.1 to 0.2 f. c., decreasing toward the front of the auditorium.
2. No area (outside of the projected picture) visible from any seat in the theatre should have a brightness of more than 2.5 to 3.0 ml.
3. The attainment of (1) without exceeding the values mentioned in (2) requires the use of a very extended effective source such as illuminated ceilings and walls, and is best accomplished by the use of an indirect system of lighting.
4. All light source fixtures such as diffusing globes and translucent glassware having a surface brightness of more than 2.5 to 3.0 ml. should be concealed from view or so

*Jones, L. A., *The Interior Illumination of the Motion Picture Theatre*. Trans. Soc. Mot. Pict. Eng., May, 1920, p. 83, and *An Improved Method for the Illumination of Motion Picture Theatres*. Trans. Ill. Eng. Soc., 1920, 15, p. 645.

†Nutting, P. G., *The Fundamental Principles of Good Lighting*. Jour. Frank. Inst., 183, 1917, p. 287.

‡Blanchard, Julian, *The Brightness Sensibility of the Retina*. Phys. Rev. XI, No. 2, 1918, p. 81.



placed as not to fall within the field of vision of the audience.

5. The lighting of the lobbies, vestibules, corridors, and stairways should be so arranged that the transition from the brightness level of the exterior to that of the interior is as gradual as possible, thus eliminating any sudden change in the brightness to which the eye is subjected. Such an arrangement is desirable for the elimination of visual shock which always occurs when passing from a region of very high to very low illumination or *vice versa*.

Other conclusions relative to the screen, frame, and lighting of the vestibules, lobbies, foyer, etc., were made which will not be reviewed at this time.

The results of these experiments were called to the attention of the architects and electrical engineers concerned in the construction of this theatre, and an effort was made to install a lighting system which would conform as nearly as possible to the recommended requirements.

After the theatre had been in operation for some weeks and the general illumination conditions found to be satisfactory from the practical standpoint, it was thought desirable to make a rather extensive set of measurements, which are here given, to determine the illumination levels actually obtained.

The lighting of the theatre during the projection of pictures is accomplished to a great extent by the large chandelier*. In this are mounted concealed units which throw light upward onto the ceiling. This lighted surface then becomes the effective source of illumination and due to the large area utilized a satisfactory low surface brightness suffices to give the required illumination. Within the chandelier are a few unconcealed lamps of low wattage which are operated at very low voltage. These light the chandelier itself to a very low level just sufficient to prevent the chandelier being silhouetted as a dark mass against the ceiling. The intrinsic brilliancy of these units is so low as to avoid any possibility of glare.

The mezzanine is lighted chiefly by lamps placed in the cove D. The lamps themselves are entirely concealed, the illumination being obtained by light reflected from the upper portions of the cove surface and from the illuminated ceiling over the mezzanine*. The space beneath the mezzanine is lighted by a similar cove system as indicated at C. All light sources within the region occupied by seats are entirely concealed from the audience, with the exception of the few small units mentioned previously which are operated at a very low intrinsic brilliancy in the main chandelier. Two indirect fixtures are provided near the rear and at the sides which throw light upon the ceiling

above the balcony and serve to provide adequate illumination in these areas.

In the accompanying plans the letters and numbers on the plans represent the points, in terms of row letter and seat number, at which measurements were made. At the points indicated, illumination measurements were made on a horizontal plane 30 inches above the floor level, the Macbeth portable illuminometer being used for the purpose. Measurements were made under two different conditions; the one which is designated as "low level" is that lighting which is used when motion pictures are being projected, and the other designated as "high level" is with all lights on and operating at normal line voltage. The results obtained at the low level setting are of greatest interest from the standpoint of motion picture projection. In Table I are given the values of table plane illumination for the low level condition. The letters at the left of this table correspond with the rows indicated in the plans and the values in each row are of illumination (in foot candles) found at the seat numbers as designated. It will be noted that while there is some variation in the illumination at various points of the theatre, this variation is not excessive, the minimum being .016 f. c. and the maximum .066 f. c. The average value of all readings recorded in Table I is .035 f. c.

TABLE NO. I

LOW LEVEL

Lighting for Motion Pictures

(Values in foot candles on horizontal plane 30" above floor)

ORCHESTRA					
Row B	.016	.024			.016
" M	.027	.032			.027
" Q	.026	.035	.040	.035	.026
" W	.024	.034	.035	.034	.024
" EE	.030	.047	.047	.047	.030
MEZZANINE					
" A	.016	.018	.021	.018	.016
" D	.037	.045	.048	.045	.037
" F	.065		.066		.065
BALCONY					
" B	.024	.050	.081	.050	.024
" H	.028	.034	.044	.034	.028
" O	.060	.020	.015	.020	.060
Mean of all = .035					

As was stated before, these readings apply to the illumination on a horizontal plane 30 inches above the floor level. A few readings were also made at various points on a plane making an angle of 45 deg. with the horizontal plane inclined toward the rear of the auditorium, this being the approximate position in which a printed program would be held by a person occupying one of the seats. It was found that the illumination on this plane was from 40 to 60 per cent greater than that on the hori-

*See illustrations in Part I, THE AMERICAN ARCHITECT, issue of June 6, 1923.

zontal plane. This increase is to be expected since an effort was made in planning the lighting installation to have the higher intensities toward the rear of the auditorium. The illumination on the program for any of the points indicated in the plans can, therefore, be obtained by increasing the indicated value in Table I by 50 per cent. The illumination values, it will be noted in actual use in the theatre, are somewhat lower than those recommended in the paper previously mentioned. Further reference will be made to this condition.

In Table 2 are given the measurements showing illumination conditions in the various foyers, lobbies, and entrances. Here again measurements were made on the table plane and in addition to these some brightness measurements were made on walls, vertical surfaces, and fixtures. All

TABLE NO. 2

LOW LEVEL

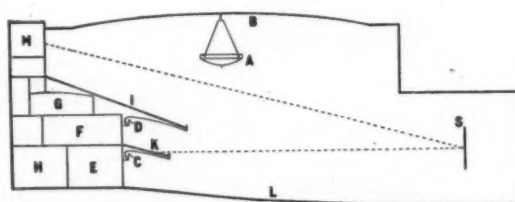
Orchestra Foyer*			
Illumination on 30" plane	Max.	.52	f.c.
	Min.	.09	f.c.
	Mean	.20	f.c.
Brightness of walls and vertical surfaces	Max.	.40	ml.
	Min.	.18	ml.
	Mean	.33	ml.
Brightness of fixture glassware		15.0-20.0	ml.
Mezzanine Foyer*			
Illumination on 30" plane	Max.	.32	f.c.
	Min.	.02	f.c.
	Mean	.10	f.c.
Brightness of vertical surfaces	Max.	.17	ml.
	Min.	.02	ml.
	Mean	.05	ml.
Fixtures		5.0-10.0	ml.
Balcony Foyer*			
Illumination on 30" plane	Max.	.66	f.c.
	Min.	.12	f.c.
	Mean	.25	f.c.
Brightness of vertical surfaces	Max.	1.6	ml.
	Min.	.1	ml.
	Mean	.3	ml.
Fixture Glassware		40-60	ml.
Main Lobby*			
Illumination on 30" plane	Max.	15.0	f.c.
	Min.	1.0	f.c.
	Mean	4.0	f.c.
Brightness of vertical surfaces	Max.	8.0	ml.
	Min.	0.5	ml.
	Mean	2.0	ml.
Subscribers' Entrance*			
Illumination on 30" plane	Max.	10.0	f.c.
	Min.	0.6	f.c.
	Mean	3.0	f.c.
Brightness of vertical surfaces	Max.	6.00	ml.
	Min.	.03	ml.
	Mean	1.00	ml.

*Note: For relative location of these places, see plan in Part I, THE AMERICAN ARCHITECT, issue of June 6, 1923.

brightness measurements given are in millilamberts (ml.) which for the purposes of this discussion may be considered as equivalent to apparent foot candles.

In considering the illumination conditions in the motion picture theatre, the chief factor of interest is the brightness of the various objects within the field of the observer's vision. Considering an observer at almost any point in the auditorium, the central portion of the field of vision is filled by the picture being observed. The regions immediately surrounding this are occupied by what we may term the "stage setting" and in this theatre it is of an architectural type, consisting largely of areas which represent gray stone walls above which may be seen a dark greenish-blue curtain representing the sky. The lateral portions of the field of view finally are filled by the side walls of the theatre, the lower portions of which are of buff colored stone above which are large mural paintings.

In the case of observers seated in the extreme rear, the upper portion of the field of vision may to a certain extent be filled by ceiling areas, these



Simplified longitudinal section through the Eastman Theatre

- | | |
|-----------------------------|---|
| L. Main floor of auditorium | M. Projection room |
| K. Mezzanine | S. Projection screen |
| I. Grand balcony | A. Large chandelier |
| E. Main floor foyer | B. Coffered ceiling of shallow dome |
| F. Mezzanine foyer | C. Cove at rear of main floor of auditorium |
| G. Grand balcony foyer | D. Cove at mezzanine |
| H. Main entrance lobby | |

being either the under portion of the mezzanine and balcony or the forward portion of the main dome. Brightness measurements were therefore made on various of the elements which may occupy the field of vision. The following values were obtained:

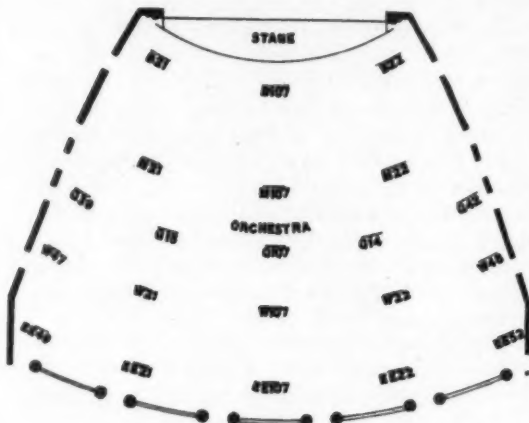
Lower portion of the side walls, mean brightness	.015 ml.
Upper portion of the side walls (murals) mean brightness	.010 ml.
Side walls of balcony	.021 ml.
Ceiling directly over central chandelier	.51 ml.
Ceiling over small indirect fixtures at rear of balcony	1.21 ml.
Stone railing in front of orchestra ...	.01 ml.
Side walls of stage setting	.006 ml.
Vertical surface of stage setting directly beneath picture screen	.04 ml.
Side banister of stage setting	.03 ml.

It will be noted that all of these brightness values are relatively very low, especially when compared with the brightness of various elements of the picture which will be mentioned later. None of the areas mentioned within the field of the observer's vision are high enough in brightness to cause glare or to raise the adaptation level of

brightness, however, is so small as to be quite negligible in producing loss of contrast.

It has been found in a statistical study of the transmission characteristics of representative motion picture positives* that the transmission of the highlight region is on the average 74 per cent while the transmission of the shadow regions is for an average picture 1.25 per cent, thus giving a contrast (that is, ratio of highlight to shadow brightness) of 58. With a screen brightness of 7 ml. such as was found in the Eastman Theatre, the highlight of the average picture would be represented by a brightness of 5.9 ml. These values are checked fairly well by actual readings taken on the screen.

In order to compute the effect of stray radiation on the contrast of the projected picture, it is only necessary to add the brightness due to stray light to both the highlight and shadow brightness and again to take the ratio. This leads to a shadow brightness of .10 ml. and a highlight brightness of 5.3 ml., giving a contrast of 53 which is only about 10 per cent lower than that obtained with no stray illumination on the screen. This reduction of 10 per cent in contrast under the conditions of visual adaptation existing in the motion picture theatre is barely perceptible and it is considered to be entirely negligible. It is probable that



Simplified diagram of the main floor, showing the locations chosen for the illumination measurements

the observer's eyes to such a point as to prevent satisfactory visual appreciation of the picture.

In order to obtain data on the brightness factors of the picture itself, measurements were made at various points on the screen while a picture was being projected. The particular film used was a portion of the picture being run at the time at the theatre and was considered to be a fairly representative picture of the better class of photoplays now being produced. The following items may be mentioned:

Sunlight on the white clothing of one of the actors was represented in the picture by a brightness of 3.0 ml.

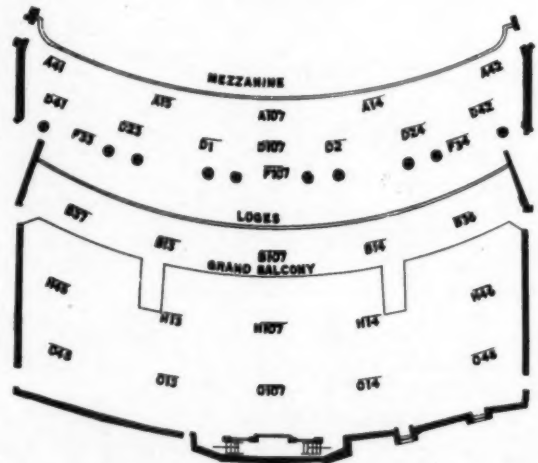
A reproduction of a letter written on white paper gave a value of 6.0 ml.

Title backgrounds measured .06 ml.

Deep shadows in some of the scenes measured as low as .05 ml.

With the projection machine running but with no film in the machine, an average screen brightness of 7.0 ml. was obtained.

The screen brightness resulting from general house illumination only was found to be .01 ml. This represents the illumination on the screen at all times due to light reflected from walls and fixtures in the theatre, and is what may be termed the "stray light" on the screen. This light, of course, is spread uniformly over the picture at all times and the effect is to lower the contrast of the projected picture. This



Simplified diagram of the mezzanine and grand balcony, showing the locations chosen for the illumination measurements

the amount of stray illumination on the screen can be doubled without interfering seriously with the photographic quality of the picture. These computations are all based on values of objective contrast and do not take into account the subjective effect which occurs in the visual processes of the

*Jones, L. A., *Printing Exposure and Density in Motion Picture Positives*. Trans. Soc. Inst. Pic. Eng.; Vol. 15, Oct. 1922.

observer when the general adaptation level is raised by increasing the room illumination. This point was emphasized in a paper previously referred to (Interior Illumination of the Motion Picture Theatre).

A study of the mechanism of vision shows that the contrast sensibility decreases appreciably when the eye is working at very low illumination levels. The presence of an appreciable amount of general room illumination in the motion picture theatre tends to raise the adaptation level of the observer and therefore to increase his sensibility to brightness differences. This effect tends to counterbalance the loss of contrast due to the presence of a certain amount of veiling illumination over the picture. The apparent or subjective contrast, therefore, is not lowered to as great an extent as is indicated by the values based on the objective brightness measurements.

The illumination on the table plane of this theatre was found to be on the average of .036 f. c. This is lower than was recommended in the former paper on this subject. Measurements have also shown that the general illumination can be increased appreciably without giving a sufficient amount of stray illumination on the screen to interfere seriously with the quality of the projected picture. When higher illumination levels were tried, there seemed to be a somewhat prevalent feeling that under these conditions the observer's attention was distracted from the picture by the higher visibility to surrounding objects and members of the audience. It would seem that factors other than the loss of quality by stray light on the screen must limit illumination levels permissible in the motion picture theatre. The illumination levels obtaining are quite adequate for the reading of a program when the type is fairly large and distinct. Little difficulty is experienced in finding one's way into the theatre even when the entrance is from brilliant exterior illumination.

It is highly desirable to arrange the lighting of the motion picture theatre so that the eyes of the patron entering the theatre are not subjected to any sudden and great change in the illumination. If the change from the exterior to the interior brightness levels can be made gradually and to extend over an appreciable period, the adaptation processes have time to operate and thus the eyes of the person entering will be in a condition for satisfactory vision at the illumination level existing within the auditorium. From the measurements of illumination and brightness, it is possible to trace the decrease in brightness level as the patron passes through various of the entrance areas. In the following table are tabulated some of these values in a way calculated to illustrate this brightness decrease in the case of a person entering the theatre through the main lobby, or-

chestra foyer and on into the central portion of the main floor.

In Main Lobby:

Just inside entrance	(30" plane)	15.0	f.c.
Center of lobby	(30" plane)	2.0	f.c.
Near orchestra foyer	(30" plane)	1.0	f.c.
Mean wall brightness in lobby		2.0	ml.

Main Vestibule:

Just inside door	(30" plane)	.23	f.c.
Under main lamps		.16	f.c.
Mean wall brightness		1.6	ml.

Orchestra Foyer:

Just inside door	(30" plane)	2.1	f.c.
Directly under lamp		.53	f.c.
Near entrance to aisle		.09	f.c.
Mean illumination	(30" plane)	.20	f.c.
Mean brightness of vertical surface in field of view		.25	ml.

Central portion of Main Floor, Seat Q-107:

Illumination on 30" plane		.04	f.c.
Illumination on program at 45 deg.		.06	f.c.

Note: For relative location of the main lobby, vestibule and orchestra foyer, see plan in Part I, THE AMERICAN ARCHITECT, issue of June 6, 1923.

A consideration of these values will show that the transition from exterior brightness levels is fairly gradual, and experience indicates that at no point is there a feeling of visual shock due to the too rapid decrease in the illumination.

In Table 3 are shown the illumination measurements made when all of the lights in the various

TABLE NO. 3

HIGH LEVEL

All Lights on at Normal Line Voltage

ORCHESTRA					
Row B	.38	.60			.38
" M	.75	1.21			.75
" Q	.60	1.04	1.38	1.04	.60
" W	.44	.81	1.21	.81	.44
" EE	.15	.32	.28	.32	.15
MEZZANINE					
" A	.15	.22	.24	.22	.15
" D	.30	.38	.38	.38	.30
" F	.52		.52		.52
BALCONY					
" B	.45	1.43	2.86	1.43	.45
" H	.22	.50	.66	.50	.22
" O	.11	.14	.16	.14	.11

Mean = .95 f.c.

fixtures are used at the normal line voltage. This is the highest level of light obtainable with the installation and may be used previous to the beginning of the motion picture exhibition, during intermission, and at times when the theatre is used

for musical entertainments. Under such conditions the illumination is very pleasing, giving an impression of brilliance without the glare and ostentation so frequently encountered in the theatrical interior.

The survey of illumination conditions indicates that in general the recommendations made in the previous paper have been met fairly well. The illumination levels are somewhat lower, but these

seem to be governed by psychological and artistic factors rather than by the quality of the projected picture. The illumination through the various entrance areas has been so adjusted that the transition from exterior to interior conditions is made fairly gradually. Practical observations of the conditions show that the illumination inside the theatre is sufficient so that an observer entering can easily find his way about without difficulty.

Revenue and Plan

REVENUE and plan cannot be dissociated. If revenue is the desideratum, then the plan is the essential element of the structure. To plan for these conditions requires a knowledge of the things which influence revenue. The most important factor is rentable area so disposed as to light, ventilation and accessibility that the maximum rate of rentals can be secured. When this has been accomplished, the correlative elements are cost of construction, durability, cost of maintenance and operation.

Too often there is, in planning, an attempt to secure certain architectural features without regard for their effect on revenue. But there is no reason why both good architecture and planning for revenue should not be an accomplished fact. It is not expected that architects should be expert in the details of operation and maintenance or in the technique of renting space which includes a detailed knowledge of adaptability of space to occupants' needs.

The same reason that induces the architect to avail himself of the special knowledge of the structural and mechanical engineer justifies him in securing expert advice on those things which directly affect the net revenue of the building. Such a service is now available through the Building Planning Service of the National Association of Building Owners and Managers. In a recent project involving over \$10,000,000 this service made such suggestions to the architect and owner that nearly \$50,000 per year were added to the rental income. The finest co-operation was apparent throughout the study of the problem. It is not the intention of this service to supplant the work of architects in the layout and design of office buildings. It is instead merely supplemental, offering a new phase of service in the planning of buildings so that they may be built to yield the maximum income with the highest possible efficiency in operation and maintenance.

A proper consideration of the relation of rev-

enue to plan should eliminate that loss through unearned income, that is noticeable in some poorly planned structures.

Fire-Stopping

FIRE-STOPPING is generally recognized as one of the most efficient methods of protecting frame construction against the spread of fire. We are all familiar with it in principle but may lack ready knowledge of it in detail. To familiarize designers and specification writers with these details and furnish them in a usable form, the National Lumber Manufacturers Association, Washington, D. C., has issued a booklet on the subject. This booklet can be secured, free of charge, on application. After the architect has provided for this necessary feature in all construction where wooden timbers are used in floors, partitions, roofs and walls, it is necessary that careful supervision be exercised in order that the work is properly executed. In structures, such as speculative buildings, where there is no architect employed, this vital factor of good construction is often entirely eliminated. That is the grave problem that confronts every person who is interested in fire resistive construction. Even city codes which require such construction are hard to enforce owing to the inadequate supervision that is largely common to most building departments. This is a condition due to the usually too small number of inspectors needed for effective supervision.

New Labor Contract in Chicago on Landis Award Basis

THE Chicago Building Trades Council has recognized the principles of the Landis Award for three years in an agreement signed recently with the Building Construction Employers Association. Working conditions laid down in the Landis Award are to be the basis for all negotiations between the unions and the contractors' association.

DEPARTMENT of ECONOMICS

Economic Factors Which Underlie Construction Activity—Prepared for THE AMERICAN ARCHITECT by the American Chamber of Economics, Incorporated*

MAY statistics of the volume of building and construction, not published at this writing, are expected to reflect the suspension and postponement of new building, which eventualities advancing costs have saddled upon the industry. This conclusion is supported by the fact that contracts awarded in April disclosed a perceptible relinquishment of their former rate of gain. The first quarter of 1923 surpassed the volume awarded in the corresponding period in 1922 by more than 20 per cent, yet the first four months of this year have exceeded the first four of last year by less than 15 per cent. Still quoting from the statistics of the F. W. Dodge corporation (reports from 27 states) contracts awarded in April were less than 1 per cent ahead of the same month a year ago, while new business for the month was only 7 per cent ahead of March's record. And March's gain, favored by heavy seasonal movements, to be sure, was better than 45 per cent over February. Moreover, contemplated jobs declined more than 19 per cent during April. And finally, the April returns of both Bradstreet and S. W. Straus & Company disclosed perceptible declines. It would appear, then, that the peak of 1923 building had been reached, although usually that altitude is not attained until May, June, or July.

No rapid decline is in prospect. The industry is still possessed of fundamental strength in rather substantial proportions, serving as assurance against collapse. It is reasonable to expect, however, that the volume of building will recede until building costs cease rising and start to decline. Although the May volume of new building is expected to show the effects of policies of retrenchment, building costs themselves are likely to pursue obstinately their avowed upward course. It may be one month and it may be several months before costs reluctantly depart this high territory, to follow downward the retreating curve of volume for costs are notoriously slow of movement. According to the index of the *Engineering News-Record*, it costs approximately 30 per cent more, on the average, to build than it did a year ago,

and 116 per cent more than it did in 1913.

Advancing costs are now receiving their greatest impetus from labor's demands, and when the architect considers the probability of declining costs and expenditures, he should bear in mind that wages are notably reluctant to give ground. The unions now have the contractor paying the peak prices of all time for the services of their members.

And they are demanding more, and threaten to strike if the contractors refuse to grant their uneconomic requests. Builders attribute these unreasonable demands to the speculators who have broken into the industry since the acute shortage of housing was realized. Time is the supreme factor with these people and in order to secure a quick turnover, they offer increased wages to attract workers from a competitor. The builder on the ordinary job is forced to bid high for his men. Furthermore, a rather serious and costly shortage of labor exists. It is ascribed to the fact that construction is still going on at an unprecedented pace, that the old supply of skilled craftsmen from Europe has been materially restricted by the immigration laws, and that the inflexibility and inelasticity of the old system of apprentice training is clearly inadequate to meet the needs of modern conditions. Moreover, labor is not as efficient as it was when wages were lower, and help was more plentiful. The feeling of security which a shortage and high wages give to a workman is not conducive to his best efforts nor does it beget the greatest efficiency.

Thus far the contractor has sought peace with his men by complying with their demands, but the time is fast approaching when it will be impossible for him to yield further. His margin of profit is becoming increasingly narrow. The public has gone on record as unwilling to pay more, and further demonstrations and confirmations of its attitude will be forthcoming from time to time as the Summer progresses. Labor has already indicated its policy.

The future of construction costs rests principally upon the attitude of the unions in the months immediately ahead. If they adhere to the point of force to unreasonable demands, costs will remain high and the curve of volume will dip the lower. If labor adopts a co-operative attitude, new business is assured in a ready volume, and there will be steady and profitable employment for all. History of organized labor, unfortunately, throws the

*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.

weight of precedent in favor of the former course of action.

Materials prices on the other hand, have already confessed their slackening tendencies. Structural steel has been the first to undergo any tangible and definite recession. Composite prices of plates, shapes and bars, f. o. b. Pittsburgh, have declined during the month of May from \$2.56 to \$2.53, according to *The American Contractor*. Lumber has only recently disclosed weaknesses. A break in values is not in prospect at the present time but there seems to be no question about quotations seeking lower levels. Since the first of the year production and shipments have been steadily improving and orders have been declining. The market for common and face brick is firm and unchanged, but Portland cement is higher.

The factors underlying the present materials market are substantially what they have been for some months past. Shortages, due to pronounced activity within the industry and to delayed shipments, still exist in many quarters. Unfilled orders are gratifyingly heavy, but the rate of gain is losing a great deal of its early warmth and intensity. The recession that has occurred within the industry will be to some manufacturers a distinctly welcomed breathing spell, for production capacity is limited and appears to have been unable to cope with a continuation of the early Spring demand. Nevertheless, if labor costs persist in their present altitudes and the volume of new building is forced to decline, that very dissipation of demand will surely be reflected in the materials markets, affecting those lines first which enjoy the more adequate producing and shipping facilities. If labor's program is long-sighted enough to include the fostering and care of new business, the resultant demand will be assurance against any break in the materials market, for in the quotations of these materials a high labor cost is likewise reflected.

Since April, 1922, builders' supplies, according to the Bureau of Labor's index, have risen more than 30 per cent, and are 104 per cent above the 1913 average. Of the nine commodity groups covered by that index, the building and construction group has made the heaviest gains. The advance has been out of line with the remainder of the list and is due for some correction, although, for reasons already stated, palpable results may not be reflected immediately.

Building costs have been further enhanced by the stiffening market for mortgage money. Outwardly that market has not undergone any marked change, although in some instances rates have been actually increased. Bankers, more commonly, have achieved the same result by increasing the rigidity of their scrutiny of risks, of refusing absolutely to loan on projects which they felt were of a speculative character, of making new loans only on that new building which investigation proved to

be necessary to relieve a shortage, and finally, by declining to advance more than 40 to 50 per cent of the total cost of the job, with a view to increasing the equity behind their risk and to compelling the owner to shoulder more of the cost of the completed structure. These restrictions have been imposed recently by bankers independently but with the idea of curtailing unnecessary and speculative ventures within the trade, of checking the advance of costs, and of bringing the industry back to a more economically sound basis. The scheme is working admirably.

While this rather formidable rise in costs, and the resulting policies of retrenchment gravely threaten to force an early peak in the volume of new building, there are factors in the situation which, unless handicapped unreasonably, indicate rather pointedly that contracts awarded will tend to remain above normal for some months yet. Unquestionably, a shortage of housing still exists. How much, it is very difficult to determine. Nevertheless, it is generally believed to be of sufficient proportions and of such an urgent character as to make it sensitive and quick in its response to lower building costs. Then, too, industry generally has acquired a distinctly stronger purchasing position than it cherished a year ago. Wise expansion will soon be needed, and happily industry is working into a position where it can afford such extensions. Particularly is this true of utilities. Moreover, the improved position of industrials and utilities has strengthened the buying power and the donating power of salaried individuals and stockholders, not to mention the laboring man. This betterment has found reflection in the erection of religious and memorial buildings and of beautiful homes. While the influence of the building shortage is diminishing from month to month, the purchasing and donation power of organizations and individuals is still in its ascendancy. Furthermore, rents have not been deflated, and the return upon the investment of real estate and construction is still proportionately large. This attraction will continue to draw the public into the market. And finally, there is an ample supply of credit at relatively easy rates for the builder who can comply with the conditions laid down by the mortgage-money banker.

The setback which this industry has received at the hands of the striking consumer is typical of what has transpired in other industries, although more notably in building and construction because here movements have run to greater extremes. Inasmuch as the building boom, so-called, has played such an essential part in the recuperation of business after the depression of 1920-1921, the prospects of withdrawing this industry's whole-hearted support has thrown a black cloud over the entire industrial and commercial outlook. A recent publication of one of our largest national banks said that last year "building construction took 15

per cent of the steel produced in this country, being second in its requirements only to the railroads. The manufacture of cement is the fourth industry in the consumption of coal. During 1922 forest products made up 7 per cent of the total freight car loadings, a larger proportion than grain, livestock or ore. There are two and a half million persons engaged directly in the building industries, besides large numbers occupied in industries directly dependent upon them. It is probable that a tenth of the total population of the country is dependent directly or indirectly upon the building industries for its support." There is a picture of the scope of the entire enterprise, and there is little wonder that when the customers of this great industry struck, that disappointment, pessimism, and some apprehension pervaded the entire field of commercial and industrial enterprise.

So profoundly have men been impressed during the past five years with the cyclical progress of business that it has apparently left them incapable of thinking of progress as a sidewise and stable movement. The violent peaks and troughs have so overwhelmed them that they label every spurt an inflationary movement, and they feel that every

decline is a herald of depression and gloom. Business in March was at record levels, a little too lively to foster a feeling of security. Prices were enjoying a corresponding movement. Consumers felt that these advances had gone far enough. They postponed their buying. As Trade Service admirably points out, they did not *abandon* these requirements. The underlying trends suggest that they could not renounce them altogether, for the purchasing power of the consumer, be it corporation, firm or individual is improving. Even the farmer is a better buyer than he was a year ago, and next year his purchases will beat this year's. It just happened that the asking price of the seller had outstripped the buying ability of the purchaser; the purchaser could afford to play a waiting game, so he is waiting. He hasn't yet renounced his buying program, for such a renunciation is usually accompanied with fear and alarm. The buyers' strike will dissipate with time and the correction of high costs, and the industry will look back upon its occurrence as a blessing disguised, for it gives every promise of being an effectual stabilizing agent, prolonging good business on a sounder, healthier basis.



A house at Ann Arbor, Mich.
Childs & Smith, Architects



Railway Station, Helsingfors

Gesellius, Lindgren & Saarinen, Architects

REVIEW of RECENT ARCHITECTURAL MAGAZINES

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

THERE is a very well worn saying about a prophet being not without honor save in his own country, and to the casual reader of architectural magazines it would seem that this comment might apply to the architect as well. There is a glamor over an imported article that affects all of us, and "Made in France" often means as much in architecture as it does in the millinery shop. I am sure very much more good Georgian architecture is now done here than in England, in spite of the fact that the English architect can draw his inspiration direct, while we are dependent on photographs; and it is equally true that the visitor from abroad thinks wonderfully inspiring the tall buildings that we consider atrocious. This peculiar state of mind often produces strange and paradoxical results. An architect can labor long and somewhat unsuccessfully in the development of a novel architec-

tural expression, only to find that it meets success not as an expression of a three story building of masonry in his own country but as an expression of a thirty story building of steel in another country; and similarly an architect can invent and get little thanks for an entirely original but somewhat absurd form of country house for the middle West and yet receive a great deal of praise when the same scheme is used for a hotel in Japan.

A case in point is the case of Mr. Eliel Saarinen who has done some work in Finland which is naive to the point of Bolshevism, and yet when he reproduces his favorite striations in the Tribune competition, is hailed as the only true exponent of modern American Skyscraper Architecture. And then there is the equally strange case of Mr. Frank Lloyd Wright, an exponent not of vertical but of horizontal lines, who quite filled up the

territory around Chicago with flatroofed houses which were distinctive but hardly domestic. Mr. Wright has recently completed the Imperial Hotel in Tokyo, Japan, much to the admiration of Mr. Louis Sullivan, who fills many pages in *The Architectural Record* of April in describing this masterpiece and in proclaiming its author as "a great, free spirit, whose fame as a master of ideas is an accomplished world-wide fact."

Now, I cannot admire the work of Mr. Saarinen in Finland, but his Tribune Building in Chicago was extremely good and wonderfully presented, and I certainly did not like Mr.

From "The Architects' Journal," London



Business premises in Helsingfors
Gesellius, Lindgren & Saarinen, Architects

Wright's work in Chicago, but I do in Japan. I cannot consider seriously Mr. Sullivan's statement that the Tribune Building is "a splendid interpretation of the spirit of the American people," a statement which to me means nothing, nor have I much patience with those who talk of the logical expression of a type of building which has no logic at all, but certainly Mr. Saarinen has made good use in Chicago of a system that he has been developing unsuccessfully for many years in Finland, and Mr. Wright's hotel in Japan seems

somehow very much more appropriate for that country than the pseudo modern classic work that is now being done by the Japanese architects. It is all very topsy-turvy and rather like Alice in Wonderland, and if there is a moral to it I sup-

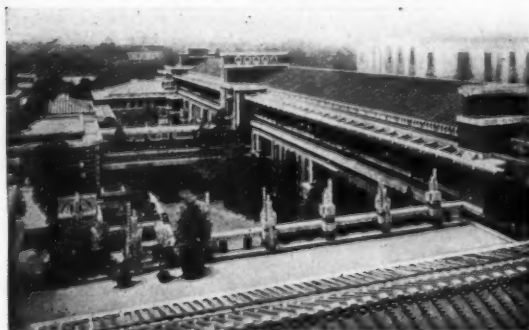
From "The Architectural Record"



Imperial Hotel, Tokyo, Japan
Frank Lloyd Wright, Architect

pose it is that if you want to make a success you must not start working upon the object of your aspiration but upon something quite the opposite. Take Sir Christopher Wren, who has just had his bicentenary; he started as a mathematician and a professor and ended by designing St. Paul's. If this general idea was carried further it might revolutionize our architectural schools. Instead of bothering first year men with shades and shadows we could give a short course in the theory of medicine or in the art of making Batiks,

From "The Architectural Record"



Imperial Hotel, Tokyo, Japan
Frank Lloyd Wright, Architect

and gradually work up to the practice of tattooing and make samplers for theses.

It is rather cheering, however, to find that all architecture is not topsy-turvy and that there is such a thing as nationality after all, and that an American can do an American building. Char-

lottesville might be termed the center of Colonial architecture in Virginia, and it is particularly fitting that a Virginian of family should be selected to do important work there. Walter D. Blair's Charlottesville Library is original and good, and it is only to be regretted that a better setting was not provided for it by the authorities. But in any location it will bear comparison with the old work of Thomas Jefferson. The mention of that name, though, brings back the old topsy-turvy feeling again, for was not the Honorable Thomas a statesman rather than an architect, and was not Dr. Thornton a physician and L'Enfant a soldier? And even in modern days Bernard Shaw has redesigned the houses of Parliament. It all goes to show, I suppose, that no one quite knows his vocation. For example, I have always cherished

rial, and President Harding the Home Sweet Home house of Donn Barber.

I always admired, as everyone does, the general scheme of the University of Virginia and I always wondered how Jefferson, an amateur, could have conceived such a monumental layout. Some years ago I came across a Grand Prix of 1807 in one of those books of early Grand Prix which date from the late eighteenth to the first quarter of the

From "The Architectural Forum"

From "The Architectural Forum"



Charlottesville Library, Charlottesville, Va.

Walter D. Blair, Architect

an idea I would have made a really dignified Bishop.

But Jefferson seems to have been a good architect as well as a statesman. I remember years ago, when McKim, Mead and White reconstructed the University of Virginia after the fire, the authorities sent up a wonderful collection of Jefferson's original drawings and notes, and very curious and interesting they were. The drawings were small and crudely drawn, but the idea was there, and the notes were extremely copious and filled with the minutest detail; schedules of quantities; the number of brick that had to be imported; directions for quarrying the stone and so on; all showing that the cares of state and the responsibility of forming a precedent for the Jeffersonian Democracy, now so loudly acclaimed, did not prevent his turning his attention to other things. An all round man was Thomas, a full man, as the old saying has it, and it would be interesting if modern executives followed his example. Mr. Taft, following precedent, should have designed the Lincoln Memo-



Delivery Room, Charlottesville Library, Charlottesville, Va.

Walter D. Blair, Architect

nineteenth century, beautifully engraved, and published in Paris in 1818. This particular scheme was by M. Huyot and was entitled Palais Pour L'Education des Princes de la Famille Imperiale. It had a familiar look and on examination seemed strangely like the University of Virginia. The central motive was different in plan, but the general arrangement was the same; there were the same connecting covered passages, and the porticoes of the flanking buildings interrupted these passages in the same manner, and even the yards at the backs were there, although the walls of these yards are straight and not wavy as were Jefferson's. It seems quite evident that some time when he was in Paris Jefferson must have seen this project and adapted it to fit the requirements of the

University, taking the Pantheon as his model for the central feature.

The great church of Hagia Sophia, or Holy Wisdom, in Constantinople, so often miscalled St. Sophia, as if it were named for a saint of that name, is the subject of an interesting article appearing in the May and June numbers of *Architecture*, written by Professor C. R. Morey of Princeton. In this article, excellent as it is, Professor Morey seems under the spell of the old fallacy that Greek work was always laid out in a series of mathematical proportions, for example he says, "Banish for a moment the distracting play of color, and you find a design whose sense of proportion and harmonious clearness is surely Greek. We see the same tradition in the very exactitude of the measurements, as carefully planned as in the case of the Parthenon. Thus the length of the building, including the atrium, or the colon-naded forecourt to the West of the entrance, was exactly 500 Byzantine feet; without the atrium exactly 300, and to conform to this length the apse and narthex are given an unusually small projection. The height of the dome above the pavement is just 160 feet, as against a visible length of the interior of 250, proportionate, you see, as the squares of 4 and 5. The height of the original dome was just one-fourth its breadth; another refinement of dimension can be seen in the placing of the baptistery at the Southwest corner of the outside of the church exactly 100 feet from the center of the square under the dome. Lastly, we have already noticed the care with which Anthemius concealed the disparity of the sides of the central square, and by a clever manipulation of moulding brought the apparent span of all four arches to exactly 100 feet."

Now there is certainly nothing Greek in the design. The fact that the interior measures exactly an even number of hundreds of feet, if indeed these figures are correct, means nothing in particular. The start of the design was the central dome, and the size of that, an even hundred feet, was probably laid down as a direct command from Justinian, just as some Czar of Russia laid out a railroad by drawing a straight line with a ruler between two cities. From a standpoint of design the dome might just as well have been 99 feet or 101 feet in diameter. The length of the church was then determined by the addition of the half domes, and if the figures given are correct, it merely means the architect preferred to work to even figures. There is nothing mysterious about it; and as to the fact that the height of the dome is to the visible length as the squares of 4 and 5, this does not seem to agree with the figure of 300 feet above given, and if the original dome was 20 feet lower than the present one this mystic ratio at once disappears as far as the original designer was concerned. It would be interesting to know what

particular degree of refinement was obtained by placing the baptistery "at the Southwest corner of the outside of the church exactly 100 feet from the center of the square under the dome." The figures given, I assume, are taken from the Greek of Antoniades, who possibly looked on things much as our old friend, Vitruvius, did, and saw arithmetical proportions that the original designer never dreamed of. It all harks back to Ad Quadratum and Mr. Jay Hambidge.

In this connection it is interesting to read the first of a series of articles on the planning of the Parthenon, published in the June number of *Architecture* and written by William B. Dinsmoor. I remember when I first met Mr. Dinsmoor years ago. He was introduced as the man who knew more about the Parthenon than any man alive, and as far as I know that is a true statement, though it is one which Mr. Dinsmoor modestly denies. This article should be read by everyone who is interested in this subject or in architecture in general, as it is well written and authoritative, and I only regret I cannot quote more than the following: "A colleague of mine at Columbia University recently selected at random a photograph of a steam-pump from a trade catalog, and found that it worked out perfectly, containing rectangle, location of valves, and all, according to the 'golden section,' 1.618. But he does not therefore claim that the engineer who designed that steam-pump consciously proportioned it according to the 'golden section,' or that an earnest and successful attempt to make it an object of beauty caused its parts unconsciously to follow the divine law." The gist of the whole thing is simply that the Greek Doric temple was a gradual development of a simple type and in each succeeding temple the architect tried to improve the proportions of the preceding ones, and as these temples were of different size it is quite probable that some scheme of modular or proportionate expression was developed to record these contemplated improvements, just as nowadays we use modules for the proportions of an order. This is the extent of its usefulness and all else is nonsense.

I have received this month a copy of a German publication, *Moderne Bauformen*, together with the statement that I will receive it monthly hereafter. Not understanding German I am unable to read the text but the illustrations are modern enough, God knows, and to judge from them I can't say I appreciate the promise of its monthly receipt. As an example of German modern building form I reproduce a quaint little conceit which is a Vorhalle and a Wandelgang. In this reproduction unfortunately much of the charm of the original has been lost, as the wall panels are yellow, the frieze red, green, blue and black and the ceiling tan and lavender with dark zigzags and the carpet bright pink, altogether just the sort of place

From "Moderne Bauformen"



Front hall and stairway of a German house

for a German profiteer to Wandelgang. This modern rot seems very much in evidence now in Ger-

Plaster Work, An Ancient Art

THE origin of plaster and plaster work is lost in the haze of prehistoric times, states a recent issue of *The Straus Investors Magazine*. Its scientific composition early reached such an amazing state of perfection that much of the plaster used on Egyptian structures four or five thousand years B. C. surpasses in many ways the material used today.

From traces of prehistoric dwellings, still extant, we learn that primitive man was accustomed to build his house of poles set in the ground, while the chinks between these uprights were filled in with a plaster made of mud and strengthened with grass. This early material was soon replaced with a composition, much more durable, which included lime, as we know it, and frequently calcined gypsum, which we today call "Plaster of Paris." A great deal of fine and delicate ornamentation of plaster made in high relief thousands of years ago is still intact today.

Plaster work on the pyramids dating from about 5000 B. C., is as hard and substantial today as it was when it was first set. These ancient builders used reeds in place of laths in constructing walls, and the plaster was applied and manipulated in much the same way it is today with tools almost exactly the same in shape, design and purpose. Hair was mixed with Egyptian plaster to strengthen it and the material was applied at a thickness of one inch.

Very early in the study of Greek building and architecture we discover a fine quality of plaster and a hard stucco of white lime. Some of this dates from the fifth century B. C. Frequently the Greeks, during the age of Pericles, would plaster both the inside and outside of the building, even when the wall was of marble. It is probable that the outside marble was covered because the

many and by the same token all over the Continent. Whether it was caused by the war or whether it caused the war I don't know, but it seems universal. Here it seems confined to Greenwich Village and to some of the horrible examples of the influence of that degenerate School of Matisse Cezanne *et al*, with which the pages of some of our so-called art magazines are defiled, and which are apparently made by a feeble-minded but utterly depraved child of eleven. It is just that sort of thing that makes one think that after all an absolute monarchy is not altogether a bad thing, although even the most despotic of monarchs would be hard put to it to find a suitable punishment. Something lingering, with the possibility of boiling oil, or even castor oil, if some Mussolini could only be found to administer it.

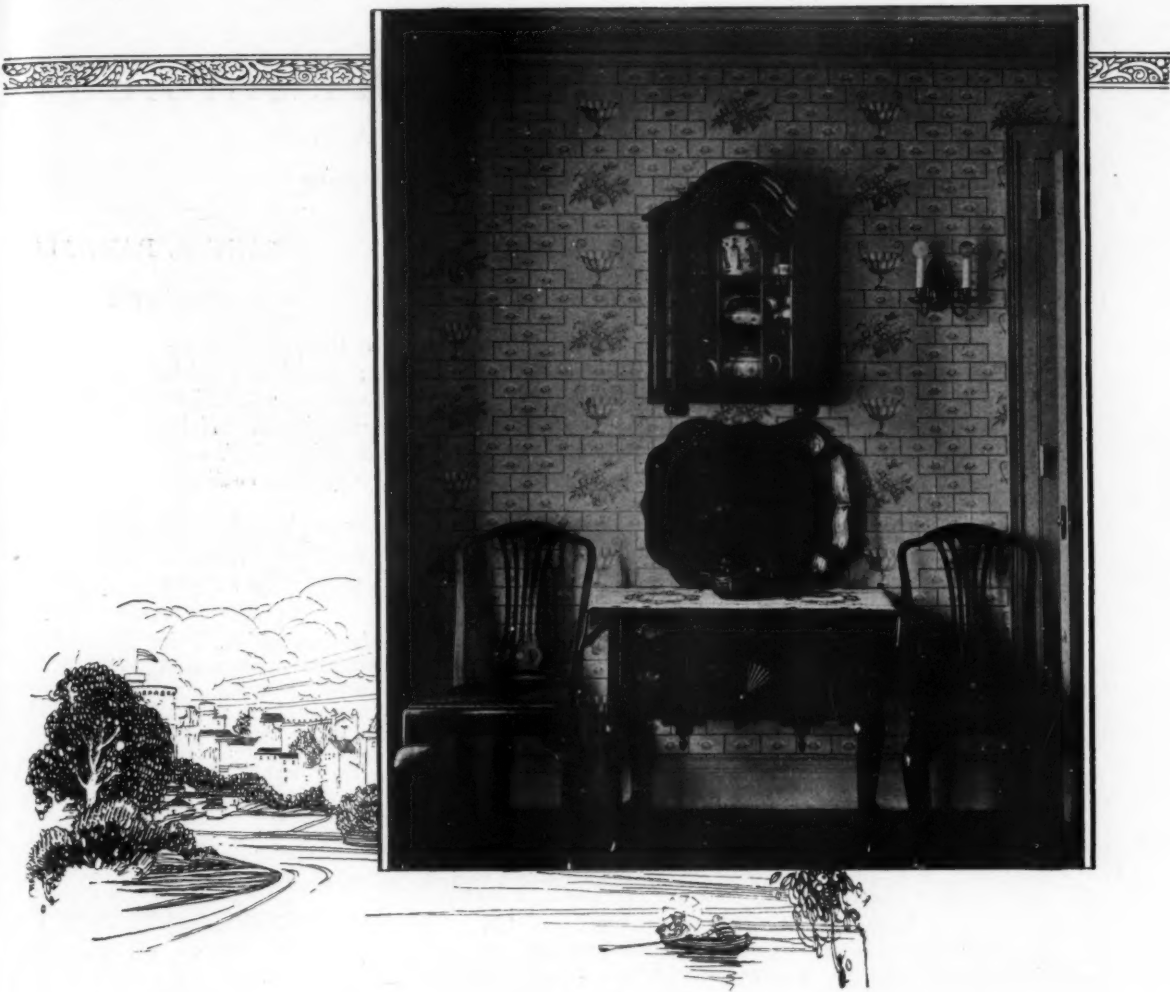
plaster offered a splendid surface for the fresco painting used extensively for decoration. The plaster of this period was also employed for the interior pavements of temples. It furnished a thick, hard surface which was ornamented with allegorical paintings.

The Romans continued to build their buildings in the Greek style and the use of plaster and its preparation were well known to them. Here are some instructions for preparing and applying plaster which are taken from a work on architecture written by the Roman citizen, Vitruvius, in 16, B. C.—"The lime used for stucco should be of the best quality and tempered a long time before it is wanted for use. The Greeks, besides making their stucco work hard, with thin coats of marble dust plaster, polished with chalk or marble, caused the plaster when being mixed to be beaten with wooden staves by a great number of men. Some persons cutting slabs of such plaster from ancient walls use them for tables or mirrors."

The elder Pliny, who wrote the natural history, famous throughout the ancient civilized world, wrote—"No builder should employ lime which has not been slaked at least three years. The Greeks used to grind their lime very fine and beat it with pestles of wood."

Many ancient English houses still standing have the walls plastered above a high wainscoting. Plaster walls and ceilings, were artistically decorated in color and some ceilings dating from the time of Henry the VIII, Queen Elizabeth and James I, rank among the finest examples of interior painting.

Most of the old houses of the Latin Quarter in Paris dating back three or four centuries, although built of brick and stone, are plastered outside and in, with a very fine plaster which is as smooth and apparently as hard as marble.



WHEN QUEEN ANNE came to the throne of England the Dutch influences that arrived with William and Mary were still strong in interior decoration. In the artistic effects of both these periods wallpaper played an important part.

Queen Mary herself had her bedroom in Windsor Castle hung with chintz, and her example was widely copied in the great town and country houses of the day. In the Queen Anne interior illustrated above an appealing

suggestion of the appropriate Dutch influence is obtained by the use of a tile paper. Such flexibility in suggesting an authentic atmosphere is an outstanding advantage of wallpaper that will appeal particularly to the architect and interior decorator.

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OUTLINE OF TENTATIVE SPECIFICATIONS FOR HOT AIR HEATING SYSTEM

(The form of this Bulletin conforms to the arrangement of Elements of a Specification as given in Bulletin No. 5, ANALYSIS OF A SPECIFICATION.)

I. CONTRACT AND LEGAL

1. Parties:
2. Agreement:
3. Terms of Payment:
4. General Conditions:
5. Regulations and Code:
6. Standards:
7. Patents:

II. ECONOMIC

8. Scope of Contract:
 - a. Drawings:
9. Work Included:
10. Work Not Included:
11. Methods of Analysis and Comparison of Bids:
 - a. Methods:
 - b. Basis:
12. Conditional Payments:

III. GENERAL DESCRIPTIVE

13. Characteristics, Service Conditions and Ultimate Requirements:

14. Location:
15. Shipping Instructions:
16. Visiting Site:

IV. PRELIMINARY PREPARATION

17. Field Measurements:
18. Shop Drawings:

V. MATERIALS

19. Properties, Chemical and Physical:
20. Sizes, Weights and Gauges:
21. Quantities:

VI. METHODS

22. Hot Air Furnace:
 - a. Foundation:
 - b. Furnace:
 - c. Furnace Design:
 - d. Trimmings:
 - e. Setting Up:
 - f. Casings:
 - g. Grates:
 - h. Regulation:
 - i. Cleanout-Doors:
 - j. Humidifier:
 - k. Cold Air Inlet:
 - l. Cold Air Room:
23. Pipes, Registers:
 - a. Smoke Pipe:
24. Pipes and Register Boxes:
25. Length of Horizontal Runs:
26. Riser Pipes:



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The three golf courses at Westchester Biltmore were laid out by Walter Travis, dean of American amateurs. Bathtubs can scarcely dispute precedence with golf courses when country clubs are the theme, yet the fact that the Westchester Biltmore baths are marked with the name KOHLER "in the enamel" is one sure sign that the international reputation of this country club has beneath it the discriminating attention to detail which produces perfection in the ensemble.

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34. Cold Air Face in Doors:
35. Covering of Pipes:
36. Screens:
37. Finish:
38. Co-operation with Other Contractors:

39. Protection of Work:

VII. SCHEDULES

40. Schedules of Operation:
41. Delivery and Completion:
42. Marking and Shipment:

VIII. RESULTS

43. Inspection and Performance:
44. Guarantee:
45. Test:
46. Approval or Rejection:

A Correction

To the Editors, THE AMERICAN ARCHITECT:

WILL you be kind enough to publish the following correction of an unfortunate clerical error in the advertisement of this Society appearing in the May 23 issue of your magazine whereby the Chapel of the Carmelite Convent, Santa Clara, California, was erroneously credited to Albert M. Cauldwell as architect.

Maginnis and Walsh, of Boston, are the architects of the Carmelite Convent and the beautiful chapel featured in our advertisement.

We deeply regret the circumstance which led to its authorship not being correctly credited. By giving this announcement every prominence that may be agreeable to you, we shall be greatly obliged.

National Terra Cotta Society
F. S. LAURENCE,
Executive Secretary.

The Art Commission of New York

MANY of us, states *The Builder*, of London, in one of its recent issues, have looked with envious eyes on the Art Commission of New York and its powers. Whenever the development of land and our towns and cities is contemplated we cannot help wondering whether no way can be found to safeguard us such as they have in New York. To read the Report of the Commission for the year 1921 is to recreate our envy. It is imperative that the members of the Commission shall possess the needful qualities of judgment, tact, and knowledge; but to err is human, and we can but do our best. The powers of the New York Commission include the jurisdiction over all designs of buildings, bridges, approaches, gates, fences, lamps or other structures erected or to be erected upon land belonging to the city, and in respect to the lines, grades, and plotting of public ways and grounds, and in respect to other arches, bridges, structures and approaches extending over or upon any street or public place belonging to the city, and its approval is required for every such structure to be erected; in the case of any such

structures the total cost of which does not exceed 250,000 dollars, the approval of the Commission is not required if the Mayor or the Board of Aldermen request the Commission not to act.

The Passing of the Morgue

THE announcement that the Morgue in Paris is to be demolished is not likely to draw indignant protests from French architects, states a recent issue of *The Architects' Journal*, London, for it has little claim to architectural distinction; but its disappearance will at least evoke "the passing tribute of a sigh." That grim little building beyond the flying buttresses of Notre Dame is part of familiar Paris, and nobody really likes to see familiar things of this sort passing away. It was a saddening sight, that of the housebreakers at work on old Newgate. The sinister associations of the Morgue have had a peculiar fascination for a certain sort of mind. The mad Méryon made it the subject of one of his most morbid etchings; and it is not without significance that Poe called one of his most horrible tales "The Murders in the Rue Morgue." Soon the place will be only a memory. And surely the French are becoming less picturesque in their nomenclature; there is a regrettably prosaic flavor about that title of the new Morgue—"Institut Médico-Légal."

Newark, N. J., to have Museum

A MUSEUM to be the gift of Louis Bamberger, will soon be erected in Newark, N. J., at a cost of \$500,000. Mr. Bamberger is not making a contribution of the money but is giving a completed building costing approximately the amount named, and suitable for its purposes, to be, with the tract of land on which it will stand, irrevocably dedicated to museum uses so long as the association continues to function as contemplated by its charter.

Up to the present time the Newark Museum of Art has been hospitably lodged at the Public Library, but it has long since outgrown its borrowed quarters.



CARMELITE MONASTERY, SANTA CLARA, CALIF.

Maginnis & Walsh, Architects

THE DECORATIVE VALUE *of* TERRA COTTA

UNDER the above heading the beautiful building shown was illustrated in our advertisement in the May 23rd issue of this magazine.

Through an unfortunate clerical error, authorship of this building was incorrectly attributed to another architect instead of Messrs. Maginnis & Walsh.

We gladly make this correction with our sincere apologies for the error.

NATIONAL TERRA COTTA SOCIETY

19 West 44th Street

New York City

Mapping of National Forests

OF the 181,799,997 acres included within the boundaries of the national forests, 20 per cent is accurately mapped and 56 per cent has been covered by rough reconnaissance, according to the annual report of the Forest Service, United States Department of Agriculture. On about 24 per cent no mapping work has been done.

City Built of Porcelain

OF all the quaintly beautiful old world cities of Germany, states a recent issue of *Stone*, Meissen on the Elbe, pride of Saxony, occupies a unique place of its own, being built almost entirely of porcelain. In 1710, the first royal porcelain factory was established on the hilltops overlooking the Elbe and from that day the city has lived and thrived through two centuries on the development of the industry. In the fifty years that immediately preceded the Great War the municipality and individual wealthy citizens were able out of their accumulated wealth to substitute porcelain for brick and stone in the construction of buildings, so that now one-half of the homes together with several factories and public edifices are constructed almost entirely of this translucent and very expensive material.

One of the principal show places of this city is a porcelain villa the home of a local magnate, the value of which is estimated at 20,000,000 marks.

BOOK NOTE

Structural Members and Connections

THE resolution of forces and determination of stresses in framed structures are matters of knowledge common to all engineers. Whether they are accomplished by graphical or analytical methods, they are simply things of pure mathematics. The correct designing of members and connections, however, involves an extended understanding of the physical and mechanical properties of all of the materials of construction. In these days of the highly "specialized" engineer, this is not common to them. Too often the younger engineer makes the fatal mistake of specializing in the use of one material—reinforced concrete, structural steel or other materials, with resulting inability to design in all materials with equal effectiveness.

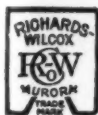
The necessity for this general knowledge does not impress many engineers as important. The lack of this involves an inability to measure cor-

rectly the relative merits of materials and results in using one material when another is better suited for the purpose and could be used with less cost. The person who is worthy of the name of structural engineer is that one who has the training and judgment which enable him to select the proper material of construction for a certain purpose and use it correctly.

This book covers the entire field of construction which includes members and connections. The first section is devoted to general theory which is followed by sections devoted to the design of steel and cast iron members; to splices and connections for steel members; to the design of wooden members; to splices and connections for wooden members and to the design of reinforced concrete members. Appendix A contains the general notation; Appendix B treats of the general properties of sections; Appendix C treats of the deflection of beams determined by the elastic curve and the unit load methods, and Appendix D gives the working unit stresses for structural timber. Each section is subdivided into topics which are very adequately presented and supplemented with very practical illustrative problems. The completeness of the work is at once apparent and all of the published data pertaining to the various phases of the topics has been used and authorities quoted.

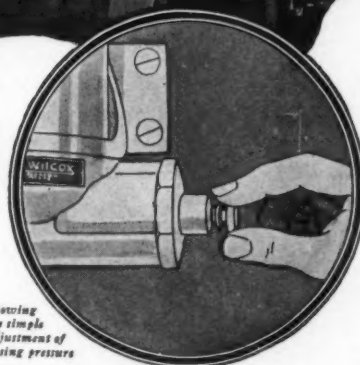
It should not be assumed that the work is a mere compilation of data, which it is not. The work evidences much knowledge acquired by practical experience in addition to a profound understanding of the underlying mathematical theories involved. This book is notable in that its tables and graphs are such as engineers use in actual designing. The field is so thoroughly covered that it can be used in compliance with all of the important American codes or recommendations. In addition to the editors-in-chief, nine well and favorably known engineers collaborated in the preparation of this book. It should be found in the working library of every architect and structural engineer. It is the second of a series of six volumes designed to provide the architect and engineer in practice and the student with a complete work covering thoroughly the design and construction of the principal kinds and types of modern structures.

Structural Members and Connections. Editors-in-chief: George A. Hool, Professor of Structural Engineering, University of Wisconsin and W. S. Kinne, Professor of Structural Engineering, University of Wisconsin, assisted by a staff of nine engineers. 611 pages, 6x9, fully illustrated. McGraw-Hill Book Co., New York City. Price \$6.00.



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PERSONALS

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Nathan Rotholz, architect, announces the removal of his office to 311 Lenox Avenue, near 125th Street, New York City.

Frank A. Bourne, architect, announces the removal of his office from 70 Kilby Street to 177 State Street, Boston, Mass.

Clarence E. Shepard, architect, has moved his office to 412-15 Huntzinger Building, 114 West Tenth Street, Kansas City, Mo. Manufacturers are requested to send catalogs and samples.

Lang, Raugland & Lewis, architects and engineers, have moved their office from 627 Metropolitan Bank Building to 412 Essex Building, Minneapolis, Minn.

Francis Willard Puckey and Austin Dickinson Jenkins, architects, have moved their office from 6 North Michigan Avenue, to the Wrigley Building, 400 North Michigan Avenue, Chicago, Ill.

Announcement is made that E. C. McManus, architect, has opened an office for the practice of his profession at 118 Locust Avenue, Long Beach, Cal. Manufacturers' catalogs and samples are desired.

It is announced that W. Wellington Smith, formerly architect of the Board of Education of Butte, Montana, has opened an office at 245 East Twelfth Street, Long Beach, Cal.

Witmer & Watson, architects, have moved their offices from 504 Wright & Callender Building to Suite 415, Bank of Italy Building, Los Angeles, Cal.

It is announced that Morgan, Walls & Morgan, architects, have increased their office facilities by establishing a branch drafting room in 1301 Van Nuys Building, Los Angeles, Cal.

Vinson B. Smith, Jr., architect, Evans Building, Gulfport, Miss., is now revising his files of architectural reference and specifications, and is very desirous of receiving manufacturers' catalogs and samples.

F. E. Johnson, architect, announces that on May 1, last, George R. Griswold became associated with him for the practice of architecture under the firm name of Johnson & Griswold, architects and engineers, Suite 31-39 Wisconsin Block, Superior, Wisconsin.

It is announced that the partnership of Kees & Colburn, architects, has been dissolved. Mr. Kees will continue at the old location under the firm name of Frederick Kees, architect, 246 Plymouth Building, Minneapolis, Minn.

Ernest D. Ivey and Lewis E. Crook, Jr., architects, have associated under the firm name of Ivey & Crook, architects, and have opened an office in the Candler Building, Atlanta, Ga. Manufacturers' samples and catalogs would be appreciated.

Announcement is made that Neil Gardner, architect, has opened a new office at 510-12 Church Street, Nashville, Tenn. Mr. Gardner has been associated with W. W. Pinson, Jr., under the firm name of Gardner & Pinson, architects. Manufacturers' catalogs and samples are requested.

Joseph J. Rauch, architect and engineer, announces the opening of an office for the general practice of architecture at 200 West Sulis Street, Philadelphia, Pa. He also announces his association with Peter Kuhn, architect and engineer, whose office is located at 3058 North Eighth Street, that city. Manufacturers' catalogs and samples would be appreciated.

Announcement is made that Mabel Parsons will continue her father's practice of landscape architecture under the name of Samuel Parsons, Inc., with Clarence Fowler and Richard Schermerhorn, Jr., acting as consultants in design and construction. The office has been removed from 101 Park Avenue to 15 East Fortieth Street, New York City.

It is announced that the partnership formerly existing between A. B. Boyer and I. A. Baum, architects, has been dissolved, Mr. Boyer retaining his office in St. Louis, Mo. Mr. Baum has taken over the architectural commission in connection with the Columbia Mutual Tower, Memphis, Tenn., and has temporarily opened an office in that city.

Harvey E. Hannaford, senior member of the firm of Samuel Hannaford & Sons, architects, Cincinnati, Ohio, recently died at his home in College Hill, Cincinnati, at the age of sixty-six years. Among some of Cincinnati's largest structures designed by his firm are the Music Hall, City Hall, the General Hosnital, Ohio Mechanics Institute and Emery Auditorium, and many other public and private buildings. Mr. Hannaford was the eldest son of the late Samuel Hannaford, founder of the firm.

