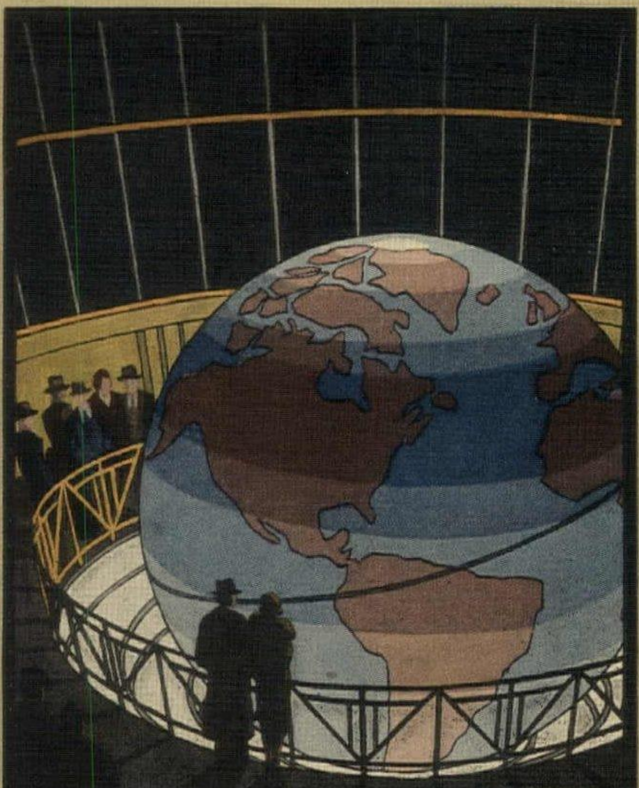
THE ARCHITECTURAL FORUM



IN TWO PARTS PART ONE

ARCHITECTURAL DESIGN

NOVEMBER 1930

THE
ARCHITECTURAL
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NOVEMBER, 1930

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THE NEWS
BUILDING
NEW YORK

JOHN M. HOWELLS,
RAYMOND M. HOOD,
ASSOCIATED, ARCHITECTS

THE
ARCHITECTURAL
FORUM

VOLUME LIII NUMBER FIVE

NOVEMBER 1930

THE NEWS BUILDING

BY

RAYMOND M. HOOD

WHEN I say that in designing *The News* Building the first and almost dominant consideration was utility, I realize that I am laying myself open to a variety of remarks and reflections from my fellow architects, such as: "It looks it!", "What of it!" and so on. However, that is my story and in the slang of today, I am "stuck" with it. In passing, I might remark that I do not feel that *The News* Building is worse looking than some other buildings, where plans, sections, exteriors and mass have been made to jump through hoops, turn somersaults, roll over, sit up and beg,—all in the attempt to arrive at the goal of *architectural composition and beauty*. But I do not want to quarrel here about architectural theories, so I will go on to tell my story of the building as briefly as possible.

There are two parts to the building,—the newspaper plant and offices, and the office building for general renting. The income from the general office building portion is what makes it possible for *The News* to have its plant on an expensive, centrally located piece of property. This is a very valuable consideration for the newspaper, from all points of view,—collection of news, manufacturing and quick distribution of papers; but it would not have been a sound financial scheme but for the great revenue-producing office building.

The plant, its main element being a press room 300 feet long, took almost the entire 41st Street frontage, leaving the most valuable western portion of the property for the development of the office building. This portion had a frontage of 125 feet on 42nd Street and extended through to 41st Street. The plot was almost ideal for this purpose. Its light was protected on the north by 42nd Street, on the south by 41st Street, and on the east one half of its length was protected by the low portion of the newspaper plant. On the west only was there a party line, but this was overcome by a bold decision of the owners at the outset. Negotiations were entered into with the city, owning the property adjoining, and a 50-foot private street was established from 42nd to 41st Streets, each party contributing a 25-foot piece of his property. This done, save for the 100-foot party wall on a portion of the east side, the office building plot had unobstructed light on all four sides. Against this blank wall were grouped the elevators, toilets and stairs. As a result every office was an outside office and had absolutely protected view and light.

The zoning laws and first class office requirements practically dictated the plan, the mass and the fenestration. The office space has a uniform depth of 27 feet from the exterior wall and is lighted by regularly spaced windows 4 feet, 4 inches wide, one window every 9 feet. At no place, even at the corners of the building, was this uniform fenestration varied, as it was the intention to create what has been shown by experience to be the best and most flexible space for high class office rental.

So the exterior more or less created itself. From the second story to the top, there was no logical reason for varying a window, either in size or location. Arriving at the top, i.e., as far as we found it advisable to go by our calculations of the relative proportion of rental space to elevator and general service, I tried the simple expedient of stopping without searching for or causing the owner to pay for an effect. The exterior has brought out, among others, two comments from architects, that I will repeat. One eminent fellow said to me, when the exterior lacked only two stories of completion: "I cannot tell you whether I like it until I see what ornamental treatment you use at the top." The second, a well known architect, said that an architectural composition must have horizontals; that as pronounced a vertical treatment as that of *The News* Building should have two or three band courses to hold it together. I do not know what to say in reply to either of these two criticisms. Naturally, the exterior of *The News* Building is so simple that a great many things could be done to it, but whenever I wanted to do anything, I never knew where to begin or where to stop; and I took comfort from a remark that Laloux made occasionally to a student who was at a loss as to what sort of ornament to use in a particular place. Laloux's remark was: "Why not try nothing?"

There is a small explosion of architectural effect at the entrance and in the lobby, where the owner gave us $150,000 to spend. His thought about this was, I feel, very intelligent,—that $150,000 spent in one place, at the entrance, might give a satisfying effect; but that where spread thin over the whole exterior, would amount to almost nothing. The popular scientific exhibit that was developed for the lobby has proved, at least for the man in the street, that the idea of concentrating the effect in one place, was not bad. The owner was in accord with the architect that giving color to the building was the most simple and direct way to get an effective exterior, and the white and colored brick and the red shades were chosen with the greatest care.

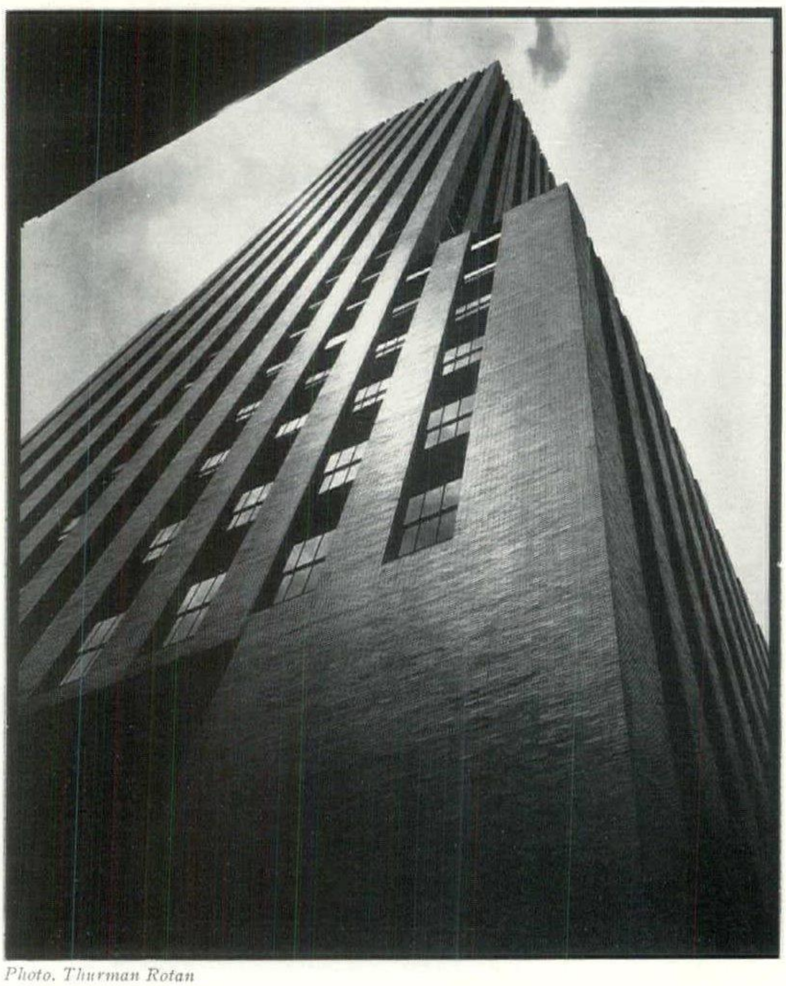


Photo. Thurman Rotan

AS I SEE THE NEWS BUILDING

CRITICAL COMMENT

BY

KENNETH M. MURCHISON

THE NEWS Building, situated on East 42nd Street, New York, between Second and Third Avenues and running through to 41st Street, is, in the language of that small but mighty designer, Raymond M. Hood, nothing but a factory. If the exterior of a building explains the plan, then it should logically explain the purpose of its occupancy, and if all that were true, then the casual passer-by would say that *The News* Building housed a bed-ticking factory. But no, it does not. It houses nothing but a newspaper plant, with offices above.

"Stripes" is Mr. Hood's middle name. He can't get away from them. He did the Beaux Arts Apartments, two blocks away from *The News* Building, in horizontal stripes. He is doing the McGraw-Hill Publishing Company's building, at the west end of 42nd Street, also in horizontal stripes.

But he got the idea of *The News* Building from seeing a pair of red and white striped B.V.D.'s in a haberdasher's shop on Third Avenue. They appealed to his taste. Peculiar? Yes, but that's Raymond M. Hood. He will probably stripe his buildings, up or down, or sideways, for the rest of his life, or until styles change; but what would he do if he had two on the same block? He'd quit, that's all, unless he could stripe them on the 45 degree line, or do a Scotch plaid, or do a polka dot!

The News Building, being intended for commercial use, was a question of light and air;—in other words, clean living. Besides this, one side was devoted to the dirty side of life, housing great news presses, a mere matter of 300 feet in length. So the building was planned in such a manner that the office section has light on all four sides, the owners even going so far as to donate a 25-foot strip to the city between 41st and 42nd Streets on condition that the city would also donate a 25-foot strip when the adjoining public school is torn down and a new building erected.

The street was a good idea. New York needs more streets. More streets and fewer taxicabs.

More buildings and fewer architects. More than 6 per cent and less work. More holidays for the boss and fewer for the boys.

So the plan was fixed by existing conditions. And once you have a plan, what else could there be to an office building? Elevations? Yes. So Raymond M. Hood borrowed a book of striped textile patterns from a wholesaler and went to work on the facade.

Firstly, what kind of an entrance should it have? "Well," said R. M. Hood, "if we are going to be mentioned in the same breath with the Chrysler Building and the New York Central Building, we've just got to do something nifty!"

So he went to the owner, Mr. Patterson, and asked for two little donations of $150,000 each, one for finishing the facades in limestone, the other for a P. T. Barnum three-ring effect in the entrance hall.

To that request Mr. Patterson said he would go fifty-fifty. The entrance ballyhoo was O.K., but what was the use, said he, of buttering 150 grand all over the outside of a big building like that?

So Mr. Hood, having lost nine thousand on account of Mr. Patterson's not being fond of butter, set out to find an Entrance Act that *was* an Entrance Act.

One day while resting in the Architectural League he met the world's tallest mural painter, one D. Putnam Brinley. D. Putnam was wearing a striped, unfinished worsted business suit, and it immediately reminded our hero of his own *News* Building, then on the fire, as it were.

The two went into a huddle. And when they came up for air, they had a grand idea.

"Put-put," said Raymond, "Could you paint the earth?"

"Ray, ray, ray!" boasted D. P., "I can paint the whole dam' firmament!"

So they repaired to the underground locker room for a further conference, and then, being still further in need of repairs, they repaired to the office of Rand McNally, the widely known map makers.

Mr. Hood finally beat his idea into Mr. Brinley's dome of silence. And they decided on a great globe, revolving in a pit and surrounded by a promenade, so that all might live and learn, and stand idly by while the earth revolved.

Mr. Brinley immediately subscribed to the *National Geographic Magazine*, and now today may be classed as one of the world's worst geographers. But he swarmed all over that great globe like a giant Croton bug, and when he hopped off, there was the earth. He didn't quite do it in six days, but he used both hands at once and dug in with his toes when he felt things slipping.

The rest of the Mammoth Cave (or Entrance Hall) is done in black glass as to the ceiling, and with show cases around the sides demonstrating what time it is in Philadelphia, Przemysl and Vladivostock, also whether it is going to rain next Sunday, and when to put on your winter flannels.

This arrangement, little readers, is supposed to be the main entrance of *The News* Building, but after seeing the globe and the spectators filling up the space almost to the bursting point, Mr. Hood's associates persuaded Mr. Hood to make another entrance on the new-found cross-cut street so that the tenants of the building could keep their minds on their jobs and think of something besides geography.

So, after one look at the revolving globe, all the tenants now go in the side street entrance. But the Earth Entrance is well filled with bright, eager school children from the public school next door and curious passers-by who see something going around and who peer in to find out who or what is revolving.

I once saw something much better than *The News* globe. It was a most beautiful young lady with a dress on,—yes, a dress on,—which dress was a map of Paris. It was cleverly designed by Ralph Barton, and the trick was that you had to get close to it before you realized that it really was a map of Paris. All the buildings were drawn in perspective, and the Seine wound its way around the young lady in a most alluring manner.

It was at Tony Sarg's place, and Tony Sarg's place is always full of architects,—that is after office hours.

Soon the lady was surrounded.

"That's where I'd like to spend another two years!" (pointing.)

"I always did like that spot!" (touching.)

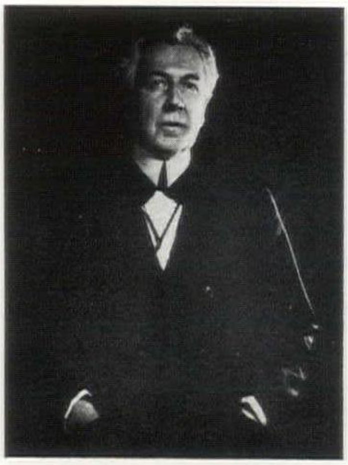
"Say, what a place to study."

And so on. For you can't help a certain boyish enthusiasm among our architects, and that dress brought back old times and old loves.

Revenons to *The News* Building, the upstairs part consists of the usual office layouts. The elevators are all dolled up with curlycues and wormy metal grilles; Siena marble meets the eye in the downstairs lobbies, if said eye has not been put out by the globe; and so forth and so on, and anything to finish up this article.

Some deriders complained about the absence of a finial on the building, so Mr. Hood put up a tin can on a tripod for some unknown reason. (He later said it was to measure the rainfall.) Then somebody else said there wasn't enough color in the building, so Mr. Hood made Mr. Patterson buy bright red window shades. "Anything to oblige," says Mr. Hood, with that innate nobility of soul and that delightful refinement of manner which characterize our New York architects.

When Architect Hood finishes his next horizontal zebra on West 42nd Street, we will have a little more to say at that time. He can't get back at us, because we never tell him where our buildings are,—and incidentally, we have difficulty in finding them ourselves!



FRANK LLOYD WRIGHT AND HUGH FERRISS DISCUSS THIS MODERN ARCHITECTURE

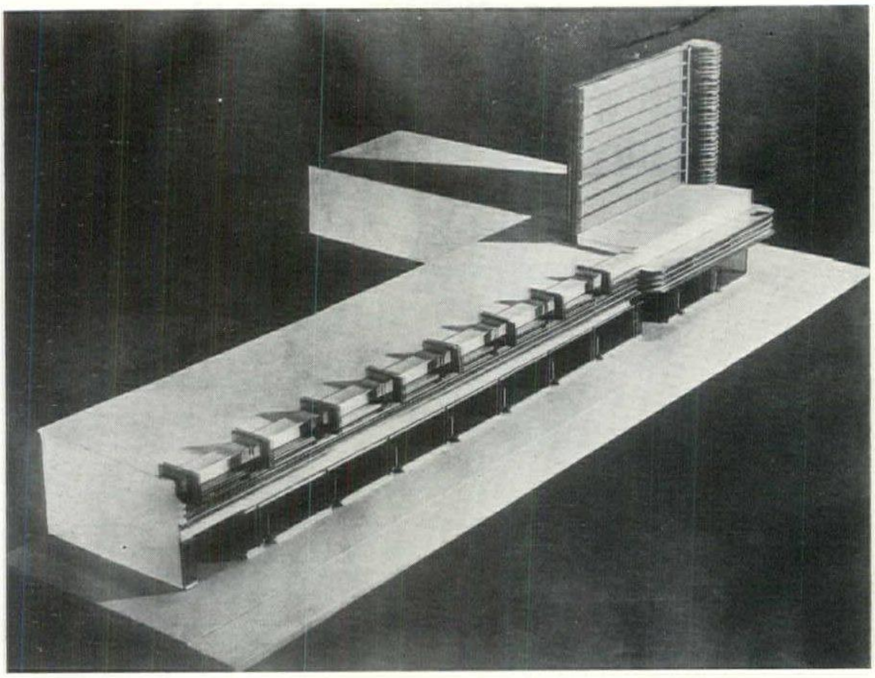
MR. WRIGHT. Architecture is really the humanizing of building,—something which, perhaps, is more important to us, where we live, than anything else in this world. A real expression of ourselves is bound to appear in our architecture eventually. All the signs along the road, as I motored along through 145 towns on my way from Chandler, Ariz., to New York, seemed to say "Why not now?" In fact, it seems to be coming now,—with astonishing, yes with alarming rapidity,—for the cornice is dead!

Many years ago,—it seems very long ago now,—the thought came to some of us in our own country that architecture was a much "deader" affair than it had any right to be. It had become an academic inhibition. In America, largely, imitation practiced for profit. But if it is anything at all, it is no masquerade. Architecture is an intensely human affair, and it seems to me that the so-called "New" is simply an awakening to that fact,—realization that it is a matter concerning us all and one that lives really where we live. So I think these new "forms" and these new "ideas" in art and decoration, furnishing and dress that we see,—and I think one may see them now from Wanamaker's clear up the Avenue, to be seen especially at the Contempora exhibition in fresh new patterns, in vital forms that seem at first peculiar,—are really all of them a serious endeavor to realize life, a better life, and more of it; and so I would like to have everybody think of the so-called "new movement" and even of "modernism,"—that rather awful aspect of the thing,—not as a freakish effort to realize something peculiar for some few peculiar people, but the sign and often the substance of a very real awakening to what is intensely valuable in human power,—that is, simply, love of life.

We are learning, now, that materials themselves all live,—that stone has character, that brick has character, wood character; that they all have characteristics that may become alive in the hands of the imaginative artist through sympathetic interpretation in design, for I suppose we have to call him still the artist, although a more prophetic name should belong to him now that he is really finding something of this sort for himself. At any rate, this fresh life is a very practical thing with very definite meaning for Americans and the American home. And it is interesting in that while America herself, out on the western prairies, expressed these ideals in concrete form many years ago, they have gone to Europe, associated with European minds of brilliance and power, and are now coming back to us sometimes queer, sometimes refreshed, to awaken us to the realization that here is something that we need more than any other nation can need it. And we are going to have it, as one may now see for oneself.

Most of our architecture heretofore, of course, as one may readily believe if competent to sympathize at all with this new movement, has been an extraneous thing; it has been something applied to life, imprisoning life really instead of releasing it. It is the misfortune of all thought that while at one time it is a living and a becoming thing, full of color and importance, it soon becomes crystallized in becoming commercialized,—"standardized,"—and then it is the misfortune of that thought-form to become recognized as fixed, accepted by academies, formalized, and taught to the young as a kind of religion. So of course, this

NOTE. This discussion was broadcast over the radio at the time of the Contempora exhibition in New York.



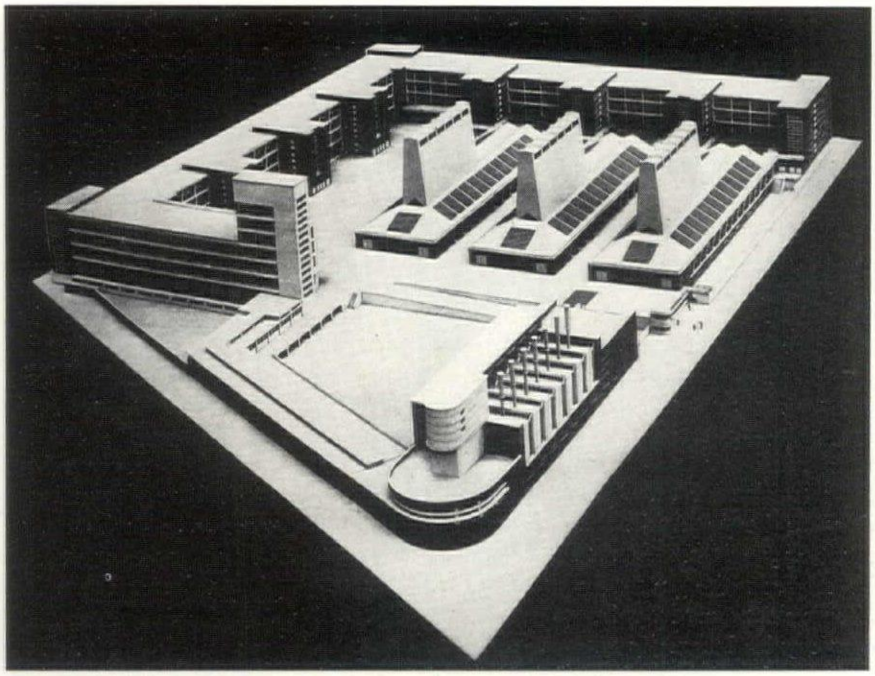
Group of stores and showrooms, Berlin. Illuminated advertising space is provided as a large ornamental feature.
Erich Mendelsohn, Architect

particular new thought, being by nature fluid matter, naturally rejects all that has gone before to choose only those matters which are living and which it sees as alive. And, knowing that the principle that works in all this is eternal, this "New" is more reconciled to let the flowers fade in order that the Old may be ever New and the New ever Old. Of course, many flowers must be born only to die while this new thought is taking effect,—while, (I shouldn't say new field of human thought, for it is really a fresh effort only, at least in America)—I say,—born only to die, while all this is taking effect, going forward as one may see it going forward now. I said "only to die," hoping, this being a little symposium, that somebody would give me incentive for "edge" so I wouldn't indulge in too much philosophy, because the world is pretty well tired of philosophy already; but they all say here that we are too much in accord to take issue.

At any rate, the watchword in this new effort is "integration." By way of the "plan factory" we have had effective disintegration applied to our country's architecture. Flotsam and jetsam came floating down ready made, practically burying all our legitimate human interest, legitimate because in architecture no less than in painting, writing or sculpture, the central interest for mankind, as it is in Nature herself, is individuality. We have had little or none. As a democracy we are not particularly successful, either, I think because we have not honored, as we should, that particular principle. We have not known how. But I think the New movement, so-called now by nearly everyone, will unearth the fact that it is in itself an expression, a defense, a statement of that valuable thing in us which we call "individuality." And as I have looked through the Contempora exhibition, it seems to me that that is one of the greatest and most valuable things to be found in it. Mr. Mendelsohn's exhibition itself marks it. That exhibition is romantic, a powerful realization of the picturesqueness of our special machine brutalities, and one may see a fresh simplicity in his sentiment and a vigorous power of expression in nearly everything he does.

In other fine efforts one may see there one will discover conscious and fine attempt to again integrate the whole room—the walls, the pictures and the furniture,—and to make comfort a living and beautiful thing, not merely an animal resource. In all these superior examples of this new attempt to recreate life, there is a great variety already, greater variety than has existed, perhaps, in the history of the world in efforts of this kind, which is really the promise in it,—an indication of vitality,—assurance that freedom in architecture is here to stay, on principle.

The thing to be most grateful for now, I think, is that the time is not far distant when, because of this "New" grasp on the essentials of architecture, every man will own his own house in the truest sense of the term. It will be a place where what he feels and what he likes and what seems to him beautiful and valuable may be reflected in his environment without false shame, academic



Project for the hosiery and knitting factory of Krasnoje Snamja, of the Leningrad Textile Trust. Erich Mendelsohn, Architect

let, or economic hindrance. But there is no "school," yet, and God forbid that this "New" should ever decline into a style or stultify itself as a "school." There is no reason in the world why this fresh hold on architectural life shouldn't maintain its vogue and character, go on growing continually, and be the genuine liberation of creative impulse. Yes,—it begins at the top, as all such movements do begin, with the better minds, with the more vital will-to-live of the world, undoubtedly; and, now as always, it will find its way down, eventually to reach the school and the academy. When that time comes, the danger point has been reached. It is not so far away. I hope there will be among us, with the coming decade, enough knowledge of the principle involved in the work to prevent forming anything in the way of a school, in the way of a style, in the way of any prevalent thought form, however finely felt, from taking possession of this valuable new thing, to make it either a passing fashion or an academic matter of form.

The hardest thing in this world for me to do is to make a speech against time. I had thought when I came here and began to talk that I was going to arouse dissension and be stimulated by my friendly enemies, and yet only friends seem to be round about me here. But they have picked me up by the scruff of the neck and, having flung me in here, are now watching me struggle, hoping that I'll be able to swim. I'm painfully conscious of not having said at all the things that I should have said, because everybody wants to know something specific about this work, and they want the thing as hard as a keg of nails. They want one to talk about brass tacks and boards and all those mechanical things which are absolutely incontrovertible and leave no room for argument, and all this before they understand what it is all about anyway. I think to do that is quite impossible. I myself should have to become much more expert, much more master of my subject before I should be able to present it in such hard and fast terms as to show its "inside" without its general form and outline being first comprehended by the beholder.

Mr. Ferriss. I want to ask Mr. Wright a question. It has seemed to me that the real tradition of architecture is that a building must express the material whereof it is built, the method whereby it is built, and the purpose wherefor it is built; and having that in mind, it seems to me that we aren't engaged in a really new movement. On the contrary, is it not true that men like Mr. Wright, whom we speak of as the "New" architects, are in fact carrying on the real tradition of architecture?

Mr. Wright. I think Mr. Ferriss has established an important fact. The "New" architects are "New" merely because they are more true to tradition almost than any tradition can be true to itself. It is, of course, the spirit of anything that deserves to live and all that eventually does live. This is no less true of tradition than of anything else. We have had an erroneous idea of tradition as something entirely fixed, a form fastened upon us somehow by faith and loyalty perhaps,—and which eventually takes us by the throat and says "No" to pretty much everything of life we have. But tradition, too, is a living spirit. Architecture is not the buildings that have been built all over the world. These buildings are only the residue, the wreckage perhaps, thrown upon the shores of time by this great spirit in passing. This spirit lives now. To be true to this spirit is what we are all endeavoring to do, each in his way. And to be true to it we must with the materials at hand and in the spirit of our own time produce those forms which are to become characteristic and true forms of our day, as those forms we violate in the name of tradition were true to their day; or else we merely stupidly violate tradition only to keep "traditions" for selfish or sentimental purposes. Unfortunately, these forms will be new as things are with us now. But they shouldn't necessarily be so were we sufficiently developed. I heartily agree with Mr. Ferriss and I am glad he raised the point.

Mr. Ferriss. It has seemed to me that most of our practicing architects today content themselves with reproducing the external forms, the details that we find on the facades of ancient monuments, whereas the true interpretation would be to grasp the spirit which was behind those monuments and to express it as opposed to its exterior coating, or, we might say, its corpse.

Mr. Wright. The things that we call "the details" and what we refer to as "ornament" are really incidental. They are minor products and come after or come along with the main theme and construction, whereas, as we are now taught and as architecture is now practiced, they have become, unfortunately, architecture itself. In other words, you can't see the trees for the wood there is in them.

Mr. Ferriss. I unfortunately find myself in such continual agreement with Mr. Wright that we have no conflict here. He and the men who think somewhat as he does stand, in short, for the expression of the spirit; that is to say, the expression of that which lives as opposed to the corpse, the crystallized and discarded forms. I think all of this which we speak of as a new movement is in fact the old urge for vital being.

Mr. Wright. The New is ever Old and the Old is ever New. All we need in order to progress without so much pain and waste is the capacity to see that and a broad sense, a liberal scheme of life that will allow growth to keep this New alive all the time in a natural process of change. And now, inasmuch as we are all so completely in accord, I think we may call this discussion a failure.

Mr. Ferriss. I should like to ask Mr. Wright another question. I feel that one of the most important aspects of architecture is the effect which it has on the average man, and I'm speaking of the effect which is received by the average man unconsciously. We know that there are a few people who are keenly alert to technical architectural values, but it is not in their minds that the important result is produced. The important thing in architecture is the effect that it is having on the man in the street. I am quite sure that people, however subconsciously, are influenced in their thoughts and actions by the kind of forms and spaces which they habitually encounter, and it appears to me that architects who are engaged in producing these forms and spaces are exerting a quite definite influence on people in general. I am wondering how aware architects are of that influence. Have you, when you have been engaged in designing a house, been concerned with whether or not it is an expression of yourself, or have you been concerned with the impression it is going to have on the beholder and the occupant?

Mr. Wright. If you mean by the average man, the unspoiled man, I would say that man would be good audience,—if we only had an unspoiled man,—because after all he is the vital factor in the problem. It is but a demoralized audience as a rule that we have to appeal to, so to make conscious appeal to the man with the little knowledge which is a dangerous thing,—who is your "average man" really,—would be something like what an actor might experience were he to appeal to the "gallery." I think that as architects we can only look to that which shines for us, and with what intelligence we have when it comes to the essential architecture of our problems. For, after all, when a man does that, he is appealing to the true man, because inherent in all men is the same ideal, shared perhaps in greater or less degree. Usually every man who truly builds is true to himself. When we make any criterion outside of ourselves, that is to say, when we set up anything as a judge, or an objective,—call it "popular opinion" or "society" or what you please,—we fall into its power and lose our own, and we cease really to be the artist. Just as an actor, I'm sure, were he to have his eye on the gallery,—were he to speak his lines and make his interpretation to and for the gallery,—would fail, and we know he will fail. We know well that type of actor, and I think we know the type of architect who is his counterpart.

THE NEWS BUILDING
NEW YORK

Photo, Nyholm & Lincoln

LOOKING FROM THE WEST

JOHN M. HOWELLS, RAYMOND M. HOOD
ASSOCIATED, ARCHITECTS

Photo, Nyholm & Lincoln

MAIN ENTRANCE

THE NEWS BUILDING

JOHN M. HOWELLS, RAYMOND M. HOOD
ASSOCIATED, ARCHITECTS

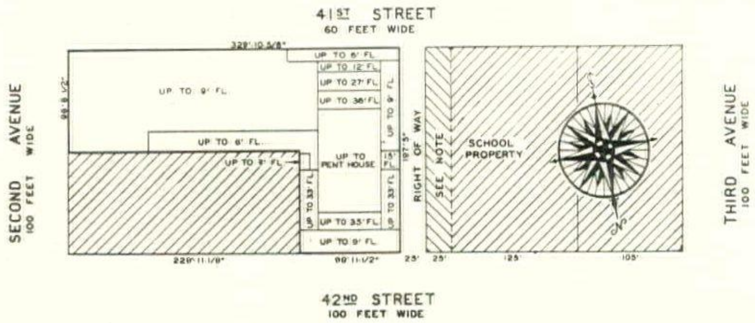
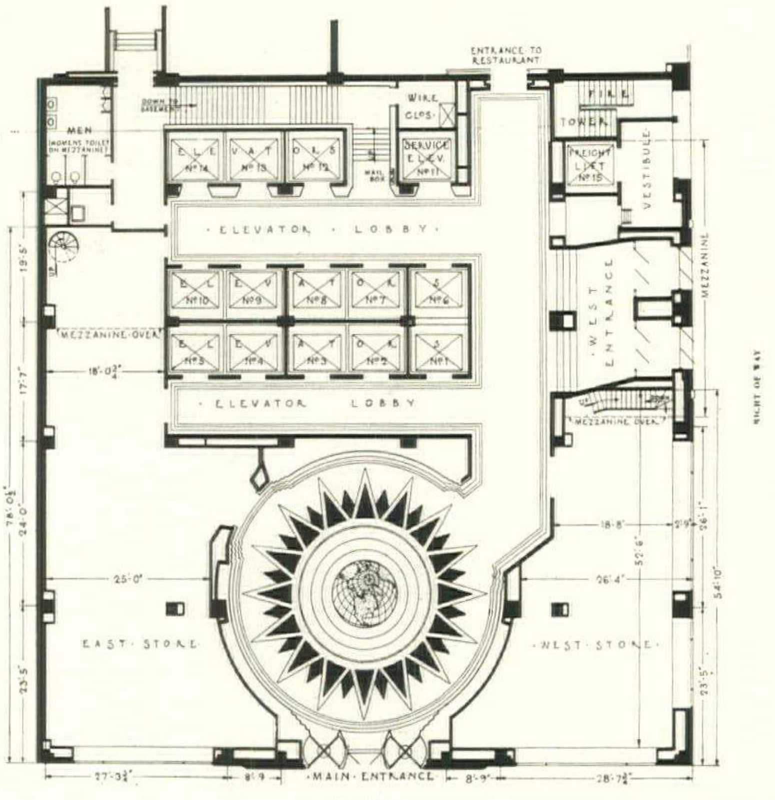


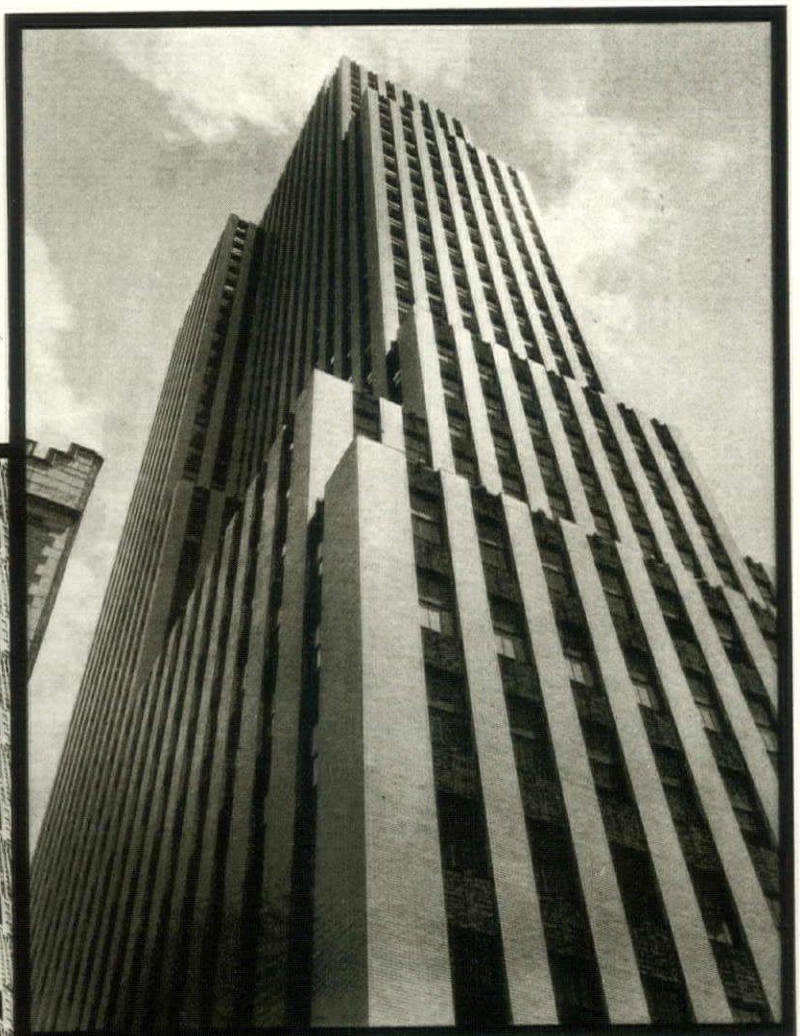
DIAGRAM OF AIR AND LIGHT CONDITIONS AT VARIOUS FLOORS

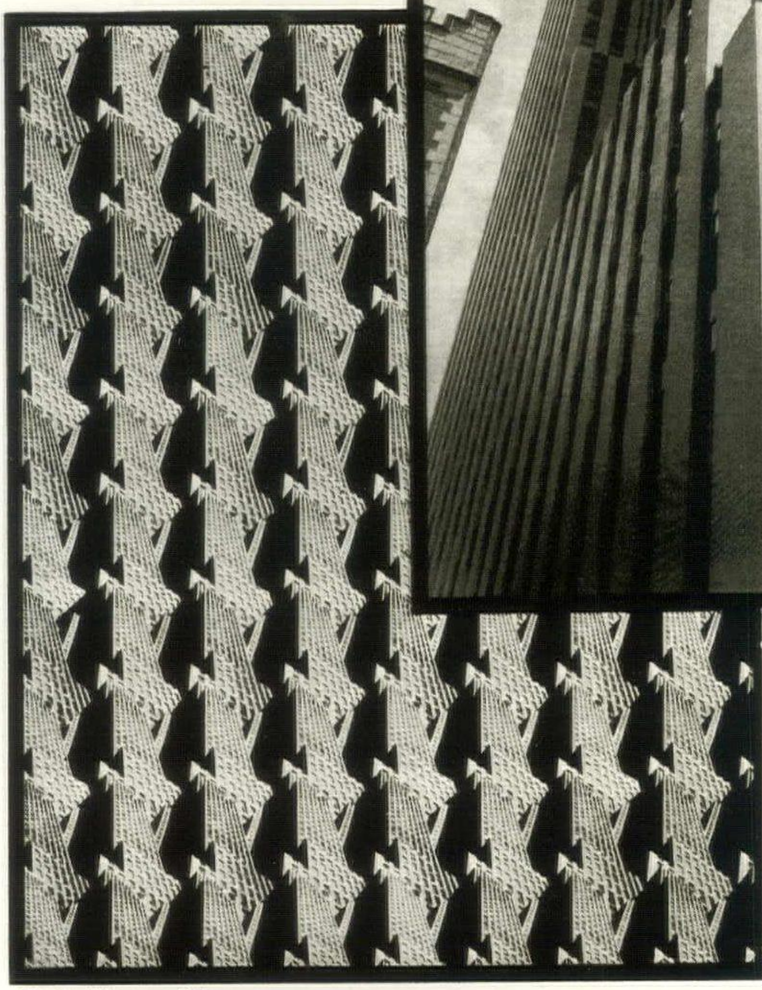


PLAN OF FIRST FLOOR

THE NEWS BUILDING
NEW YORK
JOHN M. HOWELLS, RAYMOND M. HOOD
ASSOCIATED, ARCHITECTS

RIGHT, LOOKING SKYWARD



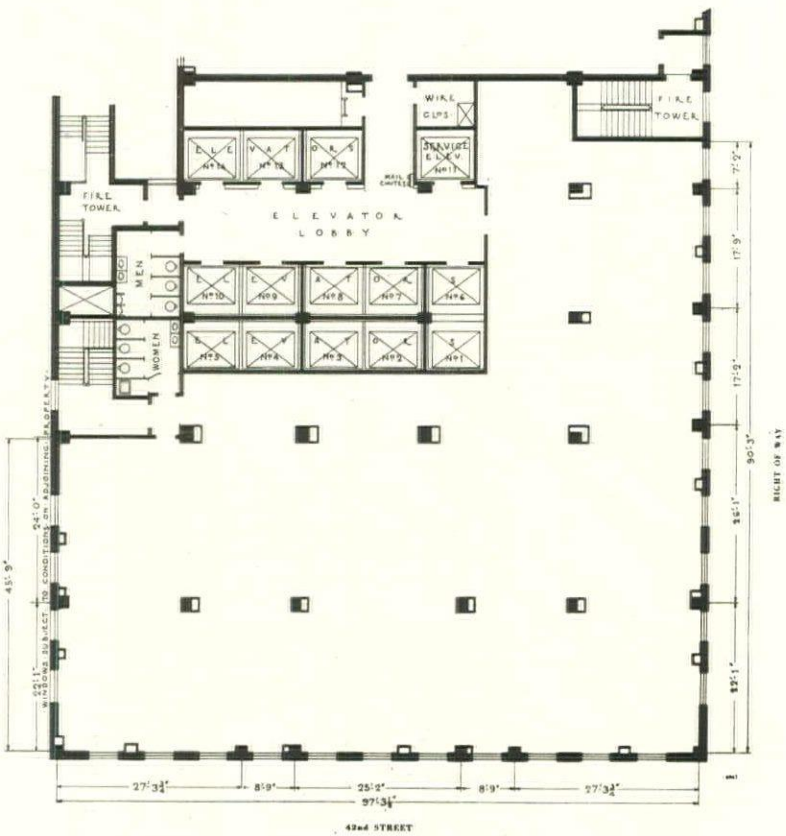


Photos. Thurman Rotan

PATTERN MADE BY REPEATING THE PHOTOGRAPH ABOVE

THE NEWS BUILDING

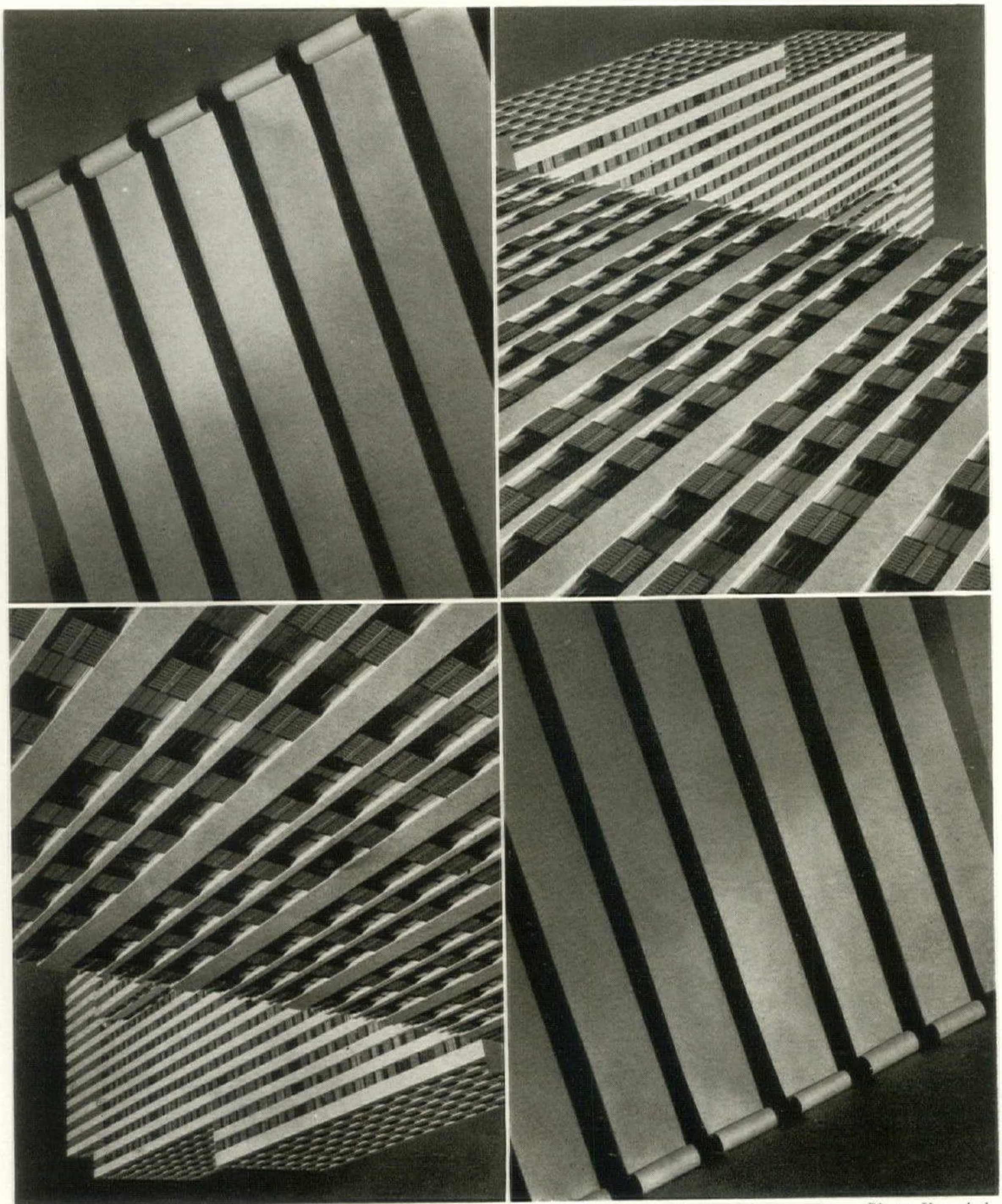
JOHN M. HOWELLS, RAYMOND M. HOOD
ASSOCIATED, ARCHITECTS



PLAN OF 7TH AND 8TH FLOORS

THE NEWS BUILDING
NEW YORK

JOHN M. HOWELLS, RAYMOND M. HOOD
ASSOCIATED, ARCHITECTS

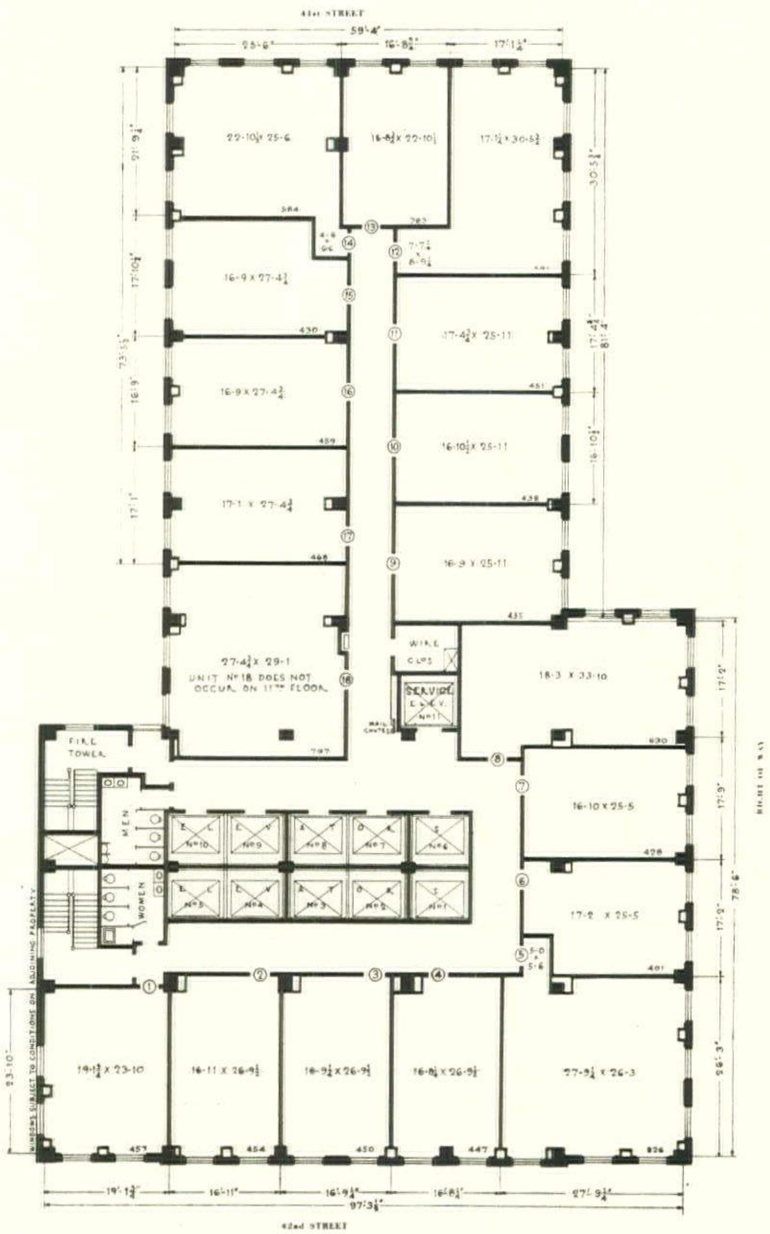


Photos. Nyholm & Lincoln *Photo. Van Anda*

UNROLLED NEWSPRINT
SUGGESTIVE OF EXTERIOR DESIGN

THE NEWS BUILDING

JOHN M. HOWELLS, RAYMOND M. HOOD
ASSOCIATED, ARCHITECTS



PLAN OF 11TH AND 12TH FLOORS, DIVIDED

THE NEWS BUILDING
NEW YORK

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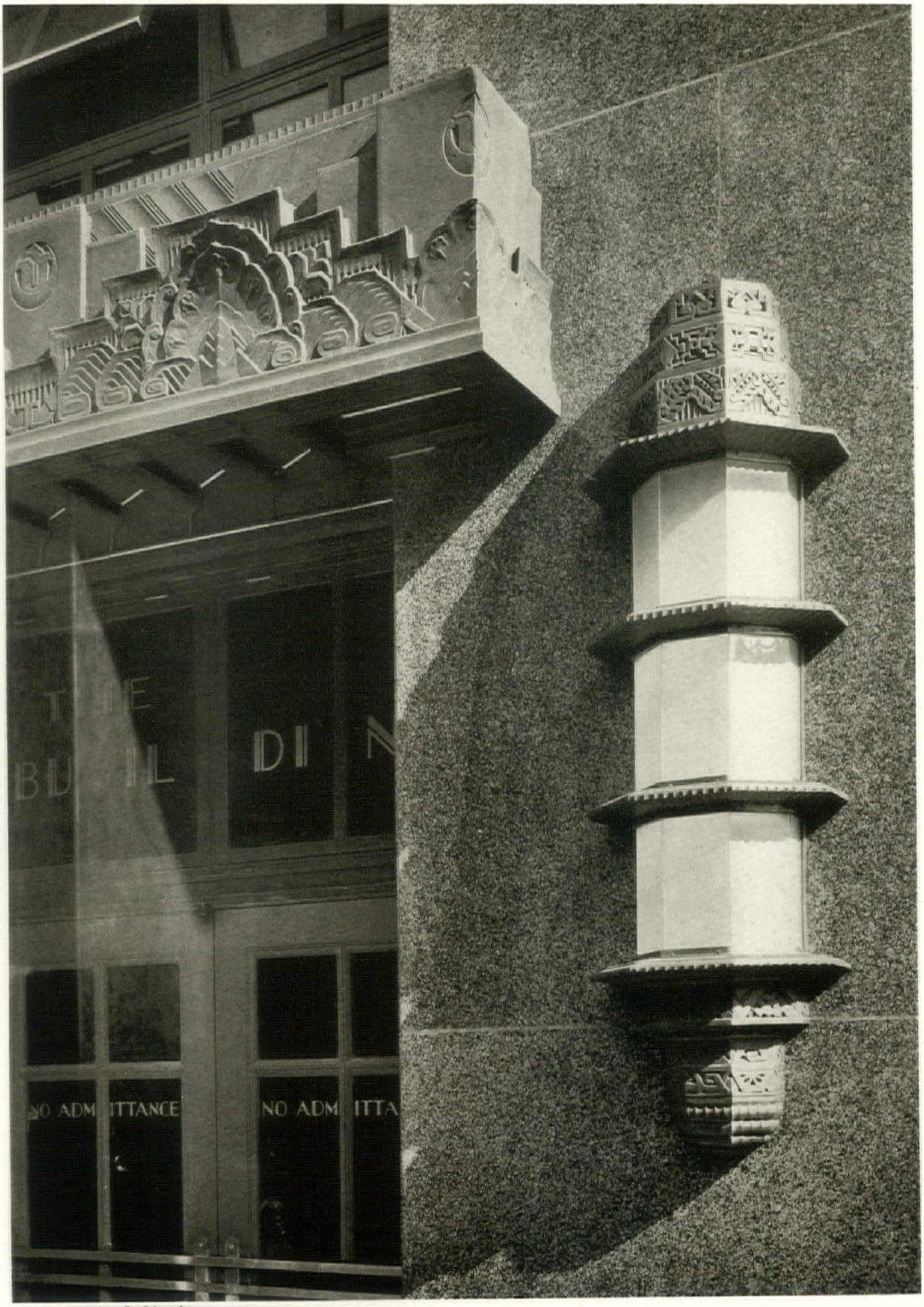

Photo, Nyholm & Lincoln

SIDE ENTRANCE AND LIGHT DETAIL
THE NEWS BUILDING
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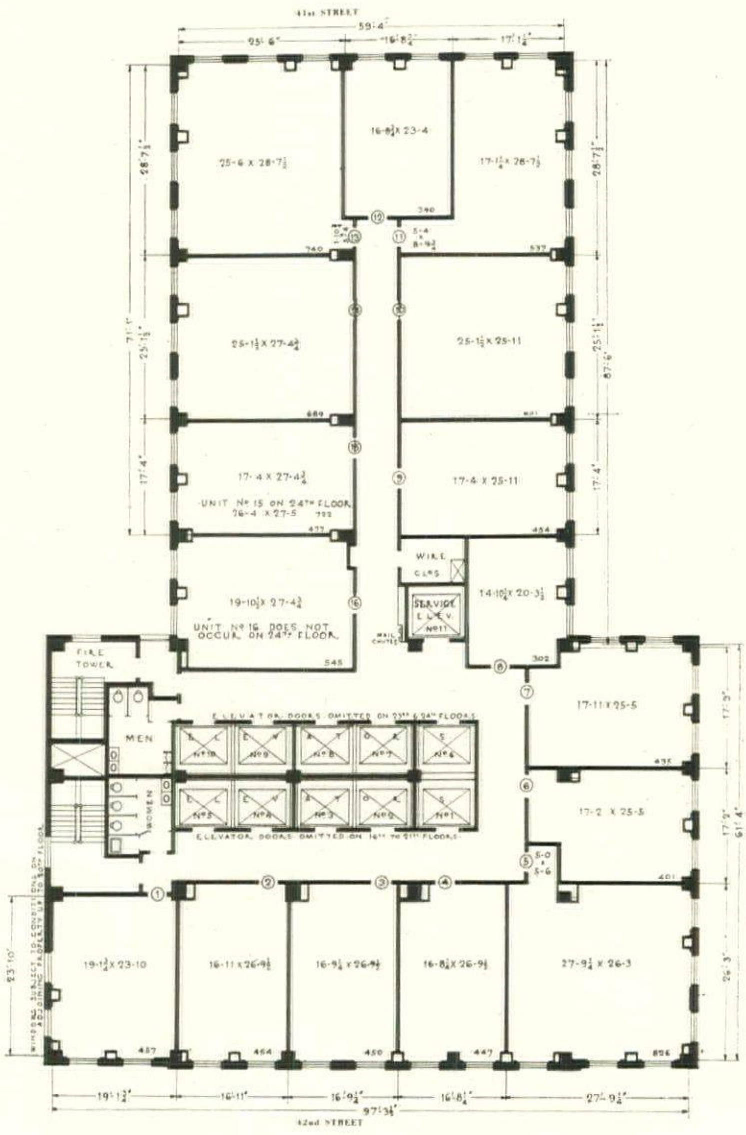

PLAN OF 16TH FLOOR, DIVIDED

THE NEWS BUILDING
NEW YORK

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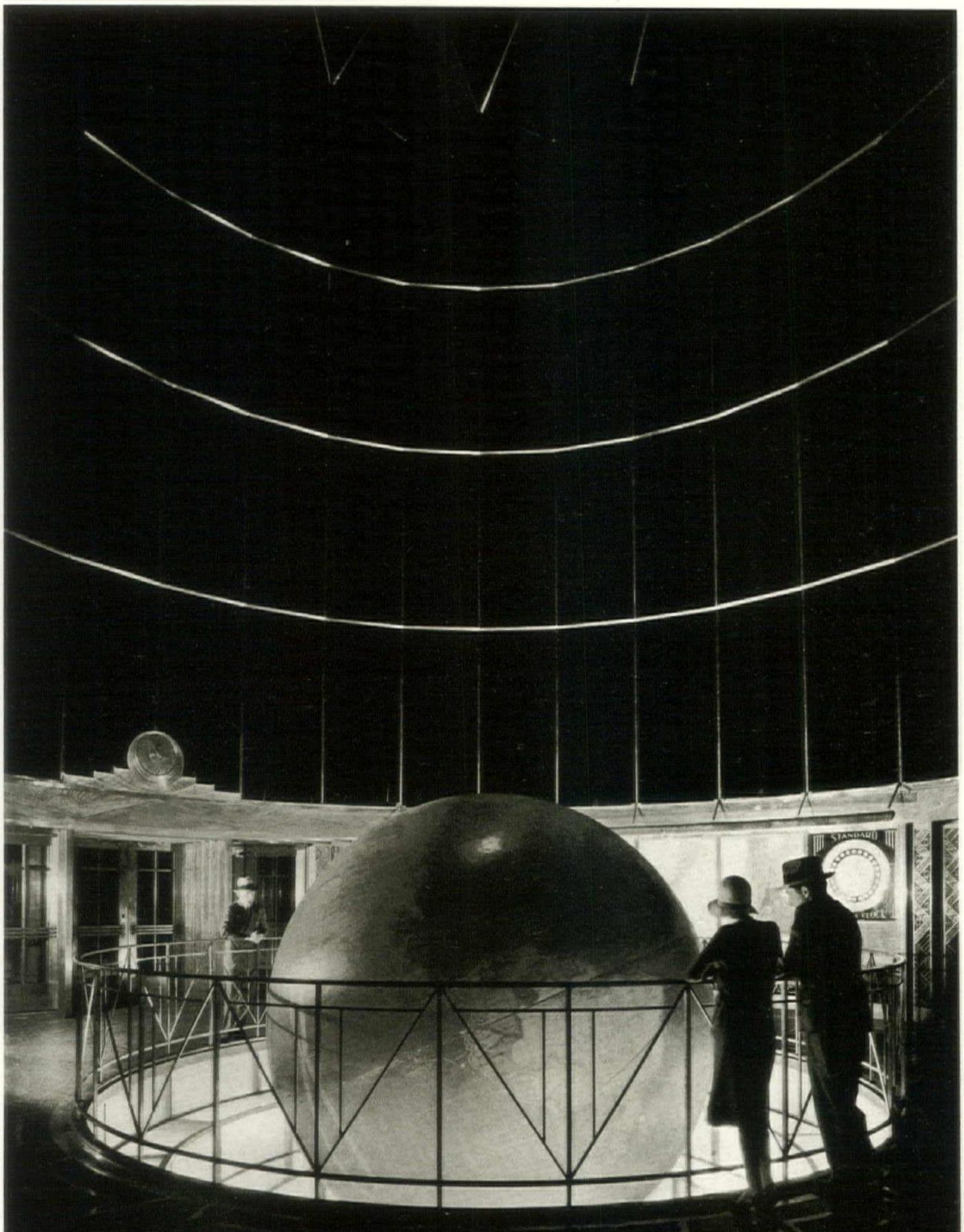

Photo. Nyholm & Lincoln

THE ROTUNDA

THE NEWS BUILDING

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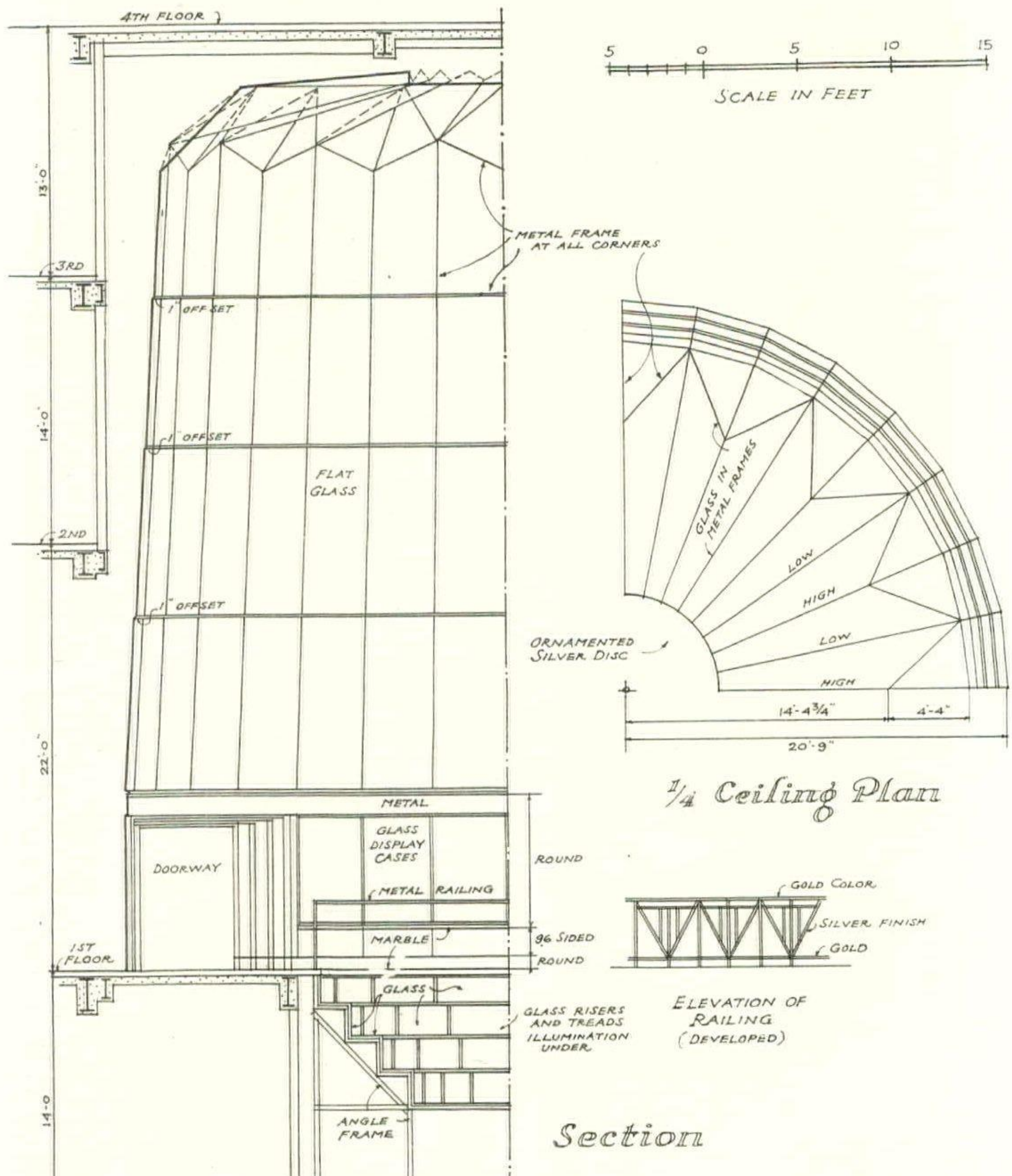

DETAILS OF LOBBY

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RENDERING OF ROTUNDA, BY HUGH FERRISS

THE NEWS BUILDING

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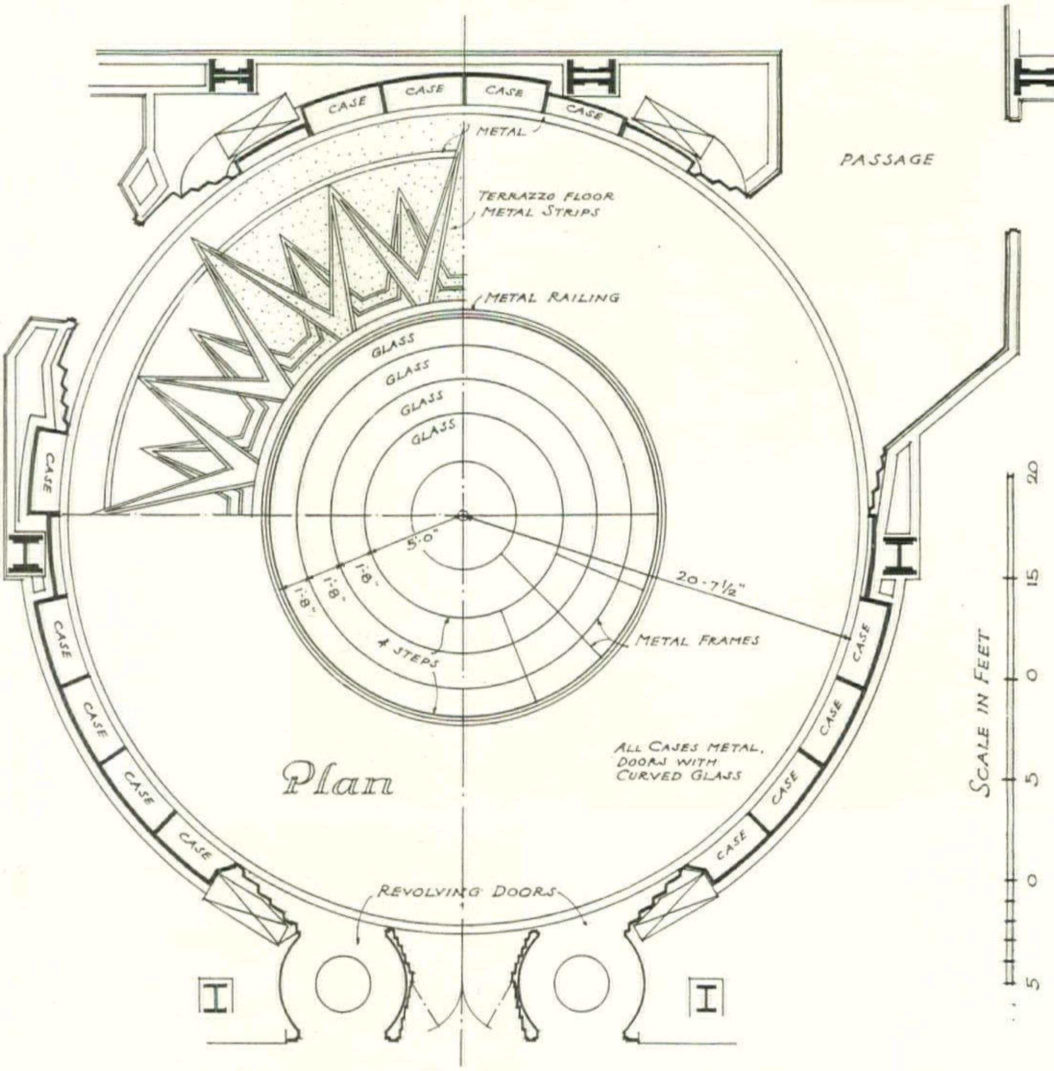

PLAN OF LOBBY

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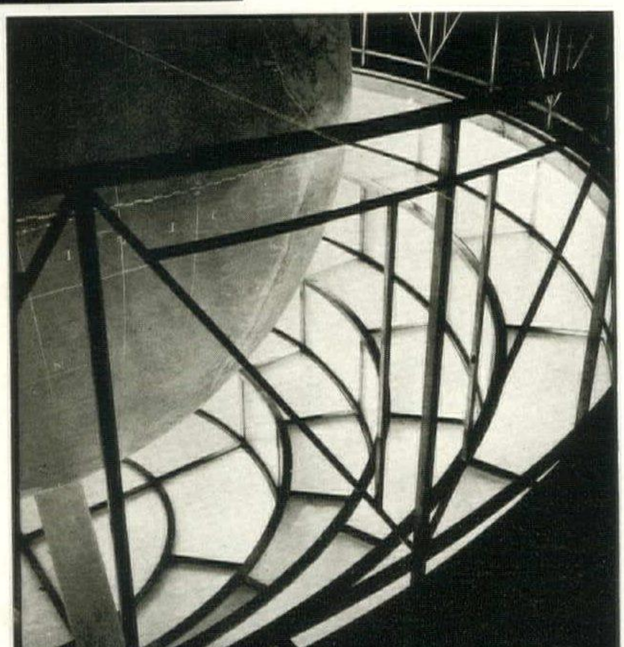
Photos. Thurman Rotan

THE GLOBE, DOWNWARD

THE GLOBE, LIGHTING



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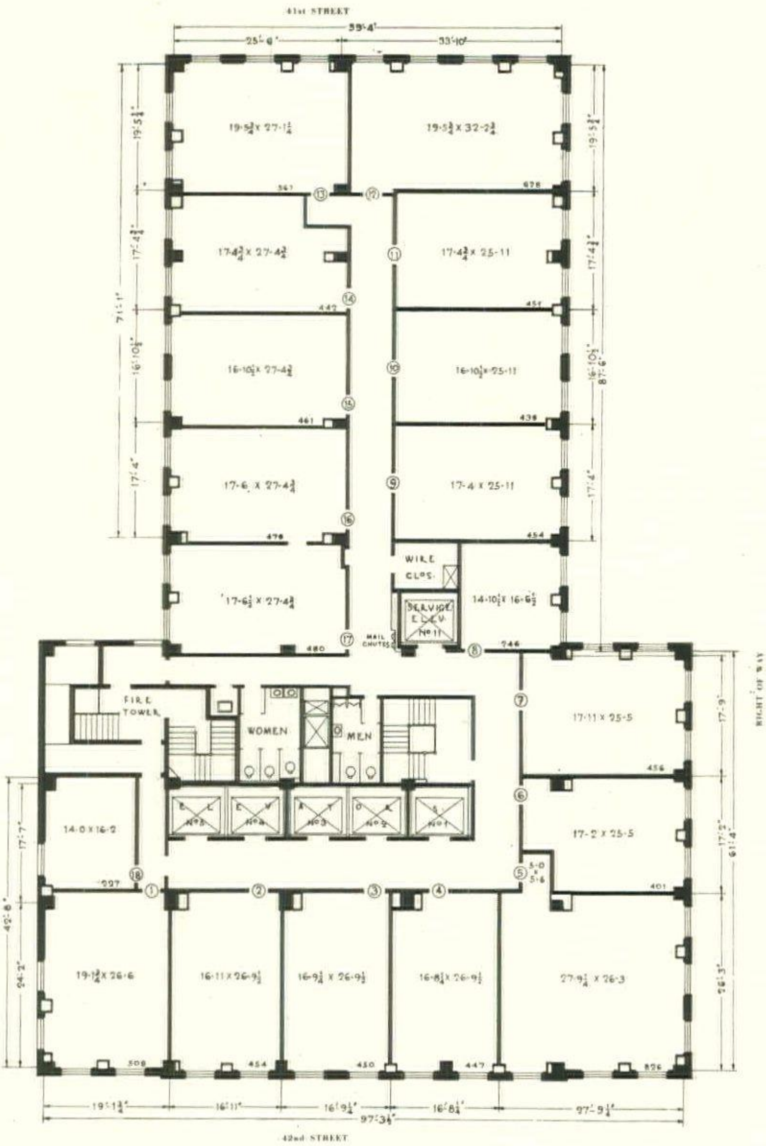


PLAN OF 27TH FLOOR, DIVIDED

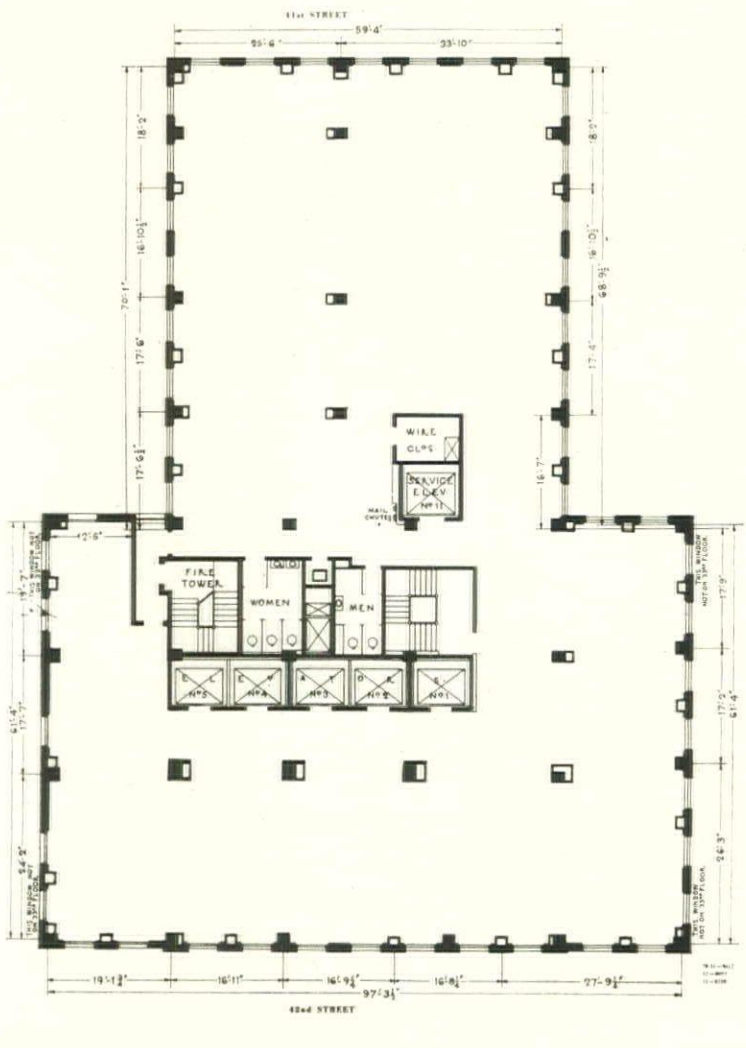
THE NEWS BUILDING
NEW YORK

JOHN M. HOWELLS, RAYMOND M. HOOD
ASSOCIATED, ARCHITECTS

Photo, Nyholm & Lincoln

ELEVATOR LOBBY

THE NEWS BUILDING
NEW YORK
JOHN M. HOWELLS, RAYMOND M. HOOD
ASSOCIATED, ARCHITECTS



PLAN OF 28TH TO 33RD FLOORS

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ENTRANCE TO ELEVATORS

THE NEWS BUILDING

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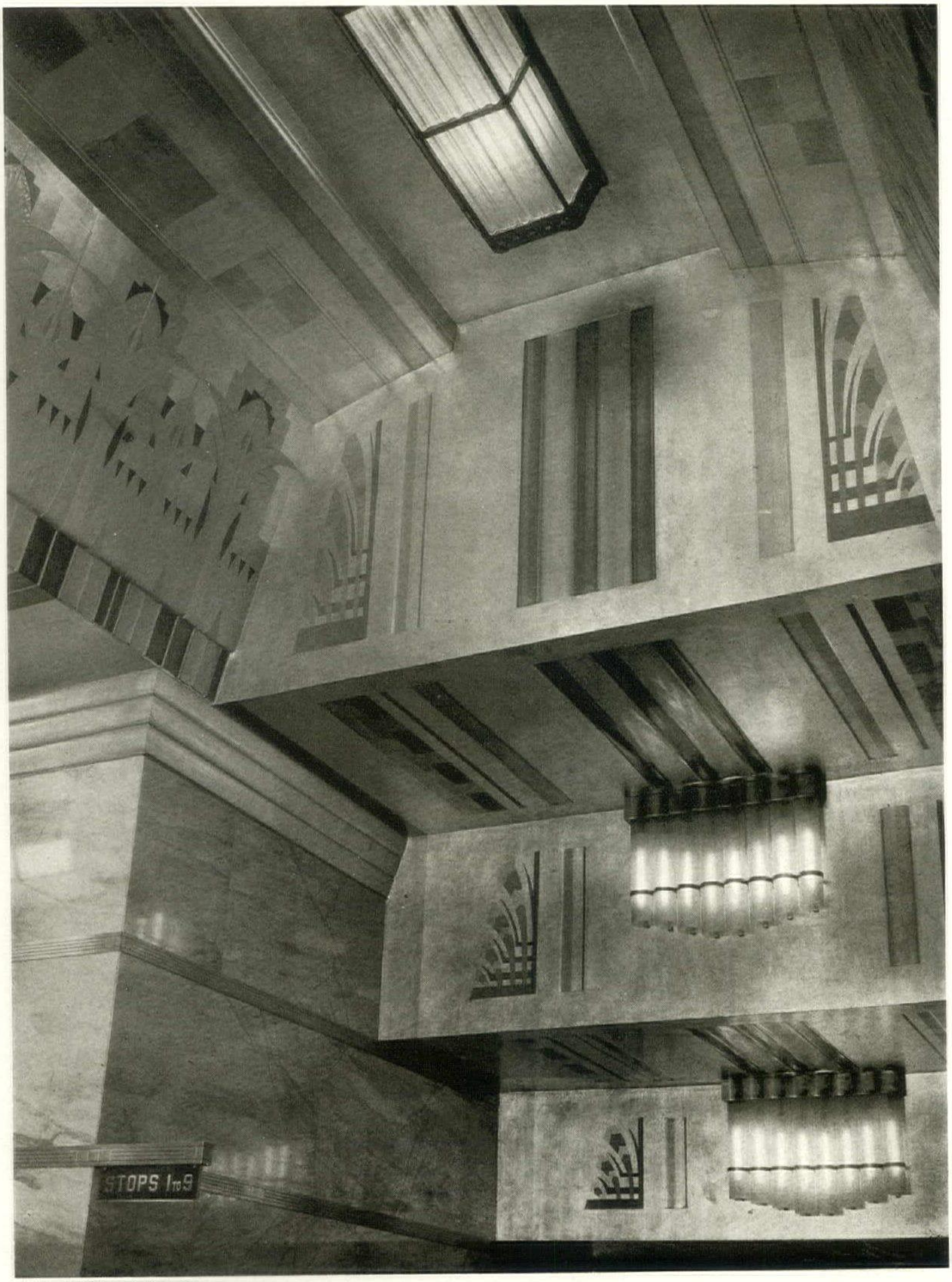


Photo. Nyholm & Lincoln

LOBBY CEILING DETAIL

THE NEWS BUILDING

JOHN M. HOWELLS, RAYMOND M. HOOD
ASSOCIATED, ARCHITECTS

Photos. Nyholm & Lincoln

ELEVATOR CAB DETAIL

ETCHED GLASS FLORAL DESIGNS ILLUMINATED FROM COVE LIGHTS DIRECTLY ABOVE

TELEPHONE BOOTH

THE NEWS BUILDING

JOHN M. HOWELLS,
RAYMOND M. HOOD,
ASSOCIATED, ARCHITECTS

HOUSE OF C. M. MOORE, ESQ.
KNOXVILLE, TENN.

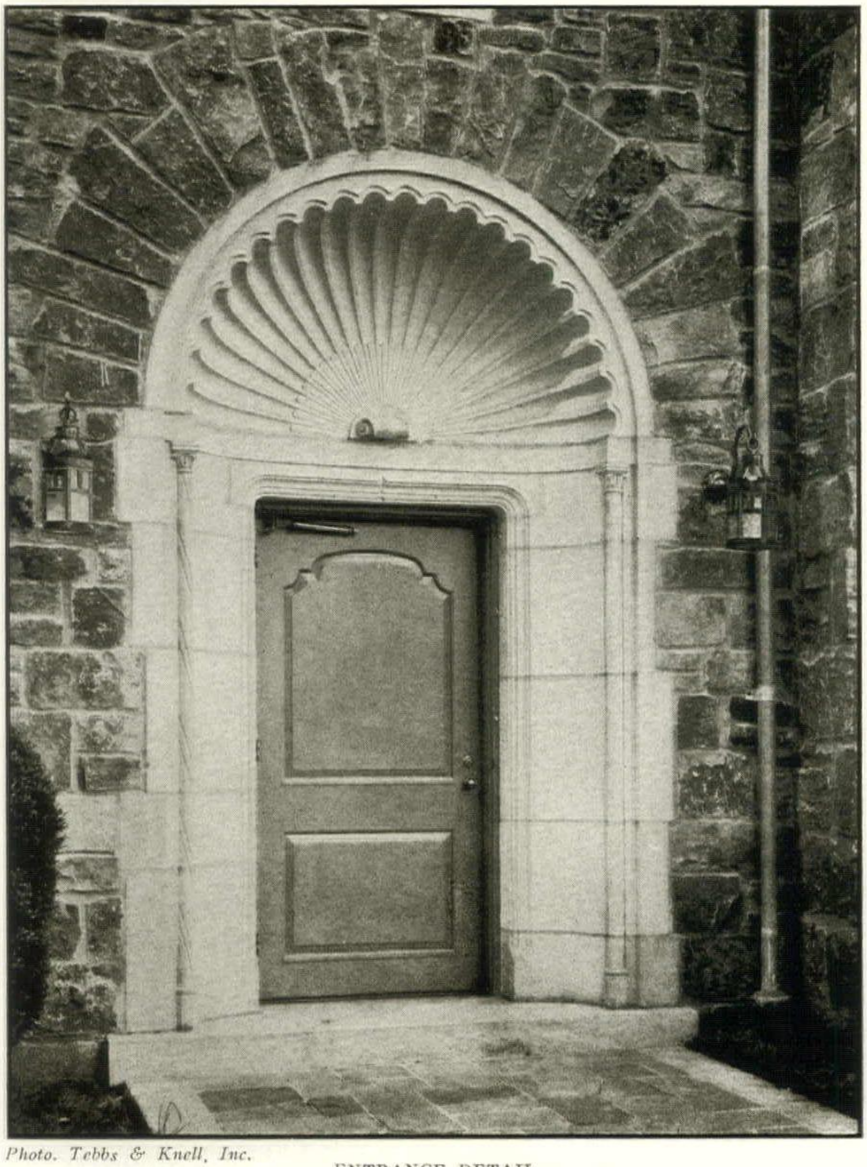
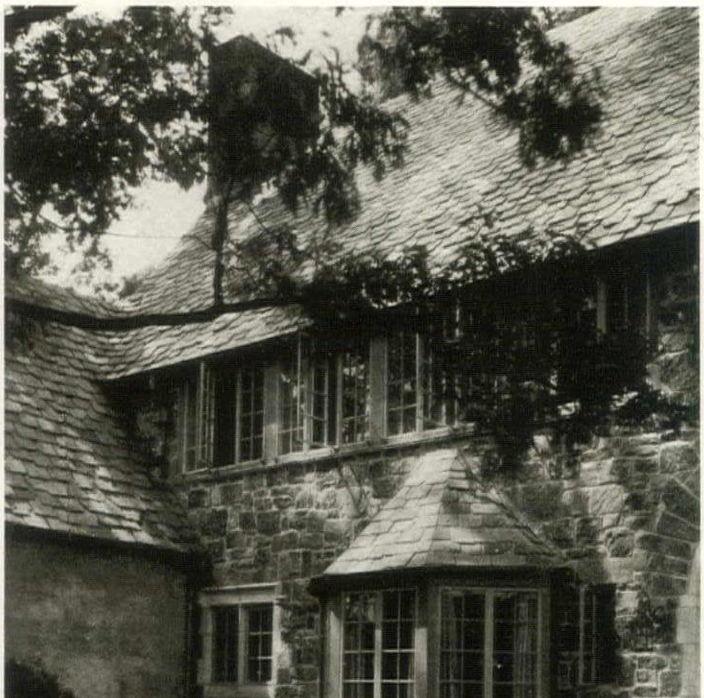


Photo. Tebbs & Knell, Inc.

ENTRANCE DETAIL

BARBER & McMURRY
ARCHITECTS

ENTRANCE FRONT

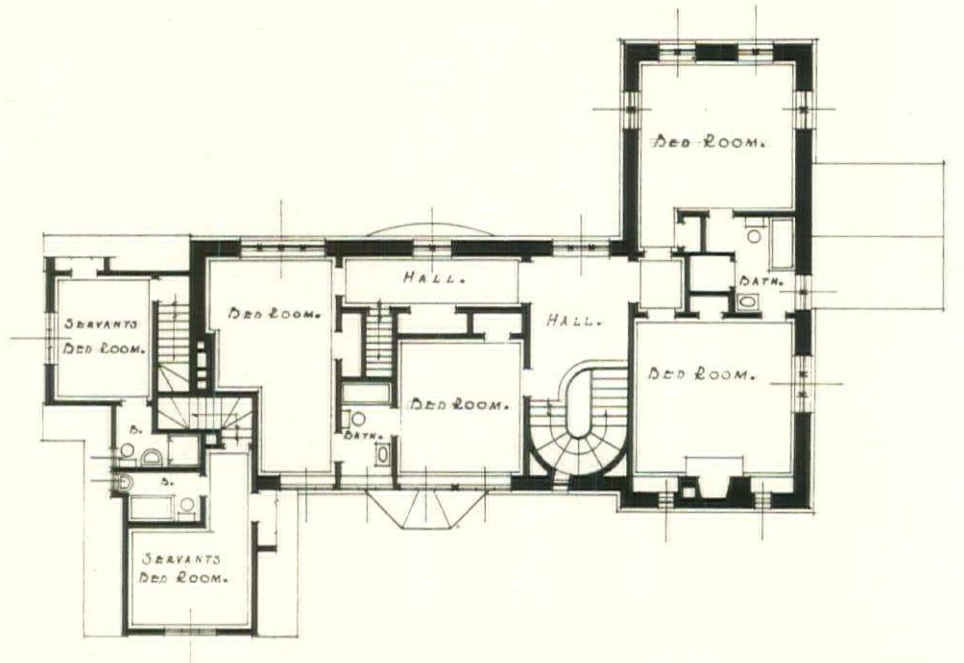


HOUSE OF C. M. MOORE, ESQ.
KNOXVILLE, TENN.

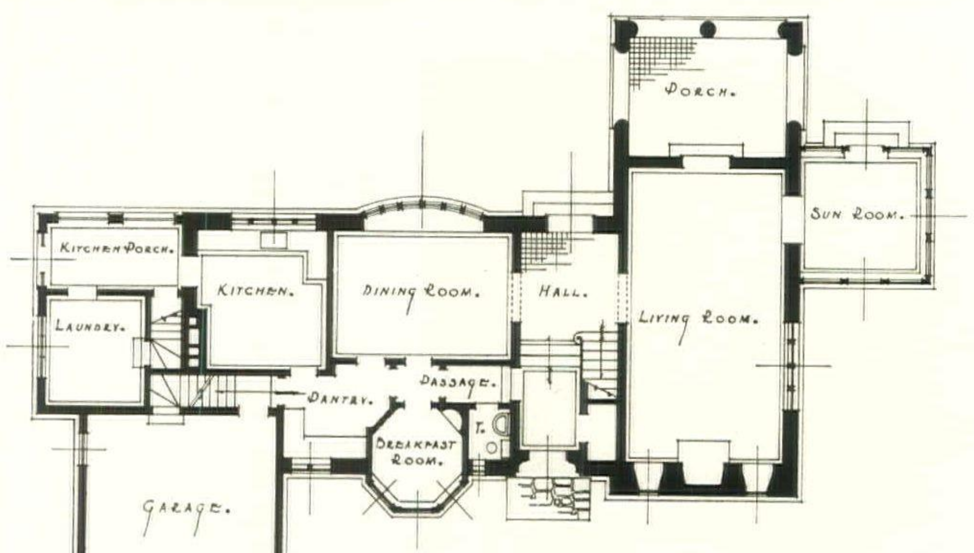
BARBER & McMURRY
ARCHITECTS

BAY WINDOW OF THE
BREAKFAST ROOM

Photos. Tebbs & Knell, Inc.



SECOND FLOOR PLAN



FIRST FLOOR PLAN

HOUSE OF C. M. MOORE, ESQ.
KNOXVILLE, TENN.

BARBER & McMURRY
ARCHITECTS

GARDEN PORCHES

Photos. Tebbs & Knell, Inc.

GARAGE WING

HOUSE OF C. M. MOORE, ESQ.
KNOXVILLE, TENN.

BARBER & McMURRY
ARCHITECTS

DINING ROOM

HOUSE OF C. M. MOORE, ESQ.
KNOXVILLE, TENN.

BARBER & McMURRY
ARCHITECTS

HALL AND STAIR
FROM DINING ROOM

Photos. Tebbs & Knell, Inc.

DESIGNING THE BONWIT TELLER STORE

BY

ELY JACQUES KAHN, ARCHITECT

THE rebuilding of the structure now occupied by Bonwit Telier was one of those involved tasks that a reconstruction usually develops. The original building was designed for an institution that had positive theories as to what it wanted. It believed, apparently, that the contemporary mood in some of its most positive forms was what the public demanded or might like.

It is quite obvious that all matters of design resolve themselves into those of taste; a new owner, a new architect, is certain to have varying opinions, and a change is not necessarily a violent criticism of this or that detail, nor a desire to wantonly destroy one man's work for the glory of a mere substitution. The essential was that the plan and scheme of the Stewart store were totally unfitted for Bonwit Teller. In another article this replanning has been considered in detail. The summation is clear that this particular store felt it necessary for its purposes to have a plan adapted to its theories of merchandising.

In the matter of detail, I may be permitted the suggestion that the original interiors permitted too much attention to the architecture and too much distraction to the eye. The psychology of the buyer is a curious one. Quite recently, one good friend criticized the new store as being too severe—too cold. It was felt that the woman who comes to buy wants to be dramatized; she steps into an interior that flatters her; the light should be subdued; color agreeable. She should be cajoled into wanting more than she had planned originally. It is perfectly true that a friendly atmosphere does create a mellow reaction that might result in enthusiastic buying. The fact of the matter, though, seems to lie in one of the serious difficulties that any store faces. It is in the cold light of the next day—at home—those articles which were sent under the spell of amiable illumination, exuberant architecture, come back to the store to be credited, and that particular form of turnover becomes a serious burden of expense.

Light seems to be one of the most vital considerations. In place of the great variety of electric fixtures of every shape and type that originally ornamented the Stewart store, a rigidly simple scheme of uniform indirect light was adopted. The fixture with fins of aluminum and bulbs producing daylight intensity was selected after a most serious analysis. The main floor illumination, also indirect, attempts with the same use of daylight lamps to produce as close an approach to daylight as might be possible.

There was unfortunately a serious problem of time for the entire work, including the study of all detail; structural, mechanical; the interiors; furniture, show windows, all had to be completed in less than four months. It was hoped that some of the original material might be salvaged, but this was almost out of the question, except for minor elements which could fit in the new scheme. One important consideration was that applied ornament—mere decoration—was found to be distasteful. So much of the recent work in the new mode recalls this trick of Paris or that of Berlin that one feels a growing antipathy to forms that are different merely for the sake of being unusual. The crystallization of the new spirit in America can hardly develop from a far-fetched hurdle into functionalism, the gas pipe school of architecture, as it were, or the more florid baroque of the Viennese spirit that filters through various sources via Germany and France. The detail in the new store was kept simple because it seemed wise to do so; the entrance, instead of being a rather low hall under the original decorative scheme, became a lofty two-storied lobby of glass and metal that had its particular function of lighting the store in part and also permitting some daylight in the departments on the second floor.

The show windows developed into the simplest of backgrounds for display. It was felt that the present tendency to elaborate the settings with curious forms in cork, metal, paper, was opposed to the principle of merely presenting goods for public view. The window displays are changed at least twice a week, and it was agreed that the success of the windows would have to be measured entirely by the interest in the stock itself. The windows, taking the forms of flattened niches, are shirred in a grayish cream-colored silk; the floor a warm gray carpet. There is no attempt to be startling; the main consideration was space, light and the simplest of background.

It is interesting to note in the final analysis that particular attention was given to the machinery of the store itself, where the store executives and the fixture designers combined to develop most minutely the types of cases, counters, stock rooms, fitting rooms, that would permit the most comfortable and efficient service. Design in that connection seemed to be more of a question of elimination of unnecessary frills—a search for simplicity that approaches absence of architectural detail. The soundproofing of ceiling, ventilation, temperature regulation, daylight in fitting rooms and on the floors in general, seemed to be more important than a search for a bizarre setting.

A MODERN STORE

DESIGNED FOR MODERN MERCHANDISING METHODS
BONWIT TELLER STORE, NEW YORK

BY

JAMES B. NEWMAN, OF THE FIRM OF ELY JACQUES KAHN, ARCHITECTS

ABOUT one year ago the Stewart store opened at Fifth Avenue and 56th Street with a great fanfare. As one of the most "daringly modern" and smart stores of the Avenue, it attracted a great deal of attention and was the center of considerable comment. As an architectural success, the building received much well merited commendation and praise. Its interesting architectural scheme was developed in parallel with a retail merchandising method which, though not unique, was perhaps developed to a much greater degree in this case than in most others of similar type.

The store, practically speaking, was divided into fairly well defined exclusive shops, each of which was treated in a highly individualistic manner, with many different interior designers responsible for the final results. Working in this way, the results were interesting and attractive from the viewpoint of design, but many considered the merchandising method which led to this result a mistake, because, due to the interest in the setting, the merchandise was necessarily relegated to the background, leaving the patroness "the center of attraction in a dramatic setting." While it is undoubtedly fitting and proper to so dramatize the patroness in certain shops, many consider that it is not fitting and proper in the modern department store, and it is just this difference in point of view which marks the distinction between the Stewart store of a year ago, and the Bonwit Teller store now occupying the premises. It remains for time to demonstrate which is the correct theory.

While the failure of the venture was in part due to this merchandising method, it is only fair to say that it is doubtless true that other factors were involved as well. Not the least of these were the current business depression, whose tentacles reached out in many directions before firmly taking hold, and the fact that this company had stepped from a considerably more limited field and clientele into a vastly larger and different field.

Sigurd Fischer
Interior View of Main Vestibule, Showing One Side of Divided Entrance Plan

The keynotes in the entire alteration were simplicity and restraint. The exterior work was largely confined to the substitution of a new entrance motif, while in the interior there was a clean sweep of all departmental fittings from the passenger elevators at the rear to the front on the Avenue. In this sweep there went all cramping partitions and trick installations which dwarfed the spacious interiors, hindered the effective display of merchandise, and, through largely cutting off the outside windows from the interior which had no mechanical relief, contributed to thoroughly unsatisfactory ventilation. The interior situation had been further aggravated by introducing extensive cove and other types of lighting which gave unsatisfactory illumination in many cases, and which also radiated a great deal of heat in the unventilated spaces.

The new department store is organized on the basis of eight floors of general merchandising space and four of offices, work rooms, receiving and utility rooms. The stock is arranged upon this plan: First floor, accessory section, general stock and novelties. Second floor, millinery and shoes. Third floor, lingerie, negligees, and corsets. Fourth floor, special order or custom-made department, import department with special rooms devoted to French imports, including lamps and general boudoir accessories, furs, and the like. Fifth floor, women's and misses' dresses. Sixth floor, women's and misses' coats. Seventh floor, infants' wear, children's wear, and clothing for junior misses. This floor is also featured by a layette department, affording privacy to the mother, with adjoining rooms for toys. Eighth floor, sport outfits, bathing suits, knitted wear, etc. The offices and work rooms, including an ample fur storage department, occupy the upper four floors.

In the store fixture work Messrs. Feil & Paradise of Los Angeles, and Taussig & Flesch of New York were associated with the Firm of Ely Jacques Kahn. In detail, the first floor is arranged as in typical department stores, as shown on the plan in the plate section, with wide traffic aisles from the Fifth Avenue front to the rear, where the passenger elevators are located, with a wide transverse aisle at the floor center, serving the 56th Street carriage entrance, fully as important in this store as the Avenue entrance. These aisles are of ample width to serve not only the general merchandising purposes, but also to allow for traffic to the elevators. The original plan of the building was based upon the theory that it is best to draw all traffic for the upper floors through the first floor sundry section, thereby promoting sales, instead of having the elevators on one side convenient to the street.

The new entrance feature was studied with the utmost care and consideration, not only to insure its artistic success, but also to insure that it would work as an integral part of the plan, and assist in the flow of traffic. In developing the idea, cases were placed on the central axis of the store, and revolving door units were placed at the opposite inner corners of the vestibule to divert traffic through the various aisles, instead of using center doors and an aisle which would become a mere runway.

Access to the show windows is through wall cases, and small service rooms along the street faces. These rooms also serve as small offices, contain tube stations and a minimum amount of stock. Stock and service rooms on this floor were kept to a minimum to obtain all possible selling space. In this connection, each of the six large center groups of island cases has been provided with a pneumatic dumbwaiter. The six dumbwaiters, arranged in a battery along the carriage aisle, connect to a wrapping, shipping and receiving room in the basement. Besides providing wrapping and shipping service for these departments, the dumbwaiters also afford ready means for replenishing stock during the day. Large replacements, however, must be made by the service department, presumably at non-selling periods.

The interior of the cases on this floor, and generally throughout the building, is a light avodire wood to display goods to advantage, while the general wood finish on the floor is a bleached black walnut. The floor is of travertine, and as this would only accentuate the usual first story noises, the entire ceiling was treated with acoustic felt. This felt has been painted in harmony with the entire color scheme, and has been quite effective in deadening sound. The lighting of the floor is entirely indirect, except for reflector lighting in connection with cases. The large general lighting fixtures are of plaster, painted to match the rest of the plaster work, and are suspended by simple hanger rods. In the toilet accessory section, reflector lighting was placed outside of the cases because, when placed inside, such merchandise usually turns color and rapidly deteriorates. Effective lighting of the Fifth Avenue vestibule has been obtained through floodlighting the ceiling as a reflecting surface from the top of the revolving doors.

Retail merchants are beginning to notice the welcome accorded air-conditioning systems in the big "movie palaces" and to realize their value as a sales asset through the personal comfort afforded the customer, and this is the second large store in New York to introduce such ventilation. Use of the system at present is confined to the first story, and is of the re-circulating type. Fresh

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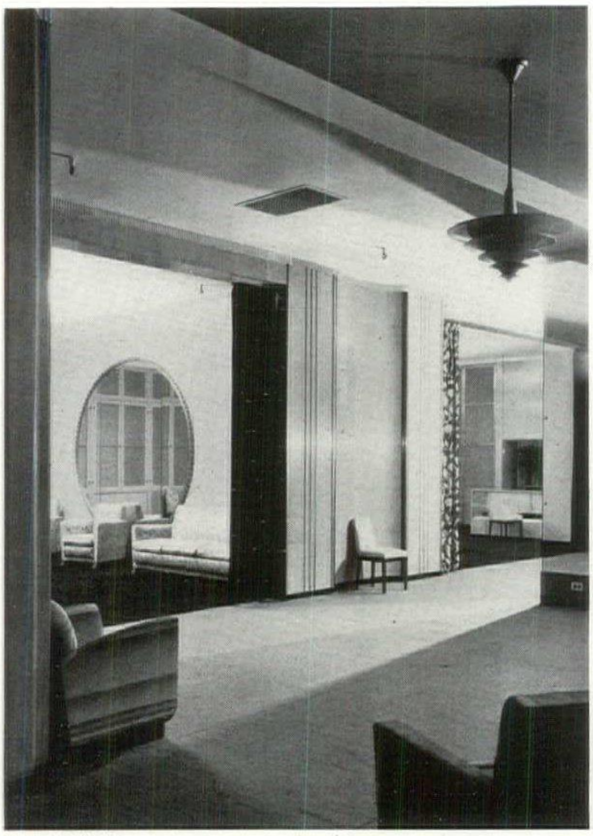
Stock Storage is Behind the Showcases; Sports Wear Department

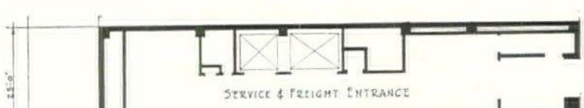


Sigurd Fischer
Simplicity of Design and Interesting Color Combinations Form Logical Background for Fitting Rooms

air is drawn in through large carved stone grilles at the Fifth Avenue entrance, is washed, treated, and supplied through wall registers near the ceiling. Exhaust grilles are provided in the bases of the show cases, and at other points near the floor. This air is supplied, cooled in the summer and heated in the winter, at the proper degree of humidity. Through re-circulating the air, some operating economy is effected. All registers and grilles are of ample capacity to provide for low velocities, and air currents are unnoticed.

The show windows are relatively shallow, and are without "trick forms" of any kind. They are separated by simple curved forms for hangings and drapery, with a certain amount of spot lighting to effectively set off merchandise on display against simple and unobtrusive backgrounds. General illumination, as usual, is from reflector lighting. No ceiling was provided for the windows, due to sprinkler arrangements, but the undue height to the first story ceiling has been cut off by installing a wire mesh top, painted black just above the show window top, which in no way impairs the sprinkler efficiency. All the show window interior above the wire mesh top has been painted black, still further leading to its effacement. Building service and freight entrances at the rear connect to service corridors for employes and merchandise.

The dominant feature of this interesting first story is the new entrance motif, referred to al-



Left: First Floor Plan
Above: Third Floor Plan

ready, and also in the article by Ely Jacques Kahn, elsewhere in this issue of The Architectural Forum. This new feature, made possible through a considerable structural alteration, runs up through two stories, opening out spaciously into the first and second stories. It not only gives the feeling of comfortable roominess, so essential in department store work, but provides a great deal of light and effectively places practically the entire first floor on display from the Avenue.

In arranging the departments on all of the upper floors, matters were much facilitated by the foresight used in the original plan in arranging for very unusual column spacings. There were only two rows of columns to contend with in the entire selling space, these being arranged with a center span of 43 feet and side spans of 35 feet in round numbers. The plans of these several floors were arranged on a common basis. This basic plan consists of opening the elevators directly into an attractive large central selling space, in which there is enough merchandise on display to form an interesting picture in itself, and also to definitely mark the department.

Around the central salon are arranged a series of stock rooms, fitting rooms, and medium sized subsidiary special selling rooms. The partitions around these surrounding accessory rooms are relatively low, and while they effectively keep the central salon from becoming so large as to lose individuality and interest, they assist in giving a

Sigurd Fischer

Purpose Expressed in Design of Small Salons Catering to Most Exclusive Clientele

Fourth Floor Plan

Fifth Floor Plan

Sigurd Fischer
Niche for Elevated Display Figure

feeling of spaciousness, as the outside windows are generally visible over these rooms. Wherever it has been possible to do so, ample space has been arranged opening directly to the windows to promote the feeling of lightness and airiness.

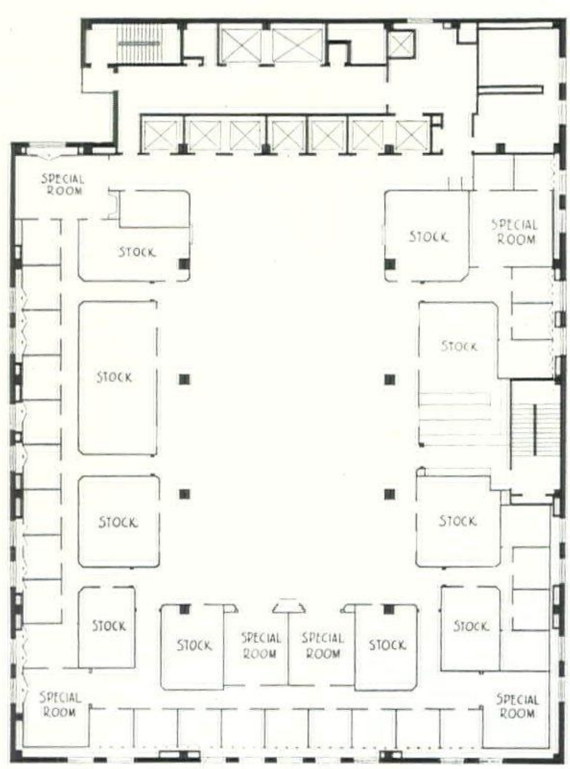
The stock rooms, generally relatively small in themselves, aggregate a very large area. In this way it has been possible to arrange the stock precisely at the points where it is most conveniently disposed with respect to the convenience of both customers and sales force. There has also been some attempt to arrange fitting and dressing rooms to assist in classified selling, adjacent to particular stock rooms. The special rooms just referred to facilitate classified selling, and also permit more personal attention, provide for better concentration, and afford the greater intimacy and privacy so essential and desirable with many clients.

The general illumination throughout all these selling floors has been provided through indirect lighting. The fixtures resemble inverted cones, formed by concentric louver rings, through which there also comes a certain amount of light. They are both simple and effective. The wattage supplied was carefully considered by various technical experts, including also the consultation staffs of the large electric companies, and certainly the floors are all flooded with light as near daylight as possible, in sharp contrast with many dingy department store interiors.

From the second through the fourth story there has been introduced an extensive system of exhaust ventilation, while from the fifth through the eighth story the exhaust is effected through two large grilles adjoining the elevators. Fresh air is obtained from the windows on these floors, and excess radiation has been supplied to heat the additional air drawn in as a result of the exhaust operation. The system provides for a change of air every five minutes. Provision has been made to extend this ventilation to the floors above the eighth, in the future. The heating of these floors is generally through iron radiators, uncovered, and without extended window stools, as most are concealed.

The second floor has been divided in two, the inside or north half being devoted to shoes, the outside or south half being devoted to millinery. Due to lack of sufficient wall spaces, small and low millinery stock rooms were arranged in the center, which also serve to divide the departments. In the millinery section there are ample spaces directly exposed to daylight, so that hats can be inspected in all kinds of light. The shoe stock room is one large department with a capacity of 20,000 pairs, running the length of the sales department. The general treatment of the floor is in Oriental walnut.

The third floor is provided with a relatively large number of fitting rooms, primarily for the use of the corset department. This department is



Sixth Floor Plan

especially developed in this store, and all varieties of imported merchandise are available with their own display and fitting rooms, as well as departments devoted to domestic goods. The general treatment is in Circassian walnut.

The fourth floor, devoted to the special order department, the import department, and the fur department, is the least commercial of all floors in atmosphere, and outside of the first is the most interesting. There is very little display of merchandise of any kind on this floor. A large central fur salon opens directly on the Fifth Avenue front, flanked by two small fur salons at the corners. The large salon has direct daylight, while the small salons have light filtered through screens of carved glass, saved during the alteration, and accordingly furs can be examined in various types of light. One of these small salons is featured by two large fur safes worked in with the design. The large fur stock room is concentrated in one place for the better control of valuable merchandise.

The special order department, on the 56th Street side, is given prominence through its location on a raised platform. It will be noted that the department is arranged with its own special selling rooms, stock room and fitting rooms. The import department on the north side, across from the special order department, is also arranged with its accessory service rooms.

It will be noted that, while these various departments are separate and distinct, they are arranged in a group, which largely caters to the particular clientele dealing in the highest grade and most expensive merchandise. The front salons on this floor are in harewood, but the rest of the floor is finished in a color scheme in various paints.

On the fifth floor, devoted to women's and misses' coats and suits, the influence of classified selling on the plan is clearly indicated. Special sales rooms, French rooms in this case, occur at each corner of the floor, each with its group of fitting and stock rooms. On this particular floor it was possible to reduce the number of fitting rooms and to use fitting mirrors in the main salon. Considerable carved glass has been used in the fitting rooms across the Fifth Avenue front, which admits some light, and there has been some variation in height of the service rooms to avoid monotony. Both satinwood and bleached walnut have been used.

The sixth floor plan is very similar to that of the fifth, except that on account of handling gowns it was necessary to introduce a great many more fitting rooms, and correspondingly more special selling rooms. These special rooms, stock rooms, and fitting rooms are tied together through an extensive sub-corridor arrangement, and it is possible to carry on very intensive selling without much surface indication. A considerable part of the fitting room partition work has been done in imported lace glass and, with outside sash, full

Sigurd Fischer

Corner of Shoe Salon

Seventh Floor Plan

advantage has been taken of daylight. Many cross partitions have been opened at the base to permit circulation. A large part of the wood is walnut.

The seventh floor provides for infants, children and junior misses. As already noted, this floor is also featured by a layette department and toy shops. The department for the junior miss is complete, and all her needs are largely provided for in the one location. There are a few special purpose fitting rooms for party gowns, etc. While there has been some variety of wood used, most of the finish is in a soft green tone.

The eighth floor provides for sport outfits, beach apparel, and knitted goods. There are ample fitting rooms, and certainly a patron is provided with every opportunity to know exactly what her beach apparel will look like. The merchandise is well displayed in high and low cases.

Throughout all of these floors the comfort and convenience of patrons have been considered in every possible way, and there has been a conscious effort to strike the proper balance between the luxurious and the moderate. While keeping in mind at all times the utilitarian point of view in all arrangements, every effort has been made within the limitations of the merchandising methods to create an agreeable atmosphere for a well established, high grade clientele.

It would not be just to close this article without paying tribute to the loyal coöperation of the building trades, which put this difficult and intricate project through on scheduled time. In most large deals of the present, it is not possible for the architect to get started until the business side of the picture is fairly certain, and practically completed. After this completion of the business details, the specter of accruing rents and interests and the proper seasonal completion date crash into the picture, and all goes through with a rush. Most of the contractors on the original Stewart Building, who were familiar with its background, were brought into the new picture. Where possible, definite lump sum contracts were let, but where much work had to go ahead before plans were even started, many contracts were let on the time and material basis. A fine morale was built up, and these men went to their work through heat and humidity, day and night, and with all the speed, and often with verbal instructions only, made surprisingly few errors of note.

Photo. Wurts Brothers

Main Entrance as Originally Designed for Stewart and Company

BONWIT TELLER BUILDING
NEW YORK

Sigurd Fischer

FIFTH AVENUE FACADE

THE FIRM OF ELY JACQUES KAHN

ARCHITECTS OF REPLANNING

Sigurd Fischer

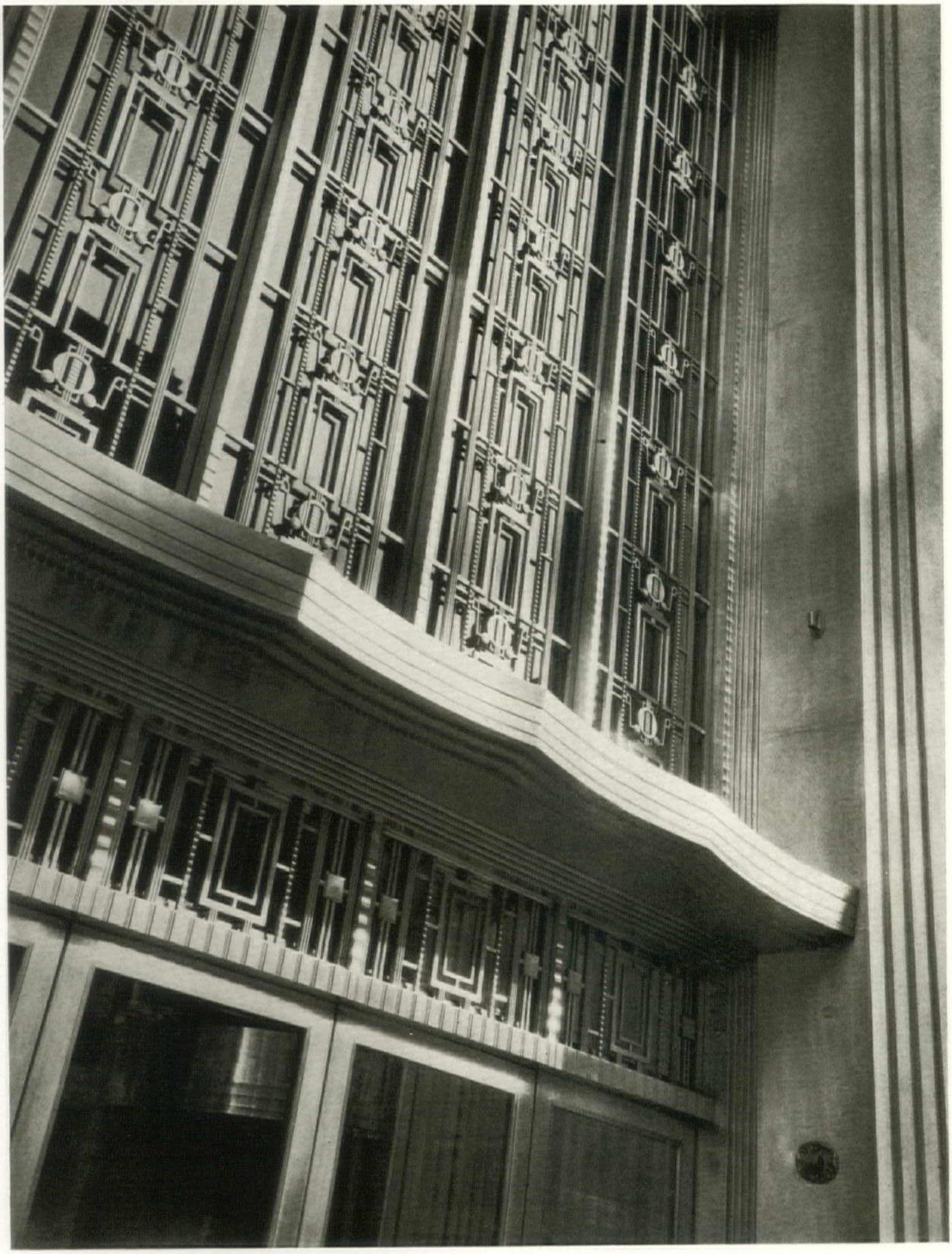
MAIN ENTRANCE

STORE FOR BONWIT TELLER, NEW YORK.
THE FIRM OF ELY JACQUES KAHN,
ARCHITECTS

Sigurd Fischer

FIFTH AVENUE SHOW WINDOW

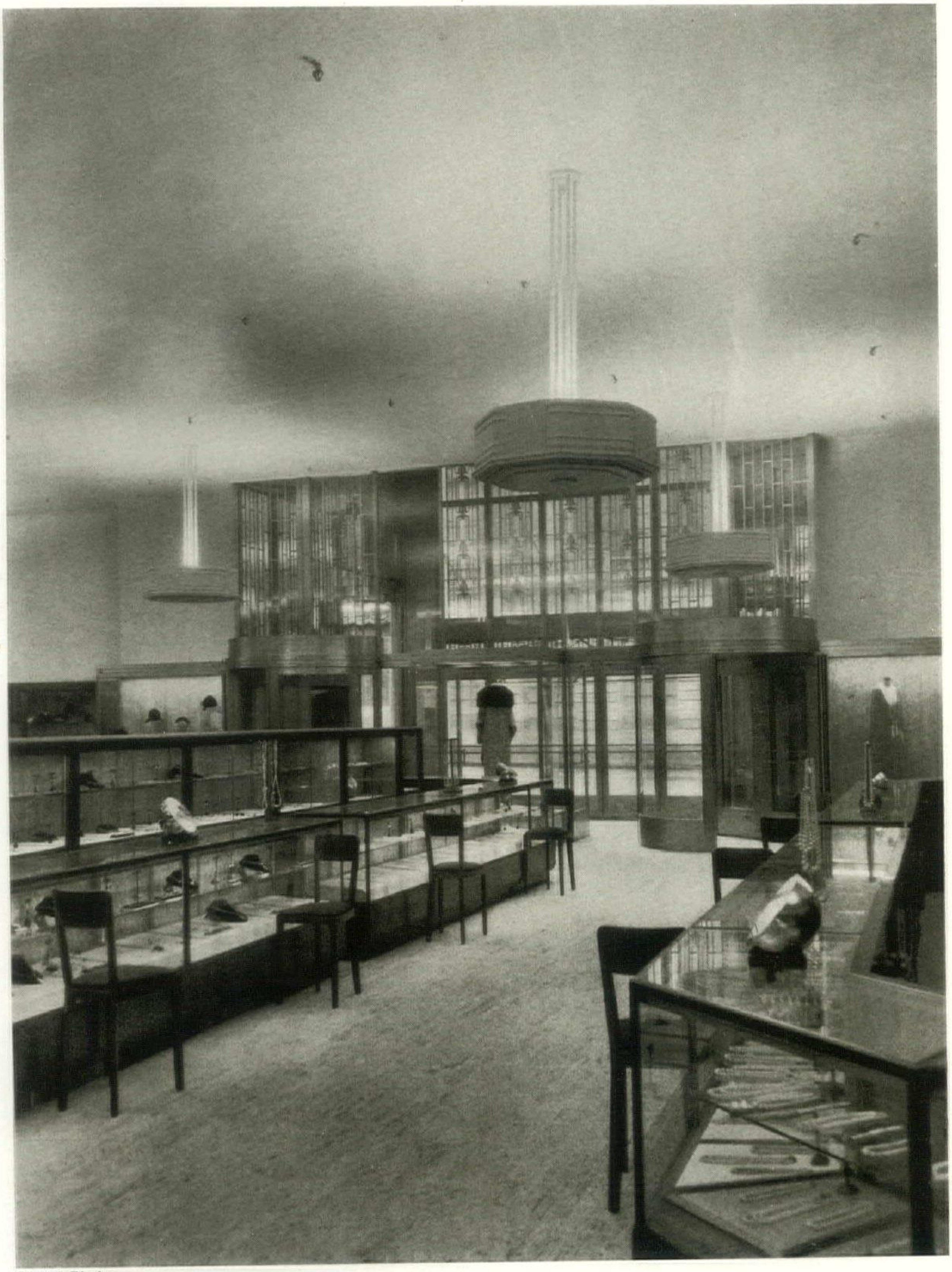
STORE FOR BONWIT TELLER, NEW YORK.
THE FIRM OF ELY JACQUES KAHN,
ARCHITECTS



Sigurd Fischer

DETAIL, MAIN ENTRANCE

STORE FOR BONWIT TELLER, NEW YORK.
THE FIRM OF ELY JACQUES KAHN,
ARCHITECTS



Sigurd Fischer

MAIN FLOOR

Floor, Buff Travertine; Wood Work, Walnut; Back of Cases, Avodire; Lighting Fixtures, Composition Plaster; Ceiling, Felt Fabric Painted Cream

STORE FOR BONWIT TELLER, NEW YORK.
THE FIRM OF ELY JACQUES KAHN,
ARCHITECTS

Sigurd Fischer

FUR ROOM

Floor Covering, Peacock Green Carpet; Walls, Harewood with Metal Flutes, Black Painted Wood Base; Cornice, Silvered Harewood; Ceiling, Cream Color Plaster; Doors, White Metal with Bakelite Inserts; Draperies, Black and Silver Silk

STORE FOR BONWIT TELLER, NEW YORK.
THE FIRM OF ELY JACQUES KAHN,
ARCHITECTS

Sigurd Fischer

FRENCH GOWN ROOM

Floor Covering, Black Carpet; Walls, Philippine Shell; Ceiling, Cream Color Plaster; Lighting Fixtures, Black and Silver; Furniture, Oriental Walnut with Coverings in Peach and Apricot; Drapery, Transparent Velvet in Graduated Black and Gray

STORE FOR BONWIT TELLER, NEW YORK.
THE FIRM OF ELY JACQUES KAHN, ARCHITECTS

Sigurd Fischer

FUR ROOM

Floor Covering, Peacock Green Carpet; Walls Painted Silvered Green; Cornice and Paneling, Silvered Harewood; Ceiling, Cream Plaster; Lighting Fixtures, Black and Silver; Furniture, Oriental Walnut; Furniture Coverings in Black, Red and Silver

STORE FOR BONWIT TELLER, NEW YORK.
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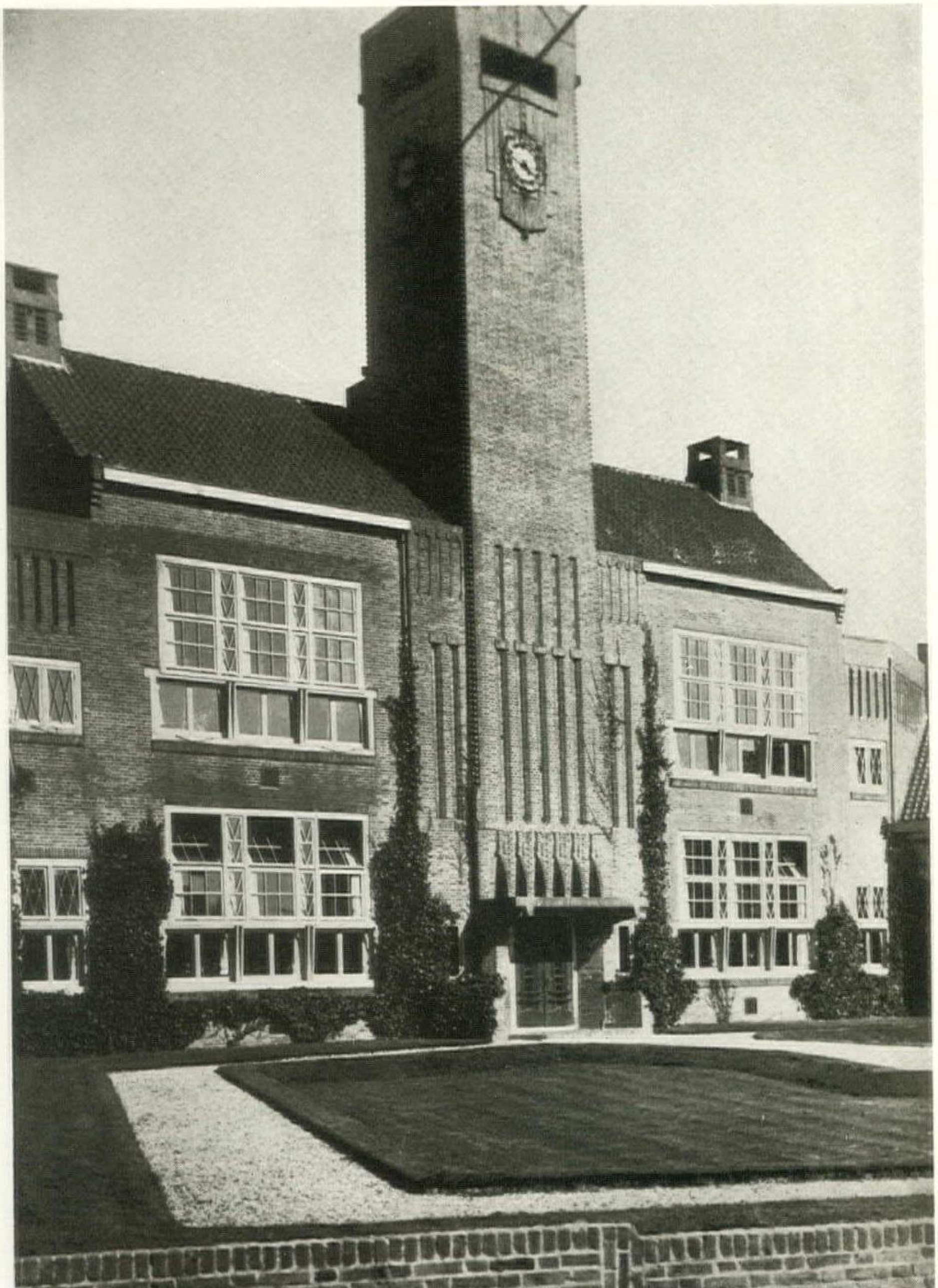
ARCHITECTS

SEVEN SCHOOL BUILDINGS



Bonney

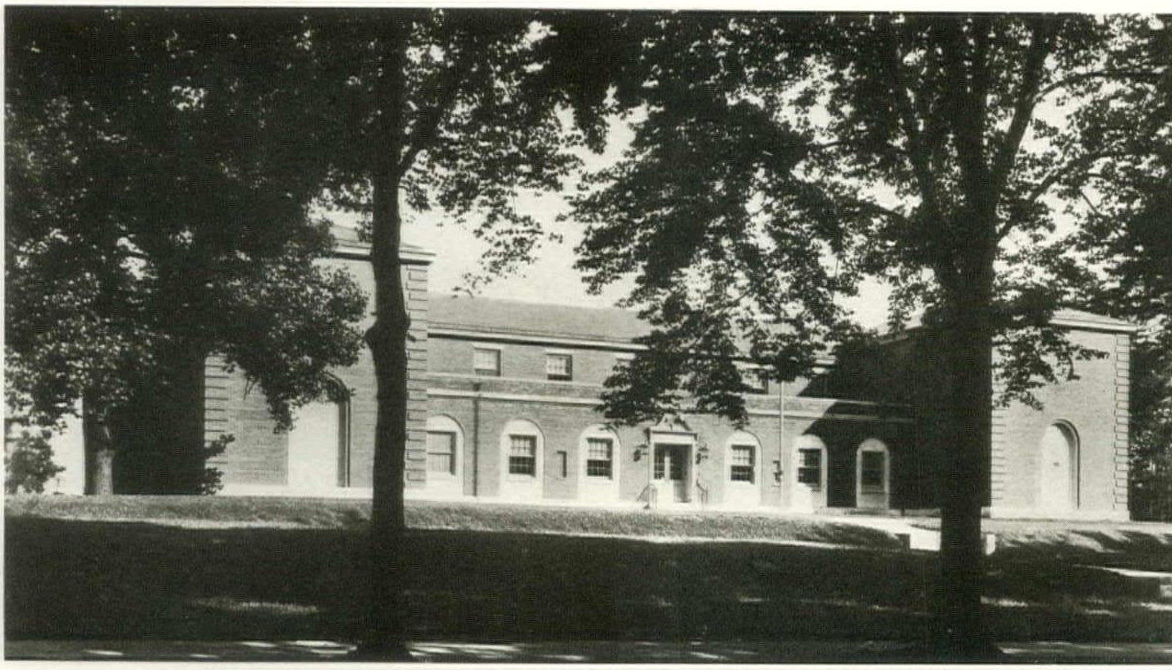
SCHOOL HOUSE AT
HILVERSUM, HOLLAND
M. DUDOK, ARCHITECT

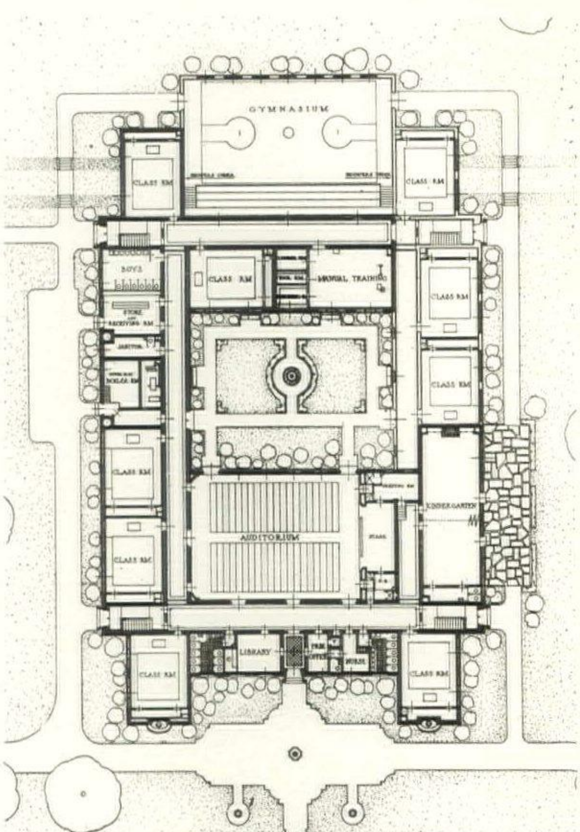
Galloway

SCHOOL AT GRONINGEN, HOLLAND

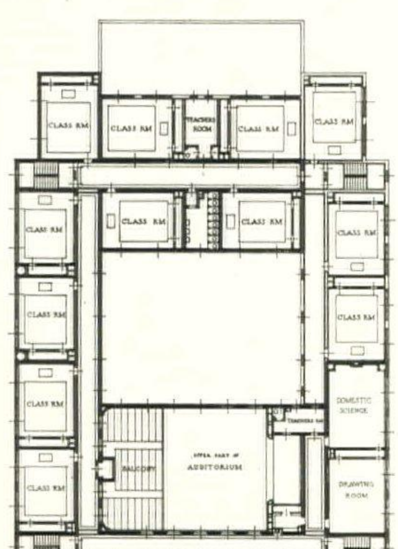
Bonney

SCHOOL AT HILVERSUM, HOLLAND



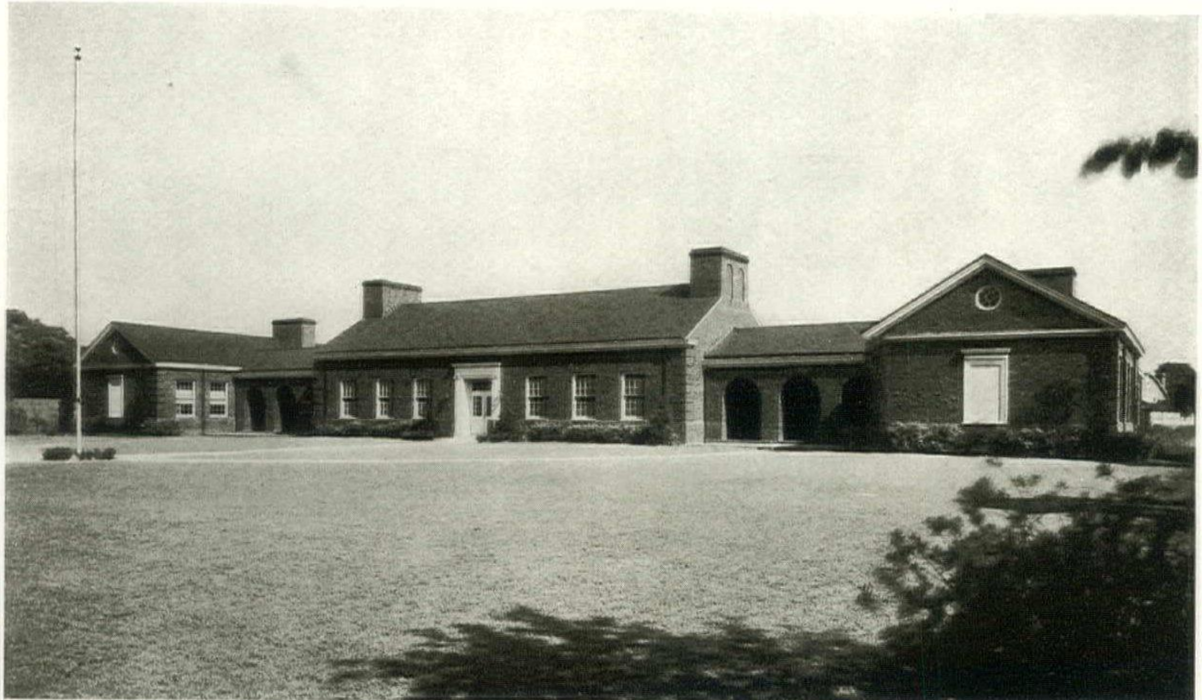


FIRST FLOOR



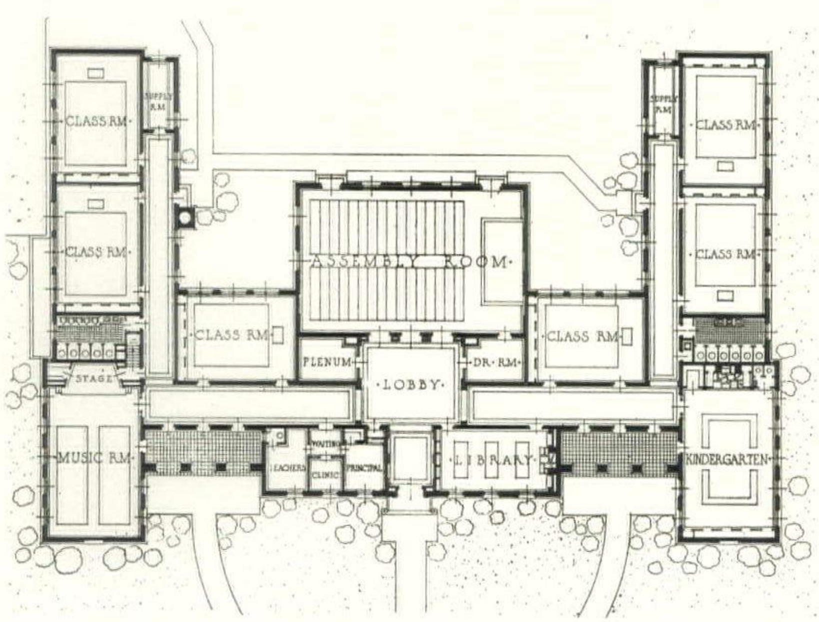
SECOND FLOOR

PUBLIC SCHOOL, MAYWOOD, N. J.
ERNEST SIBLEY AND LAWRENCE C.
LICHT, ASSOCIATED, ARCHITECTS



Gillies

FULTON AVENUE SCHOOL
HEMPSTEAD, NEW YORK.
ERNEST SIBLEY AND
LAWRENCE C. LICHT,
ASSOCIATED, ARCHITECTS

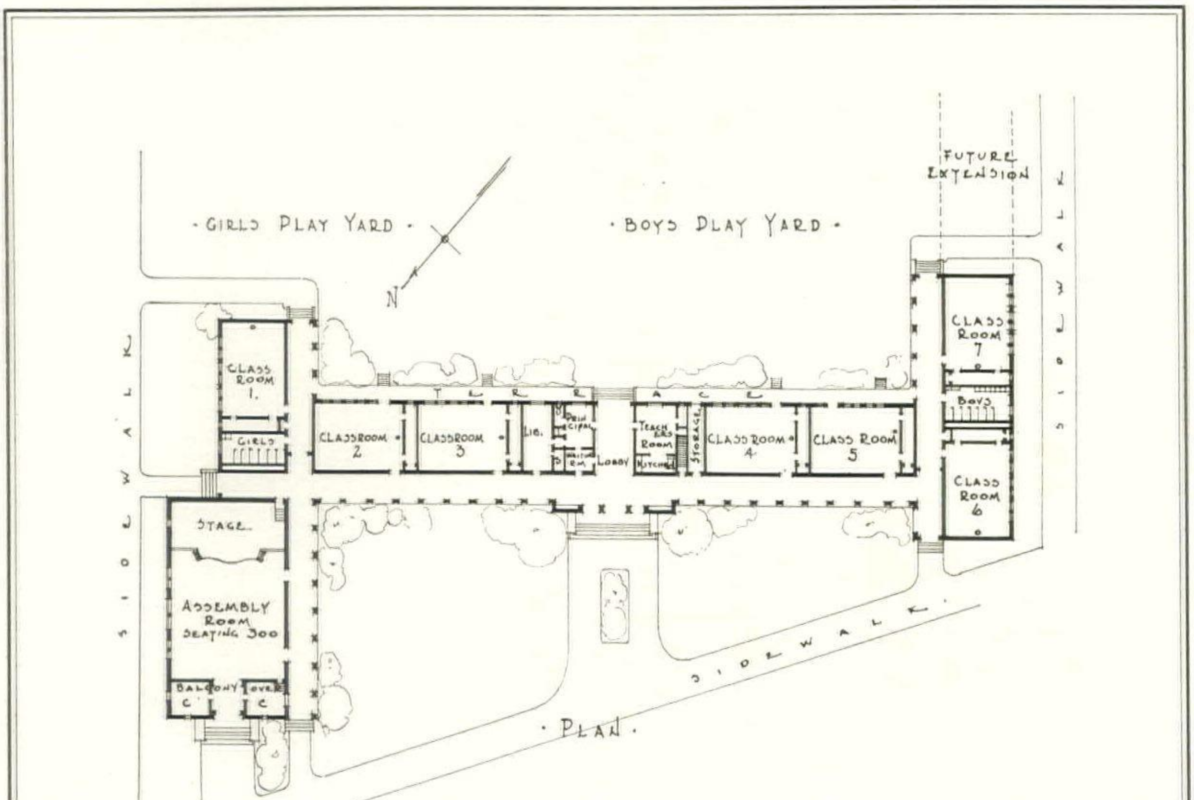


PLAN

Moulin

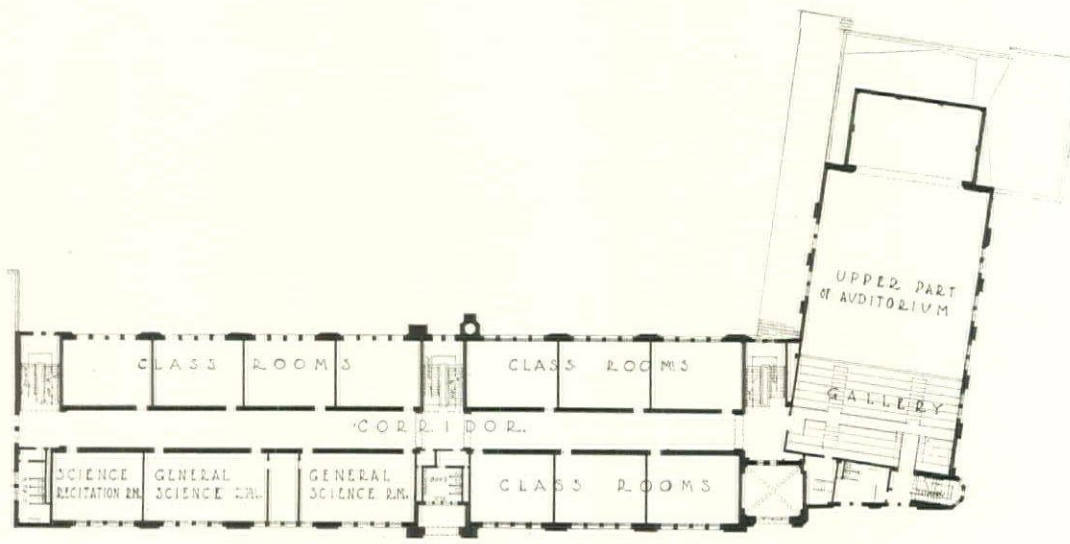
W. F. TURNBULL SCHOOL,
SAN MATEO, CALIFORNIA

JOHN J. DONOVAN AND
SYLVAIN SCHNAITTACHER,
ASSOCIATED, ARCHITECTS



FRICK SCHOOL, OAKLAND, CAL.

WYTHE, BLAINE & OLSON, ARCHITECTS



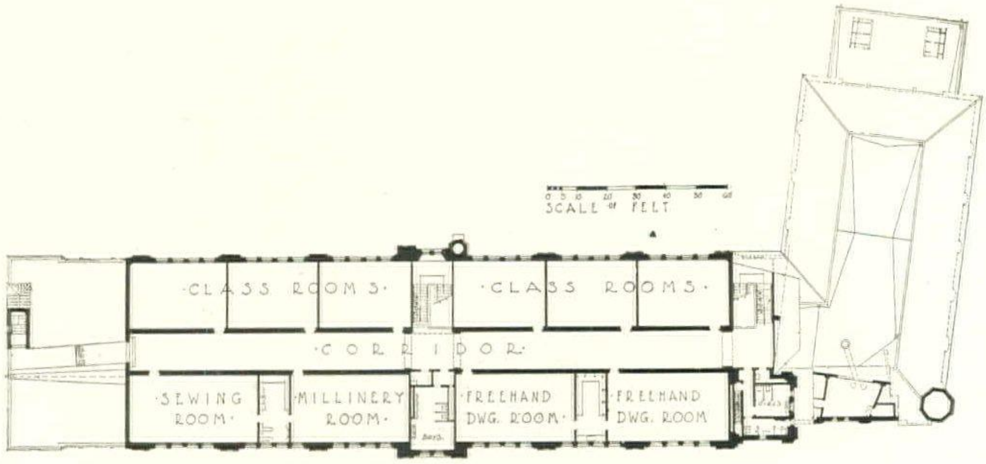
SECOND FLOOR PLAN

FIRST FLOOR PLAN

FRICK SCHOOL, OAKLAND, CAL.
WYTHE, BLAINE & OLSON, ARCHITECTS

SIDE ENTRANCE TO AUDITORIUM

FRICK SCHOOL, OAKLAND, CAL.
WYTHE, BLAINE & OLSON, ARCHITECTS



THIRD FLOOR PLAN

FRICK SCHOOL, OAKLAND, CAL.
WYTHE, BLAINE & OLSON, ARCHITECTS

AUDITORIUM

FRICK SCHOOL, OAKLAND, CAL.
WYTHE, BLAINE & OLSON, ARCHITECTS

CREATIVE ARCHITECTURE OF ERICH MENDELSOHN*

BY

PAUL LESTER WIENER

As a youth, Erich Mendelsohn already believed that the old forms of bygone ages and civilizations not only survived as shells and skeletons, but they imposed themselves upon us tyrannically as norms and standards and dominated all architecture with a kind of mock life. Every building erected according to tradition became a prison in which new forms, births and possibilities perished. And one of the great failures of our modern civilization became monumentally visible,—the inability of our culture to produce a vital architecture, bred of the spirit of our time, a concentration and a crystallization of the soul of an epoch or of a people.

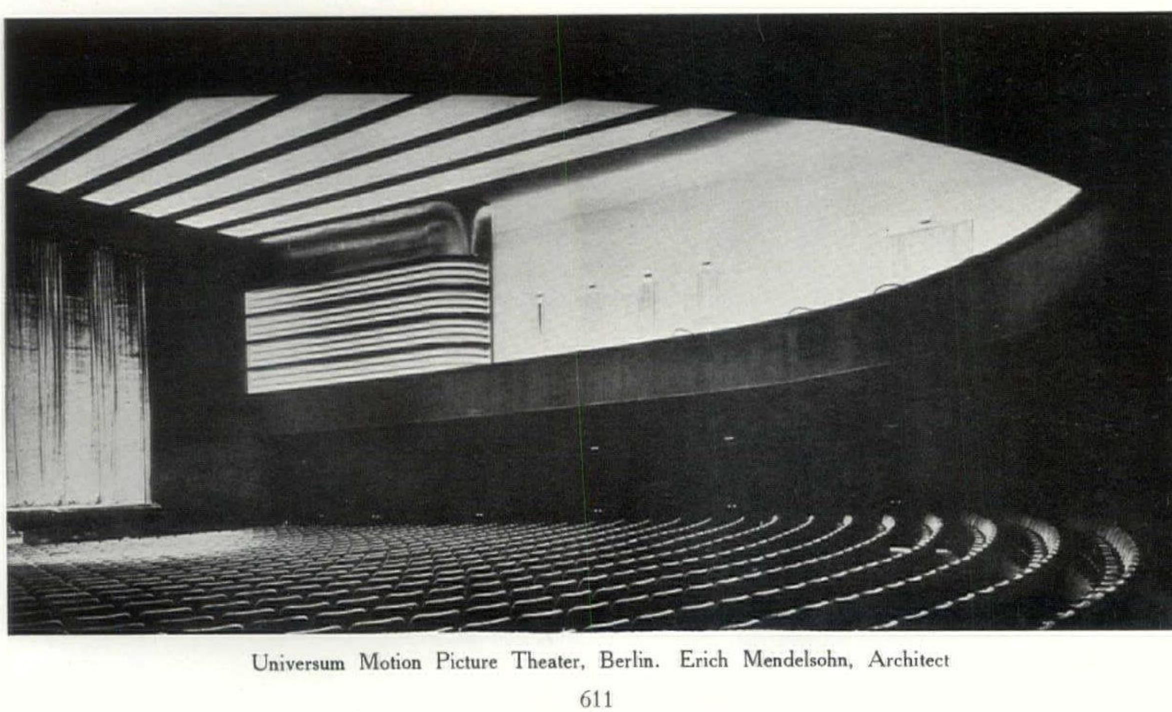
A visitor from ancient ages would be lost amidst our machines and the other products of our civilization—but our buildings would still be familiar to him—poor copies or bloodless simulacra of his own. The skyscraper is both an adaptation and an evolution—or rather an aggregation. It is the multiple stratification of the story, a liberation, it is true, but almost wholly in the engineering of altitude, the result of abnormal local and lateral pressure. It is the forced fruit of financial speculation rather than of artistic inspiration,—it has nothing in common with the unconscious forces that determine true architecture. In its forms it is still pent within the trammels of tradition. A new *liberation,* a new reformation becomes necessary if our art of building is not to sink into greater sterility.

There have been signs of a period of transition, of hints and prophecies in the work of such men as Olbrich, van de Velde, Wright, Mackintosh, and Poelzig, but the entire mass was still too rigid, too frozen to permit of the efflorescence of a new spirit of building.

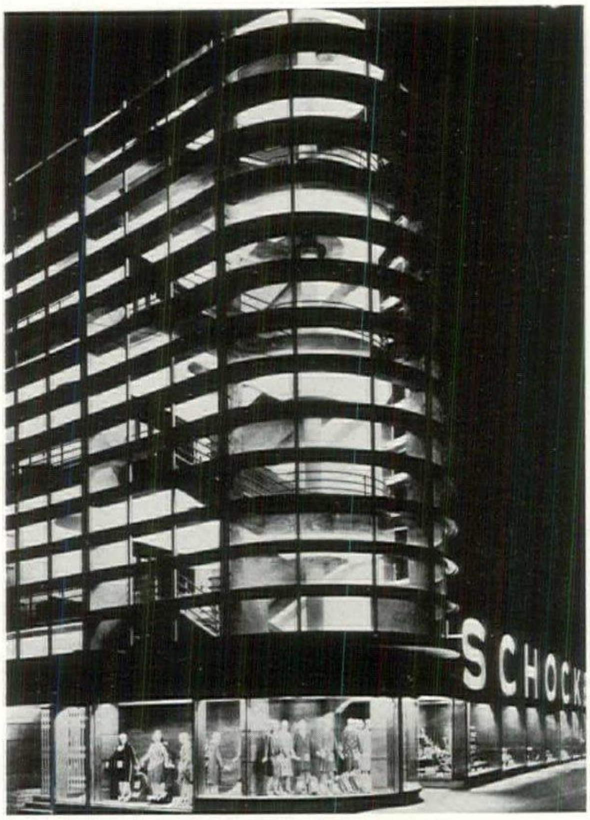
Then came the war, the great destroyer of forms,—human, national, and cultural. This meant annihilation to much that was already lifeless and soulless. It meant freedom of space and action for new forces, thoughts, and buried aspirations. The war has thus brought a new vision to many a young architect in Europe. Among those aspirants toward a new architecture, Erich Mendelsohn proceeds most scientifically with the synthesis of new forms. His inventions and innovations are inspired by a great revolutionary force, by vision, intuition and structural logic.

His work seems to point the way which

*The architectural work of Erich Mendelsohn was shown for the first time in the CONTEMPORA Exposition of Art to Industry, at the Art Center in New York.



Universum Motion Picture Theater, Berlin. Erich Mendelsohn, Architect



Schocken Department Store, Berlin
Erich Mendelsohn, Architect

architectural development will pursue in the future. His break with the past is definite and clear. His creations determine their own forms out of the nature of modern building materials, out of function, use and expediency. From the clarity and simplicity of their structural organization, the strength and purity of the architectonic will which they display, and the inherent power as expressed in their control of great masses, we obtain the impression that we are face to face with a new conception, a new philosophy of the feeling for space—that sublimated sense all great architects must possess.

Something of the austerity and inevitability of that law which dominates the monuments of the great original epochs of architecture—the Greek temple and the Gothic cathedral—and decrees that these are to be understood only in the light of their constructional conditions, is visible in these new shapes.

This law is simple: the external form is to be conceived merely as flesh and skin in relation to the structure of the skeleton.

Thus the appearance of steel as a new building material was bound to postulate a new method of architectural expression, precisely as the architectural system of direct support and load, the figure T as expressed in classic architecture, and of pillar and vault as expressed in Gothic architecture, brought forth the organic architectural form inherent in the material and the method. This ought to be a natural and logical conclusion, after we have seen how wonderfully the energies latent in iron have expressed themselves in mechanics, in machinery, in the means of transportation,—and in war.

It is chiefly because the possibilities of iron and steel have been exploited in a mechanical instead of in an æsthetic sense (owing to the supremacy of the stationary or the movable machine), that the architect has failed to take advantage of the great opportunities presented to him by this material. He has been untrue to the very soul of architecture and has confined himself to draping and garnishing first-rate works of engineering with all kinds of nondescript decorative lumber and inconsequentialities. He has distorted and repressed the freedom and the "reach" of steel by crushing and confining it within the rigid limits of some cubicular scheme or past system.

It was necessary, as I have said, that this entire world of congealed and petrified tradition be convulsed to its roots,—that all human relationships be shaken, strained, and shattered before this fabric could be freed from the bondage of the merely expedient and the calculative, as well as from the tutelage of decadent efforts at a renaissance of renaissances. The means by which enlightenment came were brutal, mad, and ruthless, but the Great Cataclysm has proved to us that architecture as a modern art must begin precisely at that point at which the nineteenth century imagined its task had already been completed.

The load in construction was no longer to be directly related to the support or the pillar, but was able to distribute and diffuse itself over great areas, or concentrate itself on small foci. The wall was no longer to be subject to the immutable law of the perpendicular. If the architect chooses to slant a wall outward like a limb of the V, in order, say, to capture more sunlight, steel and concrete remain loyal to him. Steel and concrete give men a freedom in architecture almost analogous to that which nature gives.

Thick glass, clear and colored, for roofs or walls or floors, opens up unconjectured vistas of luminosity and crystalline splendor, causing a house to vibrate with light, to unfold like a jewel of many facets, of dynamics and design. "Movement" and mass are given a new significance when contemplated from the viewpoint of Einstein's theory of relativity.

All this proves that the artist, the master-builder, is not defunct; that the true creator need only place his ear to the giant heart of the epoch and link himself to the chain of its energies in order to find those forms in which the Age would express itself.

EARLY MODERN ARCHITECTURE IN FINLAND

BY

ALAN TAFT SQUIRE

ARRIVING in Helsingfors, the visitor is possibly most forcibly impressed by the number of parks. For a city of not more than 225,000, four good sized parks are a goodly number. Besides these Helsingfors is blessed with wide boulevards, many monumental buildings of the old and modern schools, casinos, open-air restaurants, and that species of small eating establishment known as *"ravintola."*

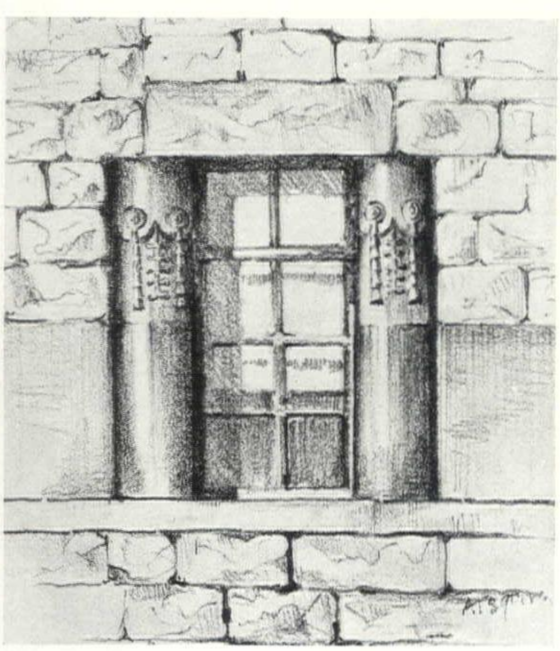
The first impression of modern architecture gave an Oriental flavor. In so far as Helsingfors is only a little over 100 miles from the Russian border, it is undoubtedly true that the influence of the flat ornament and curious curve of the Orient has crept over this frontier in a regenerated outcrop, typifying that style. What we first espied as Russian domes, we continued to see all the way down the line, even as far as Aalberg, Denmark. And we have since discovered that this form of decoration is indigenous to the Baltic. It seems to be a descendant of the earliest churches, of spires handed down from past generations. This influence has spread all through the Scandinavian regions, and may not be labeled as typically Russian, Finnish, Swedish or Danish, although all these people refine it in their own particular ways.

The first men to start this modern movement in Finland were Geselius, Lindgren, and Saarinen, who formed what they called an Architectural Bureau in the early part of this century. Their aim was to attain the rational scheme so that a building should grow from within; develop the plan for the most useful arrangements to modern needs; and then construct from the best materials at hand. There was also an attempt to create variety in accord with the romantic principles and characteristics of Finland. This last was an expression of the country dwellings or peasant cottages. In these they found a vast supply of ornament which was typically their own and suited to their climate and character in new media. These Careilian cottages had slept for generations under the heels of the more pretentious city edifices until the younger men incorporated some of their characteristics.

One may observe how there was a transformation from the crude old wooden forms into bold modern shapes in stone. This is extremely important, because through it the Finnish architects are retaining a characteristic flavor of their own architecture, employing the delicate carvings of porch posts, window casements, and cornice motifs in concrete and iron details, which seem to readily take it. This natural growth was sincere and slow, avoiding any effect of struggle or stridency.

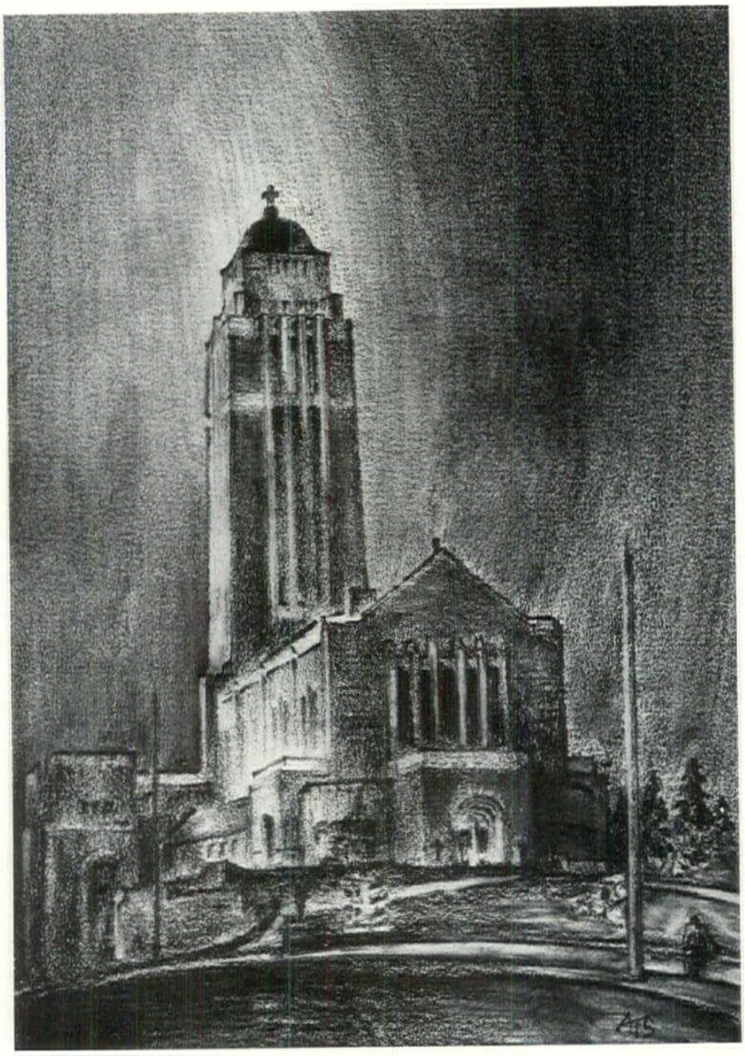
Careilia, the far central, north-east part of Finland, is inhabited only by peasants, so that the wooden cottage represents an uninfluenced style complete in itself. The ornaments from these dwellings are known as Careilian, and are often spoken of in Finland.

We had a pleasant surprise of what this cottage life means to the Finns, for on an island some two miles from the city is situated an open-air museum to which they have bodily transported some 20 different types of these huts from the steeps of northern Careilia, and have completely assembled them into a sort of museum peasant village known as Folison. Even the old wooden church was charmingly quaint with its superstitious and ingenuous devices. For example a chained wooden beggar by the main entrance vestibule held a mite box, much as one of our old wooden Indians stiffly invited one into a cigar store.



Characteristic Window,
Lars Sonck, Architect

Quite contrary to our methods, there have been placed in these cottages, unguarded and quite free for inspection, typical and beautifully colored costumes as worn by the old peasants. These strange, romantic tribes



Bergshall Church
Helsingfors
Lars Sonck, Architect

refinement. That is why much of the present work in Sweden retains the simple chastity of its patron founder.

The earliest attempts at modern carving were often grinning masks, gnomes, wild beasts, forest vegetation, and flowers. The first successful accomplishment of this Bureau is noticeable in the ornament on the Finnish National Museum. Along with the use of this sort of decoration, of which there seems to be an abundance on the Museum, Saarinen tried the effect of pure color without form. In the dome above the main lobby of this building are some brilliantly painted allegorical figures representing strength,—daring and agile in character of their execution. Apparently the use of color pleased the young designers, for they used it in the corridors where the plaster walls were tinted pale green and yellow.

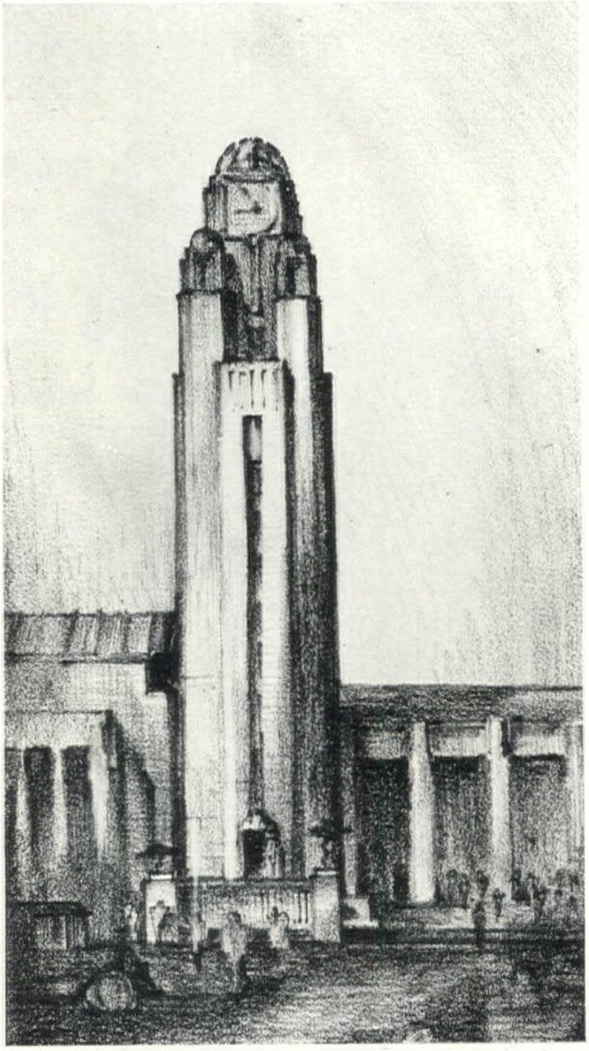
The order of these halls is remarkably well planned, for the visitor, after getting a general impression in the main lobby, sees a sign indicating the stairs. These stairs carry him up by gradual stages through various smaller exhibition rooms. The top reached, he continues down another way until the whole gallery is seen without having gone through the same place twice. The stair tower is badly massed, and the combination of bright red brick with granite is not successful on the facade. The red tile roof does not match the brick, so that it also clashes. However the building well illustrates the policy of the new school in planning as well as in its attempt at nationalizing the ornament. Here it was too profuse and hodge-podge, playing a role more theatrical than useful; but it was a virtual catalog of Careilian carving modernized.

Though not beautiful, this building impressed the younger architects and inspired them to new experiments of their own. Among these men was Lars Sonck, who shortly after began the Bergshall church. This church has one of the most magnificent sites we saw in Scandinavia, typical of that splendid characteristic, to build churches on the highest places within reasonable distance. Twice we saw this done in Stockholm,

of the North express a love of color and intricate delicacy in their dress which is a vivid contrast to their colorless surroundings of house and land.

To this Careilian atmosphere the new school has consciously turned, giving vent to its feelings in a bold and fabulous manner.

In addition to this Careilian idea of the new Bureau one may consider two other influences: the Victorian epoch of German architecture brought over to Finland by Engell, a German imported in the early nineteenth century to design some of the university buildings, particularly the library, and small diplomatic residences for Duke Alexander and the Tsar at the time of Russian domination. These buildings introduced the first full blown fruits of the Renaissance. The other influence is the contemporaneous Swedish architecture heightened by the "Gustavianish." This Gustavianish is a word defining the gentle, chaste Renaissance of Sweden as it developed from the fine taste of King Gustav. He had traveled to France and seen the late work of Louis XVI, which he brought back to his country in further



Tower, Railroad Station,
Helsingfors
Eliel Saarinen, Architect

and quite spectacularly once again in Gothenburg.

In Helsingfors a granite hill cliffs up steeply into the huge rough granite blocks of the Bergshall church. It all seems to virtually soar into the tall tower rising above, reaching a climax in a metal dome and belfry some 150 feet above the top step of the approach. Thus, one arrives by a long flight of terraced stairs to the base of this shaft. Strangely enough, the main portal is at the rear of this approach, for the tower is above the altar, which in turn is nearest the steps. This necessitates side entrances in what would normally be the transepts, which appropriately diminish the side aisles to very narrow passages. These are an architectural curiosity of Finland and are constantly employed in both old and new buildings.

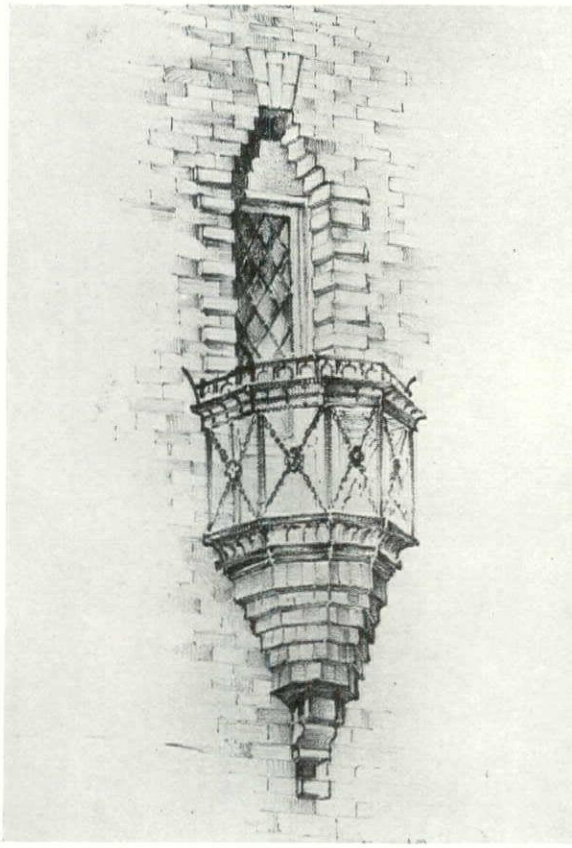
The beauty of this building lies in the direct simplicity of the facade treatment, the bold proportion which is possibly a bit too short for its height, and the length of the nave. Noticeably successful is a more restrained use of carving than that used on the Museum. Here it is more crisp, more linear and less complicated than that on the other building,—being used in stone and wrought iron with similar success.

It would not be fair to leave this building without referring again to that awe-inspiring tower. It is rather difficult to know just what to call this huge shaft of granite. Rising over the altar of the church, it seems more like a belfry than anything else, but it cannot be called such because of its shape and size. Neither is it a spire, as may be seen from the illustration. Undoubtedly it was put there by reason of a thought behind it. Be assured that the emotional power beneath that grim, almost ominous shaft permeates the feelings of the mildest. Somehow it represents the energy, clean virility, and melancholic seriousness of the Finns, the lovers of God in nature.

Perhaps the most important building in this early phase of the modern style is the *Nordiska Bank*. The ornament is here still flatter and more restrained than with the other examples with an all-over quality of design, which almost gives the impression of Spanish Plateresque. It has the same concentration of Spanish ornament of the Plateresque period,—confined the same as there in the center portion of the facade, only more highly conventionalized than the usual forms in nature. The entrance lobby offers an example of the first attempt at using brass and copper as a decorative element. These are used as edging on plaster ribs which cross the low entrance lobby. It was our introduction to this ingenuous and natural employment of color.

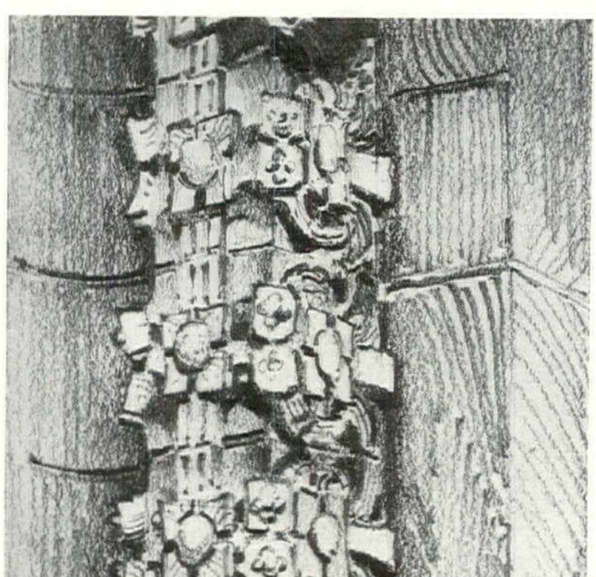
Attached on to the wing of our *pensionat,* the Swedish word for boarding house, was a curious facade, a motion picture theater which went by the name of *Bio Civis*. It has an unusual feature in its light openings, uniquely inserted into granite blocks, which form the outside of the building. The effect was like glassed holes, where the granite was not. The light enters the manager's office on one side and a ticket office on the other. One can here see that the sculptural bas-relief is extremely restrained and noticeably flattened in comparison with the more exuberant style of that employed on the earlier buildings.

Lars Sonck is probably the most erratic of all Finland's designers. Architect of the beautiful Bergshall church, of many successful and unsuccessful summer villas, of office buildings and hospitals, his stamp is always indelible. The use of squat columns with disced almost Egyptian capitols, is one of his outstanding characteristics.



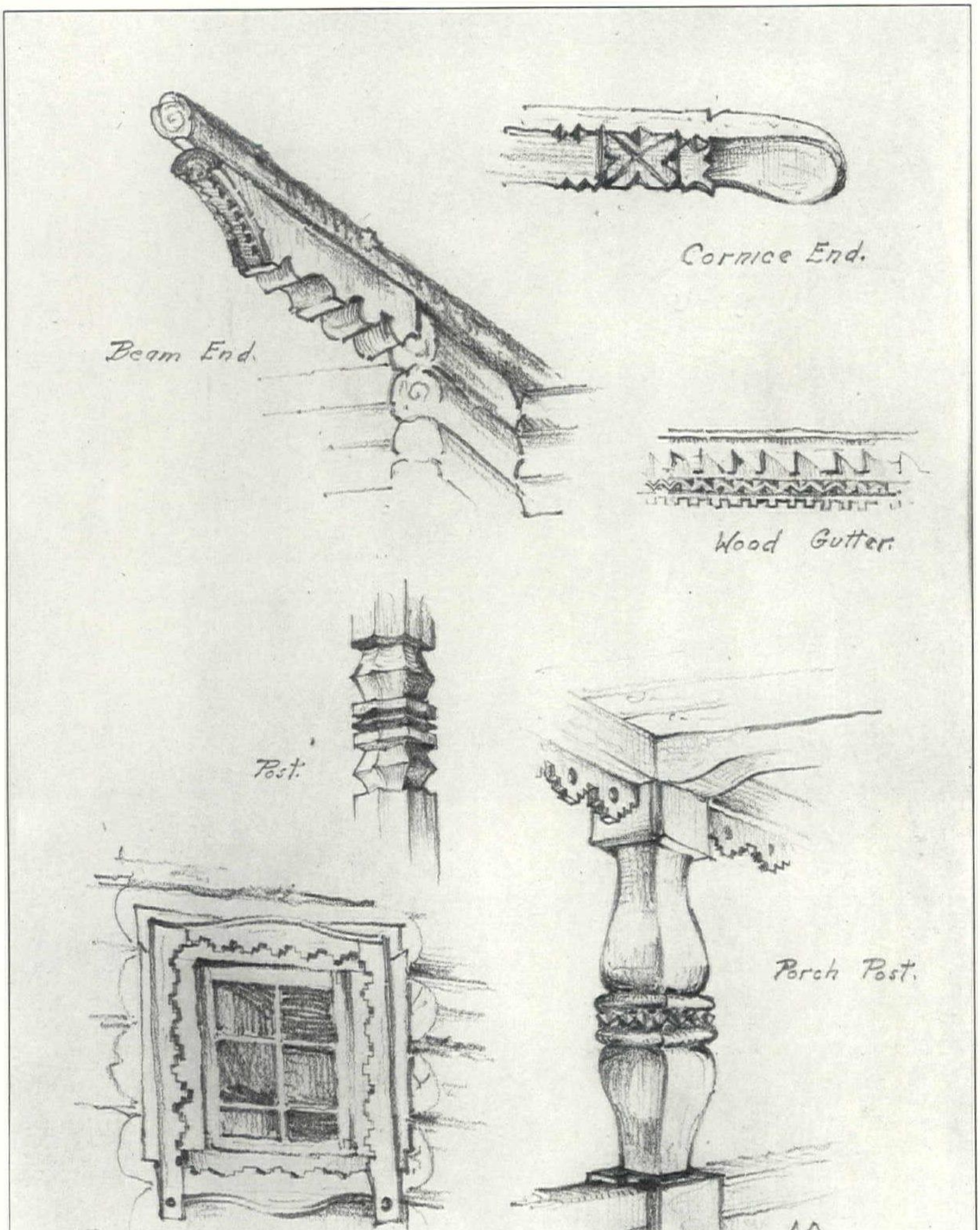
Window Balcony, Apartment, Helsingfors
Eimar Sjostrom, Architect

Motion Picture Theater,
Helsingfors



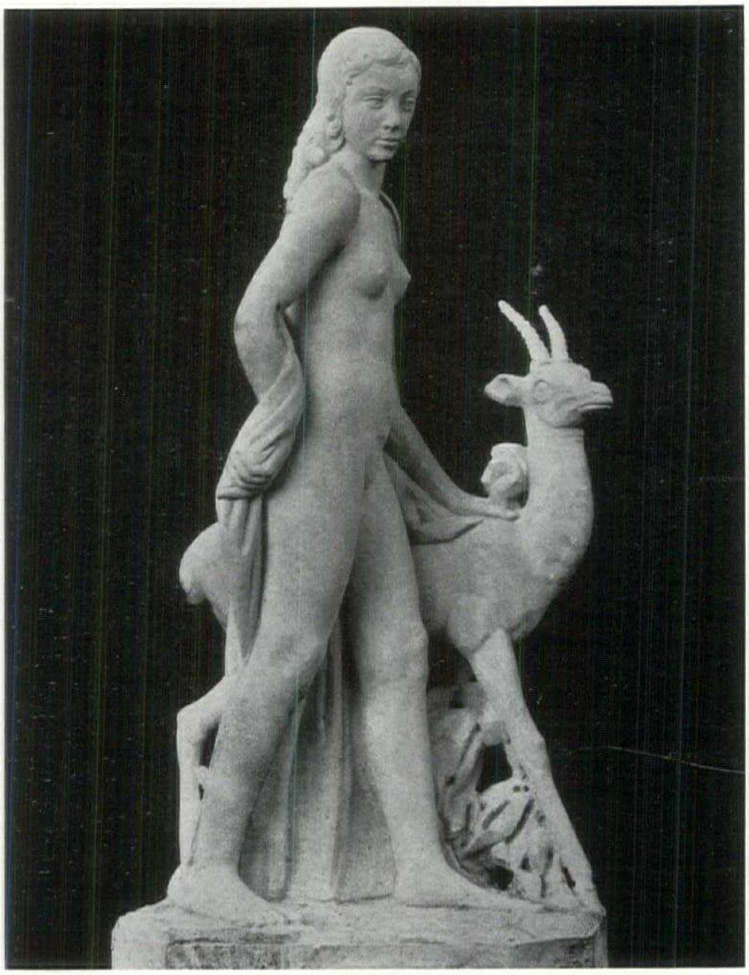
Detail, Bergshall Church, Helsingfors
Lars Sonck, Architect

Eimar Sjostrom, who had been doing splendid alteration jobs along with a few unsuccessful larger buildings, sprang into his own from a national competition with the winning design for alterations on the famous old fortress church, *Sveaborg*. It was regrettable that Sjostrom was a young man when he died. Because of this loss the restoration had been slowed up and was not finished at the time we left Helsingfors. Its simplicity and bold mass are in graceful harmony to its particular site. His work had a charm which can only be described as practice in non-superfluity. A worthy example of this arrival in the earlier works, showing the growth of restraint from the exuberant Museum, is an unobtrusive apartment building, nameless, at the junction of two narrow streets in what is now older Helsingfors. A window balcony, corbeled out on brick, and protected by a delicate iron grille, gives a clear cut idea of that new innovation,—direct use of brick as a structural bit of ornament,—colorful and simple. This is important, because all through Scandinavia the use of brick has become very popular,—to such an extent that it might almost be called the skull of their modern style. It is used largely in Finland as the cheapest and most popular building material available.



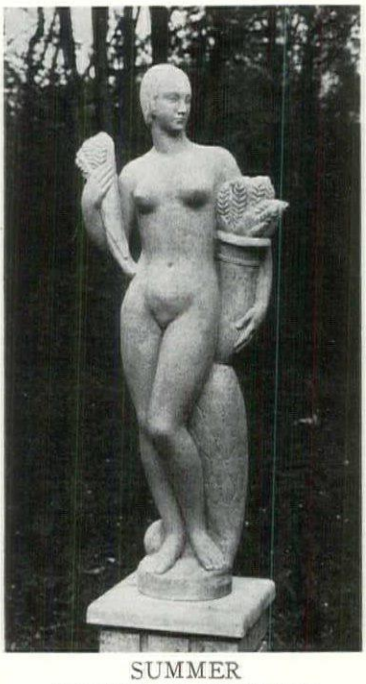
Traditional Forms of Finnish Decorative Motifs in Wood. Note the Similarity of "Modern" Designs. From "Ornamentsmotive Tafeln"

SCULPTURE FROM THE MONZA EXHIBITION

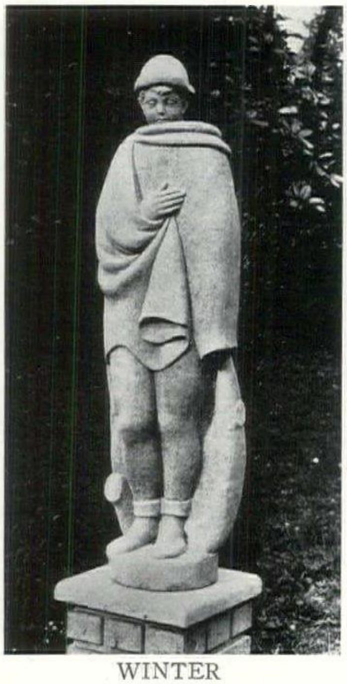


DIANE
BY CORRADO VIGNI

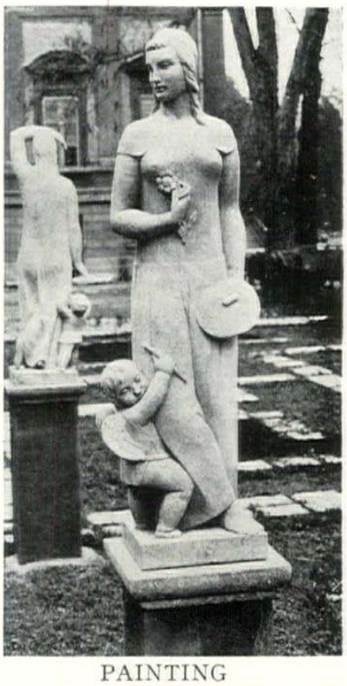
HOSPITALITY
BY CORRADO VIGNI



SUMMER
BY ITALO GRISELLI



WINTER
BY LELIO GELLI



PAINTING
BY LELIO GELLI

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THE NEWS
BUILDING
NEW YORK

JOHN M. HOWELLS,
RAYMOND M. HOOD,
ASSOCIATED, ARCHITECTS

*Photo.
Browning
Studios*

THE
ARCHITECTURAL
FORUM

VOLUME LIII NUMBER FIVE

NOVEMBER 1930

A BUILDING FOR BUILDING NEWS

BY

A. T. NORTH

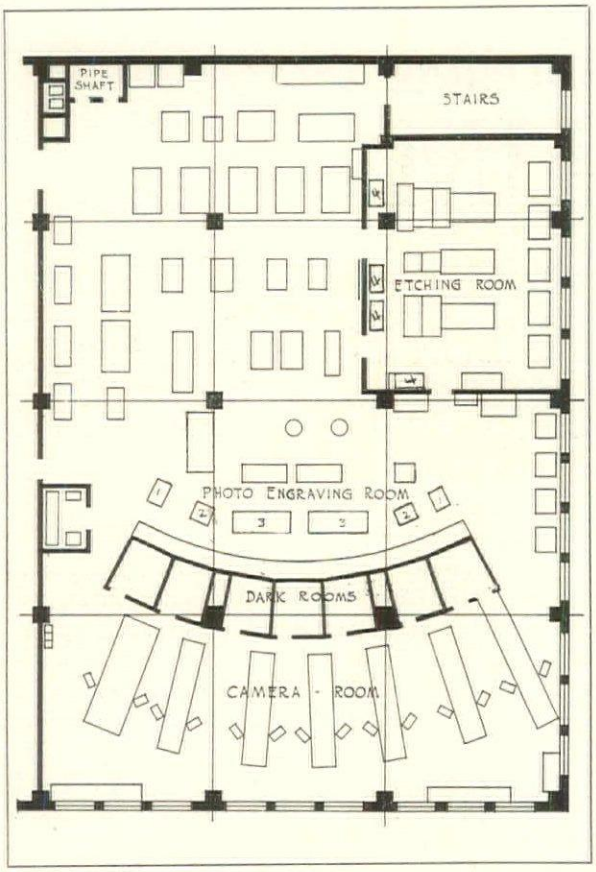
IT is difficult to evaluate the different factors that contribute to the production of a newspaper. News is collected without any special association with buildings. Architecture is important, however, in the production of a newspaper, because, when news is assembled in the editorial offices, it immediately becomes intimately involved with the building and its equipment during the mechanical process of producing a newspaper. News is the most ephemeral of things, because tomorrow is another day with *its* news. The time element is of the utmost importance in transmitting the news to the public through the medium of the printed page. The shorter the time consumed in this transmission, the more *valuable* is the news from the publisher's standpoint. The maximum utilization of time, then, is the desideratum to which the building, its equipment and the operatives all contribute.

The new printing plant of *The News* (New York) includes features that differ from those of the ordinary daily paper printing plant. The very large proportion of illustrations in this paper requires greater photographing and engraving facilities. Its small-size page and limited reading content caused it to be designated as a "tabloid," the first of its kind in this country.

Following through the physical production of the paper, the editorial offices, seventh floor, are of the usual type, with reporters' desks, the copy desk and pneumatic tubes to the composing room. Back of this space there is the unusual feature consisting of the rooms used by the large staff of photographers. Each reportorial photographer has his dark room in which the negatives are developed. These dark rooms are completely equipped for the purpose, mechanically ventilated, and the walls faced with white enameled brick. These dark rooms are on one side of a narrow corridor, on the opposite side of which are the photographic print rooms. These rooms are also completely equipped, mechanically ventilated and lined with white enameled brick. Contact prints are not made. The negative is placed in the back of a camera-like apparatus in front of a brilliant electric light. The image is projected through a lens to a sheet of sensitized paper several feet from it. These sensitized sheets are placed in packages and, as printed, are taken off and placed in the developing tank. There are no time-consuming adjustments to be made. When the print is developed and fixed, it is passed through a small window to be washed, then passed through a wringer and a dryer; then on to the art department for "editing," and to the engraving department on the floor below.

To the engraving department and composing room on the fifth floor come the "edited" photographs and artists' drawings. These are photographed on glass negatives in the camera room. Immediately back of each of the seven cameras are brick-lined, mechanically ventilated dark rooms where the negatives are developed and fixed. The negatives are passed on to the stripping sinks and tables, ovens, whirlers, sensitized zinc plates, and into the etching room. The etching room with its stoves and chemical tanks contains noxious fumes which are exhausted through aluminum vent ducts to the top of the building. From the etching room the etched zinc plate goes to the guillotine, beveler, router, mounter and trimmer; the engraving is made.

The composing room contains the linotype machines and display advertising composing tables. The type matter and the engravings are assembled on makeup tables in page forms from which the dry mats are made in heavy mat rollers. The mats are made in duplicate, one going to the Brooklyn branch printing plant. The dry mat is placed in a chute leading to the stereotyping room on the third floor, adjoining the press room. The flat mats are placed in an electrically-heated machine in which the mat is bent into a permanent semi-cylindrical form. The mats are then taken to



Plan of the photographing and engraving department. The curved arrangement of the dark rooms concentrates the stripping tables and sinks, and permits the radial placement of the cameras, thus affording more space for the lights and objects to be photographed

the plate caster and used as a mould for the semi-cylindrical stereotype plates. The stereotype metal is fused by 208 volts transformed from 13,200-volt A.C. electric elements which are immersed in the metal. The fused metal is automatically discharged into the plate caster, one on each side of the melting pot, in which the mat serves as a matrix. The cylindrical plate is then carried to the automatic shaver, where it is trimmed, cooled, and brushed, and then passed through an opening in the wall to the press room. The 1,800 plates required to furnish 36 printing units for five daily editions, the present plant capacity, weigh 40 tons in the rough. Twenty-seven tons are the weight of the finished plates, the remainder of 13 tons being the tails or "sprues," in the parlance of iron founders, which are remelted at once.

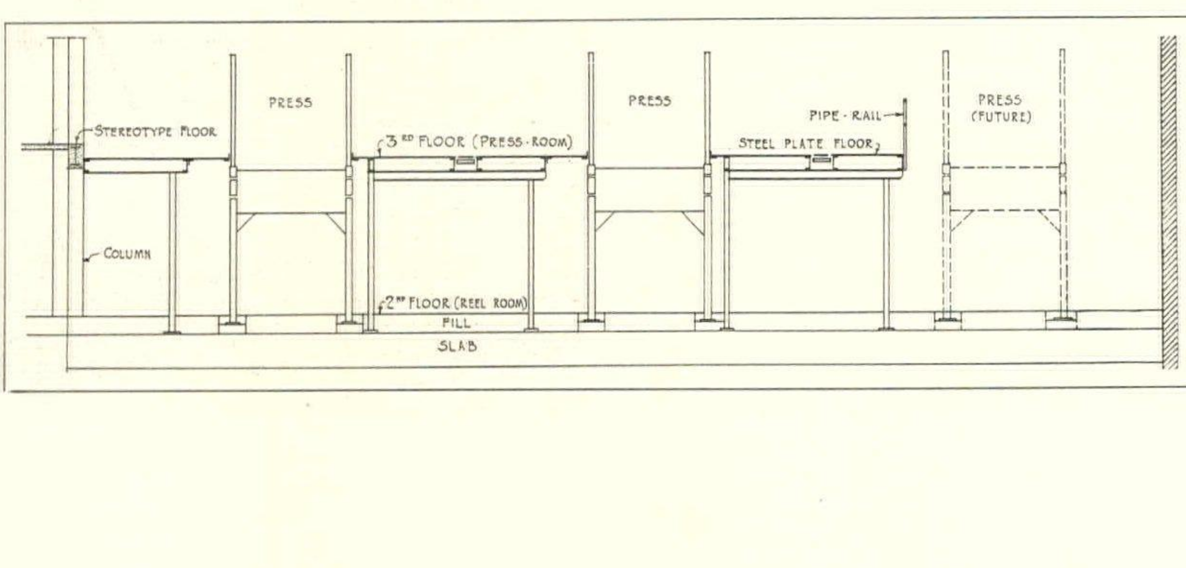
The plates are placed on a conveyor in the press room floor which carries them through the aisles between the presses. The plates now travel 500 feet to the last press in 3¼ minutes. The same conveyor transports the used plates back to the stereotype room, thus completing the circuit.

The page number is marked on the plate with black paint, and when transported to its destination it is taken from the conveyor and locked in place in the press. On the floor below the rolls of newsprint paper are placed in position and made ready for the printing. The automatic ink and oil supplies are tested, the temperature is made right, and the presses begin to roll. The papers are automatically folded and counted, sent by vertical conveyors to the mailing and distributing room on the first floor, and the production cycle is completed.

To make this production cycle possible, an analysis of the requirements was the basis of the architectural and mechanical design. These were grouped as relating to:

General requirements.
Structure.
Power and light.
Material handling.
Heating and ventilating.
Plumbing and process piping.

Section through the reel and press room showing columns for supporting the presses, and columns supporting the press room floor



GENERAL REQUIREMENTS

The News building is composed of two units, a 36-story office building and a 9-story publishing building. The publishing building is located on East 41st Street and adjoins the office building on East 42nd Street. It was necessary to prevent noise, vibration, smoke and fumes from being transmitted from the printing plant to the office building. Uninterrupted production, economical and rapid handling of materials and operation, and favorable working conditions must be provided. Provisions are made for expansion by the addition of 36 press units to the present 36 units.

STRUCTURE

The narrow building site necessitated locating the press room either above or below the mailing and delivery room, which must be at street level. The expense of rock excavation made it necessary to place the press room in the second and third stories, having a total height of 32 feet. This was favorable for routing the materials from the upper floors downward and permitted adequate light and ventilation. Vibration was prevented by a 40-inch thick concrete floor at the second story level, which provides sufficient mass to absorb the vibration of moving parts. The presses are mounted on lead and asbestos pads. The ceiling and ducts are covered with sound-absorbing material.

Elevators and stairs are centrally located on 41st Street, providing short and non-interfering traffic routes. Egress stairs are provided at the east and west ends of the building. The elevator is designed to handle both passengers and freight, having a capacity of four rolls of paper. Two paper roll conveyors and the elevator are designed for a 50 per cent excess capacity for the ultimate 72 press units, which is 216 maximum rolls per hour. Any two of these can supply the presses.

The receiving dock is of two-truck capacity and under cover. The delivery dock will accommodate 12 trucks. A ramp connects a basement delivery dock with the street level for future delivery service. The basement is now used for paper storage.

The floors are designed for these live loads:

9th—Offices, 120 lb. and 250 lb. per square foot

8th—Offices, 120 lb.

7th—Offices, 120 lb.; and "Morgue" (storage for files), 275 lb.

6th—Composing and engraving, 250 lb.

5th—Paper storage, 250 lb.

4th—Paper storage, 250 lb.

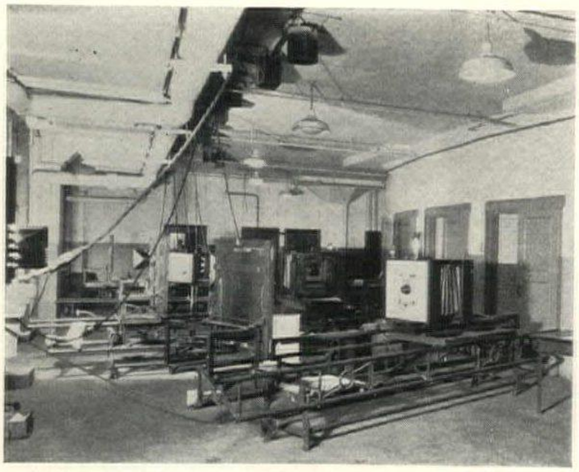
3rd—Gallery, 120 lb.

3rd—Press floor, 120 lb; Stereotype, 250 lb.

2nd—Reels and press foundations, 490 lb.

1st—Mailing, 250 lb.; Truck spaces, 300 lb.; Ramp, 300 lb.

Monolithic cement finish is general, with special hardener in the composing, engraving, stereotyping and delivery departments. The third floor, be-



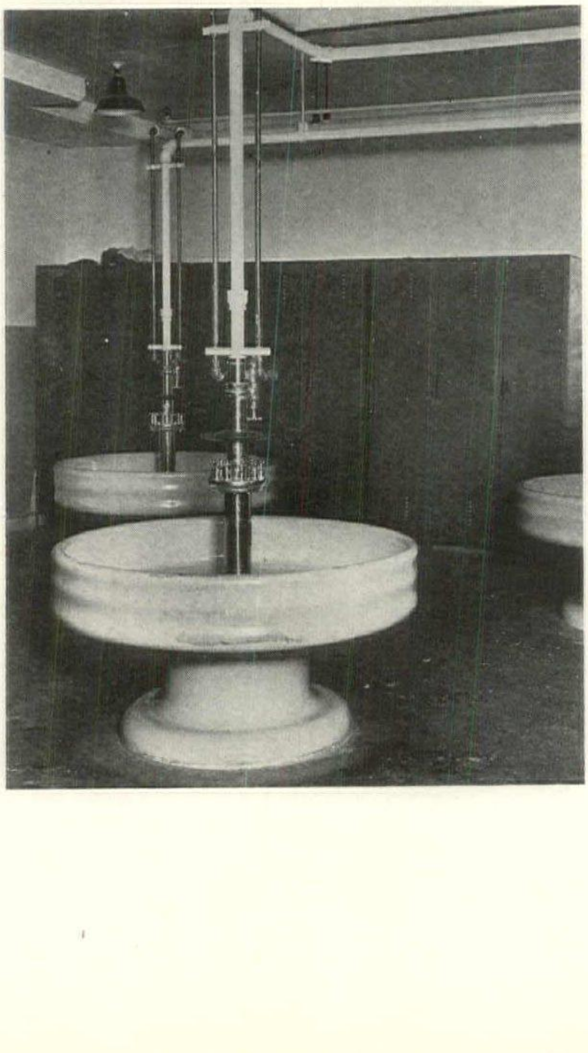
The camera and dark rooms

Interior of dark room (above)

Engraving room (below)

Composing room showing make-up tables for page forms. Sound - absorbing covering on the ceiling

Wash and locker room. Each circular lavatory accommodates nine persons, having mixing valve, individual faucet and liquid soap supply



tween the presses, is made of checkered steel plates supported by steel columns from the second floor and provided with removable sections for access to the machinery. A feralun steel plate floor surface is provided in the used-plate storage portion of the stereotype room.

POWER AND LIGHT

Both DC and AC service are required, the former for the press drives and the latter for other power, light and heat. Duplicate sources of supply are provided to maintain uninterrupted service from the independent substation bus sections. The 220/110 volt DC current is distributed from a switchboard in the basement to the two control galleries, one present and one future, in the press room. Selector panels are provided for groupings of the units to suit the number of pages of the paper and to provide for the breakdown of any unit. The wiring permits two adjacent press drives to be run in parallel, increasing the flexibility of the installation. Push-button controls on each unit give "inching," slow and fast speeds.

From 13,200 volts, the AC current is transformed to 208/110 volts for light and power. High tension lines are carried to transformers on the third floor to provide current for the stereotype melting pots to reduce cost of installation.

Adjacent lamps are supplied from three different feeders rising at three different points. Thus, some light in all areas is assured in the event of trouble in one or two banks of feeders.

The electrical service systems include telephone, clocks, time stamps, autocall and telegraph connections to different departments, district telegraph, fire alarm, and sprinkler supervisory service. The mailing room can control the number of

Stereotype Room. Presses for bending mats in rear. Two melting pots and four plate casters with exhaust pipes in center. Four plate shavers along the wall. Note the light and ventilation

papers printed by klaxon horn signals in the press room. Duplicate feeders serve this important means of communication.

MATERIAL HANDLING

The paper is received in 13-roll truck loads, the rolls being 34 by 73 inches to 40 by 73 inches in size, weighing 1,350, and 1,750 pounds respectively. A power-driven roller conveyor transports the rolls of paper to the elevator conveyor, which extends from the basement to the fifth floor. It is loaded on the ascending side at the basement, first, second, fourth and fifth floors, and unloaded from the descending side at the fifth, fourth, second and basement floors. Another elevator—lowerator is used to transport rolls of paper from the fifth and fourth floors to the second floor. The capacity of each conveyor is 180 rolls per hour.

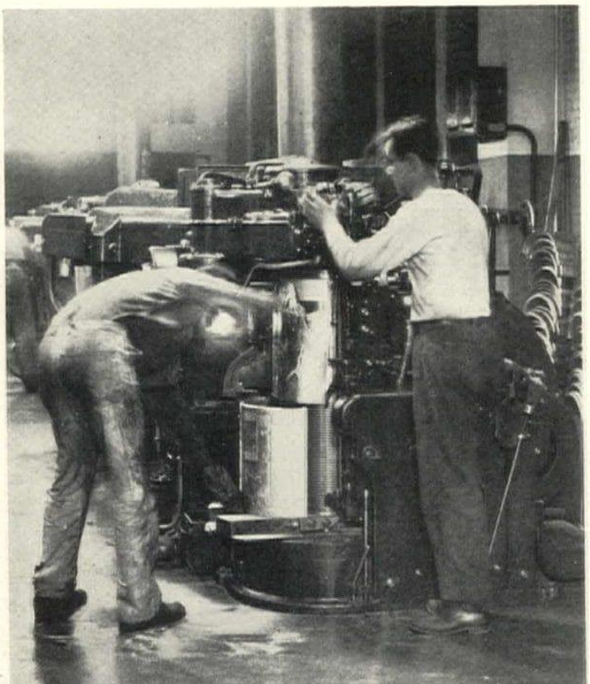
From the conveyor discharge on the second floor the paper rolls are transported to the press units by industrial tracks having turntables and switches. Each press unit uses paper at the rate of two tons per hour, and an average of 400 rolls is used each day, about 250 tons of paper.

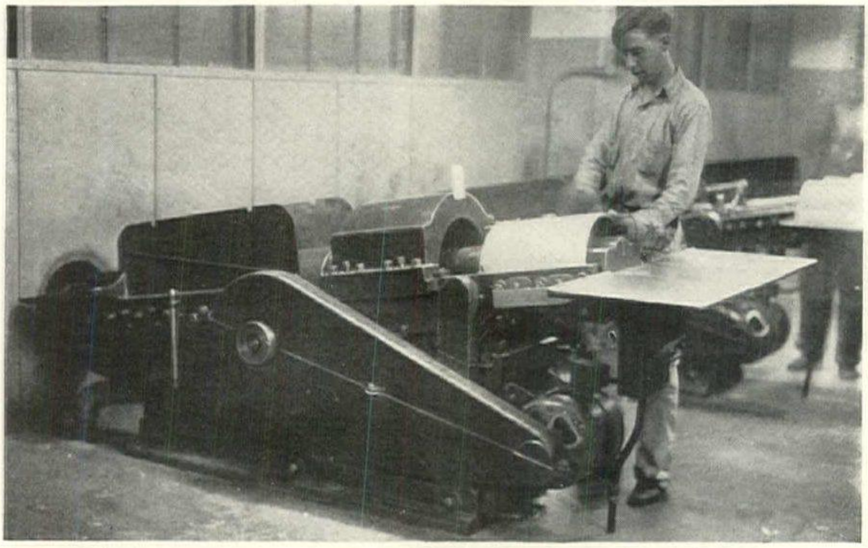
Finished papers are piled on the fingers of paper drops located in the aisles between the presses. The drops descend through shafts to the mail room. Here the loads are picked up automatically by caterpillar conveyors, and the drops return to the press room, making the round trip in 12 seconds. Papers are delivered to rolling tables in the mail room for bundling and delivery.

HEATING AND VENTILATION

The smooth operation of the presses is maintained with a constant temperature. The press room must be warm enough to insure the proper flow of ink, and there must be no air drafts to

Electric melting pot and automatic water-cooled plate caster. Removing a new plate





Shaving the plate, after which it is cooled and brushed, and passed through the wall to the press room

cause unequal expansion. In providing warm air, allowance is made for the heat developed by the presses and motors in operation. Air is admitted through six openings in the 41st Street side at the second floor. It is heated by steam coils. Direct radiation is placed under the windows and regulated by thermostats on interior columns. Two exhaust fans of 36,000-c.f.m. capacity are placed on the roof and draw the air through exhaust ducts on the ceiling of the press room into and through a vertical flue having 53 square feet of sectional area. This maximum exhaust capacity is required only in the hot summer season.

The air is changed in the stereotype room each six minutes. It is drawn from the reel room below and discharged by three 4,000-c.f.m. fans in the wall. The composing room is ventilated by a 20,000-c.f.m. fan drawing fresh air through filters and heaters, thermostatically regulated, and discharging through ducts having branches at the columns and outlets at the floor. The ten changes of air per hour are provided by three 6,600-c.f.m. fans located in the south wall. This exhaust air is filtered to clear it of dust before it is discharged.

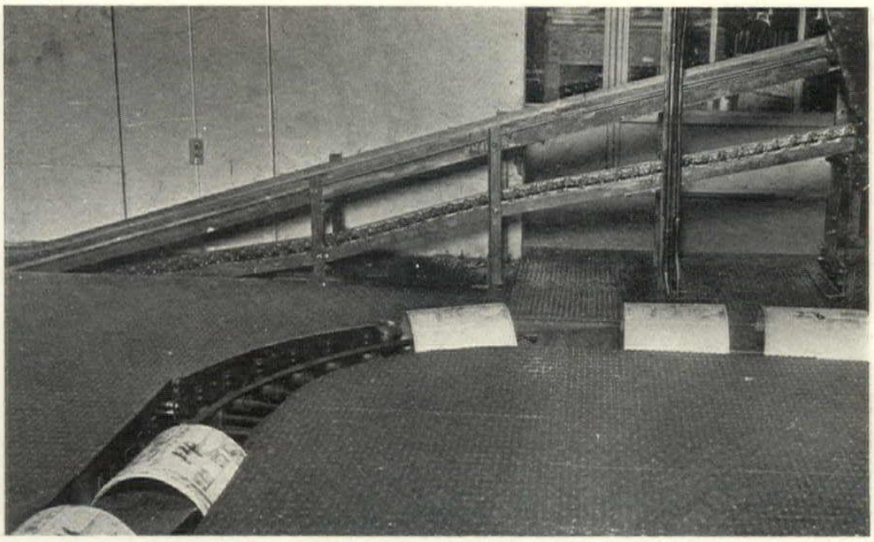
The photographic dark rooms and the photo-engraving room are ventilated. Ten changes of air per hour are provided except in the etching room, where the air is changed 60 times per hour in the summer to remove the heat generated by the stoves. The electric transformer vaults and electrical control galleries are ventilated by air changes every four minutes.

In the first floor special provisions are made to remove the fumes of the delivery trucks through openings in the floor under the delivery docks. The rest of the heating is of the regular type suitable for first class buildings.

PLUMBING AND PROCESS PIPING

Because of the different classes of labor employed it was necessary to furnish conveniently

Receiving the plate in the press room where it is placed on the conveyor, under the table, to be transported to the presses

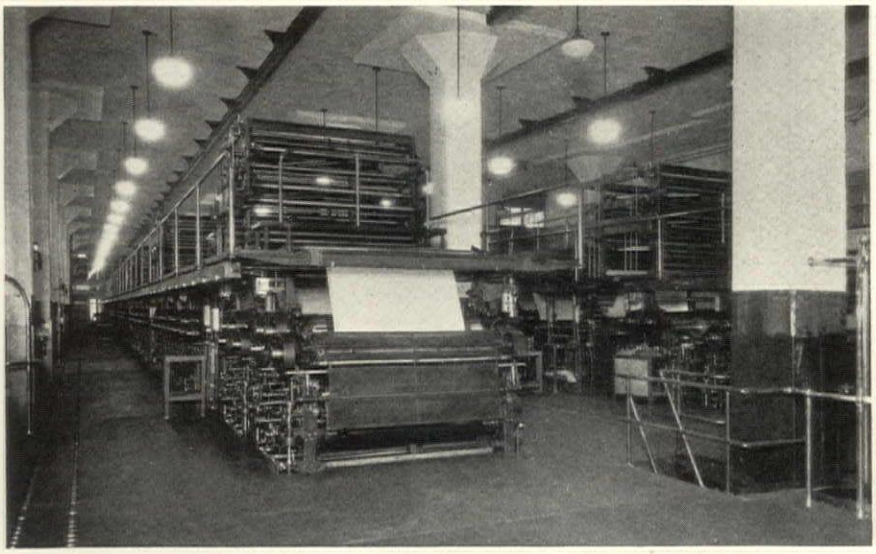


Conveying the plates to the presses. Plate for page 14 is on its way to the press

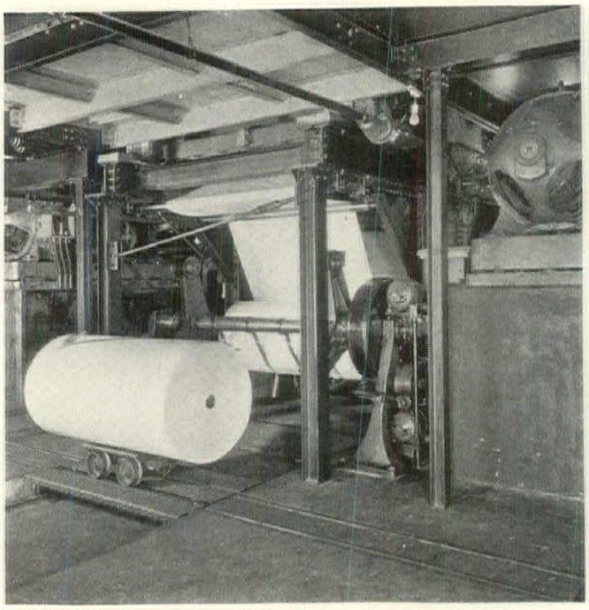
located toilet and locker rooms for each group. Wash fountains are provided, accommodating nine persons at one time. Showers are provided for the mechanical departments. The process piping systems required include:

Cooling water for the stereotype room.
Drinking water.
Cold water for photographic use.
Acid wastes.
Gas.
Air.
Ink.
Oil and kerosene.
Fire protection.

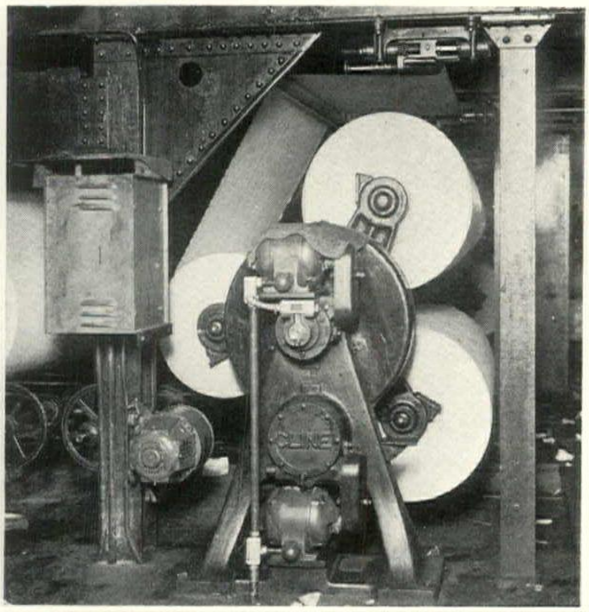
Stereotype Cooling Water System. It is of vital importance to provide a water supply sufficient to last through the printing of one issue, for cooling the stereotype plates as they are cast in the "autoplate" machines. The water is supplied from a 7,000-gallon storage tank in the basement to a 25,000-gallon storage tank on the roof. The autoplate machines or plate casters and the plate shavers are supplied with this cooling water by a loop from the storage tank. The loop is used to ensure continuous water supply in the event of trouble in any part of one line. Cut-out valves and cross connections are provided at strategic points. A vented drain carries the used water to a basement storage tank where it is re-circulated. If the cooling water temperature rises to more than 75° Fahr., it is useless for cooling the plate. Provisions are made to automatically supply colder water from the city supply, and the surplus is discharged to a 3,000-gallon roof tank from which the house pumps draw their supply. A cross connection to the 25,000-gallon house tank on the roof may be used to secure cooling water in the event of the failure of pumps or city pressure. The piping is also arranged to supply cooling water directly from the city water mains.



The press room, 36 of the future 72 presses in place. Plate conveyor in floor at the left, stairs from and sliding pole to the reel room at the right



A paper roll on a dolly truck



Feeding the press from the reels

Drinking Water. The 1,500 employes are supplied with water at drinking fountains. City water is cooled by a self-contained refrigerating unit in the basement and circulated by a 10-g.p.m. pump through the loop connecting the fountains.

Cold Water for Photographic Use. The temperature of the water used in the photographic dark rooms must not exceed 70° Fahr. The water for this use is supplied directly from the city water mains. It is cooled by passing through a water cooler in which the return water of the drinking water system at about 50° Fahr. is circulated. The cooled water is stored in an insulated 1,500-gallon storage tank from which it is circulated by pumps to the seventh and eighth floor dark rooms. Should the temperature of the drinking water return, after the cooler, reach 55° Fahr., it is automatically by-passed around the cooler to protect the refrigerating unit against overload.

Acid Wastes. The wastes from the dark rooms and photo-engraving department contain nitric and acetic acids and other corrosive chemicals. The waste pipes from these places are made of "Fahralloy" acid-resisting metal and are separate from the other plumbing wastes. Most of the sinks in these rooms and the floor of the etching room are made of Alberene stone.

Gas. Gas lines serve various stoves, driers, job presses and other equipment.

Air. Compressed air at 80 pounds' pressure is supplied to the mechanical departments for cleaning motors, driving tools and other equipment, and to the art department at 25 pounds' pressure for the air brushes.

Ink. Ink is delivered through curb boxes in the sidewalk to three storage tanks in the basement. Three pumps, one of which is a spare, deliver into two duplicate systems of piping to the underside of the press floor, where the ink troughs on the presses can be supplied from either line. Two kinds of ink can be used, and a smaller ink tank, pump and main are provided for using experimental inks.

Oil and Kerosene. Sinks are placed on convenient columns in the press room and supplied with lubricating oil and kerosene through compression faucets. Oil is used to supply the lubricating systems of the presses, and kerosene for washing up. Each system is equipped with duplicate pumps and storage tanks and filters which are located in a separate basement room for cleaning the wastes from the sinks.

Fire Protection. The usual standpipe system is installed in the stair wells and supplied from the office building section. The plant sprinkler system is served by two 20,000-gallon tanks on the roof and a 1,000-g.p.m. fire pump in the basement. The areas over the presses, stereotype room and control galleries are not sprinklered because of the seriousness of water damage to the equipment. Hand gas fire extinguishers are provided.

CONCLUSION

Every conceivable unfavorable contingency, except a catastrophe, that might interrupt production has been provided for with duplicate machinery and equipment. The greatly increased cost of equipment ensures continuous operation.

The plan arrangement, the structure and the equipment of the publishing department as described were designed by Lockwood Greene Engineers, Inc., associated with John Mead Howells and Raymond M. Hood, architects.

PRACTICAL FLOODLIGHTING

BY

CLIFFORD W. SPENCER

THE first important instance of the exterior lighting of buildings as a means of decoration occurred at the Paris Exposition of 1889, when incandescent lamps were hung in strings on the buildings. Since then the development of floodlighting technique has been indicated by its successive and increased use in World's Fairs and International Expositions. In 1925 the San Francisco Exposition marked the first important employment of concealed and projected light, generated from gas-filled tungsten lamps. Thereafter rapid progress was made to develop high standards of uniform color and intensity, culminating in the brilliance of the Barcelona Exposition in 1929. Much has been learned even since that time, and what means of startling illumination will be used at Chicago in 1933 is a matter of interesting conjecture.

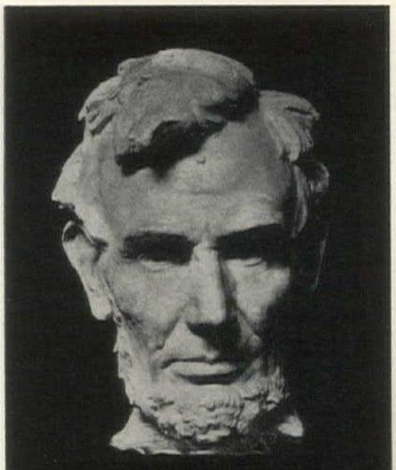
GENERAL CONSIDERATIONS OF USE

The use of floodlights as an advertising medium for commercial structures is a comparatively new but important and constantly increasing practice. Exterior lighting often serves to mark the location of a building, and, depending upon the method employed, may vary or accentuate the characteristics of its design. In many cases these are important considerations to the building owner, and when a building is to be floodlighted, care should be taken to provide for every contingency, if possible during the preparation of the working drawings. Location of projectors should be carefully studied and their angle of deflection considered for the production of a desired effect; areas should be provided for their concealment; material that is to reflect the light should be tested for efficiency in this respect; and provision should be made for the installation of all conduits and wiring by the electrician. Failure to include the latter item may increase by as much as 50 per cent the cost of a floodlighting system.

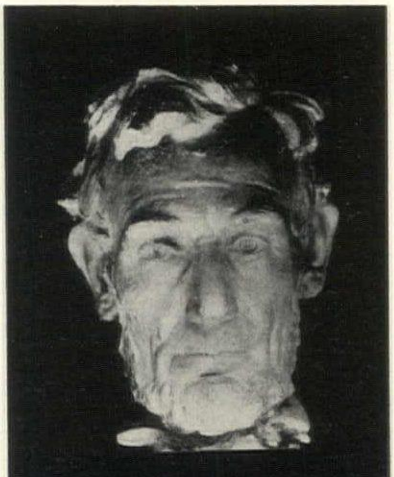
No pains should be spared to compile complete information regarding all phases of the problem. Consultation with competent illuminating engineers is advisable, and scale models are often of assistance in the study of special conditions. In some cases it may be necessary to erect full size experimental apparatus, as was done with a recent installation on the Edison Building in Philadelphia. A temporary unit was placed upon a nearby building of similar material, and the results studied from a point miles away to determine the lighting effect from a distance. Although many changes and adjustments are usually necessary after a lighting system is completed, much saving may be effected and more uniformly satisfactory results obtained from careful preliminary planning and carefully determined tests.

SCOPE OF FLOODLIGHTING DESIGN

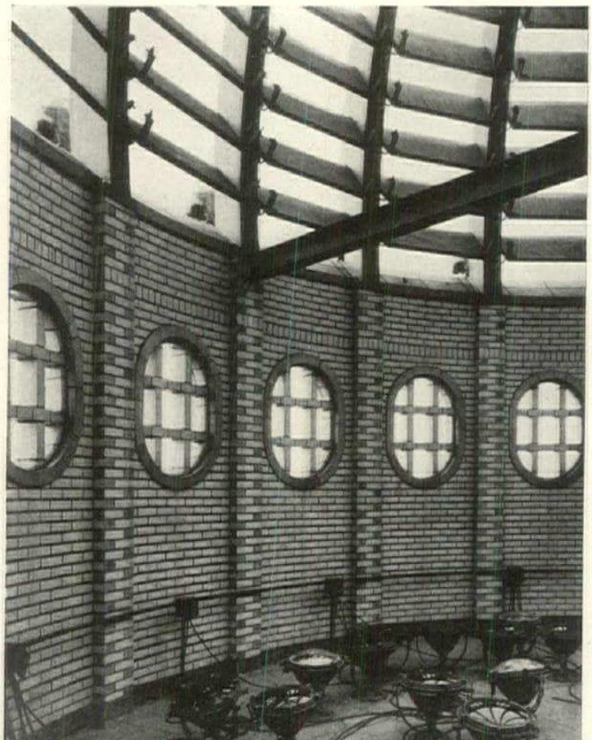
A strict analysis of particular lighting effects should be made. It should be remembered that when the light source is below the illuminated portions of the building, the shadows will be nor-



Reversing the direction of light produces some startling effects. Models are great aids in determining the proper design for floodlighting



Williamsburg Savings Bank, tower portion accented



Louvres to produce the glowing dome effect shown above

mally reversed, and that certain features may become distorted when the light is near them and comes from a concentrated source. Sculpture, especially, may be entirely changed in appearance when the light comes from a point different than that planned by the sculptor. The relative illumination of adjoining buildings should be considered, and lighting bright enough to produce a glare is not recommended.

In many cases it is desirable to light the upper portion of a building only, and it is possible, by a distinct line between the lighted and unlighted portions to make the illuminated surfaces appear to float in space with no apparent support. The illusion may be intensified by the use of color that moves and changes; and with the inclusion of varied intensities an entire building may apparently be made to move. The desirability of these methods,—usually tending to destroy the appearance of solidity of structure,—must be determined by the ultimate purpose of floodlighting the building.

The rapid development of floodlighting practice, and the desire of owners to make the lighting of their buildings distinctive, caused designers to seek more novel methods for the accomplishment of this end. From the use of a single static color the natural progression was to the employment of a variety of colors and the introduction of motion. Although the possible development of these two factors covers a wide range of possibilities, actual progress has not been great. The branch of floodlighting concerned with a variety of color and with motion is in its infancy, but the demonstration at the Barcelona Exposition is an indication of what has so far been accomplished. Here the whole ground and sky were made to glow in vivid, changing color, and a great cascade was made to flow for miles in successive billows of brilliantly colored light. In buildings, it is advisable to use color sparingly, as a means of accenting features and as a relief for shadows. For example, color is often used to pick out the space back of a colonnade, the remainder of the building being illuminated by white light. A static solid mass of colored light is monotonous over a period of time, but it may be made interesting by changing the intensity, or by an actual variation in the color itself.

IMPORTANT FACTORS INVOLVED

The visibility of any floodlighted structure depends upon the projected area of the building, brightness of illumination, average viewing distance, and degree of contrast with its surroundings. For buildings seen from a short distance, the justified lighting intensity is lower than for a building which is clearly visible for several miles. Similarly, when a large portion of a building is unobstructed in view, light of lower intensity can be used than for a low building or even a tall, slender structure, only a few stories of which are visible, due to the psychologically cumulative effect of large areas. In the case of a large building of simple design having an ornamented facade or tower, it is well to concentrate the most elaborate lighting effect on the portions having the greatest interest. The wattage necessary to produce a given effect is dependent on the area, distance, reflection factor of the building, character of the surface, and angle at which the beams of light hit the building. Much more light is necessary at the top of a structure than at the bottom, both because more is required to give the same apparent intensity over the whole surface and because greater apparent illumination is desirable at the top to give an appearance of height and to climax the effect. The illumination at the top may be from two to four times as great as that at the bottom.

ACCESSORY MEANS OF LIGHTING

Methods that expose portions of interior lighting are often valuable in enhancing the brilliance of exterior floodlighting. Light under a dome shining through openings between polished or gilded louvers set at an angle to produce reflection will transmit a colorful glow to the exterior. Grille openings and perforations at minute spaces on clock faces may be illuminated from inside and often add interest to the general scheme. The recent development of relief glass to produce bands and panels of diffused light offers many possibilities covering a wide and increasing range of effective use.

LOCATION OF LIGHTING UNITS

Projectors should be entirely concealed from the observer and placed as far as possible from the surface to be lighted in order that the angle of incidence may not be too great. An ideal location for projectors is on the roofs of adjoining buildings, at a level slightly below the surface to be lighted and not more than 150 or 200 feet distant. Such ideal locations are not often at hand, and if they are it is not always easy to obtain the permission of the owners of adjoining property for the installation of such equipment on their roofs. The next best expedient is to place the lighting units on the tops of setbacks on the building itself, provided the setbacks are wide enough to allow the projectors to be a sufficient distance out from the base of the wall to be lighted. The minimum for this distance as prescribed by different illuminating engineers varies considerably. An ideal ratio between the height of the wall to be lighted and the distance of the projector from the wall is 6 to 1, but it is possible to work to a ratio as high as 20 to 1. This, however, calls for a

Albany City Savings Bank Tower lighted from adjoining roofs

Effective floodlighting of a tire service and gas station

Pennsylvania Power and Light Building, Allentown, Pa. Entire building lighted, accented at the top

greatly increased wattage due to the light wasted by reflection into space at such an acute angle. This is especially true of a reflecting surface composed of glossy materials. For lower buildings, the lighting units may be placed on the tops of ornamental marquees or on post tops located at the curb line. These may be made in the form of street lamps with both a downward street light and a floodlight projector, so that their dual use will not be obvious.

Ornamental metal brackets of aluminum or other non-corrosive material, hung from the sides of the building with the projectors pointing upward, are sometimes used. The tops of tall buildings may be lighted from above by means of units which project out over the parapets at night, but which can be rolled back out of sight during the day. When the width of the surface to be lighted does not exceed the distance of the projectors from this surface, the projectors may be located in one group. In other cases they should be so distributed as to give a uniform intensity over the whole surface. When the units are to be on roofs, they should be located as far above it as possible without exposing them to view, to avoid contact with dirt, moisture and snow, and to facilitate servicing.

A common practice is to place the projectors so that three-quarters of the light will come from the left and the remainder from the right. This serves to soften shadows which otherwise might be too black, tending to destroy an appearance of depth and solidity. Rows of columns bounding open spaces may be silhouetted by placing projectors behind them, on the floor, concealed in a cornice above, or on the backs of the columns themselves. When the opposite effect is desired, projectors should be located at some distance. If this is not possible, they may be installed on a ledge in front of the columns. The peculiar and uniform intensity of the Neon tube light makes it an excellent medium of lighting contrast. It is a comparatively new factor in floodlighting practice, but it has already been used with telling effect in many installations, and its further development as an important floodlighting medium may be expected in the near future.

INFLUENCE OF MATERIALS AND COLOR

A careful consideration of surfaces of building materials is important, due to the practical difficulty of locating projectors in ideal floodlighting positions. Light is observed because it is partially reflected and partially diffused by the surface against which it is projected. Due to the angle of incidence,—usually rather sharp in most installations where the light comes from below,—a highly polished surface does not offer enough diffusion, and from the observer's view the light is wasted by too much reflection above. Mat or rough surfaced materials offer a higher percentage of diffusion and are therefore better surfaces from the standpoint of floodlighting efficiency.

For daylighting, however, smooth or glossy surfaces are best, and materials that combine smoothness with irregularity of surface offer a solution to the general problem. For example, snow, covered with a thin layer of ice, produces a surface combining the two types, having some of the reflecting properties of each. Terra cotta, glazed brick or materials of a similar nature approximate this type of surface and give satisfactory lighting results from either source. In general, light colored materials are more efficiently lighted. The use of colored surfaces presents special floodlighting problems often requiring detailed study for their proper solution, since such surfaces absorb all light rays other than those of their own color and produce a corresponding dedecrease in the reflection factor. Tests to determine the reflecting properties of terra cotta surfaces have been made and, although similar tests have not been made with other materials so far as is known, the results of those on terra cotta may be generally applied to them. Fig. I shows a table listing the foot-candles necessary to adequately light urban buildings depending on the surface material. Since many varying factors are

Fig. 1

Building Material	Foot Candles for Downtown* Buildings in Cities of Population: 50,000 or over	50,000 to 5,000	Under 5,000
White or Cream Terra Cotta	10	8	6
Select Gray Limestone .... Indiana or Bedford Stone..	12	9	6
Buff Limestone........... Buff Artificial Stone....... Standard Gray Limestone.. Smooth Buff Face Brick...	14	10	7
Briar Hill Sandstone...... Smooth Gray Brick....... Gray Limestone...........	17	12	8
Common Tan Brick........	22	16	10
Dark Field Gray Brick (Rough Finish)..........	28	20	4

*For buildings in outlying districts, use the foot-candle recommended for downtown buildings in cities of the next smaller classification.

involved, it may be supposed that the table represents only a general approximation.

Where surfaces are irregularly dragged or tooled, the direction of the markings in relation to the source of light should be considered. Although horizontal markings reflect a greater percentage of light downward, this advantage may be lessened by the possible accumulation of dirt that, while not materially lessening the efficiency of floodlighting, might prove most unsightly under daylight conditions. Effective reflection is obtained by using materials with faceted or geometrically textured surfaces. This is an advantage with materials of a specular surface. The metal covering of the Chrysler Building in New York was designed with a faceted surface to present a jewel-like brilliance in daylight and when artificially lighted at night. The various surfaces of glass offer many possibilities and will probably be much used in the future.

Due to specular reflection, extensive glass areas often appear black when lighted from below, unless backed by a light surface with the property of diffusion. Floodlighting of sloping roofs is difficult to secure unless the covering offers some down-reflecting surface such as thick butt tile or similar material, and unless projectors can be mounted at exactly the right angle of incidence.

CONSTRUCTION OF FLOODLIGHT SYSTEMS

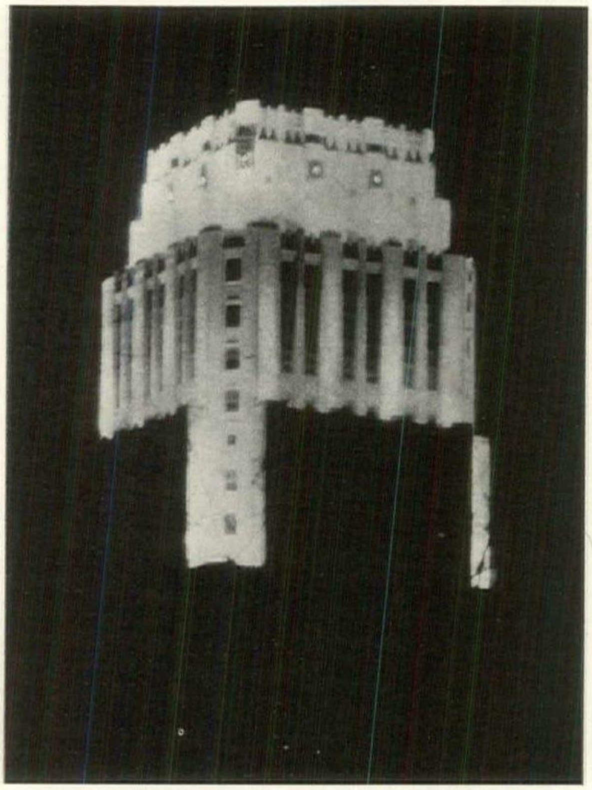
Floodlight projectors are usually mounted in batteries on rigid framework constructed of angle iron or pipes which should be included whenever possible in the original lighting contract. The direction in which the light is to be projected will govern the form of the framework, but it should be high enough above the roof or ground to prevent possible damage to projectors, but low enough to provide ease of maintenance. Framework and all conduits should be thoroughly waterproofed. Though conduits are better protected when embedded in the masonry, they are more easily changed or repaired when run in the open. Where the lighting is on the upper portion of the building, controlling devices may be located in the penthouse, or the switching may be done from the main control room of the building. Where color and motion are employed in the floodlighting system, considerable space will be required to accommodate the special switching machinery, which is likely to be quite bulky.

Location of projectors on a narrow setback of the Pennsylvania Power and Light Co. Building

LAMPS AND PROJECTORS

Since floodlight projectors are usually mounted out of doors, it is important that units be completely protected from the weather in housings of the sturdiest possible construction. Although housings of cast iron or sheet steel have been used, the use of copper and aluminum for this purpose obviates the possibility of much corrosion. The outside glass covering should be heat-resisting and cemented into the door frames to prevent the entrance of water. The doors should clamp firmly shut on a heat-resisting gasket, and all moving parts in contact should be of dissimilar metals to avoid sticking due to corrosion. If the drums are of iron, they should be heavily galvanized both inside and outside.

Formerly many units were ventilated to carry off excessive heat, but this was not very effective, and caused much damage by the accumulation of

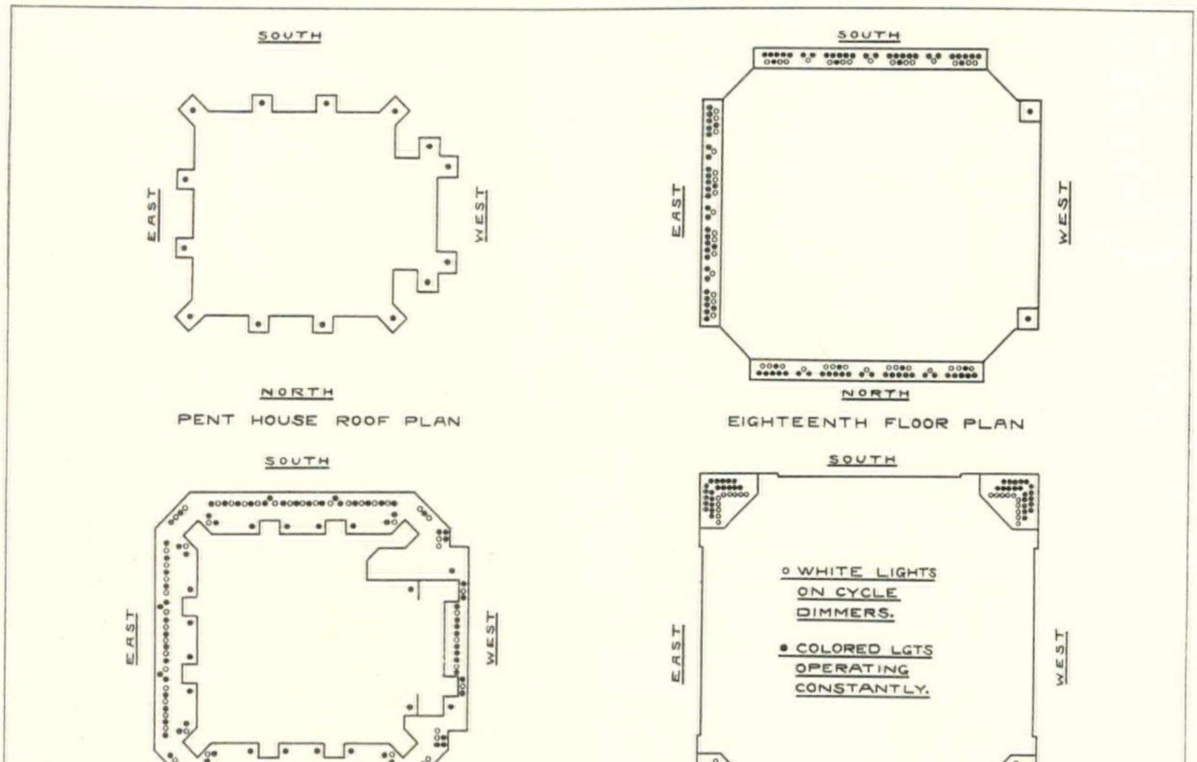


The Edison Building, Philadelphia, lighted in changing color

dirt and moisture within the unit. The present tendency is toward the use of the non-ventilated type, designed to carry off heat by conduction and convection. Since the technique of modern floodlighting practice demands fairly accurate control of the light, focusing knobs and other controlling mechanism are a part of each unit and should, like the rest of the lamp, be of non-corrosive material, with strength enough to hold the lamp securely in any desired position. It is preferable that they be hand-operated without the necessity of using special tools.

LIGHTING EFFICIENCY AND CONTROL

The beam spread of a lamp depends largely on the shape of the reflecting surface. The beam spread, by common usage, is the angle between the points on either side where the beam candlepower is 10 per cent of the maximum beam candlepower. Spill light outside this area is usually disregarded. For attaining a concentrated, accurately controlled beam, a simple parabolic reflector is used, while a non-parabolic contour in the reflector gives a wide spread beam. The material of which the reflector is made has a decided effect on the efficiency of the lamp. The three most commonly used materials are silvered glass, chromium plate, and polished aluminum. The silver plated glass is



Floodlighting Plans of the Edison Building more efficient and is less likely to corrode than some of the other materials and is more generally used for these reasons. The comparative initial reflecting efficiency of the more common reflecting surfaces is:

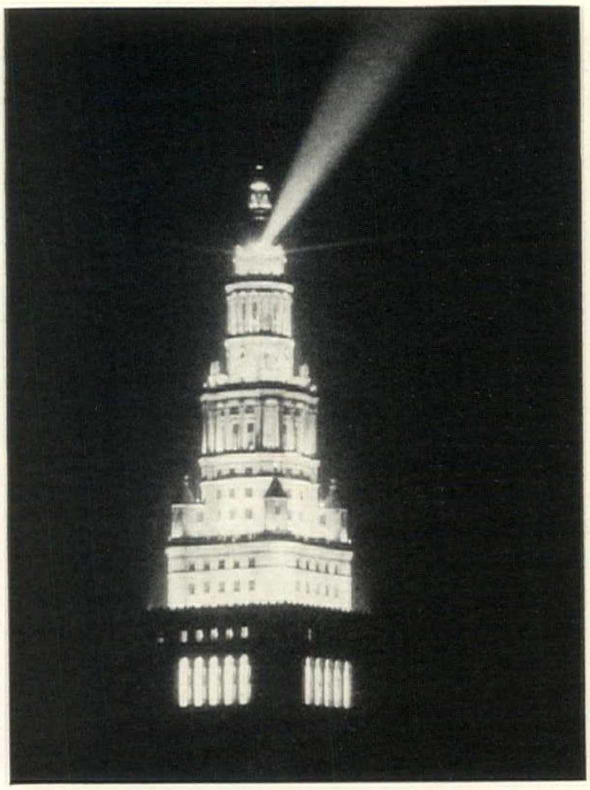
Silvered glass	82-85 per cent
Chromium plate	65 per cent
Polished aluminum	62 per cent
Nickel plate	55 per cent

If it is desired to spread or diffuse the beam, the reflector surface may be stippled, ribbed, or prismatic, or the cover glass, which is usually clear and convex in shape, may be treated in one of these ways. Although the latter decreases the efficiency of the lamp about 10 per cent, it gives a greater spread for limited applications when the projector is located close to the object.

Permanent color in floodlighting is obtained by color in the cover glasses or auxiliary color lenses inside the cover glasses. For temporary installations, gelatine color screens or color caps clamped onto the bulb are suitable. Colored cover glasses may be had in four standard colors,—red, amber, blue and green. Where other colors are desired they may be obtained by using the proper combinations of these, and tinting may be accomplished by keeping the colored light at full intensity and washing it out with white light from other projectors. If the color of screens, filters or cover glasses is too deep, the loss of light is too great to furnish effective illumination, while a color screen that passes too much light gives a washed-out effect lacking depth. For amber light the percentage of transmitted color should be about from 40 to 60 per cent; for red, from 15 to 20 per cent; for green, from 5 to 10; and for blue, from 3 to 5 per cent. This loss in efficiency need not be compensated for entirely in increased wattage, as the effect of color offsets somewhat the reduction in illumination. When lighting with amber, the wattage employed for clear light should be increased about 50 per cent; with red it should be about doubled; with green about tripled; and with blue it should be increased about five times.

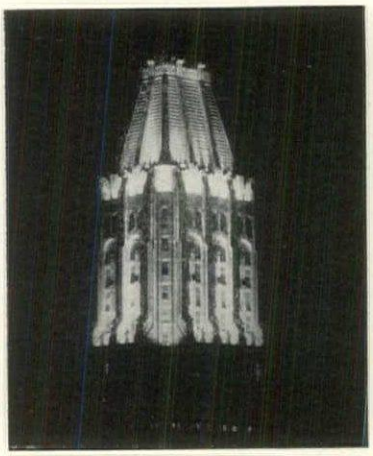
Control of spill light from projectors located in positions where such light proves objectionable may be accomplished by equipping projectors with spill rings on the cover glass, or by erecting shields of wood or sheet metal within a few feet from the projector.

The size of the light source has an important bearing on the beam spread and efficiency of a projector, and special floodlight lamps made for beams are confined to a maximum spread of about 15 degrees. These lamps are characterized by a closely coiled filament, a short light center length, and a small round bulb. This concentrated filament approaches the ideal point source of light,

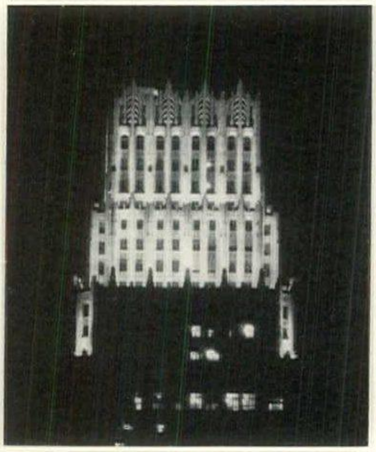


Union Terminal Building, Cleveland. Strong light on the tower, remaining portions unlighted

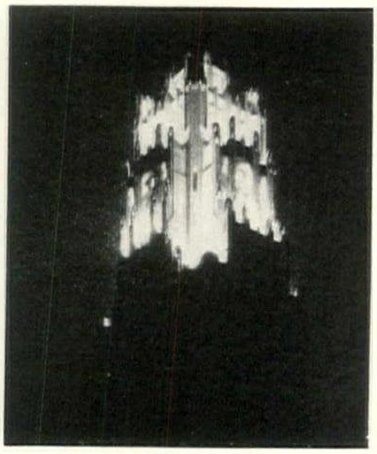
Projectors mounted on the Union Terminal Building



Baltimore Trust Co. Building
Baltimore



Gulf Building
Houston, Tex.



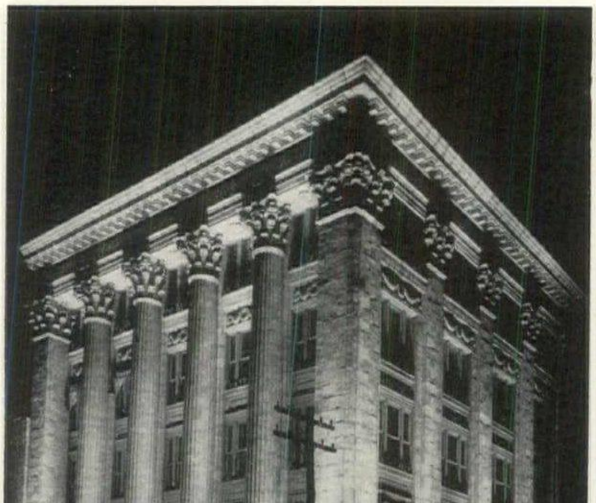
American Radiator
Building, New York

and the small round bulb imposes a minimum obstruction in the way of the reflected light. These lamps may not be burned in a position within 45 degrees of the vertical, base up. General service lamps are perhaps preferable to floodlight lamps where a beam spread of more than 15 degrees is permissible. They allow greater flexibility as regards intensities, since a range of wattages can be used in any given equipment. These lamps are less expensive than the floodlight lamps, can be burned in any position, and generally have a longer life.

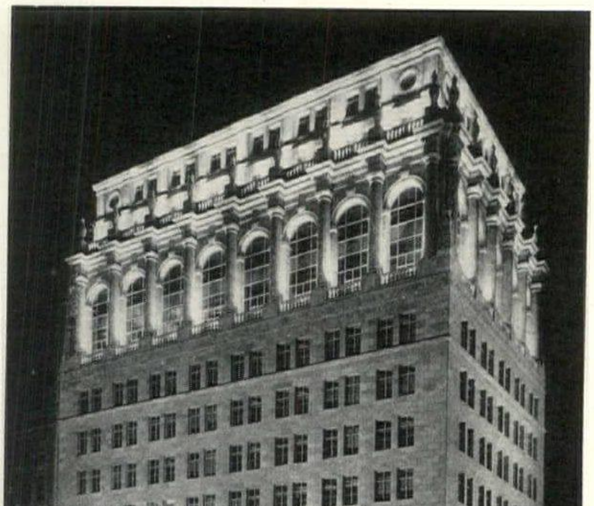
POWER AND MAINTENANCE

The factors determining the amount of current required for any given floodlighting installation are so many and varied that any general statement concerning this important matter is without value. Anywhere from one to five watts per square foot of area may be required for satisfactory lighting, and more are often provided, with costs varying within similarly wide ranges.

A poorly maintained floodlighting system, however efficient it may be at the start, soon loses its effectiveness. The cover glasses should be kept clean, and any defects that result from exposure or excessive heat should be promptly corrected by replacing the defective parts. Framework supporting projectors should be periodically painted to prevent corrosion, and exposed conduits should be frequently inspected and any damage to them should be repaired immediately. Since light banks are sometimes placed in ordinarily inaccessible places, special means for maintaining them should be provided as the construction of the building progresses or the result may be disappointing.



Berks County Trust Co.



Pacific Gas and Electric Co.

The effect of floodlighting on classical motifs

WHERE? WHAT? HOW? THE SPECIFICATION!

BY

HAROLD R. SLEEPER

OF THE OFFICE OF FREDERICK L. ACKERMAN, ARCHITECT

THE functions of our specifications have most decidedly been lost to view amid the rush to assemble information and details required by modern work. We are literally swamped by our efforts to use the latest practice, to economize, and to get the work out. Perhaps a few quiet months now will afford a respite in which to look over our office procedure and counteract the flagrant abuses which creep into even the best offices. A careful self-analysis now may save money and effort later, when building enters another blossoming period. Self-satisfaction is natural and hard to check when profits are high and work is flowing in, but in slack periods an examination of our offices is natural and of far more use than simply a curtailment of overhead and a general retrenchment. The start is difficult. We think "our" specification as good as any, and not subject to much improvement.

What is the specification? Specification material and data are forthcoming in every mail and with every salesman, but where can we look to find a fundamental theory on this document? Schools or text books, insofar as I know, have made little effort to codify or outline a system. Our specification books offer a great number of paragraphs predigested for our use *in toto*.

I believe that most people will agree that the specifications and drawings should be complementary, one to the other. That is, together they form the complete key to our building and tell the entire story. Next, I suggest that as a corollary we adopt the theory that what is told by one should not be told by the other. One may not agree with this, and certainly the custom has not been to follow such a theory.

However, if one can make such a scheme work, it will save mistakes, time, money and confusion from start to finish. Also, it will shorten the specifications and clarify and simplify the drawings. It is always assuming a hazard to tell anything twice. If such is done, changes which occur will have to be made twice, with the attendant risk that such changing will not be done thoroughly. Throughout, we double the chance of errors. Ambiguities and misunderstandings are going to happen and do happen under the usual method.

Now, if one can see the benefit and possibility of making such a clean-cut separation of these documents, some definite allotment of their respective duties must be made. The drafting room men must know just where they are to stop, and the specification writer must know exactly what part he has to formulate. The decision is to determine what can best be stated and described by the written word and what can be best told and shown by the graphic method. Certain things cannot possibly be described by words. A statue, for instance, could not even be started if it were dependent on specifications alone. So, all *sizes, shapes* and *forms* may be told once and for all on the drawings. Then, if the documents are complementary, we would expect to describe what these forms and shapes are made of and in what manner, in the specifications. In three short words, "where," "what" and "how," we tell just what we want the specifications to accomplish. The *"where"* is commonly called Scope. The *"what"* we term Materials, and *"how"* is Methods of Construction. This completes a distinct subdivision of all needed works of both documents, and the three key words for each will enable us to see how far our practice departs from this basis.

The "where" or Scope, one may argue, can more easily be told on the drawings. If time and expense are in any way factors, this is not true. More thought will be required to so word the Scope to describe where certain items occur than if they are indicated on drawings, but it can be accomplished in much less time and with less chance of error. Six or eight draftsmen, working two days, may be required to hatch all terra cotta partitions on a large project, while one specification writer may tell the story in a few sentences. Possibly "partitions for all toilets, shower and bathroom, for boiler room and machine room" would tell the whole story; or simply "all partitions shown 4 inches and 6 inches thick are to be of terra cotta." If, at a later time, it is decided to make these partitions of other materials, days of scrubbing are not required to bring the drawings up to date.

If such a system were adopted, most of the material indications would disappear from drawings. Such indications are part of the "where" and in all but rare cases can much more simply and more quickly be described in the specifications. Of course, indications on details continue, as these are not usually contract documents.

We think of the graphic method of formulating and transferring our ideas of buildings as most natural and easy. However, it is probable that written symbols were used for this purpose at an even earlier date than were the graphic drawings, as such is a later art than writing, although primitive writing was to a large extent pictorial. We know that the Hebrews most certainly used characters to specify buildings, and we have no record of drawings made as early as this. The Temple of Solomon and the Ark are most clearly specified in the Bible.

During certain periods in history when paper became plentiful, drawing then usurped the place of specifications in telling the Scope. This became especially so when blueprinting made it possible to duplicate inexpensively. Now, we make a fairly equal use of both documents, but are not going as far in using the specifications to show Scope as is economical and practical.

THE "WHERE"

In attempting to tell the "where" that the various materials are used, the Scope becomes all important and must be most carefully set up. An omission of an item of Scope, if the system just outlined is used, means trouble, as in all probability in no other place will this item be mentioned, and the architect cannot hope for some drawing note to pull him out of the hole. Thus the Scope is the index of all material used in the chapter and at a glance tells the story from the time it is completed to the time the building is finished. Estimators, detailers, checkers, expeditors and supers need only to refer to this list to see where materials are used.

The last paragraph should most definitely be qualified in case the architect has achieved a "Schedule of Interior Finishes." Having been raised in a school of the Schedule, I may be biased in its favor. However, I will at least back the statement in regard to such schedules that once used, always used. Trades indicated in such schedules are usually:

Floors
- Wood floors
- Cork floors
- Composition floors
- Linoleum floors
- Cement floors

Walls and Ceilings
- Plaster
- Stucco

Walls and Floors
- Tile
- Marble

Trim
- Metal
- Wood

Painting

In case a trade is included on this Schedule, the Scope lists nothing but simply designates the letter which refers to that trade on the Schedule column heading, and also it must define the limits of the work. That is, it must define ceiling as including all soffits, arches, reveals and all sloping and horizontal surfaces above the floor. The Schedule, in fact, becomes the Scope and, in many trades,—for instance paint,—cuts the specifications about in two.

The practice of actually placing page numbers after the items of Scope is worth while, as it provides an index at the head of each specification chapter. If necessary, on large work, these can all be assembled for use in the main index. On small or medium type of work, no other index is necessary. For instance, if, under the Scope of "Masonry, Limestone: All exterior door lintels" appeared Par. 12, 24, Paragraph 12 would describe the limestone material as to color and texture and quarry, and Paragraph 24 would tell how it was to be placed or built in. That is, the first reference would be to the paragraph on materials, and the second on that concerning construction.

It is very nice to carefully indicate stonework and brickwork all over the elevation and plans, but when a decision is made to change the stone to brick and the brick to stucco or vice versa, the joy is all gone; whereas, such a change can be made in a couple of lines in the specification by means of simple addenda. Such a practice of omitting all reference to materials on small-scale drawings is radical now, but will, in a short while, become universal, I feel. The specification document can cover this so simply and so easily and can be changed with little effort. Notes of materials may then be left off of all plans and elevations with consequent clarification and simplification. Dimension and construction lines are not then so confused with the story of what it is to be built of.

THE "WHAT"

Next, when "where" has been definitely established, comes the "what" and that concerns the materials. By our usual chapter headings we give some inkling of the materials, but these must be more carefully specified either by a complete description or by reference to some standard specification such as those formulated by the U. S. Bureau of Standards, by the underwriters, by city codes or by other organizations whose standards are recognized and accepted by the trades. Many architects may find the standard specification as drawn up by the New York Building Congress satisfactory for many of these clauses.

The specifications have absolute jurisdiction over this phase of the work, as no drawing can in any way usurp the specification's function here. Quality, grades, standards must be described in writing. The secret of a successful material specification is to write just enough for the work in question and no more. To allow leeway where possible without hurting the final result, and to define exactly at those spots where certain requirements cannot be allowed any latitude, make a good specification.

Probably more errors, extraneous words and bunk are thrown into this part of the specification than in any other. The temptation to use former work as a guide is so strong that they often are chucked in pell-mell and await correction after the project is under way. Situations, embarrassing to the architect and puzzling to the contractor, are sure to result. I know of one specification that grew gray hairs on the material man in the contractor's office. A certain stone was specified by name and described as to size, joint, etc. This New York contractor kept the phone buzzing for a full day before he cried to the architect for help. He didn't like to acknowledge defeat. The architect himself had never heard of the stone, but his partner remembered that they had used such a stone on a building in the west where this stone was a local product. Along with the limestone, this paragraph had been copied *in toto,* from the old specification for the western building. These mistakes do happen, even among good architects, and serve to bring up the question of whether or not the architect should be held financially liable for his glaring mistakes.

THE "HOW"

The last main division in the specification is that of "how." This division should go, as fully as necessary, to achieve the desired results, into details of construction, erection, manufacturing, setting, laying or finishing. The good old saying of "you can lead a horse to water but you can't make him drink" holds true here certainly. Its parallel in the building trades is "you can get cheap subcontractors, but you can't make them perform." No amount of specification will ever make any "sub" deliver quality above his standard or experience, and so if cheap work is wanted, cheap subcontractors must be used, and the work be so specified as to allow them to bid. If the work is to be of the highest quality, specifications will have to be more carefully drawn up and safeguards placed at all pitfalls. One must take into account who the general contractors estimating will be. They are more or less in the habit of giving invitations to a certain group of "subs" and one is writing primarily for them. Page after page about concrete tests will mean little to a country mason. He will either disregard the paragraphs or add about 30 per cent to his figure.

Before the "where," "what" and "how" can be written, chapters or divisions must be arranged so that subcontracts may be let without complete re-editing of the specification by the general contractor and so that items may be found in a logical manner. This is not easy to do so that both requirements are met. The type and size of the work at hand introduce a third factor which must be considered. The contractor would like to have all items arranged in chapters according to the way he will award the work. This in turn is partly dependent on trade union practice, — no, not wholly. But as the unions do not function in a uniform manner, even between New York and Connecticut, it is easy to see that this condition will not be met 100 per cent. Some unity or logic must govern above these changeable laws of unions and whims of subcontractors.

In the first place, let the order of work done govern the order of the division which is in accordance with the A.I.A. catalog index. Next, let similar materials be grouped together, unless patently to be erected by different trades. Most architects do not know the most recent and up-to-the-minute trade union rulings. For instance, how many know that if imitation stone is less than ¾ inch thick, it is to be set by a plasterer, and if ¾ inch or over it is to be set by a marble setter? Architects striving to live up to union ruling would have to move such an item from one chapter to the next on the day the decision was made. A lawyer would be needed to follow all arguments in the trades and to wire the results to the specification writer.

It is true that most architects are too lazy or too busy to make an attempt at a reasonable division of their work, and as a result the general contractor has much careful work to do in preparing his subcontract documents. He must carefully remove the cement wainscot from the floor finisher's work, but leave in the base. He must assume this responsibility, as he pays for the mistakes or errors or omissions. Possibly some day the Architectural League or Beaux Arts Society will conduct courses to keep architects informed concerning new laws, standards and rulings, but for the present we can only follow what we do happen to hear of.

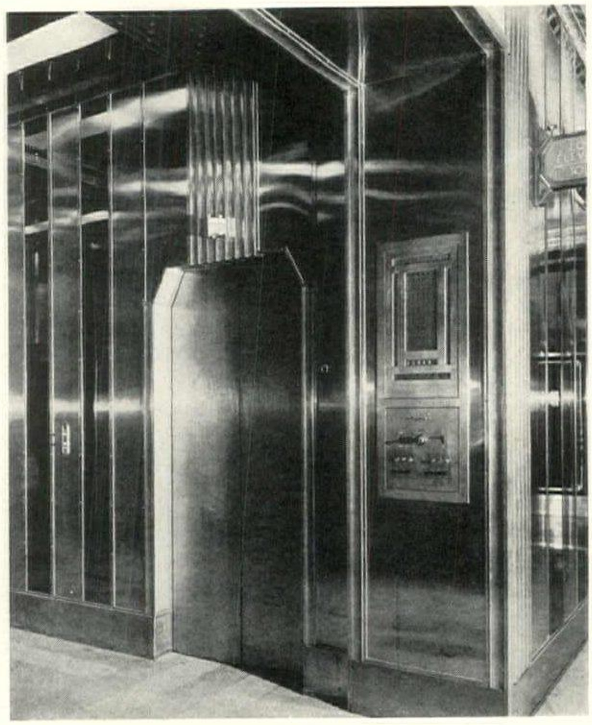
An attempt to clarify the duties of the specification has been herein made. Possibly my theory is incorrect or incomplete, but at least it is a plan which may be followed with some definite intentions in mind for all trades. The fault of many documents is that no rules govern the finding or placing of certain work, either on the plans or in the specification. It has been left to habit and custom and may even vary from chapter to chapter of the specification. One trade may be specified as to scope on the plans and another on the drawings. Such procedure can find little justification. If I have stimulated anyone to at least agree or disagree and to place his decision as a working basis in his office, my effort has been worth while.

A LOBBY OF METAL AND GLASS

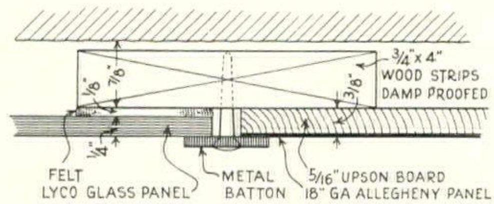
IN THE LA SALLE-WACKER BUILDING, CHICAGO
HOLABIRD & ROOT, AND
A. N. REBORI OF REBORI & WENTWORTH, ARCHITECTS

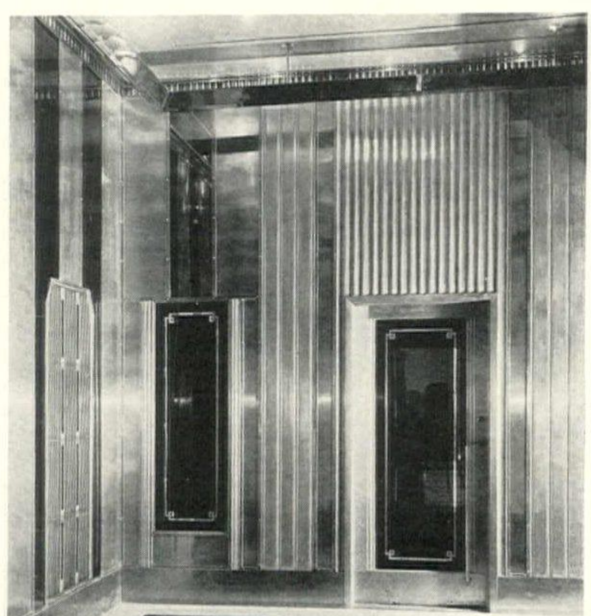
BY

A. N. REBORI



Two views of the lobby, and a detail showing the method of joining the metal and glass





THE effectiveness of metals used in interior design is dependent largely upon the surface finish, which must stand the weather and at the same time keep its highly polished finish at a low maintenance cost. In the new forty-one story LaSalle-Wacker Building, Chicago, the main elevator lobby, ground floor, presents a direct and simple use of a combination of various metals and glass. A chrome-nickel steel, Allegheny metal, was used as a wall surface, as base and cornice, and as the ceiling in the elevator lobby alcoves. The sheets used for the walls are approximately 14 feet high and 16 inches wide, 18 gauge, alternating with vertical strips of glass the same size, with a band of metal, approximately one inch in width, 1/8 inch in thickness, holding the strips of glass and metal in place. The highly polished surface counts as bright silver in contrast with the blue steel-like finish of the glass sheets. The lighting is in the form of an indirect polished metal trough carried continuously around the main lobby ceiling about 18 inches from the side walls.

The elevator cabs are of all metal design. A two-foot, fluted band of highly polished aluminum runs vertically at the side walls, and continues across the ceiling of the cars, in a striking contrast with the pale blue enameled metal walls and light yellow enameled metal ceiling of the cab. Semi-indirect lighting troughs covered with frosted glass are set flush at the ceiling. Ventilator openings at the base and sides of the car are carefully installed as part of the general design, with the openings to admit air proportioned to overcome possible pressure on the ear drums while traveling at the high speed of 1,000 feet per minute. The vertically fluted panel above the elevator door is of monel metal. The elevator lobby floor has arrows and lettering as part of the terrazzo floor pattern, giving definite directions from the entrance vestibule to the various banks of elevators.

THE EMPIRE STATE BUILDING

SHREVE, LAMB & HARMON, ARCHITECTS

V. ELECTRICAL EQUIPMENT

BY

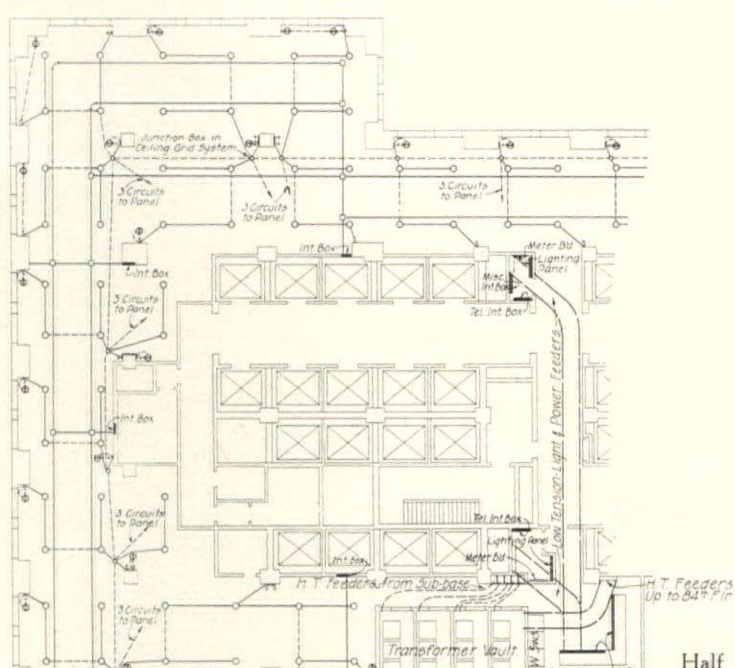
H. F. RICHARDSON*

THE Empire State Building is the first of the tall structures to have sufficiently large floor areas in the tower section to require two electrical riser shafts. The height of the building required that a number of transformer vaults be distributed through the structure, with high tension service feeders to these transformers. After some study, it was found most economical to install transformers in the sub-basement and at the 41st floor and 84th floor levels, all of the transformers at each level being installed in one vault with horizontal low voltage connections to the various riser shafts at each of these levels. There are five banks of transformers at the sub-basement vault, each of 600 K.V.A.; four banks each of 600 K.V.A. in the 41st floor vault; and four banks each of 600 K.V.A. at the 84th floor vault, a total for the building of 7800 K.V.A. The total transformer capacity is therefore sufficient to light a moderate sized town and corresponds to the current required to light 156,000 50-watt lamps. The sizes of the transformers are figured so that one bank of transformers in any of the three vaults can be out of service without curtailing the service to the building. In addition to this, low tension tie feeders are installed between the various transformer vaults to further increase the reliability of the service, and a connection from the low tension street mains is connected to this tie feeder, so that a considerable amount of current could be supplied from the street under emergency conditions.

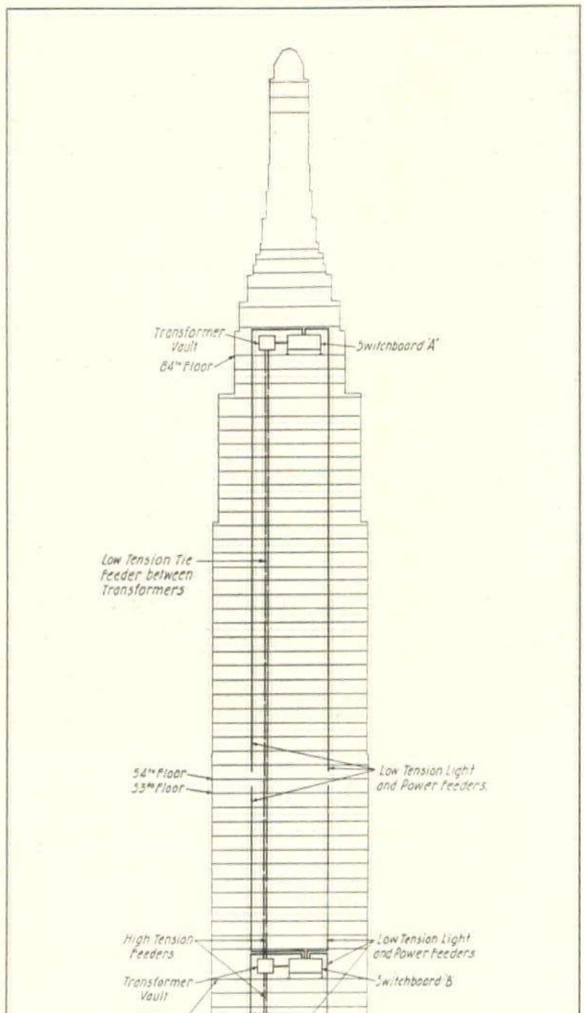
MAIN SUPPLY SYSTEM

The building is supplied with five high tension, 13,800-volt service lines, three of which enter from 33rd Street and two from 34th Street. These feeders are carried to the sub-basement vault from which point they rise throughout the height of the building, connecting to the other two

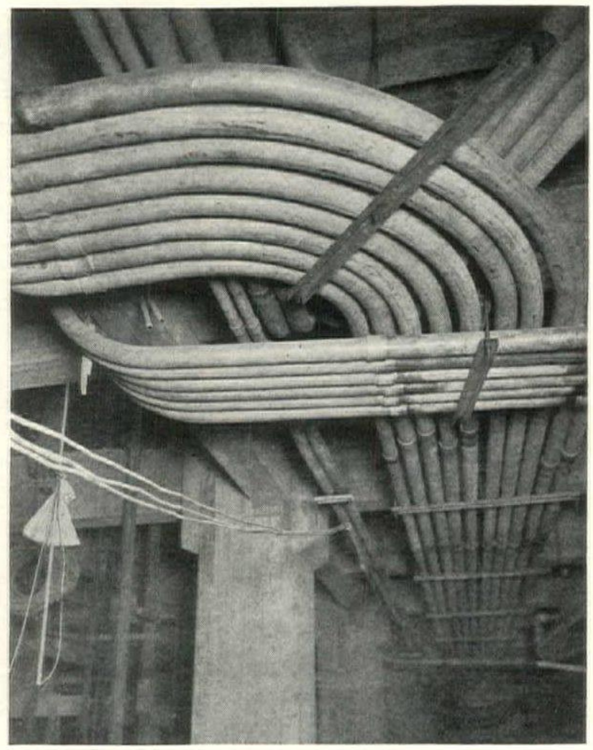
*Of Meyer, Strong & Jones, Inc., Consulting Engineers for mechanical and electrical equipment of the Empire State Building.



Half Plan of the 41st Floor Showing Transformer Vault and Electrical Distribution



Riser Diagram of Electrical Distribution



Typical Nesting Together of Conduits and Pipes Throughout the Building to Reduce Headroom as Little as Possible

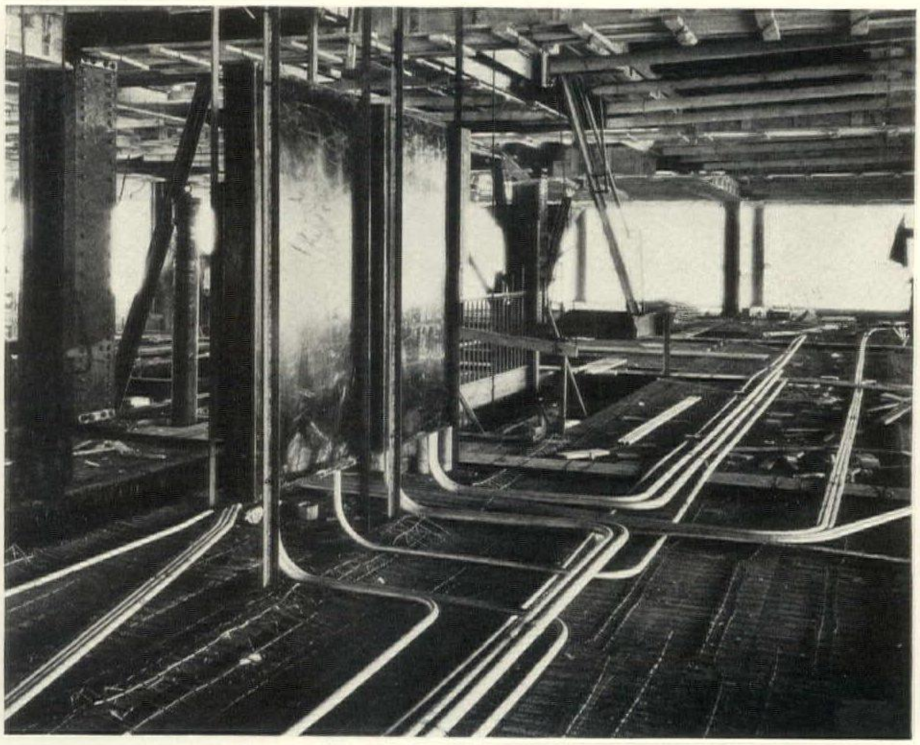
vaults. The conduits carrying these feeders are embedded in the concrete for their entire length. Cables are covered with a braided steel wire sheath, the steel strands of which are anchored at the 41st floor and 84th floor levels to support the weight of the cables.

Adjacent to each transformer vault, there is provided a low tension distributing switchboard which is connected by bus bars to the low voltage side of the transformers. From these switchboards, 3-phase feeders, 120-208 volts, 4-wire for light and 3-wire for power, are installed horizontally to the various riser shafts and thence to the lighting panels in these shafts and to the various sub-divisions of the power load.

Six riser shafts are provided from the sub-basement to the 5th floor inclusive, four of these continuing to the 20th floor and two continuing to the 84th floor. At each floor level of each riser shaft, panel boards are provided for the distribution of the branch circuits for lighting. These panels are of the knife switch, N.E.C. fuse, polarity type, and are arranged for sub-metering current supplied to tenants.

LOCAL SUPPLY SYSTEM

Considerable study was given the method of distributing the branch circuits from panel boards at the riser shafts to the outlets on the various floors. From the two angles of initial economy and future flexibility, to meet the requirements



Method of Floor Construction Described in Text, Showing Conduits in Place Ready for Structural Concrete Slab to be Poured

of tenants, particularly as to metering, a number of preliminary layouts were made and estimates obtained. As a result it was found that the most economical system was with 4-wire, 3-phase, branch circuits combined with a modified grid system of conduits. This reduced not only the number of wires required but also the sizes of conduits and materially reduced the drop in voltage from the panel boards to the lights over the usual system of wiring with 2-wire or 3-wire circuits. The wiring in each bay for ceiling outlets, switches and base receptacles is concentrated at small junction boxes in the ceiling, these junction boxes being connected with conduits which in turn are supplied from the panel boards at the riser shafts. This provides great flexibility for tenant changes.

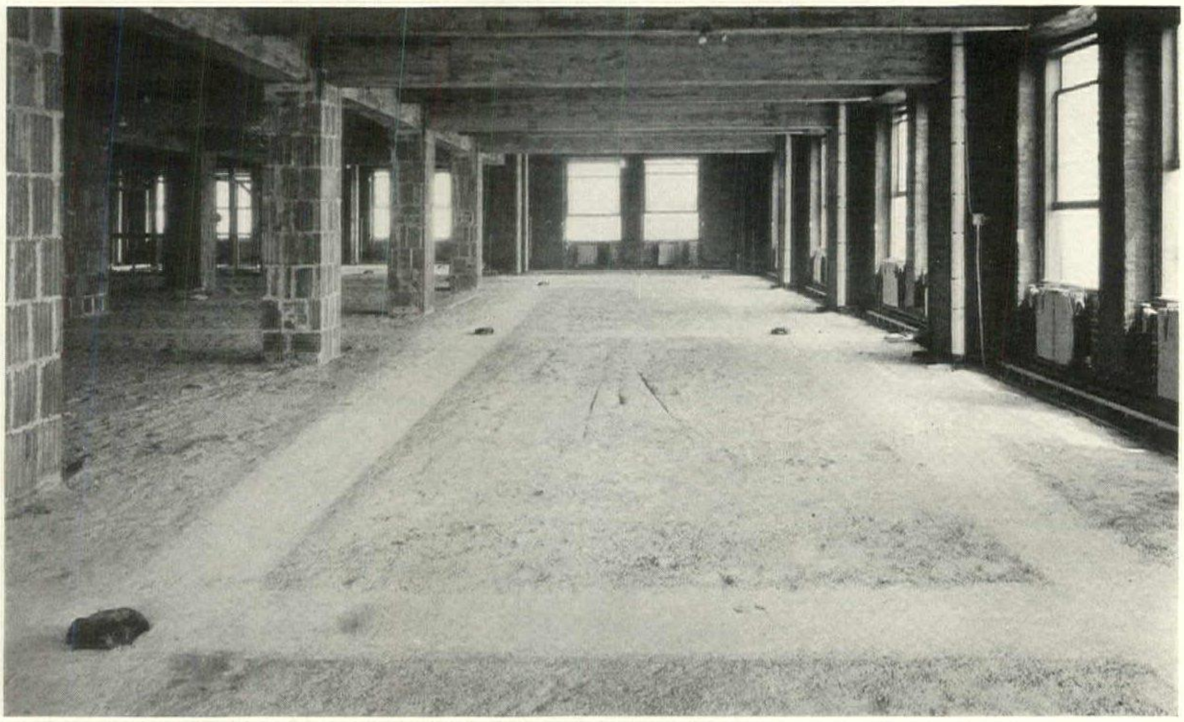
In general, four outlets are provided in each bay with a switch for each two outlets and one base receptacle on each column, both exterior and interior. The circuits are provided on the basis of approximately 2 watts per square foot, but the wiring system is sufficiently flexible to allow for an increase if needed by any tenant.

SPECIAL FLOOR CONSTRUCTION

Another departure from the usual practice is that the steel girders throughout the building are depressed 1 inch below the tops of the structural floor slabs. The beams framing into these girders are installed so that the tops of the beams are approximately 1 inch below the tops of the girders, thus bringing the tops of the floor beams about 2 inches below the tops of the structural slabs. With this method of construction all distributing conduits from the panel boards are cast in the floor slab. This is more economical in the installation of conduits, as all conduits are installed at one time instead of first installing the conduits between ceiling outlets in the slabs as is customary and later coming back and installing the home run conduits on the tops of the slabs, to be covered by the cinder fill. Less bending of conduits is required than where conduits are installed in cinder fill and have to be bent and so routed as to keep within the limits of the fill. Where speed of installation is essential, as it is in this building, the electrical contractor finishes his conduit work at one operation and goes on to the floor above, which causes less interference between trades and expedites the work considerably. In the Empire State Building, the electrical contractor completed one entire floor each working day. Conduits cast in the structural floor slabs are not subject to destructive corrosion as they are when installed in cinder fill. The thickness of the cinder fill required is, of course, reduced with this method of construction.

MISCELLANEOUS SERVICES

For the telephone and miscellaneous signaling services, such as tickers, messenger calls, telephones, etc., twelve 3½-inch conduits are installed from the 33rd Street side of the building to a room in the basement. This room is subdivided for the use of the various service com-



Structural Floor Slab Troweled along Route of Underfloor Ducts, with Floor Duct Junction Boxes in Place and Ready for Installation of Ducts

panies. From this room, approximately forty 3½-inch conduits are distributed to the lowest level of the various riser shafts, these shafts being used in common for the electric light and telephone and miscellaneous signaling distribution.

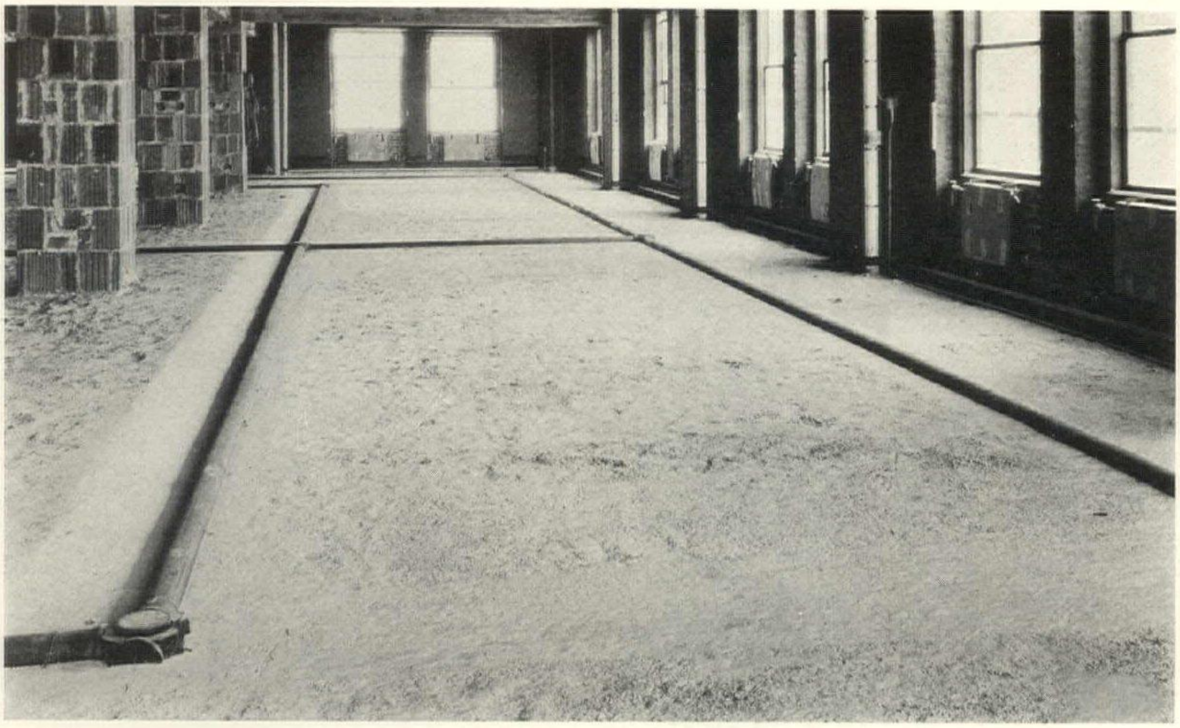
Interconnection boxes are provided in each shaft at each floor level for telephone and miscellaneous signaling services, but no conduits are installed in the riser shafts between these boxes, sleeves being provided through the floors at each level to allow the service companies to install their cables. Throughout the building, interconnection boxes for telephone and miscellaneous signaling services are provided spaced approximately 40 feet apart and located on interior columns, these being connected by conduits to the main boxes at the riser shafts. These boxes are located on interior columns for several reasons. The conduit runs are shortened and do not have to cross the underfloor ducts. The location away from the outer walls is preferable also in that these boxes are less likely to occur in private offices, etc., when the space is subdivided for tenants. It was found that ample width was available for these boxes on columns at which plumbing pipes were installed to provide for future water supply for tenants. Certain of these interconnection boxes are for use of telephones only and are 18 inches wide by 24 inches high. Others are for the combined use of telephones and miscellaneous services and are 24 by 24 inches.

UNDERFLOOR DUCTS

In general, two lines of underfloor ducts are provided around the periphery of each floor throughout the building. These are of the 6-square inch area, open bottom, fiber type. One line of ducts is spaced 4 feet in from the outer wall of the building, and the second line is approximately 9 feet in from the first line. These ducts are to be used in common for telephone and miscellaneous signaling distribution. Inserts will be installed in these ducts later when tenants' requirements are known.

Instead of providing a raised pad for the installation of these ducts as is customary, advantage is taken of the fact that all conduits are cast in the structural slabs. It was therefore necessary only to screed off the top of the structural slab before it had set along the route of the underfloor ducts, and trowel this surface. After the floors had set, the junction boxes of the underfloor duct system were put in place and ducts laid between them along the areas which had been smoothed as just described. The ducts were then held down with specially pre-formed tie wires attached to the structural slab with short hardened nails instead of with pitch.

It was felt that the underfloor ducts provided will take care of telephone and miscellaneous signaling wiring for a great majority of tenants' requirements, since the greater part of such equipment is usually located near the outer walls



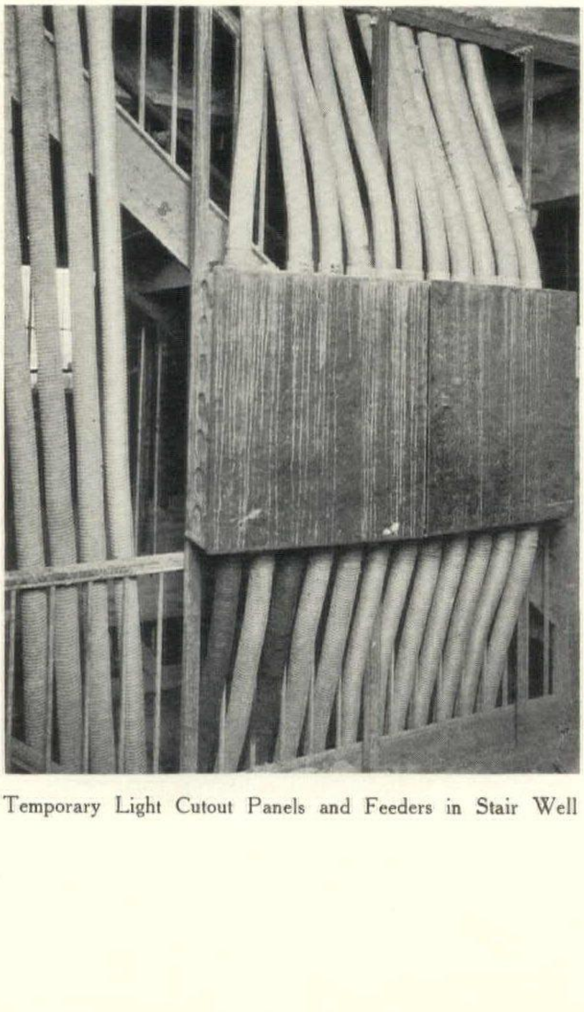
Underfloor Ducts in Place Ready for Floor Fill

of the building. It will, of course, be necessary to run certain wires along the baseboard for telephones and other equipment located away from the outer bays of the building in which the floor ducts are installed. Generally speaking, equipment in these areas can be located close to a partition, and the wiring be installed along the baseboard which has been designed to conceal such wires.

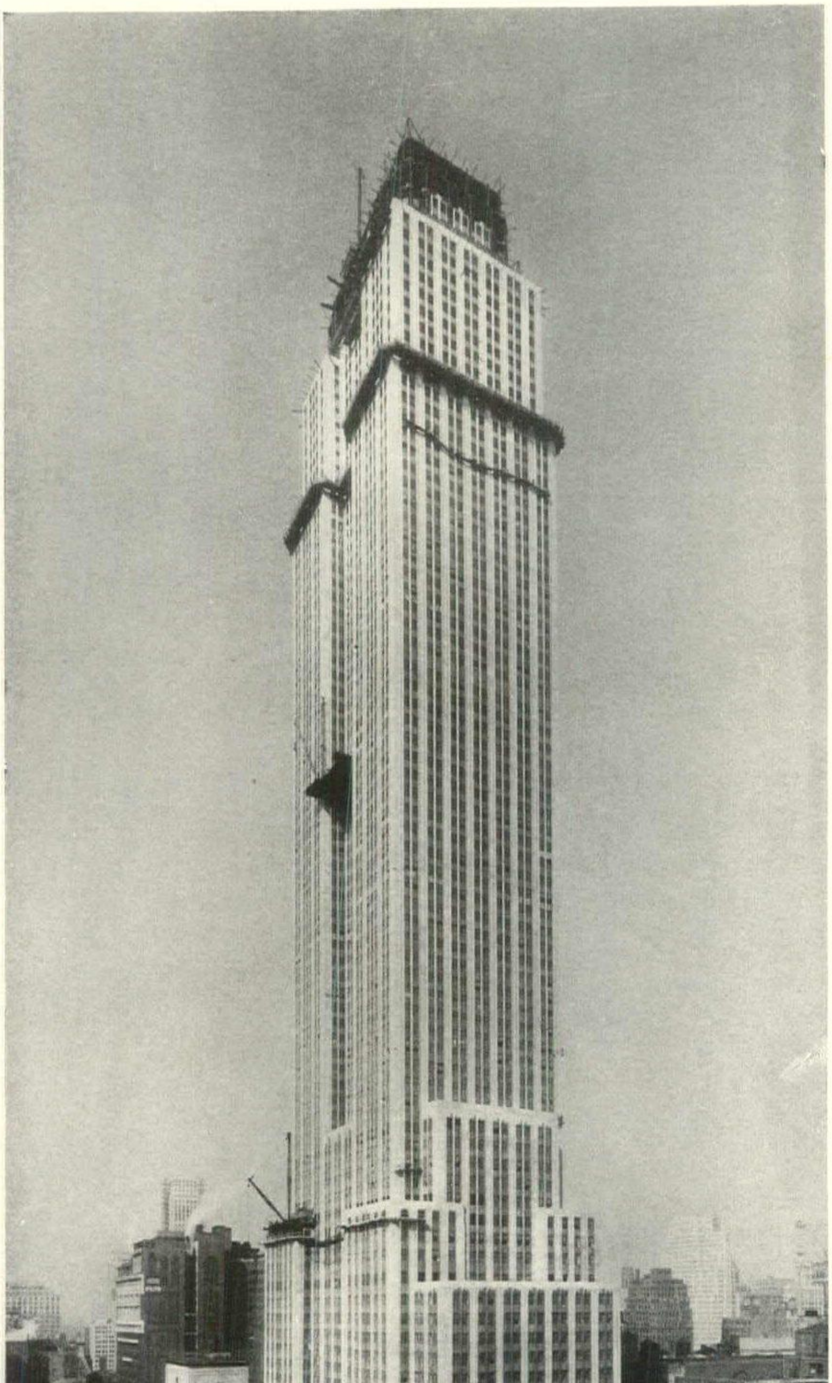
A house telephone system of the automatic type is provided with a total of approximately 200 stations, one at each floor throughout the building, one in each elevator car, and others in elevator machine rooms, pump rooms and executive offices throughout the building to provide for quick intercommunication between the various building operating departments, between the elevators and starters, etc.

TEMPORARY SERVICE

For a building of this magnitude and in which speed of construction is so important, the wiring for the temporary light and power required during the construction period is a very considerable electrical system in itself. This system was planned in advance to be as simple as possible and so as to properly illuminate the work; to provide flexibility for wiring large motors, etc., which move upward as the work progresses; to interfere as little as possible with construction; and so that as much as possible of the temporary wiring could be installed so that it could remain in place without changes as long as required. The permanent wiring system is being installed by L. K. Comstock & Company; the temporary wiring system by J. Livingston & Company.



Temporary Light Cutout Panels and Feeders in Stair Well



Knickerbocker

Empire State Building, New York. Shreve, Lamb & Harmon, Architects. Progress Photograph, October 16, 1930. Except for the Observation Tower, All Steel Work Completed to the Main Roof Level Above the 86th Floor, and Stone Work Set Up to the 81st Floor Level

THE EMPIRE STATE BUILDING

SHREVE, LAMB & HARMON, ARCHITECTS

V. PLUMBING

BY

FRED BRUTSCHY, Consulting Engineer

THE keynote in the design of the plumbing for the Empire State structure was economy consistent with proper regard as to durability, operation and maintenance of the system as a whole. This feature was carefully observed in every phase of the work, because in installations of this magnitude that relation is vital to the success of the entire project.

Due to the extreme height of the building, the outstanding problem of the plumbing most naturally is the arrangement of water supply from the point where street water mains enter the building to the ultimate delivery at the points of use, —the plumbing fixtures. As the time table for the project allowed only a minimum time for design, it was necessary definitely to determine the scheme of this system with all possible speed. This was done by also studying the standpipe requirements at the same time, for while the requirements of water storage for the permanent fire protection system are precise, even as to location, there is a small degree of flexibility through which it is possible to blend the fire protection system with the water supply system to effect a more economical arrangement.

The four zones for the standpipe system were mandatory, so that where possible the supply zones must be so arranged as to permit the combination of the tank facilities for both of these into single units at the several levels. This was done with one exception,—at the 42nd floor, where a separate fire tank was provided.

From several preliminary schemes, that shown in the diagram was adopted, the first step of the scheme being the establishing of fixture supply zones A-1 to A-5, these zones being determined by consideration of the direct gravity feed system, the standpipe tank requirements, and the architectural and structural considerations. To meet the latter considerations, the direct gravity feed system was modified with the use of pressure-reducing valves located at the bases of the zones L-1, L-3, and L-5, for a total of 20 floors, leaving the building substantially equipped with the direct system.

With zones fixed, the hourly load of each was determined, and the study of the pumping scheme made, with the result that the water is lifted direct to tanks L-1, L-3 and L-5, while tanks L-2 and L-4 are supplied by relaying back from L-1 and L-3 respectively. This scheme warranted its adoption because of its economy.

Two house pumps are provided for tank L-5, and one pump for tanks L-3 and L-1, each with an additional breakdown unit for the latter zones, calling for a total of five house pumps. This combined capacity of the three active units is 850 gallons per minute, with 250 gallons each for L-5 and L-3, and 350 gallons for L-1. The great size of this structure called for serious consideration of emergency, and to that end an emergency fill and pump line is being installed connecting with tanks L-1 to L-5 inclusive, and to each of the five house pumps. This line is so arranged that water may be pumped up to any tank, or water be permitted to feed down between any two zones. There is another point in connection with the scheme worthy of mention, and that is that there are only two pipes in the entire water supply systems which will have working pressures in excess of 110 pounds per square inch, and those are the pump lines L-1 and L-3.

There are four 6-inch water mains entering the building, one from 33rd Street, one from 34th Street, and two from Fifth Avenue, which will supply an average of 80,000 cubic feet of water per day, this being the estimated consumption.

The drainage of the building is divided into two distinct systems of piping,—storm water and sanitary. The storm water system is designed to take care of 15 cubic feet of rainfall per second, discharging into the adjacent public sewers. The storm water for the building is brought down through two large-sized main vertical leaders, with the exception of the sixth floor, where several small leaders drop direct to the basement, tying into the rain sewers at that level.

The sanitary system is made up of two zones,— one a gravity system, which carries away all sanitary wastes from the second floor and above. The other is the sub-drainage system into which all wastes below the second floor are discharged and thence taken to three duplex ejector units at the sub-basement level. There are ten separate sewers leaving this building and connecting with the street sewers, ranging in size from 6 inches to 12 inches. These carry off the sanitary, storm water, ejector, and air-conditioning discharges.

The permanent fire protection system is, of course, designed in accordance with the mandatory municipal requirements, being what is known as a "four-zone" system, with a fire pump and its accompanying water storage tank at the base of each zone. In addition there is the usual requirement of the necessary storage in the high L-1 house tank.

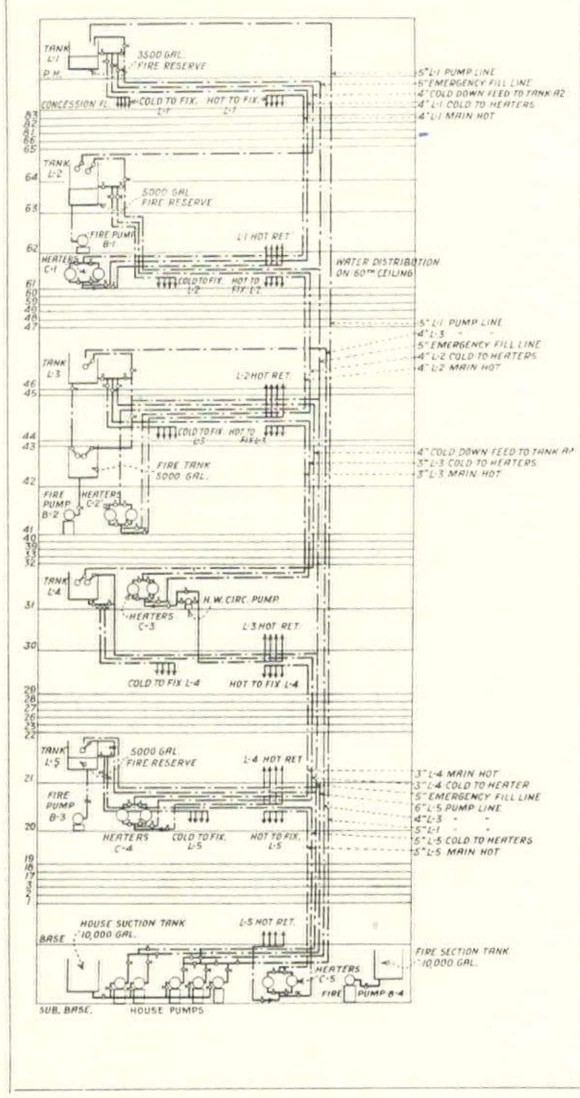
There are five main 8-inch standpipes up to the 29th floor, and two of these continue up to the 85th floor. These risers are part of the four zones, these zones being all interconnected and cross-connected to the four fire pumps and the tanks.

It was realized that while the permanent standpipes would satisfactorily provide fire protection for the completed building, there was a serious fire menace during the construction period. There was therefore included in the contract work a system of temporary fire piping with three pumps of 250 gallons each, two of these being located at the sub-basement and one at the 41st floor. These pumps discharge water into two temporary house tanks at the 42nd floor and the top roof. So that water would be available for fire purposes during all times of construction, these tanks were called to be set up at the lower floors, starting at the 20th, and moved up as the steel erection proceeded.

The vacuum cleaning installation is again a zoned system, being in two zones. All inlet valves from the 30th floor and above comprise one zone, the various risers being brought together in the 29th floor ceiling and then carried down in two main lines to the machines in the sub-basement. The risers of the lower zone extend to the sub-basement ceiling and are collected at that level, and carried to the machine.

The two zones were adopted because of two economical reasons, one being that the cost of piping of a two-zone system was less than a single-zone system, and, secondly, that the risers in the lower part of the building required less furred-out space. The building is equipped with 2,105 vacuum inlet stations and three 50-sweeper vacuum machines interconnected to four separators.

Selection of materials for the various portions of the plumbing work was carefully weighed, as is evidenced in that extra heavy steel piping is being used for the drainage and standpipe systems and brass pipe and fittings for the hot and cold water supply systems throughout. All exposed metal work in the finished rooms is to be chromium plated.



Water Distribution System. Schematic diagram of the five zones of distribution for hot and cold water and fire service, and source of water service in the sub-basement. Floors indicated at the left, some of which have been omitted from the diagram

In the design of any particular part of a building the results obtained are not only dependent upon the office in charge of this portion of the work but very largely upon the full coöperation of the so-called "board," consisting of all the engineers, consultants, architects and owners. I would be remiss if I failed at this time to say that the functioning of the board on this operation has been the most successful in my experience.

POLICY AND OPINION

and who are these men?

SOME persons attend the sessions of civil and criminal courts to obtain a cross-sectional view of society. A cross-sectional view of architects can be obtained by attending a session of the New York State Board of Examiners and Registration of Architects. And what did we find at a recent session of the Board? Along with the usual number of applicants who have practiced legitimately in other states, those who have been and are employed by large corporations to plan successfully their large industrial plants; those who have properly prepared themselves for the profession; and, also several hundred persons who have practiced architecture before the passage of the new Multiple Dwelling Law, and have made application for registration since January 1, 1930. This unprecedented rush for registration has compelled the Board to hold many extra sessions to dispose of its business without undue delay.

Several young men appear singly, with their attorneys. With many others of their class, they had been rejected at former sessions of the Board because of improper form of application, lack of evidence, or other legal reasons, and they now have a rehearing. Their experience and qualifications are strikingly uniform, indicating a distinct and numerous class or group. Their educational training is limited usually to the grade schools, one or more years in high school, and a term or two in a "technical" school as students in architectural drawing and construction. This is supplemented by a few years' experience as draftsmen in architects' offices. It is evident that, even when so employed, many of them practiced architecture in planning apartments, dwellings, small store and garage buildings. In other words, they lost no time in forcing their way into architectural practice as individuals, or as partners in architectural companies. The new law has stopped all of that.

It is plainly evident that this large class of young men have no comprehension whatever of architecture in its different phases of æsthetics, utility and appropriateness of plan, complexities of construction and equipment, building, economics, professional ethics, and its tremendous diversification of parts and responsibilities,—all comprising the functions of architecture. Mediocrity, not competence, was the qualification displayed.

Evidently these men honestly believe that they are qualified to practice architecture, according to their limited conception of it. Perhaps their designs are structurally safe within their limited scope. It is patently evident, however, that it would be an imposition on the public and unsafe to register them as competent to perform all of the functions of a professional architect.

And who are these men? Who is responsible for their utter lack of comprehension of architecture and the necessary qualifications for its practice?

And who are the public? Who is responsible for the lack of knowledge of architecture of a large portion of the public which has heretofore employed these incompetent men?

And what of registered, competent architects? Are they responsible for this woeful condition that confronts the profession and the public?

And what of our architectural schools? Are they responsible for the general lack of knowledge of what constitutes an architectural education and apparently concerned merely with their annual grist of students?

Responsibility for this condition lies somewhere. Self-preservation must compel architects to take cognizance of these matters. This condition goes beyond their merely selfish interest as professionals; it involves the safeguarding of the public interest and also of *architecture*. How can architects act to correct this deplorable condition? Individual architects who are aware of the conditions can act vigorously as appears best to them. Architectural organizations can utilize the great powers of efficient organization. The new state-wide Council of Registered Architects (New York) can be effective.

It is probable that these same conditions, which tend to lower the standing of architects and architecture, obtain in other states, for which some methods of correction must be discovered and applied. Above all, a nationwide solidarity of architects must be effected as an actuality in order to place and maintain architects and architecture in their rightful positions. It is time to think, plan and act. Work is required, and nothing worth while is accomplished without work. Is it worth while, and who will do the work?

And what of the New York State Board of Examiners and Registration of Architects? Its responsibilities are clearly defined by law. It is hard boiled when confronted with sob stuff or insidious wiles employed to confound sympathy with duty. Withal, there is always a sympathetic willingness to direct meritorious applicants in the proper way to present applications and evidence data. It is evident that it functions as intended, notwithstanding the pressures and subterfuges that are employed in many instances to befog and complicate the cases that come before it for action. The Board, in its interpretation of the law, is the only effective bulwark that protects architecture and the public against incompetent and otherwise unfit "architects," and as such it is most effective.

BUSINESS BETTER?

WHAT are the prospects of improved business conditions for architects? The question is of vital interest, not only to individual architects but to those whom they employ, directly or indirectly. The answer may serve as an index to the future activity in the whole building industry, for the construction of tomorrow is the result of the planning on the boards today. THE ARCHITECTURAL FORUM has made a preliminary investigation to find out whether the business of architects throughout the country is (1) improving, (2) static, or (3) less promising than six months ago. The survey showed that, based on the actual experience of the offices, more than half of the architectural offices found their business improving; a third reported that business was approximately static; and only 12 per cent indicated "less promising."

There is no indication that there will be any "boom" in building, but there should be a gradual improvement. Various classes of buildings in many sections are "overbuilt," and the demand has not caught up with the supply. The reason for the slight rise in the business barometer of architecture is due, in all probability, to the fact that owners realize, or have been shown, that conditions are better for building now, from their point of view, than they have been for several years, due to (a) building costs being exceptionally low, (b) labor being plentiful and with a will to work, and (c) financing being easier, with mortgage money available. There are still prospects, c'ients and owners who might be persuaded to proceed if these facts could be forcefully presented to them.

UNEMPLOYMENT WORSE?

HOW to reduce unemployment? There is an acute unemployment situation in architecture. President Hoover has just called upon the government, states and big utilities to find jobs for many out of work. New York financiers plan to "create" jobs for enough to pay $150,000 a week in minimum wages. Unemployment in architectural offices is widespread and particularly difficult to deal with. Draftsmen who have been employed steadily for years find themselves stranded,—responsible men, men of ability, training and experience. They are not going to benefit by the general schemes of relief, and it does seem as though there were an obligation on the part of all architectural organizations to work out some plan of immediate relief. Probably this can best be accomplished by the local organizations with aid from the national bodies. Certainly the last thing the unemployed draftsman wants is a "dole."

One suggestion as an immediate relief is that of "spreading thin" the work of the office, i.e., taking men on part time work so that more men may be employed. The universal adoption of the five-day week and shorter hours might do the same thing. The basic trouble, however, will not be touched by such measures. Only more efficient business organization on the part of architects will make for more stability of employment and take care of draftsmen during lean periods. The immediate problem is how to help the men in their present plight.

CERTIFICATE FOR PAYMENT!

IT is a requirement of the proper form of a building construction contract that the owner shall make payments to the contractor as stipulated in the architect's certificate. It is as binding and essential as the requirement that the contractor shall provide the materials and labor necessary to construct the building. It would be fatal to the best interests of the building industry if there should develop a disregard for the validity of such certificates, or any attempt on the part of owners to repudiate them when issued. Architects' certificates are thus discussed in a recent issue of *Cabtony*, the bulletin of the Credit Association of the Building Trades of New York:

"There are many times when advantages are taken by owners, and the architects' certificates are not issued when and as they should be; and the trade suffers as a consequence. This is an evil that the Credit Association is prepared to fight and to protect its members from its bad effect. On the other side, however, owners must of necessity honor architects' certificates as they would bank drafts. They should be paid as promptly as such drafts. This is essential to the subcontractors who are doing work; but it is vital to the architects themselves."

The architect's certificate should have the same value as a bank draft on the owner, the repudiation of which would indicate insolvency.

SUPERVISION OF CONSTRUCTION OPERATIONS

BY

WILFRED W. BEACH

CHAPTER 20, CONTINUED. ROOFING AND SHEET METAL WORK

SHEET metal cornices, of stock or special design, must be inspected for make and gauge of metal, character of mouldings and their assembly, and the strength, rigidity and spacing of the framing members.

Conductors are usually placed within the building in better work in cold climates, and either in or out in residences and cheap work and where there is no danger of freezing. Interior conductors are of cast, wrought iron or steel pipe, included with the plumbing. Exterior conductors are generally of sheet metal, round or rectangular in section, and corrugated in some manner to permit clogging, freezing and swelling without bursting. If equipped with ornamental heads and straps, these should be merely extraneous ornament. The conductor proper and the leaders extending into it must be rigidly secured independently of ornamental features. They must have adequate provision at their tops to receive discharge directly from gutter or scupper outlets, and should be set in good line a given distance out from the wall to permit painting or pointing behind. At the bottom, each conductor must be carefully housed into a "boot" or drain (and calked, if so stipulated), or fitted with an elbow to divert water away from the wall.

Skylights are ordinarily built with sheet metal frames, reinforced with heavier members, if necessary. Ribs and other glazing bars are of rolled or folded metal, designed to afford adequate strength and to form suitable rabbets for glass, which latter is secured by proper puttying or, in the puttyless types, by glazing members sprung against the glass. Some types have set screws for varying the pressure, and some have felt or composition cushions extending around each pane, under the compression members. The major defects of skylights are leaks due to improper glazing or flashing, and dripping due to inadequate disposal of the moisture of condensation. For all but the simplest skylights, the superintendent should be provided with shop drawings. Glass and glazing may be included with the skylights or may be specified with other glass. If guaranties on skylights are called for, it is well to have the glazing included. Such glass, except for conservatories and greenhouses, is usually rough or ribbed wire glass, ¼ inch thick.

Buildings designed with the sawtooth type of factory or studio roof are likely to be equipped with sash-operating devices, so that ventilation as well as light is provided. Similar sash operators may be applied to groups of side wall windows for like purpose. Operators are of several types, manual- or motor-operated, and detailed by maker's shop drawings. Louver openings may be similarly equipped, or the louvers may be arranged to operate automatically in connection with a heat-control system. Louvers, movable or stationary, should be designed to keep out both rain and snow, and should be provided with removable copper wire screens of ⅜-inch or ½-inch mesh to keep out birds. Sometimes a finer mesh is demanded to guard against bees, hornets and other nest-building insects and dust.

Sheet metal ventilators are of plain or mechanical types, the former so designed that the wind, blowing from any direction, even slightly, will stimulate the outward draft. Mechanical types are of a number of proprietary designs. Shop drawings should be supplied for all such and for any ventilators of unusual size. The latter must be well reinforced, and are sometimes fitted with heavy glass tops to serve as skylights. Ventilators may rest directly on roof surfaces, or, if small, may be fitted on the ends of pipes. For better construction, they may be provided with box bases, to rest on curbs like skylights, and be properly flashed. If attached to skylights, ventilators either surmount the ridges or are fitted on pipe elbows extending from the gable ends. Ventilators are often equipped with dampers, of varying types and methods of control, with convenient and effective means of operating.

Metal sash are constructed either of hollow sheet metal or of rolled steel sections, and are generally found segregated in the specifications, though the hollow metal sash may be under "Sheet Metal Work" and steel sash under "Miscellaneous Metal Work." Both types are essentially proprietary, either to be ordered from stock, or specially made in conformity with standard details. In either event, the inspector must examine them, upon delivery, to see that they are of the material specified (sufficiently heavy), built according to approved shop drawings, properly cared for at the site, correctly installed, and rigidly stay braced until walled in. If slightly out of plane or plumbness, the glass will later reflect woeful distortions. If in any degree warped, the sash or ventilator sections will not fit tightly nor operate easily, nor can they be satisfactorily remedied. All parts must be practically perfect. Hardware for both types of metal sash is usually applied at the factory and supplied with the sash. It may be of stock pattern, bronze, bronze plated, painted or japanned, or may be something special, as required. All this must be investigated, and all parts must be found to function and be in good condition.

Ornamental doors may be of bronze or cheaper metal, of catalog design or special details, with all of which the inspector must be conversant. High class doors of hollow metal, bronze or steel, are also used in entrances, vestibules, elevator openings, etc., and demand the same intelligent discrimination on the part of the man in charge. The intricate details of some of these doors and their fittings and hardware are frequently most puzzling to anyone lacking experience in such matters. Such equipment includes devices for sliding, revolving, automatically operating and other complicated mechanisms. One must look ahead and know that there is the necessary space for all such devices.

The calking of metal door and window frames, to render weatherproof all joinings with masonry, needs close inspection. Ordinary steel sash are set in specially formed rabbets, either as walls are built, or afterward. Later, these rabbets are filled with grout, neatly finished, and no further calking is required. Other metal sash may have frames built-in, in the same manner as wood frames, and demand similar calking.

Metal doors of regular types are either hollow or built of covered wood cores. Hollow metal doors are formed of steel, copper, nickel or bronze, of specified gauges, and of detailed paneling; the panels are of metal or glass. The metal panels and the stiles and rails contain insulation to prevent hollow reverberation. Stiles and rails have reinforcement of heavier metal wherever hardware is to be applied. The chief advantage of hollow metal doors over those that are metal-covered is their better appearance, due to concealed fastenings, and to the smoothness of the "patent leveled" heavy metal of which they should be constructed. They are delivered from the factory in finished condition, with hardware already in place. Each such assembly ordinarily includes the frames, with or without casings. For bronze work, the frames are intended to be attached to concealed bucks, previously provided, and set during partition construction. The same is generally true of steel doors and frames of the baked enamel type, though the latter are sometimes set in painted jambs. Such steel jambs, for either enameled or painted doors, are to be had of a type that dispenses with the buck. These are set in the partition ahead of the plastering, for which they serve as grounds. Such grounds may be mere "bull noses," or casings of various widths, all of stock details. Sheet metal shapes are likewise to be had for all manner of room "trim," either in stock patterns or of special designs.

Metal-covered doors, sometimes called "kalamein," are distinguished from tin-clad in common parlance, though both are ordinarily covered with terne plate. The term "metal-covered" is used to designate doors in which the covering is closely applied by machine to the stiles, rails and panels. Such covering may also be galvanized sheets, copper, bronze or other alloy, including kalamein, which latter is actually a compound of tin, antimony, bismuth, lead and nickel. It has been so much misused that it is no longer a dependable term, and hence should be avoided in specifications.

Tin-clad doors are nearly always intended as fire-retardants, hence should be built and equipped in accordance with the standard specifications of the Board of Underwriters. They are ordinarily built of three thicknesses of matched pine flooring, without paneling, and covered with terne plates of from 10- to 20-pound coating. Inasmuch as no metal door, hollow or covered, is acceptable to the Underwriters unless it conforms strictly to their requirements for doors of its particular type, architects are accustomed to stipulate that doors (also windows) intended for such approval shall bear "Underwriters' labels." Manufacturers, whose products are thus accredited, have such labels applied in their factories, thus saving the inspector this specific responsibility.

Sheet-metal ducts and metal-lined flues are important features of every modern building where ventilating is a factor. Ducts and work directly pertaining thereto are often included under "Heating or Ventilating"; but, unless governed by ordinance and official inspection, may be included with other sheet metal. Ducts for both fresh and foul air are ordinarily of galvanized sheets of specified gauge and dimensions, the former depending upon the latter and upon the method and frequency of the reinforcing and supporting members. These are generally small rolled sections, sometimes required to be galvanized. All parts of duct work must be adequately delineated and described, as such construction cannot be carried out intelligently from insufficient information. The inspector must then see that the metal *is* of proper gauge, and that it is correctly formed, assembled, jointed, reinforced, and supported; that bends are curved as stipulated; and that all deflectors, volume dampers and other contrivances are duly included. Duct construction begins at connections with fan housing or with the housing of radiator stacks, or at air inlets, and extends to fresh air inlets to rooms; also extends from foul air openings to ventilators or other outlets. Fan housing connections are usually provided with bellows-like sections of heavy canvas, to prevent the noise and vibration from the fan being communicated throughout the system. Inlets from supply ducts to rooms, and outlets from rooms to vent ducts are protected (in nearly all cases) by grilles, screens or register faces. The latter are commonly specified by catalog number from stock items, with or without borders. The edges of the ducts should be turned or folded, or fitted with small angles, and must finish flush with face of plaster, in case bucks or grounds are not provided. The grilles or register faces must be so secured in place (either to the border or, in lieu of border, to other solid anchorage) as to be readily removable for cleaning. If dampers are desired in such openings, registers, in place of register faces, may be specified, or special dampers detailed.

Vent systems may be designed to debouch into unused attic spaces, through which the air finds its way to roof ventilators or other protected outlet; or the ducts may be extended to connect directly into such outlets. There may also be provision for recirculating the air at times when the building is not in use. Vents from toilet rooms, chemical laboratories, kitchens and other fume-laden rooms must be carried independently direct to the outer air, and away from windows and other fresh air openings. Such ventilating and that of theaters and other auditoriums is often stimulated by the use of suction fans. Vent ducts from kitchens must be so designed as to be capable of actual burning out without harm, since the grease collecting at their inlets is easily ignited. Such ducts should be regular chimneys, or of heavy metal properly insulated.

Sheet metal housings are provided for indirect radiators with the necessary duct connections to outlets. Direct-indirect radiators have part housings, fitted with deflectors at top (if opening is in front), and, where so indicated, lined back of the metal with asbestos, or other required insulation. Deflectors and housings (perforated cabinets) are also provided for direct radiators, which are sometimes equipped likewise with sheet-metal humidifying pans.

Steel ceilings are of stock patterns and shapes, and are delivered in sheets about 24 inches square, coated with a dipping of primer paint. They are secured with small nails to wood strips, applied to the under sides of joists at proper intervals to accommodate the nailing. After the stripping is in place in accordance with shop diagrams, the superintendent should check over all the electric and other outlets, to see that they will occur only at proper points in the ceiling pattern, not "hit-or-miss," as is too often the case. Each steel sheet has small half-rolled edges, which are supposed to lap those adjoining and form inconspicuous joints. This means close work, but it can be accomplished by experienced mechanics. Variations are taken care of by the insertion of filler strips between the field and the border or cornice; all of which should show distinctly on the shop drawings. Similar steel sheets are offered for wall covering, particularly for wainscoting, including designs in imitation tiling intended for toilets and bathrooms. These should be applied with the same care, especially as to fitting around outlets and other members, as is given to the ceilings.

In addition to the regular run of sheet-metal work, there are many specialties of all sorts rendered in various metals, and encountered in all modern buildings. We find zinc, galvanized sheets, monel metal and German silver for sink linings, table covers and other protection; also removable metal partitions and completely assembled metal furniture of every description. For each of such items, the superintendent should be supplied with full specifications and shop drawings, and should see that all the instructions therein given are faithfully followed, down to the most minute detail.

For exhaustive information and details pertaining to all phases of roofing and sheet-metal work, the reader is referred to the comprehensive volume entitled "Standard Practice in Sheet Metal Work," published by the National Association Sheet Metal Contractors. Copies are to be had by application to the Secretary, 336 Fourth Avenue, Pittsburgh ($10).

FURRING, LATHING AND PLASTERING

CHAPTER 21

THE million-dollar high school building we have under discussion steadily advanced to a stage where it was ready for the lathers to begin operations. In this particular case, their work, including metal furring, consisted chiefly of lathing a suspended ceiling throughout the third story, and certain thin partitions and furring, such as in front of pipe chases, over recessed lockers, etc.

Furring is likely to be explicitly shown on drawings and adequately described in specifications. It should be, as otherwise both contractor and superintendent are due to experience a great deal of floundering in an effort to find out precisely what is intended. Wood furring is ordinarily included with "Structural Carpentry," and wood lath with "Plastering." Metal furring, such as that used in our school building, is generally specified in connection with "Lathing and Plastering." There will, no doubt, always be more or less argument as to where minor steel shapes cease to be structural steel and become steel furring. The usual practice in 1930 is to limit steel furring members to those of 2-inch maximum dimension. Such members are either hot- or cold-rolled. The school specification, which may be considered more or less typical, called for 2-inch cold-rolled channels, spaced 4 feet on centers, for suspended ceilings, the channels to be hung on $^3/_{16}$-inch suspension rods, also 4 feet on centers. Flat bars of equal strength are sometimes specified or substituted for the channels, and No. 8 or 9 wire in place of the rods. Cross furring ("running bars") were ¾-inch channels, 12 inches on centers. All such members must be immune from corrosion, and hence are specified to be galvanized or painted. Privilege was granted for the substitution of other members of equivalent cross-sectional area and strength, provided such permission was obtained in advance, and not at the site. Pencil rods (usually ¼-inch rounds) are frequently used as running bars, in which case the supporting members are spaced 2 feet, 6 inches to 3 feet on centers.

The heavier members of steel furring are bolted together with stove bolts, and are specially framed around all openings, such as stair wells, skylight openings, over locker recesses, etc., where stiffness is essential. The superintendent must investigate all these cases, ascertain what is to be done (get instructions from headquarters, if in doubt), and hold the foreman to it. Careful attention is equally necessary regarding small channels and other shapes used as studding for plastered partitions. The size of such studding depends upon the height of the clear extent of the partition, the designer determining what shall be used, unless governed by code requirements. Solid plaster partitions are lathed on one side of the studding only and are 1¼ inches thicker than the size of the studding; that is, ¾ inch is allowed for plaster coverage on the lathed side and ½ inch on the opposite side. The 1½-inch and 2-inch studding are generally lathed both sides, forming partitions 3 inches and 3½ inches thick, respectively. For thicker partitions, double rows of the smaller studding are used, with some form of lacing or cross ties to hold them rigidly spaced.

Members such as small channels, used either vertically as studs or horizontally as running bars, are wired together at intersections with No. 16 gauge galvanized annealed wire or No. 9 gauge hairpin clips, except that channel studs are attached at top and bottom by various methods. (The inspector must watch that the No. 18 gauge wire, provided for attaching the lath, is not used where the No. 16 gauge is called for.) Steel studs may have ends embedded in the structural slabs at top and bottom; or bent and secured thereto by nailing; or may be provided with running members at top or bottom, or both, and attached thereto by wiring or bolting; or may be wired directly to the surface of a suspended ceiling at top. The inspector is chiefly concerned in seeing that they are spaced and well secured as intended, and in proper planes to afford correct foundations for the lath and plaster. No bent or insecure members are to be tolerated.

Specifications for metal lath are so well standardized that they are, if worded in accordance with such standards, ample guide for both lather and superintendent. Such lath are of perforated metal or woven wire. Perforated metal lath is either expanded or otherwise deformed, the former described exclusively by weight per square yard (no longer by gauge). The Associated Metal Lath Manufacturers recommend 2.2-pound lath for vertical work on studding spaced 12 inches on centers, and 2.5-pound lath for 16-inch spacing. However, it should be remembered that studding back of plain metal lath should never be farther apart than 12-inch centers where tile work or plumbing fixtures are to be attached, nor should the lighter lath be used in such construction. For horizontal surfaces (ceilings), 3-pound lath are recommended where supporting members are 12 inches on centers, and 3.4-pound lath for 16-inch spacing. For wider spacings, some form of ribbed or other reinforced lath must be used for safe construction. Metal lath used in connection with floor slab construction is provided as part of it, not included with plaster lath.

Woven wire lath, electric-welded, is quoted in terms of Washburn & Moen's wire gauges, 2 or 2½ meshes per lineal inch, each way. No. 19 gauge is recommended for 12-inch spacing and No. 18 for 16-inch. For greater spacings, a No. 20 gauge mesh is to be had, with V-shaped, bent metal reinforcement applied 8 inches on centers.

All metal lath * is tagged to indicate its weight (or gauge, if of wire mesh) and can be depended upon to be as represented,—if the tags have not been molested. The finish of metal lath is either painted (dipped) or galvanized. Some makers claim added excellence for their painting by having it burned on; others call attention to characteristics

*As to terminology, the author uses "metal lath" in its broader sense. In practice, this expression is chiefly used to designate lath formed of perforated metal sheets. Wire mesh lath is called "wire lath."

of the sheets or wire from which their lath is produced. For any such particular product, the material should be specified by maker's name and brand. Wire mesh, "galvanized after woven," is claimed to be especially adapted for exterior plastering,—No. 20 gauge for plain mesh, and No. 21 gauge for a V-stiffened mesh. A triangular mesh is also offered for exterior work,—made with No. 12 gauge longitudinal and No. 14 gauge cross wires; the former spaced 4 inches, and the latter either 2 or 4 inches as desired. All metal lath used for exterior work should be galvanized. Special types of lath are offered for solid plaster partition work and for foundation for exterior stucco. In the latter class are included makes of electric-welded 2-inch square mesh; one of No. 14 gauge galvanized wire, supplied with or without a backing of waterproof paper; another of No. 16 gauge wire, with the paper backing and with V-rib reinforcement.

Wood lath are still in use in all manner of non-fireproof construction, but are forbidden in any work in which plastered surfaces are intended to serve in any degree as fire retardants. The best wood lath are assumed to be white pine, cypress and spruce. Manufacturers' recommended specifications for wood lath read: "All walls and ceilings to be plastered shall be covered with (derivation) soft pine lath, No. 1 grade, laid horizontally, 2 inches on centers, with breaking joints. In no case shall the lath be laid vertically, and all lath shall be well nailed to every stud or other bearing, using four nails to the lath." (Arkansas Soft Pine Bureau.)

The difficulties to be encountered by a superintendent in obtaining a proper fulfillment of a No. 1 wood lath specification were discussed in detail in Chapter 5 of this series (in THE ARCHITECTURAL FORUM for April, 1929), and hence need not be repeated here. But one further precaution should be given,—that no laths should be permitted to be used which show knots, bark, streaks or other substances likely to stain the plaster.

For back plastering between the studs of frame buildings, the lath are nailed to wood strips, attached to the sides of the studding, 1½ to 2 inches back from the inside face. Although a poorer grade of lath could be used for this work, it might prove inconvenient or otherwise ill advised to have two grades of lath on the premises. However, it provides a good place to use culls from other lathing. Back plastering (which is of same material as a scratch coat, and about ⅜ to ½ inch thick) is being supplanted by cheaper and more efficient methods of insulating, and is now seldom encountered in an architect's specification.

For exterior stucco, a form of wood sheathing is to be had, in the face of which dovetailed grooves have been cut, which provide keys for the plaster applied direct to such surface. Another patented lath consists of bevel-edged wood lath, mounted on asphalt-covered fiber board. This is to be had in different weights of backing, and either treated with a preservative, or left untreated. Either of these patented materials can be applied over the sheathing or directly to the studding, omitting the sheathing.

In addition to the various types of wood and metal laths, there are several types of so-called "plaster boards" on the market, some of which are offered in place of lathing, to form a base for plaster; some to serve as substitutes for both lath and plaster; some intended primarily as insulating material. None of these should be used except as intended. If used as foundation for plastering, particular care must be given to the methods of attaching and joining. If the joints are not correctly formed or treated, cracks may be expected to appear in finished plaster. So one should be familiar with the maker's instructions descriptive of the particular plaster boards or insulation sheets that are to be applied.

The final inspection of areas that are to be covered by lathing is a matter of the utmost importance and should be forecasted and safeguarded by an appropriate specification clause. Though the burden of responsibility for the condition of all areas to be covered by lathing is thus placed on the contractor, it devolves upon the superintendent, in this as in other matters, to see that the contractor or his foreman performs these duties.

Metal lath is attached to steel members by means of No. 18 gauge annealed wire, threaded into the holes, looped, and the ends firmly twisted and bent back away from the plastering. Or the lath may be secured to certain types of metal studs and furring members by means of small lugs on the edges thereof, to be projected through the mesh or perforations and bent back tightly. If laid over wood members, the lath are secured by ¾-inch No. 14 gauge galvanized wire staples or 6d wire nails, the latter driven in half their length and bent up tightly against the lath. If laid parallel with flat surfaces of wood or metal, the lath must be furred out at least ⅜ inch, to permit proper keying of the plaster. Where necessary to attach edges of lath to concrete or other masonry surfaces, there must be a nailing strip inserted, or other adequate means provided for holding the nails or staples. Wire lath must lap at least 1 inch at all joinings; other metal lath at least ½ inch along sides of sheets and 1 inch at ends. Lath should be attached at all bearings at intervals not exceeding 6 inches. Special clips are sometimes provided for rib lath and for lath attaching to under edges of steel joists. Certain lath must always be laid "right side up" in order to present their proper surfaces to the downward stroke of the plasterer's trowel.

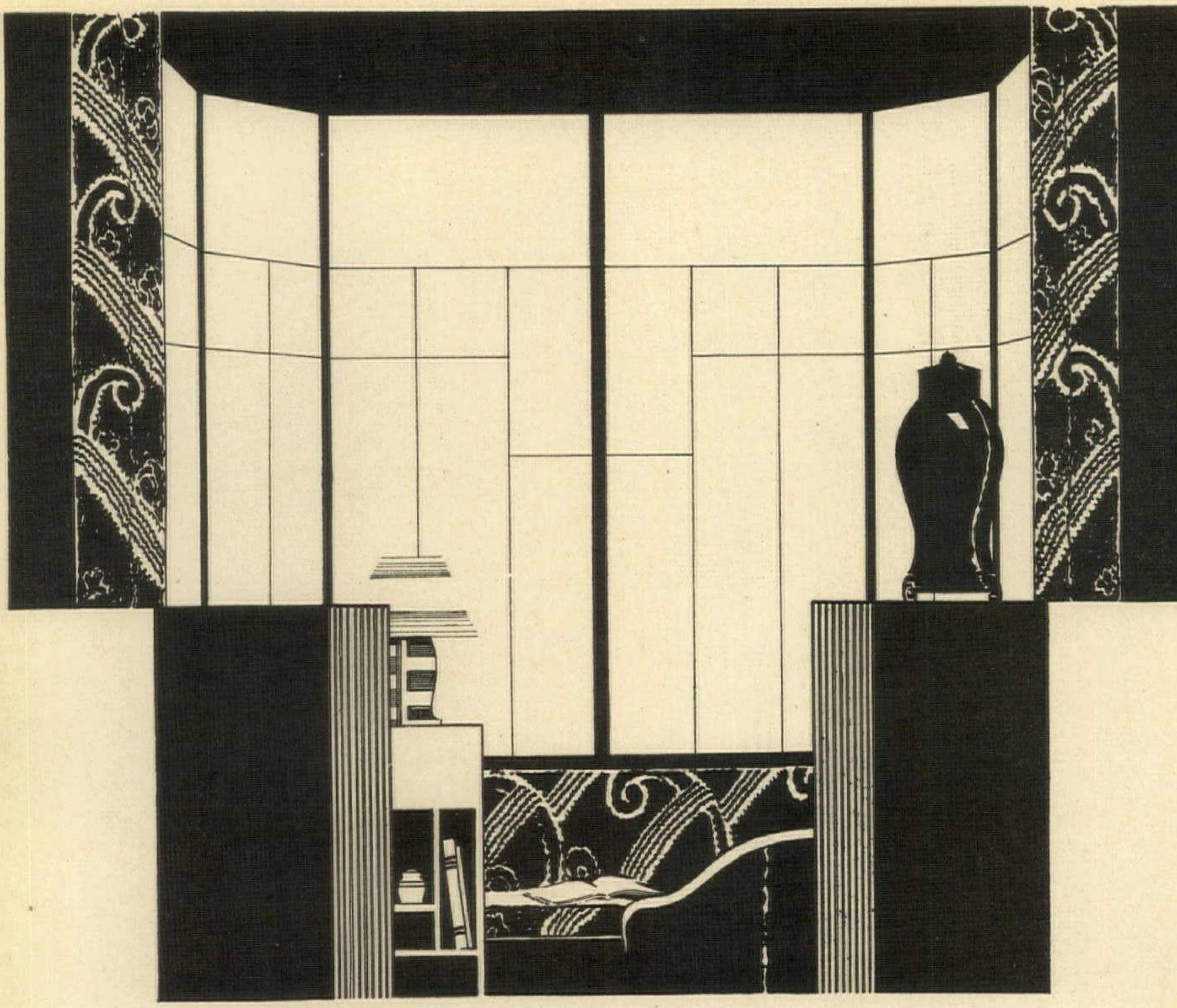
Inspection of lathed surfaces ahead of plastering is much in the nature of a repetition of what was done just ahead of lathing, except that, if possible, it is to be even more meticulously conducted. We are now considering the application of a finished material, the first of the final steps toward the completion of the interior of the building. We are preparing for what should be complete and lasting coverage of the structural parts. If any errors or oversights in these items remain for later discovery, their correction will then be a more serious matter.

Plastering is not confined to the lathed surfaces we have been discussing. It is to be applied as well to brick and concrete, and to the surfaces of tile and gypsum block partitions. Moreover, there are places throughout the building where there are joinings of different materials to be concealed by the plastering. Unless these joinings are adequately reinforced, they are likely to cause cracks in the finished surfaces. The usual reinforcement consists of strips of metal lath about 8 inches wide, either laid along on the joint, or bent into the angle, and securely attached along each edge. This precautionary measure is equally important in the lathing of wood frame buildings, which, on account of the shrinkage of structural members, are more disposed to exhibit plaster cracks than are buildings of steel frame or concrete construction. For this reason, too, specifications for structures with wood framing generally forbid the running of lath through partitions from one room to another. In fireproof work, however, it is customary to permit ceiling lath to run through over the tops of partitions, in which case there should be reinforcement bent into the angles. (A better method is to have all wall and ceiling lath extended 6 inches and bent into the angles.) Similar reinforcement should be used in all angles in wood lath work. But, though an essential part of first class construction, a superintendent has no right to demand any such joint protection, unless he finds it specified. If such a clause does not appear, he may consider its omission an oversight and obtain a ruling on the subjct from the home office; may, perhaps, be instructed to obtain the reinforcement at an extra cost.

Metal plaster beads are likewise essential to first class work, but also need specification description. They vary widely in details and cost. Inasmuch as they are used as grounds by plasterers, they necessarily determine the thickness of the plaster. It is therefore advisable to use beads that are not adjustable, but will give plaster of full required thickness. The best beads have wide wings of perforated or expanded metal, thus insuring good keying for the plastering. All plaster beads and their wings should be of non-corrosive material, zinc or galvanized iron. It is obviously essential that they be perfectly aligned. Unfortunately, they are easily bent. They are delivered at the building at a time of considerable activity and are likely to be kicked about and otherwise abused while debris and scaffolding are being moved around. Once bent, beads cannot be perfectly straightened, and hence a good specification requires that "beads shall be inspected before and after application, as none will be accepted if even slightly bent, or showing evidence of having been straightened. To this end, all metal beads shall be brought to the site in boxes or crates (not bundled), and must be duly protected before and after application."

Every surface intended to be plastered must be in exactly the right condition to receive the first coat. Wood lath should be thoroughly wet about an hour before plastering. This interval permits the disappearance of free water from the surface; but, if again allowed to become too dry, they must be sprayed. The plaster attaches to lath by its keys, not by absorption. Metal lath needs no treatment, but one must make sure that all edges are well lapped, that all attachments are firm and secure, and that all loose edges of lath and loose ends of wires and nails are bent back where they will not interfere with the smooth application of the first coat of plaster. Plaster attaches to masonry surfaces chiefly by absorption, but, if too absorbent, such surfaces exert undue suction, and hence this must be overcome by previous wetting. Some specifications call for "soaking" of brick, tile or gypsum block walls, but whereas this may be all right for masonry in general, too much wetting is not good for gypsum. A better clause requires that surfaces of gypsum block shall be sprinkled "lightly," enough to reduce the suction. Again is the experience of the superintendent drawn upon to make him a competent judge. If the walls to be plastered are of vitrified, enameled or painted brick, they should be furred, or have the surface picked or otherwise roughened in order to provide proper attachment for plaster. Concrete, even after soaking or roughening, cannot be guaranteed to retain plaster (either of lime, gypsum or cement), and hence should always be first treated with a bonding cement or its equivalent, and this is ordinarily so specified. Clay tile and gypsum blocks are scored on surfaces to which plaster is to be applied, for better adhesion. Cement plaster does not adhere to gypsum blocks, and hence is preceded by a brown coat of other mortar on such surfaces.

To be continued in THE FORUM *for January,* 1931



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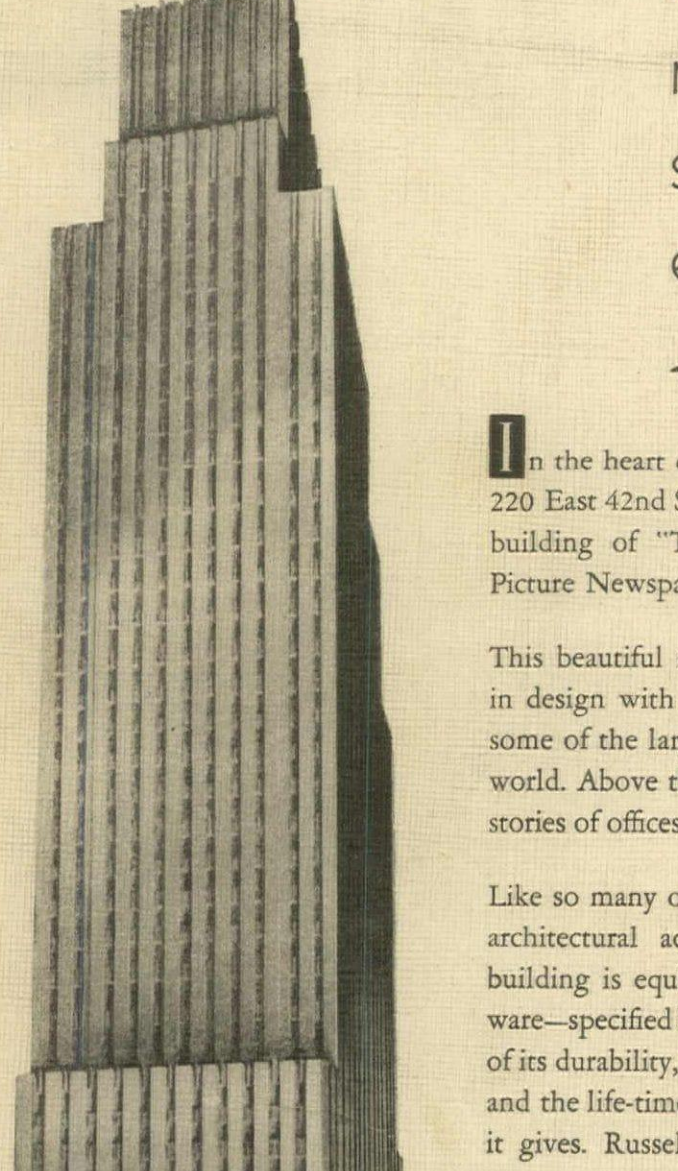

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