PENCIL POINTS

An Illustrated Monthly JOURNAL for the DRAFTING ROOM *Edited by* RUSSELL F. WHITEHEAD KENNETH REID & E. L. CLEAVER *Published by* THE PENCIL POINTS PRESS, INC.
Ralph Reinhold, *President*, P. H. Hubbard, *Vice-President*, William V. Montgomery, *Secretary*

This Month and Next

In this issue we present the first of a series of seven brief but highly valuable articles on pen drawing by Sydney E. Castle, British architect and internationally admired penman. We are certain that our readers will follow this series with keen interest since not only the text but the plates themselves will be unusually informative. The next article of the series will be included in the November issue.

Another article by Francis S. Swales on "The Architect and the Grand Plan" is being planned for the next issue. It will be the third of his series on this general subject begun in March of this year and continued in May. The author will discuss ancient precedent for modern city planning as found in Greece and Rome.

Ernest Irving Freese's series will be resumed in November with part 19, dealing with methods for finding the centers of circles which will fulfill certain given conditions as commonly found necessary in the drafting room. The illustrations will give the general solution for each set of conditions and also will show practical applications.

A knowledge of the process and principles of estimating is valuable to architects, not so much for direct use in preparing estimates for themselves, but to aid them in so designing their buildings that unnecessary costs will not be introduced and in making their plans and specifications so clear that the contractor's estimator can prepare accurate and reasonable bids. We have already published several articles by Messrs. Walsh and Saxe of Columbia University on the general subject. The third, which will appear next month, will discuss the factors that influence costs in foundations.

Contents

For October, 1931

The color plates for November will show two drawings by John Wenrich. One of them is of an old house in Canandaigua, New York, which may be of assistance to draftsmen rendering residence work. The other is a view of Voorhees, Gmelin, and Walker's competition design for the Chicago War Memorial. This design was not successful in the competition but the architects had the drawing prepared to give a better idea of how the finished job might have looked.

Decaris, the distinguished French etcher and engraver, will be represented next month by one of his engraved illustrations for Ronsard's *Discours des Misères de ce Temps*, which will form the special frontispiece. It is a splendid example of his ability to take a simple but powerfully dramatic moment in the struggle of impoverished humanity and weave it into a rich pattern of black and white design.

PENCIL POINTS—*Yearly subscription, payable in advance, $3.00 to the U. S. A., U. S. Possessions, Cuba, and Mexico. Foreign subscriptions in the Postal Union, $1.00 additional for postage; Canadian subscriptions, 50 cents additional. Remittances by International or American Express Money Order or by Draft on a bank in the U. S. Payable in United States Funds. Subscribers are requested to state profession or occupation. TO SUBSCRIBERS: Instructions for change of address should reach us before the twentieth of the month to assure delivery of the forthcoming issue. Please give both old and new addresses. TO CONTRIBUTORS: We are always glad to receive manuscripts, drawings, etc. We will use due care with material in our hands, but cannot be responsible for damages.* *EDITORIAL AND BUSINESS OFFICES, 419 FOURTH AVENUE, NEW YORK.*
PENCIL POINTS is indexed regularly in *The Art Index*

THE sand-blasting of the intricate seal of the United States on this quarried soapstone spandrel indicates another of the decorative possibilities of this age-old material.

Shadow effects equal to those obtained with deep reveals are possible at little cost by the sand-blasting of one and a half or two inch thick slabs of Alberene Stone (Soapstone).

There is a wide variety of textures and tones in this dense, weather-resisting stone and we would welcome the opportunity to submit samples and data on its qualities which make it a material worthy of consideration for interior and exterior trim.

Alberene Stone Company, 153 West 23rd Street, New York
Sales Offices in Principal Cities :: Quarries and Mills at Schuyler, Virginia

ALBERENE STONE SPANDRELS

THIN SLABS OF NATURAL STONE – BEAUTIFUL – ENDURING

LA MAISON DE SAINTES, ROUEN
FROM AN ETCHING BY JOHN WINKLER
Courtesy of Kennedy and Co., New York

PENCIL POINTS
Volume XII October, 1931 Number 10

Consult an Architect

By Wells Bennett

Our September meeting of the Architects' Association was a lively one, with some vigorous and even personal remarks for and against professional advertising. But the will to survive won, and we voted by a comfortable majority to go in for publicity in a big way. In the resolutions as finally passed, the steering committee felt that they had unified the antipodal creeds of the go-getters and the die-hard conservatives in a very tactful way. Printed matter was to be thoroughly dignified; practically confined to our names, alphabetically listed, and the phrase "Consult an Architect." This was to be our slogan, "Consult an Architect," and it was to be quietly, yet frankly, stated in print everywhere.

The other phase of the campaign was to be a series of weekly broadcasts through our local station WARCH. These talks were to be reserved and on a high professional plane too, but there would be the personal touch, or the personal sound if you like; the inspiring accents of a veritable architect's voice, giving an authentic—and of course convincing—picture of our professional services to the individual, the community, and mankind. The plan of attack being thus outlined, our meeting broke up on a note of geniality and general optimism. The necessary money, it had been decided, was to be raised by assessment upon members in proportion to prospects landed.

Since I have a good microphone manner and a rather unusual carrying voice I was selected to give the first of the weekly broadcasts. As it happened I was going over to South Bend but that made no difference since we had arranged with two other architects' groups to use electrical transcriptions. So I made the record and, the next Thursday night in the hotel in South Bend, heard my own voice. It began something like this:

"Dear friends of the invisible radio audience, and prospective clients everywhere. I am about to bring you the message of that most tangible, and at the same time the most spiritual of the arts, Architecture. Architecture is the mother art. Throughout the ages man has not only been housed, but his every civilized need has been more than met, his highest motives and aspirations more than expressed in the living rhythms of architecture. As Madame de Staël has said: 'Architecture is frozen music' . . . " Pretty strong stuff, you see. Well, after this perhaps formidable opening I gradually eased into a carefully phrased discussion of the architect's high professional integrity, his altruistic service to his client and thus to the world at large. I was at some pains to describe in glowing colors the pleasures of being a client, that sense of well-being that lingers even after the first passion of building ardor has passed. On the side I shrewdly handed a few small verbal bouquets to the realtors, contractors, and craftsmen, "those who make our dreams come true." Really it sounded awfully well and I know it must have met with favorable reception for in their programme the next Saturday night the Nutt brothers, Ches and Wal, voluntarily gave this recognition to our profession:

Ches: "Wal, you're a builder. Did you realize that architecture is the mother art?"

Wal: "Sure! Come to mamma, come to mamma, do," and they went into their song. A significant straw in the wind of public opinion, I thought.

All this happened last week. Back in town this morning I went down to the office more from force of habit than because I had anything to do there. With me as with my fellow architects things have been terribly slow; quiet, as we say in the Middle West. Arrived at the building I let myself into my private office as usual, anticipating a peaceful morning with the last week's mail. No sooner had I disposed of my hat and stick, however, than Miss Blarger, my secretary, stenographer, and specification writer, popped in, greeted me, and announced that several people were waiting to see me.

"Salesmen?" You see how low I was, but she quietly opined that they were clients, and said they all asked for me eagerly. Could it be that the publicity campaign was bearing early fruit? My professional temperature was rising rapidly. One party, it seemed, had been waiting at the door when Miss Blarger opened the office. I indicated that I would see them right away.

She smiled, and in a moment ushered in three boys about sixteen, clean, more or less freckled, their hair slicked down, possessed of numerous and large hands and feet. They were deadly serious and their spokesman began:

"Coming down on the street car we were talking about our scheme, and we saw your placard in the car ads, 'Consult an Architect,' so we came up. You know

our baseball team, the Woodchucks—they won the city pennant last year. Well, Mr. Lafe Bledsoe, the butcher, owns some vacant lots he's going to let us use, and we thought maybe you architects would put up a building for us. Just a locker room and shelter, and put up so we could move it if the lots are sold. I guess the building is easy—we know what we want—but you see you could finance it and we'd let you and Bledsoe paint your ads on the wall toward the diamond. It would be swell publicity for you." I said a few words about the dignity of the profession, during which time their wandering eyes were taking in the office. Then, as they seemed to consider my remarks in the nature of an encouraging preamble, I added that I would take their proposition under advisement. They said that they would be back tomorrow or next day, after they had canvassed some other possibilities.

This contact had been a trifle disappointing and I rang for the next visitor. I was seated at my desk but rose, I fear a bit galvanically, as there was ushered in a rather young, distinctly comely, and beautifully dressed woman. Her voice was a delight; she was the completely charming, not too cultivated, feminine client.

"Mr. Kent-Parsley?" I bowed, and at my gesture she took a chair. One's mind runs rapidly at such times. I foresaw a good commission and many long, pleasant interviews. "I am Mrs. Brand Tredgold" . . . I had heard of the family. There was a fluttering moment of hesitation. I could only look receptive and await her mood.

"You will wonder why I have come, but I heard you talk so easily and persuasively on the radio the other night, and when this morning I caught your name in the *Sun's* full-page ad it came to me that you'd be just the one." She laughed, a low musical laugh, a bit confidential, a bit embarrassed. I smiled encouragingly, and she went on:

"You see, our little club . . ."—At last! A new Women's Downtown Club, some job!—"We're debating . . . we're debating the question 'The city of West Harbor is wet.' I'm captain of the negative team and . . . Mr. Tredgold won't help me, and I've just got to have some arguments. I felt so nervous and blue until this morning I saw that 'Consult an Architect,' and I came right here." She beamed at me and took out her pad and gold pencil.

"You've had lots of experience with buildings and you must know if people are or are not building blind pigs. I hope you'll say they're not." For a moment I pondered my Clinching the Client talk then, charmed, I suppose, by her naïveté, I discarded it in favor of some informal reminiscences to which she listened avidly, and upon which she made many notes. When she left I jotted on my desk pad, "Mrs. Brand Tredgold. Consultation, one hour." In case she should come back.

The next client entering completely filled the door, at least in width. Short neck, jet-black hair and mustache, small, snapping black eyes—he was, I thought, of South European origin. He looked almost too capable physically but his expression was the friendliest. Perhaps too ingenuous, but these people sometimes have capital and are good venturers on speculative building. In his big, short-fingered hand he held a picture post card. Ah! a client who "wants something about like this." His voice was soft, his tone appealing:

"I'm Jack Morello. I come for my brother Pietro. We got plenty money. You help him out?"

"Yes, indeed, I'm sure I can," I replied. He gave me the post card and I examined it closely. It was a fine cut of the new State Penitentiary here at West Harbor. The name was in one corner and in the other our slogan "Consult an Architect." One tiny dot of a window was marked with a cross in red ink. A thick stubby finger pointed to the cross:

"That's Pietro's window. You help him out, yes?" The great hand rested easily on my arm. My visitor's face was all smiles: he had beautiful white teeth. "You start today?" It was perhaps wrong to give temporary comfort to this child of nature, but he was so trusting. I promised to have some preliminary sketches ready for him tomorrow at ten. When he had gone I felt tired and, besides, it was past noon. Miss Blarger said there were several others waiting, more kept coming in, but I bethought myself of my pocket notebook, consulted it and waved her out:

"Tell the others I can't see them. I'm leaving now to keep an important appointment."

Before she could deliver my ultimatum I had slipped out my own door, caught the elevator and departed for the University Club. There was a good chance that I might meet Percy Cobden or Frank Hunt and persuade them to have lunch with me. They practically have the say on the new Coolidge School. Sure enough I found Cobden, and with others, none of whom, fortunately, were architects, we had a pleasant time. That's the only way to get jobs. Well, it's three o'clock now, and I think I'll go home . . . Jack Morello will be around tomorrow morning at ten. Come to think of it, I believe it would pay me to go back to South Bend for the rest of the week and nurse along that prospect over there. By that time the worst of this professional publicity will probably be over.

The Frozen Fountain

By Claude Bragdon, F. A. I. A.

An eminent captain of industry once made the remark that architecture was nothing but engineering. He was wrong: engineering is the root but not the flower; architecture transcends mere *building* to the extent that Carlyle's "French Revolution" is beyond the artless babble of the chronicler.

Beauty of a richer vein,
Graces of a subtler strain

are necessary to constitute a work of engineering a work of architectural art.

Where shall this beauty and these graces be sought and how acquired?

A work of art should portray not alone a world-aspect, but *the world-order:* through and by means of the particular, the concrete, the microcosmic, it should suggest the generic, the abstract, the cosmic—the type should somehow be made to image the archetype, telling not only the story of its own creation, but the story of creation.

Nature herself gives us the hint of how this can be done. A snowflake, for example, no matter how it may differ from every other snowflake, is revelatory of the nature of water-crystallization in its double tetrahedral form, its spine-like, tree-like structure, so that the unique form is at the same time a formula of all possible snowflake forms—the type is the image of the archetype.

Applying this principle to architecture, a building, in addition to revealing its use and function, should tell something of the nature of gravitation, suspension, tension; the properties of form, color, light, and the uniqueness of materials—that concrete is cast in forms, that terra cotta is moulded and fired, that wood is sawed and planed, stone chiseled, and marble polished in order that its maximum of beauty may appear. These are matters of *right dramatization* of which nature is the great exemplar, and it is a significant fact in this connection that our two pioneer "functional" architects, Louis Sullivan, and his pupil, Frank Lloyd Wright, were both profound students of nature. In Sullivan's "The Autobiography of an Idea" a passionate love of nature is revealed. "I love nature ardently," he wrote me in a letter, and Wright once remarked, while we were walking together in the woods, "I do not see how a man can be a good architect who does not live near to nature." Those men "who in the love of nature hold communion with her visible forms" become *natural* in all their mental processes, and it is to this that I attribute the escape from that atrophy of the creative faculty which so often overcomes the schoolman, the student, not of nature, but of *art*. Sullivan, to be sure, was a Beaux-Arts man, but he specifically states that the school did not give him his *start*. "My real start," he says, "was made when, as a very young child, living much out of doors, I received impressions from the shifting aspects of nature so deep, so penetrating, that they have persisted to this day."

Now to study nature does not mean to make charming little studies of natural objects. Harvey Ellis' aphorism, "One should go sketching with one's hands in one's pockets," indicates the more rewarding attitude for an architect—the contemplation of nature, not with a view to painting her portrait, but to pluck out the heart of her mystery; to discover those generic laws according to which she invariably and inevitably works.

One of the fruits of such an intention of consciousness will be the perception that "nature is the same in all her parts": that like an air with variations her visible music consists always and only of innumerable elaborations upon one basic theme, and that it is only the vast variety of form, color, texture; of spatial magnitude and temporal duration which interfere with an instant apprehension of this inner identity, just as it is the cleverness and versatility of an "impersonator" in the matter of facial expression, intonation, gesture, which create the illusion that one sees, each time, another person.

What is this "unit-form" of nature—the archetype of all visible images? What formula most perfectly expresses our sense of the life-process? Is it not an ascension and a declension—in brief, a fountain: a welling up of a force from some mysterious source, a faltering of the initial impulse by reason of a force counter to it; a minoration, a subsidence, a quiescence —all imaged in the upward rush and downward fall of the waters of a fountain, a skyrocket, or a stone flung from the hand into the air?

This of course tells us nothing of life's *meaning*, it is merely a symbol of the life-process. From nature we shall never learn life's meaning, for nature is all pictures and no text, and its images tell us only as much as we ourselves read into them.

The idea once grasped that *life is a fountain*, we see it as one with *the tree of life;* everywhere fountains, fountains! the sun itself, the up-drawn waters and the descending rain, the elm, the willow, the heart, the phallus and the mammary gland. But however true, however interesting, what has this to do with architecture, the reader may very well ask.

Everything: for if life is a fountain, a work of architecture also is exactly that. What happens in a fountain and in every individual drop happens also in a building and in all its parts, where stress and strain, compression and tension are everywhere operative. It therefore becomes the business of the architect to

FIGURE 1

dramatize not alone the building's use and function but the interplay of the forces which go on within it; and in so doing he will be dramatizing life itself. What constitutes a thing a work of art is this suggestion of the universal through and by means of the particular: the play of Hamlet, for example, is not only *the* life of *a* man, but *the life of man*—Everyman's struggle with his own self-elements, "the enemies of his own household."

That architecture contains these deeper meanings, and that the expression of them is a determining and conditioning factor of architectural form is not a new idea: Irving K. Pond's admirable book, "The Meaning of Architecture," is an amplification of this conception of a building as a fountain: the resistance and the succumbing to gravity and a beautiful reconcilement, with illustrations of the various ways in which this has been, and can be, done. It is an idea which cannot but open the eyes of the architect who is alive to all its implications, and because conception is a prerequisite of conception, it will augment his creative power. In point of fact it is an essentially *usable* idea, fertile in ways I shall endeavor to make plain.

A building a fountain: how clarifying a point of view! I have but to look out of my window at those upthrust acres of steel, brick, and concrete which hide the river, laten the sunrise, shadow the streets and invade and blot out the sky in order to see all in this aspect, like the Chrysler tower, white and slender, whose needle-pointed silver pinnacle catches the sunlight like a fountain's highest expiring jet; like the lofts and "industrials," broad and massive, whose set-backs appear now in the semblance of cascades descending in successive stages from those summits from which they have been upthrust; or like the complicated mass of the new Waldorf-Astoria, a plexus of upward gushing, upward rushing forces, strongest and therefore highest in the center, descending by ordered stages to the broad Park Avenue river. I have but to sit, as I sometimes do, in the dim, quiet nave of St. Thomas' Church and fix my vision on its aligned stone piers, expanding, fan-wise, into the groined vaulting, to have them appear in the semblance of a succession of water jets, fixed into immobility, like time frozen into eternity. I have but to remember the dome and flanking minarets of the Taj Mahal, Giotto's bell tower beside Brunelleschi's gigantic bubble, the obelisk at Thebes, the shrine of Vishnu at Khajuraho, whose diminishing towers take on the contours of falling water, to see these too as frozen fountains thrust upward by the same mysterious energy which arises, moment by moment, in myself. For the very power whereby I perceive these things is the same power whereby they were themselves conceived—the power of the life-force, *one,* though infinitely subdivided, as the water in a reservoir is divided when hurled aloft, fountain-wise, into pearly drops and crystal ribbons—like souls which, issuing from the Unconscious, traces each a shining parabola in space-time and subsides again into the reservoir of life.

Accordingly, let the architect say to himself not only, "I shall build enclosures for the protection and trafficking of human beings," but also, "I shall create frozen fountains with the vigor of geysers and the placidity of waters stilled at even." Such endeavor will mark for him the transition from engineering to architecture; will constitute for him his accolade; and if he be able to put his idea in harness he will, in Emerson's phrase, have changed his grocer's cart into a chariot of the sun.

A fountain is *one thing* which is nevertheless *two-fold,* since it consists of an ascending and a descending stream, one of which resists and overcomes the force of gravity and the other of which succumbs to it—the first active, masculine; the second passive, feminine. Translated into terms of architecture, activity and passivity are epitomized in the vertical shaft which resists the force of gravity, and the horizontal beam which succumbs to it. This is the reason why the Greeks, those supreme dramatists, instead of leaving the column a mere cylinder of stone with a splayed top to increase the bearing surface, made of it a tapering, fluted shaft, suggesting the existence within it of a rising force, and they terminated this shaft with a capital—cushion-shaped or downward curled—suggestive of the yielding of this force to the counter-pressure of the lintel at the point where the two meet. And having thus told the story of what is happening in the column, that story is continued in the entablature, which is dramatized in similar fashion. Mr. Pond calls attention to the fact that the forces which are acting in the entablature are, compression above, tension below, while in the center lies a neutral axis along which the forces balance one another; accordingly, in the Ionic entablature the æsthetic intuition of the Greek moved him to use in the compressive field the fine-spun lines of tension represented by the fasciæ of the epistyle; the frieze, or neutral zone, he either left plain or gave over to ornament, above which occurred the broken light and shade of the cornice. Never did

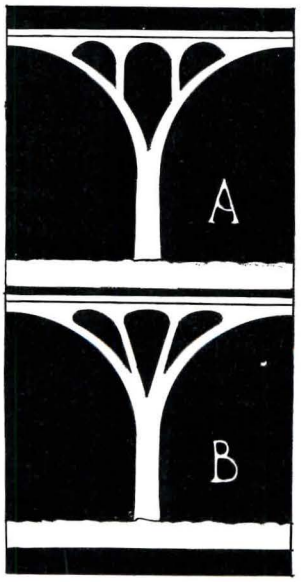


FIGURE 2

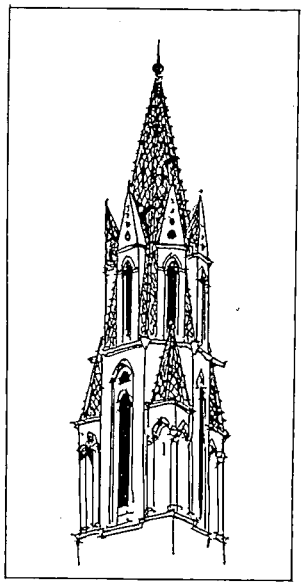


FIGURE 3

he make the mistake of introducing masses or fields of broken light and shade into the lower portion of the entablature even in the form of decoration. (Figure 1.)

Although the Greeks were extraordinarily adept at this order of architectural dramatization, the mediæval masonic guilds were not less so, after their own fashion, for the Gothic cathedrals of western Europe exhibit as complete and felicitous showing-forth of the forces at play within their structure as can be found in the world: architecture was one with engineering, and the ornament was an integral part of the architecture. The pointed arch, for example, which more than anything else may be said to be the norm of Gothic architecture, does not merely *represent* that opposition and equipoise of two diagonally acting forces—thrust and counter-thrust—which is the determining principle of the entire construction, but itself *is* such an opposition. And so it is throughout: the form was created by the function, and the function determined the form. The stone tracery was needed to give holding and stiffness to the leaded glass, the exterior buttress to resist the thrust of the interior vaulting, the pinnacle to give an added weight to give stability to the buttress; base, string and cornice mouldings took their characteristic forms from washes and undercuttings most effective in throwing the rain water clear of the walls, a gargoyle being only an ornamented waterspout. And nowhere is the fountain idea more perfectly suggested than in Gothic architecture: exteriorly in the growing intricacy and fragility of the towers as they ascend—their "tapering off" against the sky; and interiorly in the upward sweep of the piers and their breaking out, as it were, into the groined vaulting.

The sheer beauty of Greek and of Gothic architecture—a *necessitous* beauty as has been shown—has seduced the architect of today into the copying of these forms divorced from the functions which they originally served and which they so eloquently expressed; but in so doing he violates the most fundamental canon of architectural art, the *dramatization of structure*. New materials and new building methods—not to mention an altogether different attitude toward life—imperatively demand a new architectural language. Not to perceive this constitutes the fallacy of the eclectic architect, who makes a fetish of good taste. The tang of his own time, be it acrid or sweet, should flavor everything he does, but along with this communication of a sense of the immediate, the unique, the special, there must be communicated also some sense of the eternal and the absolute. Saturated as his work may be and should be with the spirit of his own time, it should yet be timeless—as are the tragedies of Shakespeare and the paintings of Leonardo. The first of these aims he will achieve by a frank and truthful use of materials and by the right dramatization of the engineering; the second, by a right dramatization of the forces at play within the structure—in brief, *the fountain*. For his problem is not basically different from that of the playwright or the novelist, who, in presenting the characters and relations of a few individuals in a localized environment, give an insight into life itself and the essential nature of man and woman.

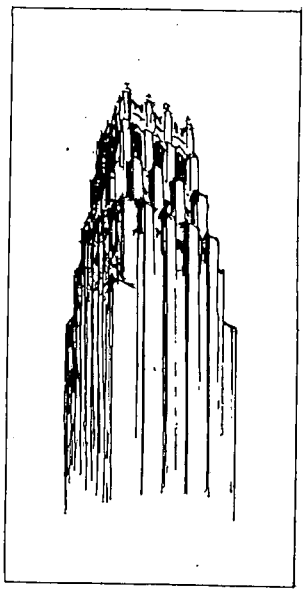


FIGURE 4

In nine-tenths of all modern building operations of any magnitude stone masonry has been superseded by reenforced concrete and steel, but so great is the power of inertia in the world of thought that even in works of engineering the old masonry forms and arrangements sometimes still persist. Here is an example, taken from my own experience:

Having been called upon by an eminent engineer to collaborate with him in the designing of a reenforced concrete bridge, he submitted a diagram representing his idea of the most economical and logical form for it: a series of great semicircular arches supporting a lesser arcade to carry the roadway. (A, Figure 2.) It occurred to me that his conception was conditioned by the tyranny of ideas associated with stone construction wherein, for stability, piers must always be vertical, and for strength and economy, openings must be arched. But in reenforced concrete construction, which is monolithic, these necessities do not exist. Accordingly instead of conveying the weight of the roadway to the main piers by way of vertical supports resting on the arch ring, as is the universal masonry practice, I suggested that they be inclined—like the ribs of a fan—conveying the weight where it needs must be discharged more directly, and thus depart-

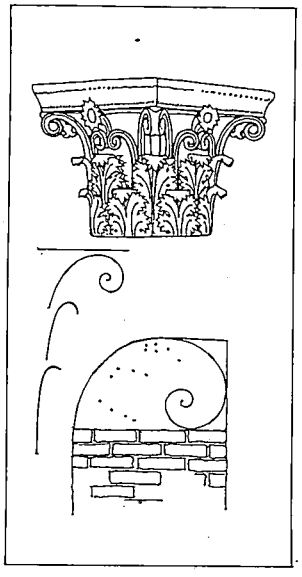


FIGURE 5

ing less from the true lines of force. (B, Figure 2.) My collaborator at first seemed amazed by this suggestion, though he could not deny its structural validity. We both agreed that the tree-like form was not only more logical, but it was more beautiful, thus verifying anew the dictum that "any increase in fitness is also an increase in beauty." I liked it best because it most resembled *a frozen fountain,* but without a long explanation he would hardly have understood just what I meant by that, as the reader may now understand it, so I confined myself to the more practical aspect of the matter.

The above is only a single instance, taken at random out of a great number, of the tyranny of past thought over our present thinking. Of this, in a different field, the first railway passenger cars and the first automobiles constitute a classic example, for the former were reproductions of the four-in-hand coach, and the latter imitated the horse-drawn vehicle of the day. We see exactly the same thing in the survival, in steel-frame construction, of the classic orders and the arch. Neither of these have any place or justification in such construction, because they *falsify* it: the vertical members of a skyscraper are in effect continuous from bottom to top, and the horizontal members, though beams for the support of the floors, perform the office of *bracing,* the whole being, in effect, a truss placed upright, the verticals corresponding to *chords.* The right dramatization of all this may still be open to question, but there can be no doubt about the wrong one: to falsify such a structure by means of columns, pilasters, entablatures, imposts, and arches, or other cerements of dead styles is to add lying to stealing, for all such constitute, in this connection, what Sullivan calls "dissenting lines," as fatal to architectural unity of effect as dissenting votes are fatal to political unanimity.

In the skyscraper, both for structural truth and symbolical significance, there should be upward sweeping lines to dramatize the engineering fact of vertical continuity and the poetic fancy of an ascending force in resistance to gravity—a fountain. But "what goes up must come down": gravity reasserts itself after the initial impulse is exhausted; every building, however lofty, must terminate, and an architect's ability as a designer will be measured by the success with which this termination is effected—by the beauty with which the building "dies" on the white counterpane of the sky. In this particular the problem presented by a Gothic cathedral tower is not different from that of a modern skyscraper, and it will be interesting to compare two typical solutions, one mediæval, the other modern. In the spire of Senlis Cathedral (Figure 3) the transition from the square to the octagon is achieved with great subtlety, the angles being filled with miniature towers and spires, while the slender dormers, set against the faces of the octagonal spire, echo, in their verticality, the vertical lines below, and their peaked roofs echo the inclined lines of the steeple above —like the upurushing and returning waters of a fountain in exquisite reconcilement. John Mead Howells' Pan-Hellenic Hotel (Figure 4), in its own so different way, also suggests a frozen fountain, the force seeming to have faltered and failed at those mathematically related stages where the diminishments occur, and, most powerful at the center, the upthrust terminal parallelepipedon finishes in jetlike tracery against the sky. As an indication of the perhaps unconscious sense on the part of the designer of the building's symbolical significance, the fountain-motif appears in the ornament, and the long vertical piers terminate in logarithmic spirals, indicative that the rising force does not cease at this point, but changes to its opposite. We have the same thing in the Ionic and the Corinthian cap (Figure 5).

It would lead only to weariness to multiply examples. The purpose of this essay will have been achieved if the author has conveyed the thought that even so utilitarian and conditioned an art as architecture, no less than music and the drama, may be made to symbolize the life of man as it *should be,* which, like a fountain, is first to prevail and then to fail, but to fail *beautifully,* to meet death in the feminine way, with resignation, as symbolized by the dome, or in the masculine way— "steel in my heart and laughter on my lips"—to meet it with defiance, as symbolized by the spire. In either case—bubble or jet—effort and its surcease stand epitomized in the fountain. Music is a fountain of sound upspringing *in time* from the still pool of silence. And because "all of the arts aspire toward the condition of music" architecture attains it most nearly when it suggests the invasion of space by an upthrust force —a frozen fountain.

Drawing from Life

With Illustrations of the Work of Students at the Massachusetts Institute of Technology

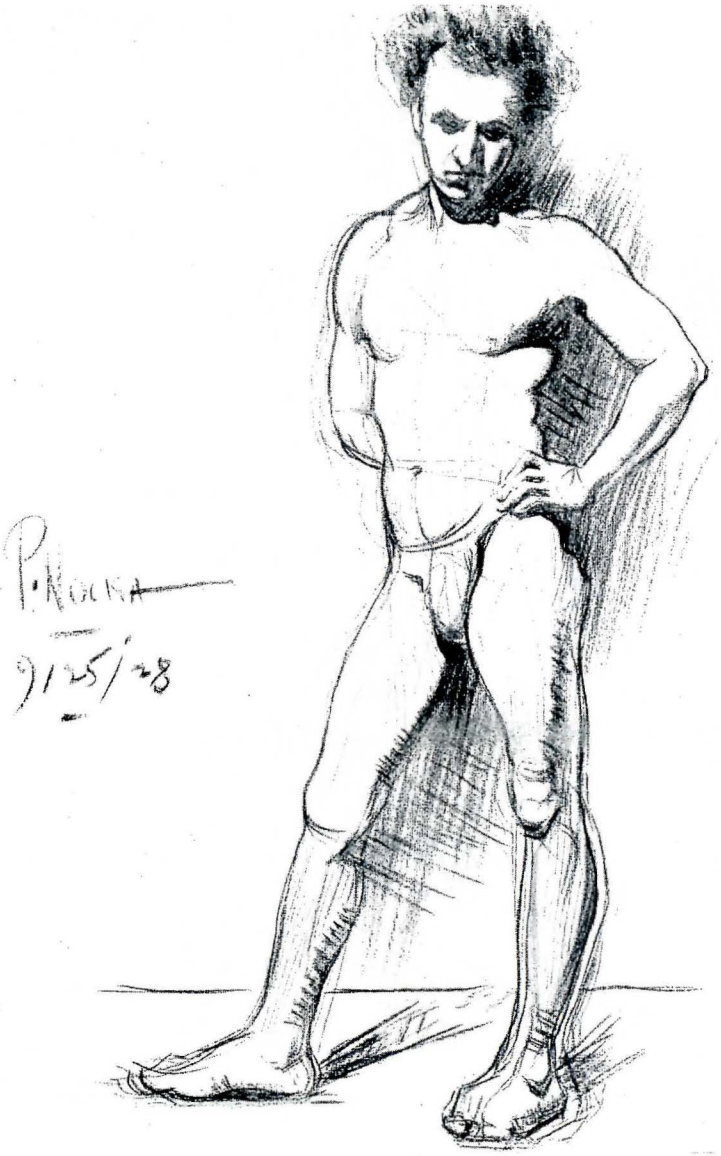
By Rayne Adams

Architectural draftsmen are supposed commonly to be æsthetic beings. I don't mean outwardly, but inwardly. When a young man embraces the Muse of Architecture, those of his friends who know the difference between a Greek *obolus* and a Spanish *ducat*, look upon him as one who has voluntarily forsaken the wide primrose path of economic success, just for the purpose of satisfying certain impractical aspirations. This, however, is not an adequate view of the situation. Just as there are two kinds of pickle—sour and sweet—so there are two kinds of draftsmen. There are those who are drawn instinctively towards the Scylla of architectural design even as there are those who are attracted by the Charybdis of architectural engineering. Once in a while a draftsman comes to the surface of the dark pool of life who is fortunate enough to grasp not one straw, but two, to keep him from drowning. This creature of strange circumstance is a sort of Nietzschean superman, sufficiently wall-eyed to be able to appreciate the subtlety of the curve of St. Peter's dome as well as to read the meaning of a table of statistics concerning the respective wearing qualities of ten commercial brands of paint.

An architectural school opens its doors to all three classes of men. With an impartiality which would do credit to Atropos, who cuts the string which attaches us to life, these schools in general admit promising material along with the unpromising. Once entered, the student finds that his elders have prepared a program for him, which, if adhered to, will, within the limits of a reasonable doubt, make an architect of him. Yet the melancholy fact remains to face the world that at least half the students of the country are studying things which they are incapable of understanding, under the misguided impression that, though the road be long, they will find a gate at the end. And even though they are interested in a given subject, they may never find the key that unlocks the gate. There are, to be sure, ways of crawling under it. The law of interest, though it states that we try to do what we like to do, doesn't guaranty the possession of an ability commensurable with the interest shown. I am, to cite a lowly example, much interested in mathematics—yet I shall never win any blue ribbons as a mathematician. Let this Rousseau-like confession bring us back to the two types of draftsmen with whom we started out.

Note the line of light and shade smudged in with apparent carelessness but in reality carefully studied.

The broad distinction between them is this:—one can draw free-hand, as the expression goes—and likes to; the other can't, whether he likes to or not. He avoids, in his office work, any invitation to indulge in free-hand drawing as he would avoid the pests of Egypt. I recall an excellent draftsman of the latter type who was in Hornbostel's office many years ago. Faced with the unavoidable difficulty of indicating some ornament in a certain panel, he drew the enclosing rectangles with T-square and triangle and then, in the circumscribed space wrote;

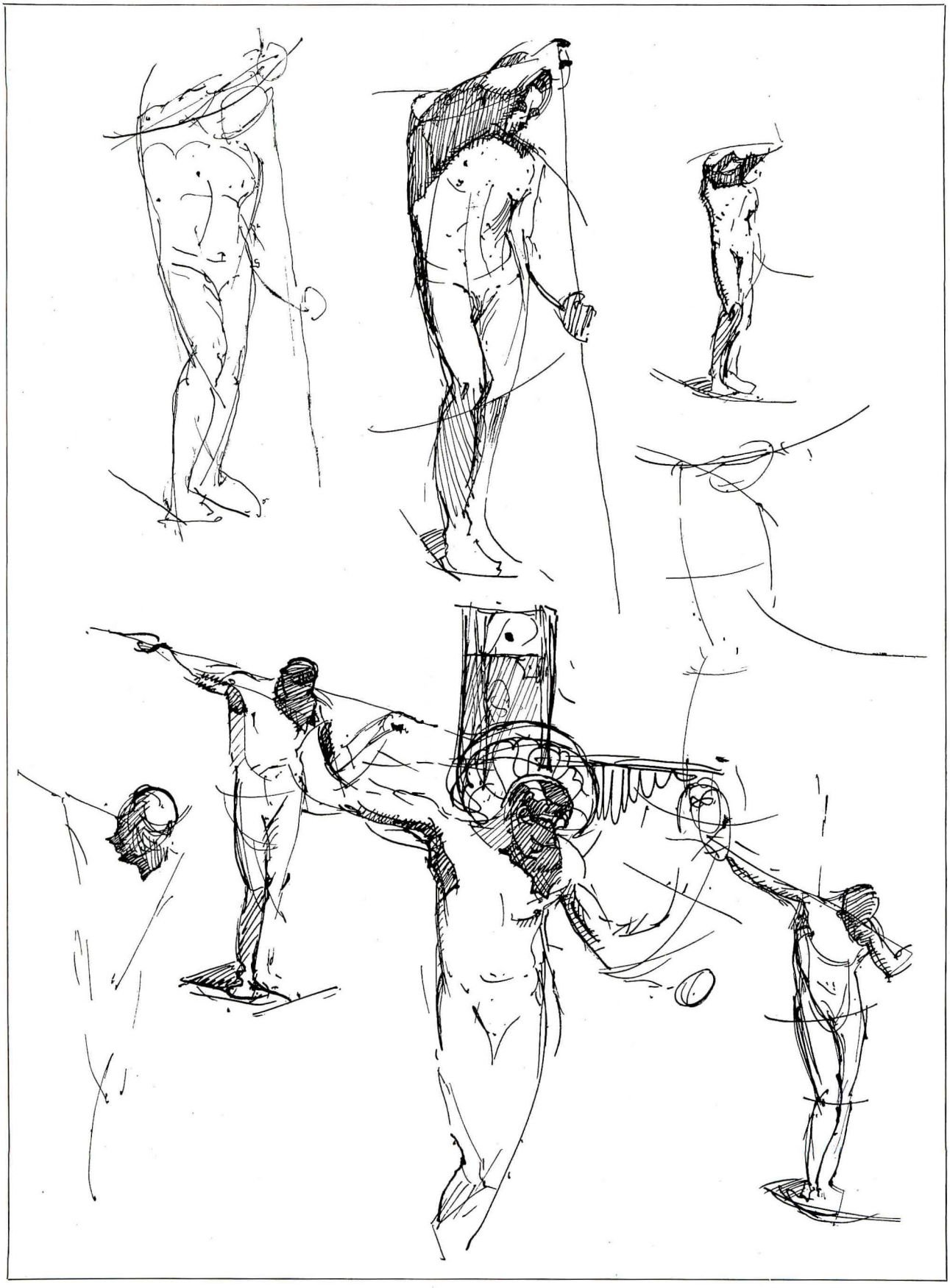


DRAWINGS FROM TWO DIFFERENT TYPES OF MODEL BY TWO DIFFERENT STUDENTS

It is well to change models frequently lest the eye become too accustomed to one set of proportions and tend to a slackening of the necessary everlasting search.

TWO CHARCOAL DRAWINGS OF THE MALE FIGURE

The students have concentrated on the shadow forms and have not attempted elaborate modeling. These drawings and most of the other charcoal drawings shown occupied from an hour and a half to two hours.



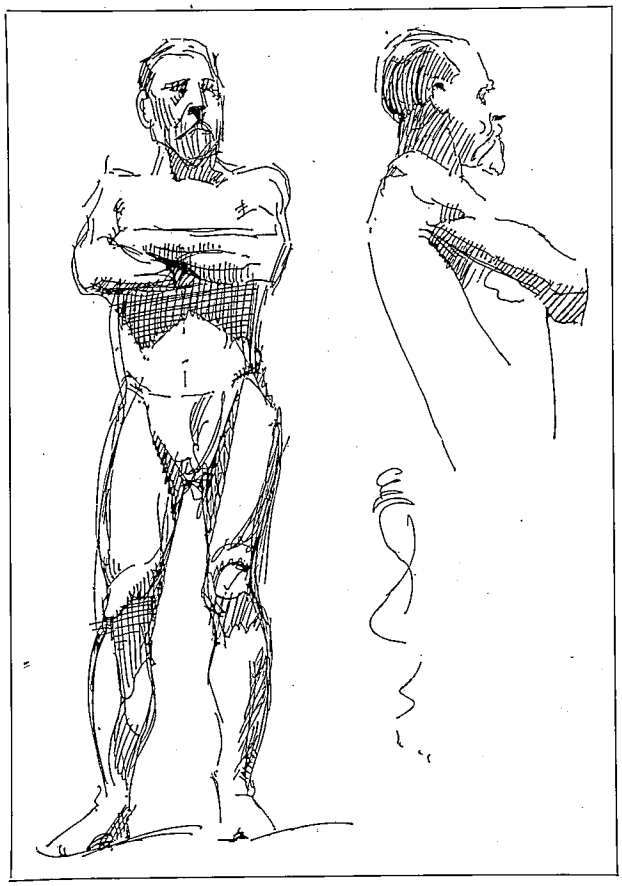
DIRECT PEN-AND-INK DRAWINGS FROM LIFE

This type of study is excellent training for the student's power of observation and analysis.

"See Plate —— in Letarouilly's Rome, Vol. ——."

This article is addressed to those who like free-hand drawing—and especially to those who wish to enlarge their ability in the drawing of the human figure. It is addressed further to those who wish to understand *why* drawing from life is an essential part in the training in architectural design.

The "why" of the preceding sentence involves many things, and its general answer, I trust, may be found in the process of reasoning which underlies the method of instruction in drawing from life followed by a distinguished teacher of drawing, Professor W. Felton Brown, of the Massachusetts Institute of Technology. I have felt, however, that there is one aspect of the matter which has an obvious bearing on the professional work of draftsmen—and one which may be easily appreciated. Before presenting Professor Brown's answer, it may help to focus the issue on one particular failing in the handiwork of the average professional architectural draftsman who is called upon to make presentation drawings.



The salient points and shadow forms express the model accurately.

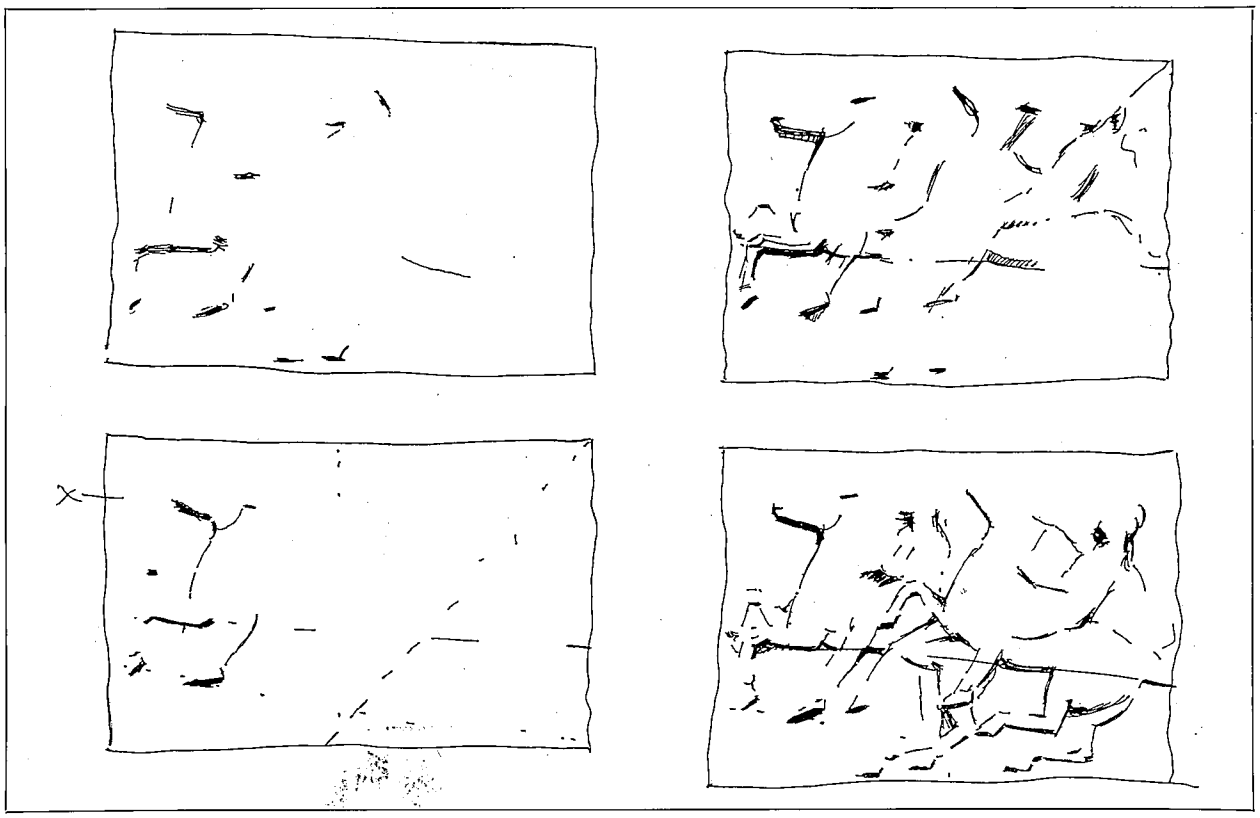
Look at almost any one of the million architectural presentation drawings made by architects and draftsmen. The figures in this pediment, for example, represent sculpture. They are drawn in such a way as to suggest sculptured stone. They are not alive. Nobody expects them to step down from the pediment. They are dead—as they should be. Far below them, in the foreground, are other figures. These are supposed to represent men and women—presumably engaged in walking, loitering, or standing still. They are not men and women at all. They are scarecrows. They aren't even dead.

Why is it that architectural draftsmen can often draw with commendable characterization a statue of the Duke of Wellington or of the late Mr. Harding, set in a proper niche, yet cannot indicate a convincing living figure dressed in the mode of 1931? Why should a living derby hat be more difficult to portray convincingly than a Roman helmet which hasn't been worn, save at a Beaux Arts Ball, for fifteen centuries? It is a practical question and ought, I suppose, to be given an intelligible answer. Why is it that even in the work of masters of drawing, such as Goodhue and Gregg, the breath of life was never blown into their foreground figures? Perhaps the answer is partly given in the presumption that they found the study of the shadows of a cornice, for example, more interesting than the characteristics which go to make up the living figure. With respect to most draftsmen who make architectural presentation drawings, the case is doubtless not otherwise. When they copy, painstakingly, some statue illustrated in the pages of Mr. Reinach's "Receuil," they do not realize that they are making a transcription from death, not life. It is always easy to copy. And then, having finished their statue of Neptune, they will perhaps realize that they have left themselves little time for their foreground figures. With their imagination quite free from the training necessary to understand the living figure, they will populate their foreground as though they were master rabbits bent on achieving a record for speed. The way out of this mess is obvious—though not always easy; they can take time to train their imaginations and give adequate time to the drawing of their foreground figures.

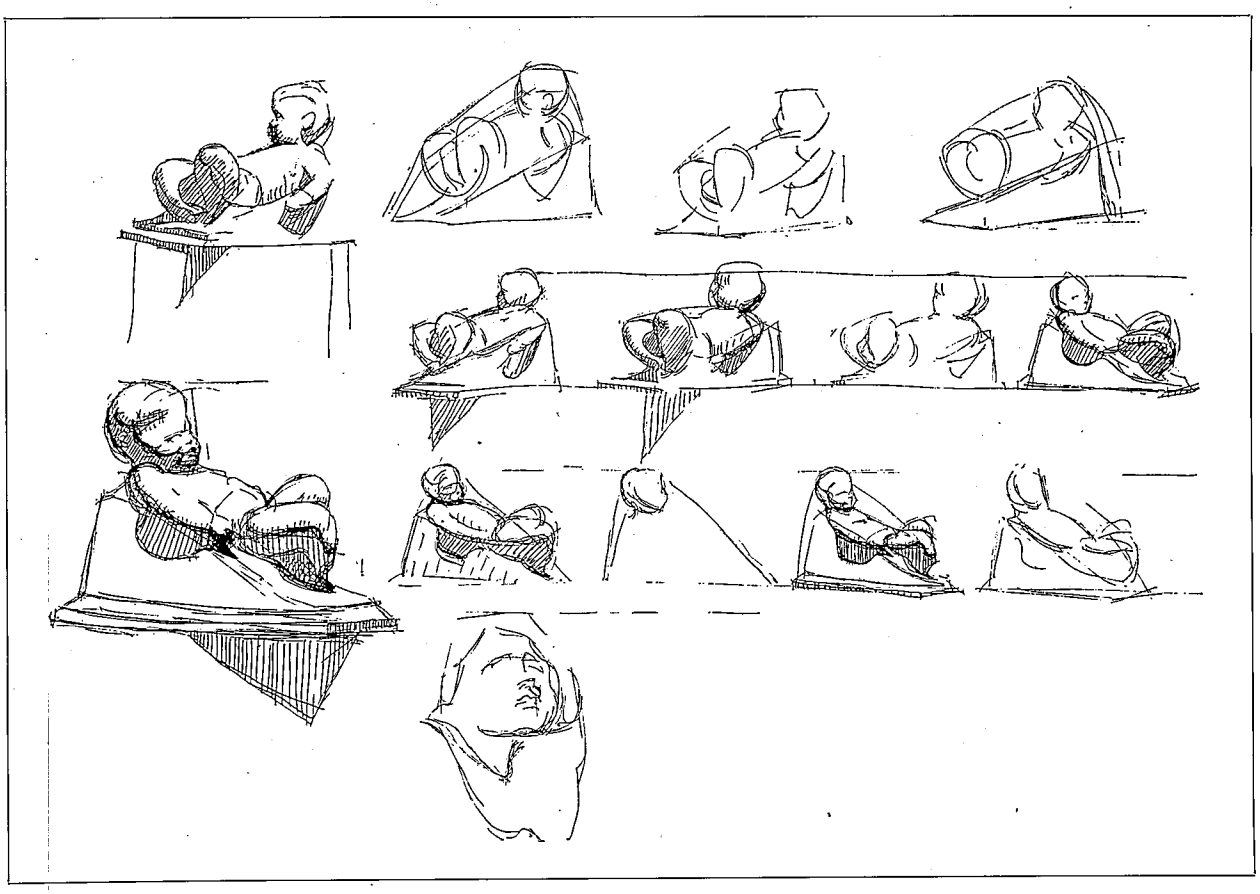
The drawings shown in this article are furnished by Professor Brown to indicate the manner in which his students are trained to work in order to understand the essential qualities of the human figure, as a living, changing thing. I suppose that the drawing of a fragment of the Parthenon frieze shown on page 731, although it is a drawing from cast, will best illustrate what Professor Brown attempts to train his students to look for. This drawing is a remarkable one. I am sure that if you came across it on the shores of some South Sea island, you would recognize what it pictures. The noteworthy thing about it is the evidence it gives of the ability of the draftsman *to select* those essential shadows which give the clue to the design. The four sketches were drawn in about thirty minutes. Drawn directly with pen, these sketches show one thing clearly: that the draftsman spent most of his half hour in thinking—searching for the elements of the composition. He must have decided, before putting down a line, what the essential shadows were and what their telltale shapes. He didn't permit himself to become confused by the half-lights. He didn't, moreover,

THREE CHARCOAL STUDIES BY ONE STUDENT—TWO FROM LIFE AND ONE FROM A CAST

Outlines are here made to express modeling by their alternate sharpness or softness. The big shadows are kept simple, the study being put in on searching for the correct "line of light and shade."



THE SALIENT POINTS WERE THE OBJECTS OF SEARCH IN THESE STUDIES



DIRECT PEN-AND-INK STUDIES FROM THE CAST BY A STUDENT

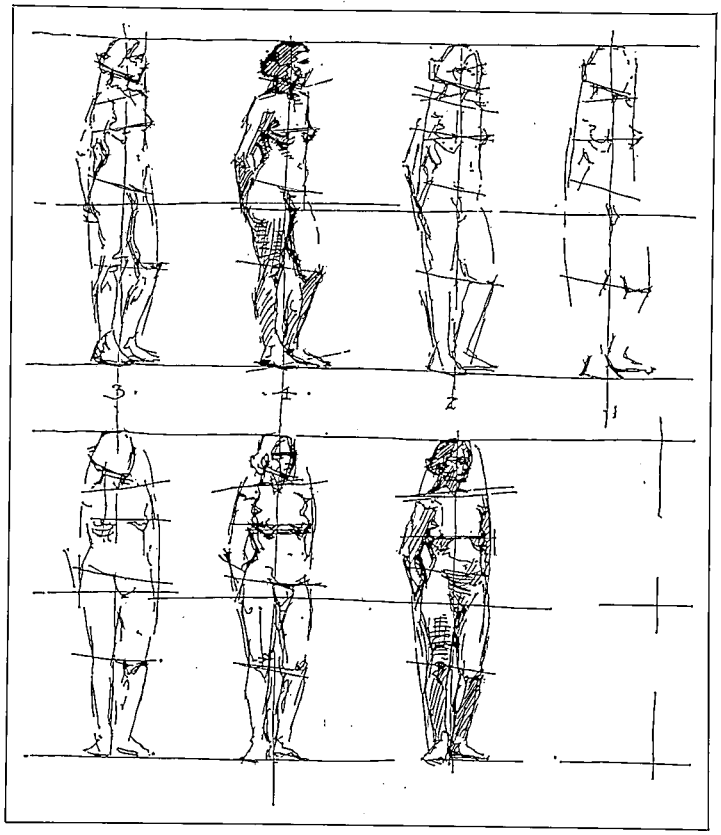
Showing careful analysis of principal construction lines and planes.

A SENSITIVELY DRAWN CHARCOAL STUDY OF A GROUP IN ACTION

Note particularly the definite indication of the salient points and the expressive variety of line. It is possible to follow the student's thoughtful progress through this drawing by observing successive corrections.

attempt to show all that he knew; he was seeking for the generalized expression of the design of the frieze.

The step, of course, which bridges the gap between drawing from cast and drawing from life, has its difficulties. Why? Because the human body is, even in repose, never rigid. It is articulated: when the weight of the body of the standing figure is shifted from one leg to the other, a multitudinous series of changes in the body takes place. These changes are, however, related, and it is the relation of these changes which constitute the "movement" of the body. The relations of the different parts of the body are made manifest by the distribution of light and shade. Each shadow holds a characteristic secret. There are certain shadows which are more significant than others, just as in the Parthenon frieze fragment discussed above. These shadows mark the line between light and shade. If the student can reduce his impression of the model to the bare indication of that essential line, he has got a lifelike drawing. And that's all there is to it.



DIRECT PEN-AND-INK STUDIES FROM THE MODEL

The student's search for the salient points and the action of the figure are clearly shown.

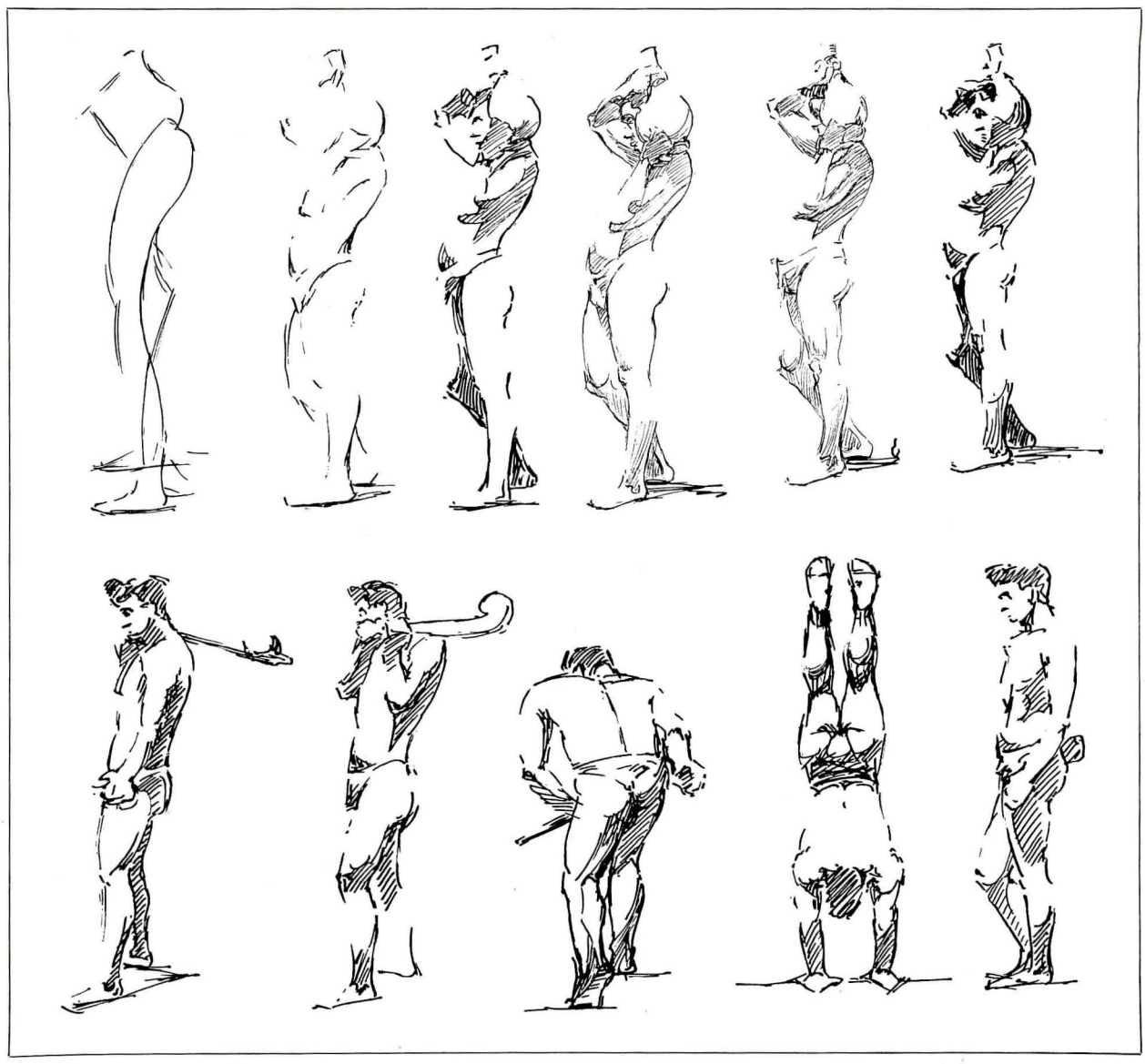
In order to train his students to think selectively, and in order to make them record their impressions rapidly, for good or for evil, they are given the opportunity to supplement the regulation charcoal drawing with pen-and-ink sketches. These sketches, for the making of which a minimum time is allowed, must be made in such a way as to tell their story directly—if they are to tell any story at all. Note, for example, how the telltale line of light and shade is indicated in the sketch shown at the beginning of this article. It is only an apparently indefinite smudge of ink put on with a dry brush—and yet how convincing it is. I suppose that Professor Brown would say that this line was visualized by the student before he tried to put the ink on the paper. In any case, it is the acquiring of the habit of such visualization that is the end sought in giving this training.

And it is just here that the larger aspects of drawing from life may be properly considered with respect to architectural design. It is not the aim of Professor Brown to give his students the impression that for them drawing from life is an end in itself. These students of his are preparing to become architects—not painters—and the essential aspect of their life class work is that it trains their imagination with respect to selectivity in architectural composition and design. As one in studying a *projet*, arrives—if he have luck—at a *parti* which meets all the essential requirements of the program, it is clear that he so arrives in terms of his powers of visualization. And drawing from life offers an amazing opportunity by which the student of architectural design may acquire that power. That all such students do not improve the opportunity is explained by the fact that there are two kinds of draftsmen; those who are so made as to get something out of drawing from life, and those who don't.

Let this contrast lead us back to the beginning of this article. Why is it that even those who can draw the figure from life with a commendable degree of lifelikeness, stumble when they have to draw a figure in modern dress? Professor Brown would have an instant answer: if the draftsman understands how to indicate the larger and more essential movements of the figure, he can successfully dress it in any clothes he cares to choose—if he takes time.

Such — if I have done justice to them—are the outlines of Professor Brown's method of instruction and its aims. If I take leave of them here to put forward a few beliefs of my own, this may serve as warning that responsibility for them is not to be laid elsewhere than on my own doorstep.

It is an accepted principle, of course, that no school can undertake to teach everything. The exigencies of modern education must be met as best they may. Yet it seems to me that a place in our architectural education might be found for instructing those draftsmen who show a special interest in presentation work, not only how to draw understandingly from life, but something concerning the indication of the clothes which living figures are in the habit of wearing. There must be certain unfailing and telltale characteristics of cos-



THESE DIRECT PEN-AND-INK DRAWINGS OCCUPIED AN HOUR AND A HALF OF THE STUDENT'S TIME

More minutes were spent, evidently, in observing and thinking than in actual drawing.

tume which, once understood, will not readily be forgotten, and which may serve the draftsman as a guide, even in those darker days of professional experience when he hasn't the time or opportunity to draw from a model. Of course it may be suggested that the way out of his difficulty is for such a draftsman to attend a school which teaches illustration. For the matter of that, it is not only a mastery of the mysteries which attaches to clothes which bothers the draftsman: it is the whole imbroglio of men driving automobiles, women on horseback, children on bicycles, and so on. The plea may be set up that this is an illustrator's work. It is, but happily or unhappily, it falls to the lot of the draftsman who makes presentation drawings to be an illustrator also. Nor is it enough to suggest to such a draftsman that he go out into Central Park and observe the mob and to sketch those figures which it offers, until he knows all about the realistic figures of everyday life. That is a counsel of perfection. If students could be induced to study without instruction, there would be no need for schools.

And yet, whether any such instruction be a feasible or even of possible realization, the fact remains that the underlying principle in drawing costume — whether of Roman times or of our own—as in drawing everything else, remains unchanged, and the success of the draftsman depends upon his power to search out and visualize the essential characteristics of whatever object he attempts to portray.

BREWER MEMORIAL FOUNTAIN, BOSTON COMMON

FROM A WATER COLOR SKETCH BY NELSON CHASE

Pencil Points Series of Color Plates

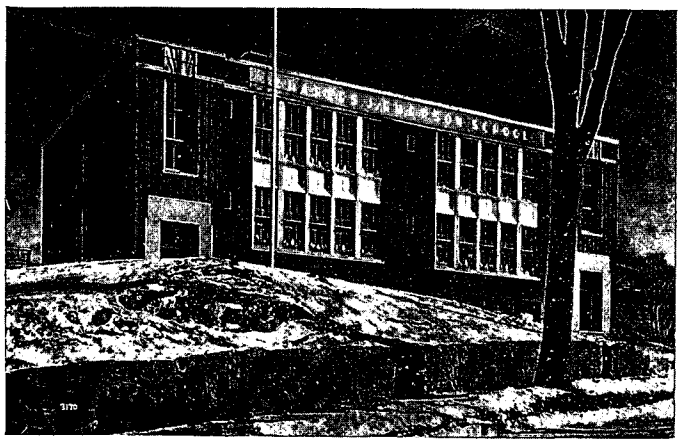
The sketch shown on this plate is by Nelson C. Chase who teaches water color and free-hand drawing in the Architectural Department of the Massachusetts Institute of Technology. Mr. Chase says, "I am really striving for directness, simplicity, and a good relation of values and color. That is enough to keep a person on his toes for life. I try to think in terms of red, yellow, and blue,—warmer or cooler,—darker or lighter,—big comparisons and no tricks. I find it more stimulating to sketch right on the spot, taking about an hour and a half for the job, but am not wholly against cooking up a picture from notes." This sketch measures 18" x 24" and was done on a sheet of rough white water color paper.

A Building on the Board

A Selection of Drawings Showing the Progress in the Drafting Room of the Design for the Charles J. Emerson School from the Preliminary Sketches Through the Working Drawings

Kilham, Hopkins, and Greeley, Architects

A small elementary school, located on an unpromising ledgy and hilly lot in one of Boston's semi-industrial suburban towns was the problem whose solution is shown in these illustrations. Eight standard size classrooms plus the usual accessories, which could be enlarged by the addition of at least eight more, were the requirements. A flat roof was decided upon by the committee, as nothing in the building's surroundings called for the more picturesque type of a pitched roof. The site was a small and extremely rough, steep, rocky and uneven lot, much higher than the street; the difference in levels diagonally between the lower and upper corners being over 28 feet. All the excavation was in ledge. The only excuse for using the lot was its convenience to the territory to be served by the school.



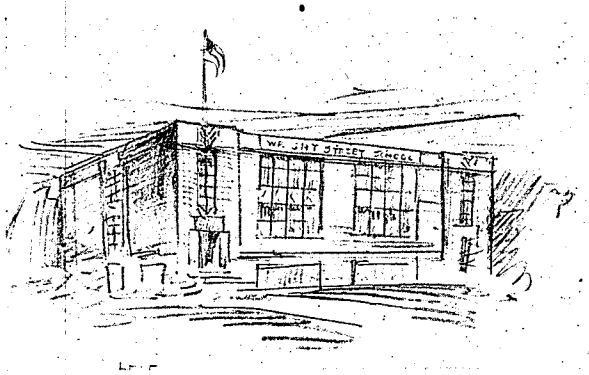
THE SCHOOL COMPLETED

KILHAM, HOPKINS, AND GREELEY, ARCHITECTS

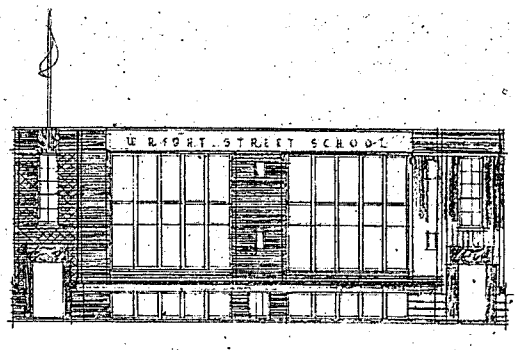
These disadvantages, however, were made up, from the architect's viewpoint, by the progressive and liberal spirit of the building committee members whose make-up represented the best in every way of what one would expect from New England.

The arrangement of the plan possesses little novelty aside from its compactness, but it actually received a great deal of study. A plan which could be expanded to at least double its original size was required and the sketches show the two principal arrangements which were worked out with this in view, together with a perspective which illustrates the result of adding eight more classrooms. While the plan adopted forces the boiler room back into the hillside, no more actual excavation resulted than if it had been placed in front, and a fine well lighted room was obtained in the front portion of the basement, well adapted to assembly or exercise purposes.

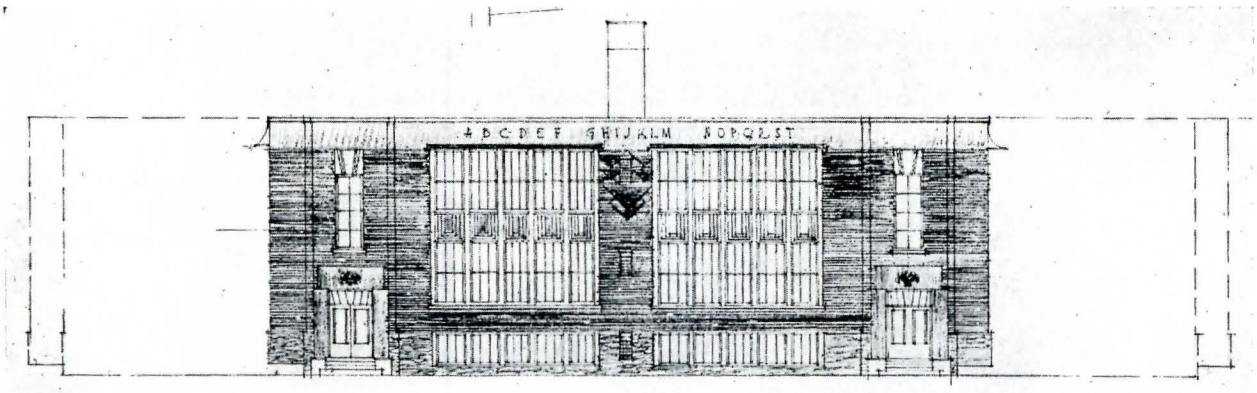
The modernistic note which runs through the design has several points of novelty for schoolhouse work. Of these points, that most immediately noticeable is the interior color scheme. The architects had been studying the matter of schoolroom coloring for some time, carrying their experiments further with each successive building, and noting the reactions of teachers, pupils, and parents to the successive layouts which became more and more novel with each building. They found that a very decided response was awakened to their suggestion to substitute lively colors for the con-



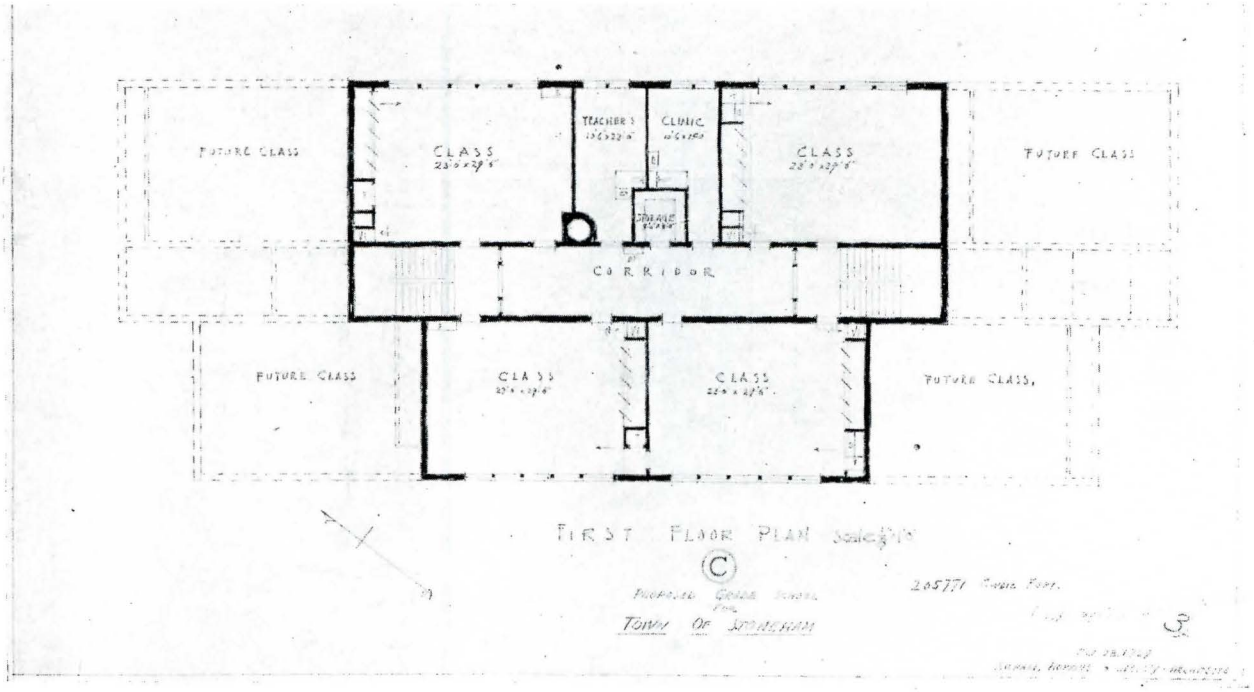
FIRST SKETCH BY MR. KILHAM



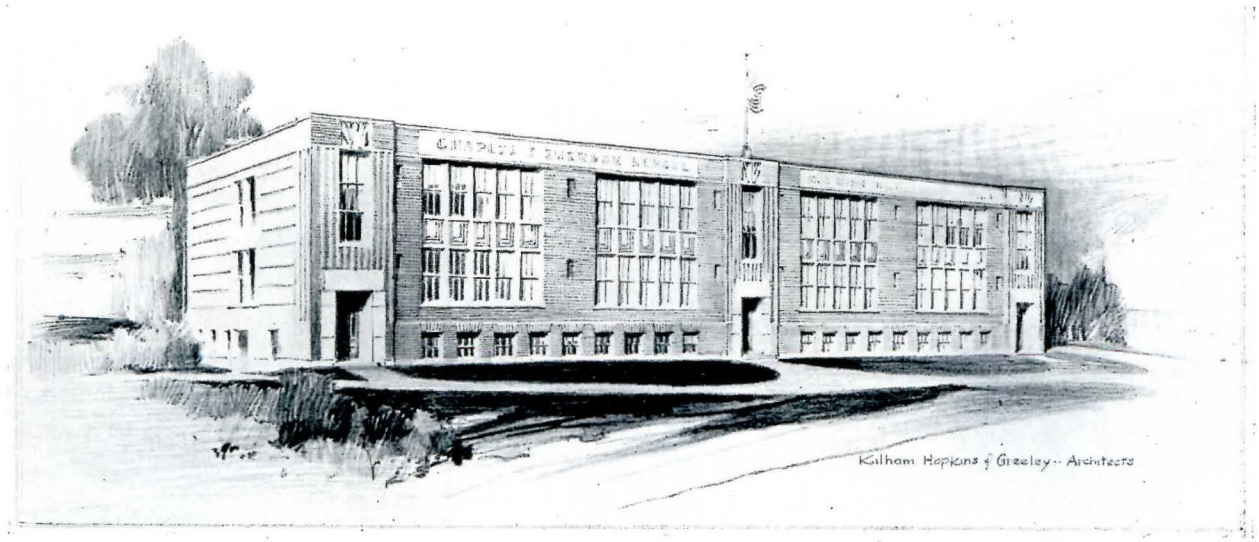
EARLY STUDY OF ELEVATION



A MORE CAREFUL ELEVATION STUDY ALLOWING FOR GROWTH AT BOTH ENDS



PLAN STUDY FOR FUTURE EXPANSION IN BOTH DIRECTIONS—THIS SCHEME WAS ABANDONED



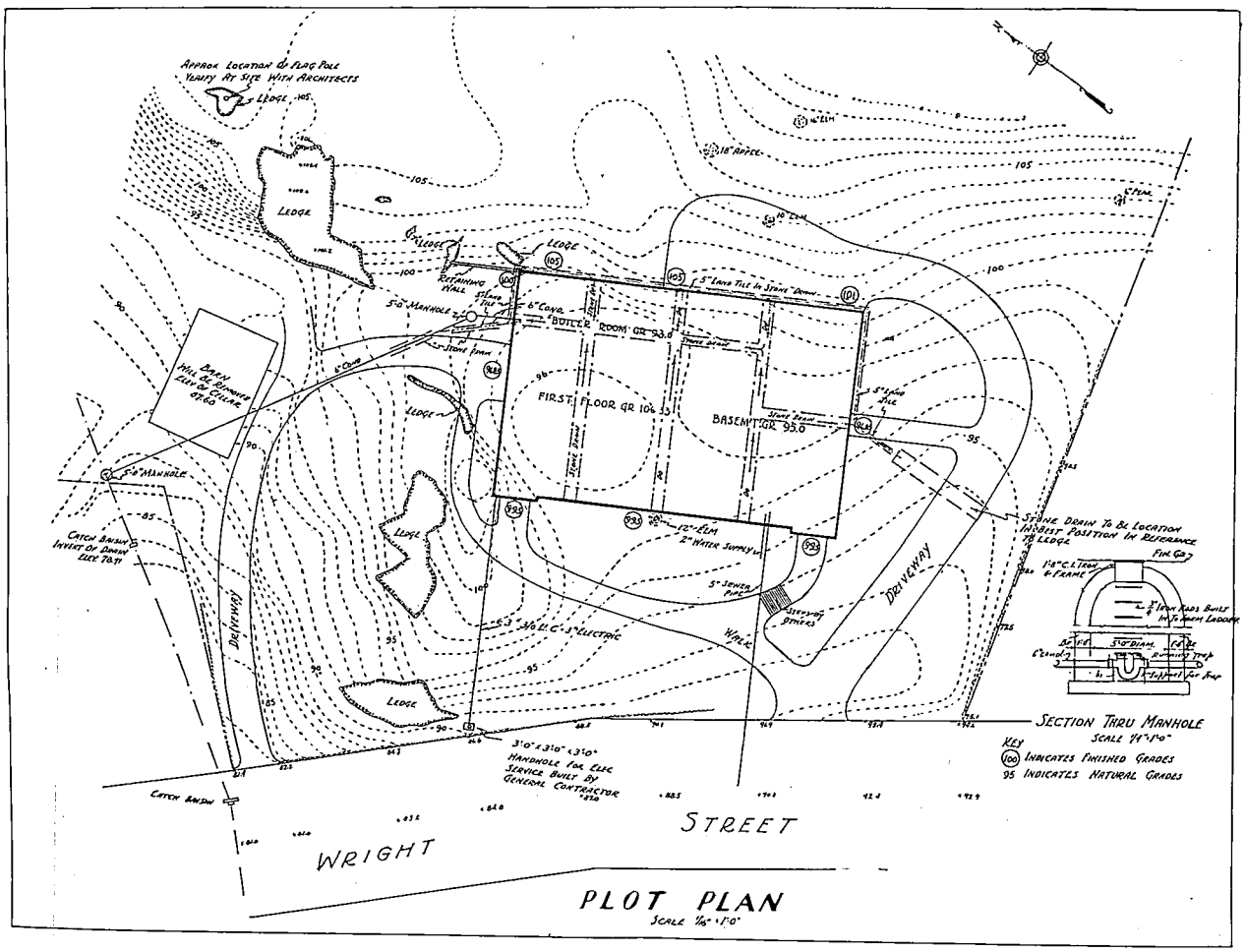
PERSPECTIVE SHOWING ACCEPTED SCHEME OF FUTURE DEVELOPMENT WITH UNIT TO BE ADDED AT ONE END ONLY

CHARLES J. EMERSON SCHOOL, STONEHAM, MASS.—KILHAM, HOPKINS, AND GREELEY, ARCHITECTS

ventional gray and drab. Experimenting carefully at first with two tones of grayish green, enlivened by a brilliant chalk rail in Chinese lacquer red, they progressed through various other combinations, finding, to their surprise and delight, that the more lively the colors the more they were liked. In one school where they tried one room only in a daring layout of blue and yellow, for which a good deal of criticism was expected, the teachers actually struggled for possession of the room—the unsuccessful ones having to be placated by taking the next brightest. In these previous schools the architects had carried the colors clear around the room, but at Stoneham they adopted the plan of making the window wall and the wall back of the pupils a warm neutral tan in every room, while in one set of rooms the wall back of the teacher and facing the pupils was of peacock blue as being restful to the eyes and preventing glare, and the wall opposite the windows was a rich yellow, very carefully chosen, which has good reflecting power for light. The chalk rails were done in aluminum paint and the woodwork was light fumed oak. The other set of rooms was done in two tones of gray green with lacquer red chalk rails, the neutral tinted rear and window walls remaining as before. The corridors were kept in neutral tones, but the stairs were gaily painted with red balustrading and black newels, strings, and handrails with walls of grayish glazed tile. Colored mat glazed tiles were used on the toilet rooms to about 6′-6″ from the floors, which were of red quarry tile.

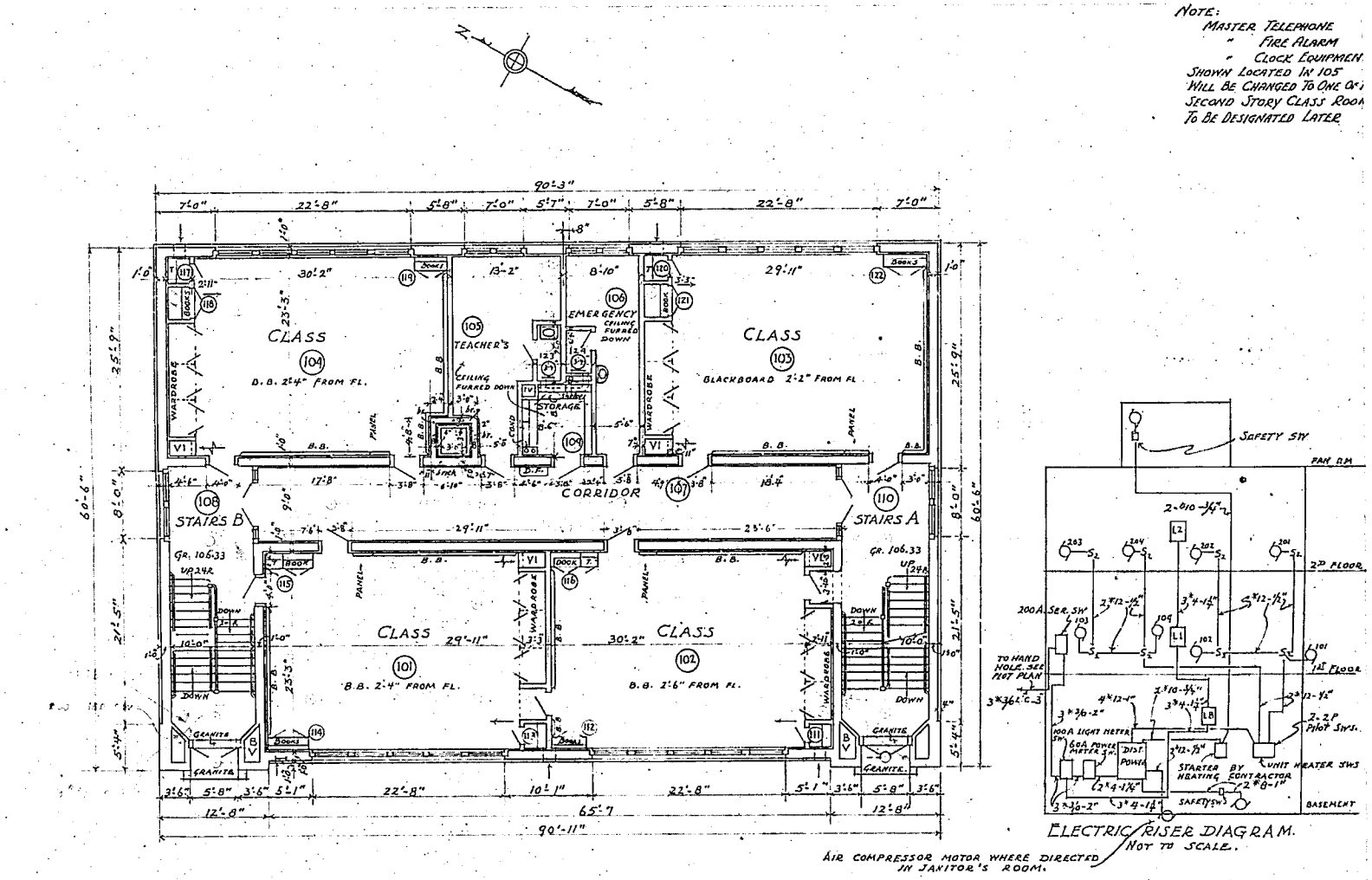
The construction is fireproof throughout, with walls of tapestry brick and cinder block backing, floors and roof of "Grid System" reinforced concrete, exposed in the basement and furred and plastered in the main stories, and partitions of gypsum and brick. Exterior trim is of natural limestone with cast aluminum window spandrels. The stairway walls, mentioned above, are lined with glazed gray "Ar-ke-tex" tile, and the corridors with burlap. The floors are of linoleum. The modernistic spirit is evident in all the minor details of hardware, lighting fixtures, plumbing, etc., and its cordial reception is an evidence of the progressive spirit of this community.

The building contains 219,620 cubic feet and cost $92,965 for all trades but exclusive of furniture and fees.. The effort was to produce a really good building rather than a cheap one, and especially one in which the cost of upkeep would be small.



PLOT PLAN—CHARLES J. EMERSON SCHOOL, STONEHAM, MASSACHUSETTS

KILHAM, HOPKINS, AND GREELEY, ARCHITECTS



FIRST FLOOR PLAN

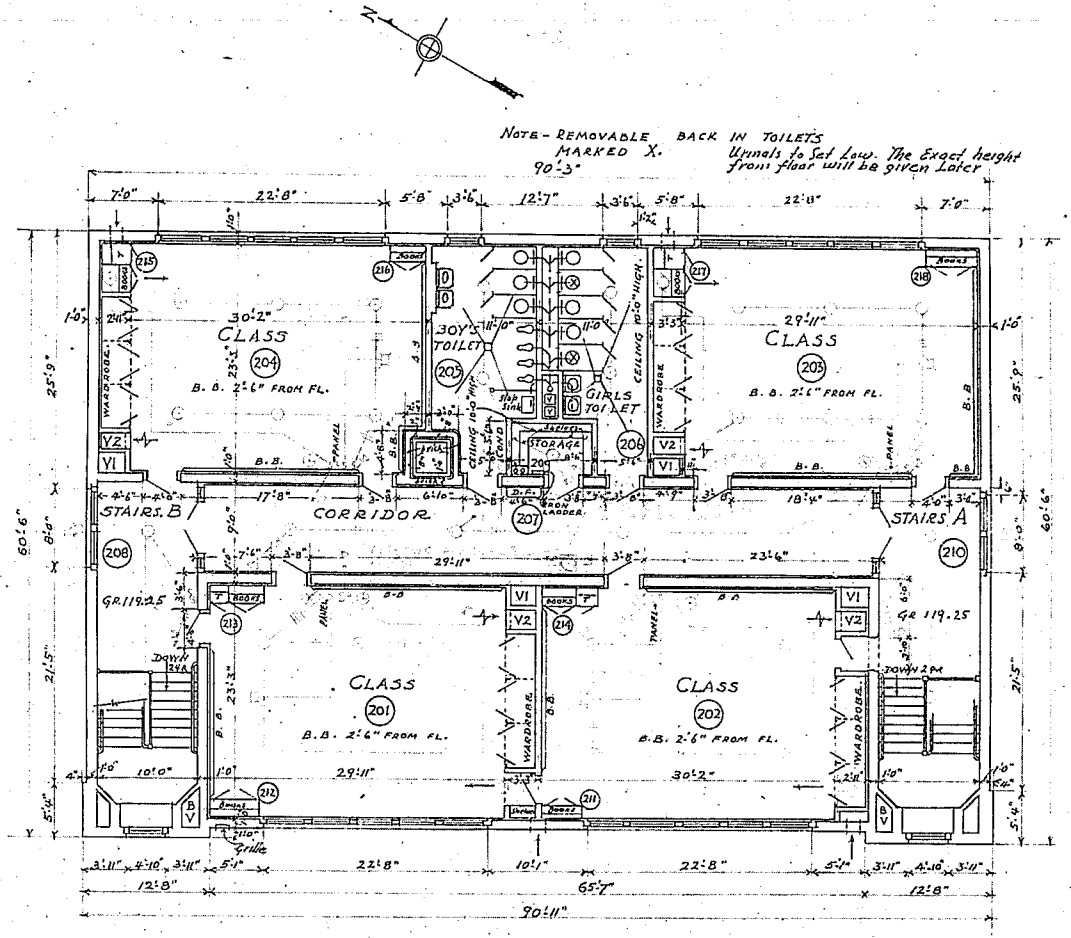
MATERIAL OF INTERIOR PARTITIONS
Indicates Cinvcor Blocks
" Gypsum
NOTE. Cinvcor Block Backing for Exterior Walls not Shown, See Specification.

REVISED 1/29/30

KILHAM, HOPKINS & GREELEY
Architects
3 PARK STREET, BOSTON
DRAWING FIRST FLOOR PLAN.
FOR GRADE SCHOOL, STONEHAM MASS
SCALE 1/8" = 1'-0" DATE 12/14/29
FILE NO. 1418 SHEET NO. 4 BY KEV

FIRST FLOOR PLAN—CHARLES J. EMERSON SCHOOL, STONEHAM, MASSACHUSETTS

KILHAM, HOPKINS, AND GREELEY, ARCHITECTS

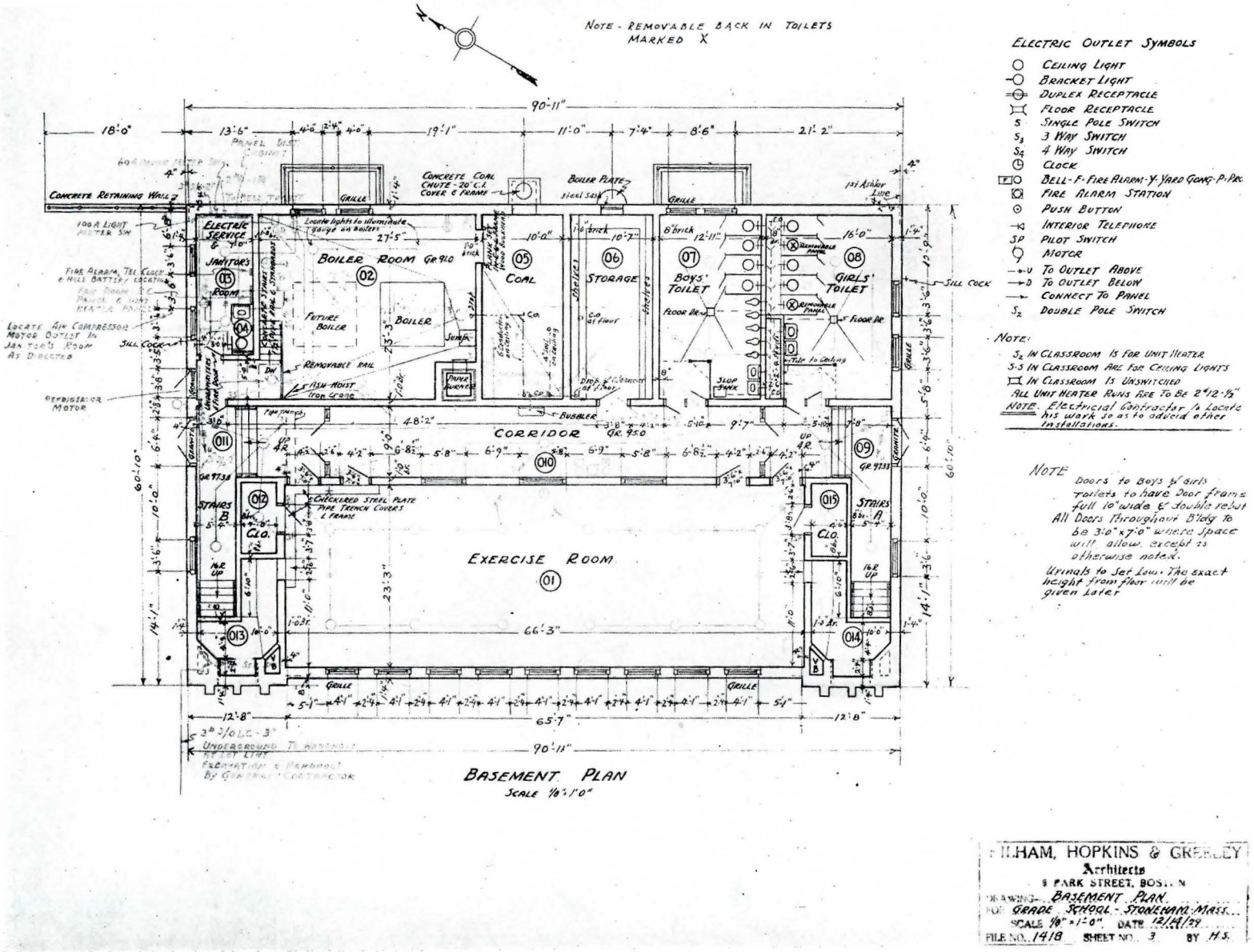


SECOND FLOOR PLAN.

KILHAM, HOPKINS & GREELEY
ARCHITECTS
1 PARK STREET, BOSTON
SECOND FLOOR PLAN
GRADE SCHOOL, STONEHAM, MASS.
1/8" = 1'-0" DATE 12/IX/29
1418 SHEET NO. 5 BY JEV

SECOND FLOOR PLAN—CHARLES J. EMERSON SCHOOL, STONEHAM, MASSACHUSETTS

KILHAM, HOPKINS, AND GREELEY, ARCHITECTS



ELECTRIC OUTLET SYMBOLS

- Ceiling Light
- Bracket Light
- Duplex Receptacle
- Floor Receptacle
- S Single Pole Switch
- S_3 3 Way Switch
- S_4 4 Way Switch
- Clock
- Bell-F-Fire Alarm-Y-Yard Gong-P-Pbx
- Fire Alarm Station
- Push Button
- Interior Telephone
- SP Pilot Switch
- Motor
- To Outlet Above
- To Outlet Below
- Connect To Panel
- S_2 Double Pole Switch

NOTE:

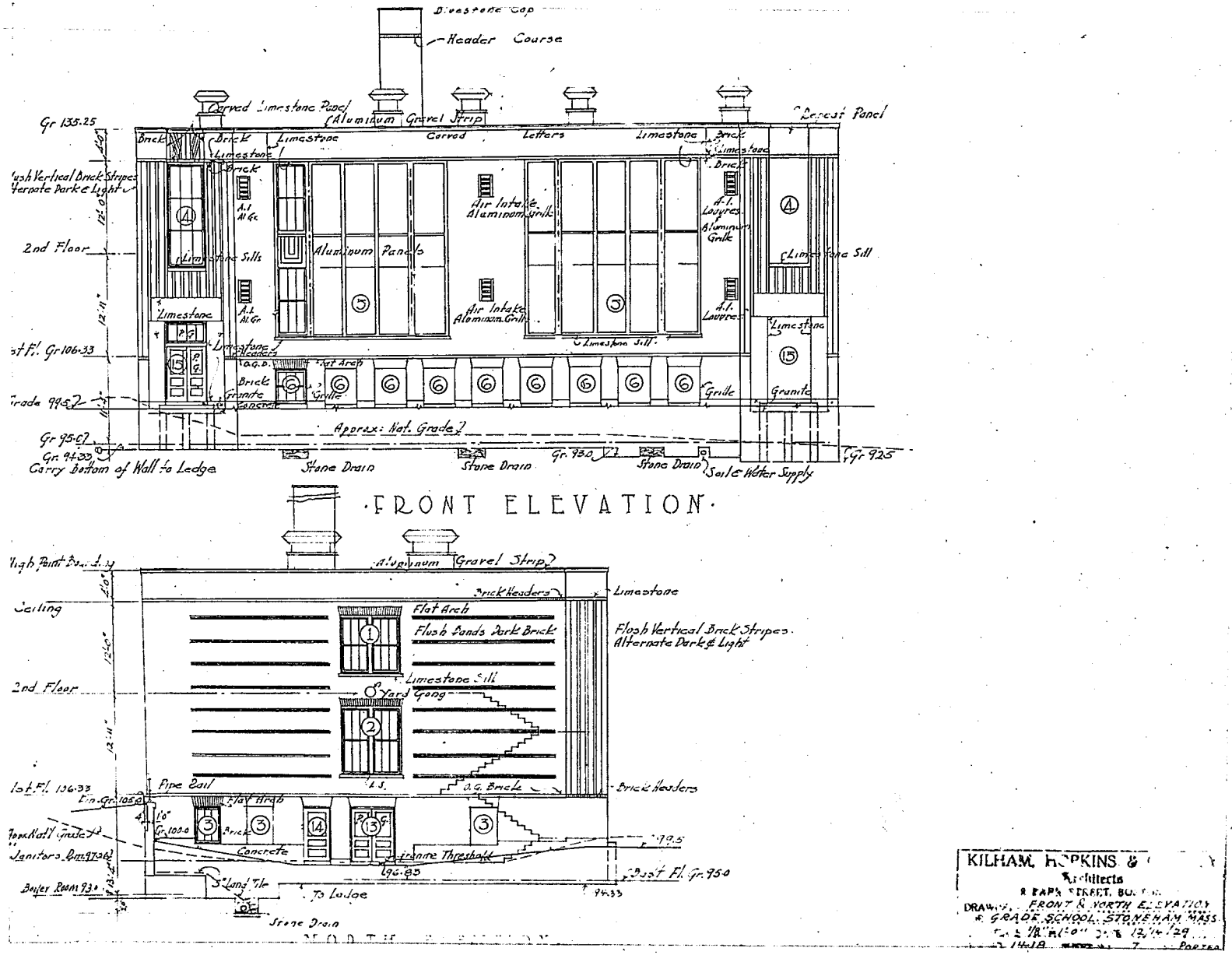
S_2 IN CLASSROOM IS FOR UNIT HEATER
S-S IN CLASSROOM ARE FOR CEILING LIGHTS
IN CLASSROOM IS UNSWITCHED
ALL UNIT HEATER RUNS ARE TO BE 2"-12"-1½"
NOTE. Electrical Contractor to Locate his work so as to advoid other installations.

NOTE

Doors to Boys & Girls toilets to have door frame full 10" wide & double rebut
All Doors throughout Bldg to be 3'0" x 7'0" where space will allow, except as otherwise noted.
Urinals to Set Low. The exact height from floor will be given later

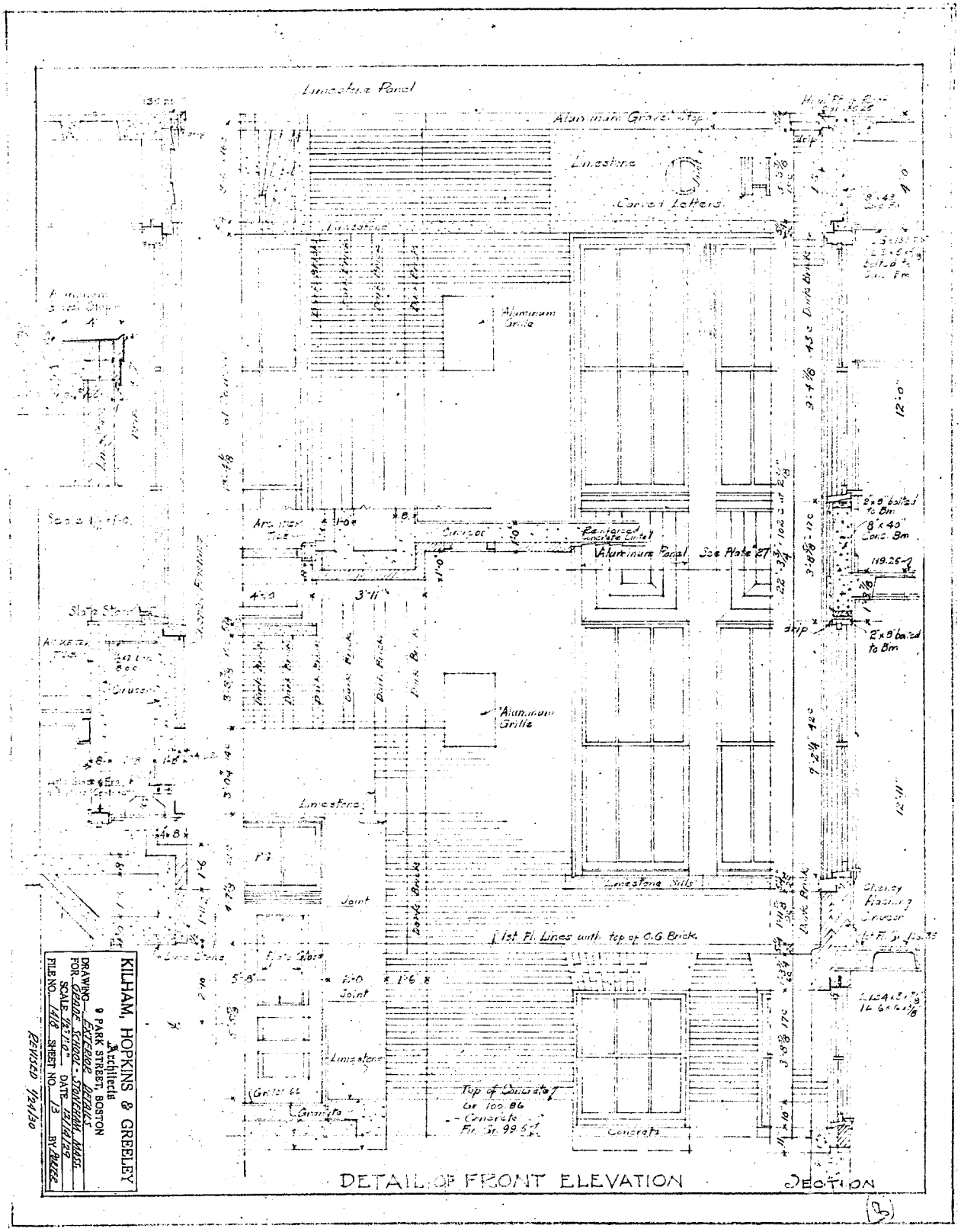
FITCHBURG, HOPKINS & GREELEY
Architects
9 PARK STREET, BOSTON
DRAWING BASEMENT PLAN.
FOR GRADE SCHOOL - STONEHAM, MASS.
SCALE 1/8" = 1'-0" DATE 12/14/29
FILE NO. 1418 SHEET NO. 3 BY H.S.

BASEMENT PLAN—CHARLES J. EMERSON SCHOOL, STONEHAM, MASSACHUSETTS



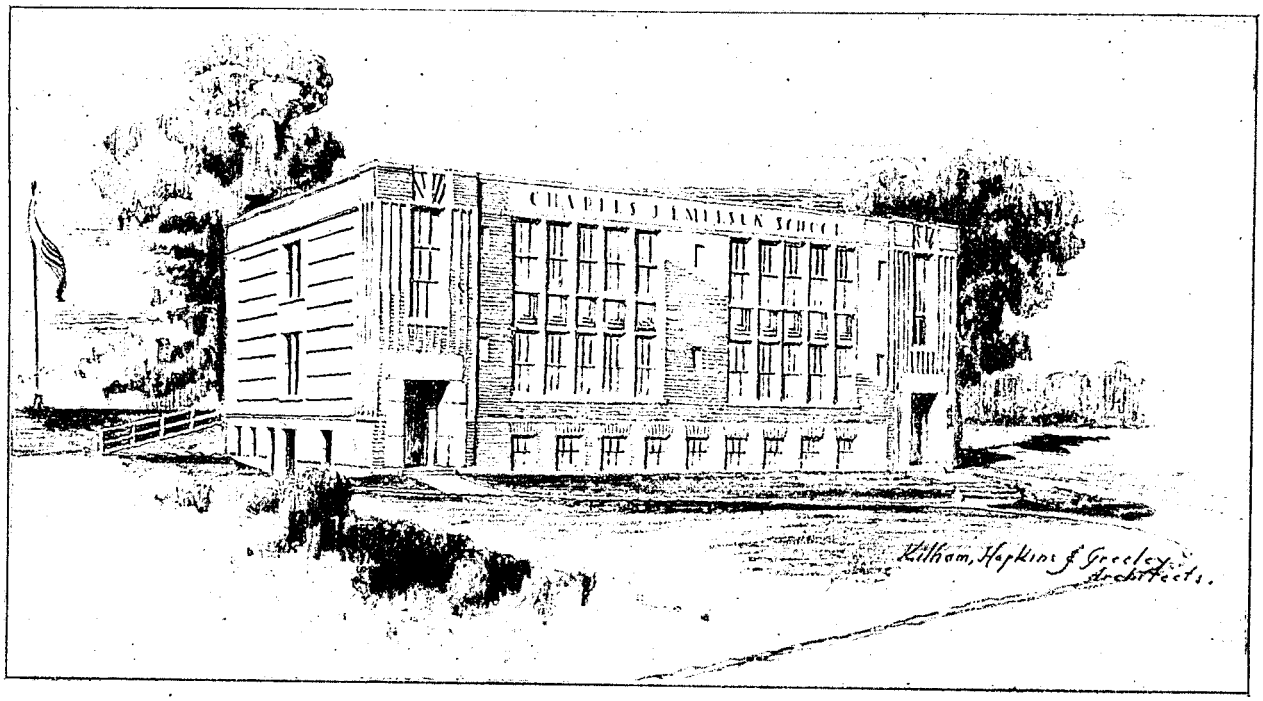
FRONT AND END ELEVATIONS—CHARLES J. EMERSON SCHOOL, STONEHAM, MASSACHUSETTS

KILHAM, HOPKINS, AND GREELEY, ARCHITECTS

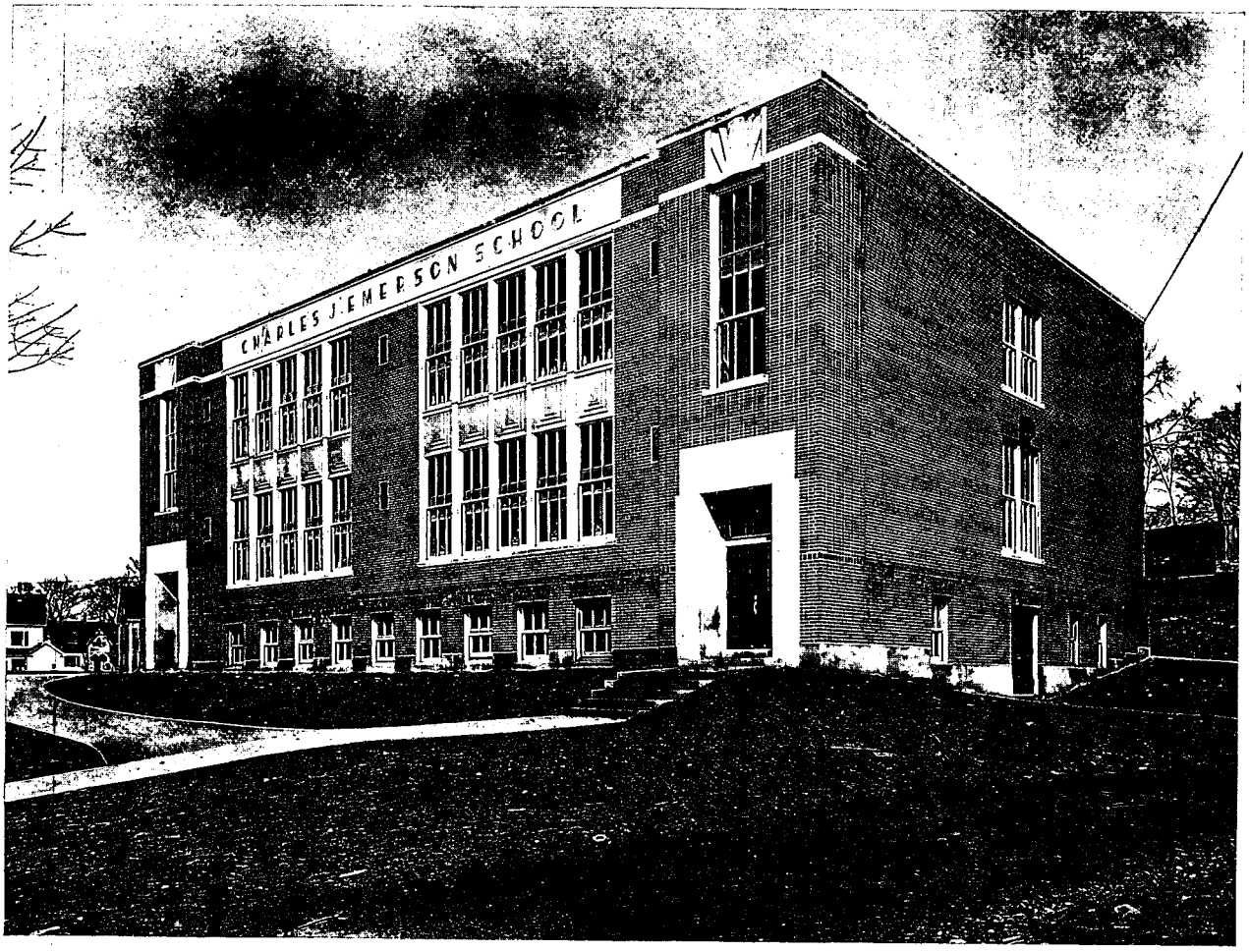


EXTERIOR DETAILS—CHARLES J. EMERSON SCHOOL, STONEHAM, MASSACHUSETTS

KILHAM, HOPKINS, AND GREELEY, ARCHITECTS



PERSPECTIVE OF SCHOOL AS BUILT—TO BE ADDED TO LATER



ANOTHER PHOTOGRAPHIC VIEW OF THE CHARLES J. EMERSON SCHOOL, STONEHAM, MASSACHUSETTS
KILHAM, HOPKINS, AND GREELEY, ARCHITECTS

The Modern House Should Be Insulated

By Arthur Bates Lincoln

Clients demand uniform temperature in their homes. Heat must not be allowed to escape too easily during winter months, nor must it be permitted too ready an entrance under midsummer's burning sun . . . Construction methods and materials may be combined to secure efficiency.

In the design and construction of the present-day residence, the architect has available at his command a varied range of equipment and materials, whose primary purpose is to increase the ease of living.

On the one hand are the positive agents for the promotion of comfort, of which the automatically controlled heating plants, burning gas, oil, or coal, and requiring but little thought or attention upon the part of the home owner, are typical examples. These are generally classified under the head of equipment. On the other hand there are the passive agents, inactive in their contribution to freedom from discomfort, assuring it because their presence in the house is a barrier to the passage of heat. These are materials built into the side walls of the house and under the roof.

Importance of Insulation

Standards of comfort for homes are today higher than ever before, with a demand upon the part of the owners for a uniform temperature of seventy degrees F. within, regardless of whether it is down to zero outdoors, or up to 45 degrees above. High cost of fuels is another factor which makes the matter of adequate insulation a vital one.

Heat will pass through the walls and roof of a house. During the cold winter months the occupant must pay to keep his house warm and comfortable; the less heat loss through these walls, the lower will be the cost for fuel. Conversely, in midsummer, the heat of the sun penetrates from the outside, particularly through the roof, increasing the discomfort of people within the dwelling.

Advertisements urging home buyers and builders to insulate their homes, and in this way to keep out winter cold and summer heat, are so numerous and diversified that bewildered laymen come to their architects and ask, "What is there in this hue and cry for insulation? What will it actually save us? Which material should we use, quilt, fibre board, powder—or what?"

Construction Methods Affect Heat Transmission

All architects are familiar with the fact that a dead air space, a space wherein air is confined with no opportunity to circulate, is one of the best retardants to the passage of heat. Materials such as glass and iron are recognized as good conductors of heat and cold. Absence of air spaces in their structure facilitates rather than opposes the passage of heat. Every material, on the contrary, which serves as a barrier to heat, is efficient in direct proportion to the quantity and size of these confined air cells. Where numerous or large the effectiveness is high, where small or infrequent it is low.

The materials of which walls are commonly constructed each have definite and known insulating values, from which is computed the size of the heating plant. Methods of construction, as well as the materials used, affect the result in walls. An examination of the cross sections of exterior walls of different types will reveal that the insulating values are greatest in those walls where air spaces are most numerous. This is strikingly borne out by figures of tests which show that the heat loss through a brick wall eight inches thick may be decreased by about one-third if one- by two-inch wood furring strips are applied on the inside face of the wall, before it is lathed and plastered.

Where the House Should Be Insulated

The most efficient result will ensue when the insulation completely encloses the living areas of the house. On the first story level it should be placed between the first floor joists, and at the ends should meet the insulation of the exterior walls. This latter should be carried through the floor thickness at all floor levels. Where the attic is to serve only as a storage space, heat loss at this important point may be prevented by insulating the ceiling joists of the second floor, but if rooms are to be finished in the attic, the protection must be placed between the rafters.

Flat roof decks over heated rooms and floors over unheated spaces require especial protection. Because of the tendency of heat to rise, it is logical to make the insulation under roofs thicker than it is on side walls, thereby increasing resistance to the passage of heat. The efficiency of the insulation does not become greater in direct ratio to the thickness of the material used, however; test figures show that the benefits in proportion to the cost are greatest with a thickness of from one to three inches.

Materials for Insulation

The selection of the proper material for the insulation of a house is not always a simple procedure, with dozens of manufacturers claiming the attention of the architect, each citing the advantages of his product over all others. A brief survey of the field will show that many sources supply the raw materials which go into these materials.

Flexible insulations, usually shipped in rolls, are made from animal hair, flax, jute, vegetable fibres, eel grass, or wood shredded to resemble wool. Some of these have long been used to increase living comfort in homes. Between two layers of heavy kraft paper the fibres are stitched and matted to form innumerable air

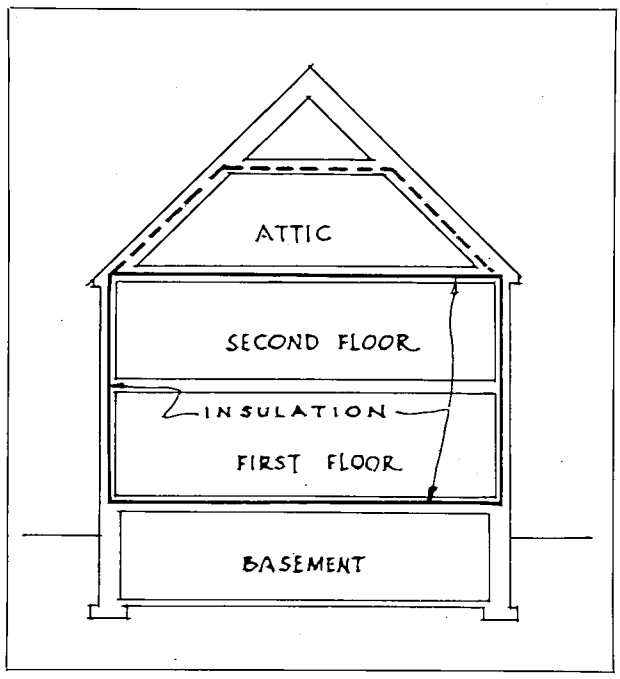


FIGURE 1

In the truly insulated house the living quarters are completely enveloped by whatever material is selected for protection. Only in the event that living rooms are placed in the attic need this follow the roof slope; insulation in second floor ceiling will retard the escape of heat in winter, and prevent the ready entrance of the burning rays of the sun in midsummer.

spaces. The covering paper is waterproofed to protect the material within and also the building in case of rain during construction. These quilts are treated to make them vermin and flame proof.

The popularity of these products is largely due to their adaptability, as they are so cut that they may be tucked into spaces between studding and rafters and fitted into odd corners or irregular spaces with ease. Manufacturers of these quilts point out that when their product is tacked in the center of the four-inch stud wall a double air space is formed. Statistics of the U. S. Bureau of Standards confirm their claim that this method of installation increases efficiency.

It is important that all horizontal layers of the quilt overlap the vertical, to seal tightly the livable areas against any heat loss. Particular attention should be paid to nailing at roof ridge and eaves in the attic, places not easy to reach, offering only cramped space in which to work.

Where construction cost must be kept at a minimum, this insulation may be wrapped like a blanket around the rough sheathed house, the exterior finish, whether shingle, siding, brick or stucco, being applied over it. While this is a less costly method, it is likewise less efficient from the insulation standpoint. For overhead protection the insulation may be nailed to the ceiling beams where there are no rooms in the attic.

Insulation in Bags

A different type of flexible insulation comes in powder form. This may be of ground rock, gypsum, or asbestos, and is blown or poured into the walls between the studding or furring. In the frame wall a greater thickness than necessary is unavoidable, since it must occupy the full thickness of the studs, almost four inches. For attic protection with such a material it is generally easier to pour between second floor ceiling beams than to attempt placing it between the sloping rafters. A thickness of 2″ is recommended here.

Another flexible insulation, a fibrous material, is blown by air gun against the inside surface of the exterior walls and roofs and coated with an emulsified asphaltic binder prior to the application of lath and plaster. There it clings, 1″ or more in thickness, its many confined air cells affording insulation. The advantages of this method are, first, the ease of controlling the thickness, which may be varied to meet any unusual conditions, and second the thoroughness with which spaces around door and window openings may be effectually sealed.

Boards for Insulation

Rigid boards, serving as insulation, are manufactured in great quantity and from varied materials. There are two general types of these boards. That most widely used is a general purpose board, about half an inch thick and 4 feet wide by 8 to 12 feet in length. It is variously used in house construction as exterior wall and roof sheathing, as plaster base, as

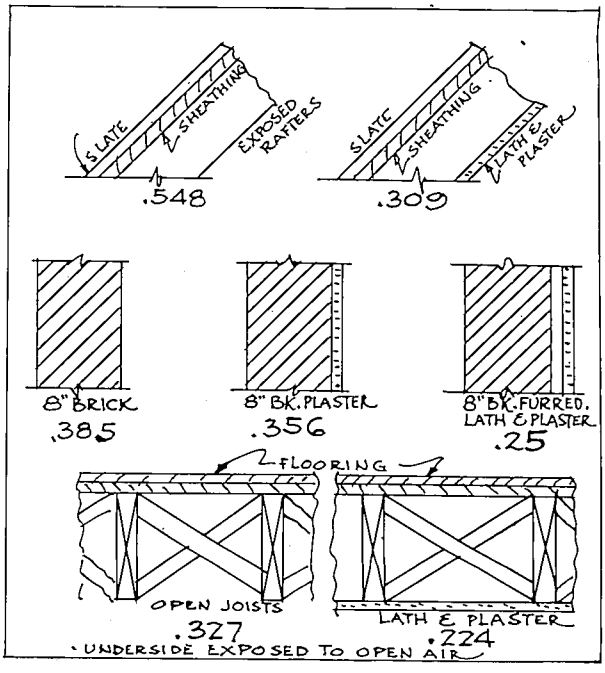


FIGURE 2

Construction methods will often improve the insulation factors of floor, walls and roof. Figures given show heat transmission factors expressed in B.t.u. per hour, per square foot, per degree difference in F. temperature as evolved by the American Society of Heating and Ventilating Engineers. Decrease in loss of heat will be observed where confined air spaces are introduced.

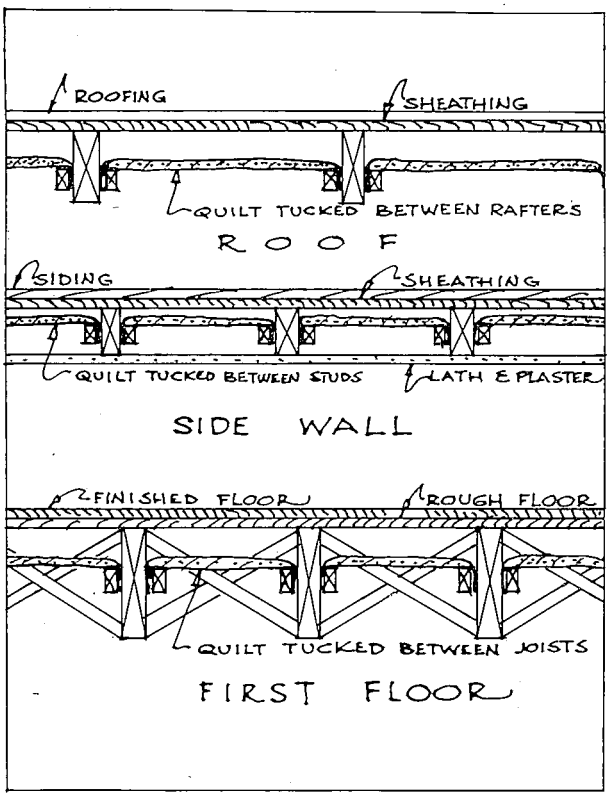


FIGURE 3

Insulation with quilt tucked between members of the structural framework. Sketches show the most efficient albeit more expensive method of using this material.

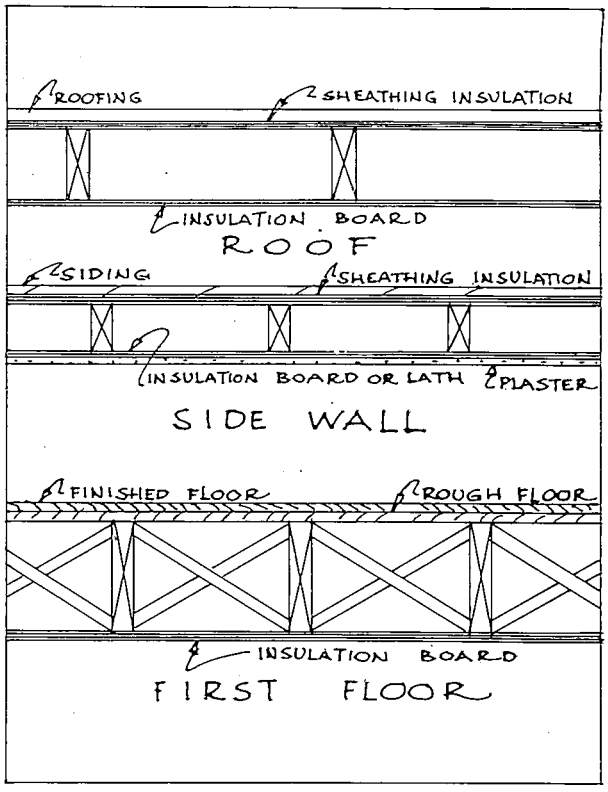


FIGURE 4

Insulation boards may be introduced as sheathing, plaster base and interior finish, performing a double service.

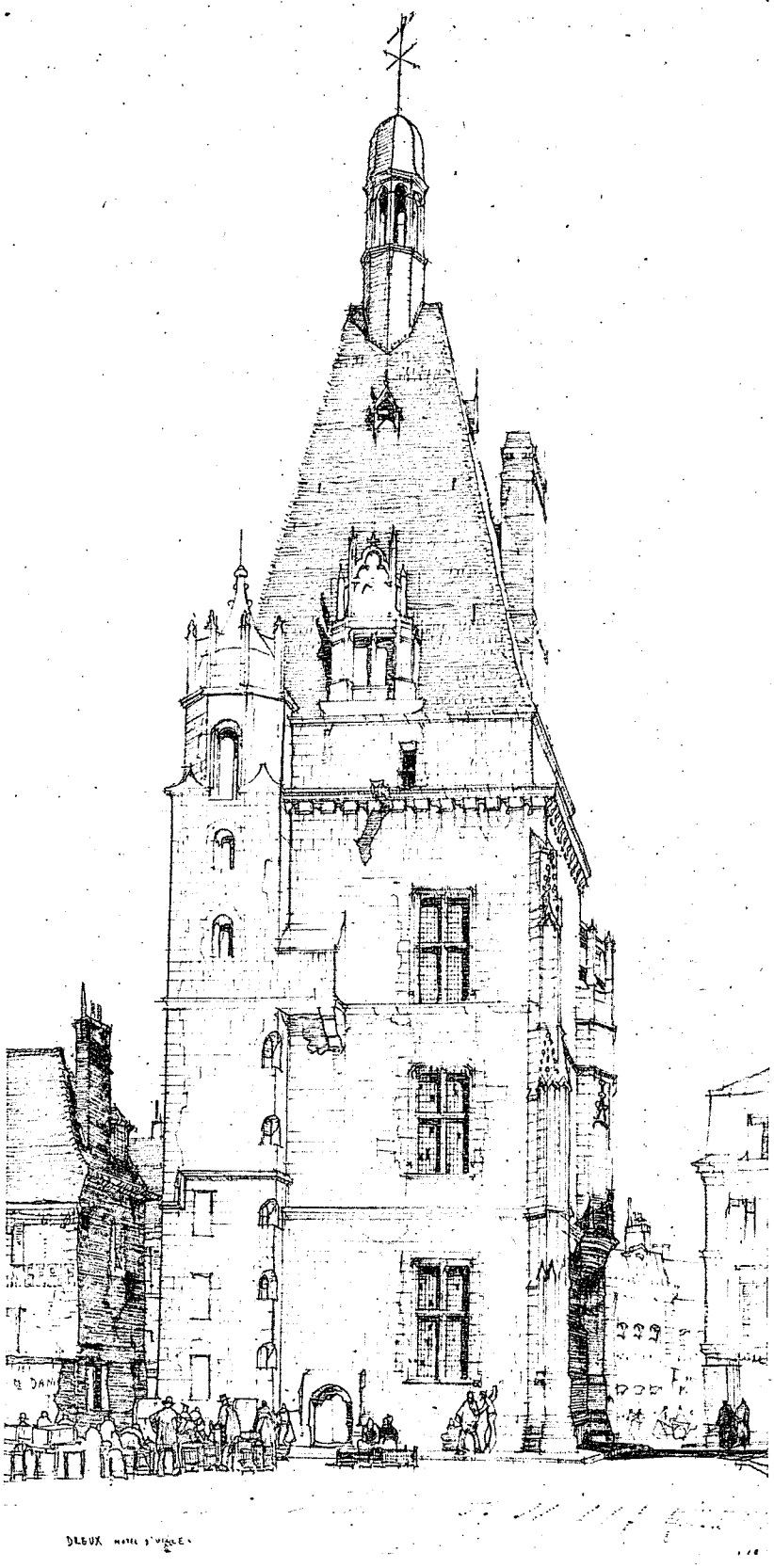
interior and exterior wall finish, and as a sound deadener under finished floors.

Wood fibre of many varieties, both hard and soft woods, sugar cane, licorice root, corn stalks, and straw are a few of the raw materials utilized. These boards, when serving as sheathing or plaster base, combine this service with the insulation feature. In attics they serve very satisfactorily to finish off extra rooms, while at the same time protecting the entire house.

There is a second type of board which is manufactured in sheets of smaller area, and 1″ or more in thickness. These are primarily for the purpose of providing insulation, although some may be used as a plaster base. Cork, peat moss, and wood fibre are the materials from which these boards are manufactured.

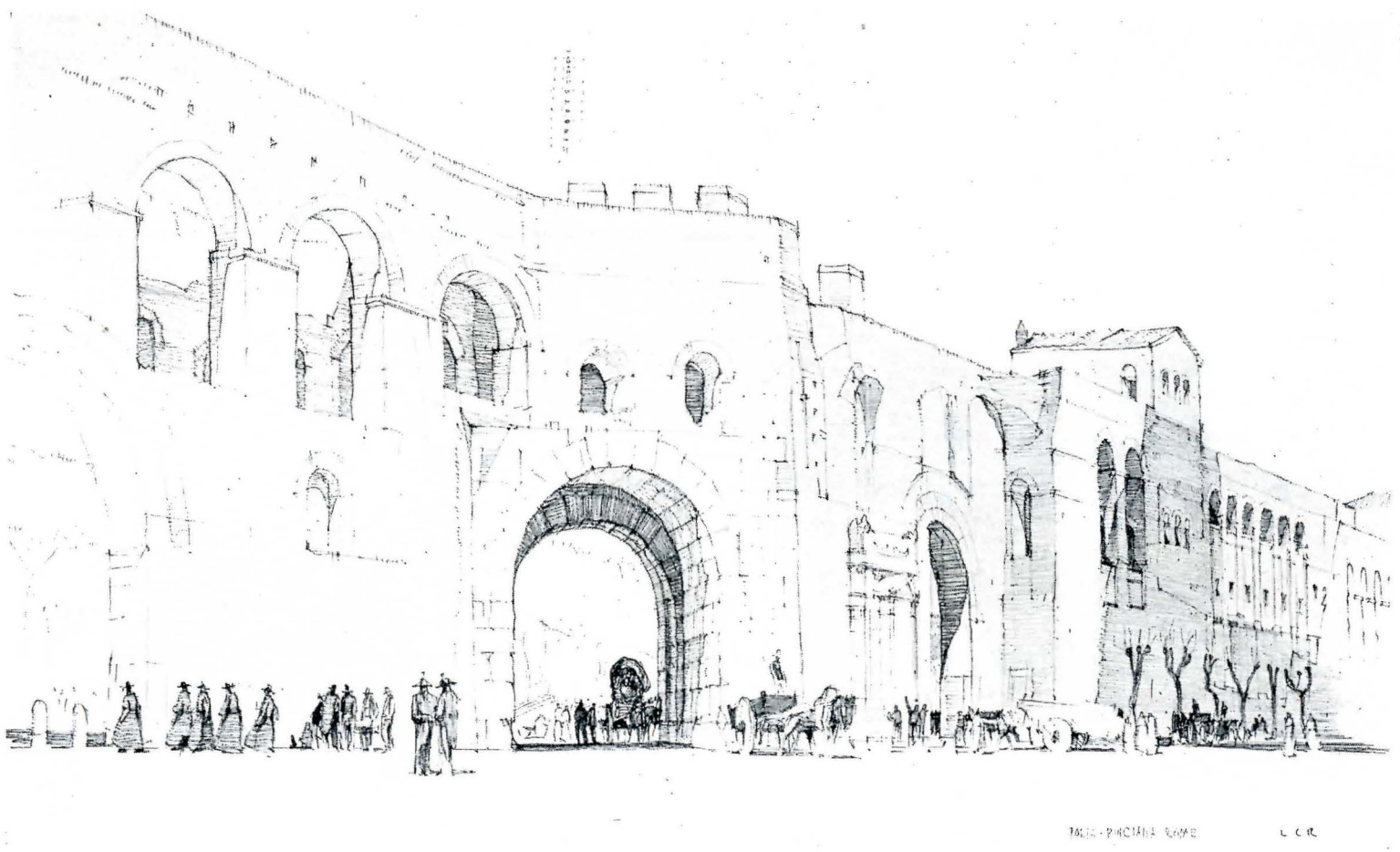
These boards may be readily cut with knife or saw, and are easily applied by nailing to the inside of the studding or furring, and to the under side of rafters.

There is a saturation point beyond which these materials will serve no further good as heat insulation, but experiments have proven that a proper amount of protection will be a benefit to the home. It will improve physical comfort and reduce the cost of annual maintenance. Infiltration of air around door and window frames and sash, and through other places of leakage, must be effectually stopped, or the advantages of a heat retardant in the balance of the walls will be largely nullified.



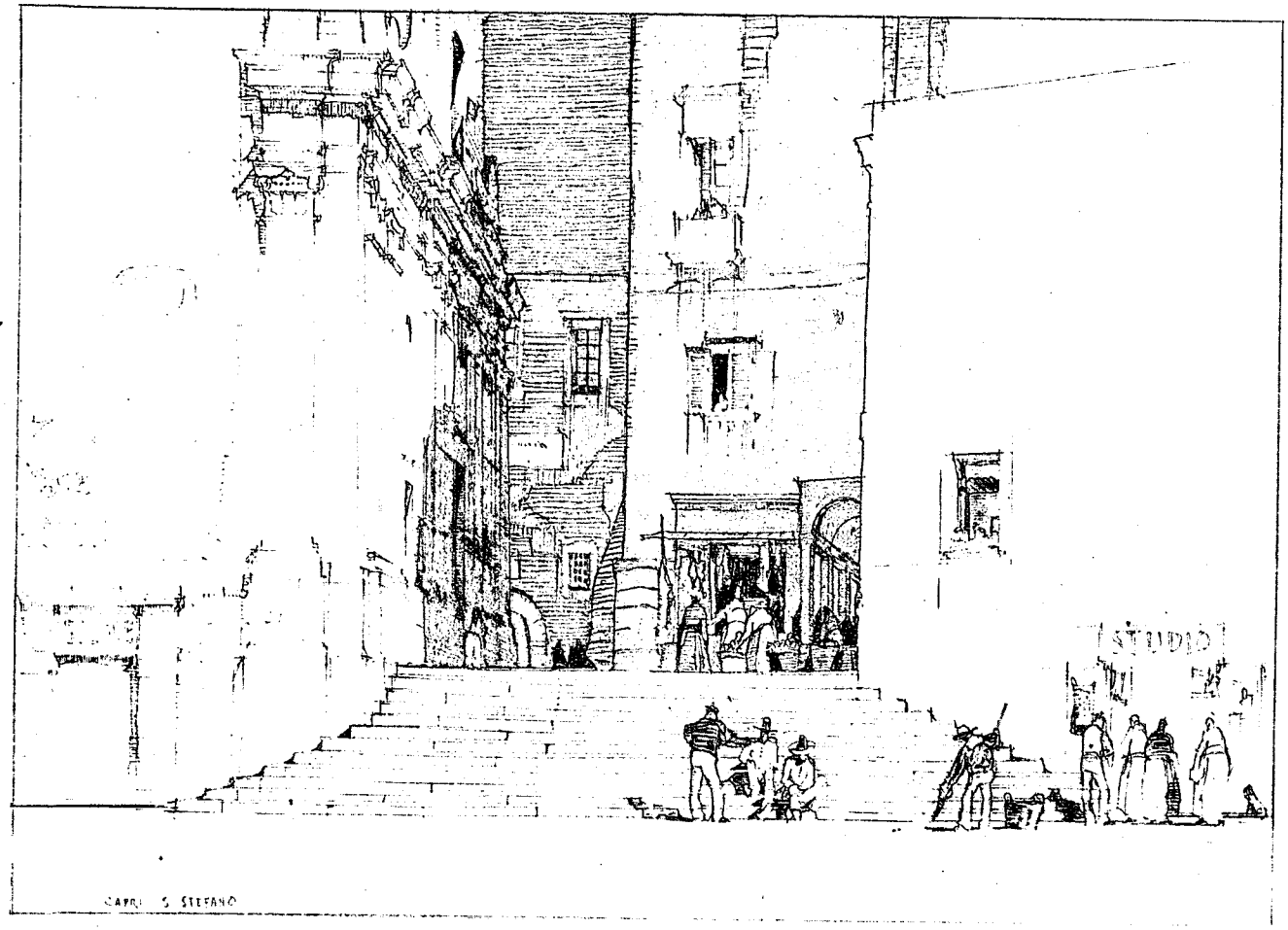
HOTEL DE VILLE, DREUX

PENCIL STUDY BY LOUIS C. ROSENBERG



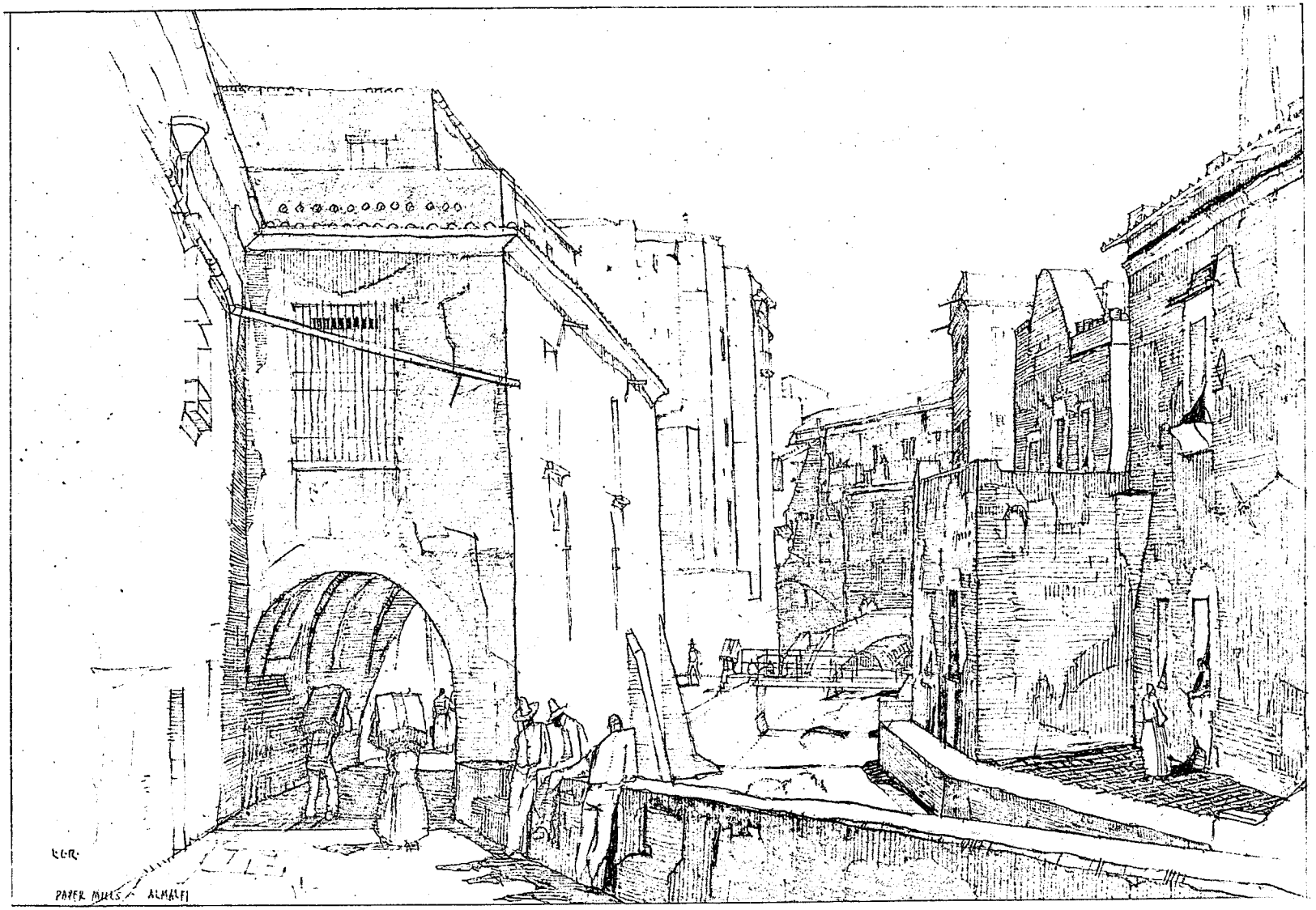
PORTA PINCIANA, ROME—PENCIL STUDY BY LOUIS C. ROSENBERG

REPRODUCED AT EXACT SIZE OF ORIGINAL



SAN STEFANO, CAPRI—FROM A PENCIL STUDY BY LOUIS C. ROSENBERG

REPRODUCED AT EXACT SIZE OF ORIGINAL



PAPER MILLS, AMALFI—STUDY IN PENCIL FOR AN ETCHING, BY LOUIS C. ROSENBERG

REPRODUCED AT EXACT SIZE OF ORIGINAL

An Architect's Notes on Pen Drawing

By Sydney E. Castle, F.R.I.B.A.

Editor's Note:—*This is the first of a series of talks on pen drawing by Sydney E. Castle, F.R.I.B.A., of London. Mr. Castle begins to engage his subject with the free and easy familiarity of long experience. He starts with early difficulties in the spirit of recalling his own; looks back over difficult ground as if traversing it again. Having passed through several phases of pen drawing, he talks authoritatively and, better still, intimately. The subject is approached as one to some extent within general grasp; and Mr. Castle will proceed to show how even a limited mastery in pen portrayal leads towards deeper and wider realization of design—its inner meaning and beauty.*

His drawings will appear in support. They are collected from a large accumulation spreading over many years, and will cover isolated objects such as the student might find in parallel near at hand. The drawings are mostly the result of what Mr. Castle calls "pen-wandering" through the museums. Ranging from a gridiron to delicate marquetry, their demands on varying technique will be realized.

The first thought that intrudes itself as I prepare to strew enlightenment on an unsuspecting world reminds me that nobody, as far as I remember, ever taught me the least thing about pen drawing. All I seem to recall is someone many years ago critically inspecting an early effort while I, crimson to my hair, stood by trying to capture a trace of encouragement from inscrutable features. In a grave voice, not free of sadness, he asked me if anyone *taught* me to do this kind of thing. I cleared any living soul of possible blame, of course; but the effect was crushing. But it was also challenging.

Looking back, I doubt very much if anyone had the power to teach me the barest rudiment. For this reason: that from the first I have rather accepted the medium as taking a peculiar native quality like the development of handwriting. No one teaches us to write as we finally do—it comes. We at first clutch a pen as if it were a broom-handle and proceed to shoot blots and smudges on a limbering or staggering route like the course of a "tank" in action. But later, after a long list of casualties, the nib consents to behave: it begins to trip and flourish, until, there we are—whether we write in the bold heroic or in the screwy shy—standing as rational beings in the cultured use of a pen. As no two faces are alike, no two handwritings are alike. And, looping back to point, no two skilled draftsmen are alike.

I recommend the aspirant to give this a little thought in making his approach. He will probably wander devious routes during his adolescence, there will be thrill and reacting shock, much aping and many wrong roads but let him grip his pen boldly—if he reckons to be blest with indigenous character and individuality, out it is due to come and there will be no stopping it. As it is due to roll off his tongue, so it is due to roll off his nib.

And that is the peculiar charm of pen drawing. It invites personality. As proved by handwriting, mere knack and fluency are less gift than natural outcome of extended application and patience. I hasten to qualify that I am not suggesting either that great flights are possible to all and sundry, or that without development of mind hand cunning alone can go very far. But this I do suggest: that most of us die undeveloped except in those things necessary for our immediate well-being, and that were pen drawing as imperative in our everyday lives as writing, most of us would learn to express ourselves intelligently thereby.

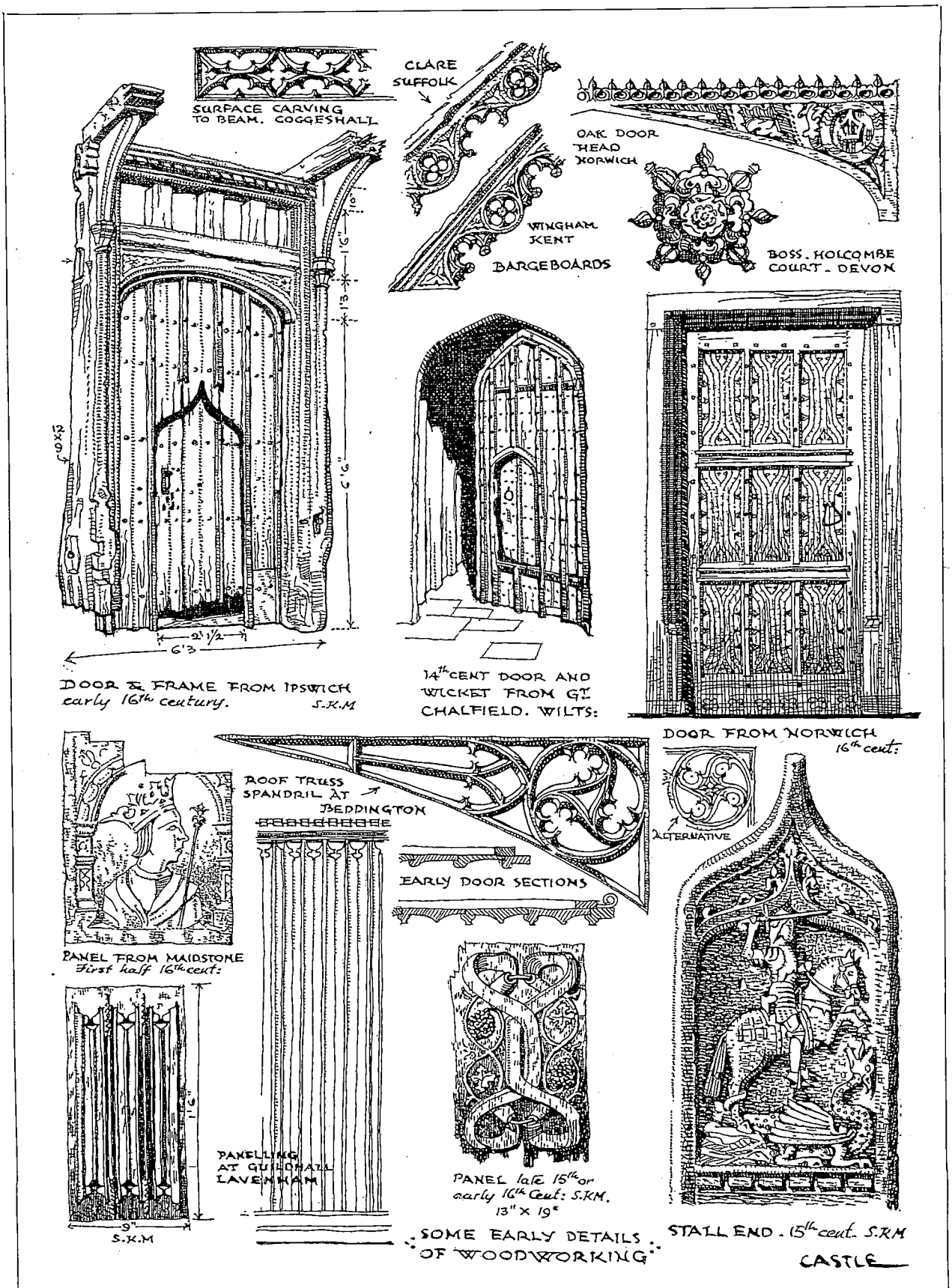
There is much fun if little nourishment in pen drawing. Let us, for the moment, take it in this spirit and inquire into possibilities.

We find it is something like golf—most effective in the employment of the least number of strokes, the success of which entails close acquaintance with the *most*. In pen and ink the stroke is alone expressive. You cannot "fluff" as in pencil: you cannot flood smooth color; you must fiddle your notes articulately, not slur them. You must work hard for your tones with a point small enough to define a hair—you must weave your pattern as with a fine needle. You must be patient, penetratingly observant, microscopic—even finicky . . . . . In sum, you must draw.

Now, I recommend museums. I know some people hate museums, but if they would aspire to pen drawing, let them bury this hatchet for the nonce and try one out. There we are: we've everything from a stuffed lion to a sixteenth century firedog. Moreover, we've a pair of eyes and, we will concede, an intelligent brain—and nothing to pay for any fun that may be going. Here, let us instance, is a fragment of Spanish ironwork. To be sure, there are lines about it—whirling, rhythmical, possibly floral—and it simply pulls us by the arm to be drawn in pen and ink. Splendid! We step in like Trojans.

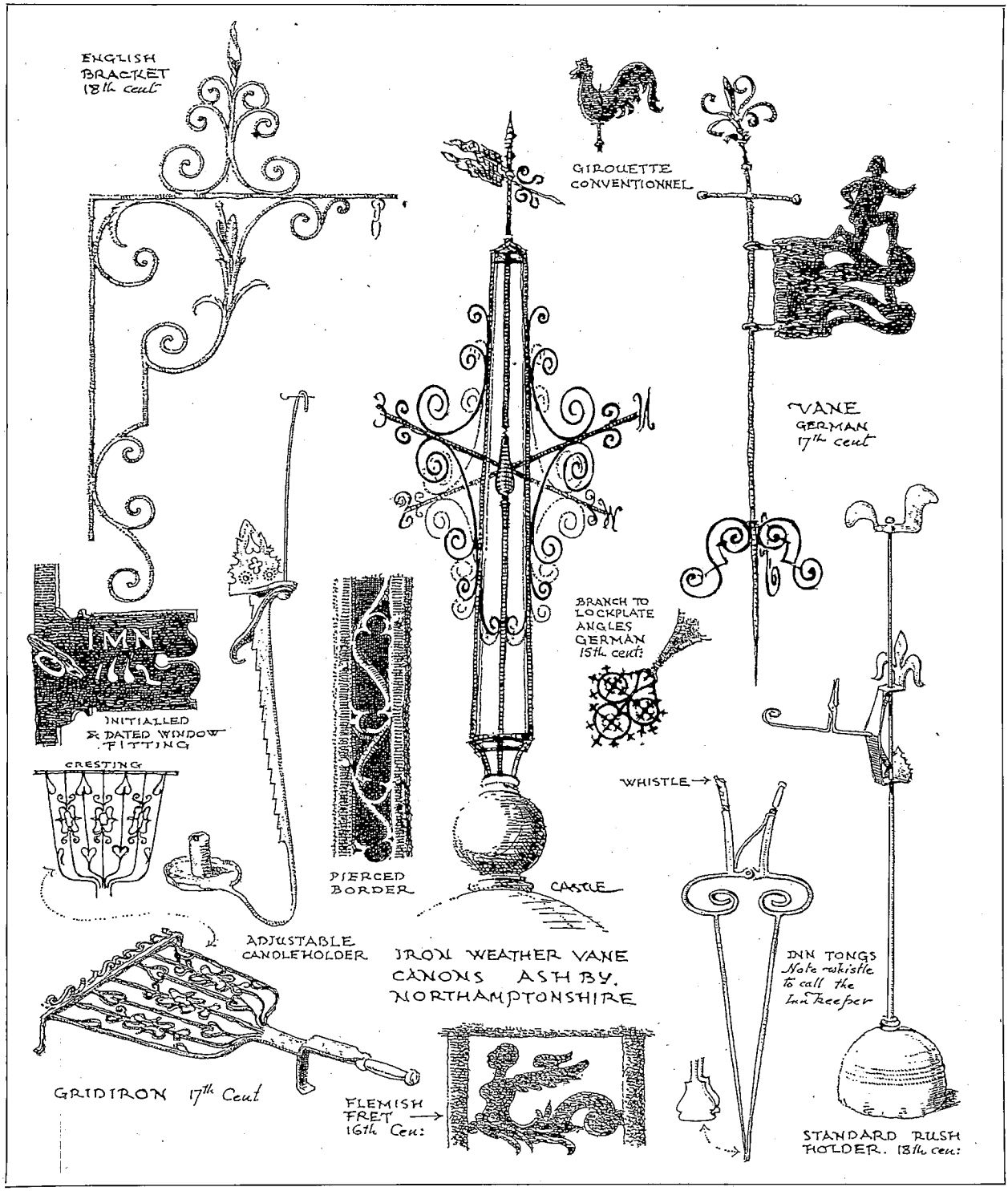
Not so easy though. Weaknesses come to be rubbed in as weaknesses are rubbed out. If we are saintly we close our eyes, if we are blasphemous, we shoot sparks. We find that the blossom of enthusiasm doesn't in the least signify the fruits of accomplishment. But we battle until the pencil has yielded fair promise and the pen is literally itching to paddle in the murky depths of the Higgins bottle.

No skipping—we must draw everything though we perish. We find we are gazelles at right-hand curves and traction-engines at left. Curious, we wonder why. Heavens! that outer line flows as sweetly as if Rubens were behind it—yet the balancing curve behaves as if the village idiot were behind it. And, saints preserve us, where has fled the sweeping grace of



DRAWINGS IN PEN-AND-INK BY SYDNEY E. CASTLE

Subjects from Mr. Castle's museum wanderings, drawn on a sheet measuring 8¾" x 12".



DRAWINGS IN PEN-AND-INK BY SYDNEY E. CASTLE—SIZE OF ORIGINAL SHEET 8¾" x 10¾"

the acanthus? It was a smooth delight in pencil—now it looks like the head of an alligator. Mind-blotting realization! It is this howling mess of a pen that has stepped in and jolted matters. But we fuss on with our vanity petering out in saturnine murk. We recall someone, we would now like to destroy, having written "the pen is mightier than the sword" and duly curse him. But we set our teeth grimly and press on, murmuring *dum spiro, spero,* or words to that effect, determined to put down this *château en Espagne* if we cast ourselves from the highest balcony the next moment.

At length we breathe more freely. Naiads gleam from glassy pools and fawns spring from woody grove. There it is. The pen is beginning to prattle—stupidly, scratchily, as tongue-tied, maybe; but for all making a once blank piece of paper say something or the other. What does it mean? Adventure—the joy of the chase!

More Letters

Discussing Means of Securing Better Cooperation Between Architect and Material Man

Editor's Note:—*These letters continue the discussion, commenced in* PENCIL POINTS *for June, of ways of securing more intelligent co-operation between the architects and producers of building materials. All architects and material producers are invited to contribute expressions of opinion on this important subject.*

MILTON TUCKER,
Specification Writer for Wm. Steele & Sons, Engineers, Philadelphia, Pa., Says:

"Like a lot of other specification writers, I am supposed to be a Jack-of-all-trades and part of my daily dozen is to sample the applesauce shoved across the conference table, or marble rail, or 'what-have-you,' by building material salesmen. Happily, most of this applesauce is digestible, but too much of it leaves a bitter taste—embittered, I suppose, by close competition and lack of good sportsmanship in this so-called building 'game'!

"Naturally, salesmen stress the good features of their products—architects want to hear them—but every product has its limitations and architects want to hear not only the truth but the *whole* truth regarding building materials. But many salesmen either do not know or will not admit of any limitations to the uses of their products and when tripped up on some shortcomings they often resort to reciting the deficiencies of competitors' products. Of course, every open-minded architect wants to hear both sides of the argument but the average salesman is not equipped to discuss the other fellow's product; too often he is too little informed about his own and any discussion of competitive products usually degenerates into mud slinging and odious comparisons.

"Such underhanded procedure is not merely unfair to manufacturers of other good products but is a waste of valuable time, not only the salesman's time but that of the architect or specification writer who is rushing to put a specification out on scheduled time. But, most of all, this destructive criticism of competitive products is very likely to work to the detriment of the offending salesman and the manufacturer he represents. A fair-minded architect may not express himself, but he probably will rebel inwardly and acquire a distrust of the manufacturer's representative and, if not an actual dislike for his products, at least a preference for other products of equal value.

"On one occasion, I was obliged to assemble complete information on a certain new material and called in a dozen representatives of various manufacturers of this material. Most of them presented the desired information concisely and fairly and outlined any peculiar advantages of his material over that of other manufacturers. A small minority, however, seemed unable to resist the temptation to 'razz' the other fellow's products and attempted to prove by rather startling 'facts' that they were unfit for use and doomed for eventual elimination from the market. But the bait didn't quite conceal the hook, and on further check up with the manufacturers of the tarred and feathered product, satisfactory proof was presented to show the material had been used with the greatest success under conditions similar to those prevailing on the job in question; moreover, the material had not been disbarred by the municipal building code nor penalized by the Fire Underwriters to the extent their competitors would have me believe. Naturally, my wrath was inwardly aroused and I became distrustful of any further statements made by the offenders. Little does a salesman realize how such tactics work to his disadvantage.

"The salesman who paints the wonders of his products in too glowing words may find he is throwing out boomerangs. Exaggeration of the qualifications and possibilities of any product eventually works to the disadvantage of the manufacturer, for there are likely to be costly mistakes due to the abuse of the product. Furthermore, there surely will be keen disappointments due to great expectations aroused in the mind of the architect who specifies the glorified product.

"Data on laboratory tests of building materials are often distorted and presented in a manner which will convey wrong ideas. For purposes of fair comparison, data on the properties of various materials should be assembled from tests made by the *same* testing laboratory, under the *same* conditions. This is especially true of insulating materials and acoustical treatment. Even the most reputable testing laboratories disagree on the sound absorption value of most materials used for acoustical purposes, and so it is quite evident that figures from only one laboratory should be used when comparing two or more products. Since laboratories disagree, the most favorable test of an inferior product may possibly read higher than the least favorable test of a superior product, thus a *superior* product can be made to appear of *less* value than an actually *inferior* product.

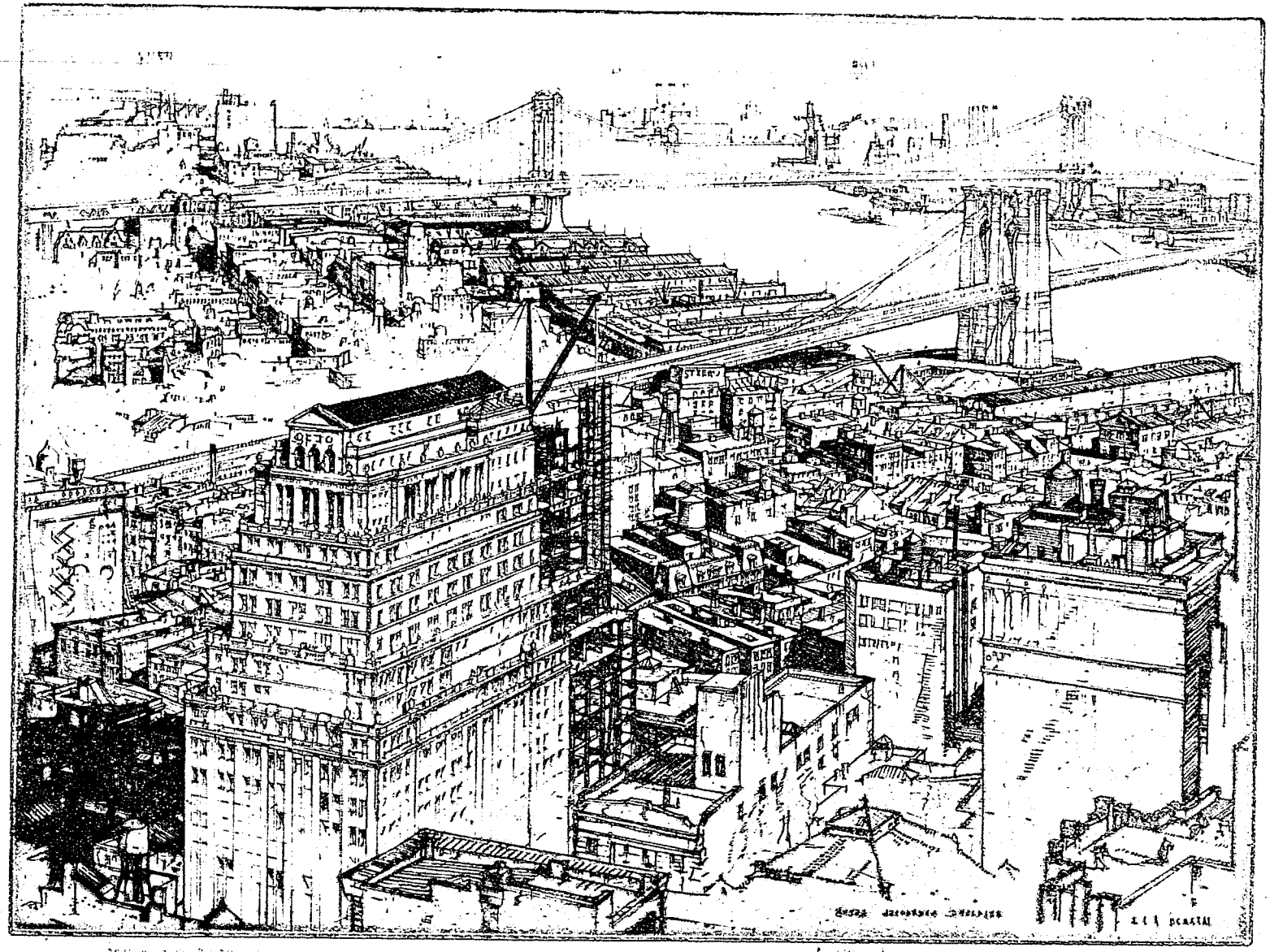
"During the last ten years, manufacturers' literature describing building materials has been greatly improved, due to the tireless efforts of architects and the hearty cooperation of the manufacturers. Although there is still room for improvement, the busy architect is not confronted as often as he used to be with the necessity of wading through a flock of photographs of big jobs and the family album of the big shots, who have headed the concern for 200 years, in order to obtain the morsel of information he seeks. He can usually find the bare facts condensed in a nutshell.

"Why, then, must he still listen to the voluminous mud-slinging resorted to by an altogether too large minority of salesmen who are selling these building materials?"

F. J. MOSS,
President, American Sash and Door Company, of Kansas City, Missouri, Says:

"Speaking from the standpoint of the mill man only, we encounter little or no trouble due to misunderstandings with the architects. However, we do feel that, generally speaking, the architects are very largely responsible for the deplorable condition of the mill business and the very indifferent and inferior millwork being supplied where the owner has a right to expect a better product. This condi-

(Continued on page 793)



Courtesy Royal Insurance Company, Ltd.

FROM A DRYPOINT BY LOUIS C. ROSENBERG

ROYAL INSURANCE COMPANY BUILDING, NEW YORK

PENCIL POINTS FOR OCTOBER, 1931
VOLUME XII NUMBER 10

A recent drypoint by Louis C. Rosenberg is shown on this plate. The subject is, at first glance, extremely complex but the artist, with a sure and delicate touch, has succeeded in reducing it to orderly intelligibility. It was done for the Royal Insurance Company, Ltd., whose building appears in the lower left portion.

PASSAIC COUNTY WELFARE HOME—WENTWORTH AND VREELAND, ARCHITECTS, PATERSON, NEW JERSEY

FROM A PENCIL RENDERING BY PAUL F. WATKEYS

PENCIL POINTS FOR OCTOBER, 1931
VOLUME XII NUMBER 10

This rendering by Mr. Watkeys was made in pencil on tracing paper and then floated onto a sheet of illustrators' board. The original was about 36" wide.

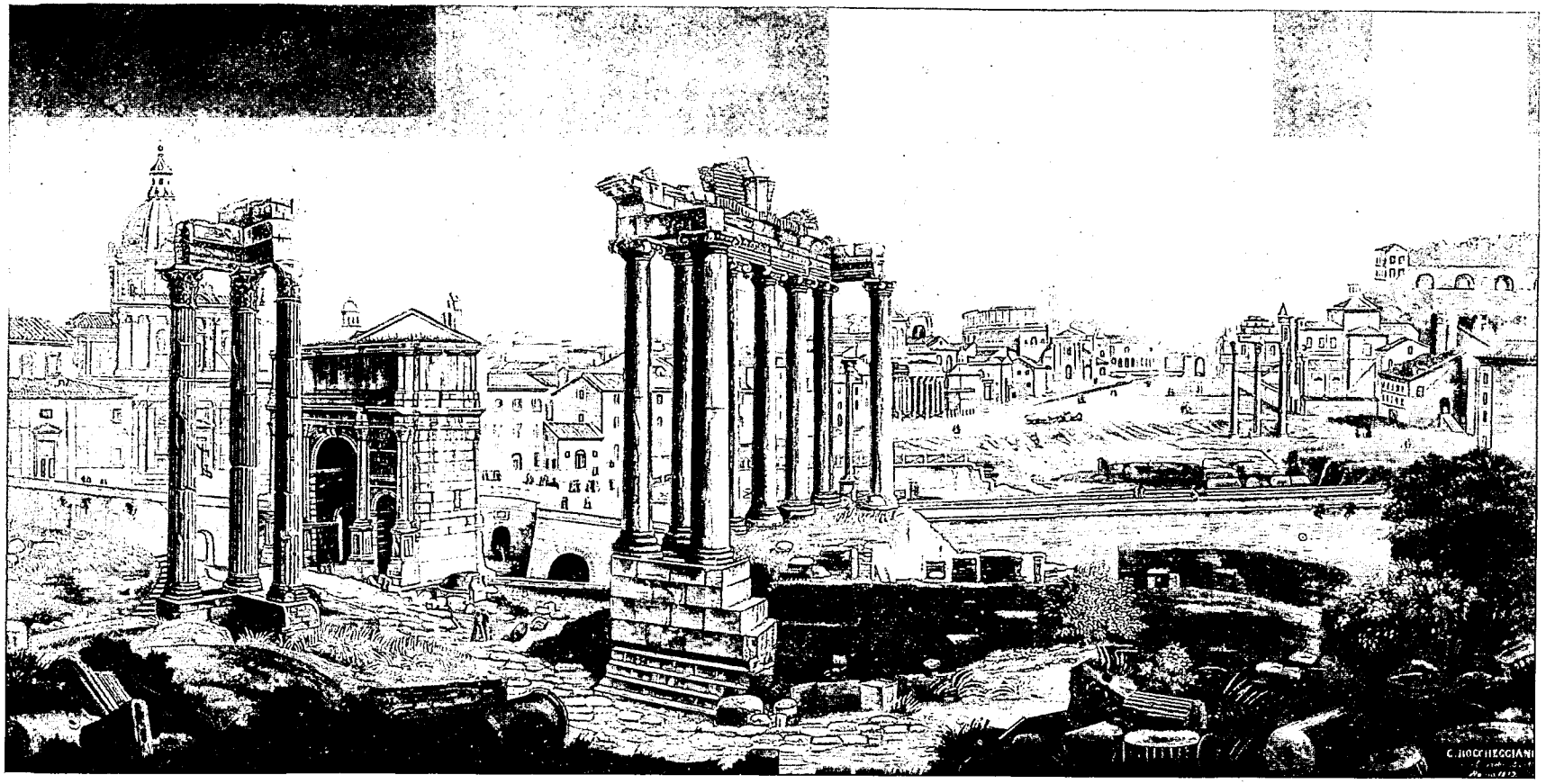
DEPARTMENT STORE FOR A. POLSICY COMPANY, AKRON, OHIO—STARRETT AND VAN VLECK, ARCHITECTS

FROM A WATER COLOR RENDERING BY FRANCIS H. CRUESS

Pencil Points Series of Color Plates

The pencil perspective layout for this rendering was done on white tracing paper and floated onto cardboard in the usual way. On account of the fragile nature of this surface it was necessary to be sure of the ultimate effect desired, as no major corrections could be made afterwards.

The sky was put in first with an initial wash, very wet, of Naples yellow and opaque white, and the colors used worked upon and in this wet ground color. The white in this wash assisted in keeping the colors in control and facilitated the clearing up around the outline where color slopped over—the drawing being perfectly horizontal. The sun rays were simulated by use of the eraser. All other parts of the picture were in pure wash, except the extreme high lights. Here it was necessary to force the effect with body color. To mask the incline of the hill which would otherwise have been too insistent, it was felt desirable to give the sky and foreground cloud shadows and lines of traffic, a directional sweep parallel to the front façade. The colors used were Cobalt, Payne's Gray, Naples Yellow, Yellow Ochre, Alizarin Crimson, Light Red, Indian Red, Burnt Sienna, Sepia and Madder Brown. The original drawing measured 27" x 17".

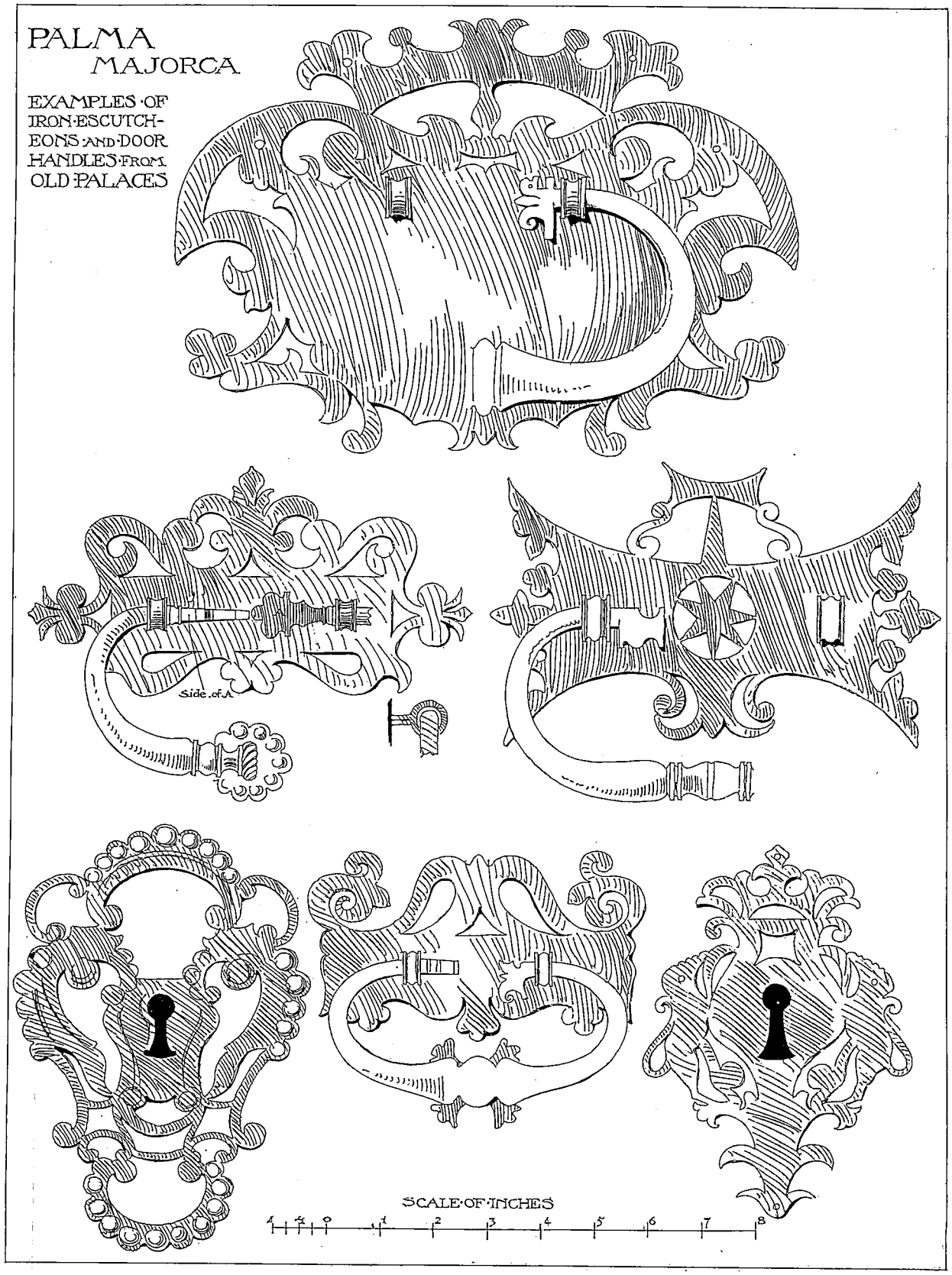


FROM AN ITALIAN MOSAIC BY C. ROCCHEGGIANI

FORUM ROMANUM—TEMPLE OF VESPASIAN

PENCIL POINTS FOR OCTOBER, 1931
VOLUME XII NUMBER 10

This rare mosaic is reproduced by courtesy of its present owner, Mrs. Eva Inez Tufts of New York. It measures 72″ x 40″ and is one of a very few such examples in this country. It hung in the Metropolitan Museum of Art, New York, from 1892 to 1917. The tesseræ are so small and the workmanship so fine that it is said that the panel took three generations to complete. It was finished in 1872.



RENAISSANCE ARCHITECTURE AND ORNAMENT IN SPAIN

A PLATE FROM THE WORK BY ANDREW N. PRENTICE

PENCIL POINTS FOR OCTOBER, 1931
VOLUME XII NUMBER 10

"Not many towns retain so many of the original door handles and key plates on their old houses as Palma, where it is quite common to find them fixed on red velvet. As a general rule the more pretentious the palace the larger the door handles, which at the same time are utilised as knockers. The handles are flattened out at the ends to prevent them being raised higher than a horizontal position."

A. N. PRENTICE.

Misadventures of a Draftsman

3—Mediocrity in Despair

By George H. Allen

The phone suddenly broke the silence.

"Hello—Reynolds—that you?" It was the boss.

"Yes, sir," I replied.

"Now listen, I just put that deal through with the Armored Conduit Corporation—all the papers are signed. They own an old three-story loft at Water and Dock Streets downtown, and it's got to come down the first of next week. You grab a tape, level, pencils, and anything you need. Run over there right away and make a quick survey, hear?

"You can get grades satisfactory enough with the string level. You will have to get in somewhere to see what condition the place is in. It's empty and boarded-up. You might try the rear windows, one of them is open. But remember, I want that survey by four o'clock!"

Without more ado he hung up.

A chance to get out into the cool, fresh air! Striding to the window I gazed out over the panorama of the city, spread checkerboard fashion below me. The distant horizon ended in a muggy haze, it was midsummer—and hot! Wiping the perspiration off my face, I scrambled among my things until I dug up the necessary "*impedimenta*," wrote a short note for the stenographer, who was out to lunch, then I rushed out locking the door behind me.

Coming out on the street I found it so stifling hot that the air was suffocating. I could actually see the heat waves rising from the sidewalk. Hurriedly taking refuge in the cool shadow cast by a handy awning I leisurely lit a cigarette while awaiting a trolley. I started to cross the street when who should I run into but Dick Bleam. We used to borrow each other's soap in school!

It was two years since we had seen each other and so, at his suggestion, we ducked downstairs to Ma Riley's sawdust cellar, where we drank enormous mugs of cold beer, swapping anecdotes the while. Time passed quickly and about an hour later I suddenly awoke to the fact that I had better be moving. We finally parted and I jumped aboard the next trolley and sat down by an open window. Stretching out luxuriously on the cane seat I reviewed the events of the last few months—come Michaelmas!

For the last year I had worked for an oil company, designing service stations on a "production" basis. They were little 14 x 18 foot affairs, tricked up in all the different styles imaginable. If the boss wanted Colonial, he got Colonial; *if it was* English, he got English. We had stock "doo-dads" which, when hurriedly assembled together, did the trick. Double-hung sash went into the Colonial; if it was French or English, up went the swinging casements! A correct and unostentatious Colonial shingle roof became prosaic French by the time we jimmied up the eaves and introduced sweeping curves at the ends of the ridge. On the English ones we nailed shingle lath down in all directions before applying the shingles, the result being a roof whose unevenness gave it an appearance of authenticity that would fool an expert.

This was my first job on leaving college and I dug right into it. But in time it began to pall on me. My mind, you see, during those days was still full of past-atelier *projets, esquisse-esquisses,* or *partis.* I was getting no practical experience in the lines which I wanted. They were treating me splendidly but it is easy to understand why I desired to make a change.

It wasn't that I had a desire of immediately becoming one of those executives who hibernate in heavy oaken offices, pushing buzzers for secretaries who gambol in like spring lambs. My intention had been to enter an architect's office, no matter how small, and soak up all the information and knowledge I could.

It was just about this time, while on this job, that I happened to hear through a friend of mine of a certain architect who was in the market for a draftsman. Although he had a small office, he was doing a very good business so I lost no time in rushing down to see him, in the hopes of there being a chance for me. Though I talked to him for some time, he seemed to be rather reticent. I knew I didn't have an experienced background to offer him but I was positive I could swing the job—if only he would give me the chance. I told him this, and eventually, through my persistence and also to his relief (probably to get rid of me), he said he would give me a trial. If I didn't prove capable at the end of three weeks—out I would go. I went to work for him the following week and things ever since couldn't have run any smoother.

My mind was in a glowing aura of contentment over these reminiscences, when suddenly I was brought back to action with a start. The trolley was grinding to a stop at my destination and I just made the door in time to get off. The building was two blocks west so I made my way up a narrow thoroughfare called Water Street, which was like the eddying backwaters of a rushing stream. It was in the older section of the city, narrow and lined with foul and sordid red brick tenements. At one time this neighborhood was known for its respectability. The "blue blood" aristocracy dwelled there but now it teemed with dirty children and blank-faced foreigners.

Sallow youths slid furtively through the crowds; a peanut hawker pushed his whistling cart along; dirty-windowed shops were festooned with garlic; and the smoke of the factories on the nearby river cast a gloomy pall over the neighborhood, streaking the buildings with thick layers of sooty silt.

Arriving at the place, I found it to be an old three-storied affair, bounded on one side by a narrow alley. This was Dock *Street!* Some of the windows were boarded up while the others showed jagged black openings where they had been broken—by street gamins, presumably. Going up to the door I found the knob missing and, looking closely, I discovered that large spikes had been driven into it solidly. Remembering what the boss had said about the rear windows, I walked around to the back of the building, which seemed to look more and more forbidding all the time. Here, there was a high fence, having for its entrance a single gate, which was nailed just as tight as the other door.

Finding a small board and bracing it against the fence I scrambled up it with a good deal of exertion, and

dropped into a small yard, which was a bedlam of refuse. I fell into a jumbled mass of bed springs, barrel hoops and broken bottles, cutting a gash on my right hand which I had inadvertently held down to break my fall. Getting out of this mess I wrapped my handkerchief around the cut. By now I was perspiring freely, my collar was wilted, as it was hot as an oven in the yard, and there were several large streaks of whitewash on my suit that had come off the fence.

I tried all of the windows but failed to find any that would open. Somewhat nettled I looked around for another means of ingress when I spied a small lean-to, no doubt a former woodshed, which jutted out from the rear. Out of the top rose a cast iron vent pipe, fastened to the brick wall with anchors. I cast an appraising eye at the pipe, wondering if I could climb up it to the roof. I was sure I could enter the building from the roof, then come down and open a window.

Throwing off my coat, I fastened the tape and line to my belt and climbed up onto the shed. Then began the hard climb up the vent pipe. It was very rusty and there were times when I wondered where the next foothold would be. With a final grunt I pulled myself up onto the hot tin roof.

It was nearly flat, having a slight pitch towards the rear, and on one side rose a large chimney crumbling to ruins and cloaked in a thick layer of black soot. A brick parapet about two feet high made a dividing wall with the adjacent building, running around the front and side to terminate at the chimney. In the middle of the roof I noticed a trapdoor, about two by three feet. Walking over to it I gave a yank but it wouldn't budge. Then I pulled with all my strength and suddenly it let go without a warning.

I looked down into the yawning black opening. As my eyes gradually became accustomed to the darkness, I began to make things out. A little light filtered through the cracks at the boarded-up windows but not enough to help to any extent. Hanging onto the edge of the scuttle I dropped to the floor, making a loud crash which resounded hollowly throughout the building. By this time I could see fairly well in the semidarkness and had no trouble in finding the door to the stairs which led down below. It was stuck tight, probably from the dampness, and I had to push hard to force it open. A rush of cold, clammy air enveloped me. Drawing back, I shuddered. There was no essence of *vie de bohème* here. What a perfect setting for a mystery thriller!

It was pitch black on the stairs, so I lit a match from a paper pack that I had with me and held it over my head while I cautiously made my way down the creaking treads. At several places they were completely rotted away. I had to be careful lest I should find myself floundering at the bottom of one of the openings. Arriving at the bottom, I bumped into another door, which I had to force open with my shoulder. I was on the second floor now and it was just as dark here as it was on the stairs. There was a peculiar draft coming from somewhere. Every time I lit a match it would give a desperate flicker—then suddenly go out!

By the time I found the stairs which led to the floor below, I was down to my last match. Several times, as I cautiously descended, my foot met nothing but thin air and I clutched wildly for the handrail. Would I ever get out of this place? What a fool I was for not having sense enough to bring a flashlight for just such an emergency as this. But there was nothing to be done now.

Eventually I came to a half-opened door at the bottom and stepped gingerly into the room. It was in Stygian darkness, but here and there a small pencil of light marked a tiny opening in the windows. I groped my way around the walls with my hands until I felt a door which led into another room. Then I found another which led into a smaller room at the rear. I tried the back door but it wouldn't budge. It was nailed down solid as a rock.

Suddenly I heard indistinct voices which seemed to come from the back yard. My first impulse was to shout, but I suddenly caught myself. How foolish it would be for someone to find me here. As it was, I wasn't in need of immediate help. Why, I could go back to the roof—no I couldn't either—I wouldn't be able to reach the opening in the ceiling. But, I expected any minute now to find a window which would open.

Turning around I followed my way along the wall until I discovered another door. It opened easily, and putting my foot out, I discovered it to be another stair leading to the basement. Then the thought struck me, that I would be able to get out through the trapdoor opening into the back yard, which I had noticed before. Going down carefully, because there was no handrail or wall for me to hold to, I suddenly was startled by a blinding flash of light.

Someone had opened the trapdoor, I caught a fleeting glimpse of a silhouette, then I felt myself falling and I let out a piercing screech. The next thing I knew, several flashlights were shining in my face as I was sprawled out on the muddy floor of the basement. I discovered later that the last four steps of the stairs were missing, consequently I was precipitated to the ground below and the shock, at that time, left me in a daze.

Someone finally helped me out into the clear sunshine.

"Well, I'll be . . . . . "

I looked up and my jaw dropped. It was the boss.

"So you're the one who nearly scared ten years' growth out of me, eh? What the blamed devil were you doing in the cellar, letting out fiendish yells and frightening everybody around here for?"

"Why," I replied, "I was trying to get out of there. I wanted to get that survey started . . . . . "

"Started! Suffering catfish, do you mean to tell me you haven't got it finished yet?"

"Yes, sir. You see . . . . . "

I could see he was mad. He was glaring at me balefully, but then I noticed a twinkle in his eye. I suppose I presented a sorry-looking exhibition—muddy, dirty, and dishevelled—because he suddenly broke out into a loud laugh, which continued spasmodically, while the other man who had helped me out of the place joined in with him. Finally the boss got control of himself.

"All right, Reynolds, you better call it a day and go home and clean up. I'll take care of the survey. Get a good rest and come in in the morning."

Gloomily I made my way home. I don't remember much of the walk back, but I do recollect that I walked miles out of the way, rather than take a trolley. Dispirited and dejected, because I had fallen down on the job, my only comforting thought was that I had a pretty decent boss.

And I didn't realize, then, that I would never work again under such a fine man as he.

"What, never? Well, hardly ever . . . . . "

Supervision of Work in the Field

By Louis E. Jallade

Editor's Note:—*This is one of a series of talks given before the Junior League of the New York Society of Architects once a month at the Murray Hill Hotel. This talk was given by Mr. Louis E. Jallade, under whose direction the whole series is being given. Admission is free to draftsmen and architectural students. Subsequent talks will be on: "Technique of writing specifications," "Office administration and cost of producing drawings," "Selling and promoting of architectural services," "Selection of building materials," and "Legal questions pertaining to the architectural profession."*

Louis E. Jallade was educated at the Metropolitan Art Schools under Arthur Lyman Tuckerman, and later in the Atelier Masqueray. He got most of his experience in the office of Shickles and Ditmars, and was the first draftsman employed at the foundation of the firm of Warren & Wetmore. He was a student in the Atelier Laloux of the Ecole des Beaux Arts. On his return he was an instructor, teaching building construction in the Extension Course at Columbia University. For a period of four years he ran the Atelier Jallade, later the Atelier Jallade-Prevost, part of the Beaux-Arts Society organization.

He was secretary of the Beaux-Arts Society for a number of years; Vice President of the New York Society of Architects; was Lt. Colonel of the 369th Infantry and is the building consultant for a number of organizations.

He is a member of the State Board of Examiners for the Registration of Architects in the State of New York.

He was chosen by the New York Society of Architects to set up the educational program of its Junior League because of his peculiar fitness as a designer and constructor.

The talk tonight is on Work in the Field. This means *General Building Superintendence.*

We have covered in another talk the preparation of plans. We will in another talk cover the preparation of specifications. The carrying on of the work in the field is something between these two. It is not necessary for an able building superintendent to have anything more than a sketch of the proposed building, nor would it be necessary for him to have specifications in order to build well and intelligently, were it not for the fact that we must keep the building within a certain limit of space, cost, and time. In other words, a man could build today as they built in the Middle Ages. He could outline the building on the ground and then build without specifications. Specifications mean nothing more than the contract terms under which that building is to be built and a description of those things which cannot be shown on the plans. I make this statement because I want you to get firmly in your mind that a building superintendent—a good one—need not memorize the specifications. He must know what they call for, but his knowledge of building construction is over and above the specifications. Building construction must be in his blood.

What the building superintendent must know first of all is materials—what they are, how they are handled, and what their reactions are. He must know these things from personal experience. He must know that plaster under certain conditions will do so and so. He must love, understand, and dream building construction. He must know how buildings are put together over and above specifications, books, rules, etc., and probably more than anything else he must know human nature and its weakness. He must know where men in the building trades slip and fall. If you know human weakness you can make provision and be on the spot so as to prevent men from making mistakes—preventative medicine rather than curative.

A building superintendent must be curious. A curious mind is the mind of the scientist, and the curious mind not only looks at everything but sees what is underneath it. No man can look at a door and say it meets the specification and is a good door unless he has done certain things. He must see whether it operates; whether it fits, stays open, stays closed; whether it is of the right wood, thickness, and finish, and things like that. The curious mind is therefore part and parcel of the superintendent's make-up. You can put this down in your rule book—any superintendent who comes out of a building operation without needing to have his shoes shined and his hat dusted is not a real superintendent. You cannot stand on the sidewalk and say "O.K." You must dig in, turn over, and snoop.

The next thing the superintendent must know is the limitations of labor and material. You cannot do anything more with a certain kind of plaster than that plaster will allow you to do. If you put on a glossy varnish you cannot expect it to look like a hand-rubbed finish. You cannot make a sand finish look like Caenstone. Therefore, a superintendent must be reasonable in his demands and expect only the best within the limits of that particular material. He must also know the limitations of labor. This may sound theoretical but it is very important. The average workman can do work only in a certain way and when you talk him out of the one way he has been working all his life, you are in trouble unless you know just what you want and can show him how to do it. Another thing you must keep in your mind, and that is you must work in accordance with classes of buildings—A, B, and C buildings. If you are building a commercial type of building, say a garage, you cannot expect Class A work such as you would find in a high-class residence. Your owner is not paying for Class A work. If you keep this in mind as a general guide you will have removed much of the customary friction to be found in your work.

There are other things to remember in relation to contractor and workman. First of all you must not destroy the confidence of the workman in himself. You cannot say you don't like the way that brick wall is laid-up unless you can tell him exactly what is wrong. Don't destroy and walk away without leaving something in its place. You cannot come to a man and say you do not like that varnish job unless you can say exactly why. You must tell the man that he will have to rub it down, or give the door another coat, or bring something up to a certain line. If you are criticising you cannot say, "I do not like the way this panel fits." You must give him something concrete. You must say, "I want a moulding here." You must not leave him in suspense. You are the leader and must say clearly, without any ifs and ands, just what you want. If you expect

him to do your studying, change places with him. This also refers to foremen and general contractors.

There is another point I want to bring up and that is to be "square and kind" with the men on the job—that is the workmen and the foreman. You must bear in mind that most of the men you meet in life and in the building business are primarily honest. They are as honest as their building knowledge allows them to be. Most mechanics and foremen are really trying to live up to what they consider a good job. If their building standards do not line up with yours that is unfortunate. They have certain reactions which you must watch. If a man has run out of material he is liable to use anything he has on hand that he thinks is just as good. He may be tired and does not want to go down a ladder. As an example, this is what once actually happened. It was 4 o'clock; the men were putting a weak concrete fill under a tile floor; it was too late to mix another batch and they did not want to stay over to do this, but there was left over a batch of brown scratch coat all mixed, so they dumped it in. It was all right under normal conditions, but a year later a pipe leak developed and the water got in. These men did not mean to get away with anything but there was that human element. That is why you are the architect. You are supposed to know where men fail. They can lay brick better than you, drive nails better than you, but you can think out things better and see further.

Another honest thing to do is to catch mistakes before they happen. I worked with an architect who specified that the steam pipes running through floors and walls were to have *solid brass* escutcheon plates at the ceiling, walls, and floor. This man came to the job every day; his superintendent was on the job every day and both saw what was going on. The foreman was using brass escutcheon plates that were solid brass but split in the middle. When half of the pipe work was up the architect said "take it down; the specifications call for solid brass escutcheons (solid means 'in one piece') and they must be slipped on the pipes before they are screwed up in place." They had to take the work down and follow the specifications. This is an extreme case but that is what I mean in a practical sense. The superintendent should have stopped them in the beginning. If you see a window frame delivered on the sidewalk it is up to you to take out your foot rule and specification to see if it has the right thickness before the frame is set in the building. If you see a wood floor delivered do not let them lay it until you see whether it has the right thickness and is otherwise as called for. Catch it before it is laid. You may say that this is the builder's business. The builder's business is your business. If you allow the contractor to make mistakes and lay the wrong floor and then tell him to take it out, you are taking that much money out of his pocket. When a man is losing money on a job, even through his own errors, he will be tempted to make it up and skimp the job. It is your business as an honest man and it is your job to see to it that the contractor delivers a building without errors.

Carry that rule a little further. A builder with a good organization has an expeditor. That expeditor goes to the steamfitter and says, "Have you ordered your radiators?" The steamfitter says, "Yes," and walks away. The expeditor then calls up the radiator company and says, "Did you get an order from so and so?" and in this way he checks up on the steamfitter. Now, that builder could sit down and wait, but that would delay the building that much. What the expeditor provides is coordination. The architect must do the same in his superintendence, and prevent mistakes before they occur. The architect's superintendent must be an expeditor. I could give you many examples of this.

The building superintendent, and I place him very high in the profession, is one of the most necessary of men. A good building superintendent is invaluable. The building superintendent (he may be the architect) must know and see everything and he must touch everything. When I say he must know everything, I mean he must know what the plans call for. He must know everything that is going on in that building, and he must touch everything with his fingers, because what you do not touch you do not know. I will give you an example. One day we were building a clubhouse in Bayonne. It was very hot and when you got off the train you could look down the street about a mile away and see the building. I saw a man kneeling in the street, moving his arm up and down. What could a man be doing on his knees in the street with a hammer. He must be making a hole in the ground. When I got to the job he had gone into the building. I waited until he reappeared. He picked up a wood joist and carried it into the building. Going to where he had laid the joist I found that the one next to the last was badly split and had been nailed. What is the effect of a split beam on a building? Nothing. There were probably other split beams in that building that I never saw, but, my observation had this effect on the other men—it let them know that I knew what was going on, could see unseen split beams, and that they could not put anything over.

I will give you another example. We once had hollow tile walls veneered on the outside with brick, and, at certain parts in the tile wall, were carried heavy steel girders. To carry the girders we had specified reinforcing rods and the tile was to be filled with concrete forming reinforced concrete tile piers. We had a resident superintendent on the job. I asked if the pier blocks were filled and he said he had seen them filled. Everyone said that they were filled. But my examination showed little clear water icicles coming out of the pier joints (it was winter). I looked at the icicles. I had never seen clean water coming out of concrete. I said, "Open this pier," and on opening it was found filled with ice instead of concrete. On striking the pier it had sounded filled and solid. There was no great glory in my method—I merely saw clean ice where dirty ice should have been.

An observant superintendent in the field must know when things are plumb and square without the use of a plumb-bob and square. When I come into a room I see a column and a door jamb. I look at the column and the jamb to see if they line up. They both cannot be wrong. I remember a job once in Worcester where we had some steam pipes running through a room that was to be used as a shower room. We had specified that the steam pipes should be covered with magnesia with an outside canvas cover. The canvas was to be sewed on and then given three coats of lead and oil. On a pipe fifteen feet up on the ceiling, three coats of lead and oil means that a man must go up the ladder three times. The chances are that you will get only two coats because there will come a time when he will say to himself, "Did I give that two coats or three coats?" I looked at this pipe and the fellow said he painted it with lead and oil. I said it looked too dull for oil and then he said they used a flat paint. I took a long stick, wet the end, and touched the paint and it turned dark. What they had used was a water paint. They had not meant to substitute, but they ordinarily used on all other jobs a ready-mixed paint—a water paint. They had not read the specification. The next time I

looked at that pipe it was nice and shiny but there were transparent oil drops on the bottom of the canvas (lead and oil drops are not transparent). They had given a coat of cylinder oil and the oil had run down to the underside, forming transparent yellow drops such as lead and oil would not make.

When you find a dishonest condition of that kind you must be as ruthless as you were charitable when you began.

You are paid by the owner, or the architect is paid by the owner, and you are paid by the architect, to superintend a building. An architect superintended a clubhouse here in New York quite well. He kept a man on the job. The building was finished and the first winter there appeared a leak in the corner. That building was built so that a couple of extra stories could be added later. The steam pipes, etc., were left extended for this future addition. The architect said this leak was nothing—that it would disappear—that it was moisture in the plaster. During the summer it was absolutely gone apparently proving his statement. The next winter it came again. He then thought it came through the stone cornice. He spent $400 to point up the joints. It was finished at the end of a very mild winter. He was again right—the leak had disappeared. And then he painted the ceiling of the room. The next winter the leak came back. The janitor, who was hard-boiled said, "To hell with the architect!" and decided that he would find out what was wrong. He made a hole in the wall and found there a steam pipe that had not been screw-capped. It was plugged with a square wood block. In cold weather, when the steam pressure came up, the vapor came through. The architect looked like a dumbhead, had spent $400 of the client's money and still did not know what it was all about, and might have lost a good client.

A good superintendent does not depend upon his memory. There is only one thing for him to do and that is constantly to make notes. It is impossible for any man to go into an unfinished building, look at it, and say it is all right or all wrong. You must have a check list or a score card—a list of things to look for. You must take this list and go around and try everything and, if not right, find the reason and put it on the list. Do not depend upon the memory of the foreman. You cannot tell a man to do this and that as you go along. He may forget or not understand. Make a list of all the things you find wrong, leaving a copy with the foreman. The next week you must take this list and try these things over again, always starting an inspection from the same point. Most likely you will find they have not been attended to.

We might go on with many examples. I might tell you how to examine stone and cement and what you should do with plumbing and steam pipes and what you should do with paints and all those things, but you can get that in books. Our talks are outside of books. We are trying to give you things that come up in a man's life—experiences. The book will tell you that if you take a handful of sand and it stays together it is not good for concrete (contains loam). Read that, but here are some of the practical things you must remember. If you have concrete mixed with dirty sand it is extremely slow in setting. We do not recommend it, but it will set hard in time. If you put too much cement in concrete certain things will happen. Dry concrete sets harder than wet concrete but is more porous. These are the things you must learn. If you mix your cement on the ground you will track up dirt. If you do not measure it you will get an uneven proportion. All such things depend upon judgment and years of experience.

You must have a bag of tricks and certain positive reactions if you want to be a building superintendent. Everyone is not fitted to be a superintendent. You can recognize a building superintendent every time you see him. You can go in an architect's office and tell who is the designer and who is the superintendent by looking at them. One makes fun of the other because they look at things from different points of view. We called them at Carrère & Hastings' office "long hairs and short hairs"—both invaluable to an organization.

Let us get into another phase of superintending. I have told you about the necessity of records—records of meetings, instructions, check lists, and superintending lists, time schedules, etc., and I will tell you why they are so important. We have a building operation and we are finishing the building. Here is the plasterer, the carpenter, the painter, etc. The building is going up and we have subcontractors' meetings once each week right on the site. The foreman is there. The meeting is called the "subcontractors' meeting." You ask of the metal-door man, "How are you coming along; have you all your details and shop drawings approved?" He may say "No" (meanwhile you are taking notes), that he did not get his drawings back from your office. You say, "When did you send them to the general contractor?" and he says, "Last week." You then ask the general contractor, "Did you send the shop drawings to the Architect?" and he says, "Yes." You ask, "When?" and he answers, "This morning." If we did not have these contractors' meetings serious delays would occur and they might be hung on the architect, time might be lost, and then weeks spent in clearing yourself.

Then, this condition may happen. He may say that he has his details and you ask if he is making his door bucks. He replies that he cannot make these because he has no hardware templates. Then the architect is able to check the hardware man. At the next meeting he is asked if he has his templates. By this method the contractor and subs are checked up and the whole field of the building operation is checked and speeded in that way. This is the architect's business. Otherwise, here is what happens. He does not get out his door bucks because he did not get the hardware templates, because the hardware was not selected—and then the job is behind time. We check up each man and each trade in that way on every job. We usually have a representative of the owner present at these meetings and, frankly, the architect is the "big man." Just what he should be on all jobs.

These contractors' meetings are carried on every week or every other week until the completion of the job. A report of each meeting is made and a copy sent to the owner. This is where it comes in efficiently. You, of course, will not want to get into this report the fact that you held shop drawings for two weeks. The same thing is true of the builder, and everybody cleans decks before the contractors' meetings, so that the work is rushed through.

The next thing is the report of the mechanical and structural engineers. They must visit the job and write reports. These reports do not go to the owner.

The man who does the superintending, either you or your employee, must write a daily or weekly report (important in law suits, if any). The general contractor's superintendent on the job must write a daily report for your files on a printed form stating the number of men of each trade working, what they are doing, the materials received, visitors on the job, weather conditions, etc. This is in the record and will save you much red blood.

(Continued on page 774)

"STANWAY MANOR, GLOUCESTERSHIRE," FROM A PENCIL DRAWING BY WILLIAM WARD

Roofing for Colonial Homes

By Rossel E. Mitchell

An erroneous belief obtains in many quarters that wood shingles are the only "authentic" materials for houses of Colonial design. The records disprove this. Even though it were true, this would appear to be a fallacious reason for using wood shingles where slate is wanted by the owner, or indicated for fire prevention reasons, in rather closely built sections. The kind of logic that would insist on wood shingles under all circumstances in order that the design might be "authentically" Colonial, should also see that nonelectrical candelabra are installed and that fireplaces are used to the exclusion of a central heating plant, which was unknown to our Colonial forbears, even the wealthiest. Bathtubs and such litter should likewise be omitted, as our Colonist forefathers were much more afraid of water than strong drink, and a weekly scrub in a portable tub was the summit of their ablutions.

It is true that wood shingles were commonly used throughout all the Colonies. It is also a fact that slate was used by some who could afford a material then very expensive, as early as the first half of the Seventeenth Century. Wood was overflowingly abundant and cheap, even for the finest grades, while slate had to be transported (at first) for three thousand miles in slow sailing vessels at carriage charges which only the wealthiest could negotiate.

Probably the earliest use of slate for roofing was at Jamestown, Virginia. Fragments of roofing slate and tile have been excavated there in connection with brick houses built before 1666, the year of the Great Fire of London. It is recorded that as early as 1684, in East Jersey "there are some houses covered after the Dutch manner with panticles" (pantiles). It is not known whether or not these roofing tiles were imported. Probably not, since brickmaking and clay working was one of the most widely diffused of the mechanical arts. It is likely they were burned at some nearby kiln by an enterprising immigrant Dutchman. The importation of such heavy and rather fragile material from vast distances is highly improbable. Their use however is an indication of the Colonist's interest in more enduring and fireproof materials than wood such as they were familiar with in the home countries.

The importation of slate, however, is a certainty, for it was used on the "Pennsbury" home of William Penn in 1698, more than a third of a century before any native slate was quarried. Gabriel Thomas describes this roof as of "tile stone." The "Slate Roof House" in Philadelphia (1700) is well known to have been so named because of its unusual roofing material. About this time it was recorded of Boston that this sturdy city was "fairly set forth with Brick, Tile, Stone, and Slate."

The fact that slate was not commercially quarried in the Colonies until 1734, and not commonly used in New England for more than a century after that date, perhaps accounts for the erroneous assumption sometimes made that slate was not used for roofing early American houses. However, 1734 is a pretty early date, even for true Colonial architecture, which term is usually blanketed to include the first crude shelters, the long, true Colonial period of comparative peace and prosperity, and the more Georgian phases of 1780 to 1820.

The first American slate quarries were near what later became famous as the Mason and Dixon line, and it is a moot question whether the first American slate came from Maryland or the Keystone State. Certainly the latter was quick to take the lead in the commercial production of slate, and maintains it to this day. Slate was first quarried commercially in Virginia about fifty years later to cover Thomas Jefferson's State Capitol building in Richmond, Virginia. Very fine quality slates are still being produced from the identical region in increasing quantities at the present time. Much local slate was used in Virginia however, long previously to the above date, 1787. Slate secured from the top of the ground, split by slave labor and held in place with hand-wrought nails is still extant in Virginia. In the eastern part of that commonwealth many fine old mansions are still standing with slate roofs which have been in place for generations. There is frequently no way of determining whether slate was the original roofing material or not, although it probably was in many instances. For while the Colonial architecture of New England was of wood, that of Virginia and Maryland was nearly always masonry. Slate was the most commonly used roofing material for the grand mansions of Colonial Annapolis and other parts of Southern Maryland. Metal was also used at an early date on some of these houses. The wealthy landholders in these colonies imported luxuries of all kinds for their houses and families. It is improbable that very many bricks were brought over due, as stated, to the widespread mechanical knowledge of the art of brickmaking; but these men of large means imported mantel pieces, marble, furniture, finishing hardware and roofing slate, as well as fine shrubs and evergreens. The importation of slate was a natural procedure, since that and tiling were the most familiar roofing materials in England. Naturally they did not look with favor upon wood roofs for their elaborate and costly homes, with the immense risks brought about by the roaring wood fires in the numerous fireplaces, and the consequent throwing out of incandescent sparks on windy days. Besides, the Great Fire of London was a very real event to them, and a calamity not soon forgotten.

Slate, therefore, as an "authentic" material for Colonial houses is well established. As to shingles, these differed from those commonly used today in being uniformly ¾ in. thick at the butt, or even thicker, instead of the wafer thinness of modern work.

Another departure seldom if ever used today consisted in the use of wedge-shaped shingles, with the thick edge lengthways instead of being at the lower end. To produce these shingles a log was cut in sections of the required length, say 24 inches. These sections were then split *radially* so that each outer edge was at least ¾ in. thick, tapering toward a thin inner edge.

This process produced the wedge-shaped shingle, every shingle being truly "quarter sawed," or completely edge-grained! The greater weather-resisting qualities of such shingles, over those "bastard-sawed" of sap wood, is obvious, especially as the Colonists scorned anything not made of the heart of the tree for exterior work!

In Winchester, Virginia, may still be seen the ancient frame building where a certain youthful engineer-surveyor,

one Mr. G. Washington, pored over his maps and surveys he was preparing for his friend and employer, Lord Fairfax. This old, old house has a shingle roof of the wedge shingle type, which has been on so long that the memory of the oldest inhabitants fails to recall that it has ever been otherwise. Certainly the roof bears every indication of extreme old age, but it still keeps out the water!

The laying of these wedge-shaped shingles is a different trick altogether from the ordinary type, and the roof presents a very interesting appearance.

When the aforesaid tall and lanky surveyor developed into the Father of his Country and Founder of its Capital, he had also become no commonplace architect. He wrote the specifications for Christ Church, Alexandria, among others, and included wood shingles to be ¾ in. thick at the butt. He also used shingles for the beautiful additions he made to Mt. Vernon, and for the roofs of the outbuildings.

"Iron" roofs, meaning sheet iron coated with tin, were used at an early date also. Copper too, came into use for public buildings. The tin roofs of Colonial times were of a high-class material, made of genuine iron which in itself was very slow to rust, and heavily coated with pure tin by a hand dipping process, making a roofing calculated to defy the elements for many decades. It fell a victim to the Nineteenth Century craze for cheap manufacturing. In place of the enduring iron was substituted a poor grade of steel, and the heavy tin coat gave way to a wash as thin as paint. This trashy material, painted a crude red, soon became the trademark for cheap, jerry-built houses, and having lost all respectability, the manufacturers of it fell victims to their own cupidity, not to say stupidity. With the return to better materials and methods and heavy coatings of tin again, this roofing is securing a renewed and deserved foothold. Properly manufactured, carefully laid and painted to harmonize with the house, it takes its place as suitable and pleasing roofing for Colonial style homes.

SUPERVISION OF WORK IN THE FIELD

(Continued from page 771)

Long before you issue the final certificate, carry this through. As you last went through the building you made notes of things to be done. You gave a copy of this list to the job foreman. That list went into your record and as each item had been corrected you crossed it off. The same kind of a list is now made near the completion of the job, and here is what should be done. You say, "Mr. Janitor, we will be through with this job in about three weeks. Carry in your pocket a little book and every time you go through the building and find something wrong, write it down." Then go to the manager and say the same thing and then the same to the Chairman of the Building Committee. In three weeks' time they will come in with a long list of things. Prune these lists down. Add your own list to this and give a copy of all the reasonable items to the general contractor. Every item is numbered. As each one is taken care of it is crossed off and when everything is corrected you issue the final certificate. You have eliminated many of the afterthoughts that come up after the workmen have left the job, and you have registered most of the "kicks," a "last chance" if you wish to call it so, giving you a better feeling as you leave.

At the time that the owner moves his furniture into the building the superintendent should be on the job to see that no damage is done to the walls or woodwork by the movers. See to it that the unpacking is done outside of the building; that the rooms are not littered with packing cases; that the interior of the elevator is not mutilated, and so on. Then, on the opening day, particularly if there is a ceremony, make an examination of the mechanical appliances to be sure that everything will be shipshape for the ceremony. If it is an important building it would be well to have a representative of the plumber, steamfitter, and electrician present so that if anything goes wrong there is a mechanical man present to take care of it. An interruption of the ceremony might give cause for complaint.

After the building has been in operation for at least a month, the building should be entirely checked over to see that the janitor or building superintendent is actually taking care of the building properly. If the architect's superintendent is on the job he will make it his business to get a list of the people who called to see the building or who were at the ceremony, because it is usually at that time, particularly if the building is an institutional one, that visitors from other cities come to look it over. They might have a building in mind. If this list is furnished to the architect he may get some very valuable leads from it. The wise architect will be present at the opening ceremony with his superintendent and his staff to pick up whatever may happen to drift in. New jobs are had that way often.

During the first year the superintendent who has been looking after the building should make several visits to see whether there is anything to be called in on the guarantees such as those for the roof, hot water, heating, etc., because complaints must be put in before the expiration of guarantees in order to have mistakes remedied.

A LETTER FROM CHARLES R. LAMB

Editor, PENCIL POINTS.

"I am naturally interested in the comments of Louis E. Jallade upon Mr. Jarboe's talk in your August issue, possibly because Jallade was one of my boys many years ago, but primarily because the points raised are very definite and the argument, that there should be some form of correction, by Mr. Jallade makes it distinctly pertinent.

"It is a great waste on the community at large, when every contractor has to take off his own sizes before submitting an estimate, and in the instance referred to there are sixteen contractors so that the taking of sizes is repeated sixteen times. Personally, I think the answer should be in either of one of two forms, either the client should pay for the taking of all sizes by an 'expert accountant,' which sizes would be submitted to the various bidders by the architect,

OR

"The same course should be pursued and the cost of the 'expert accountant' be divided between the number of bidders.

"I believe some such method is in the English practice and it certainly has everything to commend it, has it not? First, that the quantities are actually the same so that every bidder is placed on the same footing and, second, that much time is saved so that the estimates can be rendered within a relatively few hours after the quantities are issued from the architect's office.

"Why is it not possible for the American Institute of Architects to advocate this idea and if the client is unwilling to pay the slight additional fee (which he should not be as it is distinctly in his interest to have equitable bids), to have the group of general contractors and the individual specialists be willing to bear their proportionate share of the bill of quantities on any new construction?

"May I hope that the suggestion will meet with your approval editorially and can be passed on for the consideration of the architectural profession at large?"

DON'T COME TO NEW YORK FOR WORK

PENCIL POINTS:

"Some one asked me the other day if the Institute could not warn architects and draftsmen throughout the country that New York is as hard up as the rest of the country and that traveling here for a chance to get a job is useless. They say that quite a lot of men throughout the country look longingly towards New York and we ought to discourage them.

"The Institute has no way of spreading this valuable piece of information. I wonder if PENCIL POINTS and some other architectural papers could do anything about it? Providing of course that you all agree that it is a good warning to give."

(*Signed*) ROBERT D. KOHN

President, American Institute of Architects

LETTERS FROM READERS CONCERNING THE NEW YORK STATE REGISTRATION LAW

To the Editor, PENCIL POINTS:

"I have read with interest the article 'Registration Abuses' in the September number of your interesting periodical, and feel quite sure that there are abuses or injustices under the present Law in New York State, and, we presume, elsewhere.

"The law was passed presumably in the interest of safe construction and with a view to elevating the Profession; but as it stands today it shuts out from practice many a talented draftsman who can not afford the time or money to take a course in college as required.

"Of the many architects known to the writer comparatively few have had the benefit of a college education, yet have designed and completed many important buildings and are looked up to as intelligent and cultured members of society. Architects are born—not made by hours in college, though I do not wish to belittle the benefit of a college course.

"I have in mind the case of a young man who has spent some years in the office of a well known architect, whose work has attracted considerable attention and various offers of employment by clients who appreciated his unusual talent. He applied to the Registration Board in New York State for an examination but was refused a chance because he had not the required number of college credits. He took the examination in another State and passed and has his certificate to that effect. The Educational Department of New York State is trying to prosecute this young man for practicing the profession of Architecture in the State without being registered. It is said that personal prejudice has had some bearing in this case, and it certainly looks like a case of injustice."—*W. C. W., Rochester, N. Y.*

Editor, PENCIL POINTS:

"In re 'Registration Abuses' in your September issue of PENCIL POINTS.

"The history of all architectural legislation is that it has been a matter of compromise. Compromises are never satisfactory, and are properly subjects for amendation.

"The New York Registration Law is a shining example; its weakness lies largely in the Department of Education as I can attest from personal experience.

"The real object of the Law in other States is to find

(Continued on page 780)

Blank & Stoller

PHILIP ALLAIN CUSACHS

1888—1931

Philip Allain Cusachs, New York architect, and prominently connected with the Beaux-Arts Institute of Design, died of a heart attack at his home in East Islip, L. I., August 21st, in his forty-fourth year.

Mr. Cusachs, a member of an old French family which settled in the South at the beginning of the nineteenth century, was born in New Orleans. He entered Tulane University at the age of 13 and graduated in 1907.

After doing architectural work in New York, he went to Paris in 1911 to study at the Ecole des Beaux Arts, graduating three years later. On his return he entered the architectural office of his brother-in-law, Raymond F. Almirall, in New York.

In 1916 he joined the Second Battalion of the New York Naval Militia. During the World War, having been commissioned as an Ensign, he was stationed at Bay Shore (L. I.) Naval Station and at Pensacola, Fla. As a Lieutenant (senior grade) he was sent to Brazil in March, 1918, in charge of aviation, remaining there until July, 1919.

Returning to this country, he entered into partnership with his brother-in-law. In 1929 he opened his own architectural office, specializing in country residences, which were built principally in the South.

During his activities with the Beaux-Arts Institute of Design, Mr. Cusachs was chairman of the Paris Prize Committee in 1928. He collaborated with Ben Ali Haggin in writing the scenario for the Beaux-Arts ball of that year. He also took an active part in arranging the Institute's programs and in the *Bulletin* published by the Institute.

He was a member of the Knickerbocker and Racquet Clubs and the Timber Point Golf and Country Club.

The Rockefeller Building Project in Mid-town New York

Editor's Note:—*When we published the model of Radio City in the May, 1931, issue of* PENCIL POINTS *we promised our readers further information as soon as it was available for publication. Herewith is the latest release concerning Metropolitan Square, more familiarly known as "Radio C ity."*

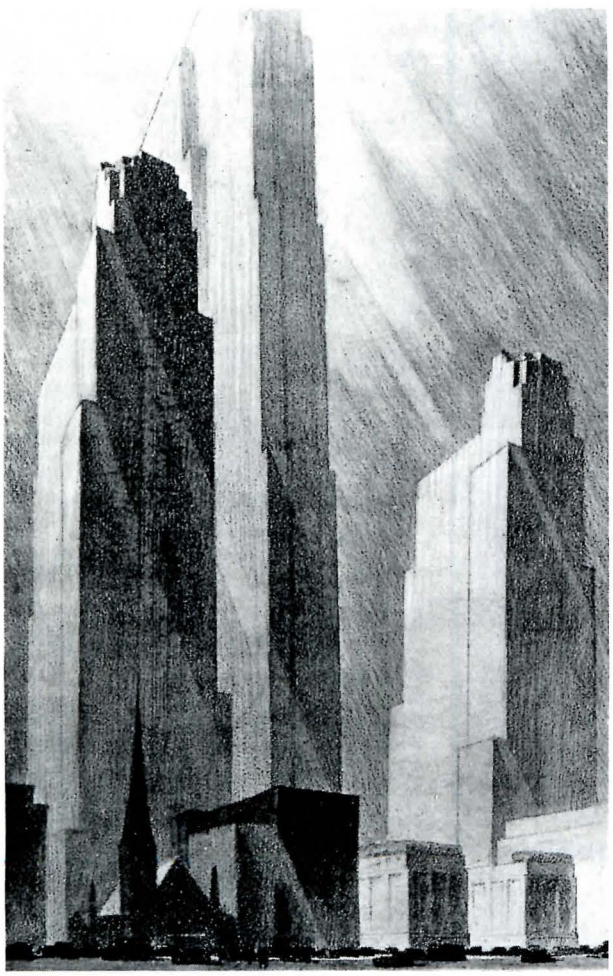
The largest of the three units of Metropolitan Square, New York, is a 66-story office building with a 16-story wing. It will occupy more than half of the middle block.

A second unit is the International Music Hall, world's largest theatre, to be located on the west half of the block between 50th and 51st Streets, and flanked on the Sixth Avenue side by a 31-story office building. Similarly situated in the block between 48th and 49th Streets will be a capacious sound motion picture theatre, completing the triumvirate with which the contractors are now concerned.

Excavation work has been in progress for several weeks on the sites of the three structures. Actual construction will start the end of this month or early in November.

Latest plans for the development show seven other building units. They include two office buildings of 45 stories each in the north and south blocks; two 6-story office buildings fronting on Fifth Avenue; a 13-story department store facing Fifth Avenue in the northern block, and an office or club building just east of the International Music Hall, the size of which has not yet been determined. A large area in the south block is being left out of the building picture at present, while negotiations are continuing with the Metropolitan Opera Company for a new opera house.

The plans show a radical innovation in architectural city

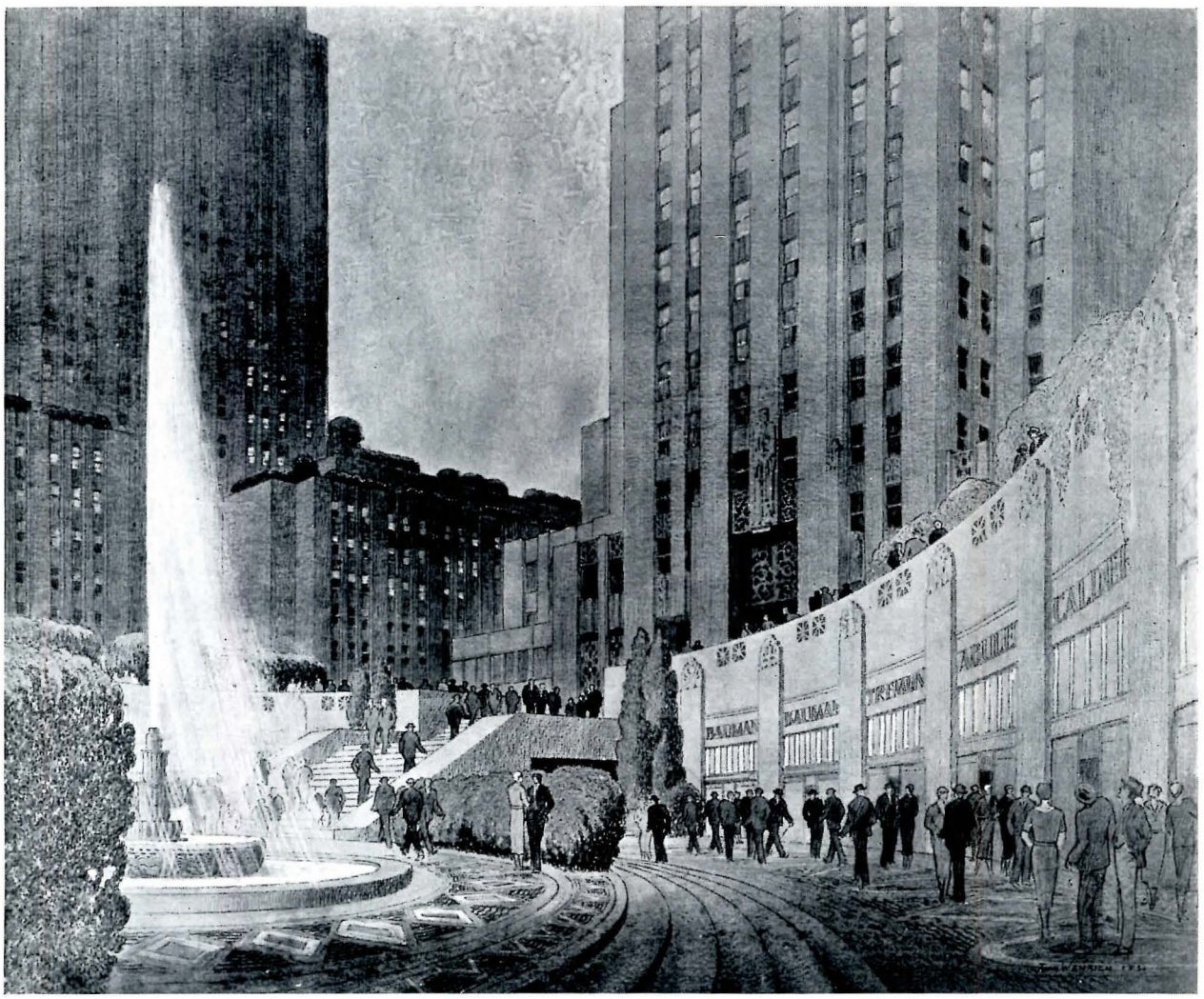


Looking up Fifth Avenue from 48th Street

Looking down Fifth Avenue from 51st Street

RADIO CITY, NEW YORK, NOW KNOWN AS METROPOLITAN SQUARE—FROM DRAWINGS BY JOHN WENRICH

REINHARD & HOFMEISTER, ARCHITECTS—HOOD & FOUILHOUX AND CORBETT, HARRISON & MC MURRAY, ADVISORY ARCHITECTS



RADIO CITY, NEW YORK—TO BE ERECTED FROM FIFTH TO SIXTH AVENUES BETWEEN 48TH AND 51ST STREETS
SUNKEN PLAZA SHOWING ENTRANCE TO THE LARGE OFFICE BUILDING—FROM A DRAWING BY JOHN WENRICH
REINHARD & HOFMEISTER, ARCHITECTS—HOOD & FOUILHOUX AND CORBETT, HARRISON & MC MURRAY, ADVISORY ARCHITECTS

planning. The lower roofs and setbacks of the buildings in the three blocks will be turned into a modern and much magnified Hanging Gardens of Babylon. Seven acres of intensive landscaping will be devoted to waterfalls, fountains, reflecting pools, trees, shrubbery, formal flower beds, multi-colored tile walks, grass plots, and statuary. Plans for covering the outer walls of the building with a heavy network of living ivy are also a tentative part of the scenic picture.

Trees rising to a height of 30 or 35 feet, planted in at least three feet of earth and ingeniously anchored to the roof, will be prominent features of the general scheme.

All the roofs and setbacks beneath the 16-story level will be fully landscaped. A complete piping and sprinkling system, underneath the earth, will water the entire landscaped area.

Practically all of the office tenants above the ten-story level will look from their windows onto a vista of gardens. Since the floors below this level will be filled in the main with shops, display space for national merchandisers, and the windowless, air-conditioned studios of the National Broadcasting Company, the big majority of the office workers will look out on roof gardens at the West or the Sunken Plaza, pictured above, at the East.

The areas of bare roofs, capped with smokestacks and ventilators, which are seen from the windows of most skyscrapers, will be conspicuously missing. So far as this building creation is concerned, the opprobrious term "chimney-pots" will have lost its meaning.

The location of the buildings in the Development follow the "stagger plan," which leading city planners have been urging for years as the perfect architectural solution for the placing of skyscrapers in a modern city. The central "tower," with lower "towers" across open areas at diagonal angles, follows the mass composition of the Taj Mahal. This arrangement offers a maximum of light. There will be from 200 to 300 feet between any corner of the bigger buildings and the nearest diagonal corner of the building most closely adjacent.

Approximately one-quarter of the space in the entire development will be used as offices, studios, and theatres by the Radio Corporation of America, the National Broadcasting Company, Radio-Keith-Orpheum Corporation, and their affiliates. The latter company will occupy practically the entire 31-story office building on the Sixth Avenue side of the block between 50th and 51st Streets.

SAN FRANCISCO ARCHITECTURAL CLUB

With summer over and vacations well spent, the San Francisco Architectural Club can look back on a splendid season of successful social activity. Our seasons must need be reversed for winter brings classes and problems, study and charettes; we are forced to play during the summer months.

A grand ball early in the season, in our own quarters, and with our own orchestra, was well patronized. The annual picnic due to *unusual* sunny California weather was postponed from May to August. In the meantime the semi-annual meeting of July brought about a change in officers. Our worthy and efficient Treasurer (the man who always had plenty of money to meet all the bills), S. C. Leonhauser, was succeeded by Sterling Carter, and Directors Walter E. Mooney and Stanton D. Willard capitulated to Messrs. Leonhauser and Robt. Nordin. In spite of these changes, President Springer is receiving excellent support from all officers of the Club.

Due to illness of a chronic nature, the Club is without the services of an executive secretary until a capable man can be found to take the place of F. Marshall Sanderson.

Early in the summer a water color and sketching class was organized. Michael B. Goodman gave excellent instruction; some fine sketches were turned out and many members of the class showed marked development in the short period the class existed.

The picnic was a grand affair, the author was there with all ten children, each of whom won a prize. Members and friends spent a beautiful late summer day, eating, dancing, and watching their heroes disport themselves in the various games and athletic contests. The associate members of the Club are not often heard from but a group of material men made a splendid showing in the basketball game, easily captured first honors and left the Atelier boys contenting themselves with a very nice consolation prize. Both the beautiful loving cup presented the winners and the consolation prize were given by N. Clark & Sons.

The Engineering class won the baseball game from the anciens and the "niggers" of the Atelier and are the proud possessors of a lovely perpetual trophy donated by the Dickey Clay Products Co.

The races were fast and our worthy vice-president, C. J. Sly, claims he'd be running yet had he not tackled one of the fellows making off with the finish line.

The irony of fate was manifest in the final scene as the gate prize, a very artistic Terra Cotta Vase, donated by Gladding, McBean Co., was won by an ardent supporter of N. Clark & Sons, their worthy rivals in Terra Cotta circles.

A very popular innovation in club activities is a weekly Open House, an evening when members may bring their wives and friends to enjoy a game or dance.

The Annual Atelier Dinner was held on Wednesday evening, September 16th. A fine representation of Atelier members gathered to honor their patrons, to celebrate the culmination of one season's work and to usher in a new season with enthusiasm and good cheer.

The boys expressed their appreciation of the valuable training in design they receive from their patrons, Messrs. Ernest E. Weihe and Ed. L. Frick, who criticise projects, and Messrs. Geo. W. Travers and K. Elliot Ponsford, who assist and direct the beginners in Analytiques.

DETROIT ARCHITECTURAL BOWLING LEAGUE

This year we have found it necessary to reduce the number of teams in the League from ten to eight. One of our charter members, Smith, Hinchman & Grylls, as well as Louis Kamper, Inc., and Giffels & Vallet have dropped out.

However, J. Ivan Dise has entered a team for the first time, and will probably use some of Kamper's men.

The season, which opened on September 18th, consists of four rounds of seven weeks each. The lineup of teams is as follows: Albert Kahn, Inc., Donaldson & Meier, Malcomson & Higginbotham & Trout, Robert O. Derrick, Inc., McGrath & Dohmen, Hubbard & Wagschal, J. Ivan Dise, Weston & Ellington.

ATELIER DES NOCEURS OF LOS ANGELES

Although realizing that business conditions throughout the country at large are fundamentally sound, the Board of Directors of L'Atelier des Noceurs, Ltd., decided at their last monthly meeting four months ago that activities must be curtailed in order to keep within the limits set by the Director of the Budget, according to the fourth Vice-President in an interview secured by a reporter and published exclusively in this magazine.

In order to assist the Chancellor of the Exchequer in a vain attempt to balance his books, without using all the boss's red ink, some of the stockholders tried selling apples on the street corners, but an inspector, appointed by the Massier, found several analytiques and niggers eating apples in an adjacent alley, so this service to the public had to be discontinued.

Monsieur et Madame le Massier entertained the troupe a while ago, at which time a lively discussion arose as to who had been out of work the longest. Finally a competition was arranged to settle the matter, the judges basing their opinion upon the length of time since the contestants had received a hair cut.

Dean Weatherhead, of the College of Architecture, University of Southern California, upon his return from the East recently, appeared before the Atelier and discussed Beaux-Arts matters in general. He seemed especially pleased at the efforts of the Committee on Architecture to secure more accurate judgments.

Some of the boys who can still afford gasoline for their cars are doing a lot of sketching during these days of leisure, which should result in an increase in the number of sketch problems submitted this year. The members are all eager to get back to work again as soon as they get jobs where they can replenish their sadly depleted supplies of pencils and thumb tacks.

ARCHITECTURAL LEAGUE OF NEW YORK

ACTIVITIES FOR OCTOBER

October 8th—Paris night; Murchison, Tony Sarg, Harry Burt, and others will bring, through tableaux, motion pictures, and marionettes, a boiled-down essence of the Voyageurs' trip last spring; opening night of the season—a stag affair. October 15th—Under the Sidewalks of New York; Lawrence Herzog promises a revelation, largely geological, but not going into the technique of foundations. October 22nd—Chester Price is in charge of an exhibition and talk on the subject of Peasant Art. October 29th—"An evening at the Colonial Exposition, Paris," under the direction of Henri Courtais. This is Ladies' Night, and those who prefer will come as Sudanese, gendarmes, or mere tourists. All of these affairs are preceded by a dinner for those who want to start the evening early.

ATELIER RECTAGON OF BUFFALO

Recently the Atelier Rectagon and the Buffalo Chapter of the A.I.A. held a prosperity party in the clubrooms of the Atelier. After the committee had served a round of punch, the speaker of the evening, William Reynolds, an ancien of the atelier, addressed the gathering. His topic was the old standby, *Beauty versus Utility in Modern Design*. Needless to say everyone present picked up a number of unusual points to watch out for in their future work (???). Following the presentation of this timeworn subject, everybody adjourned to the drafting room and participated in a series of fifteen-minute, Esquisse-Esquisse-Esquisse Competitions. The subject for the Architects was *A Sign at the Entrance to the Atelier*, and was won by Louis Greenstein. The program for the Draftsmen was *A Seal for the Atelier*, and was won by George Smith. The evening was closed with the serving of refreshments, and an informal coffee quorum about the dining table. New and old jokes were passed around, old songs were sung, verses composed to fit old melodies, business was cussed and discussed, truly a great way to wind up a big night's entertainment.

The newly elected officers of the Atelier Rectagon for the year 1931-32 are: B. C. Wojtkowski, Massier, Richard A. Polland, Sous-massier. The various portfolios were distributed as follows: Alfred G. Baschnagel, Education, Theodore Hoepfinger, House, William Saabye, Social, Anthony Betz, Library, and Theodore Peters, Exhibit.

THE ARCHITECTS LEAGUE OF NORTHERN NEW JERSEY

The Architects League of Northern New Jersey will hold its Annual Indian Summer Frolic at the Belvedere, Blauvelt Road, Pearl River, N. Y., located just over the Bergen County line.

This affair is run along the lines of the old-fashioned Beer Garden Outing. A buffet luncheon is served beginning at noon until late comers have arrived. All sorts of friendly contests and games including baseball are indulged in between architects, draftsmen, designers, contractors and material men. At this time of the year the country is particularly attractive.

In the evening a full course dinner is served in the restaurant and after-dinner fellowship carries on until homegoing. Anyone allied with the building line is invited, particularly architects, draftsmen and friends. Tickets are $2.50 per person, obtainable from any member or at the affair.

AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS

The course in Architectural Design in the Agricultural and Mechanical College of Texas has been extended to five years. The course in Architectural Engineering will remain at four years, but there is a possibility that that course also will be extended to five years within a fairly short time.

A.I.A. PROSPERITY PARTY OF THE ATELIER RECTAGON, BUFFALO, NEW YORK

First Row, Seated Left to Right: *Theodore Peters, Robert Walter.* Second Row, Seated Left to Right: *Louis Greenstein, Harvey Horton, Henry Fruauff, Karl Schmill, Harry Bacon, Benning Buell, James Johnson, John Wade, A. H. Hopkins.* Third Row, Standing Left to Right: *Richard Polland, Mr. Fenow, Charles Camillo, William Reynolds, B. C. Wojtkowski, Arthur Walters, Theodore Hoepfinger, Anthony Betz, William Saabye, Alfred Baschnagel, Mr. Pierson.*

LAKE FOREST FOUNDATION FOR ARCHITECTURE AND LANDSCAPE ARCHITECTURE

The annual judgment of the work of the students of the Lake Forest Foundation for Architecture and Landscape Architecture took place on September 4th.

This interesting summer course in architectural and landscape design was founded six years ago by a public-spirited group of men and women, interested in the development of the Arts. The foundation provides a course of instruction, extending through twelve weeks, from June until September, for honor graduates of certain recognized architectural and landscape schools. This year's group of students consisted of eight architects and eight landscape architects, representing the following Universities or Colleges: University of Illinois, Iowa State College, University of Michigan, Ohio State University, Armour Institute, Chicago, and the University of Cincinnati. In addition to these sixteen students, a painter and sculptor from Yale University were offered the facilities of the Foundation, although not in competition for the awards.

The student work is carried on under the direction of Stanley White, Professor of Landscape Design at the University of Illinois. The students enjoy one week of criticism by Dean Edgell of Harvard, one week of criticism by Dean Meeks of Yale and two weeks of instruction, at separate intervals, by Chester B. Price, New York.

Four problems, each involving important elements of architecture and landscape architecture, are presented during the course. The landscape men and architects are paired by lot, in conjunction with each problem, and work collaboratively. In addition to these problems, each student is required to present a carefully measured drawing of some existing example of architecture or landscape design. Considerable time is also spent in outdoor sketching, and students are encouraged to range at will over the handsome estates for which Lake Forest is justly celebrated. This distinctive feature of the course is of great value in offering fine types of domestic architecture, both interior and exterior, and beautiful examples of landscape design for intimate study.

The Jury, in making its awards, is expected to reach its conclusions from the totality of each student's accomplishment. The judgment took place in Durand Commons, adjoining the dormitories of Lake Forest College where the students are in residence during the course.

Four Traveling Fellowships are awarded annually: The Ryerson Fellowship in Architecture, providing one year's travel abroad; The Ryerson Fellowship in Landscape Architecture, likewise providing for a similar term of foreign travel; The Condé Nast Fellowship in Architecture, providing one year's travel in the United States, and The Condé Nast Fellowship in Landscape Architecture, with similar provisions. An interesting feature of these Fellowships is that the architect and landscape man winning each are obliged to cover a major portion of their itinerary together, so that each may benefit by the other's observations.

The Jury consisted of two architects and two landscape architects, with one of the Trustees of the Foundation acting as Chairman. The report of the Jury follows:

To the President and Directors of the Foundation for Architecture and Landscape Architecture:

Gentlemen:

Your Jury has carefully considered the merits of all the work done and exhibited by the students of the Foundation and has unanimously agreed on the following awards:

In Architecture:

Ryerson Fellowship: Lorne E. Marshall, University of Michigan.

Condé Nast Fellowship: Kenneth N. Lind, University of Illinois.

Honorable Mention, 1st: Charles M. Goldman, Armour Institute, Chicago.

Honorable Mention, 2nd: Lester Casey, Iowa State College.

Honorable Mention, 3rd: Gilbert H. Coddington, Ohio State University.

In Landscape Architecture:

Ryerson Fellowship: George Wallace, University of Cincinnati.

Condé Nast Fellowship: Edward G. Webster, Iowa State College.

Honorable Mention: Frank Mattson, Iowa State College.

Respectfully submitted,

Jury of Award

F. P. Hixon, Trustee, *Chairman*
Russell S. Walcott, Architect
Louis La Beaume, Architect
Frederick S. Kingsbury, Landscape Architect
Clarence Fowler, Landscape Architect

The Institute feels that the profession and the students owe a debt of gratitude to the Officers and Trustees of the Foundation for their generosity and broad vision. The Officers are: Walter S. Brewster, President, Mrs. Tiffany Blake, Vice-President, Alfred E. Hamill, Secretary, Mrs. John W. Cary, Treasurer, Stanley White, Director, and the Trustees are: David Adler, Augustus A. Carpenter, Robert F. Carr, Edwin H. Clark, Bryant Fleming, Alfred Granger, Frank Hixon, John A. Holabird, James M. Hopkins, L. B. Kuppenheimer, Mrs. R. R. McCormick, Donald M. Ryerson, Mrs. Charles H. Schweppe, F. A. Cushing Smith, Ferruccio Vitale, and Richardson Wright.

PRATT ARCHITECTURAL CLUB

The club has resumed its weekly luncheon in the grille of the Fraternity Clubs Building, New York. Each Tuesday at 12:30 all Pratt men are invited to drop in and say "hello"; you will seldom miss finding a friend and you may meet a classmate whom you have not heard from since schooldays. We are all looking forward to big doings in November, of which more next month.

LETTERS FROM OUR READERS

(Continued from page 775)

out the calibre of a man's studies, not how he acquires them, and HIS ABILITY to apply same.

"For example: When the late D. H. Burnham applied for a certificate to practice Architecture in California, he wrote under Education, '40 *years in a good library, and the* company of brilliant men.'

"That answer might not satisfy the clerks of the Department of Education in Albany.

"You will find, however, that every man who places R. A. after his name will indignantly deny that he has not earned it, while *every* unsuccessful candidate (and his admirers) will never blame his own lack of preparation, but always 'that [deleted by censor] Board' or some member on it for his failure to pass.

"(*Signed*) LIONEL DEANE, R. A."

FREESE'S CORNER

Editor's Note:—*As announced in June, Ernest Irving Freese will here answer any inquiries on problems involving geometry or mathematics that have practical value to the draftsman or that, in one way or another, find application in drafting room work.*

Address your problem to Freese's Corner, PENCIL POINTS, 419 *Fourth Avenue, New York.*

HOW TO DEVELOP A RADIANT OR CONOIDAL ARCH FOR A CIRCULAR WALL

In the direct elevation at Layout "**A**," Figure 3, the outer arris of the soffit—of which the arc *Bj* is a portion—appears *circular*, and can, therefore, be drawn with the compass as indicated. The *actual* line of this arris, however, is the projection of the apparently-circular line onto the curved surface of the wall; in other words, like the cylindrical arch shown here last month, the actual line of this outer arris of the soffit is the line of intersection of two cylinders. Hence, the development of the *outer* face of this arch is identical with that of the previously-shown cylindrical arch, and will not, therefore, require further discussion. (See the September, 1931, issue of PENCIL POINTS.) With the exception just noted, all similarity between the two basic types of "Circle-on-circle-arches" ceases, since the horizontal cylinder that here shapes the outer arris of the soffit *does not penetrate the wall*. Hence, in the *radiant* arch, here shown, it becomes necessary to accurately plot the *inner* arris of the soffit, in direct elevation, before complete development of the arch can be proceeded with. It is done as follows:

From the elevation, shown at Layout "**A**," project any point of the outer arris, say *j*, to its plan-location *j* at Layout "**B**"; then draw the plan *jj'* of the corresponding soffit-element which, in this case, is also a joint line. Now project *j'* from the plan to intersect a horizontal projected from point *j* of the elevation. So, you've found *one* point of the required elevation of the *inner* arris: it's *j'*. In like manner, as has been done at Layout "**A**" establish as many more such points as will exactly define the line of this inner arris and that can, moreover, be used in the development to follow. This inner arris is *not* an ellipse, nor any

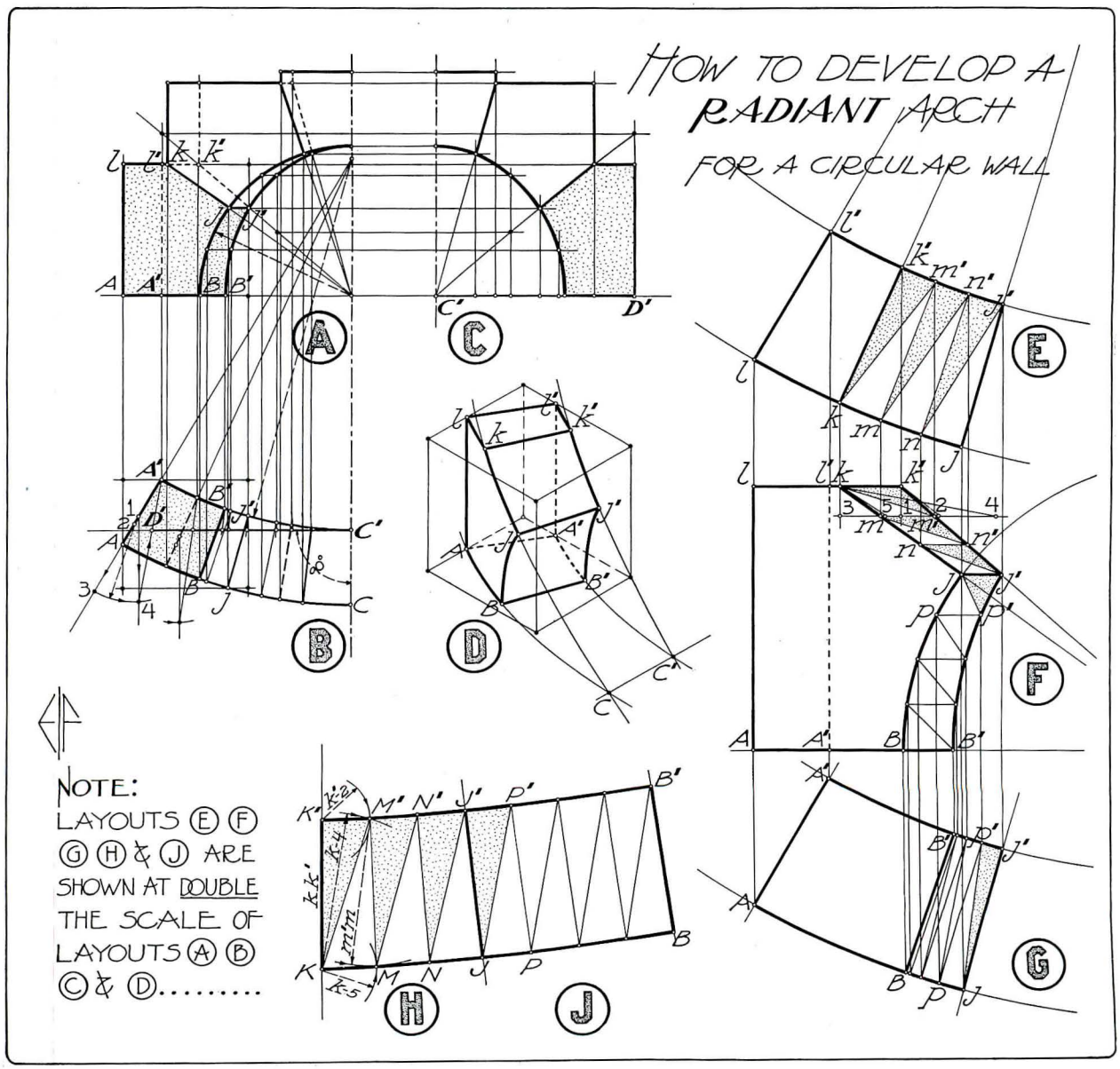


FIGURE 3

other curve that can be plotted by means other than as just instanced. Information to the contrary is not reliable.

Here, the *plan* of this inner arris—which plan, at Layout "**B**," is the circular arc $C'B'$—is coincident with the plan of the inner face $C'B'A'$ of the arch. Hence, with all its intermediate points therealong located, unroll the plan-curve $C'A'$, at Layout "**B**," into the rectifying tangent $C'D'$. The method of rectification here shown is identical with the author's cyclometric method fully explained for a similar purpose last month, and which is also embodied in Part 14 of the "GEOMETRY" at Diagram "4" of Figure 122, and at Diagram "1" of Figure 127. (See the January, 1931, issue of PENCIL POINTS, or last month's "Corner.") Now transfer the pointed-off rectifying tangent $C'D'$ from the plan at Layout "**B**" to the position $C'D'$ at Layout "**C**"; whence, the entire inner, or concave, face of the arch can now readily and accurately be developed as this latter Layout clearly shows. Bear in mind that the joint lines on this development are inclined lines on a cylindrical shell, and will not, therefore, be *straight*, though nearly so. As I said last month, auxiliary points can be established, if you are fastidious, to accurately establish the slight curvature of these developed joint lines.

At Layout "**D**," an isometric view of the springer appears, quickly projected from the three-dimensional limits established by the elevation and plan of same at Layouts "**A**" and "**B**" respectively. Isometrics such as this one exemplifies are almost indispensable aids, not only to the stone-cutter in the actual execution of the work, but also to the *draftsman* in visualizing the patterns, templates, bevels, or other directing instruments, required in that execution. They are interesting to construct, and, in practice, should be made prior to development of the patterns.

Now, neither the inclined joint-surfaces of the arch stones, nor the soffit of this arch, are *plane*: they are conoidal in shape, that is, they are *warped surfaces* whose generating element is a moving horizontally-radiating straight line, no two consecutive positions of which are in the same plane. Theoretically, such surfaces can not be developed. Practically, they can, and *are*—not only in this instance, but in *all* instances involving warped surfaces. There is one universal and easy method of rectifying *any such surface whatsoever;* the method of "triangulation." Merely divide the plan and elevation of the given surface, that is, its orthographic projections, into a sufficiently large number of *triangles* such that the surface enclosed by each triangle is sensibly *plane*, and such that each contiguous pair of said triangles have one side in common. The development of the surface then resolves into the finding of the true lengths of the sides of these triangles, and then plotting said triangles in their contiguous continuous relation one to another. This has been done in the remaining Layouts of Figure 3 herewith, which Layouts show the successive stages in the development of the warped surfaces of the springer, thus typifying the process *for each stone of the arch.* In actual practice, all such developments are made *full size*—for a scale pattern is of no earthly use—except possibly as a model. Hence, in practice, the separate plans I have, for clarity, shown enlarged at Layouts "**E**" and "**G**," and the corresponding separate elevation at "**F**," would not be required, since they would all be contained in the full-size plan and elevation which here necessarily appear at small scale as Layouts "**A**" and "**B**."

Layouts "**H**" and "**J**," then, are the respective and continuous development of the warped joint-surface and soffit of the springer, "triangulated" from Layouts "**E**," "**F**," and "**G**." A study of these graphically-explicit Layouts, coupled with the following simple facts, should make the process not only obvious but *unforgetable:*—

(1) Any plane triangle can quickly be laid out as suggested in the development of the joint-surface at Layout "**H**," when the true lengths of its three sides are known.

(2) Since, for the purpose of practical development, the triangles into which the otherwise non-developable surfaces are subdivided, are assumed as *plane*, then the real or imaginary lines connecting the vertices of said triangles are, for the purpose of locating the *points* of the development, assumed as *straight*. Observe, however, that any plotted line of the development, passing through, or connecting, such plotted points, will not be straight unless the actual line of the surface is *also* straight.

(3) The *true length* of any *horizontal* line is its plan-length, and can be taken *directly* from its plan.

(4) The *true length* of any sloping line is equal to the hypotenuse of a right triangle whose altitude is the vertical "rise" of the line (as given by the elevation), and whose base is the horizontal "run" of the line (as given by the plan). Hence, at Layout "**F**," since k'-*1* is the "rise" of the sloping line $k'm'$, or the difference in elevation between its two ends, and since *1-2* is its horizontal "run" or plan-length taken from Layout "**E**," then the resultant hypotenuse k'-*2* is, by the rule just given, the *true length* of the line $k'm'$, or the true distance *in a straight line* between the points k' and m'. Similarly, with *k-3* as its rise, and with *3-4* as its run, the true length of km' is *k-4*. Hence, since the true length of the horizontal line kk' is given directly at Layout "**E**," the three sides of the triangle $kk'm'k$ are now known, and are so plotted as the triangle $KK'M'K$ in the development at Layout "**H**," as shown. Again, at Layout "**F**," since *k-3* is the rise of *km*, and since *3-5* is the run or plan-length of *km*, then *k-5* is the true length of *km*. Also, the true length of $m'm$ is the same as kk', which is KK' of the plotted development at Layout "**H**." Hence, in this development, point *M* can now be located with the beam compass, and, so, *another* triangle added to the string.

Now *you* finish it. Easy!—after you get the swing of it.

FUTURISTIC STUFF

In the November "Corner," I'll prove to you that *no professor, nor anyone else ever has discovered or ever will* how, by Euclidean geometry, to "TRISECT AN ANGLE." Some one utters a loud noise *in the newspapers* occasionally, but it merely renders emphatic the resultant utter silence!

In the December "Corner," I'll show Alabama how to lay out that perspective when *both vanishing points and the station point* are "over in the next county"—meanwhile, read *Perspective Projection*, if you can pry loose from a dollar and four bits to send to PENCIL POINTS PRESS, the publishers.

NEW SCHOOL TEACHES WELDED BUILDING DESIGN IN FREE COURSE

The General Electric Company has announced the opening at Schnectady of a school of welding design to teach engineers, architects, draftsmen, etc., both in and out of its employ, methods of designing welded buildings.

There is no charge for instruction in the course, which requires approximately four weeks for completion. It is a flexible one and can be adjusted to suit each individual. The course requires that the applicant be an engineer, or have some training in structural design or some experience in the design of riveted structures. It is then only necessary for him to learn the difference between the application of welding and riveting to steel frames.

HERE AND THERE AND THIS AND THAT

This department conducts four competitions each month. A prize of $10.00 is awarded in each class as follows: Class 1, sketches or drawings in any medium; Class 2, poetry; Class 3, cartoons; Class 4, miscellaneous items not coming under the above headings. Everyone is eligible to enter material in any of these four divisions. Good Wrinkle Section: a prize of $10.00 is awarded for any suggestion as to how work in the drafting room may be facilitated. No matter how simple the scheme, if you have found it of help in making your work easier, send it in. Competitions close the fifteenth of each month so that contributions for a forthcoming issue must be received by the twelfth of the month preceding the publication date in order to be eligible for that month's competitions. Material received after the closing date is entered in the following month's competition.
The publishers reserve the right to publish any of the material, other than the prize winners, at any time, unless specifically requested not to do so by the contributor.

The regular prizes in this month's competition have been awarded to C. Jones Buehler in Class I; D. D. Corrough, Class II; Emanuel Desira, Class III. There is no award in Class IV. The Good Wrinkle prize goes to Henry Sharp.

Turn over and have a look at the magnificent designs in Mr. Gloop's palanquin competition. There are several more drawings that we hope to have space to publish next month.

THE STATE EXAMS.

By D. D. Corrough

(PRIZE—*Class Two—September Competition*)

Down in our state the Statutes read:
"No one can practice 'Arch.'
Unless he pass a stiff exam.
And get a good high mark."

"Goose eggs are nothing in our lives,"
The Board of Quizzers state,
They proceed to show just what they mean,
Each dumb-bell gets the gate.

First day they say, "Draw us a plan,
Show us you know it's true,
Rooms need windows, walls and doors,
Fire escapes, exits, too."

The would-be architects work all day,
Eat lunch if they have time,
The plans are done at four P.M.
Their hands are black with grime.

Next morning has its Graphics,
Next afternoon has Specs.
"Don't try to fox us," says the Chief,
"We know what you're up to next."

Strength of Materials, Concrete,
The Board of Examiners grin.
"If you can't pass our nice exam.,
We sure won't let you in."

The third day's ended, home go all
The hopeful, for a rest.
Two months at the Springs, another in bed,
The report bears this request:

"Please visit us again next fall
And try the exam. again.
You've flunked this one, we're obliged to state,
And sorry to cause you pain.

But don't give up, try it again,
Next time luck serves you better,
The next exam. won't be in vain,
Show them you're a go-getter."

A WRINKLE MAYBE GOOD MAYBE BAD BUT ANYWAY · A WRINKLE

STOP: Have you ever had to erase ink lines from the same spot on a sheet of tracing cloth two or three times, only to have, most embarrassingly, first a wrinkle (not a good wrinkle) then a hole make its appearance at the very last rub? Or have you tried to erase a mark from a thin sheet of tracing paper, with the same hole appearing almost instantaneously?

LOOK: If you will slip your triangle under the tracing so that your eraser will have the hard, hard xylonite as a buffer instead of the soft drawing paper, the mistake may be erased with one third less rubs (count them) and with much less abrasion of the cloth or paper

LISTEN: Assuming that you are one of those unfortunate individuals who must spend 1% of their time, or five minutes a day, in erasing, just consider what one third of this would amount to in a couple of centuries of drafting—not to mention the tons of energy (expressed in terms of elbow grease), likewise conserved for the use of posterity

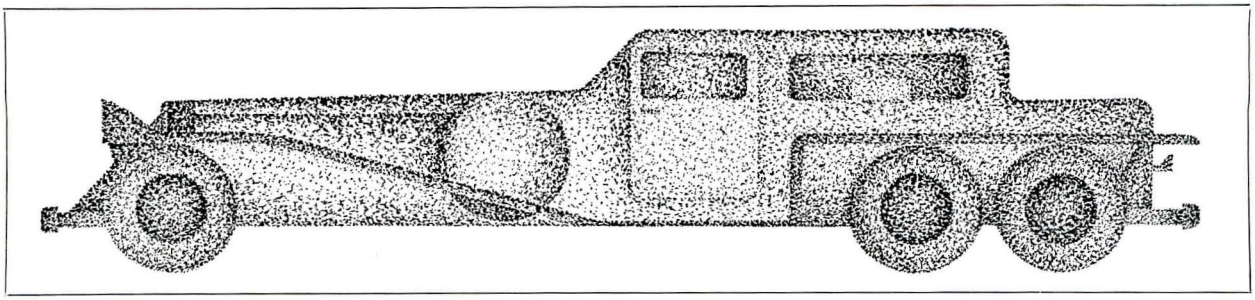
FROM HENRY SHARP, OF NASHVILLE, TENNESSEE

(PRIZE—*Good Wrinkle—September Competition*)

LITHOGRAPH PENCIL DRAWING BY C. JONES BUEHLER

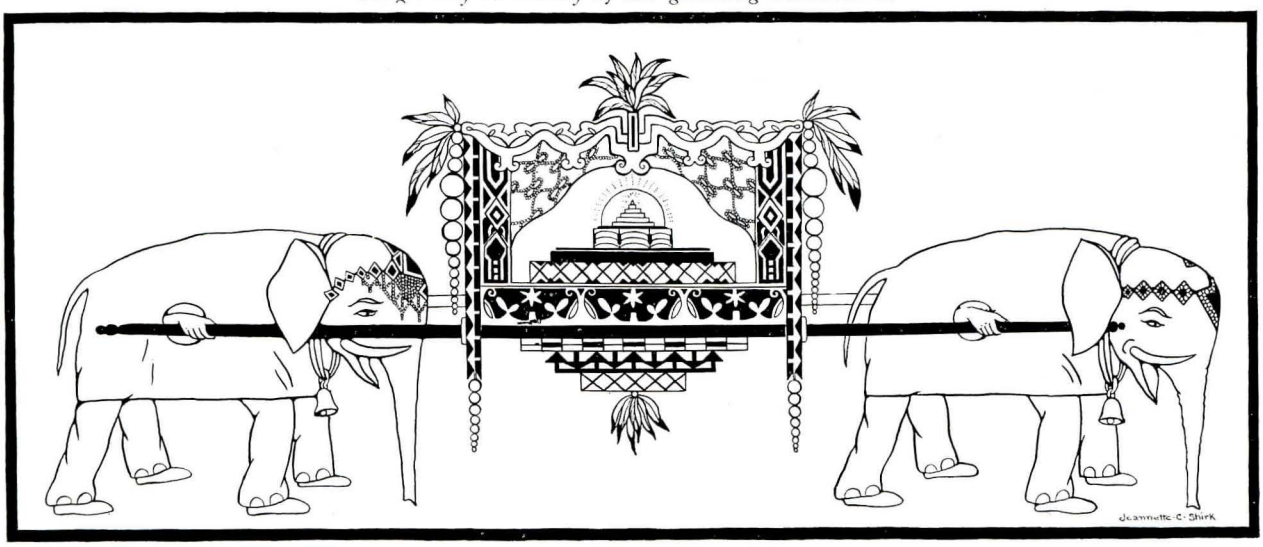
"Santa Maria-la-Mayor, Ronda"

(PRIZE—*Class One—September Competition*)



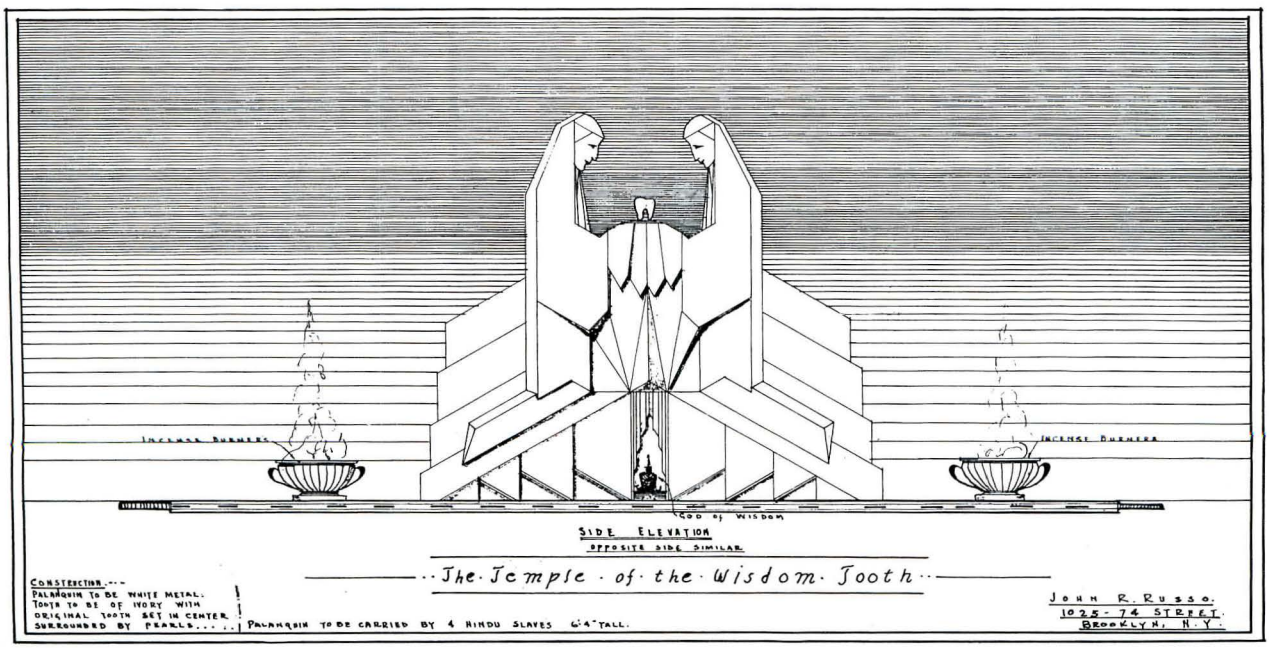
ROBERT MAJORS SENT IN THIS PERFECTLY SWELL LOOKING OBJECT

"The key to this palanquin lies hidden within the sweep of its simple lines. It was made for a molar, a white, gleaming molar, that belonged to the person defined. E. L. C., our queen supreme, demanded a good palanquin to exhibit her tooth that had been with her since youth, for the sake of her beloved countree. So now we all hope that this modern design may be worthy of her gleaming white tooth."



HONORABLE MENTION DESIGN—A PALANQUIN, SYMPATHETICALLY SUBMITTED BY JEANNETTE C. SHIRK

Presented in the (American) Indian manner . . . . . Palanquin borne by genuine blue-blooded American Elephants. Feathers from the long-suffering, moulting American Eagle. Pearls—"Each pearl a tear." Framework—any American wood suitable for carving. (Or why not Linoleum?)



GRAND PRIZE—JOHN R. RUSSO CARRIES THE DAY AND IS AWARDED THE TEN SMACKERS
THE SALVADOR GLOOP COMPETITION FOR A PALANQUIN FOR E. L. C.'s WISDOM TOOTH

The Salvador Gloop Competition for a Palanquin

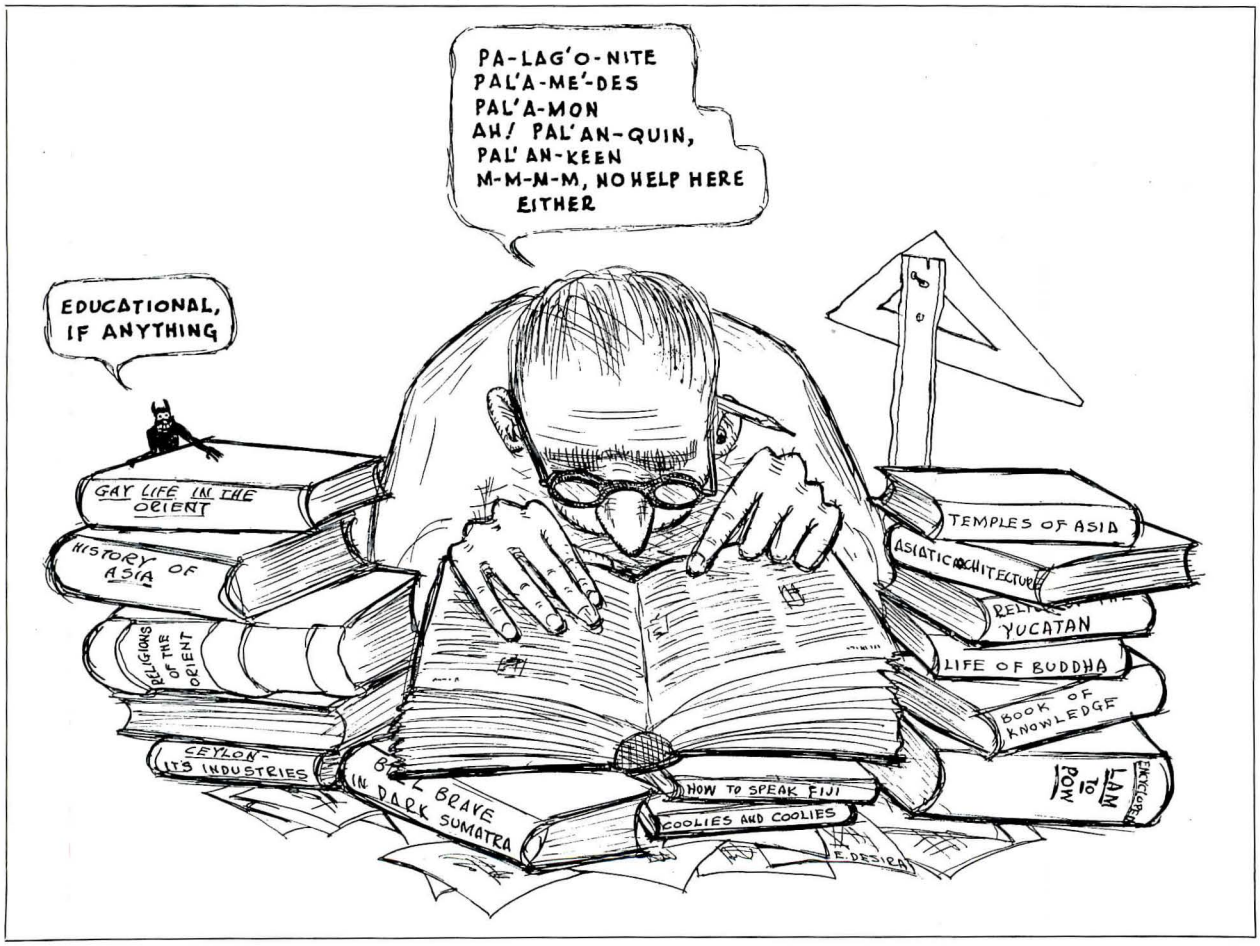
The Problem and Report of the Jury of Award

Permit me to thank you, gentle readers, for your hearty cooperation in putting over my modest idea for the Design of a Palanquin for E. L. C.'s Wisdom Tooth. Your response has been most gratifying and pleases me beyond description, particularly when my eye glances down the long list of contestants to behold the names of not only those designers of national fame—but international as well! Assuredly this here competition will have great influence toward bringing about a better understanding between the palanquin carriers and their precious load. The dental profession owes you a standing vote of appreciation. All testimonial letters received from those heretofore dreaded persons, the Extractors of the Fated Tooth, will be published in this column next month. Why not invite your dentist to express himself in writing?

The best letter received from a dentist during the next year or so will be awarded one extra-large rubber dam (used but in first-class condition). But we digress.

The Gloop jury, unsolemnly assembled, was so impressed with the quality of designs submitted that its chairman, S. Gloop himself, was prevailed upon to dig into his jeans for two extra "fins" ($5) which will be sent to the two runners-up, Major and Shirk. After a stormy debate (accompanied by a sixty-mile gale) the first prize was pinned on John Russo's design which, it was felt, concentrated reverend attention on the sacred relic more successfully than any of the others. With the return of better times E. L. C. will let the contract for the construction of the palanquin. In the meanwhile the tooth, properly sprayed with Flit, will be kept safely in the vaults of the American Ivory Corporation in New York.

S. Gloop, *Chairman*



Emanuel Desira Pictures Himself Searching for Inspiration for the Design of Our Palanquin

MR. DESIRA'S LETTER BRINGS TEARS TO THE EYES

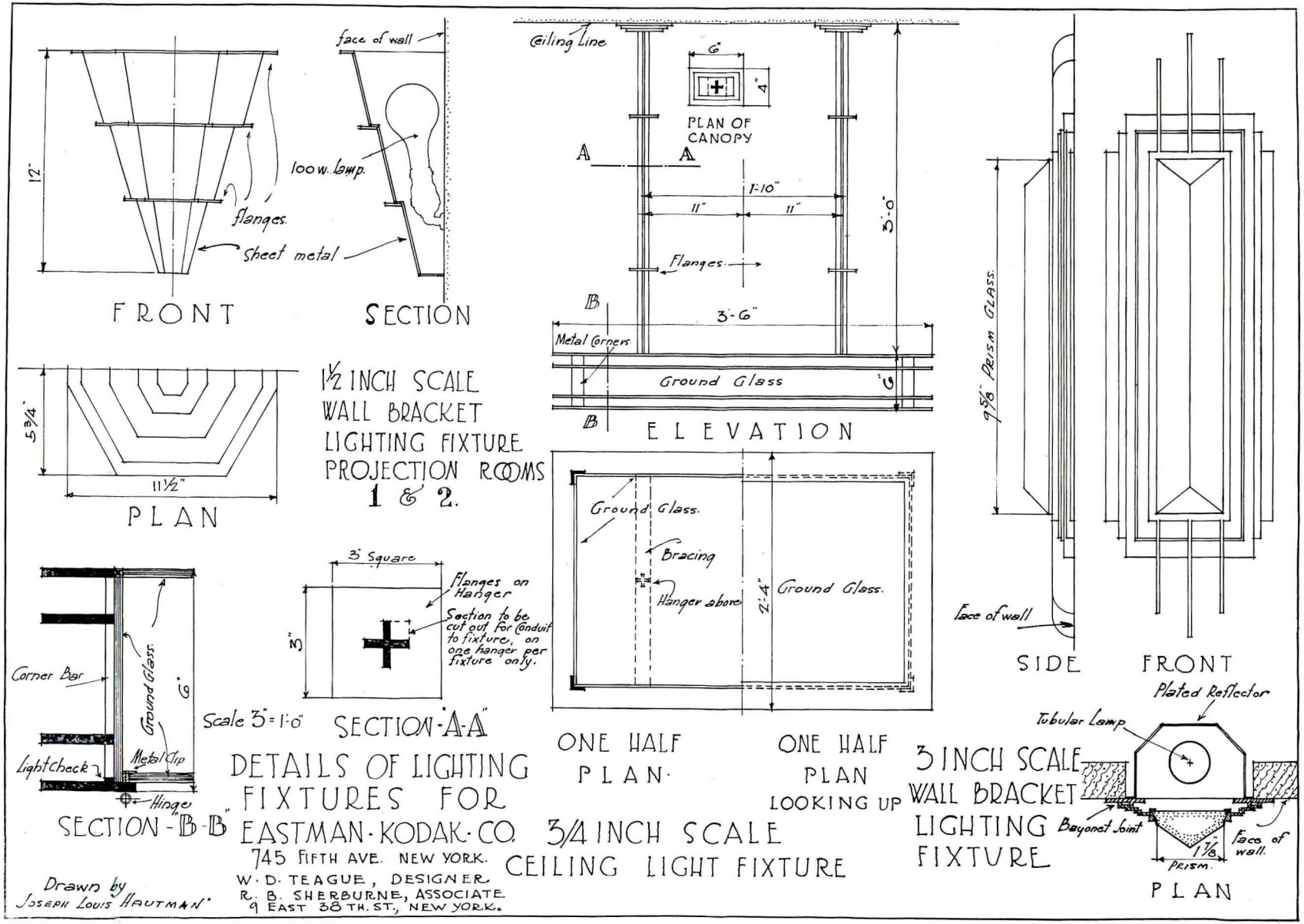
"Dear E. L. C.:

"When Salvadorio Gloop brought out this new competition for a design of a palanquin he started something for me I couldn't finish.

"I drew up about a hundred thousand designs for the darn thing but I felt that not one was fit to carry your tooth (forgive me for the gross flattery, but it's a fact!).

"So I gave up and dashed off a cartoon which disqualifies me in one competition and permits me to enter another, namely: Class III. Hope you like it! *Yours,* Emanuel Desira."

(Prize—*Class Three—September Competition*)



DETAILS OF EASTMAN KODAK SHOP, FIFTH AVENUE, NEW YORK—DRAWN BY JOSEPH L. HAUTMAN

WALTER D. TEAGUE, DESIGNER—R. B. SHERBURNE, ASSOCIATE

THE SPECIFICATION DESK

Whys and Wherefores of the Specification

11—Carpentry, 4

By Philip G. Knobloch

Finished Floors

The finished flooring shall be of the materials, grades, face and thicknesses specified and shall be air dried, kiln dried and accurately milled.

All finished flooring shall be tongued and grooved and end matched. Flooring 25/32 inch and greater in thickness shall be hollow back; flooring less than 25/32 inch in thickness shall be grooved in the back.

Finished flooring shall not be delivered to the building in damp or wet weather nor shall it be stored in newly plastered rooms or otherwise exposed to dampness.

Finished flooring shall not be laid until after all partitions have been erected and plastered and until plastering and masonry work is dry.

It shall be the duty of this Contractor to examine the building and assure himself that the underflooring, plastering and the building generally are in proper condition to receive flooring. He shall see that the underflooring or nailing concrete, where used, is level, free from plaster droppings, projections, or dampness, and shall report to the Architect or General Contractor any defects which would tend to prevent the laying of a finished floor of the character specified. Failure to make such an examination and report shall be construed as an acceptance of building conditions and preparatory work.

This Contractor shall lay between the underfloor or concrete base and finished floor and insulating material, waterproof where specified and weighing not less than twenty (20) pounds per 100 square feet. The insulating material shall lap at least two inches (2") at all joints.

Unless otherwise specified or indicated on Contract drawings, flooring boards shall run the long dimension of the room or space.

Where borders are called for they shall be laid as specified or indicated on Contract Drawings. All joints between borders and floor strips shall be tongued and grooved; butt joints will not be accepted.

Nailing

Each piece of flooring shall be well driven into position. All tongued and grooved flooring shall be blind nailed, using nails and spacing as follows:

Flooring 25/32" thick, 8d. steel cut light flooring nail, 12" to 14" apart.

Flooring 15/32" thick, 6d. bright wire finishing nail, 8" to 10" apart.

Flooring 11/32" thick, 4d. bright wire casing nail, 6" to 8" apart.

Scraping and Surfacing

After laying, all flooring shall be swept clean, scraped lengthwise of the grain and rubbed down with No. 1½ sandpaper, again swept and the dust removed with a soft cloth. Unless hand scraping is specifically called for, a machine scraper may be used.

After scraping and cleaning, all finished floors shall be completely protected by this Contractor with heavy building paper. This protection paper shall be maintained by this Contractor until the contractor for painting and finishing commences his work.

Under finished floors, we have not mentioned any particular kind of floor, for there are many! For instance, consider oak flooring. Oak may be quarter sawed and may be had in three grades. Clear, sap clear, or select, or it may be had in plain sawed either clear, select, No. 1 Common or No. 2 Common.

Maple flooring comes in several grades, as does birch. Yellow pine floor is usually specified as edge grain pine though face grain is cheaper but does not make for a durable floor when subjected to hard wear. Face widths and thicknesses vary also.

The specification as written will cover the entire flooring except that the type, size, and kind must be inserted in the paragraph. Determine what flooring the building requires, considering wear, appearance, and cost and specify the best that is possible under each condition. Insist that the flooring you specify be according to the Floor Manufacturers' Association's Manual of grading and kind.

Before flooring is brought to the building and laid, the building must be dry for the same reason as outlined in a previous paragraph. Dampness is very detrimental to flooring. In the most expensive work the flooring is backpainted similarly to millwork. This, however, is not essential as the floor is not subject to possible wall dampness.

Door Frames

Exterior and interior door openings shall be fitted with frames for hinged or sliding doors as indicated on drawings, constructed in accordance with details, of kiln dried stock of grade, materials and dimensions as specified. These frames shall be fitted with stops, finished the full thickness of walls or partitions and arranged to receive trim or scribe mould on one or both sides in accordance with detail drawings. Frames shall be rigidly blocked, wedged and firmly secured to bucks or rough studding. (See Fig. 15.)

Doors

Doors shall be of thickness indicated and of designs shown on Contract drawings.

Generally the construction shall conform to the following requirements, but Contractor desiring to furnish doors produced by manufacturers favoring special methods may submit same to the Architect for approval.

Exterior doors shall be solid or veneered as specified. Where veneered doors are specified, the stiles and rails shall have 3/8 inch thick veneers applied to cores built up of 7/8 inch strips and put together with waterproof glue. Doors, exposed to the weather when open, shall have the top edge covered with a 1/16" brass strip by this Contractor.

Interior paneled doors shall have stiles and rails veneered with 1/8 inch thick veneer, sawed cut. The veneers shall be applied over built up cores of white pine or chesnut and finished on the outside edges with a 3/4 inch strip of material matching face veneers. Paneled doors shall have plain or raised panels and with flush or raised mouldings as indicated on Contract drawings.

Flush doors shall consist of framed up construction.

Framed up construction shall consist of stiles, rails, and flush panels, all of 7/8" core construction, cross banded and finished with face veneers and edges, as specified for slab doors.

Glazed doors shall be provided with moulded glass stops on room side and where muntin divisions are shown, they shall be of wood with moulded glass stops unless otherwise specified or detailed.

This specification will cover thoroughly the subject of doors but we prefer to specify a specific door manufacturer, and the type and number of the door we want. Any special doors are to be made up by him. In this way, there is no doubt that the best door available will be purchased. Woodworking mills, not specializing in doors alone, prefer to buy their doors direct from a high grade door manufacturer. In most cases they can do better in price.

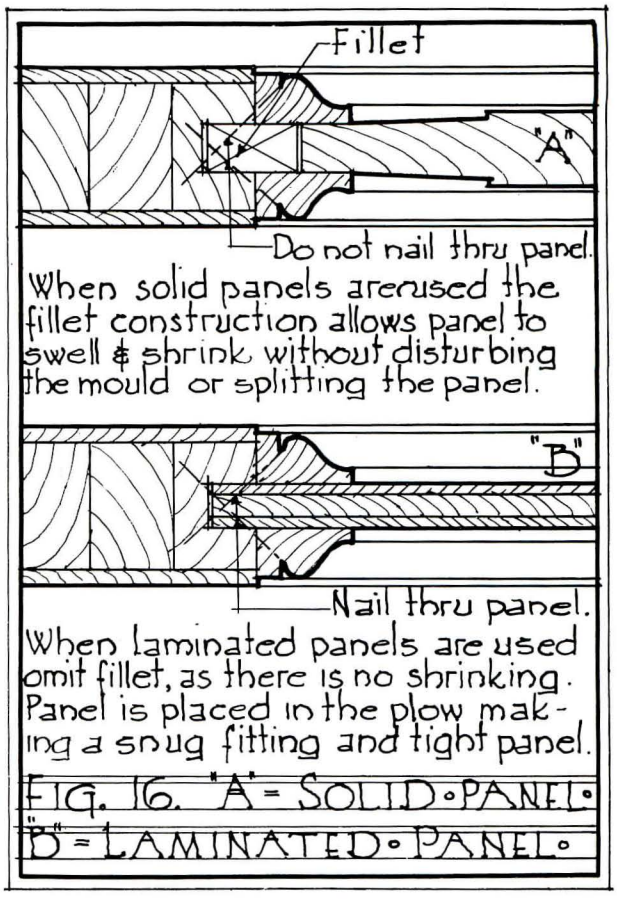


FIG. 16. "A" = SOLID PANEL "B" = LAMINATED PANEL

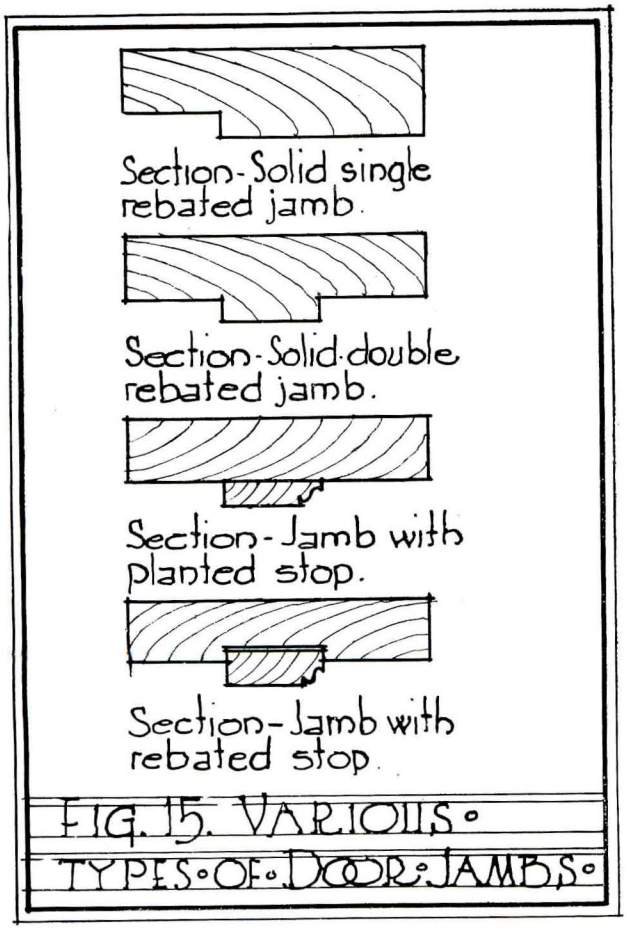


FIG. 15. VARIOUS TYPES OF DOOR JAMBS

Doors for exterior use should never be less than 1¾" thick and for buildings where their use is heavy it would be better to make them 2¼" thick. Interior doors are either 1¾" or 1⅜" thick, of course preferring the heavier thickness.

Cores and veneers should be kiln dried so that the moisture content will not exceed 5%. The cores to be either chestnut or white pine built up in straight strips with square joints. Veneering for the best doors should be 3/16" sawed veneering for the rails and stiles and ⅛" sawed veneering for the panels. A less expensive method is to use the ⅛" thick veneered throughout the door. The cheapest but least desirable is the rotary cut veneering. Rotary cut veneering is about $1.25 cheaper per door but will not be guaranteed from raising or cracking, except possibly in gum or Birch. The saving is slight but the difference in wear and appearance is very great. Use sawed veneering only. (See Fig. 16.)

Panels

Paneling should be laminated veneered 3 or 5 ply paneling. The flat panel should be not less than ½" thick for 1¾ and 5/16" thick for 1⅜. Thickness of the raised paneling is fully governed by the design of the panel and will be as many thicknesses as necessary to carry out the

(Continued on page 791)

Glass and Glazing, 2

By David B. Emerson

Prism glass, for use in store fronts and in transoms over doors, is manufactured in pressed tile. Prismatic sheet glass is made either plain or wired. This type of glass is extensively used for the redirection of light into dark interiors and is very effective if properly used. All the various forms of prismatic glass are patented products, and as they come more or less under the head of specialties it is not wise to discuss the merits of one or another in an article of this kind.

Up to this point only the various types of glass which are used for glazing purposes have been considered. Next to glazing, probably the most prominent use of glass in buildings is for mirrors. The first glass mirrors of which we have any record were made in Venice in the Eleventh or Twelfth Century. The art of mirror making was largely confined to Venice during the Middle Ages, although some mirrors were made in Germany during that period. From the Fourteenth to the Sixteenth Century the Venetians enjoyed a practical monopoly in the making of mirrors. After that time the art of making mirrors was learned and practiced in several other countries. The manufacture of mirrors in France began during the reign of Louis XIV, due principally to the efforts of his great minister of finance, Colbert. The mirrors in the *Galerie des Glaces* in the palace at Versailles were made from cylinder glass, blown, flattened, ground, and polished. At that time the making of large sheets of glass was not possible so it will be noticed that the design is divided up into small units not much over 20″ x 40″; withal the scale is excellent. After 1693, when the manufacture of plate glass was commenced, all French mirrors were made of plate glass. All the early mirrors were made by applying an amalgam of tinfoil and mercury to the back of the glass. This was a tedious process and was also dangerous to the health of the workmen, due to the liability of mercurial poisoning. In 1835 the first experiments in the chemical method of coating glass with silver were made by Johann von Liebig, the famous German chemist. This process was finally perfected by a French chemist about 1840, and has been used ever since that time. For many years the French mirrors were the standard of the world, and the term "French Plate" was regarded as expressing all that was best in mirrors. Of late years our American manufacturers have made great advances, and today the American mirror is equal to, if not superior to, any in the world.

The method of silvering mirrors is to carefully pour a solution of nitrate of silver over the glass. A reagent is added to the solution just before pouring. This reagent begins to operate in a few minutes, and precipitates the silver on the glass, leaving the liquid on top, where it serves to exclude the air, thus preventing oxidation. When the silver has properly dried, a coat of shellac is applied over the silver, and it is then given a coat of mirror backpaint. A new and very effective method for the protection of the silver on the backs of mirrors is the depositing of a layer of solid copper over the silver by an electrolitic process. The copper coating is then painted the same as the unprotected silver coating is painted. Of late years a number of new developments have been made in the manufacture of mirrors. Among these are "gold mirrors," produced by a deposit of gold chloride; the "gun metal" mirrors, produced by a deposit of lead, and mirrors on which there are several different deposits on one mirror. Mirrors are also made from colored plate glass in all the twelve shades and colors previously mentioned. In the manufacture of high grade mirrors only the "first silvering" plate glass should be used, and it should be very carefully examined before setting to see that the reflections are not distorted, something which occasionally happens in spite of all precautions. As only a small amount of first and second silvering plate glass is produced, many mirrors are made of "mirror glazing" and "glazing" quality plate glass.

It is quite as essential to see that glass is properly set as it is to see that it is properly selected. Unfortunately some specification writers and architects pay altogether too little attention to this quite important part of their work. The very earliest form of glazing of which we have any adequate knowledge is lead glazing. This form of glazing was used from the very earliest times, and is still in use at the present time. The method of glazing has changed very little with the passing of the centuries and the artisan of today and the artisan of the Middle Ages still have much in common. Leading is done with H-shaped lead sections called cames, and sometimes spelled "calms." These cames vary in width from three-sixteenths of an inch to one inch wide, and sometimes even wider. In addition to the smooth came with straight edges, there are numerous other types used at the present time, among which are the smooth surface with irregular edges, the "antique" with rough surface and various textured surfaces. Special cames are now being made which have a steel reinforcing bar inside the lead. These cames are so placed that they strengthen the leading, and make it possible to dispense with the unsightly saddle bars that would otherwise be necessary. The usual method of lead glazing is quite a simple procedure. The glass is first cut to the desired pattern and laid out on the bench forming the design, whether it be simple squares, diamond quarries or an intricate picture window. The cames are cut to the proper length and carefully pressed around the glass, meeting at each point of contact. All joints are thoroughly soldered, using the usual lead and tin alloy. After one side is soldered, the sheet is turned over and the other side is thoroughly soldered. The flanges of the cames are then filled with a cement composed of fifty per cent pure white lead, thirty per cent whiting, ten per cent litharge and ten per cent red lead, mixed with pure linseed oil. This is done to render the glass watertight. The leaded glass is set either in wood sash, steel sash or stone tracery. For setting in wood sash the glazing rabbets should be primed and thoroughly bedded with pure linseed oil putty. The leaded light should be set in the rabbet and held in place by wood glazing beads bedded in putty and tacked to the sash. If the lights of leaded glass are of any size they should be reinforced against wind pressure, either by the use of the reinforced cames previously mentioned or by galvanized steel saddle bars set into the sash and secured to the glass with copper wires soldered to the cames. The reinforcing should be determined by the width and the

design of the lights, but the maximum distance between reinforcing bars should not be over twenty-four inches. For setting leaded glass in steel sash it should be bedded in an approved steel sash putty and be held in place with steel glazing beads bedded in steel sash putty. If the leaded glass is to be set in the reglets in stone tracery it should be cemented in with a rich cement mortar, either white Portland cement or other nonstaining cement. It should be set so that a margin of lead will show around all edges of the opening. One of New York City's leading stained glass workers strongly recommends shellacking the reglets before setting the glass. It should always be remembered in detailing stone window tracery to have the reglets cut deep enough, so that the lights of leaded glass can be slipped in at one side and then pulled toward the other. Of course it is always possible to bend leaded glass slightly to get it into the reglets, but it must be remembered that bending loosens the cement in the cames and makes the glazing less waterproof. Although the fundamental principles of lead glazing have changed very little since the Middle Ages quite a number of new methods and materials have been introduced of late years. One of these newer developments is the hard metal came. These cames are generally made from either zinc or copper, and sometimes reinforced with steel strips inside the cames. They make the work of leading much easier than the old method, and it can be done much quicker.

Another recent development is "cast leading." In this type of work the leading is cast to a pattern and then finished by hand tooling. Some exceptionally beautiful results have been obtained by use of this form of leading. It is perhaps superfluous to say that to obtain the best results from this form of leading, nothing but clear glass should be used, depending entirely on the leading to produce the desired effect.

The setting of sheet glass in wood sash appears to the casual observer to be a very simple operation.

Simple as it may seem, there are several quite important items to be considered to make it absolutely successful. Before setting the glass, the glazing rabbet should be painted with a thin coat of paint or it should be given a coat of linseed oil. The reason for this is that the unpainted or unoiled wood will absorb the oil in the putty and cause it to peel off. A bed of putty should be spread on the rabbet before setting the glass, and the glass should be set in this bed. This is sometimes called "bedding" and sometimes it is called "back puttying." By whichever name you may choose to call it, always specify that it shall be done. I have found by experience that unless it is specifically called for the glaziers will try to avoid doing it. To hold the glass in place, glaziers' points, which are triangular pieces of sheet zinc, are placed at intervals of six to eight inches along the edges of the glass. In England, "sprigs," which are small square nails without heads and pointed at one end, are quite generally used for this purpose. Hence the term sometimes seen in specifications, "glass shall be sprigged." So far as I know they are never used in this country, so the term should not be used. In setting the points in the sash, the first point should be placed within three or four inches of the corner of the sheet in one direction, and not nearer than six or eight inches in the other direction. This is done to prevent the breaking of the corner. The points should be driven far enough into the sash so that they will be entirely covered by the putty and also so that the putty knife will not catch on them when the sash is puttied. After the points are set, the glass is puttied, which completes the glazing. Putty for wood sash is composed of white lead, whiting, and raw linseed oil. Tallow is sometimes added where the panes are very large and liable to movements due to expansion and contraction. In former times when the painters did the glazing, it was quite a common practice for them to mix their own putty, but today the up-to-date glazier buys a ready-mixed putty. This ready-mixed putty, due to the scientific methods of manufacture, is undoubtedly far better than most of the old hand-mixed materials. In glazing wood casement sash or wood doors the glass should be bedded in putty and held in place with wood glazing beads bedded in putty. The reason for this is that the slamming of the casement or door might jar the putty out of the rabbet and thereby loosen the glass.

In glazing steel sash a self-hardening putty which is generally composed of linseed oil, whiting, white lead and litharge is always used, as ordinary putty will not harden on metallic surfaces. Some of the patented self-hardening putties may contain other and different ingredients, but naturally the manufacturers are not telling what they are. The putty should always be used as soon as it reaches the job, as it begins to harden when exposed to the air, and in a short time it is practically impossible to work with it. Steel sash are glazed in place, while on the other hand, wood sash are usually laid flat on horses for glazing. The glass in steel casement sash is either held in place with special spring glazing clips and puttied or it is held with steel glazing moulds bedded in putty and screwed to the sash. With the different types of steel sash the putty is sometimes on the inside and sometimes on the outside of the sash, but the glazing moulds are almost invariably on the inside of the sash.

Plate glass for store fronts is set either in wood or steel frames, or in patent drawn copper or bronze frames. If the steel or wood frames are used, the glass should be thoroughly bedded in putty, self-hardening for steel frames and white lead putty for wood frames, and held in place with glazing mouldings. If wood frames are used the mouldings should not be toe-nailed, but the nails should be driven perfectly straight, as toe-nailing causes too much pressure to be brought against the glass. The patent drawn copper or bronze frames are undoubtedly much better for setting large lights of plate glass than are the teel or wood frames. In setting, the copper or bronze grips the glass at a point sufficiently far from the edge to insure freedom from fracture or strains that might be produced by "pinching." The glass instead of setting on the hard surface of the frame rests on setting blocks, so that the edge cannot come in contact with the metal. Setting blocks are made of several different materials as there is quite a difference of opinion on the part of the various manufacturers as to which material is the best for this purpose. Heavy pads of felt, lead, or iron covered with leather, soft wooden blocks, or other such devices, have all been used. Whatever blocks are used, they should be placed about ten or twelve inches from each end of the sheet. More than two setting blocks are not required, though care should be used to prevent the glass from coming in contact with the metal. In this type of setting there is no need for putty as the construction is both water and dust tight.

Wire glass should always be set with the mesh running vertically. In all other respects this glass is set exactly the same as all other kinds of glass are set in steel sash.

In setting mirrors an air space should always be left

between the mirror and the backing. Also, the backs of all stops which hold the mirror in place should be painted black to prevent the reflection of the wood showing in the mirror.

Now in conclusion let me add that I am not trying to tell the reader how to make glass, but to give him some idea of how it is made and how it may be used. There is much more in the use of glass than I have attempted to tell, but I trust that what I have told will be of some assistance to some of the younger members of the profession.

CARPENTRY

(Continued from page 788)

design intended. All laminated panels should set in the plow omitting any fillet piece as is used with solid panels. The laminated panel eliminates swelling and shrinkage, therefore, the fillet is unnecessary.

Paneled doors should be blind mortised and tenoned, which is better practice than doweling. Tenons on the rails should not be less than 2½" long and ½" long on mullions, mortised into rails. Waterproof glue used for all glueing.

The completed door should show tight joints, faces absolutely smooth and free from machine marks and mouldings cut with clean sharp arrises.

Window Frames

Window frames shall be constructed as indicated on the detail drawings of materials as specified under materials (unless otherwise noted), using clear grades for exposed parts and merchantable grade for concealed portions.

All frames for openings in masonry walls shall be provided with exterior scribe moulds. These shall be left removable until after joint between frame and masonry is caulked and pointed and then secured permanently in place.

Sash

Sash shall be constructed of kiln dried stock, of grade and material and thicknesses specified under Materials, moulded and checked in accordance with detail drawings, mortised, tenoned, glued and pinned in accordance with the best trade practice. Counter weighted sash shall be hung with sash chain or cord of the kind and size suited to weight of counter weight. Counter weights shall be of cast iron; or of lead where conditions of heavy sash or narrow mullions require that lead weights be used.

Sash to be of white pine and come to the job primed with one coat of linseed oil.

Trim

All base, rails, trim, stools, etc., shall be of kind as specified under Materials and constructed as detailed in the Contract Drawings.

Saddles

Where wood saddles are indicated on the plans they shall be of oak ⅝ thick above finished floor line with edge of trim on the door side and extend beyond the door the full width of the door stop, or where rebatted frames occur, not less than 2". (See Fig. 17.)

Miscellaneous Fittings

Miscellaneous fittings such as mantels, cupboards, bookcases, cabinets, shelving, hook strips, hanging rods, etc., shall be constructed of materials as specified, and in the manner indicated on detail drawings.

Back-painting and Priming

Under painting contract.

Base and Sanitary Core

Where noted on plans and as per detail. Splicing in very long lengths only and must be beveled splices.

Openings to Main Ceiling

Between ceiling and roof in scuttle chamber, provide access door 2'0" x 2'0" to ceiling space.

Hangers for Suspended Ceilings

Where hangers for suspended ceilings are specified, they are to be furnished and installed under Carpentry Division, they shall be placed to line in either direction at not more than three (3') foot centers. The hangers shall extend through the floor arches and shall be formed of two pieces of one (1") inch channels or 3/16" x 8" flat bars bolted or riveted together, not less than seven (7") inches long and punched to receive ⅜" diameter bolts.

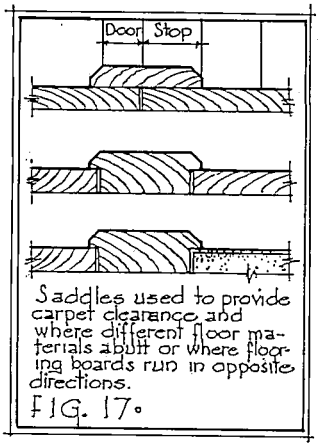


FIG. 17.

Hardware

This Contractor shall provide and apply all rough hardware required for the proper execution of all Rough and Finished Carpentry. Rough hardware shall include tracks and hangers for sliding and accordion doors.

He shall also apply all finished hardware and shall obtain from the Contractor supplying "Finished Hardware" complete information as to type and sizes and make all allowances necessary to properly receive the hardware to be used.

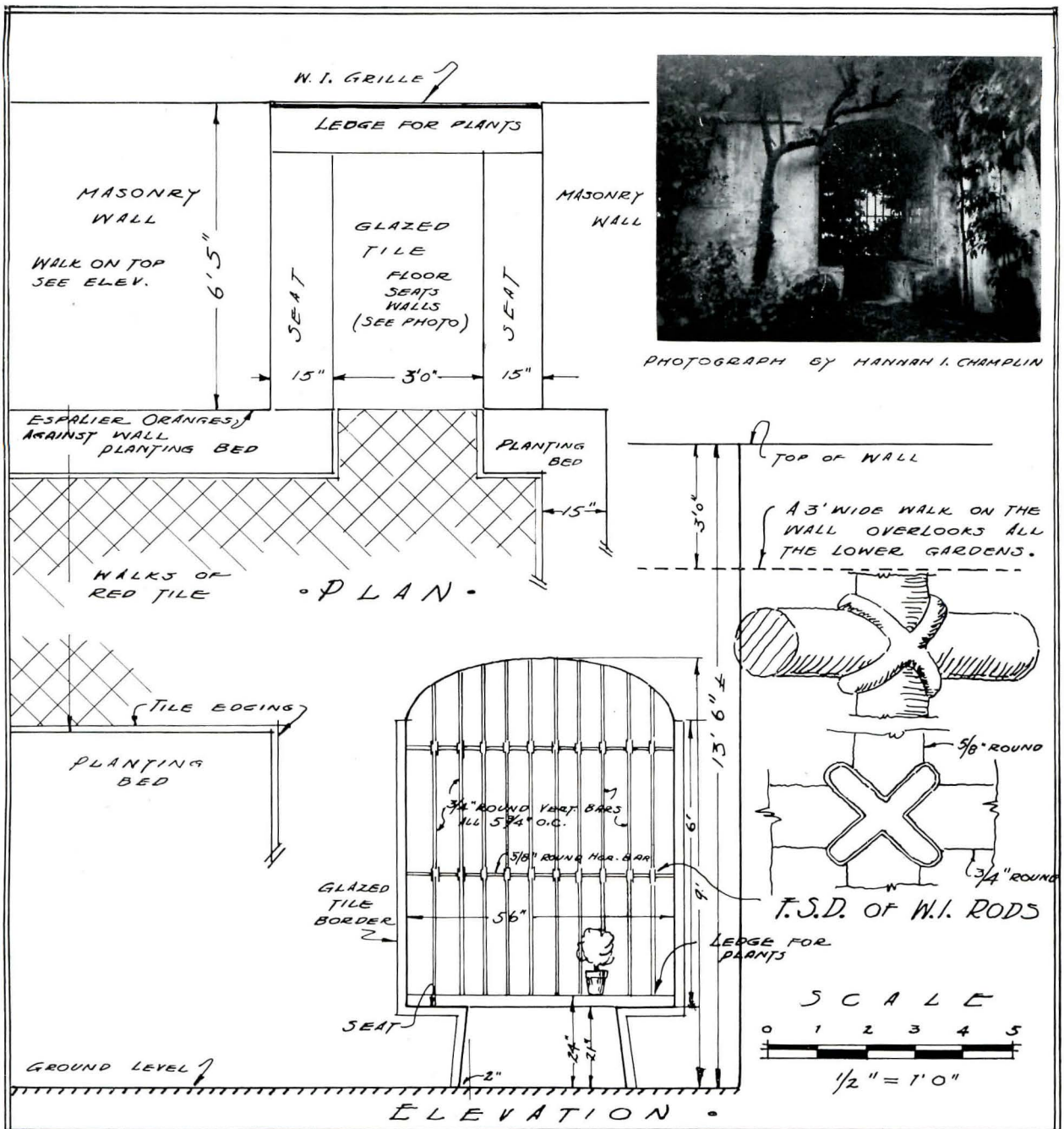
The finishing hardware to be applied under this Division will be delivered to this Contractor at the building. He will be required to receipt for same and shall assume full responsibility for all hardware so received until application and acceptance of the work in this Contract.

Glass and Glazing

Under separate division.

The most practical and satisfactory method of handling the hardware is to first determine what manufacturer's hardware is to be used. Then select the best, for the hardware receives constant and severe usage. Having completed the selection and all the hardware listed include the listing in the specificatons so that the Carpentry Contractor will be able to determine the cost of installation. Make it clear that the owner will furnish the finished hardware but that the contractor is to include the cost of installation in his bid. In this way, we know exactly what hardware we will have and there will be no price cutting at the time of bidding with the resultant loss in grade of hardware. It is quite difficult to determine equivalent hardware because of the variations in materials, designs, weights, etc. Therefore pick the best hardware immediately and you are finished.

(To be continued)



DETAILS OF A GARDEN NICHE IN THE ALCAZAR

SEVILLE—SPAIN

MEASURED & DRAWN BY CAROL H. LAWRENCE LANDSCAPE ARCHT. CLEVELAND

MEASURED DRAWING BY CAROL H. LAWRENCE

LETTERS DISCUSSING MEANS OF SECURING BETTER COOPERATION BETWEEN ARCHITECT AND MATERIAL MAN

(Continued from page 756)

tion will probably continue until such time as the architects take into account something besides price. If quality of product, and responsibility, and service are not to be taken into account in considering the goodness of a proposition, we will get nowhere fast.

"A pair of shoes costs from $4.00 to $16.00, depending upon the quality. The same is true with respect to furniture and other products, and there is just as much difference in the quality of millwork as there is in shoes, furniture, and other items, and yet millwork is just millwork, and the contractor is permitted, or forced, to use the lowest price quoted on an inferior product by irresponsible little mills, to beat down the price of the reputable manufacturers. It is more essential that care be exercised in the selection of design and the quality of millwork than in the case of furniture and shoes. Millwork when once installed stands for the life of the building, and thus is a permanent source of delight and evidence of good taste, or a subject of disgust and expense, according to the quality of the product. While in the case of furniture, if the design proves unsatisfactory or the quality bad, it can be changed according to the wish of the owner.

"Every piece of lumber put through the factory of the American Sash and Door Company is kiln dried to a moisture content of five per cent, properly conditioned, and cared for up to the time of delivery. We are forced in many instances if we want business to meet the price quoted by mills which do not even operate a dry kiln.

"We place the responsibility for this condition upon the architect, for the reason that he acts as agent for the owner, and in most cases his advice is accepted and acted upon. It would appear that the architect in his own interests as well as the best interests of his clients would be most exacting in the selection of the millwork and the installation and finishing of same. Painting and finishing of millwork is oftentimes a smear and a botch.

"It may be entirely illogical, but it does seem to me that it would be to the best interests of all concerned if the architects would work out a plan that would contemplate a very definite and accurate report of millwork concerns who are ethical, responsible and dependable from the standpoint of the product they supply. This list should be in the hands of all the reputable architects, and could be supplied to the owners if so desired."

W. D. EARNEST, JR., of Elizabeth, N. J., Says:

" 'A proper and full recognition of the interdependence of the Architect and the Manufacturer of building materials will result in a relation between them that can not be too close or too cordial. How to bring the products of the Manufacturer to the attention of the Architect without waste of time and money is a problem that interests both parties.'

" 'The Architect must be properly informed of the characteristics and applications of materials, particularly those that are new, but he usually has only a limited amount of time to devote to this part of his work. An open mind toward materials is the most important thing a Manufacturer can request of the Architect for his salesmen.'

" 'The Manufacturer's representative, as a matter of good business, should have access to someone with authority to hear him. The person who does the interviewing should have the authority to speak for the firm to outsiders and within his own organization should have equal authority to speak and be heard.'

" 'There is usually the proper man to see in every Architect's office. The reason he is there is to gather information and pass it on to the Architect, and, as he is a specialist in his line, the Architect is bound to have confidence in his judgment. The Architect's mind is influenced and made up for him by the men in his organization.'

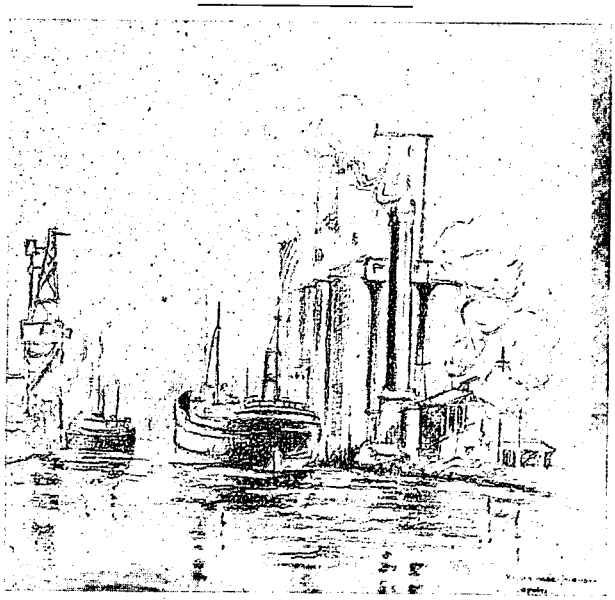
" 'Inefficiency in the Architect's organization in distributing valuable information is largely responsible for the present unsatisfactory condition under discussion.'

* * * * *

"The foregoing is an abstraction, with minor grammatical rearrangements, from the letters printed thus far in the PENCIL POINTS' Symposium. Does it not, in itself, point out a reason for the difficulties under consideration and likewise indicate a reasonable and easily adopted means of remedying the situation? I think so and will outline briefly the suggestion which it brings to my mind.

"This suggestion comes from one who is not connected with the field under discussion, but who has an absorbing interest in materials, fostered by a number of years of actual purchasing and manufacturing experience. It seems to me that the difficulties can be greatly relieved by the employment of a man, in each architectural organization of sufficient size, who, for lack of a more suitable title, would be known as a 'material specialist.' Architects of more limited facilities could group together in the employment of such a person and benefit individually and collectively from their participation.

"The duties of this 'material specialist' should be briefly as follows. He should keep in close touch with all new material developments and ascertain their value to the building industry. He should absorb all types and kinds of information in his field and be able to pass it along to his organization in a proper manner. He should represent his firm to the Manufacturer of building materials and should likewise carry the Manufacturer's message to the Architect. To sum up, he should keep himself better informed regarding building materials and their architectural application than any other person in his organization



"MILWAUKEE INDUSTRY"
FROM A CRAYON AND PASTEL DRAWING BY GEORGE F. SPINTI

and should use this information for the benefit of his firm.

"The person filling this place must have an inborn or native interest in materials, their method of manufacture, and their uses and applications, such interest to be further developed by the study or practice of architecture. His mind should be analytical and of an orderly and systematic nature so that he could properly evaluate the merits of the materials presented to him, classify them and keep the multitudinous information in such manner that it would be available on short notice.

"A keen memory and unquestionable honesty are further important requisites. Finally, a pleasing personality and appearance and the ability to handle and deal with salesmen of all types are quite necessary. A great many modern-day purchasing agents have cultivated this ability to contact with salesmen in a successful way. They have found it possible to secure the utmost help and information from their salesmen friends under almost any conditions. This is a distinct and valuable attribute for the person under discussion.

"As a final thought, it seems to me that the use of a man as suggested would prove of unquestionable benefit to the Architect, a great aid to the Manufacturer of reputable products, and would provide the basis for a mutual understanding and benefit that appears to be so badly needed."

C. W. GARRISON,
of Freeze, Vogel, Crawford, Inc.,
Milwaukee, Wisconsin, Says:

"A recent survey, made by mail, indicates that architects are about equally divided into two groups: Those who combine modern business methods with their professional skill; and a second group who are professional to a point of ignoring the basic principles of good business. Having fired the opening guns, and before going further with the battle, let me explain my own position in this matter.

"I am vitally interested in the use of advertising as a factor in business. I have been in the advertising business for more than 15 years. During that time I have had to do with the advertising of several well-known and widely used building materials. During that period I have come to know many architects personally, and I believe I know something about this business of building. Furthermore, I have a pride in my profession—consequently, I can appreciate the professional attitude of architects.

"The survey to which I refer was made to determine the attitude of architects toward the advertising of building materials in general magazines. We accept, without question, that advertising in the architectural magazines is a vital step in selling a building product. But we wanted to know, also, whether architects accept consumer advertising of building products as an indication of greater value, whether they have a preference for nationally advertised brands.

"Judging from the replies received, a large number of architects prefer to use products that are advertised in such publications as the *Saturday Evening Post* or *Woman's Home Companion.*

"Their reasons for this preference are that an advertised product usually offers greater value, that acceptance of the product has been created and the client more readily agrees to its use. Other reasons were given, but these two predominated.

"On the other hand, a large number objected, some quite violently, to the attempts of manufacturers to bring their products to the attention of owners.

" 'I know of no greater nuisance than to have a client come into my office with a bunch of clippings and tell me the products I am to use,' states one architect. I contend that this attitude is not conducive to better business relations between the architect and his client. If the client tells you what he wants, and the products are good, why not use the ones he suggests?

"And another offers the following: 'I welcome suggestions from my clients. Knowing something of what they want, I am in a better position to please them.' I submit that the architects who adopt this sort of policy are going to enjoy more business and an increasing clientele.

"Many architects conduct a building business in connection with their profession. Without exception, we find that these men acknowledge that advertising to the possible owner causes that owner more readily to accept the architect's selection of advertised products. I contend that this is good, sound business for all concerned.

"For the manufacturer who makes an unworthy product, and attempts to increase its use by high-powered sales and advertising, I offer no defense. He will destroy himself. But I do hold that the manufacturer who believes in his product sufficiently to tell the world about it should receive full credit.

"There have been instances where a manufacturer of a product thought to be inferior has employed advertising to increase the use of that product. Suppose this product is *not* the *best* on the market. If it is fairly good, and costs less, it may be necessary to use it to meet the financial condition of the owner. None of us like to reduce quality; but price has always been, and will continue to be, a factor with many.

"Let me correct an impression that exists in the minds of some architects. Advertising of building products in general magazines is not intended to give the architect the detailed information he wants. Nor is the manufacturer attempting to go 'over the head' of the architect. It is intended to give the owner a brief outline of the advantages of using the product and, as the owner is paying the bills, why shouldn't he know something about the materials to be used? The architectural magazines offer an excellent opportunity to tell you, in more detail, about the product itself—who has used it, where it has been installed and how well it works. And, finally, the catalog gives you such other information as may be needed.

"To those whose professional pride is offended by a manufacturer giving his product the widest publicity, I would like to suggest that building is a business and that modern *business* methods apply to it, and to architectural service, just as they do to the business of selling *any* product or service.

"It is not intended to offend the architect when general advertising is done—no more than the dentifrice manufacturer wants to offend the dentist, no more than the manufacturer of certain useful medicines wants to offend the physician.

"This business of building is much the same as any other, and advertising is a part of it. Why not accept it? If a manufacturer convinces you and others that his corner bead is better, that his paint lasts longer, or that his lumber is more perfect, specify it by *name.* That advertised name is worth something to you and to the owner as well as to the manufacturer.

"If a product *is* better . . . if it is accepted more readily by owners, contractors and dealers . . . if service facilities have been established to give you quick, convenient delivery . . . why not give the manufacturer the credit he deserves?"