PENCIL POINTS

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Ralph Reinhold, *President*, P. H. Hubbard, *Vice-President*, William V. Montgomery, *Secretary*

This Month and Next

You have undoubtedly noticed the change in our cover design. We hope you will like it. It came about through a notion we have had for some time that it would help the readers and users of PENCIL POINTS if a list of the articles and other features were printed each month on the cover as well as on the contents page. In referring to back issues the new arrangement should be helpful since it will enable the architect or draftsman to find quickly the issue containing any article or illustration he may be in need of at the moment. If you have any comments we would be glad to hear from you.

Next month's color plates will be appropriate for a Christmas issue, we feel. The first will be a beautiful water color by Hughson Hawley of a corner of Westminster Abbey and we are sure that Mr. Hawley's thousands of architectural friends and admirers will appreciate getting this reproduction of one of his famous drawings. The other color plate is a block print by William S. Rice showing a view of Chartres. Mr. Rice who is a resident of Oakland, California, has achieved considerable renown for his work in this medium. He gives a complete description of the technique of making prints such as this one.

Contents

For November, 1931

John F. Harbeson's series, *Design in Modern Architecture*, will be resumed next month with an installment devoted to a discussion of modernist painting. Perhaps what he has to say will help to make clearer what the modernists are about. Having already seen the illustrations we feel that they certainly do require explanation to make them understandable. Every architectural man should know something of what is going on in the sister arts, and we therefore urge a thoughtful reading of what Professor Harbeson has to say. If you don't like the pictures you will at least know more about the subject when you get through.

Arthur Bates Lincoln has another article on a small house problem for December. This time his topic is *Built-in Equipment*. So many items have been developed during the past few years in the field of conveniences that can be provided for the client at the time the house is built that the architect has to be on the alert to keep up with the times. Mr. Lincoln here provides him with a sort of check-list reinforced by remarks as to the uses and merits of the respective units. His experience with small houses and the small house client gives authority to his discussion of this subject.

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PENCIL POINTS is indexed regularly in *The Art Index*

THE FUGITIVES
FROM AN ENGRAVING BY DECARIS
Courtesy of Kennedy and Co., New York

PENCIL POINTS
Volume XII November, 1931 Number 11

What of the Architect's Future?

Some Observations by Colonel William A. Starrett

As Reported by Alfred Human

"Our country has entered a new era of building, a new era bringing new and complicated phases of construction economics. The three factors that have united in making our country the greatest building nation in the world, the architects, engineers, and builders of America, have conquered many technical problems. In the same spirit we shall conquer the problems of the new phases of economics." Colonel Starrett continued:

"Architects may be perplexed as to their own status in this new era; the kindred engineering professions are likewise pondering over the question of their relationship to this development. It seems normal that vast progress should introduce new adjustments into the ancient institution of architecture. It also seems plain to me, as a builder and engineer, that the architect's place is secure in the scheme of big construction.

Photo by Pirie MacDonald

COLONEL WILLIAM A. STARRETT

"American cities are being remade. Ever since L. S. Buffington, the young Minnesota architect, dreamed of skeleton steel structures back in 1880, Americans have pioneered a type of building that revolutionized design and construction technique.

"When William LeBaron Jenney in 1883 designed the Home Insurance Building in Chicago, taking the dead load off his walls and placing it on a skeleton framework of iron concealed in the masonry, he did more than inaugurate the epoch of the skyscraper. He opened a new social era.

"For years prior to the steel-grillage principle—first designed in the office of Burnham and Root, architects of the twelve-story Rookery Building in Chicago in 1888—there was pessimistic comment on the status of American architecture. Of all the arts, it was complained, architecture showed the least vitality.

"Then came the skyscraper, and with it, a new attitude of the world toward the American architect and American construction methods.

"This new type of structure transformed the artist-craftsman of yesterday into the three-functioned architect of today, just as it evolved the old-time building contractor, the handicraft specialist, into the coördinator-manager of today. Craftsmanship is today merely one vital phase of building operations; at times we seem to forget this primary fact of modern construction."

Colonel Starrett disagrees with those few who say that the architect is a mere theorist or picture-maker. That is an old-fashioned notion, he believes. He continued:

"As a builder I consider that the architect should, if he would keep abreast of modern construction, function in three directions, or, to put it another way, he must operate three distinct businesses.

"First, there is the designing of architecture. Till the skyscraper arrived, this basic ability was the chief function of the architect.

"Second, there is the construction of architecture. That is, the correlation of the engineering problems, the scientific planning and detailing, always with the cost limitations in mind.

"Third, there is the business of architecture. This third phase concerns his relations with the client, the management of his own affairs, his office and operating forces, and particularly his business relations with the builder and the builder's co-workers.

"Such a three-fold functioning is achieved only by intensive training, and mature experience.

"We can at once place our finger on one evil in the architect's profession: the unwillingness of the young draftsman to submit to this indispensable discipline.

"These young men, promising and brilliant in many instances, are restless and seek the immediate realization of their ideas. Instead of holding themselves in leash and settling down to a relatively brief period of work and practical schooling in the right kind of environment, the youngster succumbs to the allurement of the first prospective client's offer.

"Too often this offer comes from the type of individual owner who has made it a part of his business to pirate the brains and ideas of promising young architects.

"Plucked out of a good office, the young man feels for a time that he is ready to grapple with almost any problem. The owner, probably a shrewd business man, gets the utmost out of the immature young technician, in many cases assuming the glory for the accomplishments of his man.

"The youngster's income has been increased so generously that he remains satisfied for a while. Then, inevitably, if he has the right stuff in him, he begins to appreciate the futility of this ill-balanced, transitory kind of work. The owner has been profiting by the fine enthusiasm and talents of the youngster, but, after the bloom of youth has been stolen from him, the young architect is obliged to settle down to a jog trot, and perhaps a completely frustrated career.

"He has been ruined by the promise of immediate monetary and professional reward. Too late he must come to realize that he is the victim of a destructive system.

"Destructive because the young man is far from being the only victim. The whole field of architects suffers. There are too many architects—that is the first evil in itself—and the present system of pirating by the individual owner is doubtless the most aggravating and most disturbing element in present-day conditions.

"I cannot offer a solution for this problem; no mere formula will suffice. I do not see any fundamental faults in the schooling of the architect, that is, his academic schooling. As I have indicated in my idea of the three-fold character of the modern architect's functions, the fault lies rather in the activities of the post-school period.

"The suggestion has been made that the architect's school curriculum follow more closely that of the lawyer and doctor, by providing for a lengthier post-graduation period. That theory may be correct but I believe that the individual will have to work out his own professional salvation. Many a fine man will fall by the wayside in the struggle, that is the fate of some of the most brilliant men in all the professions.

"You ask me, how can the young architect secure the kind of business training I have cited?

"How does any banker or manufacturer get his training? Not in school altogether; he must live in the right environment, he must become saturated with his work. Architecture is no different in its new business aspects.

"The architect is not only the leader of the group of three: himself, his structural engineer, and his mechanical engineer. He is not only obliged to master the three functions I have mentioned, design, construction, and business; he is also compelled to practice or understand the highly complicated details of modern finance.

"He must be equipped to cope with that modern business phenomenon, the speculative builder. He must be prepared to act as a leader in the ferocious competition of the building industry. Like farming, building remains in the stage of jungle competition; fortunes in building are always made indirectly. He must have vast resources of information and equipment to avoid the terrific waste which accompanies competitive bidding.

"Nowadays the architect, the builder, and the owner must work and live together if they wish to construct a building according to the best standards. Whether on a low bid, competitive bidding, or operating on a cost-saving and profit-sharing basis, these three factors must forget their separate interests and work only to complete the job. The cooperation of the intelligent architect and the skillful builder effects the big, the true economies in construction; these savings are made when the plans are being drawn, not later.

"As the architect is charged with the task of translating the owner's conceptions into plans and specifications he finds that he is serving everybody's best interests by working with the builder from the outset.

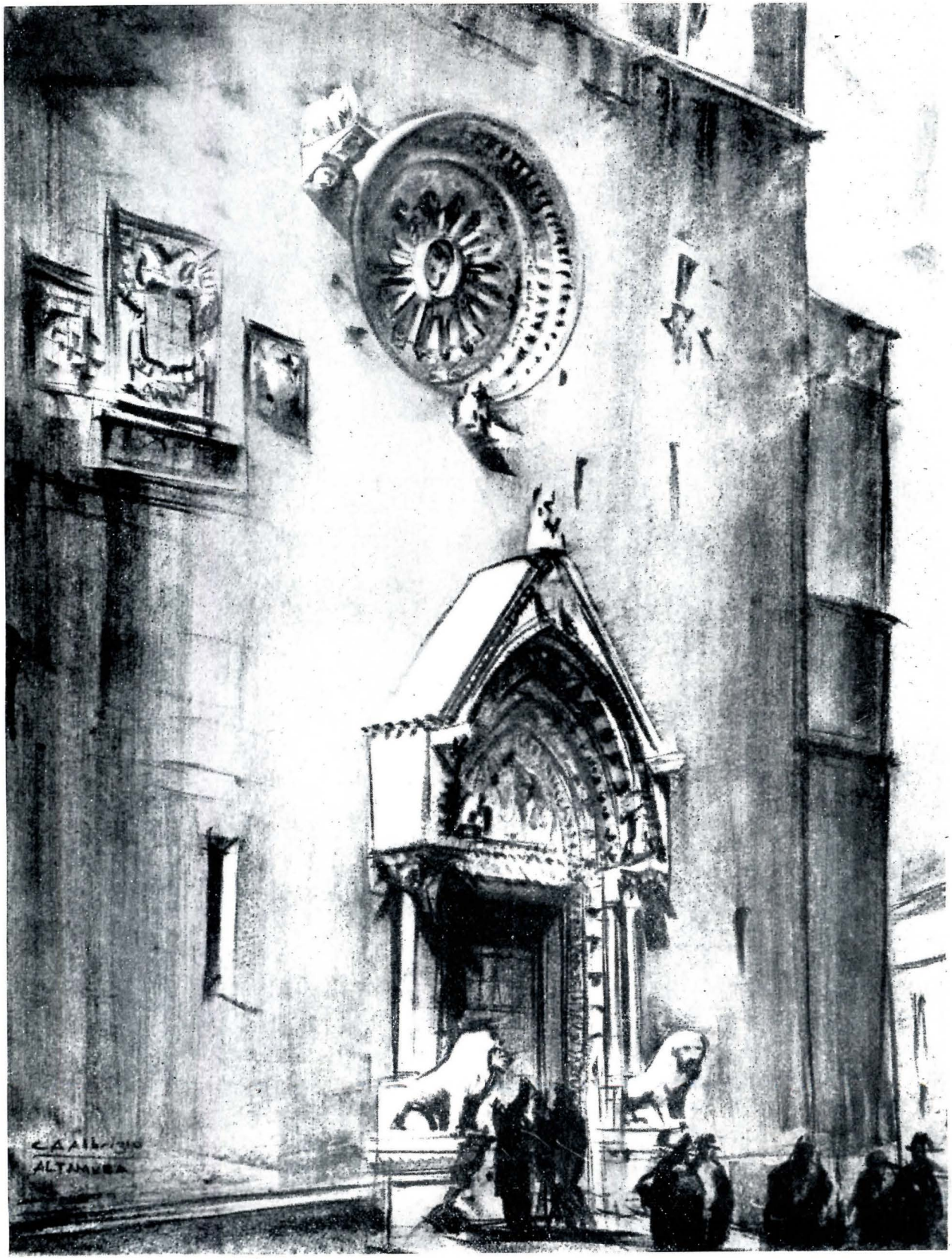
"The assumption of costs by the architect is usually the signal for a train of trouble and misunderstanding. I am not referring, of course, to those offices which have the same facilities for computing accurate costs as the builder, for these architects are also operating as builders. It is an inescapable fact that, to secure best results, the architect and the builder must work together from the beginning of every job.

"I have remarked that our cities are being re-created, giving new and almost unlimited opportunities to the equipped architect.

"The decline in the number of smaller structures in the average American city, and the growing popularity of the multiple-use building, offer full scope to the ingenuity of the modern architect.

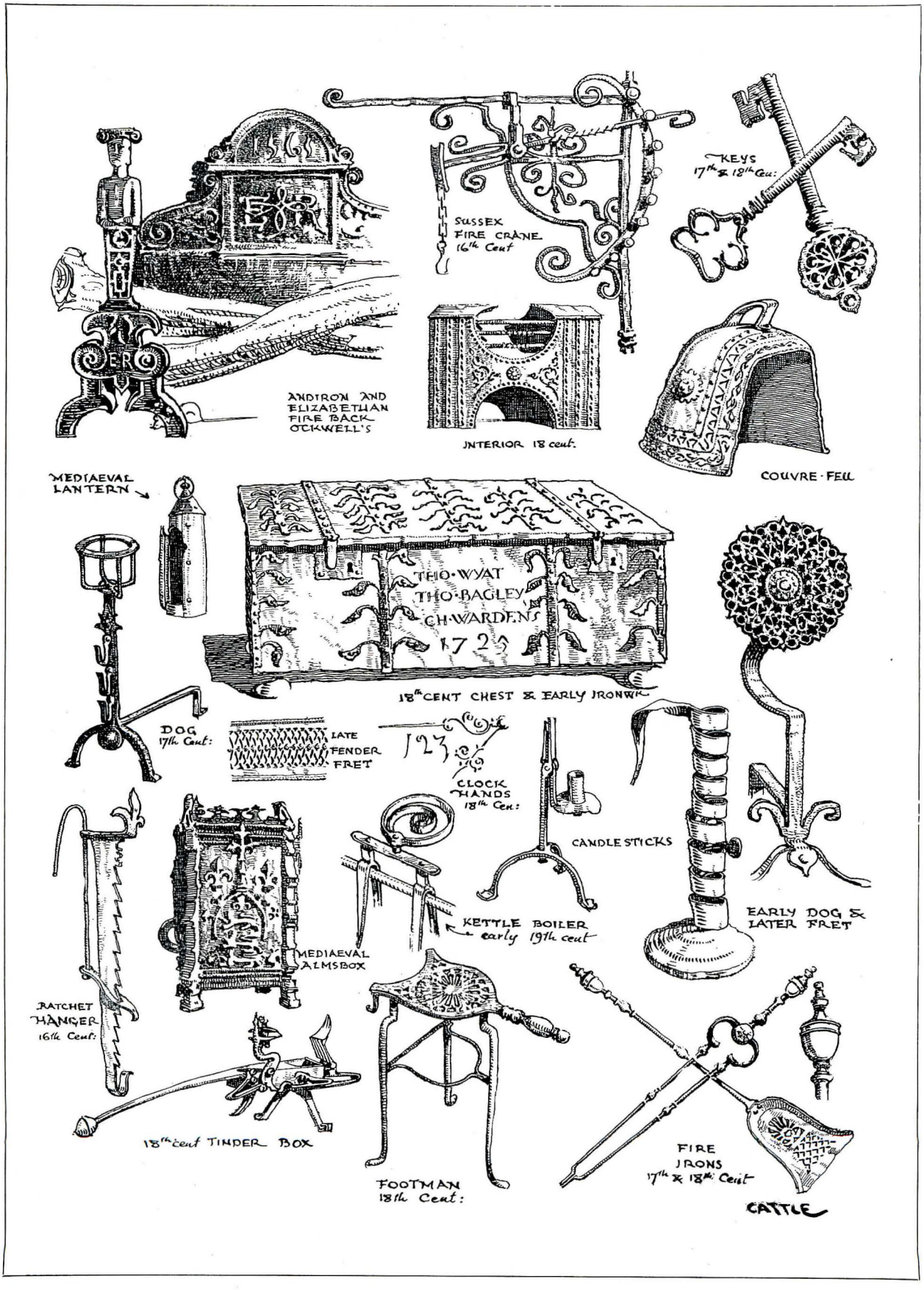
"For example, let the architect organize the twenty owners of a typical block in New York and subordinate these individuals to the cause of a unified structure.

"That is a typical problem of this new age of building economics."



ALTAMURA, ITALY

FROM A CHARCOAL DRAWING BY C. A. ALBRIZIO



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

Size of Original Sheet, 8½" x 12"

An Architect's Notes on Pen Drawing, 2

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

As we take our early steps in pen drawing, however, the fact is soon jerked on us that eager inclination keeps a worrying lead on capacity.

Our pen is a lumbering lout, a weedy consumptive, or both. It lacks individuality—spirit. It hardly refuses to dance to the music—it simply doesn't know how. The eye connects and the mind accepts communication, but the hand remains black sheep of the fold. Supposing, for example, we are minded to set down on record a ratchet-hanger such as appears at the left-hand base of the group of drawings shown opposite. Simple enough object, surely! And there it is in pencil, faithful enough, but not yet metal, somehow. Enter the articulate nib, faithfully crawling over the lines and repeating them as a schoolboy repeats his—expressionlessly. The hanger no longer looks spirited, full of life and mediæval vigor—but wooden, clumsy and . . . *new*.

We view the result glumly, suddenly realizing there is a mystery to unriddle not lost on our senses but as yet far from found in our reproductive powers. And I recall passing through many of these experiences devoutly believing that the whole essence of pen drawing laid in nonexistent rather than existent lines. It might. But, as with words, we must learn our lines before we may choose those we can afford to reject.

For instance, when I was very young I took an excursion into essay on the subject of cats. At once I assumed that my reader was one of those rare and extraordinary individuals who hadn't the least knowledge of the feline species—that, in effect, it was incumbent on me the all-erudite to be at some pains to explain them as animals almost entirely covered by fur and balanced on four legs. Exactly, and quite right of me. I was enlightening nobody but myself; practicing my scales and sizing matters up in the initial spirit of analysis. As life went on, no doubt, an annual essay on cats would have developed into deeper insight, and possibly a highly satirical less heroic bent would have illuminatingly declared itself.

Thus with our early steps in pen drawing. We are not individuals yet awhile, and our drawings are rather more for the development of our own intelligence than that of others.

There are quick pens and slow pens, of course; there are "lines" which spring naturally and "lines" which remain dutifully subservient to strict purpose and take far longer finding their mannerisms and conceits. But there is always *journey*.

There are many who believe that "born" draftsmen are those who howl in their cots for pencil or pen in order to unpeeve their natural impulses by making lightning portrayals north, south, east, and west of their nursemaids. There are many who believe that a boy with a drafting predilection for railway engines or side views of ducks is a born R.E. or R.A., or will later storm the poultry world with leaping genius.

But your Dana Gibsons come about more subtly. Their medium is seized and enslaved as servant—not master. Their charm lies in almost imperceptible personality. Their tones, their qualities, like those of Kreisler or Backhaus on their respective instruments, enrich their subject matter with piquant individuality far, far beyond mere drawing. It is mind—always mind—speaking.

Thus touching on music (ever handmaiden to the arts), the piano, in its limited yet complete capacity, may be usefully likened to black and white drawing. It grades in one color, its notes cannot croon with the poetry of wood-wind or slur as the murmur of a bow on a string: howbeit, it is satisfying, its light and shade perfectly independent. Though it may not dabble in a palette of rich colors, it has power to smoothen tone or articulate crisply. Deem our strokes notes, and we may find diverting fun out of the black and white keyboard of pen and piano.

Let us return to our museum wanderings. Let us begin to find that this self-seeking pen of ours is beginning to set up many new captivating friendships.

How lovely is that twirling curve we suddenly discover in a little forest of metalwork! These smithies! They too felt this black and white itch of ours. See how dramatically that fire-crane cuts the light! Look at the joyous fun a gridiron may bring! These fellows sung at their work, we say.

And being interested we become inquisitive.

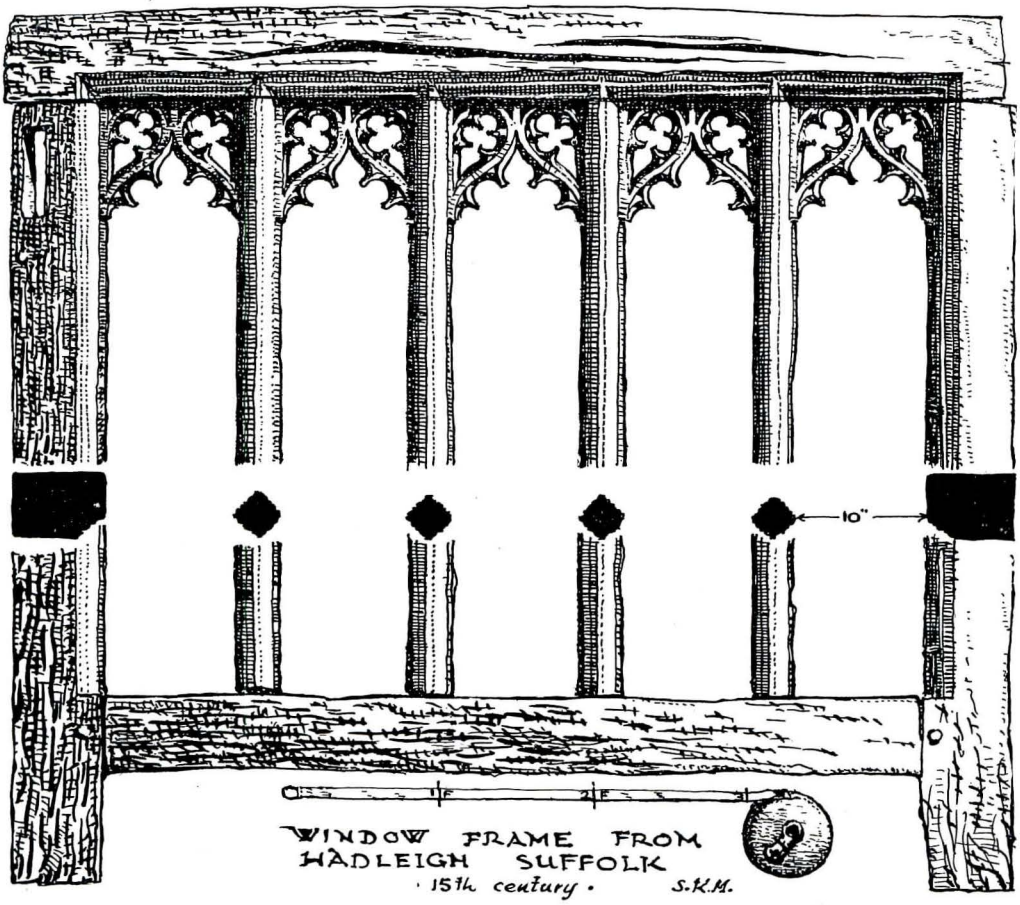
We find the smith is far more than merely that picturesque symbol of honest integrity our Longfellow spread a village chestnut tree over: we find him full of pulse, not drawing down the corners of his mouth in stained-glass piety, but living with the world and mixing with the devil. He thinks in line. Far from æsthete, he is something of a *viveur*. He draws in iron. He is unable to fluff or smudge his effects, and his work is noisy, lively, and hammer-vigorous. And when internecine strife dies down, we find him, almost alien to the church, a purely mundane person looking round for fresh hammer-fun. Life stirs him. He approaches the leaf, stares into its veins and ribs, its balanced shapes and saw-teeth edges. Beautiful! "Anvil, forge, and hammer," says he, "prepare yourselves; the leaf is coming to iron."

And when we settle into thinking, his mind is just like ours when we half timidly begin to stare at things we want to draw. His iron is our ink, his hammer our pen, his hunger our hunger.

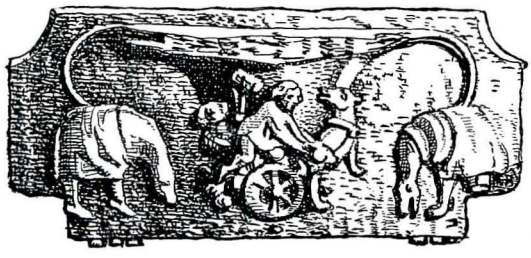
Thus, he who would elect to become adept in line, let him heed the work of the smith and feast well off his mind. For here is a great and inspiring affinity.

CAPPING 16th Cent:

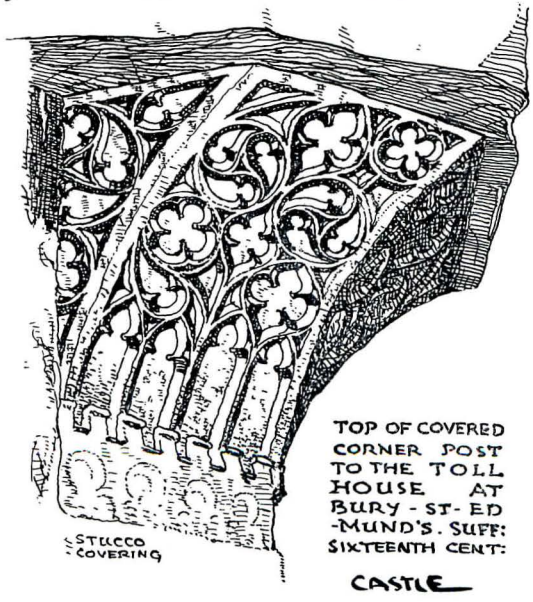
PIERCED STRING early 16th S.K.M



WINDOW FRAME FROM HADLEIGH SUFFOLK
· 15th century · S.K.M.



TYPES OF MISERICORD early 15th cent
S.K.M



TOP OF COVERED CORNER POST TO THE TOLL HOUSE AT BURY - ST- ED -MUND'S. SUFF: SIXTEENTH CENT:

CASTLE

SOME WOODWORK OF THE TUDOR PERIOD DRAWN BY SYDNEY E. CASTLE

Size of Original Sheet, 7½" x 11¼"

Is Finding Good Craftsmen Increasingly a Problem?

By Natt Piper

While all the world waxes over-enthusiastic in praise of machine products I think it most opportune to remind ourselves that fine craftsmanship is passing more rapidly than we imagine.

Almost every person engaged in work that depends, even in a small degree, upon creative effort, feels the crushing influence of quantity production. In addition, architecture and other arts have been definitely affected by the work of some persons, and a host of their poorer imitators, who appear to have used quick and exceedingly crude methods rather than those which employ good design and fine workmanship.

Architects depend greatly upon fine craftsmanship. We must have, and we must induce the employers of labor to supply, better artisans for the erection of our buildings; we must aid in developing some plan whereby the workman is given the opportunity and encouragement to become a true craftsman. This will be to our personal advantage and even of greater benefit to the investors upon whom we depend. It will reflect credit upon our cities and it will distinctly aid in leaving an inheritance for the enjoyment of posterity.

History is written in beautiful, enduring architecture. The history of our time must be written by architects assisted by skilled craftsmen—the former to dream and plan while the latter project themselves and their talents into the substance of the dream and carry it to completion.

In explanation, and for the purposes of this article, the terms craftsman and workman are used in a general rather than in a specific way. And modern craftsmanship may mean either hand work, machine work, or a combination of the two.

Although my views will be more quickly appreciated by men who have been in practice for twenty years or more, they are set forth especially for the consideration of those younger architects who have not had the opportunity to judge conditions by contrast. They, after all, are the ones most concerned in the future lack of good workmen.

Every architect, in talking to a client, emphasizes that the best material is the cheapest in the end. We all know the unskilled workman can ruin good material. Therefore why not emphasize that fine workmanship is just as necessary for ultimate success as fine material?

The greatest works of architecture and the allied arts that remain to us from the past are those in which the finest, most permanent materials obtainable were used by highly skilled, intelligent, and artistic workmen.

A study of the working conditions of these artificers will disclose, for example, that the members of the old Italian guilds—the masons and the smiths—were quite as responsible for the monuments built just preceding the Renaissance as were the architects of the period. Guild laws forced each member, under penalty of heavy fines and imprisonment, to put forth his very best effort and before one was admitted as a full member he was required to go through years of preparation, finally pass rigid tests and present his masterpiece—literally "the piece made by a master." So again, the finely made, priceless, and inspiring works of the past that we enjoy today are the direct result of these regulations.

As time went on, the power of these Old World guilds gradually declined. The art of printing disseminated knowledge more broadly and about the only remaining remnant of the guilds, at the end of the nineteenth century, was the apprentice system. Just at present, the world has so over-extended itself that this, too, is practically a thing of the past.

The modern workman cannot—and will not—belong to such an organization or submit to rules that force him to prepare himself adequately for a life work. Unless steps are taken to prevent it, architects will be compelled to struggle along with even poorer artisans than exist at the present time. It is decidedly necessary that we and our collaborators evolve schemes that combat this condition, for the time is coming when the man who "learned his trade in the old country" will not be available.

A moment's reflection will reveal that the "honest-to-goodness" craftsman must be, in spirit, a creative artist. The creative ability of the artist, that combination of imagination and dexterity, is really the tremendous force behind actual achievement. Remember that it is the artistic workman who adds beauty to the utilitarian piece. It was an artistic, creative craftsman who carved that stone gargoyle on Notre Dame or forged that wonderful screen in Toledo.

Certainly we have outstanding men—artists—in the crafts today. But will you not agree that they are only too few?

Before any artist-craftsman rises above his fellows he has necessarily learned his trade to the extent that manual operations are purely automatic; he has so thoroughly mastered his medium that his mind is free to soar to imaginative and artistic heights impossible to the one who is yet struggling with the mechanics of the thing. In brief—all artists must *first* be fine craftsmen.

Architects have at least recognized that some incentive for better work must be given and it is credit-

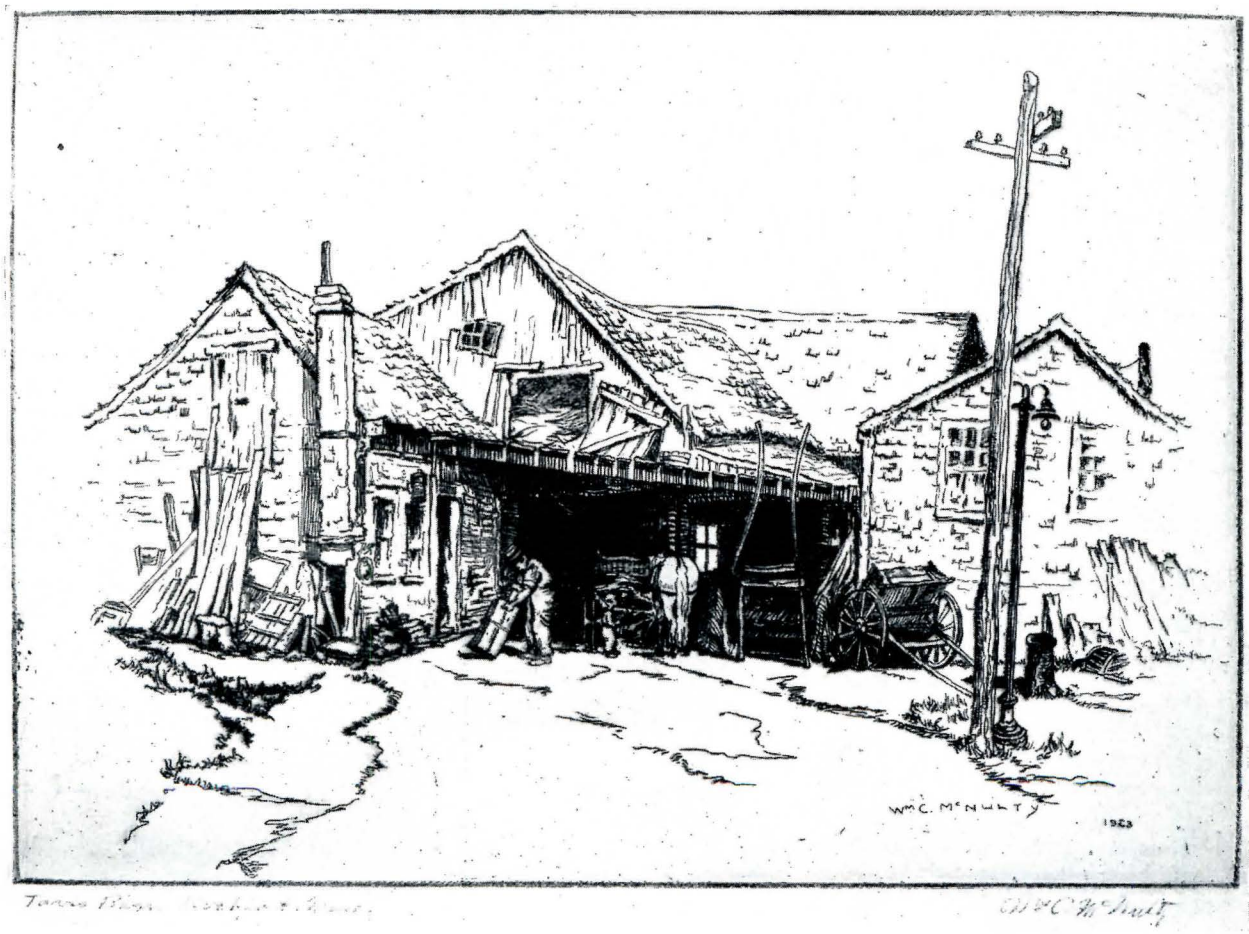
able that, during the past decade or so, various architectural societies have given certificates of award to master craftsmen. Fine as that may have been, it is not all-inclusive—nor is it sufficient.

For an unsettled or unsatisfactory state of affairs there is always a remedy. In this case it must lie in early vocational training of a very strict kind—the training to include design, a study of the physical and chemical aspects of the material employed, as well as theoretical and practical uses, manufacture, and erection. If, in every large city, free vocational schools could be established in which students could enroll for study and work in the line they love best, it would help to solve the problem. Suffice to say that these schools would have to improve upon the lax methods, generally speaking, employed in schools of this kind that exist today.

Though a great number of our really talented young men seem to be interested only in short cuts for making money, some way must be found to induce them to abandon that idea in favor of the more gratifying and lasting benefits that will accrue to them if they *first* perfect themselves in a craft. For some it is necessary to work for the immediate pay check, but there are thousands of others whose future lies with themselves, and they have set up a false standard in stressing the superficial thing. To many of them, overalls and manual labor are positive marks of inferiority, and never a thought is given to the creative work of the man who wears them. By publicly acknowledging, to a fuller extent, the great value of the true craftsman our young people can be encouraged to follow a life work within the scope of their talents. We must proclaim that ability and subsequent creative accomplishment are the things to cherish and admire.

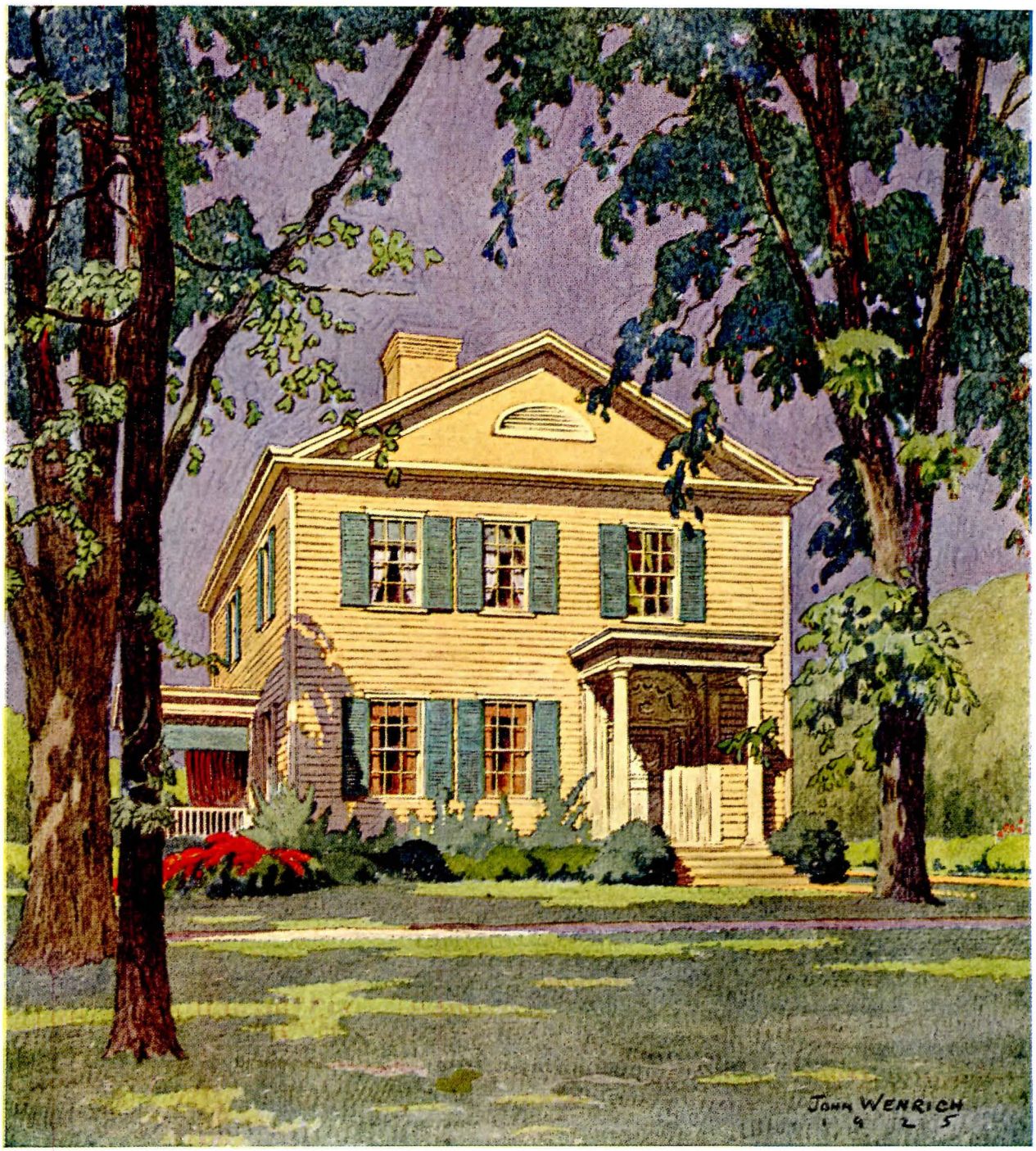
Superior craftsmanship is truly vital for the development and contentment of a nation. The superior craftsmen of the morrow are the children with us today. As a greater number of them must work in a trade or an art it is urgent that the leaders in the building industry take immediate steps to solve the problem of proper training and inculcate, in the public mind, the very highest regard for workmanlike achievement.

Through the efforts of architects and their coworkers, craftsmanship must be elevated to its former high place and made to maintain its position.



FROM AN ETCHING BY WILLIAM C. MCNULTY

This print is particularly interesting since it is the first etching ever done by the artist.



AN OLD HOUSE AT CANANDAIGUA, NEW YORK

FROM A TRANSPARENT AND OPAQUE WATER COLOR DRAWING BY JOHN WENRICH

PENCIL POINTS
(November, 1931)

Pencil Points Series of Color Plates

This drawing by John Wenrich is one of a number he made some time ago showing old buildings of the Genesee Valley in New York State. Another of the series was reproduced in the July, 1928, issue of PENCIL POINTS. *This particular subject was drawn with pencil on a light, warm gray, show-card board. All the shadows were rendered in pencil first and then washed in with transparent water color. After this, the sunlit portions were laid in with heavy opaque color. The use of opaque color for sunlit portions and transparent for shadows was advocated by the late F. Hopkinson Smith, but Mr. Wenrich struck upon the same method quite independently. The original was about 16″ wide.*

Wasting or Saving Money in Foundations

By H. Vandervoort Walsh* and Alexander T. Saxe†

"What's the use of a cellar? Why put so much money into a hole in the ground when it might build an equal amount of livable space above ground." Such broad statements have often been used as slogans by the modernists. "No cellars, flat roofs, thin metal walls, etc." Why? Because "They *must* be cheaper."

That word "must" is to be heard in loose architectural talk of today. "They must be cheaper, because you save all the excavation." But one will rarely hear the actual costs brought into the argument, so we propose here to consider some of them.

Do we really waste money every time we build a cellar? When we mark on the basement plans "Unexcavated," have we saved as much as we think?

To get at the real answer, we must first of all realize that the cellar under a small country house is a different problem from that under a commercial type of city structure. Under the country house the cost of the cellar per cubic foot is considerably less than half the cost per cubic foot of the superstructure, if excavations are made in ordinary dirt or sandy soil. Here is an example of a house 35′ x 25′ with cellar 7′ high —Cubage of cellar 6125.

General excavation and trenches	$221.00
Concrete footings	85.00
Foundation walls	336.00
Cement cellar floor	163.00
Columns	30.00
Exterior concrete stairs	55.00
Interior wood stairs	35.00
Plaster ceiling (if used)	82.00
Whitewash and paint	60.00
	$1067.00

$$\text{Cubage } 6125 = \frac{\$1067.00}{.17\frac{1}{2}} \text{ approximately,}$$

or in this particular case approximately 1/3 the cost per cubic foot of the upper structure. Figuring present-day prices, the average cost per cubic foot in residence work may be considered to be about 40c. It should be remembered that this total cost is made up of about 50% of attic and cellar space costing approximately 20c. a cubic foot and 50% livable space costing about 60c. a cubic foot, and it is the blending of these two extremes that gives us the total cost mentioned above. It is natural to suppose that any great deviation in this proportion between two types of space will necessarily change the cubic foot cost. When rock is encountered, however, the cellar may be equal or exceed the cost of the structure above.

Now in addition to considering the cost of the cellar one should look at the cost of what must be done if the plans are marked "Unexcavated." To support a house properly, and get below frost line, footings and foundation walls must be built at least three feet down into the ground, and a space below the floor joists must be cleared out for ventilation. The actual saving over the cellar cost is essentially only the cost of the foundation walls which are about three feet lower. Also the cost of general excavation (costing about 4c. per cubic foot) has been saved, and the cost of the cellar floor is out. Figuring on the basis of cost per volume, we have found that this wasted space costs about 8½c. per cubic foot as against 17½c. per cubic foot for cellar space. In other words, unexcavated space under a house costs about half that of the cellar and the cellar space costs about one-third that of the superstructure, when no rock is encountered.

From these relationships then, it can be seen that the generalization that the cellar under a house is wasted money may be quite false. In many cases the cellar is the best investment in the whole house. For example, a garage in the cellar is going to be one-half the cost of one attached to the house and built above grade. The cost of furnishing any part of the cellar may run from 8 to 10 cents per cubic foot more but still the cost is about ½ the cost of furnishing space above ground.

Now when we consider a large city building, the picture is quite different. The basement usually must be rentable area, and must be finished off in a very elaborate manner. It is also a very speculative investment. At the same time the heaviest parts of the steel columns come here, and foundations and footings are massive. Added to the cost of excavation, too, is the cost of shoring and under-pinnings during construction. Thus with much the same finish as the upper structure, and with the additional cost of complicated excavations and the fact that, for every foot carried down, the columns in their heaviest parts must be increased, it is safe to generalize that any saving on the basement space in a large building is a real saving and, that the word "Unexcavated" on the plans is going to mean something in dollars and cents.

Sensing the Cost of Excavation from Different Sites

Now to give the reader some feeling or sense of the cost of the various items involved in the construction of

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basements, let us begin with some general observations about the cost of the various kinds of soils that may be encountered in excavation work. We can classify them into cheap soils to dig and expensive ones. If sand, light loam and ordinary dirt are encountered, the cost of excavation may be considered of no serious importance; but as soon as heavy soil, clay, gravel, hardpan, shale and rock are encountered the excavation looms up as a serious cost item. To illustrate, whereas the number of labor hours required to get out a cubic yard of dry sand, by hand labor, using pick and shovel is .76 labor hours, for general work, to get out dry clay requires 2.13 labor hours.

The diagram classifies at a glance the cost problem of the kind of soil, and although it specifically applies to the hand work, the relationship holds good for all methods.

Other factors which influence the cost and which should be sensed while considering the problem are as follows:—

a. *Wet Materials Increase Cost*
   Notice in the diagram how much all the materials are affected.

b. *Depth Increases Cost*
   The diagram refers to a depth of 6 feet. Anything below this increases costs, especially with hand methods.

c. *Cramped Conditions*
   Deep but small areas excavated cost more money because of the cramping of operations.

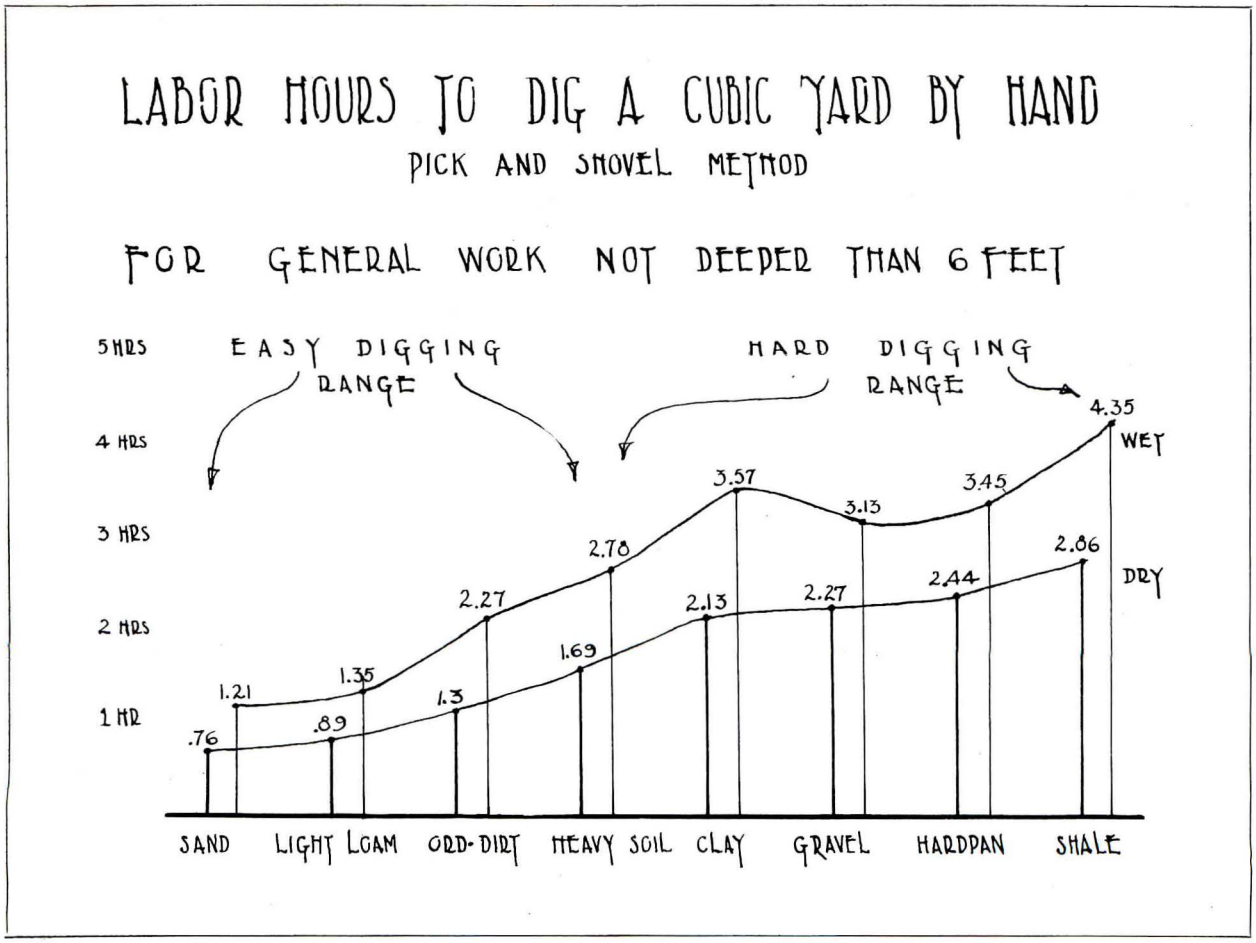
d. *Shoring and Underpinning*
   City conditions demanding elaborate shoring and underpinning are bound to be more expensive than otherwise.

e. *Easy Disposal of Materials*
   Rocks used in foundations absorb some of the cost of excavation while removal of all excavated materials from site over long hauls obviously increases costs.

Now in passing judgment upon value of a site, whether money is going to be wasted or not in the excavations, all the above-mentioned factors ought to be considered. A logical conclusion will be reached, and often where there is a choice of two or three sites for a proposed building, the architect can sense which site will be most economical. Old topographical maps of the city will give much information about the kind of soil even though the site is superficially changed by rubbish or buildings. Even in so built-up a city area as is Manhattan Island, New York, it is interesting to see how the old topographical maps tell the story of where there is soft, wet ground, or hard ground, etc., even though the surface conditions look about the same in one place as in another.

Where Excavation Costs Go Down— Foundation Costs Go Up

Now let us consider the factors which influence the cost of the footings under walls and columns. Coupled with one's judgment of the relative cost of



excavation should go the general picture of costs that will be encountered in building upon the foundation bed, once the stuff has been dug out. It is quite obvious that the lighter and smaller the building, the less problem there is in constructing footings and vice versa. Thus assuming that the foundation beds are not quicksand and that the building has average loads under its footings, we can easily assume that the size of the footings will *decrease in size* as the *bearing power of the soil increases,* and of course their *cost of construction will also decrease.* Now take a list of the different soils like this.

	BEARING POWER
Soft clay	1 ton sq. ft.
Firm clay, firm sand, wet	2 tons " "
Firm clay or sand dry	3 " " "
Hard clay, coarse sand, gravel	4 " " "
Hardpan	8 to 15 tons sq. ft.
Rock	15 to 72 " " "

In big construction work it will be noticed that those soils which are easiest to excavate require the biggest footings because of their lower bearing capacity. This means that money saved in excavations may be partly absorbed by the higher cost of footings. It also means that a rock bed, unexcavated, and the corresponding small footings required under the columns, is the height of low cost in foundation construction. The reverse condition is encountered where the soil is so soft that piles or caissons, carried to bed rock, must be used under the footings.

Now the size of footings and the cost increases as the weight of the building increases and the method of construction changes. They may be listed in the order of their increasing size and cost as follows:—

Cheapest

1. Plain concrete	Lightest building.
2. Reinforced concrete	Heavier building.
3. Steel billet on concrete	Medium weight on average bed.
4. Steel billet on 1 layer grillage beams on concrete	Medium weight on soft bed.
5. Steel billet and 2 layers of grillage	Heavy weight on hard ground.
6. Steel billet on 2 layers of grillage on caisson to bed rock or on piles.	Heavy weight on soft ground.

Most Expensive

7. Reinforced concrete matt or boat under entire building with grillage beams and billets on top, anchored with piles	Heavy weight on soft ground.

To give some idea of the relative cost of the commonest of the footings, the following list of unit prices is given, based upon average cost on an average job.

Concrete footings (light Country House), $ .35 per linear foot.

Reinforced spread concrete 18" deep, $ .65 sq. ft. surface area covered.

Steel grillage encased in concrete, $2.20 sq. ft. surface area covered.

Open caissons of concrete, $ .85 cu. ft.

Pneumatic caissons, $1.45 cu. ft.

Concrete piles, $ .80 per linear foot vertical.

Wood piles, $ .60 per linear foot vertical.

Foundation Walls

With a "cost-eye" on excavations and the kind of footings to use, the next part of the foundation problem is to study the cost of different foundation walls. To arrive at any comparative analysis, unit costs must be computed. The best unit for this is the square foot of wall surface. It can be figured for any material in any locality if labor and material prices are known. Before quoting a general table we will give an example of how the unit cost can be computed.

EXAMPLE I

Concrete Block Foundation Wall 12" thick cost per square foot of wall area.

Blocks @ 17c. per block.....1⅛ per sq. ft. Wall Surface	19c.
Mortar per sq. ft.	3
Labor of handling and setting	12
Compensation cost	1
Profit and overhead	4
	39c.

EXAMPLE II

Poured Reinforced Concrete Foundation Wall.

Forms .....Erection	16c.
Setting Bars ....labor and materials	10
Pouring Concrete. @ $8.50 cu. yd.	31
Forms .....Removal	4
	61c.

The details of cost analysis in both cases above have not been broken down to their smallest items, but they give a rough idea of how the following unit prices were computed.

(AVERAGE UNIT PRICE PER SQ. FT. SURFACE.)

(Are Independent of Size of Structure and Variable According to Labor and Material Prices.)

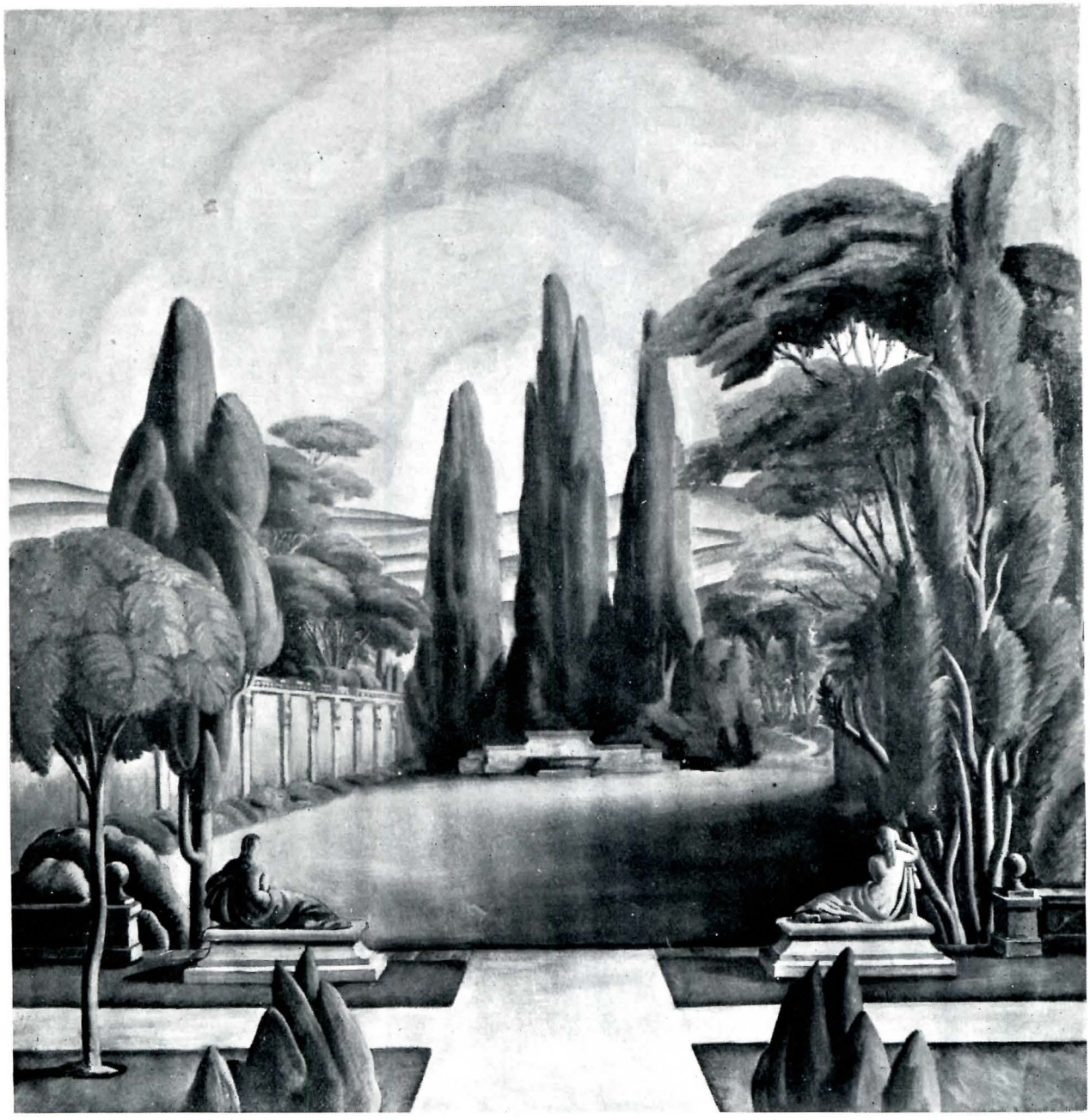
8" Thick Concrete Block	32c. sq. ft.
12" Thick Concrete Block	39c. " "
12" Plain Concrete	45c. " "
12" Reinforced Concrete	61c. " "
12" T. C. Block	45c. " "
12" Brick	80c. " "
18" Rough Rubble Stone	75c. " "

Material at site.

Rules to Observe in Estimating Total Costs of Foundation Work

When a unit price table like this one has been developed for local labor and material prices, the method of determining total costs of foundation walls is to multiply the outside area of such walls by the unit cost; but certain rules must be observed:—

1. Don't measure corners twice.
2. Figure each kind of wall separately.
3. Deduct for all openings over 4 ft. sq. in area.
4. Compute separately all parts above grade that are finished.
5. Compute separately all parts to be waterproofed.



GARDEN PANEL FOR A DINING ROOM—FRANCIS SCOTT BRADFORD, PAINTER
RESIDENCE OF WILLIAM N. DAVEY, ESQ.—WILLIAM PLATT, ARCHITECT

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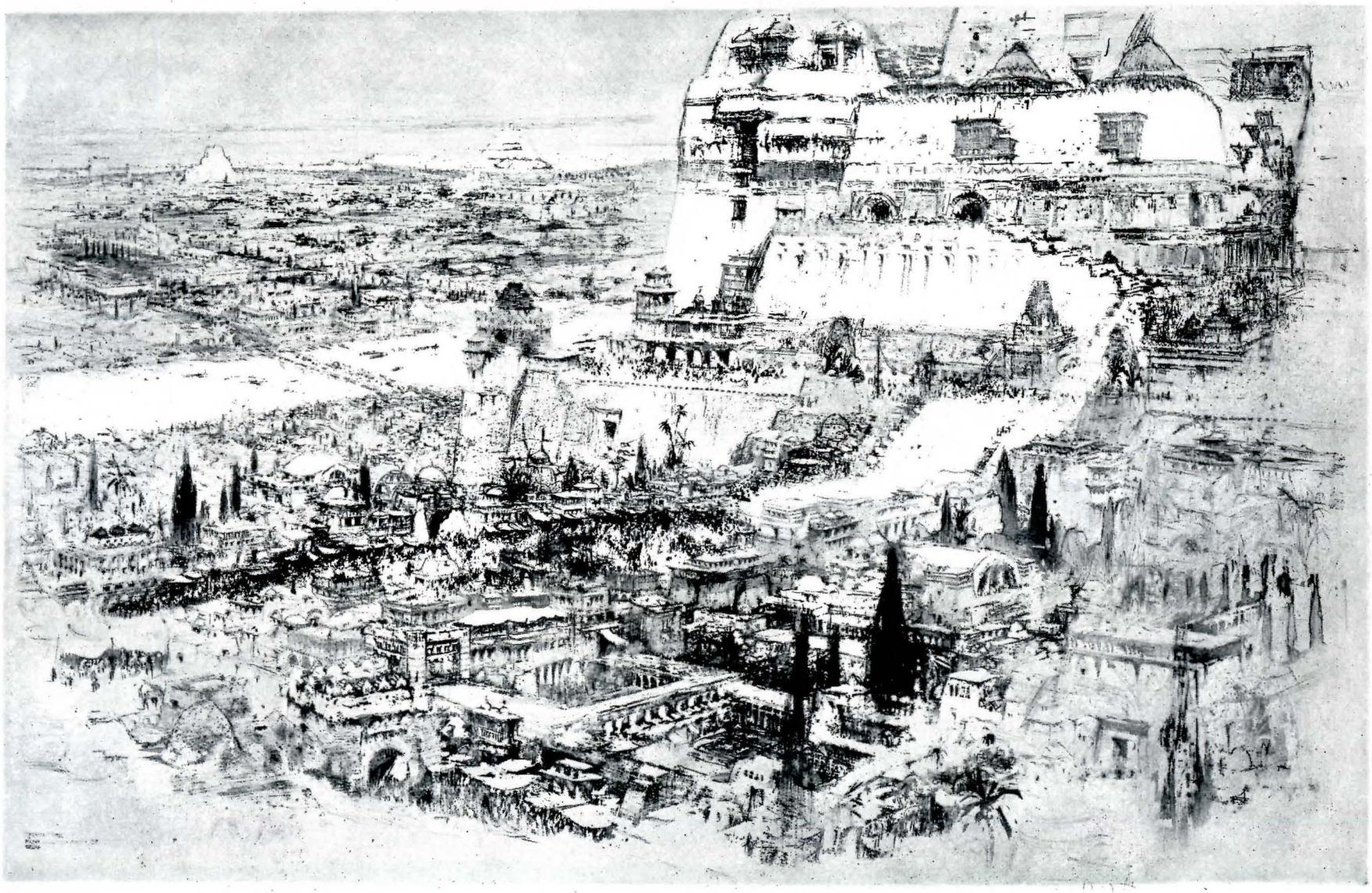


Courtesy Kraushaar Galleries, Inc.

"BABYLON"

FROM AN ETCHING BY WILLIAM WALCOT (SEE REFERENCE IN TEXT, PAGE 817)

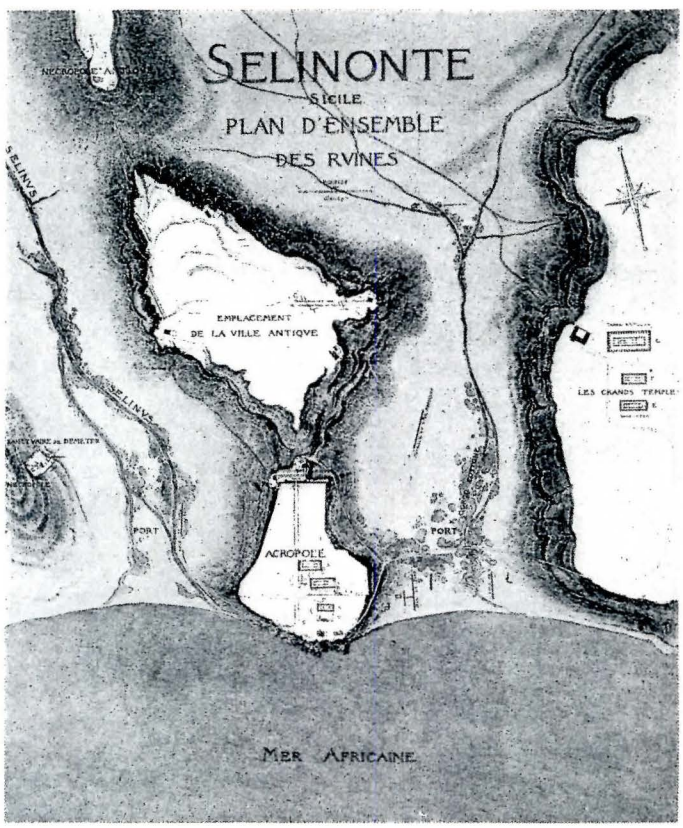
The Architect and the Grand Plan

3—Ancient Precedents for Modern City Planning

By Francis S. Swales

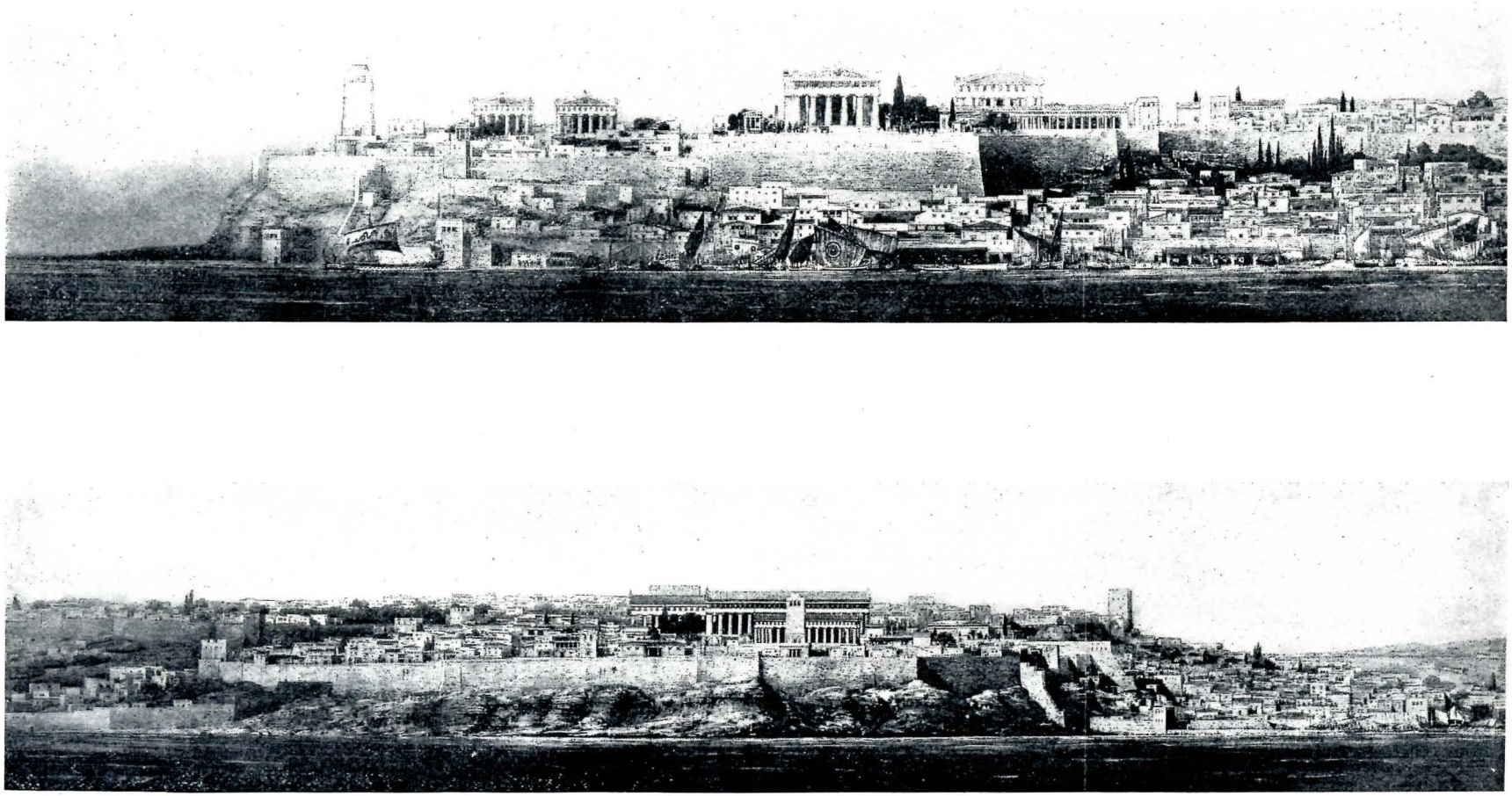
Editor's Note:—*Parts 1 and 2 of this group of articles appeared in March and May of this year. Other parts continuing the discussion will be presented in the near future. The author is well known as an authority on the subject.*

The small Greek Colonial cities of Sicily, Southern Italy and Ionia which have been referred to (*see May, 1931, issue of* PENCIL POINTS) among cities preplanned in entirety were practically capital cities—city-states. Pergamum was perhaps the most highly civilized state in the world during more than a century before 133 B.C., when its king, Attalus III, foreseeing its inevitable destiny, bequeathed it to the Roman republic, to which it became the "Province of Asia." It is one of the earliest cities in which an educational-industrial element or "zone" appears apart from the commercial district of the agora or the religious precinct of the temple — the notable industry being the making of books and the parchment upon which they were written. In other respects its civic program is interesting as in possessing a code of building laws notable as regulating party-walls, dangerous structures, and what the *Code Napoleon* was afterwards to call *servitudes* — such as, the penetration of dampness from one property to another adjacent to it at a lower level.



SITE PLAN OF SELINUS AND ITS ACROPOLIS
FROM THE RESTORATION STUDY BY JEAN HULOT

The contemporary city of Alexandria—which later figured so largely in world affairs as a financial centre under the earliest Cæsars, and the trading port between the Orient and Europe, by way of Venice, during the Middle Ages when Constantinople fell into the hands of the Turks and blocked the overland route via the "Balkan Peninsula"—like Pergamum was a city in which literary and scientific learning was popularized and commercialized. All that remains to modern civilization of ancient Greek literature was gathered from its library, probably during the invasion under Julius Cæsar. Its Museum (dedicated to the *muses*), a royal college of sciences, associated the names of Euclid, Eratosthenes, Appolonius, Hero, and the Syracusan Archimedes. All of these, notwithstanding much original work in assembling, probably only recorded in Greek letters knowledge long held as common traditions among those designers and directors of constructional works whom the Greeks named *architects;* though until recent times these have been generally classed by writers as *priests* or *philosophers*. It is rather curious that no literature exists dealing with construction (not even with the construction of roads!) until Vitruvius, and he neglects to mention the Roman system of arch and vault of his time. Yet the "knowledge of the philosophers," to which he alludes as a necessary part of an architect's training, was doubtless that of mathematics, mechanics, and other branches of physics—the "mysteries" of the masonic orders of the Egyptian "priesthood." The Aristotelian idea, of gathering such knowledge and retailing it through books, lasted nearly a century at Alexandria before "the Egyptian priestcraft presently swallowed up the Ptolemies," and sciences, which could not become generally understood, reverted to the limited circles who knew how to use them. There, among the "cult" of architects, it doubtless remained with but little leakage to the outside world until the dawn of the Renaissance, a



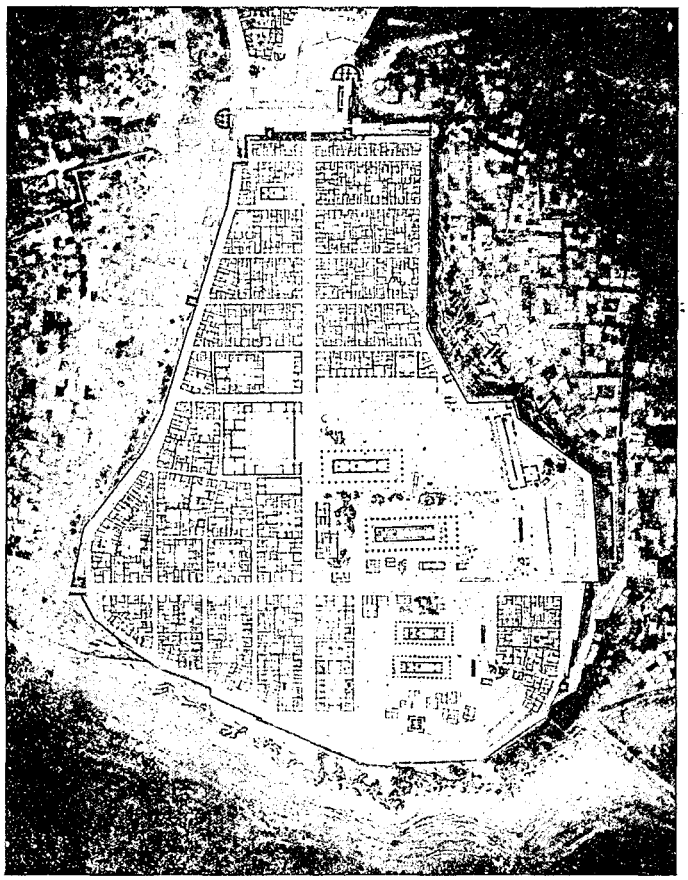
SELINUS, OR SÉLINONTE, AS RESTORED BY M. JEAN HULOT, ARCHITECT—EAST ELEVATION ABOVE, SOUTH ELEVATION BELOW

This ancient Doric Colonial port, on the south coast of Sicily, occupied a site similar to that of the modern city of Vancouver, B. C., on hills between bays or inlets.

millennium and a half later. "The lodging and catering to students who came from all parts of the world became a considerable business for the Alexandrian population" as it becomes to a modern college-town. Copying books was an extensive employment of "slaves" (whose social position seems to have corresponded with that of modern "white-collar men" except that the livelihood of the slave was more secure and it is by no means certain that his liberty was less). Housing was an economic problem during the Greek domination of Alexandria, and its museum and library were as much in the nature of a modern publishing plant as they were in that of educational institutions. The marked racial differences of the three largest elements of the population—native Egyptians, Hellenic Greeks, and Jews (of which it had a larger population than Jerusalem)—tended to instinctive classification of residential districts into three parts. The construction of the causeway from the mainland to the Island of Pharos, which became an isthmus, provided separation of the naval from the commercial port. The causeway was used, in the first place, for trucking of building material out to the lighthouse—which was 600 feet high—"containing three hundred spacious rooms and quarters for the military garrison." Here too, at Alexandria, politics and learning seem to have made a drive on unifying religion under the emperor, by which he became the emblem of the ideal or the counterpart of the idol and god, according to individual capacities of intelligence. The *Theocrasia*—a melting pot of gods—developed the Serapeum, or trinity; a religion of which the ceremonials and usages of expression anticipated those of the Christian era by some three hundred years. The place taken by the temple was away from the centre of the city, probably in one far corner near a city gate; in a park and in proximity to the Necropolis or cemetery. Wide quays and open spaces for civic gatherings and trading were planned along the waterfront. Its flat site presented no difficulties to checkerboard planning of streets. Its important Canopic Street, running the full length of the city, and the parallel and perpendicular cross streets, suggest the typical American "Main Street" town. "One curious advantage of the chessboard plan," says an English writer, "was the simplicity of postal address . . . . for instance in Antinoë in Roman Egypt, just as in Alexandria, the whole town was divided into districts alphabetically designated. Each district fell into numbered blocks, and was subdivided into north and south. The address of an individual citizen, therefore, might have been:

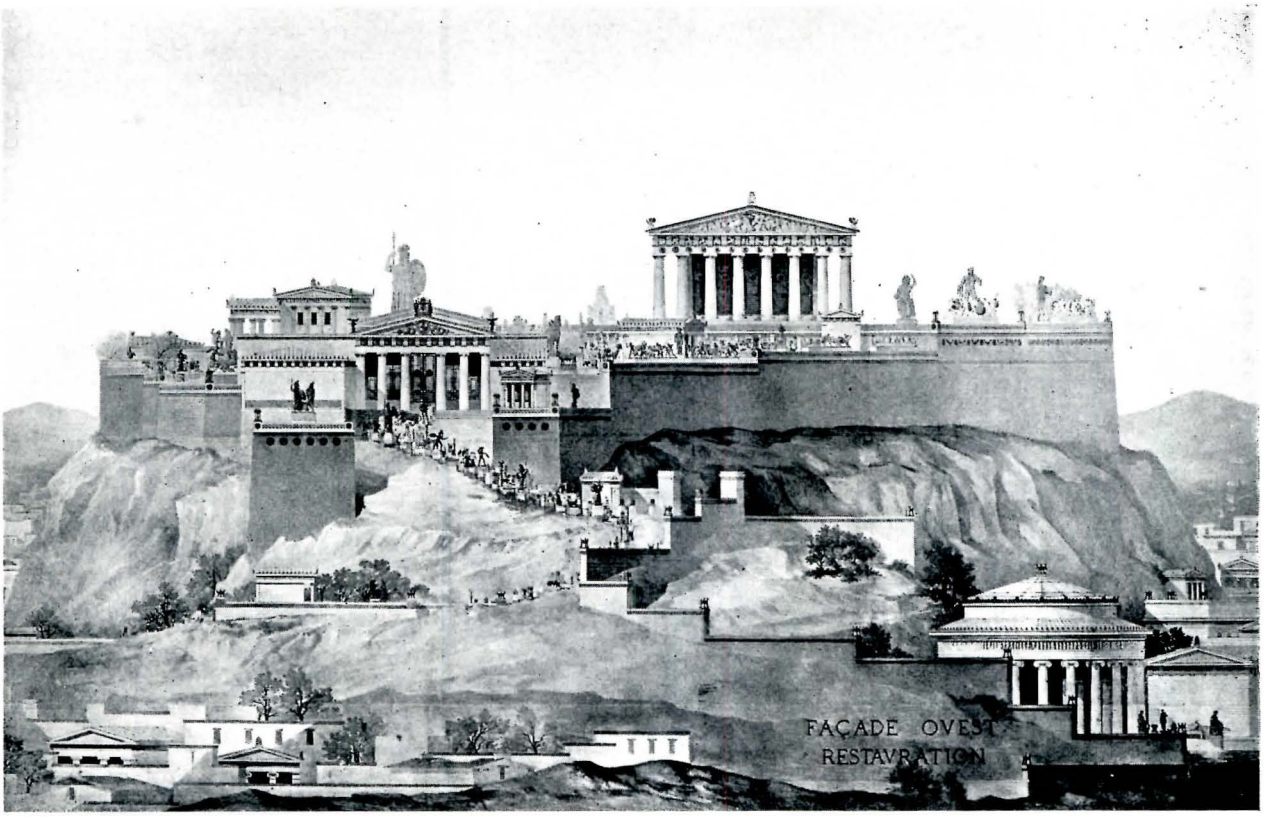
"Apollodorus, Letter Gamma, Block 8, South."

It is somewhat gratifying to discover the fact that planning a city like a filing case of humanity was not original with the United States. Roads doubtless converged to the gates in its end walls, but, owing to its position on a long narrow site—between the sea and a lake, the tendency to parallelism of streets was greater than in such cases as Detroit or Chicago or Khartoum where an uninterrupted hinterland permits roads to radiate from a centre at the waterfront and the tendency is to form a "fan-shaped" or semicircular plan of blocks and streets.



PLAN OF THE ACROPOLIS OF SELINUS
ACCORDING TO M. JEAN HULOT'S RESTORATION

It was not until after Cæsar had spent some years in Egypt and knew Alexandria (and became so well acquainted with Cleopatra that she accompanied him to Rome and first wound him around her little finger as she afterwards did Antony at Alexandria; and, still later, tried to do with Octavian) that formal civic planning was introduced into ancient Rome at a period of two or three centuries after Dinocrates planned the new city in Egypt for the great Alexander. It was to Alexandria that the first extant obelisks were lugged from the ancient Egyptian cities and Cæsar probably viewed in Alexandria the "Cleopatra's needle" which had been brought from Heliopolis, and now stands in Central Park, New York. Alexandria was the most notable commercial port of the ancient world. As a centre of shipping, as well as because of its long rectangular area and gridiron of streets, lying between bodies of water, it bears a greater resemblance to the plan of New York than any other ancient city. Unlike New



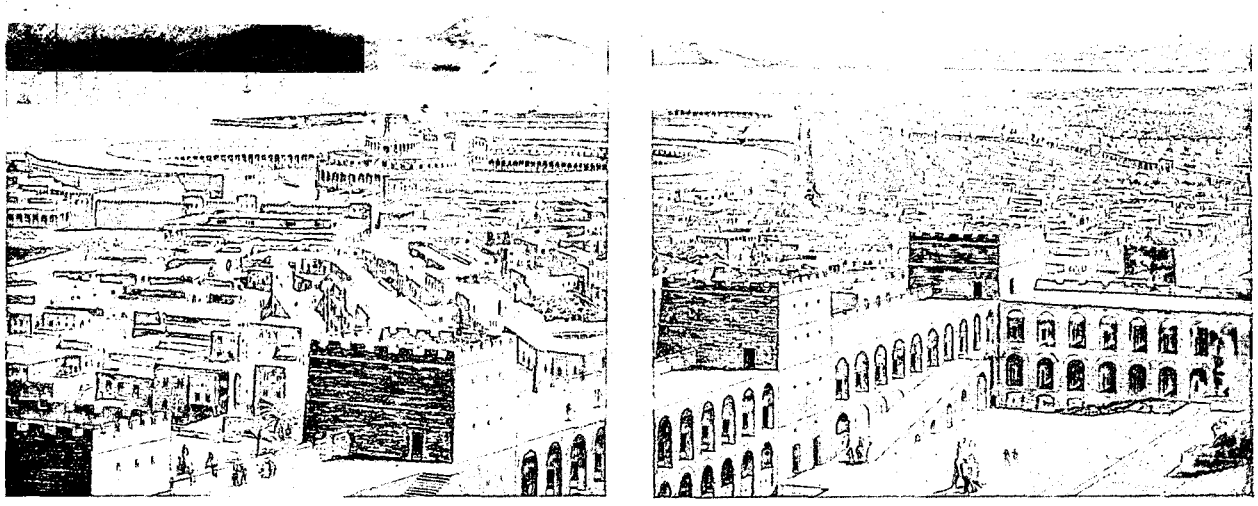
RESTORATION OF THE ACROPOLIS AT ATHENS BY MARCEL LAMBERT

Athens owed its beauty to its Acropolis and its individual monuments and the names of architects such as Ictinus, Callicrates, Philo, and Leonidas of Naxos are connected with these, though Pericles himself may have been the chief planner of the Acropolis. Milizia says that Pericles, "from the instruction of his great friend Anaxagoras, a philosopher of the first rank, and president of architecture, acquired that science," and Plutarch states that he supervised the construction of the Odeon.

York, however, its rectangular blocks are in proportion with the form of its site—showing foresight in planning for the convenience of street traffic, in connection with anticipated future growth. Its huge lighthouse—which would hold a respectable place among New York's principal skyscrapers — was planned with a vehicular ramp running around its sides to provide for hauling fuel for its brazier to a height of about three hundred feet, above which level it was hoisted by a winch to the lantern floor. Its architect, Sostrates, son of the planner of the city, is credited with inventing the lens and revolving mirror-reflector which have come into use again only in recent decades.

Selinus (*Fr. Sélinonte*), an ancient Doric Colonial port, on the south coast of Sicily, referred to in an earlier article, occupied a site similar to the modern city of Vancouver, B. C., on hills between bays or inlets—which, around the site of Selinus, have since silted up—thrusting into broad valleys bordered by mountainous surroundings. Considerable remains and ancient references have permitted M. Jean Hulot to essay a restoration of exceptional interest, quite apart from its noble groups of temples. Originally probably a straggling growth along the beach at the head of the eastern bay, Selinus developed into an important city surrounding the bay and occupying the inland plateau to the west and hillside to the east, above which was the old Acropolis, planned with a rectangular regularity reminiscent of Egyptian method rather than early Greek conceptions, as they appear at Olympia and Athens. It was replanned towards the end of the fifth century B.C., after it had been destroyed by the Carthaginians, and is perhaps the earliest of those new

PANORAMA OF ATHENS FROM THE PNYX

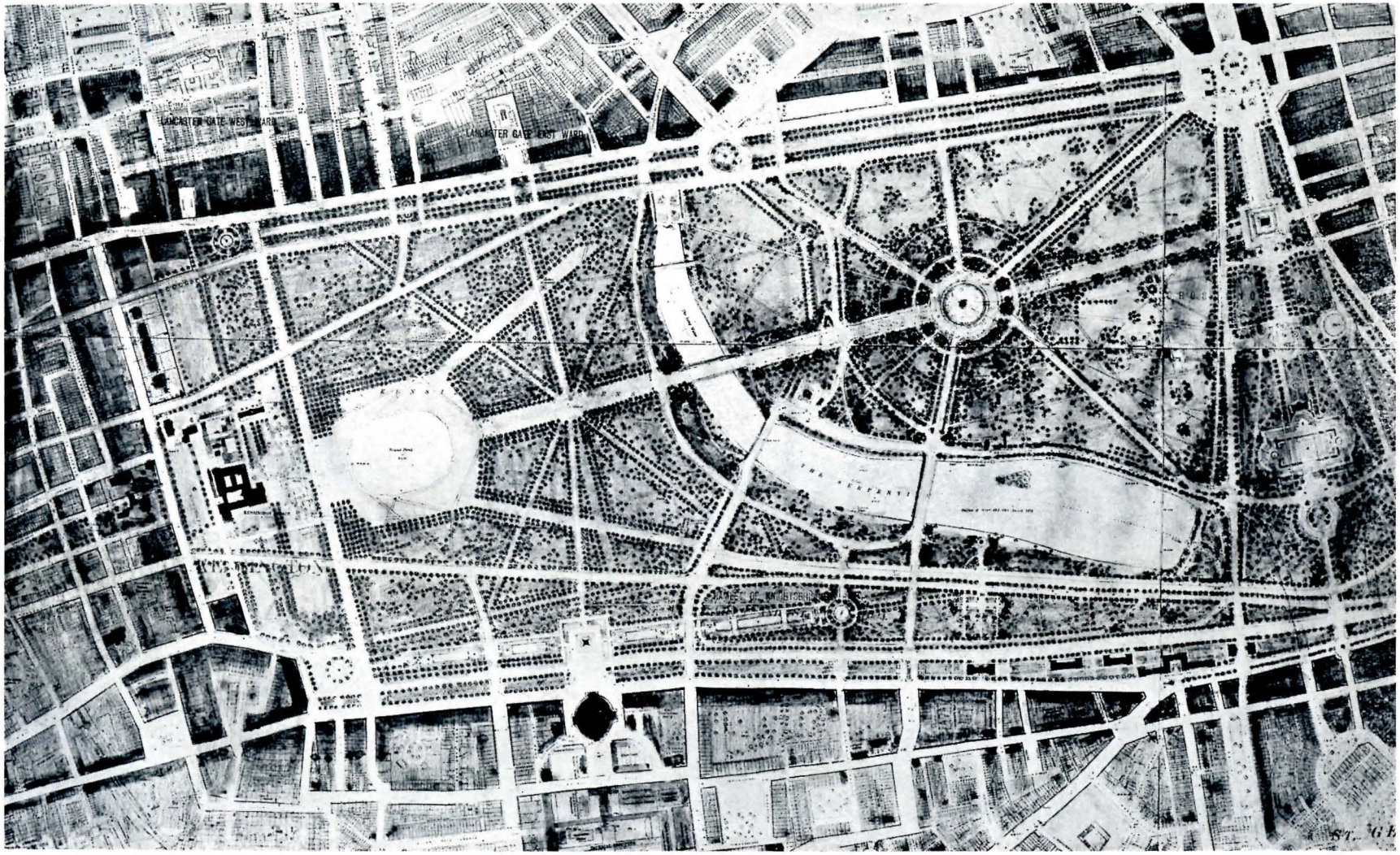


PANORAMA OF CARTHAGE AS RESTORED BY M. PAUL AUCLER

cities planned beyond the confines of an old one and conserving the old part—which became typical of the city-planning method of Louis IX of France and Edward I of England in the construction of the *bastides* or *villes neufs* of the 13th century in Southern France, and typical of the extensions of Paris, Edinburgh, Delhi, and many others at later periods. More than a little brilliant Gallic imagination backed by an architecturally well-trained mind and an eye accustomed to the clever planning of hillside streets, by Raphael and San Gallo, along the western slope of the Pincian Hill during the Renaissance at Rome was brought to bear upon filling in the spaces of unknown development; but M. Hulot has made the most of logic and probability in extending the roads of which traces exist, and of developing plausible arrangements of points of junction of streets and forms of open places from constructional hints, and connecting them up in a composition that is convincing as to convenience and beauty in taking advantage of easy grades by the most direct routes in the topography. As at Pergamum, the theatre plays a distinct part in pedestrian circulation between the agora and the streets which parallel the contours of the hillside. The principal axial avenue, reaching out to the north and bending off to the *ridge at the northwest*, is almost the reverse, as to points of compass and topography, of the main route through Rome, from the north by Via Flaminia, the bend around the Capitoline, through the circus Maximus and the Via Appia to the southeast—all of which follows a valley. The breakwater, jetties, and pair of lighthouses, forming a gate to the commercial port, recall Pliny's statement that there were several other lighthouses besides that at Alexandria. He mentions those at Ostia and Ravenna.

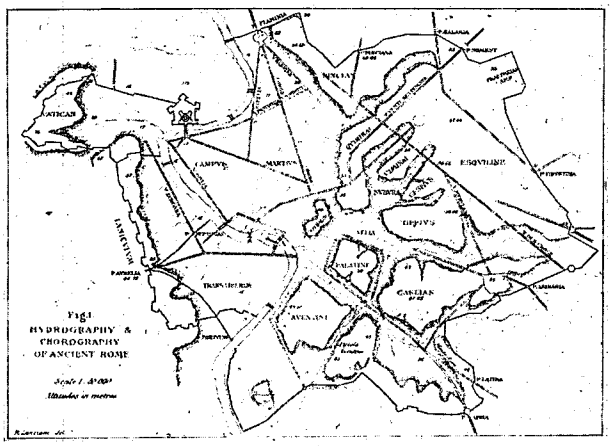
The street plan of Selinus is unique among ancient cities in the sense that the main streets, or avenues, are at once axes of the principal terrain elements, and short cuts between the various centres of architectural interest. Unlike the axial avenues of ancient Karnak or modern Paris, they do not lead up to an architectural vista, but, like the ancient Aibursha bus of Babylon or modern "through" highways of American cities, lead out past the buildings into the open country or upon the waterfront. Not the least interesting points about the replanning of Selinus, as restored, are the complete freedom from the mechanical checkerboard or gridiron plans of streets; the great variety of size, form, and direction of the quadrilateral building sites between them; and the ingenuity with which the greatest convenience of circulation through and around the city is studied out in detail. One wonders whether any Greek could ever have planned a city so well—without a thorough knowledge of old and modern Paris! Yet we can accept in entirety the plans of the Acropolis, and most of the main roads and parts of the waterfront, as authentic. According to M. Hulot, the straight, wide streets of the "new" Acropolis are actually contemporary with the old temples and, therefore, date back to about 570 B.C. or about a century and a half before the time of Hippodamus to whom Aristotle ascribes their introduction to city planning.

Athens developed only a single group of beautiful buildings—the temples of the Acropolis. Sacred spots, fortifications, and its natural topography precluded any regular geometrical pattern of block planning, even had that earlier tradition of Egypt and Babylon reached the city in its beginnings. It has been supposed that the broad spacious avenue, which led up by terraces to the Propylea, was an idea borrowed from the great processional avenue at Babylon—which Nebuchadnezzar "paved with limestone flags and spanned with a triumphal arch"— the Ishtar Gate. Pisistratus laid out a park, the Lyceum, in the outskirts of the city, and Meticus, the architect, a square which was afterwards named for him, but the city had no planned system of streets or classified areas of use. The Theatre of Dionysius (the Bacchus of the Romans), which is said to have had a seating capacity of thirty thousand, was located on the hillside but provided no apparent link of pedestrian communication

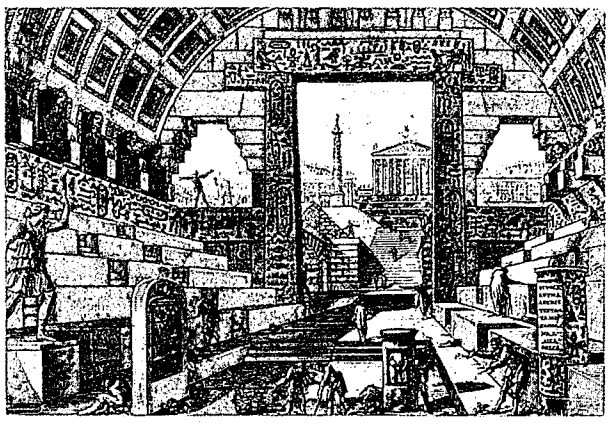


PLAN FOR PROJECTED IMPROVEMENTS, HYDE PARK AND KENSINGTON GARDENS, LONDON, ENGLAND

FROM A STUDY MADE IN 1928 BY FRANCIS S. SWALES, ARCHITECT—CITY PLANNER



TOPOGRAPHY OF ANCIENT ROME
FROM A MAP BY R. LANCIANI



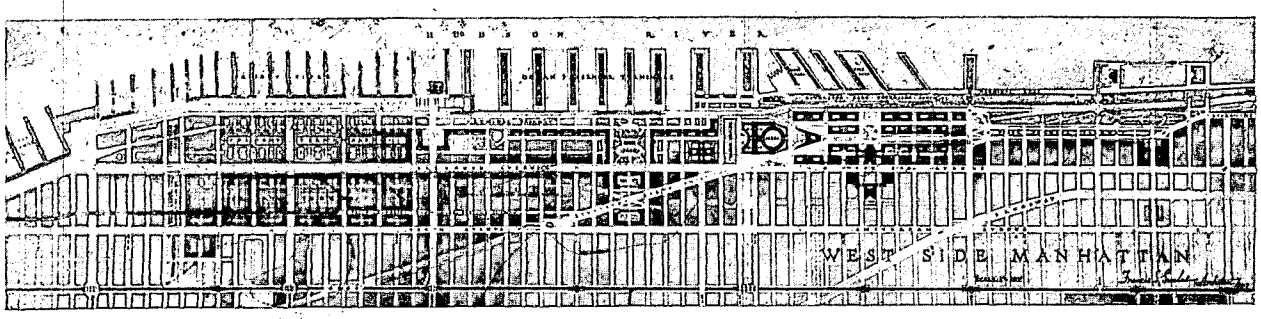
EVIDENCE OF EGYPTIAN INFLUENCE IN ROME
FROM AN ENGRAVING BY PIRANESI

between different parts of the city as did the aisles of the theatre at Pergamum. Religion, as a practical idea of the intelligent classes, became the chief vehicle of artistic expression in individualism. The Acropolis was a permanent exhibition of local art and craftsmanship and the publicity medium of a highly mercenary state. By separating its idealism, expressed by the temples, and placing it above the general mass of the housing of the populace and its industry and commerce, the Greek city-states provided a precedent to the planners of many mediæval cities in which the cathedral—as at Le Puy, Laon, Mont St. Michel, Durham, Lincoln, etc.—dominates the entire civic organization.

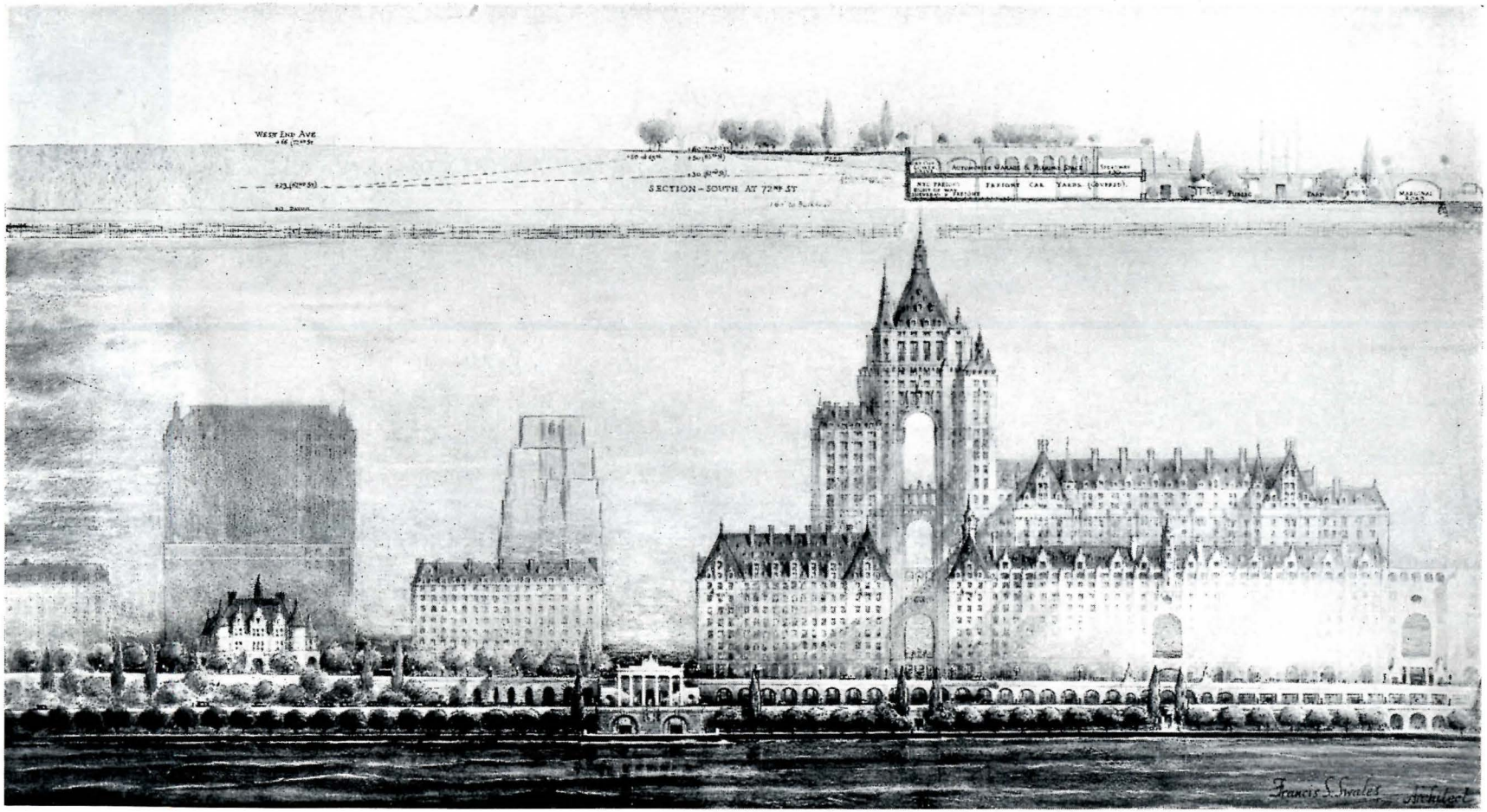
The Greek colonial cities, which were planned by architects who designed the buildings, showed the way to the planning of Rome, as much by mastery of detail and the coordination of civic functioning of elements as by the immediately obvious beauty of effect. Among the steps which had been taken by the Greeks in matters of convenience, which appealed to the later development of the practical minds of the Roman architects, were the advantages taken of hillside sites and uses of waterfronts; the use of the regular curve as a horizontal element of planning, such as the adaptation of theatres and the semicircular ends of stadia to contours; the employment of streets at lower levels for delivery at the basements—used for storage of supplies—and at the rear of shops facing the agora at the upper level;* the classification of markets—separating the sale of cattle and agricultural produce and of meat and fish from other merchandise; the arrangement of certain streets by which the wheels of ox-carts and chariots were routed through the city, as at Pompeii, by grooves which defined vehicular circulation—as our (nearly obsolete) modern street car routes are defined by their tracks—and limiting most of the streets to pedestrian use by placing steps in those running up hill; confining wheel traffic to particular streets with turning places provided only at specific points such as the market place, stage end of theatres, entrance to the stadium and around the temples; the durable waterfront construction of the ports—at Selinus and Alexandria, and the classification of buildings adapted to special functions. All such ideas were afterwards consciously adopted by the architects of Imperial Rome.

Arising from a fortress-settlement on the more or less rectangular plateau of the Palatine Hill—hence *Roma Quadrata*—the town expanded first across the

**The important consideration of separating "freight" from "passenger" lines of traffic on our modern railways had its inception in the streets of these early Greek cities. It was a feature problem of the planning of Imperial Rome and is still one of the chief problems of the cities of today. Professor Percy Gardner says that "the wares sold in the shops (of Greek colonial cities) were brought by 'waggons' to the lower chambers (of hillside sites), there stored and thence brought up to the upper chambers" . . . . . a line of shops three stories high exists at Ægæ.*



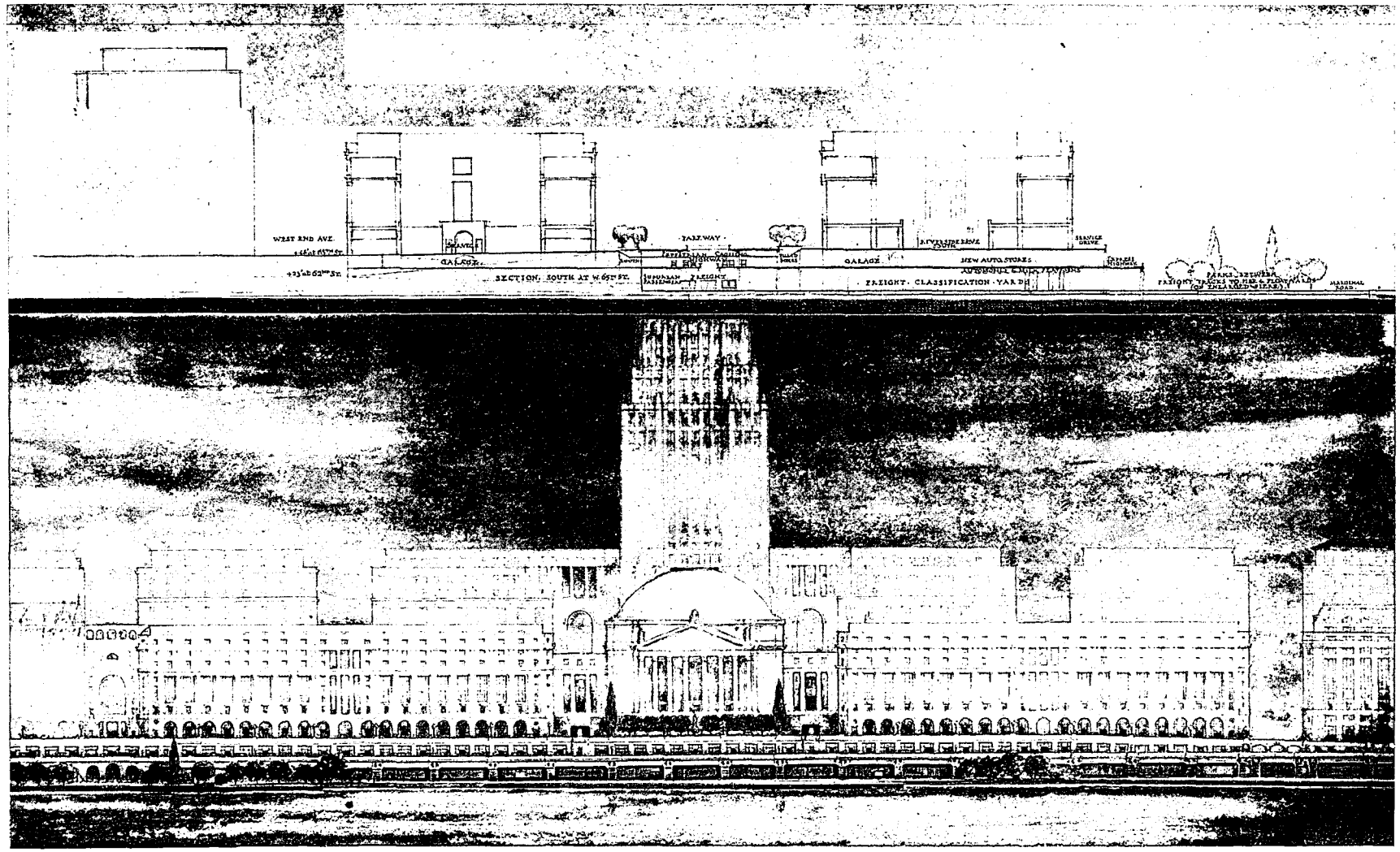
PLAN—ARCHITECTURAL AND ENGINEERING PROPOSALS FOR THE WEST SIDE OF MANHATTAN
MADE FOR THE REGIONAL PLAN OF NEW YORK OF THE RUSSELL SAGE FOUNDATION
Francis S. Swales, Architect



ARCHITECTURAL AND ENGINEERING PROPOSALS FOR THE WEST SIDE OF MANHATTAN—74TH TO 69TH STREETS

MADE FOR THE REGIONAL PLAN OF NEW YORK OF THE RUSSELL SAGE FOUNDATION BY FRANCIS S. SWALES, ARCHITECT

This and the illustration opposite show an idea to solve the problem of the railway freight yards of the west side of Manhattan by connecting the highlands at 72nd Street, 60 feet above water, with the low lands at 23rd Street, 5 feet above water, between the Hudson River and West End Avenue. The latter thoroughfare undulates, varying from the low to high levels mentioned. The whole site is to be excavated practically to the lower level to the yard limits and below 41st Street all the way back to 10th Avenue to form freight yards. A structure is to be built over the whole area one story high, part of the roof of which will be West End (or 11th) Avenue and part of which will extend out along the river to form an automobile speedway over the railroad tracks.



ARCHITECTURAL AND ENGINEERING PROPOSALS FOR THE WEST SIDE OF MANHATTAN ISLAND, NEW YORK—69TH TO 64TH STREETS

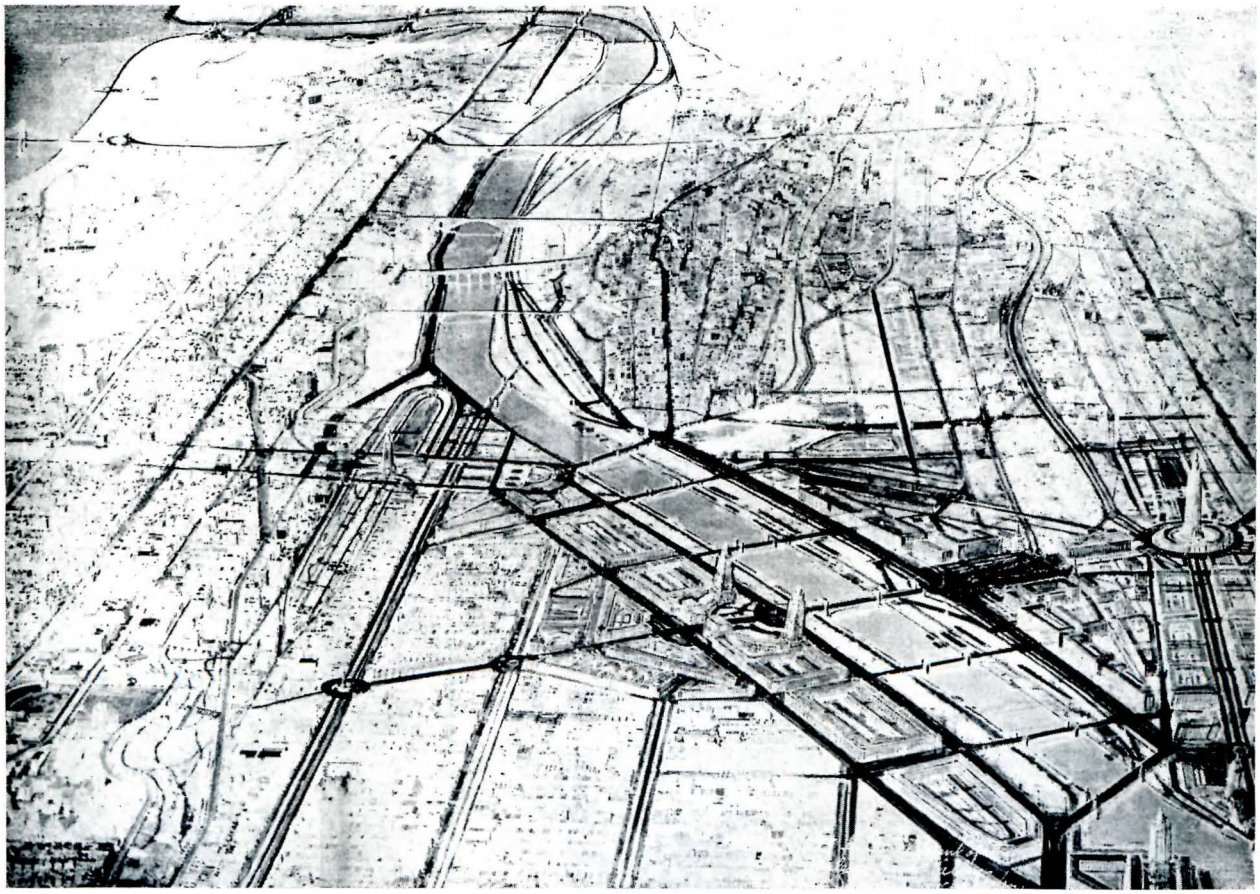
MADE FOR THE REGIONAL PLAN OF NEW YORK OF THE RUSSELL SAGE FOUNDATION BY FRANCIS S. SWALES, ARCHITECT

This drawing should be read in conjunction with that on the facing page. Above the elevated highway referred to in the caption for the other illustration, and following the inland grade of West End Avenue, a second story of viaduct is designed to be carried over the speedway. At the speedway level the floor extends across to West End Avenue, providing a garage story through which automobiles can turn and run a block across town. Above the garage, business and apartment buildings are shown. A proposal to arch dead ends of streets and create horizontal masses of high buildings is shown by the elevations. These proposals were made in 1924 and rendered in 1927.

valley, which included the Forum Romanum, and grew upon the neighboring hills. It was destroyed by the Gauls in 390 B.C. after which its first great builder appears in Servius Tullius who constructed the "Servian" walls, which included at the time of Cicero the seven hills—Palatine, Capitoline, Aventine, Caelian, Esquiline, Viminal, and Quirinal. Generally the "Servian" wall followed the cliffs of the hills, but it also included a mile of length along the plateau of the Esquiline and extended down to the Tiber. An out-post on the Janiculum, across the river, was connected with the city by a wooden bridge. The main sewers, or *cloacæ*, draining the marsh lands of the Campus Martius and the Valley of the Circus Maximus, had been formed at a very early date by regulating the courses of streams, arching them over and filling in above them. The commerce of the city was river borne in both directions and the commercial district was built up along the river bank. Claudius Clæcus, 312 B.C., built the first aqueduct to serve the district near the Tiber and the first military road. Historians seem to be agreed that there was little enough native sense of things beautiful until a new population of Sicilian-Greeks, brought in as slaves following the conquest of Sicily in the Third Century B.C., had shown the way to art. This followed so closely after the Hellenic great period of city founding and rebuilding, that architects, who had designed Greek colonial cities, new and complete, were probably the first to design improvements affecting the plan of the city of Rome.

The influence of Greek literature, especially plays, translated into Latin by Greek slaves, led to the building of theatres modeled on Greek plans. They were constructed of wood—perhaps as models for later reconstruction in concrete, brick, and stone, but, like modern "temporary" buildings, had a way of lasting until they played a part in a conflagration. Topography does not appear to have determined their location, as it had those of the Greek cities. The recorded conflagrations at Rome show the extensive use of wood construction during the Republic, and its continued existence during the Empire, especially until the time of Nero—to whom has been ascribed a practical way of eliminating decrepit slums in a great city when largely constructed of inflammable materials.

Rome's two principal military roads, the Appian Way, which entered the city from the southeast and led into the Circus Maximus—which in practice was a traffic terminal—and the Via Flaminia, which entered from the north—along the site of the present Corso and chief street of the modern city—and wound its way through the old forum, were among the first improvements leading up to the first great program of replanning the heart, and finally the whole, of the greatest city in the world at the time and perhaps, from the modern point of view, the greatest of any time. *(The next article will be devoted to Rome.)*



PLAN FOR THE RECONSTRUCTION OF THE VALLEY OF THE HARLEM RIVER, NEW YORK
Proposed and designed by Francis S. Swales, Architect, and advocated by the Regional Plan of New York.

STUDY DEVELOPED FROM COMPETITION DESIGN, CHICAGO WAR MEMORIAL

DRAWING IN PENCIL AND WATER COLOR FOR VOORHEES, GMELIN & WALKER, BY JOHN WENRICH

PENCIL POINTS
(November, 1931)

Pencil Points Series of Color Plates

This very bold study of a non-premiated competition design was made to show something more of the effect of the design if it should be built than was possible with the competition drawings themselves. It was done some time after the competition had been judged and it will be interesting for the reader to refer back to the competition as published in the February, 1930, issue of PENCIL POINTS *and to Voorhees, Gmelin, and Walker's design shown in the August, 1930, issue on pages 616 and 617. A completed pencil drawing was first made on a warm gray "Fabriano" pastel paper with black crayon. The dark values were built up with very thin opaque water color and the brightly lighted portions were put in with heavy opaque color. The purpose of completing the pencil drawing first was to give texture to the large flat masses which might otherwise be "dead" and uninteresting. The pencil shading followed the grain of the paper which ran up and down. The original measures 15¾" x 21¼".*

The Geometry of Architectural Drafting

19—At the Swing of the Compass

By Ernest Irving Freese

Editor's Note:—*This article, which is copyrighted, 1931, by the author, continues the series begun in August, 1929.*

The circle is at once the simplest and most baffling of all geometric forms. It is the delight of kindergartners and the despair of mathematicians. It is the symbol of infinity, yet contains its own end. It is finite, yet never-ending. It is the totality of Euclidean geometry; for its center is the definition of a "point," and its radius is the definition of a "straight line."

The fundamental postulate of the circle is that it can be *drawn* when its center and radius are known. However, in the drafting room, hundreds of cases occur which require the finding of a circle's center such that the drawn circle, or the required portion of same, will exactly satisfy certain given conditions or controlling circumstances. In these cases, the center is usually *unknown;* hence, must be discovered by graphical construction. Possibly the simplest problem of this kind is the finding of the center of a circle of

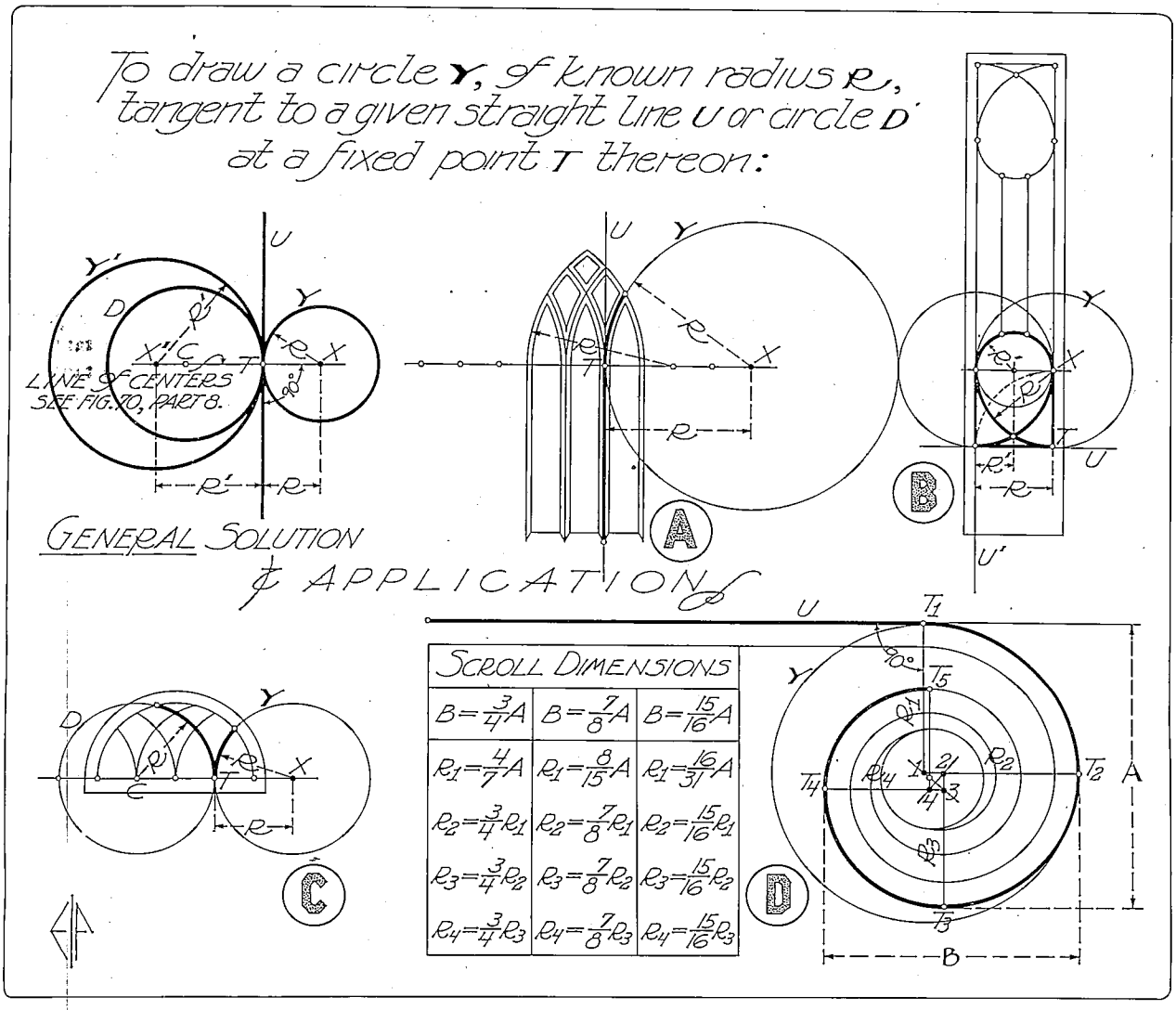


FIGURE 170

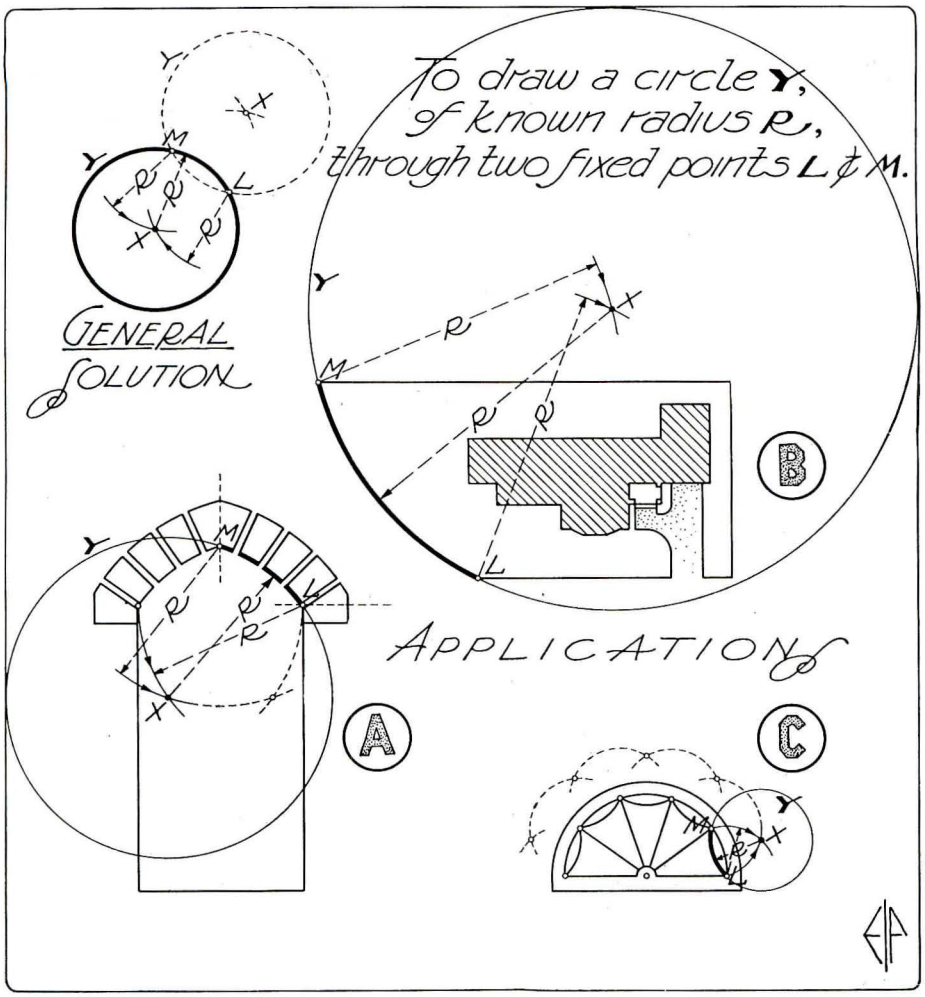


FIGURE 171

known or assumed radius, such that the drawn circle shall just touch a given straight line at a fixed point thereon. At the other extreme of the geometrical gamut is the problem of drawing a required circle, or circular arc, which shall be tangent to three given non-concentric circles. Here, both the center *and* radius are unknown, yet the given conditions are such that the required circle is exactly determinable therefrom by geometric construction. Between these extremes, many allied problems arise that are subject to various other limiting conditions: all of which will, in this Part and in the immediately following Parts, be fully covered both in general and by means of numerous actual applications pertinent to drafting room work. In this Part, the problems are limited to those cases in which the *radius* of the required circle or circular arc is one of the known, given, or assumed conditions under which the problem shall be solved. Each Figure hereinafter given states the problem, shows its *general solution*, and instances several *particular applications*. Moreover, each application carries the same reference letters as the general solution, thus rendering same practically self-explanatory. Note also, that two or more circles can always be drawn that will satisfy the *general* statement of the problem; and that the particular application makes it unmistakable which of the two or more circles is the required one. In all cases where a "circle" is mentioned, it may mean either a *full* circle or only that portion of same which the construction requires. In all applications the given or required *arc* is made emphatic by heavily-drawn lines, but the *full circle* is completed in lighter lines so as to absolutely identify the applied solution with the general one.

Figure 170:

This is but a particular case of drawing a circle, of known radius, tangent either to a given straight line or to a given circle, and passing through a fixed point: the latter here occurring *on* the given line or given circle. Hence, the simple solution is merely the application of the following facts which have before been illustrated in Part 8 at Figure 70; namely, that a perpendicular to a straight-line tangent, drawn through the point of tangency, passes through the center of the tangent circle; and that the tangent point of any two tangent circles is in line with their centers. Hence, the center X or X', for the required circle Y or Y', is readily found on the projected normal TX or TX' either with the compass set to the given radius R or R', or directly by scale measurement from the given tangent point T, as shown. In the applications shown at Diagrams "A," "B," and "C," it is obvious that the radius of Y is known. At Diagram "D," the first four radii of the scroll are made known by reference to the annexed tabulated proportions. These radii, in turn, determine centers *1*, *2*, *3*, and *4*. And the connecting diagonals *1*, *3*, and *2*, *4*, are the loci of the remaining centers. So you can "wind up" this scroll as far as you like. Moreover, you can lay it out to any desired dimension A, and then determine its other dimensions from the given tabulated proportions. The scroll shown was laid out with B equalling 7/8ths of A, in accordance with second column of proportionate dimensions.

Having disposed of the above special and exceedingly rudimentary case, let us generalize a bit and so discover exactly how many different problems must be solved in order to cover all general cases in which the radius of the required circle is given but the center

is unknown. Also let us establish the following uniform nomenclature, or reference letters, for all problems hereinafter presented and solved. In all cases, let the *required* circle be designated as Y, and its unknown center as X, and let the following letters represent and name the various limiting conditions here to be coped with:—

R= the known or assumed radius of Y.
L= a fixed point through which Y shall pass.
M= a fixed point through which Y shall pass.
S= any given line, straight or curved, upon which Y shall be centered.
U= a given straight line to which Y shall be tangent.
V= a given straight line to which Y shall be tangent.
D= a given circle to which Y shall be tangent.
F= a given circle to which Y shall be tangent.

Now, *any three* of the above-tabulated limiting conditions *determine a circle both as to position and magnitude*. Furthermore, you will discover that all possible combinations of any three of them, containing R as one factor, are represented by the following nine groups of letters:—

RLM, RLS, RLU, RLD, RSU, RSD, RUV, RUD, RDF.

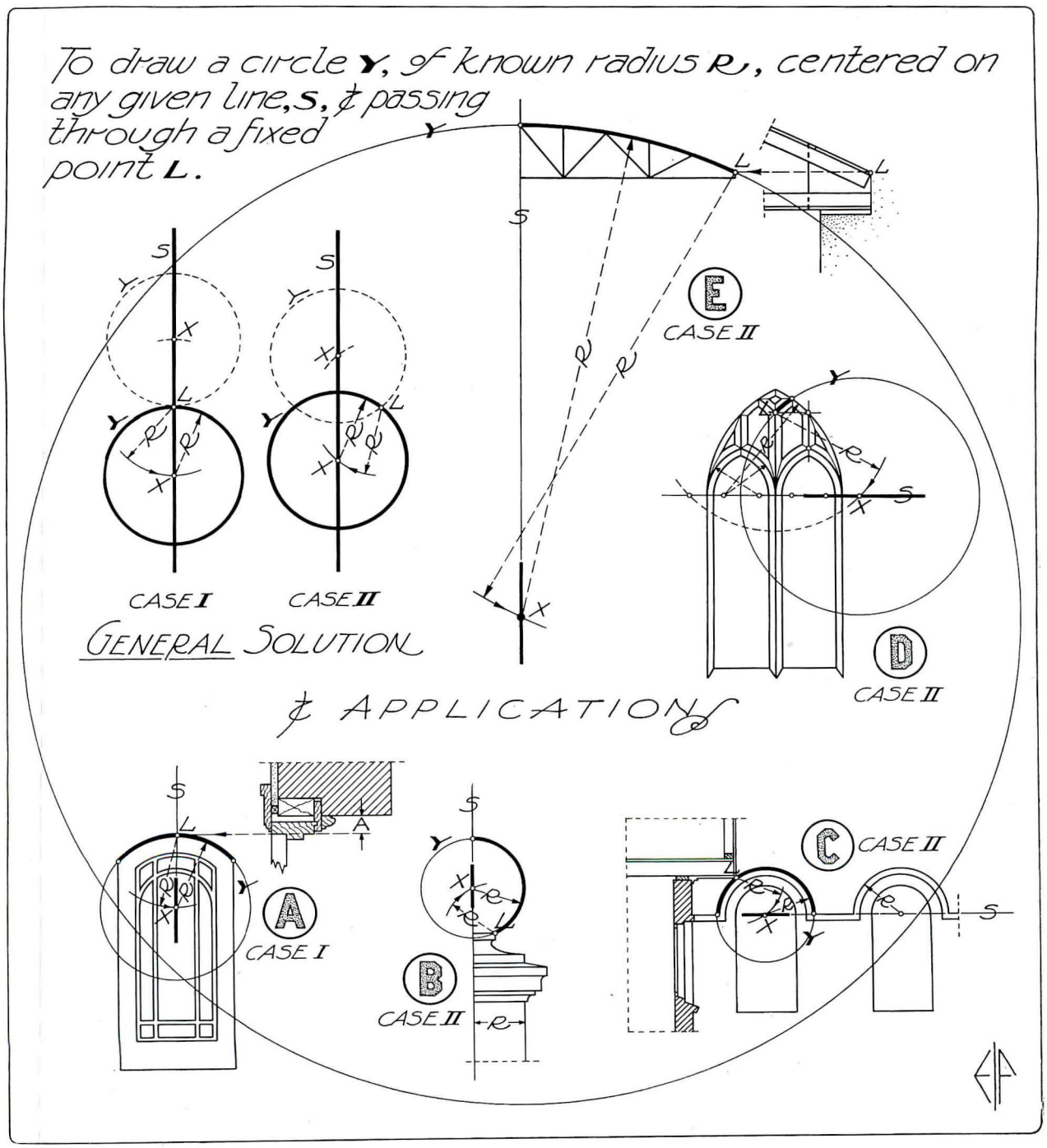


FIGURE 172

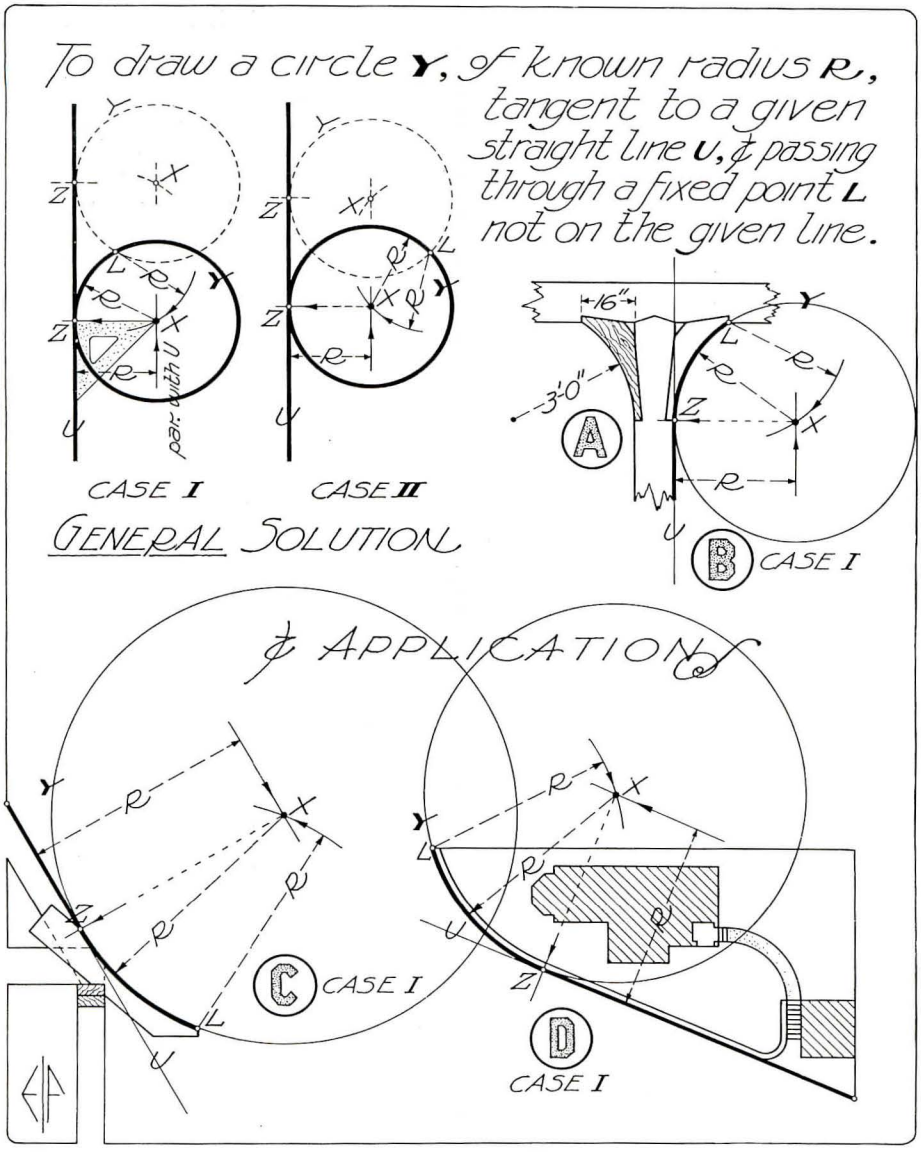


FIGURE 173

Wherefore, by reading each of the above nine groups by the interpretation of the reference letters contained in each group, you will state all possible given conditions under which a circle *Y*, of known radius, can be drawn. In other words, it has been discovered by *deduction*, instead of by *guessing*, that there are nine basic problems of the type here considered—no more, no less. These nine problems are presented and solved in the next nine Figures numbered 171 to 180 inclusive. And each solution is based on the one outstanding property of a circle; namely, that its center is distant one radius from any point on the circumference. So now, we shall find *X*—at the swing of the compass—and thus materialize *Y*. We're on our way:—

Figure 171:

Here, the problem is to determine the position of *X* such that it shall be distant *R* from both *L* and *M*. So *that* one is solved—*pronto!* At Diagram "A," *R* equals the span; and *L* and *M* are the fixed spring-point and crown-point, respectively, of the arch. At Diagram "B," *R* is made known by a notation given on the survey; and *L* and *M* are fixed corners of the plot. At Diagram "C," *R* is the known distance between the fixed division-points *L* and *M*.

Figure 172:

In this problem, *X* must fall on *S*, and be distant *R* from *L*. Hence, from *L* as a center, and with *R* as radius, cross *S* at *X*. At Diagram "A," *R* equals the known radius of the arch *minus* the detailed dimension *A*; while *L*, occurring on the given center line *S*, is the fixed crown-point of the detailed door. Evidently, any application of Case I, of which Diagram "A" is typical, is scarcely entitled to be called a "problem," since *X* can be directly located by scale measurement dating from point *L*. At Diagram "B," *R* equals half the known width of the square newel; *L* is fixed by the detailing of the sphere's turned base; and *S* is the given center line of the newel. At Diagram "C," *R* and *S* are the same as for another arch in the same wall; and *L* is the fixed extremity of an overhanging story. At Diagram "D," *R* equals the known radius of the arch; *L* is fixed by symmetrical geometric construction; and *S* is the given spring line of the arch and of all arched members of the tracery. At Diagram "E," *R* is the catalogued radius of a "stock" roof truss; *L* is the spring-point fixed by the known span and by the stock detail of the end joint; and *S* is the given center line of the span.

Figure 173:

Under these conditions, the position of *X* must be such that it shall be distant *R* from both *L* and *U*. Hence, draw a line paralleling *U* at the perpendicular distance *R* therefrom. Then, from *L* as a center, and with radius *R*, cross the aforedrawn line at *X*. A line square with *U*, projected from *X*, will now locate the exact point of tangency *Z*, as shown. Diagram "A" gives the dimensions of a curved brace as figured on the scale working drawings. Diagram

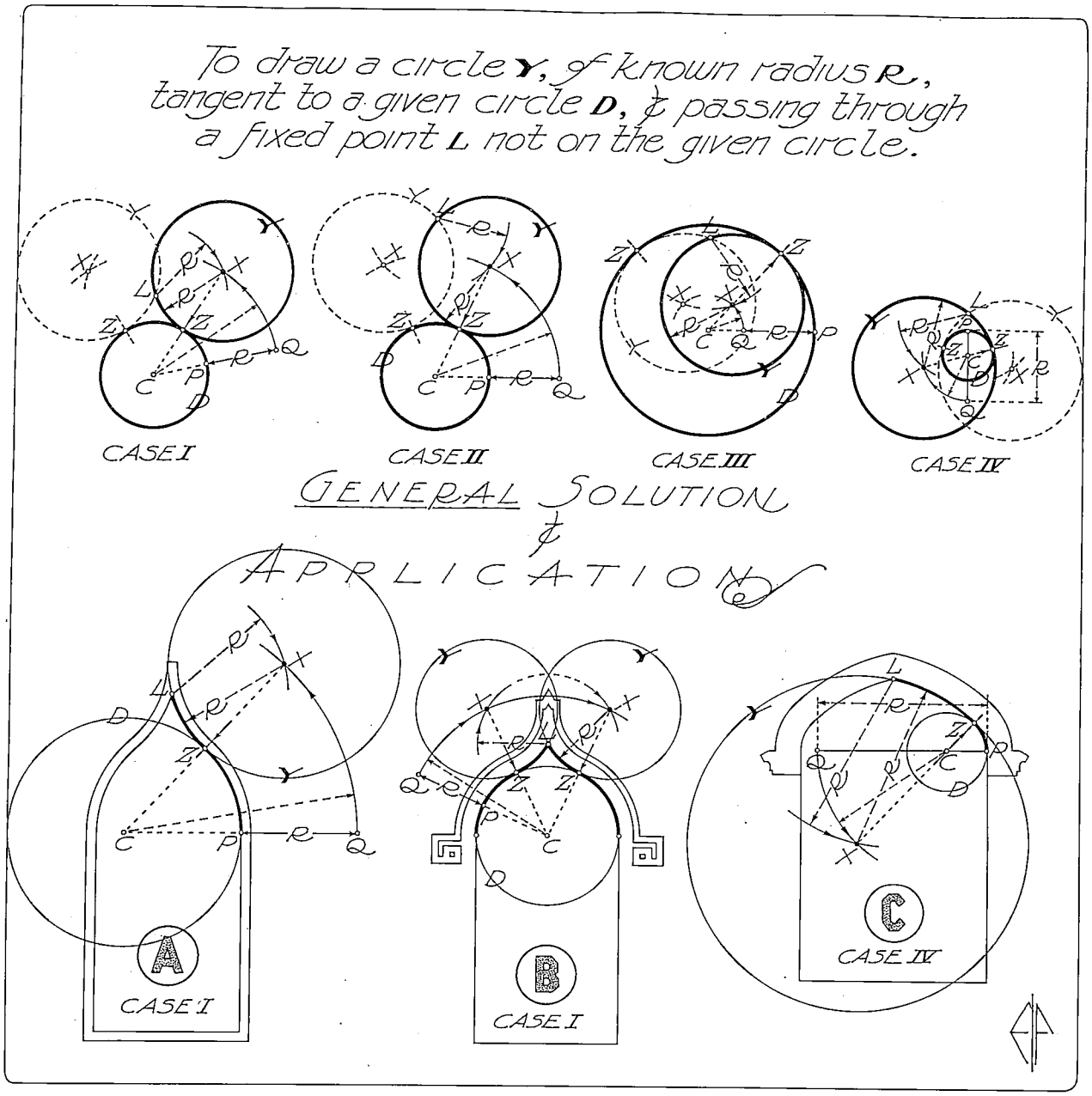


FIGURE 174

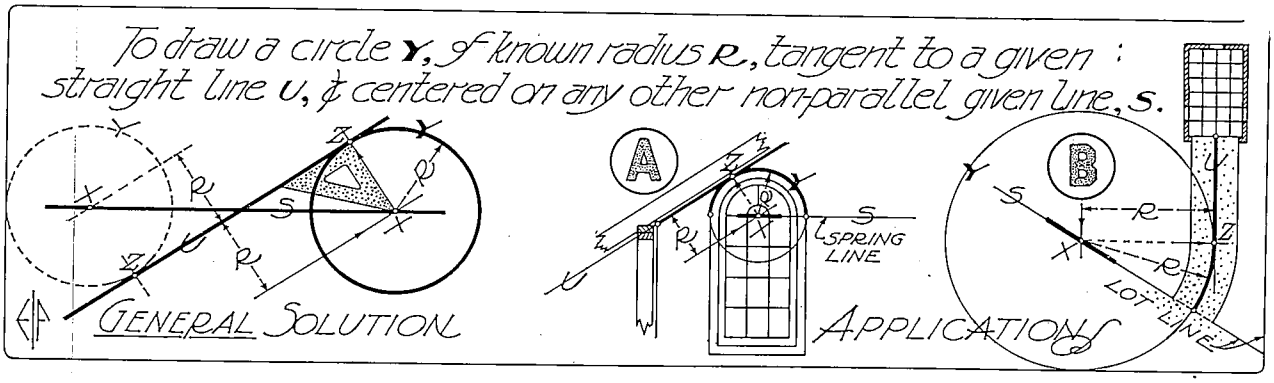


FIGURE 175

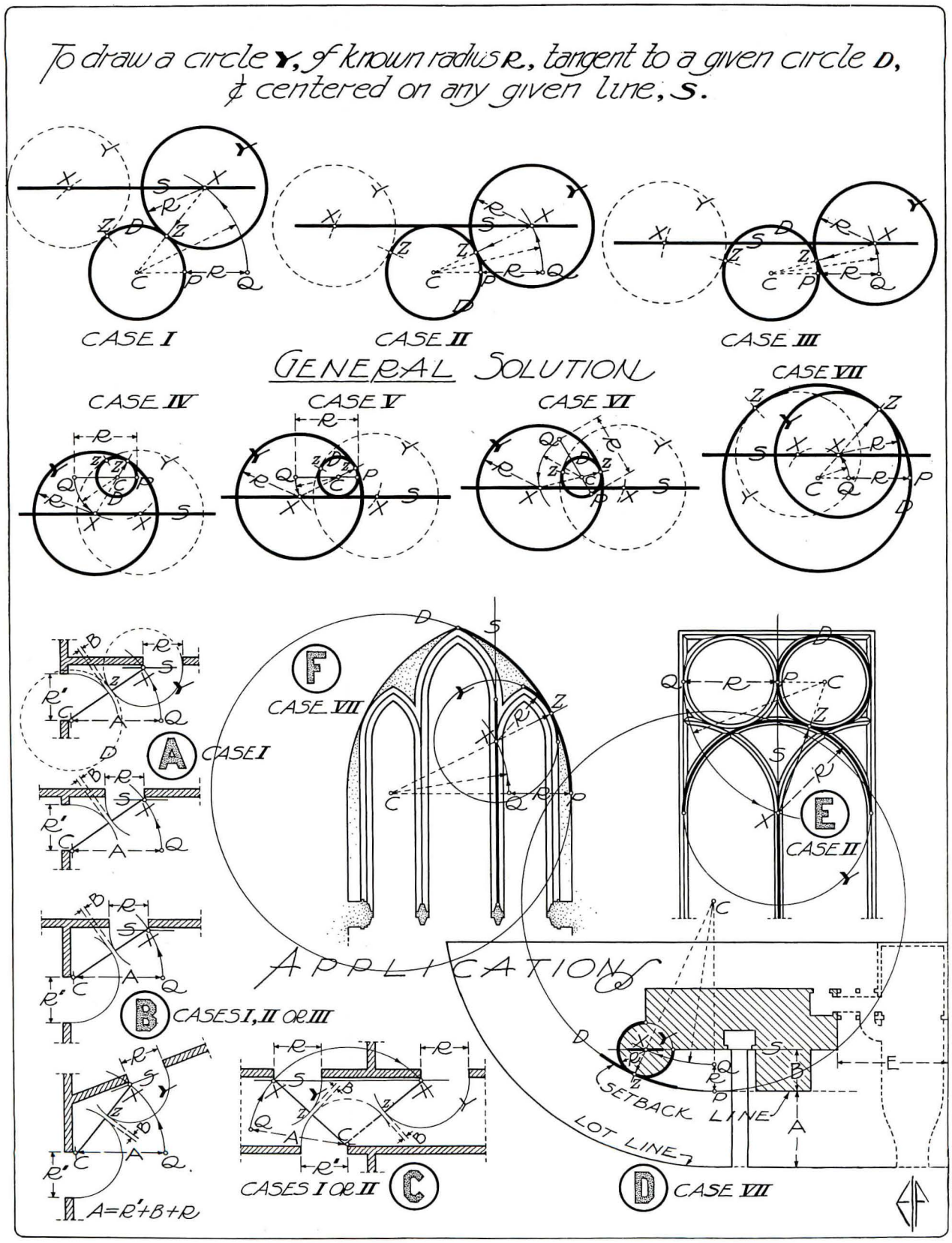

To draw a circle Y, of known radius R, tangent to a given circle D, & centered on any given line, S.
CASE I
CASE II
CASE III
GENERAL SOLUTION
CASE IV
CASE V
CASE VI
CASE VII
A CASE I
B CASES I, II OR III
C CASES I OR II
D CASE VII
E CASE II
F CASE VII
APPLICATIONS
SETBACK LINE
LOT LINE
A=R'+B+R

FIGURE 176

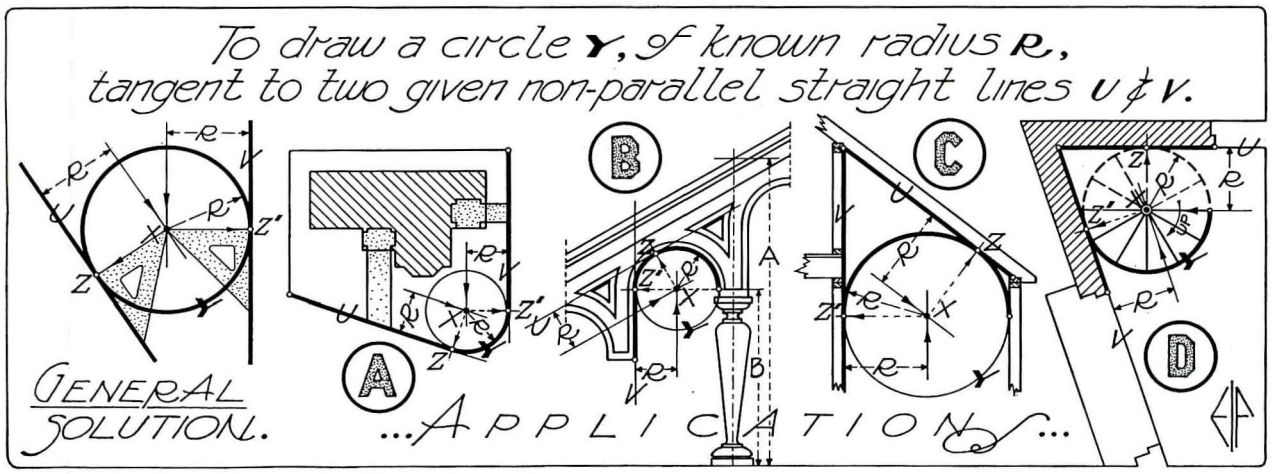


FIGURE 177

"B" shows how center X was located for the purpose of full-sizing the arc of this brace. At Diagram "C," R is either taken from the scale working drawings or else merely assumed; L and U being relatively fixed from the known conditions of the case. Point X then becomes the center from which the full-size arc of the rafter sweep may be swung. At Diagram "D," R is made known by a lettered notation on the survey; L is a fixed corner of the plot; and U is the projection of the given property line. If the tangent point Z had been located by a dimension on the survey, then this problem would have become the same as that heretofore shown at Diagram "B" of Figure 171.

Figure 174:

Obviously, the position of X must here be such as to be distant R from both L and D. Hence, on any convenient line through C, lay off PQ equal to R. Then, from center C, and with radius CQ, draw an arc concentric with D. Now, from L as a center, but with radius R, cross the aforedrawn arc at X. Point Z, the tangent point of D and Y, is collinear with C and X, as indicated. At Diagrams "A" and "B," the given and required portions of the ogeed curves are of the same radius—the most common case. Hence, R, or PQ, here equals CP. But any other given or definitely assumed value for the radius of Y would not affect the method of locating X. This is again illustrated at Diagram "C," which indicates how this solution may readily be applied to the locating of the crown centers of a 4-centered Tudor arch, the crown radius R being either known or merely assumed. In any event, the required center X thereby becomes exactly located, and the resultant circle Y, of radius R, will pass through the fixed crown-point L, and will also come tangent to the haunch arc at point Z, as clearly depicted.

Figure 175:

To conform with the given conditions of this problem, X must fall on S, and be distant R from U. Hence, a line paralleling U, at the perpendicular distance R therefrom, will cross S at the required center X. And a line square with U, projected from X, will locate the tangent point Z. At Diagram "A," R is half the known over-all span of the semicircular architrave; S is here the given spring line established by door-height or else conforming to other arched openings in the same room; and U is the limiting line of a sloping ceiling. At Diagram "B," R is the center-line radius of the driveway: it is derived from a consideration of both the minimum turning-radius of the car and the width of driveway required on the turn. (Refer to Figure 73 in Part 8, and text pertinent thereto.)

Figure 176:

Here, the problem is to determine the position of X on S such that X shall be at the normal distance R from D. Well, that's easy: on any convenient line through C, make PQ equal R. Then, from center C, revolve Q to cross S at X. The point Z, common to D and Y, is collinear with C and X, as you probably know. Diagrams "A," "B," and "C" are practical applications of the above problem to door-collision prevention. In each example, C is the given hinge-point, and R' is the given width, of a door already placed in position; while S is a given line paralleling the face of the other wall, upon which line the required hinge-point X, of the other door of known width R, must be so located that the two doors will not collide at any point in their swinging career. Lay off the distance A, which is CQ, equal to the combined width of the two doors plus any required or allowed clearance B. Then, from the hinge-center C, revolve Q to cross S at the point X, which latter then becomes the hinge-point about which the thus-located door can be swung without colliding with the one swung from the hinge-point C. Diagram "C" is especially pertinent to doors opening outward into public corridors that are narrower than the combined width of two doors plus the "throw" of the hinges. At Diagram "D," the plan of a building containing a circular tower or bay must be so placed on the plot plan of the property as not to encroach on the set-back line established by deed or ordinance. In this instance the set-back line is an arc of a circle concentric with the curved portion of the lot line, as shown. Wherefore,

the distances *A* and *B* being known, and the radius of the lot line and of the tower being known, the location of point *X*, which is the center of the tower, is easily accomplished in conformity with Case VII of the general solution. With the plan thus definitely and legally placed in position on the plot, the development of the remaining portion *E* of the property plan can then be proceeded with as suggested in dotted outlines. At Diagram "E," *R* equals the known diameter of *D*, while *S*, in this case tangent to *D*, is the given center line of the combination. At Diagram "F," the line of a vaulted ceiling governs the exterior design of the fenestration, that is, the position of the spring line of the side arches must be such that the extrados line of these arches shall just come tangent to the given line *D* of the curved ceiling, as shown. From the predetermined or desired widths of openings, the radius *R* and the line *S* become known. The geometrical problem of locating *X*, and thus determining the required spring line of the side arches, then conforms with the stated general problem—its solution coming under Case VII as shown and noted.

Figure 177:

Here, the problem is to determine the placement of *X* such that it shall be distant *R* from both *U* and *V*. Wherefore, merely draw two lines, respectively parallel with *U* and *V*, at the right-angular distance *R* therefrom, and they will cross at *X*. The exact points of tangency, Z and Z′, can then be found in the typical manner diagrammed in the Figure. At Diagram "A," *R* is the known radius of a rounded-off lot corner; the resultant arc *Y* thus tangentially connecting the already plotted property lines *U* and *V*. In the application at Diagram "B," *R*, *U*, and *V* become definitely predetermined in the process of detailing the raking balustrade; and, from these given conditions, the finding of *X* determines the spring line of the connecting arches and, consequently, fixes the remaining available height *B* as the limiting height of the

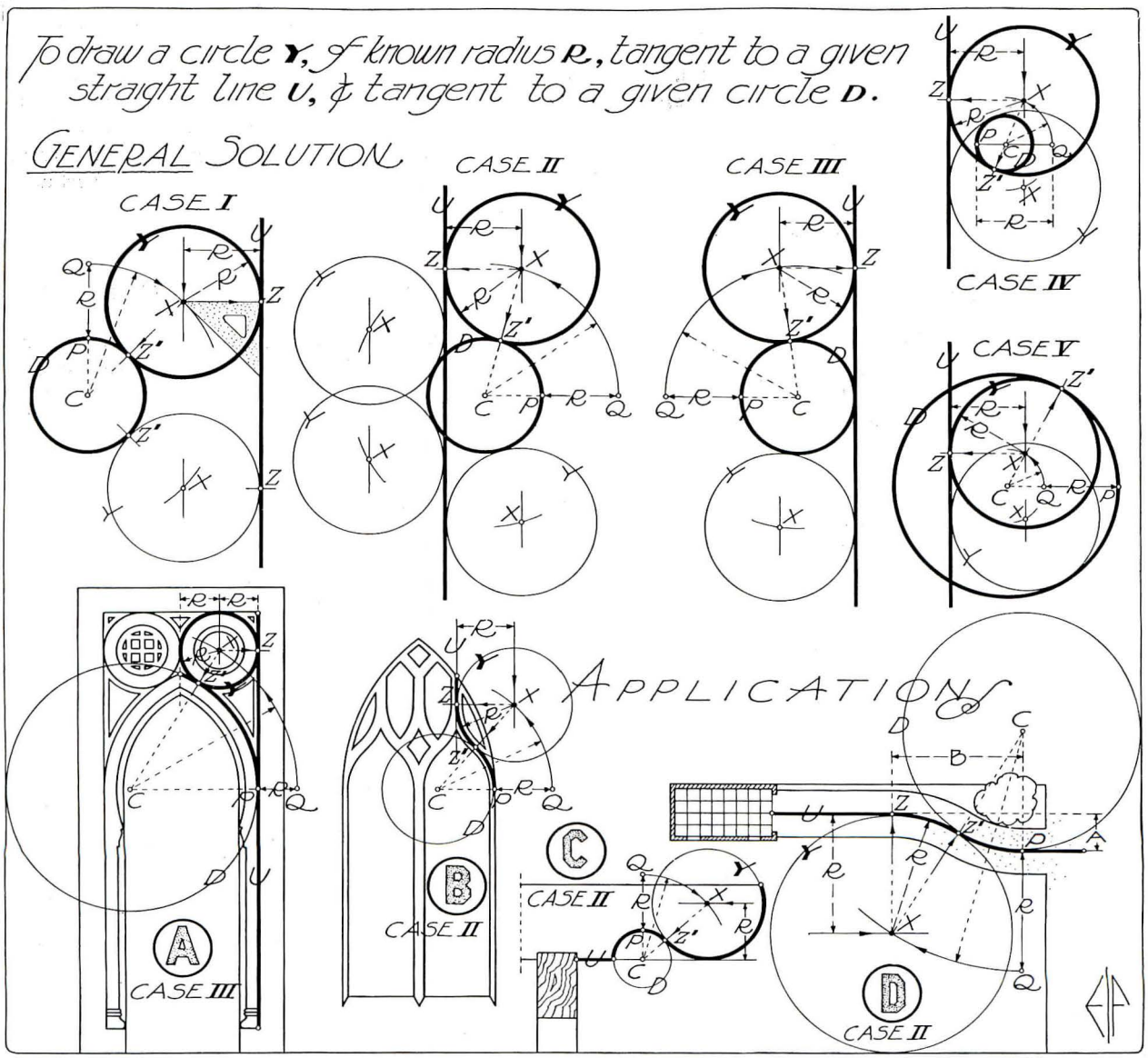


FIGURE 178

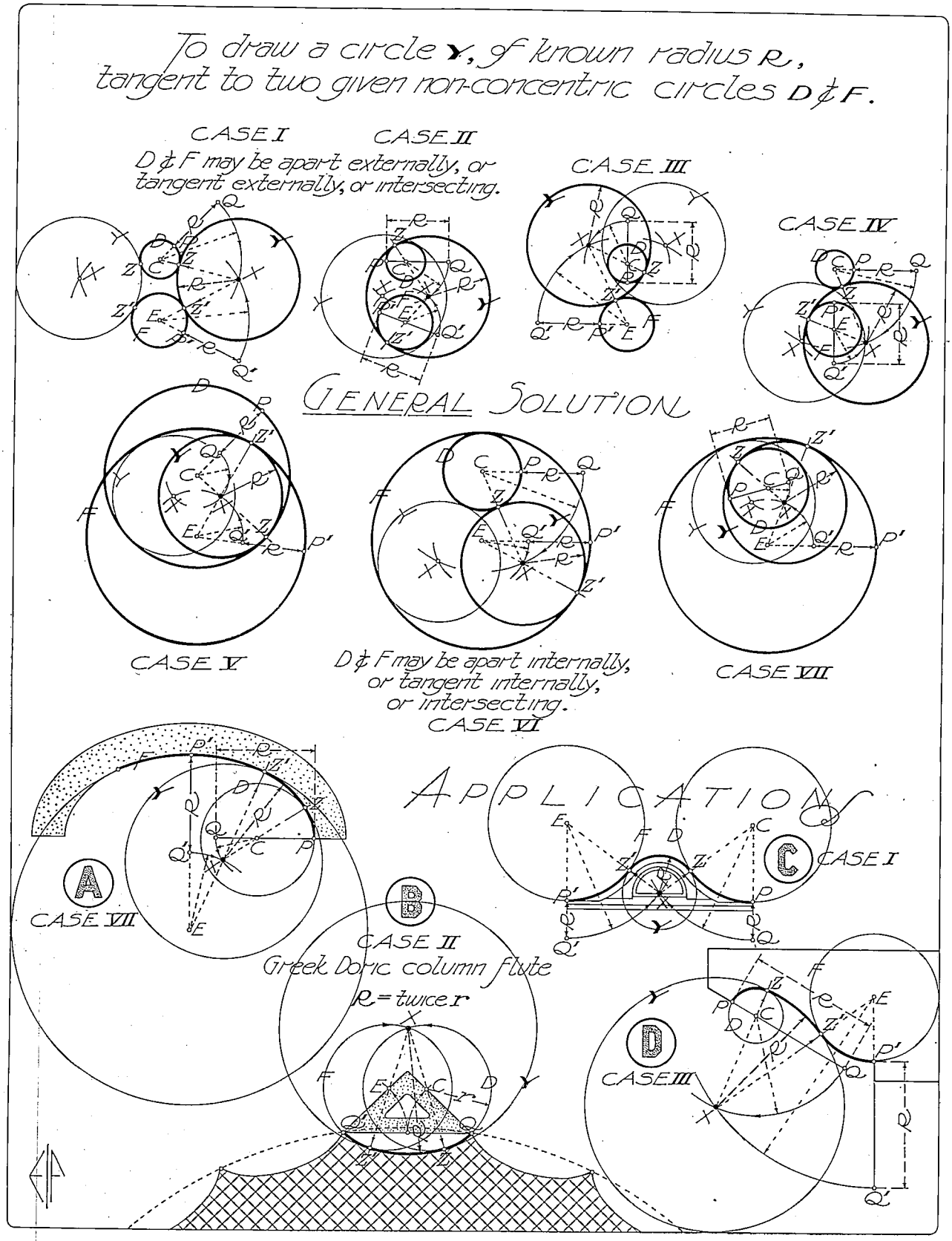

To draw a circle Y, of known radius R, tangent to two given non-concentric circles D & F.
CASE I
CASE II
D & F may be apart externally, or tangent externally, or intersecting.
CASE III
CASE IV
GENERAL SOLUTION
CASE V
D & F may be apart internally, or tangent internally, or intersecting.
CASE VI
CASE VII
APPLICATION
A
CASE VII
B
CASE II
Greek Doric column flute
R = twice r
C
CASE I
D
CASE III

FIGURE 179

baluster plus the lesser straight haunch of the spandrel. For, if the total height A is a fixed dimension, then the length of the baluster is certainly dependent upon the location of point X. At Diagram "C," a semicircular arched ceiling is quickly placed in its highest possible position between vertical walls and sloping roof. And at Diagram "D," a circular iron stairway, of stock dimensions, becomes snugly fitted into the angle between adjacent walls.

Figure 178:

Under the stated conditions, the position of X must here be such that it shall be distant R from both U and D. Hence, draw a line parallel with U, at the perpendicular distance R therefrom. Next, on any convenient line through C, make PQ equal R. Then, from center C, and with radius CQ, revolve Q to cross the other locus at X. The tangent points, Z and Z', can then be definitely located if desirable. Under certain conditions that fix the relative size of the given and required circles, it is possible to draw eight circles, each of which will satisfy this stated *general* problem. This is illustrated at Diagram "3" of Figure 180. However, as has been said, the practical *application* of the problem always indicates which circle, of the number possible, is the one wanted. For this reason, the *general* solution of the problem always appears more involved than any particular application of same, as the drawings in this Part bear evidence. In the applied problem at Diagram "A," of Figure 178, R equals half the known rectangular distance from U to the center line of the arch; and D is the given curved line

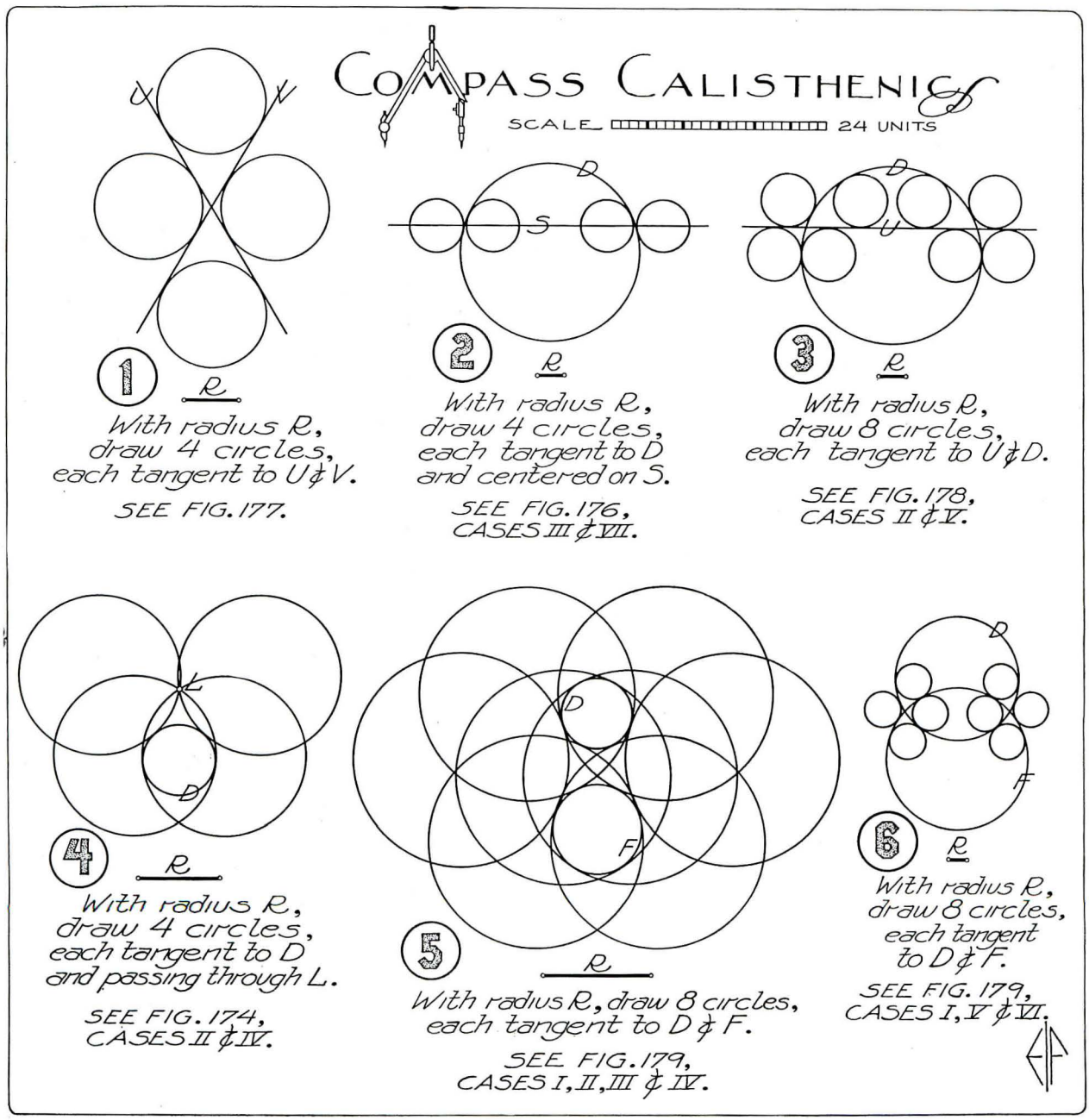


FIGURE 180

of the extrados that *Y* must just touch. Since *U* is here tangent to *D*, this classifies under Case III of the *general* solution. However, as in all problems herein presented, the classification is of no actual use except as a convenient means of avoiding the confusion of a single composite solution. For you have undoubtedly noted that the *method* of solution is identical for every case of each stated problem. This is more clearly evident in the applications than it is in the general solution of the problem. But to proceed: at Diagram "B," *R* equals the given radius of *D*, which is *CP;* that is, *both* simple segments of the reversed curve have the same radius. At Diagram "C," *R* is assumed at any likely or suitable radius that will yield a satisfactory completion of the reversed cut on the pergola beam; the amount of overhang being subject thereto rather than definitely fixed beforehand. At Diagram "D," the entrance to the driveway must be offset the distance *A* in order to preserve a desirable tree. At the same time, for conservation of space, the distance *B* must be no greater than necessary. Hence, the center-line radii of the reversed curve of the driveway must each be the minimum consistent with the proper operation of the car in either forward or reverse gear. These considerations fix the given conditions of the problem; namely, *R*, *U*, and *D;* and its solution yields the required curve, as shown.

Figure 179:

Since the unknown *X* must, under the conditions here imposed, lie at the normal distance *R* from both *D* and *F*, the following simple construction at once reveals its location. On any line through *C*, make *PQ* equal *R;* and on any line through *E*, make *P'Q'* equal *R;* then, from centers *C* and *E*, and with the respective radii *CQ* and *EQ'*, cross arcs at *X* as shown. The tangent points *Z* and *Z'* are then readily detectable in the manner diagrammed for each case. And, if your layout has been precise, the required circle *Y*, of radius *R*, centered at *X*, will pass exactly through these pre-located points of tangency. The seven cases of this general solution indicate the wide variety of reversed and compound curves that said combinations will yield. Under a combination of some of these cases, the general solution will materialize eight circles, each one of which will satisfy the stated conditions of the *general* problem. This is illustrated at Diagrams "5" and "6" of Figure 180. In the practical applications of this problem, however, its simplicity of solution becomes manifest. At Diagram "A," of Figure 179, the construction yields a ready means of laying out a 5-centered arch either from known or assumed radii. In either instance, the intermediate arc *ZZ'*, of the circle *Y*, and of radius *R*, will come exactly tangent to the haunch arc *PZ* and to the crown arc *P'Z'*, as clearly indicated. However, this construction should not be confused with the general 5-centered psuedo-elliptic construction hereinafter given in Part 28 which requires no data whatsoever except the span and the height; said referred-to construction being based directly on the properties of a true ellipse, and the three radii and five centers being thereby graphically determined. Nevertheless, the method just set out at Diagram "A," Figure 179, will often "come in handy"—especially in laying out a large scale-detail, or a full-size detail, of a 5-centered arch from the figured dimensions of same taken from the general working drawings. At Diagram "B," a Greek Doric column flute is quickly and accurately cross-sectioned from the three centers found as indicated. At Diagram "C," an "eyebrow" lacking a dimensioned height, but with the width and radii figured, is easily detailed as shown. And at Diagram "D," an application is given that should be sufficiently suggestive of all manner of ways in which the same construction can be variously utilized. As in all problems of this nature, the various radii may either be actually "known" or merely *definitely assumed.*

Figure 180:

Just a few "X-ercises"—compass calisthenics—practice in manipulation and technique. Work them out at larger scale in accordance with the simple and basic principles of circle-construction herein shown.

Figure 181:

Here are the answers to all the *dimensioning problems* heretofore set out in *PART 18* at *FIGURE 169*. How do you rate as a "draftsmatician" now?

Well, from "here on out" it's mostly graphics, but special dimensioning data pertinent to particular cases will be recorded along with the graphical constructions. Obviously, where the *radius* is a given condition, as in the problems of Part 19, herewith, the *chief dimension* is already known.

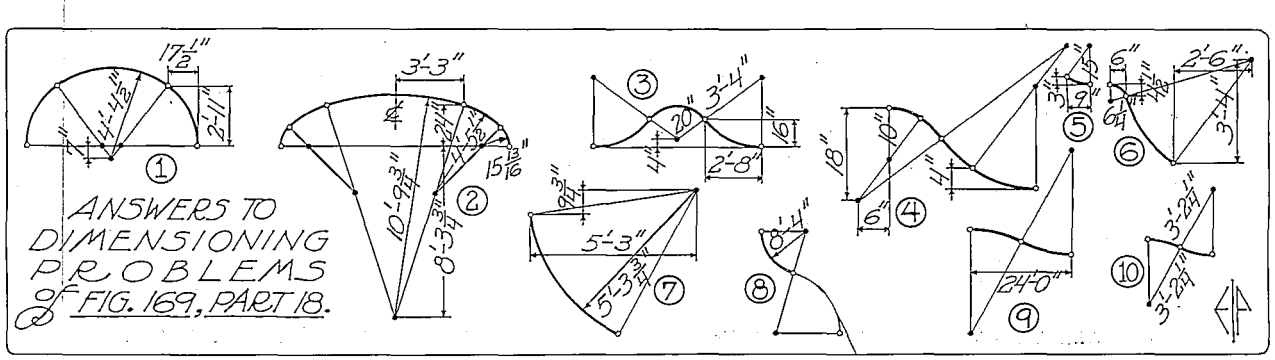
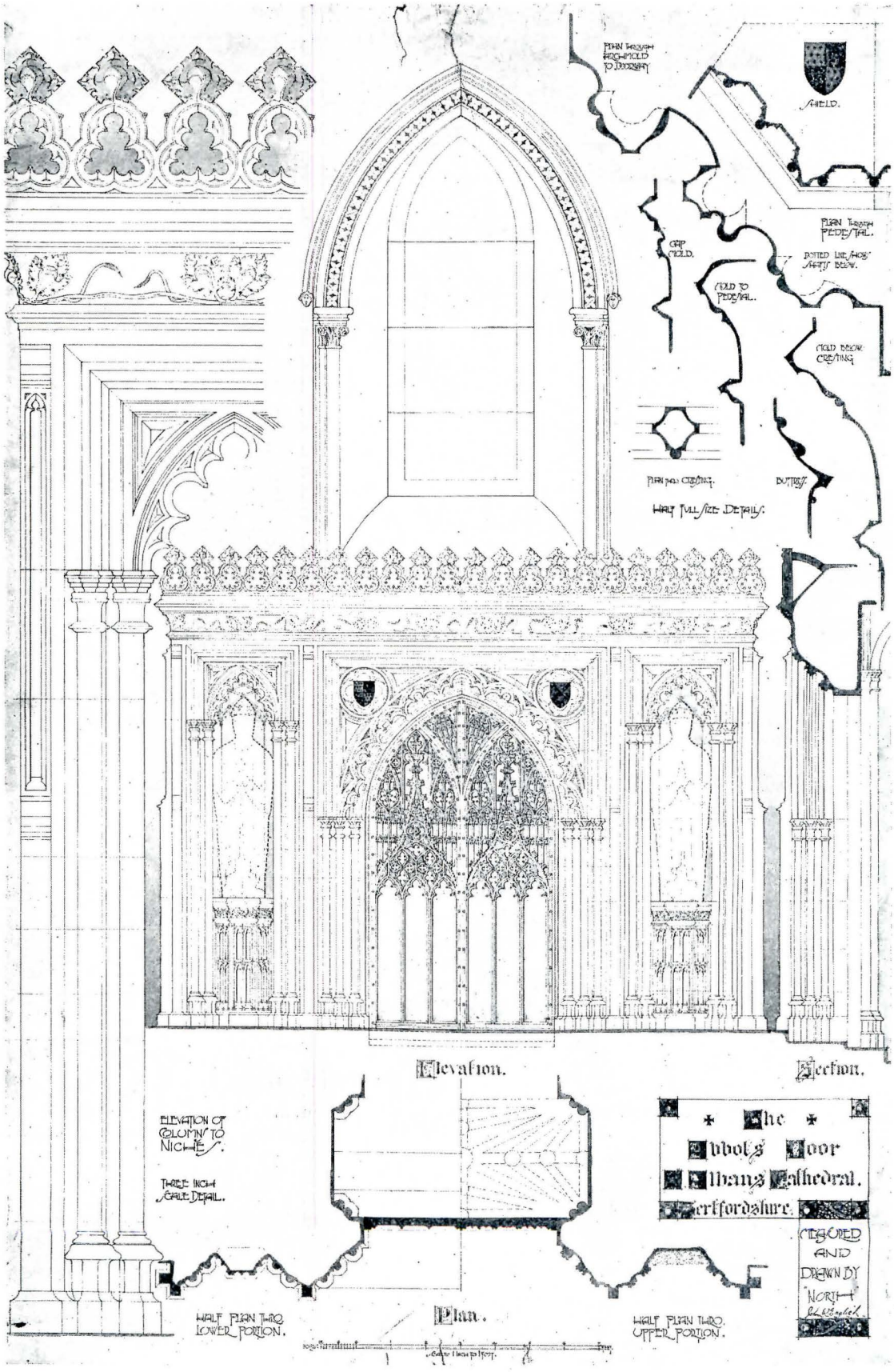
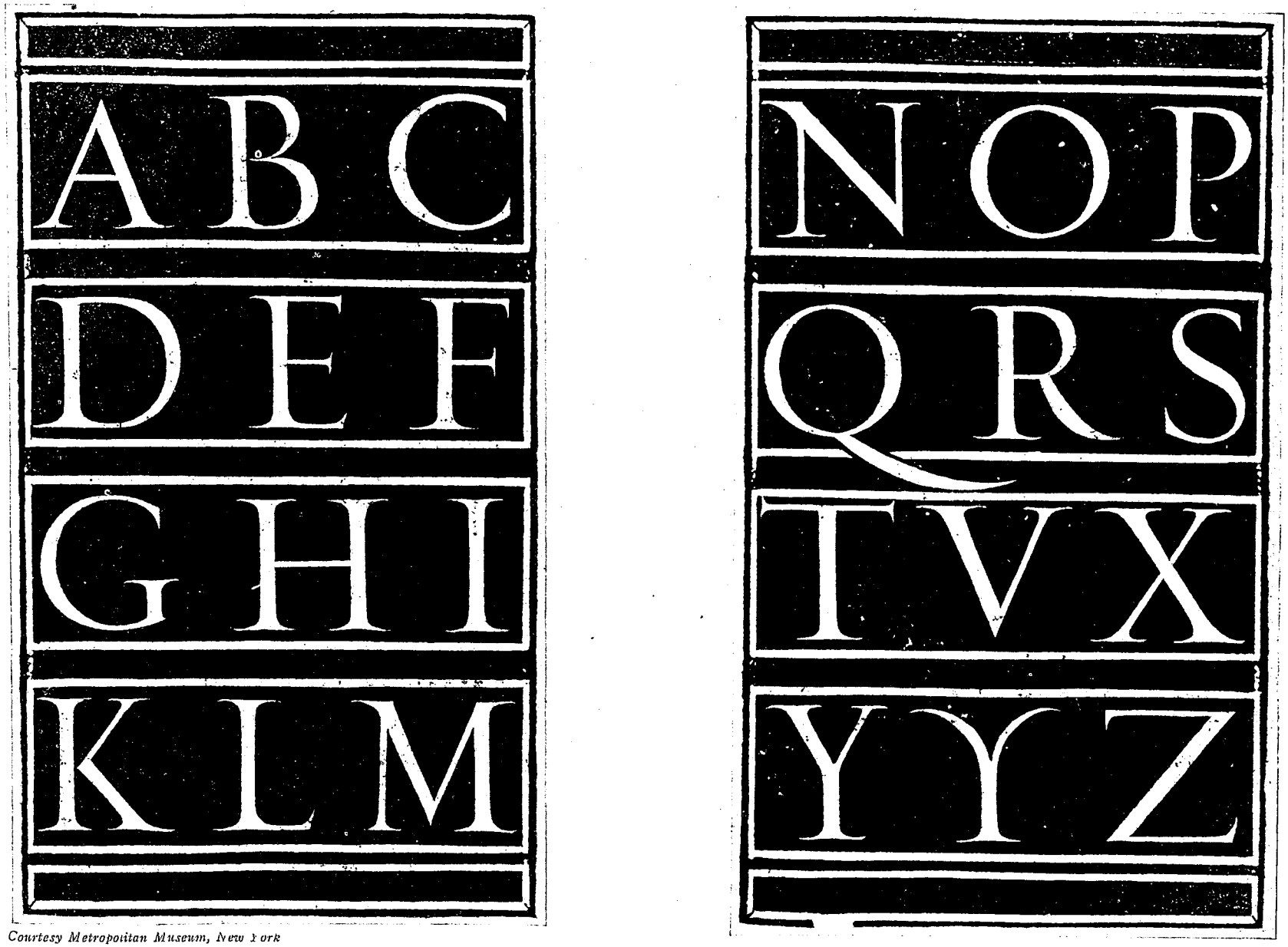


FIGURE 181



THE ABBOT'S DOOR, ST. ALBANS CATHEDRAL—MEASURED AND DRAWN BY JOHN W. ENGLISH

Size of original, 25¾" x 39½"

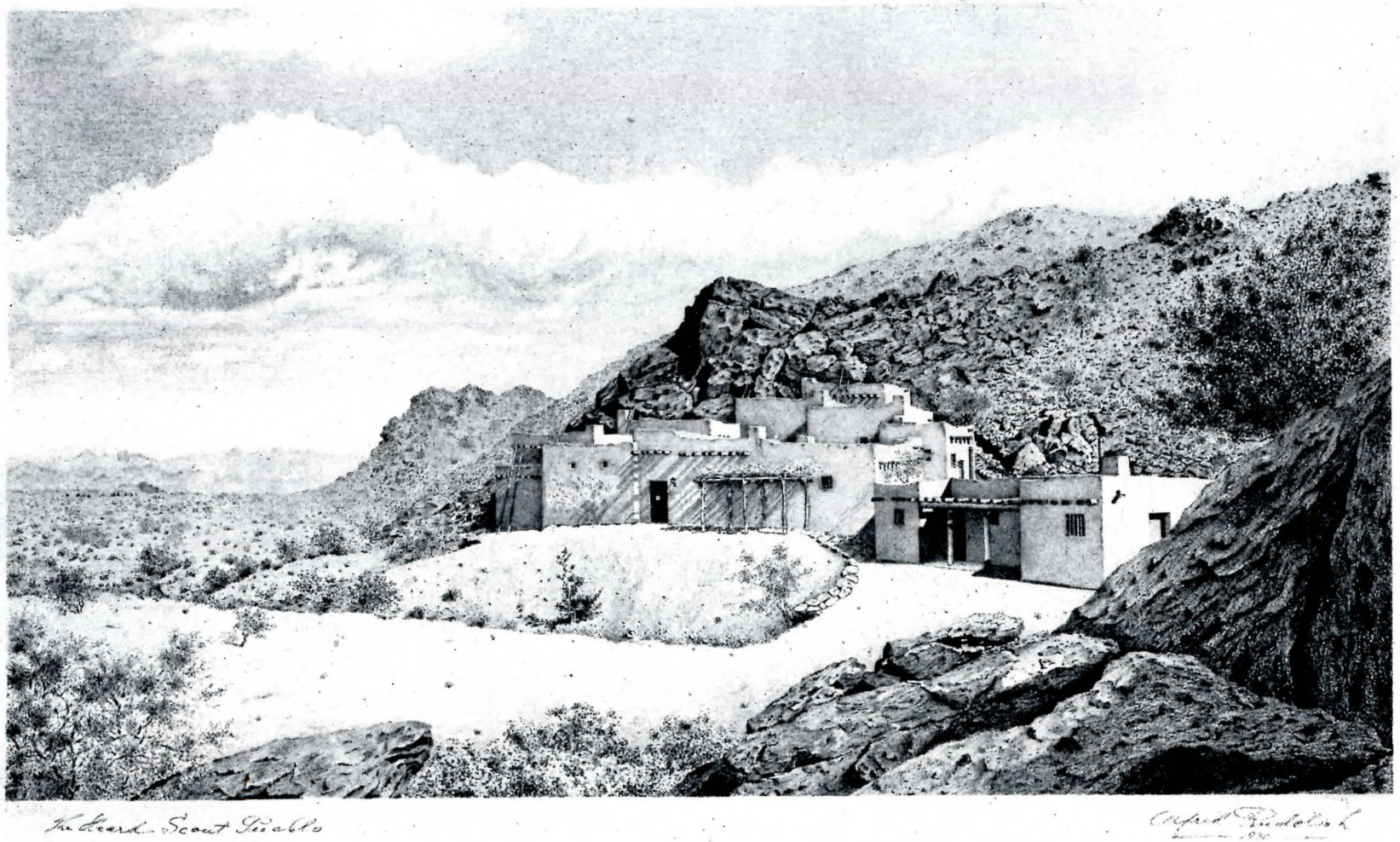


Courtesy Metropolitan Museum, New York

A FINE ROMAN ALPHABET FROM "IL MODO DE TEMPERARE LE PENNE," BY LUDOVICO VICENTINO—ROME, 1523

PENCIL POINTS FOR NOVEMBER, 1931
VOLUME XII NUMBER 11

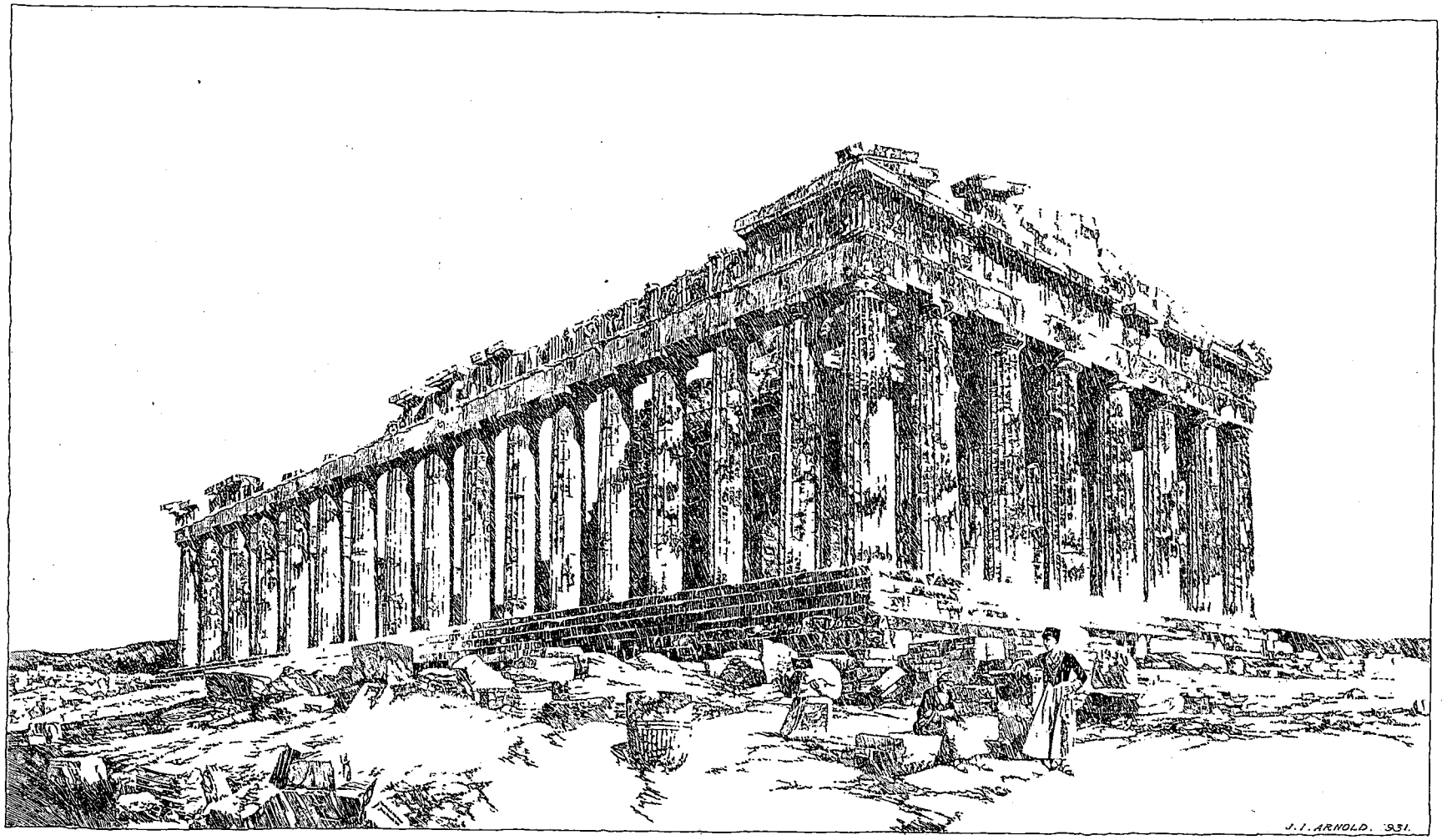
This example of lettering is from one of the old "writing books" which were common in every country in Western Europe in the 15th and 16th centuries. The plates in these books were printed intaglio from copper engravings prepared by leading penmen and scribes as models to be followed by their students or apprentices. Each volume, in general, covered all styles of lettering and writing. This particular plate, together with a number of others, will be included in Egon Weiss' forthcoming book on "The Design of Lettering."



THE HEARD SCOUT PUEBLO—PENCIL DRAWING BY ALFRED RUDOLPH

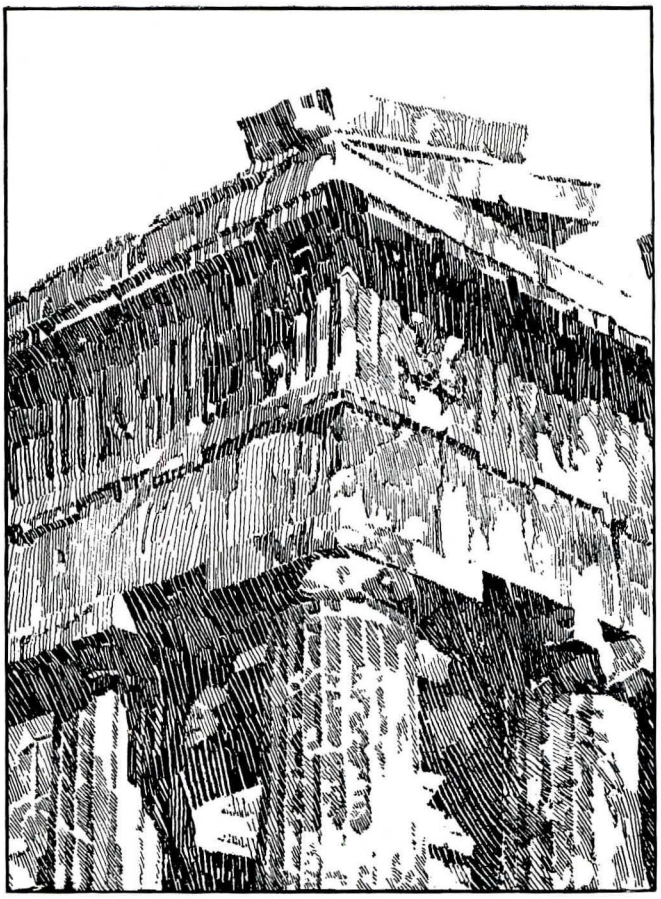
PENCIL POINTS FOR NOVEMBER, 1931
VOLUME XII NUMBER 11

This extremely skilful pencil drawing is by the same artist whose drawing, "The Sentinel," appeared in August. It shows an astounding control of the medium and makes use of almost the entire range of values possible with the pencil. Though it is almost photographic in detail, this detail does not distract attention from the composition as a whole.



THE PARTHENON IN PROCESS OF RESTORATION

FROM A PEN-AND-INK DRAWING BY JAMES IRZA ARNOLD

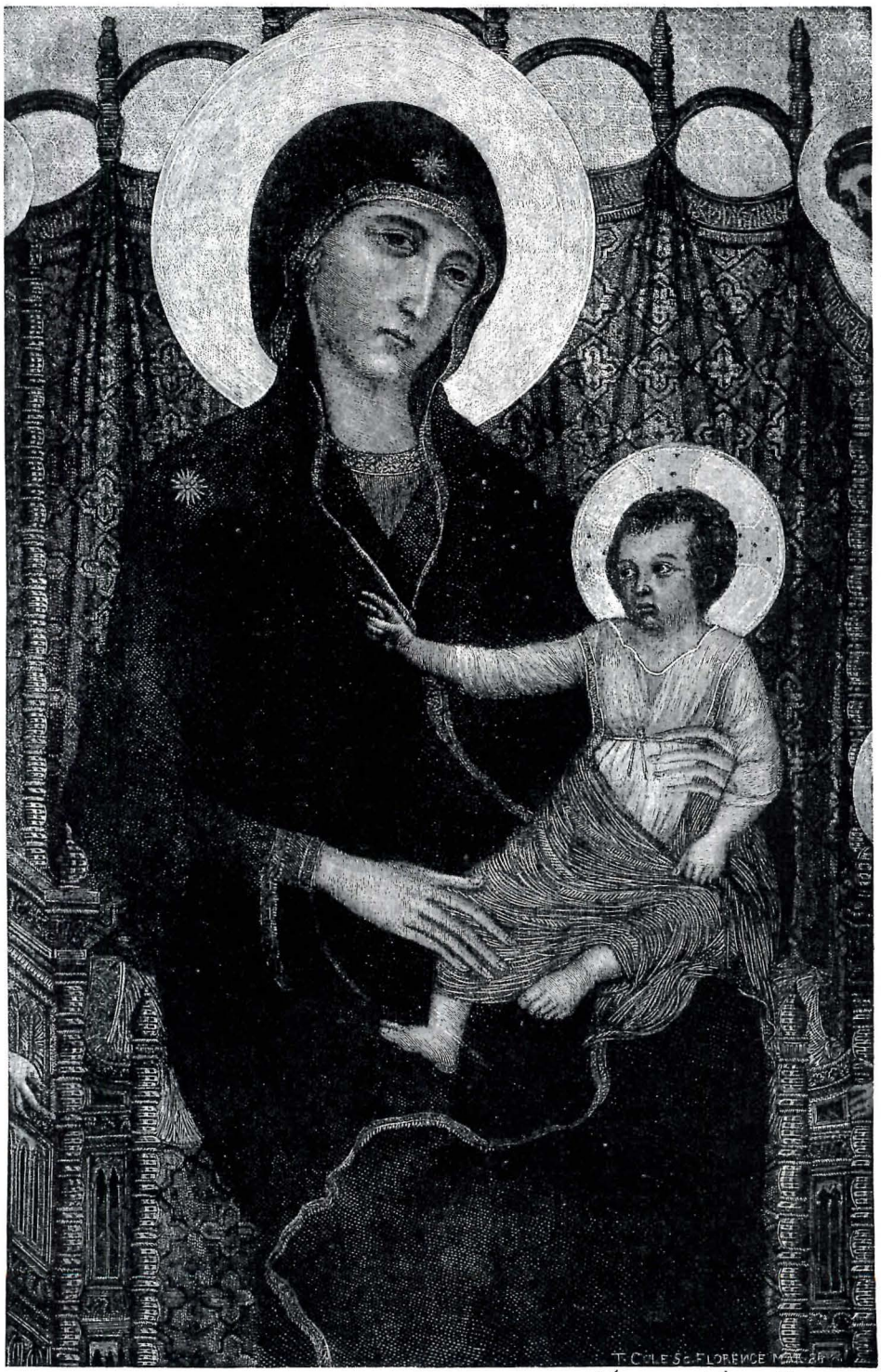


DETAIL AT EXACT ORIGINAL SIZE

PENCIL POINTS FOR NOVEMBER, 1931

VOLUME XII NUMBER 11

This plate shows a beautiful example of pen-and-ink drawing by James Irza Arnold, whose work in this medium formed the subject of an article in our November, 1930, issue. The detail above shows the technique clearly. The original drawing measured 25¾" x 14¾".



Courtesy "The Old Print Shop, Inc."

Timothy Cole

FROM A WOOD ENGRAVING BY TIMOTHY COLE

REPRODUCED AT THE EXACT SIZE OF THE ORIGINAL

PENCIL POINTS FOR NOVEMBER, 1931

VOLUME XII NUMBER 11

This engraving by Timothy Cole was made from the "Madonna and Child," which is attributed to Giovanni Cimabue and hangs in the Rucellai Chapel, Church of Santa Maria Novella, Florence. Of Mr. Cole's engraving one hundred and twenty-five impressions were printed by hand from the original blocks in 1892 by J. C. Bauer, a professional proof-printer. One of the prints is included in the memorial exhibition of Mr. Cole's work which is being shown at the Brooklyn [New York] Museum until November 10th.

Misadventures of a Draftsman

4—Nemesis Runs Amuck

By George H. Allen

A white puff of smoke disappeared on the horizon and a faint shrill whistle died away into the intense heat and silence. Only an empty ice cream box lying on the platform gave evidence that a train had come and gone.

I looked up at the sign, whose faded brown letters spelled out LAKE FOREST, and scrutinized again the newspaper I held, which was folded up in a small roll. There was one item bracketed in bold strokes with a heavy pencil. It read:

> WANTED—Architect experienced in detail and design with future for partnership. Apply in person 2815 Wyandote Road, Lake Forest, Pa.

This advertisement had appeared in the paper of the day before and had immediately caught my eye. It sounded so attractive that I lost no time in answering it —in person. For some time now, I had been working in the city but all the while I had been very restless to get into a smaller and more intimate office: one that had a definite future—and perhaps a partnership as the *ultima thule*.

And then again it was summer, which might have had something to do with it. It was about the time of the year that the young man in the city has that nostalgic urge to be out in the green fields. He begins to dream of the perfumed honeysuckle, mounded vistas of privet hedge, the lilt of the robin and the croaking of the bullfrogs down in the meadows—and in the evening, the fireflies blinking in the darkness, over a field of clover, like crystal clear stars.

A colored porter sound asleep on some crates was the sole visible evidence of life. The town actually seemed to bake under the scorching sun, which shone high in the cloudless sky. It glared at Lake Forest, and Lake Forest, seemingly forever bogged in lethargy, yawned back. The business center comprised the station, a taxi stand, and a small bank. In the middle of this group was the "square," a small green plot that was kept spotlessly clean. There was a fountain, out of which spurted a misty spray, reflecting the glittering brilliancy of the sun's rays. The main street was lined on both sides with small and exclusive shops that, oddly, didn't look supercilious in their setting.

Almost always, when you alight from a train at any suburban town you will see the shabbier side first—a mediocre station or a group of run-down stores with the inevitable "Quick Lunch," whose greasy windows display week-old posters of some dance to be given at the local firehouse.

Lake Forest was different, you sensed that immediately. It had the appearance of being correct; it stood alone. The unostentatious fountain, the delightful character of the buildings, and the polite taxi drivers, so unlike their noisy and blatant brethren of the city, set it above the average.

Sleek, smooth-gliding limousines, with smartly tailored chauffeurs, met the trains in the evenings and transported their notable array of financiers and moneyed despots over the picturesque roads, vermiculating through the dense woods and finally winding up pebbled driveways, to stop under the brilliantly lighted *porte-cochères* of their masters' estates. For the countryside abounded in stately mansions and picturesque villas, the homes of country gentlemen. Those who migrated here wanted a home out in the country where their warmth should come from a log fire, where their water might be drawn from an open well, and—as if to flee completely from the sweep of "modernism"—their homes lit by the tallow candle.

But, to return to my story, it was on a hot day in July that I found myself on the platform, mildly contemplating the scene. Without more ado, I engaged a taxi, gave the driver the address on Wyandote Road, and arrived there in about ten minutes. Paying him, I got out and walked up the flagstone walk which wound up to the entrance of a low-lying cottage, miniature in size but exuding a personality all its own. An immense stone chimney flanked one end, terminating a long rambling roof built of thick-butt slate shingles laid in a rambling fashion. Over the door a neatly lettered sign suspended from a wrought iron bracket swung in the breeze. It read:

Frederick Alwyn Spence
Architect

Walking in, I found myself in a room of generous proportions. Around the walls were framed renderings of what I supposed was work that he had designed, while at one side was a low iron railing which divided a space off for his secretary. She was busy typing, but she looked up and asked whom I wished to see. I replied that I would like to have an interview with Mr. Spence concerning his advertisement.

"Oh, yes, just a minute," she replied, and disappeared through a door. After a short wait she came out again and beckoned me to go right in. On entering, I discovered a stout man with a florid face, sitting behind a long mahogany desk. He was wearing a fuzzy, brown tweed golf suit while his affable smile and "cocksure" manner seemed to stamp him to me as a high-pressure salesman. But that was only my first impression. I could have easily been wrong and so immediately discarded this thought. He motioned for me to sit down and proferred me an imported cigarette, lighting it for me from a chromiumed gadget that must have cost quite a sum. After pulling myself together I broached the object of my visit and volubly told him about everything there was to tell. I expressed my willingness to work hard if there was a possibility of an opportunity affording itself here. He was silent for quite awhile when he then inquired what salary I expected, and I gave him a figure.

"That's all right," said he, "and if you can handle the work, the job's yours. I am swamped with work and while I have a man with me now, I have decided to take on one of ability who can produce perspective sketches quickly, and,

of course, I want him well founded in design. I'll be out most of the time so it will be necessary for him to carry on the general routine work of the office and other matters that might come up."

"That's fine, I'll consider it closed then," I readily replied.

"Good. You give notice and let me know when you'll be coming here. Oh yes, another thing, incidentally you'll be getting more money than the young man I have with me now. I would rather that he didn't know of it, so let's do this. I will give you a check for the same amount as he is getting and a—we'll say bonus—at the end of the week to make up for the difference. Is that agreeable to you?"

Now I was a firm believer that good ethics should be invariably followed in the architectural profession. It is one of integrity—one where the architect is intrusted with a certain amount of authority and looked upon as being a person of unquestionable character. However, this matter seemed to me to be harmless enough, so I told him I guessed it was all right as far as I was concerned.

"And by the way, Reynolds, you had better bring another man along with you. I'll pay him fifty a week, he can help you clean up the working drawings. I'm negotiating at present for a small office up in Meadowbrook and in three or four weeks I'll send you up there to take charge of it for me."

"That's fine, Mr. Spence," I said, "I know just the man you're looking for and I can get him up here in a week."

I finally said goodbye and caught the next train back to town. All the way, in my mind, was a cosmic fantasy of branch offices, perspective sketches, and, as he vaguely hinted, a partnership in the business!

I brought up Al Sibley with me. He was dissatisfied with the work he was doing, checking steel for a small school that some politicians were putting up for their children out in Overbrook. He was only too glad to pull out and come up to Lake Forest with me, so we moved up in very short order. We sailed right in and for two weeks I did nothing but make perspective sketches while Sibley and Jack, who was the other chap, busied themselves on two small houses, which was all that Spence had ready for us.

At the end of the sixth week things began to take a turn —for the worse. We came in, Sib and I, one Monday morning but Jack didn't show up all that day. We discovered later that he was let out but we didn't hear any more about it so it was gradually forgotten since we began to have our own troubles to worry about. We felt sorry for him, however, as things had been slowing down outside and we imagined he would have a pretty tough time getting located somewhere else.

The two houses were finished long ago and no work had come into the office since. Then we inadvertently discovered the boss had been taking my perspective sketches around to different real estate developers, with a view to interesting their clients with them. Sib and myself were disgusted. Then we found that he wasn't even registered with the State, not to mention the A.I.A., so we soon realized that instead of working for a legitimate person, we were being victimized by a wolf in sheep's clothing.

The whole affair came to an abrupt head, when, for two weeks in succession, we failed to get any salary at all. When we mentioned it to Spence, he apologetically replied that he was expecting a check from one of his clients "any day now," and that it would help him considerably if we could wait a little longer.

This happened several times again until one night we held a powwow in our room. Sib expressed his belief that there was a cockroach in the works, so we decided to take the bull by the horns and drop in at the boss's home the next evening and have a definite understanding. It was only too apparent that if he had to depend on a client's check to pay our salary, he was in no position to keep us on.

Approaching the house which, ironically enough, was an elaborate and pretentious affair, I rang the bell. A maid ushered us into the library and very shortly Spence came in, somewhat mollified to see us plopped down on his biggest sofa. He must have sensed the nature of our visit because he was very diffident and acted as though he wanted to cut short the impromptu visit as soon as possible.

"Mr. Spence," I spoke up, "Sibley and I feel that things ought to be straightened out now before they get any worse."

"Well, if it's salaries you're speaking about, I'm afraid I'll have to ask you boys to wait a little bit longer," he firmly replied.

"That's all right for you, but we think you should be in a position to pay us our salaries when we need the money," Sibley interjected.

"For various reasons I can't, and what's more I told you . . . . ," he stormed.

"Here—my, what's all this about, Frederick?" said his wife who had entered the room unnoticed. "I could hear you clear from the other side of the house."

"Well—you see dear—we—" he replied, when we interrupted him and told her everything briefly.

Unexpectedly she went over to the desk and wrote out a check for us in full. He offered some remonstrance but she brushed him aside and handed it to us. After gratefully thanking her, we went back to our rooms to pack. Things were bad—but they could be worse.

* * * * *

We were sprawled out in the day coach. The cool air, heavily laden with the odor of sweet grass, was gently blowing in upon us through the open window. Sib was lazily watching the wooded countryside roll by us, while I was dozing in a contented reverie. Finally he spoke up:

"Well, what have you got lined up?"

"Nothing," drowsily.

Silence for a long while, then—

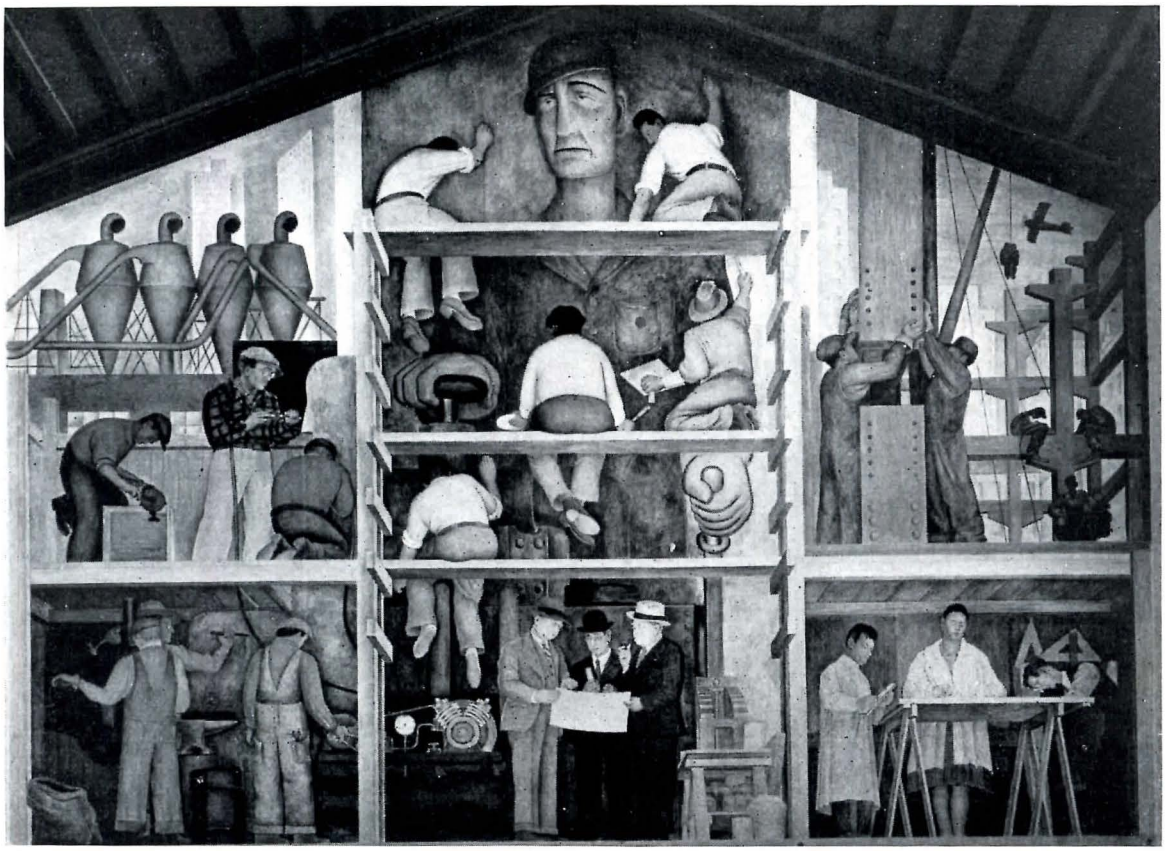
"Think we'll land something?" he asked.

"Yeah, I guess so."

"Sure, there's nothing to worry about," he returned.

I ruminated on this for some time until I began to feel drowsy again . . . . . .

You see, a draftsman is that peculiar *rara avis* that never worries about anything too seriously.



Fresco Painting by Diego Rivera in California School of Fine Arts

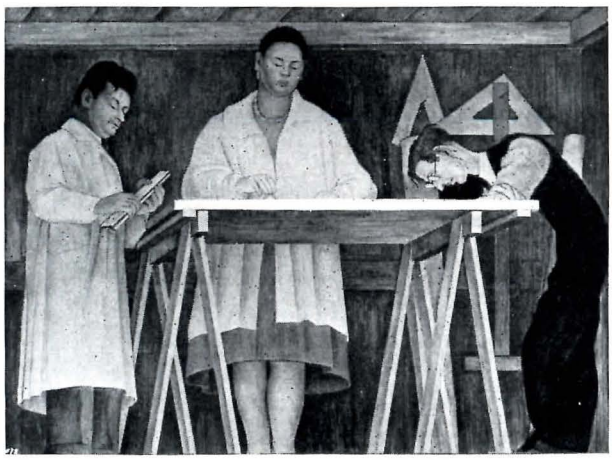
The fresco painting recently completed by Diego Rivera for the San Francisco Art Association at the California School of Fine Arts was made possible through the generosity of William L. Gerstle, President of the Board of Directors of the San Francisco Art Association. Mr. Rivera conceived the idea of epitomizing and setting forth the inspiration which he received from viewing the lively activities in the arts and commerce of this country. His conception of the treatment of this wall was the making of a picture representing a great scaffolding upon which artists were at work painting the figure of a symbolical American workman in the center. He used the natural subdivisons of the scaffolding to ingeniously make the necessary subdivisions of panels. These panels represent the various arts, and the suggestion of industry.

In the lower central panel is a group representing architecture. The left figure is Timothy Pflueger, and the right, Arthur Brown, Jr., both architects. The central figure is William L. Gerstle portrayed conferring with the other two men on architectural plans. Immediately above, Diego Rivera himself, aided by his assistants, is portrayed at work on a great painting of the symbolical figure of an American workman, which extends the entire height of the fresco, as may be seen in the illustration.

At the top left, Ralph Stackpole is shown working at his sculpture. Immediately below is a group of men working on the same piece of sculpture. The painting also includes the tools and apparatus necessary for this work.

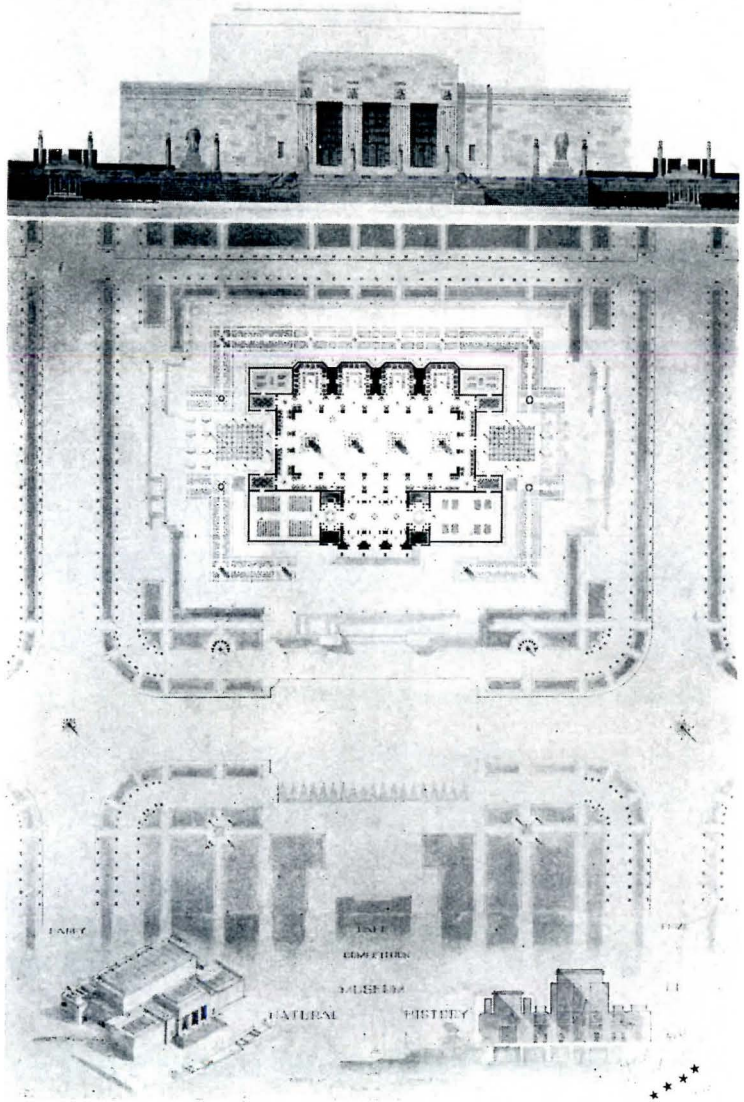
The upper right gives a vista of the framework of a great skyscraper being erected, and below is a view of a drafting room with architectural draftsmen at work on plans. This panel is shown at a larger size at the bottom of the page.

This is a monumental piece of work. The topmost part is forty-five feet from the ground and it is thirty-five feet wide. The base of the fresco is eight feet from the floor.

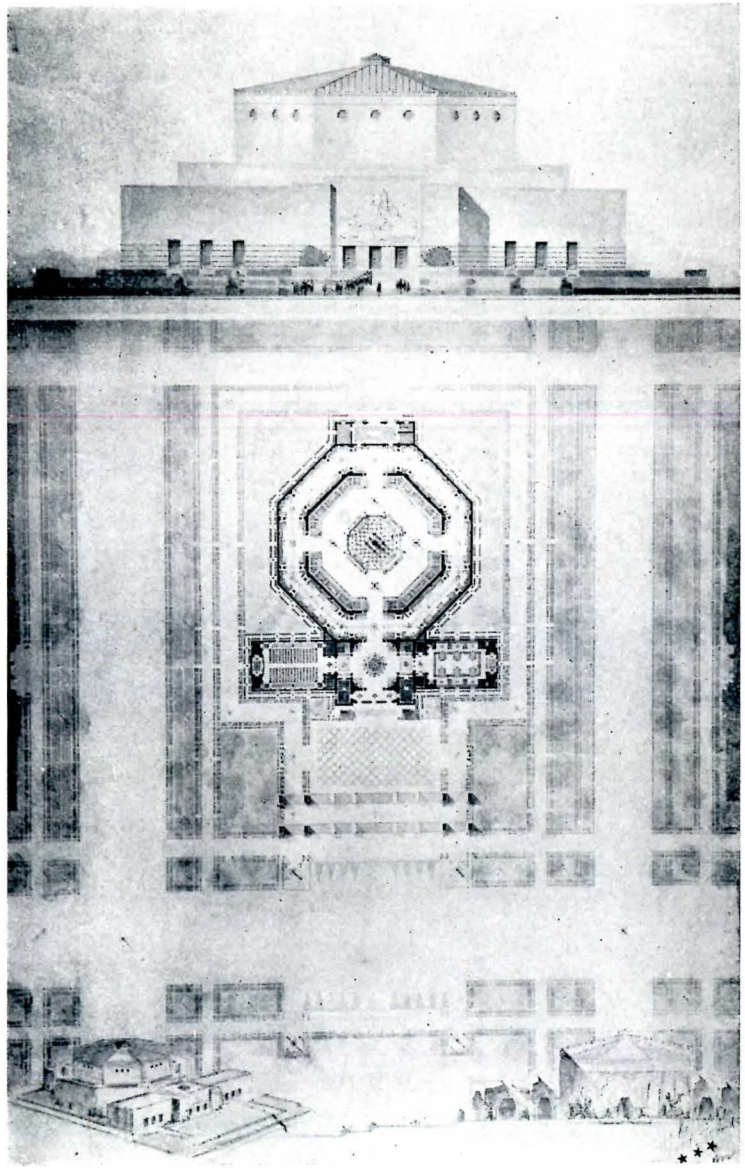


DETAIL OF THE FRESCO SHOWN ABOVE

The Board of Directors and members of the San Francisco Art Association tendered a reception to Mr. and Mrs. Gerstle on the afternoon of August 11th, from three to five o'clock on the occasion of the presentation and unveiling of this mural. In conjunction with the unveiling there was an exhibition of the studies made by Mr. Rivera for this painting and that in the San Francisco Stock Exchange.



FIRST PRIZE DESIGN BY MAURICE SCHULZINGER



SECOND PRIZE DESIGN BY CARL SCHMUELLING

HARRY HAKE COMPETITION FOR "A MUSEUM OF NATURAL HISTORY"—UNIVERSITY OF CINCINNATI

HARRY HAKE AWARDS PRIZES IN COMPETITION

Awards were recently made by Harry Hake, Cincinnati architect, to Maurice Schulzinger, who won a prize of $150, and to Carl Schmuelling, who received a second prize of $50. The Harry Hake Prizes are given annually to the senior class, Department of Architecture, University of Cincinnati. The problem of design this year was a *Museum of Natural History* for Cincinnati. The site is 350 feet wide and 250 feet deep, bounded on two adjacent sides by important streets. There is a minor street and an alley on the other two sides. The building should not occupy the entire site but should leave room for terraces for the display of outdoor exhibits. The requirements were as follows: entrance lobby; main exhibition hall, for the life-size display of animals; four galleries for display of geology, botany, zoology, and anthropology; a small library; a small auditorium; offices for curator, and small workrooms.

The drawings opposite show the winning designs. The size of the original drawings is 40″ x 60″.

The problem was given under the instruction of Professors Pickering and Kelsey, Department of Architecture, University of Cincinnati.

THE ARCHITECTS CLUB OF CHICAGO

Members of the Architects Club took their golf seriously this year. Nine afternoon outings were held at intervals of two weeks during the summer culminating in the final tournament at Columbian Country Club on Sept. 24th. The tournament was a knockout. 114 members and guests turned out and competed with varying degrees of success for the 114 prizes collected by Abe Erickson, the efficient and tactful chairman of the prize committee. An innovation was tried out this year in the form of match play to decide the club championship. Harry Bishop won the cup for the second successive year, defeating J. O. Merrill in the final match. Carl Heimbrodt won the Class B championship in the final match with R. J. McLaren.

An account of the golf season would not be complete without mention of the annual trek to Browns Lake, Wisconsin, which was held on Friday, August 21st. More than twenty members took advantage of this opportunity for two days of golf, fishing, swimming, and indoor sports organized by Art Woodbridge. Six of the real golfing enthusiasts were there for a third day on Sunday.

Since the Architects Club Golf Committee has fostered this activity it has grown from a handful of men participating several years ago until about one-third of the club members are now actively interested.

Alfred Hoyt Granger, President of the Architects Club, has just returned from Europe. Mr. Granger has been traveling and studying in Europe for over a year, concentrating upon Vienna and tracing down the source of so-called modern architecture. During his absence, the club activities have been handled by R. J. McLaren, architect, together with the board of directors.

A very new and important feature which is under consideration at the Architects Club is the development and planning of modern tenement buildings along a unified city plan. Henry K. Holsman, Architect, is responsible for this idea and if the project gets sufficient support to make it a definite feature, details will be developed under his guidance.

In addition to the regular activities at the Club, which will include interesting speakers, smokers, and social events, the monthly meetings of the American Institute of Architects, the Illinois Society of Architects, and the Architectural Sketch Club will be held as usual at the Architects Club Building, 1801 Prairie Avenue.

TECH ARCHITECTURAL CLUB OF CHICAGO

The first meeting of the Tech Architectural Club for the year 1931-32, held on September 22, gave momentum to the wheel of coming activities. We are especially fortunate in having C. W. Doll as our new patron. He has been an active member of the club for a number of years. With his inspiring leadership at our helm we are sure to have another successful year.

William T. Hooper, a member of the A.I.A., has been added to the faculty of the Architectural Department. He is associated with Mr. Janusch, engineer, and has designed many large buildings in Chicago and elsewhere.

Louis T. Alexander, the new President of the Club, has arranged to have a number of interesting speakers, prominent in architecture and its allied fields, to give talks at our banquets.

The officers of the Club are: Louis T. Alexander, President; Ben E. Spevacek, Treasurer; Harvey M. Nelson, Acting Secretary. The Club membership drive is headed by Roland Balle, very capable of serving in this capacity.

NEW YORK ARCHITECTURAL CLUB, INC.

At the annual election of officers the following members were elected for a term of one year: Emil Capel, President; M. A. Grisez, 2nd Vice President; E. F. Clapp, 3rd Vice President; A. A. Penfold, 4th Vice President; T. W. Biddle, 5th Vice President; H. Sasch, Executive Director; F. Berger, Treasurer; A. Davoll, Corresponding Sec.; E. V. Sandborgh, Recording Sec.; A. Zaborowski, Sergeant-at-Arms.

C. L. Elliott was elected 1st Vice President. Word was received at the Club that Mr. Elliott had died at Saranac Lake on October 15th. He was connected for many years with the firm of Starret & Van Vleck. The Club deeply regrets his death. Mr. Elliott was a past-president and one of the original incorporators of the Club.

The atelier is again getting under way. There is still room for a few students. If you have a friend looking for a good atelier, just recommend this one. We are going to have a new patron and expect to clean up more prizes than ever before.

Mr. Voyvodick is reviving the Life Class. Are you interested? Sure! Come around to the Clubrooms at 118 East 42nd Street some Tuesday night with fifty cents and draw to your heart's content.

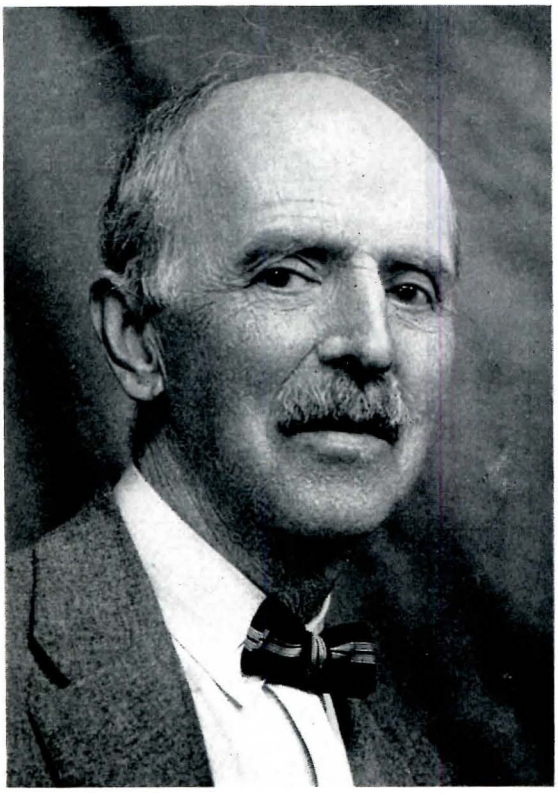
REGARDING COMPETITIONS

Beginning with this issue, we will list each month a number of competitions taking place in various parts of the country which might be of particular interest to unemployed architectural draftsmen. This data will be reprinted from *The Contest World*, a monthly publication devoted to competitions of all kinds. Information pertaining to contests other than those printed below may be obtained by writing to *The Contest World*, P. O. Box 204, Buffalo, New York.

Popular Science Monthly, 381 Fourth Ave., New York, offers $10 for a photograph of landscape. Also $100 in cash prizes for best miniature of a house.

Syracuse American, Syracuse, N. Y., offers $300 in cash prizes for the best coloring of 20 sketches. (Local.)

Eberhard Faber Pencil Company, 37 Greenpoint Ave., Brooklyn, N. Y., offers $50 each month for a suggestion for a new use of their colored pencils; and also $50 for a prize sketch.



DANIEL CHESTER FRENCH

1850-1931

Daniel Chester French, sculptor, died of heart disease at his home in Stockbridge, Massachusetts, on October 7th. He was born of old New England stock on April 20, 1850, in Exeter, New Hampshire, graduating from the Massachusetts Institute of Technology in 1872. He held honorary degrees from Dartmouth, Yale, Harvard, and Columbia.

Lorado Taft says of Mr. French that he was a very dear friend and lovely character.

"He was the dean of American sculptors, loved and respected by them all. I am deeply grieved to hear of his death. He has been a constant encouragement to me.

"He was never satisfied with work just ordinarily done, but instilled in his sculptures poetic qualities that were inspiring."

Mr. French's career as a sculptor started fifty-six years ago when he whittled a frog from a turnip on his father's farm in Concord. Now throughout the United States, in our public buildings and parks, are to be found examples of work by this sculptor. Mr. French's first great work was done in 1875, a statue of the Minute Man, erected at the centennial year of the battle at Lexington and Concord. Although at that time he knew almost nothing of the actual working methods to be followed, Mr. French mastered the technique as he went, completing the work just before he sailed for Florence, Italy, to study his art. Two years later Mr. French returned to the United States and took a studio in New York.

He received a medal at the Paris Salon of 1891 for his large relief, "The Angel of Death Staying the Hand of the Sculptor," a memorial to Martin Milmore, the American sculptor. Many commissions came from the United States Government. President Roosevelt sent him with Frederick Law Olmsted to Panama to make plans for beautifying Balboa.

Mr. French was one of the organizers of the National Arts Commission, was a member from 1910 to 1915 and served as chairman for three years. He was a founder of the American Academy in Rome, and took great interest in the Metropolitan Museum in New York, becoming a trustee in 1904. These latter two were his chief interests outside his work, although he was also identified with the National Sculpture Society as honorary president, the American Academy of Arts and Sciences and the Architectural League of New York.

He was honored twice by France, in 1910 becoming a chevalier of the Legion of Honor, and in 1920 being chosen one of nineteen foreign associate members by the Fine Arts Class of the French Academy.

Among the sculptor's better-known works in New York are the four groups decorating the Custom House representing Europe, Asia, Africa, and America; the statue of Memory in the Metropolitan Museum, and the Alma Mater figure in front of Columbia University Library.

Other works are the statue of John Harvard at Cambridge, the statue of the Republic, which was at the head of the Court of Honor at the Chicago World's Fair; the bronze doors on the Boston Public Library and marble groups for the St. Louis Custom House, the Federal Court House in Philadelphia and the Boston Post Office. Mr. French considered his most satisfactory work to be the idealized figure of a soldier which is standing in a public park in Milton, Mass.

One of Mr. French's last commissions was the George Westinghouse Memorial in Pittsburgh, Pennsylvania. Photographs of this work were published in PENCIL POINTS in November, 1930, on pages 910 and 911.

RALPH LESTER COLTON

1891-1931

Ralph Lester Colton, Philadelphia architect, died of injuries received when the manifold of the marine engine on his yacht exploded at Greenings Island, North East Harbor, Me., on September 8th.

Graduating from the College of the University of Pennsylvania in 1913, he took his degree in Architecture in 1916. He was in the office of his uncle, Horace Wells Sellers, for some time; but on the outbreak of the war enlisted in the U. S. Naval Reserve Force as a Coxswain, refusing to use the many influences that could have obtained a commissioned officer's rank for him. The fact that he left the Service as a Lieutenant (Junior Grade), proves the worth that was in him. His service, after being commissioned, was with the Battleship Division of the Atlantic Fleet based on Hampton Roads.

Returning to Philadelphia after the War, he started his own office, specializing in country residences. His own home, "Harriton," was remodeled from the original first house in Bryn Mawr, Pa., and was a never-ending source of hospitality for his friends. All the charm of the ancient house was retained and the many individual touches of personality and genius that he wove into it only added to its beauty.

He was an athlete in college, winning his letter in both Cross Country and Track; a splendid yachtsman, sailing his own yacht from Maine to Philadelphia; fond of shooting and swimming.

But it is as a friend that he excelled all other qualities save only those of husband and father, for his home life

was perfect and his greatest happiness was shared with his family and friends. Quiet, yet with a delightful sense of humor which shone from his face; strong, yet very gentle; generous, yet never ostentatious; courteous and restrained, almost shy, until he knew a person well and admitted them to that friendship which meant so much to those who knew him best.

He was a member of the American Legion, Varsity Club of the University of Pennsylvania and the Psi Upsilon Fraternity.—*Richard Fairfield Warren.*

MICHIGAN SOCIETY OF ARCHITECTS

The Michigan Society of Architects held its first regular meeting of the fall season on Tuesday evening, October 1.

The dinner, which was held at the Scarab Club, Detroit, was followed by a talk from Professor Wilson T. Orr, memory expert. Alvin E. Harley, chairman of the program committee, introduced the speaker as a man who is an expert, even in his own home town.

"Professor Orr has trained the memories of men in every walk of life—except Architects," said Mr. Harley. "Architects generally want to forget," he continued.

"I have spoken to many groups throughout the land," said Mr. Orr, "but whether it be a convention of caterers in Buffalo or of tailors in Pittsburgh, I find that their interests are largely the same, chiefly how to get more business, to make more money."

While Professor Orr took for his subject "Personality and Profits," he touched on many related subjects. In the discussion which followed great interest was shown by questions from the audience.

"Salesmanship is the habit of getting your own way," said the professor, indicating the part played by personality, adding that the best analysts have determined that the proper expenditure of the business dollar allows 46 cents for sales and distribution.

Of our present educational system Professor Orr believes much improvement could be made. He quoted a current article in which the writer said: "Education can polish a pebble or dull a diamond."

This, he understood to mean that the *average* student could acquire a little polish and the brilliant one could actually be dulled. "No less an authority than Dr. Nicholas Murray Butler has stated," he said, " 'That we are learning more and more about less and less.' "

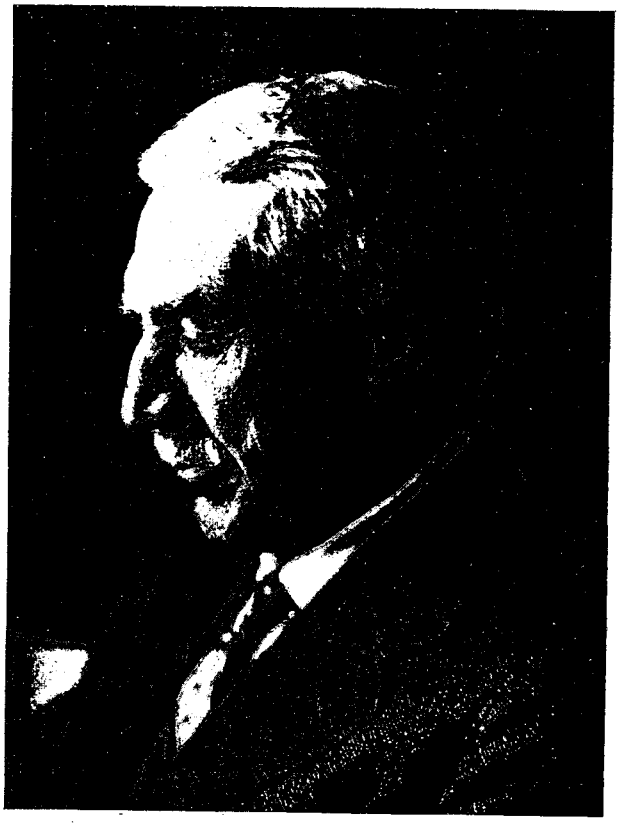
Professor Orr was given a vote of thanks for his interesting talk and Mr. Harley was congratulated on arranging the program.

WOMEN'S ARCHITECTURAL CLUB OF CHICAGO ELECTS OFFICERS

Elizabeth Kimball Nedved, A.I.A., of the architectural firm of Hamilton, Fellows & Nedved, has been elected president of the Women's Architectural Club of Chicago. Mrs. Nedved, wife of Rudolph Nedved, a member of the firm of Hamilton, Fellows & Nedved, succeeds Ruth Perkins as president. Margaret Fairman, who is with Charles Morgan, was elected vice president, succeeding Bertha Yerex Whitman.

Miss Whitman, who is practicing architecture independently, has been selected as the Club's new secretary. Aileen Anderson is the new treasurer. She succeeds Marian Crissey.

The Women's Architectural Club is trying to organize all women architects of the country, with Chicago as the charter chapter and national headquarters.



JULIUS A. SCHWEINFURTH

1858-1931

Julius A. Schweinfurth, Fellow of the American Institute of Architects, passed away suddenly, September 29, 1931, at his home at Wellesley Farms, Massachusetts. He was born in Auburn, N. Y., September 20, 1858, graduated from the public schools of that city, and came to Boston where he worked for several years in the office of Peabody & Stearns. He formed a partnership with his brother, C. F. Schweinfurth in Cleveland, and after practicing there for three years, spent a year in foreign travel and study. On his return in 1886 he again entered the office of Peabody & Stearns where for many years he was the head of their large office force. During that time he made many close friends who still cherish the memory of his kindly help and the inspiration of his enthusiastic love for architecture as a Fine Art.

He was one of the most skillful draftsmen of his day. His drawings and sketches were eagerly scanned and studied as they appeared from time to time in the architectural magazines. A folio of his drawings made during his travels in France, Italy, and Spain, is still in the library of many architects.

In 1895 he established an office of his own, where until the time of his death he had a long and successful career, designing many important buildings not only in Massachusetts but also in the middle west. Among these may be mentioned the High School of Practical Arts and the Archbishop Williams' Municipal Building in Boston, the Pierce Grammar School, Court House and Baptist Church in Brookline, Dormitory Group and Heminway Gymnasium for Wellesley College, Library in Champaign, Illinois, and Private Dwellings. The number and scope of his works bear testimony to his untiring energy and, to the breadth of his genius; in fact he was truly happy only

when creating. A man of the utmost simplicity, he shunned publicity and yet scaled the heights of lofty achievement. His loss will be keenly felt by a large number of associates who bear witness to the untiring quality of his work and character. He never failed to lend a sympathetic ear and open hand to a friend in need. He combined an uncompromising love and adherence to beauty without sacrificing utility and thoroughness in the execution of his work. Justice, tempered with human sympathy, made him in the truest sense a man.

SEVENTH NATIONAL CONFERENCE ON CHURCH ARCHITECTURE

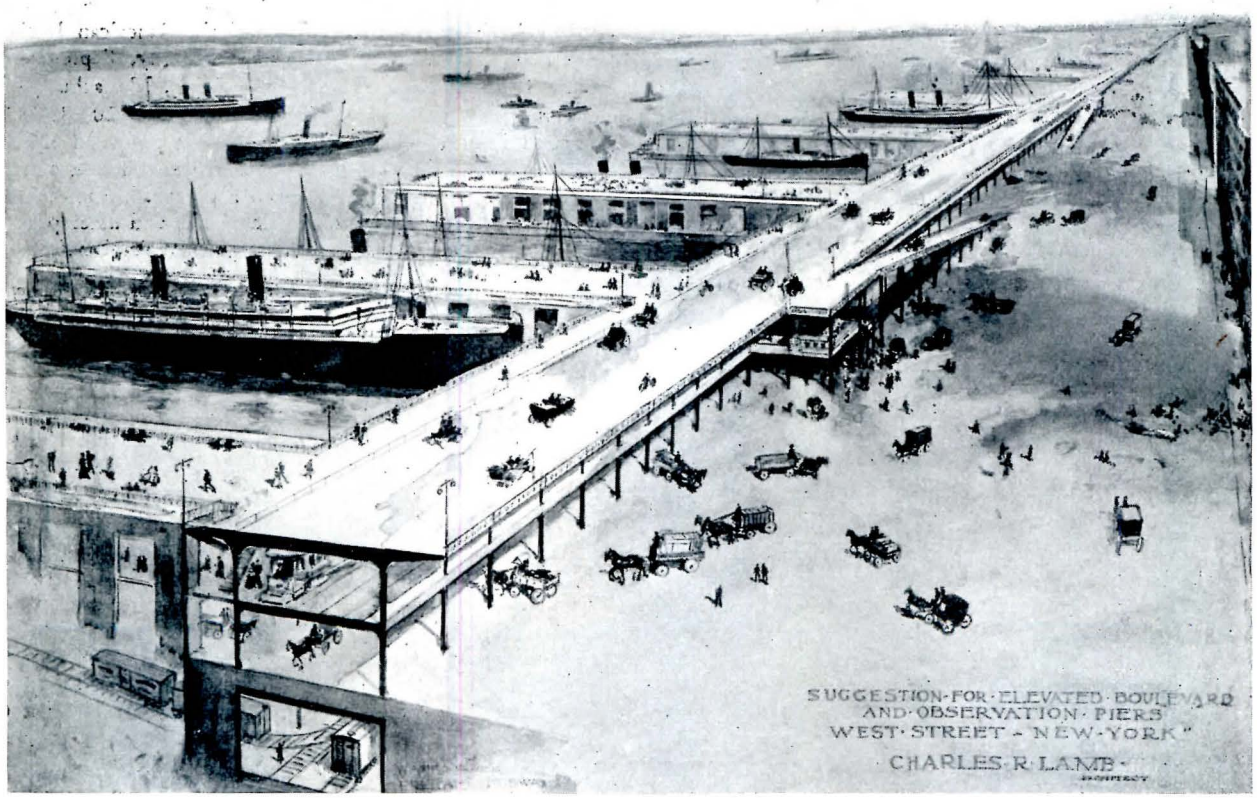
More than a thousand architects, ministers, and churchmen serving on church building committees are expected to attend the sessions of the Seventh National Conference on Church Architecture in the Hotel Pennsylvania, New York, on December 10-12.

This annual conference is conducted jointly by the Associated Departments of Church Architecture and *Christian Herald* magazine. In connection with it there will be an extensive display of manufacturers' goods and an exhibit of ecclesiastical architectural work drawn from the offices of architects throughout the eastern half of the United States. This work will include photographs, renderings, scale models, and examples of grills, fonts, ornamental iron work, and carved work. The exhibit will be shown in the roof garden of the Hotel Pennsylvania. Entry in the exhibit is free and architects having work which they would like to show should communicate with Wayne G. Miller, Director of the Department of Church Planning, Christian Herald, 419 Fourth Avenue, New York.

Architectural organizations in New York are cooperating through a joint committee in the management of the conference, assembling and arranging of the exhibit, and in the entertainment of out-of-town architects. President Harvey Wiley Corbett, of the New York Society of Beaux-Arts Architects, has appointed Chester Holmes Aldrich to represent that organization on the committee; Hobart Upjohn has been appointed by President Stephen Francis Voorhees to represent the New York Chapter of the American Institute of Architects; Francis Laurie S. Mayers has been appointed by President Julian Clarence Levi, of the Architectural League of New York; Robert F. Schirmer has been appointed by President Charles C. Wagner to represent the Brooklyn Chapter of the American Institute of Architects; and Albert Marten Bedell has been appointed by President Clarence H. Tabor, Jr., to represent the Architects League of Northern New Jersey. Representatives to the committee from other architectural organizations in and around New York are being appointed.

A. Z. KRUSE AT NEW YORK SCHOOL OF DESIGN

Alexander Z. Kruse is in charge of special Saturday classes which are being offered by The New York School of Design, 625 Madison Avenue, New York. The mornings are devoted to still life and the afternoons to working from the portrait and costume figure. Mr. Kruse is also leading a Thursday evening open forum art discussion. The course provides an opportunity for those who wish to develop a better sense of art appreciation.



CHARLES R. LAMB'S SUGGESTION IN 1903 FOR THE ELEVATED BOULEVARD AND OBSERVATION PIERS, WEST STREET, NEW YORK

FROM A RENDERING BY VERNON HOWE BAILEY

BRONZE PANELS TO BE PLACED IN MAIN ENTRANCE LOBBY OF OHIO STATE OFFICE BUILDING
PAUL FJELDE, SCULPTOR; HARRISON GILL, COLLABORATING DESIGNER; HARRY HAKE, ARCHITECT
The panels are modeled with a projection not exceeding 3/8".

ROBERT CAMELOT WINS FRENCH SCHOLARSHIP OF THE A.I.A.

The French traveling scholarship of the American Institute of Architects has been awarded to Robert Camelot of Paris, it has been announced by Charles Butler, chairman of the Institute's Committee on Education. M. Camelot will make a special study of America's stadia and playgrounds and for three months will serve as visiting professor of architecture at the Massachusetts Institute of Technology, in Boston, during the absence of M. Carlu, who is ill in Paris. Later he will tour the chief cities of the United States and Canada.

M. Camelot is a graduate of the Ecole des Beaux Arts. While a student he won sixteen medals, including the Rougevin and Paulin prizes and the Redon prize twice. He also received the prize established by the late James Stillman, New York banker, in recognition of the services rendered to American architecture by the Ecole des Beaux Arts.

The French traveling scholarship was established by William Adams Delano and his partner, Chester Holmes Aldrich of New York, both Fellows of the Institute. Mr. Delano, a former president of the New York Chapter of the Institute, is a member of the National Capital Park and Planning Commission.

The French scholarship plan is a development of the Institute's program of international relations and was initiated as an experiment four years ago by Julian Clarence Levi of New York, and was first administered by a committee of which Mr. Levi was chairman. Mr. Delano and Mr. Aldrich are continuing the scholarship under the administration of the Institute's Committee on Education.

COMPETITIONS FOR THE PRIZES OF ROME

The American Academy in Rome has announced its annual competitions for fellowships in architecture, landscape architecture, painting, and sculpture.

In architecture the William Rutherford Mead fellowship is to be awarded, in landscape architecture the Garden Club of America fellowship, and in sculpture the Rinehart fellowship provided by the Peabody Institute of Baltimore, Maryland.

The competitions are open to unmarried men not over 30 years of age who are citizens of the United States. The stipend of each fellowship is $1500 a year with an allowance of $500 for transportation to and from Rome and an allowance of $150 to $300 for materials and incidental expenses. Residence and studio are provided without charge at the Acadamy, and the total estimated value of each fellowship is about $2500 a year.

The Academy reserves the right to withhold an award in any subject in which no candidate is considered to have reached the required standard.

The term of each fellowship is two years in architecture and landscape architecture, three years in painting and sculpture. Fellows have opportunity for extensive travel and for making contacts with leading European artists and scholars.

The Grand Central Art Galleries of New York City will present free membership in the Galleries to the painter and sculptor who win the Rome Prize and fulfill the obligations of the fellowship.

Entries for competitions will be received until February 1st. Circulars of information may be obtained by addressing Roscoe Guernsey, Executive Secretary, American Academy in Rome, 101 Park Avenue, New York.

PERRY R. MAC NEILLE

1872-1931

Perry R. MacNeille, of the firm of Mann & MacNeille, Architects, New York, died at his home in Summit, N. J., on October 5th.

His wife, Mrs. Clausine MacNeille, and two sons, Holbrook and Stephen MacNeille, survive.

Mr. MacNeille was chairman of the City Plan Commission, of Summit, past chairman of the Zoning Board of Adjustment, a member of the Civic Club, the Soldiers' Memorial Association, and consultant of the Board of Recreation, all of Summit, and all of which he helped to organize. He was consultant and first chairman of the Housing Commission of Erie, Pennsylvania; City Planning consultant of Altoona, Pennsylvania, and many other cities throughout the United States and Canada. He was organizer and chief of the Housing Branch, Ordinance Department, U.S.A.; member of the Housing Bureau, U.S.A. Shipping Board, and member of the National Housing Association.

NICHOLAS N. GVOSDEFF

1886-1931

Nicholas N. Gvosdeff, a descendant of old Russian nobility, started his education in the Military Artillery School in Petrograd, Russia, received the rank of Ensign and then studied at the Imperial Academy of Arts and graduated as Architect in the beginning of the Revolution in the class of Professor Louis Benois, Dean of this Academy.

His architectural career was interrupted by his service in the army during the World War and later in the Civil War in Russia. Afterwards he fled to Constantinople where he built a residence for Mr. Nestle and also won the competition for the Grand Opera House in Constantinople.

In 1923 Mr. Gvosdeff came to New York and entered as designer in the office of Sugarman and Berger, being later employed by Thos. Lamb, then John Peterkin, and received in 1926 his last position in the firm of Cross & Cross.

His death on September 21st after a short but severe illness was a blow to his Russian and American friends.

Mr. Gvosdeff was known as a very fine and obliging person. Those Russian colleagues who were witnessing his successful development as a designer appreciated his earnest studies of local architecture, building, and engineering, also the way he devoted himself with all his knowledge, talent, love, and sincerity to the big problems which he had to solve.

He earned the reputation of a serious and skillful collaborator, especially in the last five years during his connection with Cross & Cross in New York.

A great enthusiast for precious architectural books, connoisseur of archæology and styles, composer of fantastic modern skyscrapers, writer of his monograph in which are illustrated his original creations, he left this world of strain and production early; he was a man of but 45 years.

His only son, a promising young artist, is studying in Paris. Mr. Gvosdeff was a member of the Architectural League of New York.

ATELIER DERRICK, DETROIT, RESUMES WORK

Atelier Derrick is beginning to take up the regular problems of the Beaux-Arts Institute of Design. These have been trying times for the boys, many of whom have been out of employment, but the old spirit prevails and they are ready to carry on. The remarkable thing is that even in the face of adversity these men are courageous enough to spend long hours in the atelier to improve themselves in design. What more assurance of their sincerity could there be?

Branson V. Gamber as director has given generously of his time, as have Critics Leone, Sukert, Rowland, and Wenzell.

A local jury composed of three Architects will be named to judge each of the five problems this season. Only those that receive special mentions will be sent to New York to be judged in the national competition.

THE ARCHITECTS LEAGUE OF NORTHERN NEW JERSEY

The Architects League of Northern New Jersey is desirous of obtaining a list of architectural organizations who have placed themselves on record as being opposed to the activities and program of the Architects' Small House Service Bureau.

The number of such organizations will prove interesting to the League and impressive in connection with future consideration and discussion in regard to this matter.

Secretaries of the architectural organizations interested are requested to communicate with the League by addressing Harry Lucht, Secretary, 432 Palisade Avenue, Cliffside Park, N. J. A complete list of organizations as compiled will be forwarded to those we hear from.

NEW BUREAU OF STANDARDS PUBLICATION

The Bureau of Standards has recently published paper No. 321 on *Volume Changes in Masonry Materials*, which may be of interest to architects. It can be secured by writing to the Bureau of Standards, Washington, D. C.

FREESE'S CORNER

Editor's Note:—*Ernest Irving Freese here answers 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.*

THE TRISECTION OF AN ANGLE

Euclidean geometry, so-called, appears again to be in the same nonsensical predicament of the foolish individual endeavoring with might and main to lift himself by his own boot straps. Euclid wisely and deliberately limited his mathematical investigations to the pulling on of boots. His apostles . . . to judge from seven or eight associated press reports I have before me . . . continue to tug at the straps of their own Euclidean sandals with avowed intent of lifting their own puny conception of Euclidean geometry by the identical means that forever ties that geometry to their pedal extremities. Another cyclic horde of "angle trisectors" essays the road to Fame. Then all is quiet.

Under certain conditions, the trisection of an angle can be performed solely by Euclidean means, that is, with the *compass and ungraduated ruler.* The special conditions are that the magnitude of the given angle must be known, and that the required third part of same must be one or another of the various angles that are independently *constructible* by the same limited means. These special cases, then, are not fundamental *trisection* at all: they are merely problems of constructing definitely-known angles. An angle of 90 degrees is constructible with the compass and ruler. So is an angle of 30 degrees. Hence, an angle of 90 degrees is "trisectable." Apply the same system of trisection to an angle of 30 degrees, and sufficient perseverance will land you in the crazy house!

However, by forsaking the Euclidean fiat of instrumental limitation, the general fundamental problem of the trisection of an angle is easily and exactly effected. I have shown this method in Parts 11 and 12 of the "Geometry" (PENCIL POINTS, July and September, 1930). As applied to any acute angle, it is here reproduced at Diagram "1" of Figure 4. Make *BD* any unit distance. Draw *DF* parallel with *BA;* and draw *DE* square with *DF.* Place your drafting scale across these two rectangular lines in such a position that the intercept reads *two* units and, at the same time, so that the scale lines with *B.* Then the edge of the scale trisects the given angle.

Proof of the above method is almost as simple as the method. See Diagram "2." From the method of trisection at Diagram "1," the triangles *BDJ, DJH, DJG,* are isosceles. And the rest is easy.

Now look at Diagram "3." The relations there algebraically expressed are easily deducible from the other two Diagrams. Whence, from the properties of similar triangles:—

$$Y \;:\; 2Y+C \;::\; \sqrt{1-Y^2} \;:\; \sqrt{1-C^2}$$

From the above relation, the following equality ensues:—

$$4Y^3-3Y=C$$

And now we are stuck fast. The limitations of Euclidean methods do not admit of a construction for the above unknown value of Y. The most that can be done is to evolve therefrom an analytic expression for Y that cannot be handled either numerically or "geometrically," since it will be found to involve the square root of a negative quantity and the cube root of the accumulated result.

So, if the president of Duquense University, Pittsburgh . . . .or any one else, Pittsburgh or other burg . . . . has, "after 2500 years," achieved the distinction of wrecking the entire science of mathematics by constructing, with the tools of Euclid, the trigonometrical functions of one third a given angle, let him "come across" with *proofs* instead of "announcements." Let him, in these pages, answer this hearty challenge from a mere architect out in the sagebrush country: show how to construct TWO MEAN PROPORTIONALS BETWEEN ANY TWO GIVEN LINES. It can't be done. Three roots to an equation are one too many for Euclidean Geometry. Ask Descartes, or Gauss, or Hippias, or Diocles, or Nicomedes, or Archimedes, or Apollonius, or . . . . EUCLID!

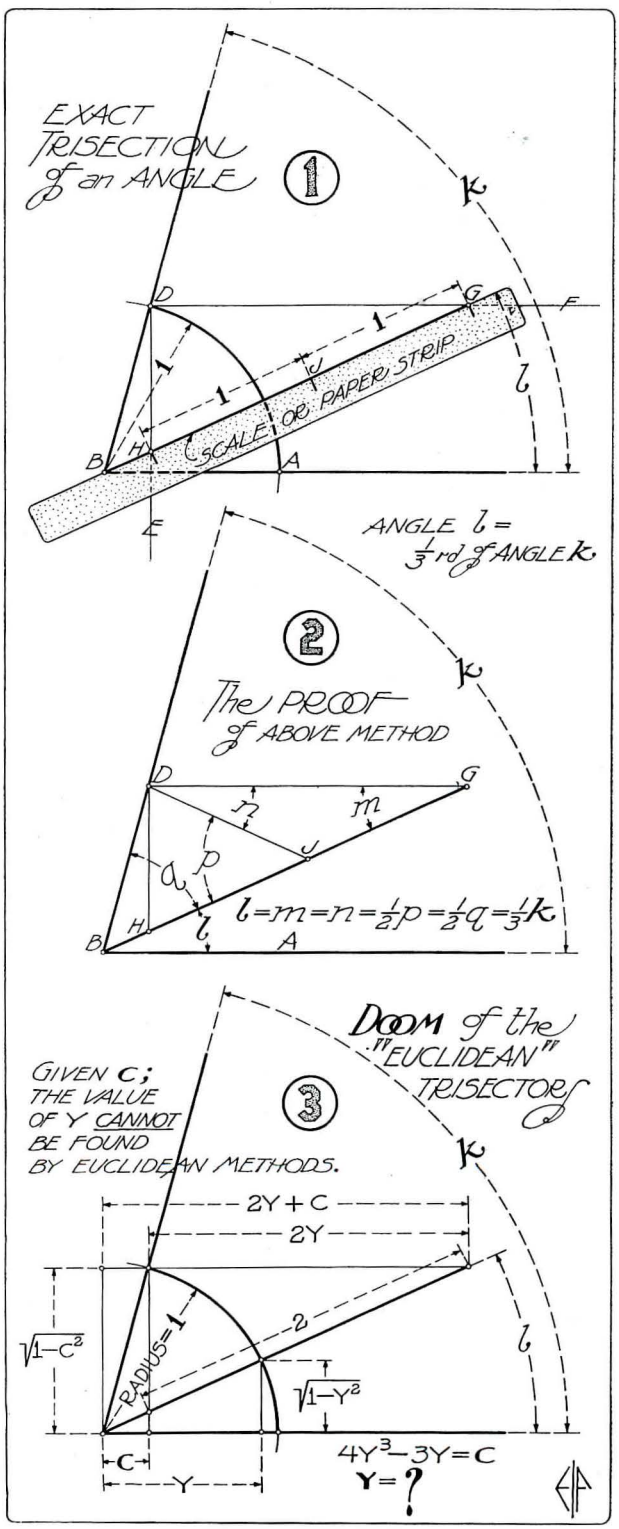
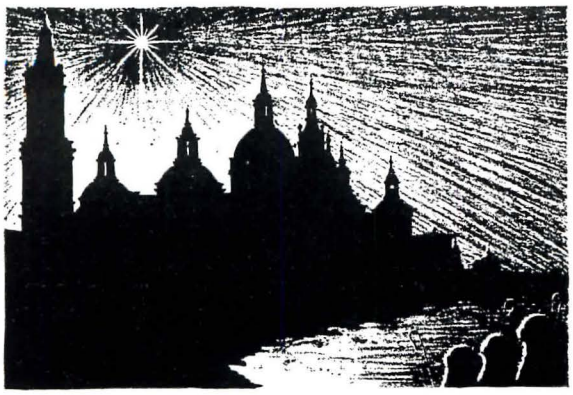


FIGURE 4

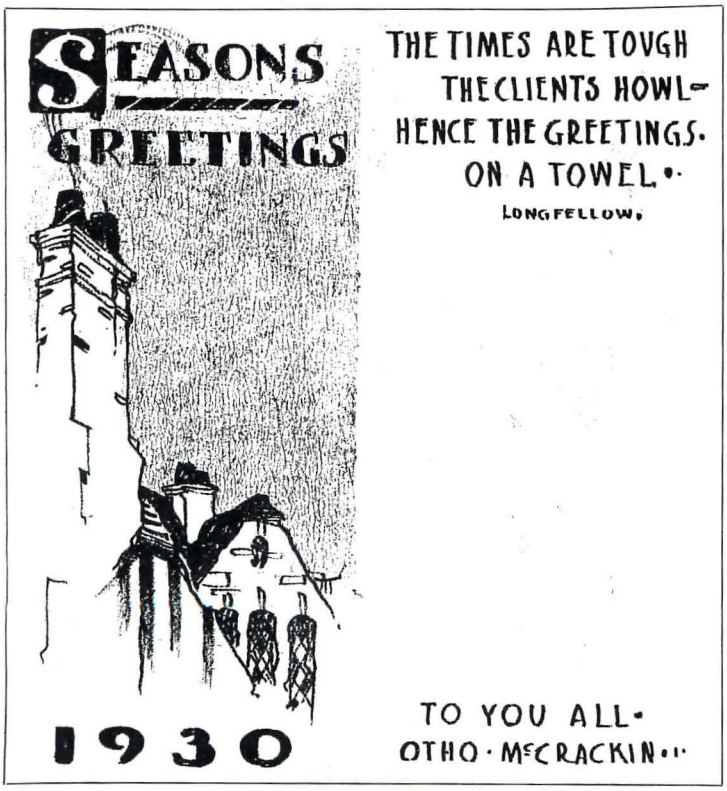


This drawing was blue printed on the cover of a folder used by Robert Peal.

George D. Crumley made this linoleum block for a friend.

The James A. Brittons of Chestnut Hill, Massachusetts, sent this amusing card to their friends.

Ralph E. Hanna and his family sent this linoleum block print from Canton, Ohio, which, he told us, was inspired by a design published in PENCIL POINTS.



Otho McCrackin is the founder of a large group whose greetings this year will be printed on paper towel folders.

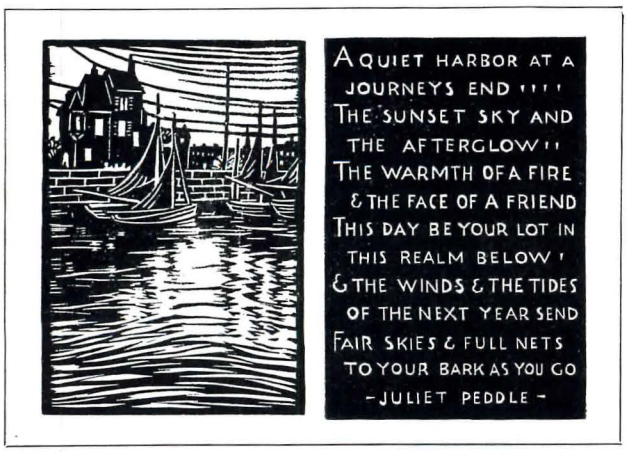
Another print by Harold Johnson made by the same method as that described on the opposite page.

IF YOU HAVE TO ECONOMIZE ON PRESENTS A PERSONAL GREETING MAKES A GOOD SUBSTITUTE

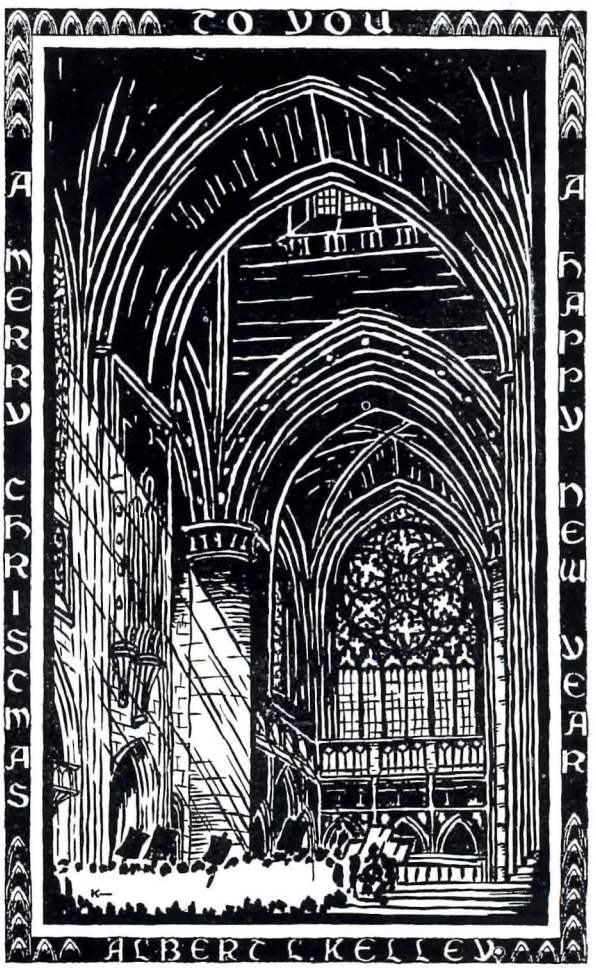
Linoleum cut of the State Office Building at Albany, N. Y., by George W. Smith.

Drawn by Herold F. Johnson, Dorchester, Mass. This card was made from a photographic negative—the design being scratched in reverse on the solution side of plate. The negative was not developed but exposed to sunlight to increase its density.

Thomas W. Causton sent his greetings by a blue print.

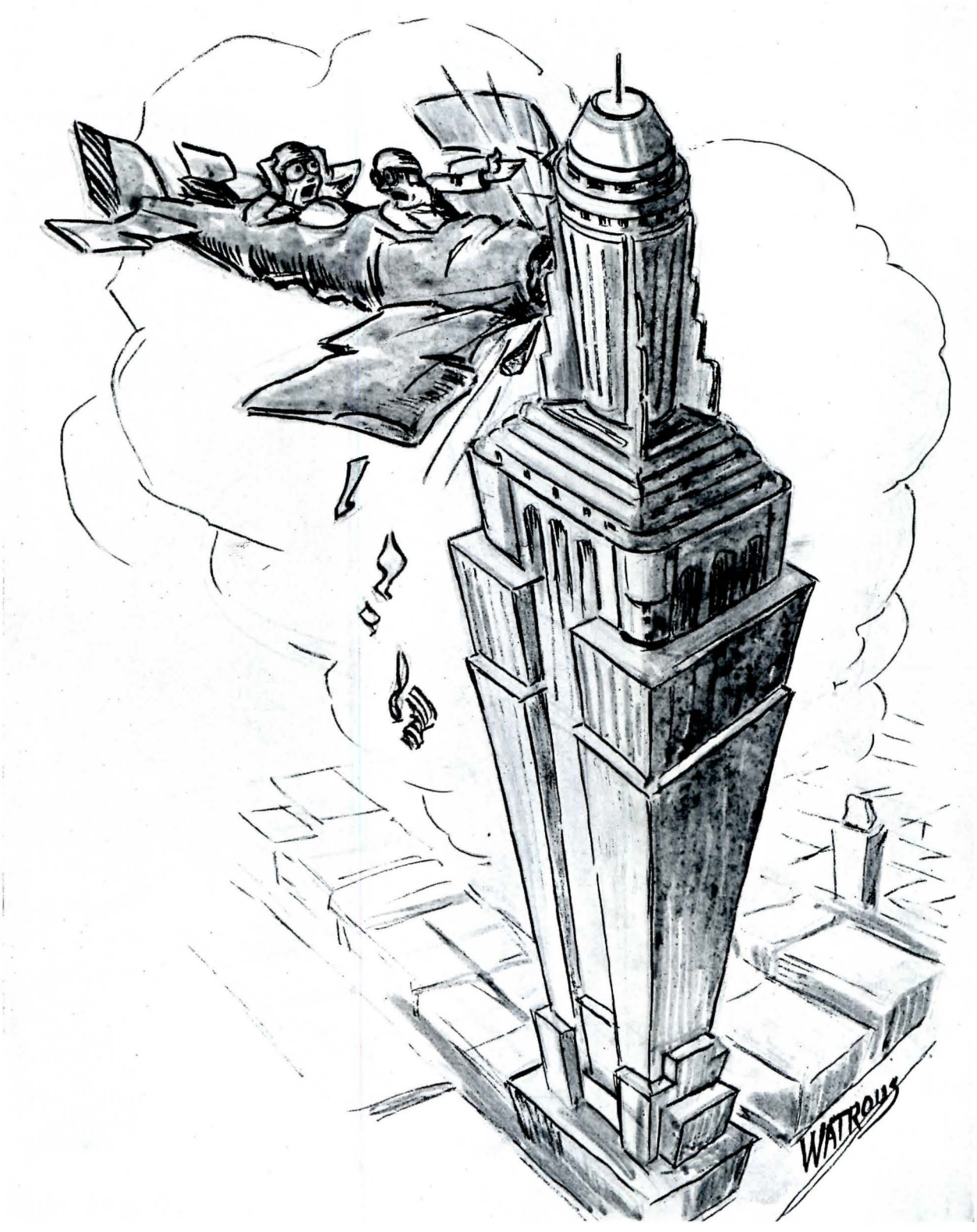


The outside cover and the inside greeting printed in black on a bright yellow paper, sent out by Juliet Peddle.



Albert L. Kelley printed this on a deckle-edged card.

JUST TO REMIND YOU THAT THE HOLIDAY SEASON IS NOT FAR AWAY



Pilot: "There's that New One I was Telling You About." From a Drawing by L. W. Watrous, New York

HERE AND THERE AND THIS AND THAT

CONDUCTED BY E.L.C.

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.

We are just getting back in our normal routine after the excitement of the Palanquin Competition. It *is* thrilling to be interviewed; not only that but photographed with Mr. Gloop! See the evidence on the next page.

The prizes this month have been awarded as follows:

Class I—Stanley Johnson, Los Angeles, Calif.
Class II—Arthur J. Lichtenberg, Trenton, N. J.
Class III—Malkan Alfred Pearlman, Chicago, Ill.
Class IV—Mr. S. Gloop.
Good Wrinkle—M. C. Dewar, Edmonton, Canada.

We just had news of the announcement of the five winners in the first stage of the Competition for the Massachusetts State War Memorial. The editor has closed all the news section but we can always find a place in our department. The winners are Maginnis and Walsh, of Boston; L. W. Briggs Company, of Worcester; Jasper Rustigian, of Worcester; Richard Shaw, of Boston; and G. Adolph Johnson, of Worcester. The final judgment will be held the end of the month and we hope to present the winning design in our January issue.

"Chinatown," from a Pencil Drawing
by Stanley Johnson, Los Angeles
(Prize—*Class One—October Competition*)

ENGINEERS

By Arthur J. Lichtenberg

(Prize—*Class Two—October Competition*)

Who's the guy who eases by, with a long and ambling stride,
Who says, "In just a minute"—then lets the hours slide,
Who checks us in the morning, as nine o'clock draws near,
He's that long and lanky, seldom cranky, assistant engineer.

Who is the bird who's seldom heard, and scribbles his time away,
Who dreams of beams, and it often seems, the end of the gol darn day
Who tells them what it's all about, without making his meaning clear,
He's that itemizing, scrutinizing, specification engineer.

Who is the man who'll scrap your plan and build the job his way,
Who can't be found, is never around on a concrete pouring day,
Who hates the rainy weather like a Dutchman hates his beer,
He's that office condemning, job defending, resident engineer.

Who is the man who'll design a bridge over anything at all,
And dodge responsibility if the whole darn thing should fall,
Who'll design you an abutment and convince you it's a pier,
He's that ruler sliding, handbook guiding, designing engineer.

Who is the man who'll clothe your span with details great and small,
With "Do-Dabs" here and "What-Nots" there and "Hocus-Pocus" on the wall,
Who reflects upon appearance, till his mind is aught but clear,
He's that line defining, shaft designing, architectural engineer.

Who is the man who'll take your plan and change it all around,
Who says your wing walls are too short, in fact they're underground,
Who finds a rod an eighth too long, a thing we always fear,
He's that line erasing, plan defacing, checking engineer.

Who takes a transit out to find a site along the creek,
Who then with care extreme transfers the data to a sheet,
Who omits the elevations, the reason is not clear?
He's the mud bespattered, torn and tattered, civil engineer.

A Close-up of Salvador Gloop and E. L. C.

Our staff photographer caught Mr. Gloop and E. L. C. as they were happily tandeming homeward after the judgment of the Competition for a Palanquin for E. L. C.'s Wisdom Tooth. Our readers will doubtless recall that Mr. Gloop sponsored this competition and that the winning designs were published last month in this department.

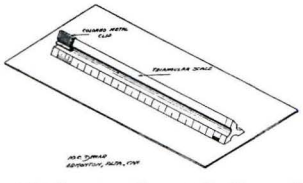
(Prize—*Class Four—October Competition*)

We were very glad to see an article about James O. Betelle in the magazine *Time*. During the past twenty years this Newark architect has earned commissions, usually 6%, on $100,000,000 worth of school buildings. He gives a word of advice which might be food for thought.

"I only know," says he, "when I was a lad about 17, getting $2 a week, I worked day and night. Many a time I longed to eat ice cream and bought milk instead, because I was saving my nickels and dimes.

"If these youths . . . adapted themselves to their work, honestly did their part and a little bit more, paying less attention to the office clock, I am certain their employers would take notice of them. . . . One cannot play hard a greater part of the night, and then go to business next morning and work efficiently."

M. C. Dewar, of Edmonton, Alberta, Canada, sent us the following good wrinkle and gets the prize in the Good Wrinkle Section.

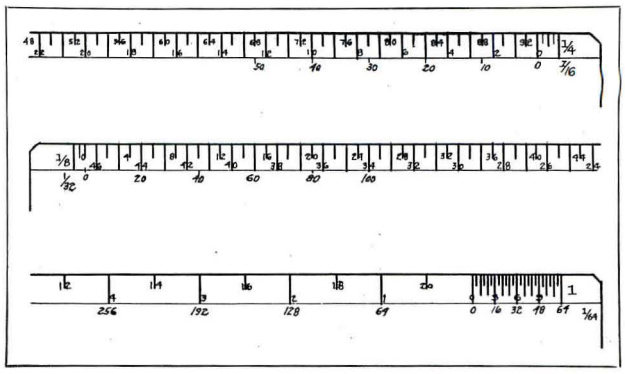


"The diagram shows an aid for eliminating a lot of waste time and patience (and many curses) in that it permits of quick finding of the scale with which you have been working.

"It is a small metal clip, colored red (or any other color), which is snapped over the upper edge of the triangular scale at the right-hand side, the scale which is being used, is of course touching the paper. It is a simple matter to pick up the scale when required and bring the clip to the top right-hand end and, presto, your scale is coinciding with the paper. No hunting, no fussing, and the triangular scale regains its popularity."

Mrs. S. P. Vetter of Patterson, La., sent us this suggestion which we pass along for what it's worth:

"To prevent thread from knotting when sewing or embroidering, give the needle a gentle twist towards yourself when pulling it through the material; all snarls are eliminated." Do let us know how it works out!



D. D. Corrough, of Highland Park, Illinois, submits the above and this explanation: "Who among us hasn't wasted hours (if all the minutes be counted up) determining how many inches make 192 feet at 1/64th scale. Get out an old divider leg and scratch your scale as shown in the drawing."

Here's a *Good Wrinkle* of our own. We didn't think it was so special until we told J. F. Wilhout of Knoxville, Tennessee, about it. He kindly writes us, "I am sure there are architects who do not know this and it is a great money saver." So here you have it.

If you wish to reproduce a working drawing for publication take a blue print, ink in black the parts of the drawing you wish to show. Your work is then ready to be sent to the engraver, who has to photograph the blue print in order to make a plate. The blue will not photograph so that only the inked-in portions will remain on the plate. Of course, the drawing may be reduced or enlarged to the desired size.

"Flyin's O.K., but gimme the ground where a guy is safe."

Drawn by Malkan Alfred Pearlman

(Prize—*Class Three—October Competition*)

THE SPECIFICATION DESK

Specifications for a Separate Contract for Overhead Work

By W. W. Beach

The architect who prefers to conduct a construction operation by means of several independent contracts is frequently embarrassed by the problem of determining which entity concerned in the work shall be held responsible for the premises during the construction period; who will be required to do all the hundred-and-one minor tasks that are not *de facto* parts of the duties of any one particular craft, but are so easily assigned to the general contractor when the work is so awarded.

Included in this category, in addition to general care and responsibility for the premises, are:

1. Permits for building construction, encumbrance of streets and walks, and the use of water during construction.
2. Safeguards of every description.
3. Removal of storm-water, snow, and ice.
4. Driveways and runways.
5. Ladders, scaffolding, and other planking.
6. Material hoists.
7. Temporary sheds for storage, offices, and toilet facilities.
8. Water, light, and telephone service.
9. Enclosing the premises and providing a sign.
10. Progress photographs.
11. General maintenance of temporary facilities, and cleaning premises at completion.

If the building is of sufficient size to warrant, it is quite feasible to group these subjects in a single "Contract for Overhead Work," presumably to be awarded to some responsible carpentry contractor. It is even conceivable that a similar contract could be awarded on a much smaller job, by virtue of including the concrete form-work to make the contract sufficiently worth while, if such carpentry could be detached from the concrete contract without difficulty.

The following specifications are for such a contract on a project large enough to leave the form-work where it would naturally be assigned. It is assumed that the "General Conditions of the Contract" of the American Institute of Architects are made the basis of this contract, supplemented by such further specific conditions as are needed.

ART. 61. RESPONSIBILITY FOR PREMISES

1. *The Premises and the Building* to be erected thereon shall be in charge of this Contractor, subject to the conditions of the various contracts under which work may be assigned to others. This Contractor shall offer every convenience to such other Contractors and their employees as are herein set forth and shall, in no case, offer any unnecessary obstruction to the work of such Contractors. After the premises are enclosed, it shall be the duty of this Contractor to exercise reasonable precautions to prevent trespassing thereon. Except for the performances of others having business relations with the Owner, directly or indirectly, this Contractor shall be solely responsible for the condition of the premises from the time same are turned over to him until acceptance of the completed work, including responsibility for the acts of his own employees.

2. *Watchmen* shall be provided by this Contractor during the entire period that the premises are under his control, to supply adequate protection to all parts of the building and site at all hours, the expense of same to be included in the contract price. The duties of a watchman may be combined with those of other employees of this contractor while they are at work on the premises, but neither the employment or nonemployment of a special watchman will relieve this Contractor from responsibility for loss or damage to the building or other property on the premises, as set forth in paragraph immediately preceding.

3. *Safeguards* shall be supplied by this Contractor wherever necessary during the progress of the work, as demanded by law and for the protection of employees and the public, including providing and maintaining barricades, red lights, danger signs, and other warnings, both on the premises and on the public property adjoining, as in the judgment of this Contractor or of those in authority may be advisable.

4. *Space on the Premises* shall be allotted to the permanent and temporary buildings and for the operations and storage of materials of those to whom work may be assigned by the Owner, all under the direction of this Contractor, subject to approval by the Architect's Superintendent. No space may be assigned to anyone, either in the building or elsewhere on the premises, or on public property adjoining, without the Superintendent's approval.

5. *Cleaning.* This Contractor shall see that the premises are kept clean and free from rubbish and unused materials and equipment, notifying the Superintendent when any other Contractor is unduly cluttering the premises. Regardless of the performances of such other Contractor, this Contractor shall, from time to time, as directed by the Superintendent, remove all dirt, rubbish, and surplus material of every description, including equipment not in use, and shall maintain the premises in a neat and orderly condition, to the approval of the Superintendent. No materials or equipment, known to belong to others, may be removed from the premises without due notification to party owning same.

6. *At Completion,* this Contractor shall remove all rubbish, equipment, and surplus material of every description (as stated in preceding paragraph) and shall leave the entire building and premises clear and in neat condition. All floors shall be broom-cleaned (or mop-cleaned) by this Contractor and all glass shall be neatly washed, free of paint, scratches, and other spots.

7. *In Case of Failure* on the part of this Contractor to place the building and premises in proper condition (as specified in Paragraphs 5 and 6 of this Article), within 3 days after the service of a notice to do so, the Architect is hereby authorized to have such work done by others and the cost assessed against those who should have done same under their contracts. In case any such work required of this

Contractor by the Superintendent is alleged to be the duty of others, this Contractor shall, after seeing that such others are or have been duly notified, perform the work as directed and may then render through the Architect a statement of the cost of the same, to be assessed against the Contractor in default. If same is approved by the Architect (and the amount has been certified by the Superintendent to be correct), an extra will be issued to this Contractor for the amount, including an additional 10% allowance for his overhead and profit. This Contractor, as a part of his contract, agrees to pay any sum or sums assessed against him by the Architect on account of work ordered done by others for him as described in this paragraph.

ART. 62. PERMITS

1. *Permits for the Building* and for the obstruction of adjoining streets, alleys, and sidewalk areas shall be taken out and paid for by this Contractor as soon as possible after the award of the contract. The Architect will supply the requisite sets of drawings and specifications for the purpose.

2. *Permit for Water* shall also be taken out promptly by this Contractor who shall pay for same and for all water used in the work by others, as well as for his own operations. No charge may be made against others for water so used.

ART. 63. PROTECTION

1. *Boxing Trees.* Locations of trees that are to remain are indicated on Plot Plan. These shall be protected by this Contractor with suitable planking before the beginning of excavating or delivery of other materials or equipment. Said planking shall be maintained in good order to the approval of the Superintendent, and until ordered removed by him.

2. *All Walks, Curbs, and Fences* that are to remain (as indicated on Plot Plan) shall be adequately protected wherever liable to damage. No driving over sidewalks will be permitted except in (number of) locations where this Contractor shall provide and maintain suitable protection of 2″ planking, rigidly spiked to a 2″ header extending across each end. Sections of the present fence may be removed for passage, stored on premises and properly replaced in original condition when so directed by the Superintendent.

3. *Storm Water* and water from springs and pipe leaks shall be adequately guarded against by ditching, drainage or other means. This Contractor shall provide and operate one or more hand- or power-pumps, as conditions may demand, if necessary to keep water from collecting in the excavation, basement, or elsewhere on the premises, to the detriment or hindrance of the work, all operating to the satisfaction of the Superintendent.

4. *Snow and Ice* shall not be allowed to remain on any part of the structure, but shall be removed by this Contractor as soon as possible, in every case, until completion of roof covering. This Contractor shall also keep all outdoor walkways that are in use, on and adjoining the premises, free from snow and ice during the progress of the work.

5. *Exposed Foundation Footings* shall, in cold weather, be protected by this Contractor with straw or other approved material, sufficient to prevent damage by frost. (Protection of other new concrete against both heat and cold is assigned to the Concrete Contractor.) The protection shall be removed when so ordered by the Superintendent.

6. *Protecting Finished Work.* This Contractor shall box or otherwise adequately protect all projecting parts of finished masonry as soon as possible after laying. Jambs, sills, and heads of openings used for passage shall be protected with suitable planking, rigidly secured. As soon as stone steps, platforms, and door sills are set, they shall be protected in similar manner. When hardwood floors are ready for filling, this Contractor shall cover them with tough, heavy paper, well lapped and tacked in place. He shall remove same to accommodate the finishers and shall replace the covering after them and maintain it in a serviceable condition until it is ordered removed at completion of the work. He shall be responsible for all damages due to lack of proper coverage as called for in this paragraph.

7. *Well-hole Railings.* As soon as wrecking of forms will permit in each story, this Contractor shall erect and maintain strong temporary railings around all the well-openings in that story until same are removed by other Contractors for the installation of their work. If such permanent work is left temporarily incomplete, this Contractor shall restore and continue to maintain such protection of said openings until same is no longer needed.

ART. 64. TEMPORARY CONVENIENCES

1. *Driveways.* In addition to the service driveway shown on the Plot Plan, there will be a temporary trucking driveway extending through the premises at right angles to the service drive, and a connecting driveway to these two, completing a circuit of the building. This Contractor shall locate all these drives under direction of the Superintendent and shall maintain them in usable condition during the progress of the work or until ordered abandoned by the Superintendent. Enough cinders, gravel, planking, or other suitable material shall be laid to continue these drives free from holes at all times until abandoned. When directed, this Contractor shall turn the service driveway over to the Contractor who is to pave same and shall not thereafter be responsible therefor. After abandonment of the temporary drives, they will be turned over to the Yard Improvement Contractor in like manner.

2. *Runways.* This Contractor shall provide and maintain a continuous runway, extending entirely around the building in location directed by the Superintendent, built of three 2″ x 10″ planks, close-laid on 2″ x 6″ sleepers, 4′0″ o.c., so supported from the ground as to be rigid and fairly level. At each entrance to the building, a branch shall be extended from the runway, of similar construction, two of which shall be of double-width as directed; all to connect with the plank covering of sills or platforms. Where so directed, cleats shall be nailed on inclined portions of runways. In addition to the foregoing planking, this Contractor shall keep on the premises for miscellaneous use 50 pieces of 2″ x 10″ yellow-pine or fir plank, 12′0″ long, and shall replace same when worn out or missing, up to a total of 4000 bd. ft., in addition to the original planks in the runways. These miscellaneous planks are to be used as needed for temporary work by this and other Contractors and shall be kept neatly piled when not in use.

3. *Scaffolding.* In general, each Contractor will be required to provide such scaffold as he may need for his own work, but this Contractor shall provide sufficient 2″ plank scaffolding and its supports to enable lathers, plasterers, and decorators to work on one-third of (or the entire) ceiling and upper side-walls at one time. This scaffold shall be erected, equipped, and maintained in accordance with State laws, City ordinances, and the rules and regulations of the insurance carriers having jurisdiction, and to the approval of the Superintendent. The workmen using the scaffold may shift same as required and their employers will be expected to supply such addi-

tional scaffold as may be needed for other parts of their work. Any Contractor intending to use scaffold not provided by himself shall first examine and test same and, if found insecure or otherwise defective, must report same to the Superintendent for correction; but, in any event, each Contractor will be held responsible for any accidents due to the condition of any scaffold his men may be using.

4. *Ladders.* This Contractor shall, where directed, install 2 double runs of ladders from basement floor to roof, and shall maintain same in acceptable condition until temporary stairs have been installed.

5. *Temporary Stairs.* As soon as forms have been removed from second-floor construction, this Contractor shall install heavy plank stairs in two well-openings, extending from basement floor to second floor, and extended to each succeeding floor as soon as possible. Stairs shall have substantial handrails and shall be maintained in good condition for general use until permanent stairs are available. The permanent stair framing, when convenient, may be fitted with plank treads for temporary use in lieu of the temporary stairs. Finished stairs may be used during final stages of the work and must be kept fully protected by this Contractor.

6. *Hoists.* This Contractor shall, as soon as sufficient second-story framing is in place, erect in locations directed and thereafter maintain and operate two (twin) mechanically-operated material hoists, with platforms and capacities of standard size. The hoists shall be extended story by story and to the roof as the work progresses. Except in case of breakdown or similar emergency, all repairs, changes, and other serviceing of the hoists shall be attended to outside of regular working hours. The equipment shall be in charge of experienced men who shall operate same for the common convenience of all concerned in the construction operations, except that the hoists will not be used by concrete workers, nor for the hoisting of items too large or too heavy for their capacity. All expenses incidental to the installation, changes, maintenance, operation and insurance of the hoists shall be borne by this Contractor as part of his contract price, and he shall also be responsible for all damage resulting from same. When so directed by the Superintendent, and not until then, the Contractor shall discontinue hoisting service and shall remove the equipment; repairing, without expense to the Owner, any damage done to the building thereby. No person shall be permitted to ride on the hoists. Warning signs, so stating, shall be posted at the shaft in each story.

Art. 65. Temporary Buildings

1. *Offices.* This Contractor shall provide a frame building, not less than 11′ x 29′, inside dimensions, one-third of which area shall be partitioned off for use of the Superintendent and shall be provided with a blueprint table, shelf, drawer, and 3 chairs. The other room shall have a continuous table, 3′6″ wide, and a shelf 10″ wide over same, both extending across one side of the room, 6 chairs or stools, and a stove arranged to heat both rooms. A telephone shelf shall be provided, accessible to both rooms. Each room shall be provided with an outside door with suitable hardware, including a cylinder lock; that for the Superintendent to have 3 keys, the other to have a key for each Contractor using the office. A rack for blueprints, as directed by the Superintendent, shall be provided in each office. This Contractor and others will be assigned space in the larger office, according to their needs, and this Contractor shall keep therein a complete set of drawings and specifications for the building, available for reference to those privileged to see them. Each room will be lighted by movable windows (2 and 4 respectively), located as directed, and by electric cord-drops (of same number), with 75-watt lamps; also one on a waterproof bracket in front of building, all provided by this Contractor, who will also supply a clerk to have charge of the Contractors' office, keep it light, warm and clean and attend to the maintenance of both offices. This clerk and an assistant (both on this Contractor's payroll) shall be continuously on duty during working hours until the building is turned over to the Owner. The assistant shall act as a general messenger in connection with duties under this contract, including such service for the Superintendent as and when demanded.

2. *Toilet Conveniences* for all persons employed on the work shall be maintained by this Contractor until such time as temporary facilities are provided by the Plumbing Contractor under his contract. The regular plumbing fixtures of the building will not be permitted to be used during the construction period. This Contractor shall build and maintain a temporary structure in location directed, of same construction as the other temporary buildings, and containing two rooms; one for the use of office men to be 5′0″ x 6′0″, inside, and to contain a water-closet (with stall partition and hinged door), urinal, and lavatory. The other room shall be 5′0″ x 12′0″ (or requisite size), inside, and to contain 2 (or more) water-closets, 3-man urinal and a wash sink with 3 faucets. Paper towels and toilet paper shall be provided continuously for each room. Each room shall be provided with a hinged outer door, that for the office men to be fitted with a cylinder lock with three keys, to be located as directed by the Superintendent. Three movable windows shall be provided for the building as directed, also two electric cord-drops with 40-watt lamps and a third such lamp on a weatherproof bracket in front of the building. The two rooms shall be heated by a suitable stove with water jacket, from which water shall be supplied to two sink faucets and the lavatory. Cold water shall be supplied to each other fixture, including a cold faucet at each lavatory. This Contractor shall supply water, heat, and light for the building, also the necessary service to keep both rooms clean and sanitary, satisfactory to the Superintendent and local Public Authorities.

3. *Shelter-sheds.* This Contractor shall provide 3 shelter-sheds, located as directed, of construction described in Par. 4, each to contain about 300 sq. ft. of floor area. Each shall have a window at each end and a hinged door in center of one side, fitted with approved hasp and cylinder padlock, with 3 keys each, delivered to the Superintendent. Each shed shall be lighted with one 40-watt lamp on cord-drop, and a similar lamp shall be located outside, on weatherproof bracket over each door. Space in the sheds will be assigned by the Superintendent, one for cement and lime, one for miscellaneous storage, and one for hand tools, etc., and for the shelter of workmen, who will not be permitted to use the office for a lunch or loafing place. This shelter shall be fitted with a stove, table and three benches, and shall have movable windows. All three sheds shall be kept reasonably neat and clean by this Contractor and heat maintained by him in the men's shelter during cold weather.

4. *Construction.* Each of the foregoing structures shall be built on level foundations, with 2″ x 6″ floor joists, 18″ o.c., 4′ longer than width of building. Each building shall have a platform 4′ wide along one side. Studding and roof joists shall be 2″ x 4″, 18″ o.c. Studding shall be 8′ long under plate on one side and 7′ on opposite side. All framing material shall be No. 1 dimension. Floors

of platform shall be 1″ x 4″ square-edged boards. All other floors, walls, and roofs shall be covered with T&G flooring, free from holes; roof and sides to be weatherproofed with 1-ply roofing in good condition. Doors shall be substantial, not less than 2′6″ x 6′6″ for toilet building and 3′0″ x 6′6″ elsewhere. Each sash shall be glazed with 4 lights of glass, 12″ x 14″; double-sash for office building and single elsewhere. Stovepipes shall be insulated where passing through roofs and shall extend at least 4′0″ above same. All materials provided by this Contractor for temporary construction and facilities shall remain his property, shall be maintained by him during the period of their usage under this contract, and shall be removed from the premises when directed by the Superintendent. In each instance, unless otherwise specified, secondhand materials in good condition may be used for temporary work, subject to approval of the Superintendent.

ART. 66. WATER, LIGHT, AND TELEPHONE SERVICE

1. *Water Service* for the building shall be provided, as stated in Arts. 62 and 65, continuously during progress of the work. A ¾″ connection shall be made to the City main (or other supply) and a ¾″ galv. pipe run from same to toilet building, with extensions of same size to concrete mixer and water barrel, each to be fitted with a hose bibb for garden hose. Pipe shall be protected where extended under drives and material storage spaces, and shall be fully insulated during cold weather. This Contractor shall provide water barrel, located as directed; also 2 galv. buckets (and dippers) for drinking water, one located on shelf in men's shed, the other carried to workmen by this Contractor's messenger, 4 trips daily during hot weather and 2 trips daily at other times. Buckets shall be kept supplied with pure cold potable water. This Contractor shall also provide continuous 5-gallon bottled water service on stand in Contractors' office, with container of sanitary cups adjoining. He shall provide ice for all drinking water during hot weather, and for the bottled water at all times.

2. *Electric Light Service* shall be provided as stated in Art. 65, included in this contract, together with 10 additional 40-watt lamps in weatherproof sockets, located about premises as directed, supported from 12′ posts. These lamps shall be controlled by switches (in 2 circuits), located outside the door to Contractors' office. A third switch in that location shall control outlets at toilet building and shelter sheds. Outlets on cord-drops shall have switch sockets. Each lamp shall be protected with a suitable guard and shall be promptly replaced as needed. No wires may be attached to growing trees nor to permanent buildings. All this temporary lighting service shall be provided and maintained by this Contractor until ordered discontinued.

3. *Telephone Service* in connection with the local Exchange shall be ordered installed by this Contractor immediately after signing of contract, for the use of the Architect and Contractors and their authorized Representatives. The instrument shall be located on a shelf, convenient to both offices, and shall be there maintained by this Contractor, entirely at his expense as long as said offices are in use. He may require reimbursement for all toll and long-distance calls but may make no other charge for the service against those entitled to use it. He may have an additional pay-telephone installed for the use of others.

ART. 67. ENCLOSURES AND SIGNS

1. *Temporary Fence.* This Contractor shall erect a tight-board fence, 6′0″ high, to entirely enclose the premises along the lot line, with openings as required for passage, and with gates or other means of closing. The outer surface of fence shall be smooth and shall have the sign "POST NO BILLS" neatly stenciled thereon at intervals of 50′.

2. *Sidewalk Enclosure* of heavy construction and smooth interior shall be provided by this Contractor as and where demanded in fulfillment of local requirements.

3. *A Signboard,* approximately 8′ x 10′, shall be provided by this Contractor and substantially erected and braced on top of fence at one corner of the premises, as directed. Sign shall be built of T&G boards, framed with a wood mold and painted two coats of approved paint. This Contractor shall employ a capable sign painter to paint thereon the name of the building, the Architect, and each Contractor, all as directed by the Superintendent. No other signs or advertising may be exposed anywhere about the premises.

4. *Enclosing Building.* When directed by the Superintendent, about the time roofing is completed, this Contractor shall make a complete temporary enclosure of the building, including hinged doors to fill all outside door openings, and muslin tacked in all window openings. All these doors shall have means of locking on the inside, except one, as directed, which shall be fitted with an approved hasp and cylinder padlock, one key of which shall be delivered to the Superintendent, the Contractor remaining responsible for all others. No nails or screws may be attached to finished woodwork of door openings. When directed by the Superintendent, this Contractor shall remove the temporary doors, but in such manner as to keep the building closed against trespassing. When new doors are installed by others, they shall be kept closed to all except those having business within, and shall be kept locked at all times when work is not being done. This Contractor shall have charge of all keys to outside doors, except that one will be delivered to the Superintendent.

ART. 68. JOB PROGRESS

1. *A Job Schedule* will be prepared by the Architect and Contractors as soon as possible after the award of the principal contracts. Thereafter, this Contractor shall arrange his duties in conformity with said schedule and shall in no way obstruct the progress of the work in conformity therewith.

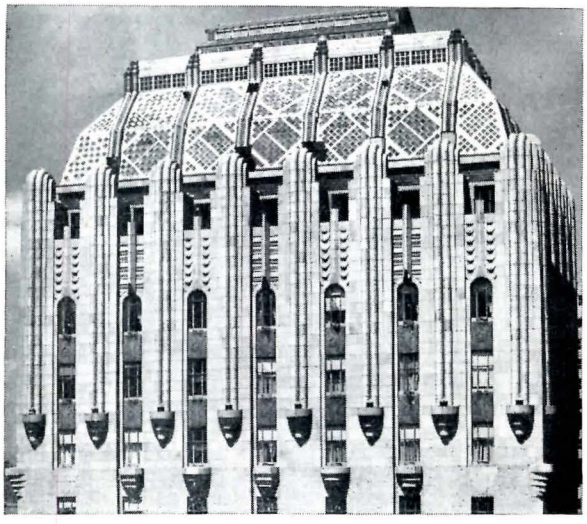
2. *Progress Photographs* shall be taken by a professional photographer at the expense of this Contractor at intervals designated by the Architect, 12 negatives in all, on 8″ x 10″ plates. Three prints from each negative, mounted on linen, with binding margin, shall be delivered to the Superintendent soon after being taken. If unsatisfactory, new photographs shall be taken.

3. *At Completion* of the entire construction and equipment program, this Contractor shall remove all remaining equipment and surplus material and clean the premises, all as stated in Art. 61, and shall release the premises and the keys to the building to the Owner's authorized Representative.

The foregoing are, of course, subject to much variation depending upon local conditions and upon the size and character of the job. The thing that the specification writer should particularly bear in mind in the preparation of a specification for such a contract is that its chief function is to pick up and tie in all the loose ends that are not easily covered in other contracts. But he must also carefully watch his "Supplementary General Conditions" or "Special Conditions," or whatever he chooses to call them.

(Concluded on page 98, Advertising Section)

Detail of Roof



BARBIZON PLAZA HOTEL
58th to 59th Sts. & 6th Ave., N. Y. C.
Murgatroyd & Ogden and Lawrence Emmons, *Architects*
FEDERAL SEABOARD MULTICHROME BUFF TERRA COTTA

A SEPARATE CONTRACT FOR OVERHEAD WORK

(Continued from page 864, Editorial Section)

Much of the foregoing matter is ordinarily found grouped under such supplementary conditions, but there are several such items that had best be handled by others than this "Overhead Contractor," such as temporary heat, building lines, and levels and their maintenance, and items of a cautionary nature, such as keeping guy wires and smoke pipes away from growing trees and other property subject to damage therefrom.

Another item seldom found in general conditions, but which should not be overlooked, is that relating to revised and superseded drawings:

"*Revisions of* drawings may be made from time to time as the work progresses, and copies of revised drawings, showing changes to date, will be supplied to Contractors as soon as convenient. This Contractor will be required to receipt for copies of all revised drawings delivered to him or his representative and shall thereafter be responsible for errors due to the use of superseded drawings."

It is also essential that each Contractor on a job where an "Overhead Contract" is contemplated familiarize himself with the terms of that contract in order that he may know how much he is to be accommodated thereby and will not figure on duplicating service unnecessarily. For this reason, the specifications for each separate contract, other than the "Overhead," is preceded by some such paragraph as,

"*General and Supplementary Conditions.* Arts. 1 to 44 (incl.) of the 'General Conditions of the American Institute of Architects,' also Arts. 45 to 60 (incl.) of the 'Supplementary General Conditions' for this work are parts of these specifications, whether bound herewith or not. The Contractor undertaking this work professes himself familiar with same and with Arts. 61 to 68 (incl.) of the specifications for 'Overhead Work,' and states that he has based his proposal accordingly."

The paragraph on "Job Schedule" in Art. 68, if properly worded in the General Conditions, need not be repeated in the Overhead Contract.

The three topics of repairing damaged plaster, replacing broken glass, and cleaning at completion can all be included in this contract, instead of only the cleaning, as above specified. It would simplify distribution by the Superintendent of the expenses to be assessed against the various contractors if all cleaning and repairing were assigned to one contract, yet it might be more practical to have the plaster contractor patch his own work, and the glazing contractor do his own replacing—might even be best for the glazier to do his own cleaning. All such subjects must be carefully weighed by the specification writer and his documents prepared accordingly.

A BOOKLET FOR SMALL HOUSE ARCHITECTS

The National Lumber Manufacturers Association has recently published a very interesting little booklet entitled, *The House for the Growing Income.* This book is designed for small home builders who have insufficient funds available for building a big house but who are able to build a small cottage designed to be adaptable for future additions.

Architects will find this booklet handy in accommodating patrons of limited means whom they may wish to help but cannot afford to serve professionally except in a limited way. The booklet may be obtained from the National Lumber Manufacturers Association, Transportation Building, Washington, D. C.