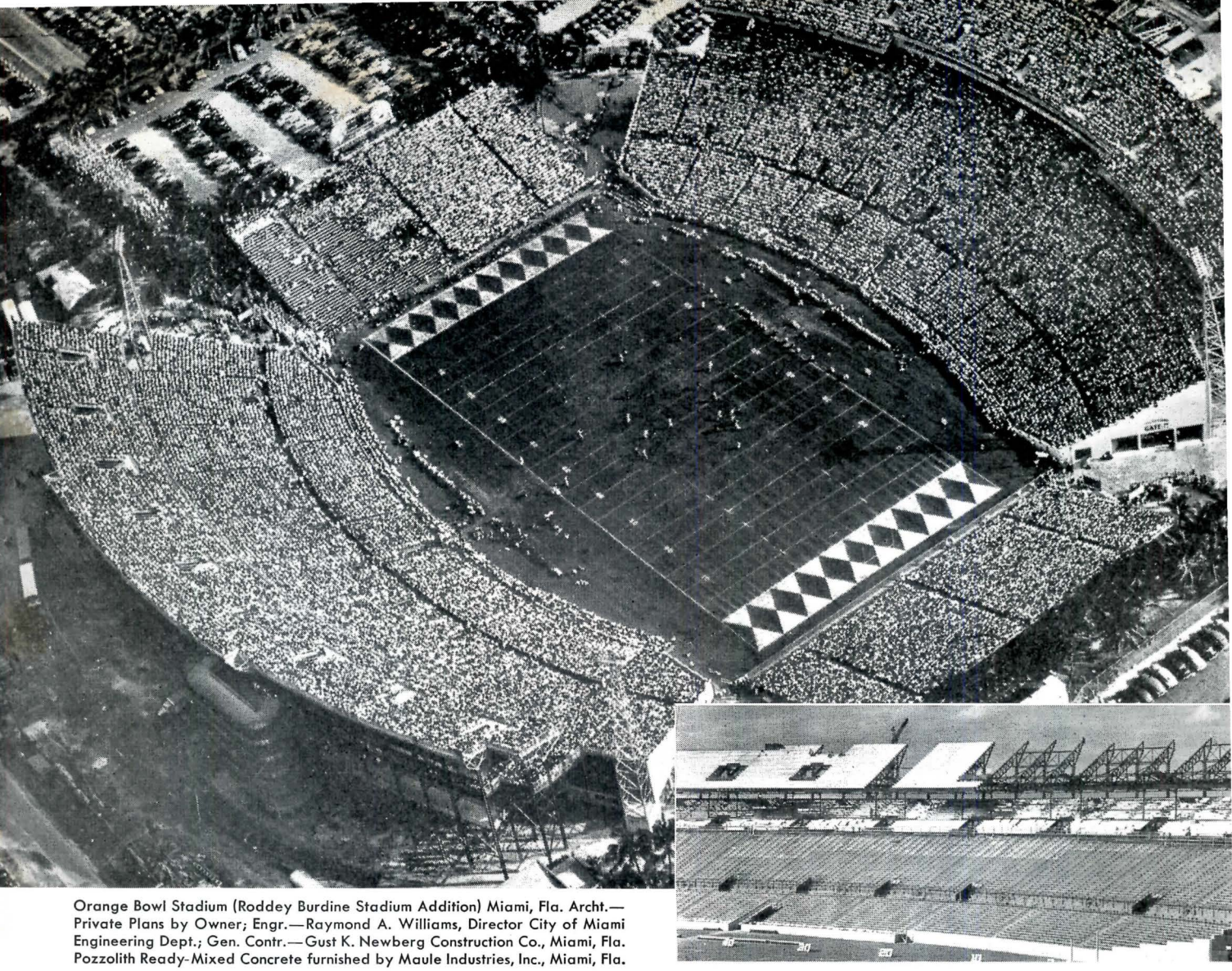
Progressive Architecture

12/48



Orange Bowl Stadium (Roddey Burdine Stadium Addition) Miami, Fla. Archt.—Private Plans by Owner; Engr.—Raymond A. Williams, Director City of Miami Engineering Dept.; Gen. Contr.—Gust K. Newberg Construction Co., Miami, Fla. Pozzolith Ready-Mixed Concrete furnished by Maule Industries, Inc., Miami, Fla.

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Allentown School Stadium
Allentown, Pa.

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Hershey, Pa.

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Progressive Architecture

(PENCIL POINTS)

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Newsletter

The construction industry is talking much of research these days. Greatest hope of integrated study lies in Building Research Advisory Board, of National Academy of Sciences, with excellent members and good sponsorship. So far, principally due to lack of funds, there has been no action.

University research is spotty and uncorrelated. Individual industry research goes ahead--Structural Clay Products Institute plans a million-dollar long-range research program--but many manufacturers wish that experience gained in "engineered house" program could be extended in further coordination.

Local school board near Chicago last month was inquiring for names of architects "not necessarily local, not necessarily school specialists" who would take real interest in low-cost building. Obvious, well-known names are sometimes too busy; local talent is often rightly or wrongly considered not capable. Immediate result: good amount of work for newer firms, which are forming in numbers. Probable ultimate result: high mortality rate among such newcomers who can't hang on through recess.

Prefabrication in full sense is not here. However, sensible moves eliminating much conventional on-the-job work are being made by many manufacturers. As one example, Wheeler-Osgood announces availability of hollow-core door which is entirely pre-fit.

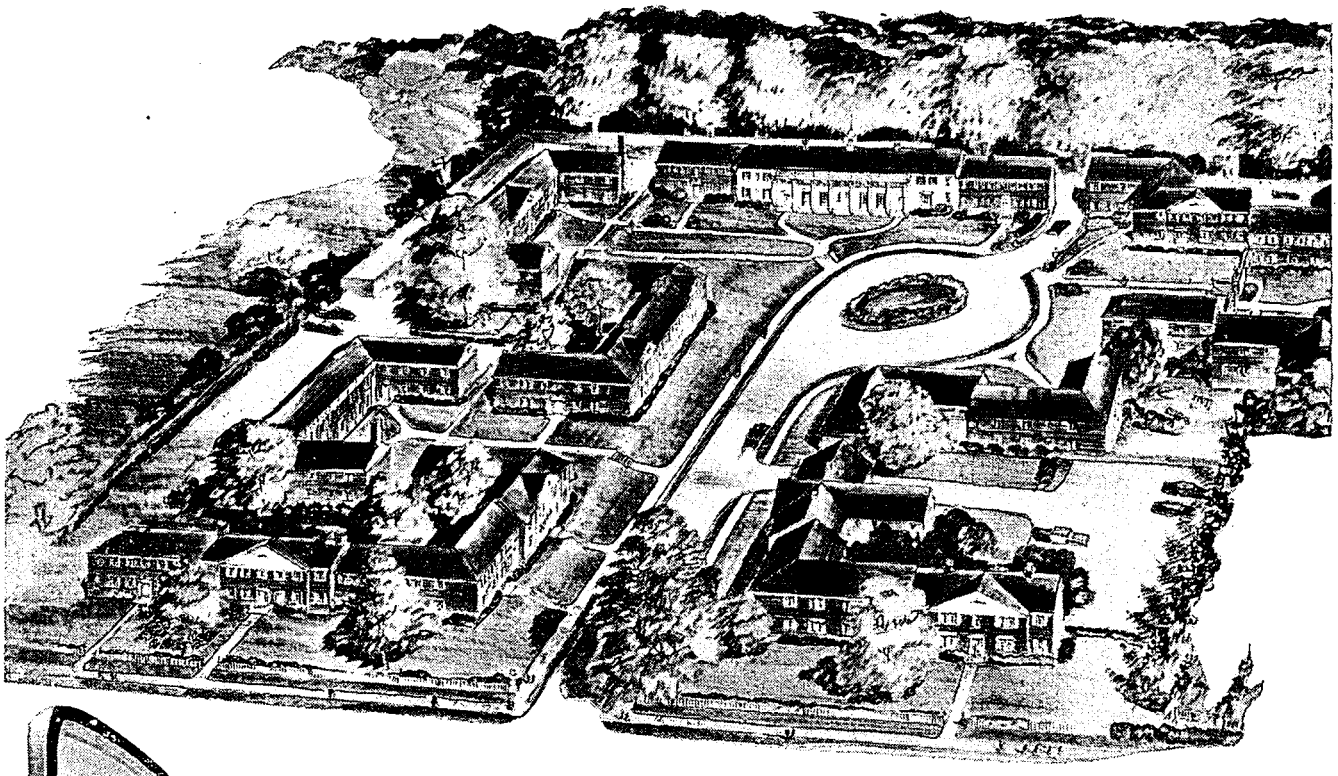
Another door development which is attracting attention is a wood door by Fox Bros., chemically fireproofed by Protexol, which recently withstood 1½ hour fire test with temperature rise through door of only 150°, better than metal or kalamein.

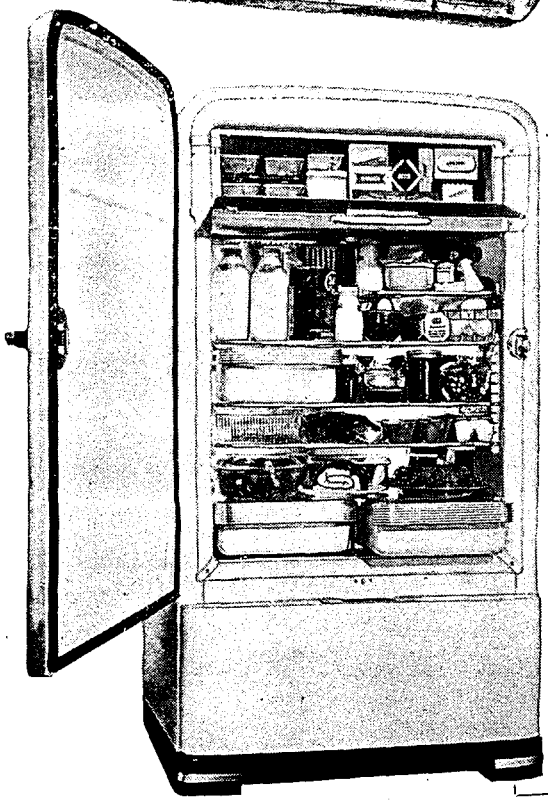
Question of possible award of A.I.A. Gold Medal to Frank Lloyd Wright will be decided at directors' meeting this month. Many local Chapters have debated the issue: Cleveland voted favorably, urged other Chapters to do same; N. Y. also approved; Central New York, by narrow margin, frowned on idea.

Most building product industries report constantly increasing production through '48. Fabricated structural steel bookings are almost 30% greater than '47, brick is up 16%, ceramic floor and wall tile is 24% over last year's production, Northern Hard Maple, Beech and Birch Flooring may show 50% increase over '47.

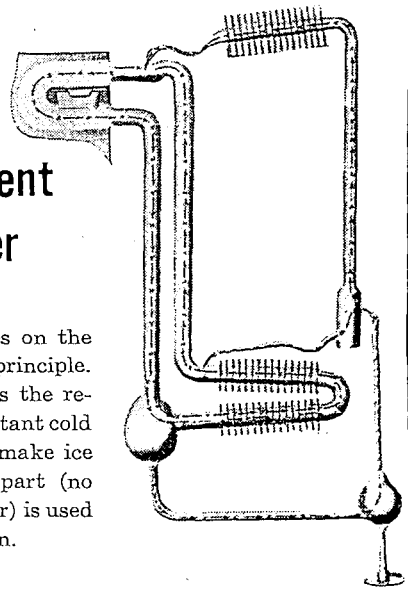
Many manufacturers are finally expanding plant facilities. U. S. Plywood's new Shasta plant, for instance, can produce as much pine plywood as entire production of that company's existing mills. On the other hand, some producers are waiting to see if present demands represent temporary boom. Cement, for example, still in short supply, cannot look to more than 5% increase in production next year, according to "Engineering News Record" survey, with present plant capacity the limiting factor.

"I wanted dependable refrigeration ...I chose silent, long-





Here's why Servel stays silent ... lasts longer



The Gas Refrigerator operates on the simple continuous-absorption principle. The small gas flame circulates the refrigerant that supplies the constant cold needed to preserve food and make ice cubes. Not a single moving part (no motor, no pump, no compressor) is used in the entire freezing operation.

for my garden apartments lasting Servel,"

Says Builder of Green Acres, Garden Apartments in Verona, New Jersey

"Last spring—when I was ready to order refrigerators—I wanted to make sure my tenants would get a refrigerator that would be dependable for years. That's why I settled on Servel for my Green Acres apartments. In addition to having all the latest conveniences, Servel is the only refrigerator that has no moving parts in its freezing system to ever need repair or replacement."

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The newest idea in American home living—where the country's fresh out-of-doors is blended with the city's modern conveniences—is the garden apartment. Naturally the builders and owners are making their garden apartments as up-to-date and comfortable as possible . . . with special emphasis on the kitchen and kitchen appliances. That's why many owners have chosen—and many more are seriously considering—Servel as the refrigerator for their kitchens.

Permanent silence pleases tenants

Tenants find something extra special in their new Servels. To be sure, they get every modern cabinet feature. And something *more*—the finest freezing system of *any* refrigerator. That's because only Servel operates without using moving parts. It has no machinery to make noise or get out of order. Just a tiny gas flame provides dependable, uninterrupted refrigeration year in, year out.

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• For IDENTIFYING *Fluorescent Lighting Fixtures*

express the illuminating characteristics and performance he recommends.

2. It supplies a precise formula for fixture identification and classification that allows the buyer to *know* he's getting the illumination recommended.

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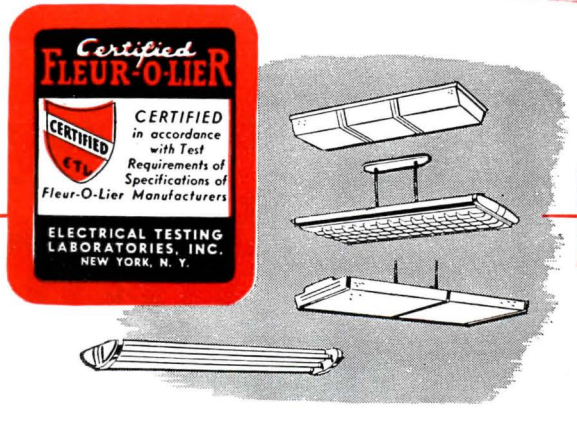

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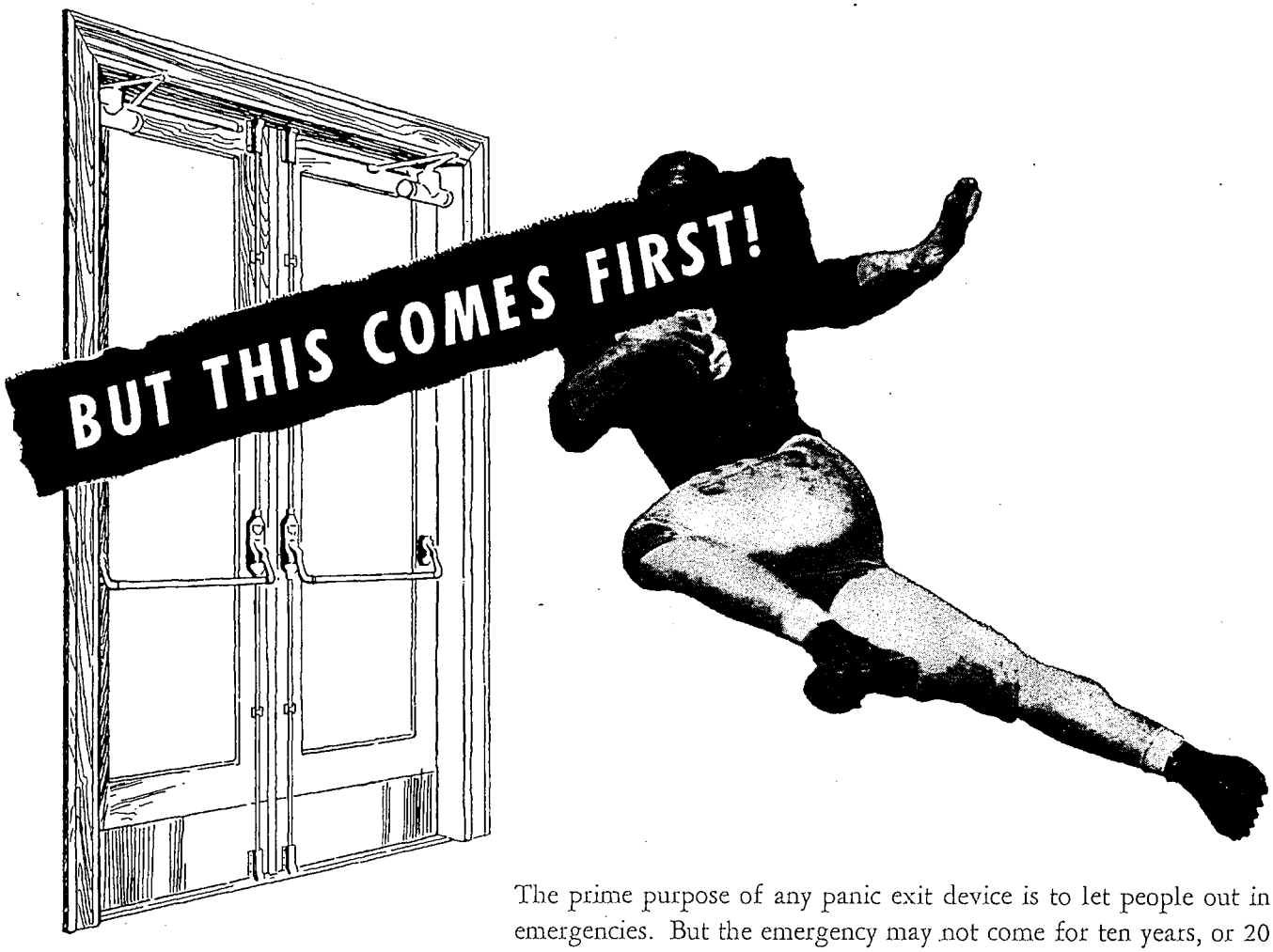

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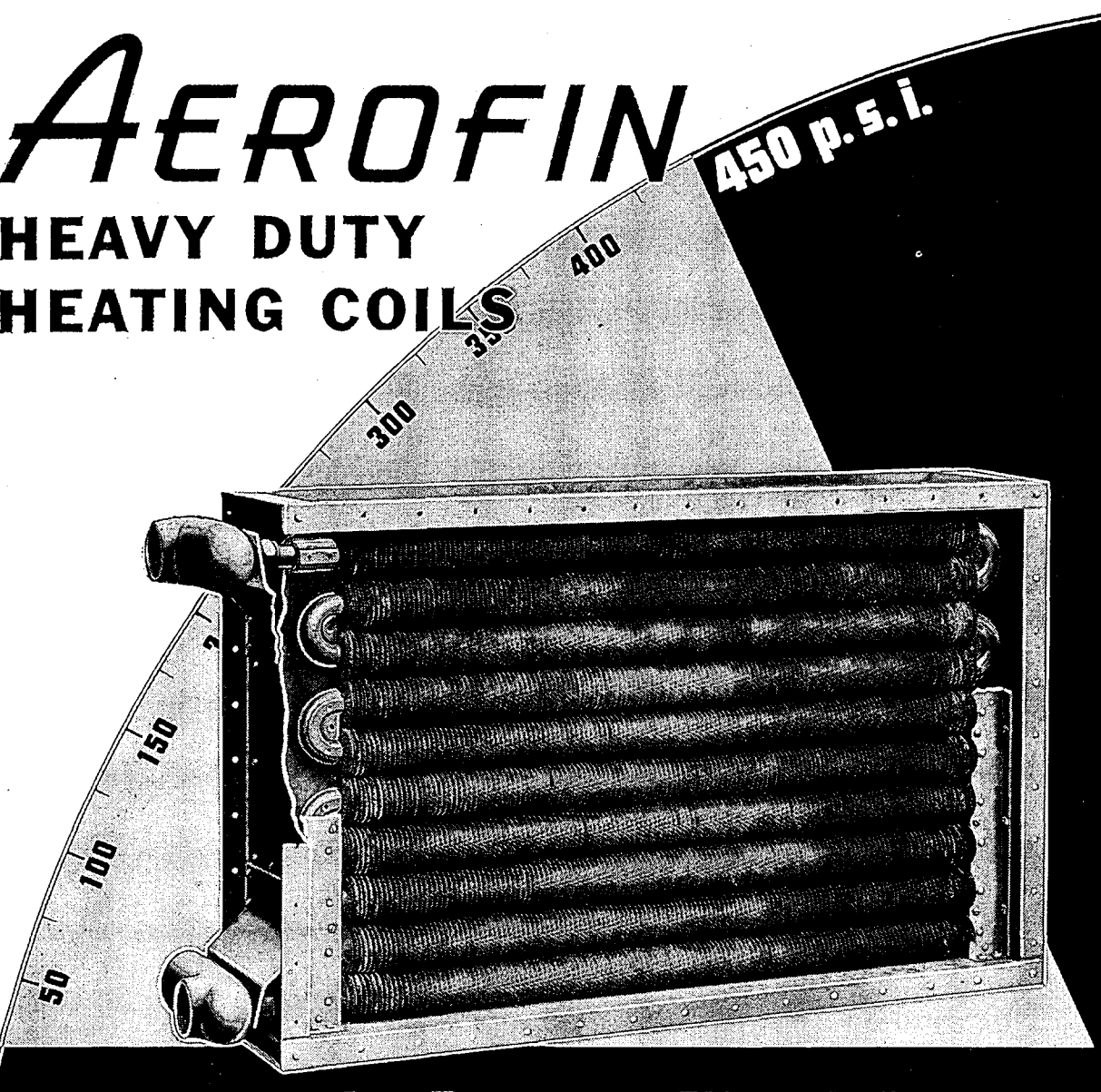

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DAY IN THE CITY

Dear Editor: On Saturday, October 16, the Philadelphia chapter, A.I.A., did a rather unusual thing. It sent 45 of its members on a trip to New York to see and analyze the public works projects that have taken place in that city and which are proposed. During the course of the trip, we were guests of the New York chapter at lunch and enjoyed the splendid hospitality of Harold Sleeper, the president.

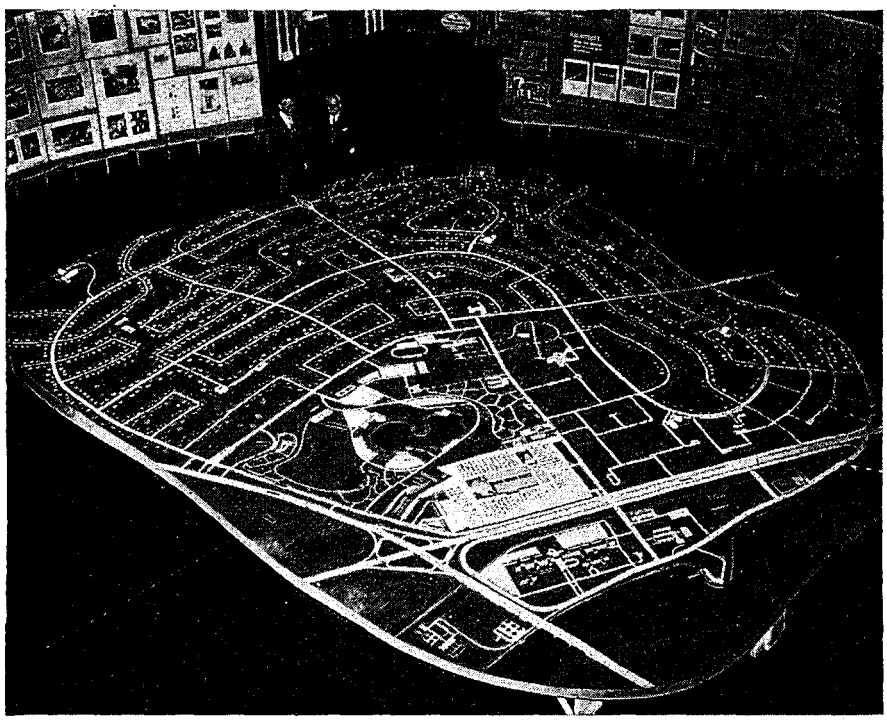
Under the excellent guidance of Bob Moses' Park Commission, we visited and inspected the Battery Tunnel, the East River Asphalt Plant, and all of the new housing projects on the lower East Side. Also participating in the trip as the guests of the Philadelphia chapter were members of the Department of Public Works, the City Planning Commission, and members of the Society of Professional Engineers.

Outstanding during the trip was the private observation car supplied by the Reading Railroad and the howling siren of a motorcycle cop who led the cavalcade from the Battery to northern Manhattan, all the way up Broadway. Another outstanding feature of the trip was the inspection of the future plans for United Nations and an interesting tour of the drafting rooms of that organization.

Our too-brief stop at "Tomorrow's World," an exhibit put on by the New York chapter, in the Museum of Science and Industry, Radio City, was quite a thrilling one. It combined a beautiful model with the display of drawings and photographs of most of the chapter membership and a fine surrounding exhibit of building materials; making the whole project an outstanding one. Though its magnitude is somewhat below the size of last year's Philadelphia "Town of Tomorrow," it far exceeds that exhibit when we consider this one of the rare instances when architects visualized and carried out an entire project of this type. I think it is of great interest to note that the Philadelphia men took great pride in seeing the works of their former classmates and personal acquaintances, which they would probably have never seen had such a trip not been taken.

We plan to fly down to Washington in the spring, since intercity field trips are part of our permanent program. There is something fine to see in every community and intercity communication between architects can broaden us all. The Philadelphia chapter would welcome visits from any group of architects or laymen; and would heartily encourage programs of this type being taken up by all chapters of the Institute.

BERYL PRICE
American Institute of Architects
Philadelphia 3, Pa.



Major Gen. Philip B. Fleming, right, Administrator of the Federal Works Agency, in New York on official business, viewing the featured model of "Tomorrow's World," an exhibit sponsored by the New York chapter, recently at the Museum of Science and Industry. On the left is Harold R. Sleeper, chapter president.

LEGAL INFERENCE

Dear Editor: I am indebted to Daniel Laitin for his letter which appeared in VIEWS in the October Issue.

He pointed out that in the American Store Equipment-Jack Dempsey case discussed in my article in the August P/A, no contractual work was actually done by the contractor, the result being that the corporation unsuccessfully sought reimbursement for its design services only. This fact is not reflected in the decision as reported and in that respect the opinion of the judge is somewhat misleading. The decision of the trial court reads, as far as is apropos, as follows:

> Though there were other services to be rendered, such as designing, arranging and decorating, there were also the preparation of plans and the *supervision of construction* work which are the usual functions of an architect.
>
> The plaintiff contends, however, that even if it did not perform certain architectural services, nevertheless it can recover for all those portions of the contract not involving such services; and that the architectural services, if any, amount only to about five per cent or ten per cent of all the services undertaken to be rendered. However, there is no means of segregating the good from the bad portions of the contract, in this case. The contract was entire and indivisible; *to plan, construct and furnish* a complete unit.
>
> To sustain the legality of the balance of the agreements would lead to widespread disregard of the licensing statutes. It would be easy for any construction contractor to thwart the purposes for which the licensing of architects was enacted, by merely providing in his contract that architectural services would be given gratis, so long as the contractor were awarded the contract itself.

Since this decision was neither discussed, modified, or reversed, but affirmed without opinion by the two Appellate Courts (including the highest court in New York State) the fact pointed out by Mr. Laitin does not affect the conclusions drawn in my article. The inference to be drawn from the case is still as was stated in the article, that contractors who in the course of construction perform architectural services thereby jeopardize their right to compensation for all work performed. It should also be emphasized, in view of Mr. Laitin's statement, that such an *agreement* is also invalid and will not permit recovery.

Mr. Laitin's comment that he had occasion to "forewarn" American Store Equipment that he as architect should have been a party to the contract is of course appropriate. Had Mr. Laitin been the principal in the contract affecting architectural services, there would have been no question about the right to recover for the architectural services rendered.

BERNARD TOMSON
New York, N. Y.

three mistaken ideas about Sound Conditioning...

mistake #1

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mistake #2

THAT SOUND CONDITIONING IS A LUXURY...

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mistake #3

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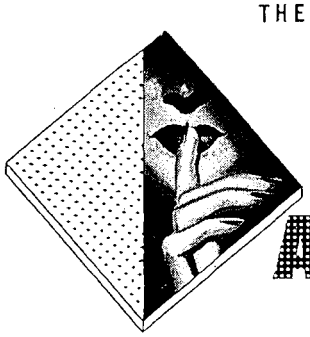

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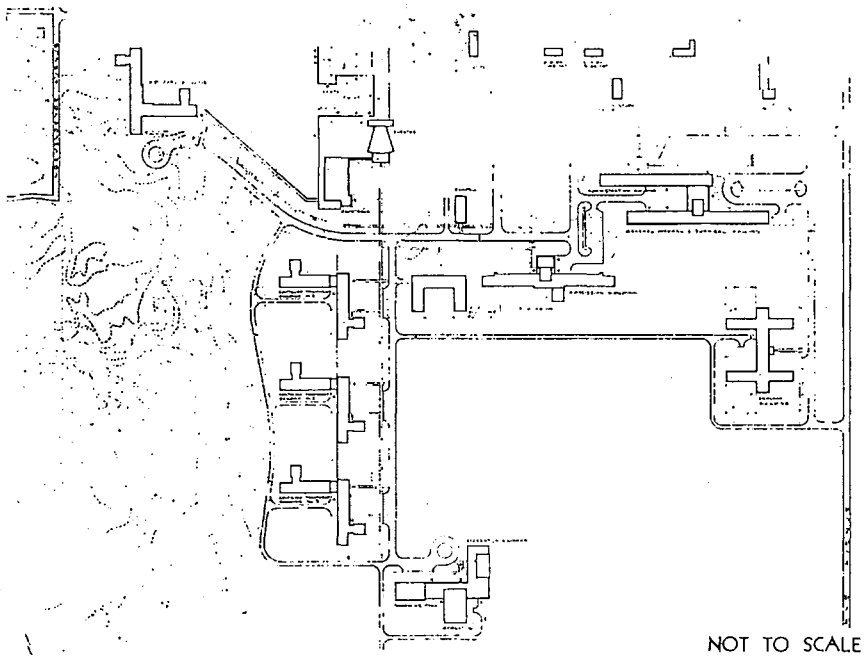
LESSONS OF A GIGANTIC HOSPITAL PROGRAM

By JOSEPH BLUMENKRANZ

(Continued from November Issue)

Suggested Economies

A case in point is the duplication of surgical facilities. This duplication is found in the emergency operating suite, supplemented by a small ward unit. The latter is not intended for admissions but is meant for emergency and accident victims only. It is doubtful whether such emergency facilities are really needed at all projected hospitals, especially where other institutions already exist, or are simultaneously planned on adjacent sites.



NOT TO SCALE

NOT TO SCALE

Function Versus Symmetry: Where axial symmetry, rather than good hospital planning, prevailed, the traffic lanes are at loggerheads with the logical disposition of elements . . . (See page 14). Examples above are from file of projects submitted.

In acute hospitals for civilians, with an average stay of 9 days, one operating room per each 100 beds is usually adequate. The assumed average stay in the VA hospitals is several times as long. Yet, the number of operating rooms called for is far in excess of the ratio of 1 to 100 beds. No doubt other factors entered into these expansive surgical facilities, such as availability of an adequate number of operating rooms for the peak of visiting surgeons operating on limited schedules. It is doubtful, however, that identical visiting staff conditions will prevail throughout the country; yet the program for the surgery is identical for all hospitals of similar bed capacities, regardless of geographical location.

In conjunction with these comments about the surgery a few words about the central sterile supply seem pertinent. On the whole, the concept of this department, as illustrated in the graphic technical guide supplied to the architects, is excellent. Unquestionably, unprecedented efficiency can be obtained in the administration of such facilities when planned according to the guide. It is therefore even more surprising that this unit is not really "central," as its name implies. For another, smaller nurses' workroom is called for within each surgery, in addition to the "central sterile supply." This appears another needless duplication which could be dispensed with.

In the out-patient department too, some economies could be effected. In fact, analysis shows that a more efficient functioning would be possible in a lesser space and in fewer rooms than requested in the program. In view of the anticipated shortage of nursing personnel and of physicians for years to come, this point cannot be overemphasized. The present criteria call for individual examination and treatment rooms, opening directly off a corridor, without the intervention of dressing cubicles. It has been successfully demonstrated in the past that an examining room with two dressing cubicles conserves a lot of time, because disrobing and dressing are done in the latter. Thus, the room proper is released for examination and treatment only.

(Continued on page 12)

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Progress Report

(Continued from page 10)

The requirements for the eye, ear, nose, and throat clinic seem too loosely framed, in contrast to other program definitions. So much so, that some architects failed to interpret them correctly and misconceptions found their way into the plans. Presently, the construction of the audiometer room in various hospitals is bound to vary to such an extent that a uniform degree of insulation will not prevail. Also, in view of the drive for economy the "must" for a 25 feet long eye-test room is not entirely convincing when the functions carried on therein can be satisfactorily performed in a space half as long.

The technical guides for the typical X-ray suites do not pay enough attention to the location of the control booths with reference to the X-ray equipment and to the overseeing of the patients. In some instances the location of the observation window precludes vision of the patient being X-rayed at the cassette changer. Ingress and position of stretchers (or beds), and their parking while the patient is being treated, are also inadequately taken care of. The advisability of the dictated installation of the transformers on floor of the X-ray room, rather than on a mezzanine above the control booth, is also of doubtful wisdom because this high-tension apparatus is thus within too easy reach of, and a potential danger to, the curious.

Excessive Areas and Other Criteria Shortcomings

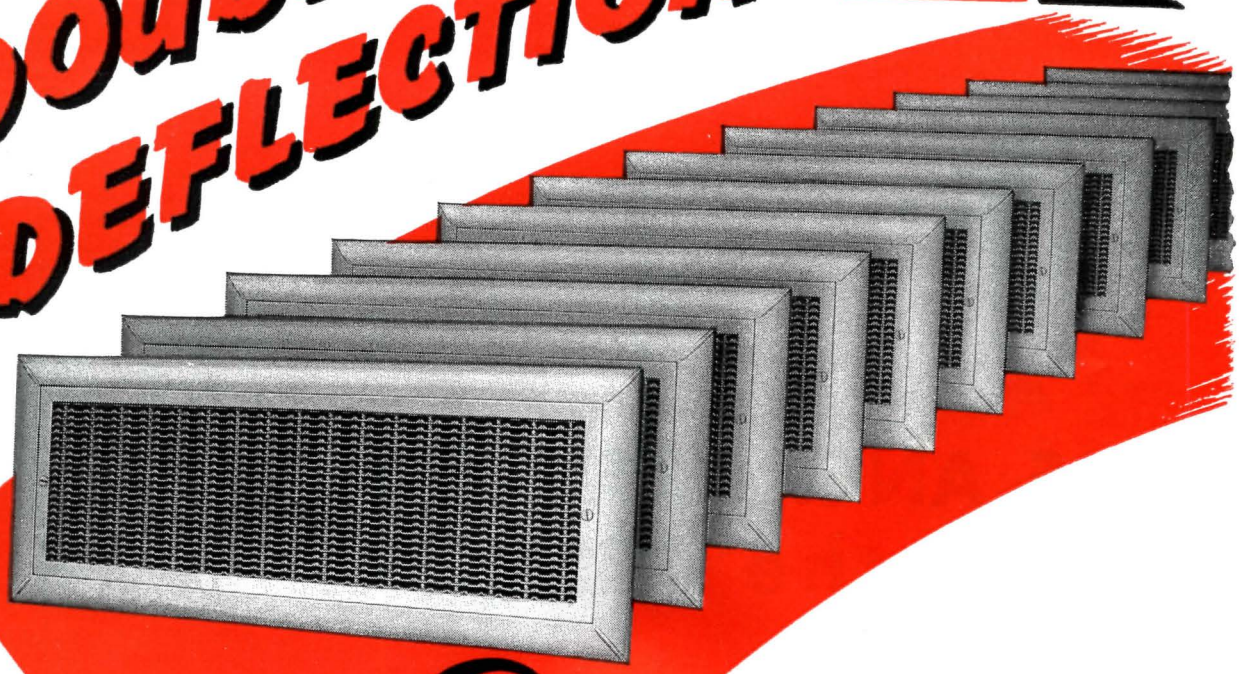
In spite of the sincere effort to keep use areas down to minimum, there is still a number of spaces for which criteria are excessive. For instance, social service interview rooms could be cut considerably below the 120 square feet asked for. A single dental treatment room could get along with an area of 80 to 100 square feet rather than the 150 square feet prescribed. In a similar vein, economies could be achieved in the operating suite where, in addition to locker rooms for male and female attendants, nurses, residents, and visiting staff, separate lounges for each of these categories are also required. It would seem that, except for the doctors, separate lounges could be omitted because such are provided together with general locker facilities.

Numerous minor, yet valuable, improvements and economies in cost or maintenance could have been achieved.

Maintaining a hospital clean and sanitary at all times demands a lot of effort, and anything which tends to reduce it is decidedly desirable and welcome. Therefore, wall-hung water closets, urinals, and other sanitary fixtures are almost taken for granted and used. Yet, in the veterans hospitals the floor-type closets and urinals were stubbornly insisted upon. Granted that they are somewhat less expensive than the wall type, this can hardly be considered a wise and well-considered economy. On the other hand, the criteria require that water-supplied fixtures such as sinks and lavatories be placed against tiled wall surfaces in order to avoid damage to the wall finish as a result of splashing. At the same time they specify that such fixtures have integral splash-backs. This is an incongruous duplication. Almost inevitably dirt and vermin lodge behind the splash-backs, especially when cracks are formed after a slight settlement or shrinkage of plaster. Fixtures without integral backs, kept a few inches away from tiled wall surfaces, have proven to be more appropriate. They also permit easy cleaning directly behind them.

(Continued on page 14)

DOUBLE DEFLECTION



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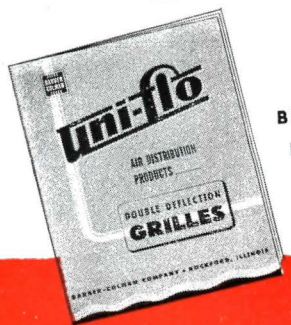

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Progress Report

(Continued from page 12)

A guide specifying door widths for the respective uses in the hospital was furnished and its application made mandatory. In it, the minimum width of a doorway through which vehicular traffic is anticipated was fixed at 5'-0", and equipped with two 2'-6" wide doors. In the past this was common practice, but now it is progressively discarded by forward looking planners who keep abreast of actual needs. It is obvious that where two 2'-6" door leaves are provided in an opening, both have to be operated in order to let most of the vehicular traffic pass by. This is an avoidable nuisance.

In the light of current staggering construction costs, the concentration upon economy led to deviations from known good practice, at least in some instances. One of these is the sacrifice of a flush interior wall surface along the exterior perimeter of the building. Instead, the furring tile, where provided, is to follow the structural column and other projections such as pipe enclosures, etc. The objective was conservation of floor area. This policy is seriously questioned, for there is no assurance that it will result in cost savings. On the contrary, there is good reason to assume that the resultant breaks in the interior face of the exterior walls will prove to be more costly than a flush condition. It is felt that, in lieu of the readiness to sacrifice a flush wall, stress should have been laid on more open planning and fewer partitions. For example, it was insisted that scrub-up alcoves in the surgery be separated from the corridor with full partitions and doors; this negates the very term "alcoves" which was applied to them. There is no doubt in my mind that a low screen is an adequate segregation from corridor traffic and that therefore the upper part of the demanded partitions, as well as the doors in them, could be omitted. The surgical suite is always planned in a cul-de-sac, hence no one but those having duties in it enter it. Open alcoves are a good common practice and there seems to be no valid reason for superseding it: or substerilization and scrub-up could share one common room.

The N.P. hospitals and the Tuberculosis Units presented similar planning problems, and in some cases the criteria could have been improved. Space does not permit going into a detailed discussion of these types.

Function Versus Symmetry

Wherever the architects attached due importance to integration of the functional needs to architecture, the designed buildings are arranged in a sequence corresponding to the flow of patients and of therapy; there, the surrounding outdoor areas are likewise zoned. Where axial symmetry, rather than good hospital planning, prevailed, the traffic lanes are at loggerheads with the logical disposition of elements. Thus, in the former, the admission and treatment building, the continuous treatment pavilion, the disturbed building, and all the adjunct facilities such as dining, recreation, occupational therapy, theater, chapel, gym, and other conveniences, comprise a well-knit group, apart from the pavilion for the acute and of the general administration. In the schemes hidebound by symmetry, the administration and the acute unit became "themes" for monumental composition cut through by extraneous arterial traffic lanes. True, the acute building, by virtue of program scope, turned out to be the largest building of the entire group. But this was hardly a justifiable excuse for making it the focal point of an irrelevant architec-

(Continued on page 16)

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(Continued from page 14)

tural composition which was completely divorced from the need for creating a humane tool of medical science. This mimicry of Bourbonic splendor is incomprehensible within the range of the most advanced and progressive hospital program.

In the tuberculosis units, strict observance of minimum floor areas in patients' rooms, as defined in the criteria, was rigidly enforced. On the other hand, not enough emphasis, in my opinion, was placed upon adequacy and type of fenestration, and for penetration by sunlight of the interior of the hospital. It would appear that floor area and cubic air content per bed are factors the importance of which needs reevaluation. This applies to hospitals in general and to contagious wards in particular. Adequate yet draftless ventilation which can supply a proper volume of fresh air, and an exposure which will insure penetration by sunlight to parts farthest from the exterior walls should, perhaps, outweigh the current stress on area and air volume. Equally, stress should have been laid on the need for adequate air sterilization in dark rooms where a concentration of germs might present an infectious hazard. Such, for instance, is the fluoroscopy room, especially in the pneumothorax suite, where the physician is compelled to spend a great deal of time together with acutely ill patients.

As in the acute nursing units, the drive to minimize the distance from the nurses' station to the farthest patient bed led, in most cases, to plans with multiple wings. The objections to this were stated under the discussion of acute hospitals. In T.B. facilities, this shape was even more unfortunate than in the acute ones, because of the deep shadows cast by the projections in the facade. Some architects, however, were not swayed by the official preference for cross wings; their appreciation of the benefits of sunlight led them to plan the patients' rooms in blocks unbroken by shadow-casting projections.

Research or Precedent?

The criteria used for the veterans hospitals comprise a most comprehensive statement of a program, from broad definitions down to the minutest piece of equipment. They proved indispensable. Without them progress would have been next to impossible. Therefore, there might be temptation to use them as a handy reference in connection with future projects. In such a possibility lurks the germ for perpetuating errors. As up-to-date as these criteria are in most respects, many improvements and deviations could be made as, I believe, was here demonstrated.

One might, for example, question on what scientific basis did the criteria determine that a seclusion room for a psychotic be 80 square feet in area; a private room for a mental patient and for the acute, 120 square feet; and one for a victim of tuberculosis, 160 square feet. (It might be of interest to add that the Multiple Dwelling Law of the State of New York calls for bedrooms to have a minimum area of 80 square feet). Could it be that reliance on accidental precedent, rather than on scientific investigation, was responsible for such variations? Also, there seems to be no doubt that some of the discords between program requirements for the respective types (acute, N.P., and T.B.) of hospitals were due to inadequate or, in some cases, total lack of coordination between the various committees framing the program. If so, these could have been easily avoided.

(Continued on page 18)

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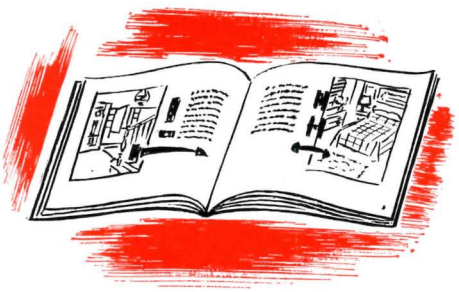

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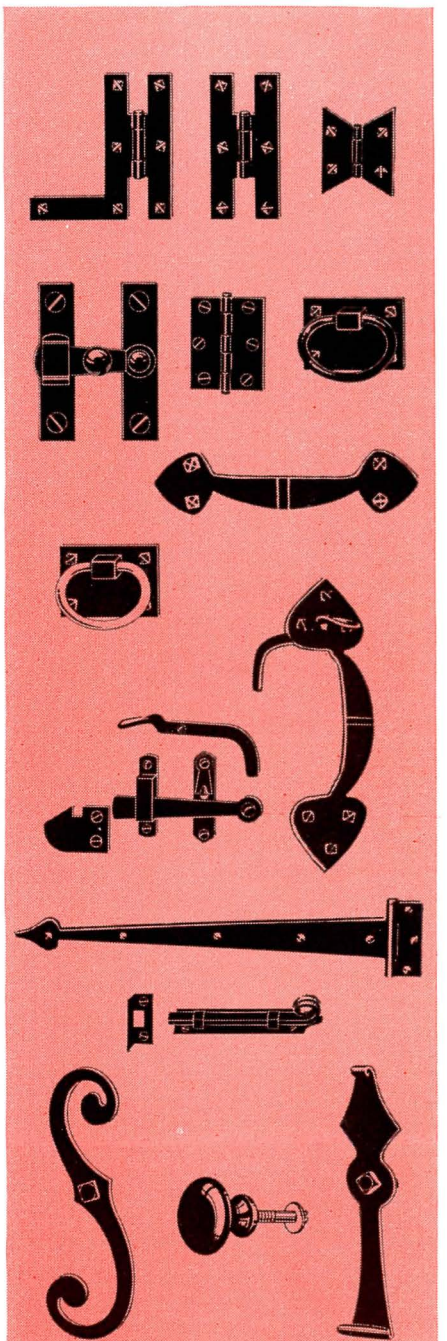

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Progress Report

(Continued from page 16)

Conclusions

Available references must not dull the planners' incentive to research. Reliance on books, even on the most recent ones, is, at best, loaded with danger of perpetuation of errors or of poor judgment. One such recent book on hospital design commits the error of being very definitive and static about some things which must undergo scrutiny as constantly as must a pathological investigation. In it one may find, to cite one example, a list of equipment needed in a substerilizing alcove (between two operating rooms); it is stated there with pontifical finality that two instrument sterilizers and one utensil sterilizer (boiling type) are to be installed in them. In fact, and fortunately so, not one of the hundreds of substerilizing rooms in the veterans hospitals will be so equipped. Rather, high speed and high pressure sterilizers will take the place of the boiling-type equipment. The latter was considered a thing of the past even while the book was written. What blind acceptance of just such a dictum would have meant for all of the surgeries can well be imagined.

These remarks are made with the ardent wish and hope that architects not be content to accept available references as gospel truth; but that they will assume the responsibility for constant research. The fruits of such research, supplanting and often superseding precedent, will be the best guarantee that hospital architecture will catch up and, henceforth, keep in step with the progress being constantly made in the field of medicine and psychiatry.

NOTICES

COMPETITION

A COMPETITION OPEN TO TEAMS OF STUDENTS of three or more of the arts of architecture, landscape architecture, painting, and sculpture is being conducted by the Association of the Alumni of the American Academy in Rome to encourage collaborative effort among students. Two prizes of $200 and $100 will be awarded. Drawings must be submitted by April 1, 1949. Complete details may be obtained from the Association offices at 101 Park Ave., New York 17, N. Y.

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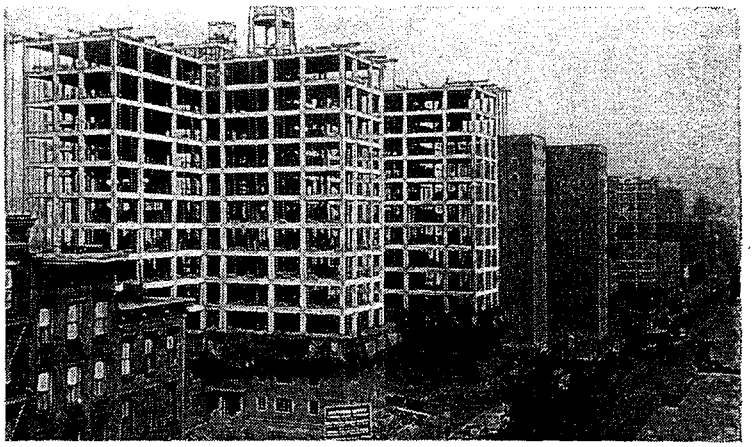

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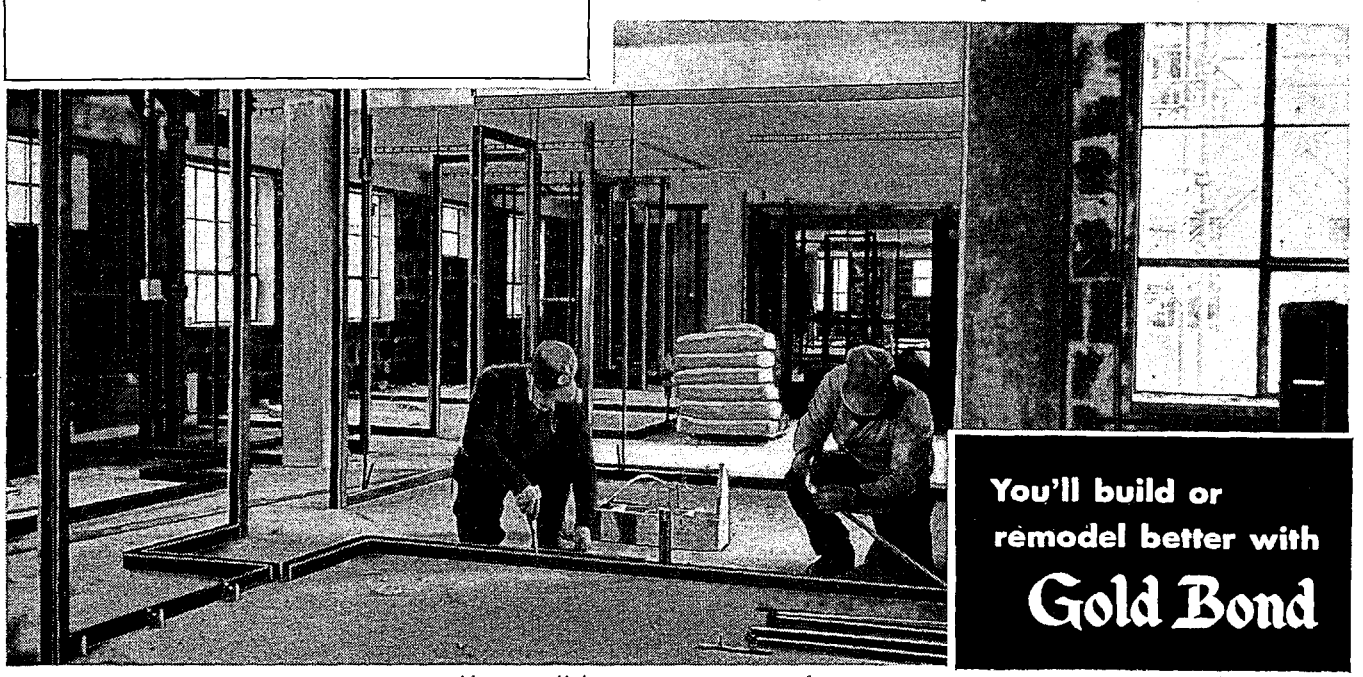

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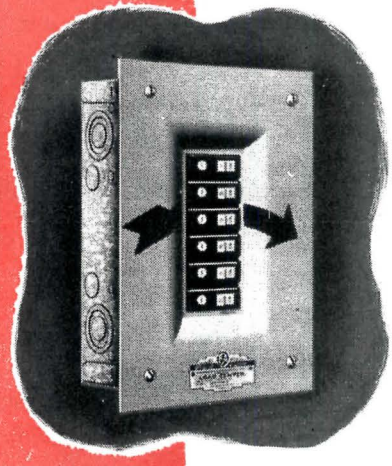

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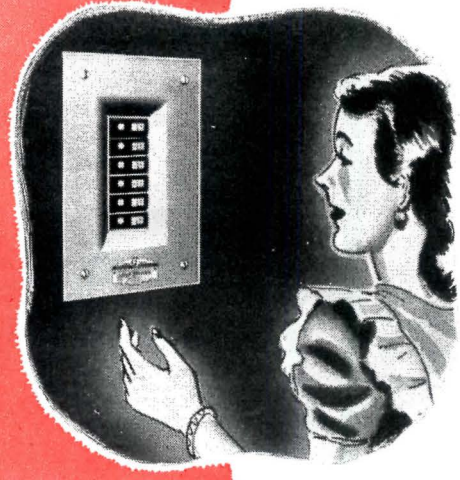

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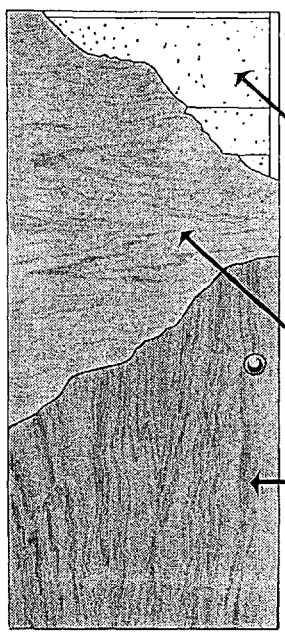

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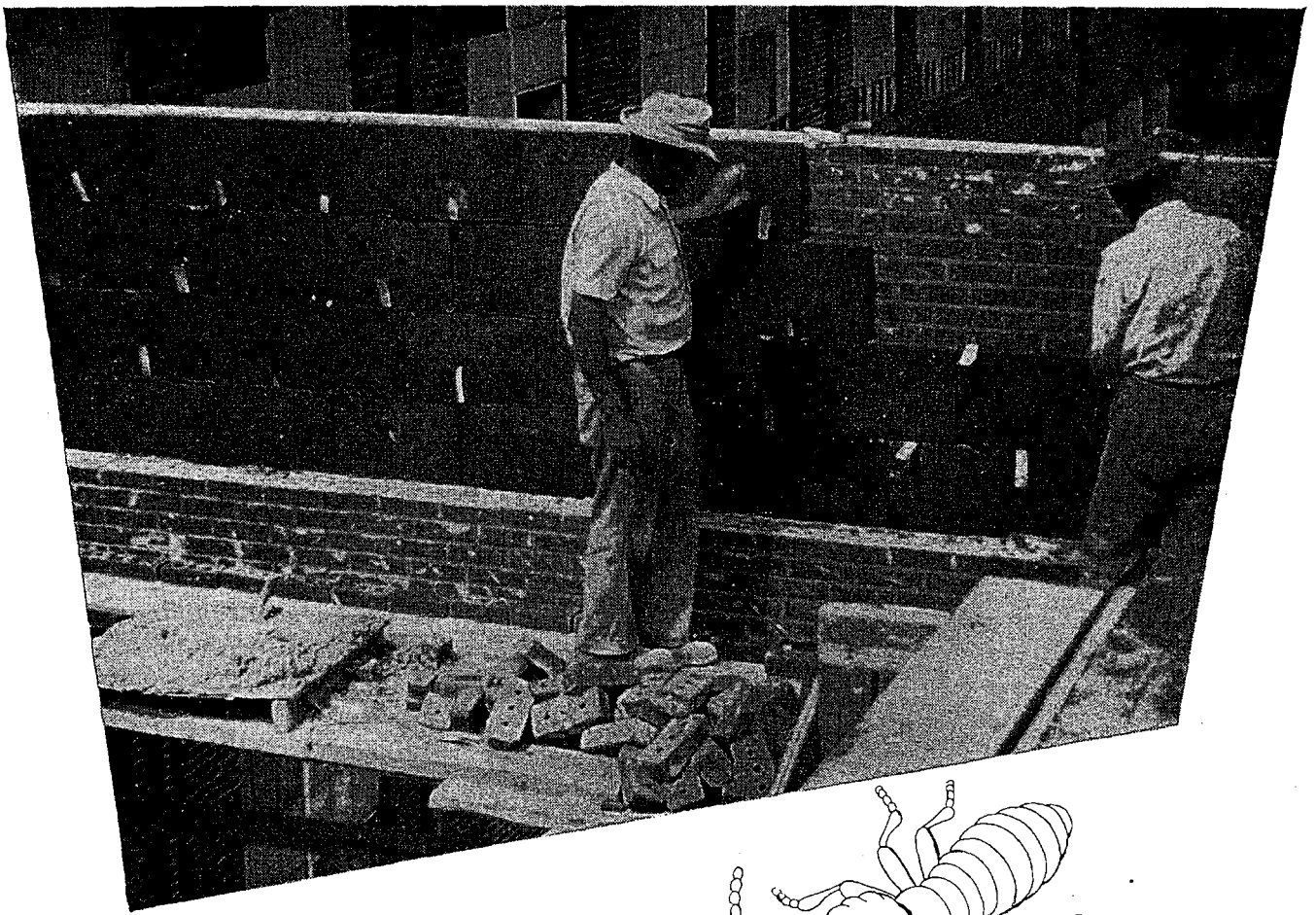

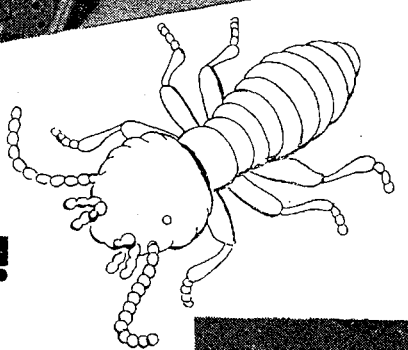

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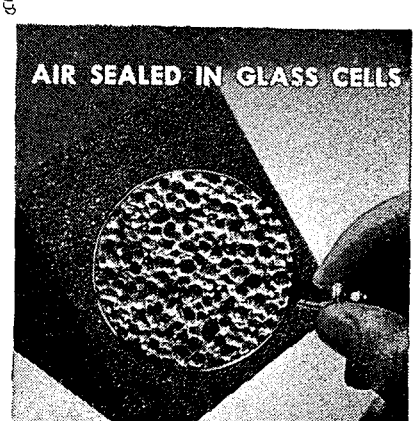

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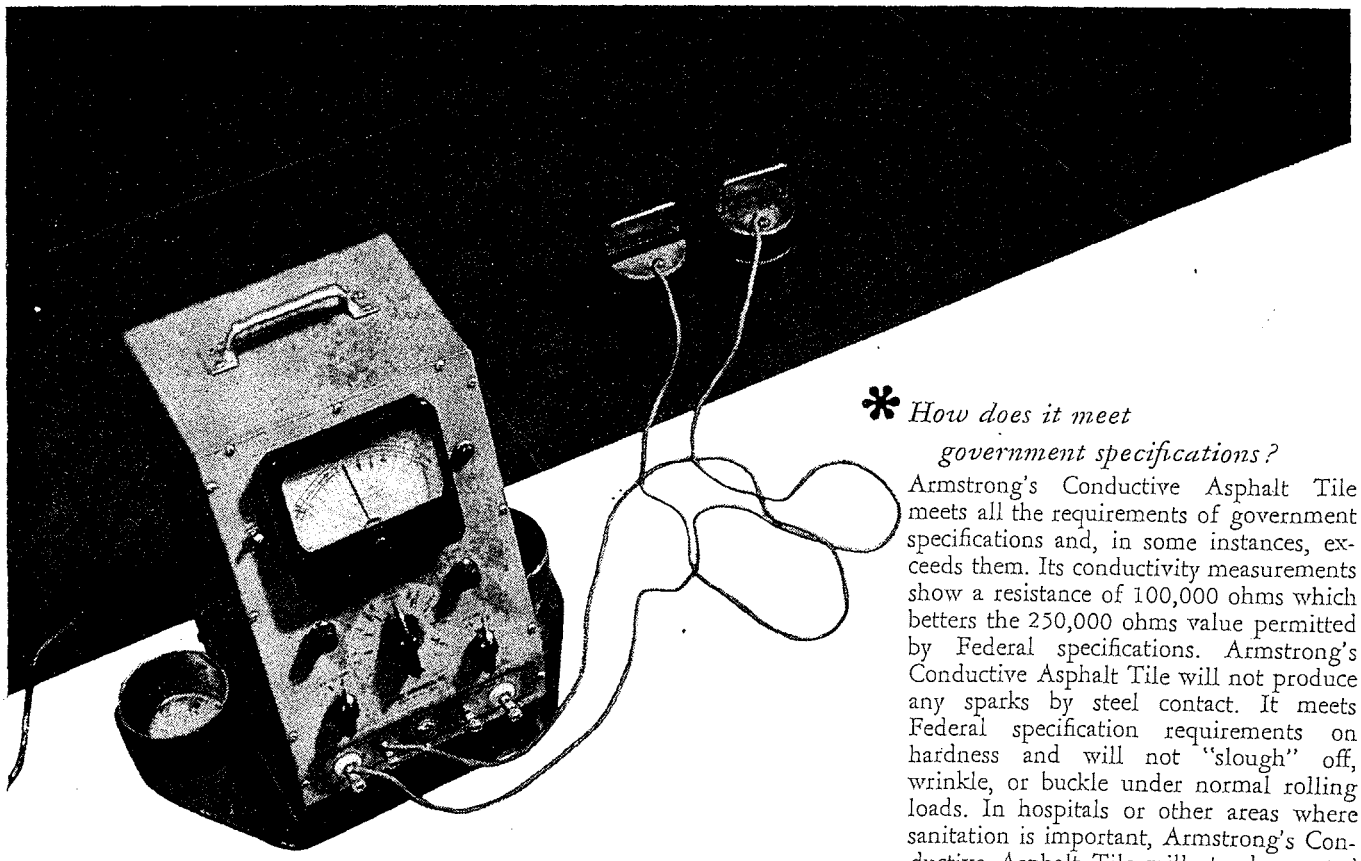

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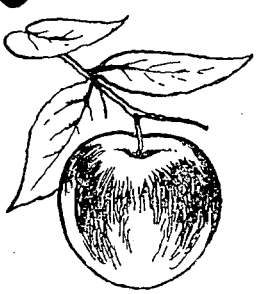
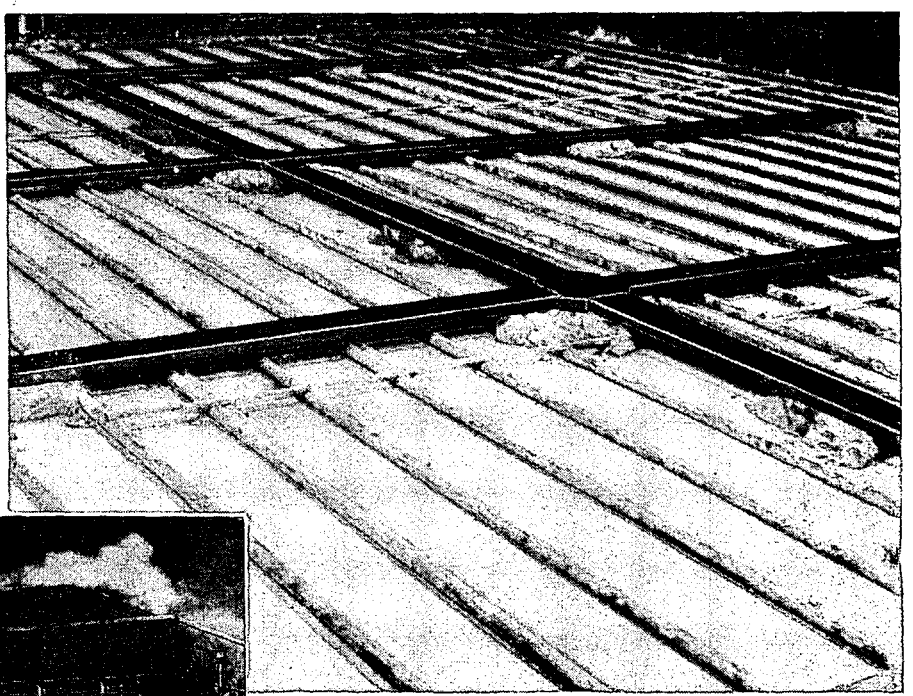
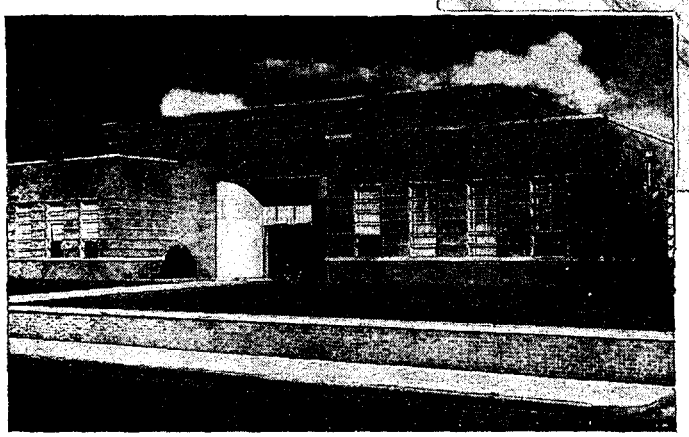






In the heart of the apple country, the fertile Shenandoah Valley, is the new office building and the plant of the NATIONAL FRUIT PRODUCT COMPANY, Winchester, Va.

And here is another great industry now being served by the WALKER Underfloor System which provides a multitude of outlets for power, light, telephone and intercommunication.

Nearly a *thousand electrical outlets* are furnished by the Walker System . . . outlets which are available at practically any point of the entire floor area. Ready for the immediate needs of today . . . and ready for changes and new needs of tomorrow.

The WALKER UNDERFLOOR SYSTEM is an active servant in this new building of the National Fruit Product Company. (Note especially, in the upper illustration, that the Walker System is readily adapted to radiant heat installations.)

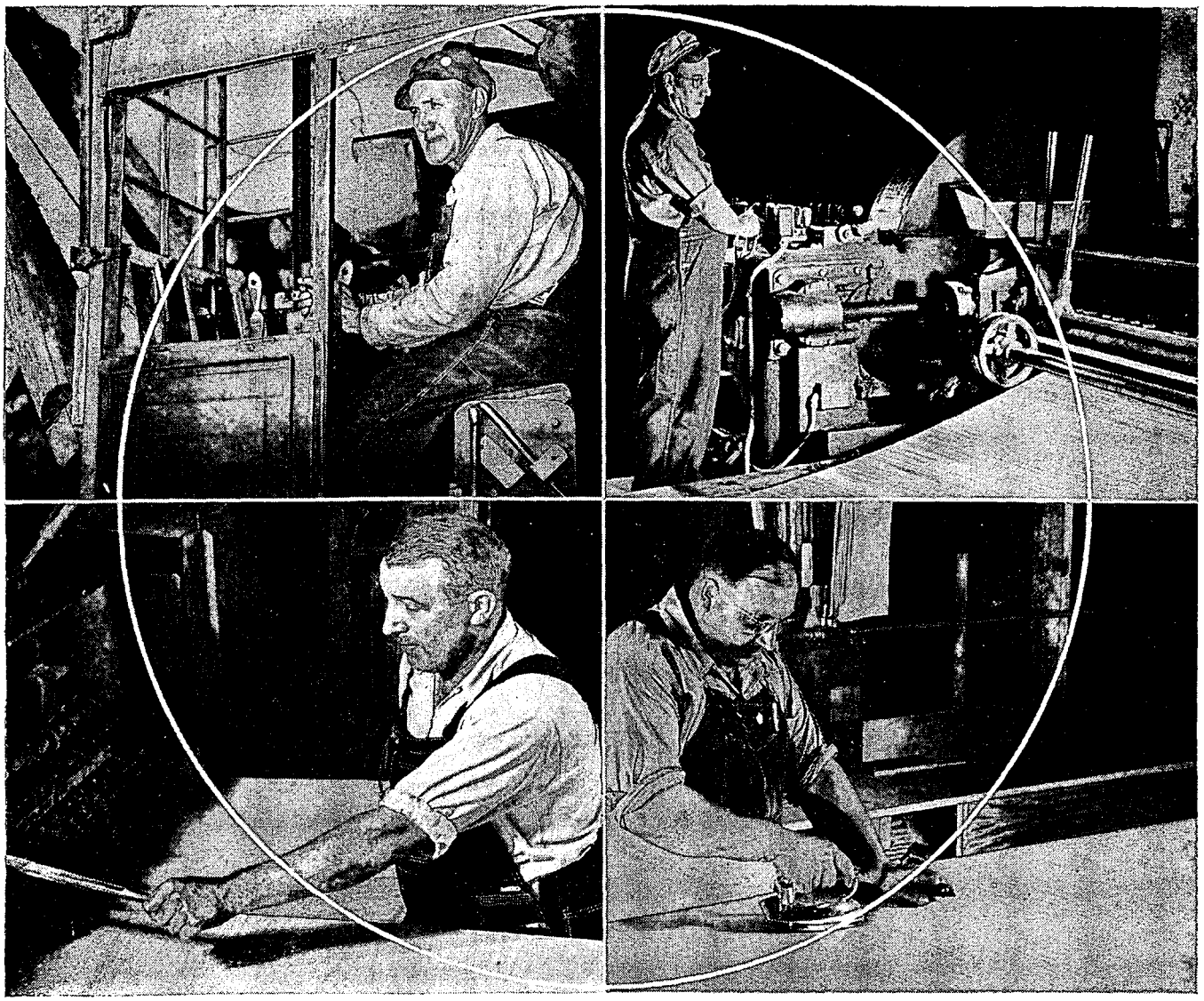
Architect:
ELMER E. BURRUSS,
Charlottesville, Va.
General Contractor:
A. R. WARNER & SON,
Waynesboro, Pa.
Electrical Contractor:
BAKER & ANDERSON ELECTRICAL CO.,
Winchester, Va.
Electrical Distributor:
Tri-State Electrical Supply Co., Inc.,
Hagerstown, Md.

WALKER BROTHERS
Conshohocken 45, Pa.

Write to us for our Catalogue No. 146 or consult Sweet's Architectural File for further details.

walker of Conshohocken UNDERFLOOR SYSTEMS

Roddiscraft Quality
a family affair



● When you buy or specify Roddiscraft doors or hardwood plywood, you are sure of a craftsman's product.

In spite of modern production methods — in spite of automatic machines—craftsmanship still determines the quality of wood products. The characteristics of wood differ widely. A knowledge of these differences influences log selection, veneer cutting, drying, bonding, sanding, finishing. At Roddis the men who govern these operations are craftsmen who know wood.

True to tradition at Roddis, craftsmanship is often a family affair. A large part of the personnel is made up of families of craftsmen with many years of experience — your assurance that each production step is in trained hands.

Yes, when you buy or specify Roddiscraft — you are assured of craftsmanship quality doors and hardwood plywood. Compare Roddiscraft and see for yourself.

Another family circle of Roddis craftsmen representing more than 100 years of experience — the Herkert brothers — Charles — log yard jammer operator — responsible for classifying and stacking logs — John, lathe operator whose knowledge of wood is vital to veneer cutting — Louis — on the belt sander where skill and fine touch assure satin smooth finish and uniform thickness — and finally, at the end of the chain — Eddie, plywood inspector and retoucher — a perfectionist — with him it's perfection or rejection.

Roddiscraft
Roddis Plywood Corporation
Formerly Roddis Lumber & Veneer Co.
MARSHFIELD, WISCONSIN

Tried many insulations, satisfied only with KIMSUL*

—says leading New York builder

575 Long Beach Blvd.
Long Beach, N. Y.

Telephone
Long Beach 3113

GORDON B. ROTH
BUILDER

September 22, 1947

Kimberly-Clark Corporation
Neenah, Wisconsin

Gentlemen:

It gives me great pleasure to advise you that in my twenty-five years of building private homes, apartment houses and commercial buildings, I have tried many types of insulation and have never really been satisfied until five years ago when I started using Kimsul.

In the Tompkins house, I used 3200 square feet of Double Thick Kimsul in the walls and ceilings. As a result of this, I feel fuel bills should prove to be very nominal. I have also built ten modern homes in Long Beach, New York, ranging in price from $18,500 to $40,000. And some twenty-five one-family houses selling from $14,000 to $15,000. All of these homes are insulated with Kimsul.

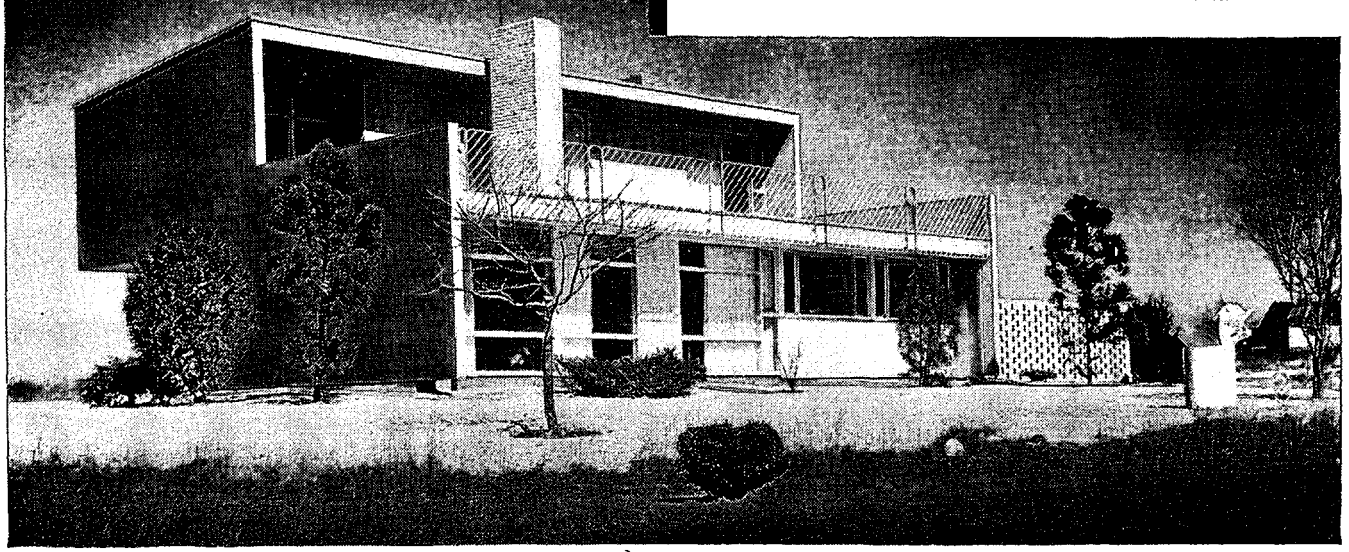
My post-war program is very extensive and I will continue to use Kimsul.

Very truly yours,

GBR:rr

Gordon B. Roth

The fully KIMSUL-insulated home of Gilbert C. Tompkins in Hewlett Bay Harbor, New York. Marcel Breuer was the architect. Photograph by Ezra Stoller, Pictorial Services.



It's true. Many-layer KIMSUL* insulation is fast becoming the favorite of builders and architects from coast to coast. For KIMSUL automatically provides uniform insulating efficiency over every inch of covered area. Its "k" factor is 0.27. It's the only insulation with the PYROGARD* fire-resistant cover. And one of the easiest to install quickly and profitably—no need for expensive machinery.

KIMSUL comes in handy, compact rolls, compressed to 1/5 installed length. To give maximum protection at lowest cost, specify it by thickness: Commercial Thick (about 1/2 in.) for walls and floors. Standard Thick (about 1 in.) for walls, attics and floors. Double Thick (about 2 in.) for attics.

Free insulation booklet. Here's a new, illustrated manual covering the latest techniques in the field. Write us for your free copy of the KIMSUL Insulation Book. Mail your request on your business letterhead.

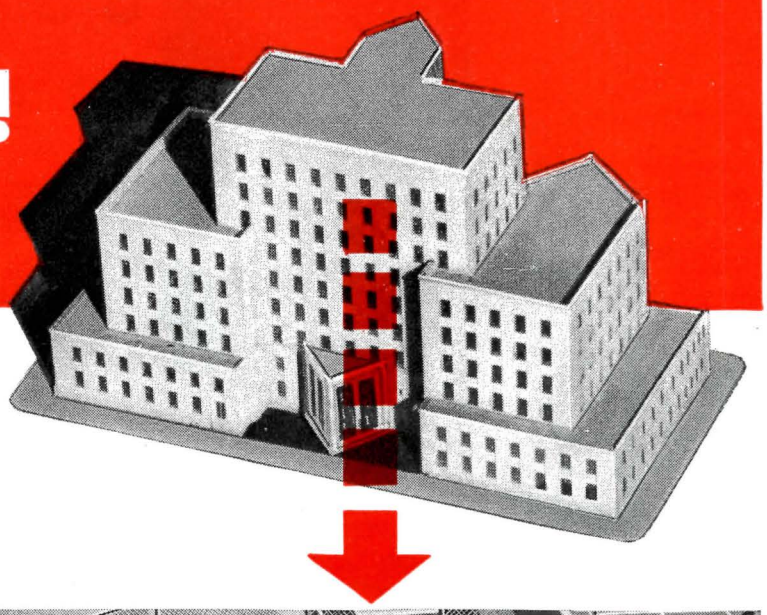
KIMBERLY-CLARK CORPORATION
KIMSUL Division • Neenah, Wisconsin

Insulate when you build.
Over-all insulation
means ready salability.

KIMSUL INSULATION
A product of Kimberly Clark

*Trademark

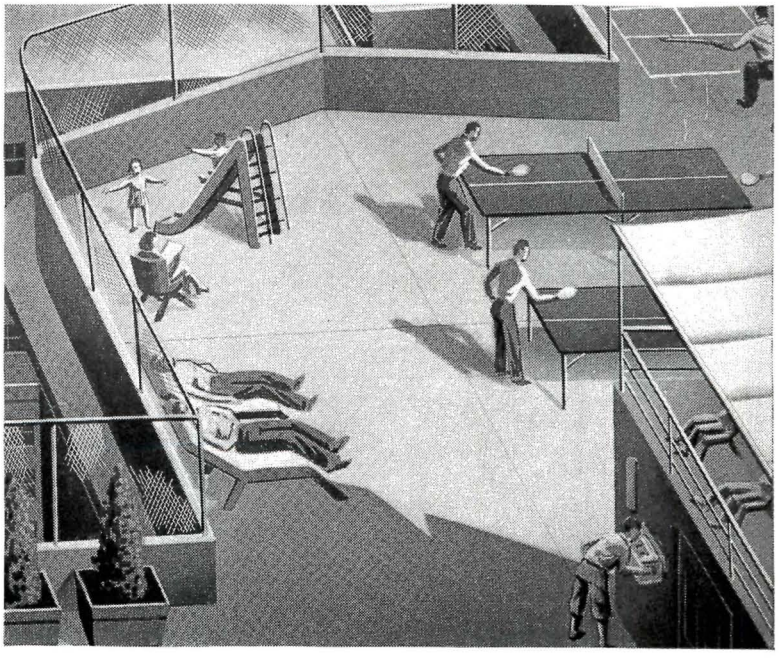
Don't waste the roof!



Like Cinderella, roofs are now blossoming forth after years of menial employment! Gardens grow on apartments and hotels. Factories and warehouses solve many space problems with new heavy duty traffic roofs. Schools, hospitals and office buildings have promenade roofs where fresh air and sunshine can be enjoyed even in the most crowded districts.

Ruberoid built-up roof specifications give the go-ahead signal to full, productive use of this valuable but long-neglected roof area. They provide the solid, workaday basis for making these new developments completely practical.

Let Ruberoid's thoroughly tested specifications help you in your current planning . . . the possibilities opened for creative design are practically unlimited. Complete specifications are available now from any Ruberoid sales office or your local Ruberoid Approved Roofer.



LIFE IS MORE PLEASANT → for everyone in this new building—the carefully planned use of this roof area provides ample recreational facilities for all.

The RUBEROID Co.

BUILT-UP ROOFINGS

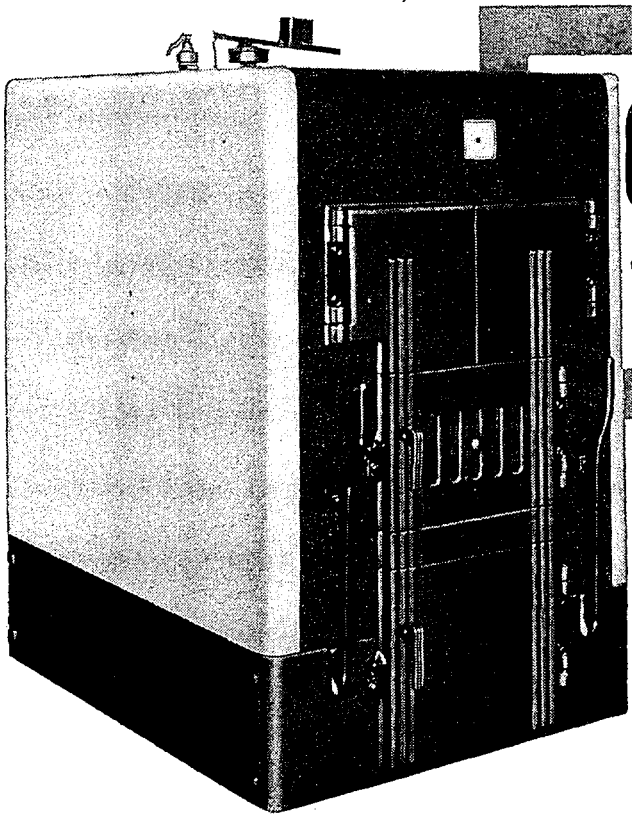
Building Materials for Industry, Home and Farm
Executive Offices: 500 Fifth Avenue, N.Y. 18, N.Y.

SALES OFFICES

BALTIMORE, MD. — MILLIS, MASS.
CHICAGO, ILL. — MINNEAPOLIS, MINN.
DALLAS, TEXAS — MOBILE, ALA.
ERIE, PENN. — NEW YORK, N. Y.

The right roof for any job—from ONE source!

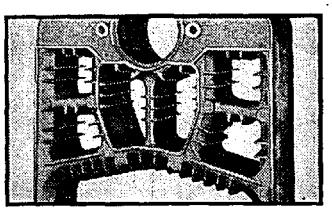
Ruberoid makes every type of built-up roof—Smooth Surfaced Asbestos, Coal Tar Pitch with gravel or slag surfacing, or smooth or gravel-and-slag surfaced asphalt . . . in specifications to meet any need. Ruberoid Approved Roofers are not prejudiced in favor of any one type. You are assured of one source for all materials, centralized responsibility, smoother operation, uniform quality!



CONVERTIBLE

TO ANY TYPE OF FUEL

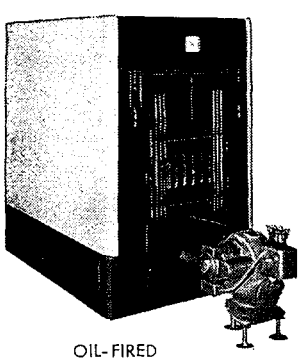
Adaptable to any firing method, the "300" Series National Heat Extractor Boiler, for steam or hot water, assures continuous heating comfort. It can be installed as a hand-fired unit and later converted to automatic firing to take advantage of changing fuel supplies. The "300" Series is particularly suited to larger homes, small apartments and commercial buildings. Radiators, convectors, unit heaters, baseboard heating units or radiant panels can be used with the "300" Series to form a complete and modern heating system.



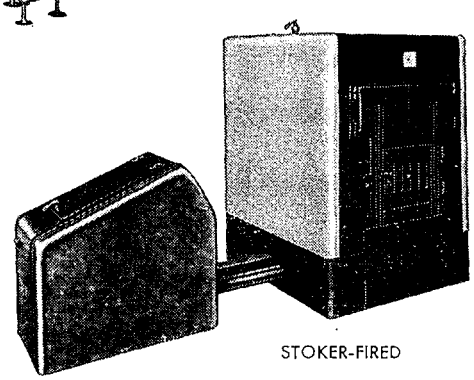
Finger-like projections form extra heating surfaces to capture and hold extra heat, reduce stack losses and fuel bills.

Durable cast iron construction, multiple-flue sections, extended heating surface, extra thick insulation, special baffles (for oil and gas firing) and an attractive jacket are some of its unique features that add up to heating satisfaction.

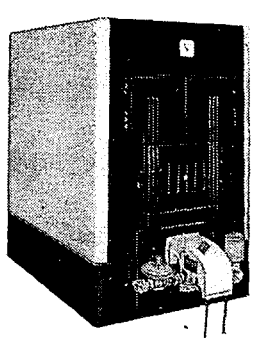
Domestic hot water, year 'round, is another convenience of the "300" Series, offered by the easy addition of an integral tankless type or storage type National Water Heater.



OIL-FIRED



STOKER-FIRED



GAS-FIRED

For complete information on the "300" Series Heat Extractor—or the similarly designed "100" and "200" Series for smaller installations or the "400" and "500" Series for larger installations—phone our nearest office or write to us at Johnstown.

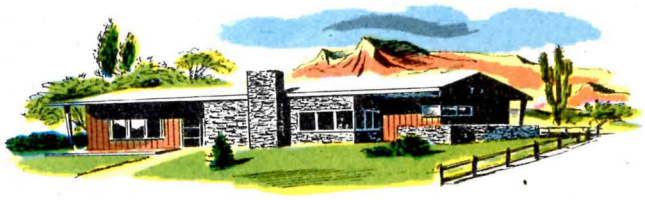
NRC

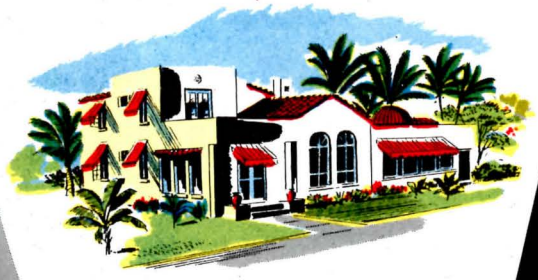
THE NATIONAL RADIATOR COMPANY

JOHNSTOWN, PENNSYLVANIA

AT HOME ACROSS AMERICA

On blueprints from coast to coast . . . from Connecticut hideaway to California ranch house . . . clay tile sets the style to brighten and beautify today's homes. House Design is on the march . . . and the timeless advantages of genuine clay tile keep pace, with modern colors and patterns that contribute to any decorative theme. Yes, America's homeowners thank you when genuine clay tile is specified.





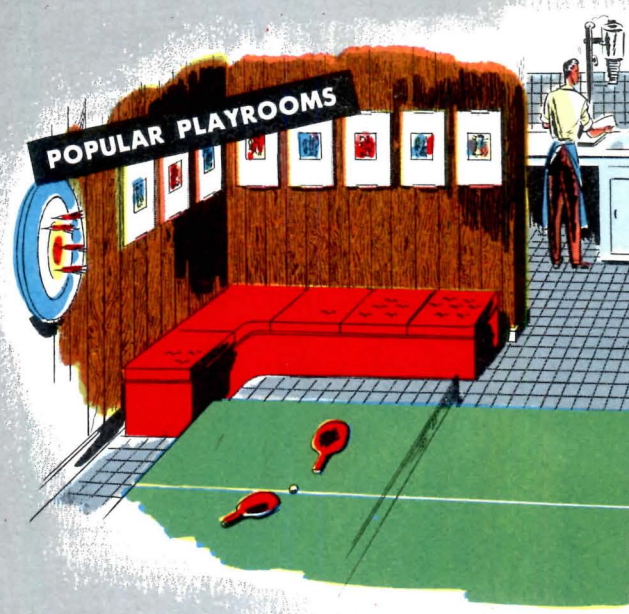
THE MODERN STYLE IS

GENUINE CLAY tile

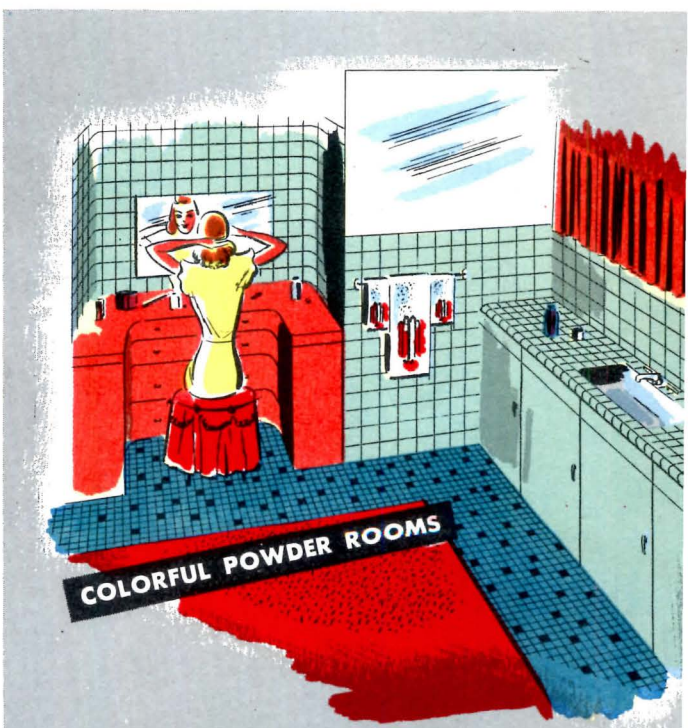
how to plan better rooms

Clay tile for floors, walls, drainboards and counter tops combines brightness, cleanliness and efficiency . . . never needs waxing, polishing or painting.

There's no need to worry about what kind of abuse this floor will take. Tile keeps its fresh, spic-and-span appearance for a lifetime.



Center the design theme of living-dining area around a colorful tile fireplace. Murals of tile also individualize the room, relate it to the owner's interests.

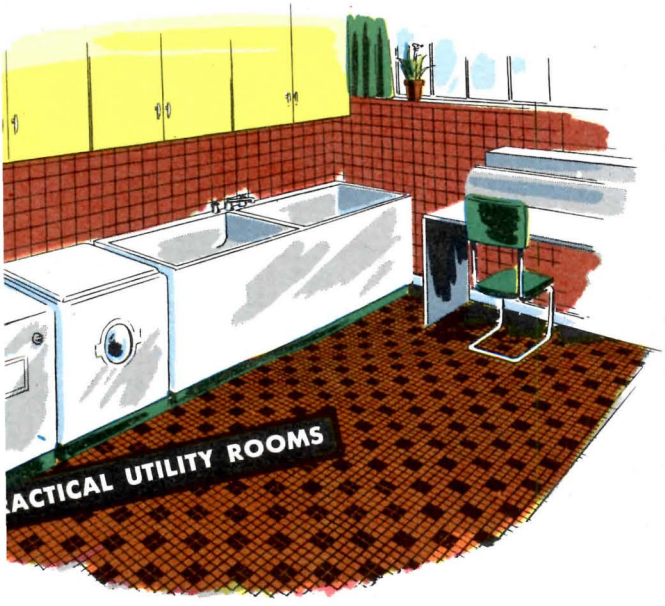


Sparkling clay tile colors in a modern pattern create a powder room of distinctive beauty . . . as easy to clean and to keep clean as a china dish.

IN THE MODERN STYLE WITH GENUINE CLAY tile

Colorful tile walls and floors highlight any decorative theme . . . and you'll find no recurring charges for repairs, redecoration or replacement.

Genuine clay tile is the first choice of architects and decorators alike because of the design flexibility it offers. Its clear, rich colors in many shapes and sizes make possible modern patterns that are pleasing and distinctive. Lovely to look at —and to live with—tile is always in smart style.



Get gleaming cleanliness and practical efficiency with clay tile walls and floor . . . stainproof, won't fade or darken, is not affected by continued dampness.

Homeowners will thank you for planning a terrace or outdoor porch floor of genuine tile . . . durable and easy to clean . . . no problems of warping, shrinking or resurfacing.

IMPORTANT

only Clay Tile gives you all these advantages

- ✓Long range economy
- ✓Resistance to cracking, chipping
- ✓Easy to keep clean
- ✓Fireproof
- ✓Permanent color
- ✓Resistance to abrasion
- ✓Unaffected by acids, alkalis
- ✓Low maintenance cost
- ✓Non-absorbent and waterproof
- ✓Stainproof and vermin-proof
- ✓For floors, walls or ceilings
- ✓For indoor or outdoor use
- ✓Modern patterns and colors
- ✓A Lifetime of Service

How to get more information about tile

Tile Council of America
10 East 40th Street
New York 16, New York

I would like to receive information about genuine clay tile for walls and floors as checked below.

☐ Data Sheet on Tile. 4 pages. Describes the types, sizes, shapes, and colors of clay floor and wall tile manufactured by the tile industry.

☐ "Ceramic Tile in Church Construction," reprint of article by Alfred A. Frantz which appeared in Church Management.

☐ "Basic Course in Tile Setting" . . . Introductory textbook for apprentices. Available free to apprentices and to dealers employing apprentices. Others may obtain this textbook for $2.75.

NAME_____

COMPANY_____

STREET_____ ZONE____ STATE_____

CITY_____

THE TILE COUNCIL OF AMERICA

ROOM 3401: 10 EAST 40th STREET
NEW YORK 16, NEW YORK

ROOM 320: 639 SOUTH SPRING STR
LOS ANGELES, CALIFORNIA

The Tile Council of America was formed in uary 1945 to provide a central source of infor tion about floor and wall tile, and to spo research and development projects designed increase the usefulness of tile in all types of pri and public building.

Participating Companies

American-Franklin-Olean Tile Company
Lansdale, Pennsylv
Architectural Tiling Company, Inc.
Keyport, New Je
Atlantic Tile Manufacturing Company
Matawan, New Je
B. Mifflin Hood Company
Daisy, Tenne
California Art Tile Corporation
Richmond, Califo
Cambridge Tile Manufacturing Company
Cincinnati, C
Carlyle Tile Company
Ironton, C
General Tile Corporation
El Segundo, Califo
Gladding, McBean & Company
Los Angeles, Califo
Mosaic Tile Company
Zanesville, C
Murray Tile Company, Inc.
Cloverport, Kentu
National Tile & Manufacturing Company
Anderson, Ind
Olean Tile Company
Olean, New Y
Pacific Clay Products
Los Angeles, Califo
Pacific Tile and Porcelain Company
Paramount, Califo
Pomona Tile Manufacturing Company
Los Angeles, Califo
Robertson Manufacturing Company
Trenton, New Je
Sparta Ceramic Company
East Sparta, C
Summitville Face Brick Company
Summitville, C
United States Quarry Tile Company
Canton, C

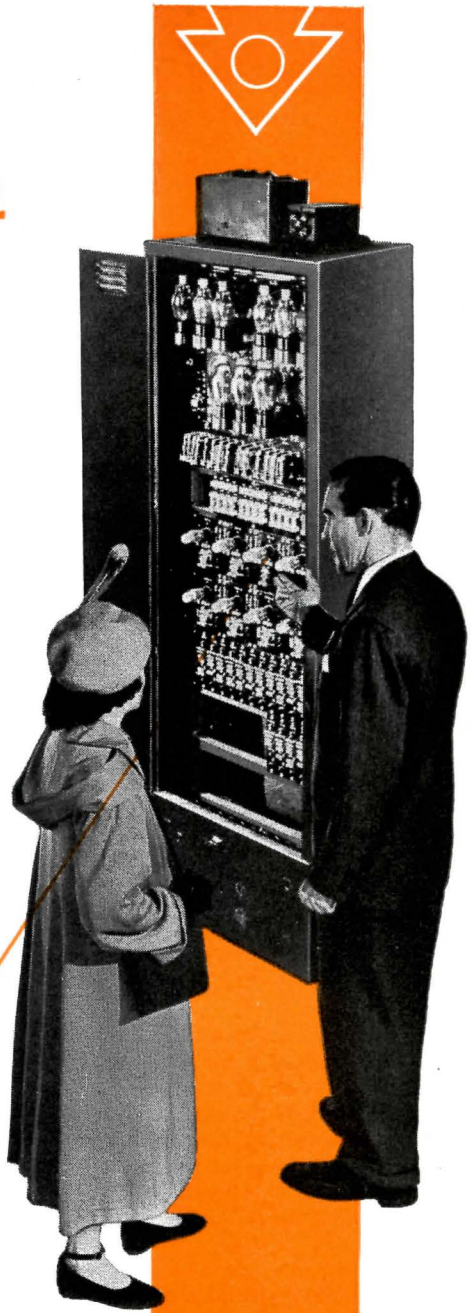
THE MAGIC BRAIN
OF ELECTRONIC SIGNAL CONTROL
REDUCES ROUND-TRIP TRAVEL TIME

You can now add a 'touch' of startling newness to your building . . . and at the same time speed up elevator service. How? With Otis Electronic Signal Control, the first successful application of modern electronic magic to proven signal control operation.

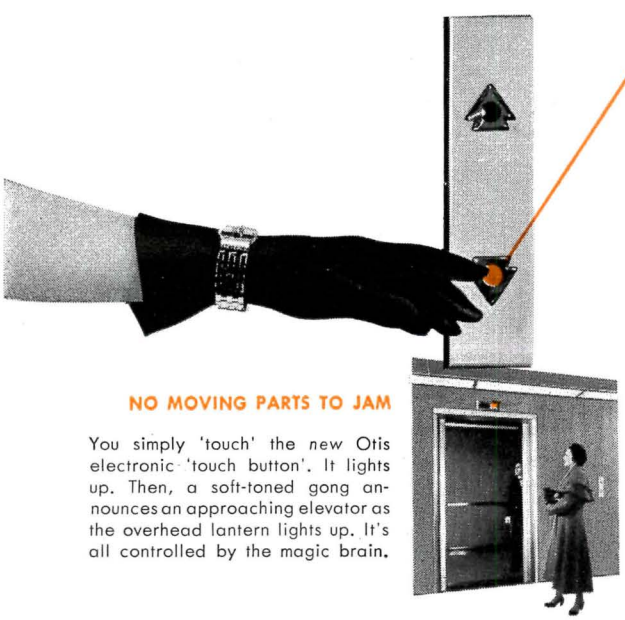
With Otis Electronic Signal Control, you don't depend upon human memory to keep track of calls. All calls are registered and remembered by a greatly simplified electronic system . . . a *magic brain* that automatically stops cars at the right floors and eliminates false stops and needless travel. Cars make more trips . . . carry more passengers. Traffic handling is speeded . . . service improves . . . operating costs go down

Otis Electronic Signal Control adds a 'touch' of advanced design to your building. Passengers no longer *push* a conventional landing button. They merely *touch* the new Otis electronic button. As if by magic, the button lights up and registers the call. No moving parts to be tampered with; no contacts to maintain.

Otis Electronic Signal Control is available for new buildings and for modernizing existing buildings. For further details call your local Otis Elevator Company office.



The magic brain – the electronic panel in the control room.



NO MOVING PARTS TO JAM

You simply 'touch' the new Otis electronic 'touch button'. It lights up. Then, a soft-toned gong announces an approaching elevator as the overhead lantern lights up. It's all controlled by the magic brain.

ELECTRONIC SIGNAL CONTROL

ELEVATORS

AS ALWAYS, OTIS LEADS THE WAY . . . THIS TIME WITH THE MAGIC OF MODERN ELECTRONICS

Long-term Low-cost Oil Heat

A CERTAINTY WITH PETRO

Mr. V. H. Paulsen is a member of the firm of Ziegler, Childs & Paulsen, Jersey City, N. J., whose plans for a 1000-bed hospital, to be erected at the boundary of Newark, East Orange and South Orange, New Jersey, have recently been in the news. Constructed by the Army Corps of Engineers for the Veterans Administration, this hospital will consist of a group of nine buildings occupying a 35 acre site.

During the past 27 years Mr. Paulsen has specialized in institutional planning, including large hospital projects in New York, Connecticut and New Jersey. He is currently retained as hospital consultant on a nation-wide hospital program.

INDUSTRIAL MODELS: No. 5 or No. 6 fuel oil; manual, semi-automatic or automatic operations; 8 sizes to 450 bhp. Thermal Viscosity preheating.

DOMESTIC MODELS: No. 3 or lighter oils; "conversion" and combination-unit types, 7 sizes. Patented "Tubular Atomization."

FULL DATA on Petro Industrial Burners are in catalog files both of Sweet's and Domestic Engineering. Details on Petro Domestic Burners available in separate catalog. Copy of either sent gladly on request.

BECAUSE THE PERFORMANCE of a heating system affects building costs to an important degree, thrift-minded owners insist on selecting only that oil burner equipment which assures economical operation. Is the heating plant competent to serve satisfactorily under the load carried? Are running costs a minimum, both in fuel consumed and in attention required? Is the oil-burning system sturdily built so that it can be expected to give good service for many years?

Architects who speak from experience endorse Petro on all counts. Embodying a basic design that reflects more than forty years' specialization in oil heat, a Petro oil burner gives long-term low-cost service at peak efficiency. Built of interchangeable parts, it permits any desired development of the basic design to meet individual installation needs.

Mr. Paulsen puts it this way:

"We have included oil heating in many of our specifications, and these installations in our experience have produced flexibility and quick steaming, combined with cleanliness and low operating costs.

"Where Petro systems are called for, we have found that their installation, supported by Petro engineering, offers certainty of a long-term and economical operation."

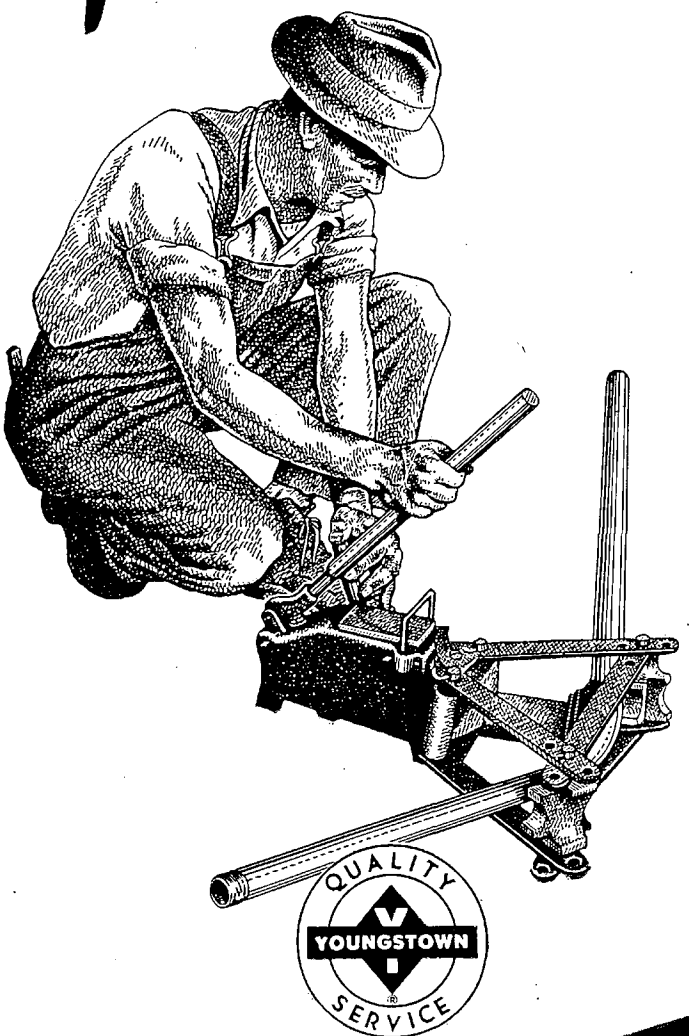
Our data bulletins go into detail. Copies promptly mailed on request.

PETRO
REG. U.S. PAT. OFF.

cuts steam costs

PETROLEUM HEAT AND POWER CO. · *Makers of Good Oil Burning Equipment Since 1903* · *Stamford, Conn.*

Yes, it's Youngstown!



Dependable Steel Pipe ... The Plumber's Friend

FOR 45 years, Youngstown Steel Pipe has served plumbing and heating contractors dependably--enabling them to furnish adequate water and heating systems to customers at lowest cost.

Whether you use a few feet or thousands of miles of Youngstown Steel Pipe, you can depend on its uniformity--uniform in metallurgical and chemical properties for easy, accurate bending, cutting, welding and threading--uniform in diameter and roundness--cut to uniform lengths--uniformly smooth inside for minimum friction--in short, *uniformly satisfactory.*

Youngstown STEEL PIPE

THE YOUNGSTOWN SHEET AND TUBE COMPANY

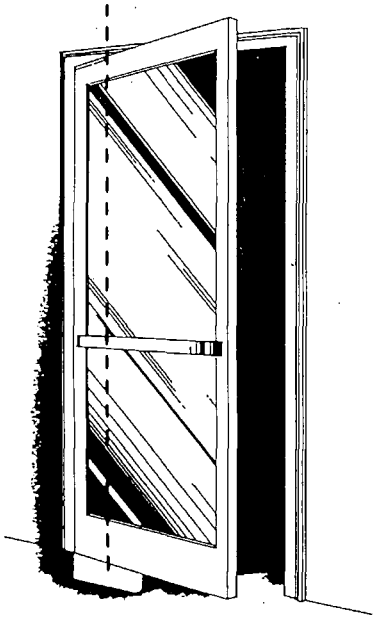
Manufacturers of Carbon, Alloy and Yoloy Steel

General Offices — Youngstown 1, Ohio

Export Office-500 Fifth Avenue, New York

PIPE AND TUBULAR PRODUCTS - CONDUIT - BARS - RODS - COLD FINISHED CARBON AND ALLOY BARS - SHEETS - PLATES - WIRE - ELECTROLYTIC TIN PLATE - COKE TIN PLATE - RAILROAD TRACK SPIKES.

Silent as the hush of night



Among thousands of installations of *Rixson* floor checks, no instance is known in which the sealed hinge housing has admitted foreign matter of any kind.

Quiet, effective door closing—with the absence of maintenance problems—requires equipment in which the buyer has confidence earned by a record of exceptional performance. Rixson door closers and checks of every type have established their reliability to function faithfully under all kinds of unusual conditions. This is because, for nearly half a century, Rixson has concentrated upon technical excellence in the invention and manufacture of quality-built door-closing mechanisms.

Specify Rixson

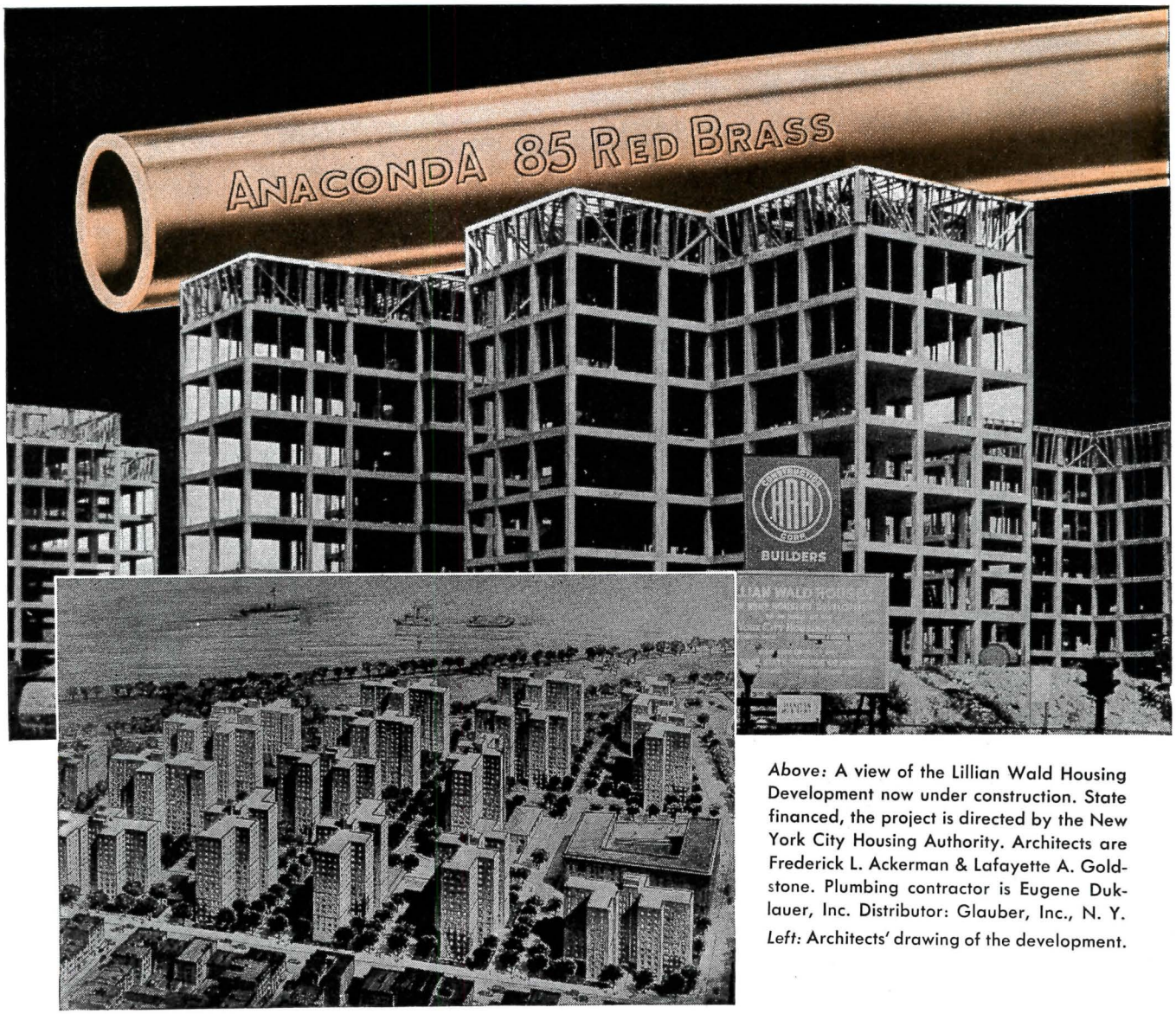
FLOOR CHECKS—OVERHEAD DOOR CLOSERS—DOOR HOLDERS—SPECIAL HINGES—CASEMENT AND TRANSOM HARDWARE.

ATLANTA.....Walter S. Johnson
917 St. Charles Ave.
.....Tel. Vernon 4725
CANADA . . .
The Richards-Wilcox Canadian Co., Ltd.
London, Ont.....Tel. Fairmont 2800
LOS ANGELES....George E. Tupper
324 E. 3rd St....Tel. Michigan 5578
NEW YORK....Fred G. MacKenzie
107 Reade St...Tel. Barclay 7-6825
PHILADELPHIA..G. Norris Williams
211 Greenwood Ave., Wyncote, Pa.
.....Tel. Ogontz 1929
PORTLAND, ORE., W. N. Browning
529 Henry Bldg., Tel. Atwater 5839
SEATTLE.....E. R. Spragg
4012 E. 38th St., Tel. Kenwood 7605
WASHINGTON, D. C.....L. J. Fait
312 N. George Mason Dr.
Arlington, Va..Tel. Chestnut 8956

The Oscar C. Rixson Company

4450 CARROLL AVENUE • CHICAGO 24, ILLINOIS • TELEPHONE MANSFIELD 6-5050

Established 1900



Above: A view of the Lillian Wald Housing Development now under construction. State financed, the project is directed by the New York City Housing Authority. Architects are Frederick L. Ackerman & Lafayette A. Goldstone. Plumbing contractor is Eugene Duklauer, Inc. Distributor: Glauber, Inc., N. Y. *Left:* Architects' drawing of the development.

TWENTY-FIVE MILES OF "85" RED BRASS PIPE in the Lillian Wald Houses

IN New York City's huge, $22,372,000 Lillian Wald Housing Development there will be 1,861 dwelling units. An estimated 6,954 persons will occupy the four eleven-story and twelve fourteen-story apartment buildings which, with their 7,695 rooms, will cost $14,450,266 to construct.

And to serve these houses with a full flow of clear water for years to come: 130,000 feet of Anaconda "85" Red Brass Pipe, ½" to 6" SPS.

No more trusted material could have been chosen for this important water-carrying job. Anaconda "85" Red Brass Pipe has been in use since 1927, and had undergone ten years of testing before that. Strong, non-rusting and of uniformly fine grain structure, it has become known as the highest quality corrosion-resistant pipe obtainable at a reasonable price.

4838

ANACONDA
from mine to consumer

Anaconda

"85" RED BRASS PIPE

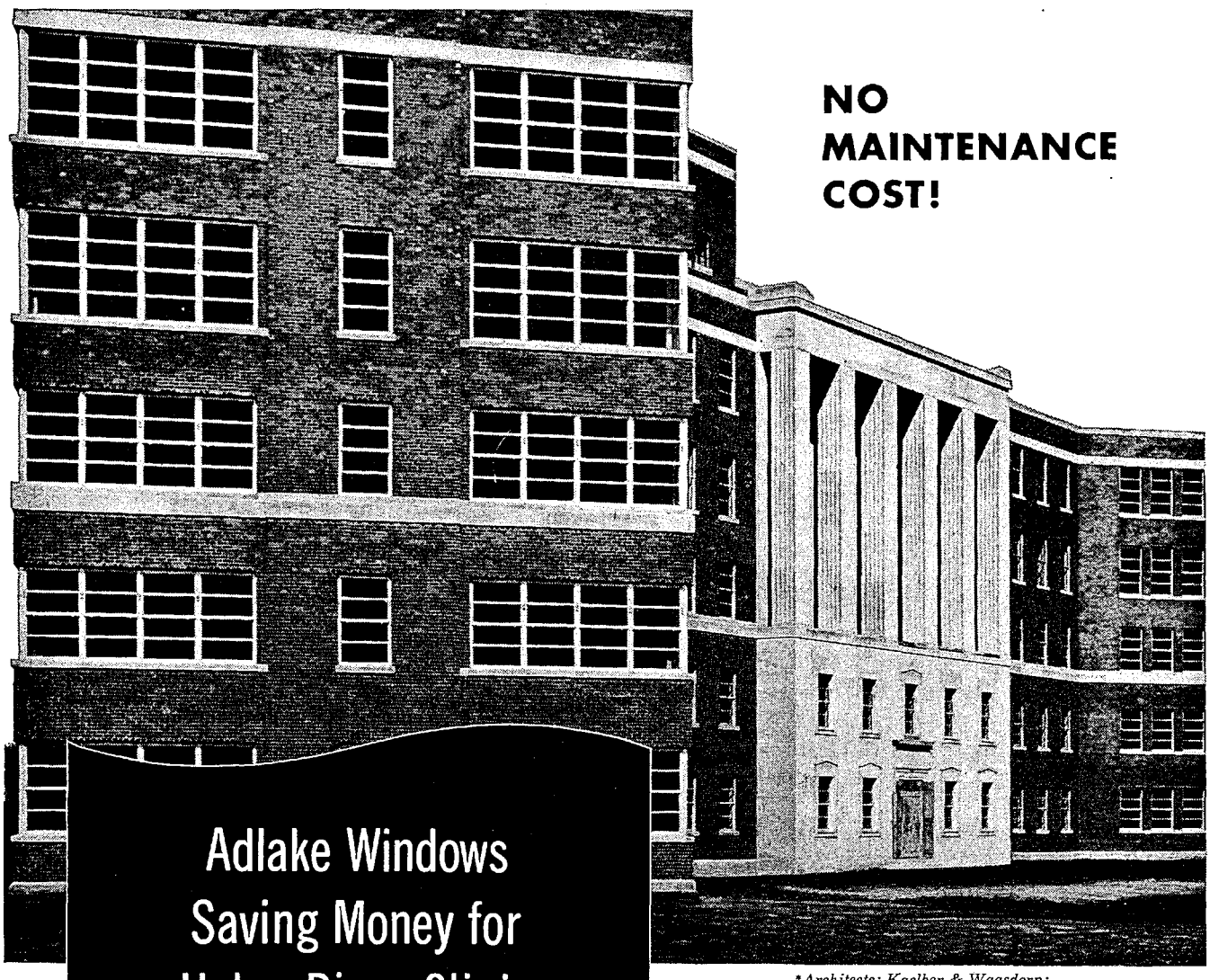
THE AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Connecticut

Subsidiary of Anaconda Copper Mining Company

In Canada: ANACONDA AMERICAN BRASS, LTD.

New Toronto, Ont.



NO MAINTENANCE COST!

Adlake Windows Saving Money for Helen Rivas Clinic

**Architects: Kaelber & Waasdorp; Contractor: A. W. Hopeman & Sons*

The 506 Adlake Aluminum Windows (Series 600) in the newly-built Helen Rivas Clinic*, Rochester, N. Y., will save the hospital a considerable sum, over a period of years, through *eliminating* maintenance costs. The windows will ultimately *pay for themselves* through this economy. Adlake windows require no painting, no maintenance other than routine washing! And they *last as long as the building.*

ONLY ADLAKE WINDOWS have the combination of woven-pile weather stripping and patented serrated guides that assures minimum air infiltration and absolute finger-tip control.

Adlake Windows never warp, rot, rattle, stick or swell. They look lovely and operate smoothly for the life of the building.

INFORM YOUR CLIENTS about the wiping out of maintenance costs and the long, worry-free service they can expect from Adlake Aluminum Windows. For complete data, drop us a post card today at 1103 North Michigan Avenue, Elkhart, Indiana. No obligation, of course.

Adlake Aluminum Windows

have these "plus" features:

- **Minimum Air Infiltration • Finger-tip Control**
- **No Warp, Rot, Rattle, Stick—No Painting or Maintenance • Ease of Installation**

THE

Adams & Westlake

COMPANY

Established 1857 • ELKHART, INDIANA • New York • Chicago

Adlake TRADE MARK

Furnishers of Windows to the Transportation Industry for over 30 years

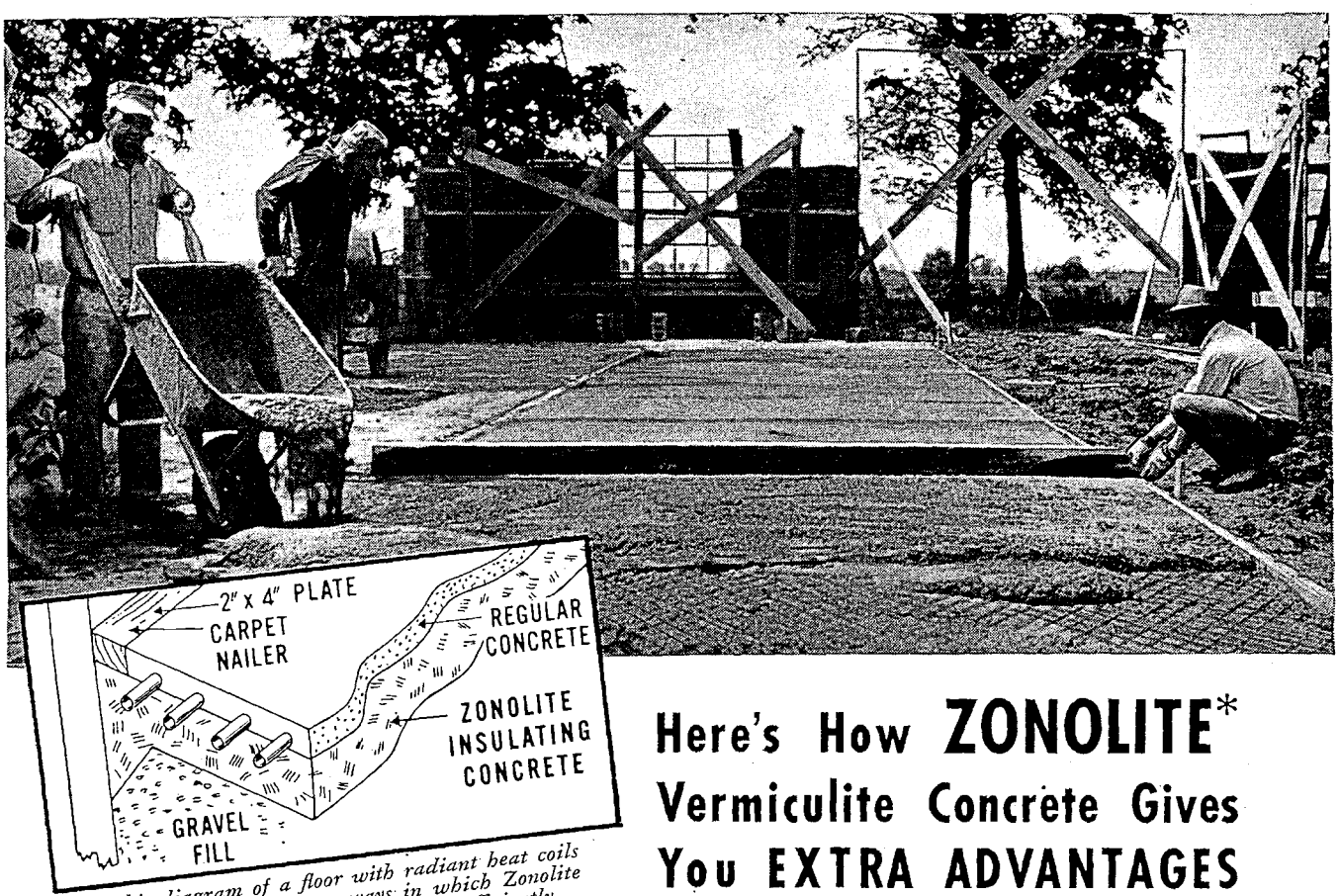
All Adlake double-hung windows carry this seal

SPECIFICATION DH-A1 QUALITY SEAL SPECIFICATION DH-A1

An equivalent of this window has been examined by PITTSBURGH TESTING LABORATORY, conforms in Materials, Construction, Strength of Sections and Air Infiltration requirements to ALUMINUM WINDOW MANUFACTURERS ASSOCIATION Specification DH-A1

MEMBER, ALUMINUM WINDOW MANUFACTURERS ASSOCIATION

Now INSULATED GROUND LEVEL FLOORS CAN BE INSTALLED EASILY AND ECONOMICALLY with NEW INSULATING CONCRETE



This diagram of a floor with radiant heat coils shows one of the many ways in which Zonolite Vermiculite Concrete can be used efficiently.

SO EASY TO INSTALL

Zonolite Insulating Concrete is extremely light and is made by mixing portland cement with Zonolite Stabilized Concrete Aggregate—a material weighing only 8 pounds per cubic foot. Because it is so light and easy to handle, it can be efficiently and rapidly applied.

Here's How ZONOLITE* Vermiculite Concrete Gives You EXTRA ADVANTAGES

Architects and contractors are discovering a new type ground level floor that insulates against heat loss into the ground and is free from condensation the year around. This new floor is made of Zonolite Vermiculite Concrete, a revolutionary form of insulation.

Floors made with Zonolite Vermiculite are low in heat capacity, permitting better control of room temperature by minimizing heat lag—a real advantage when heating rooms. This advantage, combined with its insulating qualities, makes Zonolite Vermiculite Concrete the ideal base for radiant heat pipes installed in the floor.

Millions of square feet of Zonolite Concrete have been installed in large scale housing projects, industrial structures, college dormitories and many other type buildings. A fireproof Zonolite Concrete floor increases the building value and makes the property far more salable.

ZONOLITE BRAND VERMICULITE INSULATION

ZONOLITE COMPANY
135 South La Salle Street
Chicago 3, Illinois

MAIL COUPON FOR DETAILS

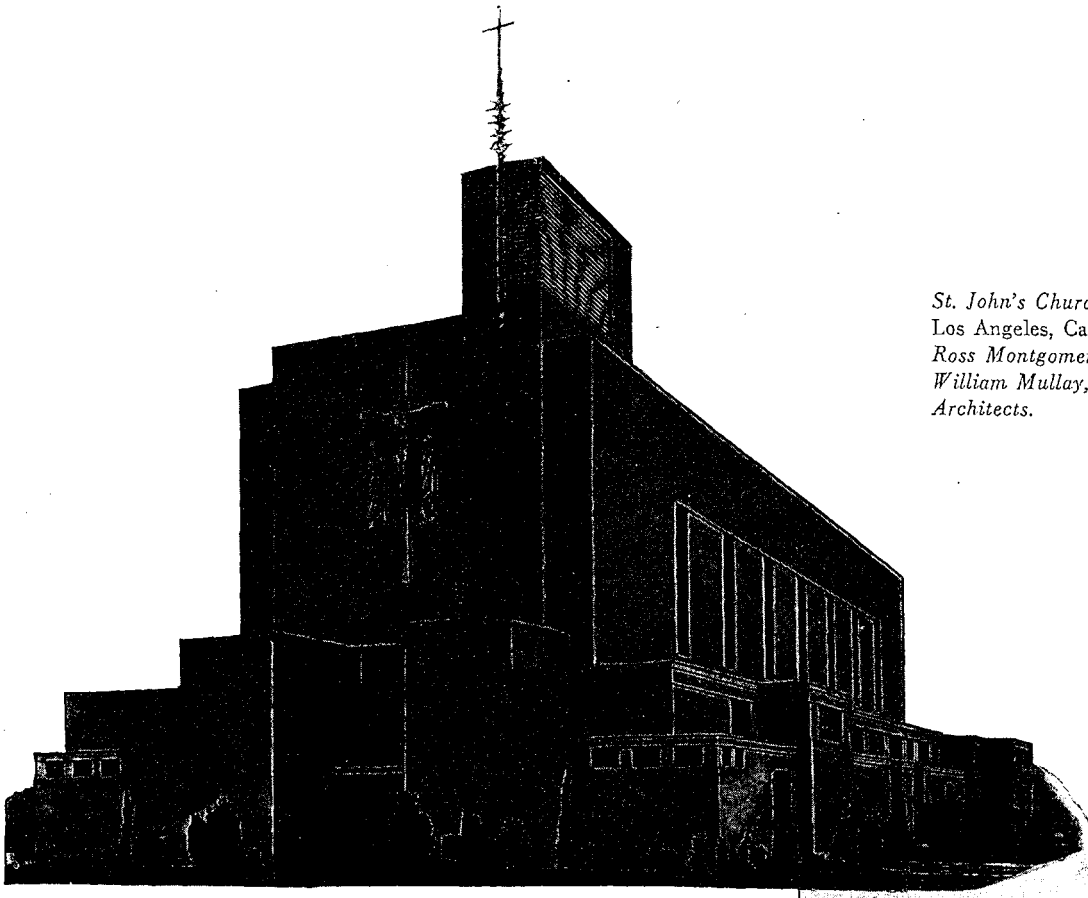
Zonolite Company
Dept. PA-128, 135 S. LaSalle St., Chicago 3, Ill.
Please send me FREE booklet that tells all the advantages of Zonolite Insulating Concrete for floor construction.

Name.....

Address.....

City.....*State*.....

**Zonolite is a registered trademark of Zonolite Company*



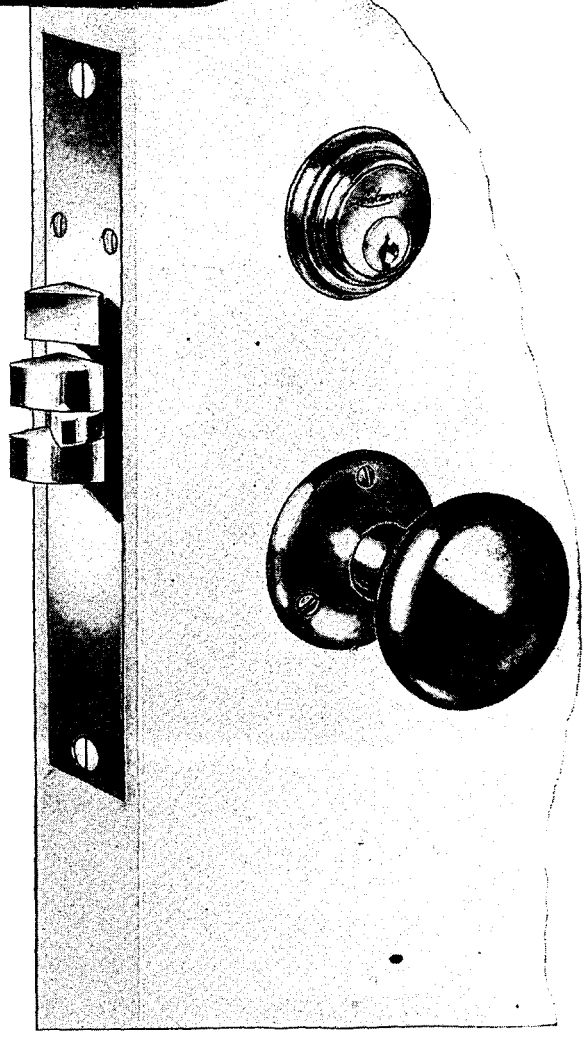
St. John's Church,
Los Angeles, California.
Ross Montgomery — William Mullay, Architects.

The feeling is mutual . . .

Regal simplicity in the church as a whole . . . regal simplicity in the Lockwood Hardware used for all its interior doors. Plain, graceful trim in cast bronze carries out the designers' original feeling without detracting from functional value.

Here again is proof that Lockwood's eye for creating fine hardware—hardware that fulfills every decorating or architectural plan — is a boon to those with vision. Here again is proof that Lockwood means *more of the best* in Finishing Hardware.

L 89-A



It's easier for you to specify the *right* hardware from Lockwood's catalog, "Simplified Specifications." You'll find this listed in Sweet's for 1949; or write for a free copy of your own.

Lockwood

HARDWARE MANUFACTURING COMPANY
Division, Independent Lock Company
Fitchburg, Massachusetts

ifferent Toilet Room
nvironments

are obtainable with

Sanymetal "PORCENA"

(Porcelain on Steel)

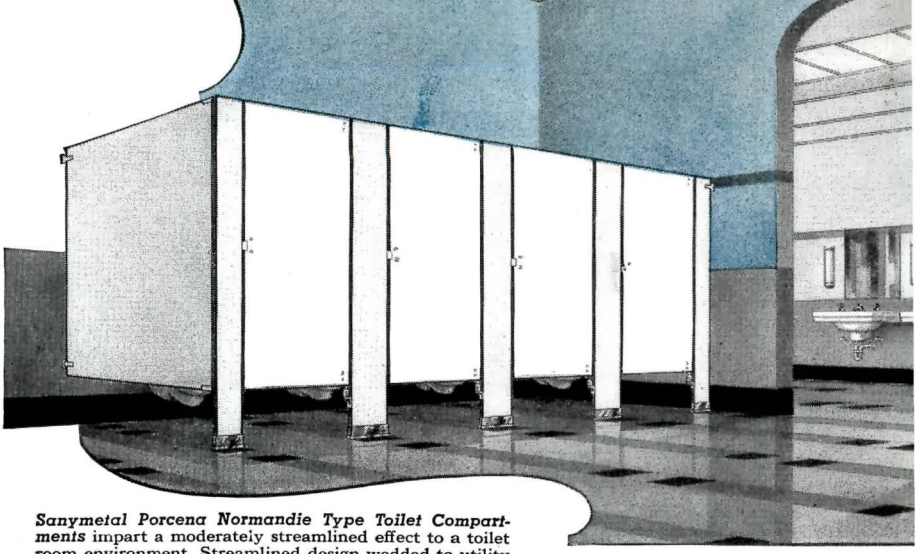
ILET COMPARTMENTS

REAT STRIDES have been achieved in the development of toilet room environments in ing with other environmental treatments of a ling. Toilet compartments usually dominate a t room, influencing the toilet room environment. metal "Porcena" (porcelain on steel) Toilet partments elevate the toilet room environment harmony with other environments of a building. e toilet compartments are fabricated of the ss and fadeless material, porcelain on steel, h makes a glass-hard stainless material that ys looks new, does not absorb odors, is moisture rust proof and resists the corroding nature of ary acids. The glistening porcelain finish dis-ages defacement and can be wiped clean as y as any glass smooth surface.

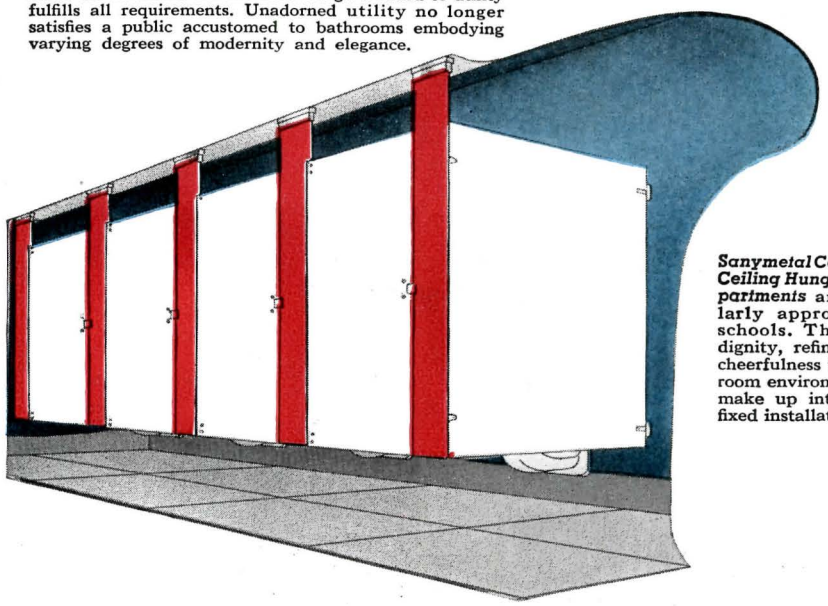
metal "Porcena" Toilet Compartments embody esults of over 35 years of specialized skill and rience in making over 96,000 toilet compart-installations. Ask the Sanymetal Representa-n your vicinity (see "Partitions" in your phone for local representative) for further informa-about planning suitable toilet room environ-s for modern school, industrial, and institutional of buildings. Refer to Sanymetal Catalog 6 in Sweet's Architectural File for 1948, or for file copy of Catalog 86.

SANYMETAL PRODUCTS COMPANY, INC.

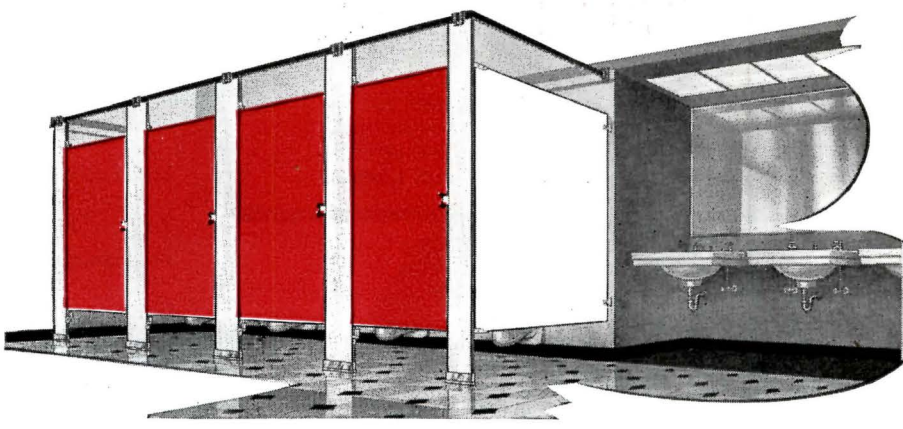
URBANA ROAD • CLEVELAND 12, OHIO



Sanymetal Porcena Normandie Type Toilet Compartments impart a moderately streamlined effect to a toilet room environment. Streamlined design wedded to utility fulfills all requirements. Unadorned utility no longer satisfies a public accustomed to bathrooms embodying varying degrees of modernity and elegance.



Sanymetal Century Ty[pe] Ceiling Hung Toilet Co[m]partments are partic[u]larly appropriate f[or] schools. They impa[rt] dignity, refinement, a[nd] cheerfulness to the toil[et] room environment. Th[ey] make up into a rigid fixed installation.



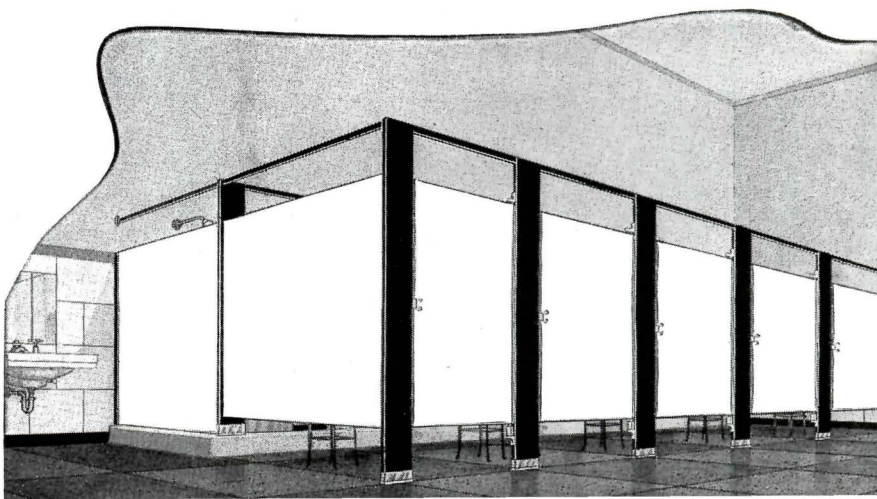
Sanymetal Porcena Academy Type Toilet Compartments provide a certain distinctiveness. This type of partition is the only one in which all the dignity and distinctiveness of standard flush type construction, unmarred by posts, is appropriately combined with the headrail.

Sanymetal*

"PORCENA"

(Porcelain on Steel) TOILET COMPARTMENTS

ossess the natural structural strength of steel, not one sheet, but vo 16-gauge sheets securely bonded on opposite sides of dense sulating core, strengthened by porcelain enamel (four layers on ch sheet) which provides a non-porous, flint-hard, glass-smooth rface that is positively impervious to odors, acids and moisture.



Sanymetal Porcena Academy Type Shower Stall and Dressing Room Compartments provide the utmost in sanitation for tourist camps, gymnasiums, clubs, Y. M. C. A.'s, etc.

Sanymetal*

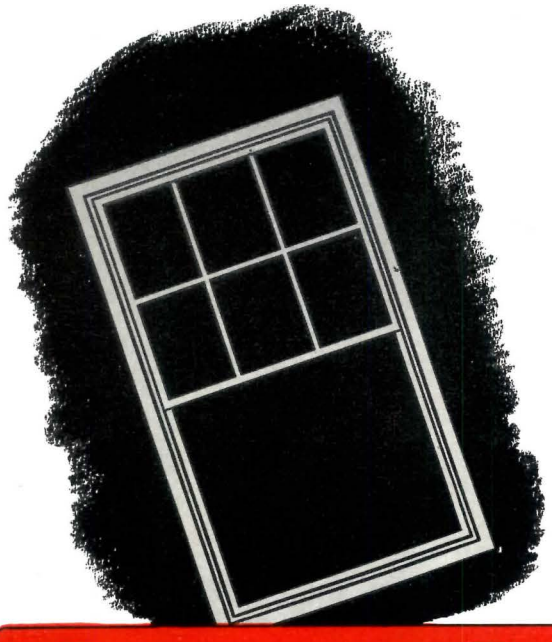
**Trade Mark Reg. U. S. Pat. Off.*

ILET COMPARTMENTS,

OWER STALLS AND

First choice for **COMMERCIA**

"QUALITY-APPROVED



This Seal

MEANS "QUALITY-APPROVED"

WINDOWS THAT MEET THE

HIGHEST STANDARD

How to *make sure* of quality aluminum windows?

This is an important question to architects, builders and owner as aluminum windows become "first choice" for *all* types of buildi

Certain manufacturers today can answer this question to your comp satisfaction. Their aluminum windows bear the "Quality-Approv Seal of the Aluminum Window Manufacturers Association. T windows have been tested by the Pittsburgh Testing Laboratory conform to the rigid specifications established by the Association

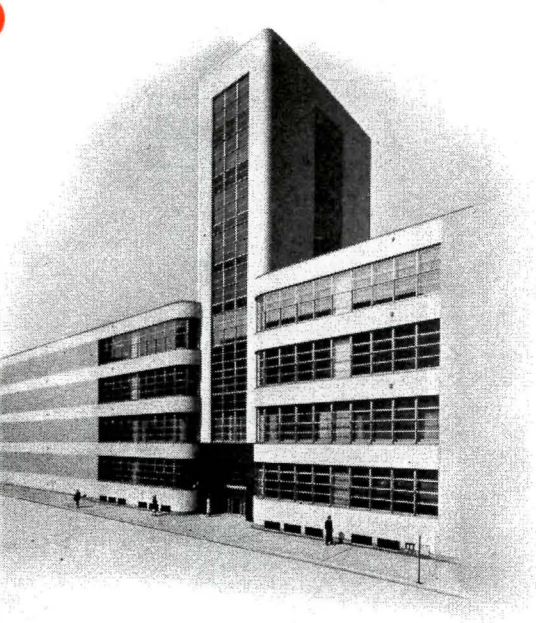
This seal assures you of aluminum windows that meet the hig standards for quality materials, strength of sections, soundnes construction, and minimum air infiltration.

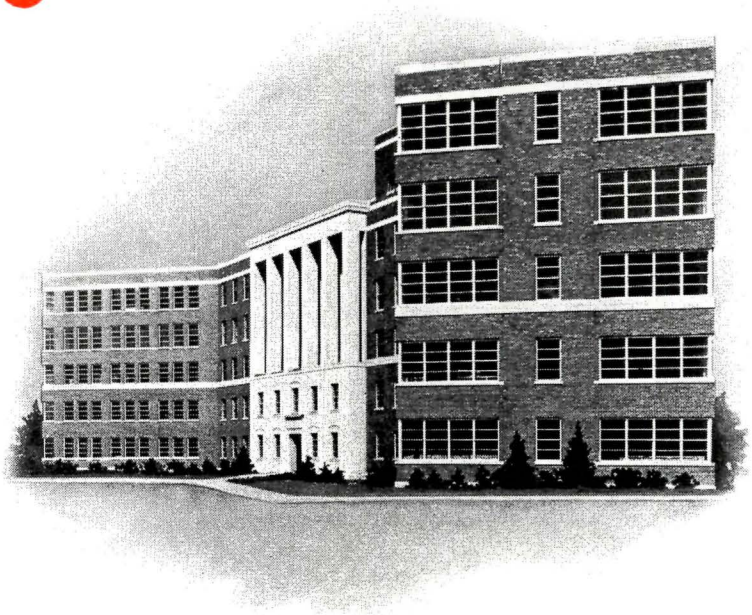
Your clients are assured of aluminum windows that are g looking, easy-to-operate, require minimum maintenance, never painting, give years of trouble-free service.

Select *only* aluminum windows bearing the "Quality-Approved" *and be sure.* Write for information and names of manufacturers w windows qualify for the Quality Seal.

ONUMENTAL *and* RESIDENTIAL *buildings*

ALUMINUM WINDOWS

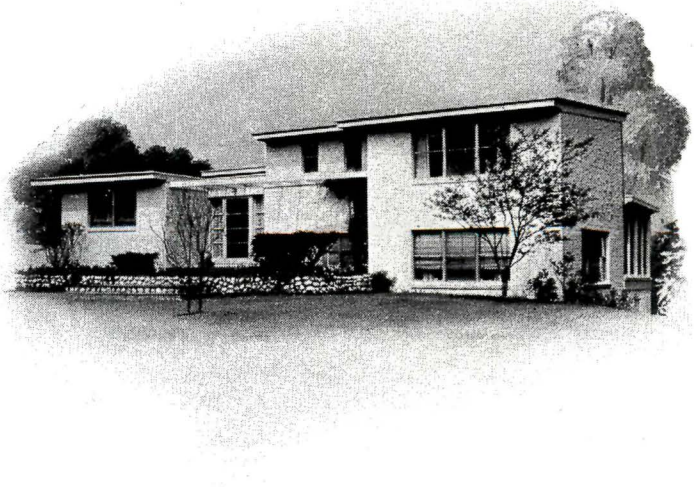




1 For **COMMERCIAL** and **INDUSTRIAL BUILDINGS** aluminum windows are ideal. They never need painting, keep maintenance costs at a minimum. *Shown above:* The Newman-Rudolph Building, Chicago, Ill.; A. S. Alschuler, R. N. Friedman, *Architects.*

2 For **MONUMENTAL** and **INSTITUTIONAL BUILDINGS**—where beauty as well as utility are important—good-looking, long-lasting aluminum windows are first choice. *Pictured upper right:* Helen Rivas Clinic, Rochester, N. Y.; Kaelber & Waasdorp, *Architects;* A. W. Hopeman & Sons, *Contractors.*

3 For **RESIDENTIAL BUILDINGS**, both single and multi-family units, aluminum windows are preferred for their appearance, ease of operation and freedom from periodic painting. *Shown at right:* Residence in Huntington Station, N. Y.



Aluminum Window Manufacturers Association

209 CEDAR AVENUE, TAKOMA PARK, WASHINGTON 12, D. C.

ANNOUNCING TO ALL ARCHITECTS IN THE UNITED STATES

The Third Annual

PROGRESSIVE ARCHITECTURE AWARDS

For 1948 the publishers of PROGRESSIVE ARCHITECTURE will make two national Awards.

1 TO THE ARCHITECT of the building or group of buildings (not a private residence), constructed during the year in the United States, which best exemplifies sound progress in design.

2 TO THE ARCHITECT of the private residence, constructed during the year in the United States, which best exemplifies sound progress in design.

Every architect in the United States is invited to present his best work or make nominations for review by a distinguished professional jury. The Awards are intended to foster sincere, reasoned progress in architectural design in the United States by citation and recognition of those architects whose efforts to improve contemporary standards are judged the most successful. The Awards will consist of suitable certificates to be given to the winners.

JURY

The buildings to be cited as the best constructed during 1948 will be selected by a jury qualified to consider all aspects of the building. Thomas H. Creighton, Editor of PROGRESSIVE ARCHITECTURE, will be the professional adviser.

PROGRAM

The only basis for selection of the buildings winning Awards in the two classifications above described will be demonstrable progress in fitness, strength, beauty, and purpose. The jury will be asked to give consideration to the appearance, plans, structure, use of materials, site arrangement, and relation to community plan and community needs.

ENTRIES

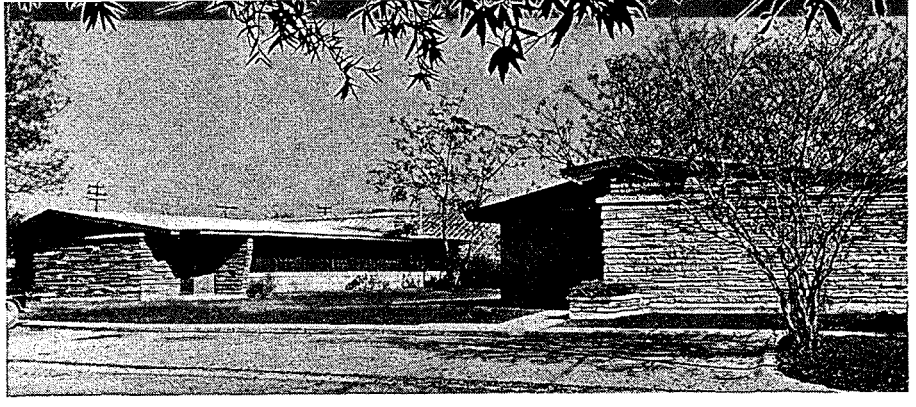
Every architect in the United States is invited to present before March 1, 1949, the best of his own work constructed during 1948 — also to nominate buildings by other architects that he believes worthy of consideration by the jury.

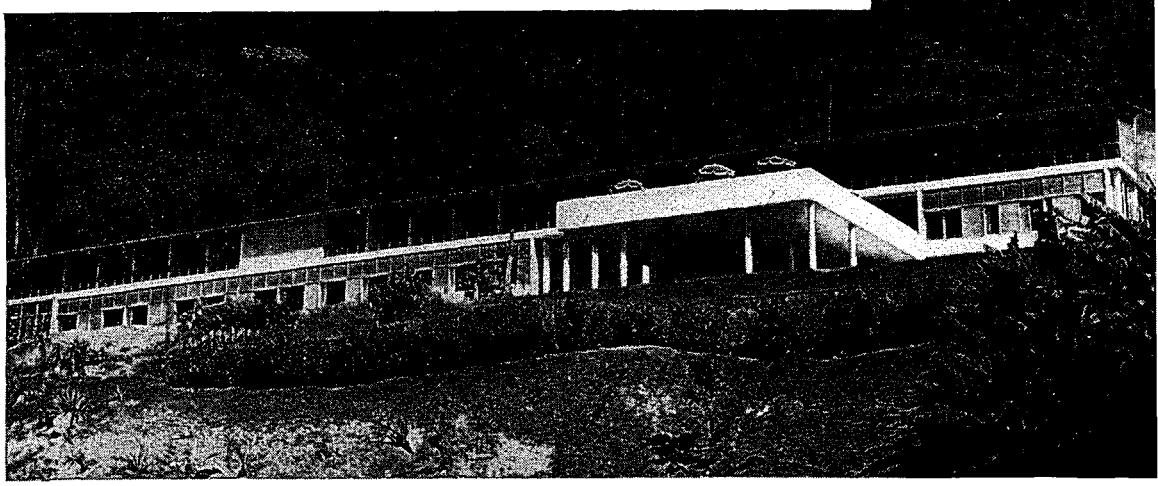
Each submission should include at least three photographs, 8″ x 10″, showing both the interior and the exterior of the building, as well as a plot plan, floor plans, and a brief description of the function of the building and its outstanding features. More detailed information may be requested by the professional adviser after preliminary examination of the work submitted.

INQUIRIES

Entries or inquiries about the Annual PROGRESSIVE ARCHITECTURE Awards should be addressed to Thomas H. Creighton, Editor, PROGRESSIVE ARCHITECTURE, 330 West 42nd Street, New York 18, N. Y.

THE REINHOLD PUBLISHING CORPORATION





Feature

ARCHITECTURE — not STYLE

An Editorial

There is too much nonsense being written about architecture these days. At a time when the United States needs thousands of schoolrooms, hundreds of thousands of hospital beds, and millions of homes, too many people are spending their time self-consciously discussing "styles" instead of producing buildings which are well designed.

We feel that the time has come to call a halt to all this attempt to write history before the heroes are dead. The present perversion of architecture's true aims seems to be based on several examples of sophistry which are easily exposed. If they aren't exposed soon, they are likely to influence the architecture of our time so as to make it an historical farce.

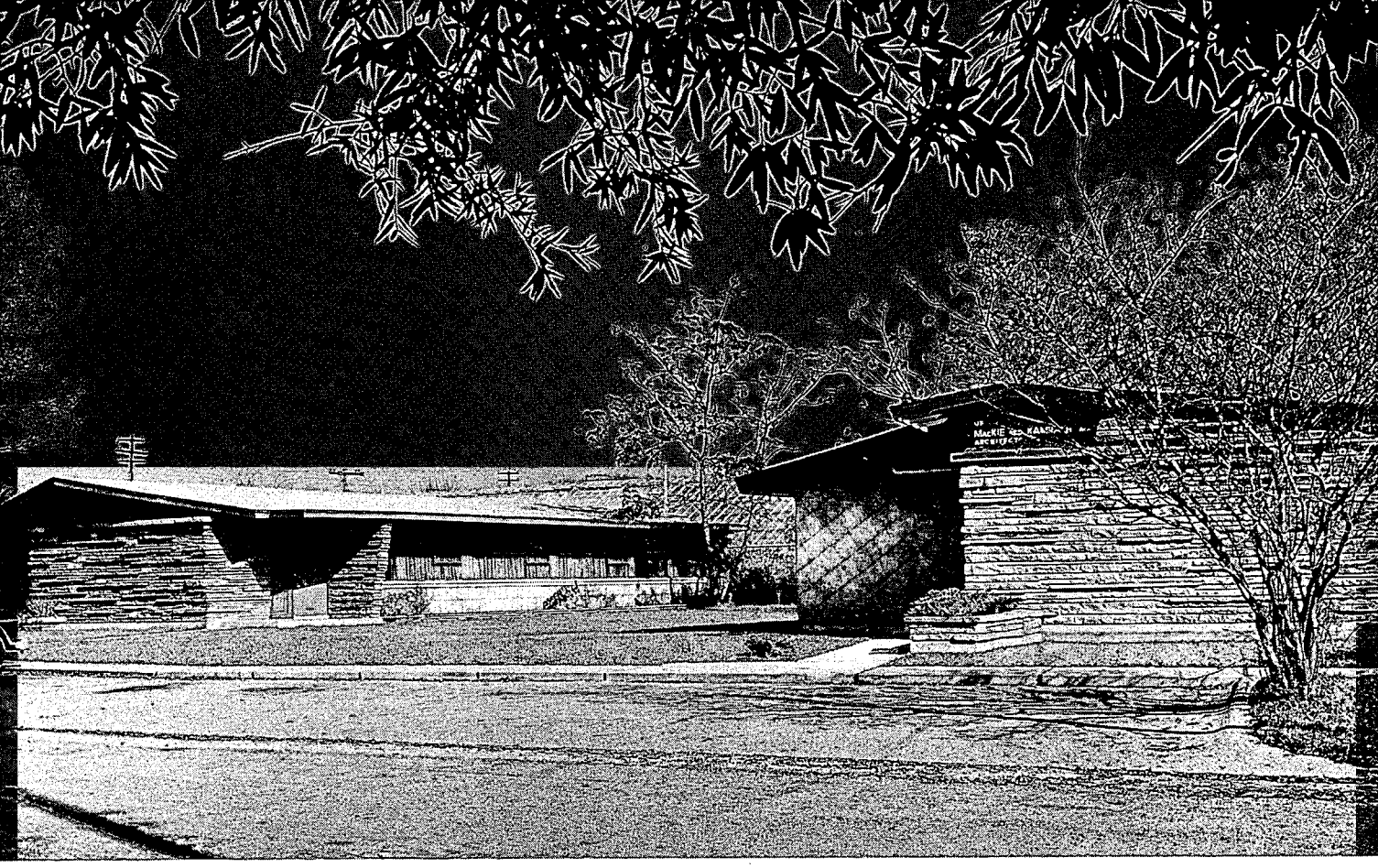
FALLACY NO. 1 is that all work must be self-consciously designed in a style. This is a hangover from several generations of eclecticism, and is historically inaccurate with regard to true, indigenous architecture.

FALLACY NO. 2 is that any work designed "out of style" is wrong, therefore a social anomaly. This is, of course, an authoritarian doctrine.

FALLACY NO. 3 is that we have solved all our technical problems and should now concern ourselves solely with "beauty." The truth is, of course, that we are far behind the other disciplines in expressing the technology of our time.

FALLACY NO. 4 is that our architecture isn't important because it isn't "monumental." This fancy arises from a lack of understanding of the implications of democracy.

LET'S STOP TALKING NONSENSE AND GET DOWN TO WORK. Let's produce more and more modern architecture, and let the historians worry about what to call it. Architecture as a cultural expression, and as an art form, must develop naturally and cannot be forced through edict and dogma. Modern design—design of our time—is not a style. It is a solution to modern problems in modern terms. The point, we believe, is nicely demonstrated in the two projects presented on the pages immediately following. For those who want a further discussion of the four fallacies, this piece is continued on page 120.



ARCHITECTS' OFFICES, right; BUSINESS OFFICES, left. Buildings and landscaping are schemed as a continuous design unit.

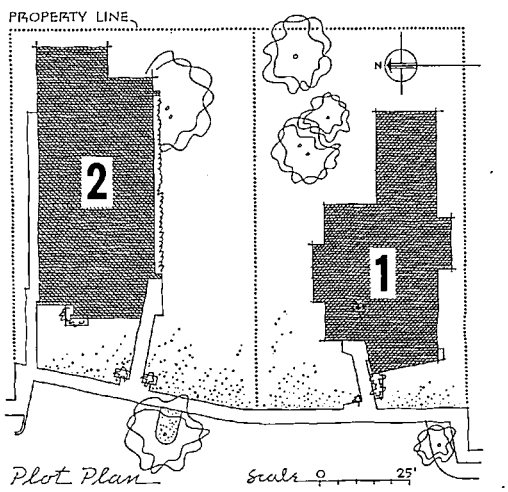
TWO OFFICE BUILDINGS, HOUSTON, TEXAS

MacKIE & KAMRATH, Architects

KAMRATH MacKIE

Karl Kamrath received his architectural training at the U. of Texas and worked two years with Pereira & Pereira before becoming chief architect for Marshall Field & Co., Interior Studios. For three and a half years, he was an officer in the U. S. Army Engineers.

Fred J. MacKie, Jr., was graduated from the U. of Texas Architectural School, worked in Chicago with Graham, Anderson, Probst & White, forming the present partnership with Karl Kamrath in 1936. An officer for three and a half years with the U. S. Army Engineers, he is past president of the Houston Chapter, A.I.A.



PLOT PLAN. The adjoining sites are relatively flat and face west toward the street. The sidewalk line has been recessed to provide off-street parking for cars.

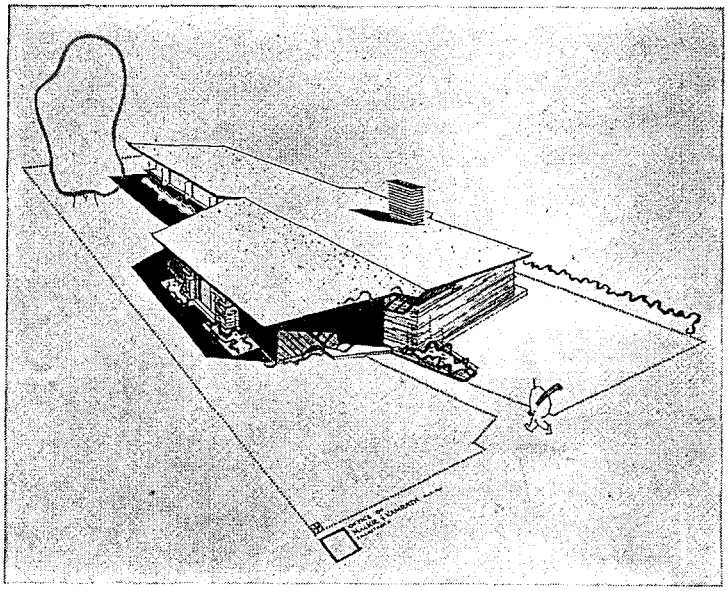
Adjoining, one-story office buildings in which the color, texture, and structural potential of local materials are dramatized in a highly personal design concept.

PROGRAM: To build two office buildings—one for the architects' own use; the other for business rental, or as it turned out, for sale to an oil-pipe-line construction company—as an harmonious group development.

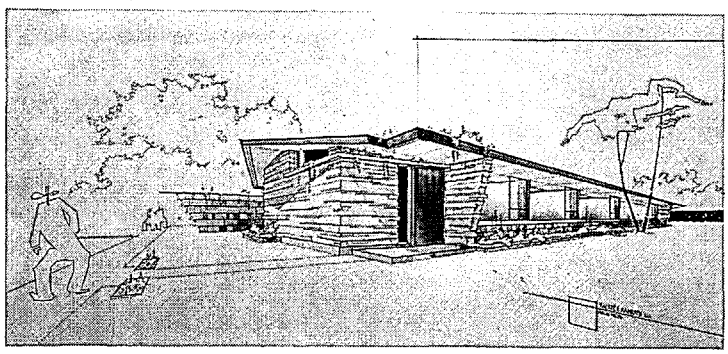
SOLUTION: Direct, functional floor plans enclosed in a boldly exuberant structural-design surround.

Perhaps the chief thing that distinguishes this pair of office buildings from other good architecture for today is the designers' fascination with the nature of the local materials resulting in their vigorous dramatization in the design. It is important to notice, however, that this in no way compromises the scheming of these buildings as good environments for the work that goes on within them—the workmanlike plans, the thoroughly contemporary attention to such things as roof overhangs to protect against too much summer sun, moving partitions that allow flexibility in use, etc.

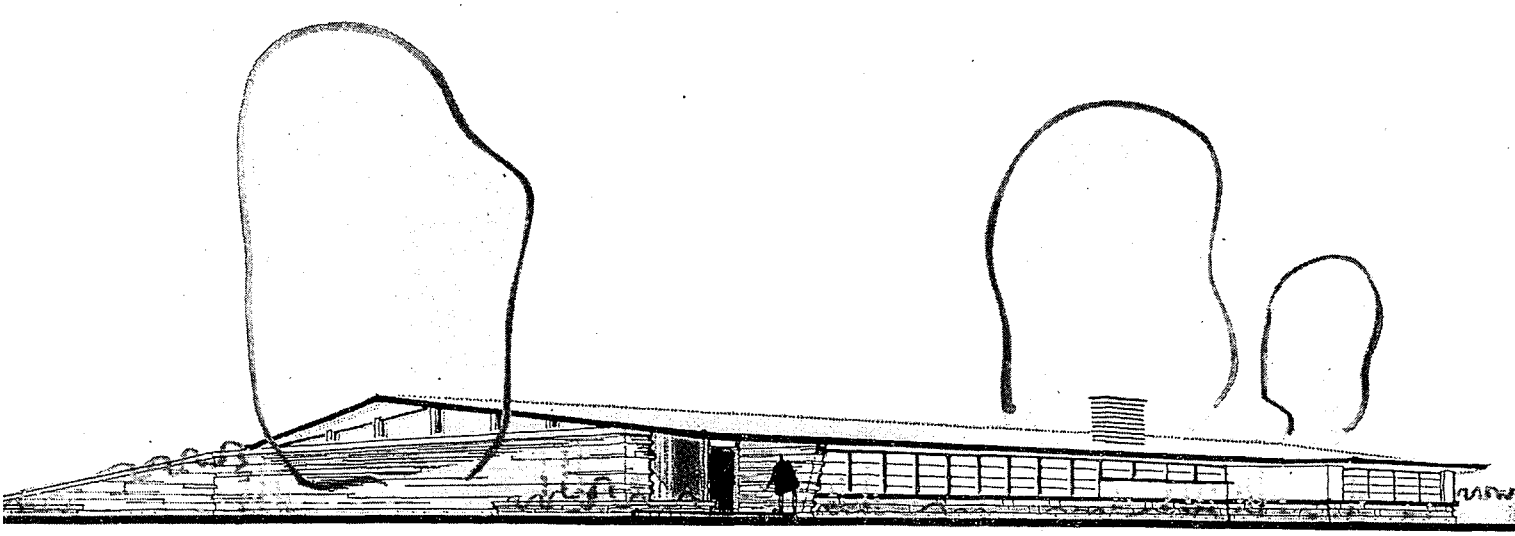
Paul Peters Photos



1. An early sketch for the architects' offices.



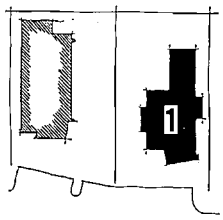
2. Study for the commercial office building.

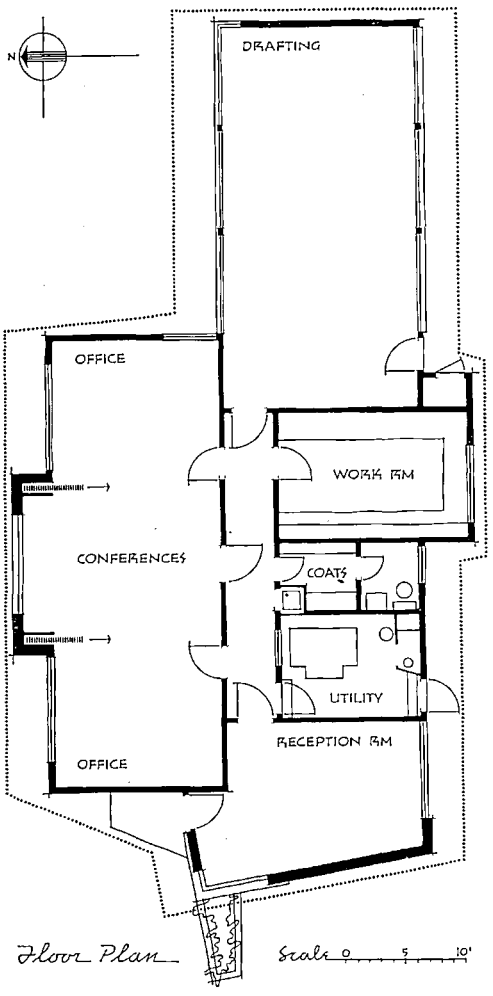


NUMEROUS sketch studies such as these preceded the final crystalization of the scheme.

TWO OFFICE BUILDINGS

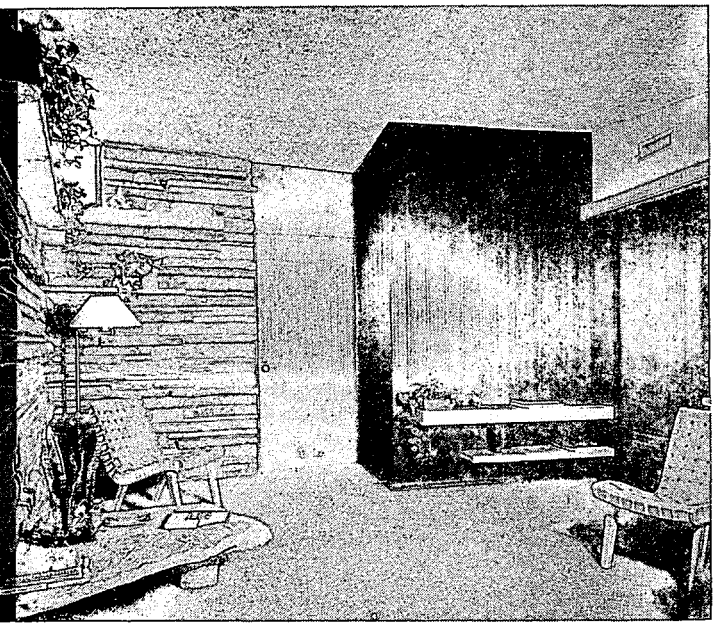
HOUSTON, TEXAS

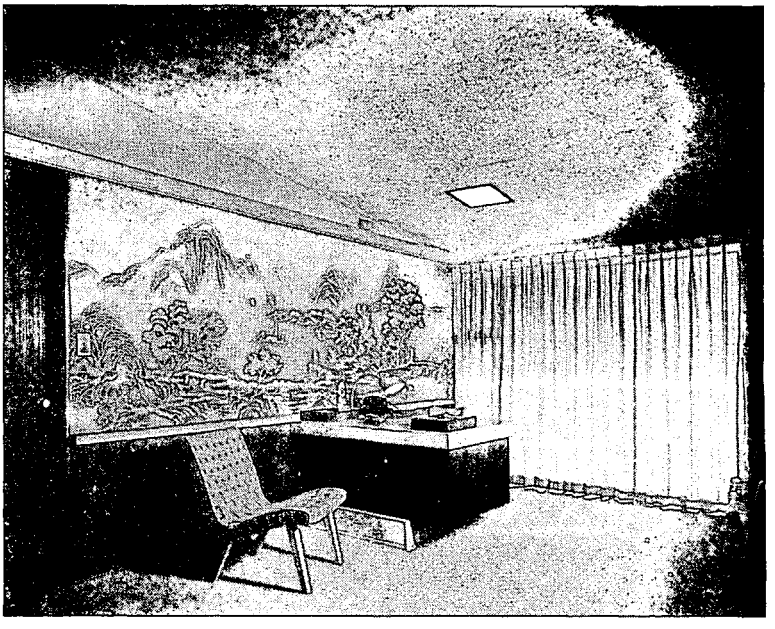




1. ARCHITECTS' OWN OFFICES

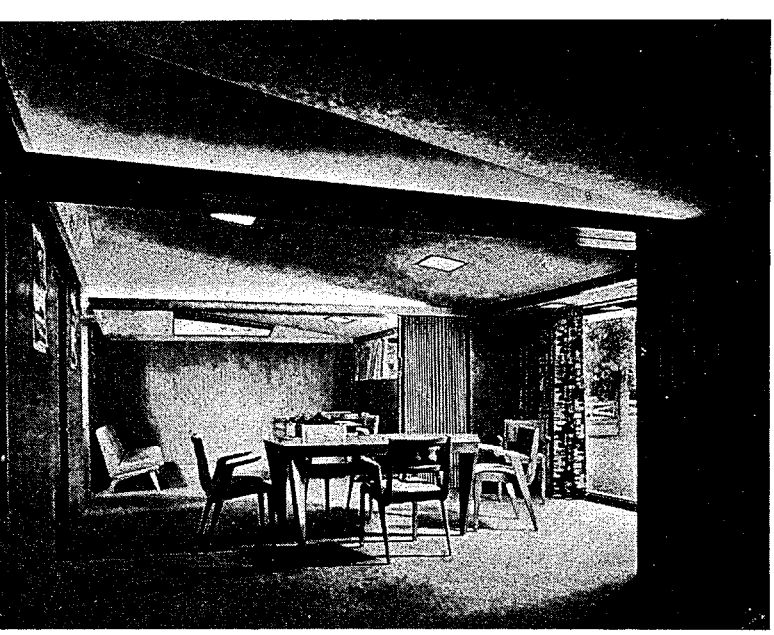
Entering these spacious professional offices, one approaches the rugged stone wall of the street front, opens the door, and comes into a colorful reception room with a huge, sunny, floor-height window at the end overlooking the southern lawn. By means of flexible partitioning, the offices and conference room may readily be three or two rooms or one very large room, as occasion requires. The drafting room, with two window walls, well back from street noise and distraction, suggests a congenial atmosphere for creative design activity.



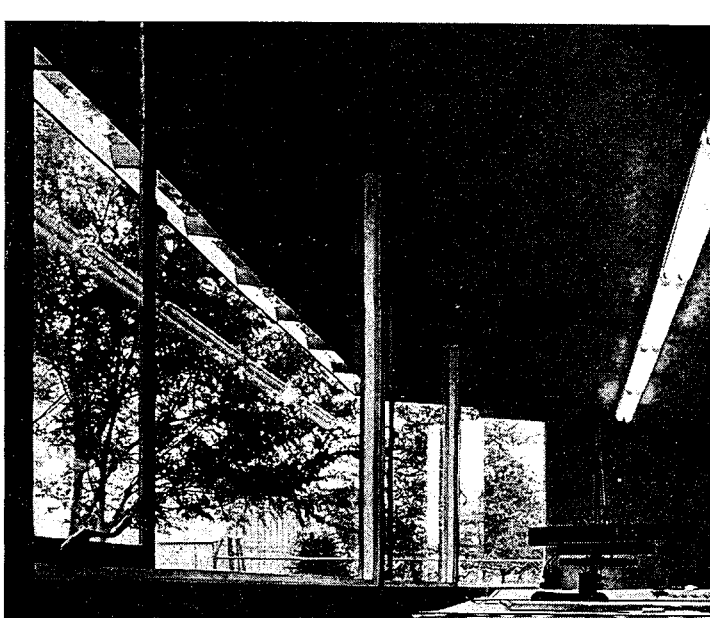


RECEPTION ROOM. Plywood wall by the door is gray-glazed Chinese red. Southern window screened by yellow-gold curtain.

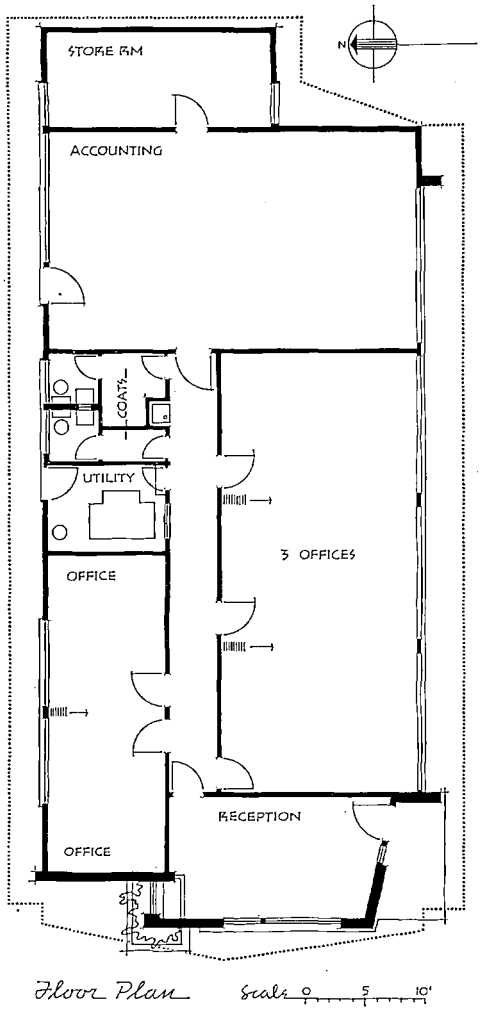
NORTH SIDE. At left, the continuous windows are in the drafting room; a narrower, "sunshaded" band occurs on the south.



ONFERENCE-OFFICE AREA, with partitions pushed back.

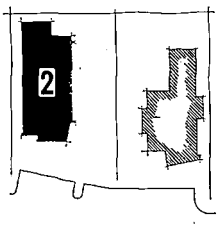


NORTH WALL of drafting room.



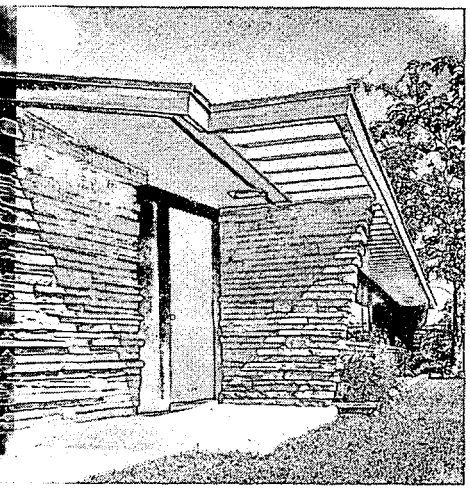
TWO OFFICE BUILDINGS

HOUSTON, TEXAS

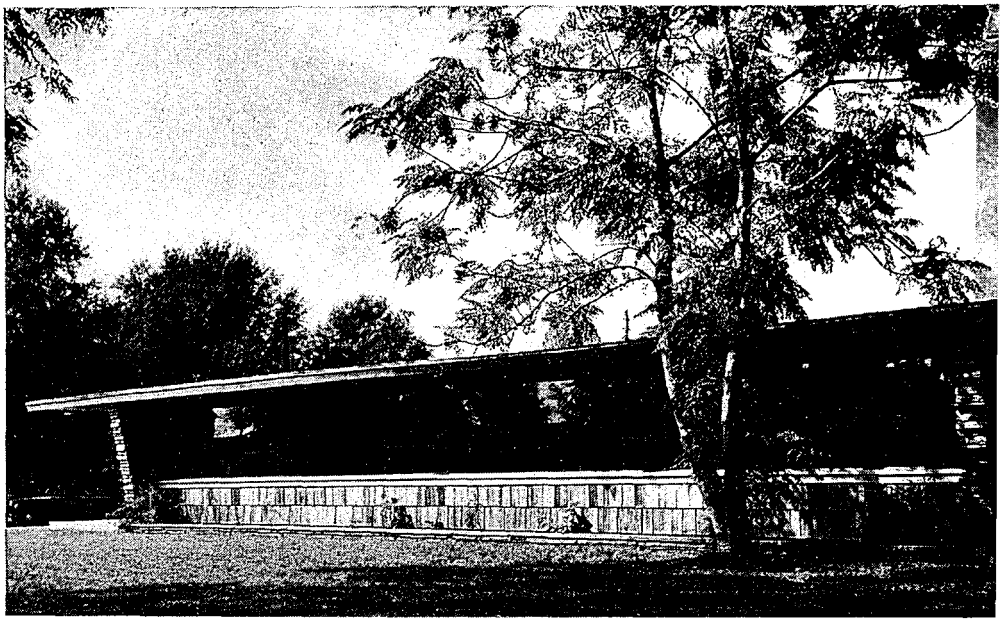


2. BUSINESS OFFICES

The business building occupies the north side of the joint site. The plan scheme is extremely simple. A corridor runs down the length of the building from the reception room to the accounting room, and offices, service rooms, etc., open off at either side. As in the architects' office building, considerable use has been made of folding partitioning so that the building readily adapts itself to varied types of business needs. The exterior hand-split cedar-shake shingles are stained natural brown; wood trim and steel window frames are painted dark brown. Stone and plywood is the chief wall finish within, with each private office having one wall of deep mahogany.

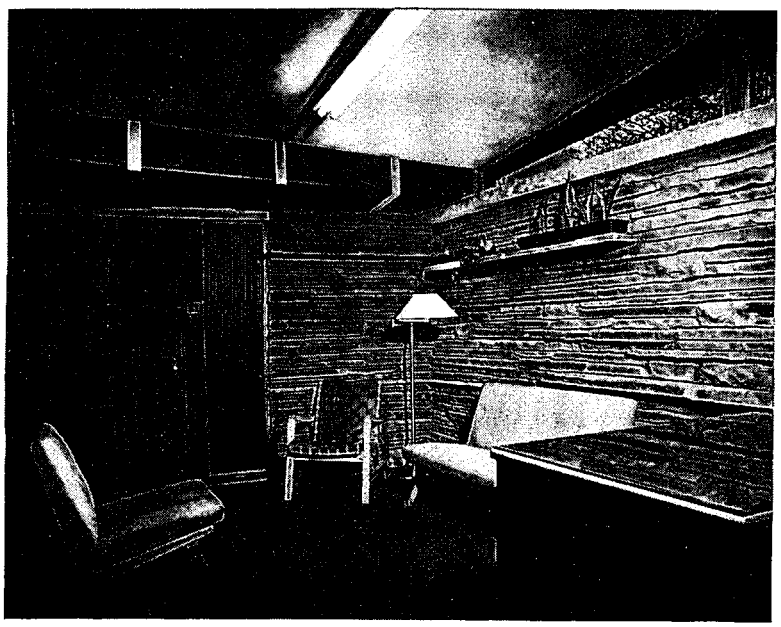


MAIN ENTRANCE. Roof overhang excludes summer southern sunlight.



CONTINUOUS BAND OF WINDOWS defines the private office area.

STREET VIEW

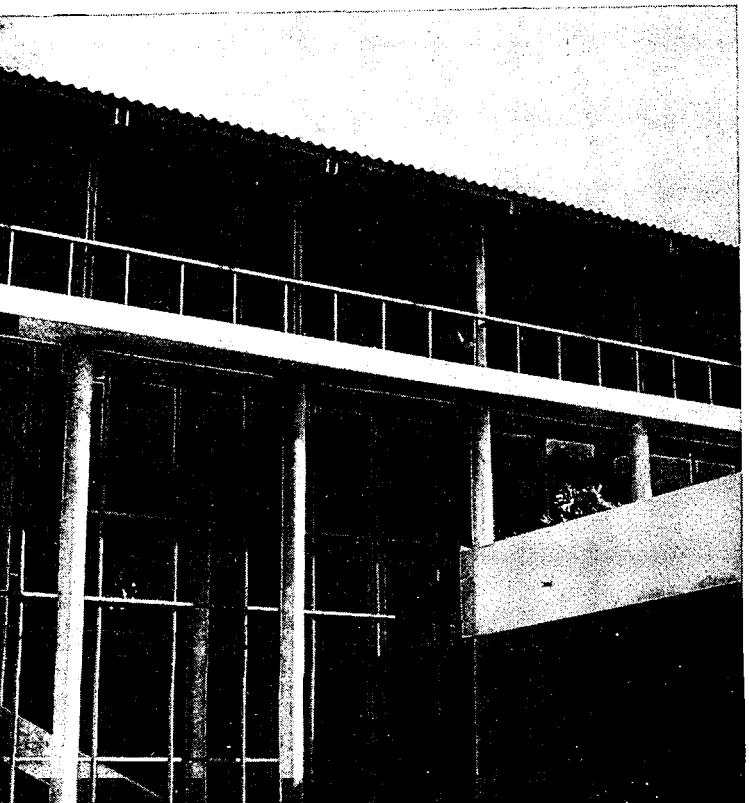


RECEPTION ROOM

ENGINEERING OUTLINE (both buildings)

CONSTRUCTION: Concrete slab. **Framing:** wood stud. **Walls:** ledge stone masonry or hand-split cedar shakes over frame; interior walls: natural stone; mahogany plywood, smooth or striated. **Floors:** asphalt tile or carpeting over the concrete slab. **Roof:** built-up tar and gravel over wood frame; white marble chip topping. **Fenestration:** steel casements; ¼" clear plate and ¼" heat resisting glass. **Insulation:** acoustical: sprayed asbestos on ceilings; thermal: cotton-base insulation in walls and roof. **Partitions:** plywood over frame. **Doors:** 1¾" wood, with natural plywood applied to faces.

EQUIPMENT: **Heating:** gas-fired warm-air system; automatic controls. **Electrical:** flexible armored conductor; both fluorescent and incandescent units.



THE ESTHETIC CONCEPT in this case is concerned

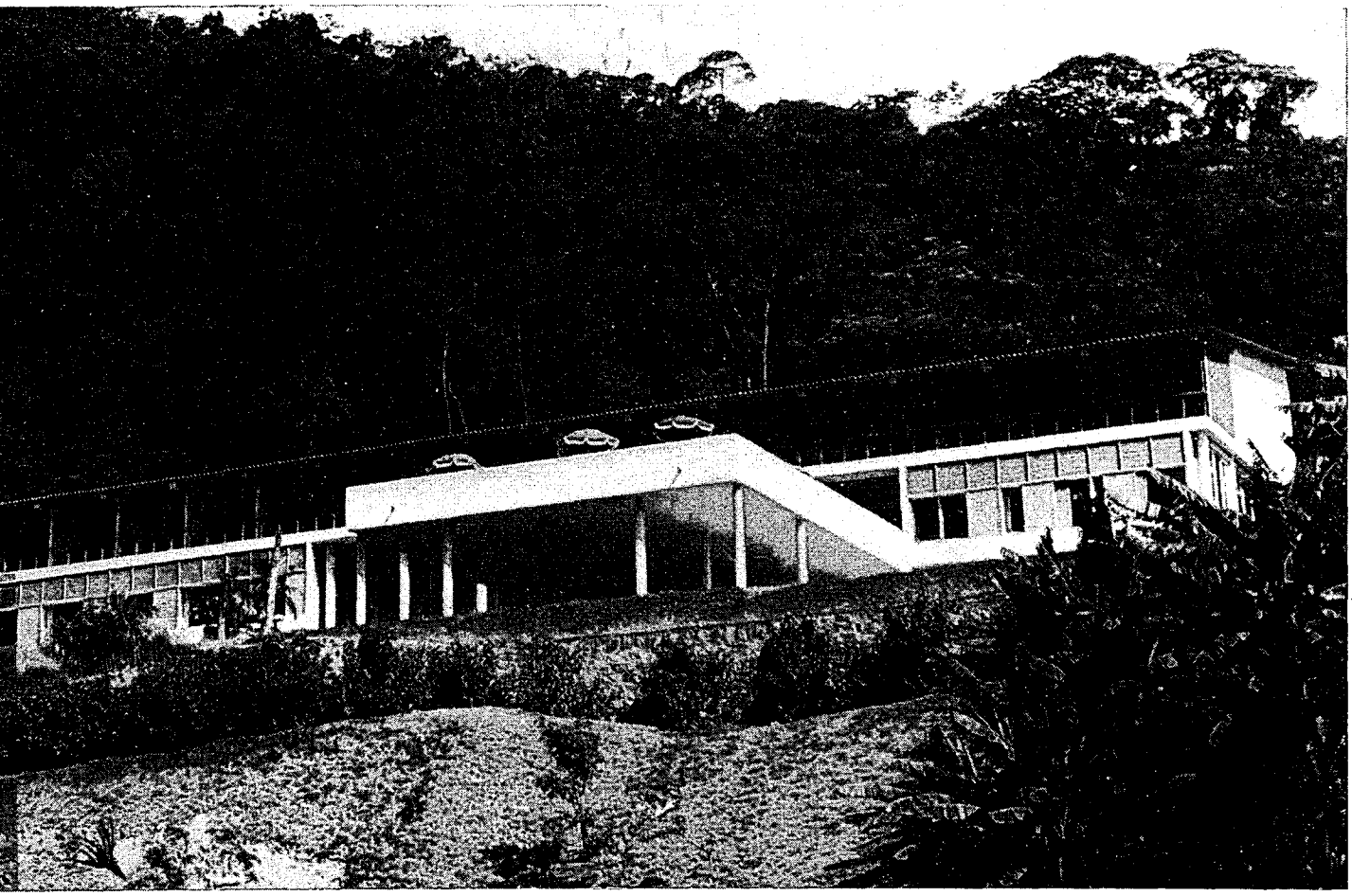
RESORT HOTEL,

TIJUCA, BRASIL

M. M. M. ROBERTO

Architects

UNFORTUNATELY, black-and-white pictures don't convey the colorfulness of the building. The wood members of the balconies adjoining sleeping rooms of the top floor *(photo at top)* are variously painted in soft blue, pink, and yellow. The stucco of exterior walls as well as walls of interior public rooms such as the entrance hall *(photo at center)* is a warm white, and the stone chosen for portions of exterior walls is golden in tone. *Photo at bottom* shows exterior of lounge area, with intercepting roof terrace structure at right. Roberto adds: "We also have the great variety of greens of the trees, and the sky, sometimes, helps a lot."



ith clear, horizontal order used as a foil to the wild, natural luxuriance.

Week-end and vacation hostelry for the use of the younger employees of the Reinsurance Institute. A colorful, contemporary structure built on three levels on a richly wooded mountain slope.

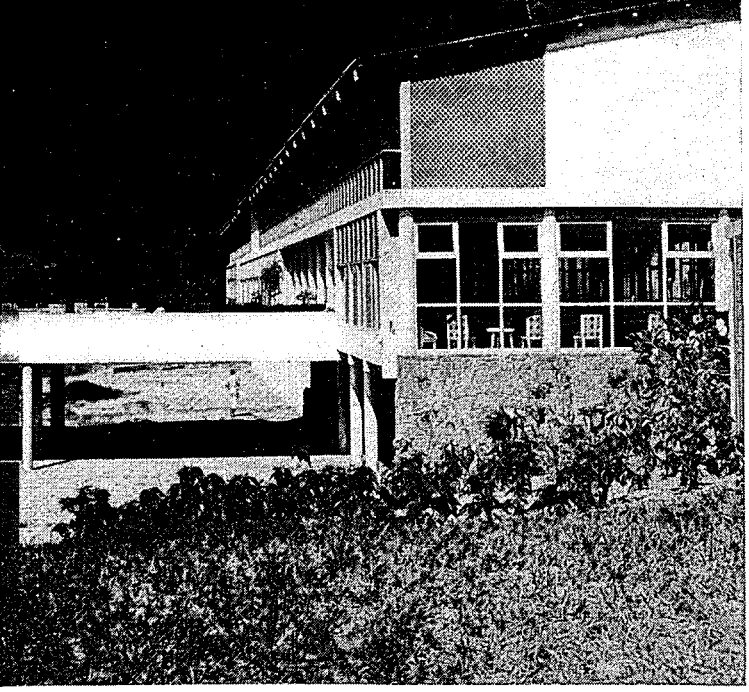
PROGRAM: Accommodations for 83 vacationers who seek relaxation and informal country recreation. Since many of the visitors are young people, dormitory accommodations were acceptable in the main, though some provision was required for young couples, some of whom would bring their children with them.

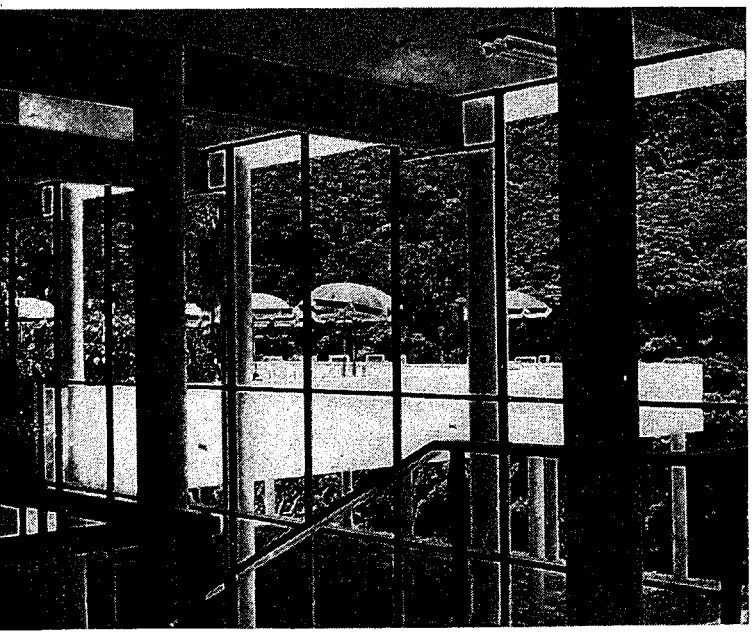
SITE: A slope but 20 minutes from downtown Rio, it is, in the words of Marcelo Roberto, "a mountain all covered by forest. Full of changes of terrain and varied outlooks, it is very cool in summer and pleasant in winter. It goes up and down, wider and narrower, and suddenly stops, in a cliff, right at the sea."

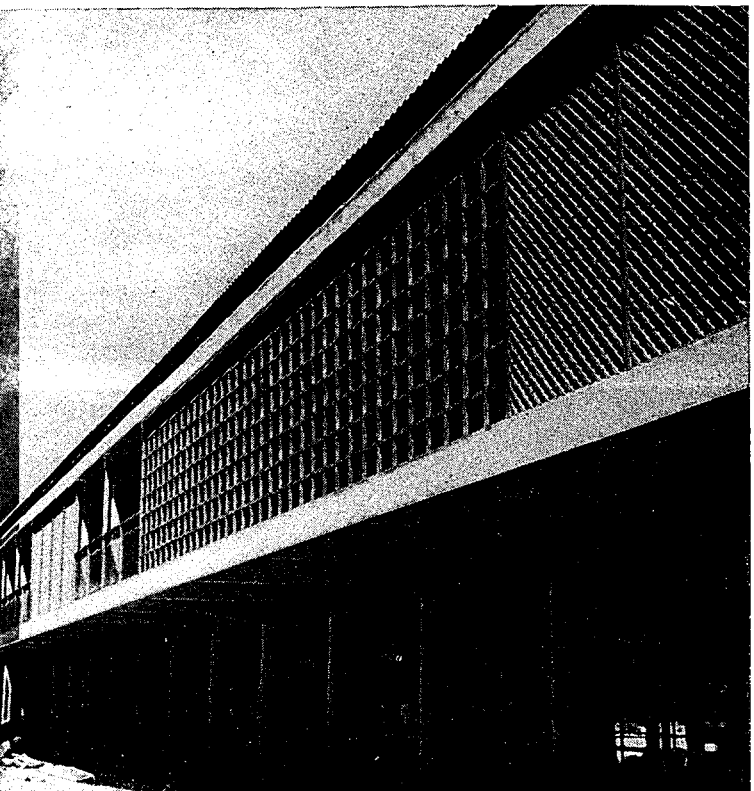
SOLUTION: Alignment in a narrow block with main faces oriented to the sunny north. Bedrooms and porches on the topmost level, shielded from too much sun by the deep sitting balcony; other levels of public rooms variously sun-protected by sliding screens, etc. All levels open out to adjoining gardens and playgrounds.

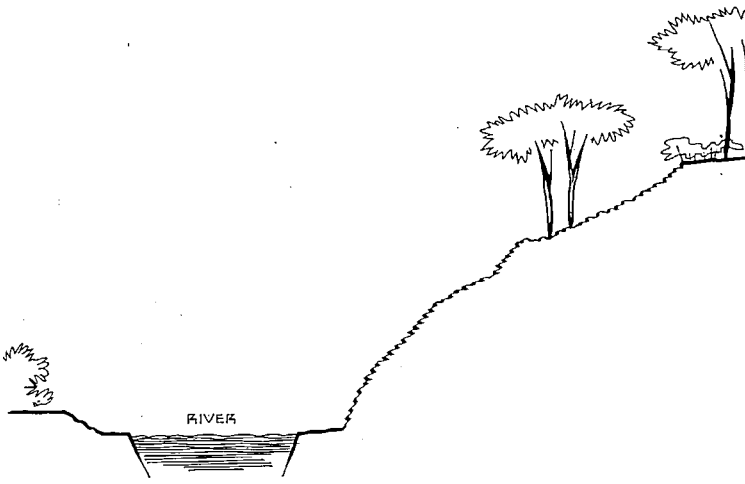
THE ROBERTOS—MILTON, MARCELO, MAURICIO

Marcelo Roberto (40) received his architectural training at the National School of Fine Arts, Rio de Janeiro, and in subsequent travel in Western Europe. In partnership with Milton (34), he won the competition for the design of the now-famous A.B.I. Building. Another successful competition gave them the commission for the Central Building of the Rio Airport. Mauricio (27) has worked with his brothers since his school days, joining the firm in 1941. All work done by this triumvirate is now signed M.M.M. Roberto.







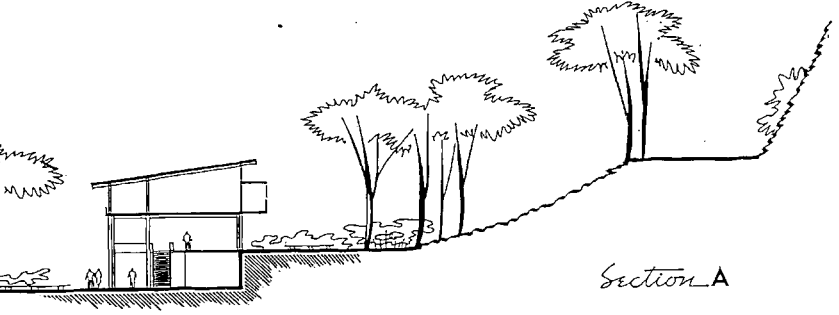


RESORT HOTEL, TIJUCA, BRASIL

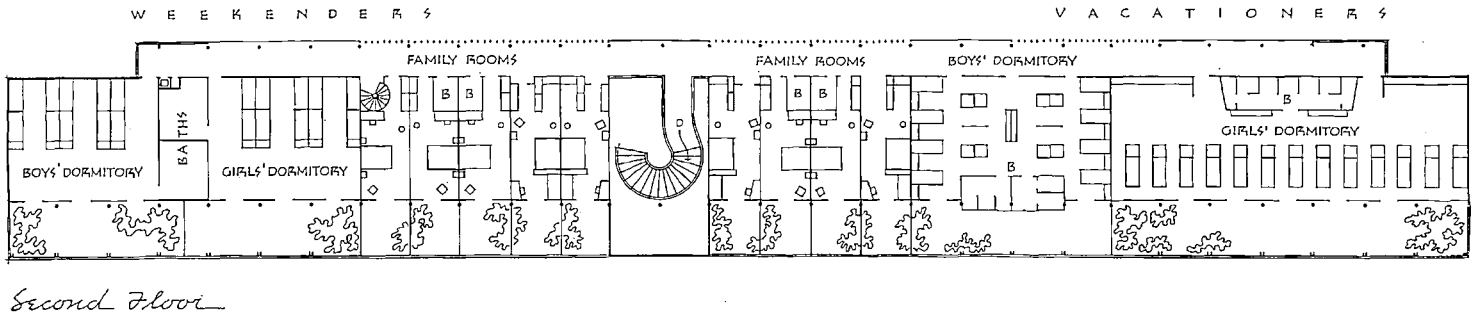
The plans and section illustrate how completely the building and its facilities are related to the terrain and outdoor recreational facilities. This also provides desirable separation of functions. On the ground floor, garage and main entrance hall, servants' quarters, house laundry, and sheltered children's play area are apart from the spaces provided for the more adult visitors. The middle floor organizes all of the public-use rooms, restaurant, and game rooms in a most spacious, informal way, and the top floor is worked out to give great privacy to either those who have retired or who simply want to sit quietly on a balcony and contemplate the natural scene.

It is truly remarkable how easy of access this apparently remote mountain resort is. One may come out by car from the city in a few minutes, or, from the northern part of the city, it is possible simply to take a tramway up to a point called Alto da Boa Vista at the end of the wider, more populated end of the mountain, and from this point it is but a five-minute walk to the hotel.

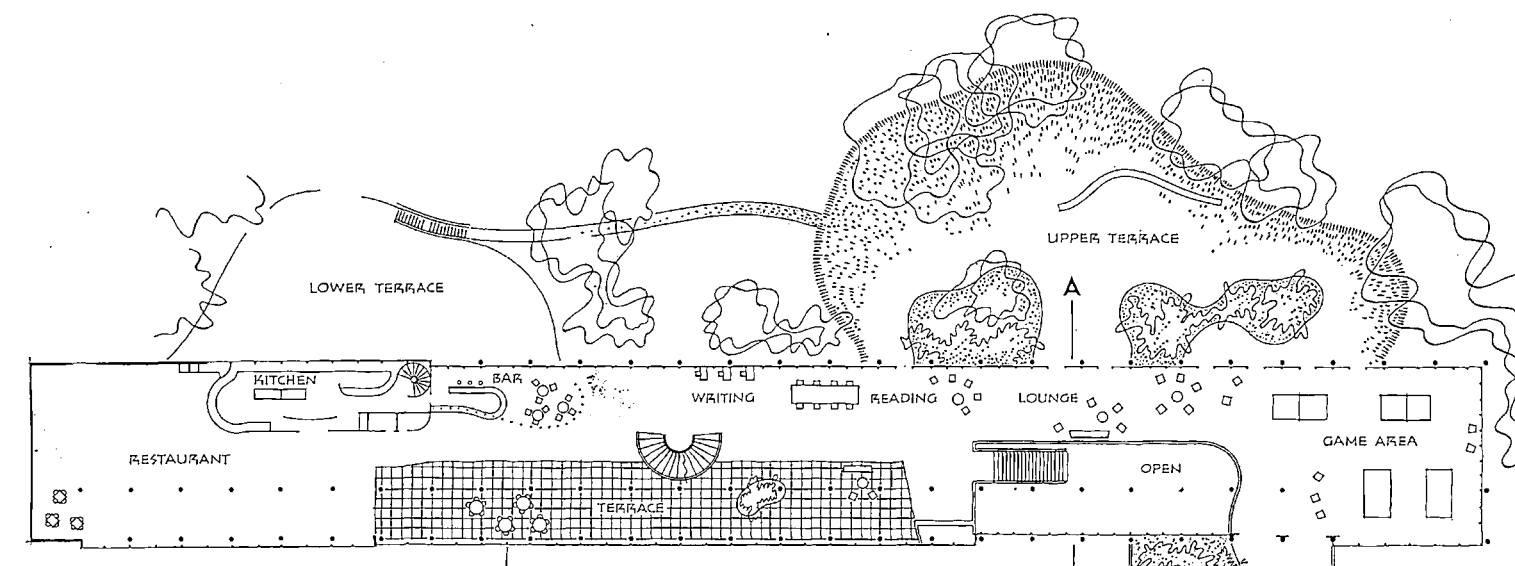
The picture at the top (west end of the hotel) suggests the colorful ensemble—the white stucco, pink-beige lattice work at the balcony end, blue and yellow frame of the balcony, and warm tones of the ground floor stonework. *The center photograph* shows the roof terrace seen across the stairwell leading down to the entrance hall. *At bottom* is a view of the rear or south front, with the bedroom gallery either wholly open or lattice screened above, and the recessed window wall of the public rooms below. Because of the topography, the building is but two stories high at this point.



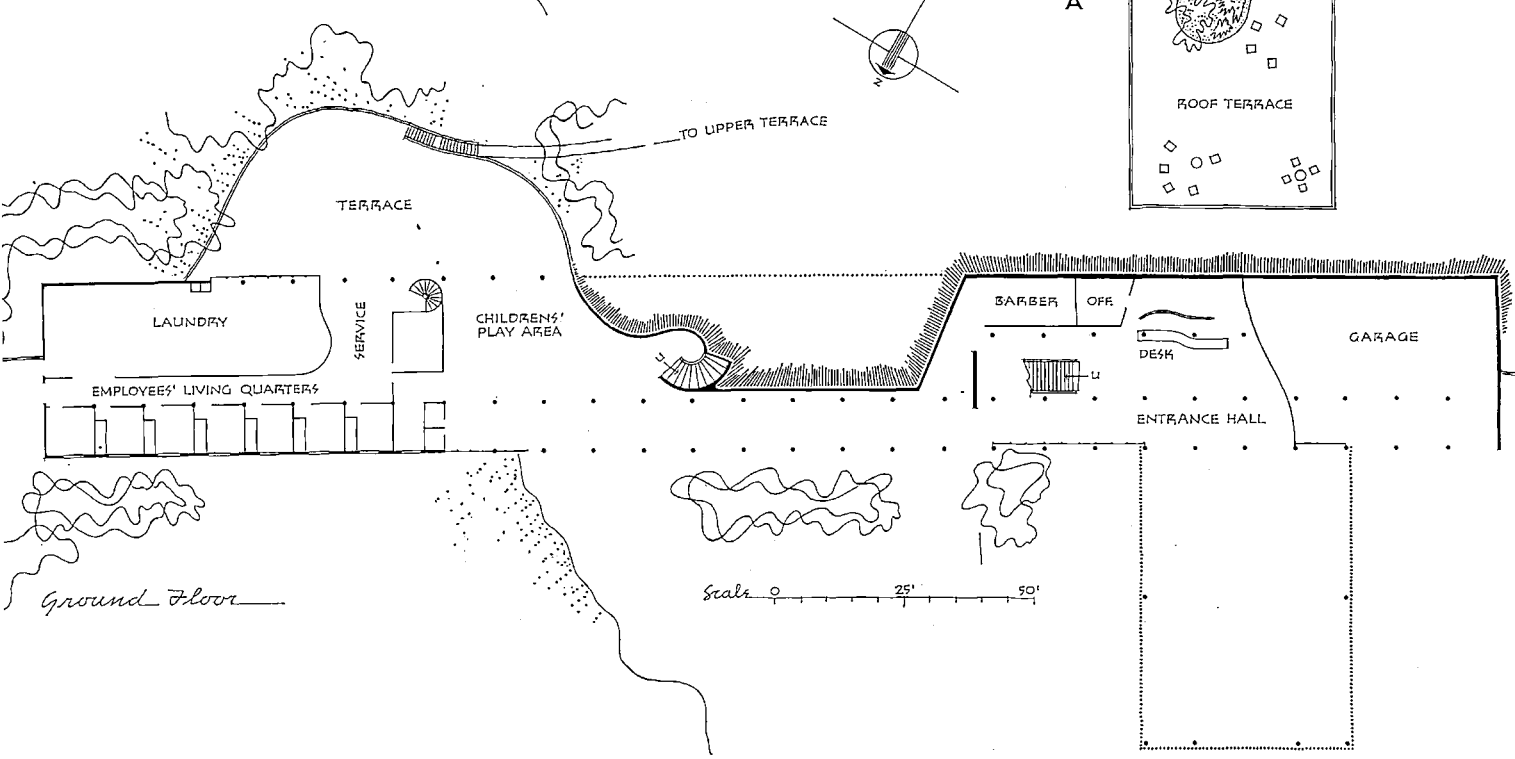
Section A



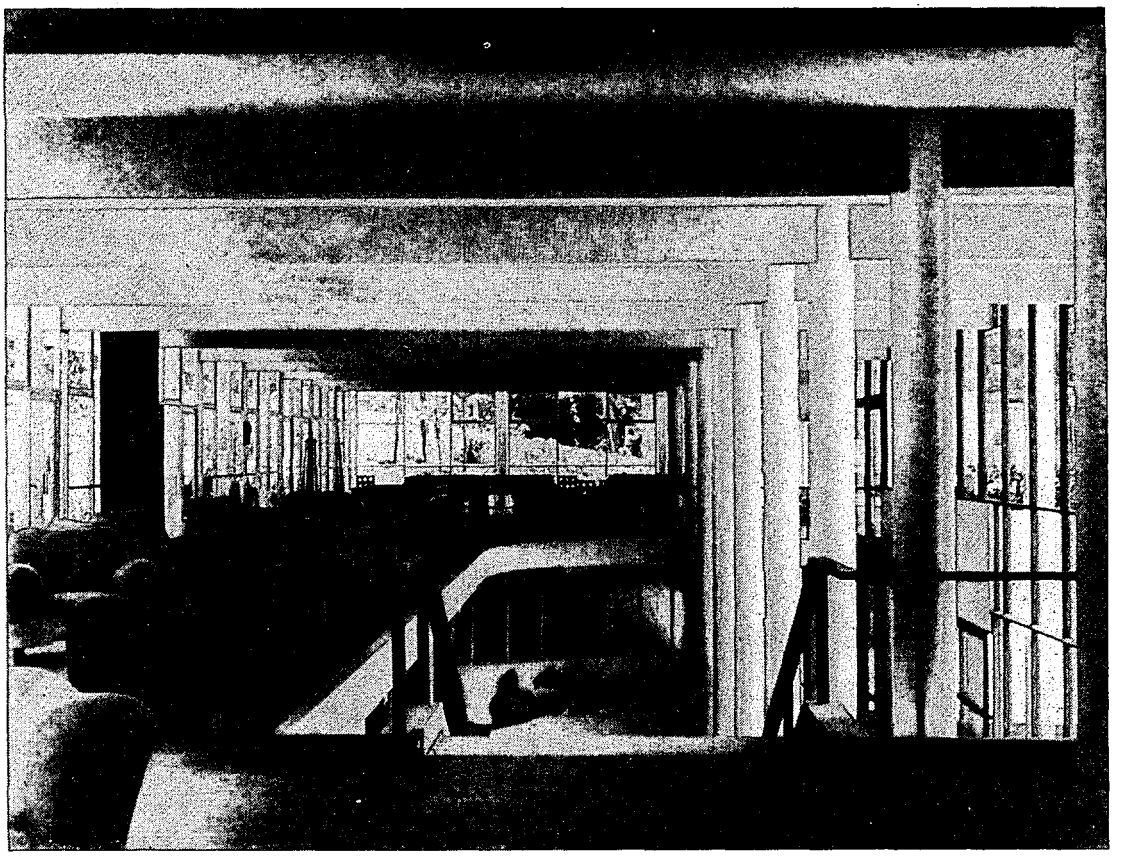
Second Floor



Main Floor

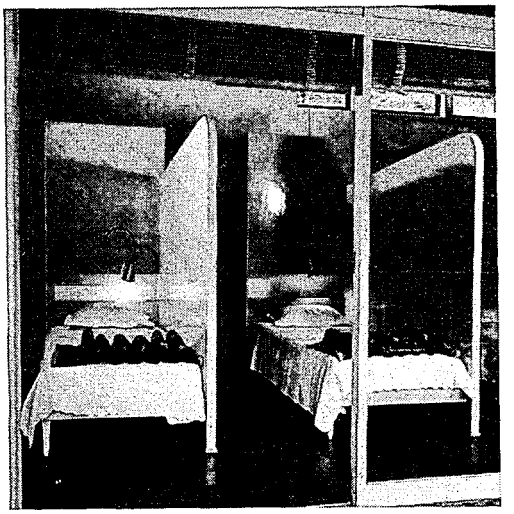


Ground Floor



LOUNGE, at top of stair down to entrance hall.

DOORS TO ROOF TERRACE, at left.



TYPICAL DORMITORY

RESORT HOTEL

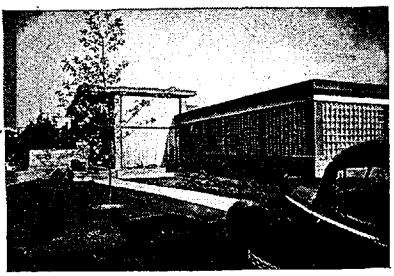
TIJUCA, BRASIL

ENGINEERING OUTLINE

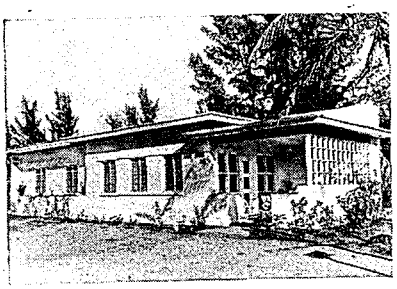
In this case, we have no precise list of materials used in the construction of the building, but the scheme is as follows in general: reinforced concrete frame: portions of walls of the lower floor of a local gray-gold granite; porch rail and framing of the top-floor balcony, wood. Concrete areas are surfaced on the exterior with warm-toned stucco. North walls outside much of the public-room area are made up of three elements: sliding windows; sliding, louvered shutters, and fixed shutter panels above, providing extremely flexible light and ventilation control.

DOCTORS' CLINICS

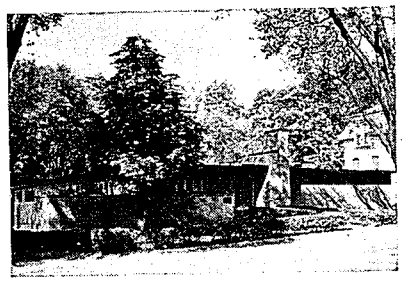
Critique



WASHINGTON Page 62

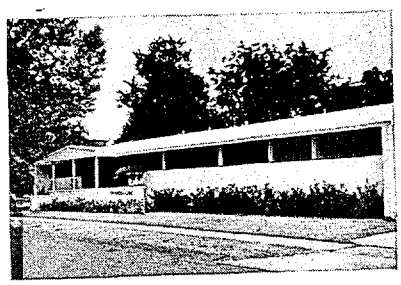


FLORIDA Page 65



ILLINOIS Page 66

TEXAS Page 67



TEXAS Page 70

The most puzzling problem in health care in the United States today is the very smallest health facility. It is puzzling because there is no agreement as to how small a hospital can be and still call itself "hospital," and there is no agreement among health authorities as to what sort of a facility should exist, either in urban or rural areas, when one does get below the smallest allowable hospital. Hospitals and health centers in this country are generally either voluntary, nonprofit institutions, run for the benefit of the community or a sizable segment of the community, or they are supported by public funds. And yet the publicly owned or community-run health center in a small community is almost a paradox, because the very paucity of population which makes the small facility seem reasonable (5,000 people will justify a 25-bed hospital) usually means that there are no general or community funds to pay for its construction and its operation.

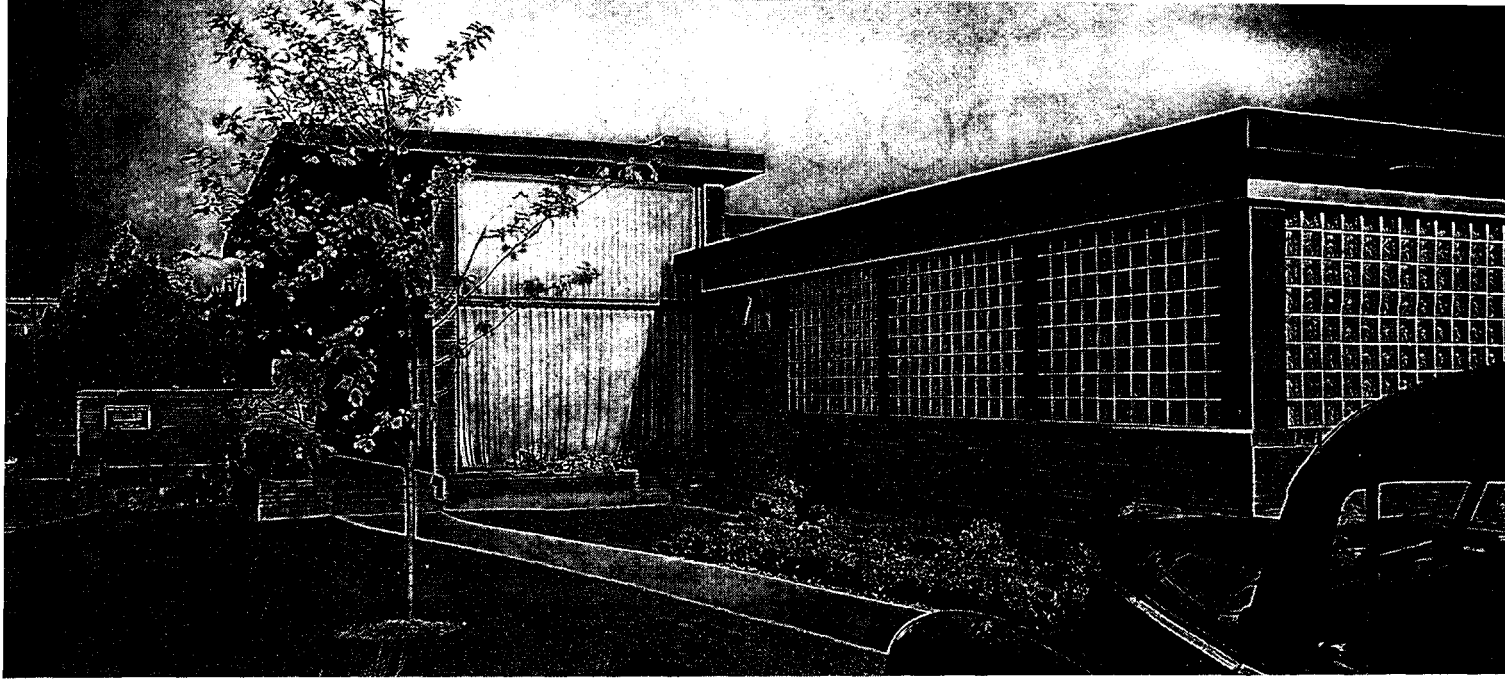
The solution seems to be twofold. In rural areas and in low-income urban districts the small clinic or health facility must be assisted by Government. In plan and function such facilities will be concerned primarily with preventive medicine and diagnosis.

Another extension of the problem is the office for the individual doctor in those thousands of communities which are neither densely urban or sparsely rural—the typical small city and town of the United States. While the proprietary hospital—a personal institution run by one or a group of doctors privately—is not important either statistically or socially, the private doctor's office or clinic often forms the final link in the chain which makes up completely planned health care. It becomes, in many localities, the local health center.

How can he plan it most efficiently? Obviously a step toward farsighted practice is to cooperate on one basis or another with other doctors in the area who may supplement or complement his own practice. This does not necessarily imply "group practice," although that is a sensible and growing tendency. But even without that, there are advantages to all when a general practitioner, an obstetrician, a dermatologist, an eye-ear-nose-and-throat man, etc., either combine or join their offices. They can refer patients to one another. They can confer with colleagues when they feel the need for discussion. They can perhaps share a pharmacy, or an X-ray machine.

One solution to the problem of planning for such an individual practice is the medical office building, a number of which have recently been built or are being planned. But even more widespread is the private doctor's clinic—his own office, either for individual practice or practice with associates or assistants —which is "proprietary" in the limited sense of the word, but which comes into being because the doctor is filling a definite community need. Here is another form of the smallest unit in a planned health program—it is the point at which the average citizen who is not indigent first touches the whole scheme of health care. Here, presumably, he receives diagnosis, advice, and simple treatment. From there, if it seems necessary, he goes to the local hospital, which in turn is related to the medical center.

Planning of these individual doctors' offices has been notoriously careless in the past. The Hospital Facilities Section of the United States Public Health Service has issued some material on the subject, but it is admittedly incomplete, and the architectural department of that group is now restudying the problem. In the meantime, P/A has culled the following buildings from many that have come to its attention, and has gone over them critically with a number of architects who have given special study to the problem. They are presented as moves in the direction of well-planned private clinic facilities which are community adjuncts and in some cases community projects.

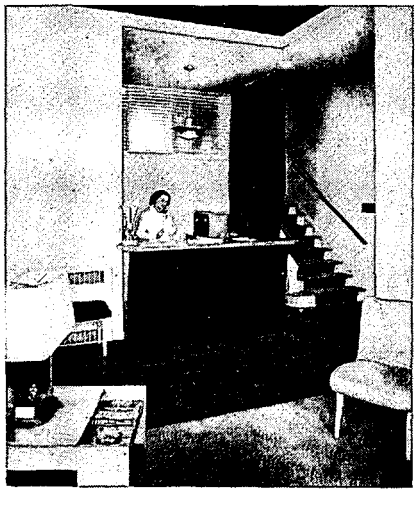


VIEW FROM NORTHWEST. Fenestration of the surgery and recovery room consists entirely of glass block.

CLINIC, LAKE CITY, WASHINGTON

SMITH-CARROLL-JOHANSON, Architects

Cash Beardsley, Landscape Architect



NURSE'S STATION

PROGRAM: To provide for a doctor and three associate doctors (plus two receptionist-secretaries; one lab and X-ray technician, one physiotherapist, and three graduate nurses) as one working unit; separate work unit for a dentist's offices (one assistant); the two units to share the same main waiting room. A small apartment for a caretaker.

SITE: Relatively long, shallow, sloping corner site.

SOLUTION: A three-level scheme with the dentist's suite (upstairs) and caretaker's apartment (downstairs) occupying the two-story portion at the downhill end, and the waiting room and doctors' offices at the intermediate level; nurse's station at interior corner of reception room provides control point to all offices. Off-street parking at the west end.

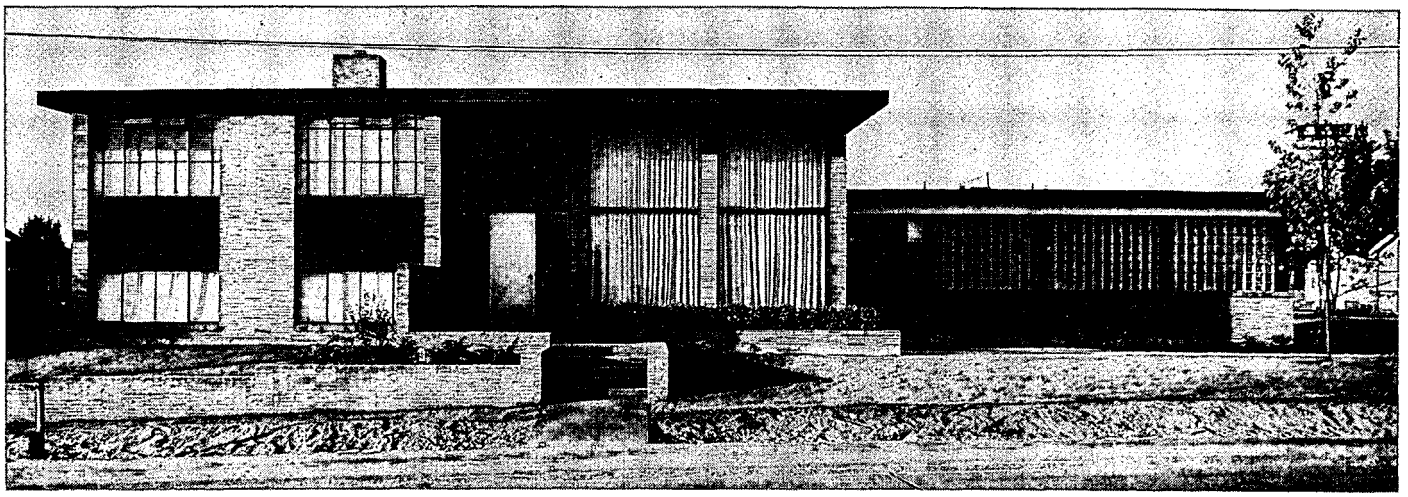
P. A. Dearborn Photos

SMITH

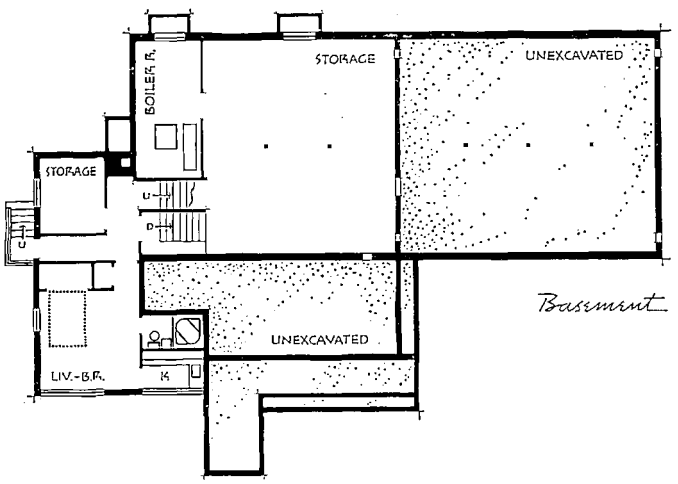
CARROLL

JOHANSON

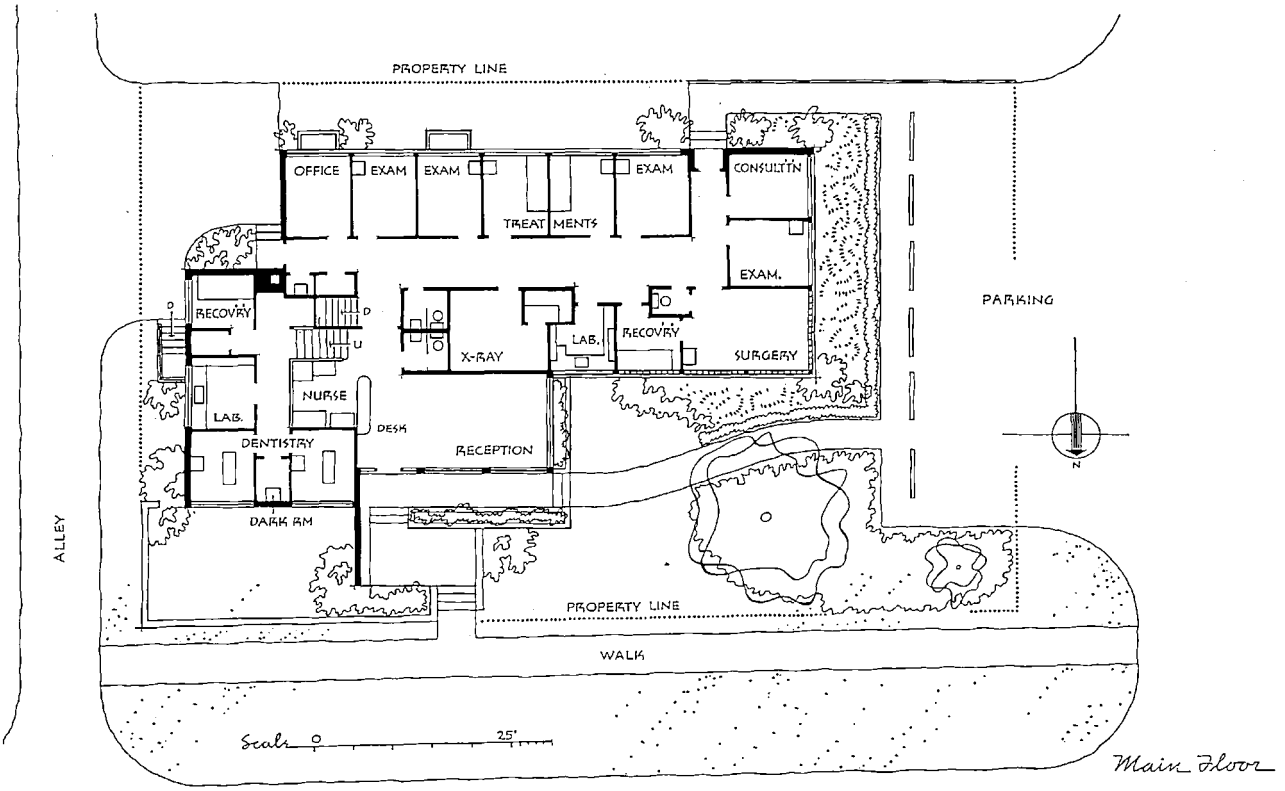
Frank M. Smith, Jr., and **Theodore B. Carroll** formed a partnership in 1930 continuing together until 1936 when **Perry B. Johanson** joined them to form the present firm. Johanson was graduated from the U. of Wash. School of Arch., after which he traveled extensively in Europe and North Africa on a scholarship. He is also a partner in the Seattle firm of Naramore, Bain, Brady & Johanson. Carroll attended the U. of Wash. and is now active in city ordinance building code work and other civic affairs. Smith's specialization is the administrative end of the office; Carroll is mainly concerned with structural design, and Johanson is the chief designer.



NORTH FRONT. Roof line of two-story portion (left) continues above the high-ceilinged waiting room (right).

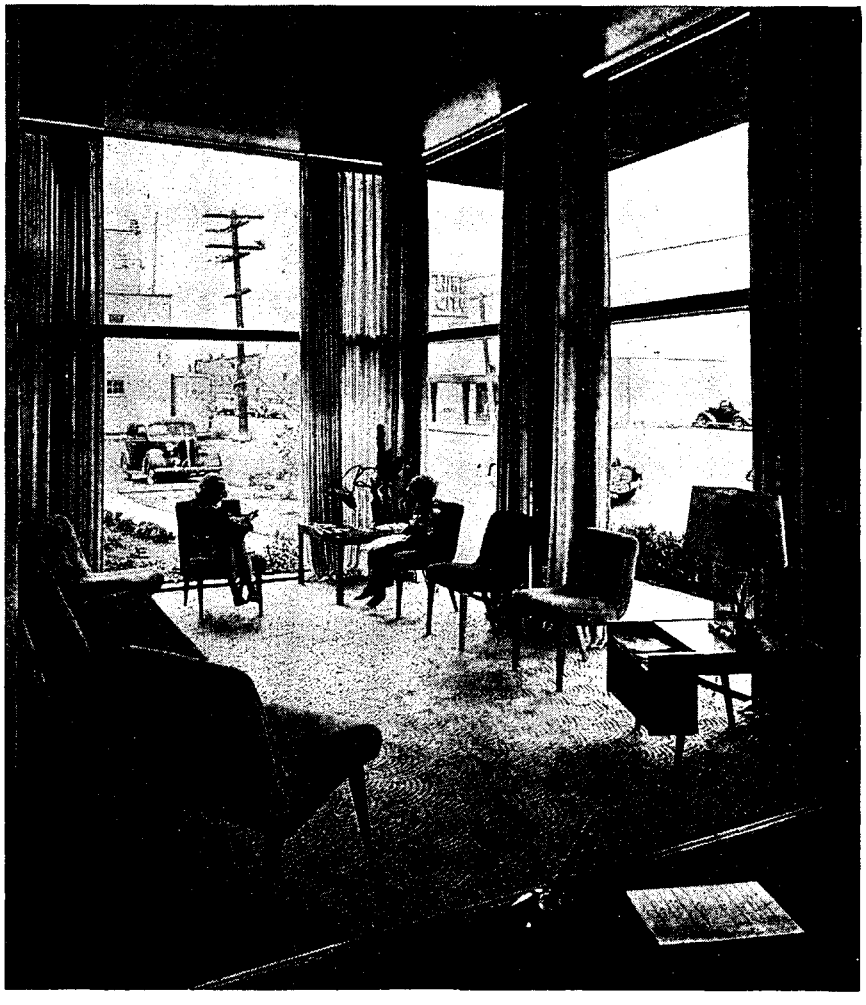


Chief plan questions: Is there sufficient space for business records, etc.? (Large storage room in basement is used for old records.) Why so wide a corridor in doctors' suite? (It allows for seating of patients and helps to divert attention from a long or seemingly long waiting period, since patients are moved along in stages.) In actual use this has proved very satisfactory, breaking the monotony and reducing congestion in the waiting room.



CLINIC

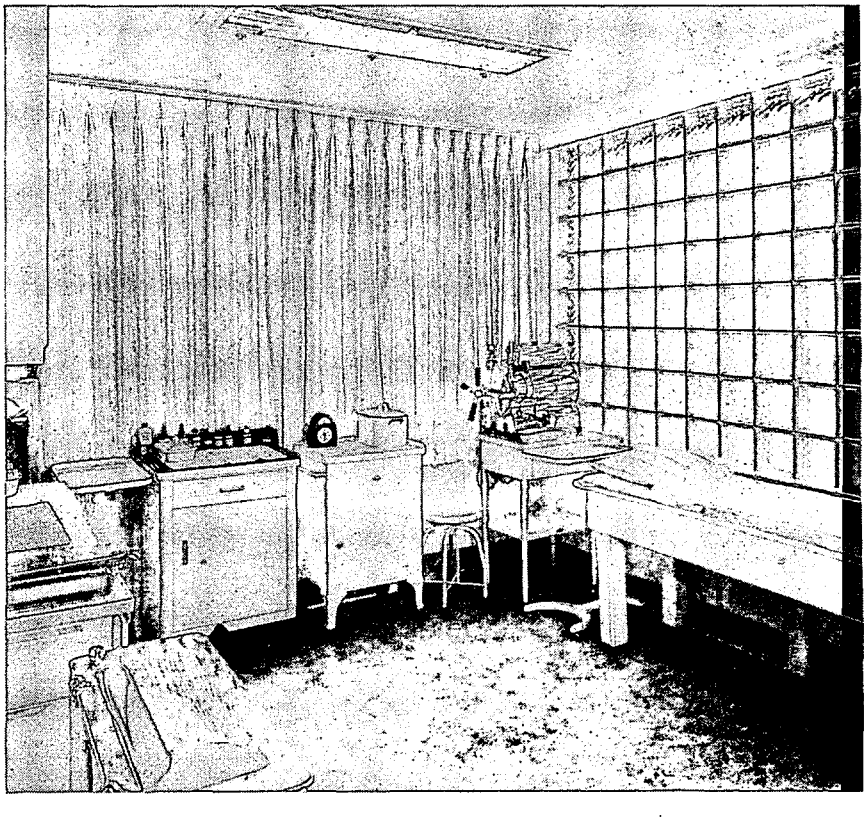
LAKE CITY, WASHINGTON



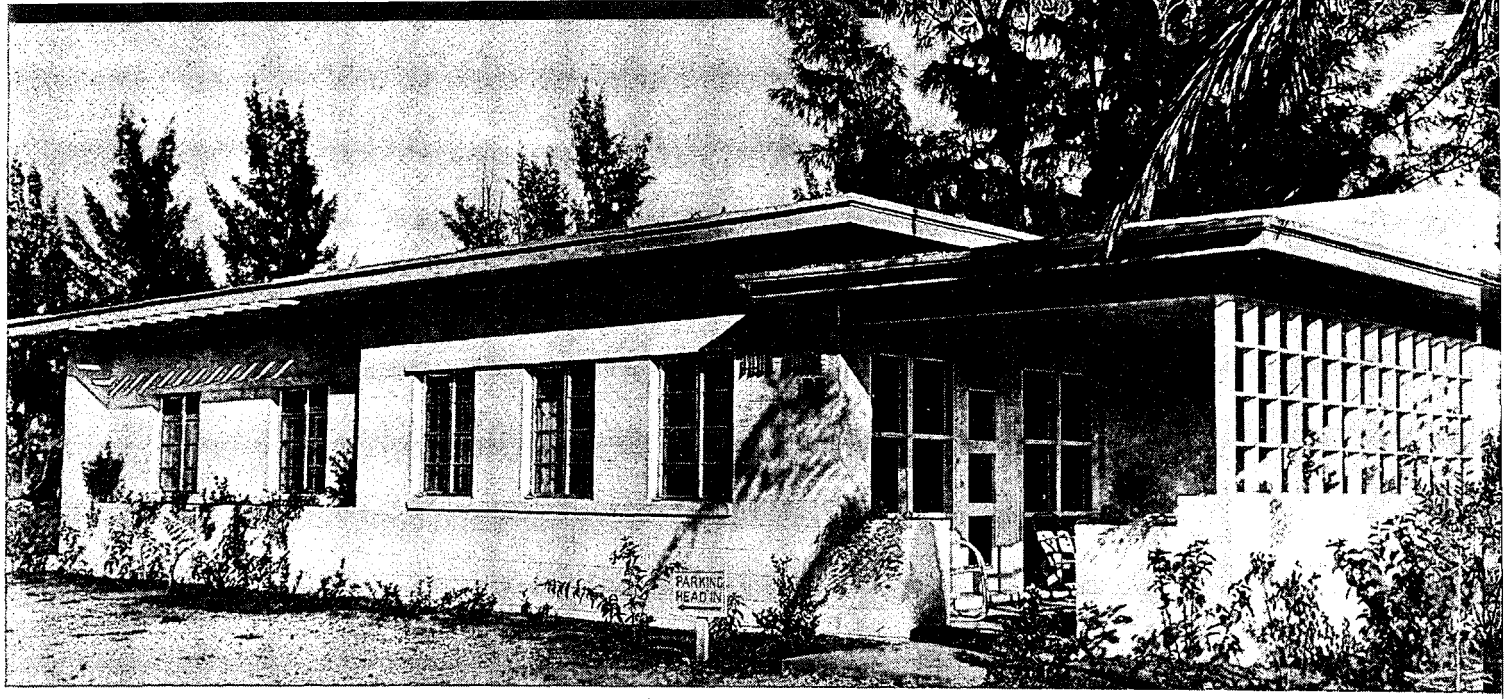
ENGINEERING OUTLINE

CONSTRUCTION: Concrete foundations. **Framing:** fir. **Walls:** (exterior) Roman brick veneer; (interior) plaster on plaster base. **Floors:** 1" x 4" T&G fir, surfaced with either linoleum or carpeting. **Roof:** asbestos built-up roofing over insulation board over 2" x 6" T&G sheathing. **Ceilings:** plaster on metal lath. **Fenestration:** steel sash; double-strength glass; plate glass; glass block. **Partitions:** metal lath and plaster over frame. **Doors:** flush panel.

EQUIPMENT: Heating: oil-fired boiler; convector system; panel in ceiling; automatic controls. **Special equipment:** X-ray; dentist chairs, etc.



The waiting room (photo at top) is a full story-and-a-half high, with windows from floor to ceiling. All-over carpeting covers the floor. Beneath the projecting roof at right, a walk leads out to the off-street parking area. Photo at bottom is of the surgery, with curtain drawn across the glass-block wall at the end. Floor surface here is linoleum.



THE TERRACE provides overflow reception-room space.

CLINIC, ST. PETERSBURG BEACH, FLORIDA

R. GOMMEL ROESSNER, Architect

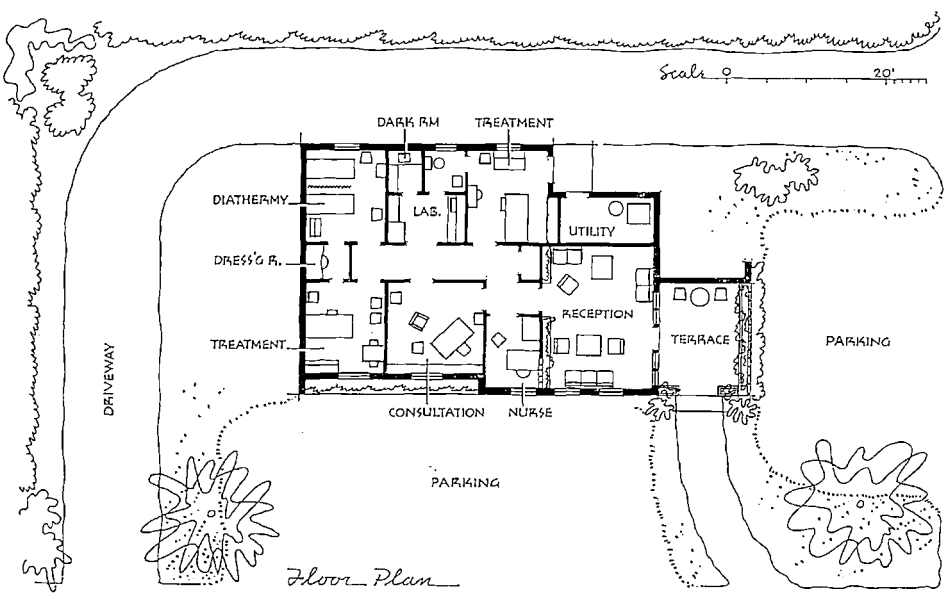
PROGRAM: Doctor's office to handle two treatment cases, diathermy, and a consultation case simultaneously. Reception space for 15; separate, rear entrance for emergency cases.

SOLUTION: Reception room at one end; nurse's office strategically placed between this and the treatment rooms.

CHIEF POINTS ADMIRED: Circulation; laboratory scheme.

CHIEF QUESTION: Toilet facilities seem meager, with circuitous access. This is frankly a compromise to meet a budgetary limitation. (Original schemes included an additional toilet.) Two entrances provide flexibility of use, depending on what adjacent rooms may be in use at any particular time.

Charles J. Belden Photo



THE CORNER LOT is large enough to provide drive around building and ample off-street parking space.

ROESSNER

R. Gommel Roessner received his B.Arch. at Miami U. and an M.Arch. from the U. of Cincinnati. Registered in both Ohio and Florida. Roessner has recently joined the architectural faculty, U. of Texas.

ENGINEERING OUTLINE

CONSTRUCTION: Concrete foundations. Walls: reinforced concrete and concrete block. Floors: asphalt tile over reinforced concrete slab. Roof: white-pebble surface built-up roof over frame. Fenestration: aluminum sash. Partitions: frame, surfaced with metal lath and plaster; plywood, both smooth and striated. Doors: white pine, louver and slab types.

EQUIPMENT: Heating: forced hot-air system; automatic controls; 42" air-conditioning fan. Electrical: flexible armored conductor; rigid conduit; both incandescent and fluorescent units.

THE BRICK BUILDING, stone-wall elements, and careful landscaping result in an unobtrusive, residential character.

CLINIC, GALESBURG, ILLINOIS

CARTER EDMUND HEWITT, Architect

HEWITT

Carter E. Hewitt cut his teeth, so he says, "on a 4-H pencil from the office of the late Herbert E. Hewitt, F.A.I.A." Six years at Princeton produced both an A.B. and an M.F.A. degree. Registered in both Illinois and Indiana, Mr. Hewitt established his practice in Illinois in 1935.

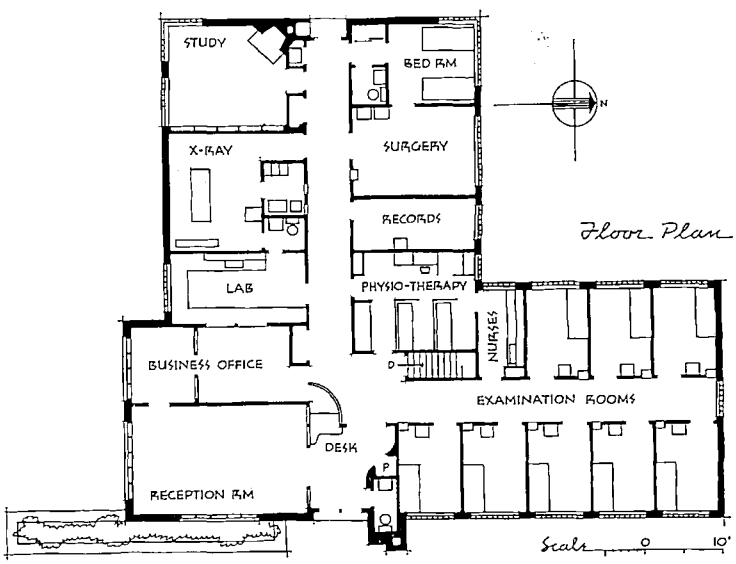
PROGRAM: Building for a doctor, three assistant specialist M.D.'s, several nurses (trained in physiotherapy), business manager, five clerical employees; planned for efficient handling of many patients daily; to be built in an established residential neighborhood.

SOLUTION: L-shaped structure with remarkable control point that overlooks and governs both corridors, the reception room, and business office.

MAIN POINTS ADMIRED: Excellent control; location of nurses room overseeing physiotherapy and convenient for preparing setups for exam rooms.

CHIEF QUESTIONS: Isn't business office space excessive? (Answer: No. In fact, addition to the whole plant is now contemplated.) How are two beds in room off surgery used? (Answer: in case of emergency, trained nurse or a doctor may have to spend night after operation with a patient.)

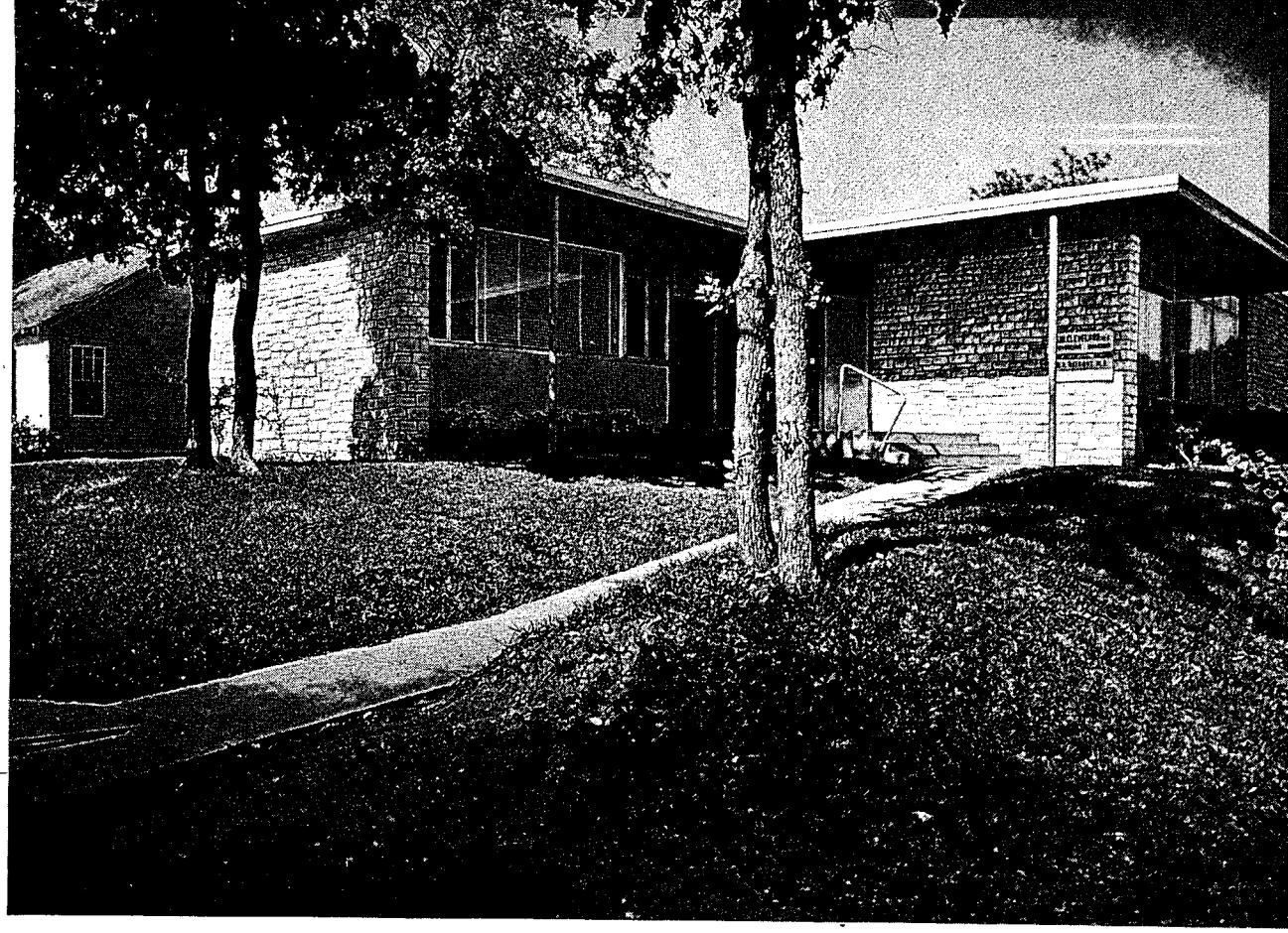
Gliessman Studio Photo



ENGINEERING OUTLINE

CONSTRUCTION: Concrete foundations. **Framing:** standard wood. **Walls:** (exterior) brick veneer; (interior) plaster. **Floors:** linoleum over moisture-resistant plywood over fiber insulation board on wood strips over waterproofed concrete slab. **Roof:** tar and gravel over wood decking on frame; copper flashing. **Fenestration:** wood casement; clear glass; glass block. **Insulation:** sheathing board in walls; tile on ceilings. **Doors:** birch-surface hollow core.

EQUIPMENT: Heating and air conditioning: forced hot-water system; oil-fired boiler; panel-type radiators in walls; radiant copper pipe coils in ceiling of physiotherapy room; both automatic and manual controls; air-conditioning compressor; controlled ventilating system.

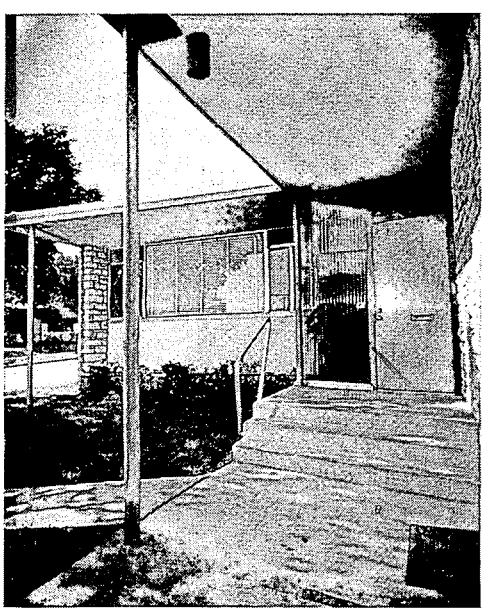


CHIEF EXTERIOR MATERIALS are native stone, glass, and flat asbestos-cement board.

CLINIC, AUSTIN, TEXAS

FEHR & GRANGER, Architects

A Mention in this year's P/A Awards



ENTRANCE. Wall of ribbed glass provides light without transparency.

PROGRAM: Consultation and examination space for two doctors, basal and X-ray room, small lab facilities, one nurse's station, and a single waiting room.

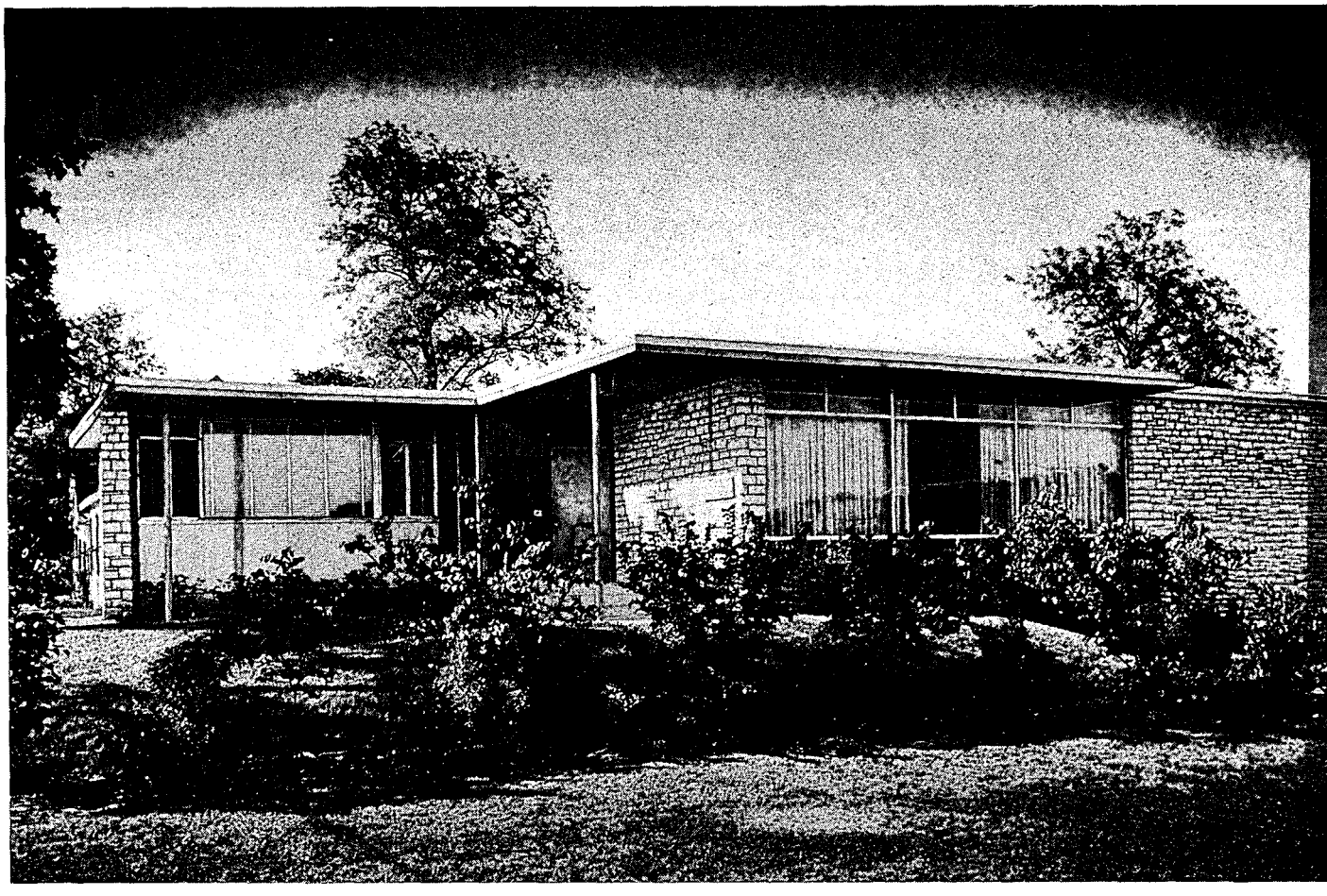
SITE: Plot at edge of established residential area adjoining a small triangular park to the south.

SOLUTION: Plan scheme that places the waiting room centrally facing south, with doctors' consultation and treatment rooms arranged in opposite corners; straightforward structural solution described below.

CHIEF POINTS ADMIRED: A finished piece of progressive architecture; the logical plan with centralized control; the ingenious structural scheme.

Granger describes the admired structural concept: "To meet the requirements of economy, flexibility, and semi-fireproof construction, a basic structural grid of pipe columns was employed with four bearing masonry walls providing lateral stiffness and bracing. Floor construction is reinforced concrete slab and beams; roof construction is a 5" flat concrete slab insulated with 1" insulation board and covered with a 20-year built-up roof."

Photo Associates Photos



VIEW FROM THE PARK to the south shows how happily the waiting-room window is related to the most agreeable view.

CLINIC, AUSTIN, TEXAS

FEHR

GRANGER

Arthur Fehr received his B.S.Arch. from the U. of Texas and did graduate work at Columbia U., N.Y.U., and the Beaux-Arts Institute of Design. Established partnership with Charles Granger in 1938.

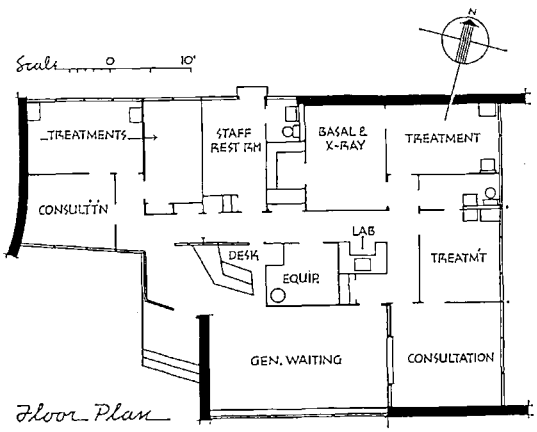
Charles Granger was graduated (B.S. Arch.) from the U. of Texas and went on to work with Richard Neutra in Los Angeles. In 1944 he received a graduate fellowship in Architecture and Urban Planning at Cranbrook Academy, receiving an M.A. in Architecture and Urban Design there in 1946.

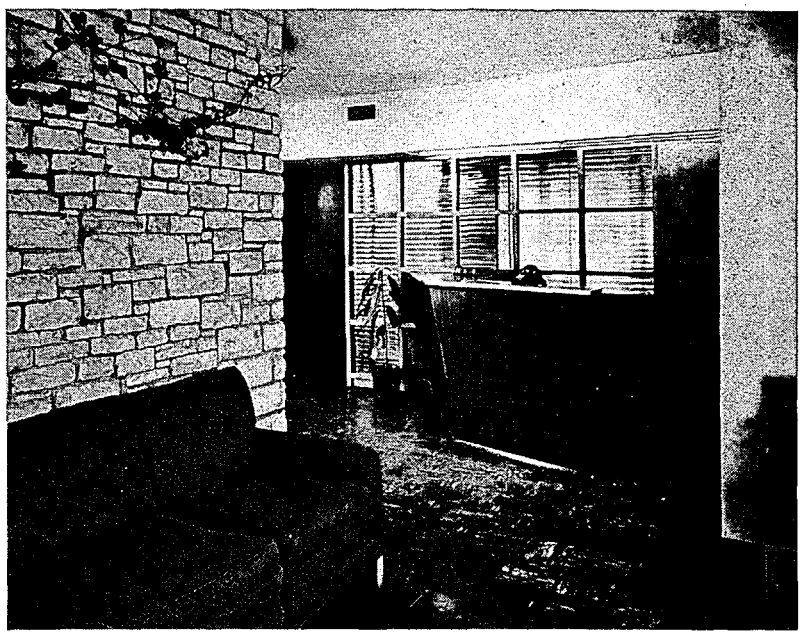
Not the least of the benefits derived from the structural scheme is the interior flexibility it allows; for partitioning is free of structural considerations, and, should needs vary in future, the interior could be rearranged without major dislocation. One of the chief questions asked about the plan was why a separate "staff rest room"? Someone felt that the consultation rooms should be sufficient. The point here is that the doctor may come to the clinic dead tired; the rest room is equipped with a couch, and he can stretch out here undisturbed until he begins his office routines. Someone asked what toilet facilities the waiting patient would use. The answer is the one between the two treatment rooms on the east side, which apparently proves convenient.

ENGINEERING OUTLINE

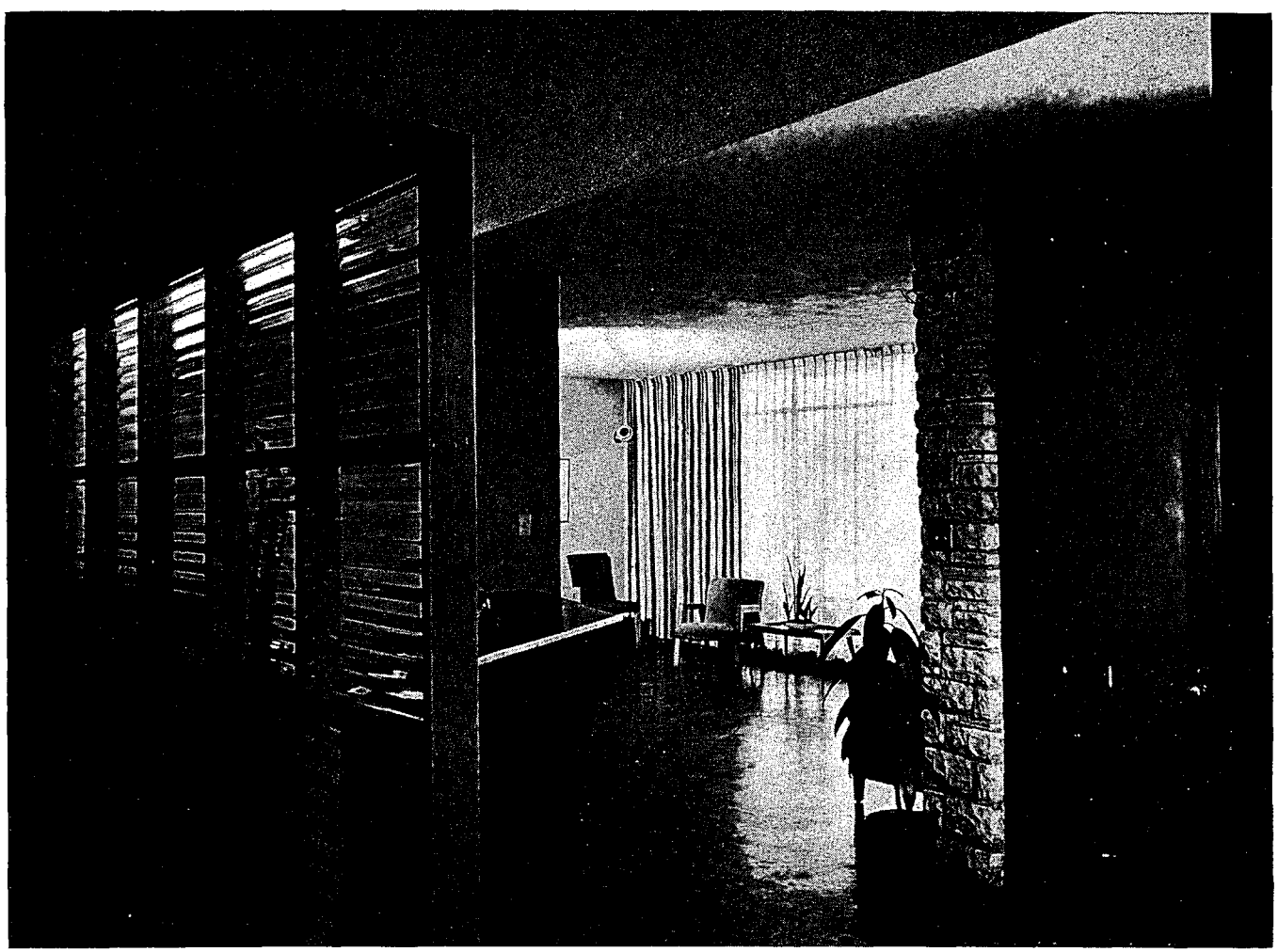
CONSTRUCTION: Framing: steel pipe column structural grid, and four bearing stone masonry walls providing lateral stability. **Walls:** 2" metal lath, plaster; mahogany plywood (interior); glass, wood bulkheads, flat asbestos cement board surface (exterior). **Floors:** asphalt tile over concrete slab. **Roof:** concrete slab, rigid insulation board and 20-year built-up roofing. **Fenestration:** aluminum casements; DSA and plate glass. **Insulation:** rigid board. **Partitions:** metal lath and plaster. **Doors:** flush panel.

EQUIPMENT: Heating-air conditioning: circulating hot water, fan and coil system; 5-ton package unit; automatic controls; forced draft cooling tower. **Electrical:** rigid conduit, 3-phase service; circuit breaker.

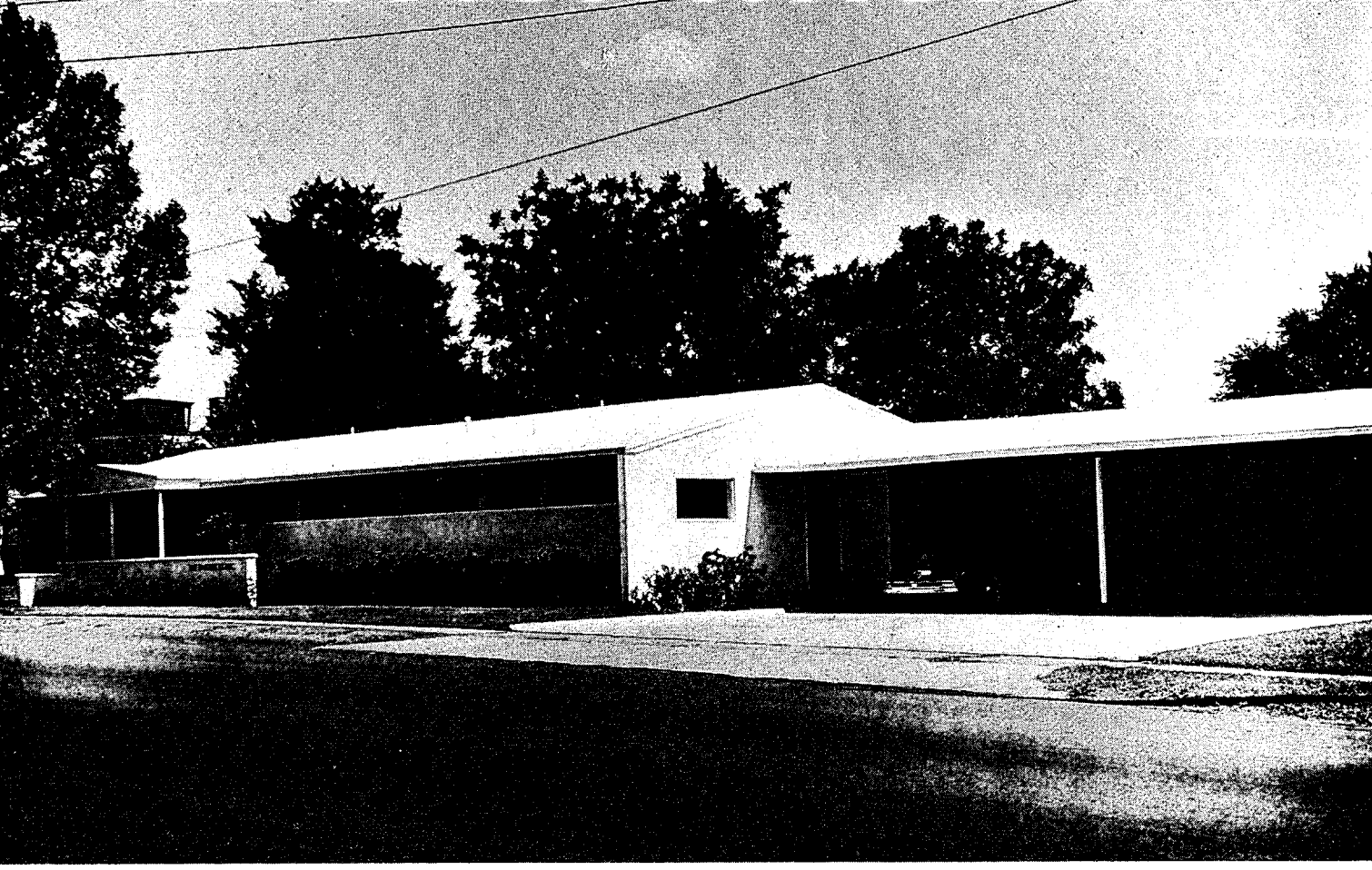




WAITING ROOM looking toward reception desk.



CORRIDOR back toward waiting room.



WHITE MARBLE CHIP roof topping reflects sun; fixed glazing and air conditioning provide interior comfort.

CLINIC, CONROE, TEXAS

R. GRAHAM JACKSON & FRANK C. DILL, Architects

JACKSON

DILL

R. Graham Jackson and Frank C. Dill both received B.S. in Arch. from The Rice Institute and practiced independently before the war. Engaged in various construction and military activities during the war, the partners established the present firm in 1946. Dill concentrates on the design work, and Jackson handles the specifications and accounting work for the firm.

PROGRAM: Clinic for a doctor, nurse-assistant, and receptionist-bookkeeper. One-point visual control, a requirement. Noise and dirt to be excluded as much as possible; economy of construction, ease of maintenance, and durability, important factors.

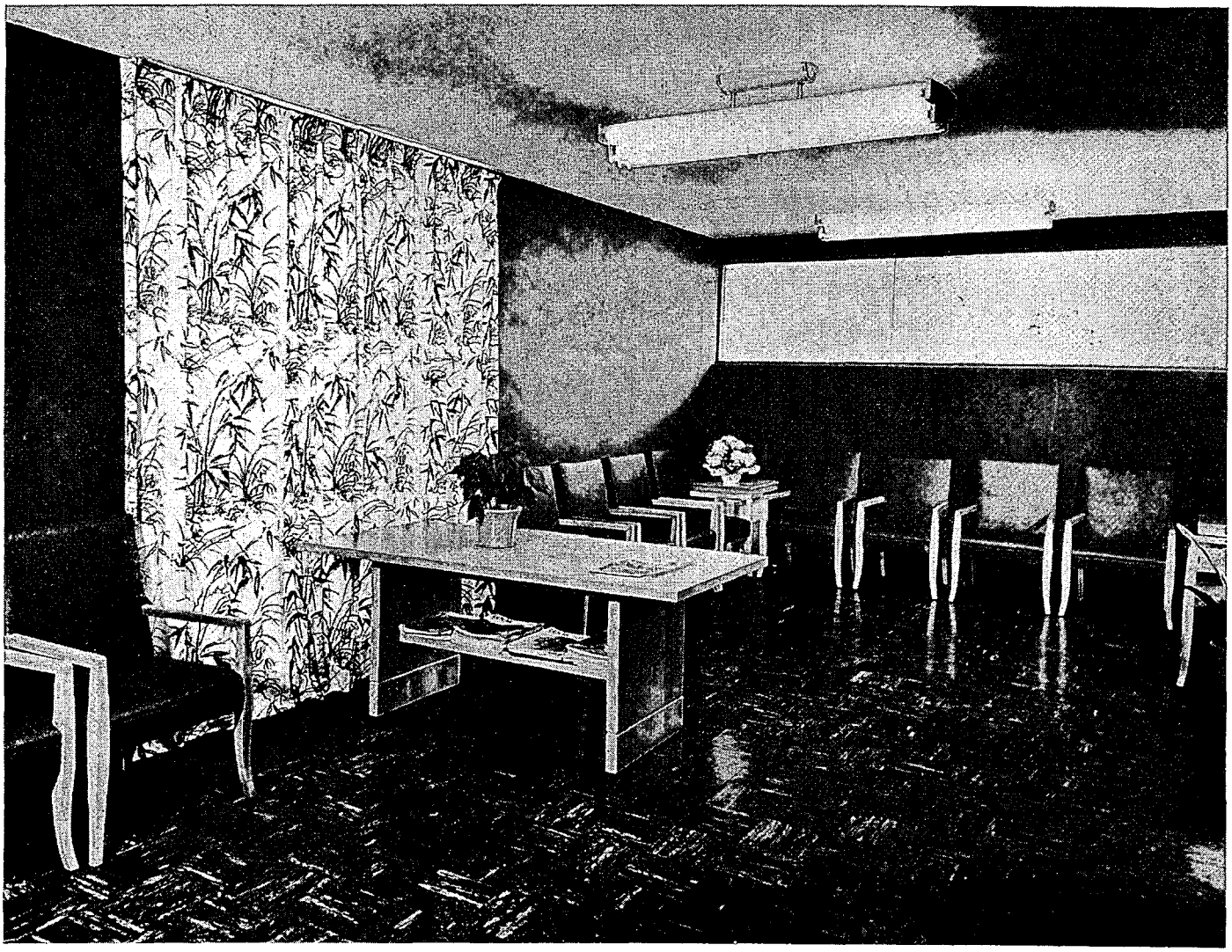
SITE: Flat, corner lot 50′ x 150′ in area.

SOLUTION: A long rectangle, with central corridor back from reception room; control desk overseeing all activities. Structural scheme of lightweight concrete-block (economy; durability; fireproofness; sound and thermal insulation); fixed glazing (to keep out noise, dust, and dirt); roof overhangs (to protect glass areas from direct sun).

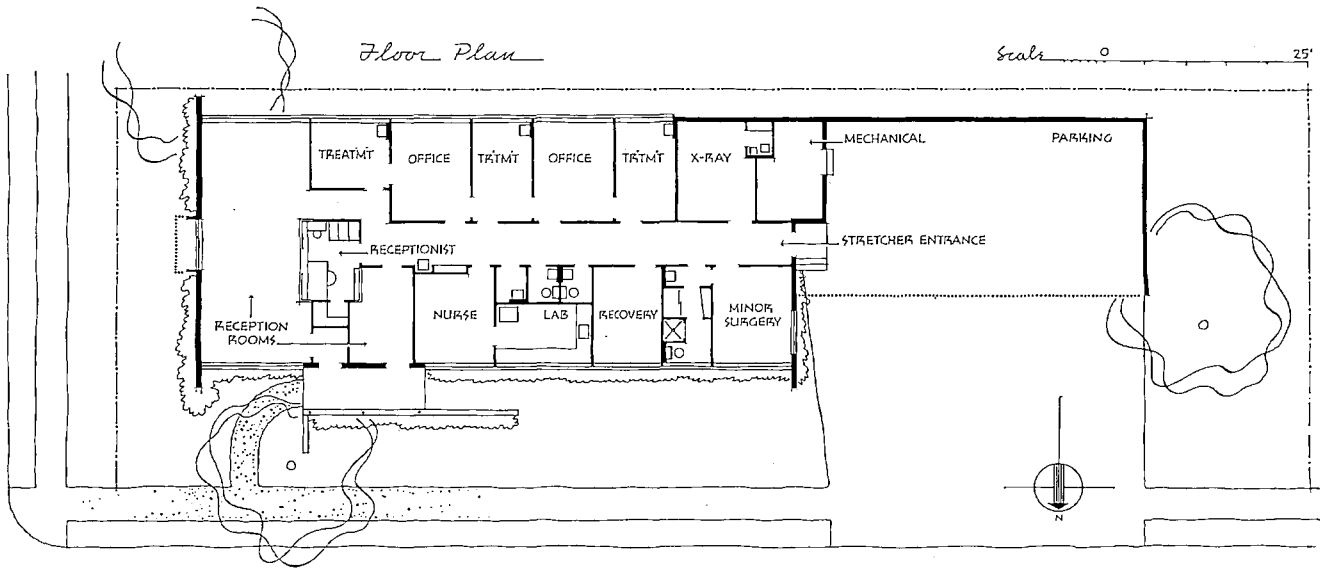
MAIN POINTS ADMIRED: Excellent arrangement for total control from single station; ingenious structural scheme; plan provisions in general.

CHIEF QUESTIONS: Actually none, in a physical plan, structural, or design sense. (See summary comment page 72.)

J. D. Burnette Photo



RECEPTION ROOM has custom-designed furniture; bottle-green walls; green asphalt tile floor.



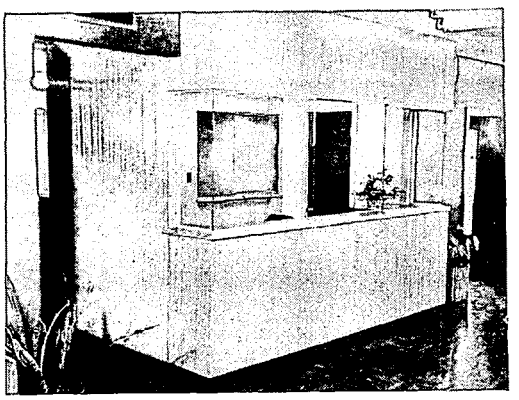
THE RECEPTIONIST-BOOKKEEPER'S DESK is enclosed above desk level with plate glass on three sides and a part of the fourth, resulting in visual control of every door in the building from her desk.

CLINIC, CONROE, TEXAS

ENGINEERING OUTLINE

CONSTRUCTION: Walls: concrete block masonry, plastered on the interior. **Floors:** asphalt tile over concrete slab. **Roof:** 4-ply tar and felt with white marble chip topping. **Fenestration:** wood frames; fixed, obscure glass; aluminum, vertical division bars. **Insulation:** 4" batt type in ceiling construction. **Doors:** mahogany slab.

EQUIPMENT: Heating-air conditioning: forced air summer and winter system, gas fired, automatic controls.



CONTROL DESK; striated plywood wall.

ALL TREATMENT and work rooms are vented through to corridor.

Critique

DOCTORS' CLINICS

These five clinics—from the Northwest and the Southeast; from the North Central states and from Texas—demonstrate better than any amount of argument the difficulty of establishing anything very much in the way of a standard for the typical doctors' office building. For, the need takes many forms; the size and type of the community present a variety of problems; the budget may be large or small, and so forth. It may be a clinic for the use of one doctor and his nurse-assistant or it may be a building for the use of a number of associated doctors. There are endless variations of the program, as the buildings used for illustration and comment will suggest.

And yet there seem to be certain general conclusions to be drawn from this group of buildings. In the first place, circulation and control of circulation are of prime importance. A small staff usually operates the building, and well-organized central control, as in the case of the Conroe, Texas, or Galesburg, Illinois, clinics, certainly makes the task of the nurse as well as the doctor easier. In general, the relation of examination rooms to treatment rooms is not as well studied as in the outpatient department of a hospital, for instance, and we see no reason why it should not be. The studies of the USPHS on this matter might well be used as a guide in this respect. Waiting accommodations are in most cases well handled, although there seems to be a tendency to overlook or minimize public toilet facilities.

One other thing that we cannot but notice is the separate provisions for races in some of the Southern clinics. This is a Civil Rights problem and one which the architect is no better qualified to solve than any other intelligent citizen. Eventually, there will surely be better answers than are now provided; but, quite apart from the grievous social problem, what an extraordinary waste of money and useful square footage this duplication of services involves.

WHAT DO YOU MEAN BY ... "and associates"?

By THOMAS H. CREIGHTON

More and more architectural and engineering offices are including an anonymous group in the title of the firm by calling themselves John Jones *and Associates,* or, being a little more generous in the appellation, John Jones *Associates.* The firm's name appears thus on the drawings, on letterheads, and on the office door, but what does it actually mean? What is an Associate? How does he differ from a junior partner on the one hand, and from any other professional employee of the firm on the other hand?

The honest answer seems to be that the title can mean almost anything that the two parties to the arrangement want it to mean. Elevation to junior partnership has, for many generations, been a prize looked forward to by key employees in a successful firm; the "Associate" is something comparatively new, and its meaning has no legal definition and as yet no established connotation.

The difference between a junior partner and an Associate is not hard to point out. Partnership ("junior" or "senior") implies monetary investment in the firm and monetary responsibility for losses, a situation which many younger men could not afford to assume even if it were offered to them. The Associate, on the other hand, is assumed to give of his ability and interest to a fuller extent than the usual salaried employee; and in compensation he takes a certain percentage from the firm's profits according to an agreed-upon schedule. He assumes full professional responsibility rather than monetary responsibility, and he is rewarded for it, not to the full extent of a partner but to a greater degree than a draftsman, designer or job captain on straight salary.

There is another type of Associateship which will be discussed later: groups of practitioners who have banded together to pool certain resources.

What are the advantages of the Associateship arrangement? Apparently, if the scheme is well conceived and sincerely operated, advantages *do* accrue to both the firm and the Associate. For the Associate they are fairly obvious. He is granted greater professional status and recognition; in addition he receives a larger financial return from the firm's activities than he otherwise would. To the firm the principal advantages are that the Associates will give more personal and professional concern to the affairs of the office—since in a sense it is *their* business—and valuable key employees are more likely to remain in their positions over thick times and thin, rather than shifting their allegiances for temporary financial advantage. There are minor advantages as well.

One firm points out that the authority of an Associate within the office is unquestioned by the other employees. Another is proud of the fact that Associates have brought important work to the office. Another values the counsel of a larger group in determining office policy.

The only disadvantages of the system, apparently, are that it can be misused by either party to the arrangement, and it may in some cases breed mutual distrust rather than the greater trust and respect it is intended to engender. For example, it is possible for an unscrupulous employer to grant a profit-sharing arrangement on what seems at first glance an equitable arrangement, solely in order to get more work through longer hours from an employee who would actually have received more money at the end

of the year if he had been paid usual overtime rates. On the other hand, the employee can overstep the authority the Associateship grants him and do the firm harm by representing himself as a principal; the lay public seldom recognizes any difference between a partner and an Associate.

These extreme possibilities can occur only when there is intent to exploit on one side or the other and, of course, might mar any employer-employee arrangement. The real danger of mistrust resulting from an Associateship agreement lies in the fact that there are raised some questions of office practice, some of bookkeeping, and even some of personal ethics, that do not enter a normal relationship. For example, just what *is* profit? Does it include the principals' salaries, or should these be deducted like any other salaries before profit is figured? How should overhead be charged? That doesn't concern Jimmy when he's getting a straight salary, but when he draws from *profit* it does concern him. He might like to know, since his income is affected, how these things are done, but if he asks to look at the books, he might be suspected of mistrust instead of curiosity. Should the profits from a certain job be credited to one year or another? If to one, it might mean more to Jimmy, in a sliding scale of percentages, than if to the other.

These possibilities of misunderstanding, if not mistrust, are all capable of solution, but they should be covered fully in any written agreement so that they do not become an embarrassment later on.

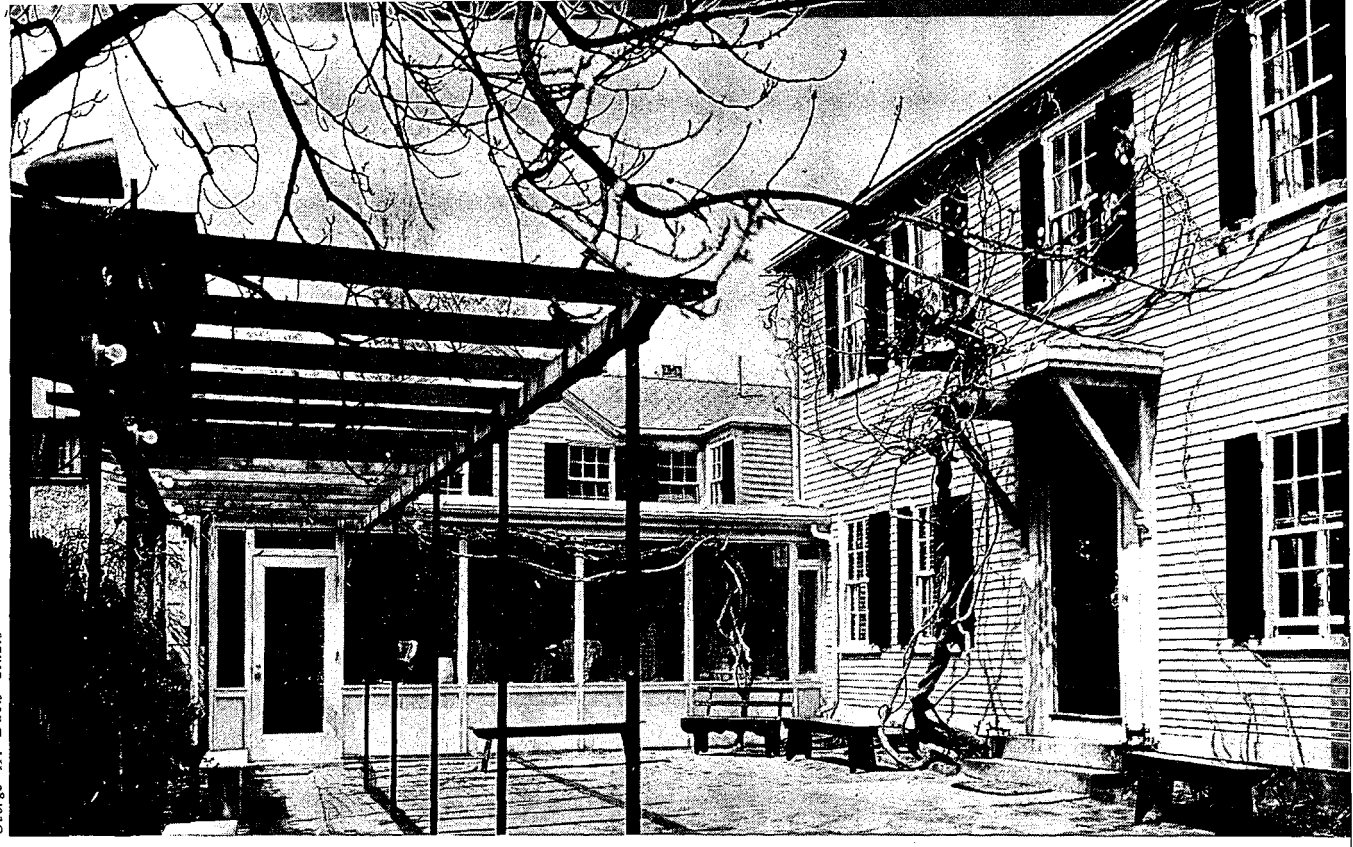
There are various ways of setting up an Associateship arrangement. Most firms have written contracts which cover every possible area of misunderstanding. The profit sharing features are usually based on a percentage allocation of profits above a stated figure. For example, one firm shares profits above the first $30,000. (There are two principal partners, and they reserve $15,000 apiece as reasonable income, before sharing.) For the next $20,000 of profit, each Associate draws 10 percent—in addition, of course, to his regular salary. Above $50,000, the Associates' participation increases, on a sliding scale.

In another instance—not so large a firm—the profit sharing begins with the first dollar of profit, and again increases as and if the profits mount.

Some firms have extended the sharing of profits to include all, or almost all, of the regular personnel. This, of course, is in line with similar schemes which have been worked out by many industrial organizations. In one Midwest architectural firm, for example, the personnel is divided into three groups—Senior Associates, Senior Design and Management Personnel, and Key Operating Personnel. The individual employee is assigned to one or another of these groups on the basis of (a) the extent and nature of contact with clients; (b) the extent to which his work can influence profits; (c) creative ability; and (d) responsibility within the firm. "Points" are assigned to members of each group. (20 points for each Senior Associate, 15 for each Senior Designman, 10 for each Key Operating employee.) In addition, an individual can gather seniority points, one for each year of employment up to 10 points. A percentage of profits is set aside on a sliding scale for employee participation, and each man shares to the extent his points entitle him. For example, Jones may have 20 points as a Senior Associate, and 6 points for six years' employment with the firm. Assuming that there are $50,000 of profits of which $7,500 have been set aside for sharing and a total of 158 points has been accumulated by the entire office, each point is worth $47.47. Jones' 26 points then entitles him to draw $1,234.22 at the end of the year.

The other type of Association is usually made up of a group of independent practitioners who don't want to become partners but do want to associate for the sake of sharing office space, sharing draftsmen, and perhaps even pooling the limited amount of work each of them can command. This is quite different from what has been previously discussed in its intent and its organization, but there are certain similarities. There may, for instance, be an agreement that a larger percentage of the profits of joint practice will be drawn by one individual than another, to compensate for a larger investment of physical plant, time, or ability to bring in work. The possibilities of variation here are endless. The advantages are quite obvious—the minimizing of investment, the cushioning of one man's bad periods, the advice and counsel of colleagues. The disadvantages seem to be equally great, because few such combinations have survived for long. What usually happens is that one member of the group, by reason of ability or good fortune, discovers that he is carrying the less lucky members of the combine, and eventually finds it to his advantage to sacrifice the pleasures of association for totally independent practice.

No matter what a firm may mean precisely when it signs its work ". . . . and Associates," it seems clear that the arrangement implied will work to the advantage of all only if it is entered into with sincerity, the desire to benefit mutually, and above all the desire to find a way to produce better architecture for the community.



George H. Davis Studio

COURT VIEW. The pergola leads to door of shop; entrance to dining rooms is through the old front door at right.

SHOP, CAMBRIDGE, MASSACHUSETTS

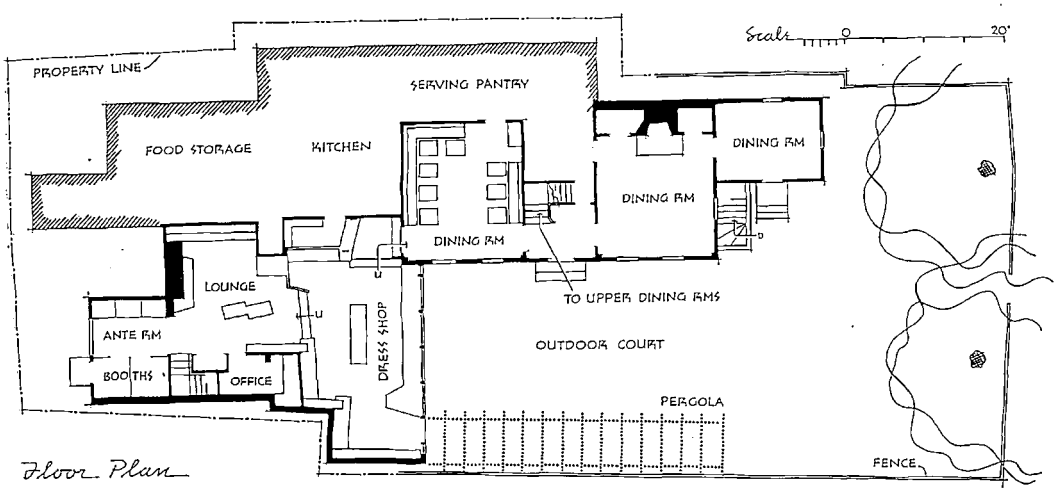
KENNEDY & JORDAN, Architects

Demonstrating the harmony that maintains when good contemporary design is sensitively related to good architecture of any period.

PROBLEM: Refurbishing and remodeling a near-shrine (built in 1811; one-time home of Longfellow's Village Blacksmith) into an up-to-date restaurant, bakery, and dress and gift shop operated as a nonprofit charitable organization to benefit Austrian Jewish refugees.

SOLUTION: Maintenance and strengthening of what remained of the original house; new kitchen-restaurant equipment within this oldest portion; contemporary shop developed at far end of courtyard.

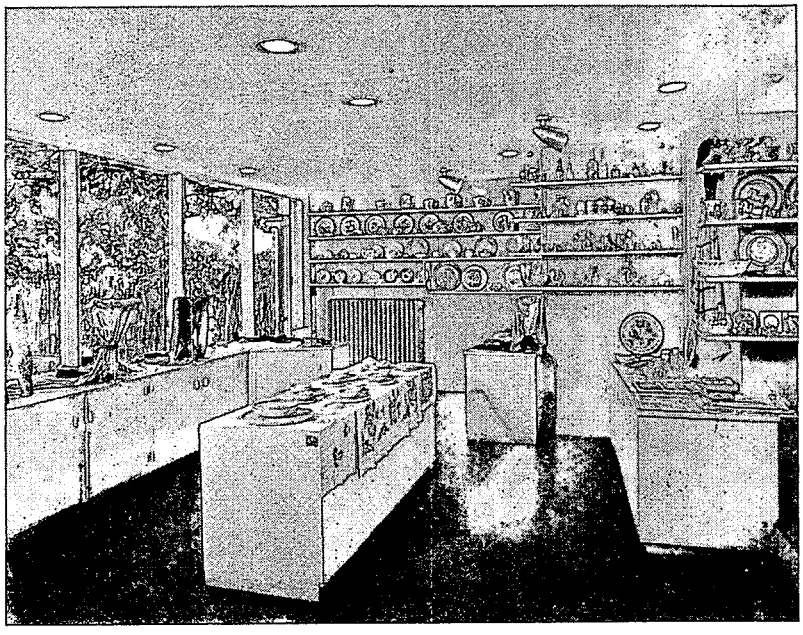
By use of sympathetic materials and in-scale elements, a modern room is joined to a fine old building without doing violence to the old, or compromising design standards for the new.



Floor Plan

THE PERIMETER of the old building was in no way changed (even including the shop space). Other dining rooms, serving pantries, etc., occupy the second floor of the main part of the building.

SHOP, CAMBRIDGE, MASSACHUSETTS



P. A. Dearborn

TOP OF under-window casework serves as display platform.

ENGINEERING OUTLINE

CONSTRUCTION: Concrete foundations. **Framing:** wood throughout. **Walls:** (exterior) clapboards; glass; (interior) plaster and stucco. **Floors:** wood in main part of job; concrete in the shop. **Roof:** tar and gravel. **Fenestration:** wood sash; plate glass. **Partitions:** wood stud, plastered. **Doors:** wood (old ones reused).

EQUIPMENT: Heating: oil-fired, forced hot water system. **Electrical:** flexible armored conductor; incandescent fixtures.

KENNEDY

Robert Woods Kennedy received his architectural training at the Ecole des Beaux Arts in Paris and the Harvard Architectural School. Work with Walter Gropius, Marcel Breuer, USHA, FPHA, and FWA preceded a teaching assignment at M.I.T., and establishment, in 1946, of a partnership with Theodore Jordan.

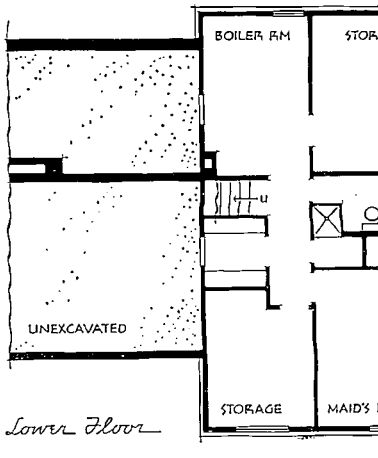
Thomas Edgar Moore was graduated from the Yale School of Architecture; worked in Denver offices, then on his *own until* the war (Air Force). He has a wife and six children and runs the West Slope branches of Smith, Hegner & Moore, a partnership formed since the war's end.

RANCH HOU

LITTLETON, COLORADO

THOMAS E. MOORE, Architec

(Of the firm of Smith, Hegner



IEW FROM SOUTHEAST. Living room wing at left.

A farm house worked out in a trilevel scheme; planned for comfortable, informal living with a minimum of housework.

PROBLEM: The family: a rancher-dairyman-farmer, with a wife and two children; a site with broad country outlooks.

SOLUTION: For economy, bedrooms (and storage and heater rooms) organized in a compact, two-story rectangle; living rooms, at mid-level.

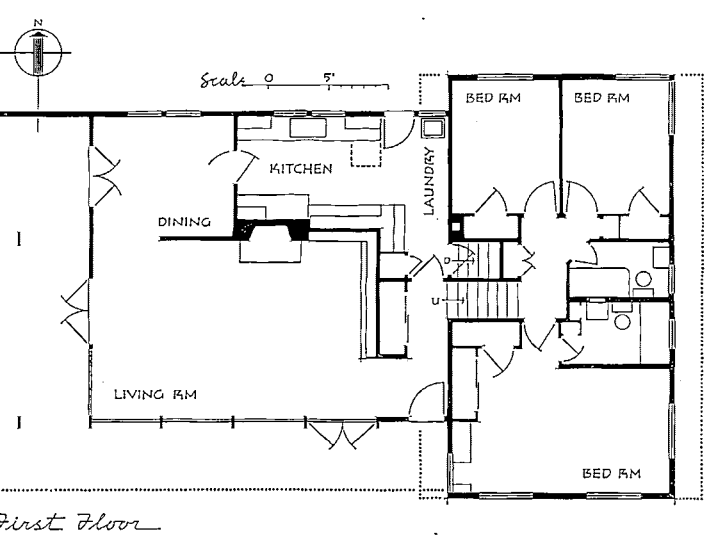
The roof of the two-story wing is of 2″ x 8″ matched fir planks on a 9-ft. span, with insulation board above, and the underside of the planks being the finished ceiling. This proved an economical type of framing, but limited the width of the house to 18 ft. In the living room, where a greater span was wanted, joists on 6-ft. centers were used.

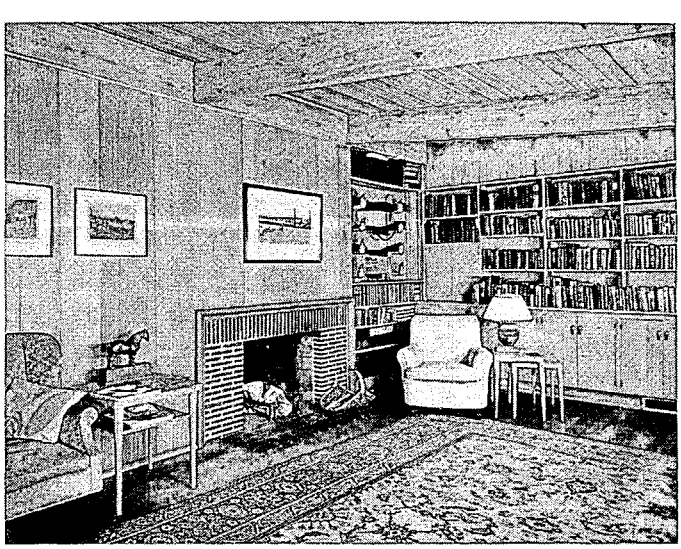
Fred Gund Photos

ENGINEERING OUTLINE

CONSTRUCTION: Concrete foundations. **Framing:** wood throughout. **Walls:** (exterior) cedar siding over building paper; (interior) plywood and mahogany. **Floors:** linoleum; oak. **Roof:** 3-ply asphalt (aluminum painted) over 2″ x 8″ matched fir plank on 6′ or 9′ spans. **Fenestration:** wood casements with double strength "A" glass. **Insulation:** (thermal) 4″ wool batts in exterior walls; two 1-in. sheets of insulation board in roof over planking. **Doors:** birch-veneer flush panel.

EQUIPMENT: Heating: oil-fired warm-air system. **Kitchen equipment:** electric range and refrigerator.





OAK FLOOR; mahogany wall; fir-plank ceiling.

THE STONE RETAINING WALL returns around the north end, the slope of the ground allowing high windows above the work counter.

CABIN, ST. CROIX RIVER, MINNESOTA

ELIZABETH & WINSTON CLOSE
Architects

A peaceful retreat built into a steep hillside high above the St. Croix River.

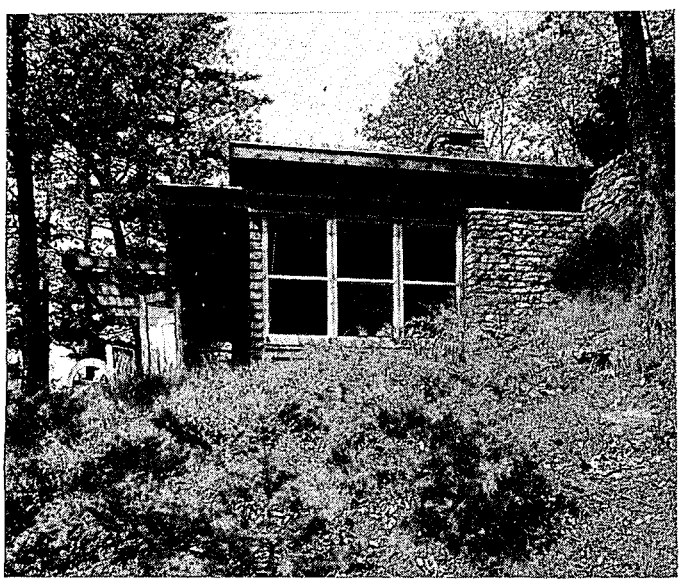
PROBLEM: A modest place where a University of Minnesota professor and his wife could get away from it all and work undisturbed on their writing.

SITE: Heavily wooded steep slope about 150 feet above the river on its east bank.

SOLUTION: A little cabin — general living room, bedroom, and storage room—literally built into the hillside, with sod allowed to come down and flourish on the rooftop.

"We considered two possibilities," the architects report. "One, to project the cabin over the bank, cantilevering it from the hillside; two, to bury it right in the bank . . . The second idea offered more protection from the hot afternoon sun and was adopted."

The rear wall of the cabin is a stone retaining wall, with the fireplace in it. The big openings are framed with 4″ x 4″ 's, 3′ o.c., to which the glazed doors (or windows) are applied from the outside. Alternate doors are fixed, and the operating ones hinge on these.

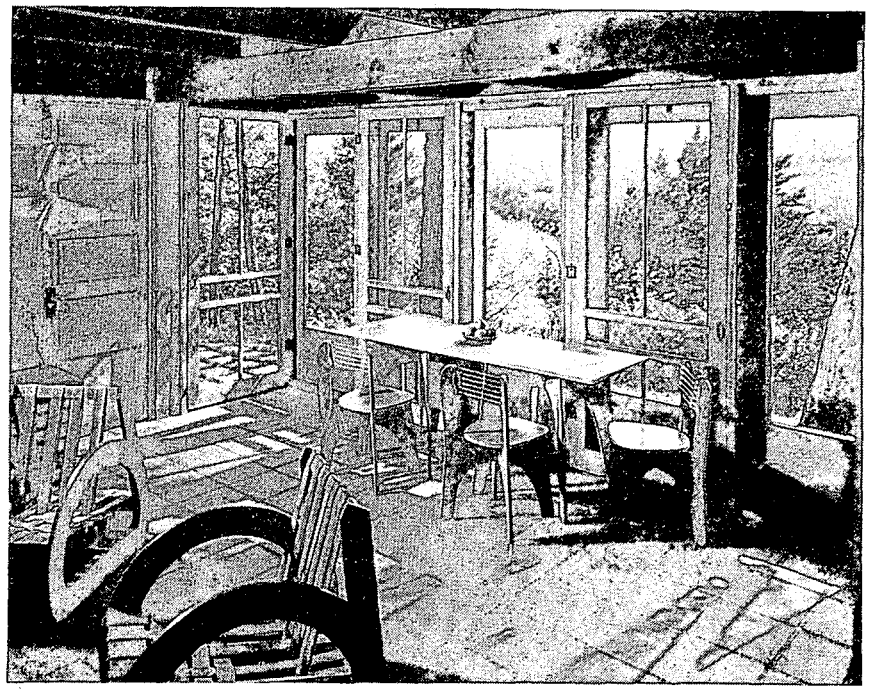


SOUTH END

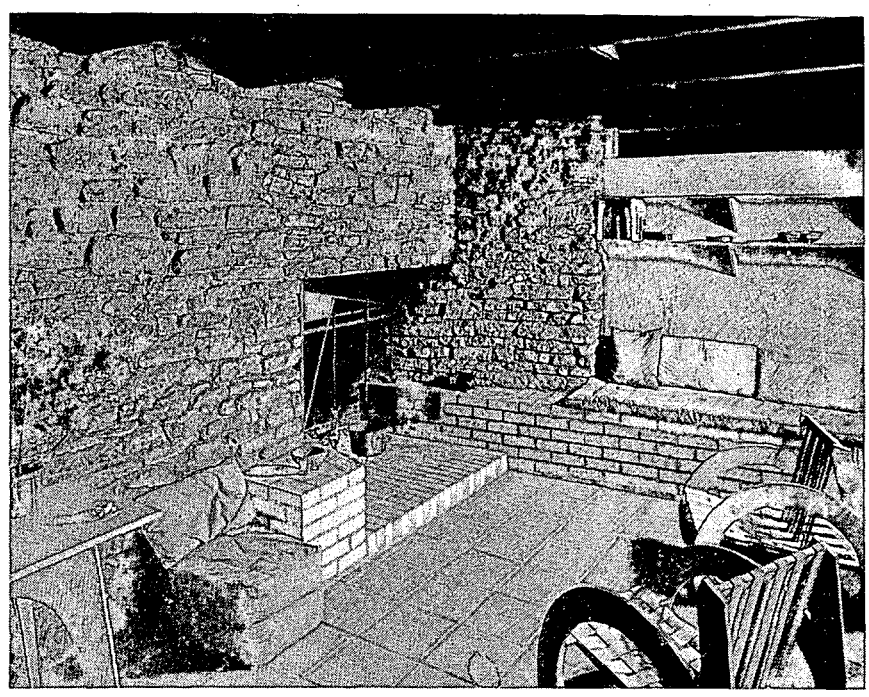
Hedrich-Blessing Studio Photos

ELIZABETH & WINSTON CLOSE

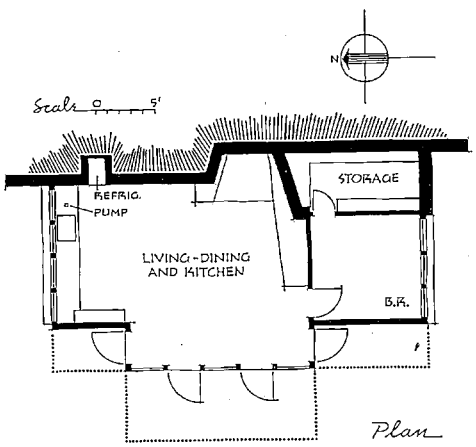
Elizabeth (Scheu) Close, studied at the Technical University of her native city of Vienna, then came to M.I.T. to complete her undergraduate and graduate work in architecture. Winston Close was graduated from the School of Architecture of the U. of Minn. and M.I.T. When they opened their office as Close & Scheu, "we were determined not to do any 'stylistic' work and not too optimistic about our chances of staying alive on this basis . . . however we have been busy steadily." During the war, the office was closed when Mr. Close was concerned with the development of Naval Air Stations.



WINDOW WALL. The architects designed and made the furniture out of fir plywood and clothesline.



HEARTH serves as both heating system and kitchen stove.



ENGINEERING OUTLINE

CONSTRUCTION: 4" concrete slab poured integral with grade beam all around. Walls: native stone masonry, or wood frame, surfaced outside with redwood lap siding, stained brown. Interior walls: fir plywood, waterproof. **Floors:** 2" smooth-faced red back-up tile laid over concrete. **Roof:** double 2" x 8"'s, 3' o.c., framed into wood girder; roof boarding: 2" planking, laid diagonally; roof surface: 4-ply built-up roofing over top and continuous down rear wall; 2' of earth fill over gravel, sod roof. **Fenestration:** wood sash, hinged and hooked; SSB crystal sheet glass. **Partitions:** ¼" fir plywood, waterproof, on 2" x 4" stud frame.

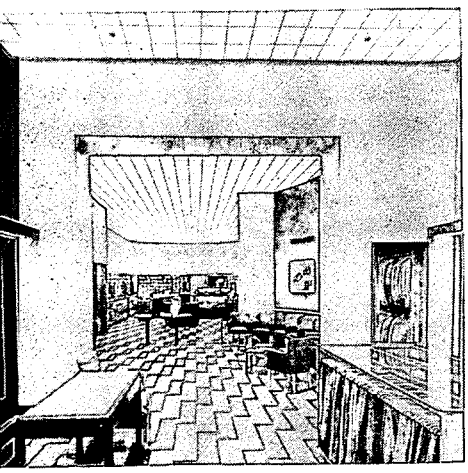
Hedrich-Blessing

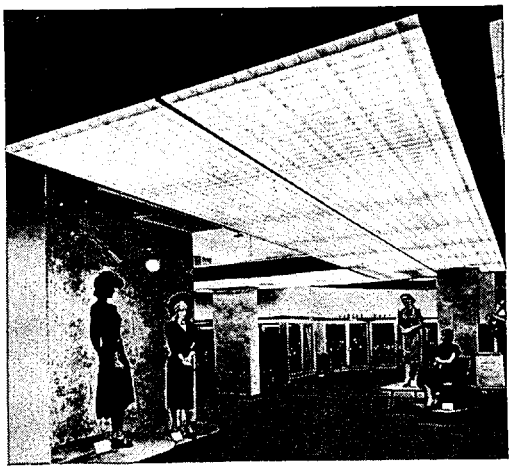
1

Some Architectural

By C. M. CUTLER and C. L. AMICK

Engineering Division, Lamp Department,
General Electric Company





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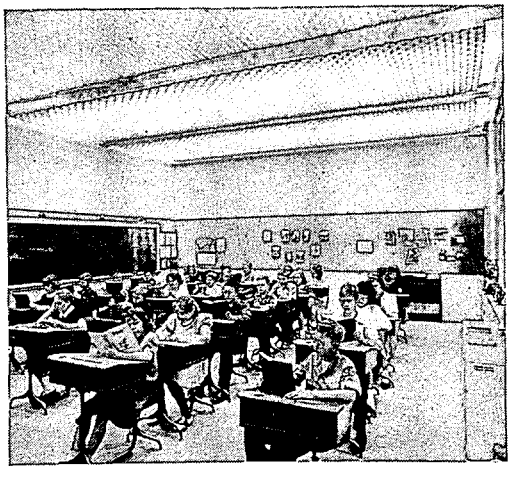

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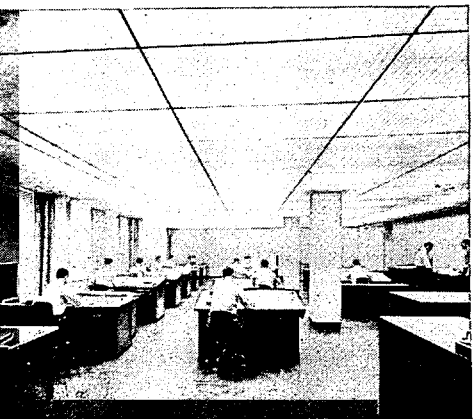
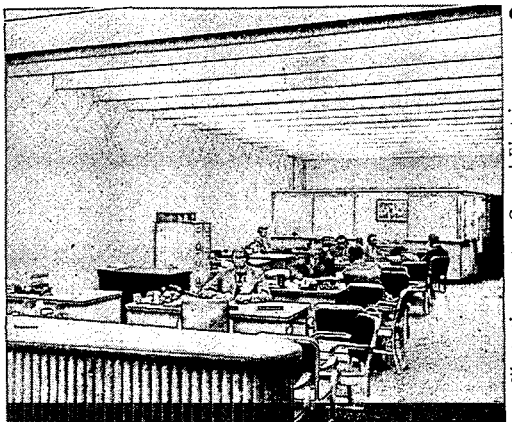




6, 7

Illustrations courtesy General Electric

Fig. 1, showroom, Furniture Mart, Chicago; 4x4x3″ louvers 11″ below continuous rows of 40-w fluorescent lamps 15″ o.c. Architects: J. F. Eppenstein, R. Schwab. Lighting: Solar Light Mfg. Co. *Fig.* 2, Tate Brown store, Charlotte, N. C.; combination of fluorescent lamps and filament spots produces approximately 100 ft-c in service. Wood louvers in removable 2x4 ft sections. Architect: M. R. Marsh. *Fig.* 3, Hecht Co., Washington, D. C.; metal louvers, 3x3x3″, in partial ceiling pattern; continous rows of fluorescent lamps 18″ o.c. Lighting: Porter Metal Products Co. *Fig.* 4, bar, Veterans of Foreign Wars, Hanover, Pa.; fluorescent lamps close above louvers, and larger cells (8x8x8″) produce a planned pattern of bands of brightness. *Fig.* 5, classroom, Lincoln School, Park Ridge, Ill.; slimline fluorescent lamps in rows 2 ft o.c., 9″ above sine-wave louvers. Architects: Perkins & Will. Lighting: Federal Enterprises, Inc. *Fig.* 6, drafting room, Coleman Co., Wichita, Kans.; industrial fluorescent fixtures above plastic 2x2x2″ louvers provide approximately 80 ft-c. Lighting: Benjamin Electric Mfg. Co. *Fig.* 7, Home Loan Dept., First National Bank, Minneapolis, Minn.; fluorescent lamps in continuous rows, deep unidirectional baffles, custom-made. Architects: Lien & Tudor.

RESEARCH REPORT 3—Lighting engineers, manufacturers, and architects have a common interest in louverall ceilings. Louverall affords a CONTINUOUS PLANE SOURCE of light in contrast to POINT SOURCES (flame or incandescent lamp) of past centuries, or the LINE SOURCE of the fluorescent lamp which has been commercially available only since 1938. Among architects who have shared in developing louverall are Perkins & Will (imaginative designs produced during the war and since realized in classrooms); Voorhees, Walker, Foley & Smith (U. N. headquarters, Lake Success); and Ketchum, Gina & Sharp (a Midwest store in 1945; then tests of full-scale models before its use in Florsheim's, New York). General Electric installed a louverall ceiling at Nela Park in 1939. Engineers at G-E, which manufactures no louverall equipment, have conducted research into the method's efficiency, advantages, and inter-relation with other architectural factors. Their findings form the basis for this PROGRESSIVE ARCHITECTURE RESEARCH REPORT.

and Engineering Considerations of

LOUVERALL LIGHTING

Interest in "architectural lighting" is rapidly increasing because of trends toward functional design, demand for higher footcandle levels with new, efficient light sources, and emphasis on high-quality illumination free from excessive brightness ratios. The physical shape of fluorescent lamps, introduced commercially only ten years ago, suggests many interesting application techniques, but their bulk calls for unobtrusive disposition in the over-all design. One system of fluorescent lighting which offers opportunities in this direction is popularly known as *louverall.*

The louverall technique gives architects and designers another method for creating distinctive, functional, esthetically satisfying interiors. Briefly, louverall consists of shielding fluorescent lamps from normal view by means of baffles, usually running in two or more directions, suspended below the lamps and covering all or a large part of the ceiling. The baffles are often egg-crate louvers; hexagonal, circular, and other curved elements (such as sine waves) are also utilized. The fluorescent lamps are ordinarily mounted either on simple wiring channels fastened to the ceiling, or in reflectors.

This interest in a lighting method which converts all, or nearly all, the ceiling into a lighting fixture is understandable. Louverall presents a refreshing lighting system of relatively low brightness, yet permits really high-level illumination in stores, schools, and offices without bothersome direct glare. Inconspicuous lighting, a perennial goal of architects, may be approached with flexibility and versatility which give the architect wide latitude. Other advantages include simplicity of making future increases in illumination (by adding rows of lamps later without any significant changes in the room), pleasing appearance (colored lamps in proper combination to give white light in the room itself), the possibility of concealing unsightly pipes and ducts near the ceiling, and the chance to hide filament-lamp spotlights above the louver. Not to be overlooked is the fact that vertical louvers present little horizontal surface for dirt and dust collection, and cause only moderate decreases in the footcandle level when soiled. Although not unique to louverall, this favorable attribute may mean real long-term savings in these days of high maintenance costs.

These desirable features are obtained with a minimum number of disadvantages. Because the cells formed by the individual baffles are open at the top and bottom, annoying reflections can be produced in shiny surfaces. This reflected glare is most objectionable with dark-colored polished objects and calls attention to the need for diffuse room and furniture finishes of relatively high reflection factors. Such recommendations are nearly universal today. Low brightness sources and low brightness-ratios within the system also reduce the interference of reflected glare. Another disadvantage is found in the present initial cost of louverall lighting, which is usually higher than that of a system using individual fixtures. The latter point cannot, however, be categorically stated, since the total cost of traditional methods of obscuring building elements (furred ceilings, etc.) and of obtaining a correspondingly high order of lighting comfort may exceed the cost of louverall.

Present installations of louverall lighting suggest the range of application fields open to this new technique. Several installation views included in this article show typical school, drafting room, and store applications made fairly recently. Bars, restaurants, and lobbies are also logical prospects for louverall lighting. Experiments already made in New York's Metropolitan Museum of Art presage a new era in solving the difficult problems of lighting paintings and other art objects. Louverall systems provide an excellent device for shielding lighting equipment in store show windows, where effective merchandising calls for high footcandle levels to get attraction value and accurate split-second seeing, without distraction from glare sources. The technique is particularly applicable to island windows where shielding in several directions is required. For dramatic highlights and over-all brightness patterns, however, special louverall designs and proper use of supplementary equipment will usually be needed.

Manufactured Louverall Equipment

The first modern louverall installations (made a couple of years ago) used specially designed louvers. Since then, several manufacturers have marketed "standard" equipments, most of which employ egg-crate cells of aluminum, steel, or plastic. Steel louvers are ordinarily finished with white enamel; plastic louvers are commonly a translucent white thermoplastic. Since the number of manufacturers developing and making available louverall equipment is increasing continuously, it is impossible to cover all the varieties which will be on the market in the future. Of course the different sizes, finishes, and types exhibit a wide range of appearances and lighting results.

Some latitude is offered in the size of individual cells. The smallest cell now commercially available in egg-crate louverall is 1½ by 1½ by 1½"; the largest, 4 by 4 by 4". In between are found 3 by 3 by 3" and 3½ by 3½ by 3" metal louvers, and 2 by 2 by 2" plastic louvers. Any cell size may be chosen in custom-built equipment. For example, aluminum louvers in the famous United Nations louverall installations at Lake Success have cells 9½ by 10" with blades 6" deep. A system in the Lighting Institute at Nela Park has some cells 12 by 24 by 12". The smaller "standard" cells usually offer the greatest initial economy but may not always

UTILIZATION

CAVITY CROSS-SECTION

Shallow cavities (small D/W ratios) have slightly higher utilizations than deep cavities.

SHIELDING ANGLE

Utilization goes down as shielding angle is increased. Crosswise angle has greater effect than lengthwise shielding angle.

USE OF REFLECTORS

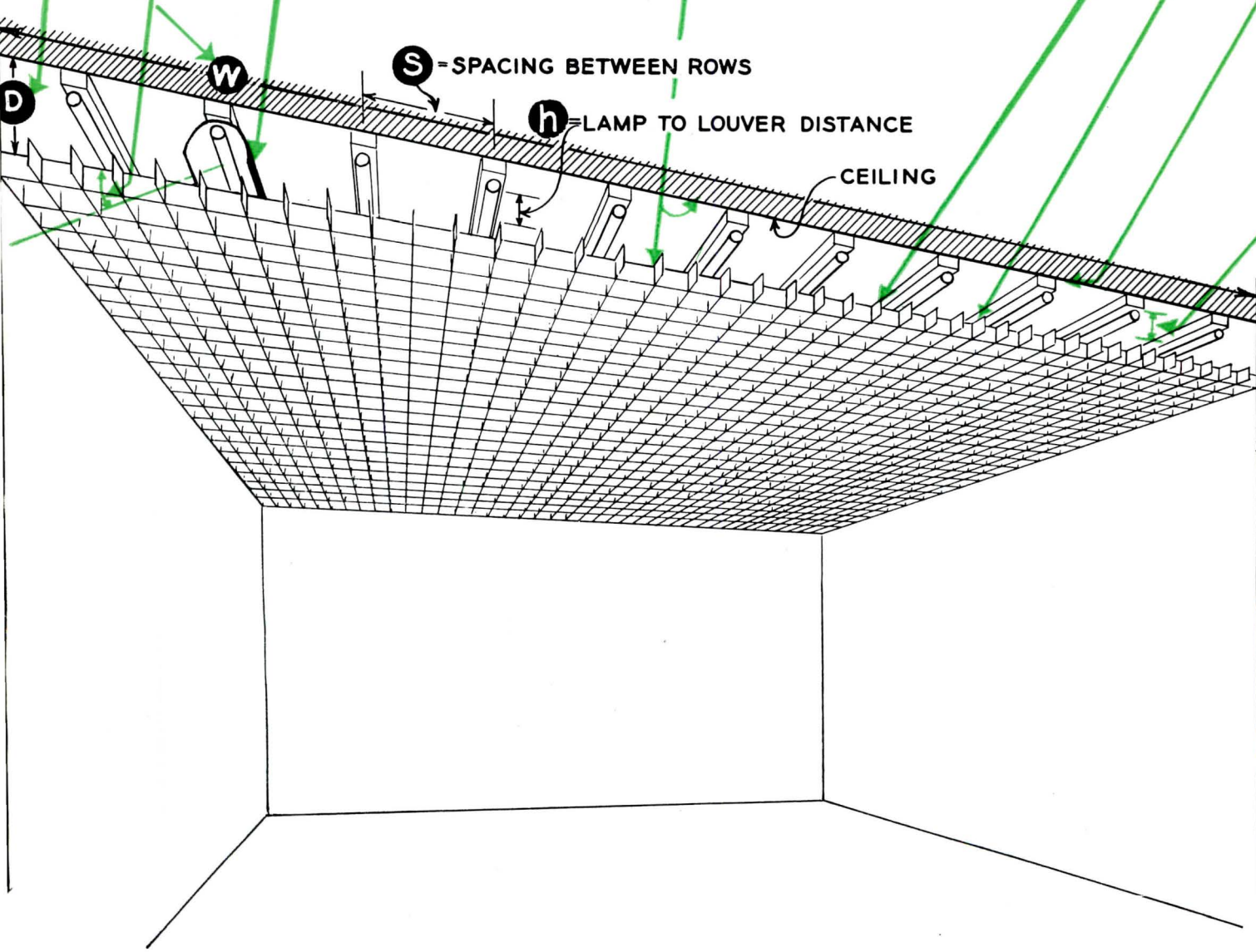
White reflectors are of advantage if cavity is dark, badly obstructed, or difficult to maintain. More concentrating reflectors improve utilization.

REFLECTION FACTOR OF OPAQUE LOUVERS AND CAVITY

Utilization higher for light-finish louvers and cavities than for darker surfaces. High reflection factors thus mean greatest system economy. Louver brightness drops off more rapidly than utilization with decreasing louver reflection factor.

CELL DIMENSIONS

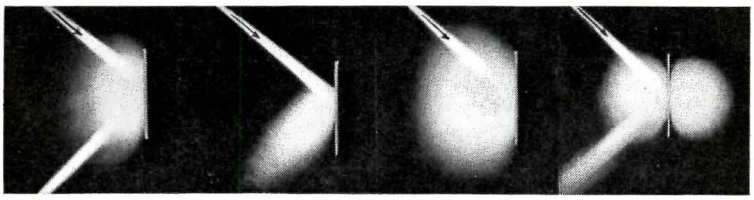
For a given shielding angle, cell size has little effect on utilization. For relatively large cells, a small gain in utilization can be accomplished by locating lamps close to and directly above louver blades.



CONSIDERATIONS

OUVER FINISH — TRANSMISSION

Glossy louvers give slightly her utilization than matte vers of the same total reflec- n factor. Utilization also reases as louvers are made re translucent.



Specular diffuse | Spread | Matte | Diffuse Transmission

BSTRUCTIONS

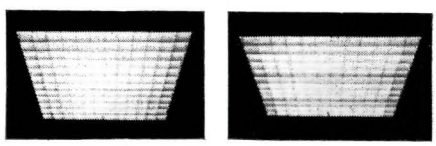
Channels, pipes, ducts and other cavity bstructions reduce utilization because they ap light.

LAMP POSITION

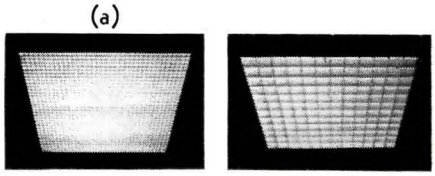
For random lamp positions, fixed cavity depth and light finishes, lamp-to-louver distance has no effect on utilization. Lamp diameter is usually a negligible factor.

APPEARANCE and LIGHTING QUALITY CONSIDERATIONS

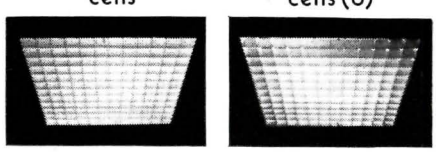
● Reasonably uniform brightness of typical opaque cells is obtained when rows of lamps are spaced no greater than approximately 1.5 times the lamp-to-louver distance (h).



s/h = 1.5 (a) | s/h = 4



2-inch cells | 6-inch cells (b)



White | Black

● Small cells give textural quality, large ones bolder pattern. Small cells will usually be used in rooms of restricted dimensions, or where such a texture is desired. Bolder cells may be more acceptable in large rooms, especially with high ceilings or where a particular architectural effect is desired.

● Louver brightness is less uniform for dark cavity finishes than for white finishes with a given spacing ratio.

● Average louver brightness increases as the shielding angle is reduced. Higher shielding angles emphasize texture due to brightness variation from top to bottom of blades and between adjacent blades, but such systems provide better concealment of objects above the louver.

● Glossy louvers result in brightness higher than matte finishes of the same total reflection factor. This can be seen by comparing photo (a)-glossy with (b)-matte. The effect is particularly true with viewing directions crosswise of the lamp and near the horizontal.

● Translucent (plastic) louvers are brighter than opaque matte-white louvers for a given illumination level. The transmitted diffuse light tends to flatten the texture of individual cells.

● The use of reflectors with the lamps reduces the louver brightness, and may affect the brightness uniformity. In both cases the extent depends on the degree of reflector, concentrations, and efficiency. Increasing concentration results in lower louver brightness (in the shielded zone) for the same illumination.

Illustrations courtesy General Electric

TABLE 1—COEFFICIENTS OF UTILIZATION

For typical wall-to-wall installations with lamps in random positions on channels and rows fairly close together. Coefficients are for the following reflection factors: cavity 75%, room walls 50%, and floor 14%. Moderately to highly concentrating reflectors increase utilization 12-45% with white louvers and cavity. Gains are less for gloss-finished and transmitting blades. No allowance included for reduced fluorescent-lamp output due to ambient temperature in the cavity. For individual louvered elements spaced in a conventional way, the utilization will be 25% higher in small rooms, and 15% higher in medium and large rooms.

Shielding Angle	Cell Size	2 x 2 inch Opaque Cells			2 x 2 inch Plastic		6 x 6 inch Opaque Cells			
	Louver Reflection Factor	75% Glossy White	75% Matte White	50% Matte	20% (Approx. 70%	25% Transmission 55%)	75% Glossy White	75% Matte White	50% Matte	75% glossy but with black (5%) cavity
30° x 30°	Cavity Height 1/20 Cavity Width									
	Large Room*	.44	.41	.30			.46	.43	.31	.21
	Medium Room*	.39	.37	.27			.41	.38	.28	.19
	Small Room*	.31	.29	.22			.32	.30	.23	.15
	Cavity Height 3/10 Cavity Width									
	Large Room	.40	.38	.27			.42	.39	.28	.16
	Medium Room	.36	.33	.24			.37	.35	.25	.14
	Small Room	.28	.27	.20			.30	.28	.21	.11
45° x 45°	Cavity Height 1/20 Cavity Width									
	Large Room	.33	.31	.22	.44	.39	.34	.32	.23	.16
	Medium Room	.29	.27	.20	.39	.35	.31	.29	.21	.14
	Small Room	.23	.22	.17	.30	.28	.25	.23	.17	.11
	Cavity Height 3/10 Cavity Width									
	Large Room	.30	.28	.20	.41	.36	.31	.29	.21	.12
	Medium Room	.26	.25	.18	.36	.32	.28	.26	.19	.10
	Small Room	.22	.21	.15	.28	.26	.23	.22	.16	.09

** The "large" classification applies to rooms whose widths are approximately four times the height from floor to louvers; "medium"—two times height; "small"—width equals height. More accurately stated in illuminating engineering nomenclature, they represent B, E and H room indices respectively.*

be suitable in scale and texture for all interior designs.

The louver section size also varies considerably among individual manufacturers. Some producers offer one standard section only (such as 12 by 48", 18 by 48", etc.) while others make a variety of sizes available. One manufacturer will supply 24 or 30" widths in 6" length increments from 12 to 96". Methods of joining and hanging louverall equipment also differ widely. Almost all present manufacturers supply specific materials for suspending the sections; usually a T-bar or rail is employed so that adjacent sections need not be individually hung from the ceiling. Turnbuckles or other adjustment features facilitate leveling the louver grid. All are designed with hinged or removable sections to facilitate relamping and other maintenance work.

Some manufacturers supply louverall sections with openings for filament-lamp spotlights, or with a complete adjustable spotlight unit as an integral part of the louver section. Others tell how openings for spotlights can be cut during installation. Such equipment is directed particularly to the store-lighting field.

Custom-made Equipment

The range of materials and dimensions here is virtually unlimited. A Chicago architectural firm used aluminum bars ¼" and ⅝" thick, with machined key-type joints to permit thermal expansion and contraction. Others have used wood blades, finished naturally or painted to suit the general decorative scheme.

Although louverall lighting generally refers to systems which shield fluorescent lamps both crosswise and lengthwise, unidirectional baffles deserve attention. Fig. 7 shows such an installation, in which the entire ceiling is composed of baffles 40" on centers running the width of the room. Made of plaster on metal lath, the baffles are 2" wide and nearly 2 ft deep. A single row of 40-watt fluorescent lamps is located on the ceiling between each pair of baffles, with a clip-on metal louver for lengthwise shielding.

In the accompanying illustration, the effects of louverall variables on (1) appearance and (2) utilization are demonstrated. Both should be considered in making an over-all appraisal.

Appearance Factors

Brightness pattern and texture of the louver grid are the most important criteria of louverall appearance. Texture is revealed by variation in brightness over each blade and by brightness differences between adjacent blades. Large brightness variations (brightness patterns) are usually a function of both louver design and finish, and lamp spacing and distance to the louvers; such patterns are most pronounced at grazing angles to the plane of the grid, hence at greater distances in larger rooms.

Recent studies* show the extent to which average louver brightness at ordinary angles of view is affected by particular design variables. Different patterns of brightness can be achieved by variations in lamp location. For example, lamps might be placed closer together over an office desk or important selling areas in a store than in other room locations. Another way to vary the louver patterns is to employ two or more colors of lamps in the proper proportions to provide a desired quality of light in the room below. For example, candlelight can be simulated in spectral quality by combining gold and pink fluorescent lamps in the proportion of 6 and 4 respectively. The color quality of white fluorescent lamps can be obtained with blue, green, and pink F lamps in the ratio of 5, 11, and 45. The many other combinations possible can give distinctive, decorative louver patterns with reasonably uniform brightnesses; or louver blades can be tinted in shades related to the room's color scheme without appreciably affecting the color of the light output.

** For a complete report, see* Design and Illumination Characteristics of Louver and Louverall Systems *by W. M. Potter and R. L. Oetting, a paper for the 1948 Technical Conference of the Illuminating Engineering Society.*

Engineering Considerations

Shielding angle. One of the first technical problems involved in selecting a louverall system is specification of shielding angle, or *the angle below the horizontal plane of the louvers at which all objects above are concealed.* In an egg-crate louver, for example, with cells 3 by 3" in cross-section and 3" deep, the shielding angle is 45° in both directions (35° diagonally from corner to corner). Cells 6 by 6 by 6" or 12 by 12 by 12" also provide 45° shielding. If blades 3" deep were mounted 6" apart (cells 6 by 6 by 3") shielding would be the angle whose tangent is 3/6, or about 27°. The term "crosswise" shielding refers to the angle which ob-

TABLE 2—SPACING BETWEEN CONTINUOUS ROWS

Footcandles*	35				50				75			
Coefficient of Utilization	.20	.25	.30	.35	.20	.25	.30	.35	.20	.25	.30	.35
Lamp**	Inches Between Continuous Rows											
40-watt T-12	23	29	35	41	16	20	25	29	11	14	16	19
85-watt T-17 (formerly 100-watt)	36	45	54	62	25	31	37	44	17	21	25	29
8-ft. Slimline @ 200 ma.	17	21	26	30	12	15	18	21	8	10	12	14
@ 300 ma.	22	28	33	39	15	19	23	27	10	13	15	18

** Average in service.*
*** 4500 white lamps. For 3500 white lamps, the footcandle level will be slightly higher.*

scures the crosswise or "broadside" view of fluorescent lamps. Rectangular cells can be used to advantage where crosswise and lengthwise shielding need not be equal.

The particular application guides determination of the appropriate shielding angle. When visual tasks are critical and prolonged, as in offices and schools, angles of 45° or higher are considered desirable. In the store field there will usually be a compromise between concealment and attainment of vertical-surface illumination, the latter being reduced by high shielding angles. When objects in the cavity are to be obscured 40-45° should be selected. Differential shielding may be advantageous in some cases, such as in a long, narrow store.

Reflecting surfaces. With white louvers and a white cavity, utilization can be increased 12 to 45% when moderately or highly concentrating reflectors are placed over the lamps; cavities more unfavorable to utilization will gain more by the use of individual reflectors. If the cavity is dark and white refinishing would be costly or complicated, or if bad obstructions exist, efficient reflectors (including the wide-spread matte variety) may materially improve utilization. Of course, reflectors present less area for periodic cleaning than the entire cavity surface and thus reduce maintenance costs.

Number of lamps. Once the type of louver has been chosen, the designer must compute the number of fluorescent lamps needed to provide the desired illumination level in service. The formulas below are used. In them, lumens per lamp are found in lamp manufacturers' publications. The coefficient of utilization can be obtained either from louverall equipment manufacturers or from Table 1. The latter indicates the magnitude of certain variables; for example, low utilizations which result from a black cavity, as given in the last column.

Lamp and louver positions. Simplified tables can be developed for determining spacing between continuous rows to give various footcandle levels. Table 2 gives such information for several popular sizes of fluorescent lamps, based only on utilization, not including considerations of brightness pattern. For reasonably uniform louver brightness, lamp-to-louver distance should be ⅔ the spacing between rows, or more.

It is impossible to incorporate in this article the effect of all the louver and cavity variables on the net utilization of the system. As a guide, therefore, the general statements on pages 82 and 83 may be helpful.

The use of spotlights above the louvers to accent merchandise featured below involves only considerations of light interference. No problem exists with spotlamps directed straight down, but if any appreciable angle from the vertical is involved (to get light on the front of a manikin, for example) it may be difficult to locate the lamps above the louver without excessive light reduction and high louver brightness. This is particularly true of the smaller cell sizes. In such cases, small louver sections can be cut out, the cell-size module may be determined by spotlight requirements, or sections with spotlight openings (furnished by the manufacturer) can be employed.

Construction Techniques

Details for specific manufacturers' louverall equipment are too voluminous for inclusion here. In general, once the T-bars, channels, or rails used actually to support the louverall sections are located and the ceiling fittings properly spaced, the T-bars or channels are leveled in each direction. Then the louverall sections are placed in position.

$$\text{Lamps needed} = \frac{\text{Initial Lamp Lumens Required}}{\text{Lumens per Lamp}}$$

$$\text{Initial Lamp Lumens} = \frac{\text{Footcandles Desired in Service} \times \text{Room Area (sq ft)}}{\text{Coefficient of Utilization} \times \text{Maintenance Factor}}$$

Louverall equipment may be fitted to the room by cutting down standard sections on the job, by using wall moldings, and by locating the grid with free space between it and surrounding walls —an arrangement which also takes care of irregular conditions.

Effect upon Structure and Other Equipment

Acoustical properties. An investigation by an equipment manufacturer showed louverall systems to be acoustically neutral, unless one of the standard acoustical materials is used. In the U. N. auditoriums, for instance, white acoustical tile forms the ceiling above the lighting units. Louverall equipment should not interfere with **air-conditioning systems** under ordinary conditions.

Fire safety. Queries about **sprinklers** arise; one manufacturer has recommended a minimum 8" between louvers and sprinkler heads to prevent interference with water distribution. The plastic used in translucent louverall sections should be self-extinguishing (capable of burning only when in contact with a flame), and free from warpage, discoloration with age, brittleness, or cold flow. Plastic louvers should not, however, be used when room temperatures exceed 125F and should clear uninsulated steam lines by at least 2 inches.

Structural load due to louverall installations is negligible. The louvers themselves weigh only ¾ lb per sq ft or less—which, since sections can easily be handled by one man, also simplifies maintenance.

While louverall is not presented as a panacea for all lighting problems, it seems likely that the technique will receive increasing attention in building design because it affords (1) an opportunity to attain high-level illumination with a minimum of direct glare, and (2) an approach to the goal of inconspicuous lighting.

Manufacturers of louverall ceilings

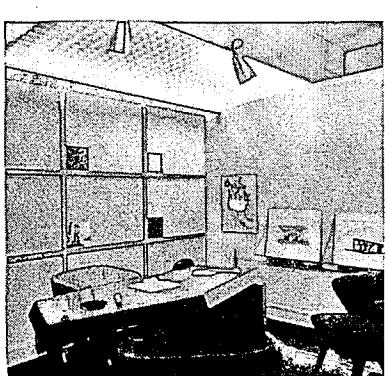
Benjamin Electric Mfg. Co., Des Plaines, Ill.
Day-Brite Lighting, Inc., St. Louis 7, Mo.
Federal Enterprises, Inc., 8700 S. State St., Chicago 19, Ill.
Fluorescent Fixtures of Calif., 2770 Folsom St., San Francisco, Calif.
Frink Corp., 2701 Bridge Plaza N., Long Island City, N. Y.
Fullerton Mfg. Co., 17 So. Chestnut St., So. Norwalk, Conn.
Garden City Plating and Mfg. Co., 1750 N. Ashland Ave., Chicago 22, Ill.
General Lighting Co., 32 Union Square, New York, N. Y.
Kawneer Company, 780 Front St., Niles, Mich.
Lighting Products, Inc., Highland Park, Ill.
Louverall Lighting Corp., 1770 W. Berteau Ave., Chicago, Ill.
Neo Ray Products, Inc., 315 E. 22nd St., New York 10, N. Y.
Pacific Full-O-Lite Corp., 320 Market St., San Francisco, Calif.
Porter Metal Products Co., 2082 Kings Highway, Fairfield, Conn.
Smithcraft Lighting Division, A. L. Smith Iron Co., Chelsea 50, Mass.
Solar Light Mfg. Co., 1357 S. Jefferson St., Chicago 7, Ill.
Spero Electric Corp., 18222 Lanken Ave., Cleveland, Ohio
Sunlite Mfg. Co., 9126 Oakland Ave., Detroit, Mich.
Tri Part Mfg. Co., 934 Plum St., Detroit, Mich.

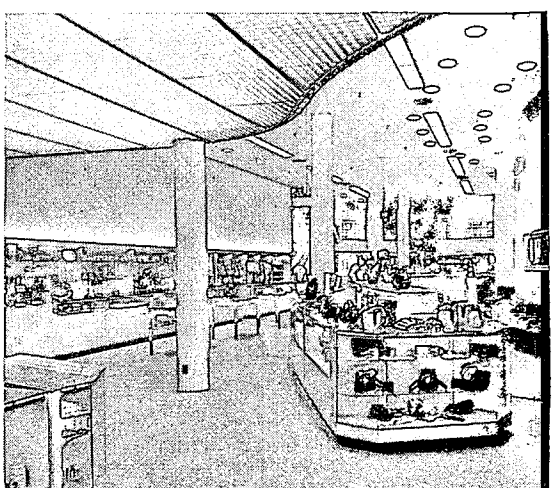
LUMINOUS CEILINGS

Louverall and Other Types

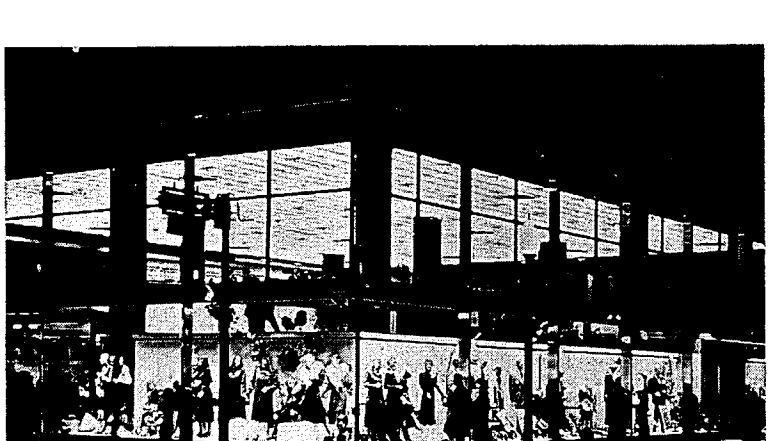
Editors' Note: Although comparable technical data are lacking for other types of luminous plane surfaces than louverall, to which the preceding report is limited, some possibilities deserve listing. Diffusing membranes, occasionally colored, usually white and translucent, have been used. Acrylic plastic was adapted to railroad car fixtures in 1944. In 1945, large, pan-shaped units of styrene (Lumitile, div. of Burton-Rodgers, Cincinnati, Ohio) were introduced. In 1948 glass fiber plus plastic, laminated between sheets of glass (Synglo, Polyplastex United, Elmhurst, N. Y.), was installed in New York's Fiberglas Building (Skidmore, Owings & Merrill, Architects.)

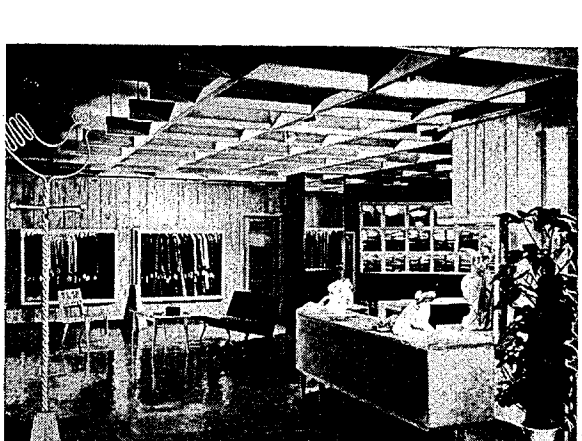
Photo courtesy General Lighting Co.



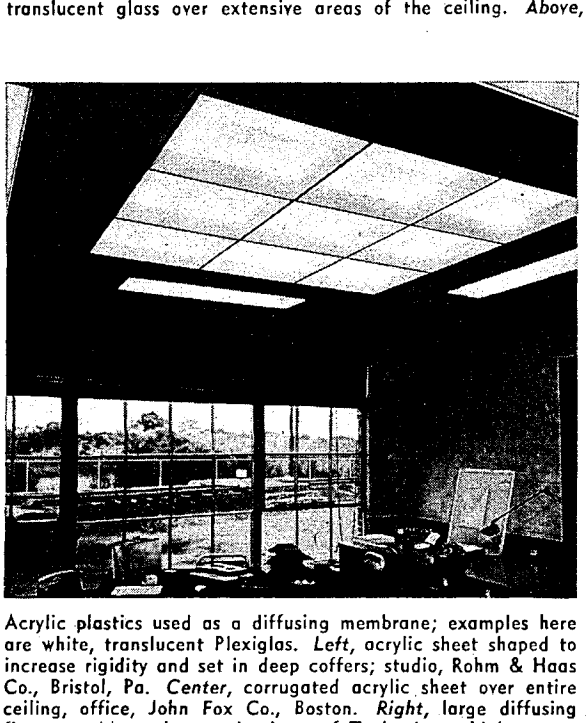


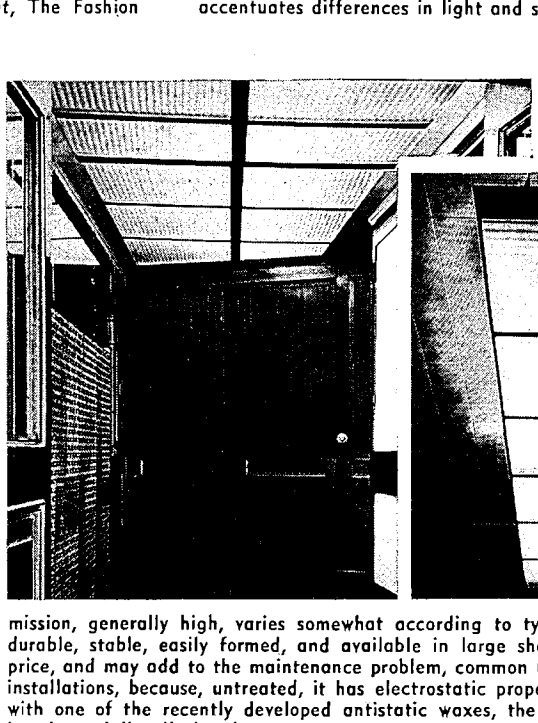
Left, office of Ken White, Designer, New York, N. Y. *Right*, Sample Shop, Buffalo, N. Y., W. C. Lurkey, Architect. Both are examples of louverall used as a plane of light; in the small office, concentrated over a small area; in the store, to ease the transition from low to high ceilings.

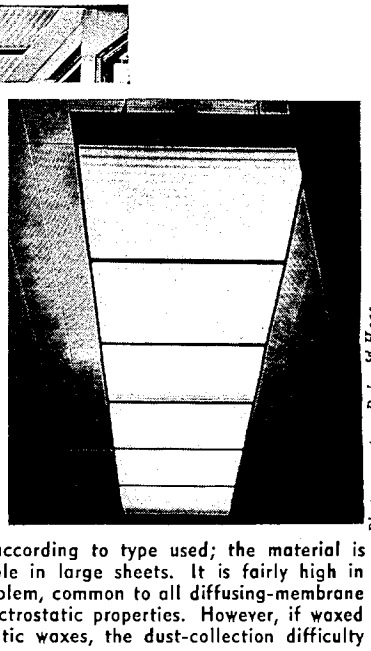




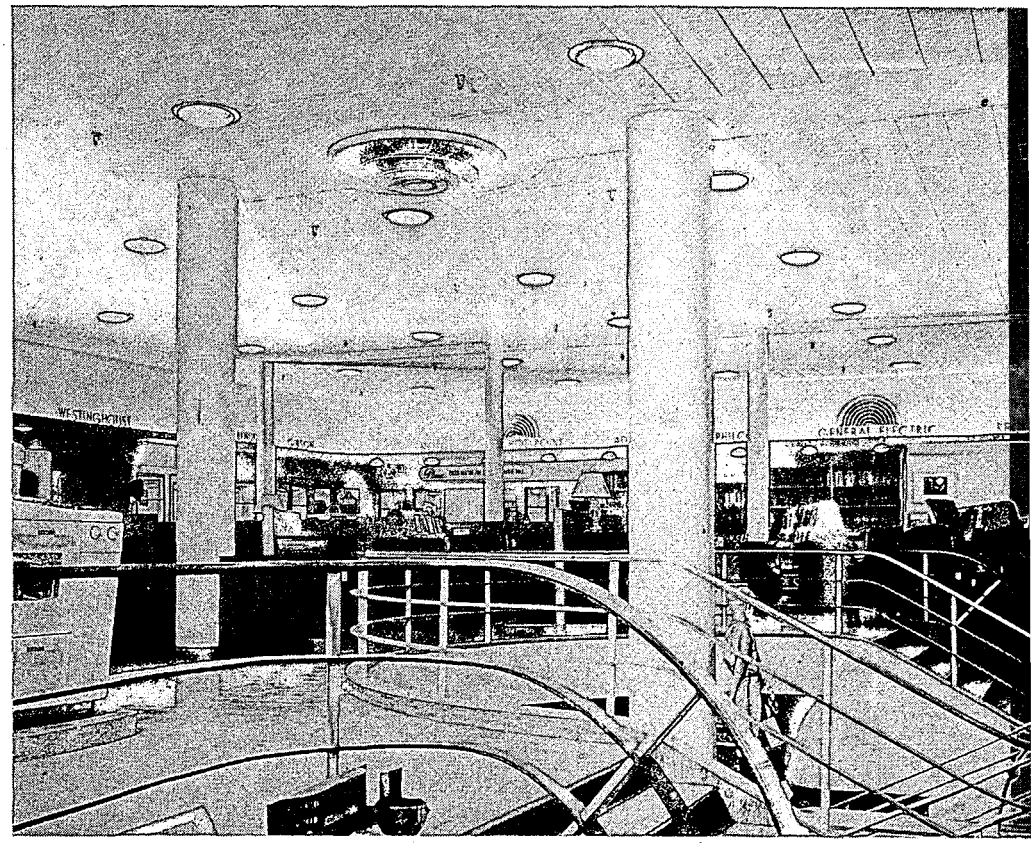
Not louverall, the succeeding illustrations show other approaches to the luminous ceiling concept. *Above*, Bond's, Terrace Plaza Hotel, Cincinnati, Ohio. Morris Lapidus, architect for the store, and Abe Feder, lighting consultant, used flat, translucent glass over extensive areas of the ceiling. *Above, right*, The Fashion Shop, Houston, Texas. Peter Copeland Assoc., designers, used a wood trellised ceiling for decorative effect; trellis spacing, too wide to be considered louverall, has limited shielding effect, accentuates differences in light and shade. Note accent lights.







Acrylic plastics used as a diffusing membrane; examples here are white, translucent Plexiglas. *Left*, acrylic sheet shaped to increase rigidity and set in deep coffers; studio, Rohm & Haas Co., Bristol, Pa. *Center*, corrugated acrylic sheet over entire ceiling, office, John Fox Co., Boston. *Right*, large diffusing fixture at Massachusetts Institute of Technology. Light transmission, generally high, varies somewhat according to type used; the material is durable, stable, easily formed, and available in large sheets. It is fairly high in price, and may add to the maintenance problem, common to all diffusing-membrane installations, because, untreated, it has electrostatic properties. However, if waxed with one of the recently developed antistatic waxes, the dust-collection difficulty is substantially alleviated.



Air distribution outlets in The Hub, Baltimore, Md.; Tyler, Ketchum & Myers, architects; Egli & Gompf, engineers for the air-conditioning system.

Facts on DUCT DESIGN

By F. HONERKAMP

Heating Engineer*

The plan of the building in which the air-conditioning system is to be installed should be carefully studied. The duct system should be simple, runs should be short, and there should be as few turns as possible. Air diffusers should be arranged to insure proper air distribution and air volumes should be distributed in accordance with the heat load.

There are several methods of calculating duct sizes:

1. Velocity Method
2. Equal Friction Method
3. Static Regain Method

The velocity method is an empirical procedure which should be used only by experienced designers. When employed, this method uses arbitrary velocities for the various sections of the ducts, with the highest value applied at the fan outlet and lower air speeds assigned to various branch ducts down the run.

Since the quantities of air to be delivered through each duct are known, the area of each duct section can easily be determined by using the simple formula:

$$A = Q/V$$

where A = duct area in sq ft
Q = air quantity in cfm
V = air velocity in fpm

To find the total static pressure against which the fan must operate, the static pressure loss of each section is calculated separately and the total loss found by adding the individual losses of the sections of the duct which has the highest resistance. This may be the duct with the longest run, but not necessarily so.

The velocity method has an advantage in that the duct area can be determined

Associated with Anemostat Corp. of America

very easily. It should be used only for very simple layouts. *Table A* gives recommended maximum air velocities for different types of installations using high velocity diffusers for air distribution.

The equal friction method is most frequently recommended because it does not require as much experience in selecting the air velocities in the system as is in the case with the velocity method. In use, the equal friction method theoretically makes it possible to design a duct system which does not need dampering to balance the air flow between various sections. In practice, of course, this is impossible because even well constructed ducts deviate from the perfect system which is designed. The equal friction method has the advantage of automatically reducing velocities in the various sections of the duct system and allowing a quick check of total duct resistance.

In the static regain method, the velocity is reduced at each branch or take-off, so that the recovery in static pressure due to this reduction will exactly offset the friction in the succeeding section. Special tables have been developed for this method, which can be used for ducts of equal lengths and equal distribution. If the tables cannot be applied, the method is not too convenient. This article will deal only with the more popular velocity and equal friction methods and a typical problem of each will be solved. *Table B* will be referred to in one example.

Fig. 1 shows a typical air-conditioning layout that is simple. It will be used to illustrate both velocity and equal friction methods.

Example of Velocity Method Calculations

From the layout in Fig. 1, we see that the velocities to be handled are, respectively, 1600, 1400, 1200, and 1000 fpm. Applying the simple formula given previously in this paper we can tabulate the results as follows:

	Sect. A	Sect. B	Sect. C	Sect. D
Q (cfm)	2400	1200	800	400
V (fpm)	1600	1400	1200	1000
Q/V	1.5	0.86	0.67	0.4
A (required Sq. Ft.)	1.5	0.86	0.67	0.4
A (required Sq. In.)	216	124	97	58
Duct Size Selected	18x12	12x10	10x10	10x6
Equivalent Round Duct Diam. (Inches)	16.1	12	11	8.4
Friction Loss per 100 Ft. In. of Water	.25	.25	.2	.2

Example of Equal Friction Method Calculations

Using the same layout in Fig. 1, the following tabulation can be made:

	Sect. A	Sect. B	Sect. C	Sect. D
Q (cfm)	2400	1200	800	400
% of Q	100	50	33	16.7
% of Area (See Table B)	100	58	41	23
A (1.5 x % of Area)	1.5	.87	.62	.35
A (Sq. Ft.)	1.5	.87	.62	.35
A (Sq. In.)	216	124	90	50
Rect. Duct Selected	18x12	12x10	12x8	12x5

In calculating the total friction loss in our air conditioning layout shown in Fig. 1 (using either branch), it is necessary to add the losses in Sections A, B, C, and D to the loss in two elbows and through the air diffuser at the end of the system. Assuming that Section A is 20 ft long, Section B is 40 ft and Sections C and D are 20 ft each we arrive at the following.

	Sect. A	Sect. B	Sect. C	Sect. D
Length of Duct	20	40	20	20
Friction Loss per 100 ft. (from AC handbook)	.25	.25	.20	.20
Friction Loss of Straight Run	.05	.10	.04	.04

TABLE A—RECOMMENDED AIR VELOCITIES

Type of installation	Main Duct fpm	Branch Duct fpm	Type of installation	Main Duct fpm	Branch Duct fpm
Television Studios	900	700	Auditoriums	1600	1200
Film Studios	900	700	Theatres	1600	1200
Broadcasting Studios	1000	800	Restaurants	1600	1400
Residences	1200	900	General Offices	1800	1400
Apartments	1400	1000	Small Stores	1800	1500
Hotel Bedrooms	1400	1000	Department Stores	2000	1600
Private Offices	1500	1100	Industrial Exhibit Rooms	2000	1600
Libraries	1500	1200	Factories	2200	1800
Concert Halls	1500	1200	Engine Rooms	2200	1800

TABLE B—RELATION OF AREA TO CAPACITY IN DISTRIBUTING DUCTS

% Cap.	% Area	% Cap.	% Area	% Cap.	% Area	% Cap.	% Area	% Cap.	% Area	% Cap.	% Area	% Cap.	% Area
1	2.0	16	23.0	31	39.0	46	54.0	61	68.0	76	81.0	91	93.0
2	3.5	17	24.0	32	40.0	47	55.0	62	69.0	77	82.0	92	94.0
3	5.5	18	25.0	33	41.0	48	56.0	63	70.0	78	83.0	93	94.5
4	7.0	19	26.0	34	42.0	49	57.0	64	71.0	79	84.0	94	95.0
5	9.0	20	27.0	35	43.0	50	58.0	65	71.5	80	84.5	95	96.0
6	10.5	21	28.0	36	44.0	51	59.0	66	72.5	81	85.5	96	96.5
7	11.5	22	29.5	37	45.0	52	60.0	67	73.5	82	86.0	97	97.5
8	13.0	23	30.5	38	46.0	53	61.0	68	74.5	83	87.0	98	98.0
9	14.5	24	31.5	39	47.0	54	62.0	69	75.5	84	87.5	99	99.0
10	16.5	25	32.5	40	48.0	55	63.0	70	76.5	85	88.5	100	100.0
11	17.5	26	33.5	41	49.0	56	64.0	71	77.0	86	89.5		
12	18.5	27	34.5	42	50.0	57	65.0	72	78.0	87	90.0		
13	19.5	28	35.5	43	51.0	58	65.5	73	79.0	88	90.5		
14	20.5	29	36.5	44	52.0	59	66.5	74	80.0	89	91.5		
15	21.5	30	37.5	45	53.0	60	67.5	75	80.5	90	92.0		

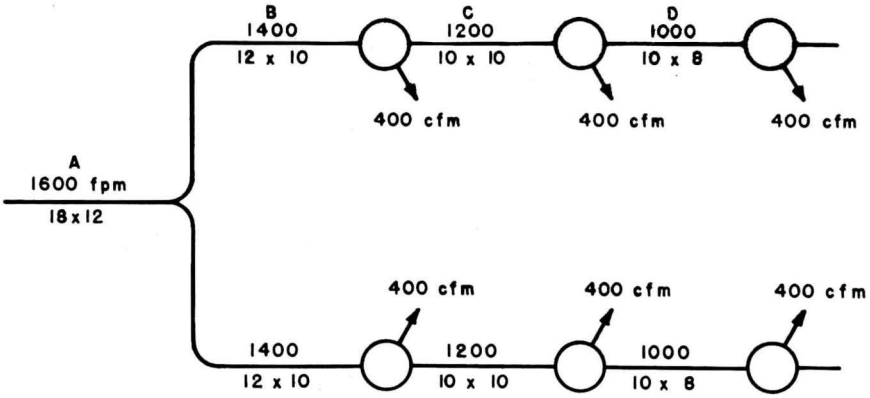


Fig. 1—Distribution system

So the remaining parts of the problem can be summed up thus:

Friction loss of total straight run	.23
Shock loss of first elbow	.03
Assume elbows with a ratio of radius to width of 1.5—Assume loss of approx. 20% of velocity head:	
$h = .2 \times (1600/4005)^2 = .03$	
Shock loss of second elbow	.025
$h = .2 \times (1400/4005)^2 = .025$	
Loss through air diffuser (from mfr's tables)	.125
Total friction loss in duct	.410

The pressure required at the beginning of the main run is therefore .41". The fan selected for the duct system must not only deliver the required volume of air against this friction loss, but also against the losses in all air-conditioning apparatus such as washers or spray chambers, heating or cooling coils and filters. The static head required of the fan for the usual air conditioning installation is between 1 and 1.5 in. of water. About one-third of this represents friction losses in the duct system. The friction losses in the air conditioning apparatus can be found in manufacturers' catalogs.

Heat Gains and Losses of Ducts

In designing large duct systems for air conditioning installations, the heat gains or losses of insulated or uninsulated ducts should not be neglected. If cold air is distributed through uninsulated ducts, for example, the temperature rise may be quite considerable on long runs, so that there may be as much as a 5° rise between the point where the duct work starts its air distribution and the last outlet. This loss of cooling effect must be calculated and the air quantities at each outlet must be compensated in order to take care of the heat load in a given area, particularly when the heat gain from the lights and people is considered uniform.

General Considerations

It is of the utmost importance to design the ducts of an air-conditioning system correctly, not only for functional, but also for economic reasons. The cost of the duct system is about 25% of the total investment. Its resistance is a substantial portion of the pressure against which the fan operates, and causes a large part of the annual power cost. First cost and operating expenses are considerably influenced by the design of the ducts.

The first cost of a duct depends on its size—the smaller the duct, the lower its first cost. The friction, on the other hand, increases with decreasing duct diameter. It requires more power to deliver a given quantity of air through a small duct than to deliver the same quantity of air through a larger duct of the same length. The operating cost of the same duct will therefore be greater than that of the larger duct. For the proper sizing of the duct diameter, first cost and operating expenses have to be balanced against each other.

Theoretically, it is not difficult to find the "economic diameter" for lowest first cost and lowest operating cost. In practice, however, the "balancing" is quite difficult, especially since reliable cost data are not always available. Therefore satisfactory solution depends to a large degree on the satisfactory estimate of the flow resistance offered by the system. The duct sizes furthermore depend on the maximum air velocities which can be used without causing undue noise and vibration.

In order to avoid noise, the velocity of the main duct should not exceed certain accepted values, as given in Table A. In using any of the methods for calculating the duct sizes it should be kept in mind that even the most reliable method of estimating the theoretical resistance of a system will not give the actual resistance of the system, because material and workmanship play an important role. A reasonable safety factor should therefore be allowed.

Manufacturers' Literature

★ *Editors' Note: Items starred are particularly noteworthy, due to immediate and widespread interest in their contents, to the conciseness and clarity with which information is presented, to announcement of a new, important product, or to some other factor which makes them especially valuable.*

AIR AND TEMPERATURE CONTROL

1-216. Cyclotherm (Bul. H-1), 6-p. folder on heat generator fired with gas, oil, or with combination burner for either; smokeless operation. Description, advantages, ratings and dimensions chart. Cyclotherm Corp.

1-217. Grilles, AIA 30-J, 193-p. catalog describing wide range of grille designs. Photos, sizes and dimensions table. Other products include back draft dampers, multiple valve registers. Hendrick Mfg. Co.

1-218. Hunter Zephair Fans, AIA 30-D-1 (Form 920), 8-p. illus. booklet on various types of ventilating and cooling fans for domestic use. Basic design data, installation, dimensions and performance data, tables. Hunter Fan & Ventilating Co., Inc.

1-219. Thatcher Furnace Company, portfolio containing nine bulletins on boilers, thermostatic tempering valve, gravity and coal-burning forced air furnaces, winter air conditioners, oil-fired heating system. Descriptions, features, dimensions, engineering data, capacities, specifications, diagrams. Thatcher Furnace Co.

CONSTRUCTION

3-28. Calcium Chloride, AIA 3-B-2, 4-p. illus. folder on surface curer for concrete floors requiring special wear resistance. Advantages, general data. Calcium Chloride Ass'n.

Two folders on lightweight precast concrete slab employing mineralized organic aggregate, in range of standard types and sizes. Descriptions, sound-absorption coefficients, properties, sizes and weights chart. Durisol, Inc.:

3-29. Durisol.

3-30. Five New Ways to Save Money When You Build.

★ **3-31. Building Construction Specialties** (Folder 900), 12-p. catalog describing concrete, granite, limestone, terra cotta accessories, rough carpentry iron work accessories, cast iron fireplace and stack iron work, foundation ventilators, and other items. Descriptions, drawings. Hohmann & Barnard, Inc.

3-32. Light from Floors, 24-p. illus. booklet on light-reflecting floors made of white cement. Description, advantages, technical data and tables, typical installations, recommended practice for construction. Universal Atlas Cement Co.

Two booklets on paneling for new and old construction. Suggested designs, directions for application, treatment of trim. Upson Co.:

3-33. Upson Strong-Bilt Panels (781-25P-BL-117).

3-34. Upson Kuver-Krak Panels (782-25P-BL-117).

DOORS AND WINDOWS

4-150. Bayley Windows, Doors, Operators, AIA 16-e, 36-p. illus. catalog on metal windows and doors in modular sizes, and hardware. General, detailed data on modular system, installation details, multiple unit tables, types, sizes, sections, specifications. William Bayley Co.

4-151. Magnalite (Brochure T-48), 4-p. illus. folder on diffusing glass, type "B" wired, for skylight installations in tobacco warehouses. Advantages, typical installations. J. C. Brady.

4-152. Residence Steel Casements (RE-1), 12-p. catalog on steel casements, basement and utility windows for houses, apartments, hotels, etc. Detail drawings, sections, tables, specifications, advantages. Detroit Steel Products Co.

4-153. Permatite Windows (Cat. 48), 23-p. illus. catalog on aluminum and bronze windows, double-hung, casement, and projected. Descriptions, specifications, elevations, sections, suggested details, typical installations, index. General Bronze Corp.

★ **4-154. Kinnear Rolling Doors,** AIA 13-D (Bul. 49), 27-p. bulletin on variety of steel rolling doors, including fire doors and shutters, RoL-TOP doors, steel rolling grilles, doors for special application. General, detailed data, construction features, electric power operation, specifications, photos, diagrams, sections, index. Kinnear Mfg. Co.

★ **4-155. No Fame to Acclaim—Only Blame,** AIA 16-B, 12-p. booklet on fire doors. Description, tests and limitations, recommendations, reference material. National Metalclad Door Ass'n.

ELECTRICAL EQUIPMENT AND LIGHTING

5-151. Busduct, AIA 31-C-66 (Bul. 101), 31-p. bulletin on feeder, plug-in, and high efficiency types of Busduct. Engineering data, charts, diagrams, representative installations. Frank Adam Electric Co.

★ **5-152. "Skyline" Louverall Ceiling,** 4-p. illus. folder on complete louverall ceiling assemblies made of aluminum. Description, advantages, specifications. Garden City Plating & Mfg. Co.

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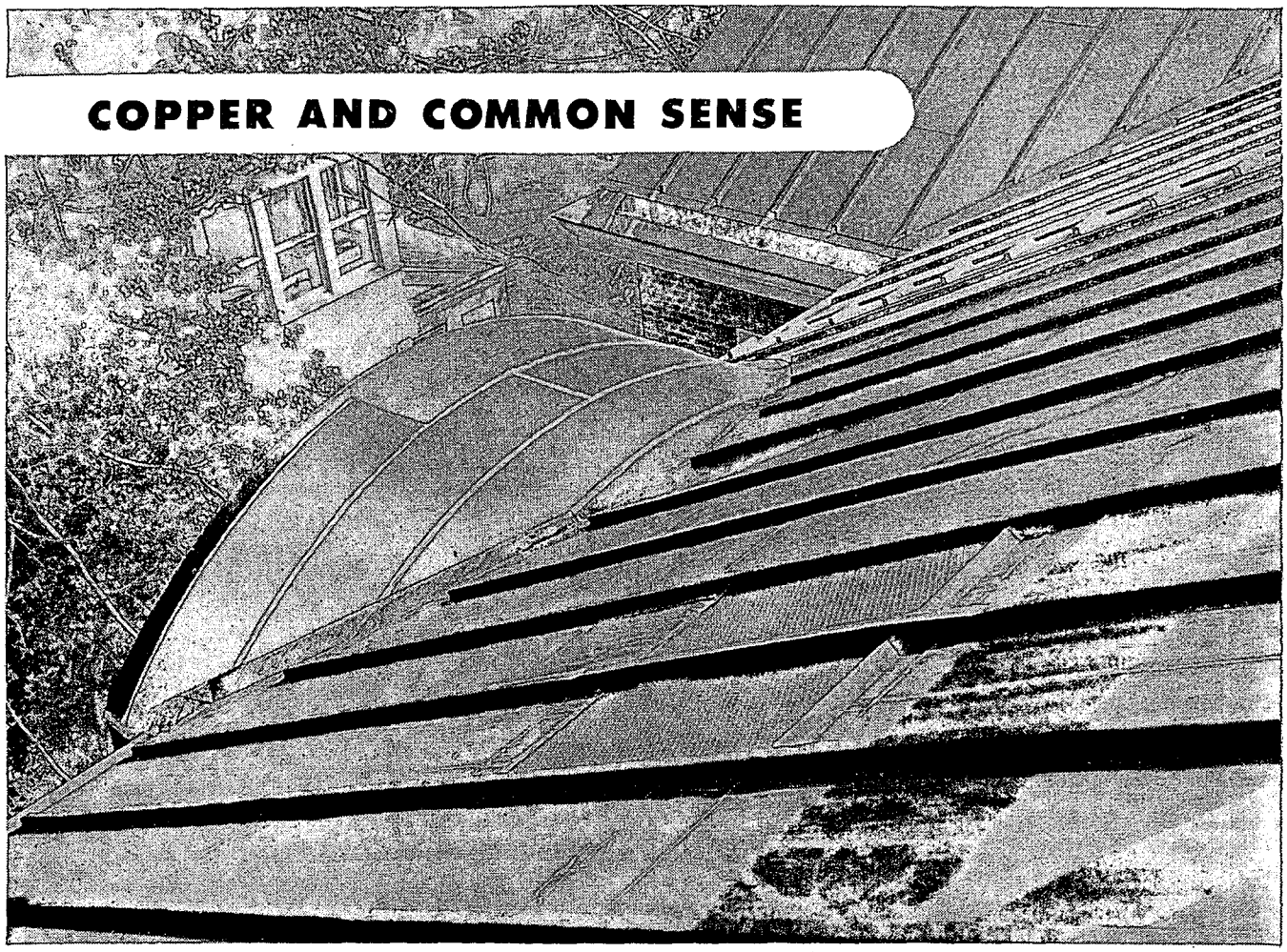

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Manufacturers' Literature

★ 5-153. Kirlin Catalog 48, AIA 31-F, 16-p. illus. catalog on recessed incandescent and fluorescent fixtures, including exit signs, for domestic and commercial use. Descriptions, photos, installation methods, typical specifications, lighting calculations. Kirlin Co.

★ 5-154. Lamps by Raymor, portfolio containing 52 photos of table and floor lamps, loose sheet giving general information and prices, and card with swatches of shade fabrics in various prints, colors, textiles. Richards Morgenthau & Co.

★ 5-155. RLM Standards for Industrial Lighting Units, 36-p. booklet containing detailed specifications for 14 most commonly used incandescent and fluorescent lighting units. Complete data on objectives, purpose, procedure for developing RLM specifications and insuring conformance. RLM Standards Institute.

5-156. Light from Floors, 24-p. illus. booklet on light-reflecting floors to make seeing easier by decreasing dark areas and shadows. Description, advantages, tables on light reflection and vertical illumination, technical data, typical installations, recommendations. Universal Atlas Cement Co.

5-157. Over-All Lighting, AIA 31-F-23 (Cat. 48), 33-p. catalog on fluorescent and incandescent lighting equipment for schools, offices, stores, etc. Photometric data, maintenance, specifications, wattages, color and dimension charts, room index table. F. W. Wakefield Brass Co.

FINISHERS AND PROTECTORS

6-140. Wax-Fortified Finish (Adv. 215), folder describing interior paint incorporating wax, in gloss, semi-gloss, and flat finishes. Color chart indicating percentage of light reflected by each of 34 colors and tints. S. C. Johnson & Son, Inc.

6-141. Sika, AIA 7-A-3, 4-p. folder on quick-setting sealers for pressure leakage. General data, instructions for use, maintenance problems and solutions. Sika Chemical Corp.

★ 6-142. Duramite pH, 6-p. folder on a plastic resin coating material with high resistance to substances that attack normal paints. Advantages, application, types available, general information. Morton Chemical Co.

6-143. Ramuc Mildew-Proof Enamel (Folder 581), folder on an enamel to which fungicide has been added for prevention of mildew on painted surfaces; especially applicable on showers, locker rooms, steam baths, swimming pools, etc. Advantages, specifications. Other related products. Inertol Co., Inc.

INSULATION (THERMAL, ACOUSTIC)

9-105. Armstrong's Industrial Insulations (11-S-48 8-47 A), 28-p. illus. catalog listing line of insulation materials. Technical and general data, methods of installation. Also miscellaneous items, including seam fillers, waterproof cement, etc. Armstrong Cork Co.

SANITARY EQUIPMENT, WATER SUPPLY, DRAINAGE

19-283. Stainless Steel Roof Drainage, AIA 12-i (P.O. 19), 8-p. illus. booklet on drainage system for domestic or commercial buildings. General data, sections, elevations, typical installations, standard specifications. Armco Steel Corp.

19-284. Briggs Beautyware, loose sheet on stainproof porcelain enameled steel plumbing fixtures. Advantages, illustrations. Briggs Mfg. Co.

★ 19-285. Water Heating with L. P. Gas (SA-3408), 15-p. booklet giving full information on factors governing LP gas hot water heating. Estimated water consumption for various services, sizing chart, heating capacities, operating costs, temperatures, fuel consumption, diagrams. Bryant Heater Co.

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19-287. It's What's Below the Surface of a Water Heater that Counts (Form 101), 4-p. folder on automatic storage water heaters for use with LP gas. Advantages. Mission Appliance Corp.

★ 19-288. Wade Drains, AIA 29-C (Cat. W-55), 80-p. illus. catalog describing drains and fittings, grease interceptors, expansion joints, sump pumps, plumbing specialties, etc. Descriptions, drawings, photos, dimensions, weights, selection tables and sizing charts, prices, index. Wade Mfg. Co.

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19-289. Anchor Fences (Form 115A), 4-p. folder on two types of steel fences for residential installation. Description, specifications. Anchor Post Fence Div., Anchor Post Products, Inc.

19-290. Bailey Fluid Meters (Bul. 301-B), 40-p. illus. booklet on fluid meters for steam, liquids, gases. Descriptions, advantages, technical data, photos, diagrams, meter operation chart. Bailey Meter Co.

19-291. How to Solve Communication Problems (Form 235), 8-p. illus. booklet on various models of electronic intercommunication and sound systems. Features, photos, typical installation diagrams. Executone, Inc.

19-292. Kitchen Hints, AIA 35-C-12 (Form K-1116), 16-p. illus. brochure on kitchen designs featuring wood cabinets with new appliance styling. Descriptions, photos, planning ideas, charts. Kitchen Maid Corp.

19-293. Whistles and Signals (Bul. 466-A), 12-p. illus. booklet on use and operation of whistles and signals for industrial and marine service. Engineering and maintenance data, installation and ordering directions. Leslie Co.

19-294. Fine Furniture that Holds, folder on aluminum or wood folding chairs with patented brace and hinge to distribute even stress of weight. Advantages, illustrations. Louis Rastetter & Sons Co.

19-295. Old New Orleans Treillage, 4-p. pamphlet on ornamental treillage manufactured in lightweight aluminum castings assembled within structural steel framing. Scale drawings. Sternberg Mfg. Co.

Two bulletins on centrifugal pumps and steam turbines. Specifications, installation data, ratings, dimensions, photos, diagrams, detailed information. Worthington Pump & Machinery Corp.:

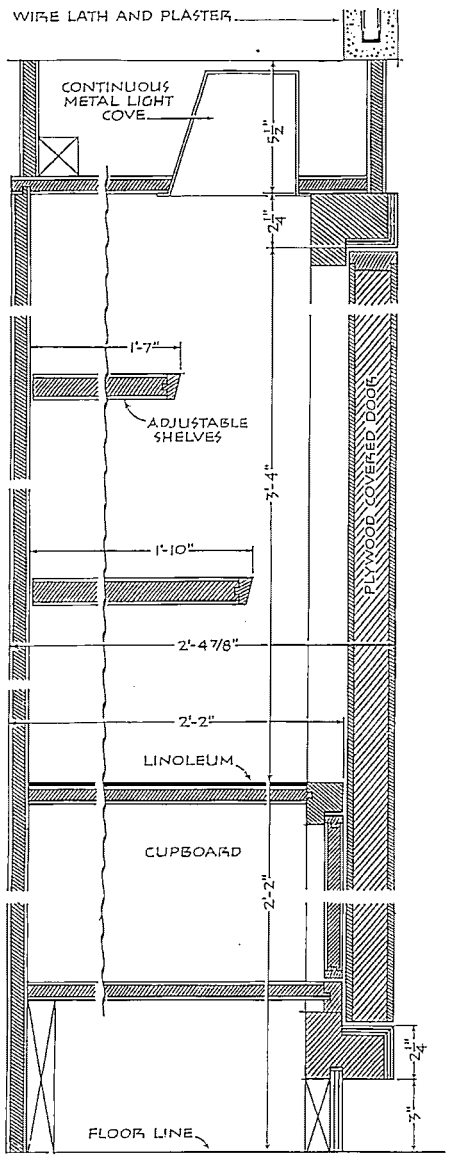
19-296. Centrifugal Pumps (Bul. W-305-BL).

19-297. Multi-Stage Steam Turbines (Bul. 1961).

SURFACING MATERIALS

19-298. Color in Formica, 8-p. illus. booklet on use of laminated plastic sheet in fabrication of table tops and other working surfaces. Advantages, color and wood finish charts. Johnson Plastic Tops, Inc.

19-299. Upson Dubl-Thik Fibre Tile (780-25P-BL-117), 6-p. folder on tile and tile panels for application on bathroom and kitchen walls. Application directions for new or remodeled construction, specifications, molding application. Upson Co.



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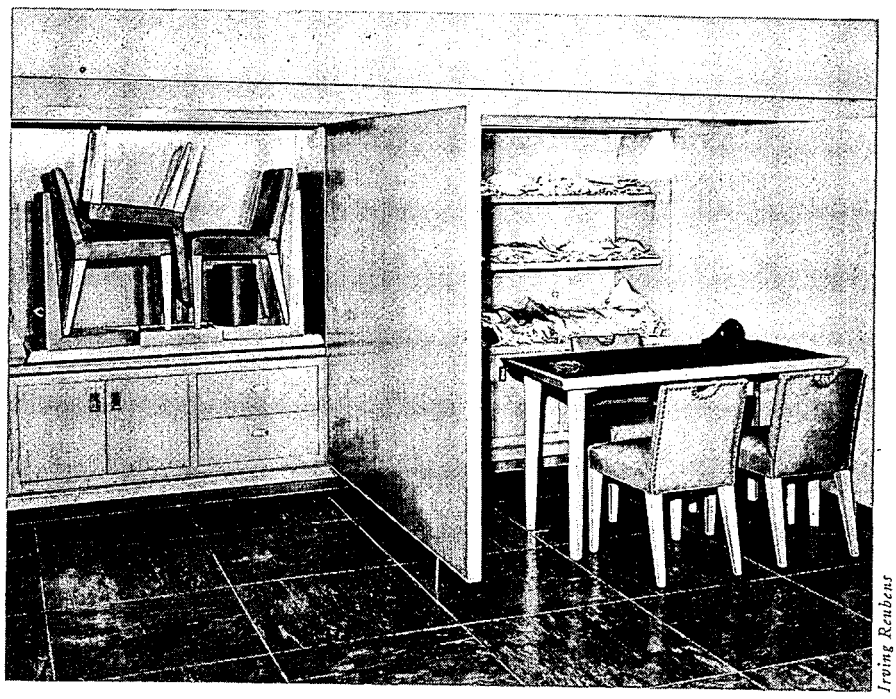

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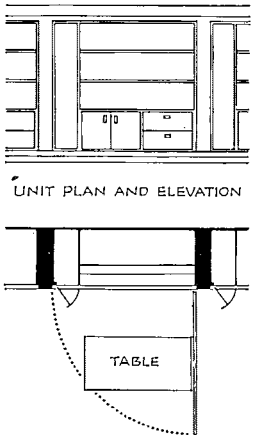
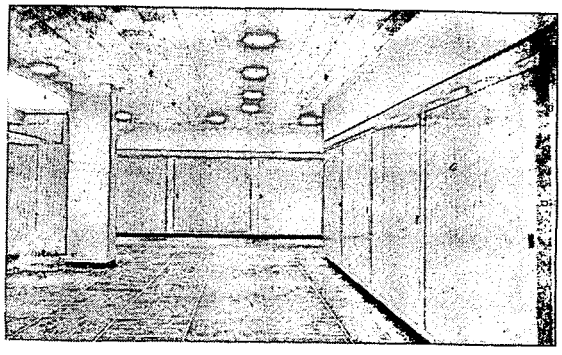
Problem: combination room for meetings and lingerie buyers' cubicles. *Solution:* hinged wall panels, open, form cubicles; closed, conceal stock, furniture.





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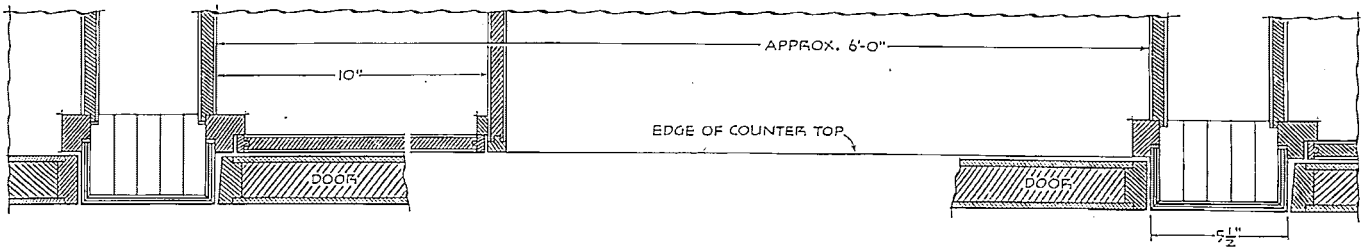

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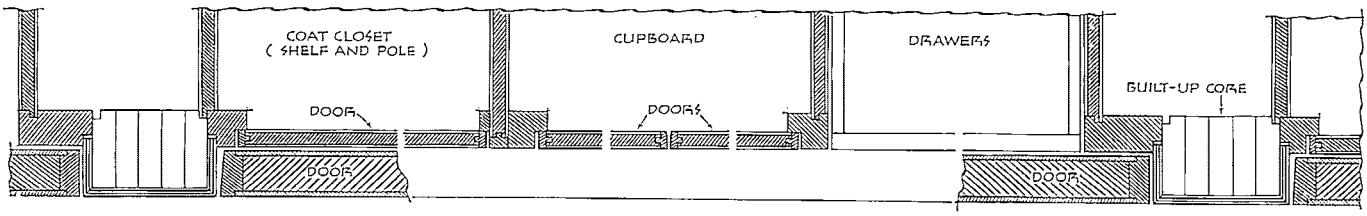

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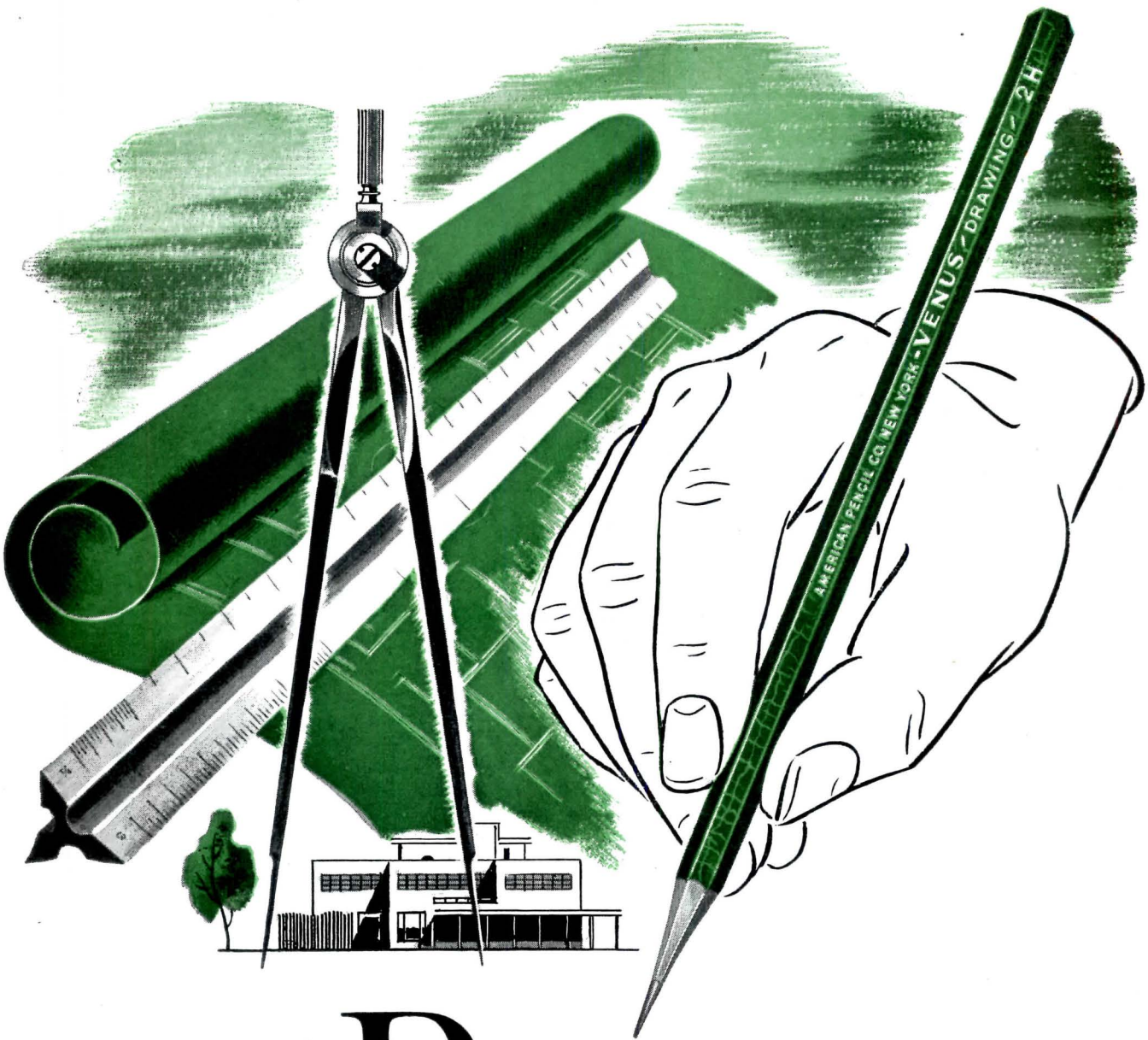


Precision

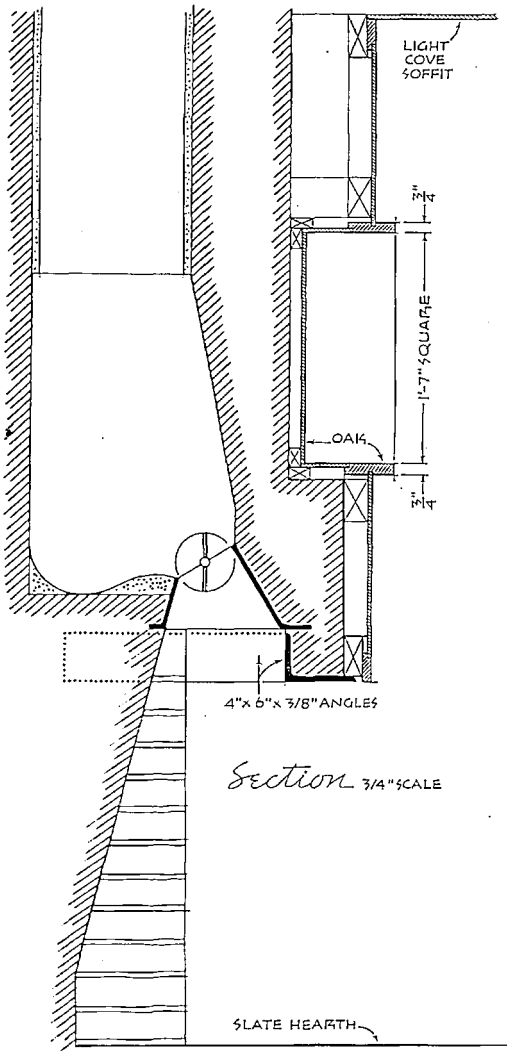
FROM the first design on the drawing board to the manufacture of a machine or the construction of a building, precision tools are essential. Foremost in the design stage is the need for dependable drawing pencils, precision tools in the hands of skilled draftsmen.

VENUS Drawing Pencils are engineered to give you drafting perfection without failure: accurately *graded* to assure uniformity in all 17 degrees... *strong* in performance... *smooth* and *clean* in action.

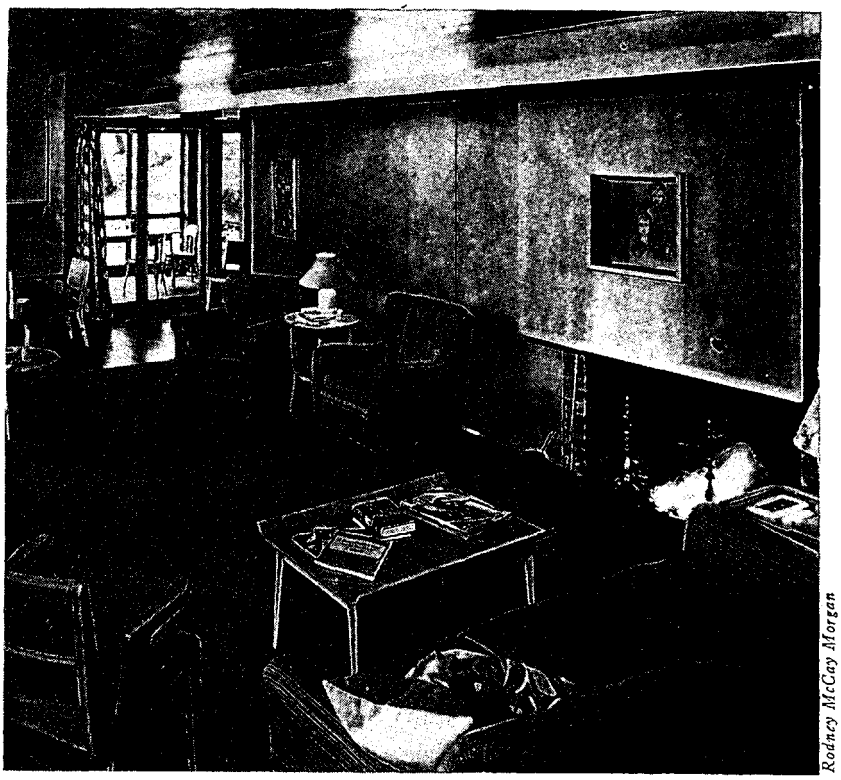
VENUS *DRAWING PENCILS*

AMERICAN LEAD PENCIL COMPANY, HOBOKEN, NEW JERSEY

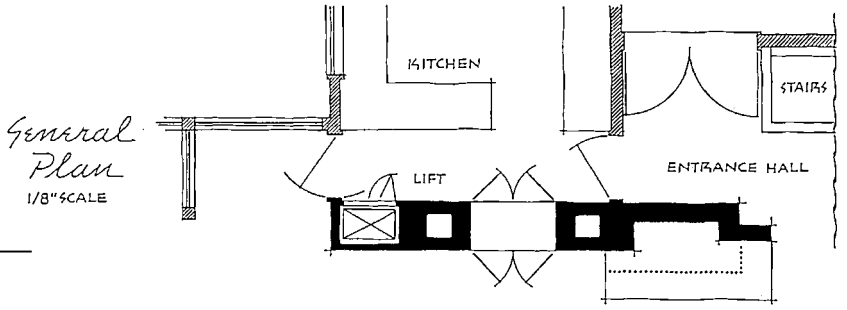
HOUSE: CABINET WALL



Section 3/4" SCALE

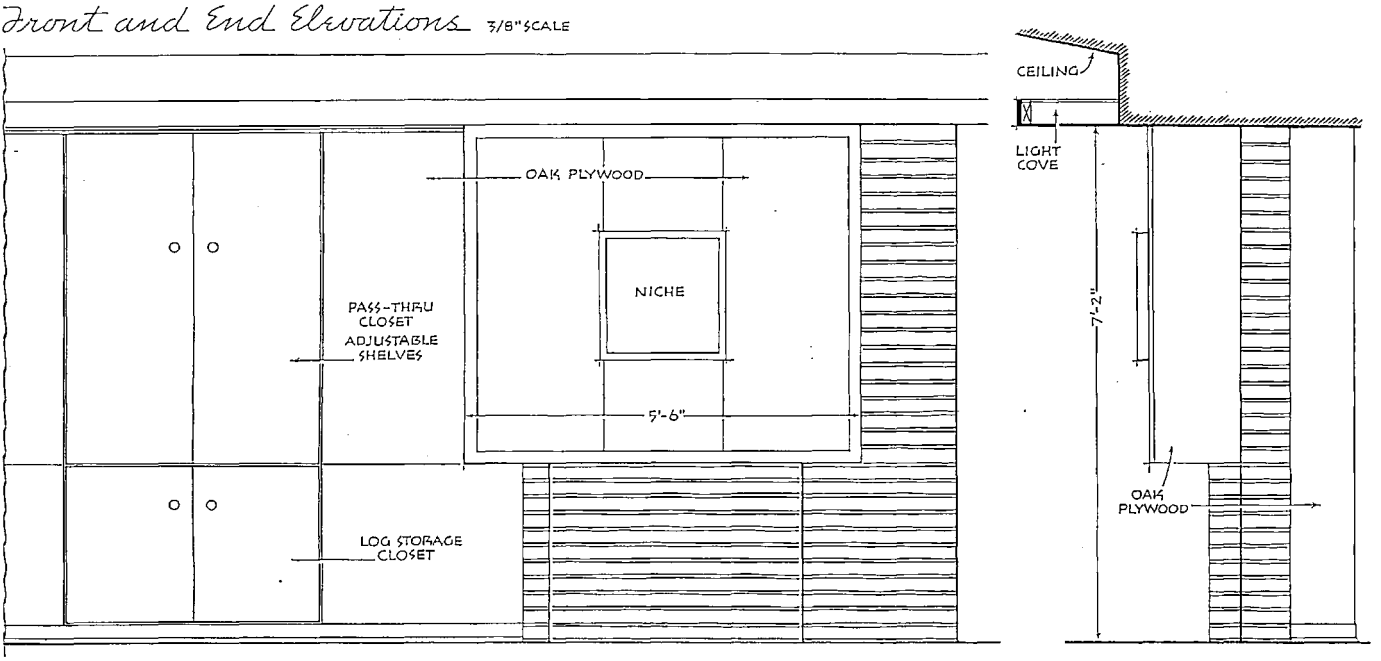


Rodney McCay Morgan



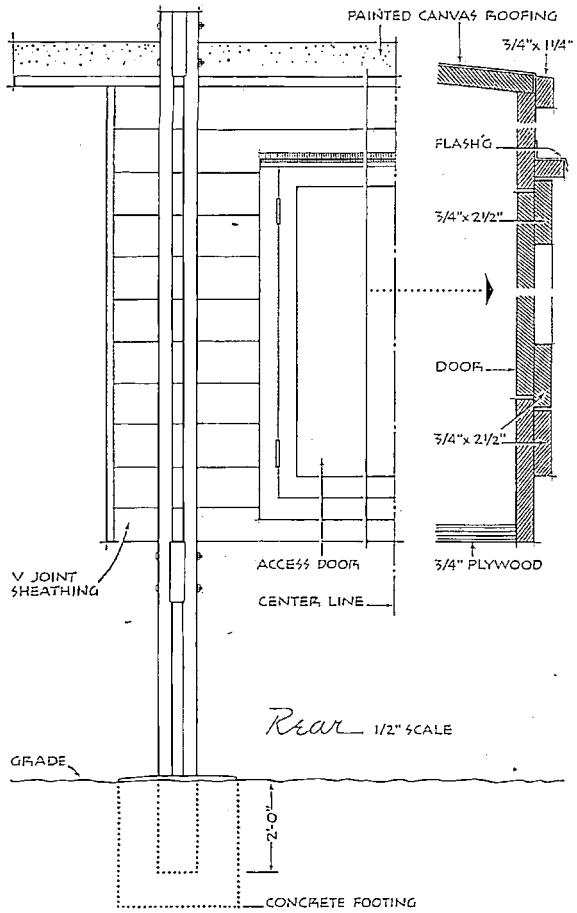
General Plan
1/8" SCALE

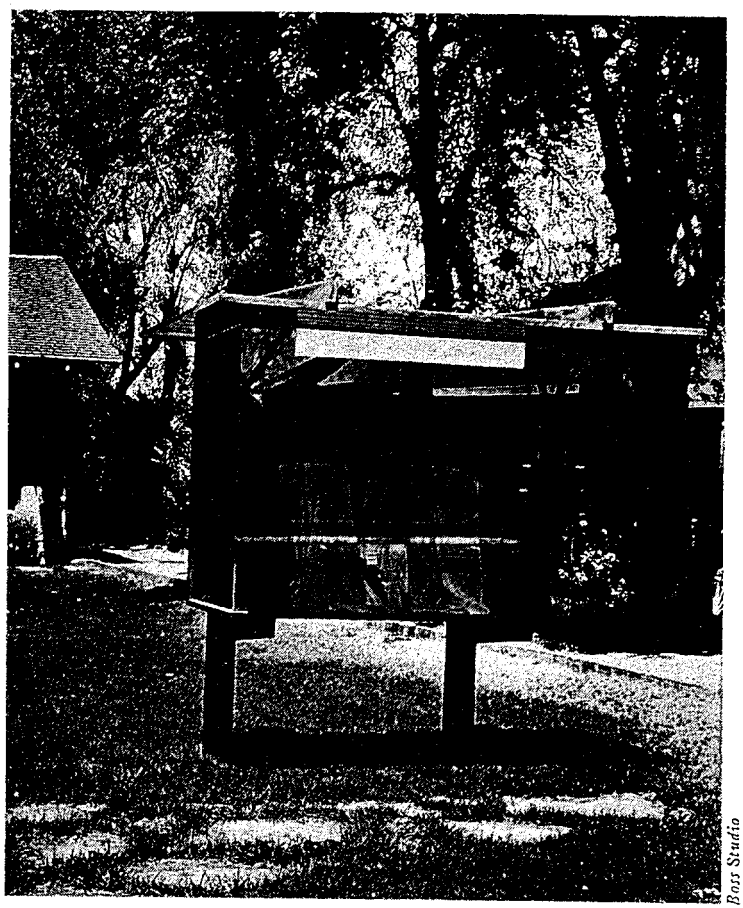
Front and End Elevations 3/8" SCALE



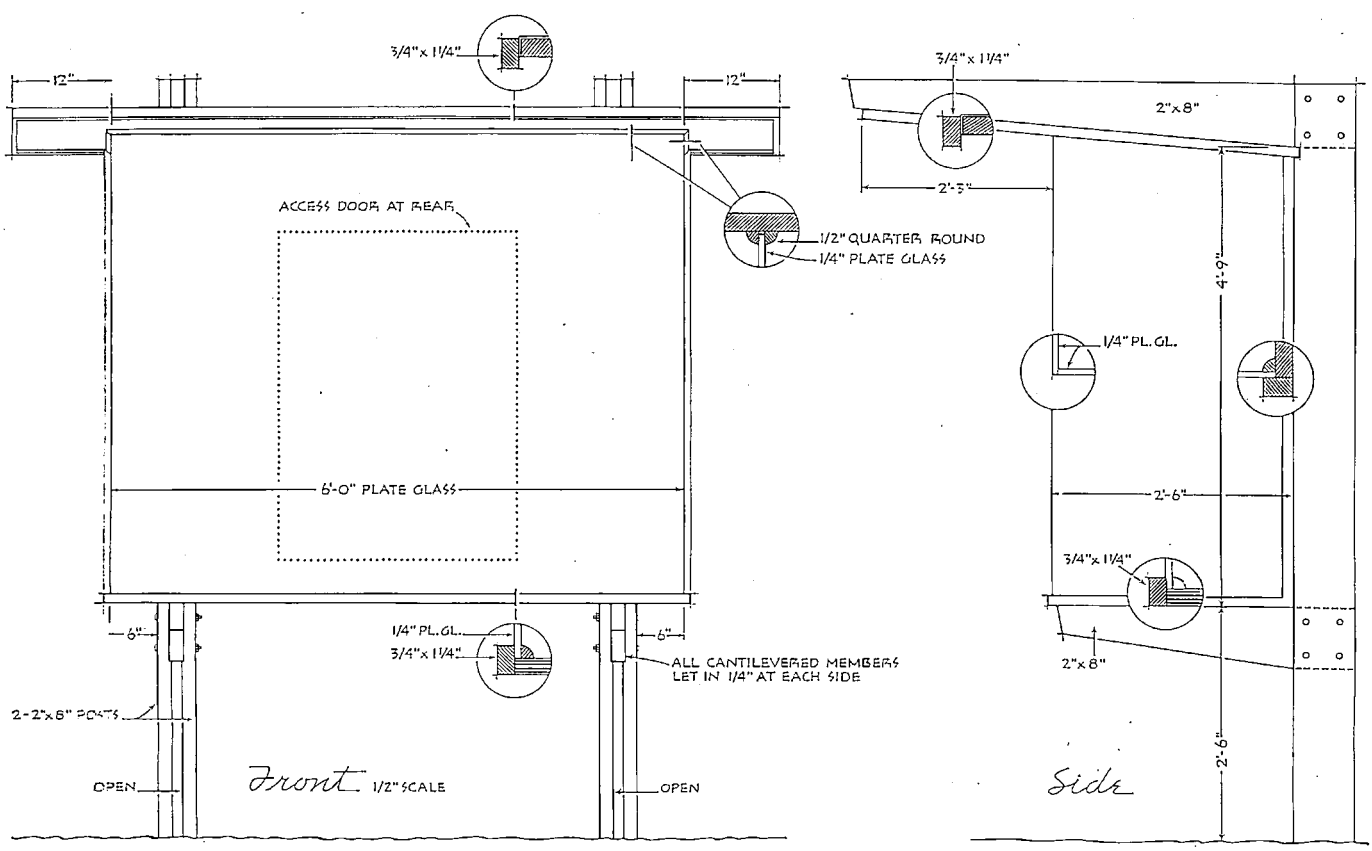
RIC SEVAREID HOUSE
lexandria, Virginia

CHARLES M. GOODMAN
ARCHITECT





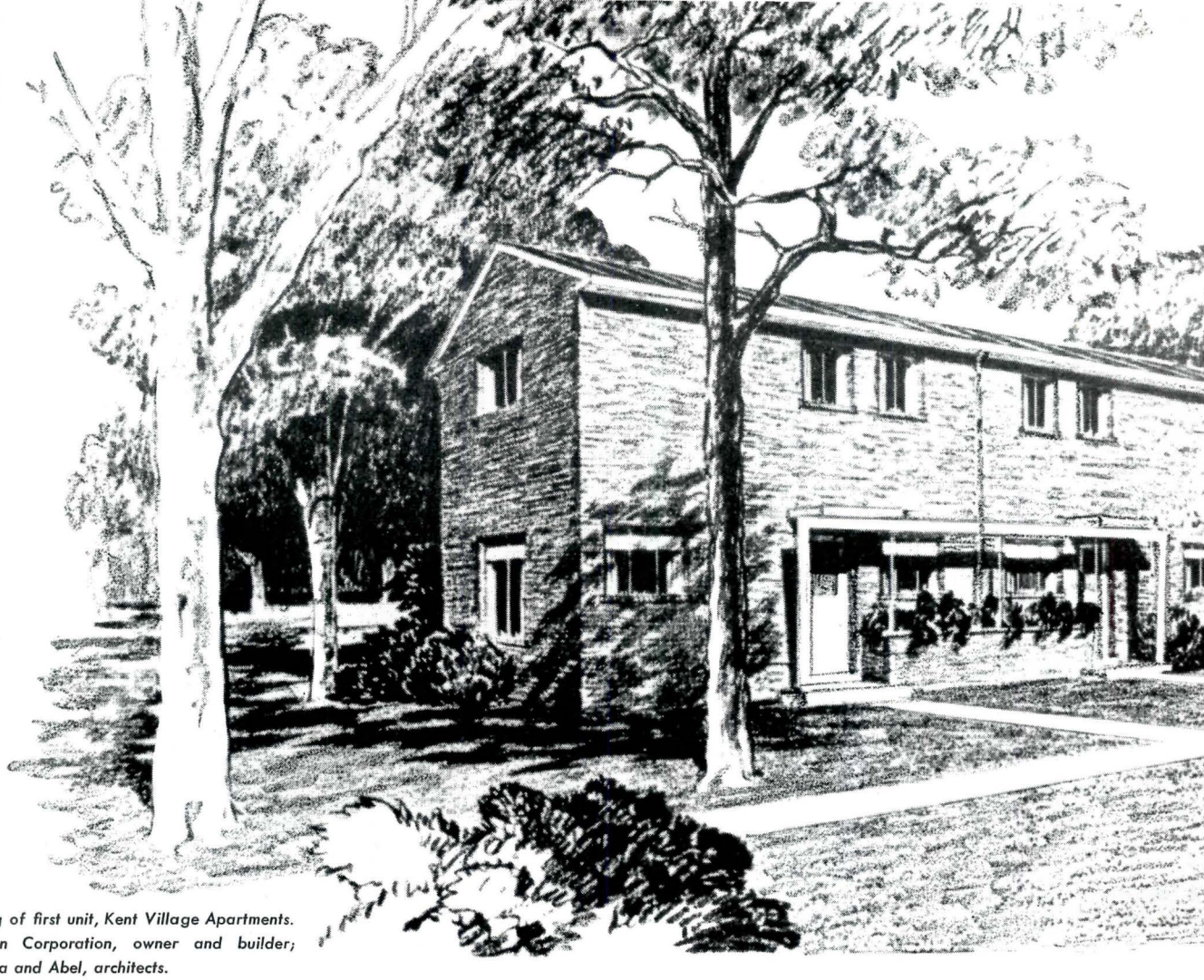
Boss Studio



S. R. HILDE-BRAND TAILOR SHOP

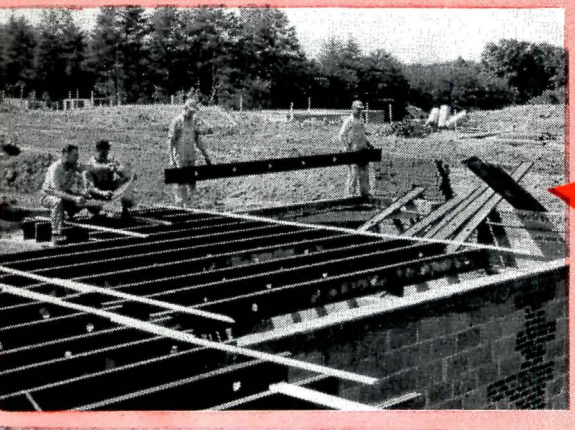
Phoenix, Arizona

RALPH HAVER
ARCHITECT



Architect's rendering of first unit, Kent Village Apartments. Roberts Construction Corporation, owner and builder; Berla and Abel, architects.

Kent Village move

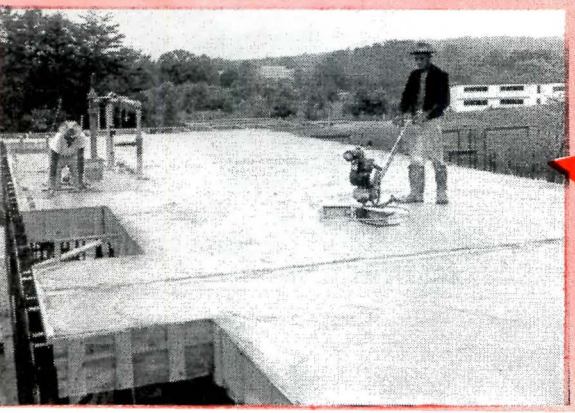


1

First stage of framing construction. Stran-Steel floor joists are placed in position.

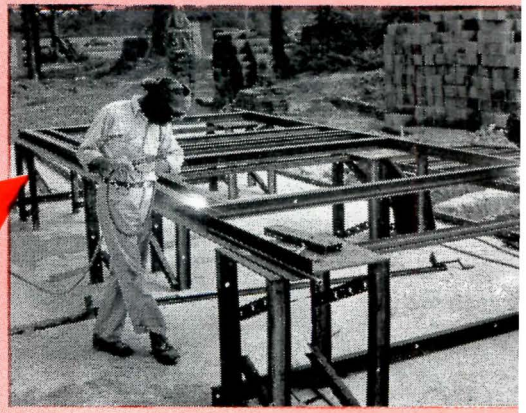
2

Fibre-backed steel mesh is nailed directly to Stran-Steel joists.



3

Two-inch concrete floor has been poured and finishing operations are under way.



4

Accurately-sized Stran-Steel studs are now assembled into wall sections.

Construction is proceeding without a hitch on the first two blocks of the $14,000,000 Kent Village garden-type apartment project now being erected in Prince Georges County, Maryland, near Washington, D. C.

Roberts Construction Corporation, owner and builder, ascribes much of this gratifying progress to Stran-Steel framing. This precision framing is providing greater speed, economy and ease of construction than would have been possible with any other framing material.

Nailable Stran-Steel framing permits economical dry-wall construction with plaster board. Its permanent rigidity eliminates the possibility of subsequent wall movement from warping and shrinking. And an incombustible Stran-Steel framework adds substantially to the fire-safety of the completed building.

If you're planning a building of any type—residential, commercial or industrial—it will pay you to investigate the advantages of Stran-Steel framing. Ask your local Stran-Steel dealer for full information, or write for his name and address.

YOU NAIL TO STRAN STEEL FRAMING

GREAT LAKES STEEL CORPORATION

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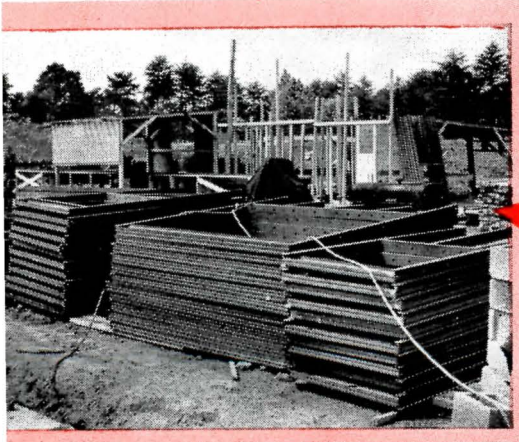
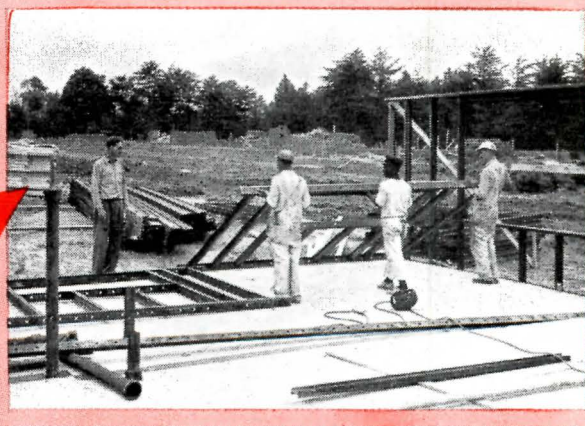
head with STRAN-STEEL FRAMING



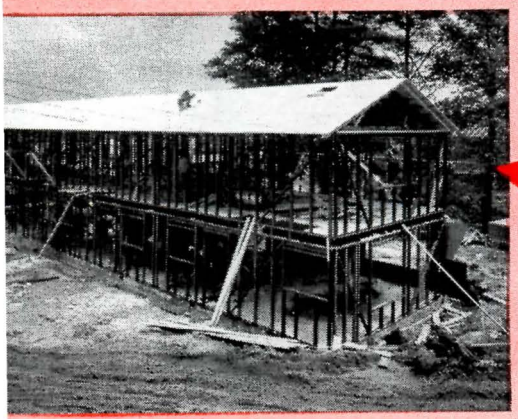
5

Completed wall panels ready for erection.



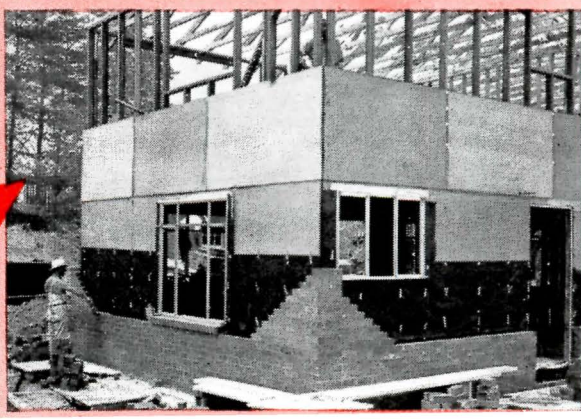
6

Raising a precision Stran-Steel wall panel into position.



7

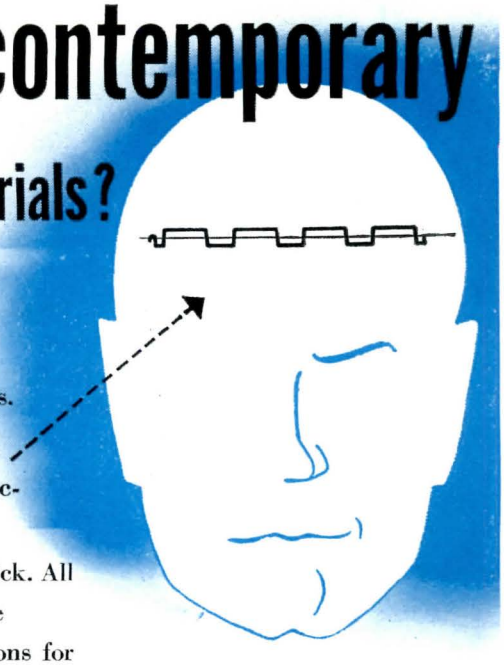
Completed exterior framework of first unit ready for close-in.



8

Close-in, wallboard is nailed directly to Stran-Steel framework.

Do you think contemporary deserve contemporary materials?



Each era has expressed its thinking in its own materials.

Steel is the distinctive material of this era.

Steel sheet formed like this is in its strongest structural shape.

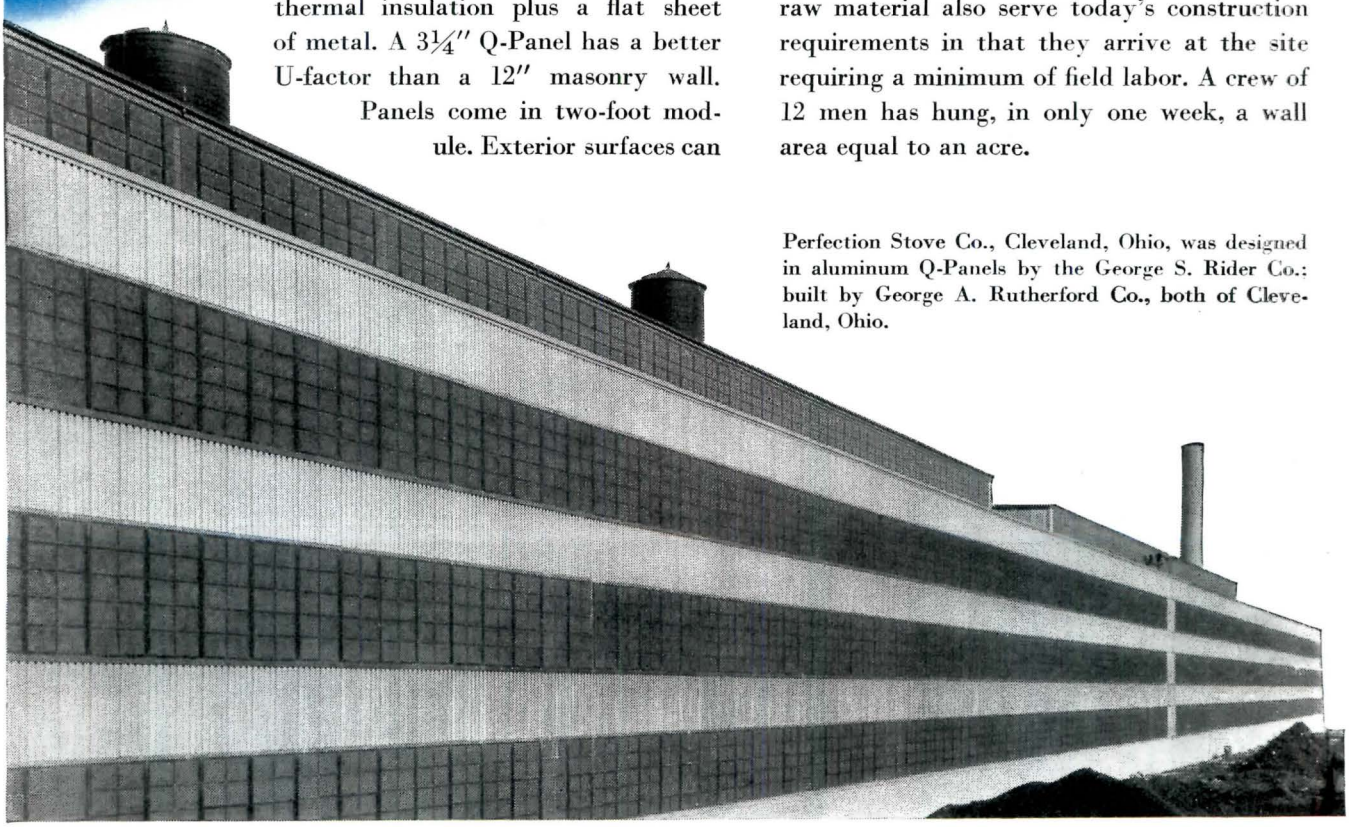
This is the shape of a Robertson Q-Unit. Q is for quick. All Robertson Q-products have *Speed* of erection. They are modern building materials. They meet today's conditions for they reduce to a minimum the uncertainties of field erection.

Q-PANEL

A Q-Panel is fundamentally a Q-Unit engineered to meet the modern idea that walls should be hung, like curtains, now that steel framework has assumed the loadbearing function.

Q-Panel uses a steel Q-Unit plus thermal insulation plus a flat sheet of metal. A 3¼″ Q-Panel has a better U-factor than a 12″ masonry wall. Panels come in two-foot module. Exterior surfaces can be flat or fluted or combinations of both, achieving contrasts in light and shadow. Exteriors can be metal coated steel, stainless or aluminum.

Q-Panels are a medium for modern appearance, capable of great variation. Q-Panels as raw material also serve today's construction requirements in that they arrive at the site requiring a minimum of field labor. A crew of 12 men has hung, in only one week, a wall area equal to an acre.

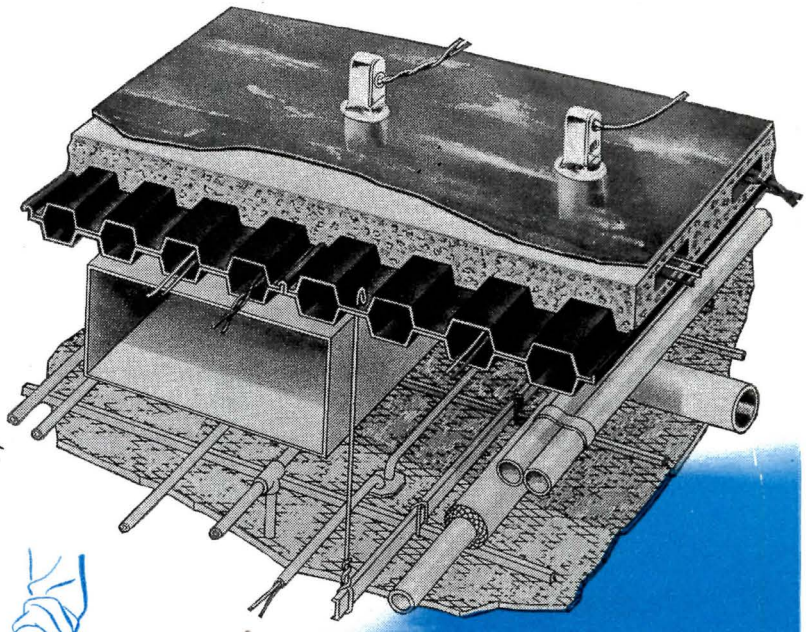


Perfection Stove Co., Cleveland, Ohio, was designed in aluminum Q-Panels by the George S. Rider Co.: built by George A. Rutherford Co., both of Cleveland, Ohio.

thoughts

QUICK-IN

QUICK-CHANGE



Q-FLOOR

Q-Floor is steel subfloor. It is a Q-Unit engineered to be a floor in this era when floors should be living, working arteries; not merely Stone-age ledges for load carrying.

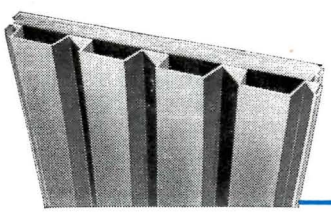
Q-Floor is engineered with a raceway crossing the steel cells in such manner that wires for any conceivable electrical service can be pulled to the exact spot where an outlet is needed. This permits an outlet on any exposed six-inch area of the entire floor. To establish an outlet an electrician merely drills a small hole. The job can be completed, literally, in minutes, without the mess of trenches. Q-Floors save an enormous amount of drafting work because outlets and partitions can be located after tenants move in. By treating floor as a facility, a Q-Floor building is provided with permanently flexible floor layouts, protected from electrical obsolescence for as long as it stands. To see Q-Floor Fittings, visit any General Electric construction materials distributor's.

Q-Floor reduces construction time 20 to 30%. Two men can lay 32 sq. ft. in half a minute. Construction is dry, noncombustible. No preset inserts required. No other floor materials offer you such flexibility of design.

Robertson Q-Panels and Q-Floors are contemporary building materials. They do everything earlier materials did and they satisfy those extra demands peculiar to today's buildings.

For general information call a Robertson representative. For literature, write

H. H. ROBERTSON CO.



Close-up of Q-Panel

2405 Farmers Bank Building
Pittsburgh 22, Pennsylvania

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World-Wide Building Service

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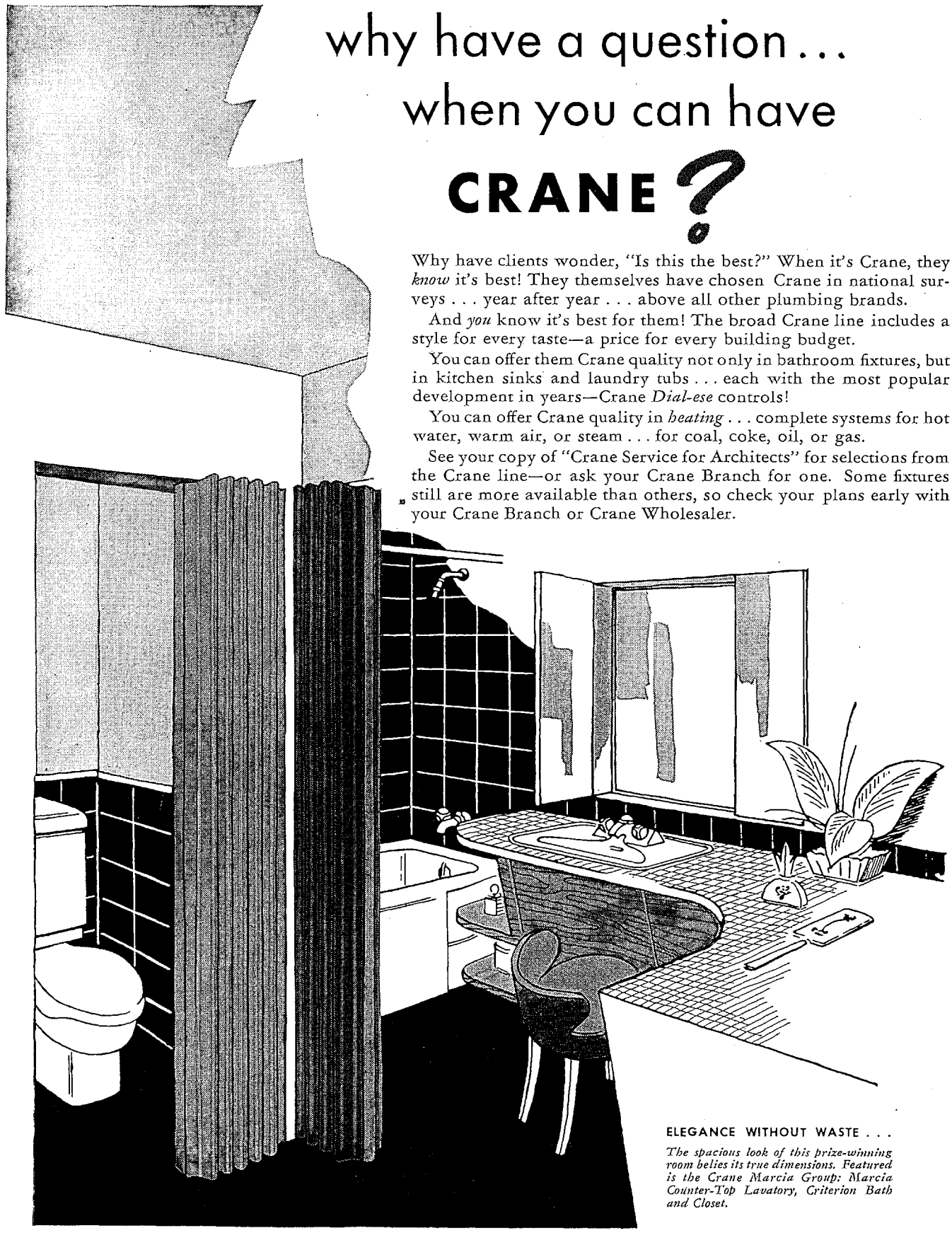
Why have clients wonder, "Is this the best?" When it's Crane, they *know* it's best! They themselves have chosen Crane in national surveys . . . year after year . . . above all other plumbing brands.

And *you* know it's best for them! The broad Crane line includes a style for every taste—a price for every building budget.

You can offer them Crane quality not only in bathroom fixtures, but in kitchen sinks and laundry tubs . . . each with the most popular development in years—Crane *Dial-ese* controls!

You can offer Crane quality in *heating* . . . complete systems for hot water, warm air, or steam . . . for coal, coke, oil, or gas.

See your copy of "Crane Service for Architects" for selections from the Crane line—or ask your Crane Branch for one. Some fixtures still are more available than others, so check your plans early with your Crane Branch or Crane Wholesaler.



ELEGANCE WITHOUT WASTE . . .

The spacious look of this prize-winning room belies its true dimensions. Featured is the Crane Marcia Group: Marcia Counter-Top Lavatory, Criterion Bath and Closet.

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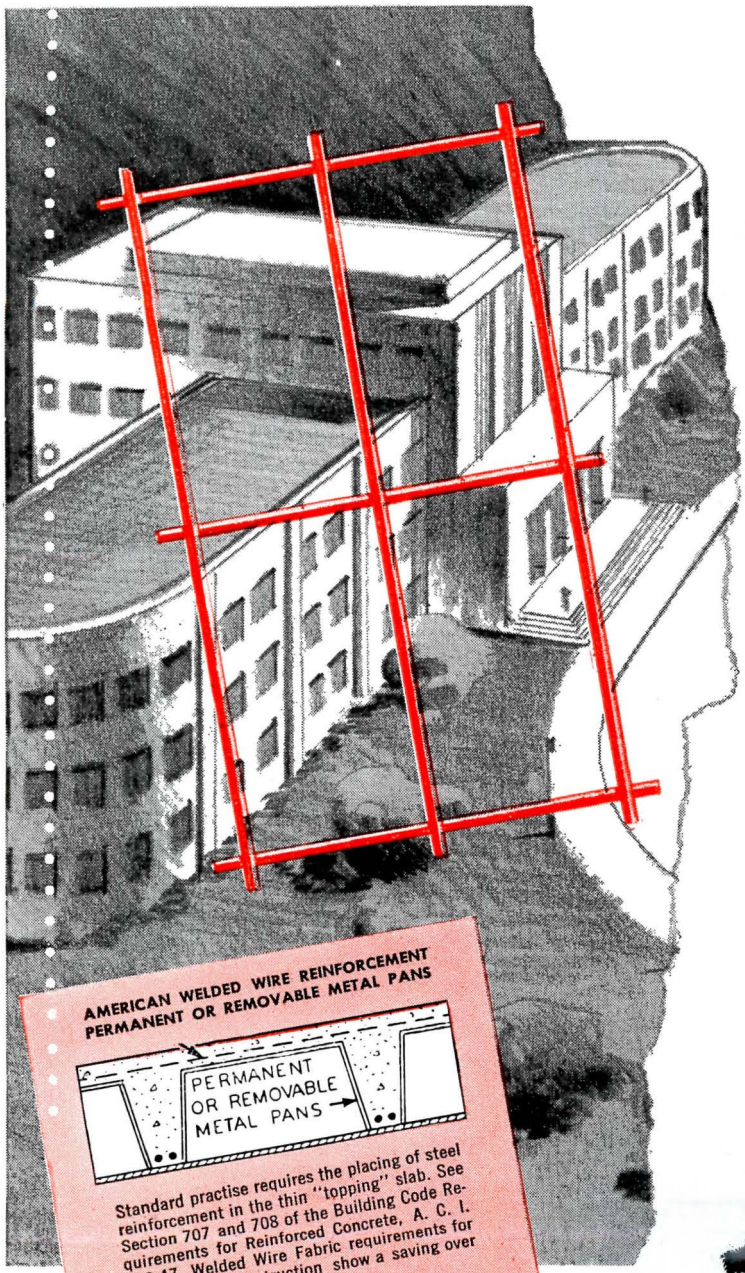
specify American Welded Wire Fabric



YOU can save material cost and construction time by reinforcing "ribbed floor" or "pan and joist" construction with American Welded Wire Fabric.

This type of construction — widely used throughout the country in office, hotel, apartment and school buildings — consists of closely spaced, comparatively shallow joists, supporting a relatively thin top slab, as shown in the accompanying sketch.

U·S·S American Welded Wire Fabric is the ideal reinforcement for this type of construction. Its many closely spaced, cold drawn, high yield-point wires, with welded cross members, distribute any unusual concentrated load that might occur between joists. Welded Wire Fabric can be quickly and easily installed, for the wide rolls cover many panels with flat, continuous reinforcement.

Stock styles of American Welded Wire Fabric provide efficient and economical reinforcement for a wide variety of concrete structures. When you specify Wire Fabric reinforcement you can find out just the proper style and weight you can use to best advantage by getting in touch with the nearest American Welded Wire Fabric sales office.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO
PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

Every type of concrete construction needs

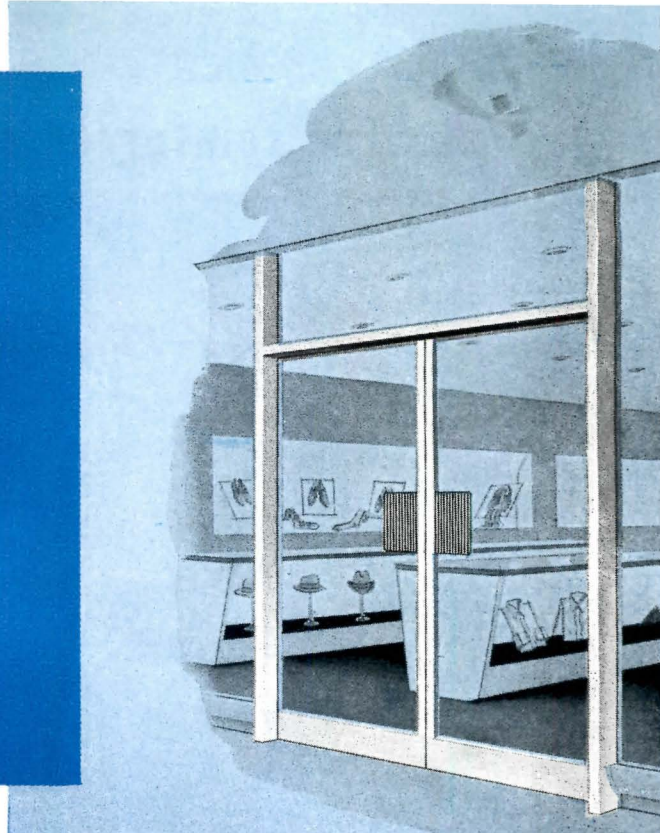
AMERICAN WELDED WIRE FABRIC
reinforcement

USS

UNITED STATES STEEL

Outstanding New Materials

that meet modern architectural needs

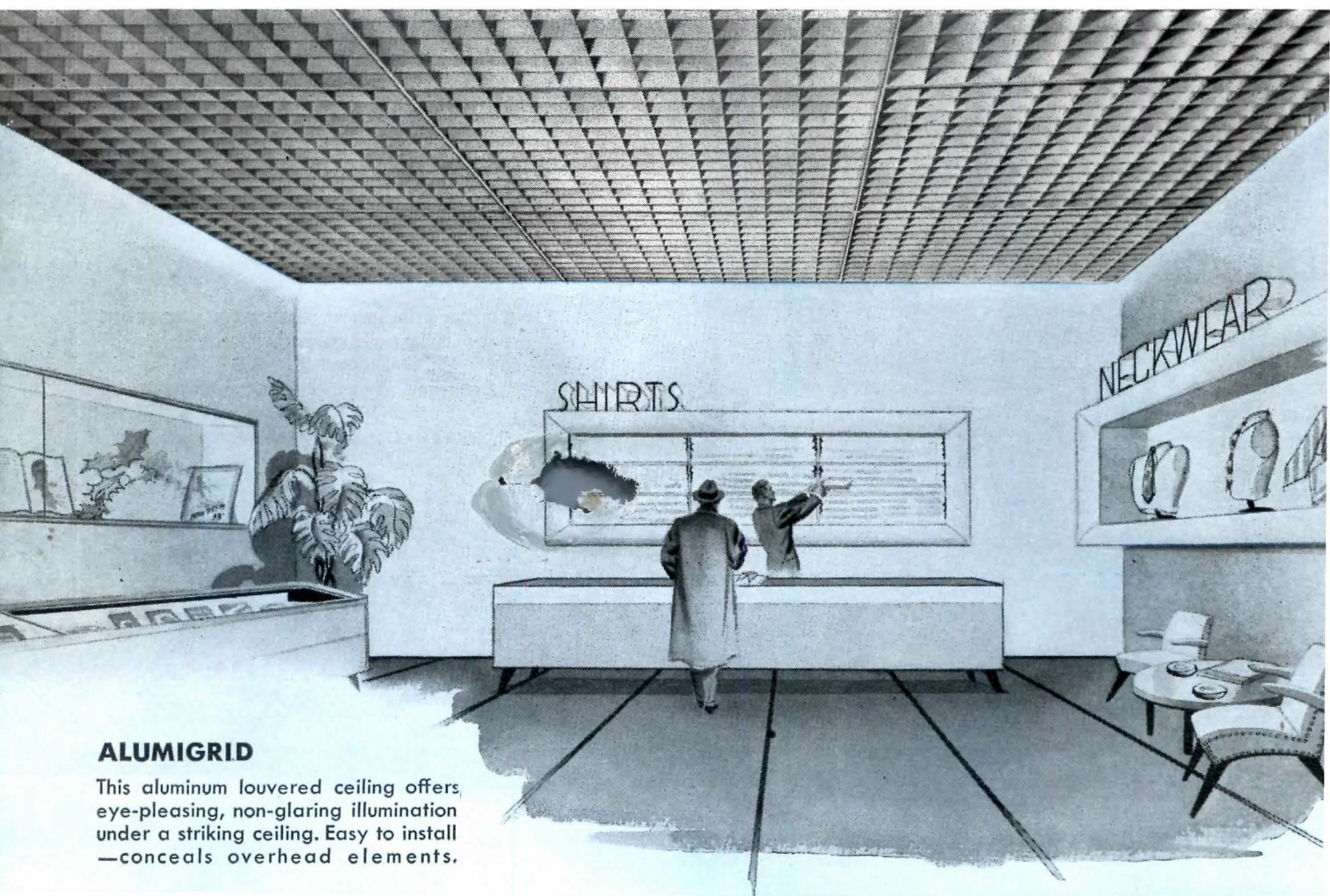


Kawneer precision-made assemblies are designed and engineered to fulfill the highest standards of modern building.

Shown here are four striking new product developments. United with the famous Kawneer Line of Store Front Materials, they offer you the widest variety of architectural metals available today.

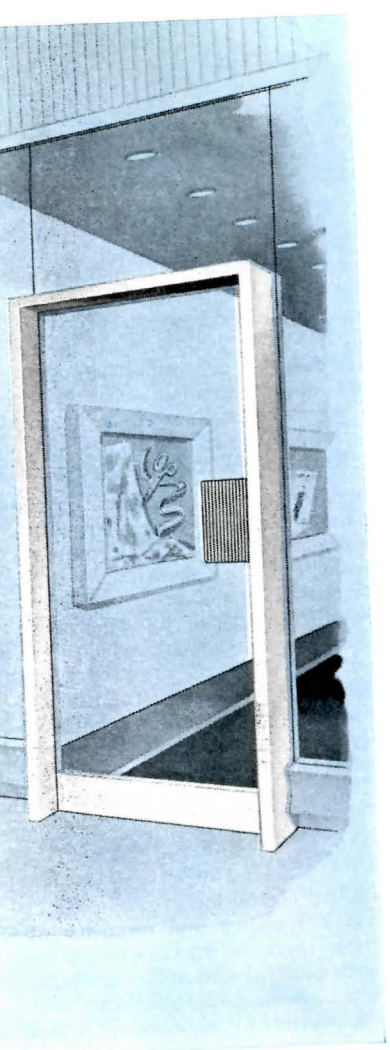
STOCK ENTRANCES

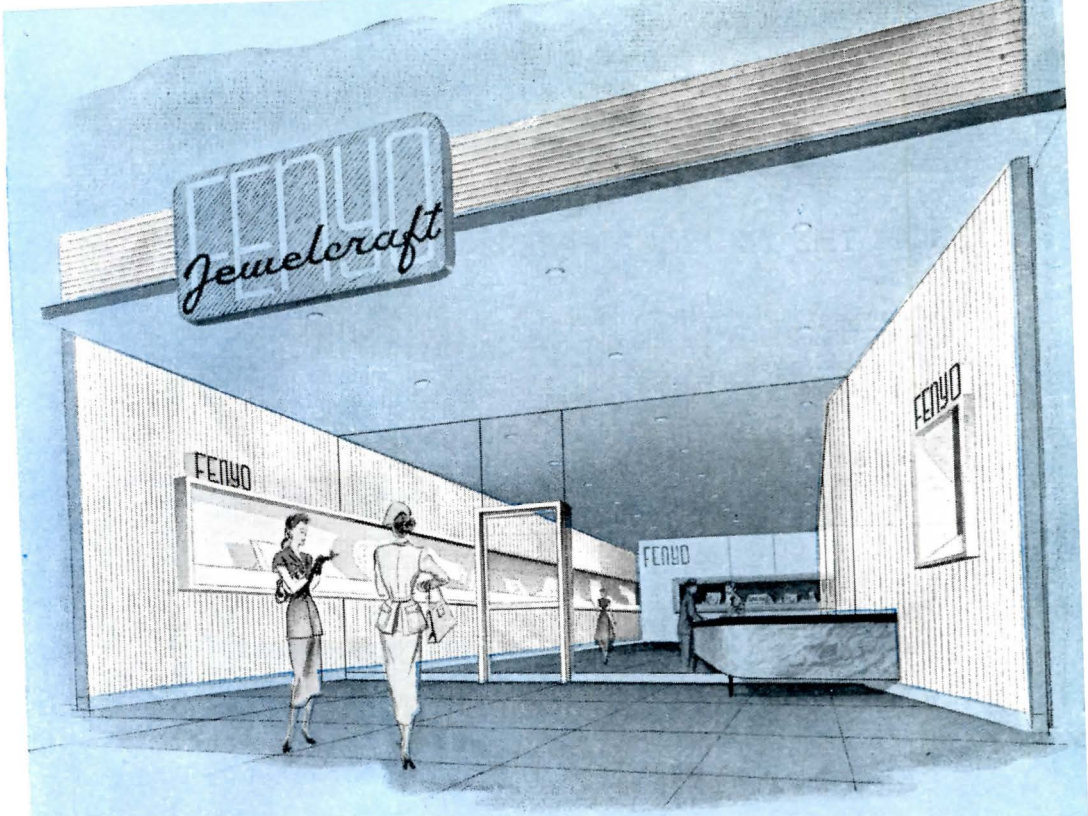
Now you can obtain immediate shipment on stock units. Kawneer offers the most complete line of aluminum entrances in the industry.



ALUMIGRID

This aluminum louvered ceiling offers eye-pleasing, non-glaring illumination under a striking ceiling. Easy to install —conceals overhead elements.





ZOURITE

The modern aluminum facing material in 4 colors! Green, brown, or black porcelain enamel baked on easy-to-handle aluminum. Also in Alumilite finish.

ALUMINUM AWNINGS

Here is the smooth-operating roll-type awning you've been waiting for. It's striking in appearance—easy to operate—sturdy and durable.

THE Kawneer COMPANY

Write for information and construction details today. 113 N. Front St., Niles, Mich., or 2524 8th St., Berkeley, Calif.

FROM THE TECHNICAL PRESS

By JOHN RANNELLS

American Standard Practice for School Lighting. Illuminating Engineering, *51 Madison Ave., New York 10, N. Y. September 1948.*

When the Illuminating Engineering Society comes up with a recommended practice it represents the stage of "progress of the art" which all the interested members can agree upon or consent to, and has the weight of this very active professional organization behind it. The present publication of the Society carries the additional weight of "American Standard," having been approved by the A-23 Sectional Committee on School Lighting. This committee was sponsored by the I. E. S. and the A. I. A. in 1923 and has representatives from a diversified group of interested organizations (American Medical Association, electric light and power group, U. S. Public Health Service, National Safety Council, etc.).

The School Lighting Committee of the I. E. S. has been four years thrashing out this standard, which is a complete remake of the last publication in 1938. It is a remarkably well organized document, readily grasped by any user, whether designer, school official, or custodian. Its primary purpose is to establish criteria of good illumination. *"Illumination is good when it is suitable in quality and quantity for (1) creating general environmental brightness agreeable and beneficial to the user, and (2) permitting a high degree of efficiency in seeing the necessary task with a minimum of effort."*

After detailed discussion of school tasks in relation to quality and quantity of illumination there is ample consideration of both natural and artificial lighting and means of obtaining the best results. A section on economic factors (costs and maintenance) concludes the "Practice" proper but a series of appendices gives background material which is no less informative.

The big advance in lighting in the past few years has to do with "visual environment" which considers brightness patterns rather than mere footcandles on the working surface. Numerous illustrations of well-lighted-schoolrooms point up the various means of obtaining good seeing conditions while an appendix has a thorough discussion of the various factors involved: glare, visual field, brightness ratios, illumination levels, etc.

The trend in illuminating standards has been toward higher footcandle levels, the current recommended practice being about double the 1938 recommendations. There has been much experimental work done to establish scientific bases for these recommendations. These bases are seriously questioned in an article by Miles A. Tinker in the same issue of *Illuminating Engineering*, while the general status of research in the field is reviewed by M. E. Bitterman. These articles and the ensuing discussions make a strange contrast to the confident authority of the Standard Practice. Their inclusion in the same issue with the "Practice" provides a rich sample of the active relationship between theory and practice that keeps the work of this Society so alive. The extent of the literature is attested by some 67 references in the general bibliography,

(Continued on page 108)

for better fluorescent lighting

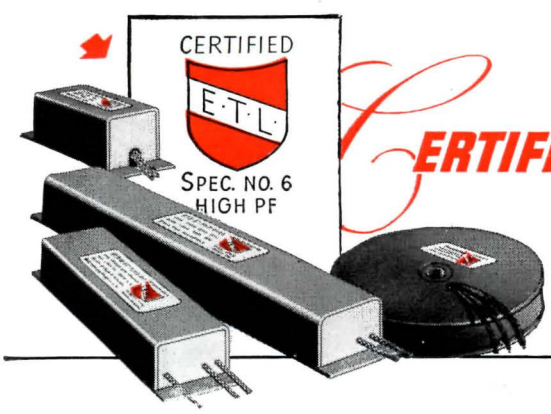
DEMAND *Certified Ballasts*

• When you demand and insist on Certified Ballasts in fluorescent lighting fixtures—you're protecting your own best interests—as well as the users'.

Everyone benefits by using Certified Ballasts because they assure . . .

Full lamp life — **Rated light output**
Quiet operation — **Dependable performance for fixture life**

Strict specifications control the building of every Certified Ballast—Electrical Testing Laboratories, Inc., an impartial judge, then checks and tests them. You're surer of satisfaction with Certified Ballasts.



Certified BALLAST MANUFACTURERS

Makers of Certified Ballasts for Fluorescent Lighting

2116 KEITH BLDG., CLEVELAND 15, OHIO

(Continued from page 106)

and more than twice that many in the two articles with their discussions.

Controversies over the experimental bases for evaluating seeing conditions wax very warm at times. Great difficulties stand in the way of setting up *any* scientific basis for so complex an activity as seeing and experimenters who have done a great deal of work are prone to defend it. Meanwhile the practice goes on improving through the establishment of criteria that have resulted from the intelligent attention given to the subject, whether all the "scientific" work stands up or not. The present controversy on the need for higher levels of illumination is a hot one. If you want to get into a study of the "science of seeing" this will start you off with a bang!

The Hospital Building. *The American Institute of Architects, Department of Education and Research, The Octagon, Washington 6, D. C., 1948. 71 pp., $1.00 to A.I.A. members; $2.00 to nonmembers.*

The material in this booklet includes papers read at the 1947 A.I.A. Convention Seminar on Hospitals, and the papers, data, and bibliography which comprised the A.I.A. Bulletin's Building Type Reference Guide No. 2. The ensemble makes a very complete reference work, which should be added to the hospital architect's library.

T.H.C.

BOOKS

SHOPS AND STORES

Morris Ketchum, Jr., Reinhold Publishing Corp., 330 W. 42nd St., New York 18, N. Y. 307 pp., illus. $10.00

Here at last is a functional approach to store planning, construction, and layout—an approach based on a real knowledge of the fundamental activities and operations of a retail store.

In *Shops and Stores* Morris Ketchum, Jr., has caught the essential reasoning of a merchant. In simple, easy-to-understand language the author discloses the formula for effective store planning. Successively he treats the various factors involved in designing and constructing a store: plans, equipment, materials and structure, store fronts, typical shops and stores, and shopping environment. He arranges his topics in a sequence that is necessary to produce an efficient and pleasing shop.

The discussion of the planning stage is especially helpful. Too often the factors of traffic control and store layout have been talked about without a clear understanding of basic principles. Ketchum removes them from the realm of the mysterious and places them in the realm of the practical. For instance, a much-talked-about development in traffic control is the "free flow" design. This book makes clear the basic reasoning behind the design. A short excerpt will illustrate Ketchum's thinking:

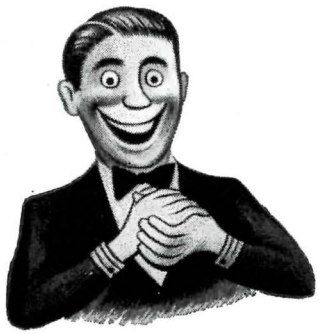
"By contrast, the *free-flow* plan retains all the advantages and few of the disadvantages of the conventional grid. In a *free-flow* plan, it becomes possible to better integrate the varying requirements of sales and circulation, to allow for the flexible rearrangement of sales departments, and to create variety and interest throughout the sales area.

"Customer traffic in a *free-flow* plan is drawn through the store along more

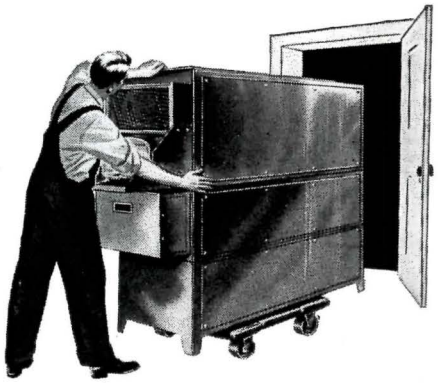
(Continued on page 110)

HE knocked down walls

HE practically rebuilt the equipment on the spot



HE saved time . . . cut costs with a G-E CENTRAL PLANT AIR CONDITIONER



Move a General Electric Central Plant Air Conditioner right through a 30" door. Smaller sizes can go through completely assembled . . . larger sizes in sections. Install it exactly where you want it. It's quick and easy because this G-E equipment is compact . . . and because its prematched sections can be arranged *28 different ways!*

This "building block" design applies to both the new vertical and horizontal models which cover a cooling range from .8 to 58 tons . . . and a heating range from 28,100 to 1,310,000 Btu's per hour. A complete line of heating coils is available.

The G-E Central Plant Air Conditioner is light in weight but rigid and sturdy due to its welded sheet-steel construction. That means it's easy to handle, inexpensive to ship.

The free booklet offered in the coupon below will give you further details . . . or contact your G-E air conditioning representative for full information.

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Better Air Conditioning

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Air Conditioning Dept., Sect. A85012
Bloomfield, N. J.

Gentlemen: Please send me your free booklet on the new General Electric Central Plant Air Conditioners.

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The companies listed below manufacture doors according to specifications and standards of the Fir Door Institute as promulgated by the U. S. Department of Commerce, which conform to the grading rules and inspection service of the Institute. All doors, produced by these manufacturers which bear official F. D. I. seals, are backed and guaranteed as to quality by the Fir Door Institute.

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—*as Certified by F. D. I. Inspection*

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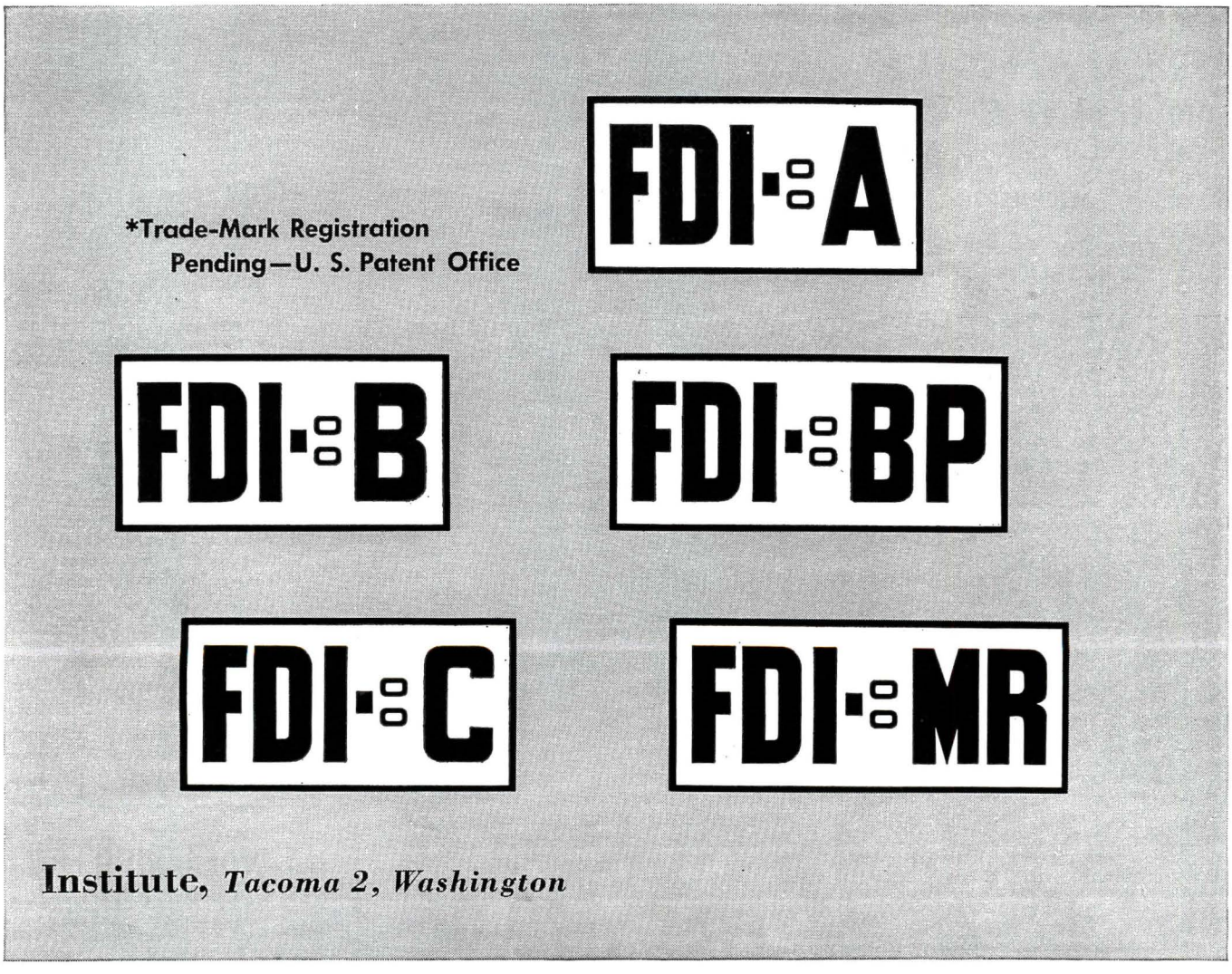

ARCHITECTURE — NOT STYLE

(Continued from page 122)

ly to utilitarian types and inhibit architectural display." But the *Review* remarks that "before long representational buildings, those in which the community calls for some kind of monumental gesture, will be required again. . . ." This fallacy is based on a lack of understanding of the peculiar nature of our times—and particularly the development of democracy. The monuments of our time, we can hope, will be such buildings as hospitals and houses and schools, for the use of all our people—not palaces and temples and triumphal arches for emperors or aristocrats or fascist gangs. Johnson pokes fun at the early American houses of those "who were poor and couldn't afford to build high ceilings and large halls." But, he adds, "As soon as their fears began to dissolve and their wealth to increase, the New England settlers immediately returned to the orderly, formal and *architectural* expressions being developed in England." He asks, "Who remembers what the Corinthian cottage was like, and who, for that matter, particularly cares today?" Well, aside from the fact that some do care how ordinary people have lived through the ages, the distinction between our time and the time of the Greek empire is that today the home of the common citizen is a much more important architectural expression than a monument to a ruler would be. Let those few architects and critics who want to worry about monumentality hie off somewhere and do so, but for heaven's sake, let's the rest of us get some houses and some hospitals built. That accomplishment would be enough of a monument for the architecture of our time.

Again we say, LET'S STOP TALKING NONSENSE AND GET DOWN TO WORK. We have new materials that we don't yet fully understand, and we're learning more every day about the properties and the behavior of the old ones. The scientists in other fields are outstripping us—physiologists are learning about human behavior faster than the architects are learning how to accommodate its vagaries. In every design field—industrial, residential, commercial, institutional, or whatever—the social needs and the functions of our time have been barely studied, to say nothing of being solved.

Let's have more and more modern architecture—architecture of our time. And let's analyze it and criticize it as it comes—on the basis of its contribution to better living in our troubled world. But please, please, let's not pull it apart because it is or isn't one style or another, monumental or not, cottagy or internationally, or what have you. If each problem is really studied and decently solved by a devoted group of designers, future historians will find a name for it. Now let's get down to work.

Architect:
Stevens & Sipple,
Orlando, Florida

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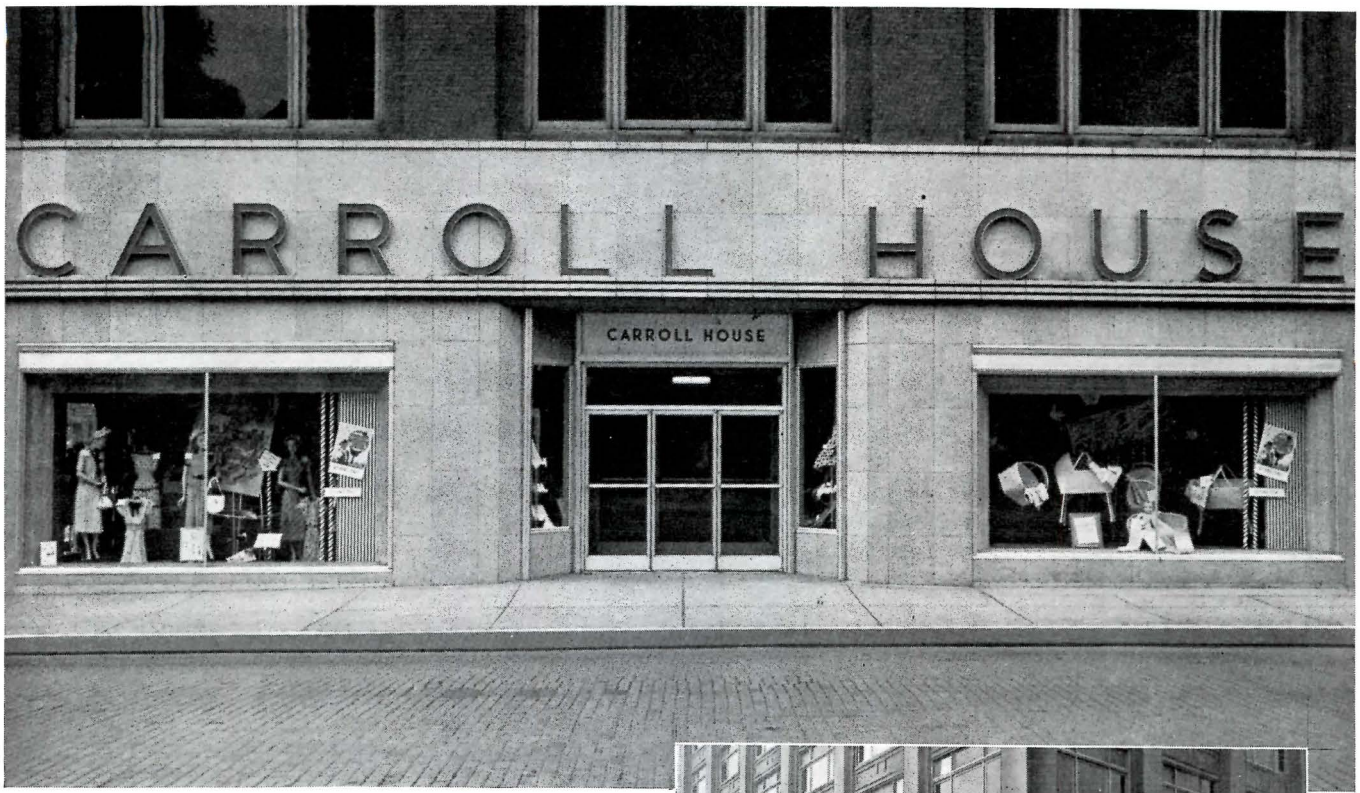

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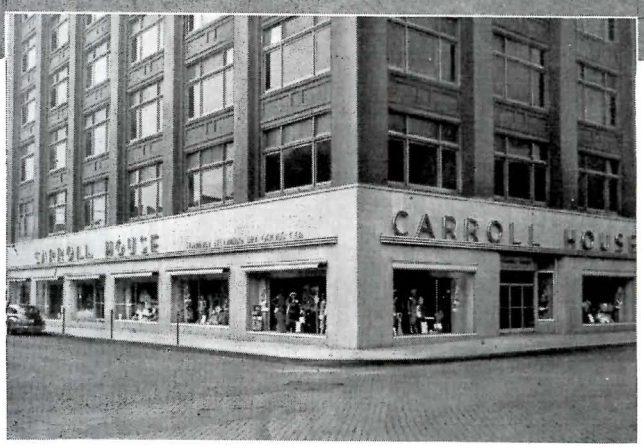

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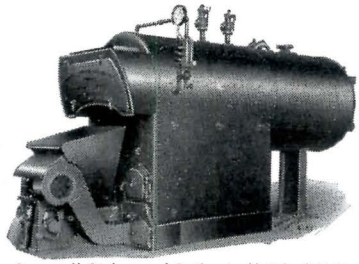

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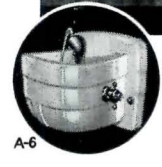

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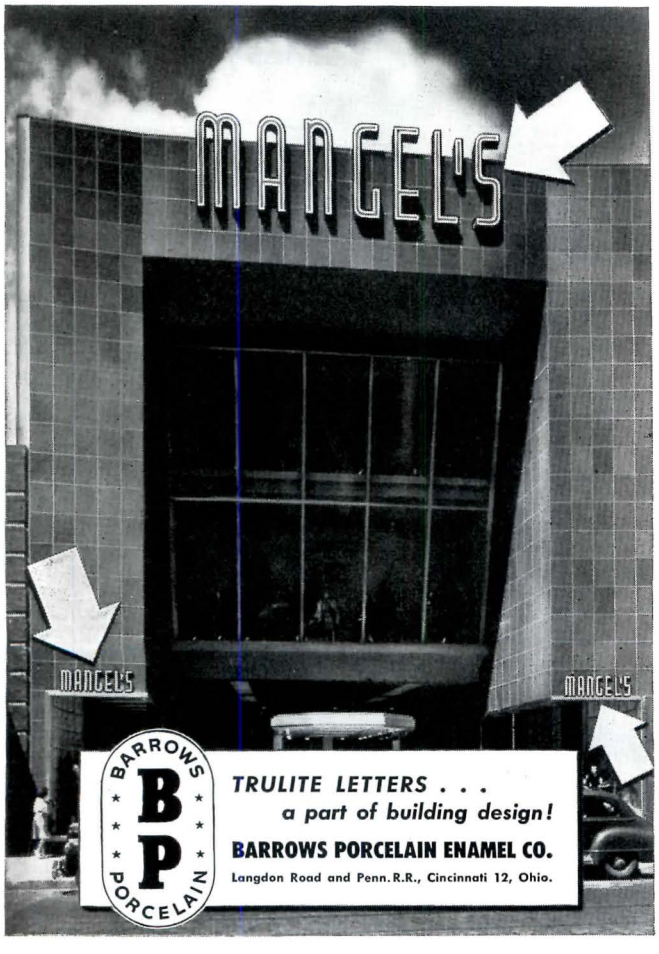

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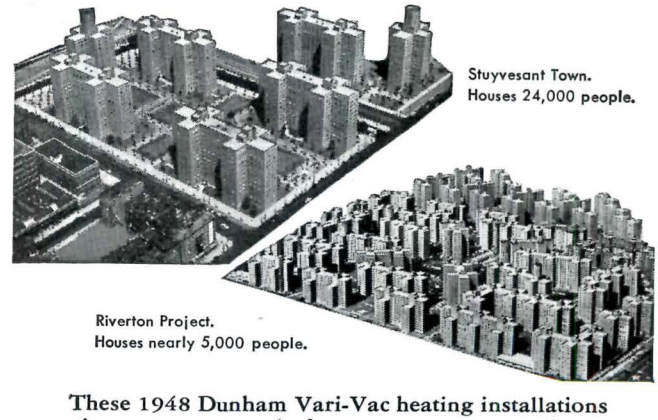

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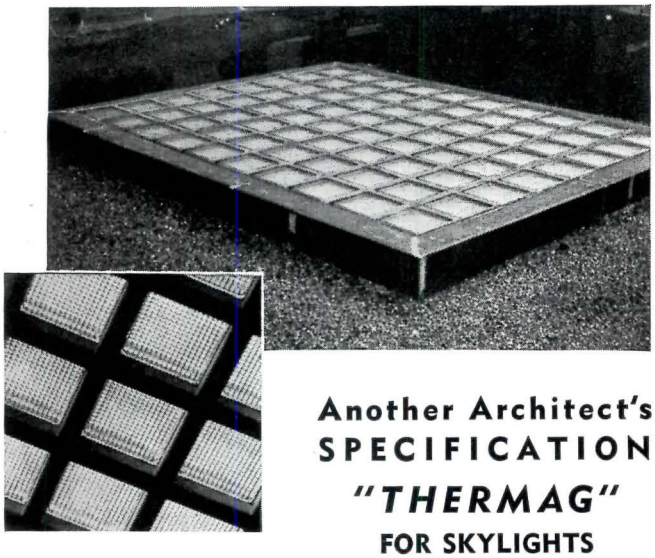

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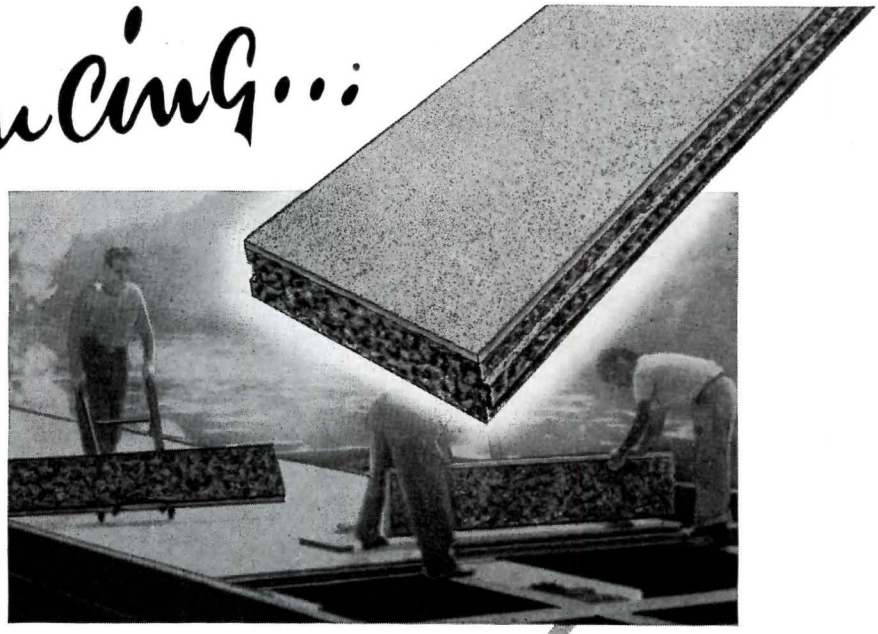

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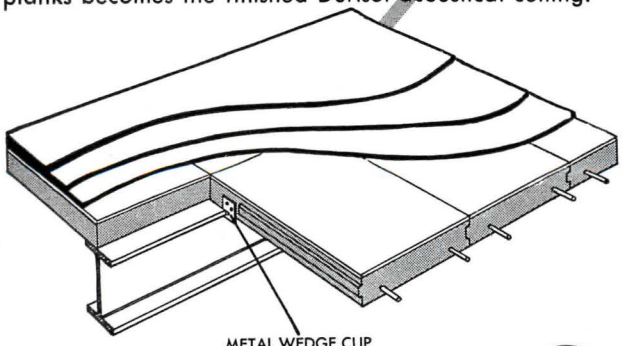

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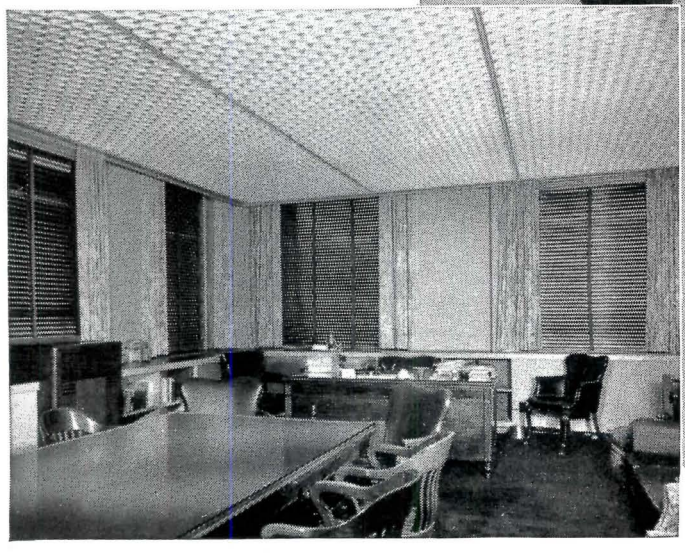

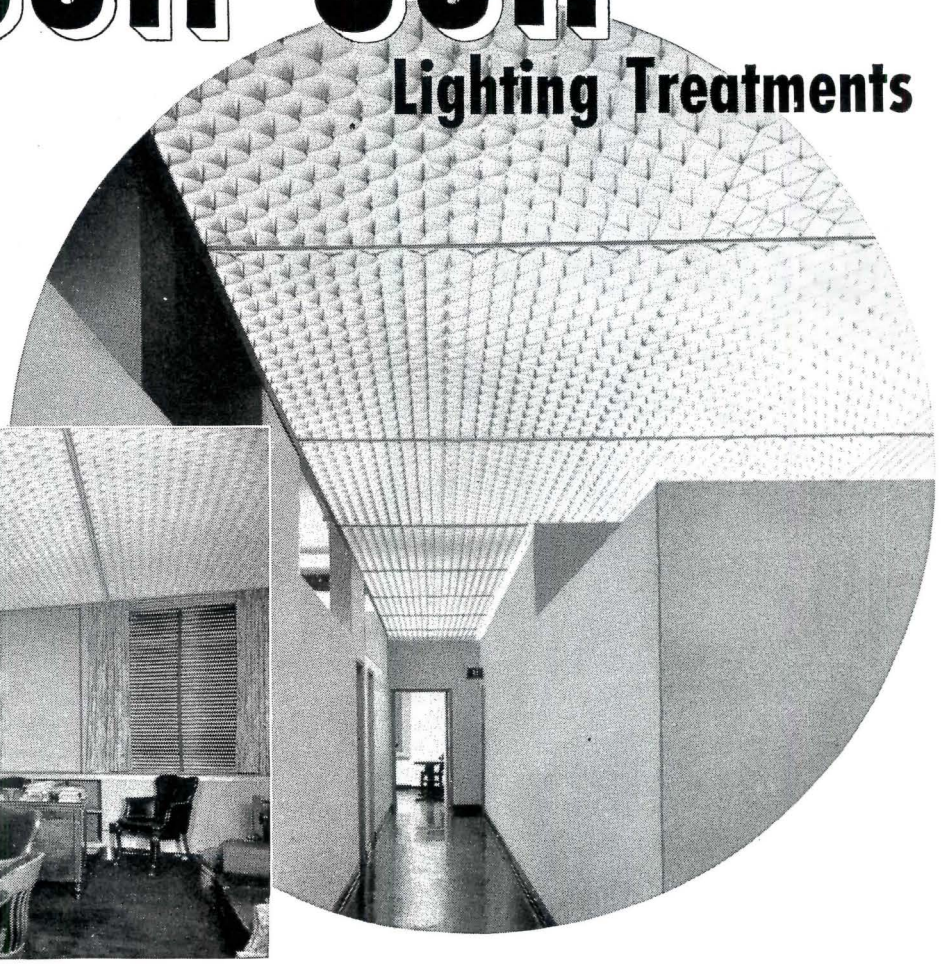

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This beautiful overall ceiling louvering is easy to install. The light-weight sturdy hanging mechanism developed for Cell-Ceil not only speeds up application but provides such easy access for relamping and cleaning that continued satisfaction to the client is assured.

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The Federal engineering staff will gladly advise on any installation problem. Our technical bulletin on installation techniques is also available, address Dept. CC-12.

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Product Report . . . . December, 1948

A. S. Bennett & Associates, a New York research organization, has just completed a nationwide study to learn how building products get into buildings. In this and subsequent issues, we will discuss the study, giving details and comments about the 24 classes of products which were investigated. By observing the ways in which representative architectural firms specify products, you will have a better idea of how nearly your own operations are geared to those of your contemporaries.

FACTORS IN SPECIFYING AIR COOLING EQUIPMENT

Each month, as we go through the 24 classes of products investigated in the Bennett study, we want to emphasize that these are not positive conclusions. The study showed the overall way in which architectural organizations specify products, but it did not show conclusive results when individual products were investigated. Thus, while the following information is interesting as showing a trend, not all of it shows a *positive* trend.

Nineteen buildings were investigated to see *how* and *why* certain air cooling equipment got into the buildings. The refrigerant in most cases was freon, although water came in for its share of installations. No need to go into too much detail on this, because the refrigerant did not show up as a controlling factor when it came to selecting different types and brands of equipment.

In fact, when respondents were pinned down to telling the interviewers exactly *why* they selected the particular installation used in the building under discussion, type of refrigerant wasn't even considered—except where it had a bearing on total cost.

But let's go into the "why" of the interview more closely, to see if we can't develop a few ideas that would give hints on the best way to proceed if designing a building with air cooling equipment.

Of the architectural concerns involved in the investigation (19 of them), seven said they asked the advice of consultants before specifying any *type* of air conditioning equipment. Only five of them asked the advice of consultants when it came to a particular *brand.* And in both cases exactly half of the firms calling in consultants did so only after first considering many other factors—such as client's requirements, first cost, availability, local restrictions, etc.

It's interesting to note that the architectural firms first went into the client's needs in terms of load, funds available, and the other controlling factors. Only after these problems were cleared up did a consultant enter the picture. However, if a consultant was called in, he was often influential in the final specification. In one case, a consultant named a particular type of equipment, but the architectural firm had to change to another system because the consultant had not considered cost when making his choice.

There was nothing significant to tell us *why* architectural firms select one particular brand in preference to another. Again it's a matter of solving the basic problems faced by the overall design, and then finding the equipment that best meets those problems. However, here are some reasons for selecting brand—judge them as inconclusive but interesting. For instance, load requirements were important in 4 cases, and suitability for the building as it was designed accounted for three choices. Nothing too startling, you'll agree. The sample was too small. All other reasons were scattered.

Here's where we can begin to draw conclusions, however. The architectural firms investigated were asked *when* (that is, during what design stage) they decided on the type and brand of air cooling equipment used in the buildings. In 10 cases the decisions as to *type* of equipment (that is, whether it would be a central unit, individual units, etc.; whether it would use freon or water on some other refrigerant) were made during preliminary drawings. In three cases the decisions were made during preliminary specifications. Thus, out of the 19 buildings investigated, 13 decisions were made during preliminary stages. It therefore becomes obvious that the more normal procedure (and more logical) is to specify the type of air cooling equipment at an early stage in the design. The next stages therefore become far simpler, for detailing is probably pretty much routine—it's usually just a matter of using the equipment that fits the specifications, following the manufacturer's installation instructions when it comes to construction.

When it came to *brand* decisions, the picture was not too definite as to when they were made. Answers were scattered. Eight said they decided on brand when they decided on type. Four waited until final specifications. And two did not make final decision until construction was under way. To a large extent, the size and complexity of the unit installation involved was responsible for the timing.

In summary, it seems to us that the investigation indicated a need on the part of architectural firms for more information on air cooling equipment —what it is, how it works, what it will do, and how it can be worked into the building design. There was some dependence on consultants, and with air cooling equipment coming into greater

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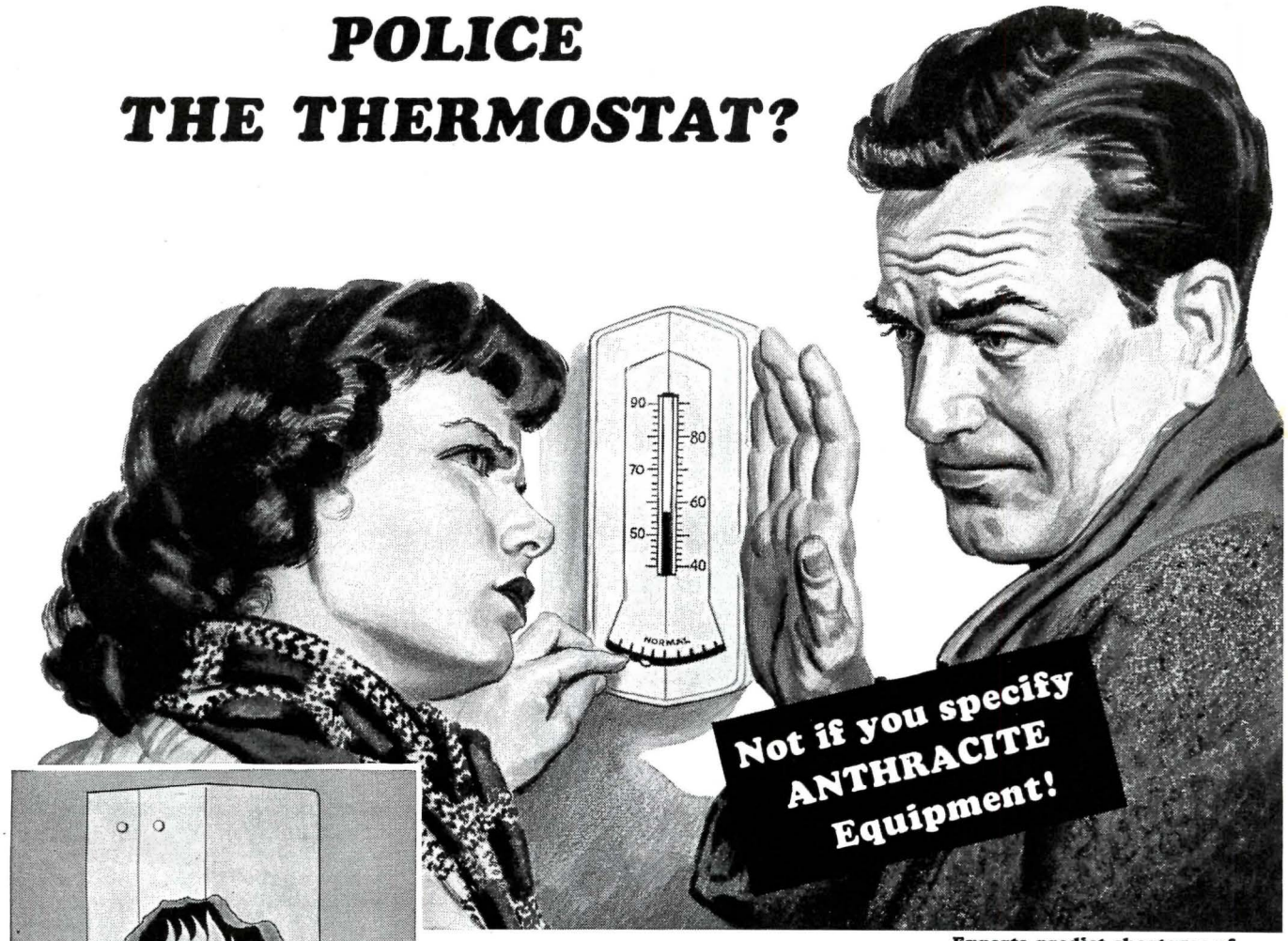
(Continued from previous page)

and greater use with every passing day, it is important that architectural firms know enough about such equipment so that they can feel confident of their design and specification without having to rely wholly on outside sources for the necessary information. Speedier, more economical work will result.

Finally, as in all other products investigated, you will note that the *type* of air cooling equipment is specified at an early stage in the design, while brand decisions come somewhat later (due principally to the fact that brand decisions are made separately, although they usually depend to a large extent on the *type* selected).

Must Owners of your new houses *POLICE THE THERMOSTAT?*



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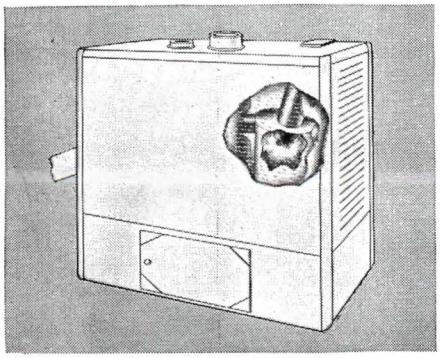

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P/A P.S.

I'VE HAD TWO UNUSUAL ASSIGNMENTS RECENTLY, both very interesting and both indicative of certain trends in fields that touch ours. You might like a report on them.

The first started with a telephone call from a Midwest city. It seems that a manufacturer was preparing to build a new industrial plant, involving the expenditure of several million dollars. Not knowing anything about architecture, he set as his goal a building that would be beautiful—beautiful enough to attract notice nationally—and a building that would be modern, in the sense that it would take full advantage of all the things available to make it an up-to-date, well-functioning industrial structure.

Trying to be fair to himself he had run a private "competition" by paying three firms of designers to make preliminary studies. A fourth firm, rejecting this procedure because it was "unethical," had come in on its own afterward and both made suggestions and offered criticisms of other proposals.

●

THE CLIENT WAS CONFUSED. What was a beautiful building? What was a modern industrial plant? How could he tell which of these firms was advising him well? Advice varied greatly, even as to the number of square feet required. And the request was: would one of our staff spend a day with him, consulting and advising.

Now I'm not sure what the ethics of a situation like that are. We weren't asked to act as professional advisors or as jury for a true competition, and yet it seems to me that in our land a man has a right to select as he sees fit, provided he pays for any professional services requested (as he had in the case of these preliminary studies). In any event the situation was so intriguing that I went, and spent a most interesting and wearing day.

IT WAS NOT A MATTER OF DECIDING AMONG COMPETING SOLUTIONS. I said to begin with that I was not competent to judge, not having had an opportunity to study the problem. So what we did was to spend the day discussing architecture in quite general terms. We discussed the question of how a design office works in studying a program—in fact, in *developing* a program—and how it arrives at a reasonable decision on space requirement as well as plan. We talked for many hours about the nature, and characteristics, and possibilities, and limitations of a number of materials. We talked about the physiology and psychology of industrial workers—and I did most of the listening then. Finally, we got into a discussion of beauty. We went back into architectural history and tore certain famous buildings apart to find what made them seem beautiful to this manufacturer. We talked about public reaction to buildings—what makes them beautiful or ugly, outstanding or nondescript, good or bad in the public eye.

AT THE END OF THE DAY THIS REMARKABLE CLIENT THANKED ME, and told me he was now able to make up his mind. The next day he assigned the commission. Since then I've seen a model of the proposed solution, and I approve heartily. It was a peculiar, and perhaps a most sensible way for the result to be achieved. I wouldn't want to have the part I took in such a procedure very often, however.

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THE OTHER ASSIGNMENT WAS OF A VERY DIFFERENT NATURE. It stemmed from the fact that **P/A** has recently completed a survey based on 524 case studies, of how building products get into buildings. Made by A. S. Bennett Associates after advice and approval from the A.I.A., Producers' Council, and a number of research specialists, it is attracting a great deal of attention in building materials sales circles. Partly because of this, and partly because we've been paying a good deal of attention to the matter of how an architectural office operates, Dave Miller, of Armstrong Cork, asked me to run down to Lancaster, Pennsylvania, and speak to a group of salesmen-in-training. Again it seemed like an unusual but interesting and useful assignment, so I went.

Perhaps 18 or 20 recent college graduates—one of the nicest looking bunch of boys I've seen in a long while—had gone through a lengthy training course in the manufacture of the products they were going to sell, and in sales training. My job was to help tell them how an architect operates, what sort of information he wants from a manufacturer's representative, when he wants it, and who in the organization wants it. During a full morning session I had a most attentive and intelligent audience, and I hope they got as much out of it as I did. As a matter of fact I had a bonus—I went through the plant afterwards and watched the manufacture of asphalt tile and linoleum—a most interesting series of production steps.

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THIS METHOD OF SELECTION AND TRAINING SHOULD CERTAINLY BE APPLAUDED, and should hold promise of well-informed, intelligent representatives from Armstrong calling on or being available to the architectural office. In the second place, the inclusion of a factual study of architecture and architects in such a course seems to me very sensible. Yes, I said *architecture*—these were curious young men, and before the morning was over we inevitably had some questions about and discussion of design, and history, and coordination of materials, and integration of materials into other aspects of design.

There is a trend toward better general as well as specific education in the whole design and construction process, for various people who plan to enter parts of the building industry. Some of the universities are giving courses which lead this way, and it would seem important for the architectural profession to lend a hand to the end that a real understanding of architecture be made a part of all such fields of study. It would be a great help if contractors, for example, knew more about the architect's whole activity from the first design step on. For instance:

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WADE PORTER, JR., OF DENVER, TELLS OF A CONTRACTOR who called on a Denver architect with a set of prints of home-drawn plans, for which he had correctly been refused a building permit. The architect took the job, designed a reasonable structure, made competent drawings, and delivered them to the builder with assurances that a permit could now be obtained. The contractor was pleased, grateful, and apparently a little baffled. "Thanks," he said. "This is swell. But . . . I wonder . . . could you tell me of a good place to take a course in advanced blueprint reading?" Wade wants to know whether this is funny or tragic.

Thomas H. Creighton