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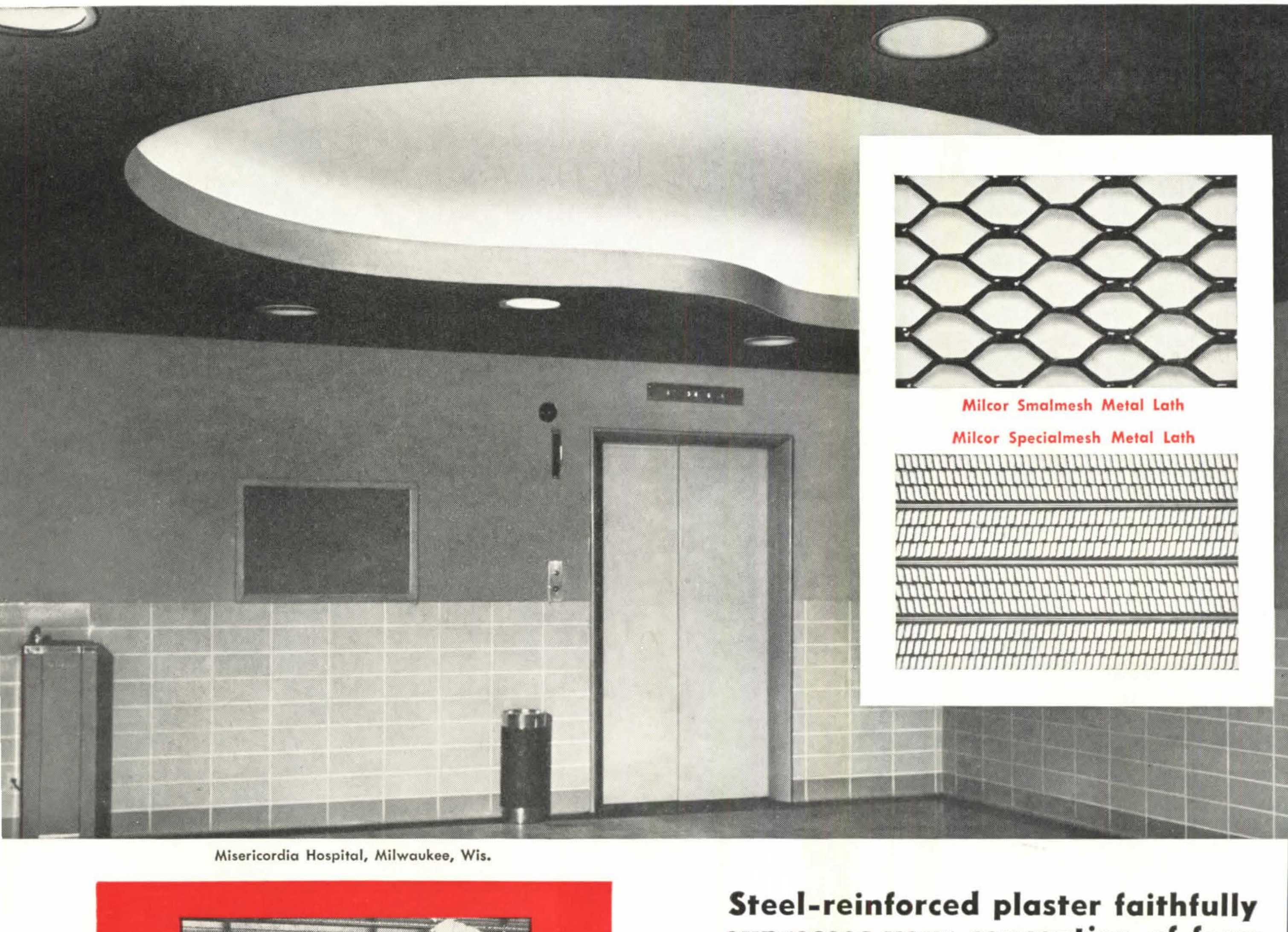

Milcor Smalmesh Metal Lath

Milcor Specialmesh Metal Lath

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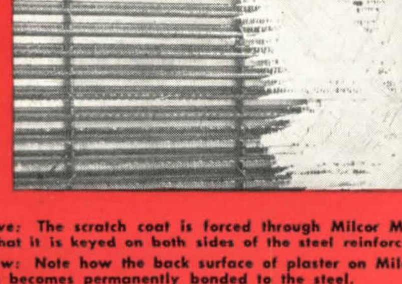
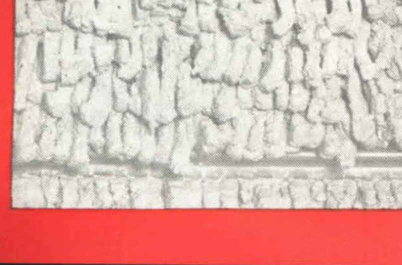


Above: The scratch coat is forced through Milcor Metal Lath so that it is keyed on both sides of the steel reinforcing.

Below: Note how the back surface of plaster on Milcor Metal Lath becomes permanently bonded to the steel.



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M-1

p/a newsletter

American Hospital Association's survey covering nearly half of all U. S. hospitals revealed that estimated $1,165,385,765 billions would be needed to replace obsolete and inadequate parts of physical plants. Greatest total need was estimated by nonprofit, short-term hospitals while highest average per hospital ($1,902,659 millions) was in mental and allied group.

Boston Architect George W. W. Brewster received 1954 Boston Arts Festival Architectural Award, given in co-operation with the AIA, for the most outstanding architectural project built in New Enlgand within past five years. Plans, drawings, photos, and scale models of award-winning entry (Gordon Gibbs home, Marion, Mass.) along with those of seven other individuals and architectural firms receiving Honorary Awards were displayed at Boston Arts Festival held June 6 through 20. Jury: José Luis Sert, George Howe, and Burnham Kelly.

Ralph Rapson of the M.I.T. Department of Architecture staff leaves there to head University of Minnesota's School of Architecture. . . . Allen S. Weller, member of University of Illinois Art faculty since 1947, will become second dean of College of Fine and Applied Arts there, September 1. College includes Departments of Architecture, Landscape Architecture, Art, and School of Music.

Last month families moved into 22 new homes, each equipped with different type of year-round air-conditioning system, in Edgewood subdivision of Austin, Tex. Homes are of varying design and structure. One-year study of mechanical, financial, and human problems involved in home weather control will be sponsored by Research Institute of National Association of Home Builders, in co-operation with more than 50 other organizations, including the University of Texas, the Air-Conditioning and Refrigerating Institute, and the National Warm Air Heating and Air-Conditioning Association.

Jury for Producers' Council's Annual Product Literature Competition awarded Certificates of Exceptional Merit this year to Pittsburgh Plate Glass Company, Armstrong Cork Company, and National Concrete Masonry Association. Entries were "New Pittco No. 17 Recessed Sash" (ad) and publications "Armstrong's Floors and Walls" and "Ideas for Wall Patterns with Concrete Masonry." Jury composed of Ben John Small (New York), Richard M. Bennett (Chicago), Edward G. Conrad (Cleveland), D. Kenneth Sargent (Syracuse), and Howard Dwight Smith (Columbus) also awarded several Certificates of Merit and Honorable Mentions.

Early this month PROGRESSIVE ARCHITECTURE moves, with its sister publications in Reinhold Publishing Corporation and Reinhold Book Division, to a new mid-Manhattan location. Reinhold will occupy three floors of the 430 Park Avenue Building, New York 22, N. Y. (described on page 106, May 1954 P/A). All communications should be directed to the new address from mid-July on. Telephone: MUrray Hill 8-8600.

PROGRESSIVE ARCHITECTURE published monthly by REINHOLD PUBLISHING CORPORATION, 330 West 42nd Street, New York 36, N. Y. Ralph W. Reinhold, Chairman of the Board; Philip H. Hubbard, President and Treasurer; Fred P. Peters, Vice-President and Secretary, Gilbert E. Cochran, H. Burton Lowe, Merald F. Lue, William P. Winsor, Vice-Presidents; Kathleen Starke, Assistant Treasurer. Executive and Editorial offices: 330 W. 42nd St., New York 36, N. Y. Subscriptions payable in advance. Subscription prices to those who, by title, are *architects, engineers, specification writers, designers or draftsmen, or employes of architectural and engineering firms, and* to government departments, trade associations, members of the armed forces, college libraries, college students, publishers, advertisers, prospective advertisers and their employes—$5.00 for one year, $8.00 for two years, $10.00 for three years. Above prices are applicable in U. S., U. S. Possessions and Canada. Latin America and Philippine Republic—$10.00 for one year, $16.00 for two years, $20.00 for three years. All other foreign subscriptions — $15.00 for one year, $25.00 for two years, $30.00 for three years. Single copy — $1.00, special issues — $2.00 per copy. Printed by Publishers Printing Co., New York, N. Y. Re-entered as Second Class Matter September 21, 1951, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Volume XXXV, No. 7, July, 1954. In Art Index, Architectural Index.

Turn page for WASHINGTON PERSPECTIVE

newsletter

Frederick Gutheim **Washington Perspective**

Strong building records, notably in housing and industrial plants, are confirming the many earlier predictions of a good construction year. Recession talk is receding. If there were any genuine concern with the economic future, equal, let us say, to that of last February, more anxiety would be expressed over the narrowly conceived, lethargic manner in which General Bragdon is going about his Public Works Reserve assignment for the Council of Economic Advisers. So far the program hasn't got outside of Washington.

As Congress prepares for adjournment and the summer's campaigning begins in earnest, political developments turn uppermost. Washington accepts the probability that the Democrats will pick up enough seats this November to organize both the House and the Senate when the 85th Congress convenes. Lack of a working majority has contributed greatly to the weakness of President Eisenhower's leadership. At this writing, the Senate is evenly divided, and the GOP has a majority of three in the House! The President has been able to show strength only in those areas of government—such as foreign and military affairs—where bipartisan support could be found. He has been weakest when fishing for the support of the radical Republican fringe, most notably in the earlier appeasement of Senator McCarthy. Often he has found his program rescued by Democratic votes. Should the anticipated resurgence of Democratic power in Congress come about, it is quite possible that Eisenhower may become a more effective chief-of-state—at least during the period before the pressures of the 1956 Presidential Campaign develop.

These circumstances also spotlight the political splintering which commenced with the four-party election of 1949 and may find additional expression if Dixiecrats, For American, and other well-defined blocs continue to drift from established party moorings. They also illuminate the question of Congressional supremacy over the Executive, broadening it from simple questions of the abuse of investigative power to such older, and on the whole more substantial invasions of the Executive as tacking Legislative riders on appropriation bills, or writing into laws such procedural requirements that Executive responsibility is nullified. Building programs have been peculiarly subject to such abuses (either by Congressional committees or subcommittees striving to retain project control through approvals). A Presidential veto of the lease-purchase program on precisely such grounds would not be surprising. And if a serious roll-back of Congressional encroachment upon Executive power is attempted, a similar measure—a Presidential veto of specific items in supply bills—would be a popular measure around which supporters could rally.

Heavier expenditures for defense and foreign economic aid are expected, perhaps five to eight billions more. Reverses in southeast Asia leave no alternative. On a recent trip in the midwest I heard much war talk. The upset budget and renewed inflationary pressures are likely events of the near future.

Aftermath of the Supreme Court's decision ending the "separate but equal" doctrine in public education cannot help but result in a general overhauling of school building plans in the states where segregation has been practiced. A generally higher level of building ought to be one result. More important, in the long run, may be changes in educational offering, as schools respond to their enlarged responsibilities.

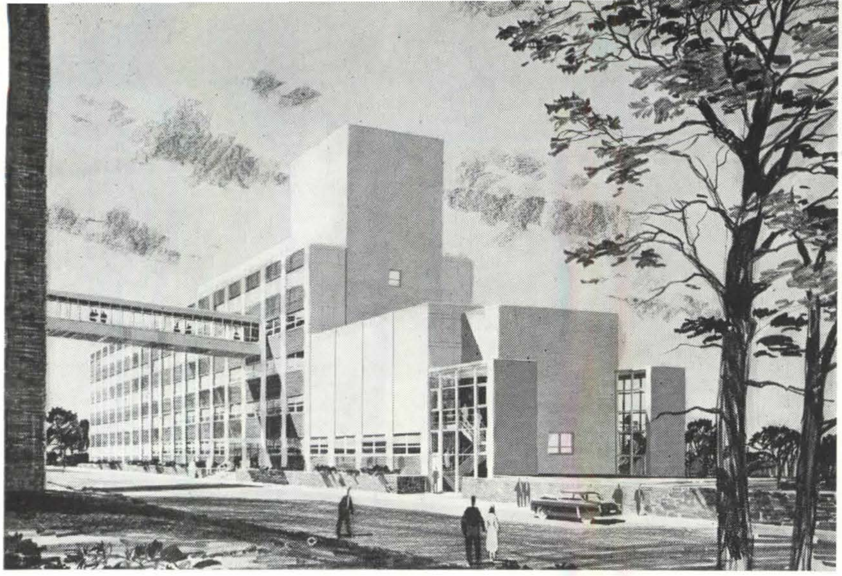
The housing bill so greatly desired by the Administration is now so battered by special privilege that many of its most sincere supporters believe it should be put over until the next session of Congress. That calm advice runs against the political need to produce, if only in token form, this ingredient of the President's "dynamic program." The outlook for public housing is certainly dim. A certain irony may attach to Senator Capehart's espousal of this cause following Senator Maybank's withdrawal, but it is doubtful if either in the Senate or the probable conference the requisite support can be mobilized. If Republican votes can win victory here it will be by some fancy footwork.

The first group of architects to design State Department buildings include W. W. Wurster (a Hong Kong office building) and Chloethiel Woodard Smith (embassy in Asunción, Paraguay)—top-flight architects whose work is at sharp variance from the glassy, Le Corbusier-derivative school that has dominated this program in recent years. The good advice of Belluschi, Shepley, and Walker is clearly in evidence. One awaits with interest further appointments of this caliber.

One advantage of writing from this city is the opportunity to see the opening exhibition of two decades of the work of that outstanding Brazilian landscape architect, Roberto Burle-Marx. On view here at the Pan American Union until July 12, it will be offered as a traveling exhibition by the Smithsonian Institution. Burle-Marx also makes a lecture tour in the United States during June and July. This fresh manifestation of our interest in contemporary Brazilian design will be reaffirmed this fall when Henry-Russell Hitchcock starts south on his expedition to up-date the excellent "Brazil Builds" show presented by the Museum of Modern Art in 1943.

PROGRESSIVE ARCHITECTURE

July 1954



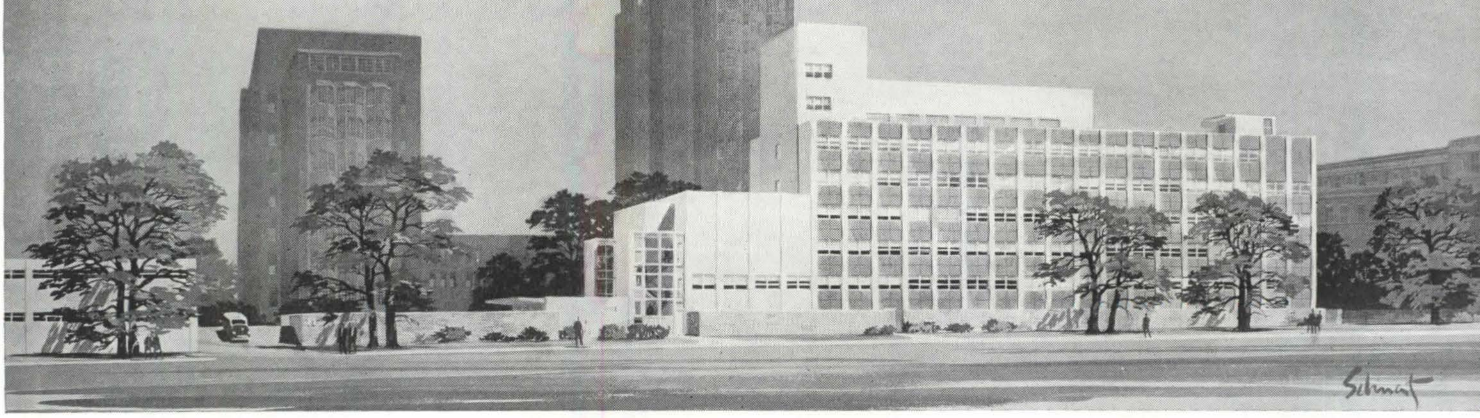
p/a progress preview

county hospital laboratory and mortuary

After nearly 15 years of discussion and evaluation of the need for a modern laboratory and mortuary facilities to serve hospitals and county medical examiner in Brooklyn, New York, the design for a well-studied structure (*illustrated here* and *overpage*) has recently been completed by DeYoung, Moscowitz & Rosenberg, Architects, New York. Construction is expected to begin later this year. The project is under supervision of Department of Public Works, City of New York.

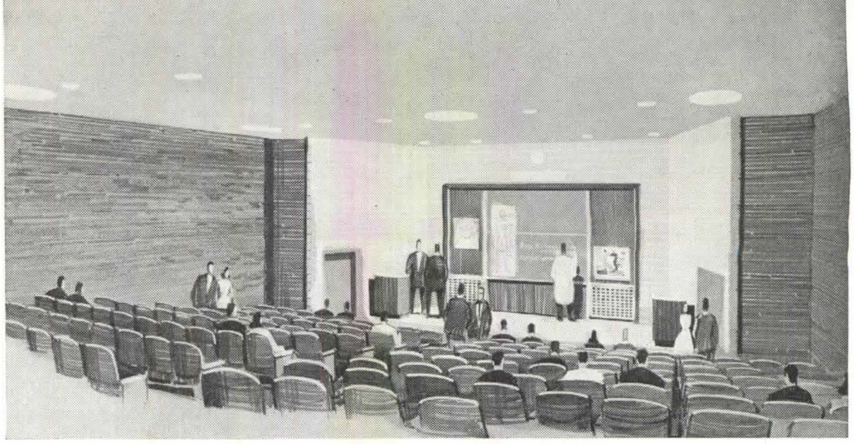
The site is just across a service street from Kings County Hospital, a 3800-bed institution, and it is proposed to connect the new and old buildings with a glazed bridge on the level to provide most convenient access from operating rooms to surgical tissue rooms of the pathology floor in the laboratory. This bridge also will carry TV cables from operating rooms to the lecture hall in the new buildings, where students will be enabled to view operating procedures and techniques. Similar provisions will be made to transmit from the autopsy amphitheater to the lecture hall. Major traffic and services between the new and old structures will be through a tunnel under the hospital street.

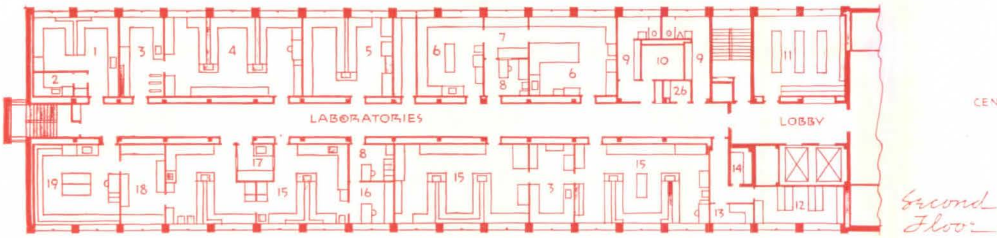
The laboratories—to operate on a 24-hour schedule—will be used for routine clinical and diagnostic duties as well as special studies of virus diseases, etc. Separation of facilities for homicide and hospital activities was required in certain facilities, such as the ground-floor morgue.

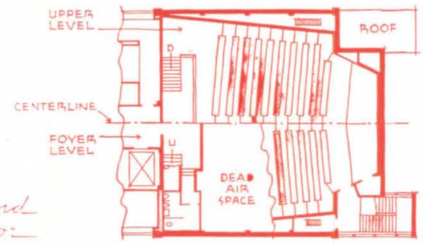


p/a progress preview

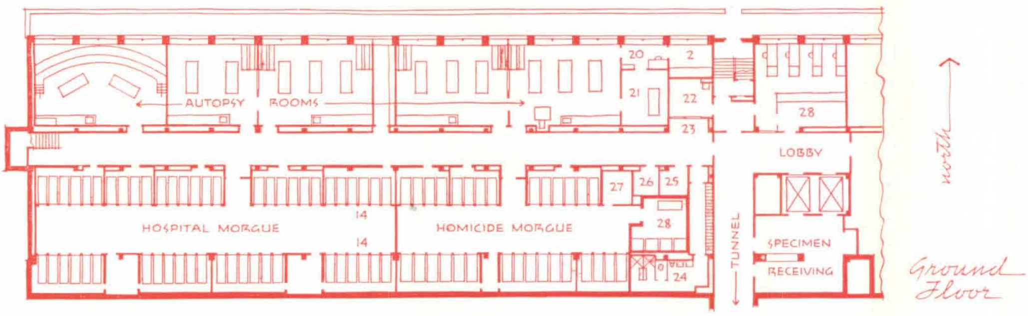
In the lecture hall (right) *the activities in operating rooms and autopsy amphitheater* (bottom of page) *will be watched by TV. A typical laboratory is shown* (below). Renderings: Schwartz





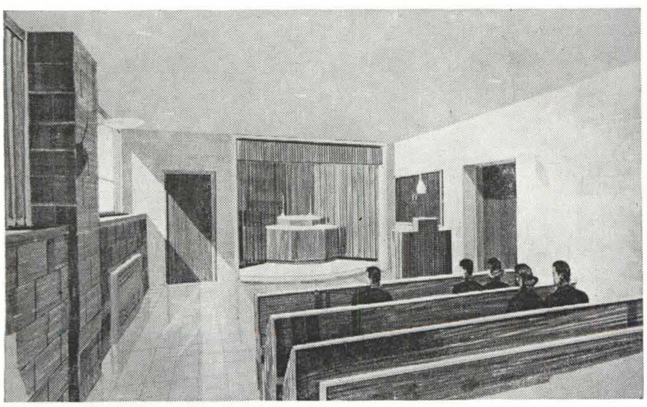


Lecture Hall SECOND FLOOR EAST

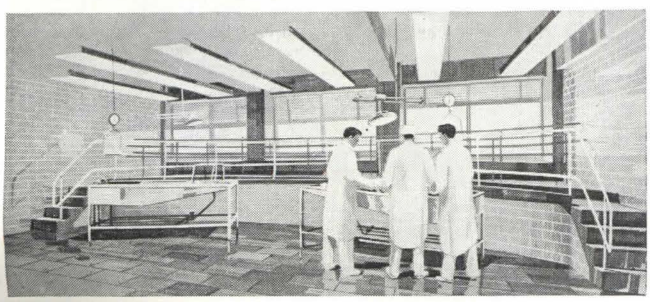


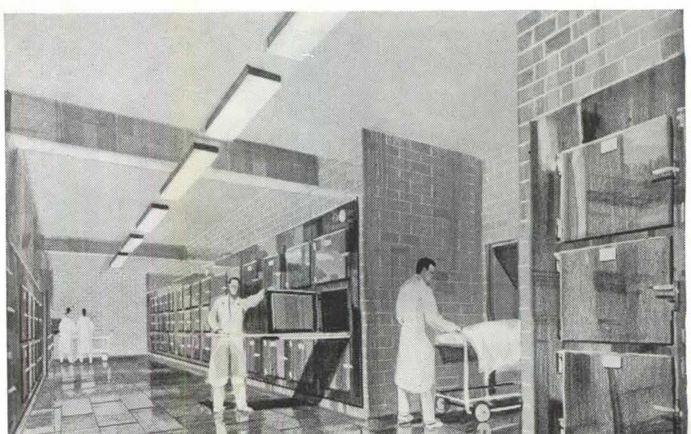
1 PHYSICAL CHEM. PREP.
2 DARK ROOM
3 GLASS WASHING
4 TOXICOLOGY
5 SPECIAL LAB.
6 CLINICAL PATHOLOGY
7 CHIEF TECHNICIAN
8 SECRETARY
9 LOCKERS AND TOILETS
10 REST ROOM
11 MUSEUM
12 CHEMICAL STORAGE
13 PAPER STORAGE
14 REFRIGERATOR
15 ROUTINE LAB.
16 CHIEF CHEMIST
17 FLAME PHOTOMETER
18 BALANCE ROOM
19 PHYSICAL CHEM.
20 PHOTOGRAPHER
21 X-RAY
22 VIEWING ROOM
23 BODY ALCOVE
24 MALE EMPLOYEES
25 CLEAN LINEN
26 JANITOR
27 COMPRESSORS
28 MORTUARY OFFICE

Scale 0 25 feet 0 5 meters



The chapel (left) *will have a revolving sanctuary, to accommodate three rituals. The morgue gallery* (below) *and autopsy amphitheater* (below left) *are on the ground floor.*





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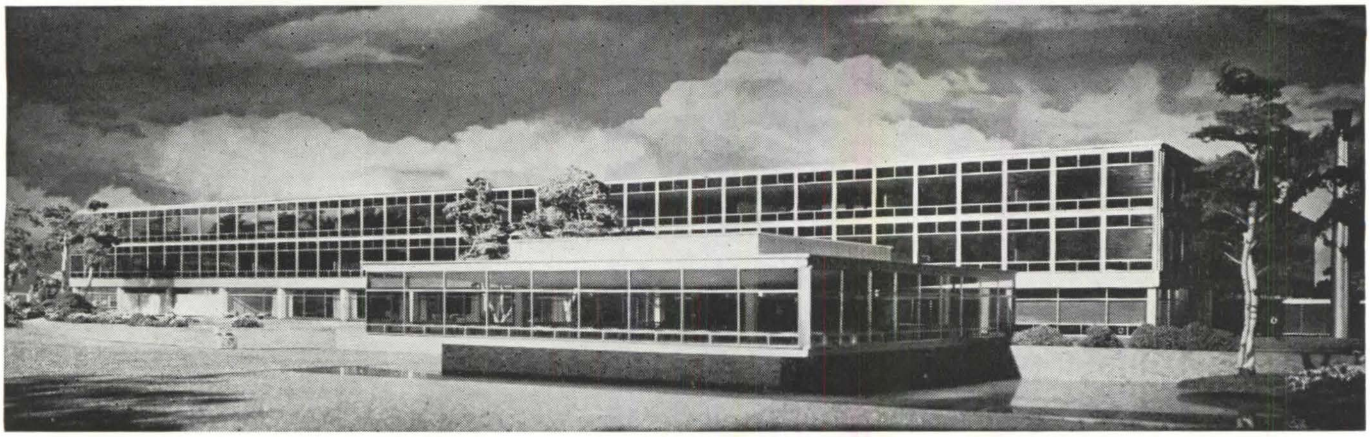


Photos: Ezra Stoller

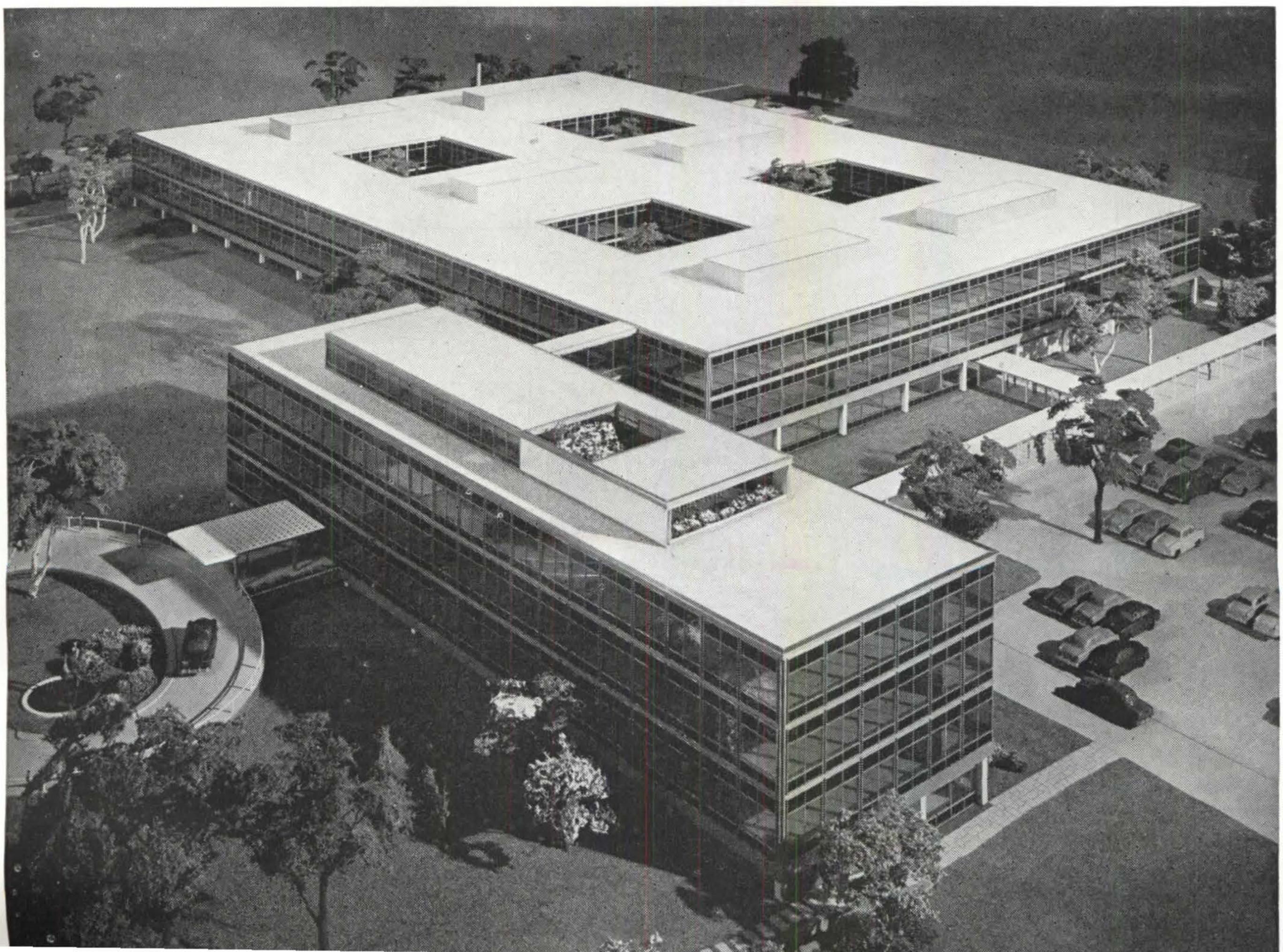
insurance company home office buildings

Construction of spacious new home offices designed for the Connecticut General Life Insurance Company of Hartford by Skidmore, Owings & Merrill, Architects-Engineers of New York, Chicago, and San Francisco, has begun on a 268-acre site in suburban Bloomfield, Connecticut. Turner Construction Company is the general contractor for the job, expected to cost more than $10 millions.

The main three-story building will provide more than 500,000 sq ft of office space and it will be supplemented by a one-story cafeteria to accommodate 800 persons (*model photo above*) and by a four-story administrative annex (*model photo below*) for executive offices and special departments.

Careful analysis of the flow of work between sections of the company was a part of the planning, which stressed flexibility within the structures. The horizontal scheme also facilitates future expansion. There are almost no permanent partitions, offices being separated generally by movable colored screens, readily changed and suggesting informality. The buildings will be air conditioned, summer and winter, and other modern equipment will include an electrical conveyor system for files and papers, escalators for passenger traffic, some elevators (principally for freight).

The exterior walls will be of heat-absorbent glass and porcelain-enameled steel. Interior gardens will echo landscaping of the rolling farmland acres.



master planning or public buildings management?

keenly aware

Dear Editor: As a member of a firm which has done considerable work through the good offices of the Public Buildings Service, I wish to comment on Fritz Gutheim's comments on the present state of PBS (*June 1954 P/A*).

Those of us who practice in Washington are keenly aware of the workings of Government agencies which do architectural work, either on their own or through private architects.

They all work very differently and undoubtedly must do so because their problems are very different. Their view of architecture and their dealings with architects must vary. Some do all of their own architectural work; others do it all through private architects, perhaps with good and sufficient reason.

It is probable that agencies who do their own architectural work feel that they can do it themselves either better or cheaper than through private practitioners, and yet this remains to be proved. The important question is which method produces the better architecture?

From a purely human (and perhaps selfish standpoint) private architects would like to see all buildings designed by private architects. However, there may be a considerable number of projects which, because of their size or nature, can best be designed by the agency which must maintain and operate them.

It seems obvious that some agency must always be available to promote and to implement all public construction projects, even those designed by private architects. It also seems quite possible and desirable for this agency to administer the design, construction, and maintenance of government buildings of all kinds. With an organization of this type, it is only natural and perhaps desirable that the agency will also design some buildings itself. It is only when the agency does this on a large scale that the private architect begins to feel threatened by the shadow of government competition!

After working for many government agencies, it is my feeling that PBS has functioned unusually well and that it has dealt intelligently and fairly with private architects. For the general welfare it is to be hoped that PBS will continue to function as it has in the past.

WALDRON FAULKNER
Washington, D. C.

friend to profession

Dear Editor: I think the Fritz Gutheim article (WASHINGTON PERSPECTIVE, *June 1954 P/A*) on W. E. Reynolds an excellent one, and also go along with him in his admiration for the good qualities of Commissioner Reynolds. He has done an excellent job and has been a friend to the architectural profession.

RALPH WALKER
New York, N.Y.

pendulum swing

Dear Editor: Gutheim's comments show the conflict between the tendency to centralize controls and the swing of the pendulum in the other direction to give greater and greater autonomy in the development of their own buildings to the various departments of the government, including the Post Office. On one point I disagree with Gutheim, and that is where he points out that Peter Strobel, the management engineer who succeeds Commissioner Reynolds, "has little to inherit but the public building management duties of a once high office." The managerial point of view is all-important. We need a larger concept of the meaning of enlightened management. The centralization of management of public buildings as well as of all types of real estate is one of the needs of the day.

Especially in his concluding paragraphs, Gutheim reveals the well-known need for the right type of leadership. In this case it amounts to the type of leadership that can explain the type of buildings needed so as to get the appropriations. There has been altogether to little emphasis upon exploratory work and preliminary planning. Too frequently no funds are available to pay for the type of exploratory work needed. When the pinch of need gets tight enough, a construction appropriation is made and then first emphasis is put on getting working plans made so construction can be commenced.

As designers, we architects ought to be able to work more closely with those responsible for the managerial servicing of buildings in the largest sense of the word. If architects were free to spend the requisite proportion of their time on this important form of advance planning, not only might the form and internal arrangement of buildings be improved, but the exterior grouping and locations of buildings as well. ARTHUR C. HOLDEN
New York, N.Y.

empowered and aggressive

Dear Editor: This country needs a PBA, but of a new type, one that does not await what comes to it by default after the more aggresive agencies have gone off each on their own. Some, it is true, have done fine jobs occasionally, but I can't get over the bad ones. Take one tiny, typical example, but of immense importance to one small community—a nasty, shoddy new little post office.

PBA should first be a master plan agency empowered and aggresive enough to anticipate and put together various public building programs and get up development plans for them, grouping, relating, and staging them in a physical and temporal way within cities, areas, and communities. This requires more than waiting for jobs. It means creating them. In some cases, PBA should carry out the resultant jobs, in other cases not—all depending on the extent to which their clients, who are consumer agencies of the government, are properly equipped to carry out the design and construction functions. These would not start, however, until the co-ordinated development or guide plans have been finalized by PBA, working in consultation with the consumer agencies which are their clients.

If PBA has failed—I don't know that it did (Reynolds was a great man)—it

(Continued on page 16)

(Continued from page 15)

is perhaps because of not having emerged creatively and imaginatively into the field of master plan of development as an *instigator*, but having remained relegated to a diminishing *servitude* on programs instigated by others.

JULIAN WHITTLESEY
New York, N.Y.

original architects

Dear Editor: Sibyl Moholy-Nagy will not, I hope, mind a correction about Chandigarh in her review of Corbu's latest *(March 1954 P/A, page 176).* In fact, as she says, *"If one is to believe . . ."* which one must not, for the site plan of Chandigarh is Albert Mayer's and Julian Whittlesey's, and the basic architecture is Matthew Nowicki's. Corbu is just a Johnny-come-lately in India, although, as usual, he claims all the credit.

HENRY S. CHURCHILL
New York and Philadelphia

Mrs. Moholy-Nagy did not repeat in P/A her comment to the same effect, included in her review of the Le Corbusier book in The Saturday Review *for February 20, assuming that a professional audience would be familiar with the design history of Chandigarh.*

the river of effort

Dear Editor: Felix Candela's chief thesis in "Stereo-Structures" *(June 1954 P/A)* would appear to be an effort to throw off the empiricism of 19th and 20th Century building practices which have served to deter or even strangle a search for proper building forms. The river of effort to achieve a firm statement of form has many tributaries, including emotional individualism, the right of organic unity, sculptural and plastic illusions, process engineering and socio-technic-industrial expression, structural clarity, and the externalization of form by the exploitation of physical properties of materials.

Candela's article, "Stereo-Structures," would fall near the mouth of the last-noted streamlet, rather than at the mouth of the river. Most certainly his attack on the sterile structural handbook and its users is valid. As pertinent, however, are the archaic and empirical standards established by amortization tables, promotional procedures, zoning tests, and underwriter edicts.

Economically, I do not believe that Candela's paper properly recognizes fundamental differences representing form through structure as related to socio-economic fact in the United States and in Mexico. I am afraid that certain primary assumptions made by the author would require quite complete reorientation of attitudes in finance, distribution of goods, and even the work habits of our "mechanics." While fully concurring in the need, I find the assumption of immediate applicability highly improbable in this country. The charges of "paper" en-

(Continued on page 22)

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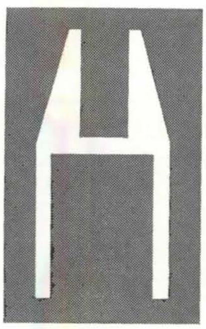

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(Continued from page 16)

gineering and "cheap" engineering are wholly true—they are also interwoven in the fabric of our economy, our political structure, and our culture.

Decades of cumulative incompetence may not be wiped out through structural analysis, no matter how forcefully presented. Attitudes integrating factors of personal security, risk, social conformity, education, profit motive, and custom, as they all affect form, are directly relatable to the atrophy in structural ingenuity. A discussion largely circumscribed by physical properties of a particular material is indicative of the atrophy as I sense it.

Multifunctional structural integrity (structural units that serve several purposes) is equally applicable to concrete, steel, or plywood. Perhaps erroneously I feel an implication by Candela of the doctrine of the superiority of a material. Actually, his presentation and arguments are equally sound for many materials and several assemblies.

Candela, perhaps with particular materials and forms in mind, states that in "organic structures of nature—where design progresses by natural selection . . . —the plane rarely occurs . . ." He apparently assumes a relationship between organic natural phenomena and inorganic-manmade structures. Perhaps a better analogy would be to compare our structures and the crystalline structures of nature. German physicist von Laue in 1912 verified through the use of X rays the orderly arrangement of the atoms in various crystal planes. Apparently, analogous reasoning based upon submicroscopic arrangements of nature would more nearly apply to man-made structures. Certainly a direct relationship of organic life and structures of inorganic materials should not be used to reinforce unrelated arguments. Apples do not usually produce orange juice and beehives lend little insight for the creation of form to house a human environment. I cannot believe there is a direct relationship between the pressed form of a single material in an automobile fender and a laboriously formed thin reinforced-concrete shell.

If many of our present structures are inefficient skeletons clothed in a ridiculous skin, we might wonder whether Candela's proposals do not interchange an inefficient skeleton for an anticlastic membrane of solid bone. In neither case have we found the multifunctioning materials allowing single process construction.

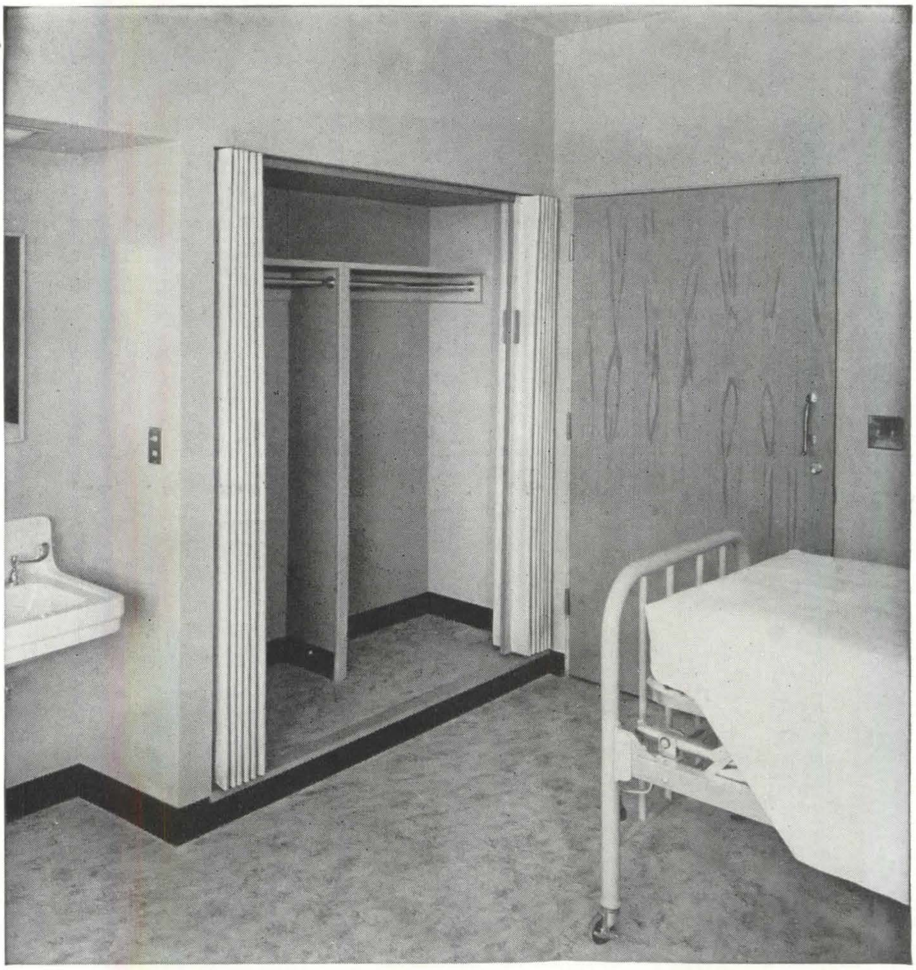
In the case of thin shells, we must yet solve the problems of thermal conductivity, water repellency, acoustical reverberations, luminosity, reflectivity, and simple intersurface connections (windows, for example). We may exchange the efficiency and controlled working conditions of the shop for appreciable material savings at the job site. But we are far from the co-ordinated, efficient, single-process building operation for which we search.

(Continued on page 24)

Additional Hospital Space At No Additional Cost . . .

when you specify "Modernfold" doors, according to Architect Gerald G. Scott, Portland, Oregon. Writes Mr. Scott: "'Modernfold' doors were specified as an alternate to the Specifications for the Central Oregon District Hospital, but when the bids were opened, it became apparent that these doors could be had for no additional cost over wood doors. Their use was more than justified by an overwhelming list of advantages, including economy, but particularly by their space-saving feature. The Contractor was especially pleased because they relieved him of the responsibility of hardware, painting, and installation; resulting in less time on his part spent during the finishing stage of the job."

Pictured is one of the rooms from Central Oregon District Hospital, Redmond, Oregon. Scott & Payne, Portland, Architects.



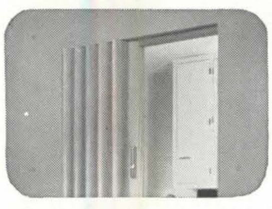
Your ideas come to life . . . for life with "Modernfold" doors

For every room division or door closure problem, there's a simple, economical, space-saving solution. That's "Modernfold," the original folding door.

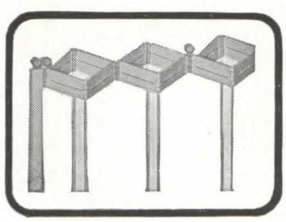
Specifying "Modernfold" doors keeps clients happy. For these steel-framed, vinyl-covered doors can't be equaled *anywhere* for quality of design . . . for quality and strength of materials.

And because this line is *complete,* you're sure to save time and get exactly what you want when you specify better looking, easier operating, longer lasting "Modernfold" doors.

NEW CASTLE PRODUCTS, INC.
New Castle, Indiana; Montreal 6, Canada



Better Looking
Fabric covering conceals all operating mechanism. No cornice needed. Adjustable trolleys keep doors hanging flush to jamb.



Longer Lasting
Balanced hinge construction both top and bottom. Trolleys attached at hinge intersections. No sidewise twist or pull possible.

Better Background
Over 100,000 "Modernfold" doors now in operation—a backlog of space engineering experience that's your guarantee of satisfaction.

YOU CAN'T GET MORE IN A FOLDING DOOR

the doors that fold like an accordion
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p/a views

(Continued from page 22)

Physically, and empirically, we are quite sure that two-way movement of mass can be accomplished with minimum energy over a level plane. Certainly a relationship exists between floor and ceiling and human occupants. For pure necessity and convenience, we must generally establish the reasonable ceiling height requirements of man. Unfortunately for Candela's arguments, these heights are usually the same at the center and at the perimeter. When utilitarian requirements outweigh the effect on the spirit, the loss of structural cubage and the increase to heating and cooling plants becomes determinant.

High real-estate values and unreasonable densities necessitate a predominance of multistory structures in most urban areas of my experience. In the outskirts, undersized but economically defensible subdivisions of land are conventionally rectilinear in nature. Esthetically, we can ponder the rightness of endless voluptuous curves and unrestricted, though structurally sound, geometric form. Such a polyglot family of shapes and forms could conceivably dissolve what little unity yet remains of our measled suburban acres.

Another disadvantage apparent to everyone reading Candela's paper is the lack of a simple method of measure related to curvilinear and compounded forms. Planes of reference such as shipboard frame lines, water lines, and buttocks lines appear impractical for usual job mechanics. Certainly we must assume the artisanship of a Naguchi and the template work of a master shipwright to expect reasonable connections between anticlastic shells and such prosaic necessities as a curtain wall. A limited use of such hand and piece work in some structures is laudatory, but to propose its wide acceptance appears to me unreasonable.

Candela has presented his position well. His arguments are basically valid and with many I agree, but I cannot give great credence to the proposals which apparently entail an almost complete reorganization of so many basic social institutions, practices, and procedures. Structural fetishes must not define our environment of the future. Structure must assume its proportioned place in the growing understanding of a family of technological considerations.

In my mind, structures far more prophetic than the thin-shell dome are the erector-set space frame of Michigan's Unistrut or Mies van der Rohe's Theater for Mannheim.

Through structures we must look to unified systems capable of housing an entire building at a single swoop. Structural elements must serve more than one stress and one purpose. They must be multifunctional. The interdependency of parts must be developed—but we cannot exchange a bone skeleton for a bone cranium (and here too lies a story)!

CHARLES R. COLBERT
Architect and Planner
New Orleans, La.

the architect's files: part 2

by Siegmund Spiegel*

drafting room (continued)

In last month's discussion of filing problems in the architectural office, the discussion covered six categories of technical material, preferably filed near the drafting room. In this article the discussion is continued, with reference files the main consideration. The next item to discuss, then, would be:

7. *Source Material File:* Material in this category consists of Plates, Articles, Reports, References, Research Notes, Specialized Structures, etc. It is valuable to have the material kept up-to-date and antiquated material eliminated from time to time. Into this category fall Standard Details which an office may have developed for its use. However, though some details may remain relatively "standard," every job may, more often than not, present individual problems which will make the "standard" at best a convenient reference.

Source Material, though constantly used, will not be used frequently by the majority of the men in the drafting room. It will be of more use in an area of the office where design work is done.

The AIA Document #261, *The AIA Filing System for Architectural Plates and Articles* is an excellent guide for filing material in this category. Although the actual listing in this guide may not be sufficient for registering the innumerable topics on which an architect may keep references, it is easily expanded by adding additional decimal subdivisions. Every item filed should be marked with its subject number so that it can be easily returned to the file after use.

Source Material filing can be accomplished by a secretary.

8. *Architectural Magazines and Other Subscriptions:* The magazines, in addition to illustrating the latest trends in the profession, form a valuable part of Source Material. In many instances they are kept intact and filed as a part of the Library. Once filed, they will primarily be of use to the design staff, rather than to the men on production work.

The (filing) drawback of most magazines seems to be the lack of comprehensive periodic indices which would permit easy reference to certain articles. For the last few years, there has been published *The Architectural Index,* which gives the content of the majority of the magazines on a yearly basis. The magazines indexed are: *Architectural Forum, Architectural Record, Arts and Architecture, House and Home,* PROGRESSIVE ARCHITECTURE, articles from *Interiors,* and articles from *Bulletin of the AIA.* If magazines are kept by an office, this index will prove to be a time saver.

9. *Library:* The Library, as distinct from the "working Library" consisting of material listed previously which is in daily use, may become quite extensive in an architect's office. Once it reaches proportions which require a breakdown into individual subjects, it has been found useful to assign separate shelves to each subject. A suitable breakdown could be based on such headings as: Planning, Housing, Redevelopment, Residences, Special Buildings (e.g., Shopping Centers, Churches, Airports, etc.), Technical (e.g., Climate, etc.), Art, etc.

Since not all books or major reports so filed are easily recognized, and if the amount of books is extensive, card indexes by Title and Author are helpful. Each book is marked with the number of its shelf and its own number on the shelf. These index cards should state the shelf number and the book number on the shelf. (This card may also be used for penciled notations, e.g., who took book and date.)

This type of Library will not be used over-frequently, and therefore need not be located in the drafting room. It should, however, be so located that the men have access to it.

The Library filing can be maintained by a secretary.

10. *Photo, Publicity, and Reprint*

* *Architect, Office Manager for Mayer & Whittlesey, Architects, New York, N. Y.*

Files: Small photos are best filed by jobs, alphabetically, loose in folders. Reprints of published articles are kept similarly, except that it is preferable to keep their order by date, the latest being at front. Large photos and brochures are kept obviously best in flat drawers.

These files, too, can be maintained by a secretary.

11. *Construction Cost Data:* Too frequently architects realize their lack of knowledge concerning construction costs. Actual job experiences will provide some individual job figures for cubic or square foot costs. While a job is being planned, material-cost comparison is made frequently. Comparative figures on a unit basis obtained from friendly contractors or manufacturers for various construction items are best recorded on a card index (note date for each information so obtained). A basic work file can be commenced with this card index. Occasionally a contractor's bid will reflect unit prices for all items of work. A copy of this information should supplement the card file.

In order to obtain at least a relatively good insight into construction costs, it is advisable to subscribe to various sources furnishing cost information. A few of these are: *Building Construction Cost Data* (R. S. Means) yearly; *Manual of Appraisals* (Boeckh); *Building Costs* (Boeckh) monthly; *Construction Market* (Dow) weekly; and other cost data prepared by various large contractors and local AIA groups.

As the material bearing on costs is rarely used by the majority of the men, it is best kept near the person most frequently concerned with cost questions.

12. *Job "Desk" Files:* This is merely a file kept by the Job Captain containing copies of all planning notes, memoranda, minutes of meetings, pertinent correspondence, etc., having direct bearing on his seeing the job through to completion. The originals are kept in the main office file.

the office boy and his function

Various duties originate from some of the above-mentioned filing systems, which help keep the Drafting Room in good working order. It is obvious that an architect could not afford to keep a senior technical employe occupied full time with such functions. A young man, aspiring to become an architect, is ideally suited for this work.

Such a young man, commonly known as office boy, among other duties generally has to keep the drafting room in order, attend to the various filing functions described above, check on and order supplies, order prints and distribute them as they are received, stamp these "received" and "issued," make out transmittal forms, etc. In addition to these functions, he may get a chance to help build models, conform duplicate shop drawings, and do occasional drafting, until such time as he may become so proficient in the latter so as to warrant his advancement to a junior draftsmanship—necessitating employment of a younger man to take over his office-boy function.

The office boy, in the conscientious performance of his duties, is an invaluable asset toward the efficient functioning of an office. He has the rare chance to see and learn in detail all the workings of an architect's office (usually not taught in schools): instead of having to learn the hard way, should he establish his own office in years to come, as is so often the case with a number of young men whose first job in an office puts them instantly "on the board."

This completes the author's discussion of filing of "technical" material in the office. As provision must also be made for filing of "nontechnical" material, that will be the subject for next month.

Bernard Tomson **it's the law**

IT'S THE LAW *(April 1954 P/A)* discussed the essential functions of a Board of Zoning Appeals and, in particular, the factors considered by a Board in granting a variance.

In recent years, a practice has been employed by cities, towns, and villages which constitutes a serious encroachment upon the powers of a Board. This practice consists of the granting by local governing bodies of certain "special permits" or "use permits" to property owners.

Such action by a governing body is in many if not most instances, unauthorized and improper. The State of New York has, as do all states, zoning-enabling acts which empower the cities and local governing bodies to enact zoning ordinances and appoint boards of zoning appeals. The enabling acts in New York do not delegate to the governing or legislative body the power to grant variances or grant administratively "special or use permits." Under the New York acts, it is the chief purpose and function of the board to grant or deny variances and their determinations are always subject to judicial review.

It is manifestly clear that when the local governing body grants a "use permit" for a use not permitted by the zoning ordinance, it is, in effect, amending the ordinance as to that particular parcel of property. Such action is legislative rather than administrative. As the local body is acting in a legislative capacity, there can be no summary review by a court.

The New York Court of Appeals in *Matter of Neddo* v. *Schrade,* 270 N.Y. 97, determined that the adoption of a resolution by the City Council of the City of Saratoga Springs transferring real property from a partially restricted to an unrestricted zone was not subject to review by certiorari. In labeling the action legislation, the Court declared as follows:

"The setting up of a Board of Appeals and the exercise by it of its limited statutory authority does not detract from the legislative power remaining in the City Council to amend, alter or change the lines of the zones. When application is made to this latter power, we find an instance where the City Council grants relief through legislative power reserved to it, even though a Board of Appeals may be functioning with concurrent power pursuant to a grant to the Board of statutory power." (p. 102)

There is no question of the power of the local governing body to amend from time to time its zoning ordinance, as to any or all properties. Such amendments, however, should encompass the same considerations and requirements that were applicable when the original ordinance was enacted. The Village Law of the State of New York (Section 177) prescribes that a zoning ordinance must deal with zoning the village "in accordance with a comprehensive" plan applying to the entire village. It must be designed to do the following things:

". . . lessen congestion in the streets; to secure safety from fire, panic and other dangers; to promote health and the general welfare; to provide adequate light and air; to prevent the overcrowding of land; to avoid undue concentration of population; to facilitate the adequate provision of transportation, water, sewerage, schools, parks and other public requirements. Such regulations shall be made with reasonable consideration, among other things, as to the character of the district and its peculiar suitability for particular uses, and with a view to conserving the value of buildings and encouraging the most appropriate use of land throughout such municipality."

Thus, when a governing body grants a "use permit," it is amending the ordinance without following its own comprehensive plan and such legislation is not calculated to effect the stated purposes and objectives contained in the enabling act of the state. Such action in many instances is actually a form of legislative discrimination against other parcels of property similarly situated. The property owners affected by such action are deprived of their court review which would be their right if the matter had been before the Board of Zoning Appeals. The granting of "use permits" constitutes, therefore, little more than a circumvention or usurpation by the municipal body of jurisdiction expressly reserved by the enabling statute to the board.

The courts have viewed critically, in some instances, the practice of local bodies granting "special uses". In *Village of South Orange* v. *Hiller,* 92 N.J. Eq. 505, the Court held invalid an ordinance that provided for granting of "special permits" by the Board of Trustees of the Village, after a hearing, to the property owners. The Court, in recognizing the discriminatory nature of the provision which could not apply to all citizens alike throughout the district, said as follows:

"Discretionary powers reserved to the trustees to give to one and to withhold from another the privilege of violating the ordinance is not conferred by the enabling act, and is without legal effect and is void."

The courts have been unalterably opposed to piecemeal zoning and have consistently advocated zoning acts containing a comprehensive plan for the development of a community. Such a view was aptly stated in *Chapman* v. *Troy,* 241 Ala. 637, as follows:

"A single ordinance laying off a small portion of the city as a residence district, taking no account of other areas equally residential in character and so far as appears without any comprehensive plan with a view to the general welfare of the inhabitants of the city as a whole, is not permissible. Piecemeal ordinances are not favored."

In order to be effective, zoning must, of necessity, be in accordance with a comprehensive plan, so as to insure proper development and use of a given community.

traveling exhibition brings design to the public

Shopping Centers of Tomorrow is the title of an architectural exhibit prepared by Victor Gruen Associates and circulated by the American Federation of Arts. Through the early months of this year it has been traveling and attracting large crowds—unusual crowds for museums in New Mexico, Kansas, Kentucky, and in Detroit, Michigan; Minneapolis, Minnesota; and so on. The Gruen partners (Victor Gruen, R. L. Baumfeld, Karl O. Van Leuven, Jr., and Edgardo Contini) are well pleased with the results of much work (and expense) for the firm, because the public relations and public education result have been all they could ask for. It goes without saying that an exhibition of this caliber does good for all of architecture—not only for its designers and its sponsors.

"An exhibition, to be successful," says Burton Cummings, Director of the AFA, "must, like a work of art, spring from an idea which is rooted in human experience and from there be brought to its fullest point of development with the means of communication available. With this exhibition, the more we study it the more we understand the validity of the idea and appreciate how beautifully it has been exploited. We are able to see with great clarity that something must be done about our expanding economy, population and technology, and the concurrent mounting congestion in the American City."

P/A is particularly pleased to see how handsomely the "idea has been exploited," because much of the material was first gathered together for the June 1952 special issue of this magazine, on Shopping Centers, for which Victor Gruen and his associates and Larry Smith, economic consultant, and his staff, were guest editors. That issue has become the standard reference on the subject, and this exhibit bids fair to be the outstanding *public* documentation of the same subject matter. Wherever the exhibit has been shown, local publicity has been tremendous. The Gruen files bulge with clippings from the Minneapolis *Tribune*, the Louisville *Courier-Journal*, the Detroit *News*, the Wichita *Beacon*, and so on; and with notices of TV and radio shows based on the exhibition.

Architects should be interested in the enterprise not only as a public relations activity of unusual proportions, but also because of the exhibit technique which was developed for the panels. Designed to fit in a space of approximately 2400 square feet, the show is on a series of demountable panels, with special, simple connectors and floor plates *(shown in detail acrosspage)*. A special triangular section marks the "Introduction" or entrance to the exhibit. From here the viewer is led logically through a sort of continuing story, divided into sections based on the history of shopping centers, traffic, parking, safety, environment, weather, and shopping atmosphere, to a central group of panels on "the design process." Final sections of the exhibit show four large projects from the Gruen office, demonstrating in actuality the points that have been made.

Design, editing, layout, and construction of a truly professional exhibit of this sort require specialized knowledge, unusual talents—and a large budget. Not too many private architectural firms could do the same thing. It may, however, mark a standard of exhibition quality which some others might aim toward, and which AIA Chapters, and even national groups and societies might emulate.

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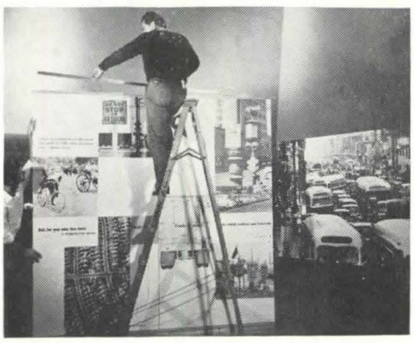
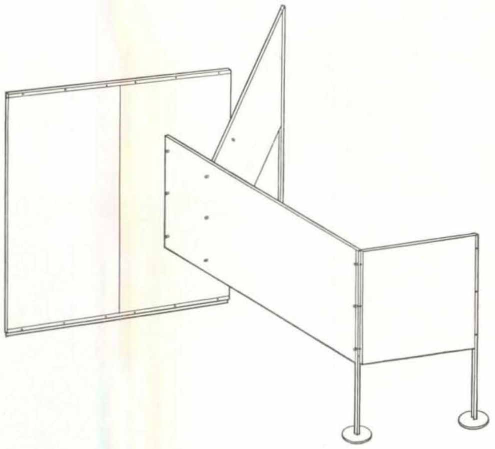
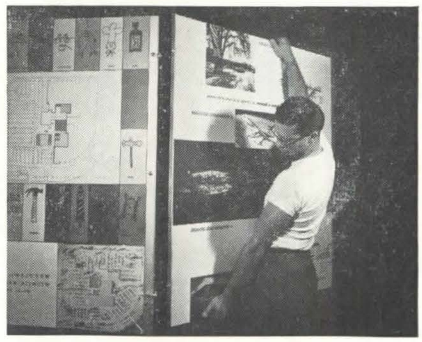
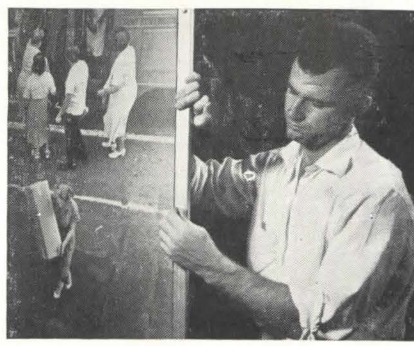
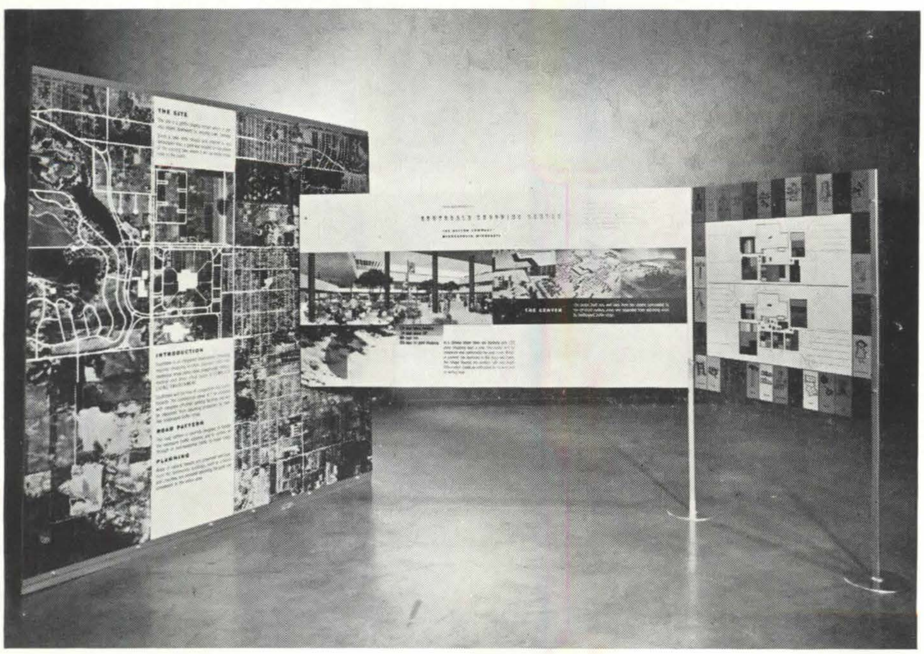


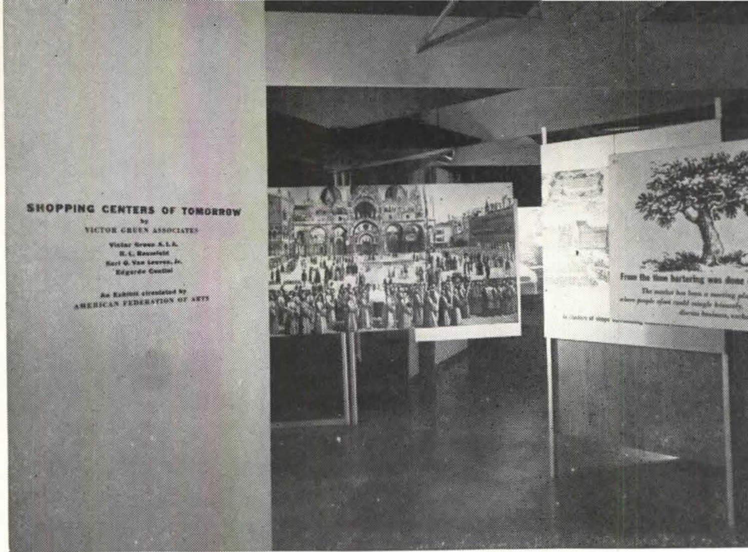


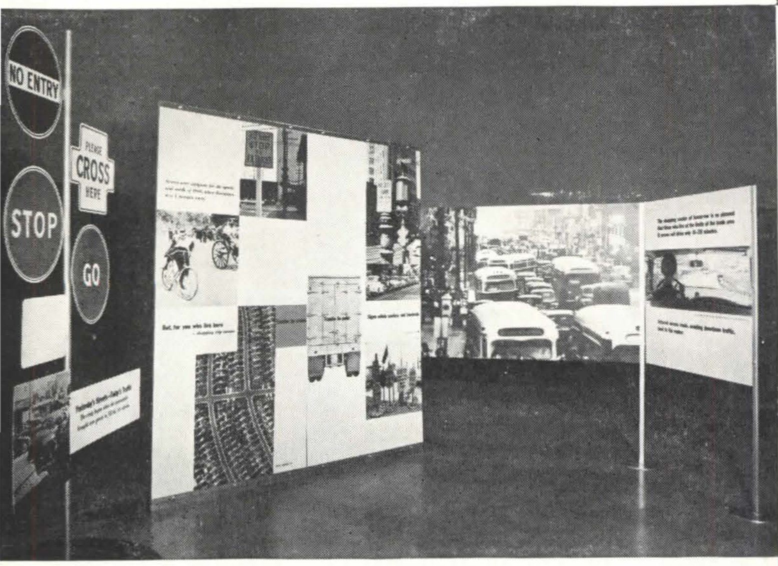






A series of standards with floor plates, and a system of panel connectors make erection of the exhibit simple. A floor plan, keyed to the panels, indicates ideal layout of the exhibition, which can vary depending on available floor space, so long as sequence is followed. A somewhat typical panel grouping is shown on this page—details above, and the finished assembly at the right.

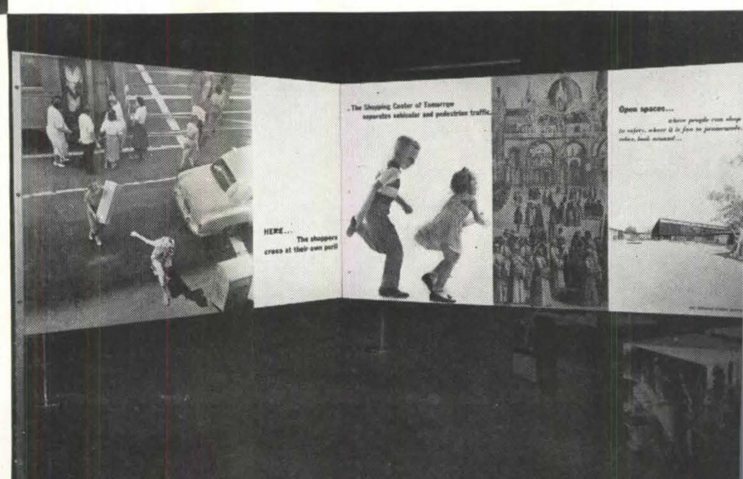




HISTORY. *From the time bartering was done under a tree the market has been a meeting place . . . but these historic market places . . . had* human scale.

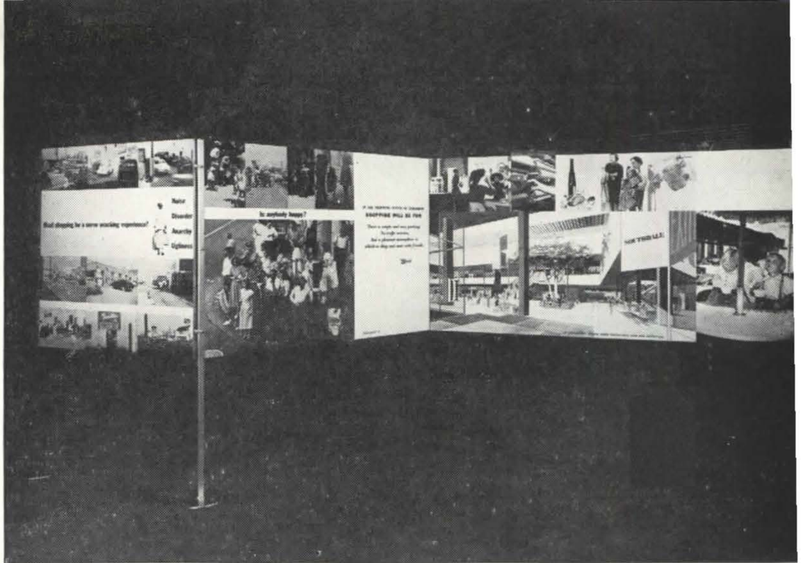
TRAFFIC. *The crisis began when the automobile brought new speeds to fill the city streets . . . shopping center traffic is not channeled through quiet, residential streets.*

SAFETY. *The pedestrian world has dwindled to a ribbon of pavement on the banks of the traffic stream. . . . The shoppers cross at their peril. In highway strip developments, parking cars and road-crossing shoppers mix. . . . The shopping center of tomorrow separates vehicular and pedestrian traffic. It provides open spaces where people can shop in safety, where it is fun to promenade, relax, and window shop.*

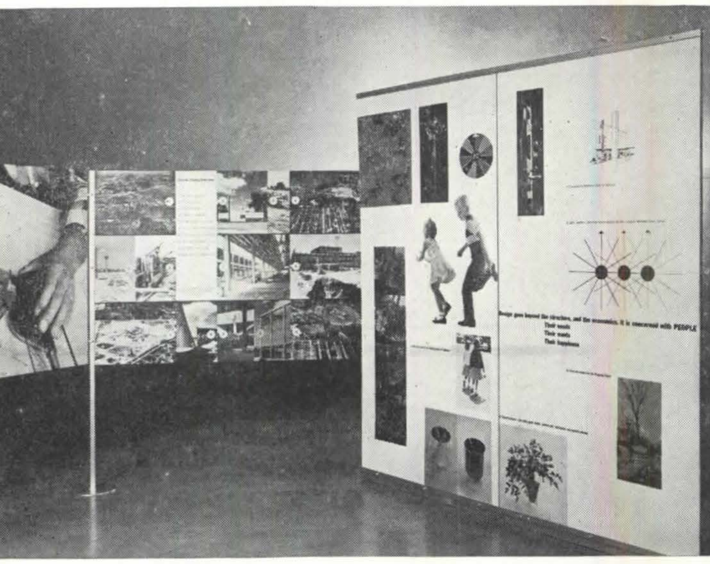


ENVIRONMENT. *Danger, disorder, disintegration are appalling features of our commercial slums. . . . Buffer areas should be created to protect residential areas from noise and fumes. . . . A shopping center which fails to consider its relationship to residential areas will soon be surrounded by blighted and slum neighborhoods and will find itself with a greatly reduced business potential.*

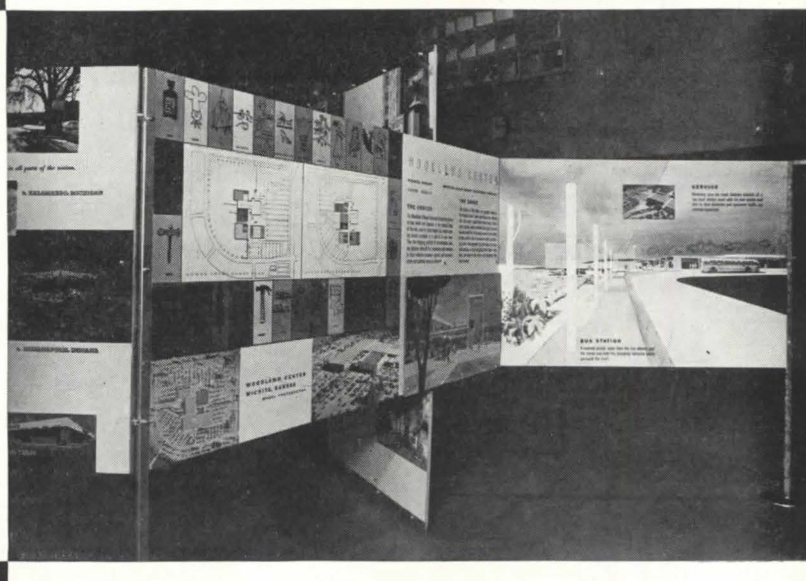
Captions on these pages are from the exhibit.



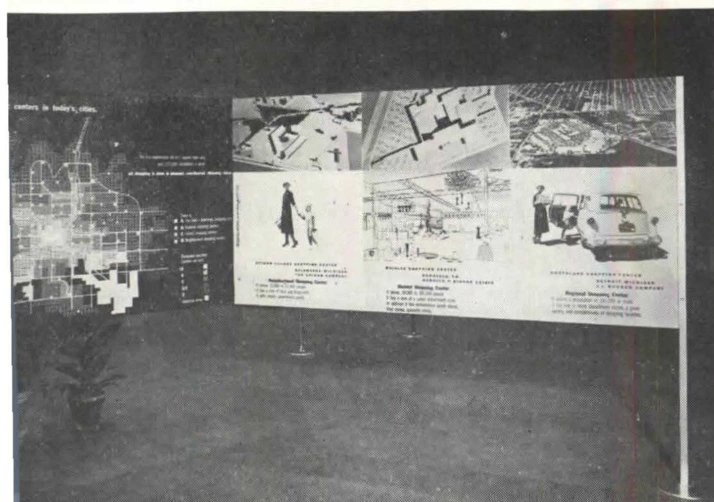
SHOPPING ATMOSPHERE. *Must shopping be a nerve-wracking experience, full of noise, disorder and ugliness? . . . In the shopping center of tomorrow, shopping is fun . . . there is a pleasant atmosphere in which to shop and meet with friends. . . . The shopping center of tomorrow will present a sound mixture of large and small tenants to offer variety, interest, and color.*



DESIGN PROCESS. *The shopping center architect must combine skills ranging from traffic engineer to city planning to chain store leasing expert. As a team captain, the architect co-ordinates the work of specialists in a dozen fields . . . The beginning of the planning process is the economic analysis . . . The final plan is developed through study of various possibilities in relation to the site.*



PROJECTS. *Woodlawn Center, Wichita, Kansas: The stores of the center are grouped around a landscaped court. Lower level stores face directly into this court and upper level stores face the shopping balcony which overlooks the court. Covered arcades lead from the parking areas. . . . A ramp and stairs at strategic points interconnect the two levels of stores and parking.*



Improved Health Standards

Two separate, but closely related, trends in modern health-care practice have given rise to new architectural needs and opportunities—even including entirely new building types.

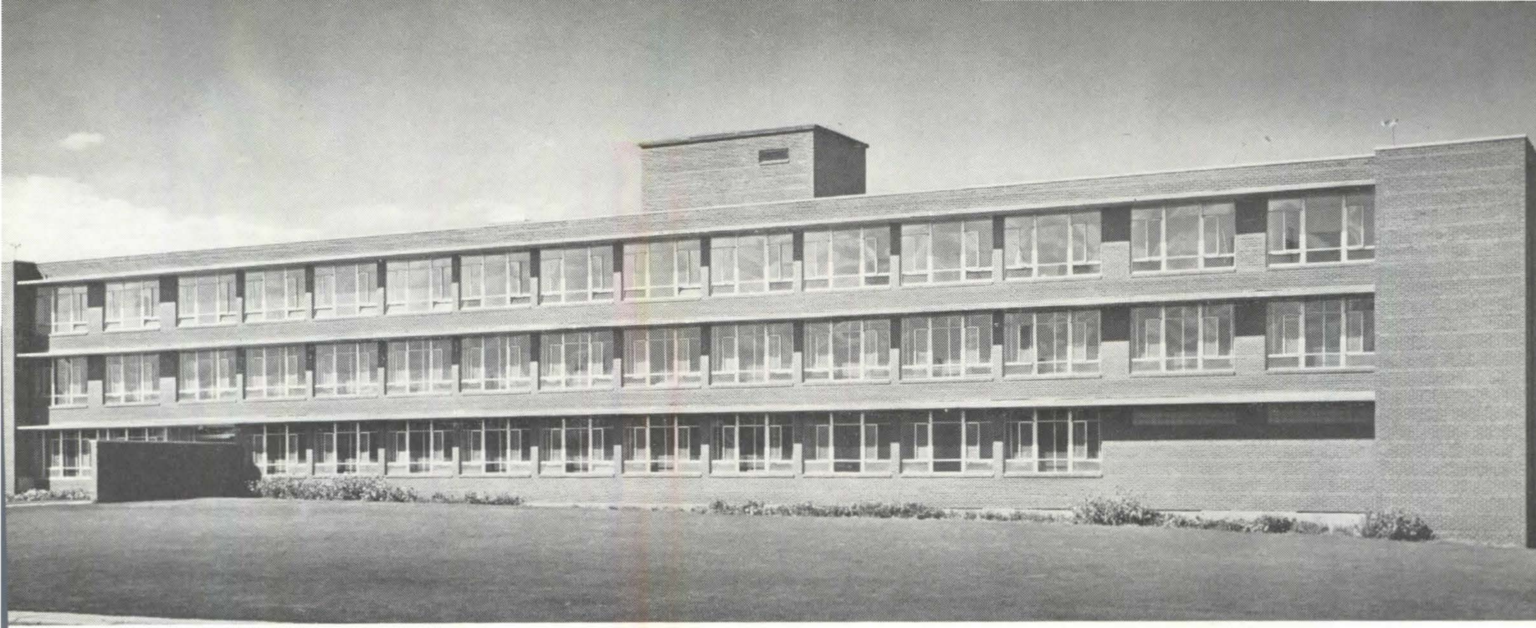
1. Early ambulation and early discharge from the hospital are subjects that have been much discussed among hospital people, but only now are being recognized in new hospital plans. With the extremely costly equipment that a modern hospital requires, everything possible is done in treatment to shorten the patient's stay; thus the hospital is enabled to serve a greater number of patients without the expense of additional beds.

According to Dr. Andrew J. Signorelli, Medical Director of Faith Hospital in St. Louis (page 82), "the combining of modern hospital efficiency with contemporary treatment methods has reduced the average length of stay in hospitals by more than one half." In planning, design elements to speed the patients' recovery range from the obvious, such as the use of pleasing and restful color, to wholly new plan concepts, such as inclusion of an entire separate floor for convalescent patients so that they are physically removed from the inevitable tension surrounding immediate postoperative or acutely ill cases.

2. Clinical and outpatient care to control disease before it becomes acute or chronic—before the patient requires a hospital bed—in a great many cases avoids hospitalization altogether and reserves valuable hospital space for those who really need it.

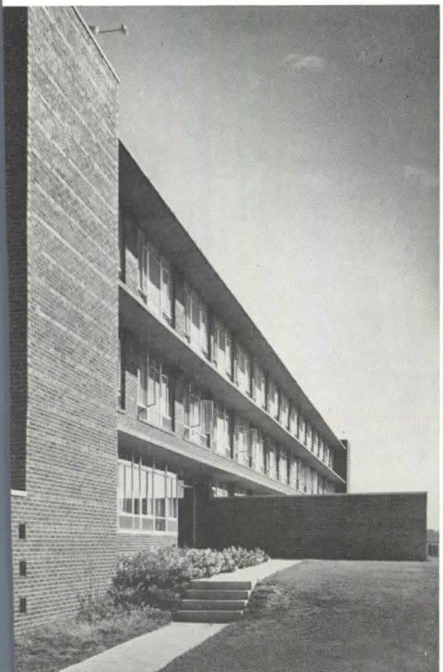
Insurance and prepayment plans (plus public education) have increased the use of outpatient facilities in recent years. As a result, some wholly new building types and refinements of time-honored ones have become important architectural problems. The HIP Clinic in this issue (page 115) is an outstanding example of the new independent "clinic"; more familiar group practice buildings and specialized doctors' office buildings are increasing in number; outpatient departments in the hospital or as part of a medical center are receiving new study.

The buildings in this issue were selected to show the impact of these contemporary trends. They indicate clearly, we feel, that reliance on past (even recently past) accomplishments will no longer suffice; new and improved health standards require newly studied planning standards.



osteopathic hospital

location	Denver, Colorado
architects	Fisher & Fisher
structural engineer	Milo S. Ketchum
mechanical engineers	Marshall & Johnson
general contractors	Mead & Mount and Frank J. Buirgy Construction



The economic resultant of several components—design, structure, maintenance, and operation—spells the success or failure of any hospital. To assume that an architect has done a good job simply because he has turned out a handsome design, chosen an economical structural system, used materials that require little maintenance, or worked out an efficient floor plan is not an entirely valid assumption. None of these alone makes a good hospital; this comes only from a judicious integration of all the above features, plus administration which makes full use of the physical facilities.

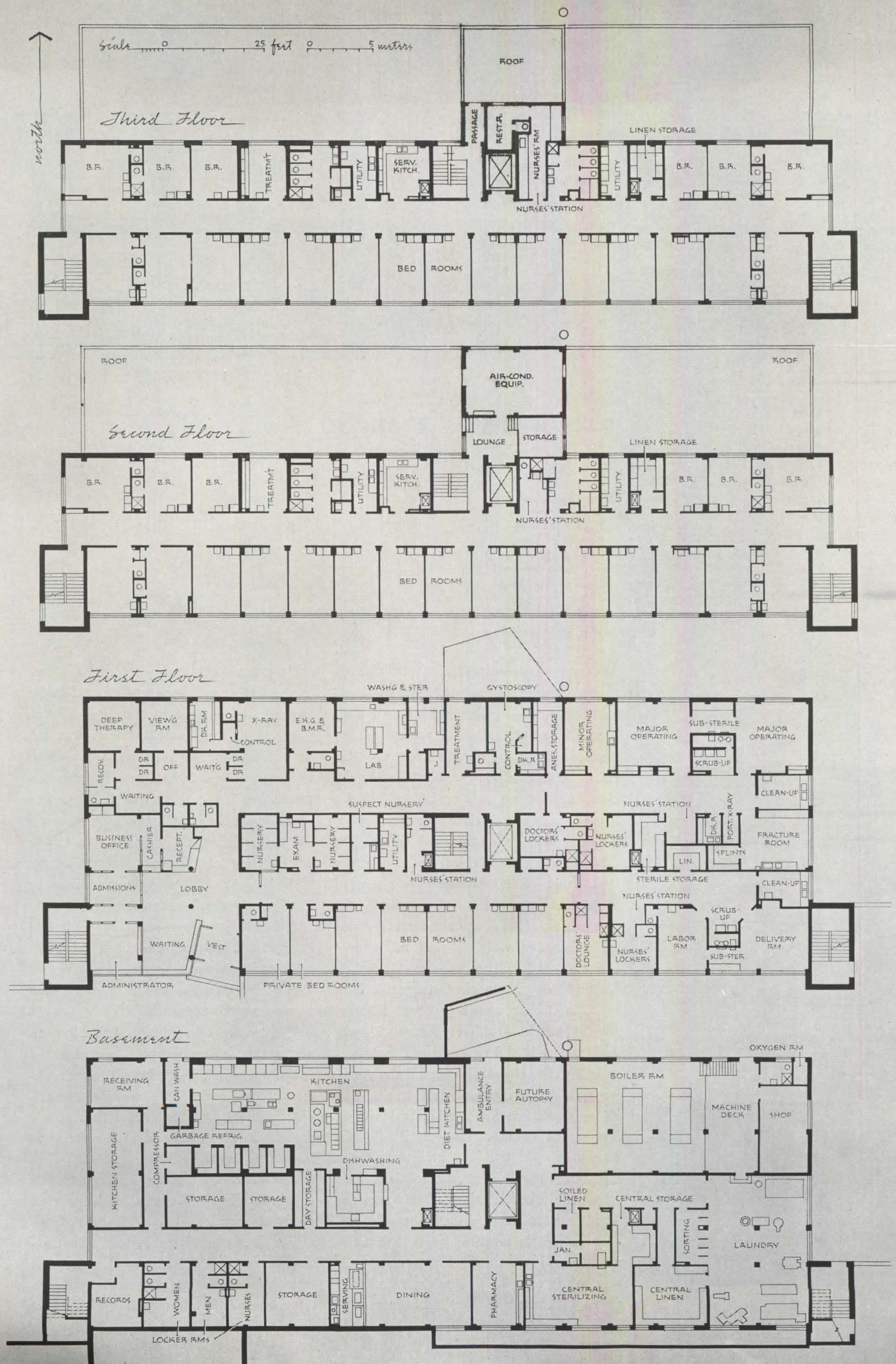
The Rocky Mountain Osteopathic Hospital, in Denver, shows just such integration. Here the architects have obviously designed well and chosen their materials well, and they have also used a structural system—reinforced-concrete frame and slabs—that, for this particular building, has proved quite economical. As for efficiency of operation, the architects claim that is the result of good administration; while the administration claims that the architects are responsible. Whoever is responsible, it is certainly evident that the architect-client relationship was and still is a happy one, which itself can be taken as an indication of how extraordinarily well the architects have served the client.

The entire structure was erected under the initial contract by Mead & Mount, Contractors, but the third floor was left unfinished—to be completed when funds became available. As a result of the hospital's economic design and its smooth operation, it became feasible to complete the third floor only a year later (much earlier than anticipated), increasing the 50 beds to 88. This was the work done by Frank J. Buirgy Construction.

A future laundry was planned, but as commercial service has been adequate that addition is indefinitely postponed. The nursery, on the first floor, can be expanded to the south.

It is certainly worth noting that, in Denver, where most buildings are oriented to the west for a view of the Rocky Mountains, this hospital is more sensibly oriented to the north and south. Sick people are not as often interested in scenery as in cool, softly lighted rooms. And unlike a resort hotel, this hospital is used by residents who are familiar with the view of the mountains.

The strong horizontal lines of the structure accent the flatness of the site, but they also serve to dramatize the mountains beyond, for those passing by.



Scale 0 25 feet 0 5 meters
north
Third Floor
ROOF
PASSAGE
REST. R.
NURSES' RM
LINEN STORAGE
B.R.
TREATMT
UTILITY
SERV. KITCH.
NURSES' STATION
BED ROOMS
Second Floor
ROOF
AIR-COND. EQUIP.
LOUNGE
STORAGE
First Floor
DEEP THERAPY
VIEWG RM
DK. RM
X-RAY
CONTROL
E.K.G & B.M.R.
WASHG & STER
LAB
TREATMENT
CYSTOSCOPY
DK. R
ANES. STORAGE
MINOR OPERATING
MAJOR OPERATING
SUB-STERILE
SCRUB-UP
RECOV.
DR
OFF
WAITG
WAITING
CLEAN-UP
SUSPECT NURSERY
BUSINESS OFFICE
CASHIER
RECEPT.
NURSERY
EXAM
DOCTORS' LOCKERS
NURSES' LOCKERS
PORT. X-RAY
FRACTURE ROOM
SPLINTS
LIN.
ADMISSIONS
LOBBY
STERILE STORAGE
VEST
DOCTORS' LOUNGE
LABOR RM
DELIVERY RM
SUB-STER
ADMINISTRATOR
PRIVATE BED ROOMS
Basement
RECEIVING RM
CAN WASH
KITCHEN
AMBULANCE ENTRY
FUTURE AUTOPSY
BOILER RM
OXYGEN RM
MACHINE DECK
SHOP
KITCHEN STORAGE
COMPRESSOR
GARBAGE REFRIG.
DIET KITCHEN
DISHWASHING
STORAGE
DAY STORAGE
SOILED LINEN
CENTRAL STORAGE
SORTING
LAUNDRY
JAN.
RECORDS
WOMEN
MEN
NURSES
SERVING
DINING
PHARMACY
CENTRAL STERILIZING
CENTRAL LINEN
LOCKER RMS

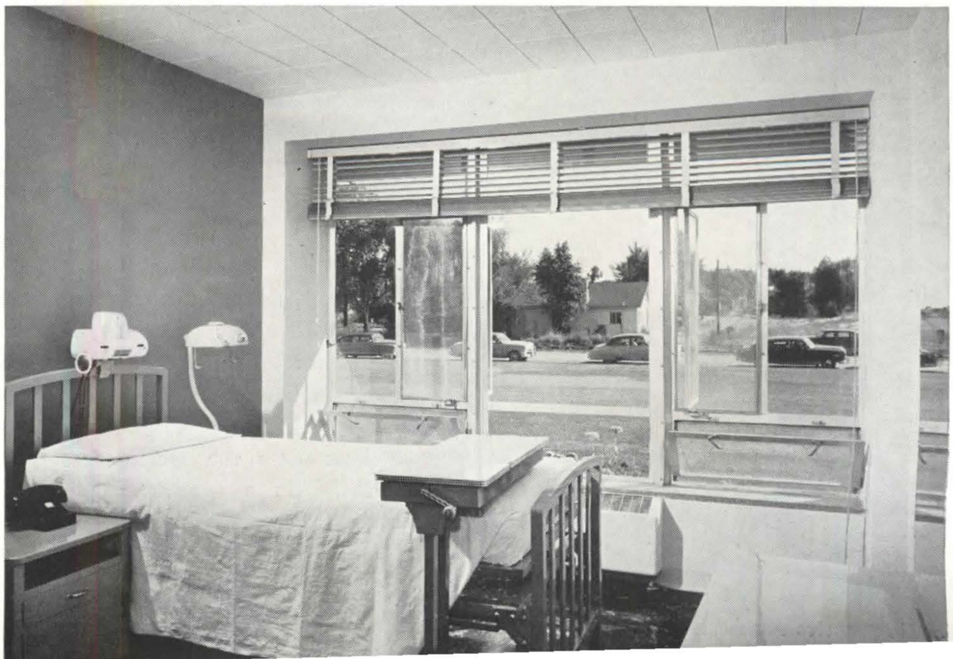
osteopathic hospital

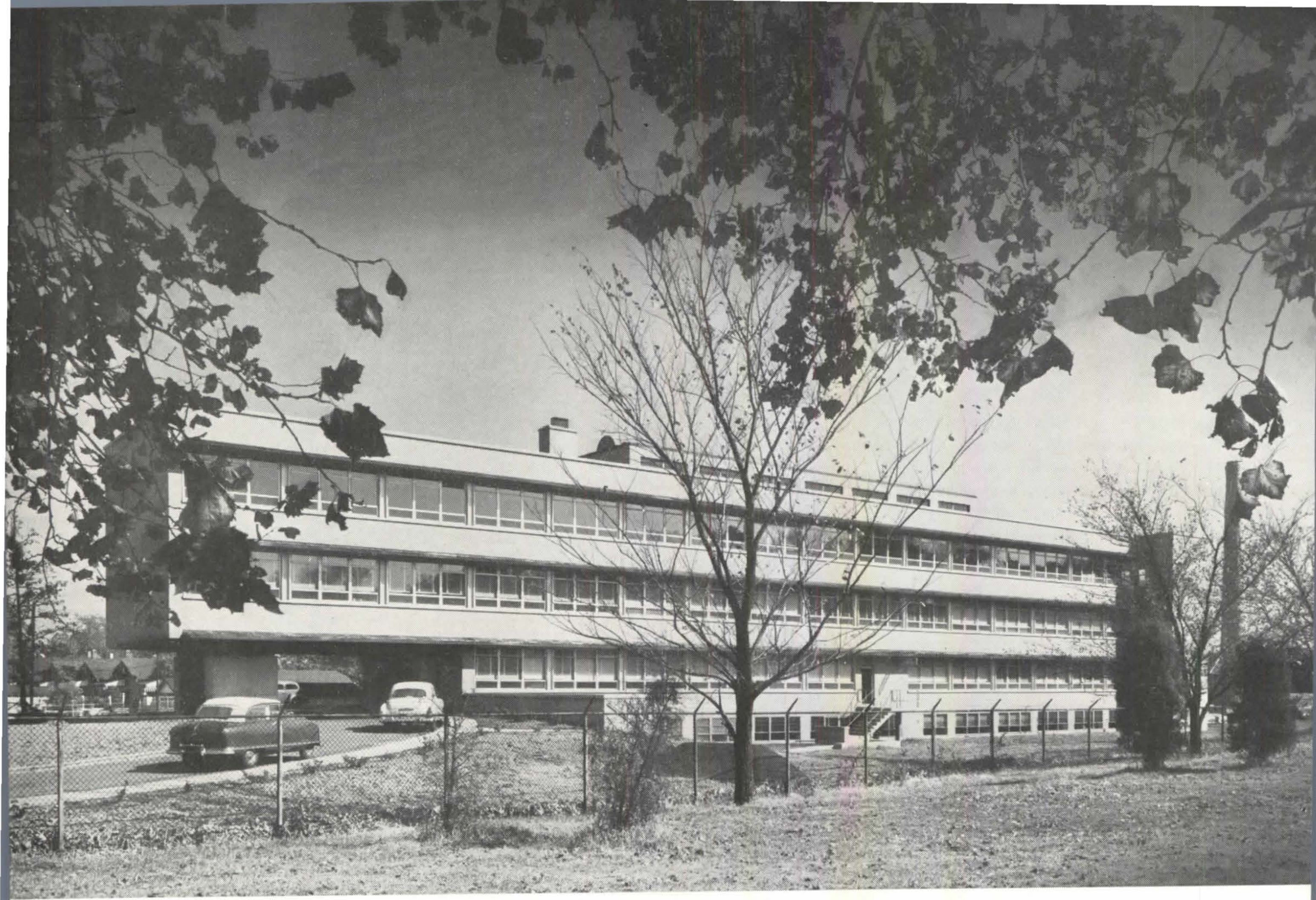
Twin operating rooms (right) *on main floor are separated by scrub-up room and sub-sterilizer space, which opens directly to them without doors. For economy, an anesthesia room was omitted in favor of direct anesthesia at the operating table, hence pipes and tubing on near wall. Floor is terrazzo; walls and ceiling plaster.*

As neat as the operating room, the administration area enjoys warm textures of natural brick and wood, acoustical plaster, and matchstick draperies. Filing cases and divider (right) *separate cashier and reception desk from business office.*

Small, simple room (right) *for patient has abundant natural ventilation; light can be regulated with blinds. Materials and furnishings were chosen for high quality and low-maintenance requirements.*

Photos: Reynolds Photography



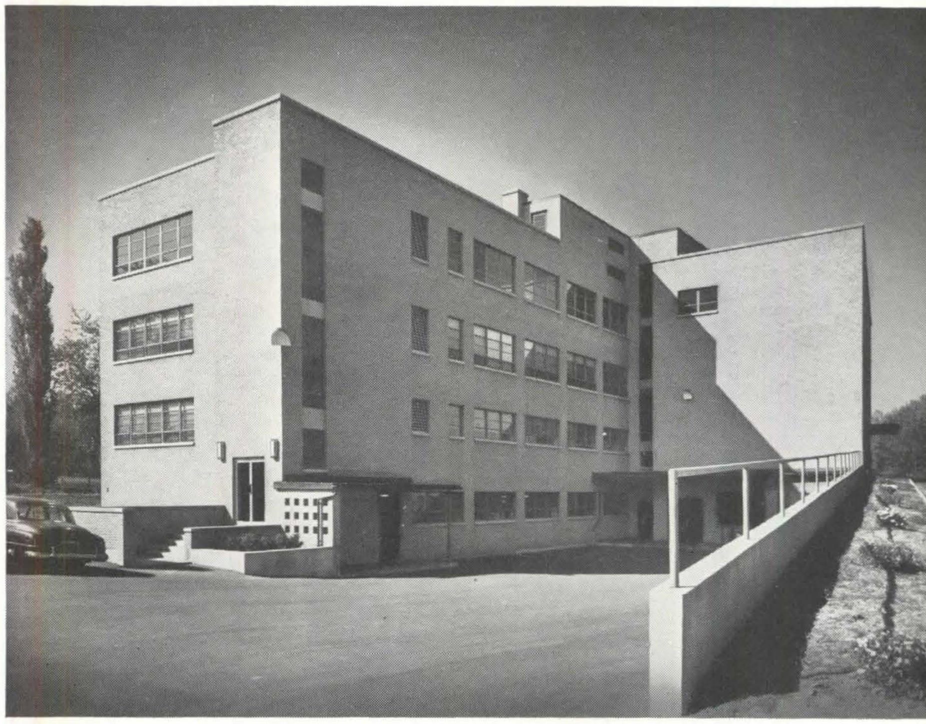


private general hospital

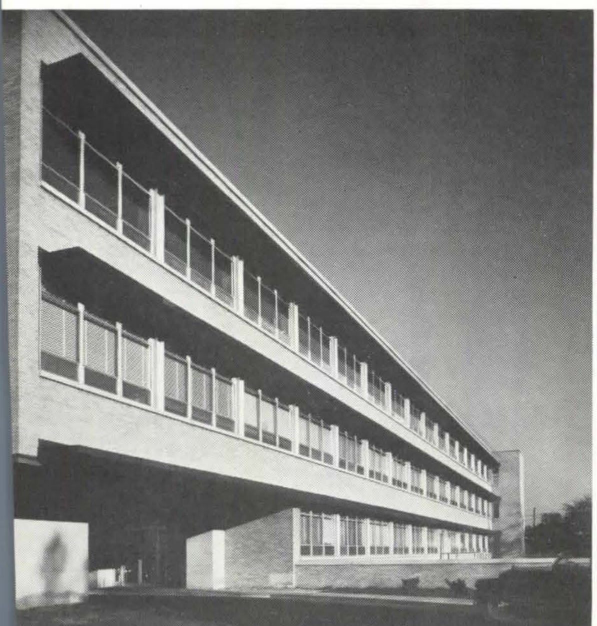
location	St. Louis, Missouri
associated architects	Joseph D. Murphy and Angelo G. Corrubia
medical director	Dr. Andrew J. Signorelli
structural engineer	Neal J. Campbell
mechanical engineer	Harry F. Wilson
general contractor	Charles Cristina Construction Company

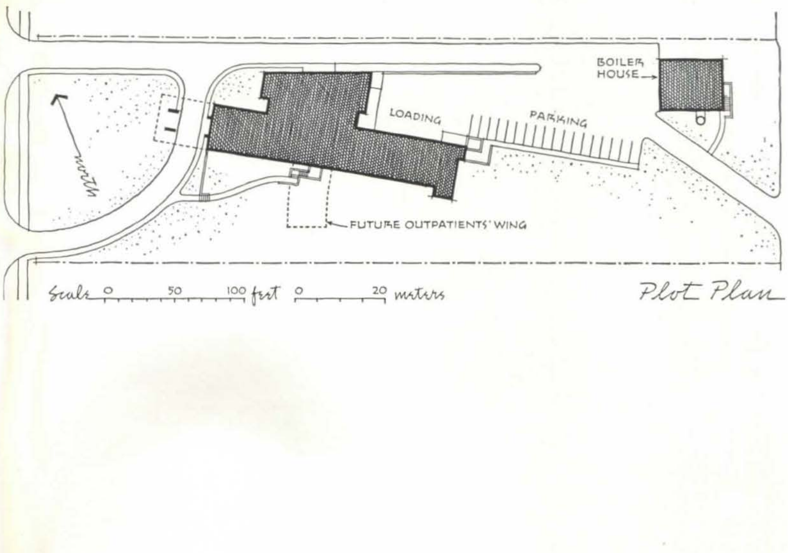
A private, nonprofit, nonsectarian hospital, owned and operated by the doctors of the staff, Faith Hospital as it stands today is but four floors of an eventual six-story building. Also to be added at a later date are increased outpatient facilities in a wing extending to the south from the building on the ground- and first-floor levels. (*Plan acrosspage.*)

Design and equipment of the hospital were developed by the architects around the advanced health-care theories of Dr. Andrew Signorelli, Director of the Faith Hospital Association. "All functions of a hospital plan," the Doctor stated in the initial program, "should be so related



At present, the top floor is complete as a shell, only; the three floors finished are used intensively and serve from 45 to 55 patients. When two more floors are added, the hospital will have 200 beds and 40 bassinets. Ambulance entrance (right of photo at right) *is at the rear and adjoins the emergency suite on the first-floor level; the driveway continues down and around to the ground-floor service-truck dock.*
Photos: Julius Shulman

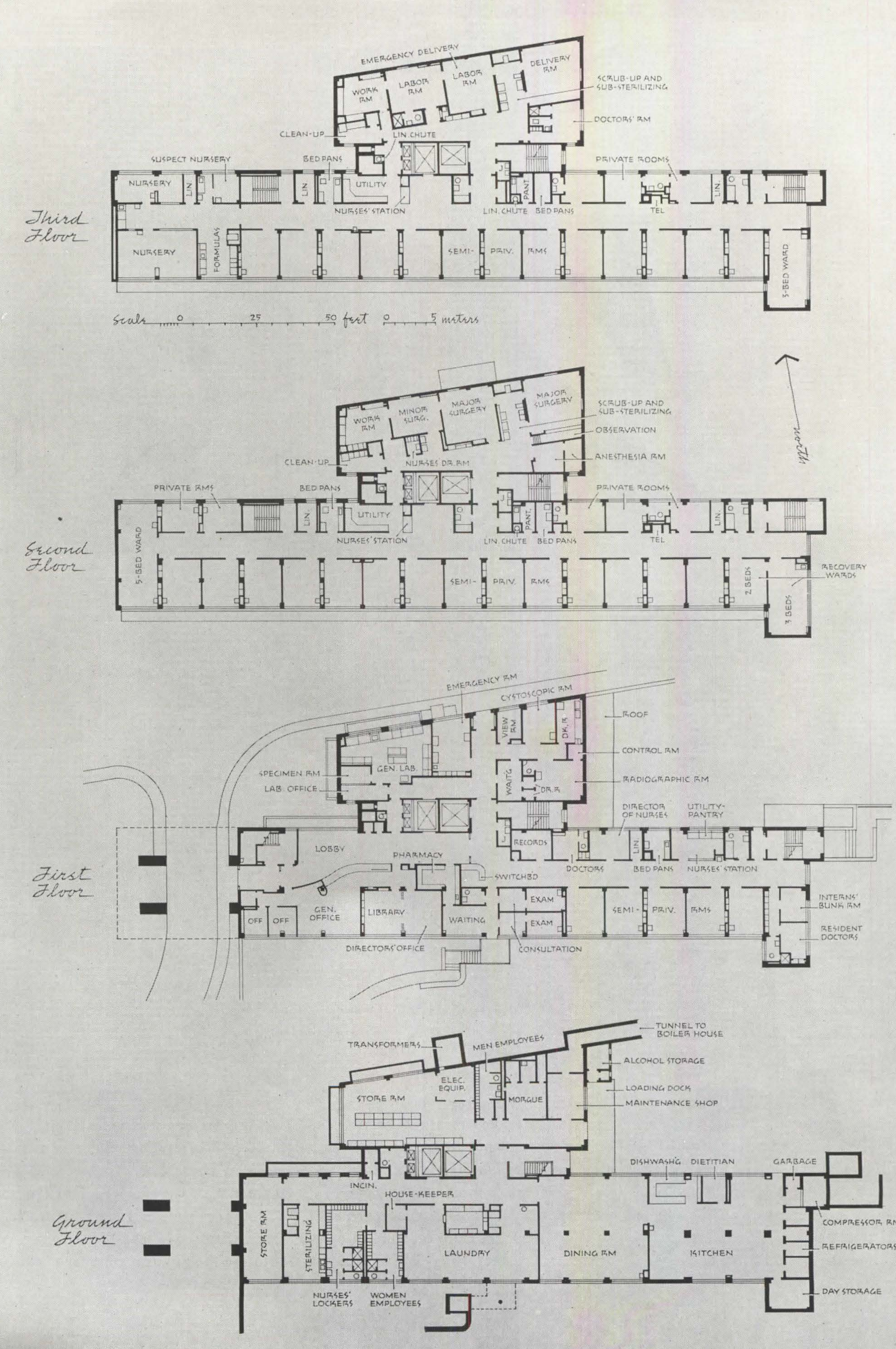




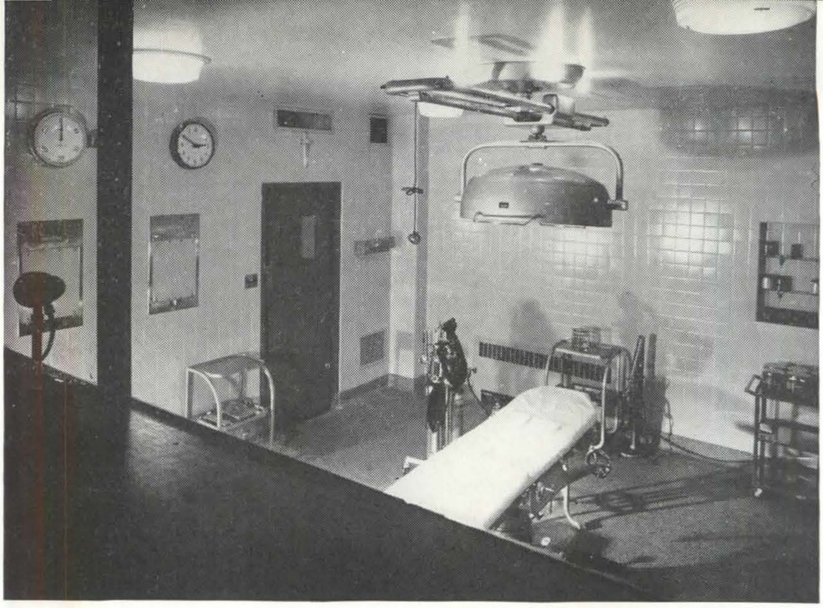
Plot Plan

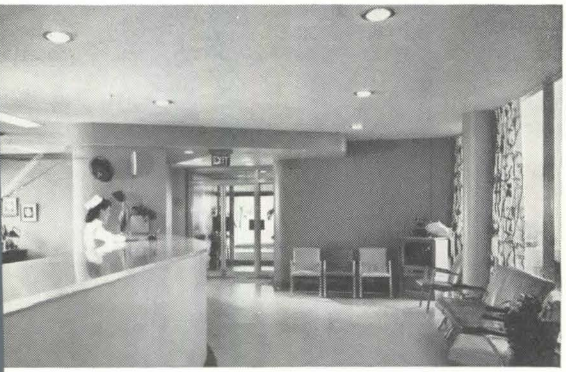
that each individual patient receives maximum care, service, comfort, and tranquillity with minimum friction, duplication, and expense." Heart of the idea was to plan in such a way as to promote earliest possible ambulation and discharge from the hospital consonant with proper health care. Thus, the patient gains the welcome result of keeping his or her costly hospital expenses to a minimum, and the hospital is able to extend its specialized services to an increased number of patients—inevitably leading to a less wasteful, more economical operation. At present, this is handled by moving postoperative cases to special recovery rooms at the east end of the nursing floors, where there is a special nurse in attendance. As soon as feasible, these patients are moved into the semi-private or private rooms. When additional floors are constructed, the plan is to use the top or sixth floor exclusively for convalescents.

private general hospital



Constructed on a narrow, rectangular, two-acre site, with a 165-ft frontage to the west along a major boulevard, the building consists of a long, nursing-unit wing, with most patients' rooms facing south and sun-protected by projecting, structural eyebrows, and an irregular-shaped wing to the rear in which are located operating rooms, labor and delivery rooms, and laboratories. The main entrance at the west end leads to the public lobby (below).





The ground floor houses storage and food-preparation facilities, a laundry, employes' locker rooms, sterilizing room, morgue, and maintenance space.

On the first floor, in addition to the main entrance lobby and administrative offices, there is the outpatient department, X-ray, general laboratory, and emergency suite, with ambulance entrance at the rear.

The second and third floors are typical hospital floors, including patients' rooms, services, and operating rooms. The unfinished third floor is currently planned as a maternity department.

The future fourth and fifth floors are tentatively schemed as facilities for general hospital cases and convalescents, respectively.

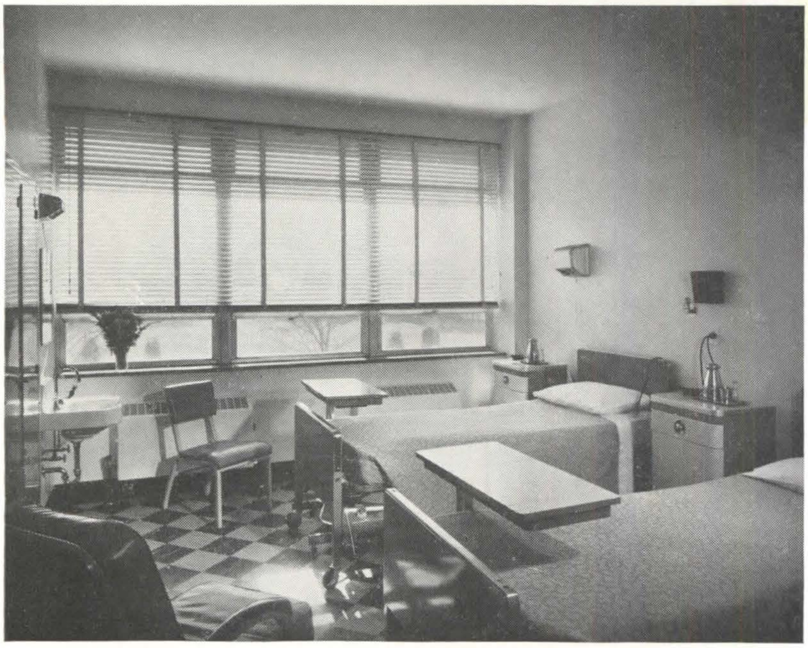
Throughout the design, everything possible was done to favor the well-being of the individual patient and to shorten the recovery period. Appropriate use of color to create a cheery, warm atmosphere; large windows to admit a greater amount of sunlight into patients' rooms; soundproofing to decrease annoyance from hospital traffic; an efficient call system. All these, plus provision of special areas for patients needing intensive care, were consciously designed to promote speedy convalescence.

The entire north wing of the building is air conditioned. The operating-room photograph (top) *was taken through a window in an observation corridor.*

The scrub-up area (center) *occurs between the two major operating rooms.*

On the south wall of the ground floor is the sterilizing room (right).

private general hospital



The semiprivate rooms (top) *are all on the south wall of the hospital. Wall-to-wall areas of insulated glass are protected on the outside by sun shades that screen the sun's rays in summer and allow maximum penetration in winter. Each bed has two-way communication with the nurse's station, in addition to the standard call system.*

At the east end of the nursing unit are two recovery rooms (above) *where intensive nursing care is given to postoperative cases.*

Materials & Methods

construction

Foundation, frame, floors, walls, roof: foundation: precast reinforced-concrete piles, pile caps—Smith & Brennan Pile Company; reinforced-concrete frame, below-grade walls—Missouri Portland Cement Company, Missouri Rolling Mill Corporation; above-grade walls: brick—Alton Brick Company, lightweight-concrete block; floors and roof: reinforced-concrete pan and flat slab: metal pans—Ceco Steel Products Corporation. **Wall surfacing:** exterior: brick—Alton Brick Company; interior: hollow tile with plaster, ceramic tile—Cambridge Tile Manufacturing Company, structural glazed tile—United States Gypsum Company; rest rooms: ceramic glazed structural tile—Arketex Ceramic Corporation, metal lath and plaster—Inland Steel Products Company. **Floor surfacing:** ceramic tile—Cambridge Tile Manufacturing Company, asphalt tile—Kentile, Inc., cement—Universal Atlas Cement Company, terrazzo and cement—Hubbellite Corporation, terrazzo. **Ceiling surfacing:** plaster on metal lath—H. H. Robertson Company, exposed concrete, acoustical tile. **Roof surfacing:** 20-year bonded, tar and gravel—The Ruberoid Company. **Waterproofing and dampproofing:** membrane waterproofing on basement and boiler-room floor slabs, floors of sterilizer rooms, exterior walls receiving plaster—The Ruberoid Company. **Insulation:** acoustical: fissured mineral-wool tile cemented to plastered surface—Armstrong Cork Company; thermal: glass-fiber insulation—Owens-Corning Fiberglas Corporation, cane-fiber insulation—Celotex Corporation, corkboard—Mundet Cork Corporation. **Roof drainage:** cast-iron downspouts—Josam Manufacturing Company. **Partitions:** interior metal—E. F. Hauserman Company, metal toilet—Sanymetal Products Company, Inc. **Windows:** aluminum and steel architectural projected sash—A.B.C. Steel Equipment Company, Inc. and Detroit Steel Products Company; plate and insulating glass—Libbey-Owens-Ford Glass Company; aluminum entrances—The Kawneer Company. **Doors:** hollow-metal interior doors—Niedringhaus Metal Products Company, hollow-metal elevator doors—Otis Elevator Company, hollow-aluminum entrance doors—The Kawneer Company. **Hardware:** master-keyed cylindrical lock sets—The Schlage Lock Company, door closers—The Oscar C. Rixson Company, ball-bearing hinges—The Stanley Works. **Paint:** exterior enamel and interior stippled—Pratt & Lambert, Inc.

equipment

Kitchen and laundry: stainless-steel kitchen equipment with steam, gas, and electric operation—Southern Equipment Company and Magic Chef Inc.; steam and electric laundry units—The American Laundry Machine Company. **Specialized equipment:** lead-protected radiographic suite—Westinghouse Electric Corporation; sterilizers—Wilmot Castle Company; metal cases, cabinets, patients' room furniture—A. S. Aloe Company. **Elevators:** 200 ft per min elevators with collective automatic control—Otis Elevator Company; automatic dumbwaiters. **Lighting fixtures:** office: incandescent—Art Metal Company; lobby: silver bowl indirect—Kurt Versen Company; patients' rooms: indirect and direct incandescent—Hub Electric Company; operating room lights—Wilmot Castle Company. **Electrical distribution:** service entrance switch with three-phase emergency circuit—Federal Electric Products Company; dead-front safety-type circuit panelboards; breakers and fused-type multibreakers. **Plumbing and sanitation:** siphon-jet flush-valve water closets—Kohler Company; solid plastic toilet seats—Olsonite Plastics Division of Swedish Crucible Steel Company; vacuum-breaker flush valves—Speakman Company; chrome lug-type accessories—Hall-Mack Company; gas-fired, double-flue incinerator—Joseph Goder Inc.; drinking fountains—Halsey W. Taylor Company. **Heating:** three 150 hp steam generators—Cleaver-Brooks Company; wall-hung convectors—Trane Company; pneumatic controls—Johnson Service Company; single-inlet ventilators—Buffalo Forge Company. **Air conditioning:** Freon refrigerant—E. I. du Pont de Nemours & Co. (Inc.); 375,000 Btu per hr compressor—Brunner Manufacturing Company; electrostatic air cleaner; pneumatic controls—Johnson Service Company.

air conditioning: Savannah Memorial Hospital

by K. R. Goddard*

In the following discussion of the general features of a 100-percent air-conditioned hospital in Savannah, Georgia, the author describes some new applications and combinations of mechanical equipment designed to reduce the operational expenses of that institution.

There has been an important increase in the construction of hospital facilities in the Southern states. Because of climatic conditions in this area of the country, it was natural that a modern concept of full air-conditioned space and other mechanical improvements be incorporated in their planning. Georgia now has under construction three hospitals in the category of 300 beds or larger–all three have the same hospital consultant, Dr. Herman Smith of Chicago.

The first one to be constructed, located in Augusta, Georgia, embodies the use of the Carrier conduit system of air conditioning, using high-pressure delivery of the supply air to individual units in each room. In this system, the fresh air (about 20 percent of the total required volume) is filtered, washed, and tempered in centrally located apparatus and delivered at high velocity to the individual units. Each room unit is composed of a tempering coil and air-jet diffuser which induces the air from the room over the tempering coil to combine with the supply air and then blow into the room. Either chilled or warm water is circulated in the tempering coil, depending upon the season. Water is chilled at this installation by steam-turbine-driven centrifugal compressors, and the warm water is obtained by shell and tube converters using steam for heating.

The second large hospital, erected at Macon, Georgia, employs the Trane Uniflow system of air conditioning. In this system, each conditioned space has an individual conditioning unit complete with tempering coil, fans, and fresh-air inlet from outside. The chilled and warm water is obtained in the same method as above.

The third large hospital now under construction in Georgia is at Savannah and employs still a third type of air conditioning, the principal features of which are presented in this article. The Memorial Hospital has in excess of 134,500 sq ft of air-conditioned space. A policy was established that all of the nursing areas, the operating suites, delivery suites, and nurseries were to be supplied with 100-percent fresh air.

Savannah is a coastal city and the normal summer humidity is quite high. On any 100-percent fresh-air system, the refrigeration required is, therefore, proportional to the air required to overcome the building heat gain. Consequently, the lower the building gains and losses, the less air required to overcome the load. Studies were therefore made to determine those construction features which would be economically justified in maintaining the building heating or cooling load at a minimum. The walls of the building are of cavity-wall construction, the two in. cavity being filled with glass-fiber insulation. All of the windows having eastern, western, or southern exposures are to be screened with Ingersoll "Koolshades." These shades eliminate the necessity of venetian blinds and permit maximum visibility while still reflecting up to 70 percent of the solar gain on the exposed glass areas. This feature was found to be cheaper than using insulating glass or double glazing. It also gives the interior decorators an opportunity to cover windows with decorative draperies instead of blinds. The saving in refrigeration tonnage realized by installing the insulation in the walls amounted to 72 tons, and the savings gained by shading the windows with "Koolshade" amounted to 74 tons or a total of 146 tons of refrigeration. An equally proportionate saving is made in heating during the three winter months. Because the building is essentially cruciform in plan, little or no reduction in solar-heat gain could be made by orientation.

After careful consideration of several methods and types of equipment for air conditioning, it was decided to use a high-velocity, central-plant type of system. The high-velocity method of air distribution lends itself nicely to larger temperature differentials between the conditioned supply air and the air in the conditioned space. Of course, the greater the differential that can be successfully maintained between the supply air and the desired temperature of the conditioned space, the less air required to overcome the load. The cooling load for the building, without insulation and shading of glass areas with venetian blinds, was determined as 872 refrigeration tons of air conditioning, including the fresh-air load. Based on 100-percent fresh-air in the nursing areas, operating suites, delivery suites, and nurseries and 25-percent fresh-air in the administration areas, 135,670 cfm of fresh-air would be required, using a conventional low-velocity distribution system. After adding the insulation to the exterior walls, shading glass areas with "Koolshades," and increasing the temperature differential between the supply air and the air in the conditioned spaces 50 percent (from 20 to 30 degrees), the fresh-air requirements were reduced to only 66,175 cfm, an additional refrigeration saving of 295 *tons*.

Another important advantage of the high-velocity method is its ability to deliver variable quantities of air into some

**Associate, Thomas & Hutton & Associates, Architects-Engineers, Savannah, Ga. Architects for the Savannah Memorial Hospital were Abreu & Robeson, Atlanta, Ga.*

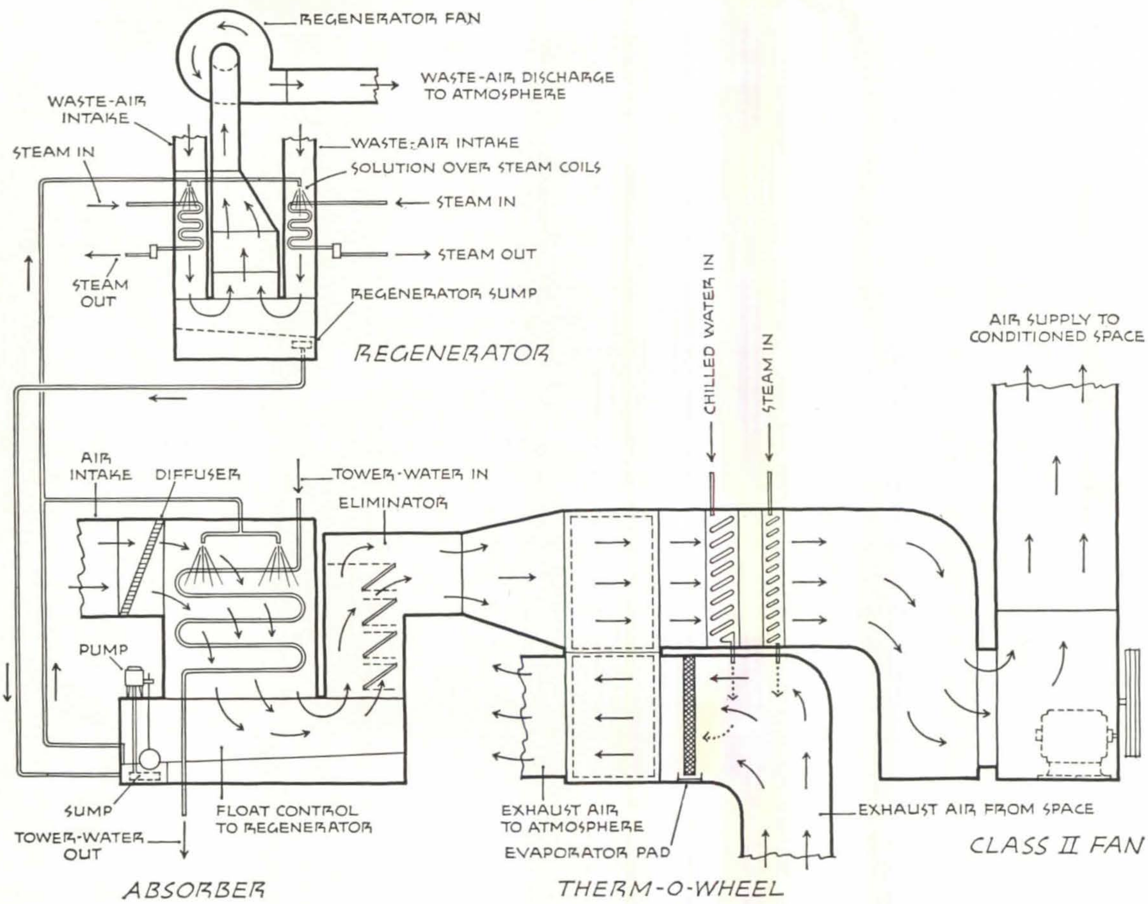


Figure 1—schematic diagram of air conditioners.

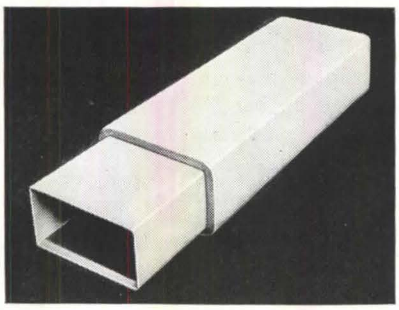


Figure 2—asbestos-cement duct with inner shell partially withdrawn (right).

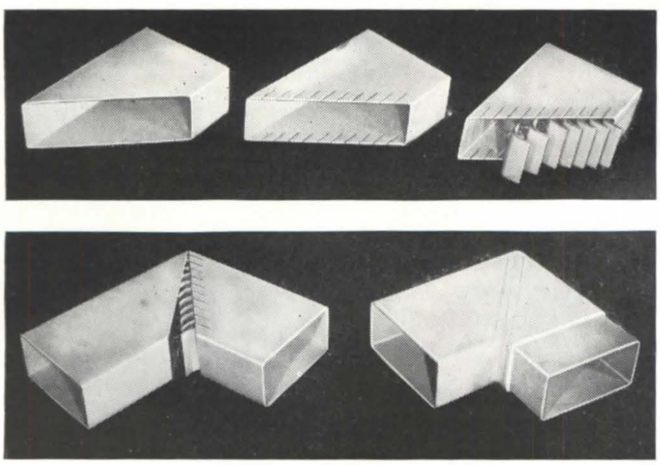
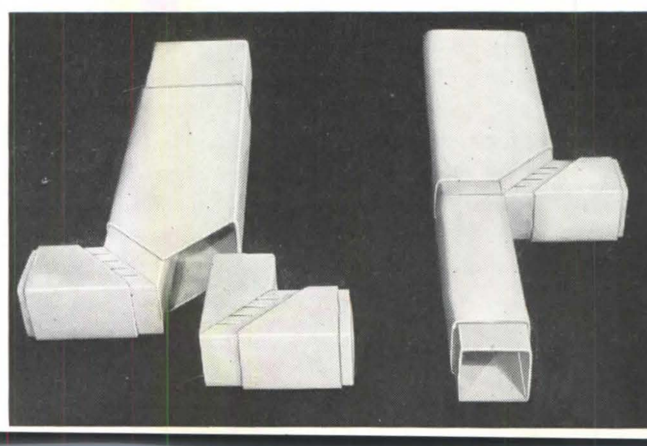


Figure 3—fabrication of 90 degree turn with asbestos-cement directing vanes (above).

Figure 4—assembly of 90 degree turn with directing vanes (below).



Velocity, Feet per Minute	Static Pressure Drop, Inches of Water per 100 Ft			Coefficient of Friction f		Value of C	
	Asbestos	Metal					
	Observed	Observed	A.S.H.V.E.	Asbestos	Metal	Asbestos	Metal
11 in. x 13 in. Rectangular Ducts							
1000	0.098	0.098	0.165	0.00391	0.00391	84.5	84.5
2000	0.310	0.310	0.600	0.00308	0.00308	97.0	97.0
3000	0.645	0.670	1.270	0.00286	0.00297	98.3	94.8
8 in. Round Ducts							
1000	0.200	0.235	0.280	0.00543	0.00638	70.0	59.5
2000	0.725	0.825	1.020	0.00492	0.00560	70.0	61.7
3000	1.545	1.735	2.150	0.00466	0.00522	70.0	62.5
5½ in. x 8½ in. Rectangular Ducts							
1000	0.200	0.195	0.340	0.00420	0.00443	85.0	87.2
2000	0.665	0.595	1.270	0.00377	0.00339	92.5	103.5
3000	1.395	1.300	2.600	0.00353	0.00328	93.5	100.0
2½ in. x 11 in. Rectangular Ducts							
1000	0.341	0.267	0.600	0.00474	0.00371	93.2	118.5
2000	1.175	1.032	2.500	0.00410	0.00360	89.8	102.0

Table I—results of friction tests on asbestos and metal ducts.
From article by R. H. Heilman in February 1938 *Heating, Piping & Air Conditioning.*

spaces without unbalancing the entire system. This permits individual variable control in each room by means of an inexpensive manual control—a versatility virtually impossible with conventional low-pressure distribution, without the use of a considerable amount of expensive controls.

In order to overcome the tremendous latent load imposed by an 80 F wet-bulb emperature for 66,175 cfm of fresh outside air, and at the same time maintain easonably close control of the relative umidity throughout the conditioned paces, five "Kathabar" dehumidifying pray towers are employed. These units rovide the air-conditioning equipment ith an apparatus dew point of 46 F and reserve safety factor down to 40 grains f moisture per pound of air supplied. he penalty normally arising from the se of chemical dehumidification is overcome by transferring the entire dehumidifying load—equivalent to approximately 400 refrigeration tons—to the cooling tower and permitting the temperature of the air through the absorbers to rise 14 degrees above the 85 F tower water.

The dehumidified air is passed through a "Therm-o-wheel" which is used as a heat exchanger to recover the temperature of the cooled, exhaust air from the conditioned space and transfer it to the warm, dry, fresh, incoming air. The additional cooling required to lower the air to 48 F is accomplished by a chilled-water coil operating as a sensible cooler. The chilled water supply (42 F) is controlled by a modulating valve operated by a thermostat located in the return-air duct immediately ahead of the "Therm-o-wheel" exhaust inlet. No reheat is required with this system; however, a heating coil is supplied for winter operation and can be used for reheat should occasion require it (*Figure 1*).

The air distribution in the hospital is achieved through a supply system carrying high-velocity air at three in. maximum static pressure to all conditioned spaces. The ventilation system is of such size as to permit the system to return to exhaust a volume of air equal to the volume supplied. Air velocities in the exhaust system are conventional consistent with a low noise level. The duct used in the distribution system is Careyduct (asbestos cement) with premolded insulation on all the supply ducts. Four major factors that influenced the selection of this particular type of duct for use in this building are:

1. The asbestos-cement duct presents a smooth interior surface with excellent flow characteristics; the friction loss of this duct is slightly less than sheet metal duct at the higher velocities (*Table I*).

2. The sound-absorbing qualities inherent in the duct material itself aid in noise reduction and eliminate the necessity of any sound traps in the system other than the attenuation accomplished by the outlet valve boxes.

3. The ease of fabrication and assembly of this type of duct system insure a good air-tight job capable of withstanding approximately 10 in. of static pressure. In this particular installation, however, the maximum static pressure will not exceed 5 in. All joints of the duct cores are cemented and insulation is then cemented in place over the core—the joints of the latter being staggered to produce, in effect, two solid air-tight sleeves (*Figure 2*). All turns greater than 45 degrees and all branch take-offs employ prefabricated, airfoil, turning vanes (*Figures 3 and 4*). The permeability of the material itself is so low that losses due to seepage are negligible.

4. The cost of the Careyduct installed, based on our experience with other high-velocity jobs, offers a saving of over 15 percent of the over-all ductwork cost, as compared to insulated sheet metal constructed to withstand the same static test and to obtain an equivalent noise level.

An appreciable saving in building space and ductwork was accomplished by using a plan which enabled air-conditioning and ventilation ducts and plumbing to be located in a common chase. (*Figure 5 indicates the detailed planning and co-ordination of air conditioning with plumbing that was necessary to obtain a maximum saving in construction cost.*) Each riser feeds from the ceiling of the top floor and serves two adjacent rooms on each floor level, for all floors above the first. Distribution of air for the first floor is accomplished over the suspended ceiling of that floor.

Air diffusion in this type of system is of paramount importance since the comfort of the occupants depends not only upon the temperature, but also to a large extent on the velocities of air circulating within the conditioned spaces. In order to accomplish proper diffusion from a high-velocity air-distribution system, three things must be accomplished:

1. Static pressure and velocities must be reduced and attendant noise absorbed.

2. Temperatures of supply air must be adjusted to those consistent with occupant comfort and at the same time overcome the building gain or loss.

3. Distribution of air must be accomplished (into all parts of the space) at velocities not objectionable to the occupants.

There are several types of diffusers available which accomplish these items satisfactorily. Two types only are being used in this installation: a ceiling-type diffuser and a sidewall adjustable-vane outlet. There are two approaches to the problem of introducing extremely cold supply air into a conditioned space. One approach aspirates room air into the high-pressure unit, blending it with the supply air before introducing the tempered mixture to the space. The other approach introduces the cold supply air *directly* into the space, depending on rapid mixing to secure temperature equalization and prevent drafts. Bids received on both types showed that the latter method of direct supply air dispersion was more compact and cost appreciably less. In order to prove the effectiveness of this method, the specifications provided that the manufacturer of the nonaspirating type (Connor Engineering Corporation, Danbury, Connecticut) prepare a mock-up of a typical patient's room. The engineer would then run complete tests to determine temperature equalization and velocity patterns. The results of the test proved that the non-aspirating type diffuser would be completely satisfactory. Aside from the difference in cost, the direct diffuser offers less of a maintenance problem in a hospital application. No dust or germs are collected on the diffuser plates or baffles since no air from the conditioned space is drawn over or into the diffuser. Ceiling types are completely adjustable from a straight down blast to a horizontal no-draft diffusion (*Figure 6*). The sidewall diffusers are a multivane-grill type with adjustments to throw the air in any direction, i.e., up, down, right, or left.

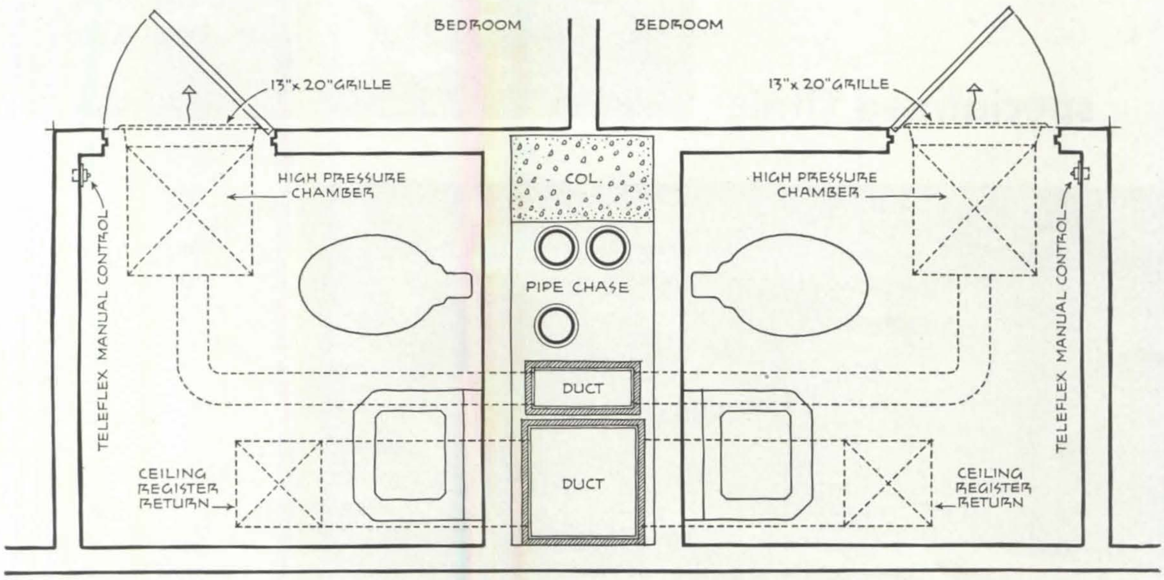
Both the ceiling and wall types are designed to provide an extra rapid entrainment of the air in the conditioned space with the supply air, thereby being tempered in the space itself, rather than within the diffuser. Complete adjustment of the volume of supply air is accomplished by the high-pressure air-reducing valve in the attenuator box. These valves are made of stainless steel with bronze fittings to prevent wear and corrosion. Temperature differences within the conditioned spaces are maintained within 1½ F maximum from floor to ceiling and from one side of the space to the other. Velocities of the air within the occupied conditioned space are held to under 50 fpm and, at the same time, air outlets are located to wash glass areas at a minimum velocity of 75 fpm. The noise level is maintained at a maximum of 37 db when the air valve is open to design volume of air flow. All of the patients' rooms and private offices are equipped with a manual volume control, wall mounted within the space, while public areas and general offices have recessed hex-head adjustment of air volume on each outlet.

The spaces are zoned to overcome solar changes and variations of outside temperature from one side of the building to the other. Interior spaces are zoned separately. Each zone is controlled by a centrally located thermostat, operating a modulating damper in the main duct feeding the zone. The entire space is maintained at a constant summer temperature of 78 F and a winter temperature of 75 F by thermocouples, located in the return-air discharge main, operating modulating valves on the air-tempering equipment. Humidity is maintained within one or two percent by "Humidistats" in the return-air stream controlling the apparatus dew point and gravity of the "Kathine" solution circulated in the air washers.

During the winter cycle, the "Kathabar" units serve only as air washers and for humidity control. The "Therm-o-wheels" again pretemper the air by transferring the temperature of warmed exhaust air to the fresh incoming air. As shown by independent tests, the efficiency of these thermal exchangers is 90 percent of the difference in temperature of the air at the inlet and the exhaust outlet, which represents a tremendous saving in both heating and cooling requirements. An additional feature in connection with "Therm-o-wheels" is the ability to use an evaporative pad to reduce the temperature of the exhaust air on the intake of the exhaust side of the wheel. This feature permits a gain of approximately 10 F in sensible temperature reductions by evaporative cooling during the cooling cycle. The combination of air-tempering equipment used here has reduced the chilled-water requirements from an original estimate of 872 refrigeration tons to 315 refrigeration tons. A steam-vacuum jet chiller will be installed by Ingersoll Rand, which has a normal capacity of 340 refrigeration tons of chilled water at 42 F.

Other considerable savings in operating expenses are anticipated due to the multiuse of steam generated. All of the steam generated is used for at least two purposes and most of it is used three times before being recovered as condensate. The power plant consists of two water-tube boilers generating steam at 250 psig and 500 degrees TT. The steam is first used in a turbine generator operating noncondensing at 250 psig and 100 psig back pressure.

This high back pressure affords a suf-



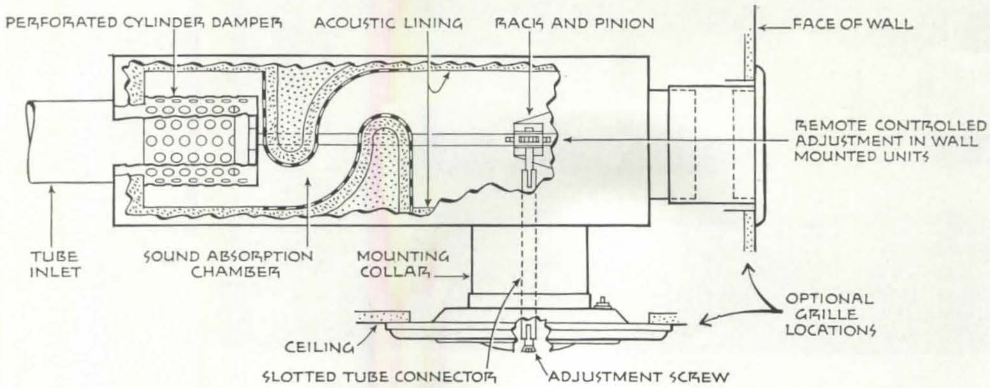


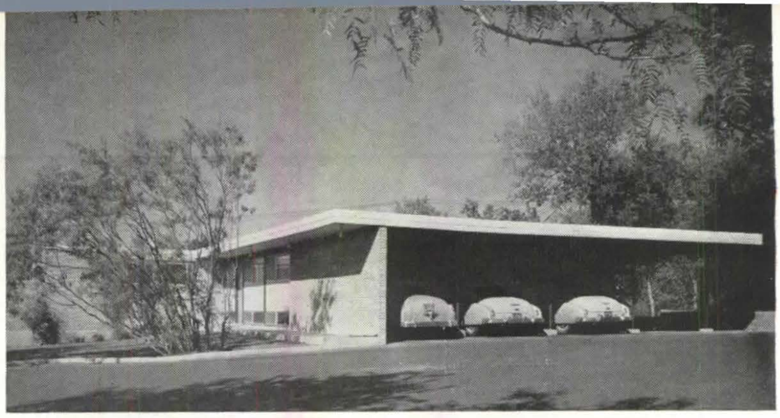
Figure 5—plan of typical chase and typical plan of two adjacent rooms (top).

Figure 6—diagram of high-velocity attenuator box and ceiling diffuser (bottom).

ficiently high water rate on the turbine to provide all of the hospital steam requirements while generating from 60 to 70 percent of the hospital electrical requirements. After the steam leaves the turbine exhaust, the steam necessary for laundry and hospital sterilization is bled off the 100 lb pressure main. The balance of the steam at 100 psig is fed to the auxiliary turbines operating the power plant auxiliaries. The auxiliary turbines operate on a 30 psig back pressure and thereby supply exhaust-steam for water heating, kitchen, operation of the steam-jet chiller, etc. There are pressure reducing stations between each of the three steam mains (250 lb to 100 lb; 100 lb to 30 lb). During normal operations, the steam requirements are so balanced that less than four percent of the steam used must pass through the reducing valves.

The air-conditioning chiller is a four-booster steam-jet vacuum chiller with three boosters operating on 30 lb and one booster on 100 lb steam. The chiller condenser is so arranged that during the winter season it can provide condensing facilities for the entire plant or any portion of it as the need arises. During the summer months the chiller uses all of the excess 30 lb steam. The 3150 gpm cooling tower, built of ceramic tile to provide maximum life expectancy and minimum maintenance under conditions of continuous service, supplies cooling water for both the condenser and the "Kathabar" dehumidifying equipment previously mentioned.

The complete power plant, except for the generator, electrical switchgear, and water-heating tanks, is located outdoors at the rear of the service building, thereby saving a considerable amount of building structure.



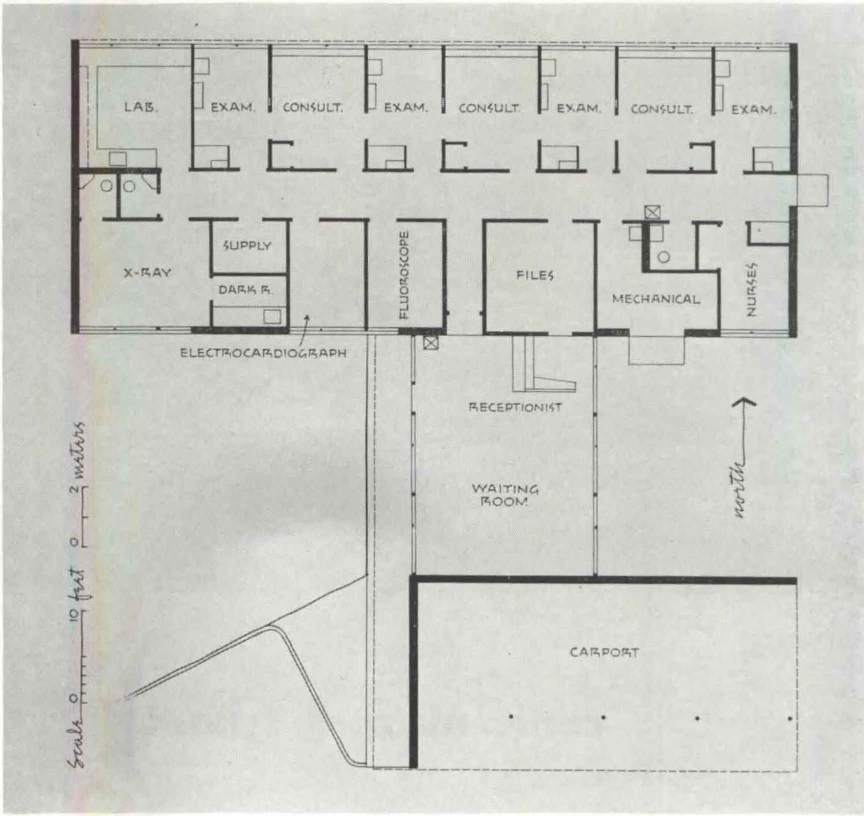
specialized clinic

location	Austin, Texas
architects	Fehr & Granger
structural engineers	Wilson & Cottingham
mechanical engineer	Herman Blum
general contractor	R. J. Pekar

In designing this clinic for a family of doctors—the father and older son, doctors of internal medicine specializing in cardiology; the younger son, a surgeon—the architects consciously strove to introduce elements that would ease the worry of going to the doctor. On the west or entrance side, the wall is developed as part solid and part glass, the solid portion providing desirable privacy for waiting patients. In the windowed portions, some operable panels occur in both the top and bottom bands. On days when air conditioning is not required, a good breeze and cross ventilation can almost always be induced by opening these panels, along with their opposite numbers in the facing wall. The latter wall, entirely of glass within frames, overlooks a richly landscaped patio provided as "a distraction from one's sickness."

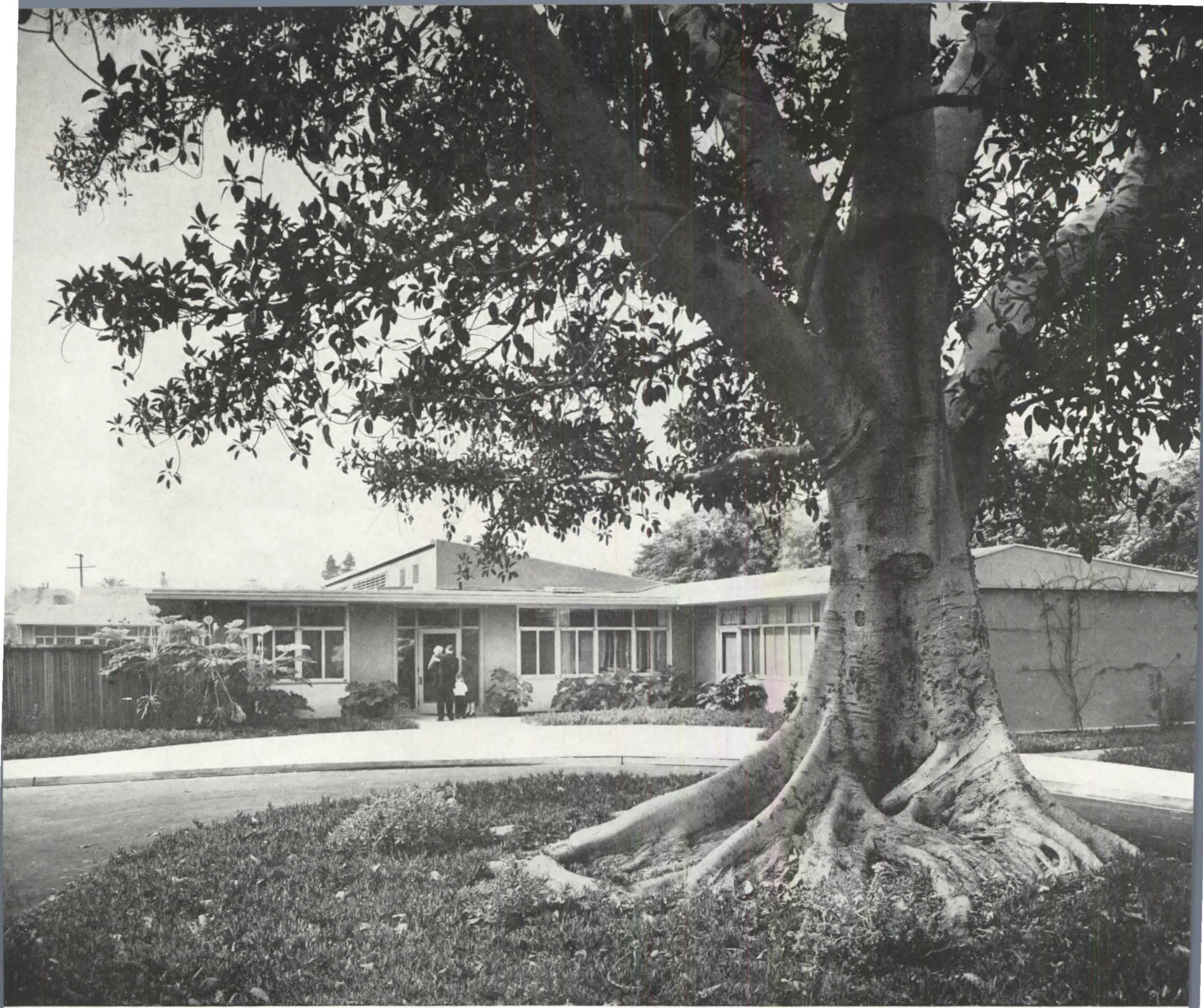
Built on a reinforced concrete foundation, the wood-frame structure has exterior walls of brick, glass, or asbestos board. The floor system is of precast concrete joists; surface flooring is rubber tile. The entire subfloor area of the building is used as return air plenum for the heating and air conditioning. Acoustical tile is used on ceilings throughout,

A large parking area and carport serve the clinic at its south end. The two photographs on this page illustrate the waiting room, with its window wall facing the restful patio. Not apparent in black-and-white photographs is the cheerful color—blonde furniture; upholstery in light pastel tones; and draperies striped in yellow, gray, white, and black.
Photos: Meisel—Dallas



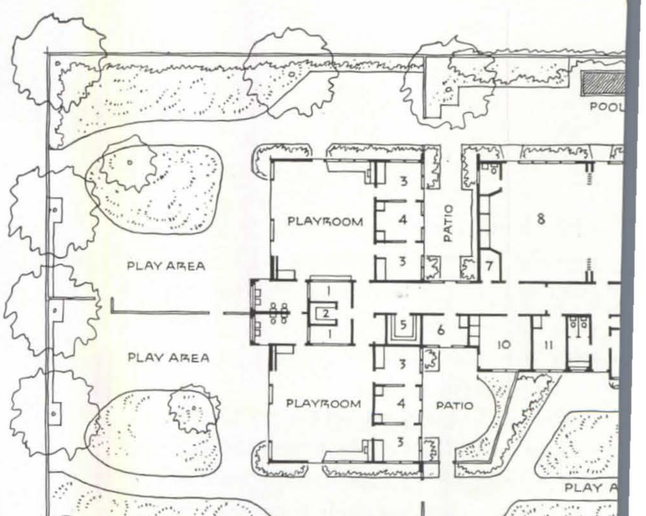
while four inches of glass-fiber material provides thermal insulation. Lighting combines both incandescent and fluorescent fixtures. Aluminum and projected sash are glazed either with plate or double-strength A glass.

The forthright plan scheme, with the various specialized rooms across the central corridor from consultation and examination rooms, has made it possible, so the architects tell us, for the doctors "to see more patients per day and at the same time to feel less fatigue at the end of the day" than they did in their former quarters.



clinic/nursery school

location	Los Angeles, California
architect	Walter L. Reichardt
consulting architect	H. Roy Kelley
structural engineers	Brandow & Johnson
mechanical engineers	E. L. E. Co.
landscape architect	Ruth Shellhorn
color consultant	Everett Sebring
general contractors	Steed Brothers

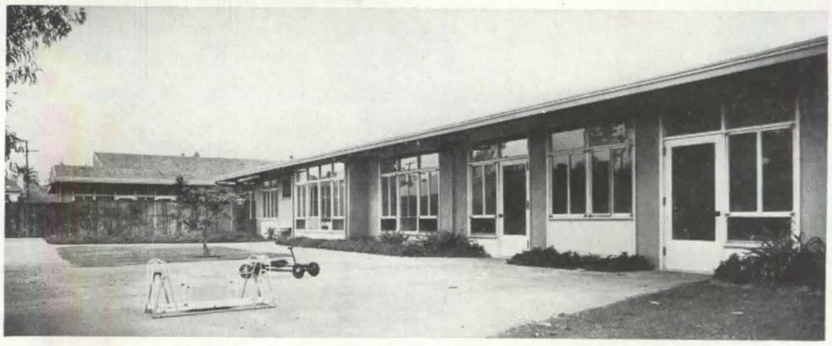


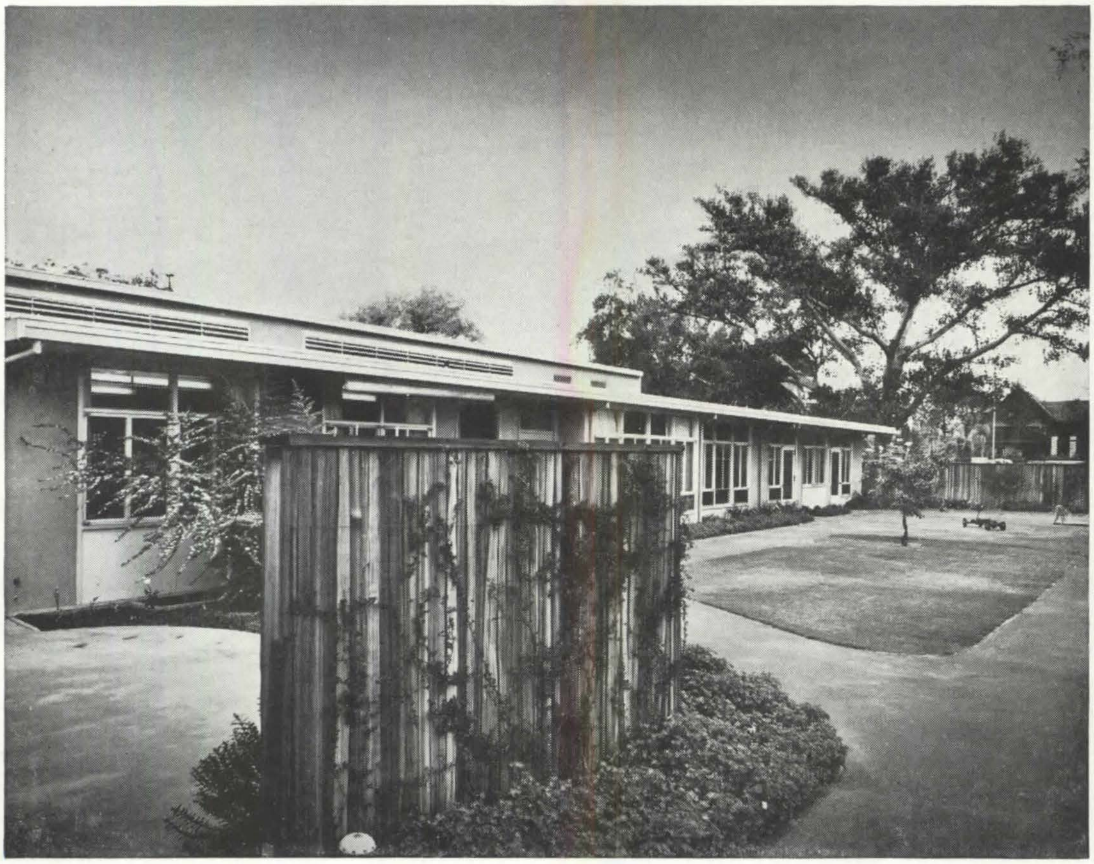
Floor Plan and Plot

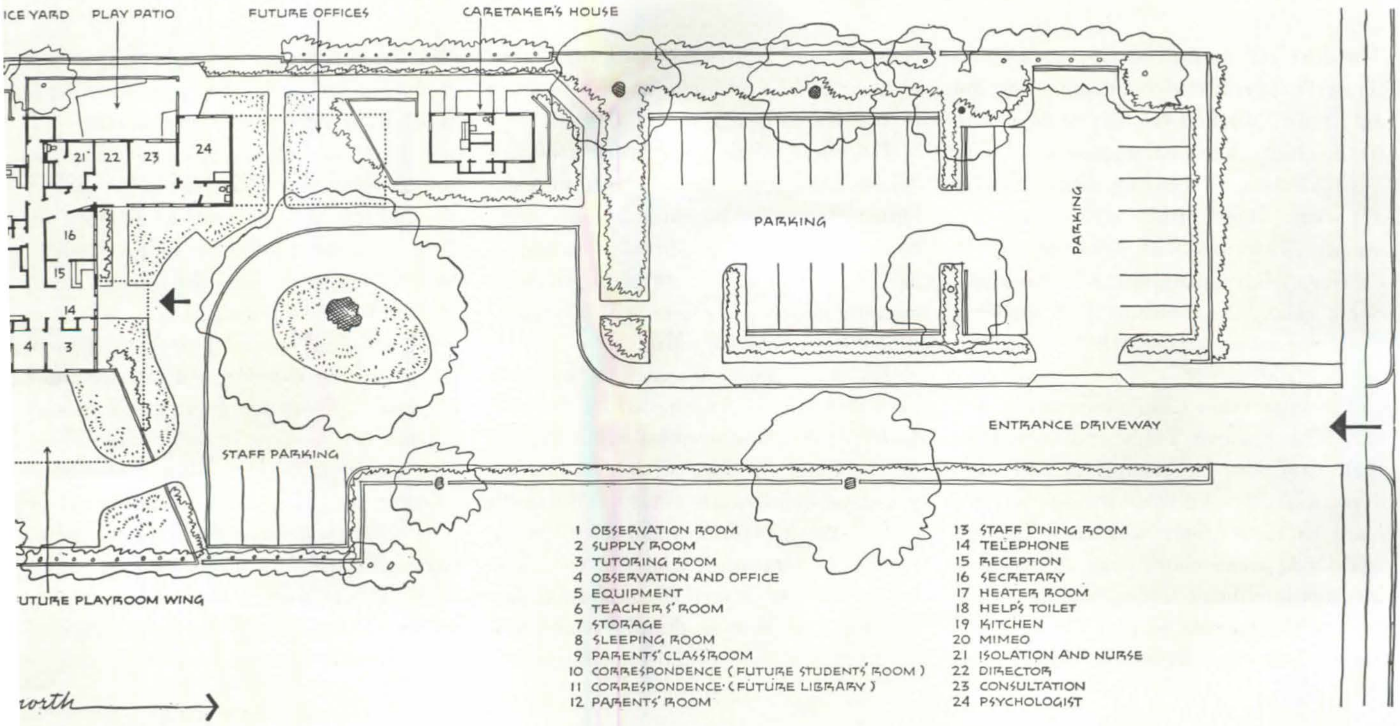
Scale 0 50 feet 0 10 meters

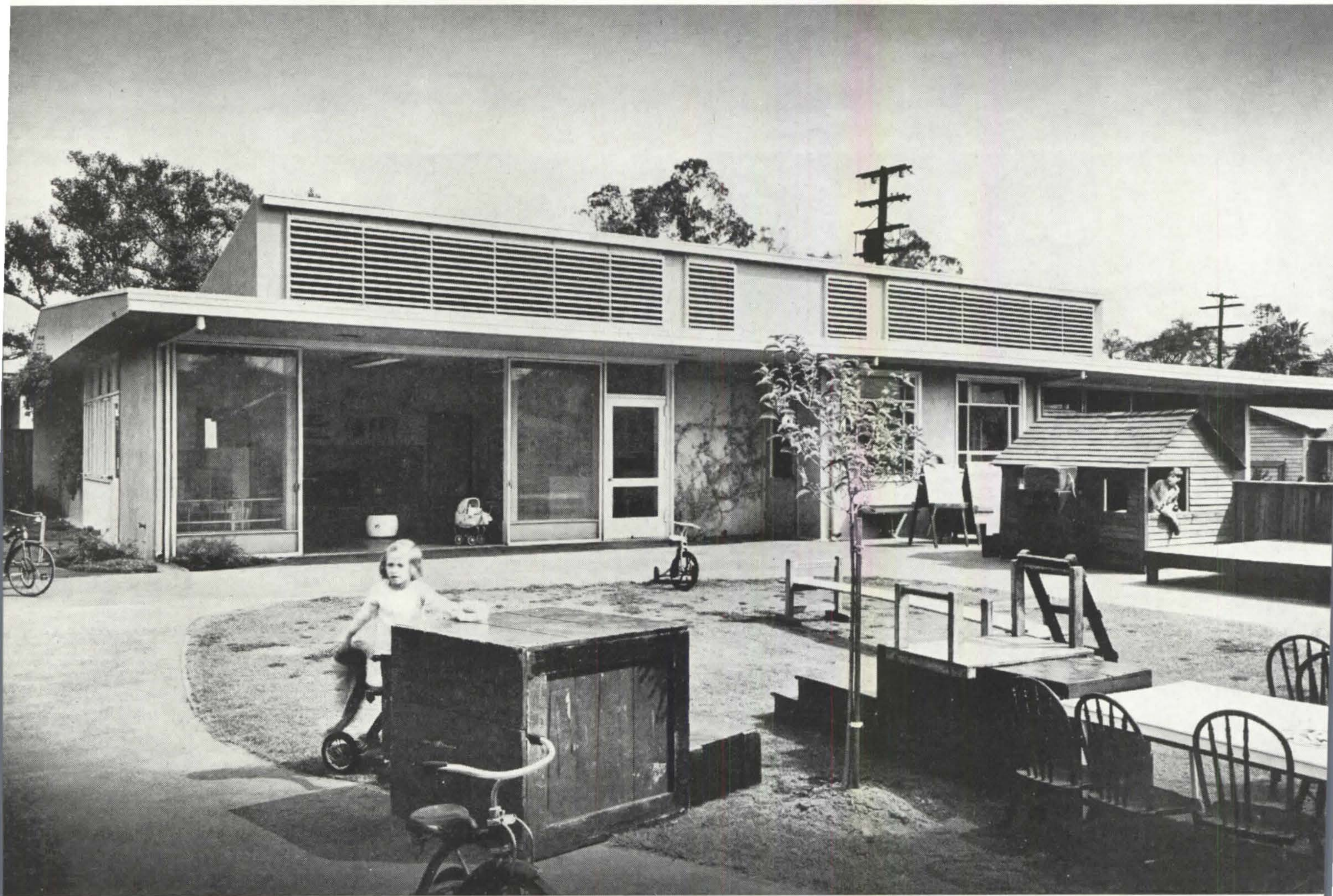
The stated purpose of this clinic is "to find, to encourage, to guide, and to train the parents of deaf and hard-of-hearing children. First, in order to reach and help the children, and second, to help the parents themselves." The long, narrow site, plus the wish to save the giant rubber tree in the forecourt, determined the basic plan organization. Each major area has its private outdoor counterpart.

Photos: Julius Shulman









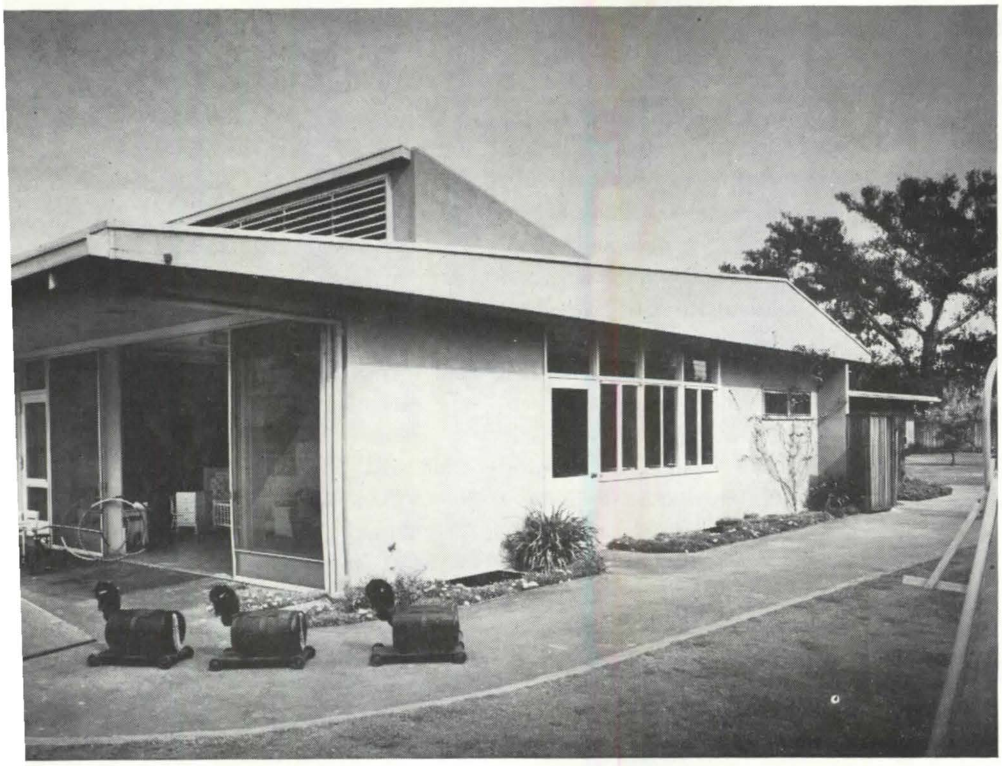
The deaf and hard-of-hearing have a particularly aggravated handicap. For not only must they find the way to cope with the disability, but—unlike most handicaps—impairment of hearing is not readily apparent. Hence, those afflicted are frequently confronted with unwarranted ridicule or embarrassing misunderstandings. Some thoughtless people even consider deafness humorous, which it most certainly is not.

The John Tracy Clinic, founded by Mr. and Mrs. Spencer Tracy and named for their deaf son, is designed to help children who are hard-of-hearing or deaf learn to make their way in a hearing world. A prime element in this process involves intelligent understanding on the part of the parents so that (1) they can make their own necessary adjustments sensibly, and (2) by knowing the nature of their child's problem, be in a position to further his progress.

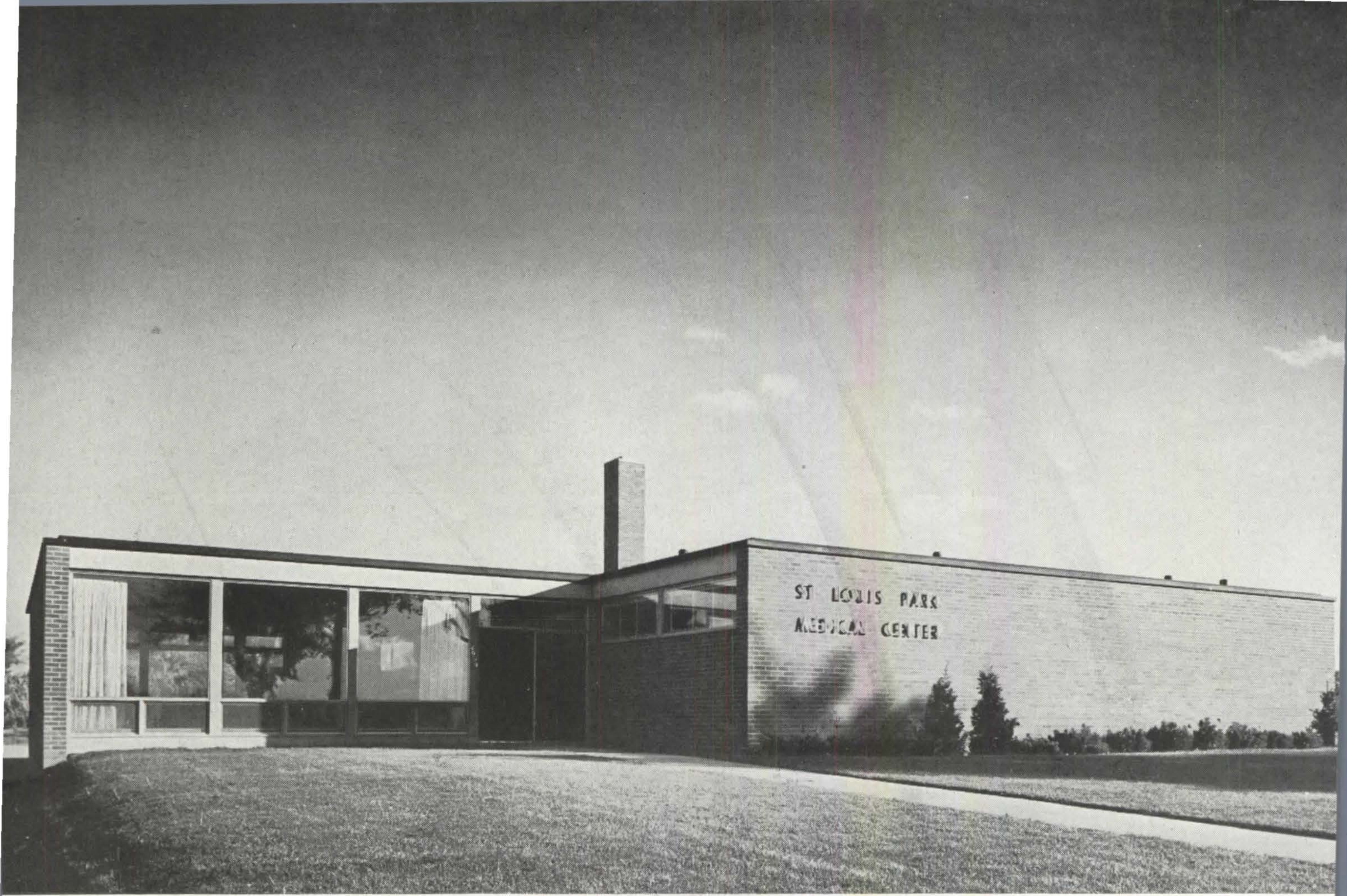
The clinic offers a wide variety of useful services—consultation to study each child; classes for parents; psychological counseling; correspondence courses; a summer session; a teacher training course; weekly day clinic; and a nursery school for 4-to-6-year-olds.

The long, narrow shape of the building plan was largely determined by the 500-ft deep site whose greatest width (at the rear) is 128 ft. The two playrooms for preschool children are placed at the south end of the structure, and each of these extends into its own fenced play-yard. The toilets may be entered directly from outdoors as well as from the playrooms, and each unit has two special tutoring rooms, with an observation room between them. A sleeping room for nap periods is separated from a parents' classroom by folding doors, and this whole space may be joined to accommodate large groups. A third playroom is planned as a future addition, as are several specialized offices to be added to the administrative wing at the front of the building.

Of standard wood-frame construction, the clinic has exterior and interior walls of plaster; floors are wood, surfaced with asphalt tile (except in the kitchen where ceramic tile is used); ceiling surfaces are acoustic tile. The building is heated by a hot-water system with radiant baseboard units. Natural lighting is used for major requirements, with clerestories (over playrooms, sleeping, and classrooms) covered with adjustable metal louvers.



Sliding doors open the two big playrooms at the back of the building to their separate, fenced play-yards. Adjustable metal louvers and operable-sash elements in the clerestories regulate light and air. Doris E. Chambers, clinic secretary, tells us that "it is a functional and practical building and at the same time a very attractive one. The building combines, as one staff member put it, 'intimacy with space.'"



location	St. Louis Park, Minnesota
architects	Thorshov & Cerny, Incorporated
general contractor	Lebeck & Company

group clinic

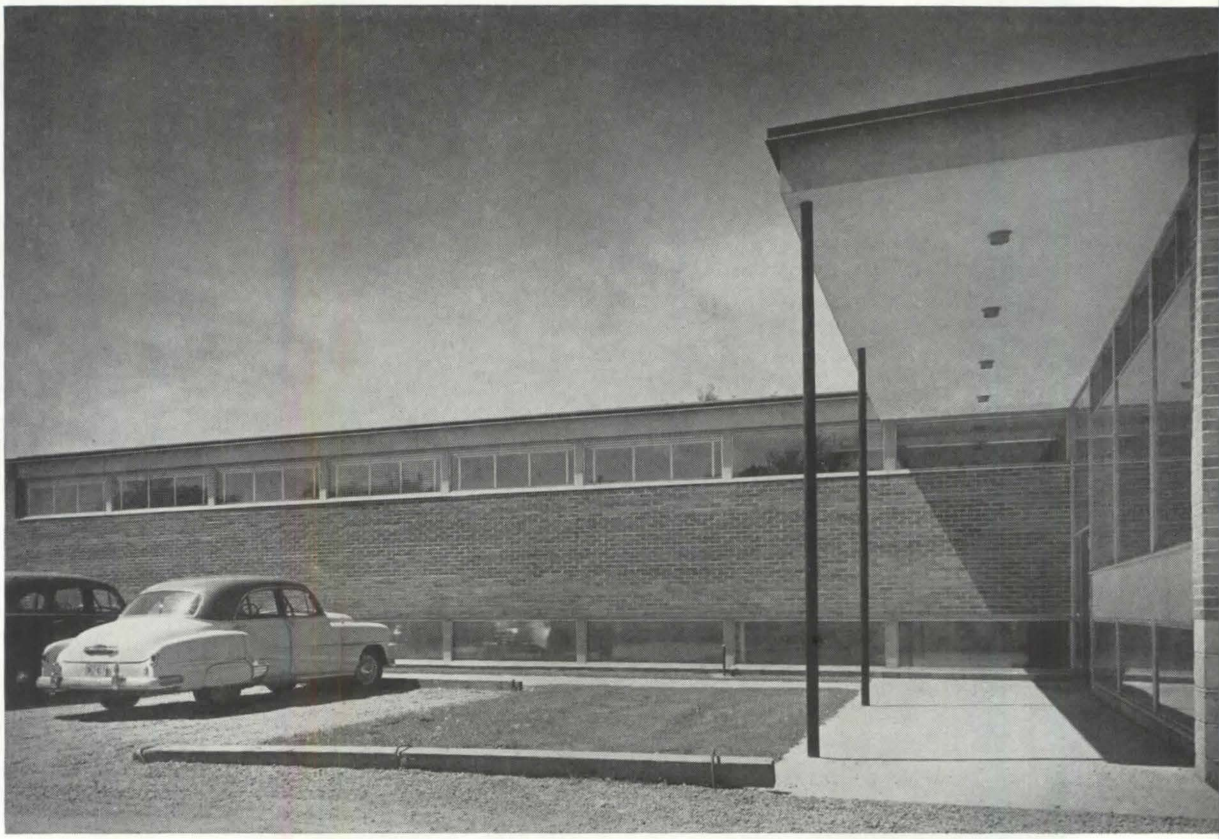
Ten doctors of St. Louis Park, Minnesota —all veterans of World War II—collaborated to build a modern clinic, the St. Louis Park Medical Center. Since each of them is a specialist in one of the following fields—medicine, surgery, orthopedic surgery, urology, eye, ear, nose and throat, pediatrics, and obstetrics—the residents of this Minneapolis suburb now have a central place to which they can go for rather comprehensive medical service. Located near the intersection of Minneapolis' beltline Highway 100 and a main artery into the city, Excelsior Avenue, the Medical Center is quite accessible, and off-street parking is provided for 49 cars.

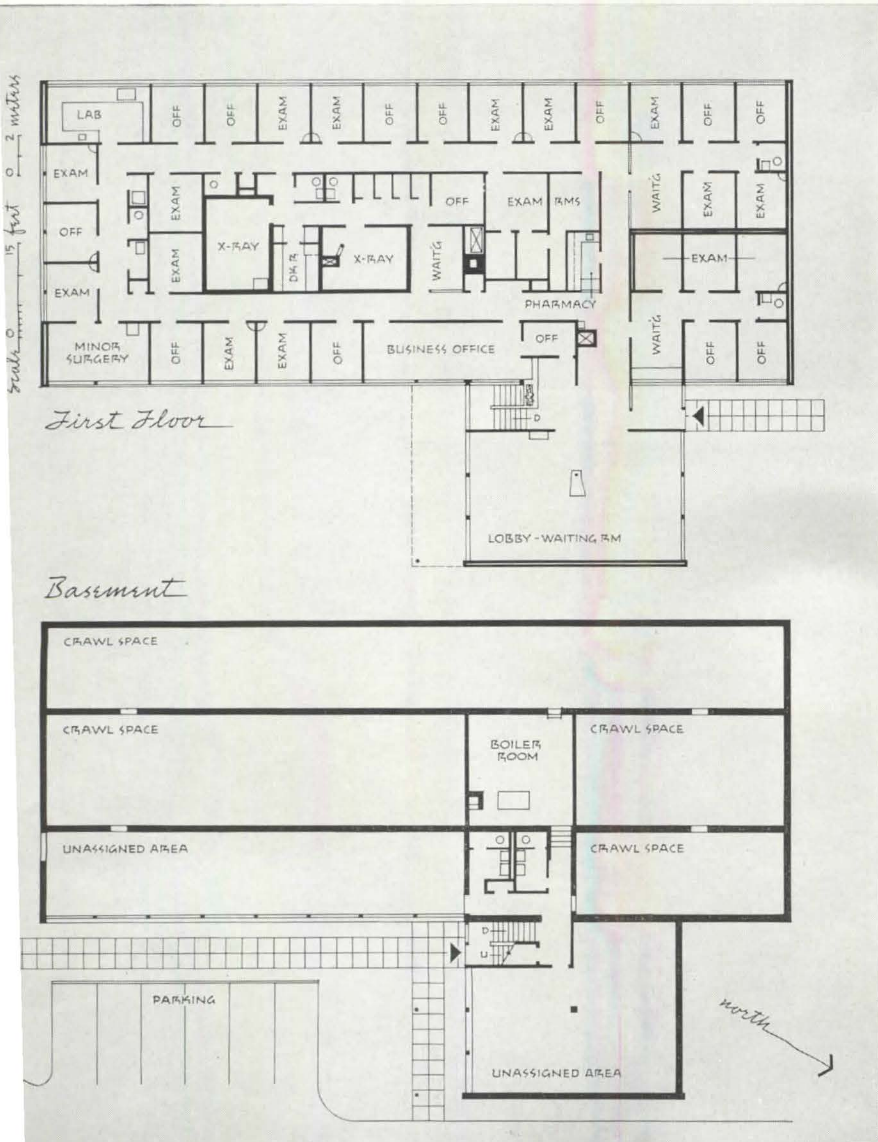
Like Upper Manhattan Medical Group Center *(page 115)*, St. Louis Park Medical Center contains no hospital beds; it is strictly for out-patients. Examination rooms are grouped around the central core of diagnostic facilities, used by all the doctors. Just off the central core are the lobby and main waiting room.

The pediatrics suite, which has its own waiting room, is insulated against sound by double-thick cavity walls; these are also used for exterior walls (*plan acrosspage*).

Otherwise, the structure is steel frame and bar joists, with concrete-block foundations. Modular rooms are partitioned by nonbearing walls which can be taken out when larger areas are needed. With the exception of the main waiting room, all windows are of fixed double glazing, over sills that are 6 ft high. On the down-grade side (*acrosspage*), windows at ground level light the basement. Bottoms of brick walls and opaque glass spandrels indicate level of main floor.

When the building is expanded—the structure was designed for outward or upward expansion—a separate entrance and parking area will be provided for the staff.

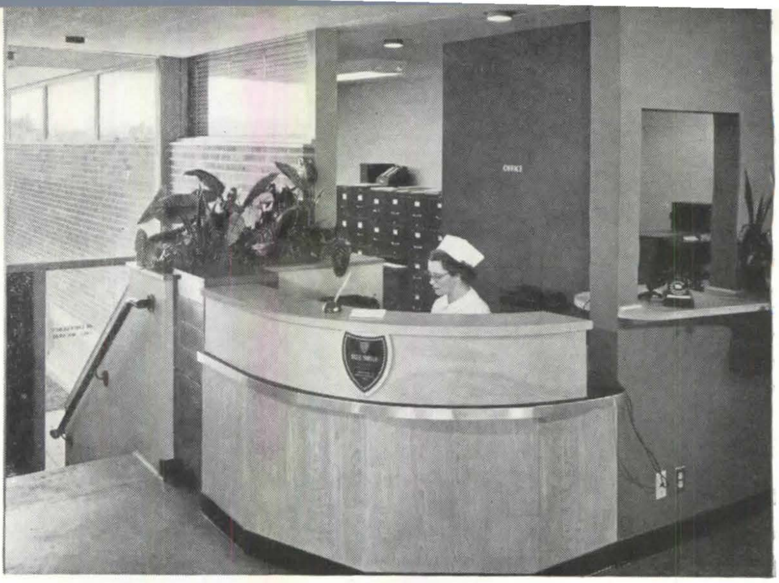


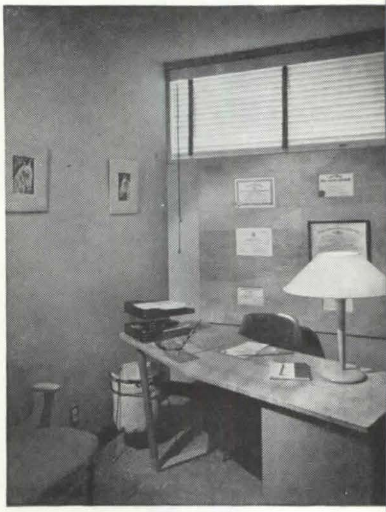


Direct expression of exterior (above) *reflects the logical plan* (left). *Large but well shaded window in main waiting room is desirable; while high windows are used in offices and treatment rooms for privacy.*

Photos: Reynolds: Photography, Inc.

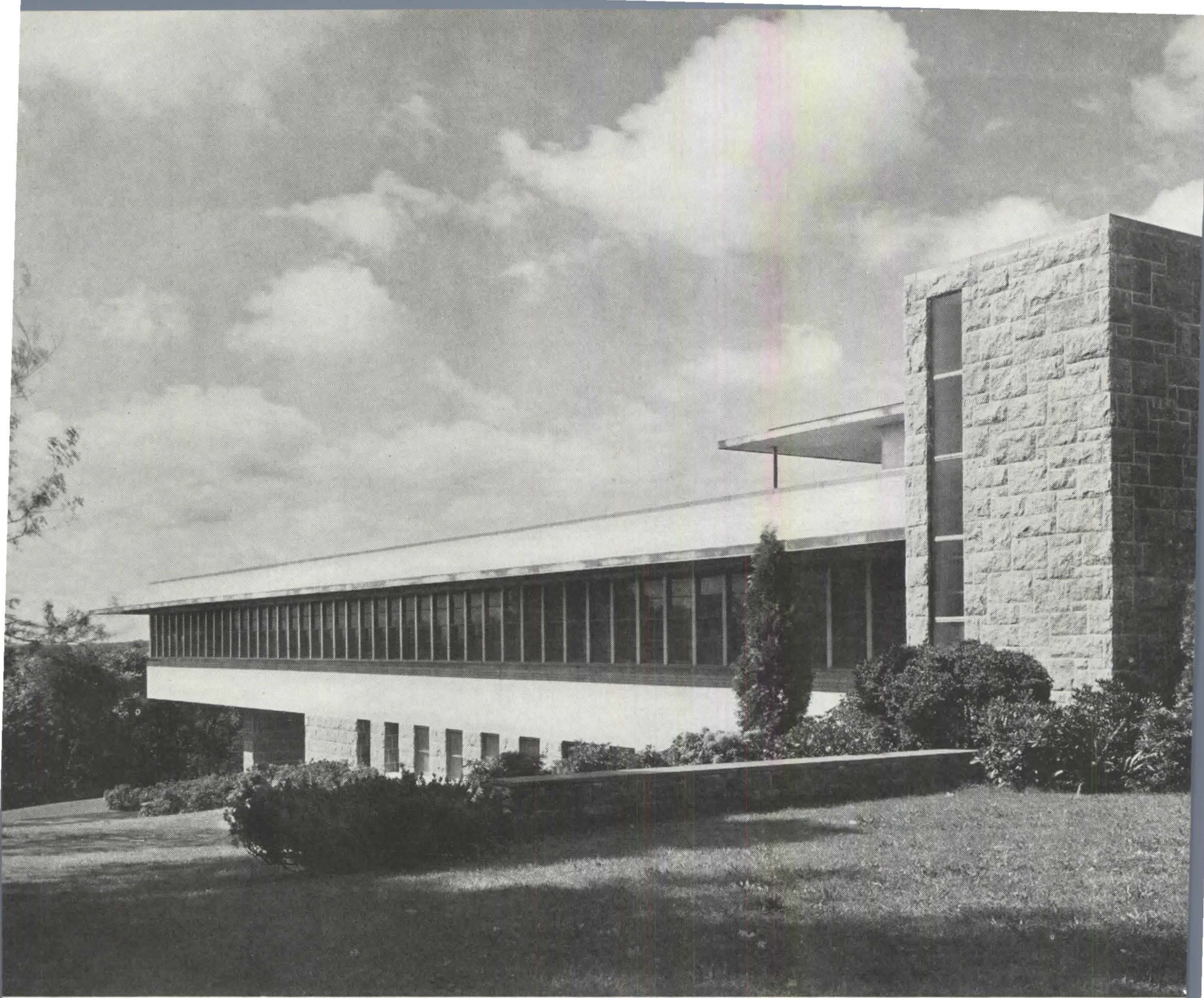
Both of Medical Center's entrances lead to desk (right) *which is just off the main waiting room* (below). *Floors are all asphalt tile, and ceilings are covered with acoustical tile in public areas. Notice how business office is insulated with acoustical tile to deaden sound of switchboard and office machines.*





Pediatrics waiting room (below) *has special decor to occupy children's minds. Just beyond glass-top partition is main entrance.*

Large wall space of nicely furnished office seems to have been a challenge to the doctor.



college infirmary

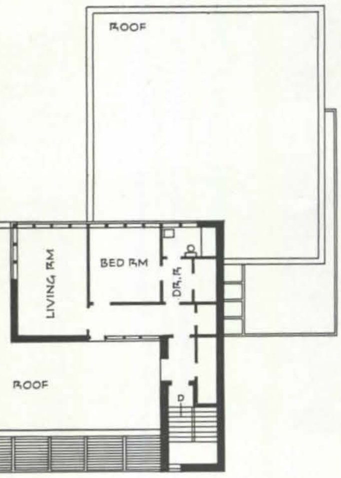
location	New London, Connecticut
architects	Shreve, Lamb & Harmon
structural engineer	Peter A. Strobel
mechanical engineer	Gerritt H. VanderVeer
decorator	Ann Hatfield Associates
general contractor	A. F. Peaslee, Incorporated

The Connecticut College for Women asked the architects to design a 22-bed infirmary with facilities for routine examinations and clinical treatment for its more than 800 students and teachers. It was not expected, however, to provide for the seriously ill, since a nearby city hospital already had adequate provisions for them.

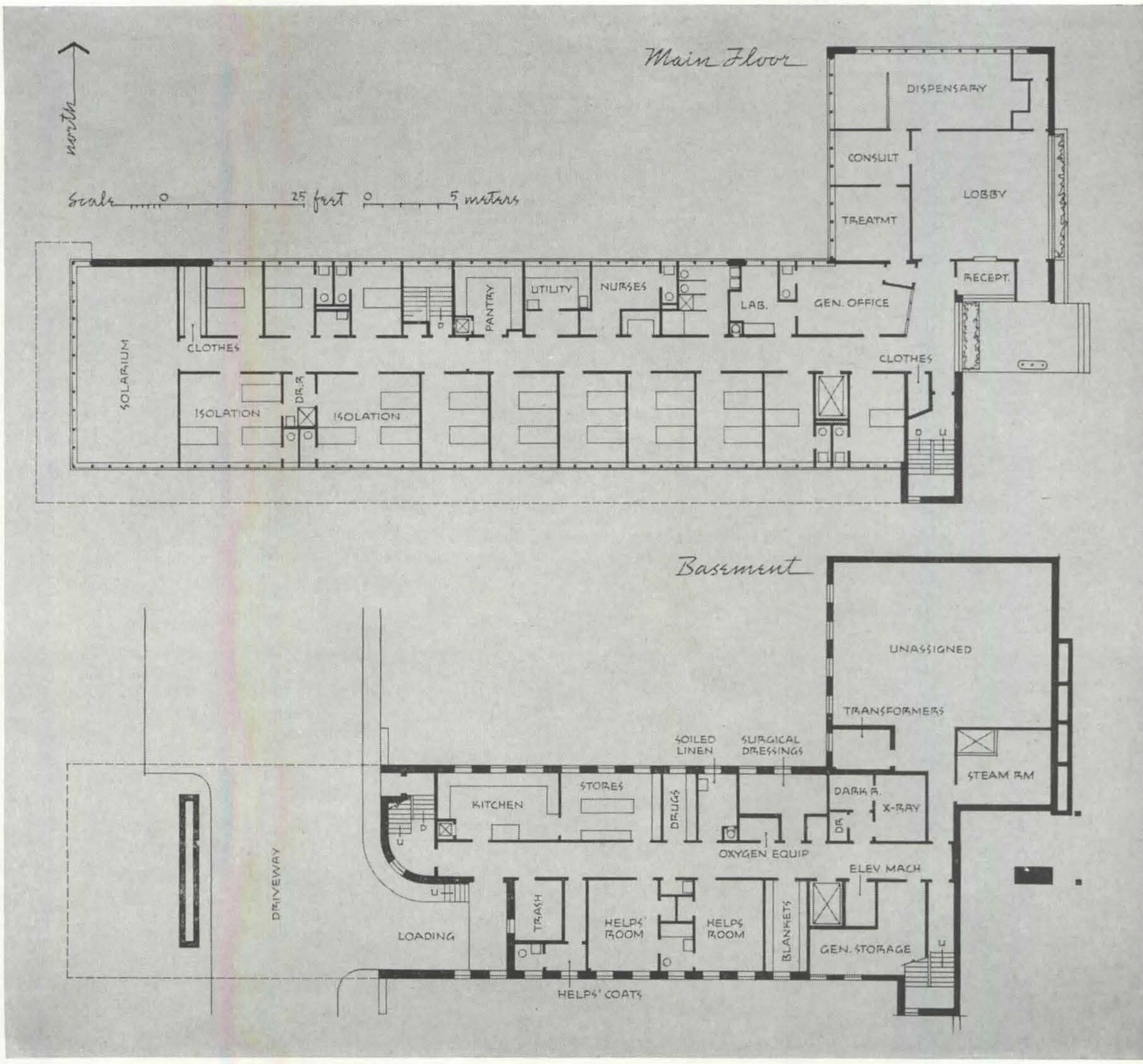
The site, in the northwest corner of the campus, slopes from east to west, and the infirmary was originally planned to parallel the contour lines. But because a totally *submerged basement* and western exposure for patients' rooms were considered undesirable, this plan was abandoned. Instead, the main axis of this long, narrow building (*above*) was turned perpendicular to the contour lines, with the east end anchored firmly into the slope, and the west end resting on a steel-and-granite pier, from which 32 ft of the building is dramatically cantilevered.

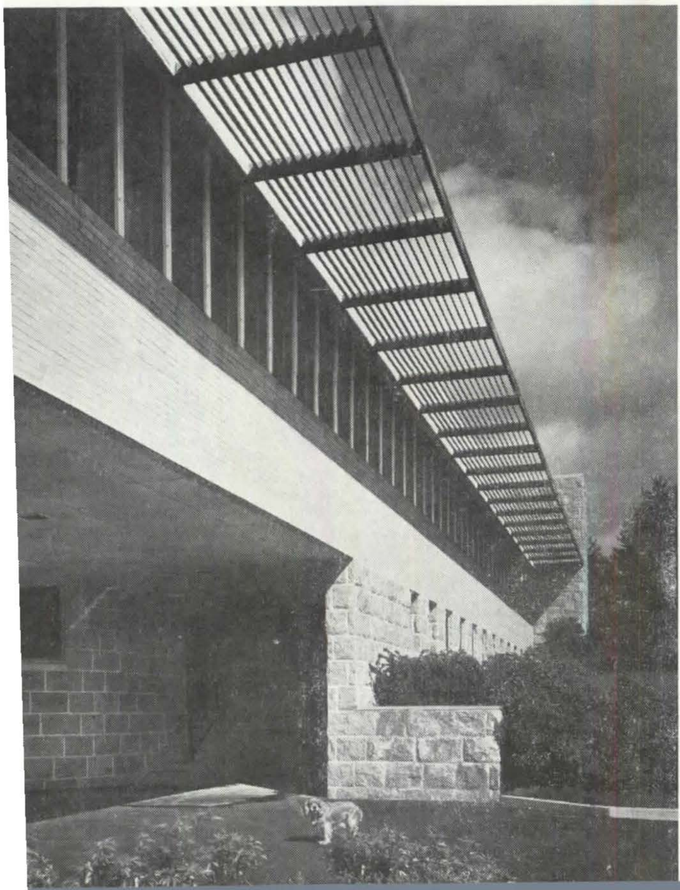
Although there are three floor levels in the infirmary, only the main floor is used by patients. The entrance to this floor is at the east-end grade level, in a granite-faced element which is visually separated from the ward wing by a massive stone-covered stairwell (*above*). In plan, however, the lobby area is continuous with the ward wing, the only visual separation being the general office and desk, by which those in the lobby must pass on their way to the wards. Also in the lobby element are the dispensary and rooms for consultation and treatment.

The ward wing is a long area divided by a central corridor which leads to the



Penthouse





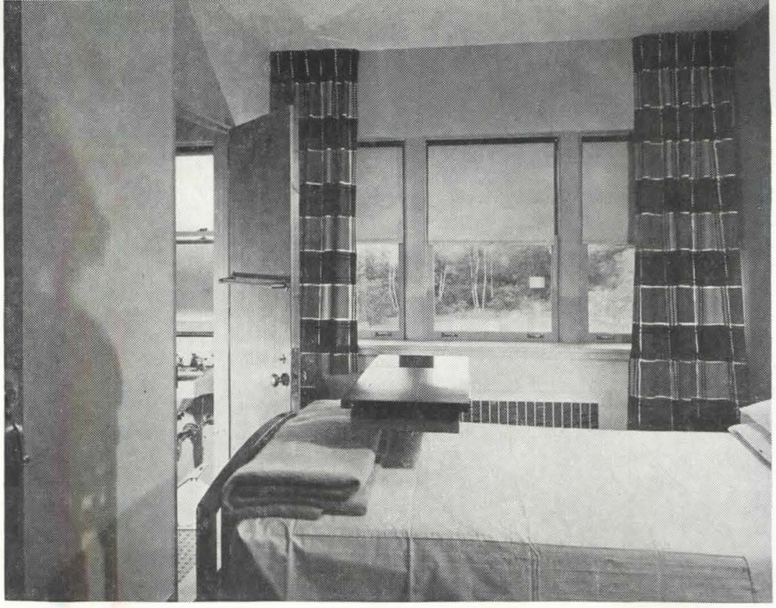
Connecticut codes require that a building of this type have stairs to the roof, so the architects also put the superintendent nurse's apartment on the roof.

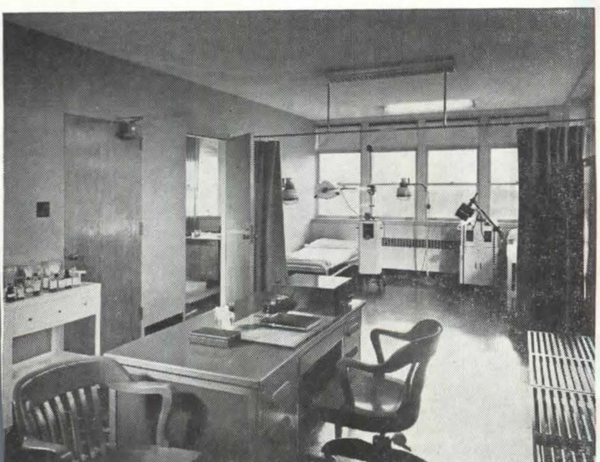
Basement entry (left) under ward is used for emergencies and deliveries. Road leads to parking lot behind building. Photos: Joseph Molitor

college infirmary

Solarium (below), *at west end of ward* (right), *is supported by cantilevered steel sections more than 4 ft deep. Louvered sunshades outside and draperies inside provide adequate sun control.*

Large lobby (right), *like solarium, is furnished comfortably and informally. Double doors lead to main entry. Asphalt tile flooring and acoustical tile ceiling are used throughout in public areas.*





Partitions between patient's rooms (above) *occur at window mullions; some partitions contain steel-pipe columns. Colorful draperies dispel the antiseptic feeling of hospital.*

Dispensary (left) *opens into consultation room, through open door, and to lobby, through closed door. Translucent glass is used in windows here.*

solarium (*acrosspage, top*), at the west end. Rooms for patients (*top* and *center*) line one side of the corridor, and rooms for services and treatment line the other. Except for the north wall of the solarium, modular strip windows are continuous around the ward and are protected on the west and south by louvered sunshades of copper.

The basement, most of which enjoys daylight through high windows, is used for service and maintenance. It is connected to the main floor by stairs at both ends, and deliveries are made at the basement level from the road that runs under the ward.

The infirmary's attractions can perhaps be best estimated from the report that for the first few weeks after opening the incidence of light illness took a sudden and sharp rise at the college.

NEW DIRECTIONS IN THERMAL INSULATION: PART VI *

by Groff Conklin

ventilation

There is literally no place in the United States where natural or forced ventilation of certain parts of the house is not of importance. In the warmer climates, room and attic ventilation is almost essential for hot-weather comfort, while in regions where winters are cold, such ventilation is important not only for the summer comfort it gives but also for the reduction in vapor pressure inside the structure that it can cause in winter. In all climates, also, crawl space ventilation is important to keep moisture from rising from the ground into the walls and floors of the building.

The point has been made strongly earlier in this series that it is largely ineffective, and therefore bad practice, to design the house so that the owner will have to do his own ventilating for condensation control by opening and closing windows, doors, fireplace dampers, etc. The housewife simply will not perform this function when it is most needed —when it is very cold outdoors. Consequently, the well-designed modern house must be provided with good automatic, foolproof means of ventilating the roof or attic, the rooms, and the crawl spaces under the house.

There are a few experts in the field who say that ventilation is all that is needed to eliminate the danger of moisture condensation damage and that no vapor barriers should be used. Actually, there is no single cure-all. Both techniques are needed in the tight, relatively small, modern home of today. Prof. C. E. Lund of the University of Minnesota Engineering Experiment Station strongly emphasized this at the Conference on Condensation Control conducted by the Building Research Advisory Board. "You should not sacrifice barriers for ventilation. . . . Barriers should be used . . . wherever possible. However, ventilation does assist in dissipating . . . moisture under the right conditions."

(A) ATTIC AND ROOF VENTILATION. The part of the house most in need of ventilation in both warm and cold climates is the roof and the attic area under it, if that area is unheated. For many years, it has been customary to specify small gable or hip louvers or vents for the colder parts of the country, usually no more than the minimum size specified by the FHA *Minimum Construction Requirements* series. The size differs from region to region; in the New York area, at least in the southern part, the requirement is 1/300 of the horizontal projection of the roof over the enclosed space, half of that at least to be as near the high point of the roof as possible. Ventilating openings are to be screened; the requirement for screening was recently changed

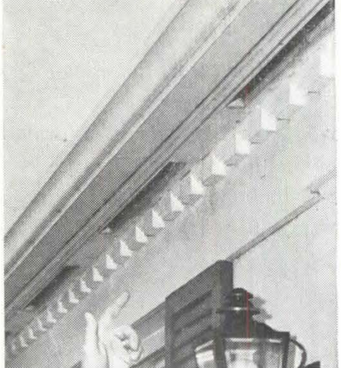
* *Preceding articles on condensation appeared in the March and April 1954 issues of P/A. A concluding discussion will be presented next month.*

Figure 1—attic louvers in gable of a "Trade Secrets House" built by Gerholtz Community Homes, Inc., Flint, Mich.

Photo: courtesy of the National Association of Home Builders

Figure 2—eave vents protected by overhang face downward.

Photo: from *Design of Insulated Buildings for Various Climates by* Tyler Stewart Rogers



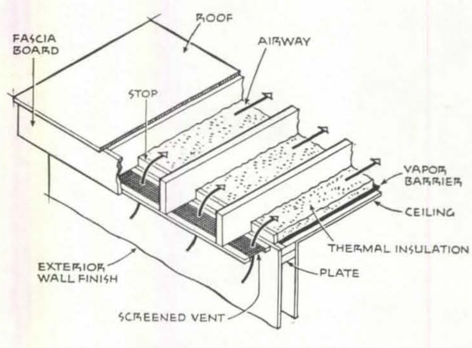


Figure 3—ventilation of flat-roof cornice with hung ceiling. Detail shows vents at underside of eaves for flat (or shed) roof; vents were designed so that they connect with air space above insulation. Vents should be as near outside of cornice as possible so that little or no rain or snow will be driven through them. Vents should not be placed in the face of the fascia board.

The Problem of Condensation in Residences

from 16-mesh-to-the-inch to 8-mesh-to-the-inch, thus improving the efficiency of air flow but permitting entrance to the attic for many types of insects.

This minimum louver area requirement should, according to good practice, be increased considerably, if the client wishes to have a screening that will keep insects out. A moderately low-pitched roof in which *all* of the gable is one continuous louver is shown (*Figure 1*). Interestingly enough, too, this house—the National Association of Home Builders' "Trade Secrets House" of 1952—was built with these louvers all the way from Houston, Texas, north to Flint, Michigan.

In view of the fact that a really perfect vapor seal is not always easy to install in an attic—particularly around the attic stair well, plumbing vent stacks, chimneys, and other openings—effective attic ventilation is almost a necessity.

In all houses in which the attic ventilation is placed between the rafters rather than the floor joists, in all flat or shed roofs in which there are no attic spaces or there is no room for gable louvers, and in many types of homes with irregularly shaped attics that gable louvers cannot ventilate effectively, eave vents are a necessity. It is only in relatively recent years that provision for eave vents has had to be made, since many older houses without attic insulation had open spaces under the roof overhang between the rafters. However, a well-insulated roof is one in which the insulation seals off the whole house below from the outer air or the cold air of the attic, and thus prohibits the free flow of moisture vapor up from the living quarters and out through the eaves and louvers.

Eave vents may consist of continuous strips, circular holes cut between each pair of rafters, or some intermediate type as shown (*Figure 2*). Possible details for vents in the cornice of a flat roof and another detail for a hip roof are illustrated (*Figures 3 and 4*). In unfinished attics they may simply open into the attic space if there are adequate gable louvers or, in hip roofs, good peak or hip vents (*Figure 5*).

However, special measures must be taken in many houses with finished attics in which there are no collar beams nor gable louvers and where the insulation is carried between the rafters clear to the peak. Special provisions must also be made for all flat or shed roofs in which the insulation is tacked between the rafters or across their bottoms and the rafters butt against the center girder, rather than resting on it.

In the former case, peak venting is necessary. A method of providing air circulation in a peaked roof is illustrated (*Figure 6*). The topmost sheathing board is omitted and the roof cap is made sufficiently large (reinforced perhaps by a thin piece of plywood) so that it will cover the space where the sheathing board

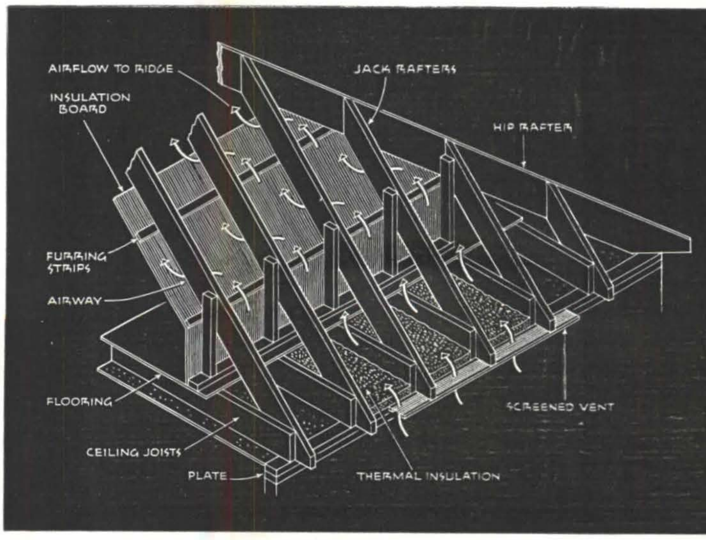


Figure 4—eave vents in a hip roof. In this finished attic the eave vents permit air to enter narrow space between insulation and closed rafter system created by means of furring strips nailed laterally across rafters. Effective air circulation will require a hip louver at roof peak or four smaller louvers, one on each side of the roof (as in Figure 5).

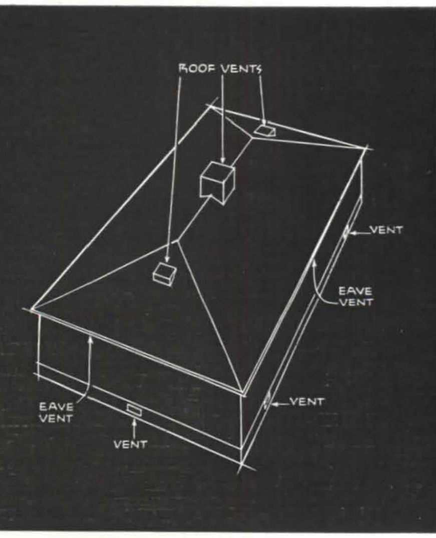
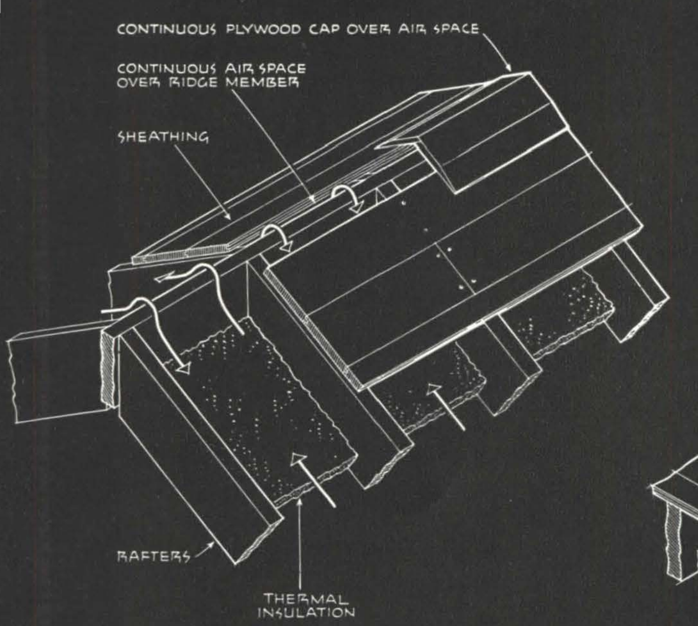


Figure 5—peak or roof vents for hip roofs. Alternate types of vents for hip roofs that supplement and aid ventilation originating at eave vents. Peak vent is perhaps most suitable for houses in which the attic has been finished. Roof louvers are satisfactory for unfinished attics.

Illustrations adapted from *Condensation Control in Buildings*, HHFA, 1949



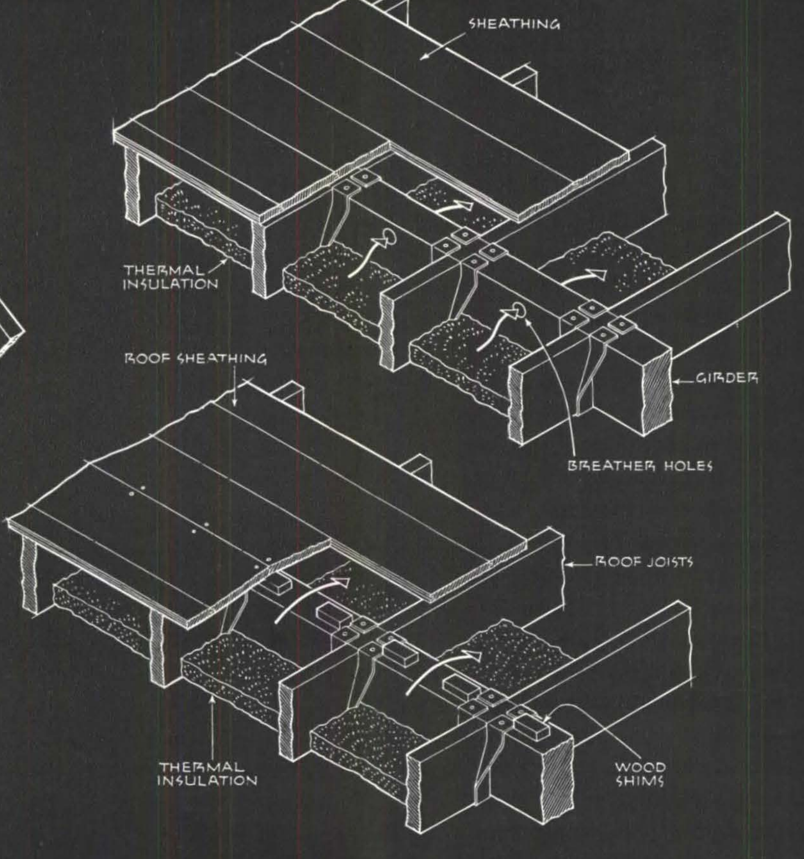


Figure 6—method of providing air circulation in a peaked roof.

Figure 7—alternate methods of providing air circulation through flat or shed roofs.

is omitted and overlap the next board. At each end of the gable the space left by the omitted sheathing board should be screened. Air circulation is thus provided from the eave vents to the peak and then along the peak and out at the edges of the gable.

For flat or shed roofs of the type mentioned above, some provision that will permit air to pass through or over the center girder will be necessary. Small 1″ to 2″ diameter holes bored near the top of the girder, one between each pair of rafters or roof joists, would provide the necessary space, as would 1″ or ½″ wood shims placed at regular intervals on the top of the girder before the roof sheathing is put in place (*Figure 7*).

In many flat or shed roofed contemporary houses the ceiling joists are left exposed for visual effect and the roof is built up directly on top of these joists. Here roof ventilation is impossible and extra care must be taken to make sure that the vapor barrier under the insulation and on top of the roof sheathing is in perfect condition before the built-up roofing is finally put down. A technique for doing this was discussed earlier. Some architects provide for ventilation at the ceiling line in homes of this type by specifying clerestory window strips. It might also be possible to install small louvers in the wall where it meets the roof. They may help to remove moisture vapor concentrations from the ceiling area but may also waste heat if the openings are not carefully designed.

It is, of course, impossible to show examples of all different combinations of attic spaces, built-up roofs, and other methods of finishing off the tops of dwellings. The architect will have to apply the known principles of air circulation to the design of such roofs so as to assure sufficent air motion at all times. This means, as L. V. Teesdale of the Forest Products Laboratory pointed out at the BRAB Conference, that air circulation from all sides of the roof should be made possible by a combination of eave vents and gable louvers. Then, no matter if the house is so oriented that the gables do not face into the prevailing winds, there still will be enough ventilation. Teesdale remarked that there have been many instances where homes have been so located that the winds did not blow against the gable louvers or where the houses were so close together that sufficient air motion was impossible; in such houses "even with brisk winds, no appreciable amount of air would pass through the louvered openings. Additional openings under the eaves were required to provide positive air movement in these houses."

It should, however, be borne in mind, as Prof. Frank B. Rowley of the University of Minnesota observed at the Conference, that "too much ventilation may cause damage by cooling off the top of the insulation . . . to such an extent that the vapor, in coming up through the floor below, will condense [in the insulation] before it gets a chance to diffuse in the attic area." With a good ceiling vapor barrier, however, this is not likely to be a particularly probable occurrence.

(B) Forced Ventilation in Attics. It is becoming an increasingly popular practice to include attic exhaust fans in all but the lowest cost homes, except, of course, in those with year-round air conditioning. From the point of view of summer comfort, such fans are almost necessities in most parts of the country, even the northern tier of states. The fans are sometimes installed in the attic floor to suck air up from the rooms below and exhaust it through gable louvers, eave louvers, or small roof penthouses on flat roofs.[1] When fans are placed in one of the gable windows or in a special gable louver, provision is made so that the air is pulled up from the rooms below, either through the attic stair well or through a special vent-duct in the ceiling.

Attic fans of this type are hardly suitable for winter attic or roof ventilation. They are too powerful and waste too much heat. Furthermore, the ceiling opening through which the air is pulled up by the fan must be provided with a tight cover, complete with insulation and vapor barrier, to prevent heat and moisture vapor leakage during cold weather. When an attic stairway or scuttle access is used for summer air circulation, the protection described earlier will be sufficient.[2] When there is a direct ceiling opening for a fan, special precautions will have to be taken to provide insulation and a vapor seal over it during the winter months.

(C) Wall Ventilating. All houses, except air-conditioned homes with fixed glazing, are provided with the most satisfactory means of winter ventilation known to man: windows. In the summer, open and screened windows are the only really effective means of cooling a house by means of air currents alone; fans can speed up the process, but a fan which merely stirs up air inside a closed house is not doing an effective job.

However, the point has already been made that these ideal ventilators will not be operated efficiently by the home owner when the weather gets cold. Some other method of reducing interior humidities when they reach a point where they could damage the structure must be found. Theoretically, a good vapor barrier will handle the problem, but no barrier is perfect. Furthermore, too high a concentration of moisture inside the house can actually damage window frames as condensation on the window drips down, and cause mold and mildew in closets and elsewhere.

Of course, the major problem in most home owners' minds is keeping interior humidities up. When it is very cold indoors, the air inside the house is likely to become extremely dry unless the structure is tightly sealed with vapor barriers, weatherstrips, and storm windows. Consequently, pans of water are often set out on radiators or warm-air grills, humidifiers are set to work in warm-air furnaces and elsewhere, and, in extreme cases, kettles of water have been set to steaming on stoves.

This need for high interior humidity has led to various expedients for reducing the vapor pressure on the walls of a dwelling. The most common of these are wall vents, either airing the outer side of the wall or actually venting the room directly to the outdoors, and automatic dehumidifying installations.

People in the paint industry primarily concerned with the elimination of exterior paint failure, often use some means of ventilating the siding or shingles, so that the circulation of air will drive off the dangerous concentrations of moisture inside the wall. Some types of siding with very narrow overlap provide cracks between the strips that give a certain amount of air motion—but these types also permit wind-driven rain to damage the wall. When the siding has a wide overlap, small wedges have been known to be used to provide air circulation behind the siding strips. In existing homes that have been winterized and therefore do not have adequate vapor barriers, these techniques may be permissible but they are not desirable in new construction with good vapor barriers.

Another idea frequently promoted is the provision of small vents at the top and the bottom of the wall between each pair of studs. These can either be small holes cut at an angle through the bottom and top plates, or prefab metal louvers or plastic tubes ¾″ or more in diameter placed at the base and the top of each stud space.

It is the best-informed opinion that this is a poor expedient. In the first place, good design calls for fire stops between each pair of studs, both for the purpose indicated by their name and also as a means of strengthening the wall. No vapor would be able to penetrate these stops unless holes were bored in them, in which case their value as fire stops would be destroyed.

Secondly, it has often been shown that condensing moisture vapor in a narrow space will tend to migrate to the colder side of the wall area rather than being "sucked up" to the top vent by stack action, unless the air motion is so strong as to reduce the temperature to a point where droplets that would be too large to be lifted by such air motion would be formed.

Finally, any small hole or louver at the bottom of a wall located in a cold climate is likely to become clogged with snow or ice *just at the time* when the air circulation theoretically would be doing the most good. This water might penetrate through the holes or louvers when

[1] *W. H. Badgett, in his excellent pamphlet* The Installation and Use of Attic Fans, *published by the Texas Engineering Station, College Station, Tex. (1940) makes the following point against so installing attic fans that they exhaust the air vertically upward from the rooms, rather than at an angle. "Every effort should be made to avoid vertical installations in residences because air and mechanical noises usually prove objectionable with the fan installed directly above the ceiling grill."*

[2] *Page 125, April 1954 P/A.*

Table I

	Air in	Air out				
Temperature	32 F	70 F	70 F	70 F	70 F	70 F
Relative humidity	Sat	24%	30%	45%	60%	Sat
Absolute humidity (Lbs water/lb air)	0.00379	0.00380	0.00475	0.00712	0.00950	0.01582
Water vapor removed from house (Lbs water/lb air)		0.00001	0.00096	0.00333	0.00571	0.01203
Enthalpy (Btu/lb air)	11.758	20.986	22.026	24.636	27.516	34.090
Total heat removed from house (Btu/lb air)		9.228	10.268	12.878	15.758	22.332
Air necessary to remove 1 lb water vapor from house (Lbs air/lb water)		1,000,000	1,042	303	175	83
(Cu ft air/lb water)		13,450,000	14,000	4,070	2,350	1,020

If a house has a volume of 10,000 cubic feet and an infiltration rate of one air change per hour, which is considered typical, the water removal rate is:

$$\frac{10{,}000}{14{,}000} = 0.714 \text{ lb per hr}$$

Then if the house is equipped with storm windows and vapor barriers and is otherwise arranged for a humidity of 45 percent, the ventilation rate necessary to remove the same amount of water in the form of vapor is:

$$4070 \times 0.714 = 2900 \text{ cu ft per hr}$$

The heat loss due to ventilation in the original case is approximately:

$$\frac{10{,}000}{13.5} \times (70 \text{ F} - 32 \text{ F}) \times 0.24 = 6750 \text{ Btu per hr}$$

The heat loss due to the same cause in the second case is:

$$\frac{2900}{13.5} \times (70 \text{ F} - 32 \text{ F}) \times 0.24 = 1960 \text{ Btu per hr}$$

The estimated saving is: $6750 - 1960 = 4790$ Btu per hr

If the total heat loss of the house is 50,000 Btu per hr for an outdoor temperature of 32 F, the saving amounts to:

$$\frac{4790}{50000} = 9.6 \text{ percent of the total heat loss}$$

melting occurs and damage from rot could easily result.

In other words, it would seem that any attempt to ventilate the outer layers of the walls of a home is likely to be foredoomed to failure. As Rowley put it at the Conference: "You may get into more difficulty with wall vents than without them."

(D) Ventilating From The Interior. It would seem, then, that the only suitable method of reducing dangerous concentrations of humidity inside the house, when they occur, is interior ventilation, preferably by some method that will operate automatically.

In this connection, it is worth quoting R. S. Dill of the National Bureau of Standards to show that interior ventilation is actually less wasteful of heat than one might imagine. His example, already a classic in the literature of building condensation, is reprinted here for the convenience of architects not already familiar with it:[3]

"Some persons find low humidities uncomfortable. Glued wooden furniture deteriorates when the humidity is too low . . . [Actually,] the ventilation required to dispel the water vapor generated in a house is less when the humidity is high. This is illustrated by the following table . . . which shows that for air entering a house is less when the humidity is high. 70 F and 30 percent relative humidity, 14,000 cu ft are necessary to remove one pound of water, in the form of vapor, from the house." (*Table I.*)

In other words, it costs less to ventilate an adequately insulated and moisture-protected house than it used to cost in the days when houses were unprotected. As Dill put it at the BRAB Conference: "Less ventilation is required to dispense with a given amount of water vapor when the humidity of the ejected air is high. Hence, fuel savings are favored when higher humidities are maintained in the house."

This means, really, that the structure must be built so that its parts can withstand a vapor pressure resulting from humidities ranging between 40 and 45 percent. This is about the level, according to most authorities, which the average person requires for comfort and good health. It is far higher than would exist in unprotected houses. The problem is, however, *that in such* homes there is a marked tendency for humidity to rise *above* that level "until," in Dill's words, "condensation occurs on some surface in contact with the inside air," causing mold and mildew damage and even worse. Also, it may be pointed out that such high concentrations of vapor can penetrate gaps in the vapor barrier and pour into the wall or ceiling, to condense and

[3] *From* Condensation in Buildings *by Richard S. Dill. National Bureau of Standards Letter Circular LC-863, 1947, p. 9.*

cause paint failure and rot unless adequate ventilation is provided.

There are two methods of controlling excessive interior humidities by ventilation in winter that do not call for operation by the home owner. Both of them, naturally, involve bringing in some of the cold, dry air and ejecting some of the warm, humid air. One is by means of an air intake on the furnace; this is probably suitable only for warm-air units. Here the home owner often shuts off the normal air intake in the winter or else humidifiers are attached to the unit to add moisture as the dry air enters. By attaching a humidity controller to the air intake or the humidifier, set to operate when the humidity reaches, say 45 percent, an automatic and foolproof method of keeping interior humidities below the danger point can be achieved. *(Figure 8 shows a new type of electronic controller.)*

The other method is to connect a humidity controller to an automatic fan in the kitchen, bathroom, or laundry, or any combination of these, and also to some intake vent elsewhere in the house near the ceiling. When the humidity reaches the danger point, the controller would be set to open the intake vent and start the exhaust fan, thus pulling the warm damp air out and cold dry air in until the moisture in the air has reached a predetermined point.

The necessity of including such precautionary instruments as a humidity controller in a new house is hard to establish. The typical home owner has no idea what level of humidity his family prefers, and even less of a notion what humidity level the family's living habits are likely to cause. Consequently, if a well-designed house is provided with a good semiautomatic kitchen fan and one or two modest vents somewhere near the top of the ceiling and normally left closed, it would always be possible to put in the necessary automatic controls should the need arise. This could even be specified by the architect in the contract, if he chooses, together with an estimate of the added cost.

Of course, if the family objects too strenuously to these solutions because of fancied drafts or high heat losses, one can always resort to silica gel dehumidifiers with built-in controllers; these can be placed at the source of the greatest production of moisture with the hope that they will solve the problem. This is an expensive alternative and not one to resort to until the house has been lived in for a while, but it may be called for in exceptional instances.

(E) The Problem of Double Glazing. One minor annoyance that sometimes reaches the proportions of a problem is the condensation that occasionally shows up on the outer pane of double-glazed windows. This is not likely to occur unless the double glazing is in the form of storm windows that are weather-stripped or otherwise tightly sealed. But if they are, there is a way of eliminating the condensation that is the essence of simplicity. Robert Miller of Pittsburgh Plate Glass Company suggested it at the BRAB Conference:

"If . . . you have condensation occurring on the outermost glass and you vent it from the bottom, you will not be particularly successful in getting the moisture off that window. However, if you will also put a very small vent, of the size of . . . a pencil hole at the top of the window so that there may be some slight circulation through the window, you will get complete elimination of the condensation on the outer window and will not materially increase the likelihood of condensation on the inner window." The heat loss, too, it may be added, will be extremely small.

Naturally, such a trick should not be tried with insulating glass windows such as "Twindow" or "Thermopane." In any event, there is little likelihood of serious condensation occurring on such windows, so the problem probably will not arise.

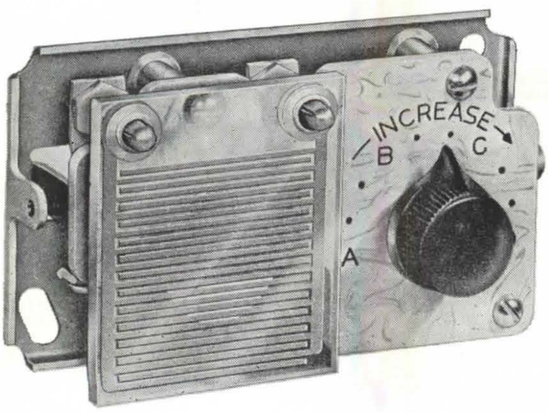


Figure 8—electronic humidity-control system features operating differential of one-half percent relative humidity.

Photo: courtesy of Minneapolis-Honeywell Regulator Company

Part VII will appear in August 1954 P/A

six-story lift-slab building

by J. Hoogstraten and S. J. Borgford*

What is believed to be the first six-story, lift-slab building has just been completed at Winnipeg, Manitoba. Except for the fact that the roof will be supported by the walls and partitions of the sixth story, the general procedure followed in the design and erection of this structure was that outlined by Fred E. Koebel in his article "Structural Aspects of Lift Slab" *(page 93, February 1953 P/A)*.

In the first stage of construction, columns a little over three stories high were erected. The sixth floor was raised and temporarily connected to the tops of these columns. After the slab was braced with guys, the fifth floor was raised and temporarily connected immediately below the sixth floor. The fourth, third, and second were then raised in succession and permanently fastened in position. Next, the fourth- and fifth-story columns were welded in place *(left half of Figure 1)*. The second stage consists of raising the sixth and fifth floors into position as shown *(right half of Figure 1)*.

A square, box-section column composed of two 8″ x 8″ angles is generally used in lift-slab construction because of its relatively large radius of gyration and because it fits the 15 in. center-to-center distance of the lifting screws. For six-story loads, however, the angles must be ¾ in. thick in order to provide enough cross-section area, and the cost of welding and straightening becomes correspondingly greater. For these reasons it was decided to use 12 WF 72 and 12 WF 65 rolled sections for the lower and upper columns respectively. The first-story columns were designed as modified composite columns—a 16″ x 16″ concrete column was poured around each steel section to take the second floor loads.

For the initial lift of the sixth floor, with the jacks mounted on columns approximately 26 ft above the stacked slabs, the tops of the columns are not supported in either direction. Therefore, the effective length must be taken as twice the actual length, producing a slenderness ratio of 218 and a Euler critical load of 139 kips for the 12 WF 72 section. As the lifting load was 54 kips, the section was deemed safe for this loading case. With the sixth floor

* *Professor and Assistant Professor, Department of Civil Engineering, The University of Manitoba, Winnipeg, Canada; consulting engineers for this building.*

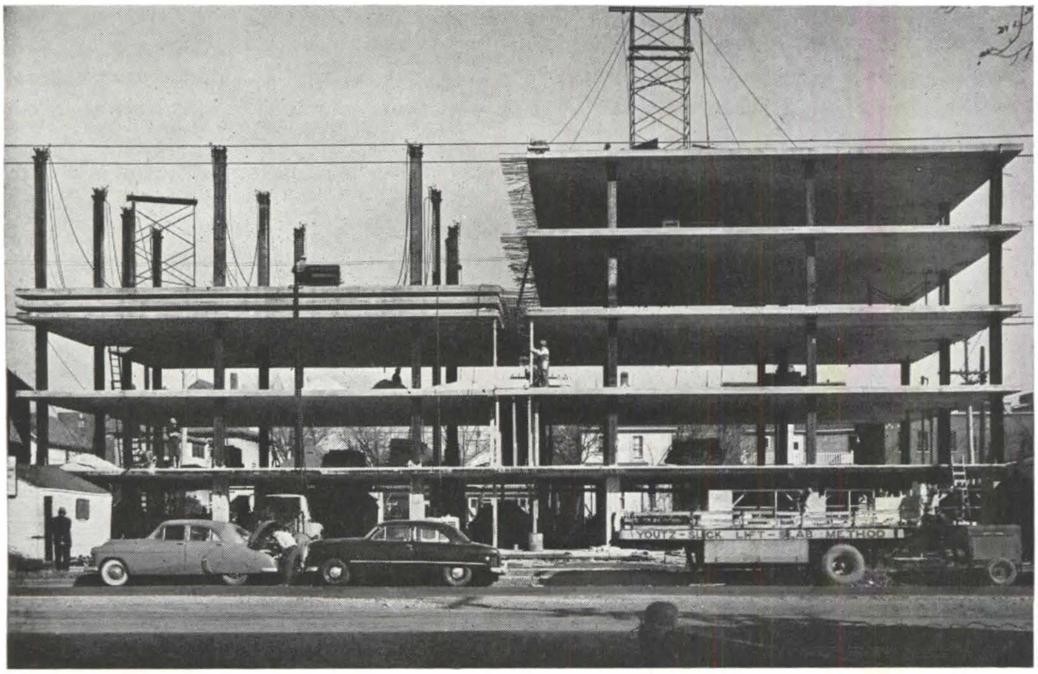


Figure 1—two stages of multistory lift-slab construction. All six floors are in final position in right half of photo; floors six and five are about to be raised at left. Roof will be supported by walls and partitions.

slab in place and braced by guys, the unsupported length of the column is reduced and during the remaining lifting operations, column stability is not critical.

The lifting-collar casting was designed for a jacking load of 65 kips and a total load of 122 kips. Some assumptions regarding the interaction of the collar and slab are necessary to achieve a fairly rational design, and the assumptions made are illustrated in the accompanying diagrams.

It was assumed that the vertical load, represented by W, is uniformly distributed *(Figure 2)*. V is the vertical shear; ∴ V=W. The couple whose forces are V and W is opposed by a triangularly distributed system of forces having a resultant F_1 arising from compression between the collar and the slab, and the forces F_2. The forces F_2 provide the normal ring stresses in the horizontal flanges as indicated *(Figure 4)*. The external force system on the collar for the lifting condition is shown *(Figure 3)*.

With these assumptions, it is possible to draw free-body diagrams for all elements in order to complete the design.

For the total load condition, the collar was designed for both top and bottom welds to the column flanges. A photo of the collar is shown *(Figure 5)*. The forces F_1 in the concrete can be evaluated and it was found that they increase the tension in the column-strip steel in the order of five percent for the lifting condition. Typical bays are 21′ x 23′ and the slab thickness is nine in. Architects: Smith Carter Katelnikoff.

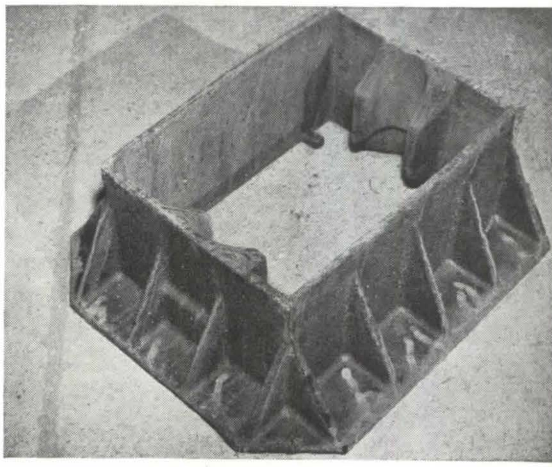
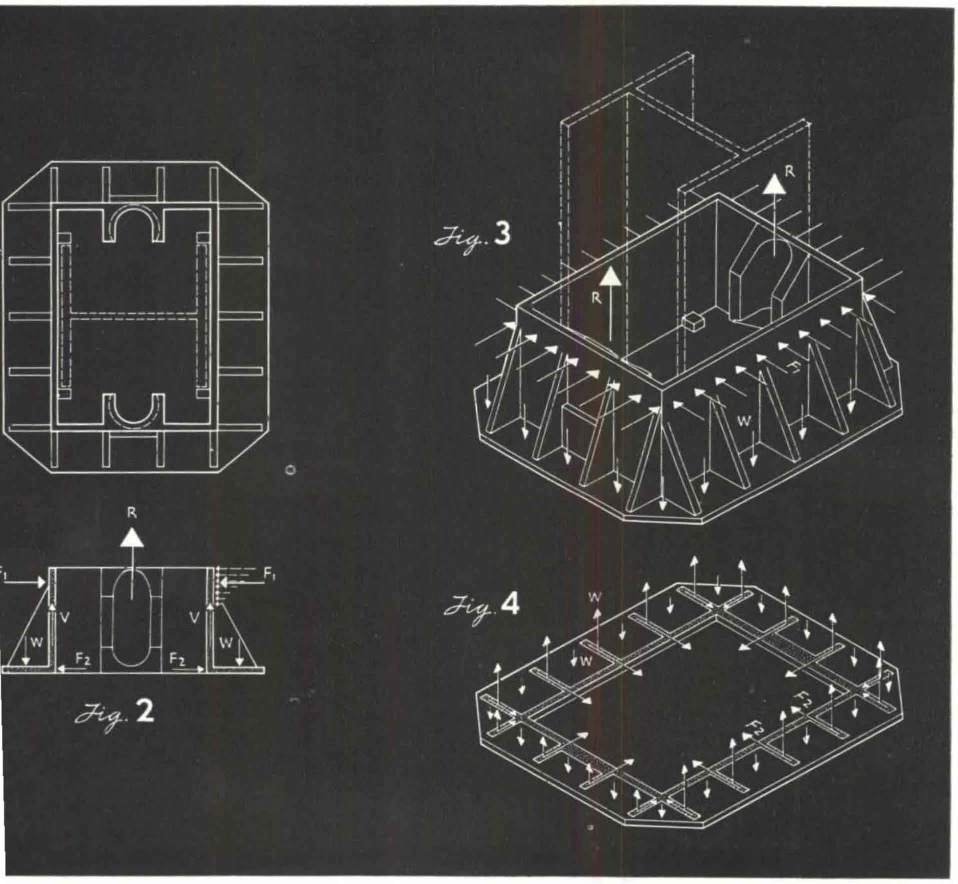


Figure 5—lifting collar was designed for both top and bottom welds to the column flanges and for a total load of 122 kips.



flaws in doors

Hoe Corporation of Poughkeepsie, New York offers an illuminating autopsy on defective door specifications. I think it is an excellent commentary: worth remembering. Space does not permit more examples; however, don't fail to ask me for additional material.

1. *Specification:* "All interior doors shall be flush type as manufactured by Crooks, Roddis, U.S. Plywood, Mengel, Hardwood Products, Haskelite, General Plywood, New Londoner, Paine, or as approved."

Analysis: This specification is taken verbatim from one school building. It is undoubtedly the worst, from the architect's viewpoint, that could possibly be written. Apparently the architect has gone to Sweet's Catalog and listed just about everybody who advertises wood doors. He has not even said whether the doors should be solid core. Elsewhere in his specification he said that all doors were to be birch. Several of the manufacturers listed make both hollow core and solid core. If you were bidding this job competitively, I am sure you would base your price upon hollow-core doors because there is nothing in the specification that forbids them, yet the chances are very good that if hollow-core doors are furnished, the architect will be most unhappy as he probably intended solid-core doors. Who is to blame if this occurs?

2. *Specification:* The following paragraphs are both from the same job but occur on different pages of the specifications:

a. "Flush-veneer doors as manufactured by U.S. Plywood, Roddis, or equal. Face veneer 1/8", cross banding 1/16", core solid with rails framed into stiles."

b. "Flush-veneer doors shall have stiles, rails, and panels of built-up cores of narrow strips of pine. The entire core of doors shall be covered with a 1/16" thick cross-veneer of birch and a 1/16" thick finished-veneer of kinds of wood specified."

Analysis: Neither paragraph describes any door customarily made. Furthermore, the two paragraphs are contradictory; one calls for a face veneer 1/8", the other calls for a face veneer 1/16". What kind of door would you assume was required and used in making up a price? The core construction in both cases is the Crooks or Hardwood Products "straight flush." The thickness of veneers is not used by anybody. Actually the door that is described in paragraph (b) is strictly a special door at a special price. The door described in paragraph (a) is a door Hardwood Products used to make under the name of "sturdy flush type" but does not make any longer, except on special order and even then their cross band is 1/12", not 1/16". This specification does not describe the Hardwood Products "Master" door because of the core construction.

3. *Specification:* A complete detailed description of the 1/4"-veneer door with stile and rail core as made by Crooks and Hardwood Products "straight flush" is given, followed by the sentence, "doors made in strict accordance with the above detailed specifications by any manufacturer will be approved."

Analysis: This is a very excellent way to write a specification covering a 1/4"-veneer door. It permits any other manufacturer to make the door if he so wishes (no manufacturer such as Roddis or U.S. Plywood will make the door), and, therefore, has the effect of restraining other door manufacturers from complaining that they are being excluded from a specification (as, in this case, the architect has made very plain what he wants).

4. *Specification:* The specification describes and clearly specifies the 5-ply slab-core door, then goes on to state that all doors must be guaranteed for the life of the installation.

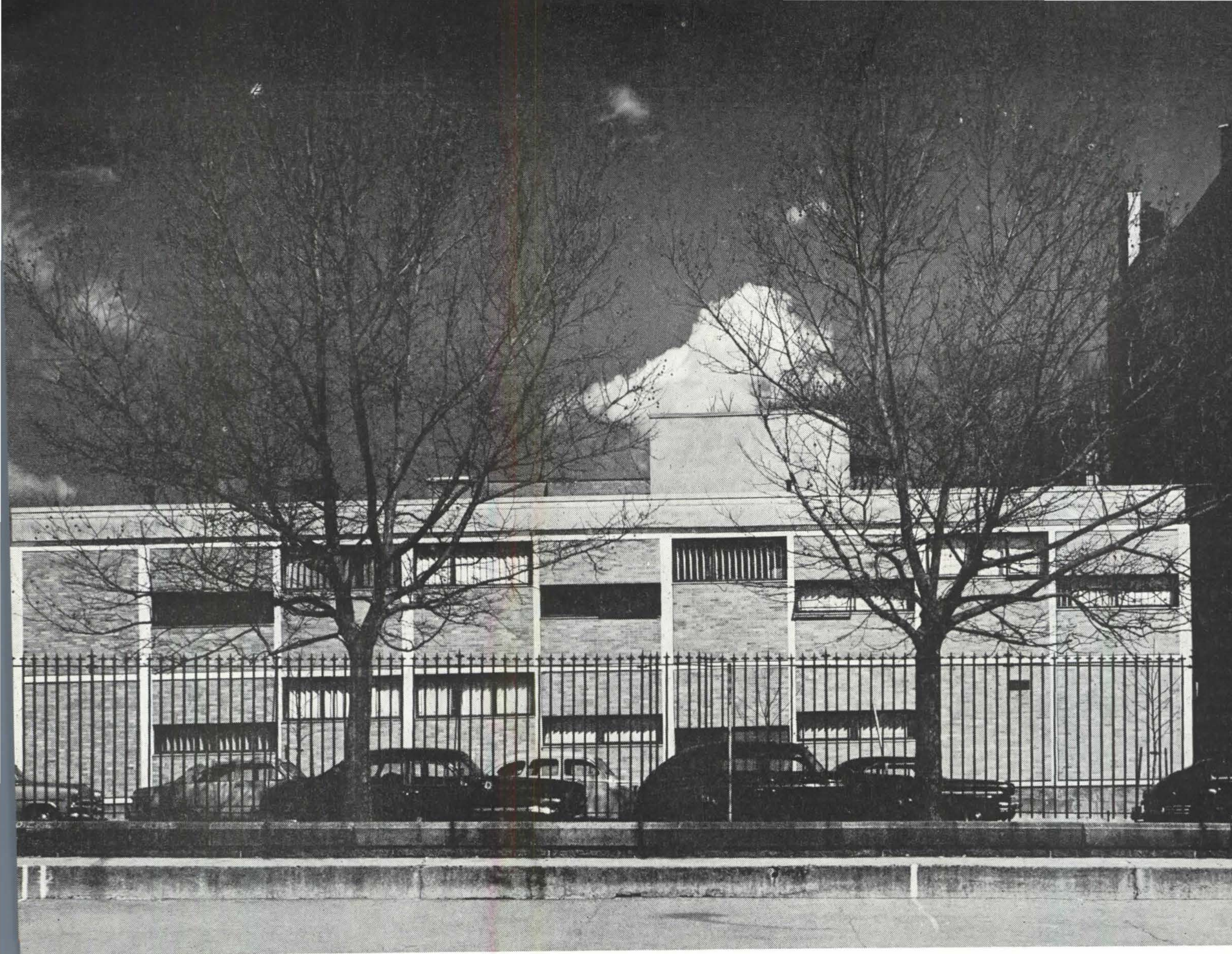
Analysis: This specification is an example of lifting part of one manufacturer's specifications from the context and imposing it on another type of door. U.S. Plywood Kaylo "stay-strate" door is the only door on the market at the present time guaranteed for the life of the building. As a general practice, most other manufacturers guarantee the doors for two years from the date of installation.

5. *Specification:* "Interior doors shall have cores of 5-panel type divided by cross rails, cross banding, and 1/28" face veneers, and shall be as manufactured by Roddis, U.S. Plywood, or equal."

Analysis: The door described is not made by any manufacturer. On what door would you base your price?

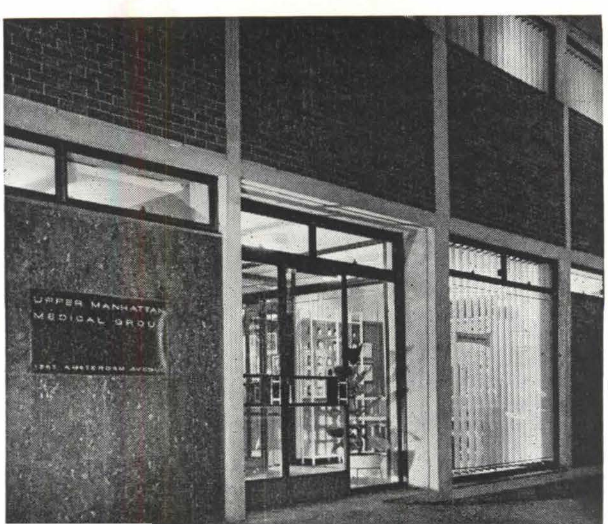
6. *Specification:* "Doors shall have louvers with free air openings as indicated on heating and ventilating plans."

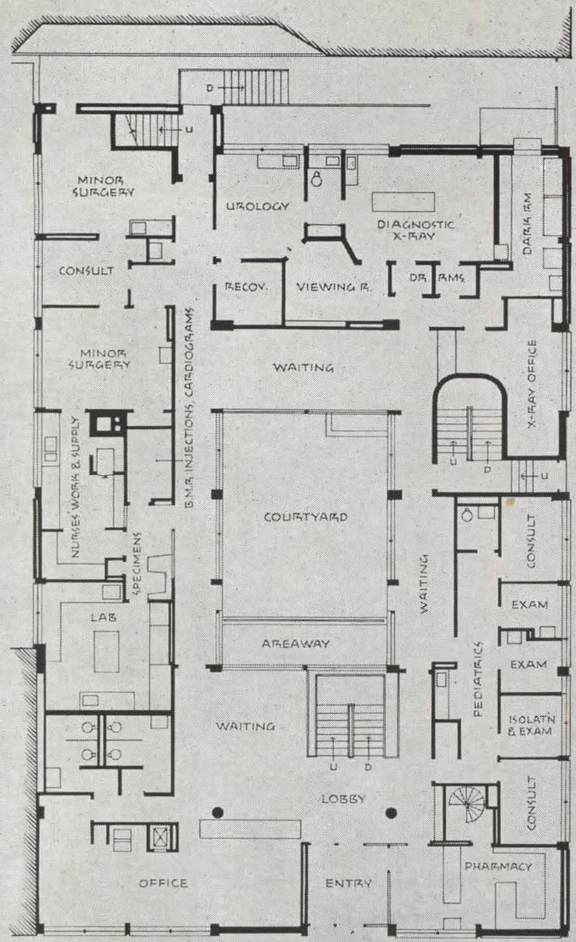
Analysis: Nothing is said about wood or metal louvers. Furthermore, the heating and ventilating plans are not usually available to the mill, and, therefore, there is no way to tell how many doors, much less which ones, require louvers, nor their size.



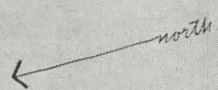
health insurance plan clinic

location	New York, New York
associated architects	George Nemeny, Abraham W. Geller, Basil Yurchenco
structural-mechanical engineer	Peter Bruder
heating-electrical engineer	Bernard Green
interior furnishings	Integra
clerk of the works	William Cox
general contractor	Adson Builders, Incorporated

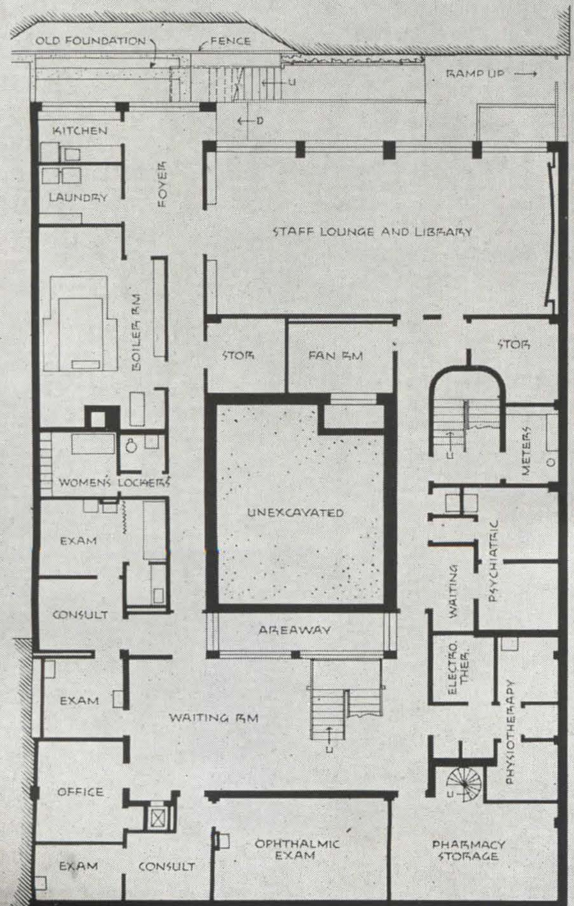




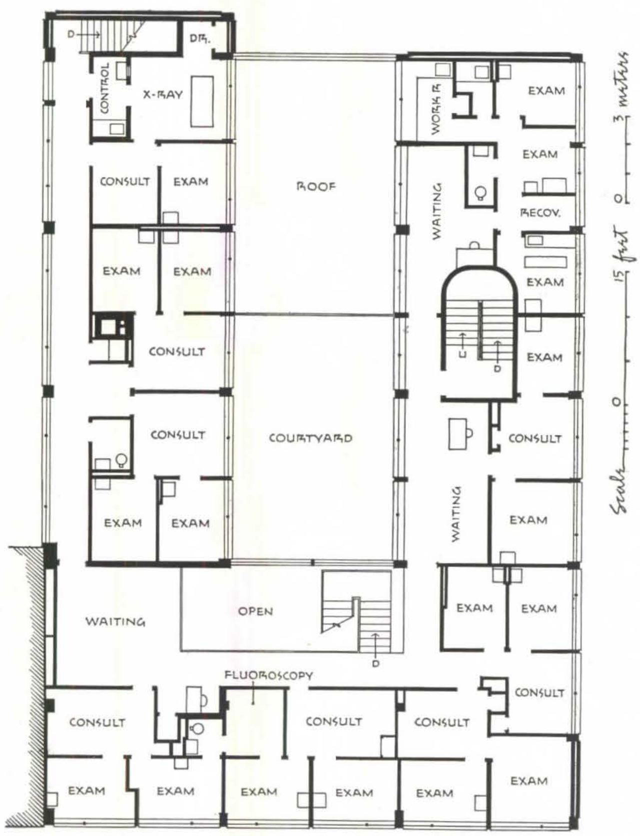
First Floor



Basement



Almost a half-million people in the New York metropolitan area are now members of HIP—Health Insurance Plan—an organization which believes, frankly, that it is cheaper to treat patients before they become seriously ill, and that, in this way, many more people can get the medical attention they need. Despite criticism of medical group practice from conservative and reactionary quarters, HIP and others like it are doing well what they set out to do. Evidence of this is the new Upper Manhattan Medical Group Building which was completed in October 1953, a



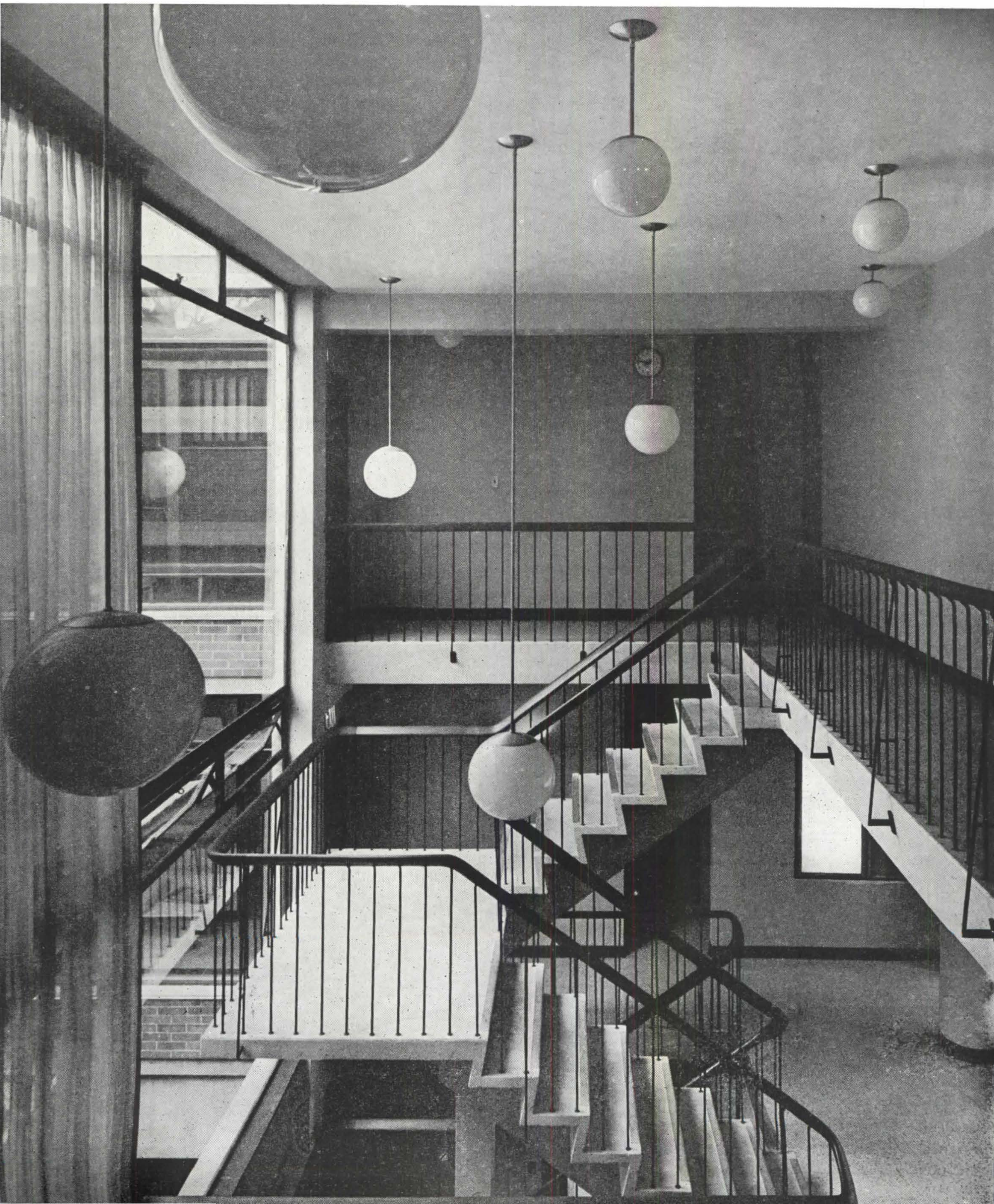
Second Floor

signal step in the advancement and expansion of HIP.

On a typical 60′ x 100′ corner lot in Harlem, UMMG serves approximately 15,000 HIP members and 5000 private patients, treating them for everything from toothaches to fractures. Manned by a large staff of specialists, some of whom have private offices outside the building, this health plant is planned to handle routine examinations quickly and thoroughly

Sofas in waiting room across court from main lobby were designed by Integra and are set before a wall of brilliant red. High windows at second floor indicate examination rooms; lower windows indicate consultation rooms. Drapery at left is bright yellow-gold.
Photos: Louis A. Reens

health insurance plan clinic

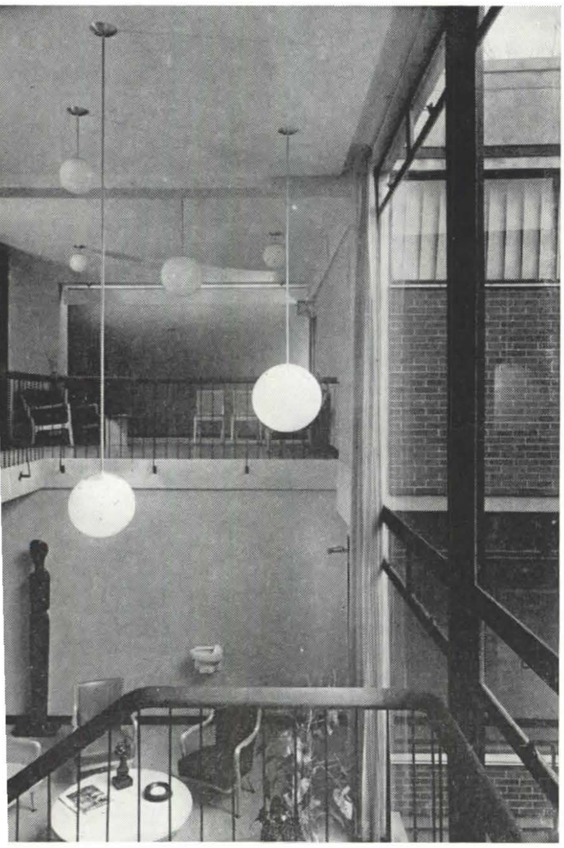


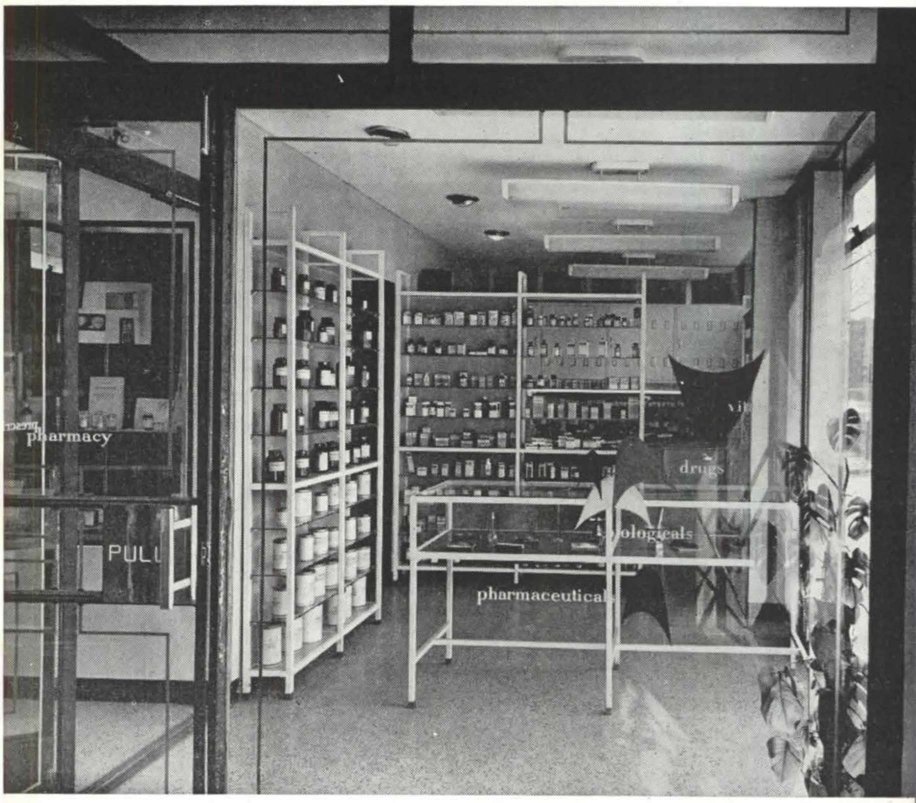
on the main floor. Except for the Pediatrics suite, which is on the main floor, the suites for specialties are on the other two floors—Eye, Ear, Nose, Throat, and Ophthalmology being in the basement along with staff conference room and service facilities.

The unexpected feature of the building—one which is not apparent from the outside—is the garden court in the middle of the plot. Because of this planning device, almost every room enjoys daylight, and those that face the court have pleasant views. This court, together with the large glass areas surrounding it, creates a feeling of spaciousness which belies the size of the building. For example, the dramatic staircase (*see also* SELECTED DETAILS) in the main lobby is visible from other waiting areas, corridors, and offices. Dramatizing the space above the main lobby (*below* and *acrosspage*), which is separated from the court only by a glass wall, light globes of varied sizes have been suspended at different heights.

Partly due to the difficulty of obtaining steel when the structure was designed, the architects used a reinforced-concrete structural system with reinforced-concrete floor slabs which contain hot-water radiant-heat coils. To express the structure, the concrete has been left its natural color and has been exposed wherever feasible, inside and out. Between the exterior columns and slabs, brick panels have been used for fillers and these protrude one inch, to give thin shadow lines and to emphasize that they are panels. An interesting two-dimensional pattern has been thereby achieved.

Emphasizing the excellent integration of details, interiors, and furnishings with the structure and plan, this month's SELECTED DETAILS *and* INTERIOR DESIGN DATA *continue the UMMG presentation.*

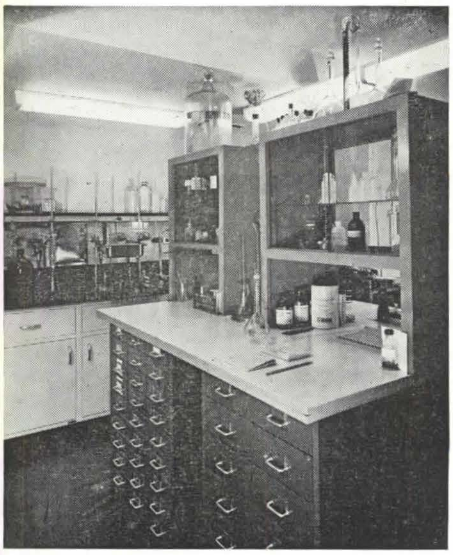




Chairs on second floor (above) *are set against a background of bright royal blue. Terrazzo-like floors are asphalt tile.*

Glass-walled pharmacy (above right) *makes an attractive display at the entrance. It also can be seen from the outside. Fixtures were designed by the architects and fabricated by Lafayette Store Fixture Co., Inc.*

Laboratory (right) *is compact and efficient.*



critique

by Frederick Gutheim

Near the beginning of a new human activity, an appropriate architectural form is usually found which establishes the type of building. Thereafter architects have few doubts concerning the way a department store or a railroad station, for example, should look. In the case of the movement toward preventive medicine, the architectural keynote was undoubtedly the Peckham Health Center in London. Here, in a building plan organized around a huge, eye-filling, health-giving swimming pool, a great social center and medical examining facility was developed: a concrete-and-glass structure which seemed to express perfectly the ideals and function of the new establishment. Yet, in retrospect, Peckham was less a health center than a social center. That is not the direction in which pay-as-you-go medical care in the United States is proceeding. We have elected a different path of health insurance and group medical practice. With or without Federal aid, that is the direction in which we are moving. Peckham does not point the way. Instead, the typical form of American health center has been found in the new clinic for the Upper Manhattan Medical Group.

In this colorful, fresh building one is entirely rid of the institutionality of the hospital, the impersonality of medical practice, the idea that design is controlled more by germs than by people, much less any overtone of socialism or collective action. In buildings of this type, pressure for low-maintenance materials and antiseptic routines has frequently moved down all possible deviation and preserved the indelible hospital atmosphere with its glary tile, glass, and enamel. Not so here! What has been achieved is a friendly building, domestic in scale, intimate in feeling, warm in expression; a reasonable building exhibiting a decent economy, but without hint that this has been done at any sacrifice of efficiency or medical values; a building that clearly puts people, their needs and comforts, uppermost. And it is a proud building in which modesty is unmarred by that phony, shiftless poor-mouthing in which ugliness is construed as related to economy rather than, as is the fact, to waste.

The building stands on a corner of a busy traffic street in a middle-class Harlem neighborhood. The site is relatively open to the south where it overlooks a playground. The exterior is formal, with little hint of the architectural satisfactions which lie within. Panels of matte brick, laid with close joints, fill in the exposed concrete frame. The principal street-front interest is a glass entrance composed of steel-casement doors and the plate glass window of the pharmacy. Beyond one glimpses a courtyard and a suggestion of colorful interiors.

The reception area is notably good. People walk in, check in, and find comfortable and attractive places in which to sit while waiting for their appointments. The furniture and lighting fixtures are gay and elegant. Colors are chosen carefully, and are positive. The circulation is easy and coherent, with a conspicuously good precast concrete stair. The building itself has little suggestion of special facilities for the sick, and most of the patients, of course, are not sick. They are concerned with staying well.

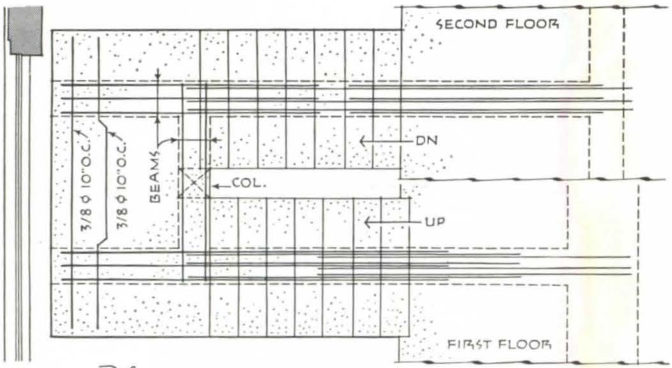
The entire plan can be easily understood from the reception area at the entrance. It is organized around a small, quiet central court, glassed on all four sides, and running through the two floors of the building. It is open to the sky and handsomely landscaped. Four principal waiting areas look onto this courtyard, as do several corridors. The outer perimeter of the plan is composed of treatment rooms and doctors' offices. These offer little out of the ordinary, except as efficient arrangements of examining rooms, laboratories, or other special rooms. (The building contains the smallest dental suites I have ever seen —but also one of the best waiting rooms.) Since many offices are used by several doctors they have an appearance of impersonality, but aside from this they would work well in any medical building.

The simplicity and clarity of this plan, achieved not without struggling for it, is counterbalanced by careful detailing and decoration. The combination holds the secret to the building's final character and atmosphere, the reason it appears to be a happy, well-functioning place, enjoyed by its occupants and those they serve. This well resolved building, with its careful plan and its excellent integration, provides a sound framework for a discreet yet significant scheme of decoration which completes the architect's intention in a thoughtful and sincere manner and expresses what is the fact: the architect's firm control over all elements in the building, his mastery of its creation, his responsibility for it.

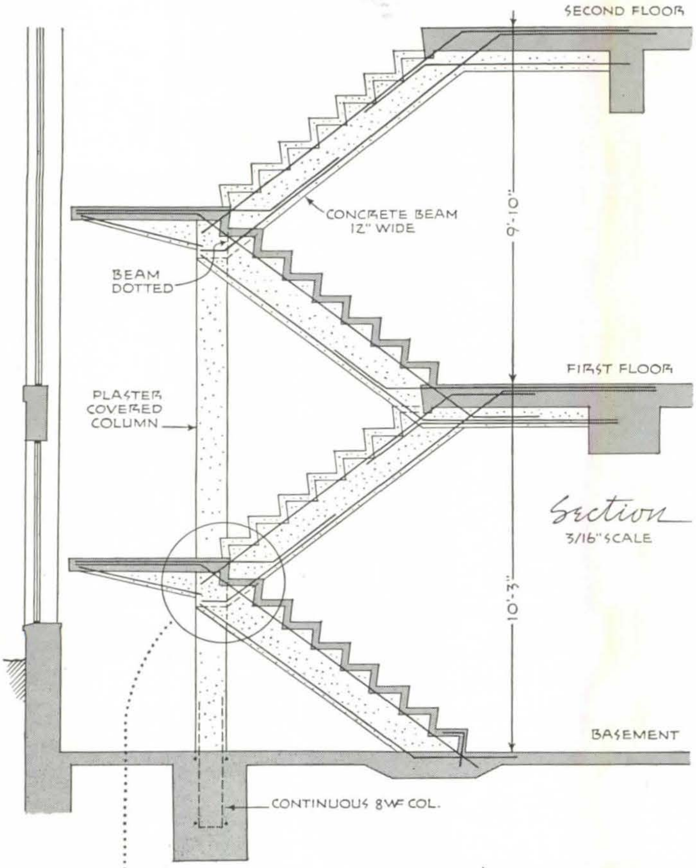
This is one of thirty similar buildings now being erected under the Health Insurance Plan in New York City, and the only one to my knowledge of much architectural interest. It sets high standards, not only in its program and planning but also in its architecture. I believe these will be influential in all future buildings of this type.

"The Hospital, gray, quiet, old, where Life and Death like friendly chafferers meet," has nothing whatever to do with the quality with which the architects have endowed Upper Manhattan. Here is a declaration of independence from past traditions of medical architecture, one that will exert powerful influence upon the flood of new facilities which health insurance and new developments in treatment and practice are creating.

clinic: stairs

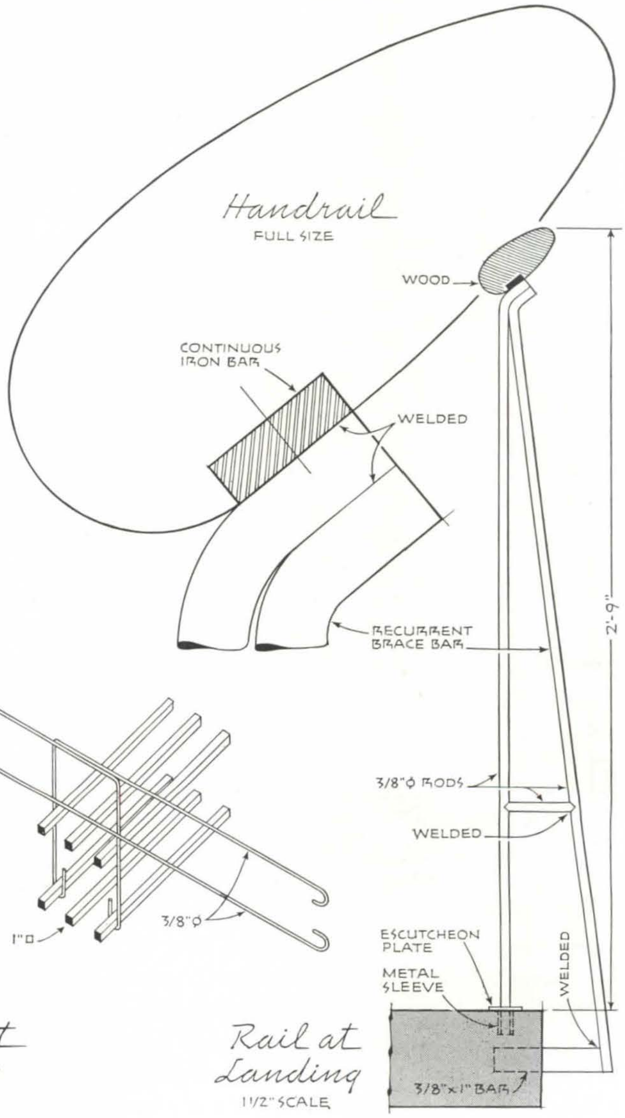


Plan 3/16" SCALE



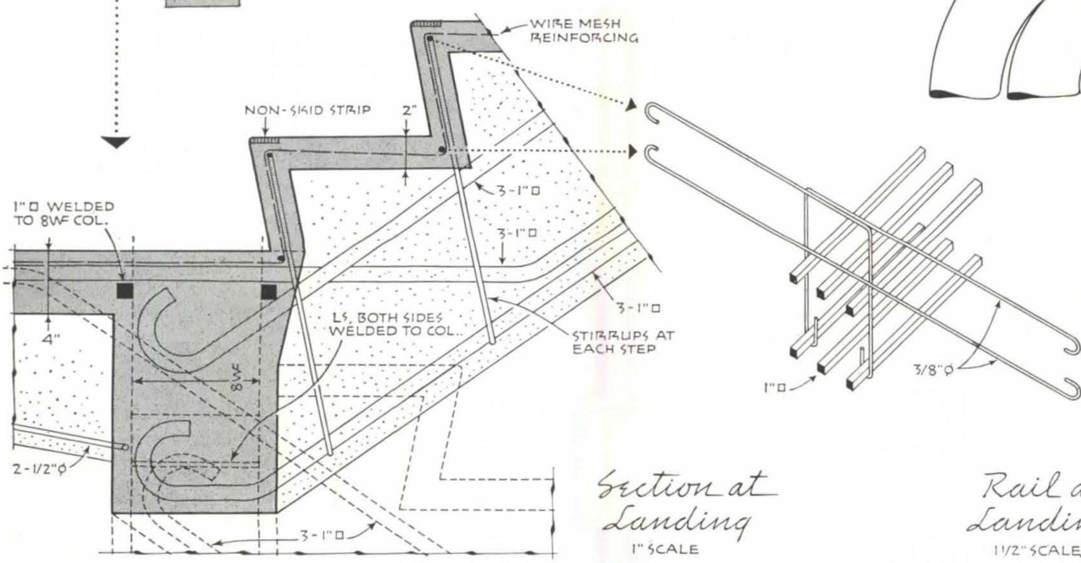
Section 3/16" SCALE

LOUIS REENS



Handrail FULL SIZE

Rail at Landing 1 1/2" SCALE

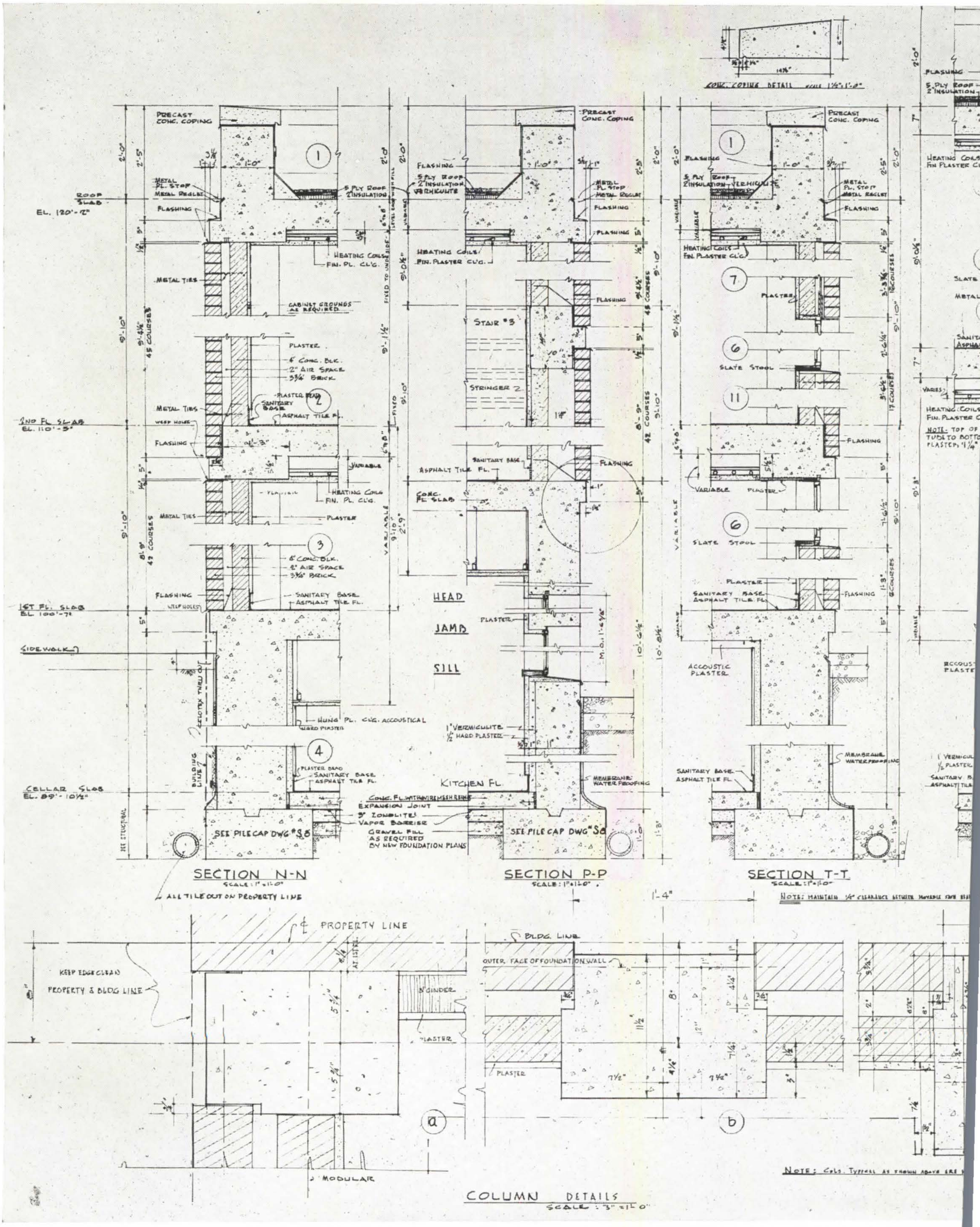


Section at Landing 1" SCALE

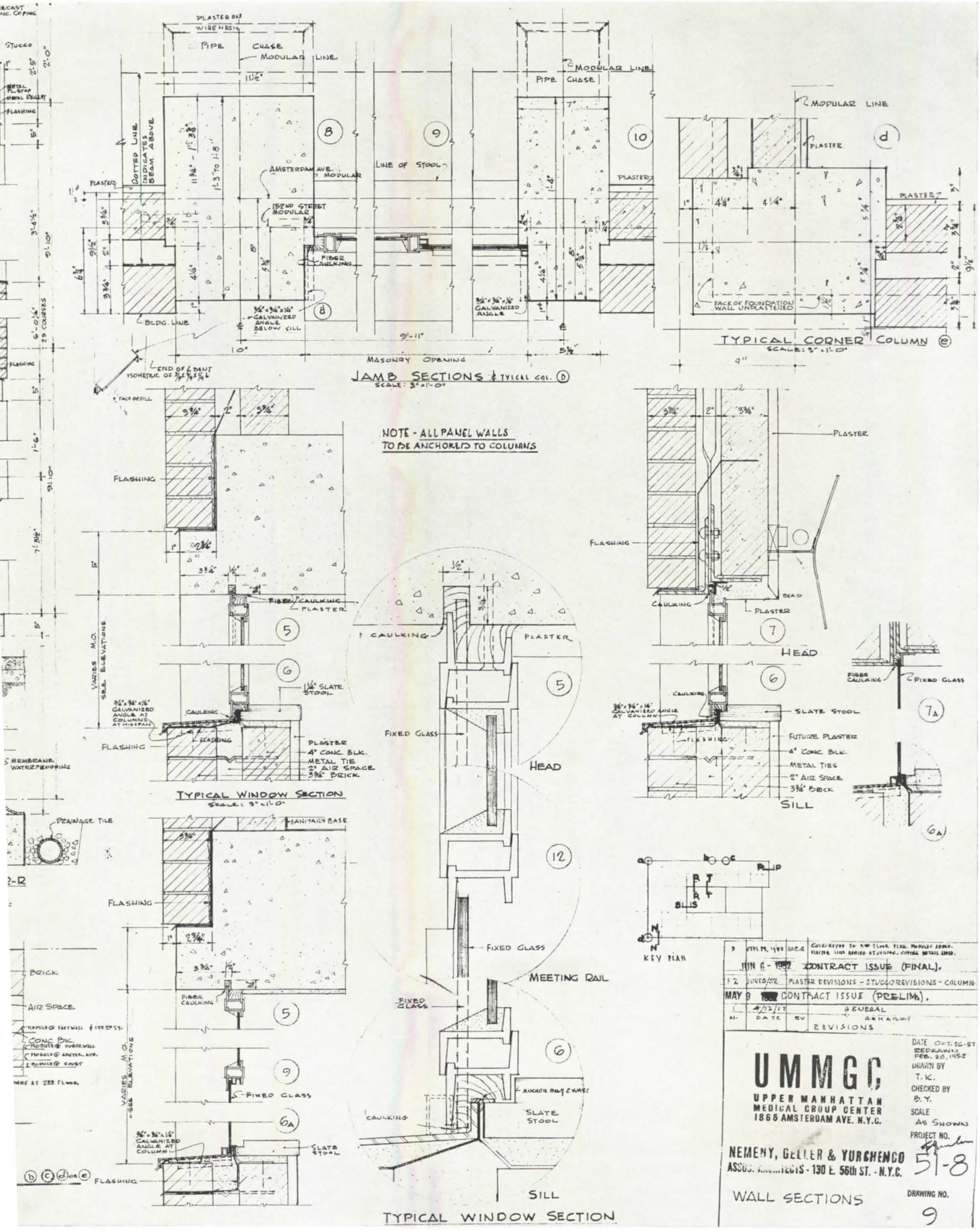
UPPER MANHATTAN MEDICAL GROUP CENTER, New York, N. Y.

George Nemeny, Abraham W. Geller, Basil Yurchenco, Associated Architects

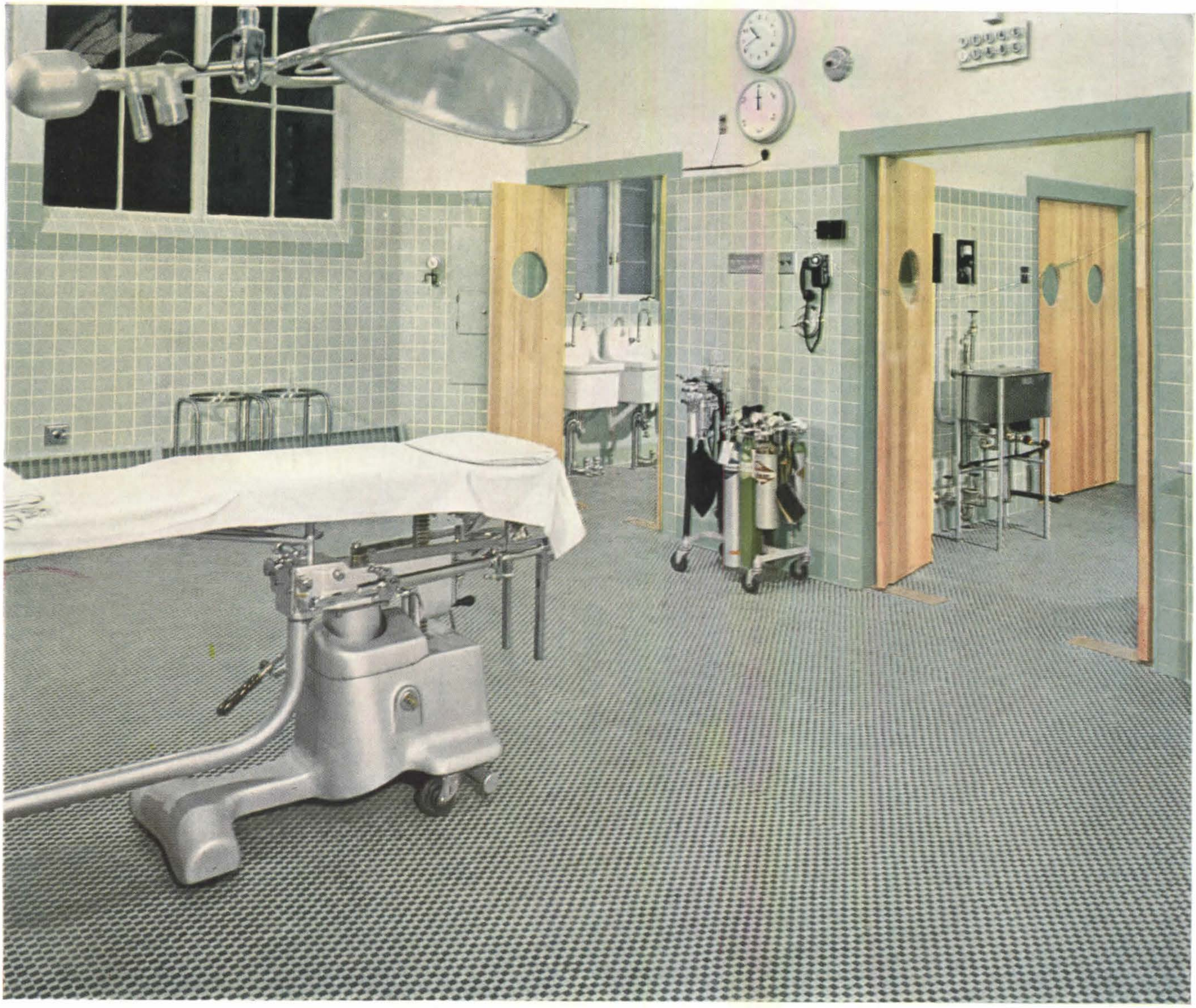
health insurance plan clinic



wall sections: Upper Manhattan Medical Group Center, New York, N. Y.



George Nemeny, Abraham W. Geller, Basil Yurchenco, associated architects



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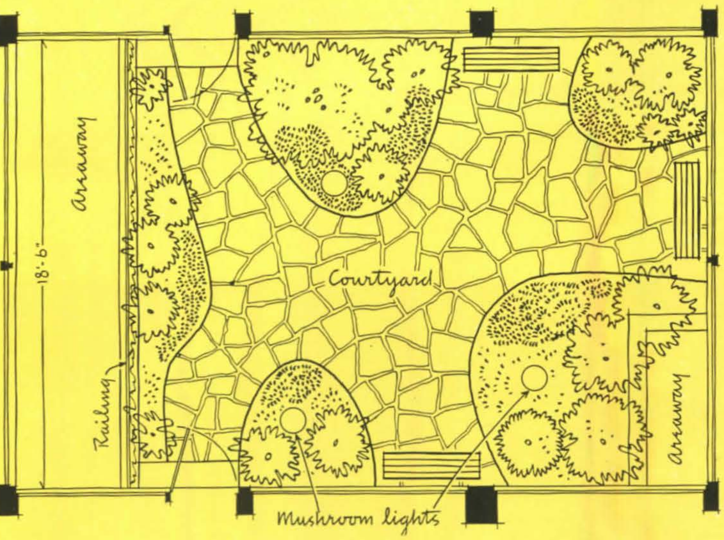


associated architects	George Nemeny, Abraham W. Geller, Basil Yurchenco
interior furnishings	Integra
execution	Adson Builders, Incorporated

health insurance plan clinic: interiors

Uninterrupted areas of plain wall surfaces were painted in primary colors for purposes of identification of various sections and, in addition, to prevent any possibility of the building having a sterile, clinical appearance. In contrast, all of the furnishings and upholstery fabrics are in neutrals—gray, brown, black, and white—where used in conjunction with the strong wall colors. Further design theory dictated fabrics and materials of extreme durability, both for ease of maintenance and to achieve furnishings as free as possible from destruction, due to the more than average use.

Seating units were designed with integral tables, to avoid the leggy look of end tables used in combination with the seats.

Flooring in all public areas is black with white pattern; while conference or working areas have black on a white ground.

In the staff lounge and conference room there are small, high windows on one wall. The opposite wall has been painted white to reflect as much light as possible. Adjacent walls are either gray or black, neutral because they are used for changing art exhibits. Here the upholstery is brilliant—yellow, vermilion, turquoise blue, and blue-purple.

All areas have a brightness through the color of the wall areas or the furnishings, carefully combined with the subtlety of neutral colors. The fascinating theme is best shown by the color photograph on the following page, looking down into the paved garden court from which all rooms open.

PAGE BEAUCHAMP

health insurance plan clinic

Lobby data

furnishings and fabrics

Long Seat with Integral Tables: designed by Integra/ executed by Mamo & Seidentop, Inc., 403 E. 62 St., New York 21, N. Y./ **upholstery:** #V710 cerulean blue 096, "Algeria"/ Leather Guild, 52 E. 21 St., New York, N. Y./ #AC 2301 gray horsehair/ Arundell Clarke, 25 E. 73 St., New York, N. Y.

Seating Unit: designed by Integra/ executed by Mamo & Seidentop, Inc./ **upholstery:** #216/2, black "Viscott" cloth/ Isabel Scott Fabrics Corp., 17 E. 53 St., New York 22, N. Y.

Open Armchair: Finland House, 41 E. 50 St., New York, N. Y./ **upholstery:** #IG-56 vermilion "Fabrilite"/ Fabric Leather Corp., 16 W. 32 St., New York 1, N. Y.

Circular Coffee Table: #MT26/ 42" diameter/ Roman travertine top/ Fabry Associates, Inc., 6 E. 53 St., New York, N. Y.

Drapery: #2082 "Diffusion" cloth/ yellow/ Edwin Raphael Co., Central Ave., Holland, Mich.

Sculpture: Charles H. Alston, 556 Edgecombe Ave., New York, N. Y.

lighting

Globes: #B4260/ Lightolier, Inc., 11 E. 36 St., New York, N. Y.

walls, ceiling, flooring

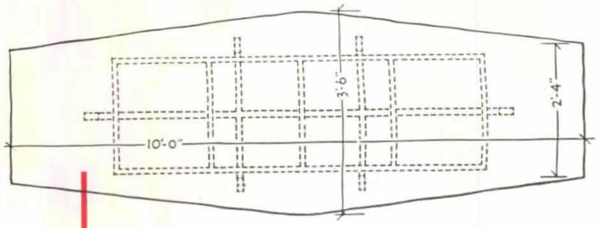
Walls: painted plaster/ paint/ Martin-Senour Co., 9 E. 56 St., New York, N. Y.

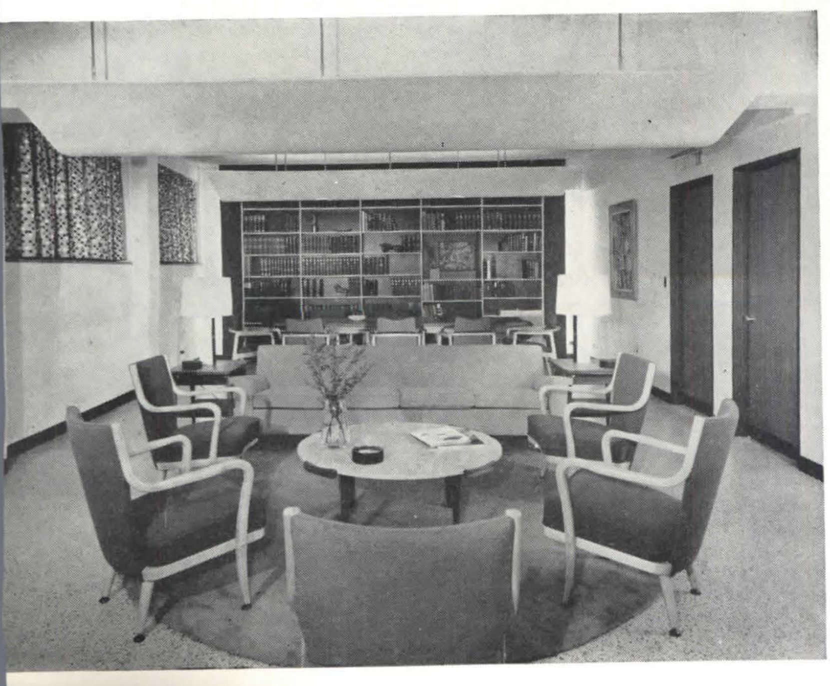
Ceiling: plaster/ U. S. Gypsum Co., 300 W. Adams St., Chicago 6, Ill.

Flooring: "Confetti"/ color #S609/ Mastic Tile Corp., North Montgomery St., Newburgh, N. Y.

hotos: Louis A. Reens

health insurance plan clinic





Staff Lounge, Conference Room

data

cabinetwork

Bookcase: designed by Integra/ executed by Multiflex Corp., 666 Fifth Ave., New York 19, N. Y.

furnishings and fabrics

Open Armchairs: Finland House/ **upholstery:** #9-057, purple/ Herman Miller Furniture Co., One Park Ave., New York, N. Y./ #K510/10 transportation cloth, red/ Knoll Associates, Inc., 575 Madison Ave., New York, N. Y.

Coffee Table: #MT26/ 42" diameter/ Roman travertine top/ Fabry Associates, Inc., 6 E. 53 St., New York, N. Y.

Sofa: #U190/ Jens Risom Design, Inc. 49 E. 53 St., New York, N. Y.

End Tables: #T-490/ walnut/ Jens Risom Design, Inc.

Conference Table: designed by Integra/ executed by Multiflex Corp.

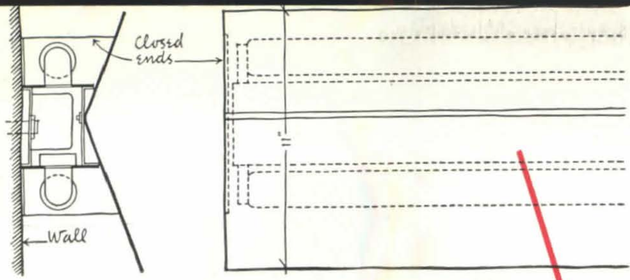
Conference Chairs: #132/ natural beech/ **upholstery:** #1045/25 G5, blue-green/ John Stuart, Inc., Fourth *Ave. & 32 St.*, New York 16, N. Y.

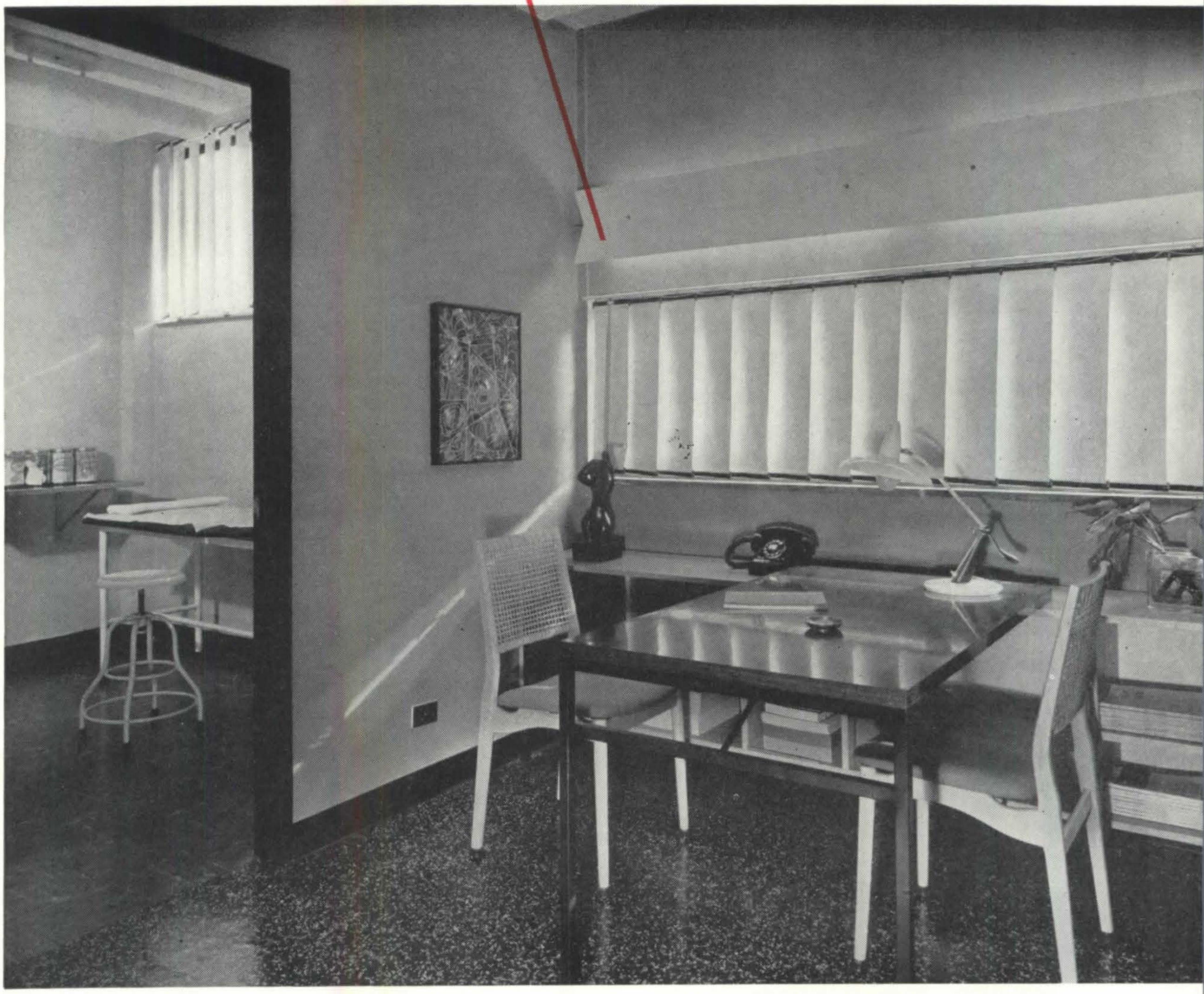
Drapery: #3-553, "Small Squares"/ Herman Miller Furniture Co.

lighting

Ceiling Fixture: designed by archi[tects]/ executed by Fulton Heating & Ventilating Corp., 625 Hudson St. New York, N. Y.

Lamps: black and white Micarta Abaca cloth shades/ Berrier-Gnazz[o] Designers, 206 E. 49 St., New York N. Y.





Waiting Room

data

furnishings and fabrics

Desk: #SO-131/ teak top, beech frame/ Swedish Modern Inc., 675 Fifth Ave., New York, N. Y.

Chairs: Finland House/ **upholstery:** #2075, "Correlation," black sand/ Edwin Raphael.

Seating Unit: with integral table/ designed by Integra/ executed by Mamo & Seidentop, Inc./ **upholstery:** seat, #IG-56, vermilion "Fabrilite"/ Fabric Leather Corp./ back rest, #AC 2301, gray horsehair/ Arundell Clarke.

Consulting Room

data

cabinetwork

Wall Cabinet: designed by Integra/ executed by Multiflex Corp.

furnishings and fabrics

Desk: #T3048/ top, Realwood Formica, walnut, metal leg frame/ Lehigh Furniture Corp., 16 E. 53 St., New York 22, N. Y.

Chairs: Finland House/ **upholstery:** #2072, "Correlation," yellow sand/ Edwin Raphael.

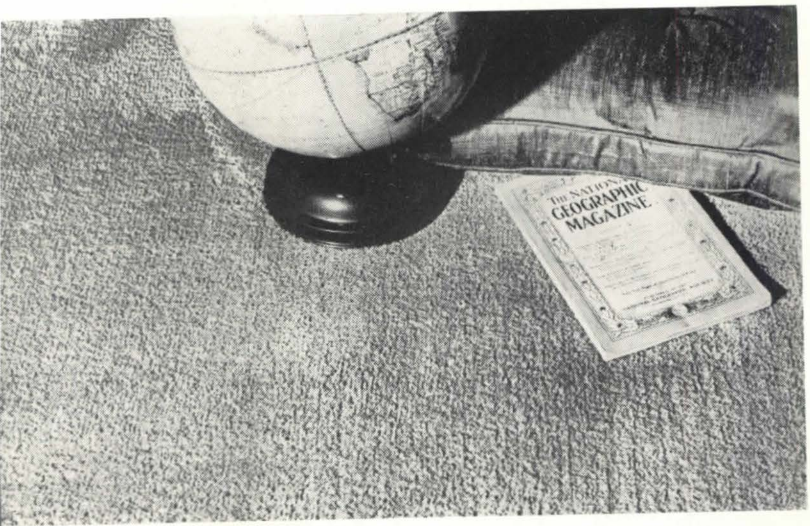
Blinds: Thru-Vu Vertical Blind Co. P. O. Box 266, New York, N. Y.

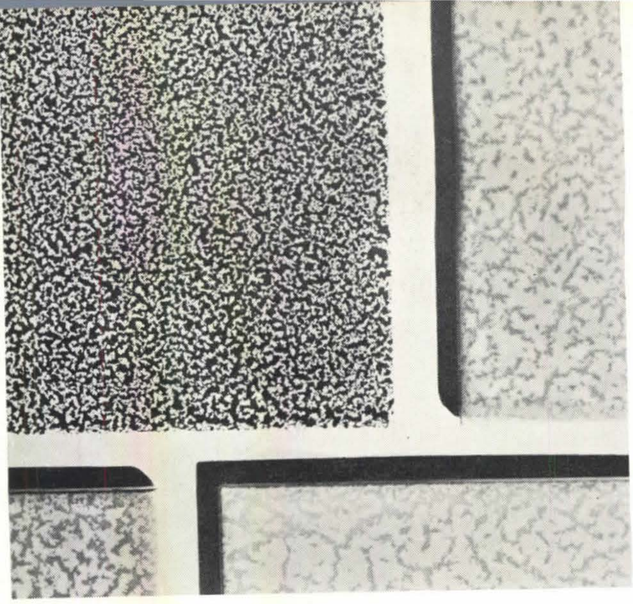
lighting

Wall Fixture: designed by architects/ executed by Lightolier, Inc.

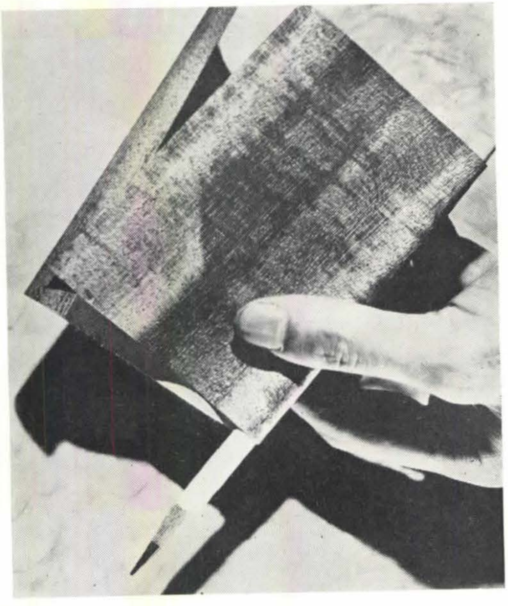
p/a interior design products

Carpet: "Carlton"/ cut-pile, tufted cotton/ colors Sandalwood, Spray Green, Pearl Gray, Cinnamon, Forest Green, Beige/ available in 9' and 12' widths/ treated with "Resistol," patented finishing process to retard normal soiling/ **retail:** $4.95 a sq. yd./ **A. & M. Karagheusian, Inc., 295 Fifth Ave., New York 16, N. Y.**

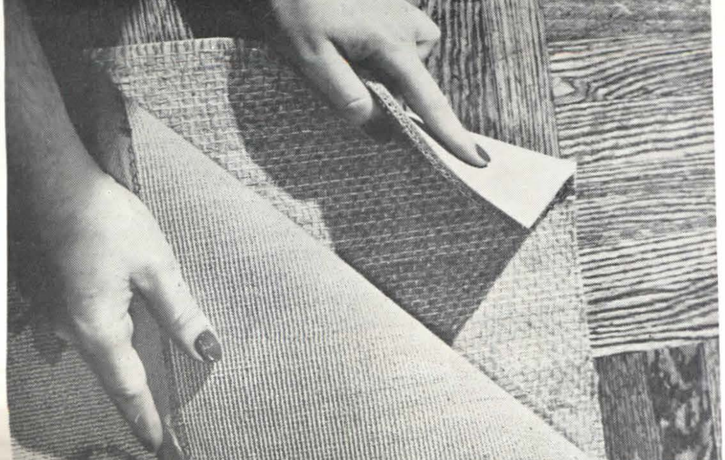




Ceramic Floor Tile: "Duraflor"/available in twelve colors to harmonize with "Gloss Tone" wall tiles/ 4¼" squares and 3" hexagonal patterns/ crystalline texture, designed to reduce slipping, breaks color glaze into unstudied pattern/ **Royal Tile Mfg. Co., Fort Worth, Tex.**



Carpet Cushion: "Cushion De Luxe"/ sponge rubber with fiber tensile topping/ ¼" thick/ available in 36" and 56" widths in rolls of 20 linear yards/ **retail:** $2.25 a sq. yd./ **United States Rubber Company, Rockefeller Center, New York 20, N. Y.**



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G. Holmes Perkins, Dean of Fine Arts and Architecture at the University of Pennsylvania, contributes this month a thoughtful article on the Teaching of Architectural Design. I know that practitioners, educators, and students will all find that a study of what Dean Perkins has to say will be value to them in their thinking about the teaching of Architecture. As an alumnus of the School of Architecture of the University of Pennsylvania, I am proud and happy of the fine leadership which the School has in Dean Perkins, so I take a double pride in presenting this month's guest.

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Until the advent of Carl Feiss' OUT OF SCHOOL, those of us in the schools have had few outlets for our trials and tribulations—and almost no audience. The lively and provocative analyses of the special problems of an architect's education come happily at a time when the discussion is still at a boil among educators and practitioners alike. Yet, with all the divergence of opinion natural to a period of unprecedented change and in spite of the multiplicity of educational experiments, there is still a wide area of agreement which might surprise the casual on-looker who only sees the fury and the sound of dispute. Yet is it not this very dispute which, in the long run, fosters the development of a common ground and makes progress possible in the development of better methods?

As a reaction to the growth of a progressively more unrealistic and abstract process of architectural education, there sprang up a somewhat intemporate clamor for a return to the apprenticeship methods of the Middle Ages. Surely many of the criticisms of the earlier system had validity and just as surely there were many merits in the intimate contact with the building process which was gained through apprenticeship to the medieval master builder. Yet neither the old nor the proposed alternative came to grips with the basic problems of a modern age. The older system did nothing to foster in the student a basic understanding of the evolving social needs and desires without which no properly functioning architectural solution is possible. An apprenticeship system, in spite of its obvious value in bringing the student in contact with the realities of building, is truly reactionary in its failure to recognize the technical and organizational complexities of architecture today; nor does it offer a better avenue for social understanding. Never in history has the architect been forced to find in so short a time so many unprecedented design solutions to problems created by changing social demands and technical inventions. Facts which he learns at school become out-dated before he has the opportunity to use them as a responsible professional. The basic weak-

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out of school

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ness of any approach which emphasizes the accumulation of current facts becomes overwhelmingly clear in this period of rapid change.

The architect's ability to find constantly improved solutions to constantly changing problems requires the development of the habit of experiment and invention. A meaningful sense of space and form can only grow out of a deep and sympathetic understanding of human needs when coupled with an equally intense awareness of the latent opportunities discoverable in today's technical processes and materials. The whimsical architecture of the esthete is to be shunned as much as the stultifying dictates of the doctrinnaire. The architect is called upon to find unprecedented experimental forms to solve new problems, to grasp the significance of new methods of fabrication which can save materials and manpower, to recognize the impact of the improvement of old materials upon architectural design. Out of this vortex of forces new forms of architecture are emerging which are the invention of the architect. In recent years, such inventions as the lift slab, the space frame, the new vaulted forms inherent in shell concrete and bent plywood, and the use of tension structures have given architecture a new look.

In any scheme of architectural education it would, therefore, seem that there is first of all a need to understand with some precision the habits, thoughts, and feelings of one's fellow citizens without which no reasonable solution can be achieved in terms of functional efficiency and beauty. Secondly, through experiment in the laboratory and on the job, the special potentialities of structure will be absorbed by the future architect to a point where his sense of structure will become an inherent and instinctive part of his normal way of working. A similar grasp of problems of the form inherent in the increasingly complex and costly mechanical plant and acoustical treatment becomes ever more critical.

The prime objective of architectural education is therefore to acquaint the student with the creative way of working

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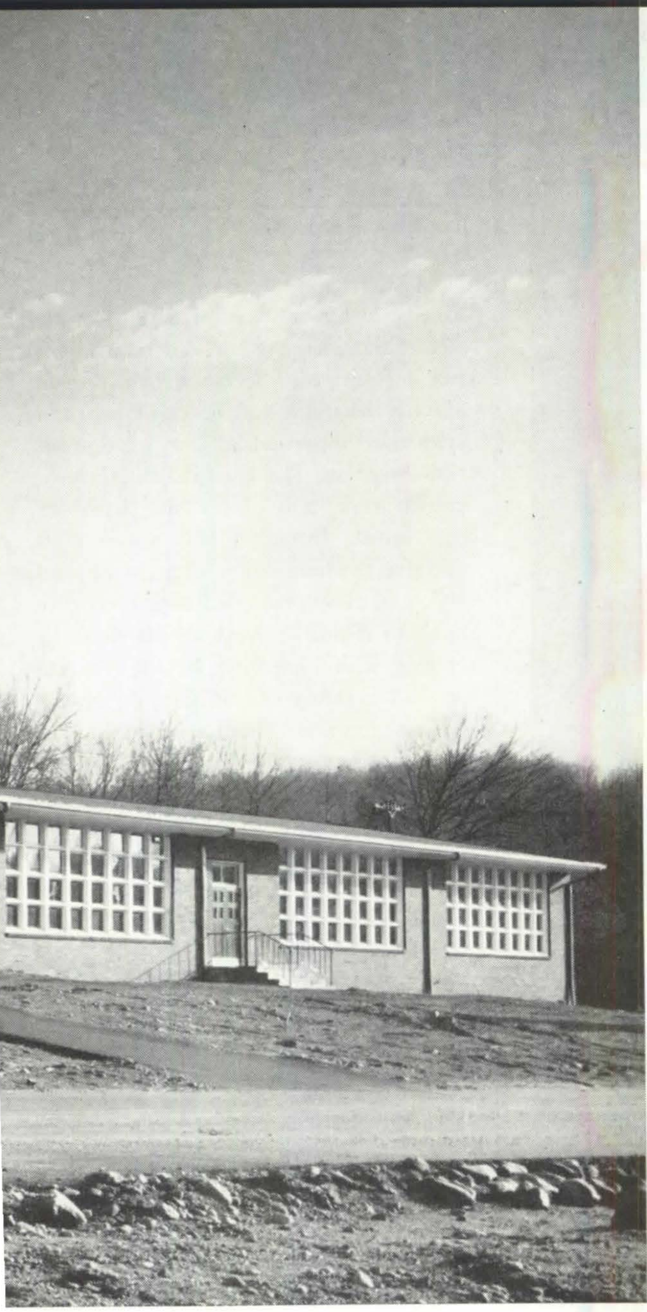

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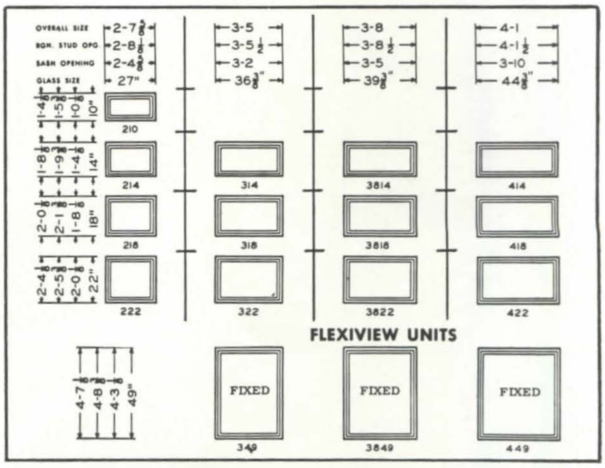

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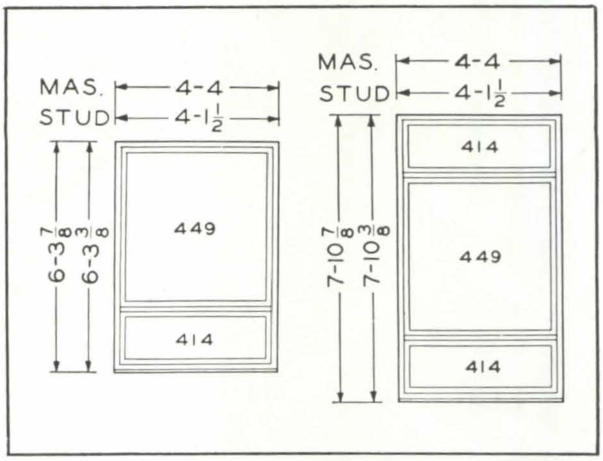

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out of school

(Continued from page 154)

which is common to all of the arts of design. Although many curricular variations can be devised, success depends upon offering the student the most frequent and attractive opportunities for experiment and invention. The discipline of investigative work must form the base for experiment. Invention will bloom most effectively where knowledge is deepest and most closely coupled with a creative habit of mind. By work in the field, by contact with humanity, by experiments in the laboratory and on the job, and by maintaining at all times an open mind to the inventions of others it may be possible to develop the native abilities of the student to the point where he can in future years in the profession, continue to grow in maturity and vision. Any tendency to become satisfied with current methods of production or design can only prove stultifying in the long run. Even the most massive knowledge of the techniques of building will not in itself make the architect. Such a man is capable only of repeating the outer trappings of architectural form of another generation, unthinkingly and without understanding.

It is, therefore, evident that the acquisition of facts no matter how well learned and no matter how necessary is not the major problem in the education of the architect. Instead the most pressing need is the development of an imagination capable of welding into creative form a concept of space possessing real beauty, an effiiciently functioning plan, and a structural idea with today's technical and material and economic means. The creative act which permits the architect to conceive a building which grows out of so many diverse needs, restrictions, and opportunities is the special skill which deserves the most asiduous cultivation in the school.

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Carl Feiss has asked me to put down briefly some of the means we use to encourage the students along this line. Though it perhaps should be taken for granted, there is clearly no magic in any system. Where there is magic it is in the teacher not the system. Yet I am asked

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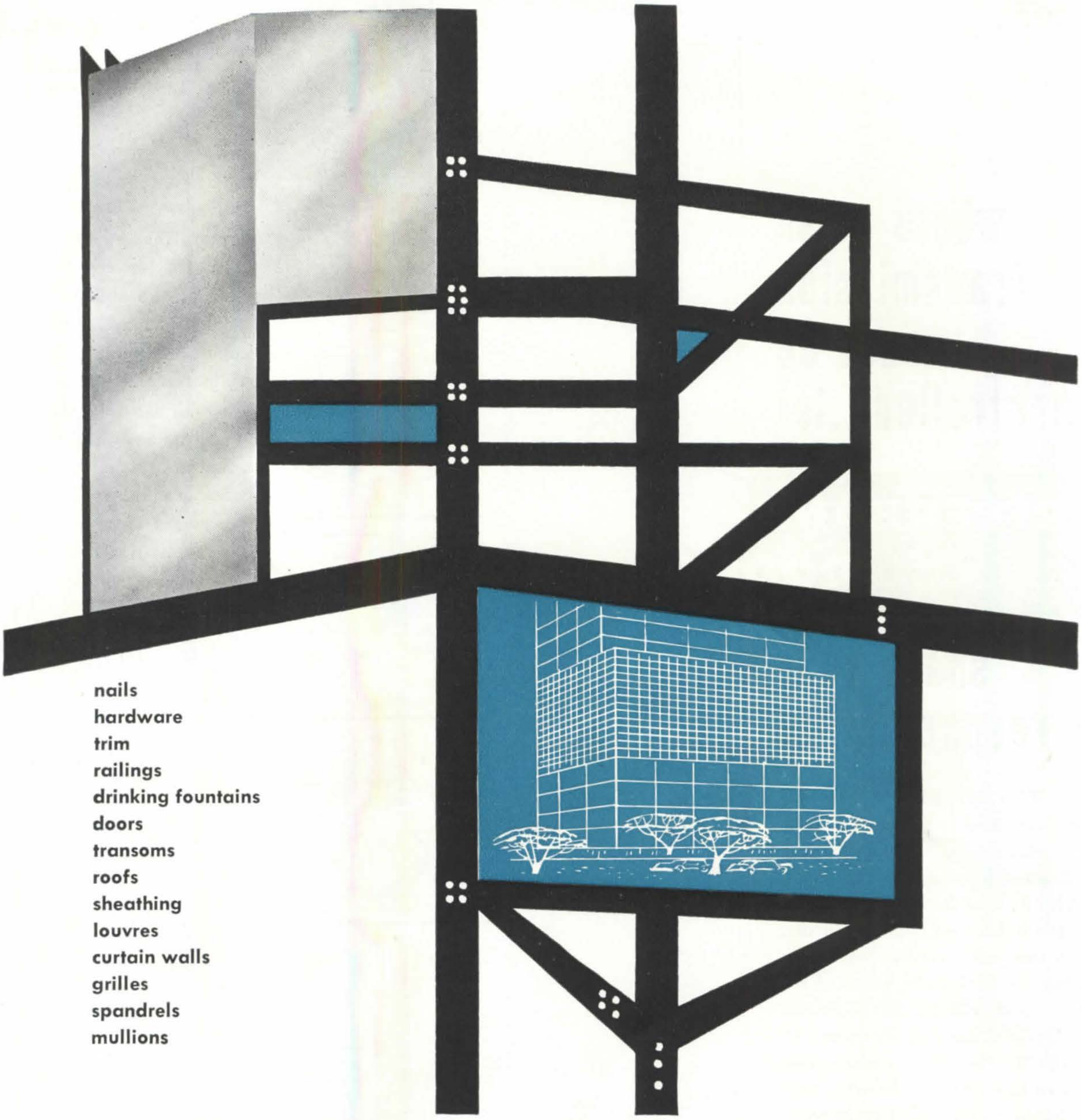

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out of school

(Continued from page 158)

here to note those methods which though still evolving seem to have the power to develop that spontaneous enthusiasm so necessary to deep understanding. A review of the students' progress through the school may reveal a few of the more important points. A majority of the students come to us from high school, although there is a sizable portion of each class who have had a number of years in a liberal arts college or who are in many cases graduates of such institutions. In a previous issue there was considerable discussion of attempts to find objective tests to screen prospective applicants for training as architects. In our experience no such test has proved entirely satisfactory. For this reason, among others, a very heavy emphasis is placed upon the design aspects of the training during the first year. In this way, the necessity for prior screening is to a large extent eliminated, since the student, during his first year, pretty well screens himself. Almost never is it necessary for the faculty to exclude a student from the second year, since those who do not find themselves dedicated to design, or who possess too limited an ability, quickly transfer to other areas of the university where their talents can be better used. If such a transfer is made at the end of the freshman year the time of graduation is not delayed.

The first year does not differ very widely from the beginning course in design offered in many institutions. This basic course does, however, consume a rather higher portion of the time in the freshman year than in most schools. Nearly half the semester credits and somewhat more than half the student's time is devoted to this work. As in all institutions, it serves two basic purposes: first, to develop in the student a creative way of working which is common to all the arts of design; and second, to break down those inhibitions, preconceptions, and prejudices which he all too often has acquired from his environment and secondary schooling, and to give him again the confidence of youth in his ability to create. It is the intent in the first as well as in

(Continued on page 164)

out of school

(Continued from page 160)

the later years to encourage the development of a creative spirit and orderly vision. These habits of thought and of vision are not to be gained through the mere accumulation of factual knowledge nor by the imposition of dogma, but can only be gained through repeated personal experience. The emphasis is placed, therefore, on experimental essays in line, color, space, and structure in which are gained as by-products those necessary skills of drafting, descriptive geometry, and perspective. In the discussion of the role of light and shadow, color, and texture in architecture, examples of past masterpieces are constantly used to illustrate the potentialities of light as a medium of architectural design. By such an introduction to the past, the student gains a respect for the masterly creations of earlier centuries without ever being tempted to repeat dead forms. He takes courses in the history of art and architecture only in the later years. This experimental approach to design through repeated personal experiences becomes deeply ingrained during this first year and opens the way to the study of architectural problems.

In the second year, the student is thrown immediately into architectural problems which combine in the most intimate fashion the work in design and in the materials and methods of construction. These carefully and consciously intertwined courses consume nearly two thirds of the sophomore's time. In the lectures on materials and methods a first once-over is given to systems of construction, to the character and qualities of materials, to the problems of acoustics and to heating and ventilating. This bird's-eye view is reinforced by a detailed re-examination of each of these areas in later years in the more intensive courses of steel and reinforced concrete, acoustics, and the mechanical plant. In other words, the unity of the architectural concept is stated and maintained from the very start. To be sure, a different emphasis may be given to the various parts in the successive problems, yet at all times the essential unity is preserved. The

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out of school

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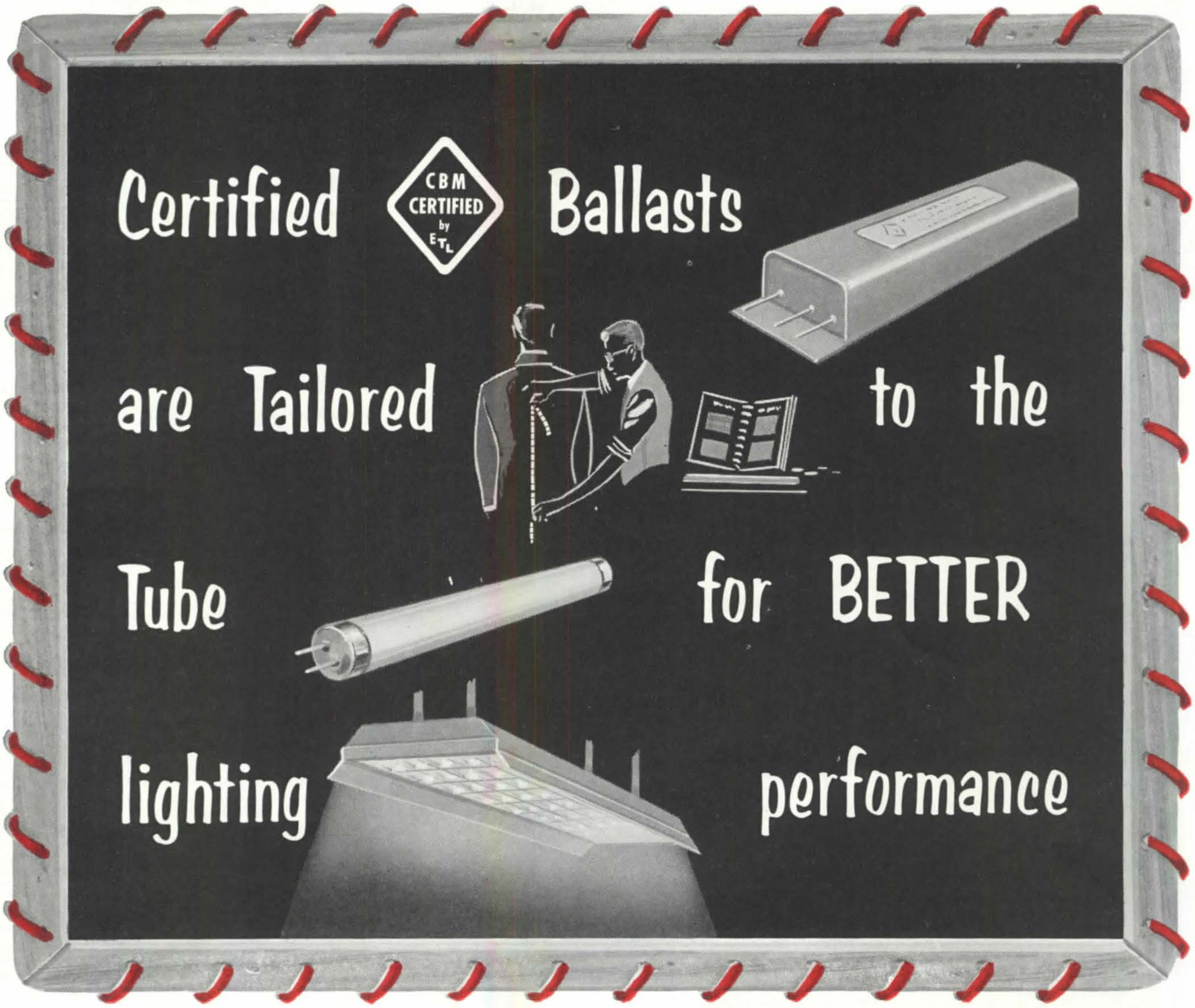
student, through three quarters of this year, studies the design and construction of simple buildings which lend themselves naturally to the use of wood. The week-end house, the three-bedroom residence, or a simple city building between party walls are studied simultaneously in structural balsa-wood models as well as in sketches. In fact, the detailing of these buildings chronologically follows the study model which is normally made at $\frac{3}{4}''$ to the foot. The first designs, done individually by each student, are followed by teamwork in which larger models are analyzed in great detail in both structure and finish and whole bays are built at full size in the workshop. By the spring of his sophomore year the student is therefore well aware of the indissolubility of structure, form, function, and the esthetic aspects of design. He has developed a sense of structural discipline and has acquired a good grounding in wood construction which will stand him in good stead in the years to come. The careful and prolonged study of each problem with painstakingly complete detail in wall sections, plans, and structural models awakens a sustained response and sets the student on the road to serious professional work. In his final problem of the year he is introduced to the design of outdoor space and to the problems of relating larger and somewhat more complex structures to a rolling landscape. A dormitory based upon a well system (rather than a corridor) is used as a building unit which may be repeated in various combinations to produce groupings around courts of differing sizes.

In the third year, the emphasis changes to some degree in that, instead of the small individual unit, the interest is focused upon the development of a neighborhood. All problems given during the year revolve around this central theme. At this point it should be noted that it is not the custom of this school to give faculty prepared programs to the students. It is, instead, the intent wherever possible to ask the class by a breakdown of the assignments to investigate the subject in the field and in the library. It is their

(Continued on page 170)



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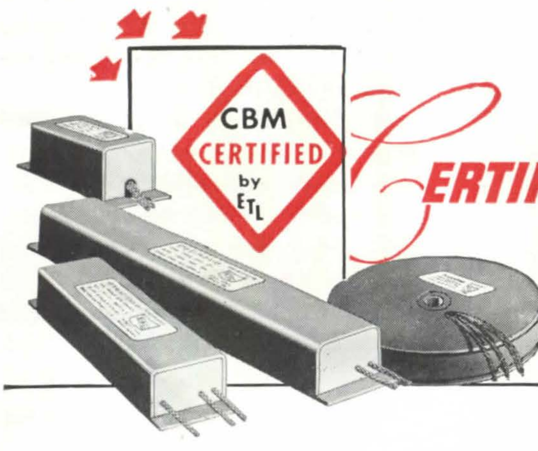

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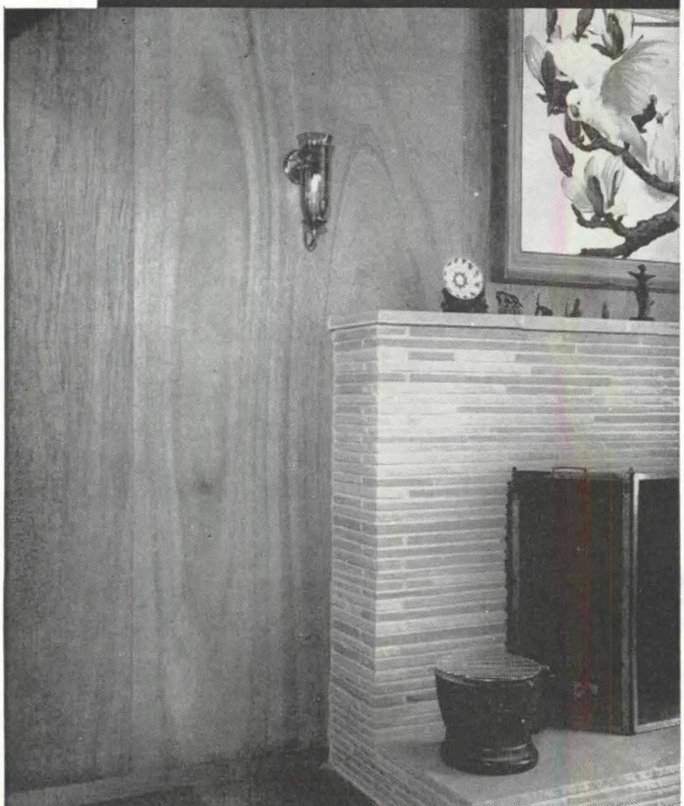
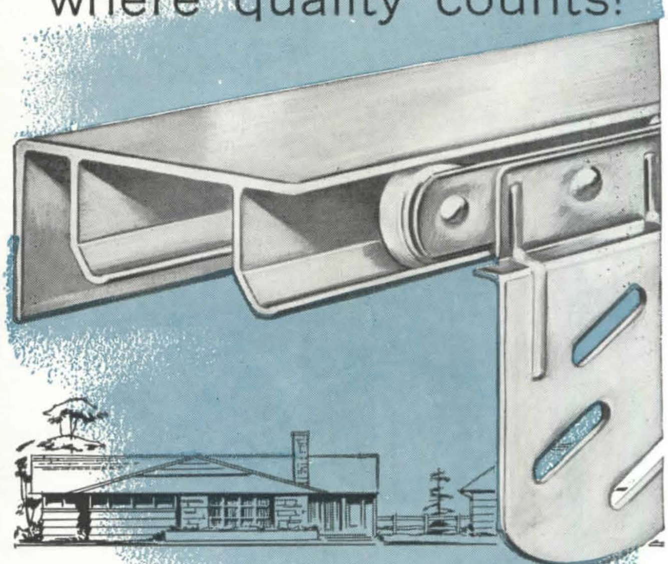
out of school

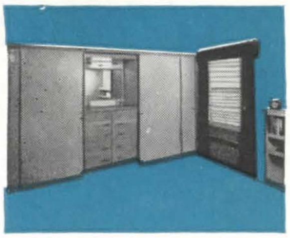
(Continued from page 168)

research and their conclusions which make the program. As an example, as a base for the study of the neighborhood housing the students are asked to report upon various blocks in the city which are within walking distance of the university. These reports present in models and in graphic form, information on the size, kinds, and quality of the housing, the availability of schools and recreation areas, of shopping, and something of the family composition and income range of the people living there. Nothing evokes more effectively a sense of the social basis of architecture than to ask the student to make such an examination of an older area. He returns fired with an enthusiasm for finding a better solution for the future. In the course of his search for such solutions he examines and analyzes the solutions to similar problems in the same graphic terms as his own personal investigation including models at the same scale as those of the existing area. Such visual comparisons offer a dramatic basis for the discussion of problems of density, of layout, the accessibility of schools and work and make otherwise dull and meaningless standards living realities to the future architect. These analyses are followed by design studies of mixed groups of row housing, walk-ups and high-rise buildings on a site which can be easily visited and for which the class has already prepared a topographic model. A similar procedure is followed in the development of the program for the neighborhood school and local shopping center. Rough individual studies are made early of possible neighborhood layouts with a most serious attempt made to assign the principal sites for these structures. From the many designs submitted two or three are chosen for final development. It is then, on these tentative sites, that each student designs a school and a shopping center. Following these detailed designs a restudy is made in group work of the total neighborhood presented in model form. It should be noted that running parallel throughout the first half of this year is a course on landscape construction which permits the students to develop the grad-

(Continued on page 172)







out of school

(Continued from page 170)

ing on each of the problems. In fact, on all problems from the third year on, a grading plan is required. With the constant repetition of this requirement the architect as well as the landscape architect begins to acquire that necessary sympathy for the ground and for the relationship of his structures to it.

Throughout the first three years all students have gone through a common experience, but in the fourth and first half of the fifth years the student is allowed to choose from among seven available critics. Each critic is permitted to give problems of his own choice. The common requirements are only that problems are due at the same time, are judged by the same juries, and in some cases have similar requirements as to the amount and character of technical work in details or structure to be shown. The special interests of the critics tend to produce in each of the studios a certain recognizable and individual quality. On each of the four major problems, one of the seven critics is always a visitor whose fresh ideas are a constantly changing stimulus to faculty and students. For the most part, the problems are relatively complex single structures, although one studio as a matter of policy always gives problems of a civic design character in which there is considerable collaboration with the graduate students in city planning. Since students, during their first three years, become abundantly familiar with the qualities and foibles of the critics through the open jury system and other contacts, it is natural that they would tend to choose men with whose way of working they feel they might be most sympathetic. This freedom of choice was begun with very considerable misgivings since it seemed to encourage unreasonable and intensive rivalry among the studios while at the same time, since the studios are limited to fifteen students each, students getting only their second or third choice of critic might feel somewhat disgruntled. After three years none of these fears appears to have been justified. On the other hand the advantages have proved greater than anticipated. Foremost among these

(Continued on page 176)

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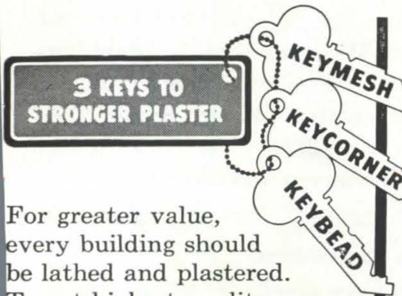

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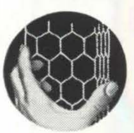

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out of school

(Continued from page 172)

has been the variety of experience offered the student by the initiative of the critics in developing programs of which they have specialized knowledge. Such freedom to experiment constantly tested before the whole faculty and student body, is the finest assurance of individual and collective growth.

This independence, fostered so assiduously in earlier years, meets its final test in a 15-week thesis based on a program written by the student. The final drawings (prepared with only three criticisms) must demonstrate the ability of the designer to prepare contract drawings and specifications, and to calculate the structure and mechanical plant. This start on a lifetime of education for the profession, it is hoped, will leave the student with confidence, a deep-rooted experimental sense, a conviction of the unity of architectural conception, an open mind to new developments, and some understanding of the process of architectural evolution which will allow him to make his own decisions and which will establish him in time as an independent man and architect.

G. HOLMES PERKINS

notices

remodeled store

LEO V. BERGER, Architect-Engineer of Brooklyn, N.Y., was Architect for remodeling of McCrory's Brooklyn store illustrated in the advertisement of BRASCO MANUFACTURING COMPANY in May 1954 P/A *(Page 211)*. The credit printed under the picture was incorrect.

P/A congratulates

C. W. LITTLE, new General Sales Manager of VIRGINIA METAL PRODUCTS, INC., steel fabricating firm with headquarters in Orange, Va. Virginia Metal Products is a subsidiary of Chesapeake Industries, Inc., manufacturers of movable steel partitions, steel doors and frames, library bookstacks, and conveyors for office buildings and hospitals.

Architects: **Thomas, Jameson & Merrill, Dallas**

General Contractor: **J. W. Bateson & Co., Inc., Dallas**

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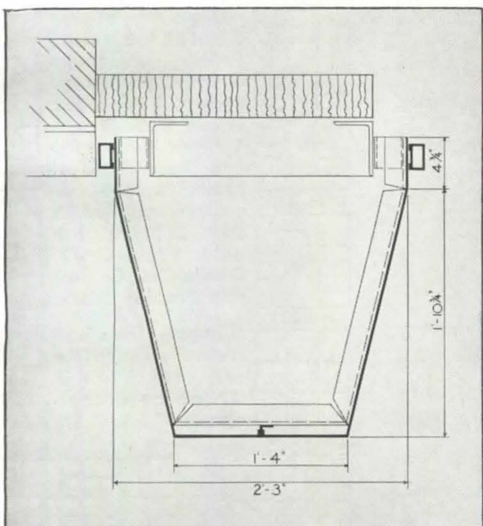
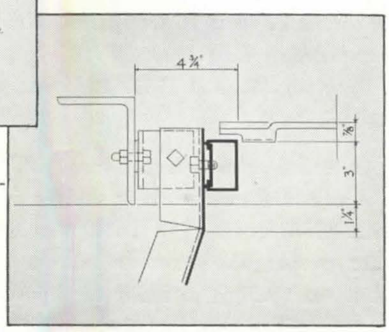
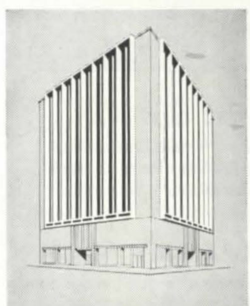


HORIZONTAL CROSS SECTION OF FIN



CONSTRUCTION DETAIL OF FIN AT SPANDREL



SEE "MR. PEEPERS," STARRING WALLY COX, NBC-TV.

ALUMINUM

p/a reviews

books received

Urban Traffic. A Function of Land Use. Robert B. Mitchell and Chester Rapkin. Columbia University Press, 2960 Broadway, New York 27, N. Y., 1954. 256 pp., $5

The Modern Renaissance in American Art. Ralph M. Pearson. Harper & Brothers, 49 E. 33 St., New York 16, N. Y., 1954. 300 pp., illus., $6.50

Engineering Contracts and Specifications. Third Edition. Robert W. Abbett. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y., 1954. 429 pp., $6

Dwelling House Construction. Albert G. H. Dietz. D. Van Nostrand Co., Inc., 250 Fourth Ave., New York 3, N.Y., 1954. 396 pp., illus., $7.50

Cheskin Color Wheel for Color Planning. Louis Cheskin. The Macmillan Company, 60 Fifth Ave., New York 11, N. Y., 1954. Illus., $5

Idea 54, International Design Annual. Edited by Alvin Lustig. George Wittenborn, Inc., New York 22, N.Y., vol. 2, 1954. 132 pp., illus., $8.50

New Furniture. Edited by Alvin Lustig. George Wittenborn, Inc., New York 22, N.Y., vol. 2, 1954. 139 pp., illus., $8.50

read before building

Quality Budget Houses. *A Treasury of 100 Architect-Designed Houses from $5,000 to $20,000. Katherine Morrow Ford & Thomas H. Creighton. Reinhold Publishing Corp., 330 W. 42 St., New York 36, N. Y., 1954. 221 pp., illus., $4.95.*

Architects who design houses will have to add this book to their shelves, if only in self-defense. The book was written for people who want to build a house, but can't afford to build the house they want. Since this includes almost everybody, and since the book itself is a notable bargain, it is a safe bet that most clients will have studied it carefully before they come into the architect's office.

(Continued on page 182)

reviews

(Continued from page 180)

The architect who is thus forced to buy the book will find that it is useful to him in other ways, containing as it does an excellent selection of recent work in the small and not-so-small house field. The $20,000 limit is not as restrictive as one might expect, and houses up to 2800 square feet are included. (The 2800-square-foot house was built in Atlanta in 1950 for $18,200, or $6.50 per sq. ft!). In architectural quality, the average is fairly high, considering the price limitations and the fact that many otherwise eligible homes had already been published in the authors' previous book, *The American House Today*.

The houses are shown with an average of two or three photographs each; a few are shown in drawings only. All plans are reproduced at 1/16" scale. Information about the houses is unusually complete, consisting of Cost Facts, Materials, Plan Facts (the owner's requirements, nature of the site, etc., in considerable detail), Economies, and Budget Suggestions (for further savings).

A notable feature of this book is its cost data. Cost figures, unless properly qualified, can be very misleading and they are therefore usually omitted. But this easy solution was hardly suitable for a book with the title *Budget Houses.* The authors therefore buckled down and gave the figures as fully and carefully as possible. First they explain exactly what is included and what is not included in the cost. For each house they give the cost, the date of construction, the area of the house proper, the area of basements, porches, etc., and the cost per square foot. Factors for correcting to 1954 costs are listed and a rough method of correcting for regional cost differences is described.

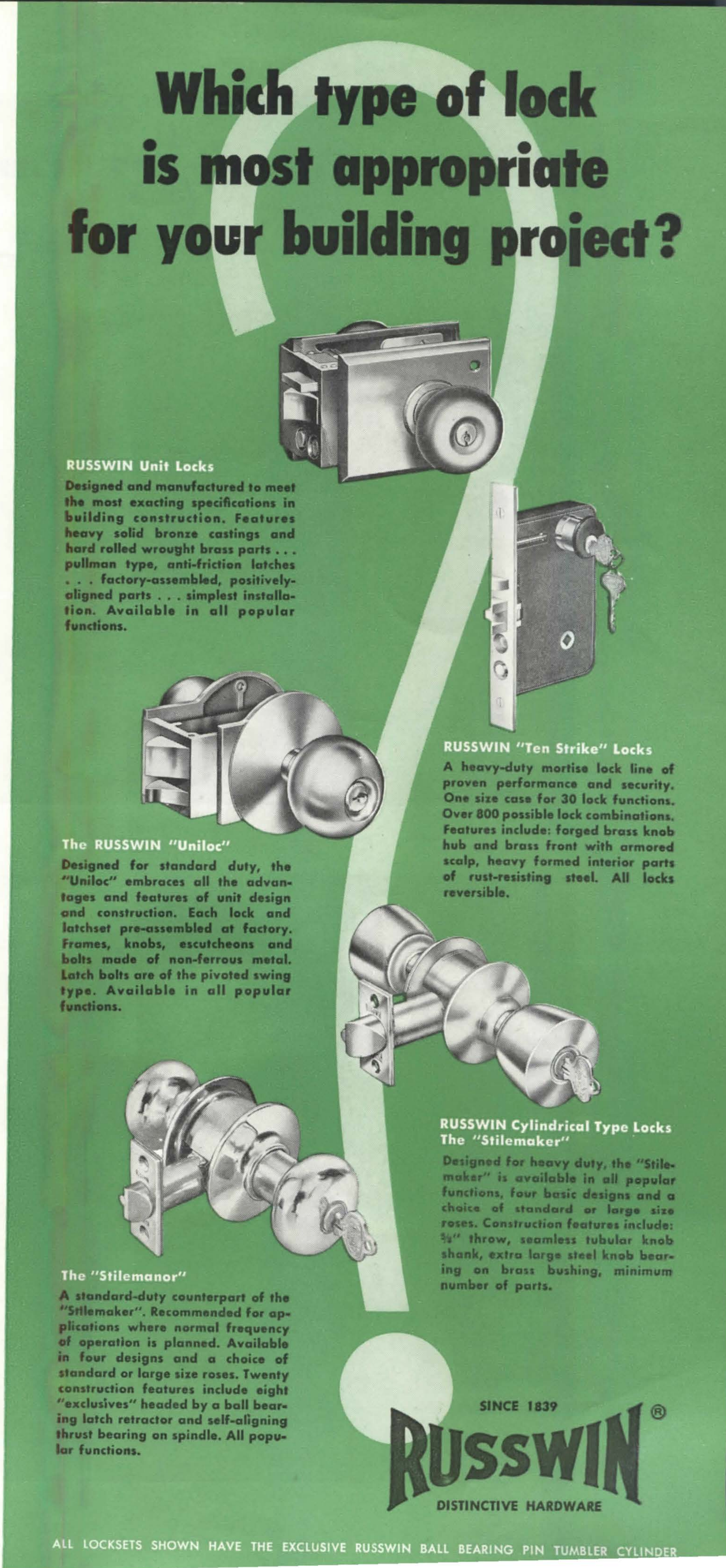
The text is much more than the usual introduction. It runs continuously through the book and offers sound advice to the person intending to build. Subjects covered are Site, Use of Space, Expansion, Structure, Materials and Equipment, Ready-Built Houses, Co-operatives, Owner as a Builder, Architect and Builder. The chapters on planning for future expansion and building your own house are particularly valuable, since there is widespread misunderstanding of these subjects on the part of the public.

The advice given throughout is generally excellent, such as "see an architect," "don't buy too small a lot," and "stick to stock sizes and standard materials." This reviewer, however, would question the authors' repeated insistence that economy results from the use of exposed structure and natural finishes. In a book which so strongly emphasizes costs and in which every chapter is subtitled "How to save" on this or that, it is surprising to find that the relative costs of common building materials and constructions are nowhere given. This is a subject on which the public in general is very poorly informed.

The publication of a new book of houses offers an opportunity for some stock-taking. Comparison with *Homes* (Reinhold, 1947) shows that we have come a long way in seven years. There has been a striking increase in the popularity of flat roofs, which are used on about half of the recent houses. There are only a dozen or so symmetrical-gable roofs of sufficient pitch to count as such. The low-pitched hipped roof which was very prominent in the earlier book has disappeared entirely. The influence of Mies van der Rohe, hardly visible in 1947, is an important factor in the current book. Three houses in the Chicago area derive from this source; one of them is so "pure" that it turns its principal glass wall, unprotected of course, toward the west. Nevertheless this beautifully composed house by Crombie Taylor and Gyo Obata is one of the most attractive in the book, as is Robert Rosenberg's serenely beautiful house in East Hampton.

Among other houses that appealed to this writer are three characteristic flat-roofed ones by Neutra and two characteristic butterfly-roofed ones by Stubbins; also a very sensitive design by Henry Hill, a strikingly dynamic one by Craig Elwood, and a tiny one (650 square feet) by Paul Rudolph.

JOHN HANCOCK CALLENDER



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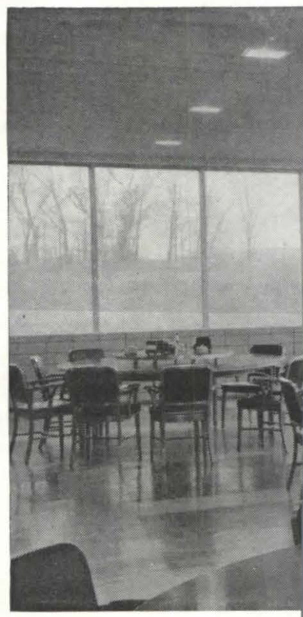

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atmosphere.

Last week was a very busy one, both at the office and socially. Out-of-town visitors seem to arrive all at the same time—we're always glad to see them and don't want to miss any of them; and these visits usually seem to coincide with local social events. Some architects on-the-loose pass through breezily, like "Spitz" Spitznagel, who simply called up one evening to get the name of the best Japanese restaurant in town—and some add to our own knowledge of the town, like Mrs. Carl Warnecke, who spent a morning tracking down the pickled whale which I didn't know was displayed in a midtown parking lot. The reasons for their being here are various: Peresutti, from Milan, is supervising the new Fifth Avenue Olivetti showroom; a group of our Cuban friends are working with Sert & Weiner on a housing project for Havana; from Texas, the MacKies and the Kamraths arrived with the usual fabulous Texas reason—in this case, a party thrown by a Houston client at *21*, in New York, with the guests flown up.

By Saturday night of last week I was in a state, more confused than usual, which didn't seem to be entirely explained by the whirl of activities, or even the series of annual P/A sales and editorial meetings that had added to the week's pleasures. On Sunday morning I knew that I was sick—and from then until this writing I've been in bed, not wanting to move, running a very neat temperature, the subject of kindly care and solicitation by my sweet wife and a professional person who has kept popping in and out of my consciousness. My mind, at the time the fever began to rise, had been filled with tales of architectural practice (always collecting case histories, you know, even at a party) and the role of this individual—actually a kindly and efficient doctor—became confused in my clouded vision.

"We have to make a thorough programmatic study of your problem," he seemed to say. "A diagnosis, so to speak. We have to study exactly how you function, and what your needs are, before we can design something as a solution."

This seemed vaguely familiar to me, but I brushed it off with a comment that at the moment I *wasn't* functioning.

"That's just it," he said smugly. "You see a human being is developed by organic growth. You know how a building grows—organically? Well, that's just the way we design people."

This seemed vaguely distorted to me, but as he had stuck a thermometer in my mouth, I could only nod agreement.

"Of course there is one school of thought," he added, "that holds the structural, skeletal form is predominant. Doctor Van der Sullivan, the famous 19th Century diagonstician, for instance, based a treatment method on the premise that *function follows form*."

He took out the thermometer, glanced at it and shook its telltale mercury back from the height to which it must have climbed. As he applied various gadgets to various limbs, listened, watched, and tapped, he went on:

"But others feel that a statistical analysis of circulation arteries and flow of related requirements is the safest method of program development. It was formulated by a French physician, Dr. Crow, who started from the thesis that the human body is a machine for living with. A machine, held off the ground by stilts, or legs, which he called pilotis. Very revolutionary philosophy! He never cured a patient, but all the schools use his theories today."

By now I felt that I must indeed be ill, and I was glad to see him go, with his instruments, which looked to me like a great roll of blueprints, under his arm.

"I shall be back," he said, "with a preliminary solution. One of my junior associates—a design specialist—will go over this data. We'll have the answer for you in no time."

How long I dozed—hours, or days—I don't know. But the man was back when I opened my eyes.

"Well, we have the diagnostic program fully analyzed, and are ready with our recommendation," he said.

I expressed mild interest.

"First of all, you'll be glad to know, since budget is always a consideration in these problems, that we feel sure we won't have to build a new structure."

I expressed greater interest.

"No, we feel sure we can remodel, refurbish, and alter the old to make it practically as good as new. The frame is OK."

He gave the frame a thump.

"So now we're ready to get down to working details and specifications. This will take some time, you know. A remodeling job is very tricky—you never know what you're going to run into as the work goes on."

•

He dictated his specifications over the phone to the local druggist. I was, I am afraid, too weak to demand competitive bidding. I do remember asking if I might see a presentation drawing or a model of the finished result he hoped for.

"We don't do that any more," he explained. "Oh, I do have a model in the closet in my office, that I made back in school days, from miscellaneous parts, but we'd prefer to have our clients have trust in us. We don't want to start an argument about styles. So many people still want traditional, you know, while we prefer the lean, angular, almost ascetic, modern type. Not so well protected, maybe, but if we check on it periodically, we can keep it in good, well-functioning condition. For us, we might say, less is more."

I was thinking this over as he left. His final words were, "I'll be back from time to time for supervision trips. As the job progresses you may see more and more of the job captain assigned to this project, and less of me; but I'll be available whenever you want me. Got to go inspect a job now where the superstructure cracked, and the supports are unsteady. Goodby."

I went back to sleep.

Thomas H. Creighton