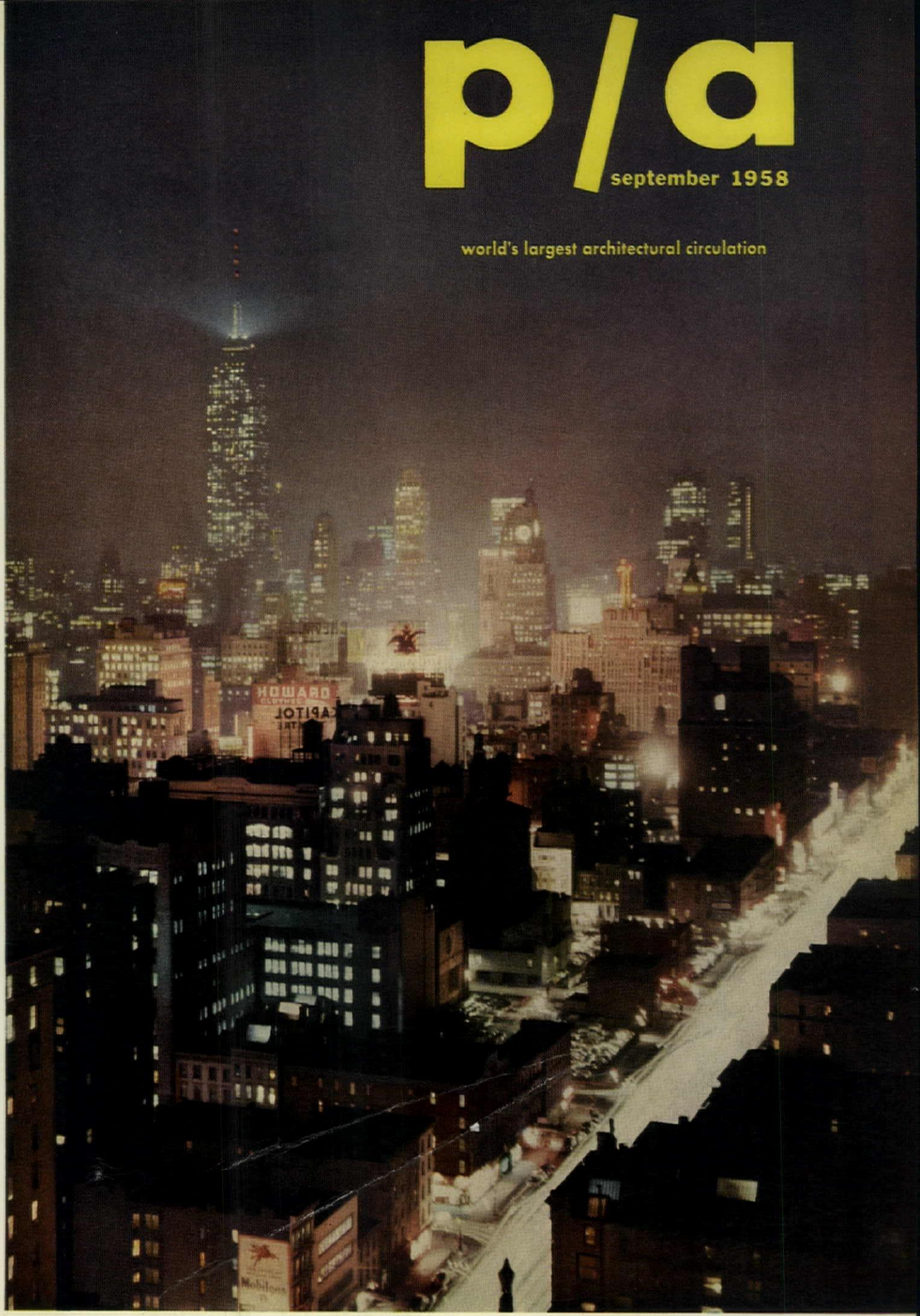
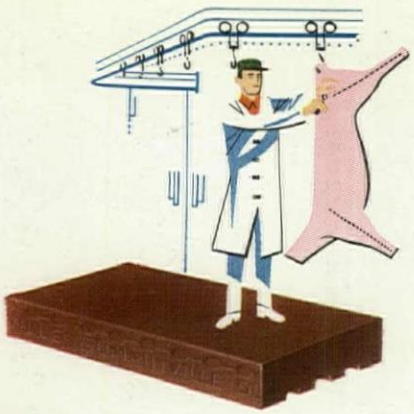
p/a

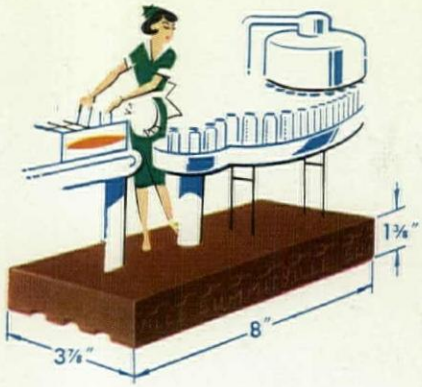
september 1958

world's largest architectural circulation



lighting is architecture





WHERE ALL OTHER FLOORS FAIL···

SPECIFY *Summitville* HEAVY-DUTY ACID-RESISTANT FLOOR BRICK

Floor failure is caused by many things . . . traffic, acids, oils, caustics, vehicles, sanitation maintenance and chemicals all take their toll.

Summitville heavy-duty floor brick is the answer to all these floor problems. In food processing plants, dairies, meat packing plants, bakeries, breweries, institutions, power houses, etc. all over the world, over 30 million sq. ft. of Summitville floor brick have provided years of trouble-free service.

Summitville heavy-duty floor brick is available in five floor surfaces to answer any requirement.

Consult your local ceramic tile contractor or write for the full story of Summitville's acid-resistant floor brick, quarry tile, glazed quarry tile, large unit 12-veneer.

Write for new full-color Catalog Dept. P

GLAZED QUARRY TILE — FLOOR BRICK

Summitville Tiles, Inc.

SUMMITVILLE, OHIO

12" VENEER — QUARRY TILE

Bakery: Pepperidge Farms, Inc.
Downingtown, Pa.

Contractor: Drehmann Paving & Flooring Co.
Philadelphia, Pa.

The open-beam ceiling of Armstrong Cushiontone Roof Deck soaks up noise and lends unusual interest to this modern interior.

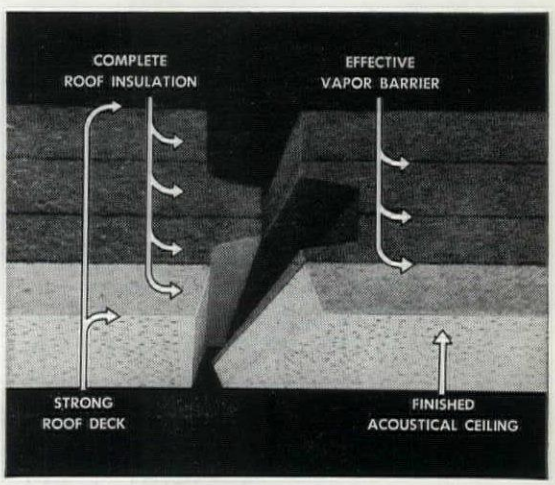
ew four-in-one Armstrong Cushiontone Roof Deck adds quiet and beauty to open-beam interiors

EW Armstrong Cushiontone Roof Deck is a 4-in-1 material provides roof deck, insulation, tiple vapor barriers, and finished ustical ceiling in one quick appli-on. It needs only beams to sup- it and built-up roofing to weath- oof it.

ew Armstrong Cushiontone Roof k offers the architect many new rior design opportunities within a modest budget.

ushiontone Roof Deck is made up ″ layers of asphalt-impregnated fiberboard. The interior surface is prefinished with two coats of washable white paint. The attractive pattern of random perforations absorbs more than half the noise that strikes the ceiling. Cushiontone Roof Deck is available in 2′ x 8′ panels 2″ or 3″ thick, with strong T & G joints on all four sides.

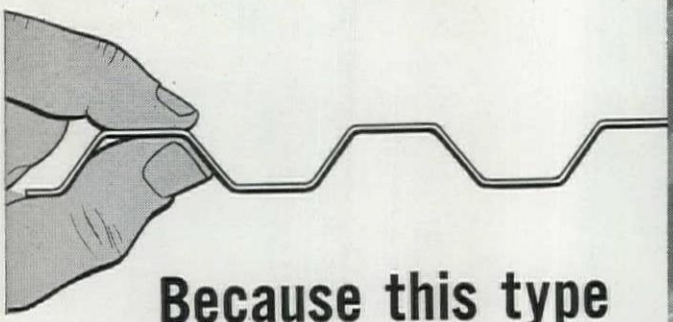
Send for free twenty-four page booklet, "How to build with Armstrong Roof Deck." Write Armstrong Cork Company, 3909 Watson Street, Lancaster, Pennsylvania.



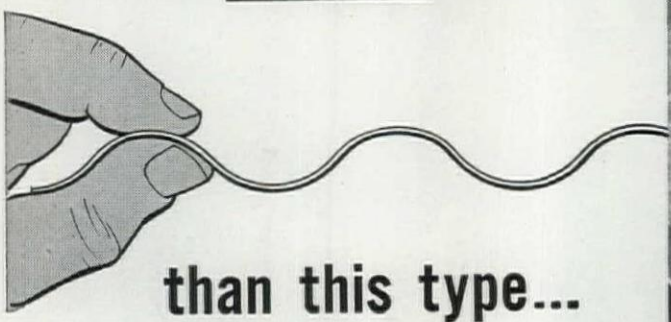
A 4-in-1 material, Armstrong Cushiontone Roof Deck provides a sturdy roof deck, multiple vapor barriers, roof insulation, and a prefinished acoustical ceiling.

Armstrong BUILDING MATERIALS

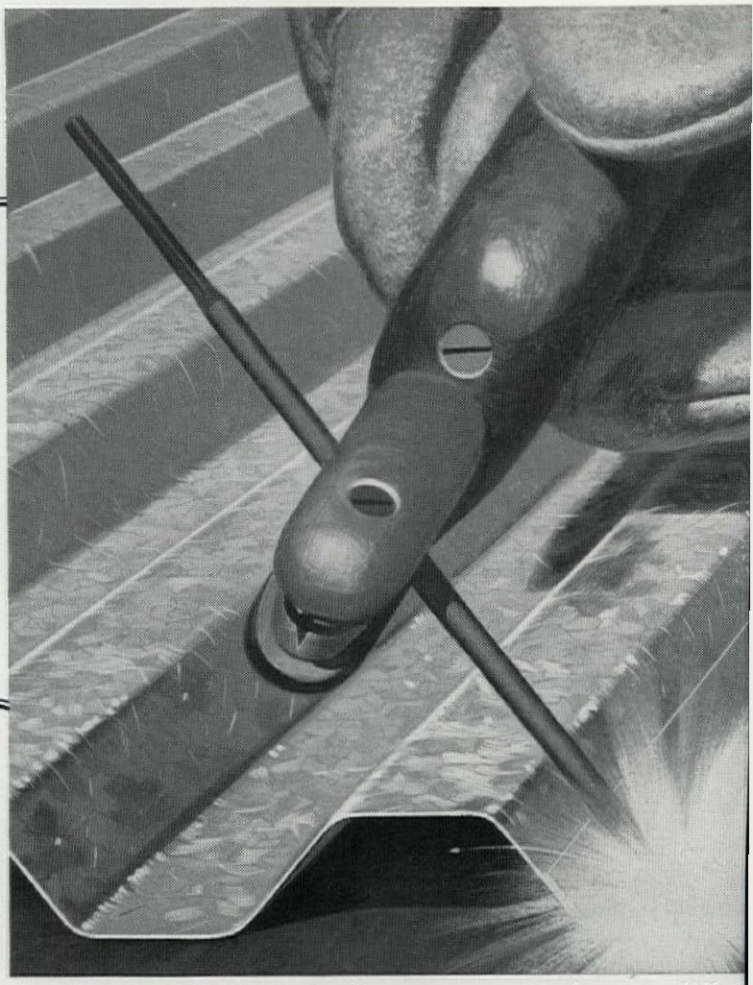
LOK ROOF DECK • TEMLOK SHEATHING • TEMLOK TILE • CUSHIONTONE CEILINGS



Because this type of corrugation is stronger . . .



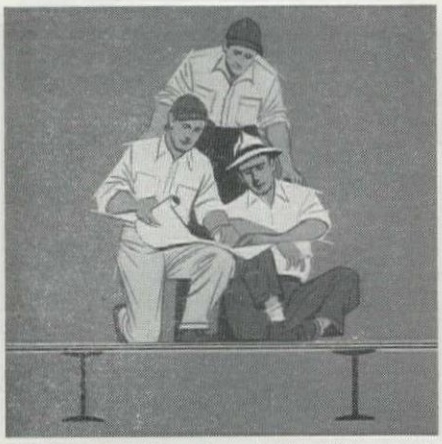
than this type...



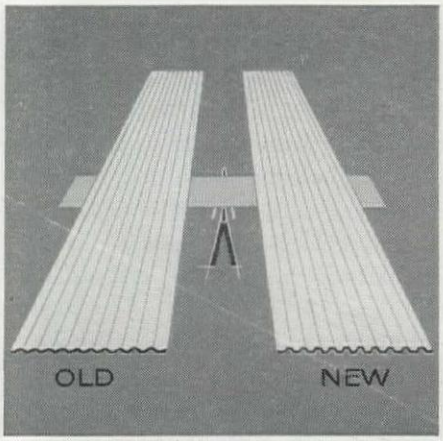
STANDARD CORRUFORM, for floor spans up to 3½ feet, is available i

Granco brings you a new

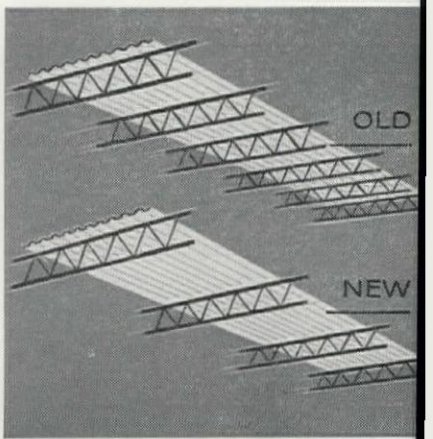
A totally new steel centering! A striking new angular pattern! Corruform looks stronger. Corruform *is* stronger! Granco has re-designed it to increase sheet strength 50 percent. *Yet, there's no increase in price!* Here's what this means to you: A stronger steel base for concrete floor slabs means safer construction . . . savings in framing and concrete . . . easier-to-finish floors . . faster job completion. You stay on schedule! Tenants mov in sooner! Today, "new pattern" Corruform is available fro coast to coast. For more information, consult your neare Granco district office, or mail the coupon at lower righ



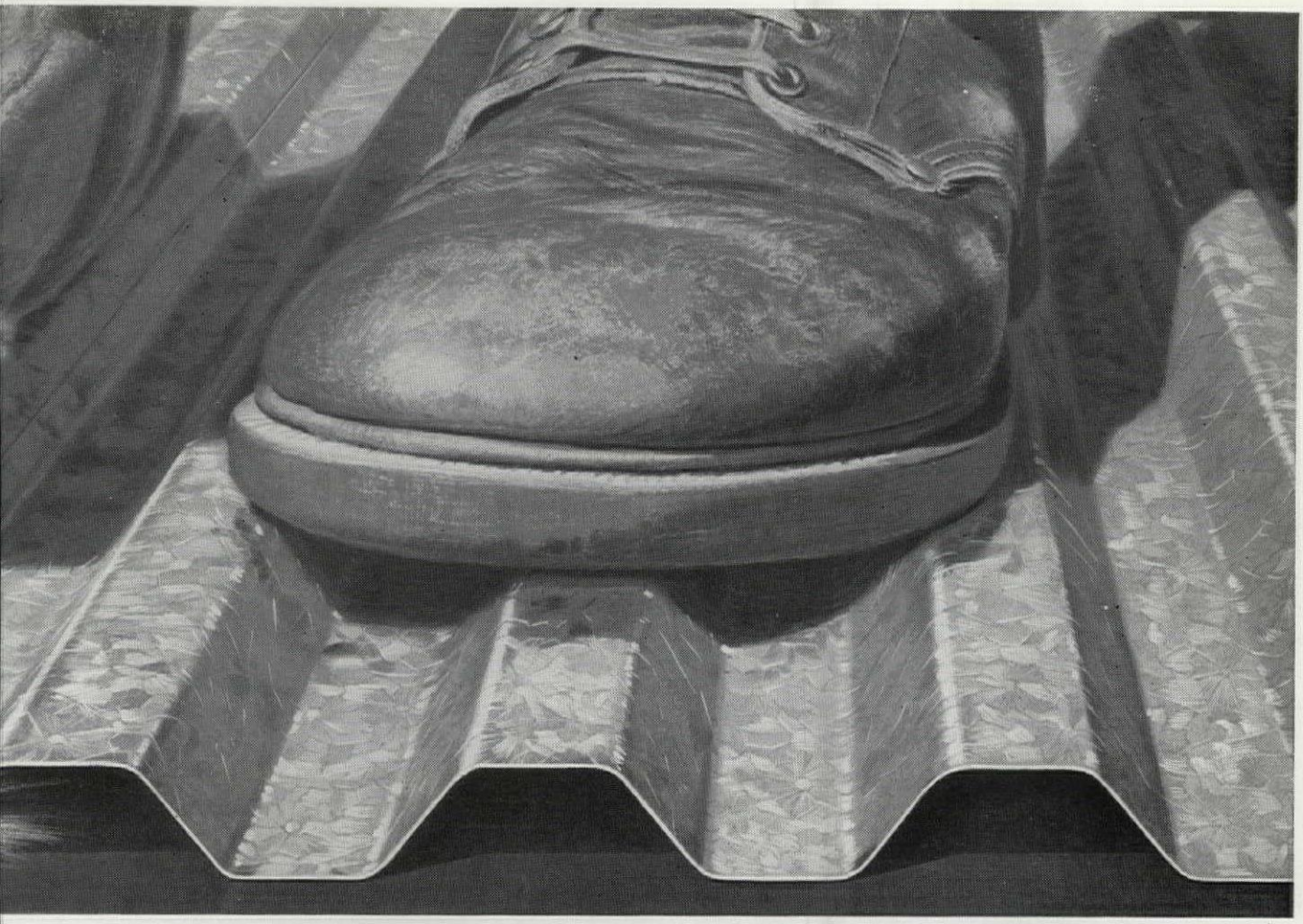
STRONGER. Corruform is 100,000-psi tough-temper steel with section modulus increased 50 percent. In place, it provides a safer work platform and a tighter solid base for concrete.



SAME WEIGHT. New Corruform strength results from *better design.* No increase in weight means no increase in price! Light-weight Corruform sheets are easy to handle.



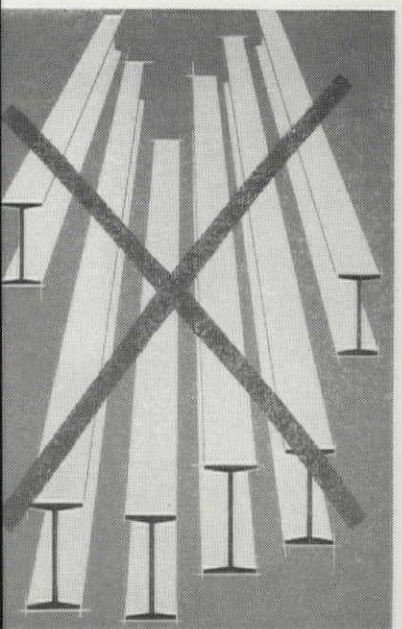
LESS FRAMING. Stronger sheets require l support, fewer joists. Result: More econo per floor. Rigid Corruform permits slab be cast and finished in one easy operati



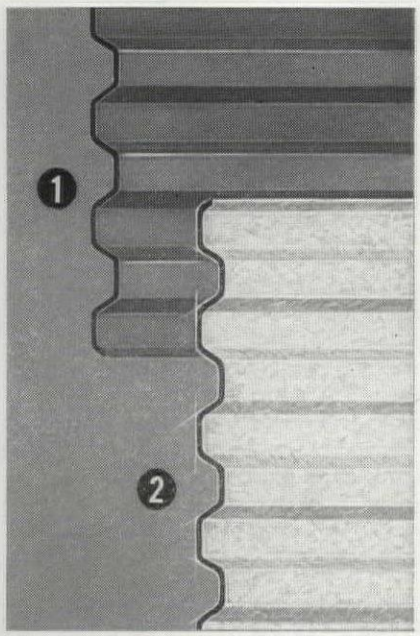
ngths up to 12 feet 3 inches. For spans from 3½ feet to 5 feet, *HEAVY-DUTY CORRUFORM* is available in lengths up to 18 feet 4 inches.

Corruform® base for floor slabs

See our new catalogs in Sweets!



UTS COST. Corruform reduces framing. ide selection of gages and standard or ecial lengths minimize end laps. Strong id sheets won't sag, save concrete.



TWO FINISHES. 1. Uncoated Corruform for unexposed application with suspended ceilings. 2. Galvanized Corruform for exposed ceilings—needs no field painting.

GRANCO®

GRANCO STEEL PRODUCTS COMPANY
6506 N. BROADWAY, ST. LOUIS 15, MO.

A Subsidiary of
GRANITE CITY STEEL CO.
Granite City, Illinois
Granco Distributors in 86 Principal Cities

SINCE 1878 GRANITE CITY STEEL ®

Free Corruform Product Manual!

Contains description, advantages, uses, specifications, details and selection data on "new pattern" Corruform. Mail coupon to Granco address shown above. Att.. Dept. PA-59.

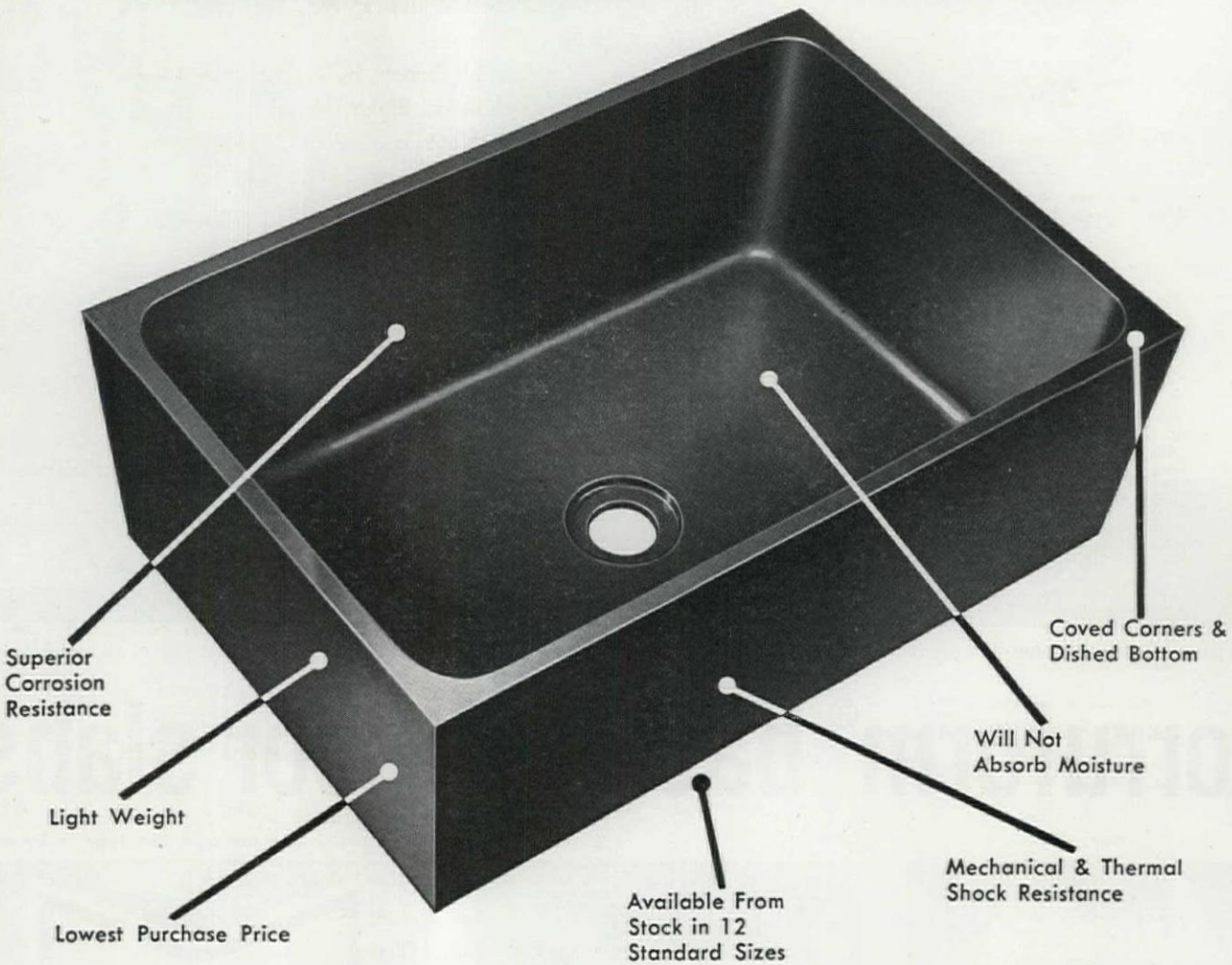
Name_____

Firm_____

Address_____

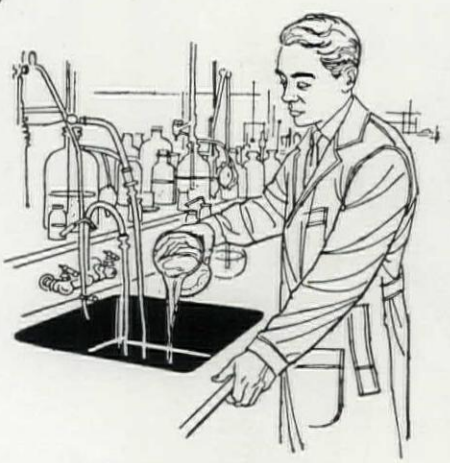
City_____ State_____

NEW DURCON®
LABORATORY SINKS



Durcon is an epoxy resin, modified by The Duriron Company to provide even greater corrosion resistance and mechanical strength. These completely new DURCON laboratory sinks are extremely attractive, light in weight, and shock-resistant, and they cost less to buy and less to install. These sinks are designed, built, tested, and proved by The Duriron Company; and are backed by the reputation which Duriron has established over nearly half a century.

Let us send you complete details contained in our free Bulletin PF/5. Address: Durcon Department, The Duriron Company, Inc., Dayton, Ohio, or contact your nearest laboratory equipment manufacturer. Durcon sinks are available from stock in twelve standard sizes, and in special sizes to meet virtually all requirements.



THE DURIRON COMPANY, INC., DAYTON, OHIO

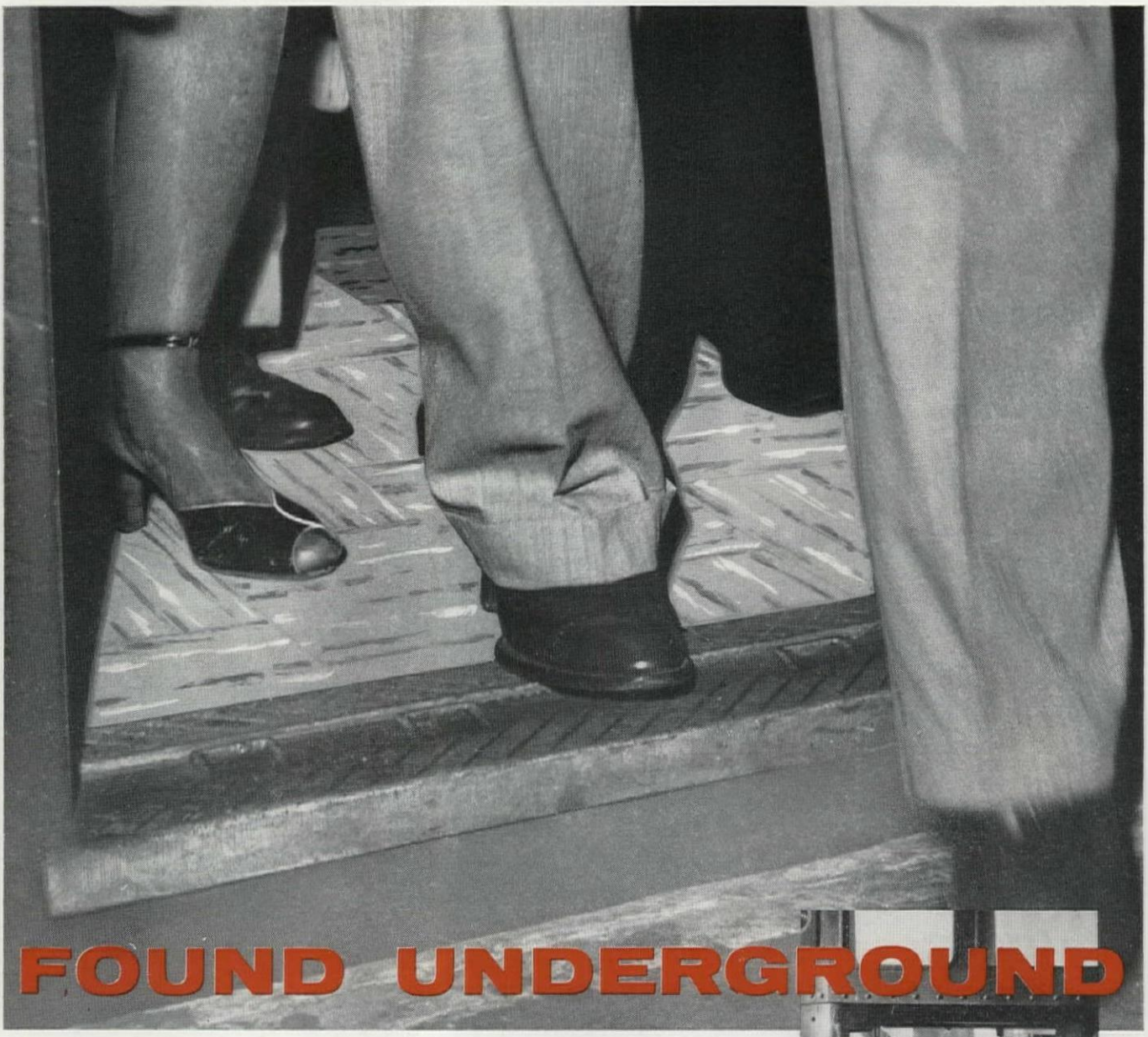
DURCO CORROSION RESISTING ALLOYS & EQUIPMENT

Branch Offices: Baltimore, Boston, Buffalo, Chicago, Cleveland, Dayton, Detroit, Houston, Knoxville, Los Angeles, New York, Pensacola, Fla., Philadelphia and Pittsburgh.

September 1958

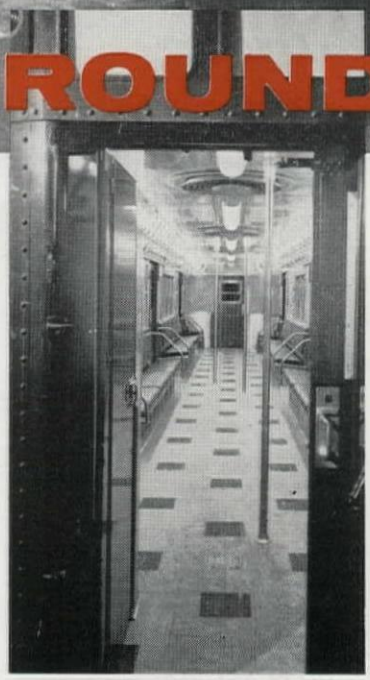
PROGRESSIVE ARCHITECTURE

Published monthly by REINHOLD PUBLISHING CORPORATION, 430 Park Avenue, New York 22, N. Y. Second-class mail privilege authorized at New York, N. Y. Professional subscription—$5. (For full data, see page 67).
Volume XXXIX, No. 9



FOUND UNDERGROUND

the toughest wear test ever!



The Matico Tile Floors in 350 New York City subway cars take more punishment in one day than most floors get in a lifetime. Only the toughest flooring could stand up under the constant beat, beat, beat of millions of riders' feet. But Matico's ability to take it . . . proved in installation after installation across the country . . . is only one factor that led to Matico's selection. Others: Outstanding economy; fast, easy maintenance; through and through quality; a wide choice of pleasing colors. Aren't these the very properties you look for when you specify flooring? For information and specification data write: Dept. 9–9, P.O. Box 128, Vails Gate, N. Y.

MATICO TILE FLOORING

MASTIC TILE CORPORATION OF AMERICA

Houston, Tex. • Joliet, Ill. • Long Beach, Calif. • Newburgh, N. Y.

Vinyl Tile • Rubber Tile • Vinyl-Asbestos Tile • Asphalt Tile • Plastic Wall Tile

QUALITY CONTROLLED MATICO PRODUCTS

BA521

It's the Law by Bernard Tomson

P/A Office Practice *article emphasizing the importance of protecting a practice by a properly drawn Will that is kept up-to-date.*

Although the following article concerning Wills is of general application, it should be of particular interest to architects. The chief asset of an architect is often his business. In the absence of a Will, this asset must usually be immediately liquidated upon death. If the business can be continued or its value otherwise conserved by proper testamentary provision, this fact should be of extreme significance to the practicing architect.

Despite the importance of Wills, intestacy (the state of dying without making a Will) is more often the rule than the exception. Judge John J. Bennett, Surrogate of Nassau County, New York, has been rendering an important public service by leading a campaign to alert the public (and women particularly) to the importance of securing a proper Will in order to protect the security of the decedent's family. The Surrogate is the judicial officer under whose supervision estates are administered and, consequently, he is continually faced with unhappy and sometimes tragic situations which arise out of the failure of a property owner to protect his family by securing a properly drawn Will. For example, in Judge Bennett's county in the year 1957, there were more than 850 estates which were administered in his court where no Will was left. He notes that in New York State this was true of more than half the estates; and estimates for the United States have placed the figure as high as eighty percent. He urges each wife to know the answers to the following questions:

How will I be provided for in the event of my husband's death?

How will my children be provided for in the event of my husband's death?

What will happen to my husband's business in the event of his death?

He states that the refusal of wife or husband to consider these problems (because of the unpleasant and unhappy nature of the subject) is shortsighted and foolhardy.

The primary purposes of a Will are (1) to set forth the intentions of the maker of the Will concerning how he wishes his property to be distributed at the time of his death, (2) to conserve his assets and to insure against their dissipation, and (3) to maintain at a minimum the amount of taxes and other expenses which will be charged against his estate. These objectives cannot be realized in the absence of a Will and will often be defeated by an inadequate Will.

The widow whose husband dies without a Will is surprised to learn that her children receive a larger proportion of her husband's estate than she does. For example, under the law of New York, the assets of a property owner, who dies without a Will, leaving a wife and children, passes one-third to the wife and two-thirds to the children: the latter two-thirds *not* subject to the control of the wife even if the children are under the age of twenty-one. If it is necessary to utilize any portion of that inheritance for the maintenance or education of the children, the widow is required to seek the permission of the court for that purpose. Further, the relatively small share of her husband's estate which passes to her may be inadequate for the widow's continued and proper support. In such a situation the absence of a Will providing that the entire estate is bequeathed to the widow would result in real hardship.

Perhaps even more shocking to the widow is to discover that her "in-laws" may share in her husband's estate where he dies without a Will. Using New York law again, as an example, a widow without children whose husband left an estate of any size would only receive a little more than one-half of that estate if there was surviving her husband, a parent, brother, sister, nephew, or niece.

In many estates, the chief asset is the husband's business. In the absence of a Will, the law generally requires that his business be immediately liquidated. The financial loss resulting from forced liquidation is, of course, obvious. A Will can provide for the orderly disposition of the business by granting broad powers to the executors. More important, however, the business asset can be conserved by providing that the business be continued. A successful business which supported the family during the husband's lifetime can continue to do so after his death, if proper provision is made. Where that business must be liquidated or otherwise disposed of and the income from it thereby terminated because of the absence of a Will, such result is, at best, wasteful, and at worst, tragic.

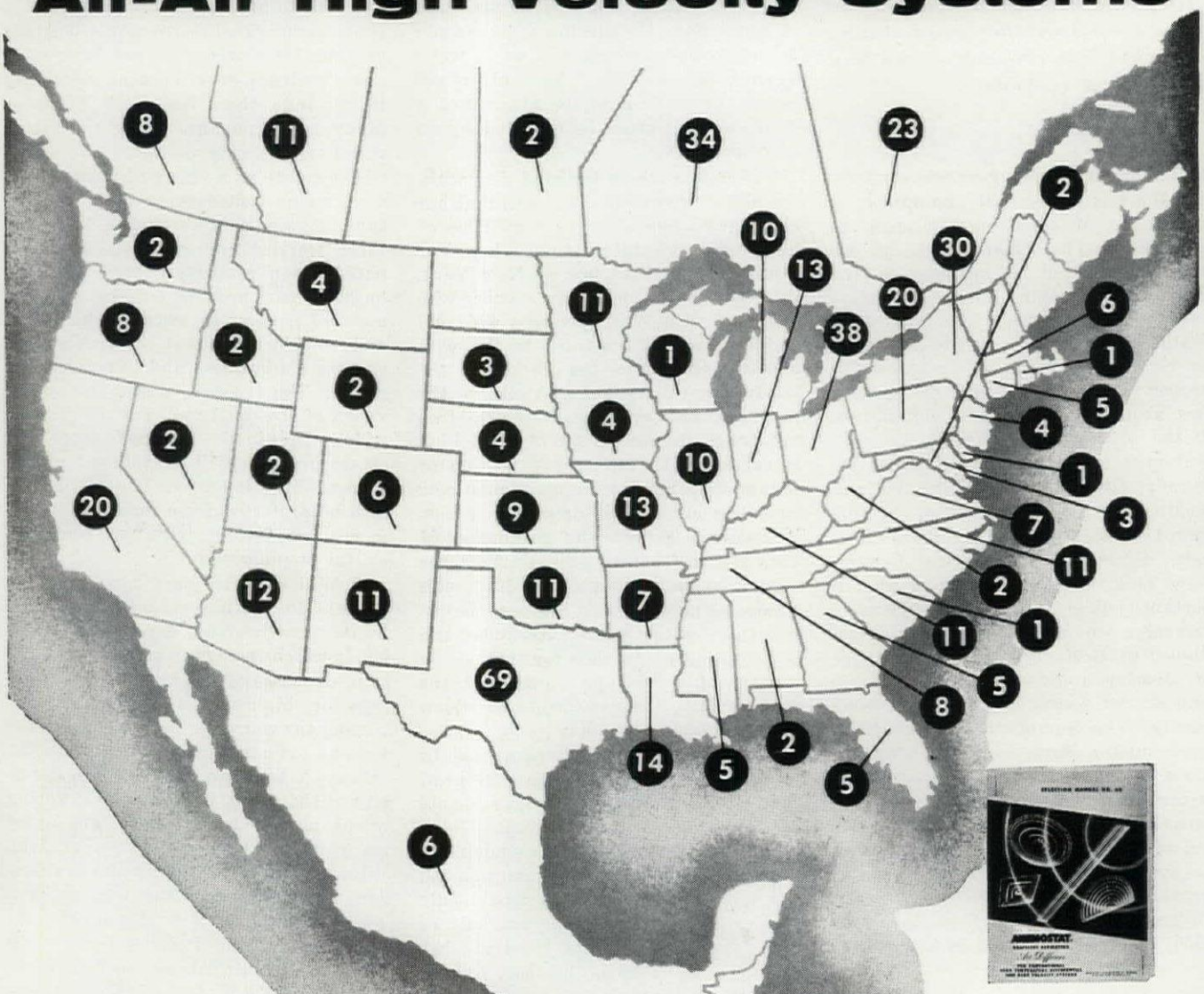
Many husbands may feel that they do not wish to burden their wives with the problems involved in running a business or that their wives do not have sufficient business experience or capability to continue their husband's business. Many husbands also worry that their wives will quickly dissipate the assets of the estate as a result of unsound advice, undue influence, or other misfortune. Again, only through a Will, can these worries and concerns be eliminated. In a properly drawn Will, the husband can provide for the appointment of persons in whom he has trust and confidence to act as trustees to operate his business and to manage his estate. The trustees, under the supervision of the court, will pay over to the widow the income earned from the estate and she will be relieved of the responsibility involved. The widow will also be protected from unsound investments, predatory relatives, and unskilful management.

A Will can also save taxes and expenses. In the absence of a Will, the estate must bear the expense of surety bonds which the administrator must obtain, expenses of guardianship proceedings for children, and expenses of petitioning the court for permission to take various actions in connection with the estate. A Will can eliminate the necessity of the surety bond and by granting broad powers to the executors avoid many other expenses of administration.

Even more significant is the tax burden which can be limited by a Will which is prepared with this problem in mind. Under the Federal Inheritance Tax Law, certain exemptions from taxation are provided. One of these exemptions is commonly known as the "marital deduction." The amount of the estate which is left to the wife and the manner in which it is left determines the amount of this exemption. A good proportion of this exemption can be lost in the absence of a Will or as a result of a Will which is not prepared with this tax problem in mind.

This article has touched upon only a few of the more obvious problems arising under our inheritance laws. There are many other complex questions which must be considered, in preparing a Will which will do the job intended. Laws and circumstances continually change and, consequently, Wills must periodically be reviewed. The primary fact, however, is that in the absence of any Will, the husband and father has failed to justify the faith which is ordinarily reposed in him by his family.

ANEMOSTAT reports on All-Air High Velocity Systems



Selection Manual No. 60 will be sent to you promptly on request.

Anemostat Corporation of America pioneered the development of All-Air High Velocity Systems. Anemostat leadership in high velocity systems has resulted in more than 500 fine installations using more than 60,000 units in office buildings, schools, hospitals, auditoriums, etc. throughout the United States, Canada and Mexico.

Anemostat Selection Manual No. 60 contains complete information on the many architectural and engineering advantages of the Anemostat All-Air High Velocity System.

ANEMOSTAT®

DRAFTLESS *Aspirating* AIR DIFFUSERS

ANEMOSTAT CORPORATION OF AMERICA

10 EAST 39th STREET, NEW YORK 16, N. Y.

REPRESENTATIVES IN PRINCIPAL CITIES

Mechanical Engineering Critique

by William J. McGuinness

P/A Office Practice *column on mechanical and electrical design and equipment, devoted this month to new theories in setting standards for levels of illumination.*

During the present decade, intensities of illumination recommended by the Illuminating Engineering Society have increased. While realizing that many detailed jobs required higher levels of lighting, IES has sought more valid methods of arriving at these levels. In 1950, the Society authorized a 10-year research project at the Vision Research Laboratories of University of Michigan, under direction of Dr. H. Richard Blackwell of the Departments of Psychology and Ophthalmology. After eight years of research (which will continue) certain conclusions have now been drawn which will form the basis for a new edition of the Society's lighting handbook, to appear early in 1959. Based upon Dr. Blackwell's current report of 87 pages, 3 tables and 29 illustrations, lighting standards will be changed, according to C. L. Crouch, Technical Director of the Society.

Of far greater interest than the number of footcandles proposed for various tasks is the rational method of selecting each intensity. The perceptive abilities of the eye have been studied in great detail. The eye has been interpreted as a cycling and tracking device, the limitations of which have now been accurately measured. One of its operating characteristics (newly discovered) is called "assimilations per second" (aps). The research group discovered that two closely timed flashes of light could be distinguished as two impulses instead of one, only when they were at least 1/10 sec apart. It became apparent that the eye cycles at a rate of about 10 times per second and, with enough light, can assimilate this number of impressions. With less light, only a few assimilations can be made, and with very poor light several seconds may elapse before an assimilation can be made. IES wants enough light to permit at least 5 aps.

In addition to aps, many other studies were made. These included the motion and speed of the eye in following moving objects; the difficulty of seeing in backgrounds of contrasting light intensities; and in seeing objects with varying color contrasts. Of importance, also, is a measure of objects that can be seen while the eye is looking in a direction slightly away from them.

Advancing from these basic measurements, it was necessary to apply the knowledge gained to a simulation of useful tasks in many fields of visual activity. By means of many devices—including such things as a wheel, 8 ft in diameter, carrying 4-in. discs—eyes were tested for focus, speed, and perception. Allowance was made for the difference between the average viewer and the greater seeing ability of the trained laboratory observer.

Experiments comparing actual jobs with laboratory simulations of them began at threshold conditions (minimum lighting) and were continued to the intensity that facilitated maximum seeing ability. Comparisons were made for 56 useful tasks. For each task, records were kept of the aps that were achieved for various levels of illumination. For a sample of shorthand writing with a No. 3 pencil the results are as follows:

aps achieved	ft-c required
1	6.3
3	30.4
5	76.5
7	133.0
10	304.0

Since IES has set 5 aps as the minimum performance by which lighting shall be set, 76.5 ft-c would be required. This exceeds the present standard of 50 ft-c.

It is interesting to compare old and new lighting levels. Recent, but pre-Blackwell-Report recommendations are as follows:

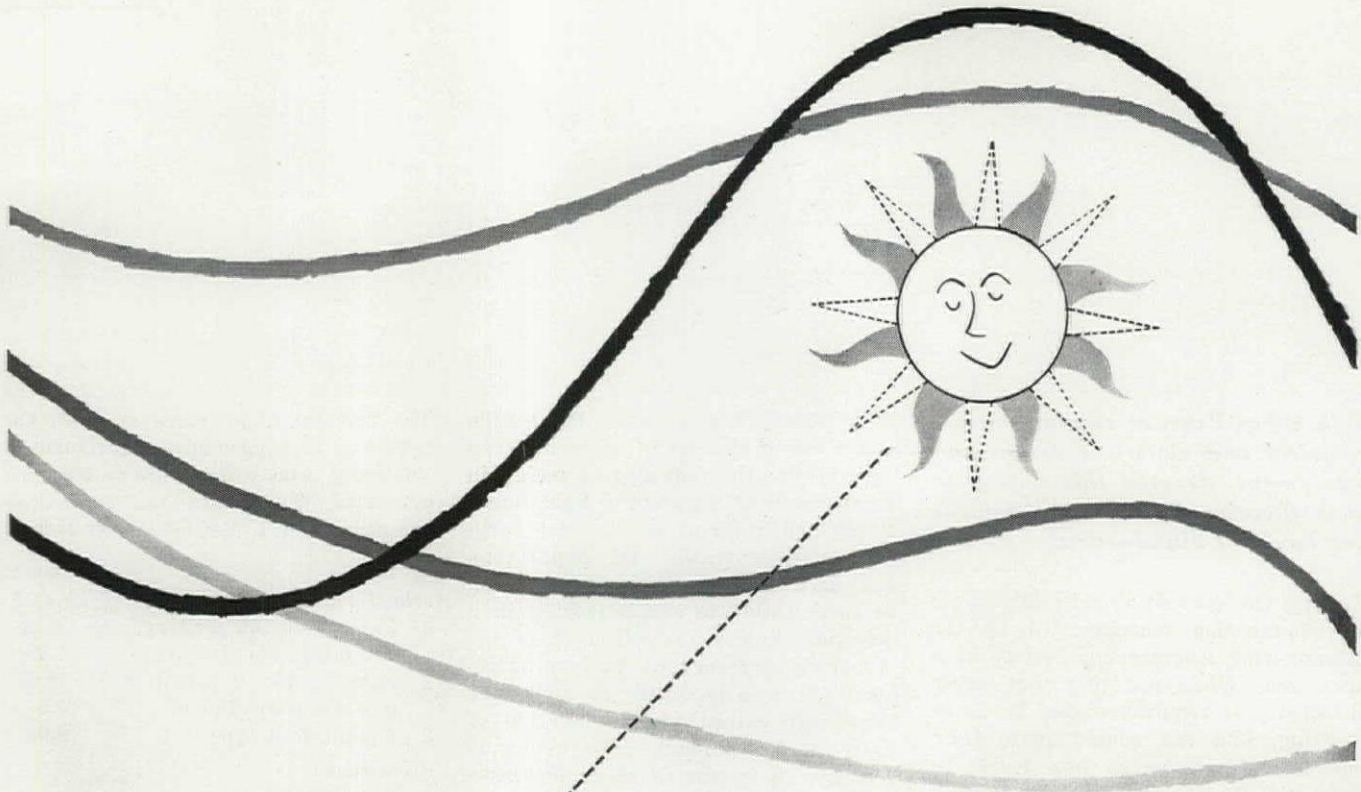
use	ft-c
School classrooms	30
Offices (typing, etc)	50
Clothing manufacture	30-200
Woodworking	20-50

The research team came up with the following recommendations for some of the many tasks which were studied and evaluated. These are the intensities prescribed for 5 aps.

task	ft-c
school tasks	
1 Sample of ink writing, one 6th-grade student	1.38
2 Samples No. 2 pencil writing, poor student	63.0
3 6-point text type	2.98
office tasks	
1 Shorthand copy, No. 3 pencil	76.5
2 Typed original, good ribbon	0.97
3 Typed original, poor ribbon	3140.0
4 Typed carbon, fifth copy	133.0
clothing manufacture	
1 White chalk on blue-serge cloth	10.4
2 Orange chalk on light-brown tweed	266.0
3 Brown-thread stitching on brown-silk tweed	10,000.0
lumber industry	
1 Skip defect, viewed from 16 ft	71.0
2 Tight sound knot, viewed from 16 ft	12.9
3 Chip grain, viewed from 16 ft	6470.0

The startling thing about the new findings is their great variation. To the planner who is not a specialist in lighting it would appear that tasks should be grouped to use a given lighting intensity, or that greater light levels should be available in each use-area in order to minimize moving about. Very low levels will be noticed for some jobs. In spite of this, it is unlikely that present minimum standards will be lowered. A low limit of 30 ft-c may be considered.

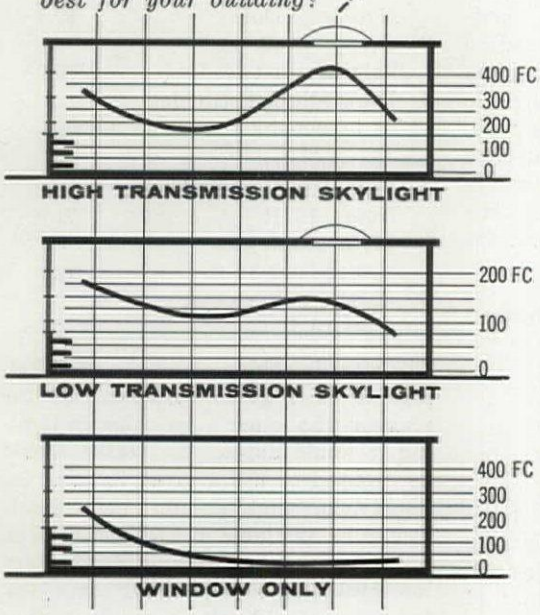
These broad results with specific and widely differing light levels will undoubtedly be edited for practical use, before their appearance in the handbook, yet all of us must be alert to a new kind of awareness in lighting design.



THROW A NEW LIGHT ON ILLUMINATION COSTS

With Naturalite's New Daylight Plan

Which Daylight plan is best for your building?



You can achieve

Adequate Light Transmission
Good Light Diffusion
Low Brightness Ratio
Low Solar Heat Transfer

quickly and easily — with Naturalite's Daylighting Plan

Now . . with Naturalite's new Daylight Engineered Plan for dome skylighting . . you can write your specifications for *daylight* illumination with the same scientific accuracy as you do for *artificial* illumination. It lets you put skylights in your building with these time and money-saving advantages:

- You quickly specify precise, mathematically correct daylighting for the job at hand . . no guessing about too much or too little skylighting.
- You plan skylighting that saves so much in illuminating costs it becomes self-liquidating, quicker than any other domes on the market.
- You get Naturalite's *wide choice* of dome materials in standard units . . easily select the one best suited for the job.

You get a better buy when you specify NATURALITE. Write or call today for complete information on Naturalite's new Daylight Plan

NATURALITE® *inc.*

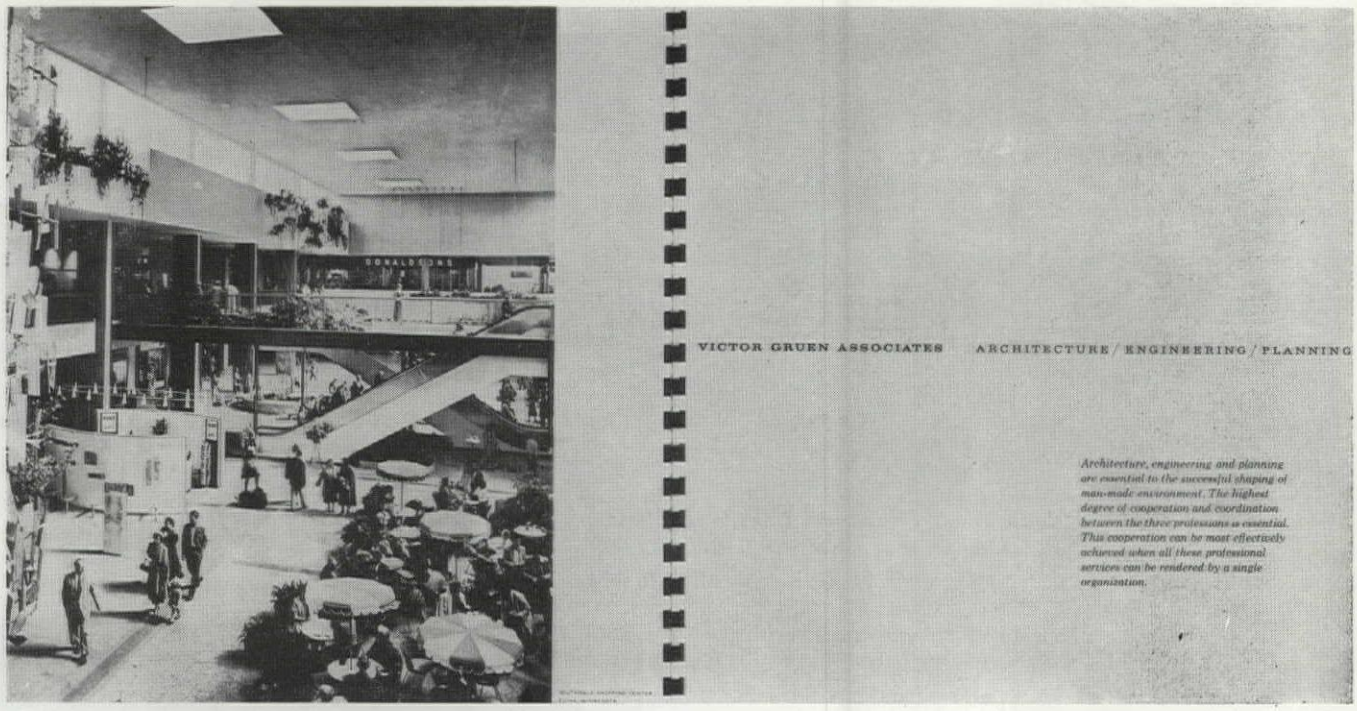
5115 East Grand Avenue • Dallas, Texas • Telephone TAylor 1-2377

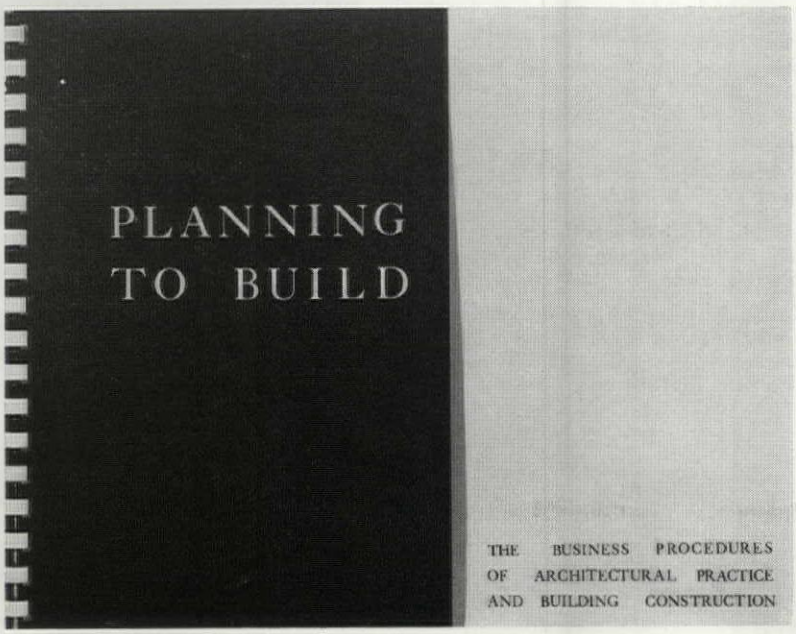
OFFICE BROCHURES 1: pictures and statements

P/A Office Practice ***article—first in a series—illustrating effective and dignified use of office brochures.***

Brochures directed at potential and actual clients come to the attention of P/A's Editors constantly. They vary greatly in method of presentation (and in quality); in general, however, there seem to be two principal emphases. One type primarily shows photographs of work and keeps text brief; the other emphasizes attitudes and methods of operation rather than past accomplishments. (Sometimes, of course, the first type is best for the successful firm, the second most useful for the beginning office.) Illustrated on this page are the best examples of these two general categories that the Editors have recently seen. Below is the frontispiece spread from a new brochure of the office of Victor Gruen Associates, beautifully illustrated, and with text short, simple, and direct. At bottom is the cover of a more-text type brochure from the office of Nolen & Swinburne, Philadelphia architects.

(Continued on page 13)





The world's Largest Clear-Span Laminated-Wood Structure Shelters . . .

ANOTHER CHAMPION TROPHY® FLOOR GYM FINISH

Physical Education Center, Montana State College, Bozeman, Mont. Shell-type design with glued, laminated fir arch ribs.
Architect: Oswald Berg, Jr., & Associates, Bozeman, Montana.

The new Physical Education Center at Montana State College brings 1.6 acres under the circular roof, seats 10,000 to 15,000 without a single obstruction to view—at a cost of only $9.90 per square foot for the main arena.

Inside, the beautiful playing floor was treated with the finest gym floor finish available—Hillyard TROPHY.

As in the case of many other famous field houses, TROPHY was chosen for its unique properties:

- Official abrasion index highest of any gym finish tested.
- Lightest known color, which brings out full flooring beauty—helps both players and spectators to see every play clearly. A TROPHY floor is ideal for televising!
- No-glare (matte finish) and non-slip surface that invites fast-action play. UL listed "slip resistant."
- Bone-hard, smooth finish that repels dirt, grease, water, stains—ends rubber burning—makes maintenance easy and economical.

TROPHY is the outstanding first choice of architects, coaches, school administrators. Today, more than 15,000 of the nation's finest gymnasium and arena floors are Hillyard-finished.

Ask the Hillyard "Maintaineer®" in your area for complete data on how to lay out gym games and for specifications for modern specialized treatments on every type of floor. He'll be glad to serve as your "Job Captain" when your floors are being treated.

The Hillyard Maintaineer is "On Your Staff, Not Your Payroll"

PRODUCERS COUNCIL

SEE OUR CATALOG IN SWEET'S ARCHITECTURAL FILE

ST. JOSEPH, MO.
Passaic, N. J. A-4 San Jose, Calif.
Branches and Warehouse Stocks in Principal Cities

FLOOR HILLYARD TREATMENTS

OFFICE BROCHURES 1: pictures and statements

In programming, Nolen and Swinburne first examine the project as a whole in terms of general environment. What factors of a region or a city should we analyze? Depending on the character of the project, we investigate the influence of population trends, geo-political boundaries, transportation, shopping, business or recreational facilities, surrounding terrain and weather, neighboring buildings or open spaces, etc., etc. These studies we summarize in a site analysis.

Nolen and Swinburne interpret the physical elements of space requirements in terms of:

Immediate needs
Future needs

Individual physical elements of space we consider in terms of:

Function	Size	Traffic Patterns
Importance	Location	Service

All as modified by the factors of:

Flexibility
Expansibility

We consider the people who will use these elements of space in terms of:

Atmosphere	Communications	Good Vision
Efficiency	Sound Control	Thermal Comfort

We expect all aspects of programming to be sensitive to the influences of psychological and sociological factors and be aware of the total range of construction technologies.

Programming deals with space and space relations.

What is Space?

As popularly conceived, space is a series of required rooms connected to each other or strung out along a corridor. Rooms have floors, walls, ceilings, windows and doors; are this wide and long and so high. If we need a certain room to do a certain thing, why we just add it to the plans at the point where it is needed. Programming then is a simple process of listing these rooms and the architect will then assemble them under a roof, provide heating, plumbing and lighting and make them all work together.

In a very limited sense this is true, but let's look at it this way:

There is Exterior Space and Interior Space.

A building should first relate to its surrounding exterior spaces, and the program must insist on proper exposures to sun, wind, view, streets and traffic patterns. A building must recognize the contours of its own site and the configurations of adjoining landscape or cityscape. This will take more time and study for the architect, but the economic and architectural value of the project will be improved only to the extent that it improves its own environment.

Interior space is the reason for building. The architect considers interior space as a total whole of related individual elements. 'Rooms' are not entities in themselves. Taken together these segments of space properly designed and related, interwoven and moving into, penetrating and becoming parts of other segments of space, create a whole that is greater than the sum of its parts.

For those architects with vision and imagination, this fluid manipulation and modelling of space opens up challenging and exciting areas of solution. It is this philosophy of spacial design that creates significant architecture and at the same time meets all the practical requirements of a building program.

Planning to Build—the brochure from the office of Nolen & Swinburne—is, in effect, a series of statements on architectural office procedure. Well written for the layman's comprehension, on a high level of professional and ethical understanding, the booklet is an office-practice manual for the client. Opposite are two pages on the subject of Programming. "Architecture," begins the booklet, "is not a thing apart . . . beautiful for itself alone. It is this and more. . . .

"Architecture is not a theory alone . . . of rhythmic living structure; nor of exquisite meaningful form; nor of superbly modulated space; nor of piercing intellectual synthesis; nor of totally integrated design; it is all these and more. . . .

"Architecture is not a study in realism exclusively . . . of program analysis; of functional relationships; of mathematics and law; of science and technology; of labor and business; of economics and finance; it is all these and more. . . .

"Architecture is not the creation of a building a'one; a building with all its beauty, discipline and reality. It is that building and its relation to those who will use it.

"Architecture is the creation of total environment within which man can accomplish his aspirations."

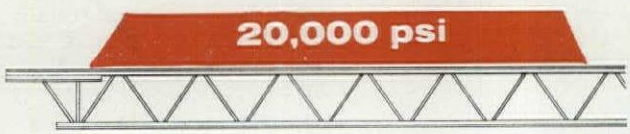
Other sample pages from this brochure will be made the subject of the next several OFFICE PRACTICE articles in P/A—not for our readers to copy, but for them to admire as dignified, effective public education.

IMPORTANT NE

STEEL JOIST

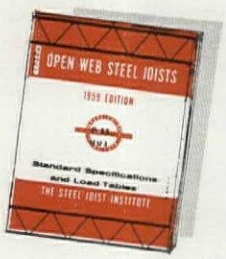
1 DESIGN

Architects and engineers now are offered all types of SJI Approved open web steel joists, based upon 20,000 psi working stress. Open web steel joists approved by the Institute are thus in balance with all other steel used in structures. Greater economy and a more efficient use of steel results.



2 COMBINED SPECIFICATIONS

Specifications and load tables for all types of open web steel joists are combined in one handy reference for the designing architect and engineer. "S" series and "L" series joists uniformly designed are covered in this one over-all standard specification.

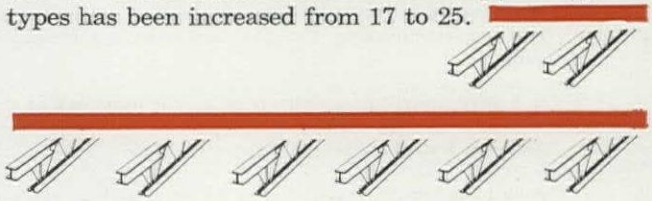


3 NEW SIMPLIFIED MARKING FOR OPEN WEB STEEL JOISTS

To simplify the designation and type mark of steel joists of all types and spans, a uniform system of marking has been adopted. The depth and series identification is incorporated in one type mark to give the designer a uniform system for identification. For example, an "S" series joist, formerly identified as type SJ102 will now be known as 10S2, or a 10" deep joist of the "S" series and a #2 chord section. A joist identified as 24L06 is a 24" deep, "L" series joist of a #6 chord section.

4 EIGHT ADDITIONAL TYPES

To provide greater flexibility and a more exact application of open web steel joists for given structural loads, the "S" series of Steel Joist Institute Approved joist types has been increased from 17 to 25.



STEEL JOIST INSTITUTE

1346 CONNECTICUT AVE., N. W. • WASHINGTON 6, D. C.

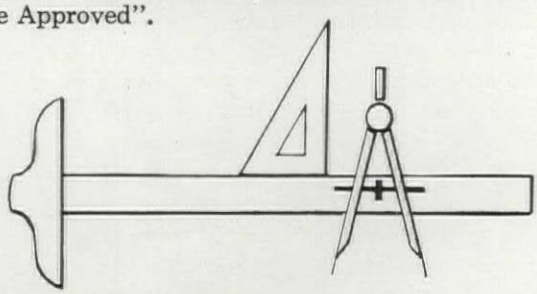
Steel joists of the designations adopted by the Steel Joist Institute and manufactured by the following companies have been investigated and approved by the Steel Joist Institute:

AMERICAN BRIDGE DIVISION
United States Steel Corporation
ARBUTUS STEEL COMPANY
BETHLEHEM STEEL COMPANY
BUILDERS STRUCTURAL STEEL CORP.
CECO STEEL PRODUCTS CORP.
COLORADO BUILDERS SUPPLY CO.
CONCRETE STEEL COMPANY
JOHN HANCOCK, JR., INCORPORATED
LACLEDE STEEL COMPANY
MACOMBER INCORPORATED
ROBBERSON STEEL COMPANY
JOS. T. RYERSON & SON, INC.
SHEFFIELD DIVISION
Armco Steel Corporation
SOUTHWEST STEEL PRODUCTS
TRUSCON STEEL DIVISION
Republic Steel Corporation
VIRGINIA STEEL COMPANY

WS FROM THE INSTITUTE

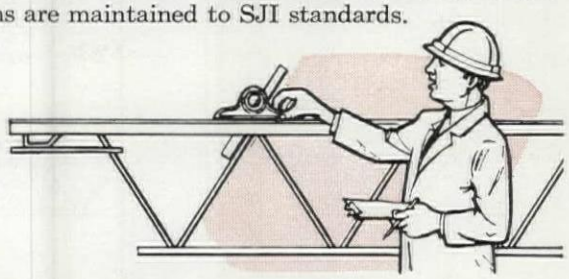
5 ENGINEERING DESIGN CHECK ..."L" SERIES

To assure designers and specifiers of "L" series open web steel joists of proper uniform design properties, an engineering design check on such joists has been developed by the Steel Joist Institute and will be required before a manufacturer is permitted to indicate his product as "Steel Joist Institute Approved".



6 QUALITY VERIFICATION PROGRAM..."S" SERIES

A Quality Verification Program on all Steel Joist Institute Approved "S" series open web steel joists assures designers and code authorities that these structural members have not only been checked for design and load bearing ability but are subject to a continuing program of inspection by an independent laboratory at the Steel Joist Institute member company plants, to provide assurance that actual fabrication and production conditions are maintained to SJI standards.



7 NEW LOAD AND SPACING TABLES

Although the SJI Approved open web steel joists to be manufactured under the new SJI Standard will not be available from member companies before January 1, 1959, a new comprehensive load and spacing table is offered the architects and engineers for use as of October 1, 1958. This will permit inclusion of the construction economies of the new balanced design steel joists in many structures now in the planning stage.

STEEL JOIST INSTITUTE APPROVED SJI ©

FREE! *Write for new standard specifications and load tables.*

See our insert in Sweet's Architectural File 2c/St

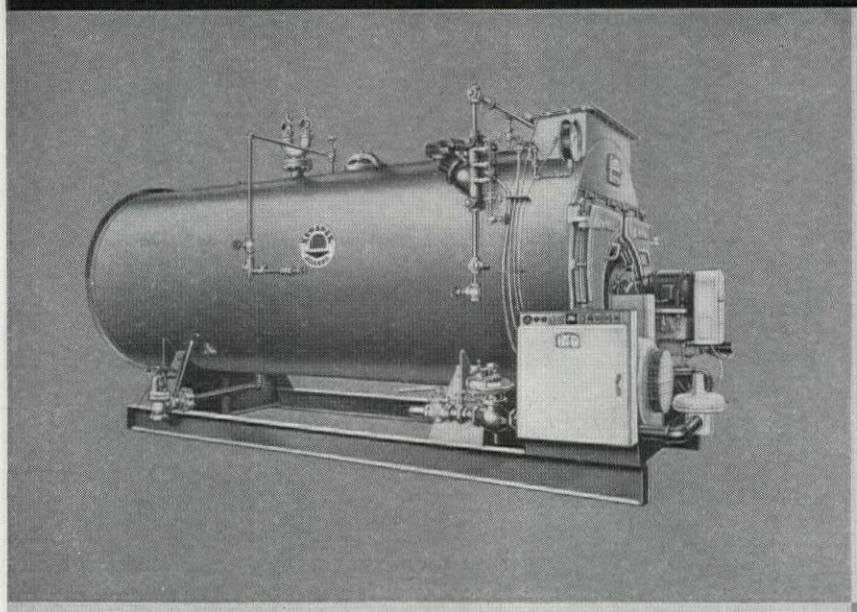
STEEL JOIST INSTITUTE
Room 715
DuPont Circle Bldg.
Washington 6, D. C.

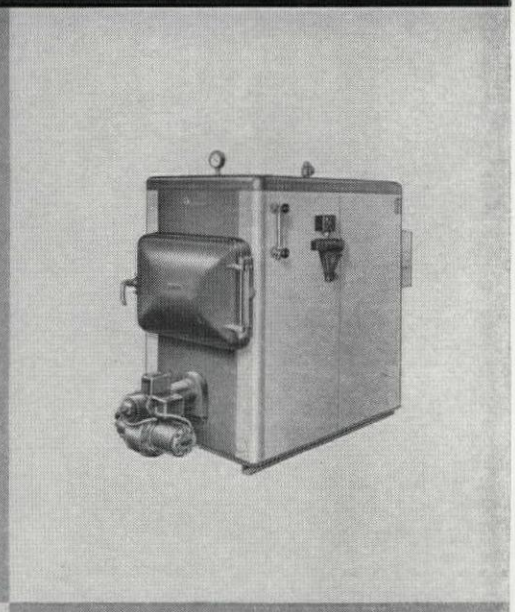
☐ Please send me a copy of your new Standard Specifications and Load Tables.

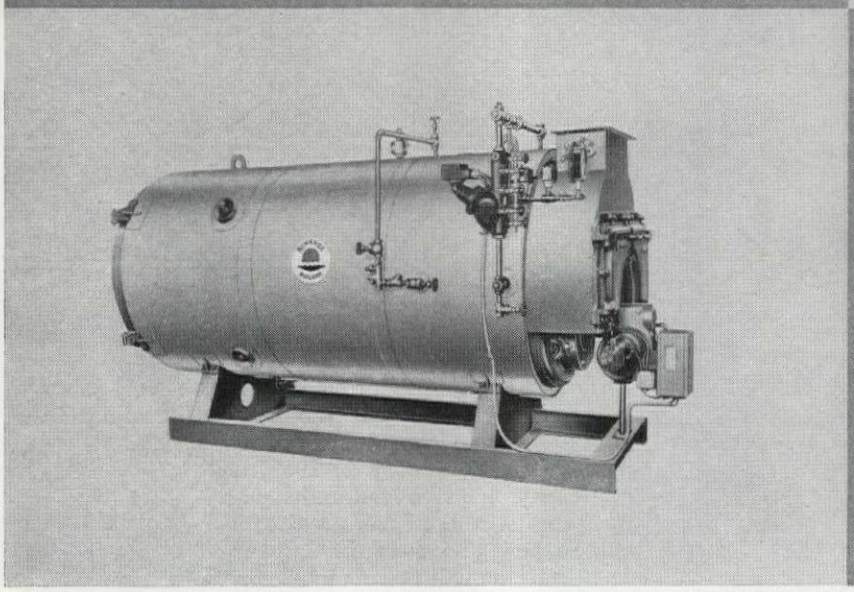
Name_____
Company_____
Address_____
City_____ Zone____ State_____

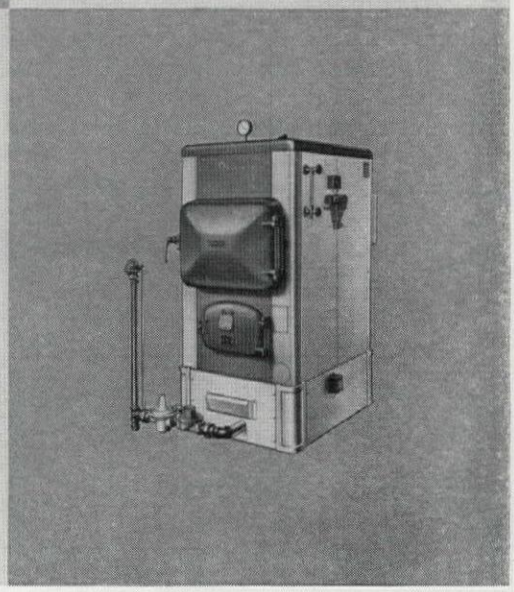
KEWANEE® PACKAGES

36 sizes span a full range of fuels





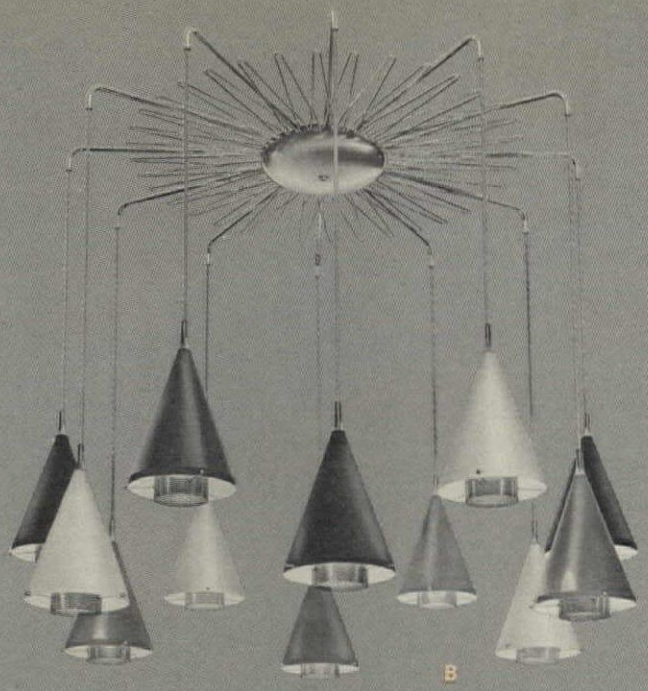




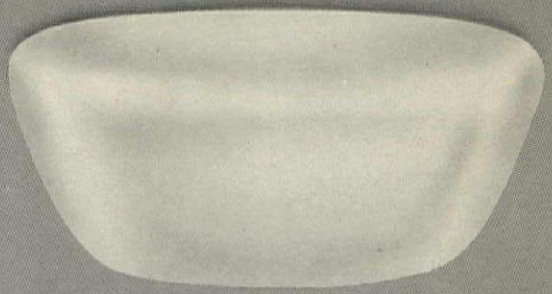
Now Kewanee's family of integrated boiler-burner packages covers a spread of sizes from 18 to 651 hp in high pressure models . . . 216,000 to 21,855,000 Btuh, low pressure. The fuel range is all-inclusive, too—oil from No. 1 through No. 6 . . . natural, manufactured, mixed or LP gas . . . oil-gas combination firing on any Scotch type package . . . forced draft eliminates high stacks. Factory assembling and fire-testing on Scotch type packages, when desired, means only five simple connections for installation. For complete facts on any type, any size or any fuel, contact your nearby Kewanee Man. AMERICAN-STANDARD, KEWANEE BOILER DIVISION, 107 Franklin Street, Kewanee, Illinois.

AMERICAN-Standard

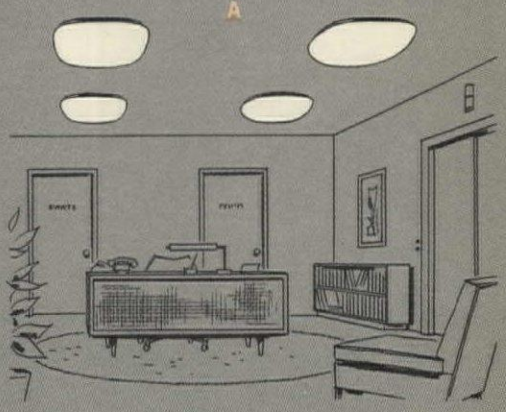
KEWANEE BOILER DIVISION



B



A

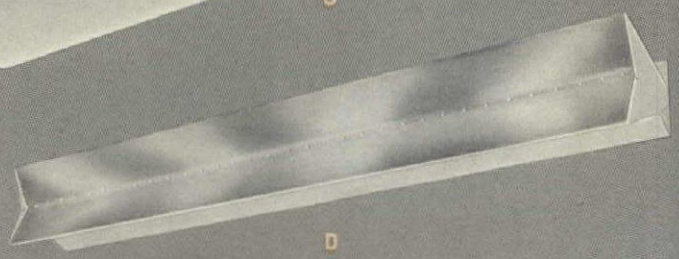


B

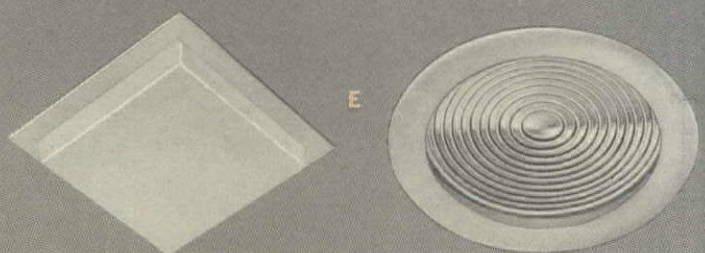
* 3 lighting for nearly every requirement

Whether you are looking for a high styled decorative lighting fixture for an exclusive dining room or a modular functional unit for a hospital corridor, look to Lightolier as the single source that can best fill your needs. You can choose general lighting devices to illuminate a spacious office area or specific lighting to bring a merchandise display to sparkling life. Each of the illustrated fixtures represents an entire line...

C



D



E

A CIRCULITE... a completely new form; a softly sculptured styrene diffuser fully encloses two Circline fluorescent lamps. This economical unit has a built-in look.

B PORTFOLIO... more than 50 dramatic decorative designs... this one has 12 pendants in red, black and white mounted at random lengths from a brass canopy. Also available with glass and metal mesh pendants.

C OPTIPLEX... surface and recessed from 2' x 2' to 4' x 4', fully diffused wide-area fluorescent lighting for office, school, hospital, store. Formed plexiglas diffuser has crisp form.

D LYTELINE... four foot fluorescent wall units that can be butted end to end, decorative and functional, both up and downlight. Three attractive finishes: bone white, satin brass, walnut veneer. Ideal for over a desk or table; corridors, lobbies... motels, dormitories, offices, homes.

E CALCULITE®... a wide range of recessed incandescent units for decorative and functional accent lighting. Full Alzak reflector assures maximum light output, exclusive Colouvered® lens eliminates glare, Torsiontite† springs offer positive, safe hinging and automatic levelling.

†U. S. Pat. No. 2701299

*One of five good reasons for specifying LIGHTOLIER.

*4 a trusted name in lighting

Each fixture in Lightolier's wide range of public area, residential and commercial designs is backed with fifty-four years of lighting leadership. America's top designers and illuminating engineers collaborate with master craftsmen at Lightolier to create sparkling new designs, new lighting concepts, new lighting efficiency. The Lightolier name is your assurance of highest quality and permanent good taste.

*5 a wide network of trained distributors

These authorized Lightolier distributors can assist you with your lighting problems

ALABAMA
Birmingham:
Mayer Elec. Sup. Co.
CALIFORNIA
San Francisco:
California Elec. Sup. Co.
COLORADO
Denver: Central Elec. Sup.
CONNECTICUT
Bridgeport: B. M. Tower
Hartford:
Beacon Light & Sup. Co.
New Haven:
Grand Light & Sup. Co.
New London:
United Elec. Sup. Co.
Stamford: Marie Co.
DISTRICT OF COLUMBIA
Maurice Elec. Sup. Co.
National Elec. Wholesalers
O. R. Evans & Bros.
FLORIDA
Miami:
Farrey's Whsle. Hdwe. Co.
GEORGIA
Atlanta: Atlanta Ltg. Fix.
ILLINOIS
Chicago:
Efengee Elec. Sup. Co.
Englewood Elec. Sup. Co.
Hawkins Electric
Hyland Elec. Sup. Co.
Wholesale Elec. Sup.
Elgin: Fox Elec. Sup.
Rockford:
Englewood Elec. Sup. Co.
Springfield:
Springfield Elec. Sup.
INDIANA
Ft. Wayne:
Mossman-Yarnelle Co.
Gary:
Englewood Elec. Sup. Co.
So. Bend:
Englewood Elec. Sup. Co.
IOWA
Des Moines:
Weston Lighting Co.
KANSAS
Kansas City:
W. T. Foley Elec. Co.
KENTUCKY
Paducah: Ohio Valley Sup.
LOUISIANA
Baton Rouge:
Electrical Wholesalers
New Orleans:
Interstate Elec. Co.
MAINE
Bangor: Standard Elec. Co.
MARYLAND
Baltimore:
Atlantic Illuminating Co.
MASSACHUSETTS
Boston:
Mass. Gas & Elec. Light Co.
Henry L. Wolfers Inc.
Fitchburg:
Service Elec. Sup. Co.
Pittsfield: Carr Supply
Springfield:
Eastern Elec. Sup.
Worcester:
Atlantic Elec. Sup.
Benjamin Elec. Sup.
MICHIGAN
Detroit:
Madison Elec. Co.
Michigan Chandelier Co.
Flint: Royalite Co.
Grand Rapids:
Purchase Elec. Sup. Co.
Pontiac:
Standard Elec. Co.
Saginaw: Standard Elec.
MINNESOTA
Duluth:
Northern Elec. Sup. Co.
Minneapolis:
Charles A. Anderson & Co.
Northland Elec. Sup. Co.
St. Paul: Lax Elec. Co.
MISSOURI
St. Louis: M. K. Clark
NEBRASKA
Omaha:
Electric Fix. & Sup. Co.
NEVADA
Reno:
Western Elec. Dists. Co.
NEW HAMPSHIRE
Portsmouth:
Mass. Gas & Elec. Light Co.
NEW JERSEY
Atlantic City:
Franklin Elec. Sup. Co.
Camden:
Camden Elec. Fix. Co.
NEW YORK
Albany:
Havens Elec. Co. Inc
Binghamton:
Freije Elec. Sup. Co.
Buffalo:
Buffalo Incan. Light Co. Inc.
Niagara Falls:
Hysen Sup. Co.
Poughkeepsie:
Electra Sup. Co.
Rochester:
Rowe Electric Sup. Co.
Syracuse: Superior Elec.
NORTH CAROLINA
Charlotte:
Independent Elec. Sup.
Durham: Noland Co.
Greensboro:
Elec. Sup. & Equip. Co.
Kinston: Kinston Elec.
Winston-Salem:
Noland Co.
OHIO
Akron:
The Sacks Elec. Sup. Co.
Canton: The Electric Sales
Cincinnati: B. & B. Elec.
Cleveland: H. Leff Electric
Columbus:
Elgee Elec. Co.
The Loeb Elec. Co.
Dayton: Martin Elec. Co.
Duellman Elec. Co.
Toledo: Gross Elec.
Youngstown:
Mart Industries
OKLAHOMA
Tulsa: Lawson Elec. Co.
PENNSYLVANIA
Allentown:
Coleman Elec. Co.
Erie: Kraus Elec. Co.
Harrisburg:
Fluorescent Sup. Co.
Hazleton:
Power Elec. Co. Inc.
New Castle:
Midwestern Elec. Co.
Philadelphia:
Ace Lighting Fix. Co.
Gold Seal Elec. Sup. Co.
Sylvan Elec. Fix. Co.
Pittsburgh:
Allied Elec. Sup. Co.
Argo-Lite Studios
Doubleday-Hill Elec. Co.
Wally Elec. Sup. Co.
Reading: Coleman Elec. Co.
Scranton: Lewis & Reif
Wilkes-Barre:
Anthracite Elec. Sup. Co.
RHODE ISLAND
Pawtucket:
Major Elec. Sup. Co.
Providence:
Leavitt Colson Co.
SOUTH CAROLINA
Anderson:
Sullivan Hdwe. Co.
Columbia:
Capitol Elec. Sup. Co.
Noland Co.
Greenville:
Sullivan Hdwe. Co.
SOUTH DAKOTA
Watertown:
J. H. Larson Elec. Co.
TENNESSEE
Johnson City: Noland Co.
Nashville:
Nashville Elec. Sup. Co.
TEXAS
Dallas: Rogers Elec. Sup.
Ft. Worth:
Anderson Fixture Co.
Houston:
Marlin Associates
San Antonio:
Southern Equip. Co.
VIRGINIA
Arlington-Rosslyn:
Noland Co.
Lynchburg:
Mid State Elec. Sup. Inc.
Norfolk: Noland Co.
Roanoke: Noland Co.
WEST VIRGINIA
Charleston:
Goldfarb Elec. Sup. Co.
Virginian Electric Inc.
Huntington:
West Virginia Elec. Co.
Wheeling: The Front Co.
WISCONSIN
Appleton:
Moe Bros. Northern Co.
Eau Claire:
W. H. Hobbs Sup. Co.
La Crosse:
W. A. Roosevelt Co.
Milwaukee:
Lappin Elec. Co.
Standard Elec. Sup.
WASHINGTON
Seattle:
Seattle Lighting Fix. Co.

ALASKA—*Anchorage:*
Northern Supply Co.
CANADA
Montreal:
The Gray Elec. Co.
Toronto:
Revere Elec. Dist.
Toronto Elec. Sup. Co.
HAWAII
Honolulu:
Hawaiian Light. & Sup. Co.

LIGHTOLIER
Dept. PA-58, JERSEY CITY 5, N. J.

Please send me your 32-page catalog of public area, commercial and residential lighting by Lightolier.

Name_____

Firm_____

Address_____

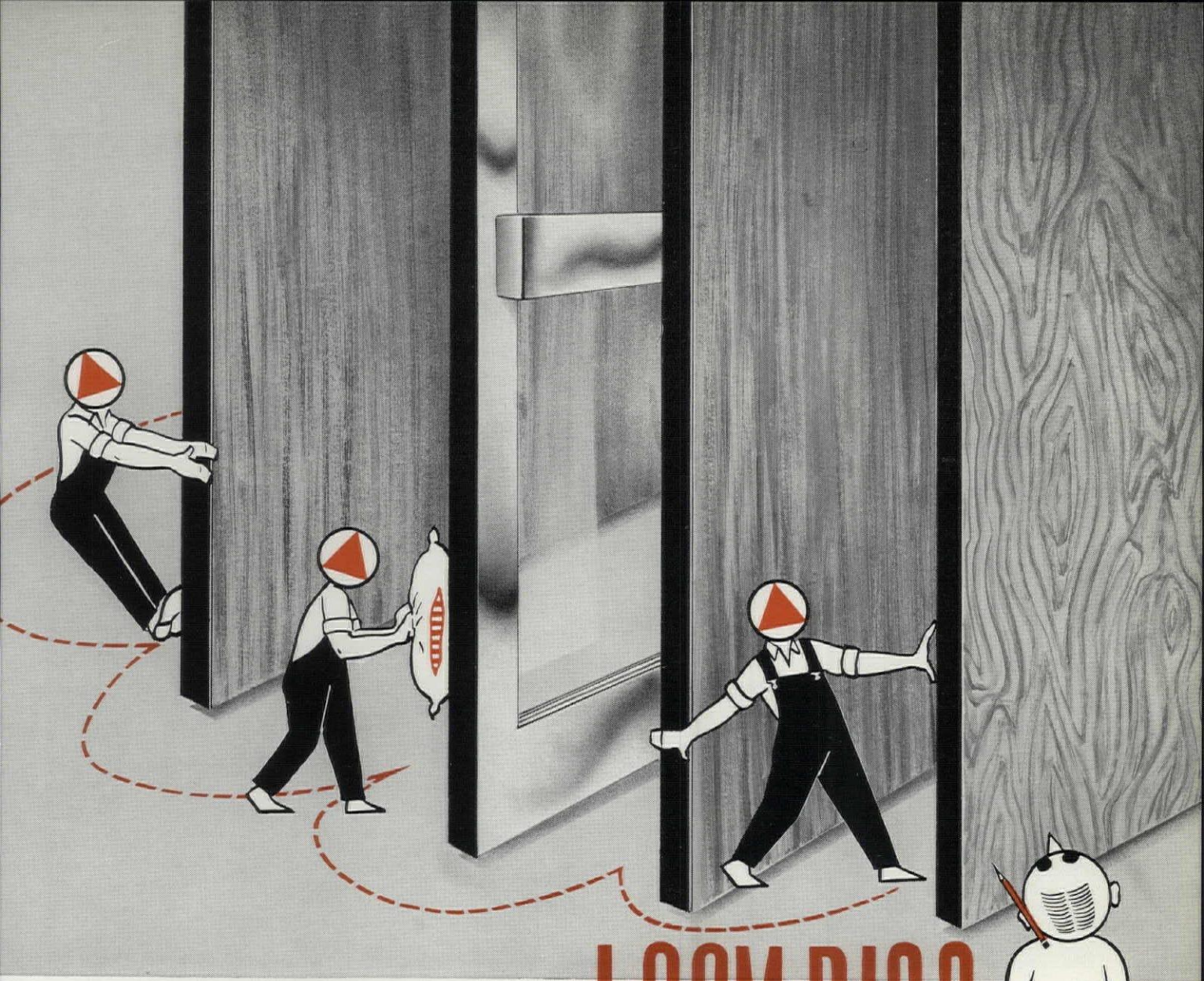
City_____ Zone_____ State_____

*One of five good reasons for specifying

LIGHTOLIER

MAIN OFFICE AND FACTORY: JERSEY CITY 5, NEW JERSEY

SHOWROOMS: NEW YORK, CHICAGO, LOS ANGELES



door control problems LOOM BIG?

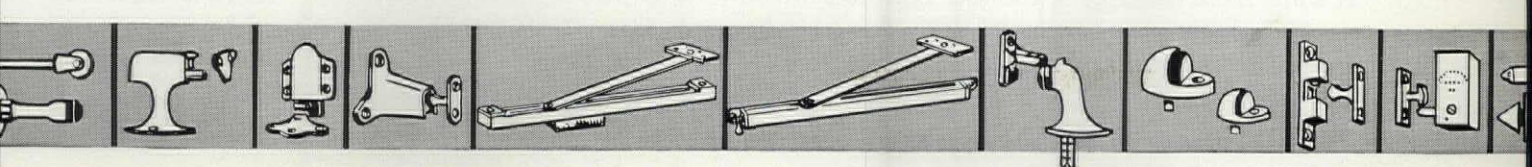
good reason for turning to GJ . . .

With GJ you have the *one complete line* of builders' hardware designed for most *every* problem of stopping or holding the door . . . including the safe cushioning and silencing of the door's action.

If yours is one of those "never before heard of" types of problems, keep in mind that GJ engineers have worked out special adaptations to meet unusual problems of installation and function for over 35 years. Some of the early adaptations are "standards of the industry" today.

And if it's extra quality you require for hard daily usage, long continuous wear, etc., these are assured by GJ's long record of producing "life of the building" hardware.

Meeting door control problems—one and all—is our only business. Every order gets the careful consideration of experienced door control engineering. Your specification always means more when you write in "... *shall be GJ* ...".



GLYNN · JOHNSON CORPORATION

write for details **4422 north ravenswood avenue • chicago 40, illinois**

since 1923

Sears, Roebuck & Company's Tampa store . . .

concrete folded plate roof achieves large, unobstructed floor area

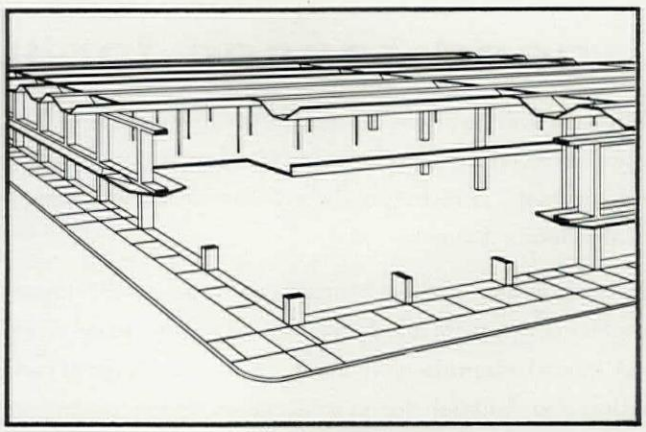
One of the basic requirements here was to achieve unobstructed floor space with economy. Architects Weed, Russell, Johnson & Associates found the answer by using a concrete shell in the form of a folded plate. This construction made it possible to span the entire floor area with only one interior row of columns . . . and suspend the second floor from the roof. The result: 163,715 square feet of *fully flexible* floor space, so important to any retail selling operation.

Folded plate design is, in itself, unique and interesting. And only concrete can give the added boldness of the wide, cantilevered overhang.

It's one more example of the way new uses of concrete are bringing big economies and added vitality to both conventional and modern architecture.

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete



Isometric view showing 125-foot c on c spacing of main columns. Floor slab is supported by 3-inch plates welded together to form a hanger. Hangers are spaced 25 feet c on c.

FOR STRUCTURES... MODERN **concrete**

For the office of Conrad N. Hilton, custom-matched Algoma-Grade Weldwood walnut paneling. Hilton Hotel Bldg., Beverly Hills, Calif. Architects: Pereira & Luckman.

Practical public relations—and low maintenance, too! Beautiful wood paneling by Weldwood

To help noted host Conrad N. Hilton extend a gracious welcome—the cordial warmth of Weldwood walnut paneling. Handsome, distinctive wood interiors such as this create a favorable setting for business. And Weldwood paneling is economical because it requires almost no care—actually grows more beautiful with the years. Every Weldwood paneling installation is guaranteed for the life of the building.

Why not look into the many ways Weldwood's fine hardwoods can help you add permanent beauty and value to your designs for business, institutional, and home interiors? You can select from superbly cut and matched panels in practically all woods of the world: tropical mahoganies, luxurious African Korina®, and exotic teak, or rich native woods such as American oak and cherry. Many are available in prefinished panels—all offer Nature's infinite variety of grain patterns. See Weldwood paneling at any of 114 Weldwood branch showrooms in the United States and Canada.

Weldwood® Wood Paneling

Product of
UNITED STATES PLYWOOD CORPORATION
In Canada: Weldwood Plywood, Ltd.

SEND FOR FREE BOOKLET

United States Plywood Corporation
Dept. PA 9-58, 55 West 44th Street
New York 36, N. Y.

☐ Please send me, at no obligation, a free copy of "Functional Beauty for Business and Institutional Interiors," which has 28 pages of idea photographs showing Weldwood paneling in offices, stores, and institutions.

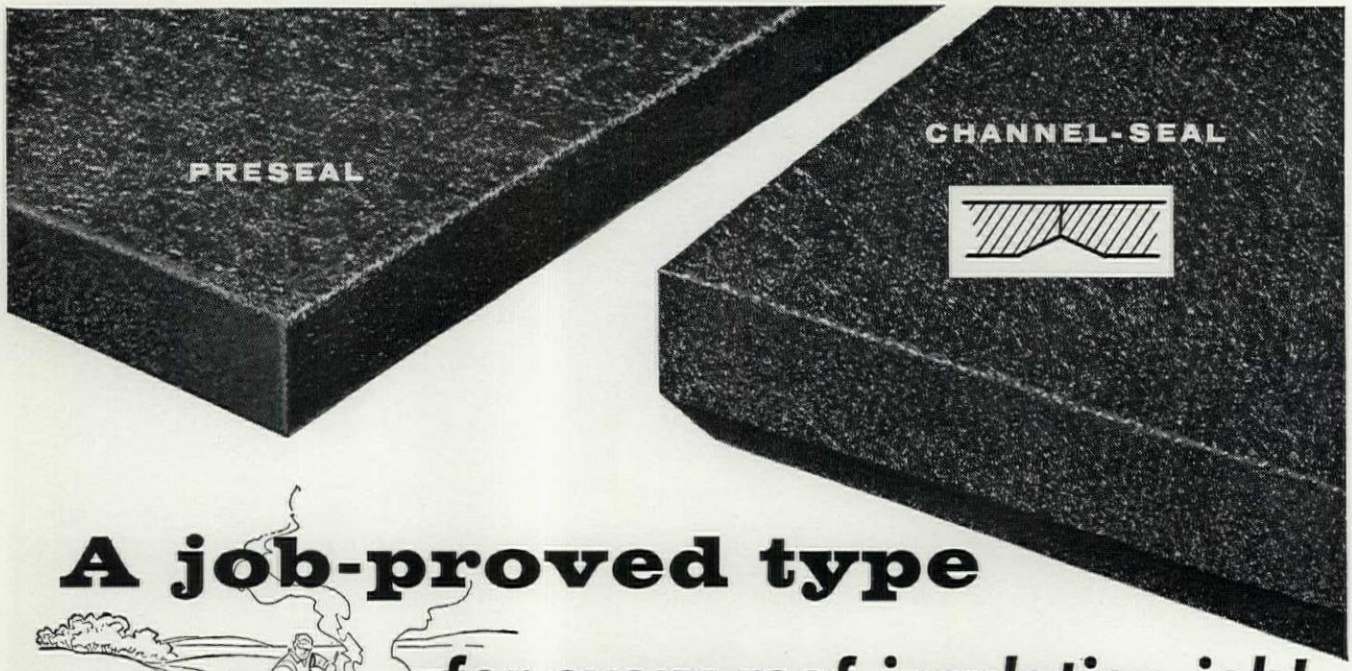
☐ I would like a Weldwood Architects' Service representative to consult with me.

Name .....

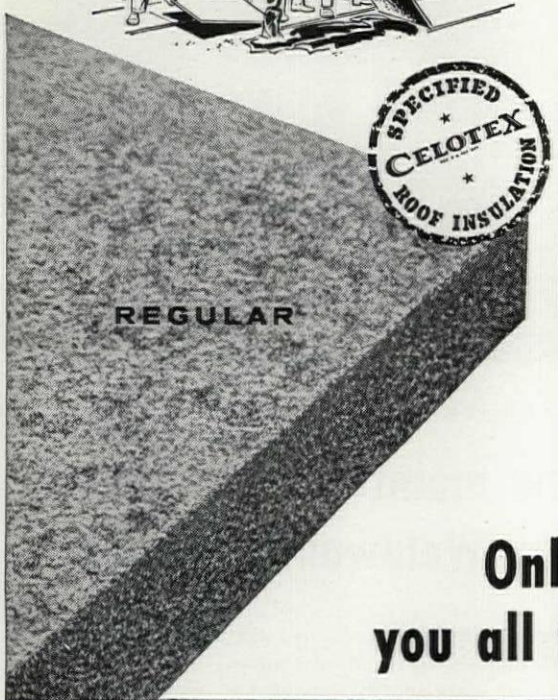
Firm .....

Address .....

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



A job-proved type for every roof insulation job!



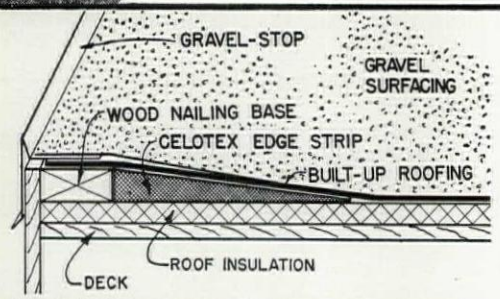
1. PRESEAL—Asphalt coating on sides and edges protects against moisture pickup at job site; also provides excellent surface for mopping and bonding to deck or felt with either asphalt or pitch.

2. REGULAR—For 35 years the recognized standard in roof insulation where lowest cost is important. Meets or exceeds all applicable Specification Standards. Natural, textured surface makes strong bond with pitch or asphalt.

3. CHANNEL-SEAL—Asphalt-coated board featuring bevels on deck-side edges, forming a network of connecting channels across the entire roof area. Channels are means of equalizing air pressure between roofing and deck, thus minimizing any pressure build-up and hazard of roofing blisters.

All three products available in a complete range of Conductances (C-values).

Only the Celotex "Big 3" give you all these performance advantages!



NEW! **CELOTEX EDGE STRIP** for flat roof applications where no parapet wall or gutter exists. Helps control direction of drainage. Provides smooth, solid base for felts. Size: 4 ft. long, 12 in. wide; thickness tapers from 1⅝ in. to ⅛ in.

See 1958 Sweet's Architectural File, Catalog 10a-Ce.
Write for Specifications, Samples, Information Manual.

Rugged (mighty hard to damage!) • Clean-cut snug-fitting edges • Smooth solid base for felts • No worry about punctures or depressions that become weak spots under felt • Withstands heavy traffic • Strong, rigid, crush-resistant • Uniform density and thickness • Permanent, efficient insulation • Over 30 years job-proved service • Billions of feet in use

CELOTEX
REG. U. S. PAT. OFF.
ROOF INSULATION

THE CELOTEX CORPORATION
120 SOUTH LASALLE STREET, CHICAGO 3, ILLINOIS

SCHOOL'S ABSTRACT MURAL IN CERAMIC VENEER

depicts Greenwich Village activities in the arts and crafts for students. Huge polychrome terra cotta panel 11′ 2″ x 17′ 6″ was developed in Federal Seaboard's studio at the Perth Amboy, N. J. plant from quarter scale cartoon by artist John Murray Barton. Michael Radoslovich is the architect, Grayco Builders, the constructors of this Public School No. 41, West 11th Street, New York City. Federal Seaboard's colorful literature illustrating the versatility of Ceramic Veneer is available upon request. Also without charge, we will gladly furnish construction detail, data, color samples, and any other information involving Ceramic Veneer, the modern architectural terra cotta.

FEDERAL
SEABOARD
TERRA COTTA
CORPORATION

10 E. 40th St., New York 16, N. Y.
Plant at Perth Amboy, N. J.

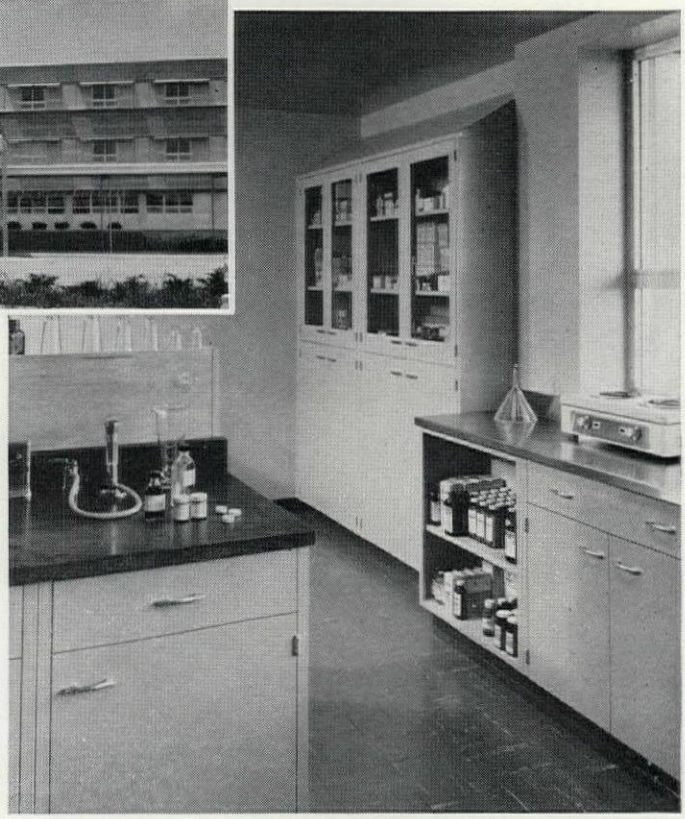
F S T C

Hospital Casework

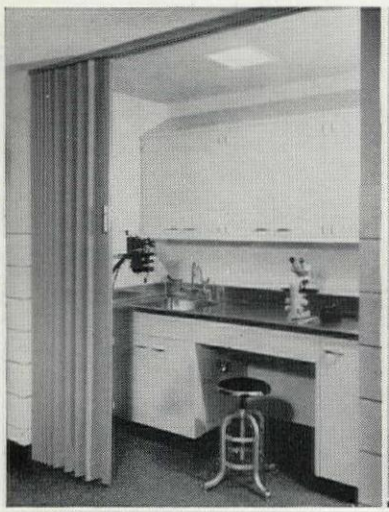
by *St. Charles*

At McDonough District Hospital,
Macomb, Illinois

Architect: Lankton-Ziegele-Terry and Associates

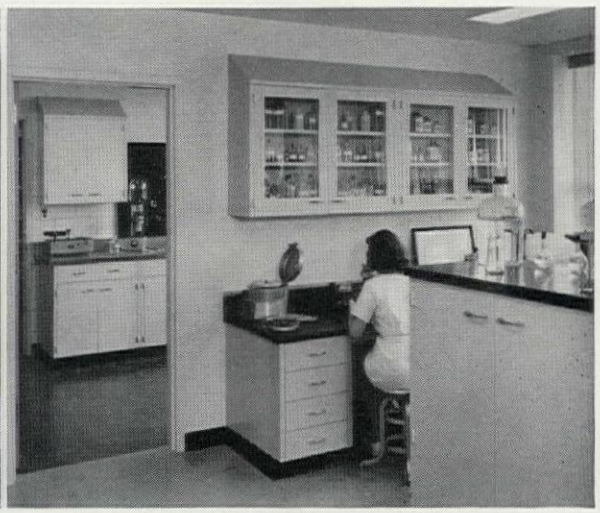


Pharmacy



Section Examination

Patient Wardrobe



General Laboratory

No two hospitals are alike, in that each has its own special requirements for equipment. Accordingly, when it became necessary to decide on equipment for the new McDonough District Hospital, the choice was St. Charles.

Throughout the hospital field, St. Charles is becoming known for its dependability and attention to details.

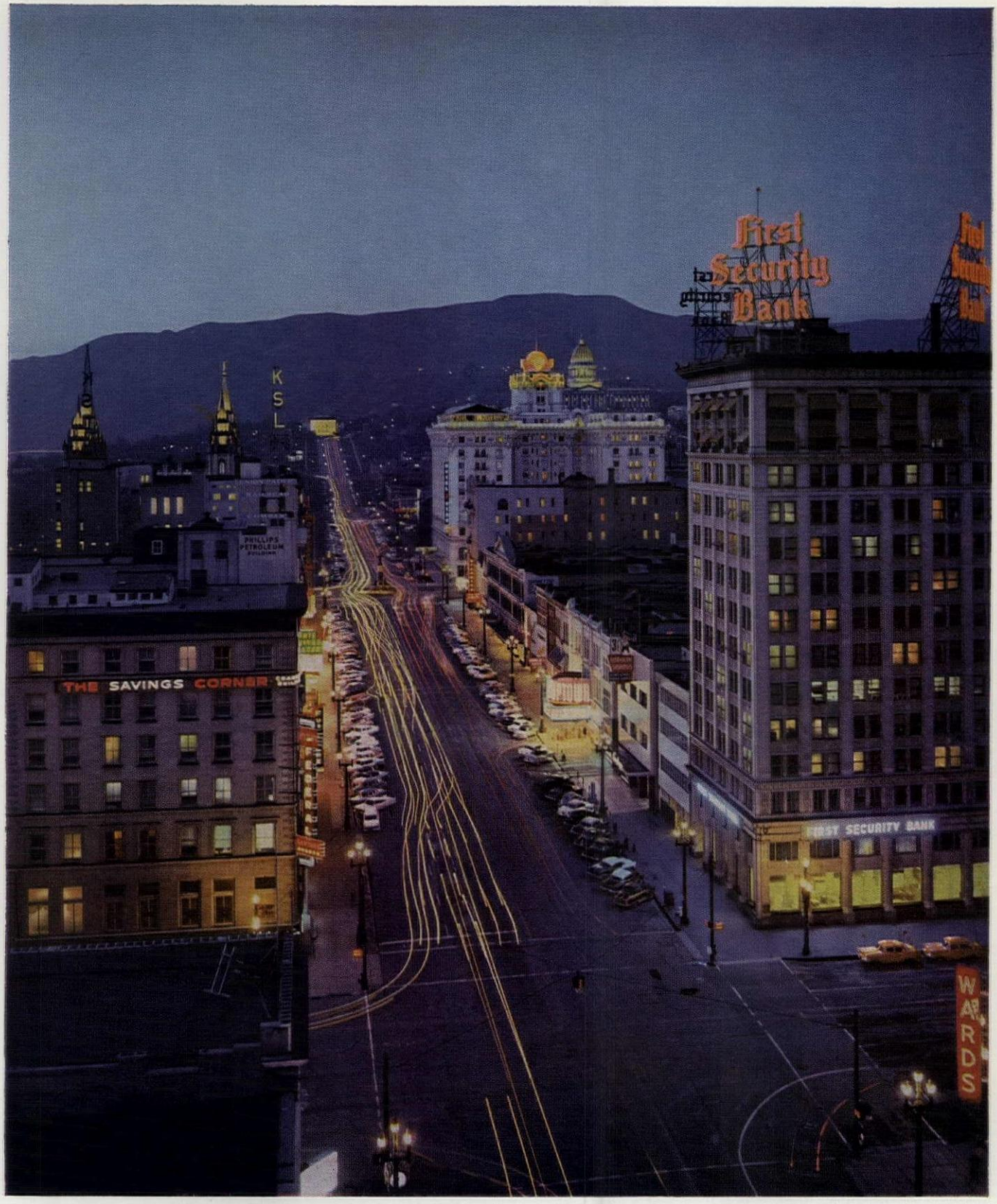
St. Charles' experienced men and modern facilities for manufacture are available to you . . . with competent help on casework applications and planning. Your request will bring a prompt response.

This complete catalog, "St. Charles Hospital Casework," is available at request on your letterhead.

StC

casework • sinks and counters • special purpose units

ST. CHARLES MANUFACTURING COMPANY, DEPT. PAH-9, ST. CHARLES, ILLINOIS



SALT LAKE CITY, *capital of Utah, began its unique history in 1847 when Brigham Young halted his determined group of 148 Mormon pioneers at Emigration Canyon and declared, "This is the place!" Today, Salt Lake City, in a beautiful setting at the foot of the Wasatch Mountains, is the largest city between Denver and the Pacific coast and a rapidly expanding industrial center in a region of rich natural resources. OTIS, the pioneer in providing and maintaining safe vertical transportation for passengers and materials, has fulfilled 76% of Salt Lake City's diverse requirements. This is to be expected of the leader. Outstanding value has made OTIS the accepted word for elevator quality in the cities of the world.*

OTIS ELEVATOR COMPANY
260 11th Avenue, New York 1, N. Y.
Offices in 501 cities around the world

AUTOTRONIC® OR ATTENDANT-OPERATED PASSENGER ELEVATORS • ESCALATORS • TRAV-O-LATORS • FREIGHT ELEVATORS • DUMBWAITERS
ELEVATOR MODERNIZATION & MAINTENANCE • MILITARY ELECTRONIC SYSTEMS • GAS & ELECTRIC TRUCKS BY BAKER INDUSTRIAL TRUCK DIVISION

Baker® industrial trucks

GENERAL CONTRACTOR: PAUL H. SCHWENDENER, 7553 SOUTH CHICAGO AVENUE, CHICAGO, ILL.

...now we're cooling with GAS

Specify Arkla-Servel Gas Air Conditioning and you specify years of trouble-free comfort

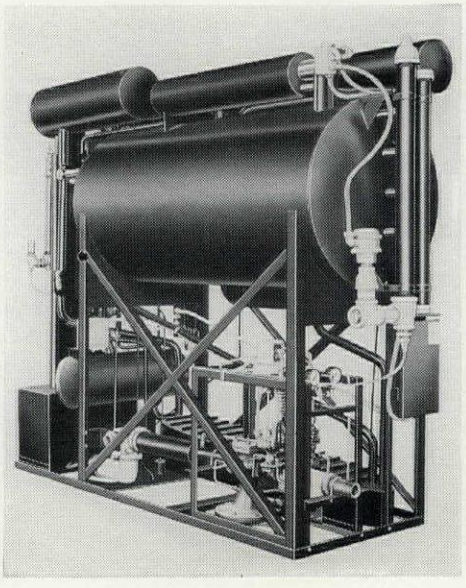
With their new Arkla-Servel Gas Absorptive Cooler, the La Grange Federal Savings and Loan Association keeps customers cool in summer with the same compact system that keeps them warm in winter.

Before installing Gas, a complete study was made of available air conditioning systems. The Arkla-Servel unit—the only 25-ton absorptive cooler—was chosen because it is compact, easy to install, and costs are low for installation, operation and maintenance. No specially trained operating or maintenance personnel are required.

Only Gas gives these important advantages:

- high efficiency at all times—even during the light loads
- temperature control is constant
- modular adjustment of capacity (instant automatic adjustment to match actual cooling requirements)
- dependability of fuel service at all times

Take advantage of the consulting services provided by your Gas company. They have trained specialists who have been working with architects and engineers for years. Check the facts and you'll see modern Gas air conditioning out-performs all other fuels. *American Gas Association.*



continuous LENGTHS... *motorized!*

Here is gymnasium seating that can give you up to 10% more seating capacity in the same floor area—that will greatly improve the appearance of your gymnasium—that is fully automatic!

New, exclusive Wayne-Weld design replaces conventional sectional seating with one sleek, sweeping expanse of seat, riser and footboards for the entire length of your gymnasium. Opens and closes with the turn of a key switch. This is truly a major seating advance for America's finest gymnasiums.

Never before such handsome, efficient gymnasium seating . . . one *continuous*, *motorized* bank of seating instead of the three, four, five, ten or more individual units of various lengths normally needed to fill a complete side or end of your gym.

More Seats in the Same Floor Area—Wayne's new continuous design eliminates gaps between units, adding up to 10% more seating capacity. Note how the new lengths also effect a more practical and eye-pleasing alignment of seats, risers and footboards.

When stands are closed, Wayne continuous vertical front design permits an unbroken sweep of rich wood patterns on gymnasium end or sidewalls for the most beautiful panelling effects ever created with gymnasium seating. The wood is fine-grained, highly splinter-resistant, deep color Philippine Mahogany or vertical grain Douglas Fir.

Greater Strength—New continuous lengths of seat, riser and footboards are Wayne-Welded, fully tested and guaranteed as strong or stronger than comparable sectional lengths of the same wood. No special understructure is required. Standard Wayne girder-bridge type supporting understructures are employed.

Motorized Operation—Wayne's fully-automatic motorized Rolling Gymstand system operates even the longest continuous section quietly, smoothly and efficiently. Turn a simple key switch and the section glides into position. No manual operation time, no jamming, ever! No special building requirements or special tracks.

A new rolling foot system provides 250% more floor support for spectator load than any other gymnasium seating, greatly increasing stability and distributing the load more evenly over the full depth of the structure.

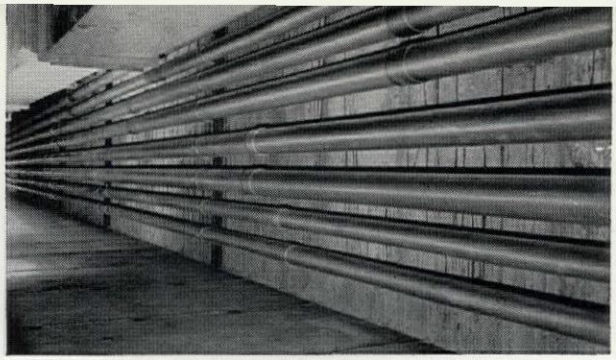
For increased seating capacity in your gymnasium, for outstanding appearance and maximum operating efficiency, look into Wayne's new Continuous design now. Here is more proof that Wayne builds Gymnasium Seating better.

WAYNE

WAYNE IRON WORKS, WAYNE, PENNSYLVANIA

Rolling Gymstands • Outdoor Grandstands • Folding Partitions • Basketball Backstops

Unbroken sweep! New Wayne Continuous Gymstands with Wayne vertical front styling and rich mahogany tones give gymnasiums impressive new look and feel of spaciousness; ***plus... still more seating capacity.***



Bank of Youngstown "Buckeye" Steel Conduit in tunnel of Carrier Administration Building will protect important electrical wiring for lifetime of the structure.

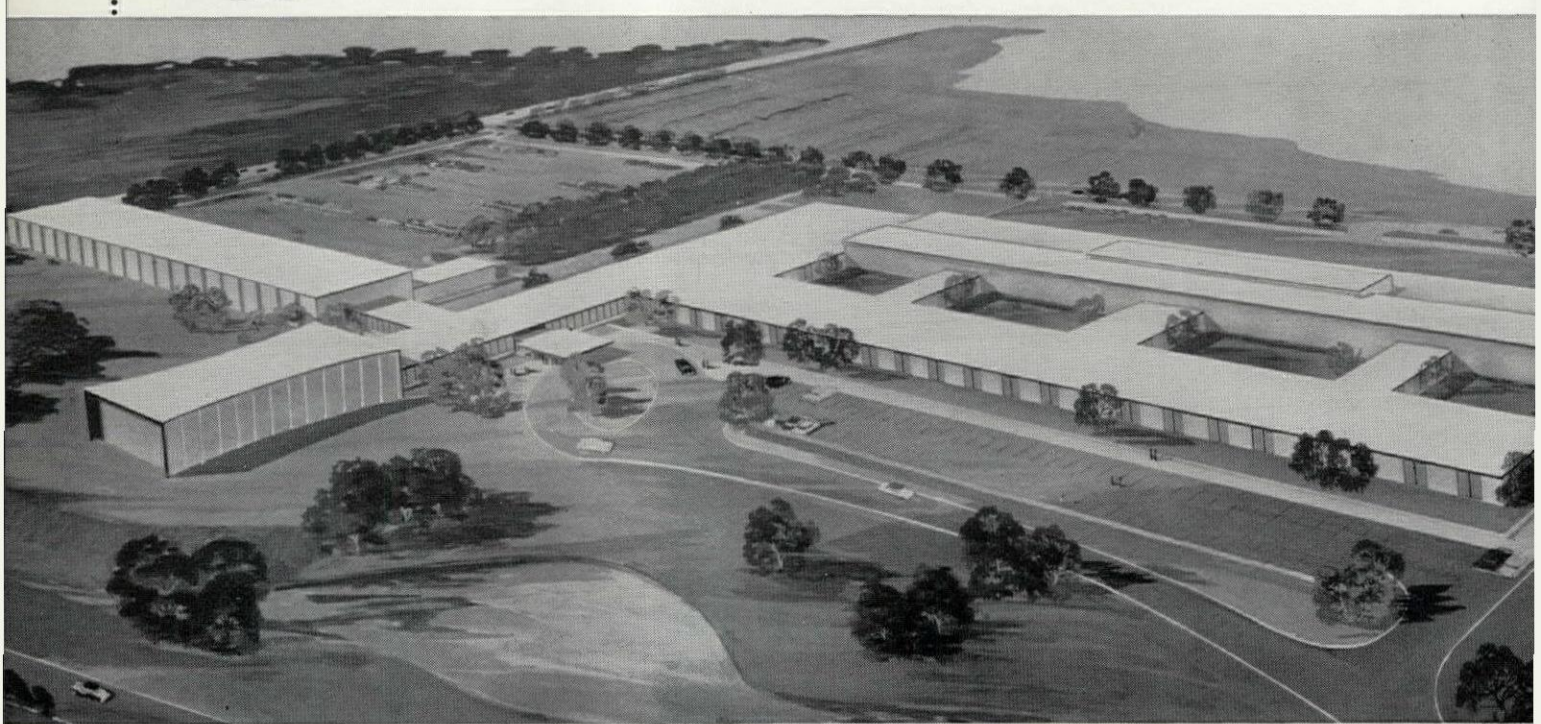
Accent on Excellence

Youngstown "Buckeye" conduit

This modern, highly functional Administration and Research Center located at Syracuse, New York was recently completed by Carrier Corporation, leading producer of air conditioning, refrigeration and heating equipment.

To guarantee against failure of the center's all-important electrical system, Youngstown Full Weight Rigid Steel "Buckeye" Conduit was selected to protect

Carrier



Administration and Research Center, Carrier Corporation, Syracuse, New York

ARCHITECTS AND ENGINEERS: Schmidt, Garden and Erikson
Chicago, Ill.

CONSULTING ARCHITECTS: Carson & Lundin
New York, N.Y.

ELECTRICAL CONTRACTORS: Bec Electric Company
Syracuse, N.Y.

CONDUIT SUPPLIER: Baldwin-Hall Company
Syracuse, N.Y.

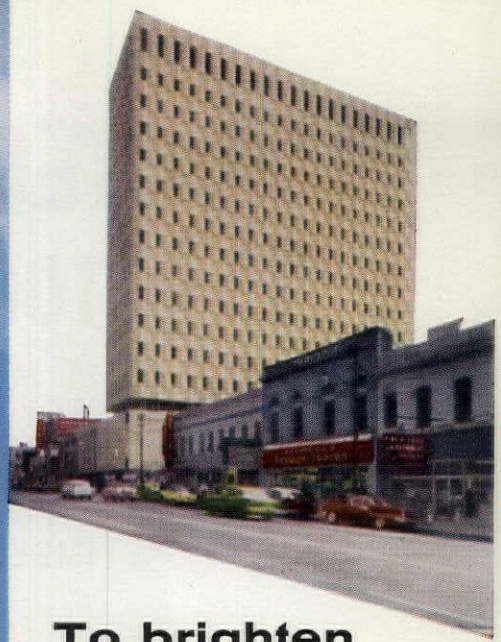
all wiring from damaging elements such as water, moisture, vapor, dust and dirt. That's because steel conduit is today's *only* method of wiring protection approved by the National Code covering all electrical installations.

When you specify "Buckeye" Conduit, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create electrical wiring systems with an "accent on excellence".

QUALITY YOUNGSTOWN SERVICE

THE
YOUNGSTOWN
SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel
Youngstown, Ohio



To brighten the face of an office building

You'll see more and more instances where precast architectural concrete facings add distinctive beauty – as well as strength and durability – to exterior walls. These concrete "curtain walls" can be quickly anchored in place, thus transforming framework into a finished skyscraper in just a matter of days. The walls shown here are made of Atlas* White cement, with color supplied by exposed quartz aggregates. There's a virtually unlimited range of surface textures and colors available – and concrete surfaces made with cement require little or no maintenance through the years.

Universal Atlas is a major supplier of cement, the modern, versatile building material that meets America's concrete construction needs. Universal Atlas Cement Co., 100 Park Ave., New York 17, N. Y.

Wachovia Bank and Trust Co. Building, Charlotte, N. C.
Architects: Harrison and Abramovitz, New York;
A. G. Odell, Jr., and Associates, Charlotte.
Contractor: J. A. Jones Construction Co., Charlotte.
Architectural Concrete Facings: Mabie-Bell Co., Greensboro, North Carolina.

UNIVERSAL ATLAS CEMENTS

ker of PORTLAND *and special cements* – **Universal Atlas Cement Company**

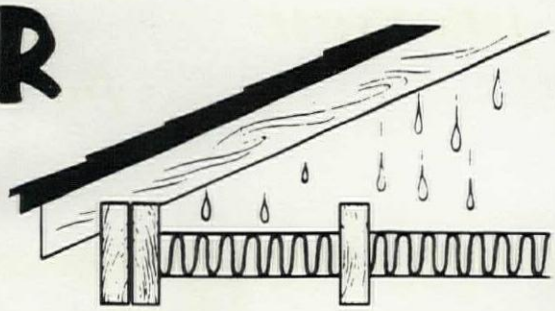
Subsidiary of **United States Steel**

USS

WATER BARRIER

ON TOP OF INSULATION

(in addition to vapor barrier below it)



PROTECTS against DRIPPING CONDENSATION

TIMBER ROT, PEELING PAINT, WET PLASTER, etc.

If water from vapor condenses on the **cold** underside of the roof in winter, drips onto a non-corrosive, continuous, metal barrier of *non-perforated aluminum* on top of the insulation, it will be retarded from soaking in and impairing thermal efficiency.

This metal is also almost impervious to vapor, and therefore insulates against timber rot – peeling paint – wet plaster – crumbling masonry – rust – insects.

There's always vapor, vapor everywhere—think of dew or frost on grass, or fogged-up windows or windshields. In winter there's also a flow upwards into the colder roof spaces from breath and perspiration, from bathing, heating, combustion, cooking, etc. An average family of four has an output per week of 152 lbs. of water vapor, or 76 quarts of water when condensed.

Vapor is a gas. Its density at 32°F is 1/205,000 that of water. It tends to flow to the cold roof or vents, if any, because the coldest area has the least vapor density. So the vapor will flow under pressure through timber, plaster, asphalt, paper, most other non-metallic building materials, openings, breaks between even closely butted insulations, past flanges—whether non-metallic or metallic, etc.

WHAT IS THE SOLUTION?

Insulation with non-porous vapor and **water barriers** on **top** as well as on **bottom,** made of genuine, *non-perforated metal* of almost zero permeability will drastically reduce most of these hazards. This barrier to water and vapor should be long and **continuous,** without breaks every few feet.

Such insulation is commercially available at competitive prices. Its scientific construction of multiple layers of aluminum, fiber, and air spaces also minimizes condensation on or within the insulation. It has relatively slight capacity for absorbing and storing water. It comes in lengths up to 500 feet.

Moreover, it is ideally constructed against heat escape in winter, heat inflow in summer. Its low density air spaces permit little heat flow by Conduction. Its metal surfaces have a heat Radiation reflectance of 97%, heat ray absorptance of only 3%. The layers of metal, fiber, and air spaces drastically reduce Convection.

Write for a free sample; for a DATA SHEET AND THERMAL CHART giving descriptions and thermal values of numerous non-metallic and metallic insulations. Also get a free copy of a most helpful National Bureau of Standards Bulletin, BMS 63, which discusses condensation in building spaces.

THERMAL VALUES* INFRA PARALLEL INSULATIONS
Non-metallic Insulation Equivalents†

	UP-HEAT	DOWN-HEAT	Cost§
TYPE 3	C .143=2⅓"	C .046=**7⅕"**	3½¢ sq. ft.
TYPE 4	C .105=**3⅕"**	C .038=**8⅔"**	5¢ sq. ft.
TYPE 5	C .081=4"	C .034=9½"	6¢ sq. ft.
TYPE 6	C .068=4⅘"	C .034=9¾"	7¢ sq. ft.
TYPE 9	C .043=**7¾"**	C .029=**11¼"**	12¢ sq. ft.

Types 1, 2, 7, 8 also available

*Determined by method of National Bureau of Standards in H.H.F.A. Research Paper 32.

†Calculated on basis of limiting thermal values cited in Fed. Specs. LLL-f-321b; HH-I-585; HH-I-521c; HH-I-551a.

§Average installation rate is 2000 sq. ft. per day per man.

CAN BE PURCHASED THROUGH YOUR PREFERRED LOCAL DEALER

Infra Insulation Inc., 525 Bway., N. Y., N. Y. Dept. P-9
Please send ☐ BMS 63. ☐ Samples
☐ Data Sheet & Thermal Chart

NAME_____

FIRM_____

KIND OF BUSINESS_____

ADDRESS_____

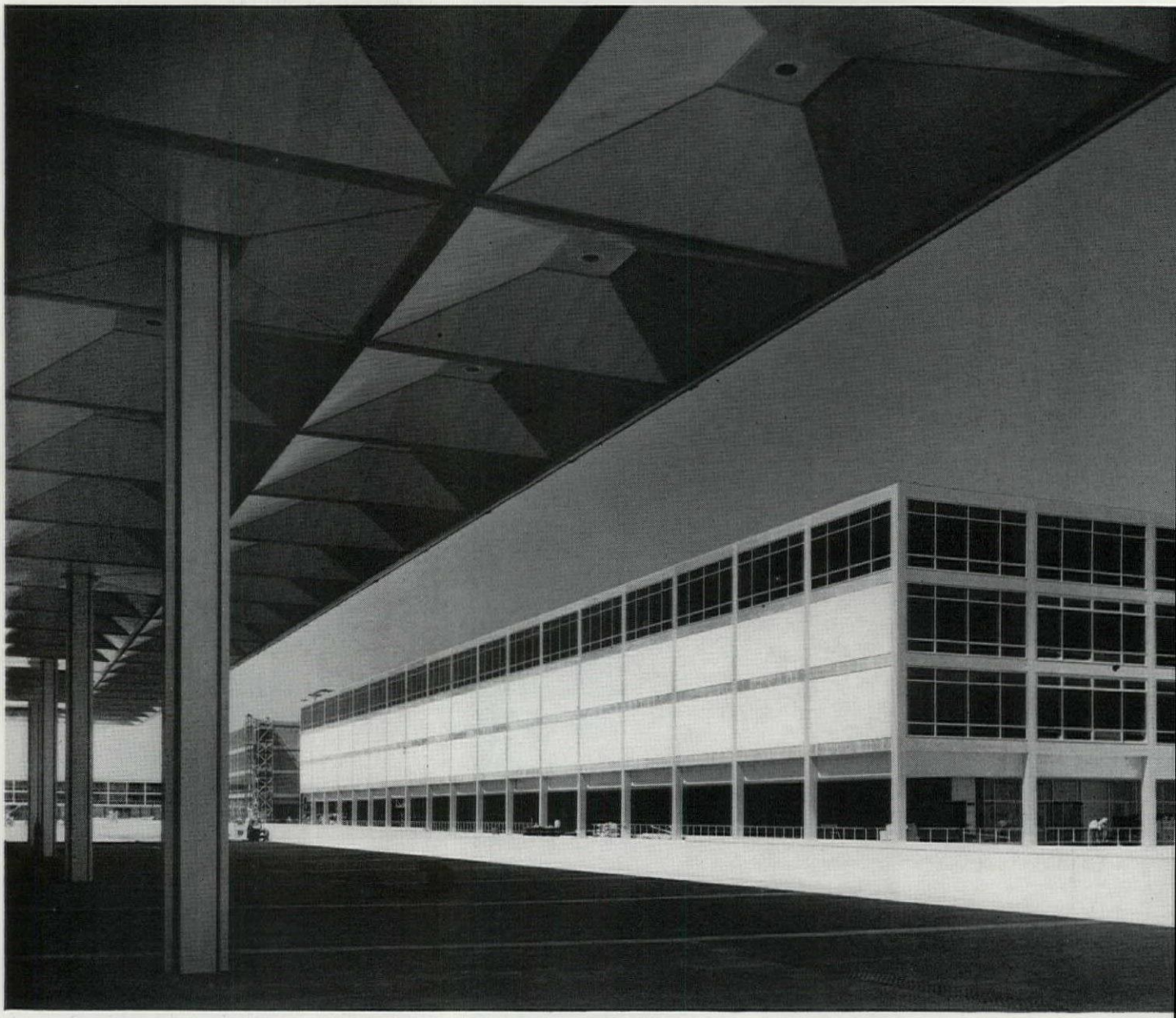
J. Alex Langley

REYNOLDS METALS OCCUPIES NEW HOME

To be formally opened this month in Richmond, Virginia, this sparkling new headquarters for Reynolds Metals Company was designed by Architects Skidmore, Owings & Merrill; Gordon Bunshaft, Partner-in-Charge. The building is classically placed at the end of a 65'x253' reflecting pool, bordered by willow oaks; Charles F. Gillette, Landscape Consultant. Aluminum, naturally, is extensively employed, though, as Bunshaft comments, "only where appropriate." Among exterior uses are column casements; door frames; entrance canopy; mullions; spandrels; and sun louvers. Inside the building aluminum was used for office partitions; acoustical and light-diffusing ceiling panels; moving stairways; file cabinets; office furniture; yarn in draperies and carpeting; and hardware.

Reynolds Metals Company

1

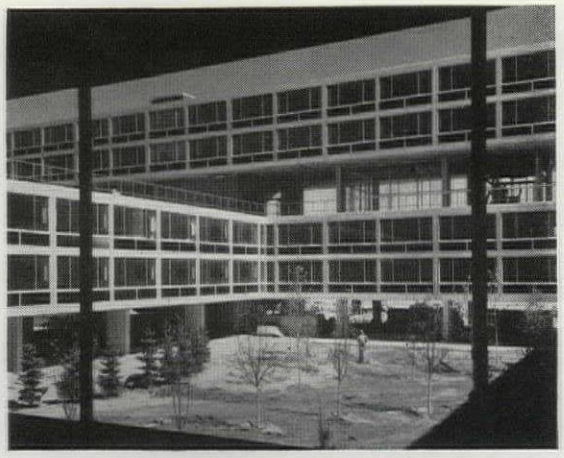


Burton H. Holmes

AIR FORCE CADETS ARRIVE AT NEW SITE

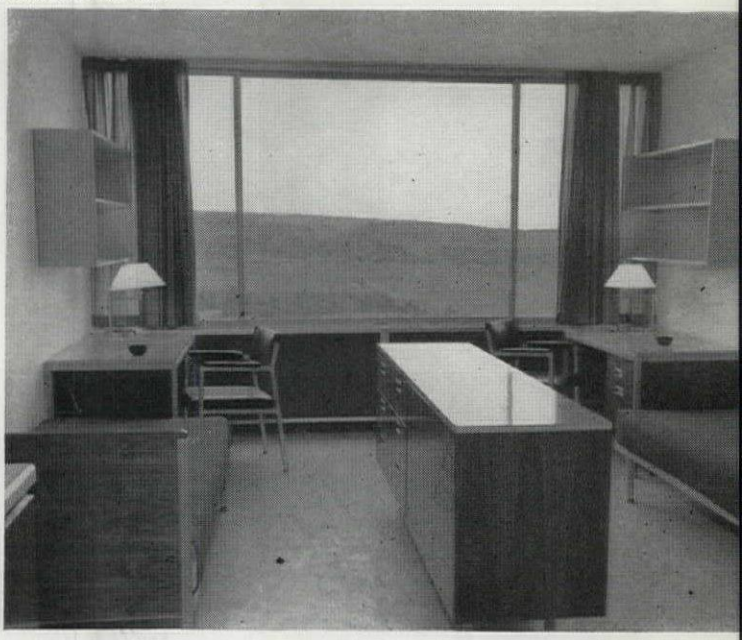
COLORADO SPRINGS, COLO., SEPT. 1 — Last weekend, 1160 Air Force cadets arrived from the interim Academy site at Lowry AF Base, near Denver, to occupy their new facilities eight miles north of here. Although the school becomes operational tomorrow, it will not attain full capacity—2520 cadets and a faculty of 360—until July 1, 1962. Approximately $95 millions of the presently authorized $114 millions for "pure construction" have been paid out—or about 85 percent of the building authorized by Congress has been completed. According to the Air Force Academy Construction Agency, more than the minimum essentials necessary to begin operations are now complete.

As the cadet approaches the north entrance to the site via U.S. Highway 85-87, he first becomes aware of the academic area established on a mesa approximately three miles to the West. After leaving the highway and entering the peripheral road encircling the site, his view of the Academy buildings is blocked for a time by intervening, rolling land covered with Ponderosa pine. When about one mile away, he again sees the principal buildings of the academic area, in greater detail. Continuing, the cadet soon arrives at the heart of the academic area, surrounded by structures that will be his principal shelter and work areas for the next four years as he is "motivated and dedicated" for a service career. Skidmore, Owings & Merrill, architects-engineers for the entire project, have located impressively long, modularly disciplined, steel-framed structures curtained with glass, aluminum, white marble, granite, and mosaics to define the principal plaza. (Site plan, JUNE 1955 P/A.)



2

Photos: H. LaPlant

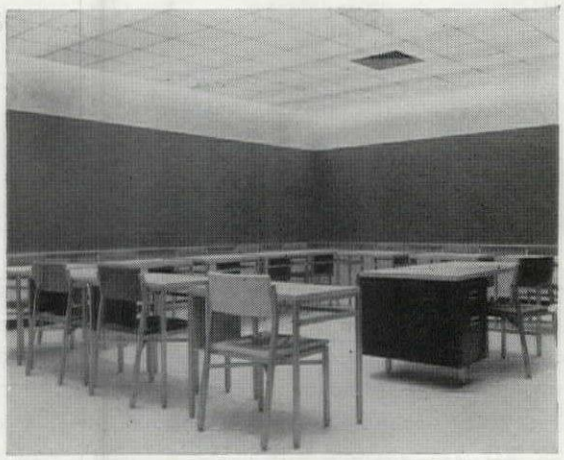


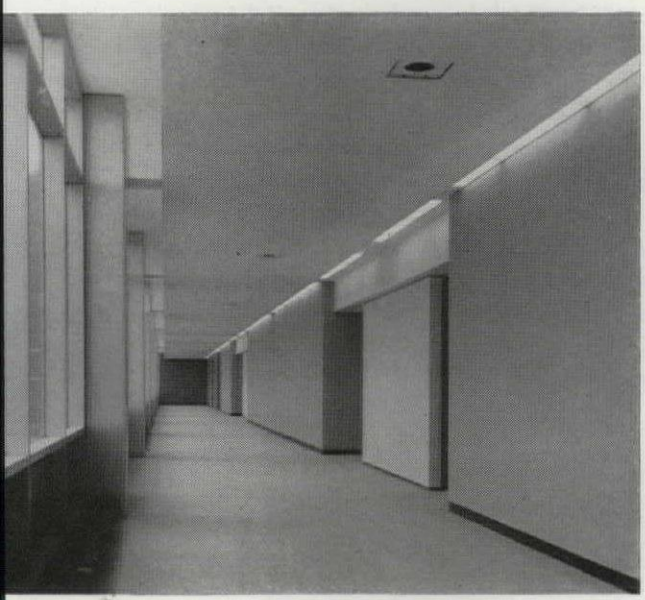
3

The academic complex, **1**, cadet quarters, **2**, and dining hall, **9**, are all in the final stages of construction. Extending for one-quarter of a mile across the northern segment of the academic area, the cadet quarters contain—in addition to 1320 two-man rooms—day rooms, facilities for private social activities, a small theater, dark room, store, and barber shop. All rooms have striking views—overlooking the foothills of the Rockies, or the plains to the East, or what are to be handsomely landscaped courtyards **2**. The quarters are provided with furniture designed by Walter Dorwin Teague Associates **3**.

In general, laboratories are on the lower levels of the academic complex **1**. Classrooms, on upper levels and planned in clusters of four or five (easily enlarged for special requirements), are especially suitable for small-group instruction **4**. The library and commandant's offices, in the northernmost part of the academic complex, have a unique, continuous, five-story concrete circular stairway providing one of the frequent elements of variety within the discipline of the modular-design concept **5**. A typical classroom corridor, which can be ventilated at the spandrel, is shown **6**; some are as long as 700 ft. An open corridor, encircling the building at the main plaza level, is one of the building's most dramatic uses of space. A lecture hall, seating 1000, and two smaller halls are also within the structure. The entire building is air conditioned.

4

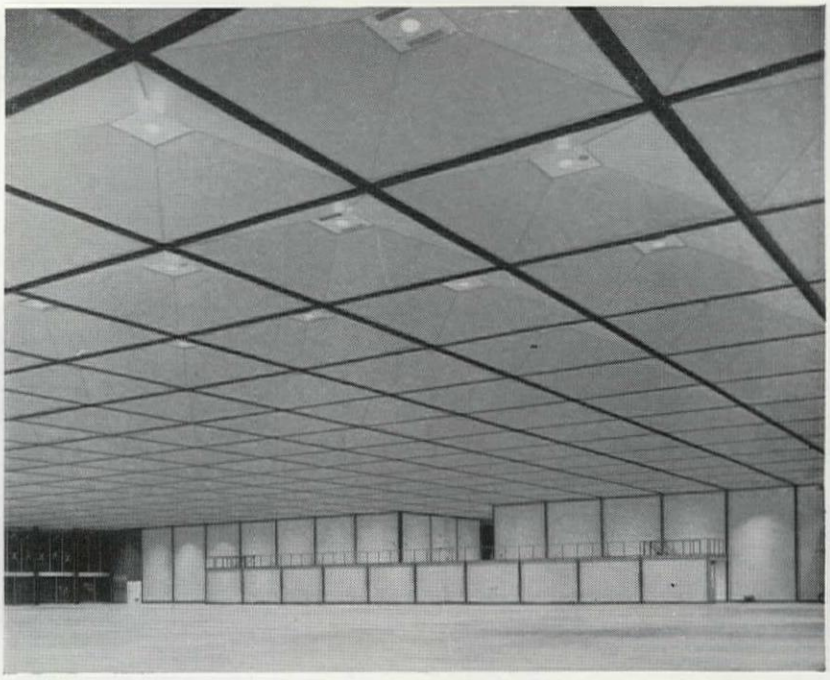




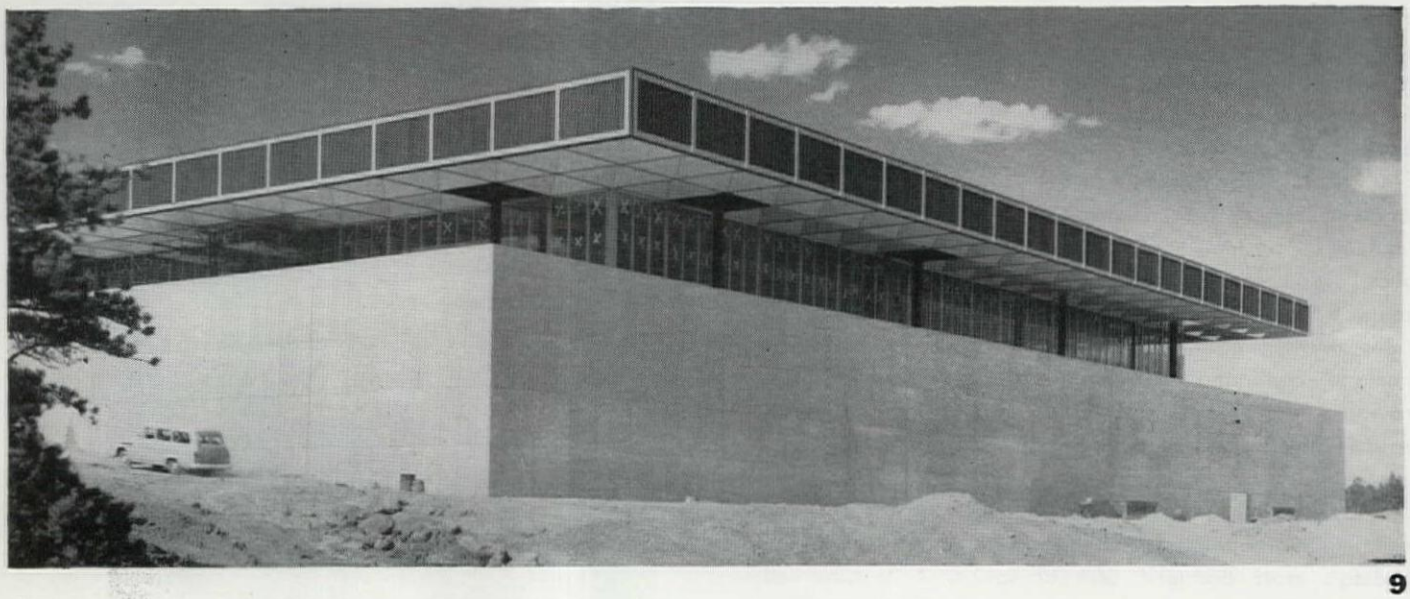
6

5

8



7

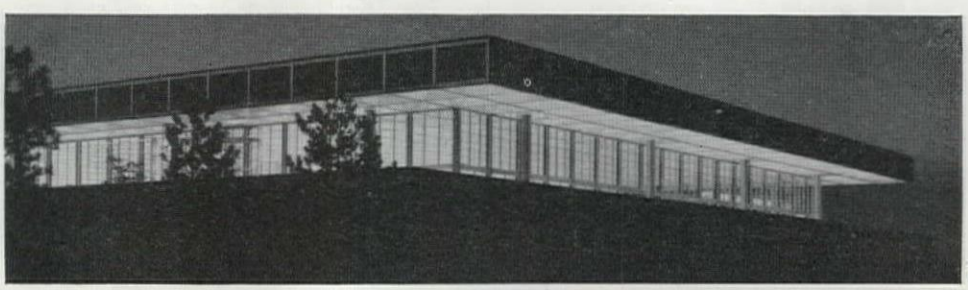


9

The huge square dining hall, having an uninterrupted, column-free space of 266 ft in one direction, **8**, can conveniently accommodate the entire student body at one seating. Its openness is made possible by a double-truss roof system cantilevered 28 ft beyond the base of the hall on all four sides **7**, **9**, **10**. Two kitchens with up-to-the-minute equipment and adjacent refrigerated-storage areas are on the lower level.

Other elements of the academic area (not shown) are the administration building fronting on the Court of Honor (73 percent complete); the cadet social center and theater seating 3000, to be finished next summer; the physical education complex having three separate gymnasiums (each capable of staging three standard basketball games simultaneously), two swimming pools, handball and squash courts, rifle ranges, etc. (45 percent complete); an aero-science building; and planetarium and museum (79 percent complete). The tri-faith chapel also facing the Court of Honor (SEPTEMBER 1957 P/A) and the hospital to be located on the next mesa to the south, although part of the original appropriation, have not yet been started. An air garden with fountains and reflecting pools designed by Landscape Architect Dan Kiley, will be planted just north of the dining hall. Playing fields (north) and parade grounds (east) surround the academic area.

Senior-officer area, Douglas and Pine Valley Housing, community center, elementary and junior-senior high schools, service and supply area (finished), and future air strip are in the southern half of the reservation and in various stages of completion.



10

p/a news bulletins

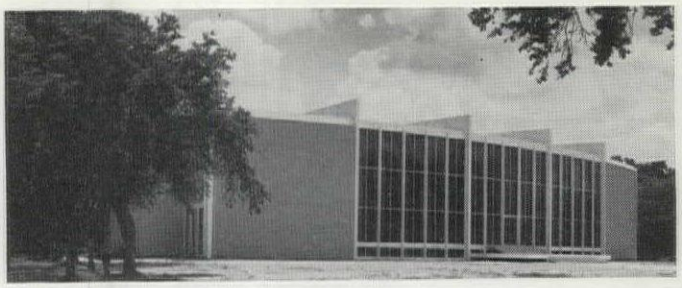
• Newest addition to Museum of Fine Arts of Houston, Texas—Cullinan Hall (right)—will open October 11. Designed by Mies van der Rohe, structure has 10,000 sq ft of exhibit space, and on the lower level houses four studios, research library, and storage rooms. Structural materials include buff-colored brick, gray-tinted plate glass, white plaster walls, with travertine marble and green Venetian terrazzo utilized in flooring. Future additions to the Museum include a two-story glass-enclosed gallery wing to create a sculpture court.

• Fullbright Predoctoral Fellowships offer an opportunity to students interested in carrying on comparative studies in housing and planning. Recipients to spend the academic year 1959-60 in the Netherlands at International Federation for Housing and Town Planning headquarters, The Hague, five miles from Technological University in Delft. Application forms from: Institute of International Education, 1 E. 67 St., New York 21, N. Y. or from Fullbright officer on a campus. Deadline for filing applications is Nov. 1, 1958.

• Fourth annual "Design in Hardwoods" competition held in connection with Hardwoods Exhibit at Chicago's Museum of Science and Industry, has been announced by J. P. Hamer, president, Hardwoods Exhibit Board of Directors. Awards and Honorable Mention Scrolls, to be presented at convention of Fine Hardwoods Association in Chicago in February, will be awarded in four classifications: production furniture, custom furniture, architectural installations, and "miscellaneous." Entries must be of completed projects or, in the case of production items, must be currently in distribution. Deadline for entries is Dec. 1. Entry blanks: Fine Hardwoods Association, 666 Lake Shore Dr., Chicago 11, Ill.

• Camera, Swiss photographic magazine, and International Asbestos-Cement Review, quarterly published by Editions Girsberger, Zurich, are inviting architects, photographers, and general public to submit high-quality photographs of new buildings in the construction of which asbestos-cement was used. For prospectus giving the conditions of competition, and a brief survey of architectural applications of asbestos-cement, write: Camera, C. J. Bucher Publishers Ltd., Lucerne, Switzerland.

• In this one-story library, covering some 29,700 sq ft next to the new City Hall in Palo Alto, Architect Edward D. Stone has achieved a functional and esthetic combination of steel, glass, and tile, to give maximum flexibility both indoors and out. Structural-steel framing served the dual purpose of lifting the structure to permit glass walls along its entire perimeter and to carry the weight of the heavy shake roof, which matches the City Hall. The pattern of pierced terra-cotta blocks surrounding the building as a patio screen, and repeated in the light-diffuser panels, serves as a light and wind barrier and also has an acoustical utility. Structural engineers were Pregnoff & Matheu, San



Francisco. Steelwork and structural steel were furnished by Golden Gate Iron Works, San Francisco, and Bethlehem Pacific Coast Steel Corporation.

• Manhattan's skyline will receive the touch of acknowledged masters through the panel of eminent architects collaborating in design of Grand Central City, the "world's largest commercial office structure" to adjoin Grand Central Terminal in New York. Planning the 50-story, 3,000,000

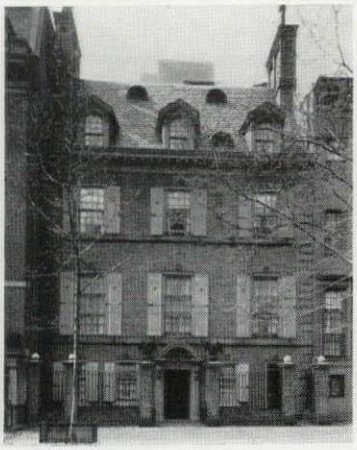
sq ft skyscraper, to cost $100 millions, are Pietro Belluschi, Walter Gropius, and Richard Roth, partner in the architectural firm of Emery Roth & Sons. Erecting the project is a group headed by Erwin S. Wolfson, board chairman of Diesel Construction Company, and including Herbert Scheftel, Stuart Scheftel, and Alfred G. Burger.

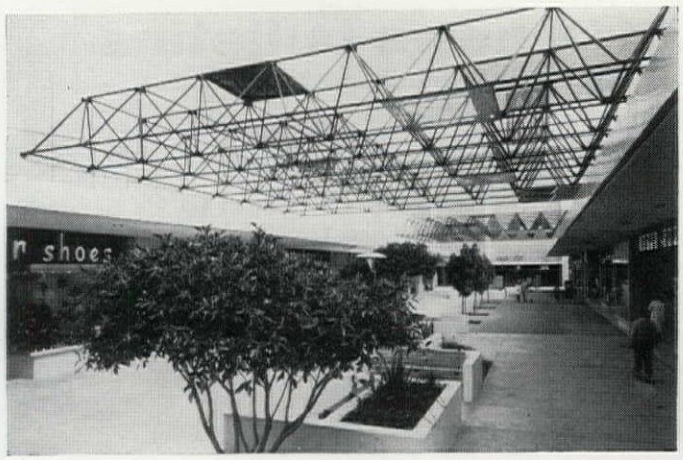
• Walter L. Gordon, practicing architect in Portland and formerly director of Portland Art Museum, has been named Dean of University of Oregon School of Architecture and Allied Arts. . . . Albert Christ-Janer has been named Professor of Art and Dean of the Art School, Pratt Institute. He is director of School of the Arts and Professor of Art at Pennsylvania State University, and was director of the arts center development at New York University. . . . Dr. Stephen P. Timoshenko, professor emeritus at Stanford University and authority on applied mechanics, will receive an Elliott Cresson Medal from the Franklin Institute of Philadelphia, Oct. 15. . . . William H. Scheick has been appointed Vice-President of Research and Development for Timber Engineering Company, research-engineering affiliate of National

p/a news bulletins

Lumber Manufacturers Association. Before joining TECO, Scheick was executive director of Building Research Institute and Building Research Advisory Board. . . .

• New New York headquarters of Welton Becket & Associates will be at 116 East 55th Street, in one of the last great town houses to be built in New York. It was designed in 1926 by William Lawrence Bottomley for the late William Ziegler, Jr., prominent New York businessman and philanthropist. Moving date is October 1. While building alterations are under way, the firm will continue to occupy offices at 11 West 42nd Street.





• The $12-millions Eastland Shopping Center at West Covina, California, was designed by Albert C. Martin & Associates, architects-engineers. Its unique overhead "space frame" decorative structure in the Center's Mall area, provided by Unistrut Products Company, is intended to create a sense of intimate scale in the area by defining height, as well as to carry out triangular theme of the center, and to throw shadow patterns of reflected color through transparent color panels. Constructed by May Company on a five-acre tract, the center has two levels, with 65 stores and shops, and May Company's own store of four levels.

• Charles Luckman, partner in firm of Pereira & Luckman, Los Angeles and New York, will present the keynote speech at the Fourth Annual Convention of the Prestressed Concrete Institute, to be held in Chicago at the Edgewater Beach Hotel, Sept. 21-25.

Washington report

by Frederick Gutheim

Whether the 85th Congress, which has just concluded its work, is one of the worst or one of the best depends not only on your political point of view but even more on your angle of interest. In terms of building, the Congress has done well. While it has stopped short of any national public works program, and has still to take any action to alleviate the shortage of school buildings, it has advanced such continuing Federal activities as housing, the Hill-Burton hospital program, and defense public works. But even more to the point, Congress has shown increasingly its ability to think independently and responsibly as never before.

• Building is leading the way out of the slump, indeed; but it is caught in the dilemma of increasing productivity and inflation. The rise in building costs, fear of which was used by Administration economists as an argument against expanded Federal building programs, now appears to have been an inevitable development. Locally, building costs are up since last year about 2.5 points on the Boeckh housing-cost index. National materials-cost increases, highlighted by steel, will be reflected in the next round of construction contracts let. The future economic picture is anything but one of rapid recovery. Pockets of unemployment will remain, both in specific industries and in particular geographic areas. This situation is expected to have profound political effects on the coming elections. If it continues, as I expect, it will also shape a number of actions by Congress next year.

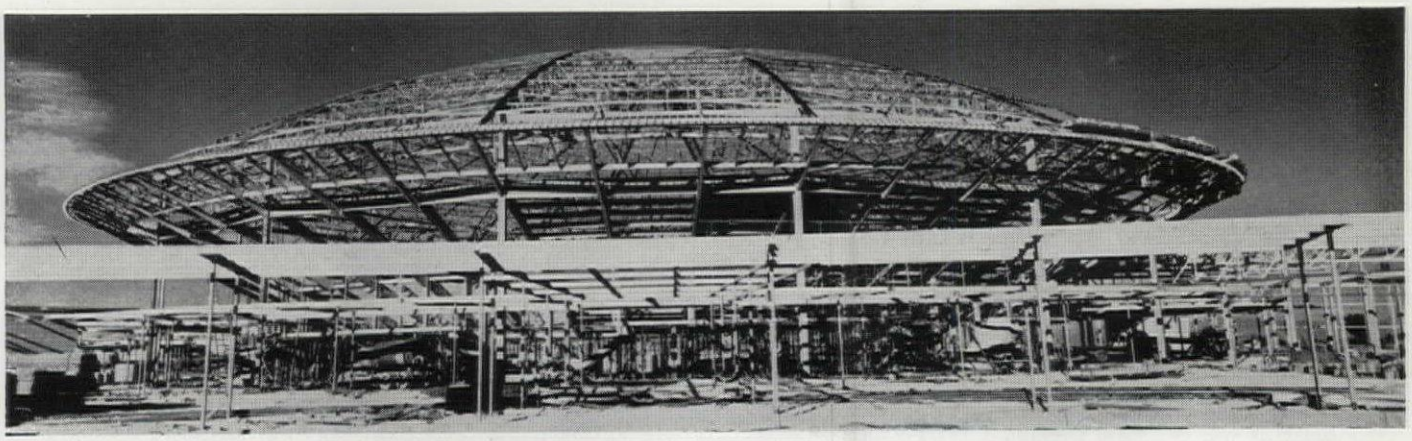
• New Federal building in Washington authorized by Congress will include one $14-millions unit in the Southwest Washington redevelopment area, and another just west of the Department of Health, Education & Welfare building. Both are general-purpose buildings, for undesignated agencies, and will house employes formerly located in temporary buildings along the Mall. Another important building development was authorization of $1.2 millions in planning funds to start the controversial Lafayette Square building. In debates on these measures, Sen. Warren G. Magnussen observed that the action really marked the end of the lease-purchase program of Federal construction. And, in effect, he added, it was good riddance because lease-purchase building was more expensive than direct construction. Let us hope that this argument is followed up by Congressional action on needed buildings rather than lead-

• American Hospital Association's Washington Service Bureau reports that $186.2 millions have been appropriated for medical facilities, with some $150 millions assigned to basic hospital construction.

• Structural clay products house to be built as part of Living For Young Homemakers "Basic Materials Research and Design Program," will be designed collaboratively by Prof. Roger Montgomery and Dean Joseph Passonneau, of Washington University School of Architecture, St. Louis.

• According to Architects-Engineers Adrian Wilson & Associates, $4\frac{1}{2}$ millions Las Vegas Convention Center, completion date set for February 15, 1959, is now running ahead of construction schedule. Air-conditioned throughout, the building will contain the most modern installations of electronics equipment for broadcasting, including closed-circuit television, separate viewing screens, and intercommunicating devices. Advanced lighting systems and engineering permit complete flexibility of use—for conventions, sporting events, and any variety of exhibits. The mushroom-shaped main building has an over-all length of 1000 feet, including the exhibit wing, and total footage will be 275,285 sq ft. Surface of the dome will be of anodized aluminum; special lighting effects will dramatize it at night. Dr. Vern O. Knudsen and J. S. Hamel were acoustical and illumination consultants, respectively.

• Ninth National Noise Abatement Symposium to be held at Hotel Sherman, Chicago, Oct. 9-10, will treat with problems of noise in industry. Sponsors are Acoustical Materials Association, Acoustical Society of America, American Industrial Hygiene Association, American Society of Planning Officials, American Society of Safety Engineers, Armour Research Foundation, National Noise Abatement Council, and Noise Control Magazine.



ing circuitously back to a situation where balking at capital outlay results in no construction.

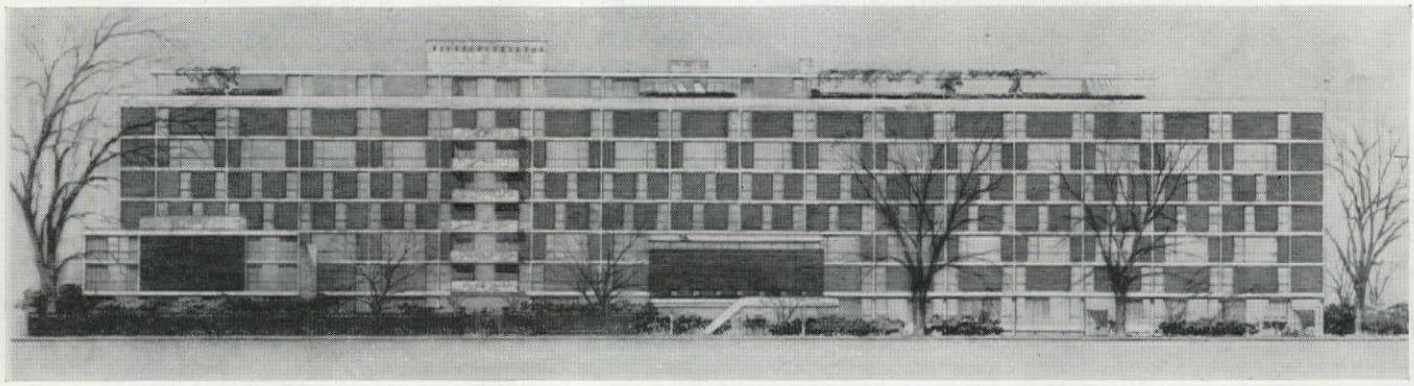
• Building surprise of the month was authorization of the new headquarters building of the recently created Space Agency. The architects are as yet undesignated. The building will be located on the grounds of the Beltsville, Md., agricultural center, 15 miles northeast of Washington, and will house about 650 employes.

Other locally significant actions by Congress resulted in the green light for a new, permanent, 258-bed hospital building at Bethesda Naval Medical Center, included in the $1.6-billions military-construction bill.

• At this writing, it is permssible to hope that favorable final action will be taken on the location of the much-studied Cultural Center for Washington. A 10-acre Federally owned site overlooking the Potomac between Georgetown and the Lincoln Memorial has been approved by the Senate, and has attracted the support of most local interests, including the AIA. The Center's proponents are confident that once a suitable site has been provided, construction and operating funds (estimated at about $25 millions) can be raised privately. The American National Theatre & Academy has also pledged itself to raise the funds needed to purchase a small additional piece of ground needed to round out the site. What this project now needs is a convincing set of hearings, probably to be scheduled next spring by the House Public Buildings subcommittee—and an inspired program and architectural design. Both should emphasize the national character of the undertaking.

• After the expert Gaither Committee has advised the President that a $22-billions 10-year civil defense program should be undertaken, the Administration's response now appears to be limited to the proposed $29-millions pilot program for fallout shelters. This would yield about 40 prototype shelters and an accelerated research effort to improve fallout shelter design standards, and incorporate them into the planning of new construction. More important, perhaps, is the trend of the entire program toward a wholly Federal character, and away from the stultifying and vague sharing of this Federal responsibility with state and local agencies. An Office of Defense and Civilian Mobilization has been organized in the Executive Office of the President, headed by Leo A. Hoegh.

• Washington-bound trippers, especially the millions of school tourists, might like to know there is an excellent official guidebook, available from the Superintendent of Documents, at the modest price of 30 cents. Prepared by the Department of Health, Education & Welfare as Departmental Bulletin 15, it is entitled, Know Your Capital City.

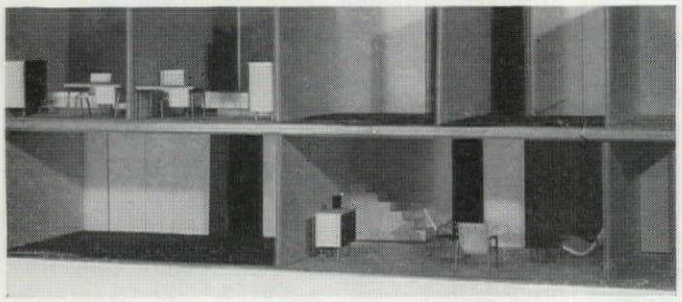


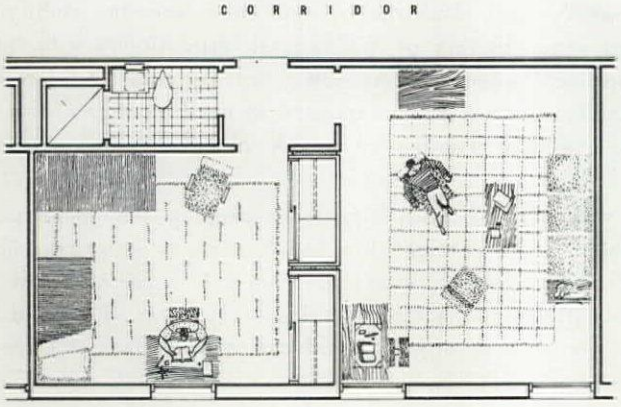
HARVARD BUILDS EIGHTH HOUSE

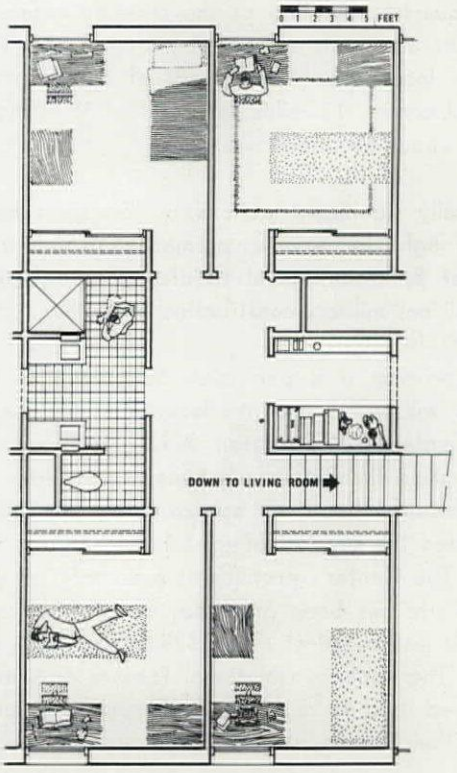
First new building to go ahead under The Program for Harvard College—Harvard's planned growth program for which $82,500,000 is currently being raised—is an additional all-inclusive residence hall: what is known at Harvard as a House. Designed by Shepley, Bulfinch, Richardson & Abbott, Quincy House (or Eighth House, as it has become known) will add certain planning innovations that have both improved and made less expensive the original House concept.

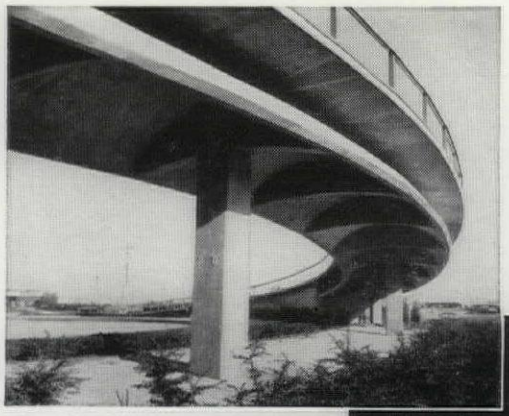
The basis of the program remained the college-within-a-college ideal, with the House containing dining space, tutorial rooms, and living space for tutors and a House Master. The planning change that has been made is to depart from the traditional dormitory "entry" system and adapt a version of the skip-stop corridor idea in the central portion of the building. The top six of the House's seven stories are divided into two groups of three-floor "sandwiches." The middle of the three floors contains living rooms (typically for four students) on either side of a corridor. Above and below this floor are bedroom-study floors, reached from the living rooms by internal stairs, and on the bedroom floors there are no corridors. Faculty offices and apartments for resident tutors are on the lowest floor.

Shown (above) is the west elevation; the House will be a concrete frame, cast-slab structure; red-brick screen walls providing integration with earlier "Georgian" Houses. Below are a cutaway model showing interlocking of living areas with bedroom-studies above; and plans of the typical four-man suite's upper level, and a self-contained two-man suite which occurs toward ends of the building.









Gateway TO THE STARS

Dramatic Concrete Ramp at New York International Airport Provides Graceful Access to Arrival Building

• "Gateway to the Stars"—at Idlewild Airport—is a curving reinforced concrete promenade which connects with a prestressed concrete bridge leading to the Arrival Building.

Imaginative and daring in design, this strikingly modern ramp, set on widely spaced concrete columns, skirts the edge of the broad circular reflection pool in a graceful sweep.

The bridge which leads through the 11-story control tower, is fabricated of prestressed concrete channel beams made with 'Incor'*, America's FIRST high early strength portland cement, and also utilizes widely spaced columns.

Well-integrated designs, coupled with concreting know-how, make this a quality job of highest order. Artistry in concrete has been achieved, plus an all-important economy that lasts for the life of the structure, making the most of today's construction dollars.

*REG. U.S. PAT. OFF.

NEW YORK INTERNATIONAL AIRPORT
Arrival Building Reflection Pool and Elevated Promenade
Owner: **PORT OF NEW YORK AUTHORITY**

Design
SKIDMORE, OWINGS & MERRILL (Building and Bridge)
Associate: **WALLACE K. HARRISON**
HERBERT FLEISCHER (Pool and Ramp)
All of New York City, N. Y.

Contractor: **TULLY & DI NAPOLI, INC.** (Bridge, Ramp, Pool)
Flushing, New York

Prestressed Bridge Beams
PRECRETE, INC. Flushing, New York
Soil Cement: **FRANK MAMORALE, INC.**
Glen Cove, New York

Masonry:
TEACO CONSTRUCTION CORPORATION (Pool, Ramp)
Bronx, New York

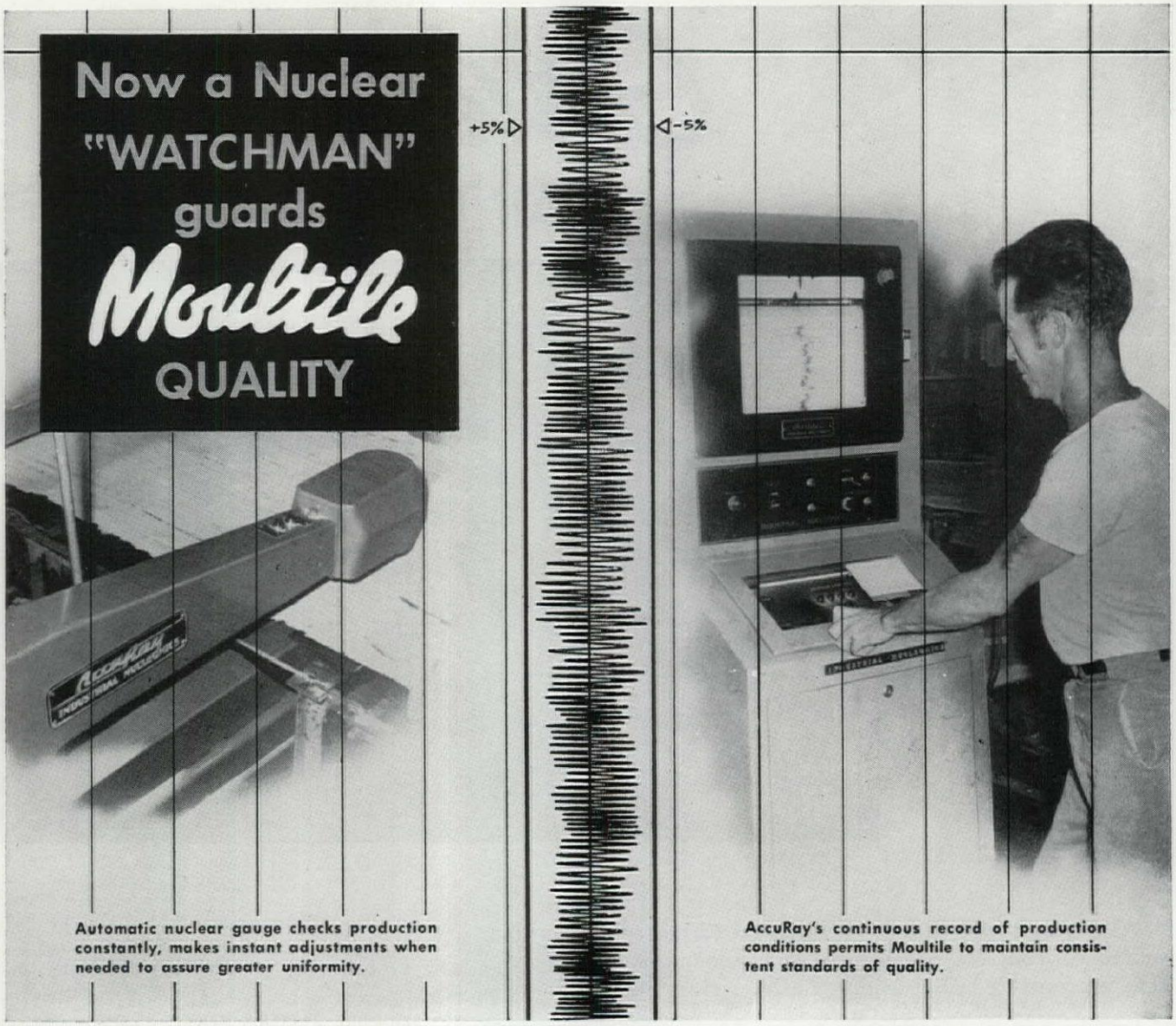
Lone Star Materials supplied by
COLONIAL SAND & STONE CORPORATION
GENERAL BUILDERS SUPPLY CORPORATION
Both of New York City, N. Y.

LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

Offices: ABILENE, TEX. • ALBANY, N. Y. • BETHLEHEM, PA.
BIRMINGHAM • BOSTON • CHICAGO • DALLAS • HOUSTON
INDIANAPOLIS • KANSAS CITY, MO. • LAKE CHARLES, LA. • NEW ORLEANS
NEW YORK • NORFOLK • RICHMOND • SEATTLE • WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 21 MODERN MILLS, 48,900,000 BARRELS ANNUAL CAPACITY



AccuRay® assures tile uniformity never before possible

Moultile uses peacetime atomic energy to revolutionize tile production and to bring you a product that nuclear science makes better than ever. AccuRay, by providing automatic density control, maintains thickness within a tolerance of plus or minus 1%. Such remarkable uniformity has never before been achieved in resilient tile.

In addition to continuous control of tile gauge, AccuRay also provides a tighter surface and improved dimensional stability for a uniformity of shrinkage which prevents off-square tiles. AccuRay serves to improve continually the quality of the tile and acts as a barometer of progress.

Another example of how Moultile's modern production techniques give you an ever-better product.

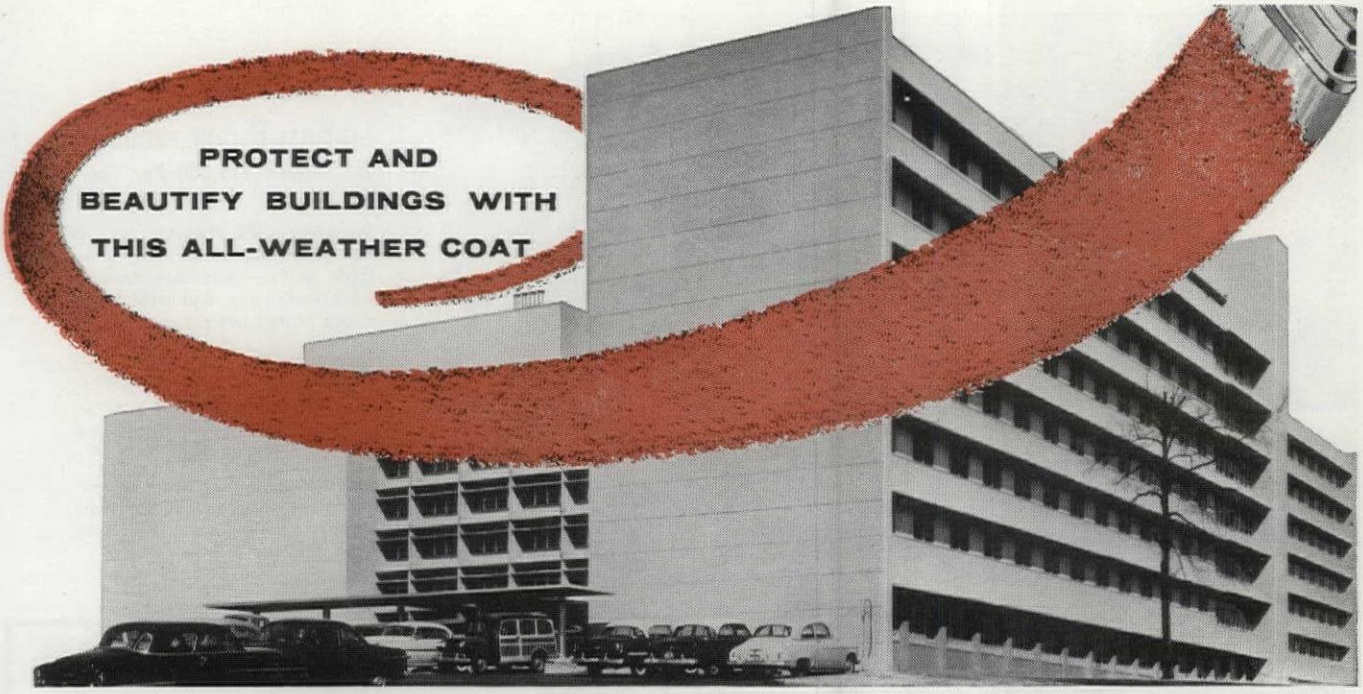
AccuRay T.M. REG. BY INDUSTRIAL NUCLEONICS CORPORATION, COLUMBUS, OHIO

MOULTILE, INC. Houston, Tex. • Joliet, Ill. • Long Beach, Calif. • Newburgh, N. Y.

Asphalt Tile • Moulflex • Jubilee • Moulcork

Moultile PRODUCTS SINCE 1929

A-62



HYDROCIDE®

COLORCOAT

The heavy-bodied, water-repellent masonry coating

You can dress up your building attractively with COLORCOAT. The extra thickness of COLORCOAT gives extra hiding power and extra weather resistance. This resin-base masonry finish decorates, protects and makes exterior walls water-repellent.

COLORCOAT'S decorative, textured finish increases the value of buildings old or new. Its toughness and long life cut maintenance costs. COLORCOAT is applied by either brush or spray —to stucco, brick, concrete and block construction.

- Contains Silicone to impart water-repellency
- Uniquely formulated to eliminate chalking, flaking and peeling
- Bridges hairline cracks and pores
- Permits walls to "breathe"—reducing possible internal condensation
- Can be applied over surfaces previously painted with oil or water-base coatings
- Bonds two ways—by adhesion of its resin base, and gripping action of reinforcing agents
- Gives lasting protection, plus a colorful, textured finish

A Product of Sonneborn RESEARCH

Since 1903 manufacturers of quality building products.

IN 10 BEAUTIFUL COLORS!
Mint Green, Desert Tan, White, Concrete Gray, Slate Gray, Tile Red, Old Ivory, Ranch Rose, Cloud Gray, Canyon Tan

MAIL COUPON FOR MORE FACTS!

L. SONNEBORN SONS, INC.
Building Products Division—Dept. PA-98,
404 Fourth Ave., New York 16, N. Y.

☐ I would like full information on how COLORCOAT saves maintenance costs on old or new buildings.

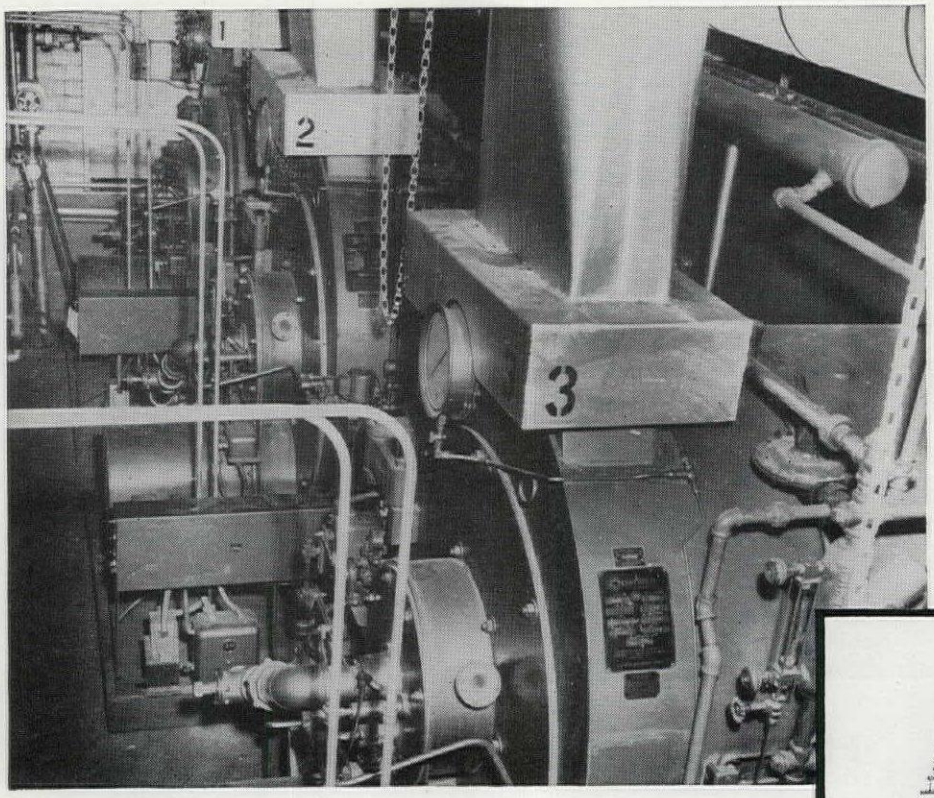
☐ I would like your Building Construction and Maintenance Handbook with 128 pages of important information.

Name.....Title.....

Company Name.....

Address.....

City.....Zone.....State.....

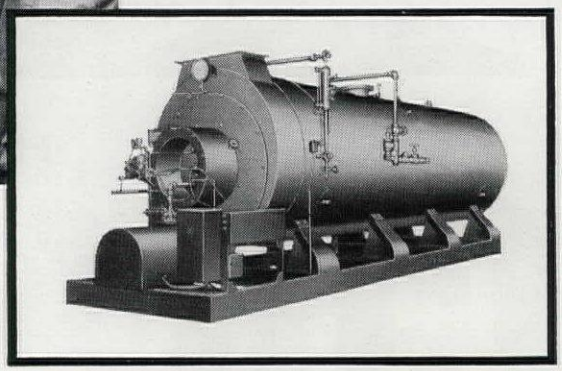


HERCULES-GALION PRODUCTS, Inc., Saves $15,000 Per Year!

Hercules-Galion Products, Inc., of Galion, Ohio, makers of dump truck bodies, ready-mix concrete truck equipment, and steel burial vaults, retired two old style boilers.

To improve heating efficiency, they installed three Cyclotherm 125 h.p. combination light oil/gas package steam generators. The total savings per year comes to $15,000.

As growing production or expanding plant facilities require more steam, Cyclotherms can be added when needed.



CYCLOTHERM

Steam capacity that grows with the plant!

When you recommend Cyclotherm Steam Generators you recommend a steam source that can be quickly and economically expanded to meet plant expansion. For Cyclotherm's wide range of capacities permits the addition of exactly as much new capacity as may be needed at any time. Will 518 lbs. of steam per hr. suit the requirements? That's what a 15 HP Cyclotherm produces. Or are 25,875 more steam lbs. per hour wanted? In that case, a 750 HP Cyclotherm fills the bill. And between these extremes there are sixteen intermediate sizes to choose from.

Compact Cyclotherms are also kind to boiler room space — the Cyclotherm is up to ⅓ smaller than the ordinary package boiler. Installation is easy—no costly stack, no excavation, no foundation. The Cyclotherm is shipped complete — ready to operate. Burner and boiler are built together to work together with *one* manufacturing responsibility back of the entire unit.

Cyclotherm's Cyclonic Combustion guarantees a minimum of 80% efficiency. Larger units operate at from 30% to 100% of rated capacity with no loss of efficiency. Smaller units operate on and off automatically according to load requirements. With simpler design and fewer parts, Cyclotherm reduces maintenance costs by from 30% to 50%. Cyclotherm's world-wide service organization gives prompt service on every call. For full information, write us today.

There are 18 Cyclotherm models, ranging from 15 HP to 750 HP. Burns oil and/or gas. The Cyclotherm meets all state requirements and is built in accordance with A.S.M.E. and National Board Standards and bears the label of Underwriters' Laboratories, Inc. Guaranteed against any defect in materials or workmanship. Cyclotherm also manufactures a complete line of Hot Water Generators in 10 capacities, from 670,000 BTU per hr. to 6,700,000 BTU per hr.

YEARS AHEAD IN STEAM & HOT WATER GENERATION

CYCLOTHERM®

STEAM AND HOT WATER GENERATORS

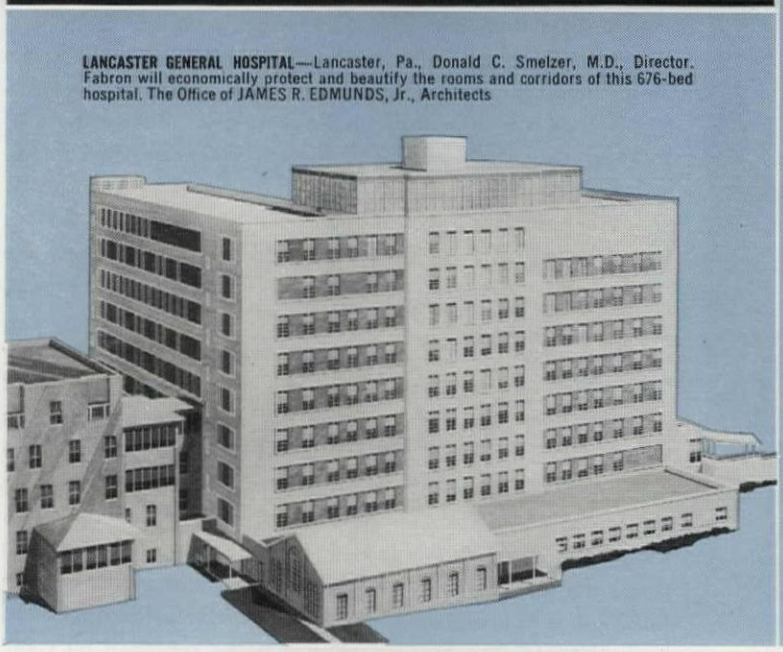
A Division of National-U.S. Radiator Corp., Oswego, N.Y.

Clip to Your Letterhead

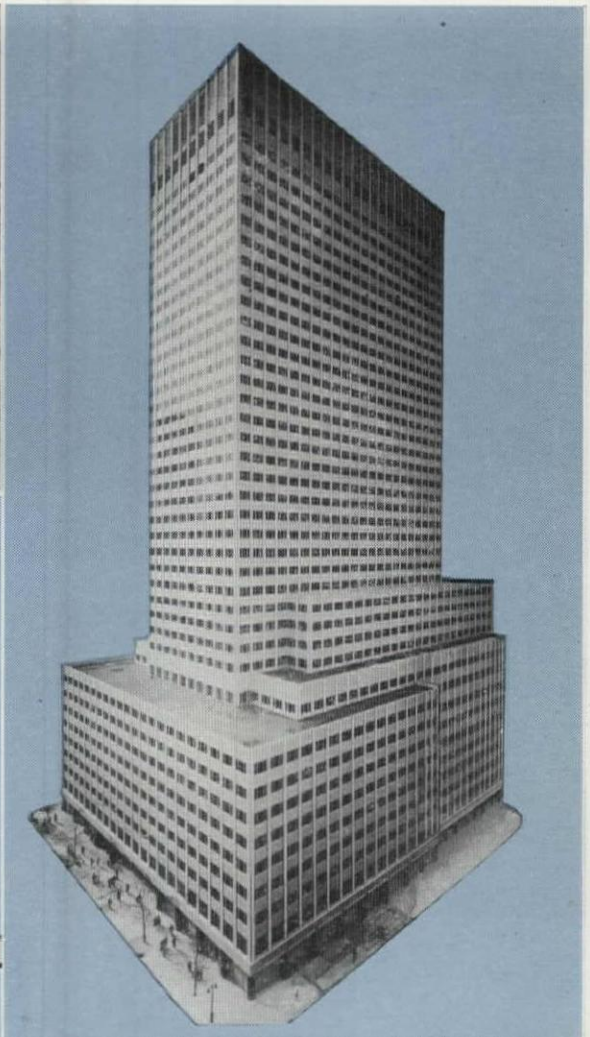
Cyclotherm Division
National-U.S. Radiator Corp.
58 E. First St., Oswego, N. Y.

Please send me your booklet *Cyclotherm Cyclonic Combustion*, also rotogravure copy of *Cyclotherm Sales Steam* with illustrations and descriptions of Cyclotherm installations.

natural choice for wall treatments



LANCASTER GENERAL HOSPITAL—Lancaster, Pa., Donald C. Smelzer, M.D., Director. Fabron will economically protect and beautify the rooms and corridors of this 676-bed hospital. The Office of JAMES R. EDMUNDS, Jr., Architects



TISHMAN BUILDING—New York, N. Y. New Fabron is being installed in the corridors of this building to minimize overall upkeep costs and simplify future maintenance problems. CARSON & LUNDIN, Architects

pure vinyl, fabric-supported wall coverings

new FABRON®

new PERMON®

Today, more than ever before, where you find walls, you'll find new Fabron and Permon! For important buildings everywhere—whether new, old or in construction—more and more owners, administrators and architects are specifying new Fabron and Permon for dramatic styling, low maintenance, durability, and true long-term economy. Check their outstanding advantages against the obsolete and money-wasting properties of conventional wall treatments:

- Striking decorative beauty
- Glass-like washability
- Unsurpassed colorfastness
- Positive plaster-crack protection
- Safety from fire and toxicity
- Remarkable resistance to abrasion and impact damage
- Record-breaking durability
- Low initial cost and maximum long-term economy

All-New *Vinyl FABRON* with exclusive 3-ply construction*—resists everyday wear and tear.

All-New *Vinyl PERMON* heaviest vinyl made—protects lower wall areas exposed to excess abuse.

Send today for complete information on new Fabron and Permon vinyl wall coverings.

*A Toscony Process

FREDERIC BLANK & COMPANY, INC., 230 Park Ave., New York 17, N. Y., *Established 1913*

p/a financial news

by William Hurd Hillyer

Stock-market pundits who advise the buying of corporate securities "as a hedge against inflation" are likened by a well known monetary authority to Tibetan monks who turn repetitive prayer-wheels. Speaking recently before the New York Society of Security Analysts, Franz Pick of Pick's World Currency Report contends that stock-and-bond protection is illusory because corporation reports are measured with "a rod of steadily shrinking size," to wit the dollar. Granting this expert's thesis, it would seem that the nearest to an inflation hedge is real estate with its basic tangible value, its present and potential improvements, and its inherently limited supply. Recognition of this fact may have prompted the current heavy investment in land and buildings, particularly by financial institutions. The architect's position in the nation's economy is further strengthened and his arguments for new construction are reinforced.

Land in general is giving a good account of itself. According to the Federal Reserve Bank of Chicago the bright spot in the economy continues to be the agricultural sector. In the first half of 1958, the farmers enjoyed a "realized net income" 22% above that of last year—the best showing since 1953 and reflecting a $13.3 billions annual rate. Largely as a result of this cash influx, plus a bumper wheat crop, the demand for better and more commodious farm buildings is opening up a vast field hitherto seldom invaded by architects. The reason: wood is being replaced by steel. Trussless steel is finding favor for agricultural structures to which it has proved as well adapted as in the realm of industry. A leading manufacturer of such products reports a six-month rise of 30% in his sales for the '58 half year, as compared with the corresponding '57 period. A similar increase is expected for 1958 as a whole.

• "Not slower than Majesty moves" with pace unperturbed by frenzied Washington efforts to hasten it, the economic cycle, that ponderous entity, has begun a leisurely upswing precisely according to schedule (see recent issues of P/A). Business statistics already reveal an encouraging reversal in trend. Plus signs predominate in Dun & Bradstreet's latest available reports as we go to press. Steel-ingot production rose 6.6% above the preceding week, having gained 4% in the week before that; corresponding increases for bituminous-coal output were 3.5% and 74.8%; the like figures for freight-car loadings were 4.4% and 18.5%. Small minuses were registered by bank clearings and wholesale food prices.

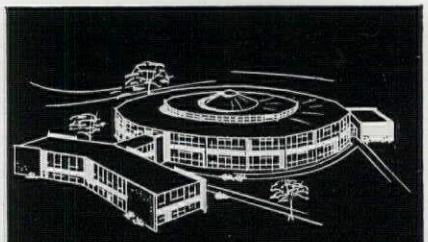
• A novel approach to the economic outlook for this fall is furnished by Chase Manhattan Bank in its study of the recently established Common European Market. EEC (European Economic Community) now has six treaty signers

—Western Germany, France, Belgium, Luxembourg, Italy, and the Netherlands. Negotiations are under way with United Kingdom and other Western European countries. This undertaking is hailed by Chase as potentially "one of the most significant economic events of all time," posing "a series of challenges and opportunities to U. S. business." The bank underscores the necessity of American manufacturers expanding their research facilities so as to overcome the handicap of tariff restrictions on incoming goods plus the lack of such restrictions between EEC participants. This aspect of the survey points to an increased demand for architecturally correct office buildings in America to house additional research facilities, rather than for purely industrial units less interesting to the architect.

• Pellets of optimism for the profession: Fanny May (FNMA) has $150 millions fresh money available, to support the mortgage market and spur a three-quarter-billion housing program, much of which is materializing without her aid; nonfarm dwelling starts are back to 1955 levels, running 5000 units monthly ahead of '57; Mutual Savings Bank deposits nationwise increased one-and-a-third billions dollars during the first six months of this year as compared with $876 millions in the like period of '57—a quarter billion a month going currently into mortgages, the fastest pace of increase on record; First National City Bank of New York believes an upturn is in the making, coincident with second-quarter recovery of gross national product to an adjusted annual rate, some $2.2 billions above first-quarter figures; commercial and industrial failures are below one number for this time last year or the year before.

• Despite heavy Federal financing, the municipal-bond market continues to be a massive source of funds for public architectural undertakings, with schools as the largest category. Three Los Angeles School District issues, due in 1983 and totaling $40 millions, were floated by banking syndicates last month on a 3½% income basis. The Bond Buyer yield-level, however, reflects a slight weakening of the market following the international flare-up. Dealers are favorably impressed by the large number of relatively small orders for bonds, indicative of broad distribution.

• The second half of '57, as foreviewed by the First National Bank of Chicago at its semi-annual panel of business leaders, will in all likelihood enjoy an improving economic climate. The recession's rate of decline, says Bank Board Chairman Edward E. Brown, is now lessening and may end decisively by 1959. He sees no sign as yet of the "spiraling" that is still dreaded in some knowledgeable quarters. James R. Price, Chairman, National Homes Corporation, expects a decline of less than 2% in the rate at which new construction is put into place during the last six months of this year. Public building, on the other hand, "will be strong in trend" with an anticipated 10% upturn. Inland Steel's Pres. Joseph L. Block reports that inventories have been drastically reduced and that during the fourth 1958 quarter there should be a substantially accelerated pace in that industry.



Mt. Morris High School, "The Magic Circle School of Tomorrow", Mt. Morris, Mich.

Center of Activity:

9,200 sq. ft. Edge-grain Ironbound Floor, $33/32$" thick, Dri-Vac treated and laid over cork in Mt. Morris High School gymnasium. Architects: Belli & Belli, Chicago. Installed by Whitcomb-Bauer Flooring, Inc., Detroit.

IRONBOUND* CONTINUOUS STRIP* HARD MAPLE FLOOR

All activity at the striking new Mt. Morris High School centers around the gymnasium. Surrounded by classrooms and situated between two wings, the gym is the focal point of the entire structure. Therefore the type of gym floor chosen for this area was especially important. A Northern Hard Maple floor was a must because of its bright, natural beauty and smooth splinter-free surface. In addition, the floor had to be shock-absorbent and uniformly resilient. An Ironbound floor not only meets all these requirements, but it offers much more to preserve the original condition of the floor.

Since the gym floor is below grade, edge-grain Ironbound was chosen because it will expand and contract less than other floors under difficult moisture conditions. The individual slats will remain smooth and tight, bound together with long, barbed steel splines. For extra protection against moisture absorption, the flooring was vacuum-treated by the Dri-Vac process. The treatment will also protect the floor against rot, fungus, and termites.

If you have had problems with excessive expansion and "cupping" of gym floors, perhaps an edge-grain Ironbound floor is the solution.

For information and name of your nearest franchised installer, write Robbins Flooring Co., Reed City, Mich., Attention: Department PA-958.

T.M. Reg. U.S. Pat. Off.

ROBBINS FLOORING COMPANY

Reed City and Ishpeming, Mich.

Manufacturers of Ironbound* Continuous Strip* Maple Flooring, PermaCushion* Resilient Floors and other hardwood flooring.

Call the man from Fenestra for

Apartment doors at the lowest installed cost!

Concealed within the sleek seamless beauty of this new Fenestra® Hollow Metal Flush Door is a rigid, rugged, welded structure that gives the door the strength to withstand years of tenant abuse. It's Fenestra's exclusive multi-rib reinforcement!

And, in addition to beauty and durability, you get the lowest installed cost because:

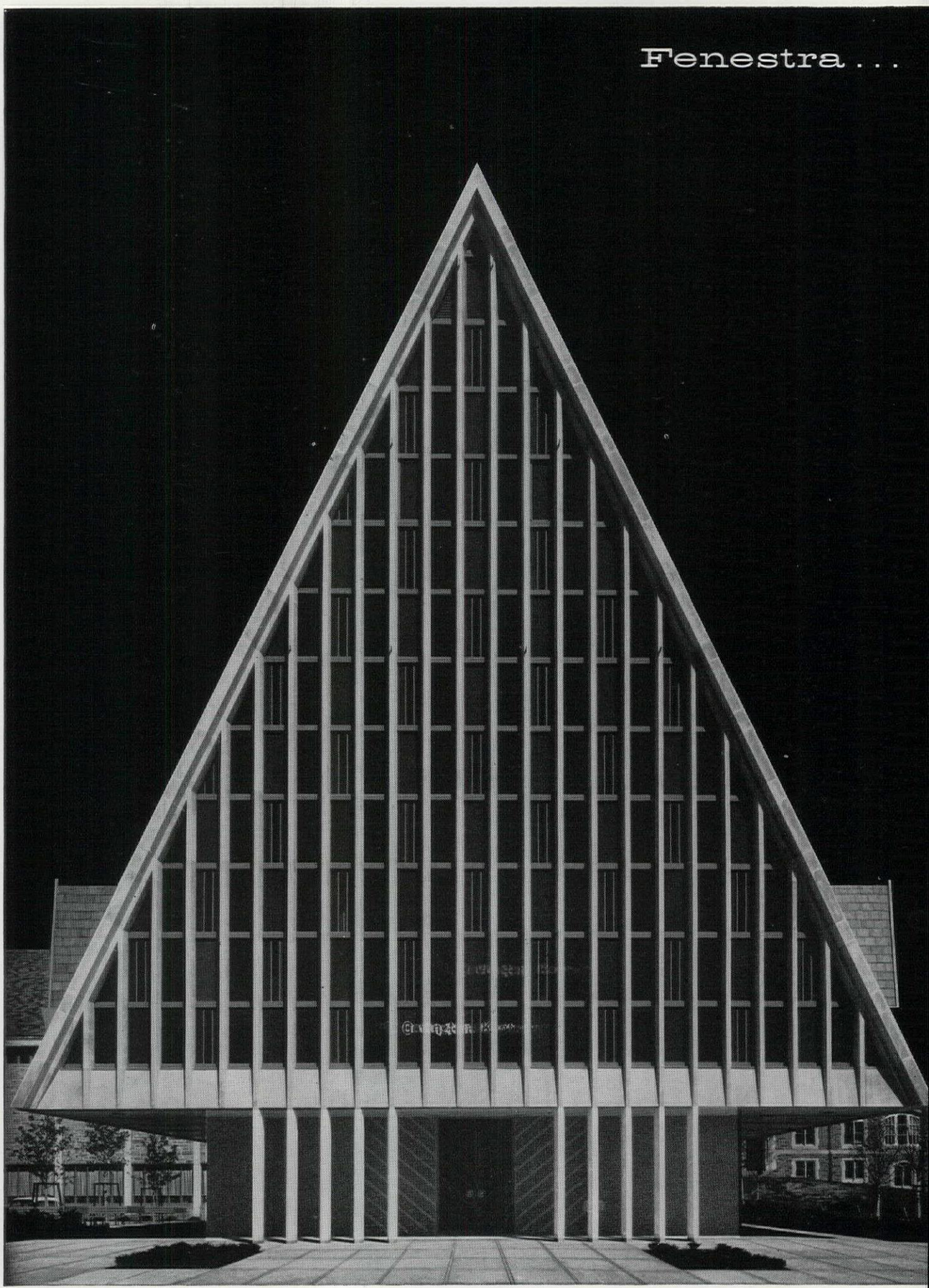
1. You buy a *complete package*—door, frame, hardware, completely machined at the factory to eliminate on-the-job cutting and fitting.
2. Erection is fast—one man with only a screw driver can hang a door in minutes after the frame is installed.
3. You have a complete selection of door types (1⅜″ and 1¾″) of distinctive designs and features—*all mass produced.* Custom quality at *stock* door prices!

Ask your Fenestra representative (listed in the Yellow Pages) to help you in your selection and specification of doors, frames and hardware. Or, write to Fenestra Incorporated, Dept. PA-9, 3409 Griffin St., Detroit 11, Michigan.

Let the man  *from Fenestra be your "door man"*

Fenestra HOLLOW METAL DOOR FRAME • HARDWARE UNITS

YOUR SINGLE SOURCE OF SUPPLY FOR DOORS • WINDOWS • BUILDING PANELS • CURTAIN WALLS


Fenestra . . .

Announces new custom engineered

Curtain Walls of Steel or Aluminum

Here's a bold and imaginative structure . . . an excellent example of how Fenestra® can take your building design—single story or high-rise monumental—and engineer, fabricate, deliver and erect the curtain wall . . . *as a package!*

You have a wide selection of steel or aluminum systems. A choice of subframes, windows and mullion patterns . . . a choice of vents including projected, vertical pivoted, double-hung, top-hung and casement . . . a choice of insulated panels, plain or embossed aluminum, or porcelain enameled steel. All materials, including the panels are produced by Fenestra. The *completeness* of the Fenestra line is a challenge to your creative design ingenuity.

Specifying and ordering curtain walls from a *single responsible source* saves you the time and trouble of searching out and fitting together components from various sources. Fenestra coordinates production, delivery and erection to eliminate confusion and save time and money.

Your local Fenestra representative can give you the details. Call him today—listed in the Yellow Pages—or write Fenestra Inc., Dept. PA-9. 3409 Griffin Street, Detroit 11, Michigan.

Fenestra

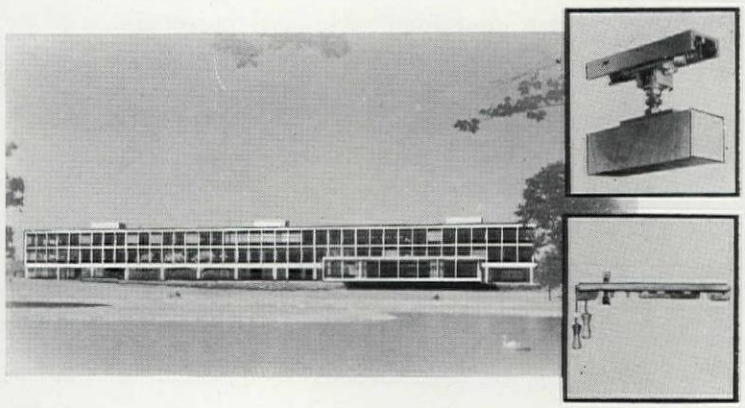
INCORPORATED

YOUR SINGLE SOURCE OF SUPPLY FOR
CURTAIN WALLS • BUILDING PANELS • DOORS • WINDOWS

Fenestra Curtain Wall—Steel subframes with applied projected sash. Lodge Hall and Recreation Building. Masonic Homes, Elizabethtown, Pennsylvania.

Architects—Mitchell & Ritchey, Pittsburgh, Pa.
Contractor—The Pottiger Company, West Reading, Pa.

CONNECTICUT GENERAL SPECIFIES GRANT SLIDING HARDWARE



Building Name:	CONNECTICUT GENERAL LIFE INSURANCE BUILDING
Architects:	SKIDMORE, OWINGS & MERRILL
General Contractor:	GEORGE A. TURNER CONST. CO.
Contract Hardware:	TULL BROS.
Grant Products Used:	5000 SLIDING DOOR HARDWARE 2200 DRAPERY HARDWARE

Spec writers on major construction throughout the country are writing Grant Hardware into their plans. Grant continues as the nation's finest sliding hardware, by every standard of measurement.

Connecticut General chose both Grant 2200 Drapery Hardware and Grant 5000 Sliding Door Hardware for their new home and Grant Hardware fills every operating requirement to the letter.

Writing specs? There's no better Sliding Hardware spec than Grant. For information on the complete line of Grant Sliding Hardware write for your copy of the Grant Catalogue.

See your hardware consultant for experienced assistance in selection of hardware.

Photo by Ezra Stoller

GRANT SLIDING HARDWARE

Grant Pulley & Hardware Corporation

49 High Street, West Nyack, New York • 944 Long Beach Ave., Los Angeles 21, Cal.

sliding door hardware • drawer slides • drapery hardware • folding doors • tub enclosures • pocket frames • pulls • special sliding hardware

A NEW Gaslite by ARKLA

...the TILT-TOP

INCORPORATING

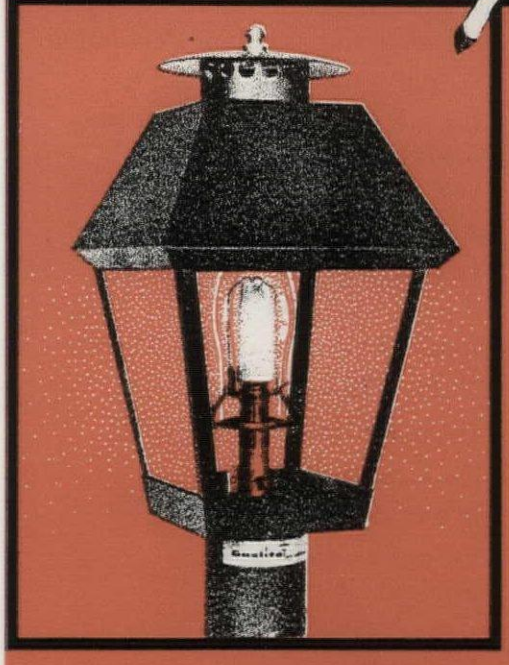
THE MOST

ADVANCED FEATURES

AND DESIGNS

IN

OUTDOOR LIGHTING



CABILDO MODEL 102

AVAILABLE WITH

POST OR BRACKET

MOUNTING

TILT-TOP

The hinged top swings back for easy access to interior.

HURRICANE Style Chimney

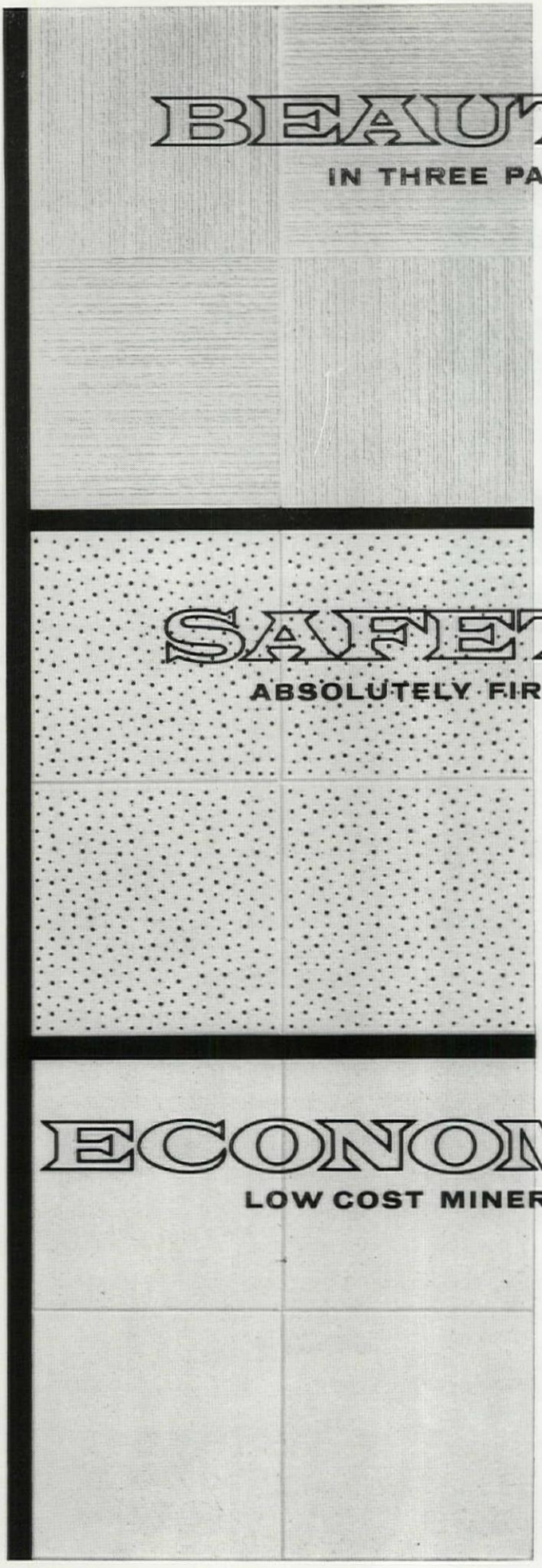
Adds a touch of elegance ... reflects the nostalgic charm of yesteryear.

Improved BURNER Assembly

Mixture control offers maximum candlepower ... mantle lasts for years, even with constant burning.

LOOK FOR THE NAME **Gaslite** BY ARKLA

Let the "ARKLA team" assist you in initiating a successful Gaslite Sales Program.
Write ARKLA AIR CONDITIONING CORP., GASLITE SALES DIVISION, DEPT. L.
LITTLE ROCK, ARKANSAS.



Announcing: Gold Bond ACOUSTIROC

3 new acoustical tiles that add variety to your designs

3 patterns: Smooth, Striated and Random Perforated.

Suitable for any decor—traditional or modern—from business office to fine restaurant.

Absorbs up to 85% of all noise striking it.

Can be installed in high humidity conditions.

Class A Incombustible.

Light reflection up to 91%.

Cuts easily and neatly. Strong, not brittle.

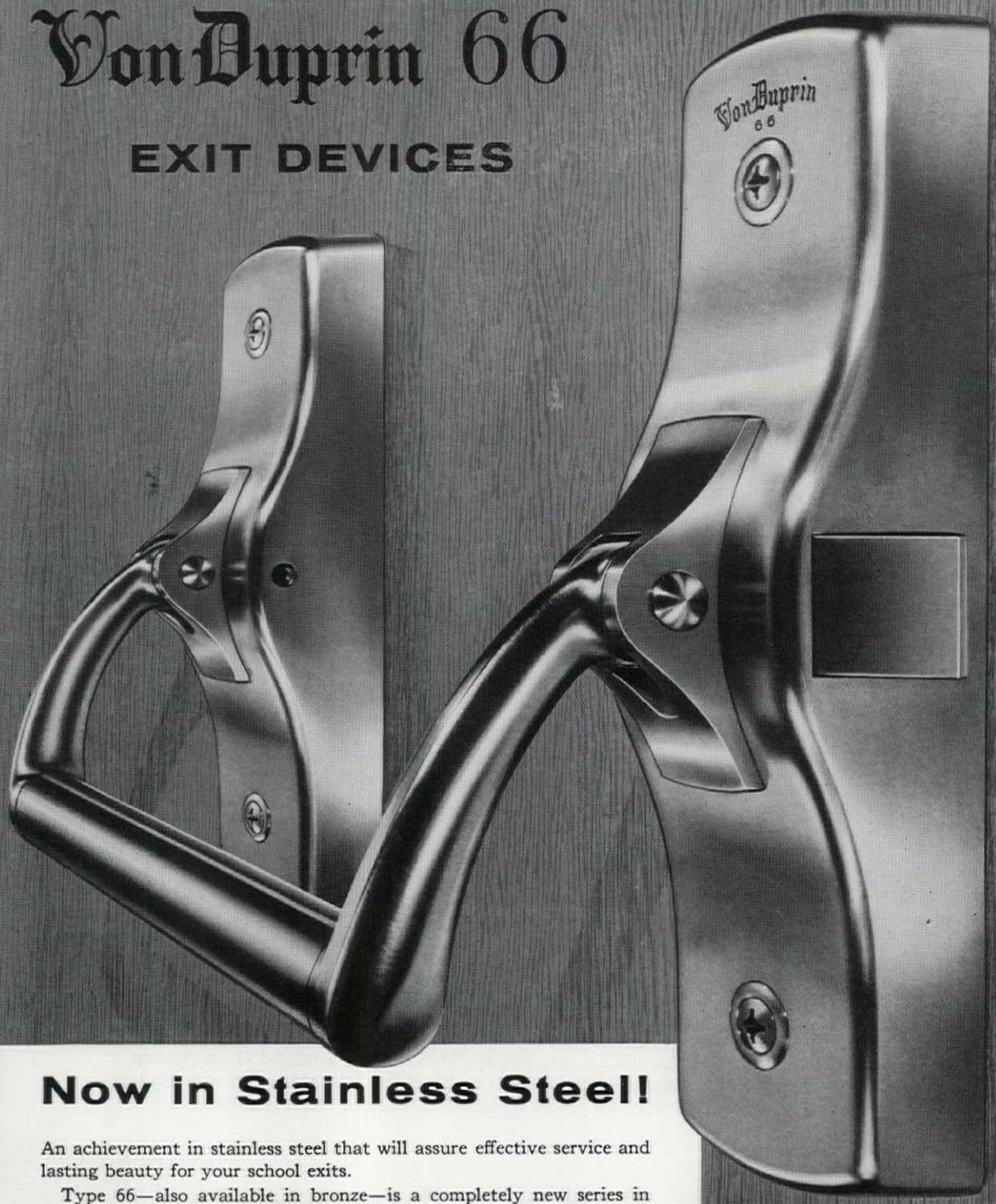
Costs less than most mineral tiles.

For more complete information, see your Gold Bond® representative, or write Dept. PA-98, National Gypsum Company, Buffalo 2, N.Y.

Gold Bond
BUILDING PRODUCTS
NATIONAL GYPSUM COMPANY

Von Duprin 66

EXIT DEVICES



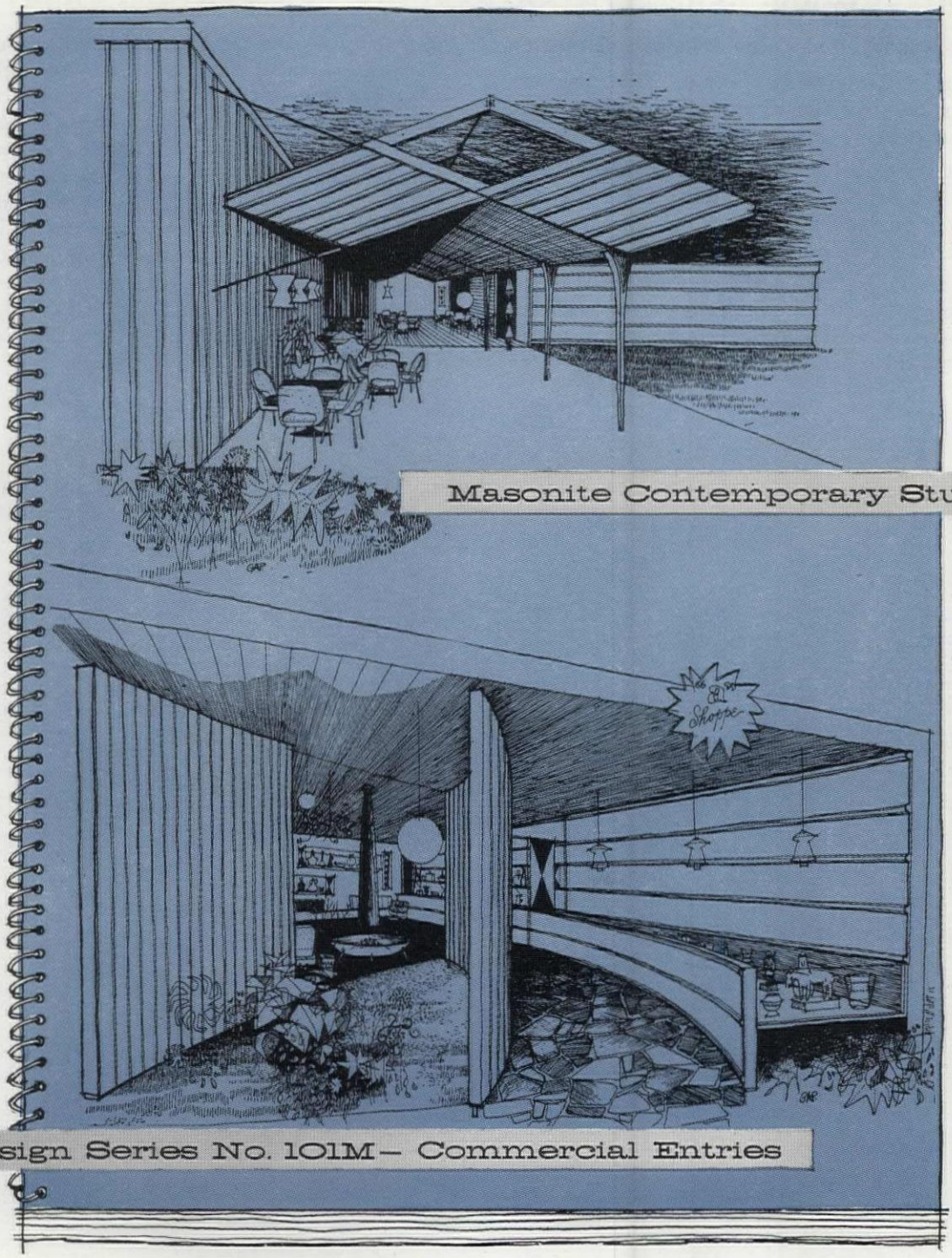
Now in Stainless Steel!

An achievement in stainless steel that will assure effective service and lasting beauty for your school exits.

Type 66—also available in bronze—is a completely new series in rim, mortise lock and vertical rod models, and features a smart new line of matching outside trims.

For the finest expression of "the safe way out!", ask your architect or hardware consultant for full details on the Von Duprin 66. Or write direct for your copy of Bulletin 581.

VONNEGUT HARDWARE CO. • VON DUPRIN DIVISION
INDIANAPOLIS 9, INDIANA



It's outside the store where those important first impressions are formed. The facade and the entryway must say, "*You* are invited." And here the deft touches of the imaginative architect, working with modern materials, can be artistically and commercially successful.

Masonite exterior products will compliment your more distinctive designs. Illustrated above are Sunline, Panelgroove® and Ridgeline®, three of many surface varieties offered. Investigate now the advantages of Masonite® panels for added design interest.

MASONITE
Panel Products

®Masonite Corporation—manufacturer of quality panel products.
* Sunline available west of the Rockies only.

Masonite Corporation, Dept. PA-9, Box 777, Chicago 90, Illinois
In Canada: Masonite Corporation, Gatineau, Quebec

Please send me your free brochure on Masonite exterior panels.

Name.....

Firm.....

Address.....

City.....State.....

Zone.....County.....

NEW ARCHITECTURAL ALUMINUM EXTRUSIONS FOR CONTEMPORARY DESIGNS

. . . now readily available from Kaiser Aluminum distributors

This Metals Service Center for Copper & Brass Sales, Inc. demonstrates an effective use of new Kaiser Aluminum architectural extrusions in contemporary design.

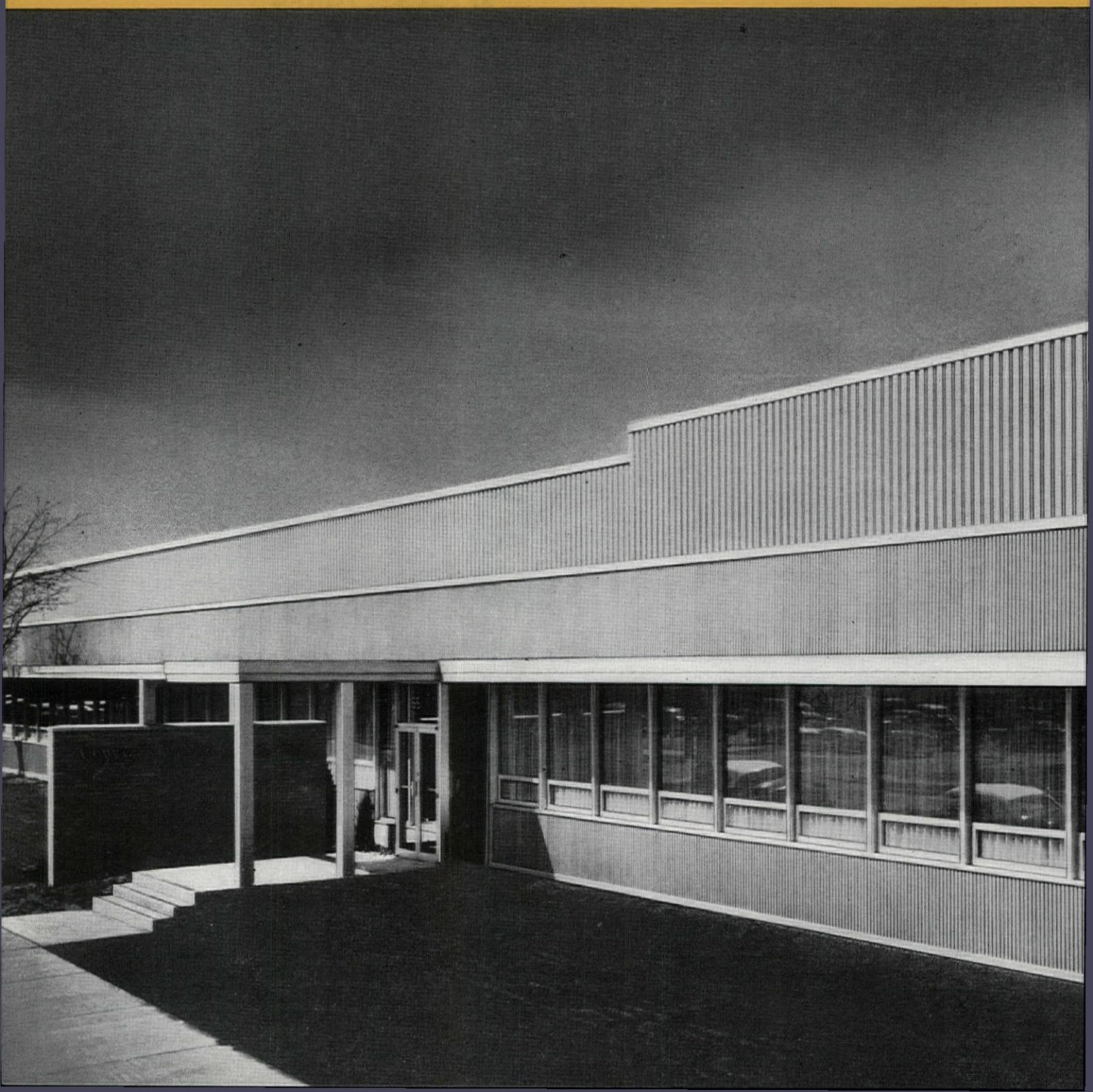
In addition to the gravel stop, facing system and window sill used on this project, Kaiser Aluminum offers a complete line of extrusion products engineered for the functional requirements of today's architecture.

Included in the line are a variety of gravel stops, copings, window sills, thresholds, and handrails as well as fascia expanders, fascia system, architectural and structural shapes, rod, bar, pipe and tube. All are now readily available in a wide range of sizes from Kaiser Aluminum distributors.

Investigate the advantages these lightweight architectura extrusions offer for your designs. Natural corrosion resist ance assures permanent beauty, minimum maintenance.

For more information and complete architectural specifi cations on any or all of these products, contact the Architect' Service Representative at the Kaiser Aluminum sales offic listed in your telephone directory. Or write: Architect' Service Department, Kaiser Aluminum & Chemical Sales Inc., 919 N. Michigan Ave., Chicago 11, Ill.

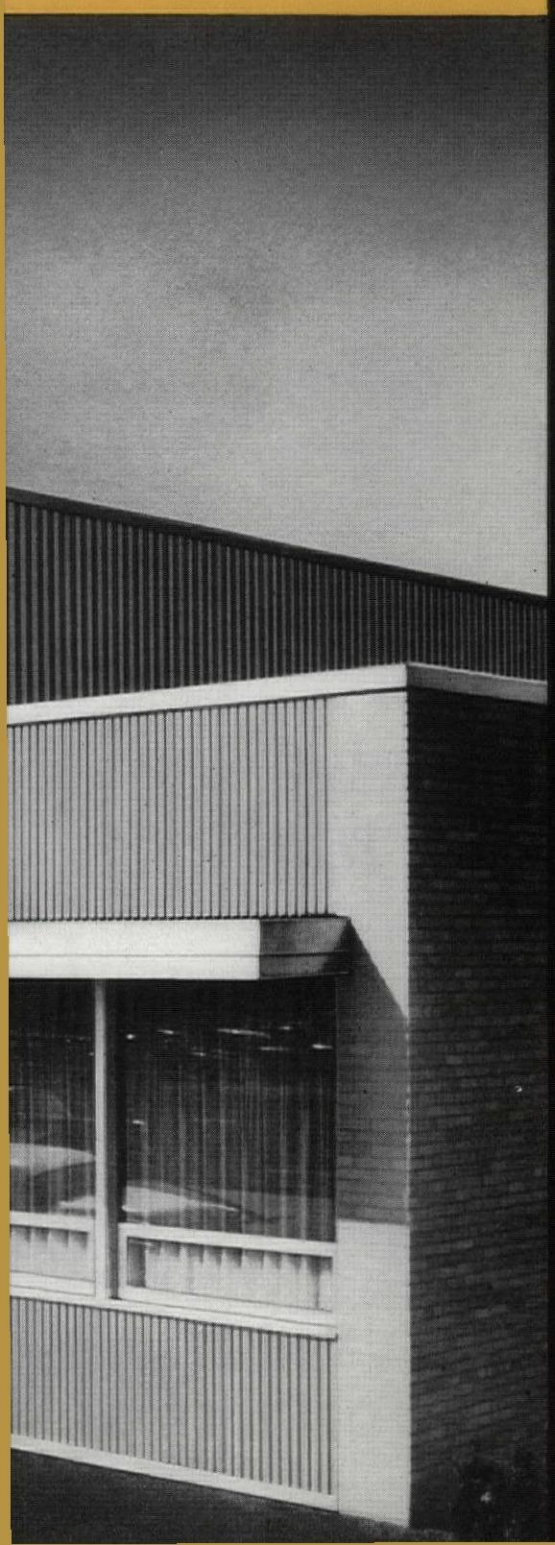
Kaiser Aluminum & Chemical Sales, Inc., *General Sale Office,* Palmolive Bldg., Chicago 11, Ill.; *Executive Office* Kaiser Bldg., Oakland 12, Calif.

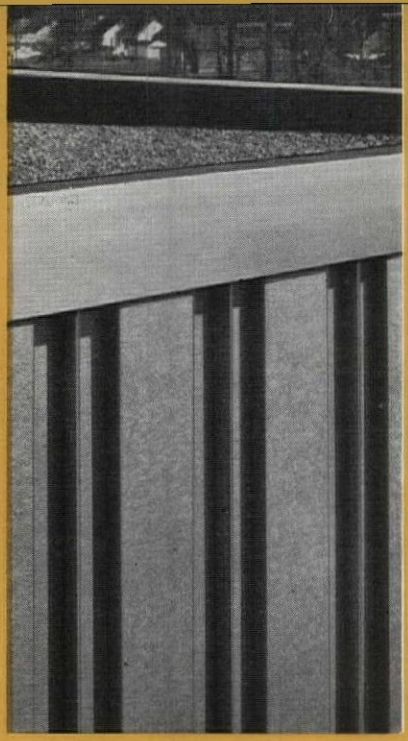


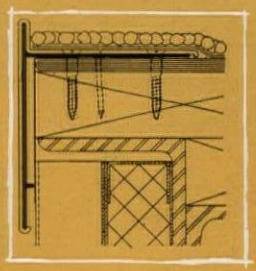
KAISER ALUMINUM

what the architect conceives ... aluminum achieves!

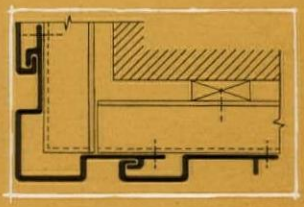
CK" • Sunday Evenings, ABC-TV Network • Consult your local TV listing



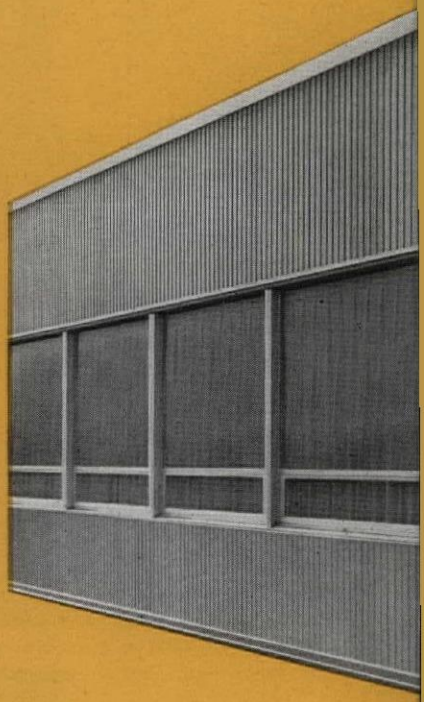




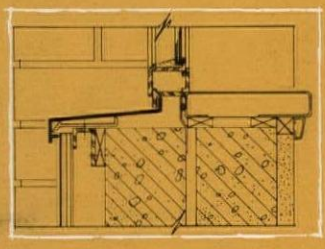
Typical detail and photo of Kaiser Aluminum's Type K-1 Gravel Stop. Note simplicity and pleasing shadow line that results from the straight drip edge feature.



Kaiser Aluminum's standard Facing System may be used for interior or exterior applications. Typical detail shows outside corner components in horizontal section. Photo shows pleasing texture effect of the configuration.



The straight drip edge feature of Kaiser Aluminum's Type K-1 Window Sill is shown in typical detail and photo. As in the Type K-1 Gravel Stop, this feature contributes to the structure's contemporary design. Standard sill widths range from 2⅛" up to 8¼" plus ⅜" drip overhang.



ENGINEERS AND ARCHITECTS: Giffels & Vallet, Inc., L. Rossetti

CURTAIN WALL FABRICATOR-ERECTOR: The R. C. Mahon Co.

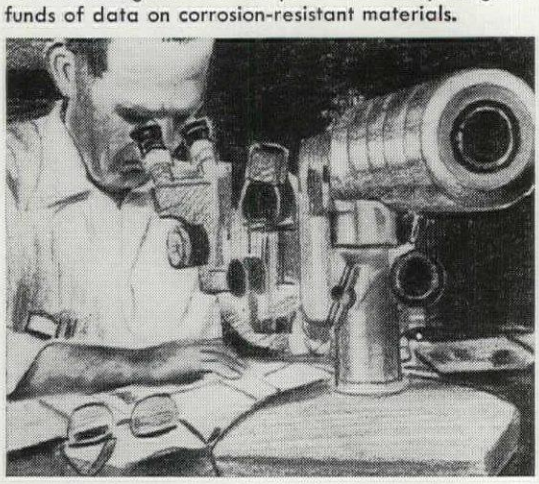
GENERAL CONTRACTOR: Perron Construction Co.

Copper & Brass Sales, Inc. (Kaiser Aluminum Distributor), Detroit, Michigan

A Byers field service representative can relate new 4-D Wrought Iron test results to the specifier's corrosive applications.

Laboratory and field test results lend added support to 4-D Wrought Iron specs

Our metallurgical staff compiles and analyzes great funds of data on corrosion-resistant materials.



With some products, a company representative's natural enthusiasm is often *tempered* by actual test results in the laboratory.

Not so however, with new 4-D Wrought Iron. Byers field service engineers can present research facts which confirm the increased corrosion-resistance of this new product.

Comparative testing with standard Wrought Iron, as well as many ferrous substitutes, proves new 4-D Wrought Iron a decidedly superior deterrent to corrosion. So the wisdom of standard Wrought Iron specifications may now be further enhanced by specifying new 4-D Wrought Iron.

Byers field service engineers are lending even more credibility to this story with their own knowledge of corrosive infighting. The Byers representative will welcome an opportunity to relate these test results to your corrosive applications. Call him soon. Or, write us for helpful literature on new 4-D Wrought Iron. A. M. Byers Company, Clark Building, Pittsburgh 22, Pa.

BYERS WROUGHT IRON

PROGRESSIVE ARCHITECTURE published monthly by REINHOLD PUBLISHING CORPORATION, 430 Park Avenue, New York 22, N. Y. Ralph W. Reinhold, chairman of the Board; Philip H. Hubbard, President and Treasurer; Fred P. Peters, Vice-President and Secretary; Alfred E. Fountain, H. Burton Lowe, Merald F. Lue, D. Bradford Wilkin, William P. Winsor, Vice-Presidents; Kathleen Starke, Assistant Treasurer. Executive and Editorial offices: 430 Park Avenue, New York 22, 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. All foreign subscriptions—$10.00 for one year, $16.00 for two years, $20.00 for three years. Foreign rates apply to architects and engineers only. Single copy—$1.00; special issues—$2.00 per copy. Printed by Publishers Printing Co., New York, N. Y. Indexed in Art Index, Architectural Index.

ABP

AUDITED PAID CIRCULATION ABC

REINHOLD

world public relations

Dear Editor: You may be interested in notes for a little report I was asked to make for my friends, the AIA Chapter of Pasadena, on a recent trip to Europe, Africa, and South America.

To see the far-flung presentations and pavilions in Brussels—with the much-needed help of the chief architect—leaves one fascinatingly ignorant about the distribution of design talent over the planet. One sees only which governments have recognized architects and design as a contemporary international means of public relations. Surely Turkey does not have more "Gift" per square mile, but the Turkish Pavilion belongs to the best. From experience last year as a consultant to the Turkish Government, up to the Soviet border, I'd say the country at large is probably far from equal to Italy in regard to architectural imagination. Yet political conflict seems to have somewhat impaired both the Italian and the Venezuelan exhibits. France looks more garish and "colossally industrialized" than refined and cultured. Long, leathery, but now so prosperous Portugal has learned—perhaps from its own rather despised colonials in Brazil—how to make a fine and fresh world impression. Spain suddenly appears as a leading country in the use of reinforced concrete for its pavilion, all of hexagonal slender mushrooms. Perhaps the truest-to-fact representations are those of Austria, Germany, and Holland. Japan's building, by the old-time Le Corbusier pupil, Maekawa—I saw him coming back to Tokyo 30 years ago—is grand. The site planning was quite a job on the lively grades and among the trees of the Fairgrounds. The Japanese and the Germans did well in this respect also, but the latter, unjustly, found no applause from their own government.

The Voice of America let me broadcast praise for our U.S.A. Exhibition. The Belgian colleagues, kind like those in East Africa, made me a member of their Society, and the Colonial Ministry invited me to a cocktail party in front of their Congo Town Planning Exhibit. But what is more than all cocktails, is, they graciously furnished a plane and motor cars to see those towns and neighborhoods actually down in the tropics. These communities were pretty much as advertised—really well studied. The effort in these towns I could compare to what I had seen in Kenya or in the endless black-peopled suburban clusters along the east-west metropolitan railway line that carries 1000 commuter trains a day into the new Johannesburg railroad station, designed by Architect Joubert.

Belgian Leopoldsville is, as a town, better ordered and more impressively planned than Accra, Ghana, with 300,000 population each. But Accra is just sprouting the new harbor city, Tema, a few miles east at the Goldcoast. Dakar, Senegal, is in progress somewhere between these two equally large cities and has a much grander Parliament building than the one that Kenya has in Nairobi, which I saw in full operation with opposition speakers of darkest pigmentation. I met black Ministers of Housing and Commerce in Ghana, Nigeria, and loyal opposition leaders, alike.

But no town compares with the new venture of Brazilia and no enthusiasm with that of President Jusselino Kubitschek, of Brazil. My "Portuguese" proved understandable enough to him, because I shared his enthusiasm. His palace, the work of Niemeyer, 1000 miles from Rio, is finished.

RICHARD J. NEUTRA
Los Angeles, Calif.

ruling not final

Dear Editor: In his excellent column, IT'S THE LAW (JUNE 1958 P/A), Bernard Tomson makes the, to us, surprising statement: ". . . a recent decision of a Colorado court [declares] the registration and licensing law of that state unconstitutional."

(Continued on page 70)


MUTUAL BENEFIT LIFE

Architects: Eggers & Higgins, New York City, N. Y.
Contractor: George A. Fuller Co., New York City, N. Y.

Venerable age . . . dynamic youth stand side by side

IN THE ILLUSTRATION HERE, the happy juxtaposition of a house of worship and the new home office building of the Mutual Benefit Life Insurance Company in Newark, New Jersey, underscores a proud architectural heritage and the dynamism of today's creations.

It is with good reason that glass is playing an important role in contemporary structures. And this impressive modern building is an outstanding example of the increasing use of Pittsburgh Glass as a basic material in the planning of structures of all kinds.

Pittsburgh's SPANDRELITE® glass in color is utilized in this building for the spandrel areas; Pittsburgh Polished Plate Glass for the vision areas; HERCULITE® Tempered Plate Glass Doors, equipped with PITTCOMATIC® automatic door openers; SOLEX® Heat-Absorbing Plate Glass for more comfortable interiors; quality PENNVERNON® Window Glass for openings where sun-heat is not a problem; Heavy Plate Glass for room dividers and other interior applications; Pittsburgh Mirrors in the rest rooms. All of these *Pittsburgh* products helped to create a structure which is at once both beautiful and functional.

In planning new buildings, or in remodeling existing structures, we suggest that you give prime thought to Pittsburgh Glass. It will help you design them *better*. For assistance on specific glass problems, contact your nearest Pittsburgh branch for the name of the architectural representative serving your area. There is no obligation on your part.

PITTSBURGH GLASS

. . . the basic architectural material

75th ANNIVERSARY 1883—1958

SYMBOL OF SERVICE FOR SEVENTY-FIVE YEARS

PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

(Continued from page 67)

The State Board of Examiners of Architects has been advised and is continuing to function on the assumption that the law has *not* been declared unconstitutional. The assumption is based upon the following:

1. The decision in question was rendered by a County Court. The State Supreme Court has not rendered (nor been asked for) an opinion.

2. The case in question was a criminal action; the sole issue was whether the statute could be enforced against the particular defendant and only insofar as described in the complaint.

3. The language of the Court concerning constitutionality of the specific applicable provision of the law was "Invalidity of that part of the statute defining the practice of architecture doubtless renders void the entire statute." We feel that this statement does not of itself void the law (though it may pose the question). That other legal authority agrees with the Board is evidenced by the fact that lawyers and courts alike have since participated in actions concerning this law.

CASPER F. HEGNER, Secretary
Colorado State Board of
Examiners of Architects

•

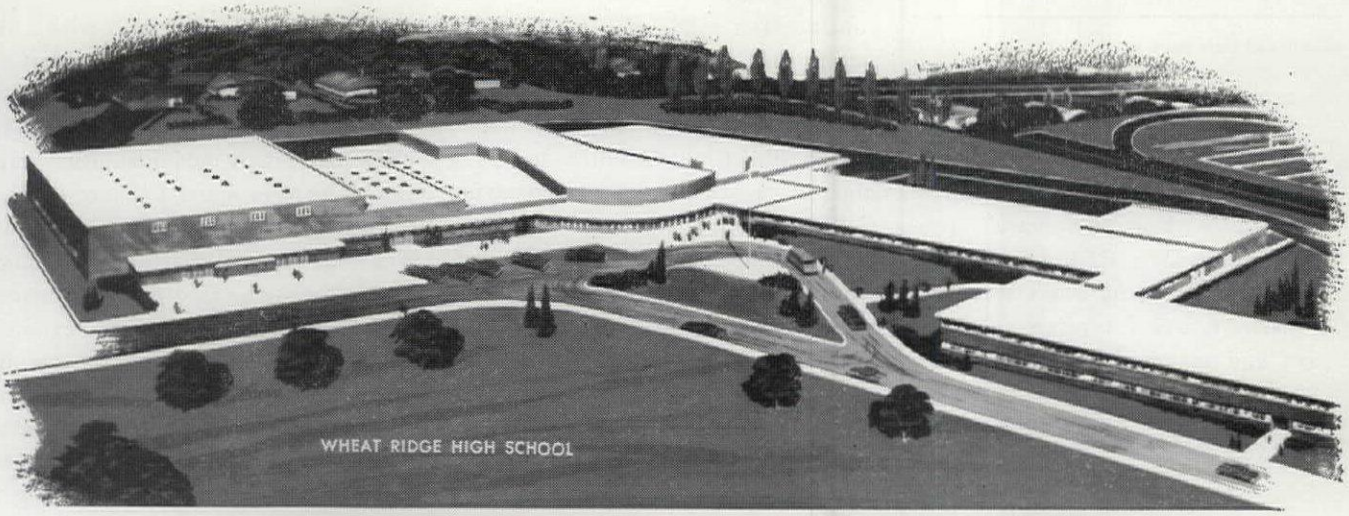
I have read with interest Casper F. Hegner's letter concerning the JUNE 1958, IT'S THE LAW column.

Hegner inferred from this column that I had indicated that the Colorado registration and licensing law was a nullity, and that there could be no further administration of it. This inference was apparently drawn from the statement that a Colorado Court had declared the registration and licensing law of Colorado unconstitutional. This statement is accurate, but the inference drawn from it is unwarranted. Until the Court of highest and last resort has spoken in respect to any legal issue, that issue is not finally resolved. In order to determine the case before it, the Colorado County Court ruled that the licensing and registration law was unconstitutional. This does not preclude the possibility that other Courts or Appellate Courts might reach a different conclusion.

The refusal of the Colorado State Board of Examiners and others to accept the Colorado County Court decision as a binding precedent (and properly so), does not negate the fact that the Court did declare the statute unconstitutional. In any event, it is clear that the statute in question has been subject to attack, and serious questions have been raised concerning it. In this connection, the chief point of the column (which bears repetition) was that the adoption of a uniform registration and licensing law would be an effective means of reducing the area of possible future challenge.

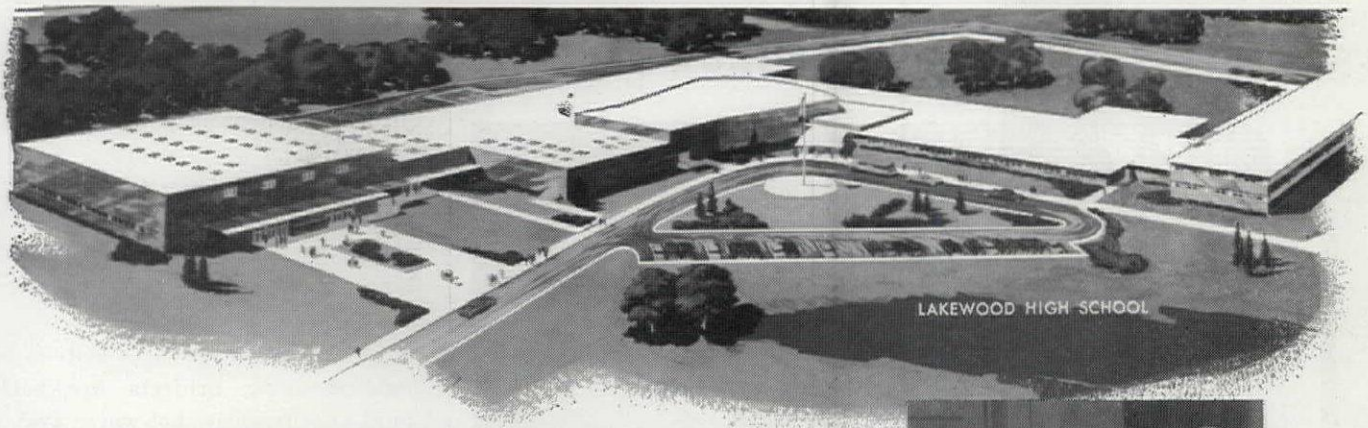
BERNARD TOMSON

(Continued on page 76)



TWO MORE PRESTRESSED CONCRETE STRUCTURES

For Both Schools • *Architects*—R. D. Peterson & A. T. Auburn • *Engineers*—Sallada & Hanson • *Contractors*—Craftsmen Construction Co., Inc. • All of Denver, Colo.



Architects R. D. Peterson and A. T. Auburn tell you in their own words why they chose prestressed concrete for two schools

"In designing the new Lakewood and Wheat Ridge High Schools, in Jefferson County, Colorado, each with approximately 125,000 square feet of floor area, we were faced with a limited budget for the size and facilities required. After careful analysis with our structural engineers, we selected prestressed concrete as the structural system.

"The use of prestressed concrete has resulted in a fire-resistant building at a much lower cost than comparable buildings of the same size and facilities in this area. The completed buildings, including all the built-in equipment under the general construction contract, the cost of land, furniture, site improvements, fees... are within a $2,000,000 budget for each school.

"The successful bidder, with a combined bid for the two projects, decided to set up their own casting bed on the Wheat Ridge site for the double-tee slabs for both projects. The double-tee slabs are being used for all roofs and floors above grade, and are left exposed with a sprayed-on acoustical plastic finish, except where suspended ceilings are provided to conceal piping in rooms above. This results in an attractive appearance at much less expense than suspended ceilings. The auditorium and gymnasium prestressed beams were post-tensioned. This allowed a reduction in over-all height with a consequent savings in cubage and construction cost. The use of pretensioned, prestressed slabs permitted us to design a 40'-0" wide clear span library room with a minimum structural depth. This method was also applied in other areas requiring clear spans with no columns."

Here, again, is a collection of qualities that clearly points out the advantages of prestressed concrete as a construction method.

It is but one example in a growing list of applications all over the country. Roebling's role in the prestressed field goes back to the introduction of the method in this country. We invite inquiries of any nature on the subject of prestressed concrete. We have at hand literature, experience and the *desire* to bring the many benefits of prestressed concrete to your attention. An inquiry to Construction Materials Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey, will bring a prompt reply.

ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation

CONSULT ROEBLING...FIRST IN U. S. WITH PRESTRESSING AND TENSIONING ELEMENTS

(Continued from page 70)

studies under way

Dear Editor: Regarding Charles Neergaard's heating-research proposal (JUNE 1958 P/A): we in the Division of Housing are conducting an earnest and intensive study of ways and means to reduce cost of construction and of operation of public and middle income housing. We also propose to keep the entire planning and construction field posted about our studies to bring about a greater return per construction dollar. We are about ready to publish our first Interim Report, which will explain in detail our plans to attain this goal.

As to whether we would engage in an experimentation with six identical multistory structures in one of our projects about to be built, in order to test the six varieties of heating and insulation suggested by Neergaard, I cannot answer with positive assurance at this time. The decision will depend to a large extent upon the findings and recommendation of my research experts. It may be that some of the recommended methods will be tried in some of our vest-pocket projects, consisting of one or two buildings.

Insofar as our past experience is concerned, we have had a wide variety in the types of installations varying from individual apartment hot-air system to controlled two-pipe low-pressure steam for the large projects in densely populated urban centers. The large projects usually have a central heating plant with underground mains extending to every structure. There have been large projects, however, with several heating plants in each.

In Buffalo, where three state-aided public-housing projects are being built concurrently, hot-water system is used with a common boiler plant for two projects nearly a half mile apart. The third project has a small plant in each of the five seven-story structures.

The devices used within apartments range from ducts and registers to baseboard radiation. By and large, however, convectors are in use with exposed risers and branches.

As to insulation of exposed surfaces: we have recently modified flat-roof, fiber- or corkboard from 1″ to 2″ in thickness, and in suburban projects, with slab-on-the-ground concrete floors, we recommend 2″-glass-fiber insulation against foundation walls extending below frost line.

Neergaard's suggestions are good and will be given very serious study. We also are very concerned about these problems and are constantly trying to improve our standards of construction, provided that such improvement is within our means.

(Continued on page 80)

ıething *Really* Different in Fluorescent Lighting

Sabre by Miller is a fresh, exciting approach to the design concept of *on-the-ceiling* fluorescent lighting. Here, shallow depth and sweeping lines blend to enhance the appearance of any interior. Styling, comfort and high efficiency meet the needs of modern stores and offices — commercial interiors of all kinds; schools, too.

Sabre's carefully engineered, *one-piece* wrap-around refractor of prismatic, crystal-clear plastic provides added sparkle, and excellent brightness control. Viewing is comfortable from all angles. Maintenance is easy.

And this unique combination of features comes at a truly popular price. Discover today, how the new Sabre can help solve your specific lighting design needs. Write Dept. 958-A, The Miller Company, Meriden, Conn. for complete catalog information, or contact your Miller Representative for a physical demonstration.

miller
SINCE 1844

Now PRE-ENGINEERED to save you

NEW Carrier HEAT PUMP

are factory-tailored to meet

No longer is it necessary for the architect and engineer to spend tedious hours selecting and matching heat pump components in an effort to obtain the proper balance for a given commercial or industrial installation!

Now he need only refer to the Carrier Heat Pump Weathermaker* Systems Chart shown below to determine the pre-selected components that provide exactly the proper range of heating and cooling capacity. It's another first from the company that offered the first commercial heat pump more than a quarter of a century ago.

These Heat Pump Weathermaker Systems offer a maximum latitude of design. There is a choice of individual room units, central station or multi-zone units with duct work to distribute conditioned air. You may also select air-cooled condensers or water-chilling machines to match the heat source and capacity desired. And because all Carrier components come in a wide range of basic capacities, there is a system that is tailored to meet the requirements of any climate.

The new pre-engineered Heat Pump Weathermaker Systems are available in factory-rated capacities from 5 to 100 tons and in four basic types: air to air, air to water, water to air and water to water. In larger sizes, too. Call the Carrier dealer listed in the Yellow Pages of your telephone book for details now, or write Carrier Corporation, Syracuse, New York.

*Reg. U.S. Pat. Off.

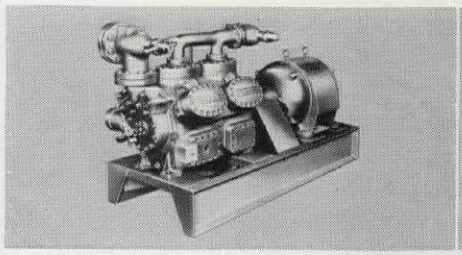
Selecting components is simple as ABC with

AIR TO WATER COOLING CAPACITY†			HEATING OUTPUT, BTU/HR			EQUIPMENT					
TONS	CONDENSING TEMPERATURE °F	COMPRESSOR BHP	OUTDOOR AIR DESIGN TEMP.			COMPRESSOR UNIT REFRIGERANT		COMP. MOTOR HP	OUTDOOR AIR UNIT	CONDENSER-CHILLER	
			0° F	+10° F	+20° F	R-12	C-500			MODEL No.	GPM
6.7	115	9.2	34,200	43,500	54,300	5F30		10	9A8	DXH807K	16.1
10.7	114	13.9	52,000	65,600	82,100		5F40	15	9A14	DXH1007K	25.7
13.1	118	18.4	63,200	81,000	100,800	5F60		20	9A14	DXH1008K	31.4
15.5	118	21.4	73,500	94,300	117,900		5F60	25	9A16	DXH1009K	37.2
21.1	116	28.0	95,500	122,700	154,000	5H40		30	9A25	DXH1209K	50.6
30.9	118	42.3	149,000	190,000	238,000	5H60		40	9A33	DXH1411L	74.2

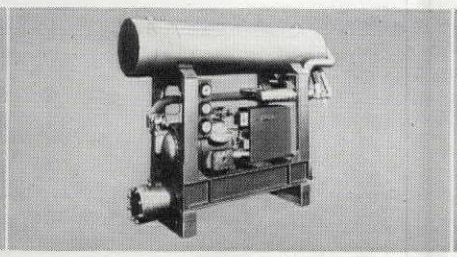
hours of selection time!

WEATHERMAKER SYSTEMS

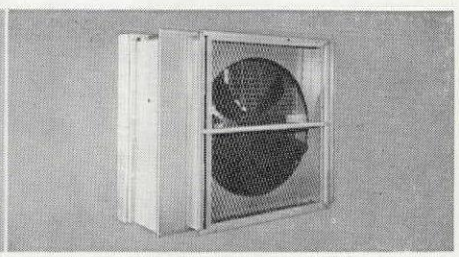
commercial and industrial requirements



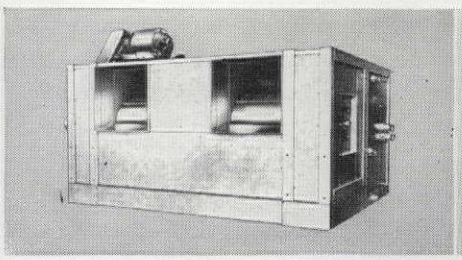
Heart of Heat Pump Weathermaker Systems: Dependable Carrier Compressors are the product of more than 50 years of refrigeration experience.



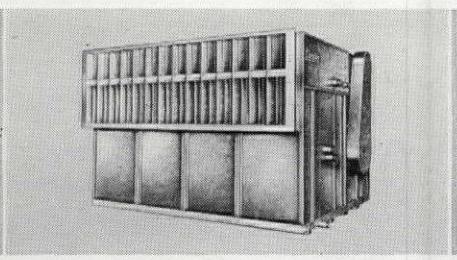
For water source or distribution: Carrier Water-Cooling Machines match coolers, condensers and hermetic compressors for maximum efficiency.



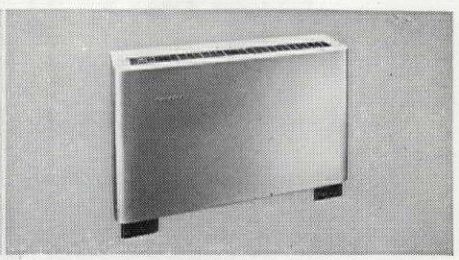
For air source application: New Carrier Air-Cooled Condensers are installed singly or in multiples to perfectly match required capacity.



To heat and cool through ducts: Carrier Central Station Weathermakers feature building block design with system mated fans and coils.



For zone control: Carrier Zoning Weathermakers permit heating or cooling of up to 14 zones or rooms. Heats and cools different zones simultaneously.



For room-by-room conditioning: Carrier Room Weathermakers give individual control for direct expansion or chilled and hot water air conditioning.

this new Carrier Heat Pump Weathermaker Systems Chart

AIR TO WATER COOLING CAPACITY†			HEATING OUTPUT, BTU/HR			EQUIPMENT					
TONS	CONDENSING TEMPERATURE °F	COMPRESSOR BHP	OUTDOOR AIR DESIGN TEMP. 0° F	+10° F	+20° F	COMPRESSOR UNIT REFRIGERANT R-12	C-500	COMP. MOTOR HP	OUTDOOR AIR UNIT	CONDENSER-CHILLER MODEL No.	GPM
36.2	119	49.0	166,000	215,000	271,000		5H60	50	9A37	DXH1412L	86.9
42.0	116	55.0	193,000	246,000	308,000	5H80		60	9A50	DXH1611L	101.0
52.8	116	69.5	244,000	314,000	393,000	5H40-60		75	9A63	DXH1613L	126.7
71.8	119	96.7	332,000	428,000	538,000		5H120	100	9A75	DXH2012L	172.0
98.1	117	127.0	461,000	590,000	744,000		5H80-80	125	9A112	DXH2411L	235.0

†*Comparable charts for other types of systems available from your Carrier Dealer*

p/a views

(Continued from page 76)

Your interest in bringing this matter to the attention of your readers is an important contribution in sparking greater efficiency and economy in construction and maintenance of housing projects.

JOSEPH P. McMURRAY, Commissioner
Division of Housing
State of New York

Dear Editor: Charles Neergaard has adequately proved that hospitals can be less expensive to operate, and often less expensive to build, if they are well insulated. There is ample evidence that this statement applies to every type of air-conditioned building, to all electrically heated buildings and to all heated buildings located in temperate and cold climates.

Neergaard's most significant statement is: "I have run into two obstacles: the skepticism of arhcitects and engineers and, when insulation was adopted, the almost inevitable tendency to over-design the heating plant."

These frustrations are readily explained: when clients find bids running higher than budgets they tend to cut out such items as insulation and insulating glass. And they are often allowed to do this, unless the architect or engineer is informed on the true economics of insulation. Furthermore, if insulation should be added to the building as an afterthought, no one is willing to pay the engineer for the redesign of his system which should be required for maximum economy of operation. Hence the apparent "over-design" of the heating plant.

The main problem is "what benefit would the proposed investigation produce?" Neergaard believes the facts are already known. I am convinced he is right. Calculation methods are surprisingly reliable. If architects do not accept the facts already known, what evidence is there that the results from the six test buildings would be any more effective in getting the profession to use insulation for high comfort and minimum operating cost? If architects would pick up the challenge, I am sure manufacturers would support the program; but the manufacturers must be convinced that the test results would be believed and used.

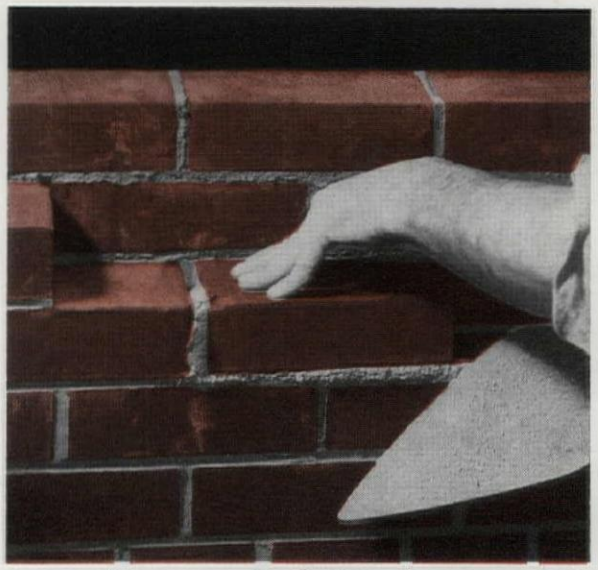
TYLER S. ROGERS, Technical Consultant
Owens-Corning Fiberglas Corporation
Toledo 1, Ohio

WHEN YOU CHANGE YOUR ADDRESS

Please report both new and old addresses directly to P/A five weeks before you move. The Post Office will not forward your magazine to the new address unless you pay extra postage. Avoid this needless expense by notifying us five weeks in advance.

PROGRESSIVE ARCHITECTURE
Circulation Department
430 Park Ave., New York 22, N. Y.

BRIXMENT MORTAR
Is More Plastic



To compare the plasticity of any two mortars, try shoving a brick into place, with a full head joint. The more plastic the mortar, the easier the work. Try this with Brixment mortar!

AND GOOD PLASTICITY
IS THE FIRST REQUIREMENT OF GOOD MORTAR

One of the most important characteristics any mortar can possess is *plasticity*. Within certain limits, plasticity is the greatest single factor not only in the *economy* of the brickwork, but also in its strength, its neatness, and its resistance to the passage of water.

One of the outstanding characteristics of Brixment mortar is its unusual plasticity. Because of this plasticity, a bag of Brixment will carry three full cubic feet of damp sand and still be as plastic as 1-2-9 cement and lime mortar.

Brixment mortar's exceptional plasticity makes it easy for the bricklayer to secure neat, economical brickwork, with the brick properly bedded, and the joints well filled.

LOUISVILLE CEMENT COMPANY, LOUISVILLE 2, KENTUCKY

Cement Manufacturers Since 1830

Long Span M-DECKS Provide

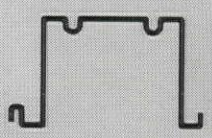
Classroom in Roosevelt School, Livonia, Michigan. One of Five new Schools in Livonia constructed with combined Roof-Ceilings in which the Mahon Long Span M-Deck provides the Roof Structure and the Acoustical Ceiling in one economical unit. Architects: Jahr-Anderson-Machida Associates, Inc. General Contractors: Birchard & Roberts.

Serving the Construction Industry Through Fabrication of Structural Steel, Steel Plate Components, and Building Products

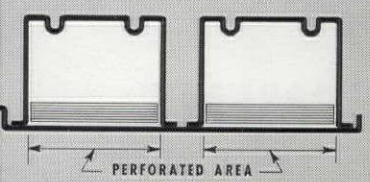
he Structural Roof, Finished Ceiling Material and Acoustical Treatment!

Cel-Beam Sections Span from Wall to Wall or Truss to Truss . . . Eliminate Purlins

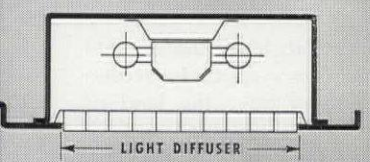
MAHON
Long Span
M-DECK SECTIONS



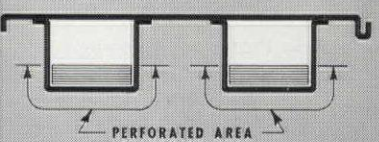
SECTION M1-OB
OPEN BEAM DEPTH 3", 4½", 6" or 7½"



SECTION M2SR (Acoustical)
CEL-BEAM DEPTH 3", 4½", 6" or 7½"



SECTION M1T (Troffer)
DEPTH 6" or 7½"



SECTION M2 (Acoustical)
CEL-BEAM DEPTH 1½", 3", 4½", 6 or 7½"

At Left: Cross Section of Long Span M-Deck Combined Roof-Ceiling with Troffer Lighting.

☆ OTHER MAHON BUILDING PRODUCTS and SERVICES:

- M-Floors (Electrified Cellular Steel Sub-Floors)
- Insulated Metal Curtain Walls
- Underwriters' Rated Metalclad Fire Walls
- Rolling Steel Doors (Standard or Underwriters' Labeled)
- Steel Roof Deck
- Permanent Concrete Floor Forms
- Acoustical and Troffer Forms
- Acoustical Metal Walls and Partitions
- Acoustical Metal Ceilings
- Structural Steel—Fabrication and Erection
- Steel Plate Components—Riveted or Welded

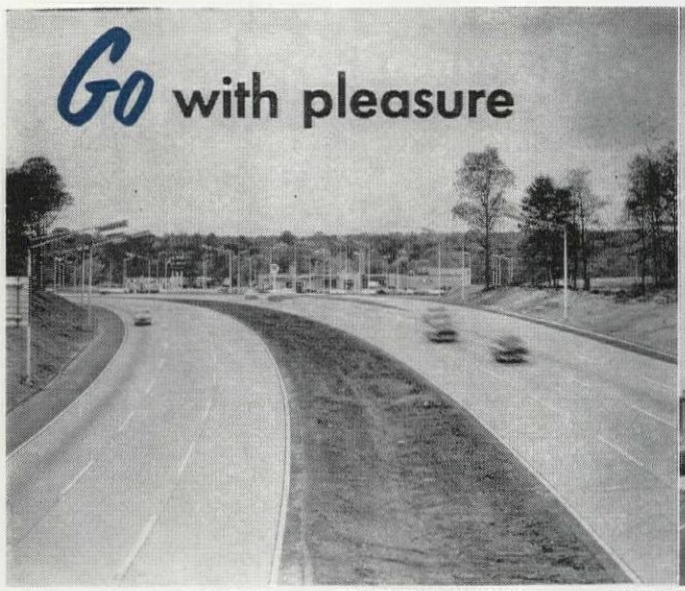
☆ *For INFORMATION See SWEET'S FILES or Write for Catalogues*

THE R. C. MAHON COMPANY • Detroit 34, Michigan
Sales-Engineering Offices in Detroit, New York and Chicago
Representatives in all Principal Cities

of Steel and Aluminum

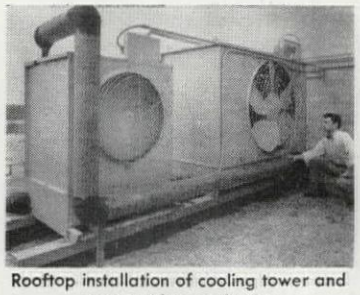
MAHON

On the new *Connecticut Turnpike...*

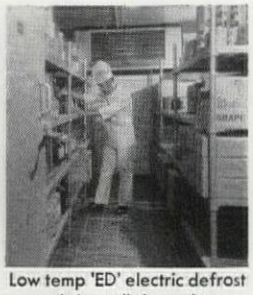


ARCHITECT *Fred Dixon* • CONSULTING ENGINEER *Wm. Carson* • CONTRACTORS FOR HEATING, AIR CONDITIONING & REFRIGERATION *Bay State York, Fred Raff Co., Becker and Goldstein*

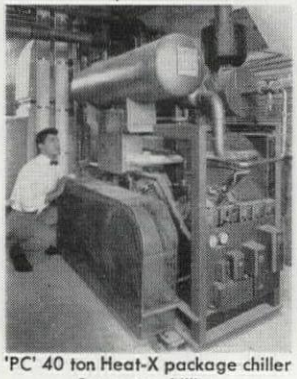
Comfort made possible by COMPACT DUNHAM-BUSH EQUIPMENT



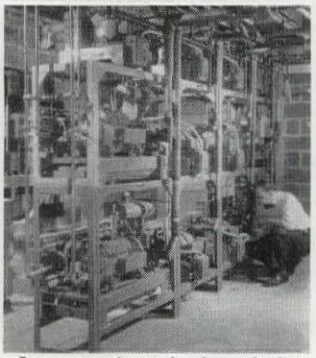
Rooftop installation of cooling tower and evaporative condenser



Low temp 'ED' electric defrost unit in walk-in cooler



'PC' 40 ton Heat-X package chiller for water chilling



Brunner-metic condensing units in rack assemblies

The matchless combination of engineered compact design and high performance efficiency—that's why Dunham-Bush was selected to serve the eight Savarin restaurants on the new Connecticut Thruway.

The single major problem at each of these eight locations was how to get maximum floor space to accommodate the many travelers, and yet have the kind of equipment necessary to insure complete customer comfort. A solution was sought . . . Dunham-Bush was selected.

Units of the following types are installed at each of the new eating places . . . for complete atmospheric comfort and proper food and drink conditioning: Packaged Water Chillers, Unit Coolers, Evaporative Condensers—all with patented Inner-Fin construction that permits compactness of design previously impossible; Air Handling units, Oil Separator Mufflers, and Rack Assembled Condensing units (for extra space-saving convenience).

Depend on Dunham-Bush, the single, compact organization that has the product depth, diversity, and experience to satisfy every demand for heating, air conditioning and refrigeration equipment.

Dunham-Bush, Inc.

WEST HARTFORD 10 • CONNECTICUT • U. S. A.

DUNHAM-BUSH

AIR CONDITIONING • REFRIGERATION • HEATING • HEAT TRANSFER

WEST HARTFORD, CONNECTICUT • MICHIGAN CITY, INDIANA • MARSHALLTOWN, IOWA
RIVERSIDE, CALIFORNIA • BRUNNER DIVISION: UTICA, NEW YORK

SUBSIDIARIES

heat-x HEAT-X, INC. BREWSTER, N.Y. · BRUNNER THE BRUNNER CO. GAINESVILLE, GA. · dunham-bush DUNHAM-BUSH (CANADA), LTD. TORONTO, CANADA

dunham-bush DUNHAM-BUSH, LTD. LONDON, ENGLAND · BRUNNER BRUNNER CORPORATION (CANADA) LTD. PORT HOPE, ONTARIO

materials and methods for lighting in architecture

On the pages immediately following there will be found an array of light sources, fixtures, controls, devices and materials that should help architectural designers to achieve imaginative use of lighting as a design element. (See pages 86 to 113.)

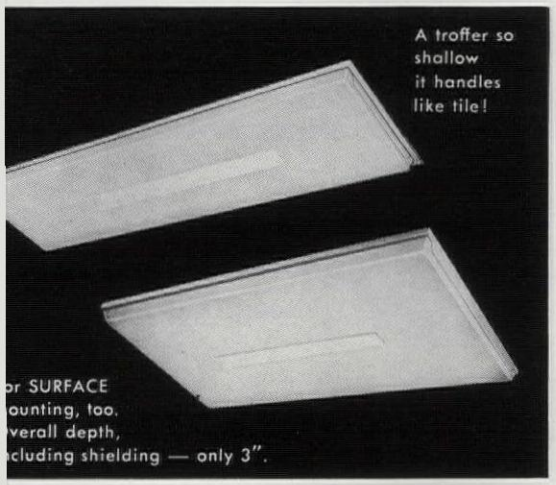
The lighting industry long ago passed the milestones of efficiency and utility. These advertisers and other lighting-product manufacturers who use P/A's pages to describe and depict new developments for our readers have made it possible for the profession to give its clients "luminous environment" in the finest sense.

So easy on the eyes of

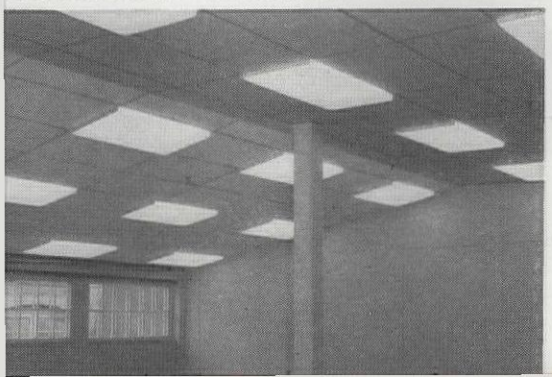
This handsome new bank and office building in Fort Worth, Texas, houses the Mutual Savings & Loan Association. Architect: Preston M. Geren. Consulting Engineer: Yandell, Cowan & Love Engineering Co.

NEW Smithcraft SLENDEX

breaks the ceiling space barrier

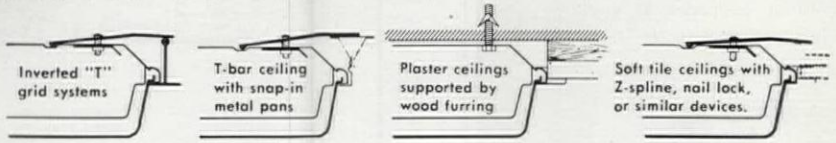


BREAKS THE CEILING SPACE BARRIER! 100 SLENDEX 2' x 4' units, selected from the offerings of 14 manufacturers, installed in the testing laboratory of one of the nation's largest steel companies. Ceiling 7'6" at lowest point; 1½" cavity depth.



SLENDEX solves tough ceiling problems . . . in acute ceiling space conditions . . . in low ceilings . . . in minimum cavities. Recesses only 1⅜" . . . SLENDEX is so shallow it handles like tile! Slender, sleek architectural styling is complemented by unique engineering features. Requires no extra depth for tilting . . . goes into the ceiling *flat*. Simplified installation and maintenance. Clean uniform lighting . . . no dark center streaks. Now — simplify your lighting job by using the new Smithcraft SLENDEX!

ADAPTS TO ALL COMMON CEILING TYPES



Write today for the complete Smithcraft Catalog, your buying guide to "America's finest fluorescent lighting."

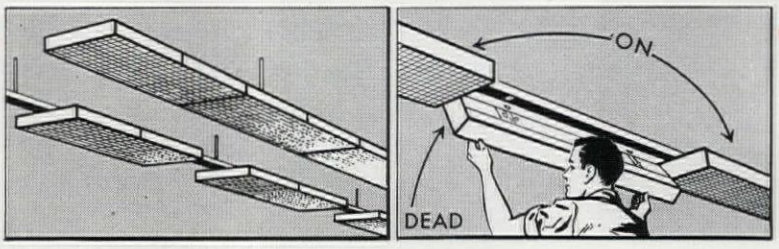
Smithcraft
LIGHTING
CHELSEA 50, MASSACHUSETTS

NEW GIBSON ORTHO-66

unequalled for flexibility and ease of maintenance

CONTINUOUS ROW OR INTERVAL MOUNTING

The Ortho may be mounted in continuous rows or at intervals of 4, 8, 12 or more feet. Fixtures can be added, removed or re-spaced at any time by one man without tools.



REMOVAL OF FIXTURE WON'T INTERRUPT OTHERS

Any fixture may be removed for cleaning or repairs at any time withou. interrupting the other fixture in the row. When a fixture is unlatched, it disconnects itself.

Gibson LIGHTING

GIBSON MANUFACTURING COMPANY

1919 Piedmont Circle, N. E., Atlanta 9, Georgia

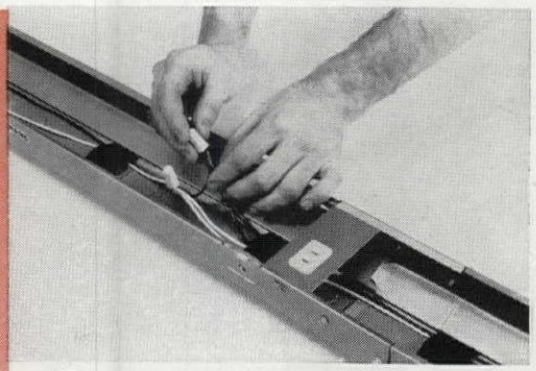
MANUFACTURED IN CANADA UNDER FRANCHISE BY ELECTROLIER MANUFACTURING CO., LTD. MONTREAL

another fine fixture that plugs in on the exclusive Gibson Uni-race*

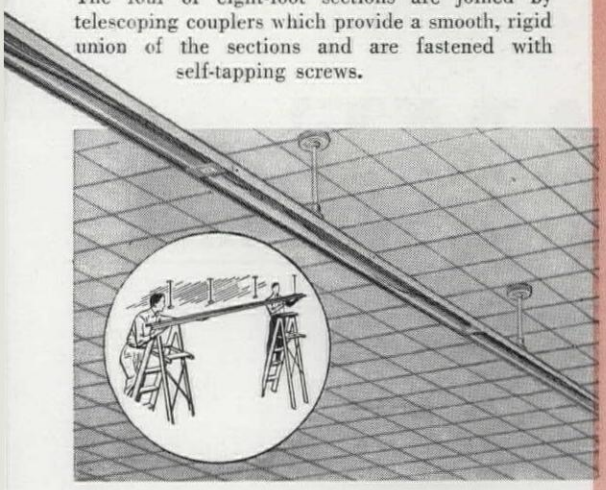
4 SIMPLE STEPS that save over 75% on installation labor costs

Because the Ortho fixture eliminates so many of the time-taking operations common to conventional installations, it easily saves more than 75% in labor. Contractors report that all labor, including stems and lamping, averages only 17 to 22 man minutes per fixture, as compared with the NECA standard of over 2 man hours for conventional fixtures.

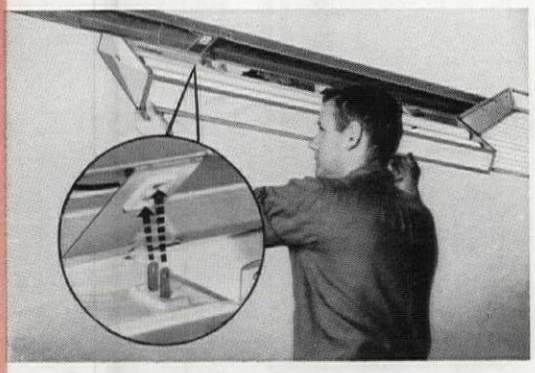
1 Assemble the Uni-Race • The exclusive Gibson Raceway, known as the Uni-Race, can be assembled on the floor in lengths up to 200 feet. The four or eight-foot sections are joined by telescoping couplers which provide a smooth, rigid union of the sections and are fastened with self-tapping screws.



2 Wire the Uni-Race • Branch-circuit wires are laid in the Uni-Race and connection is made at each built-in receptacle. The receptacles will later receive the plug that is built into each fixture. The Uni-Race, U. L. approved as a raceway, has a capacity of five No. 8 AWG wires or eleven No. 14 wires.



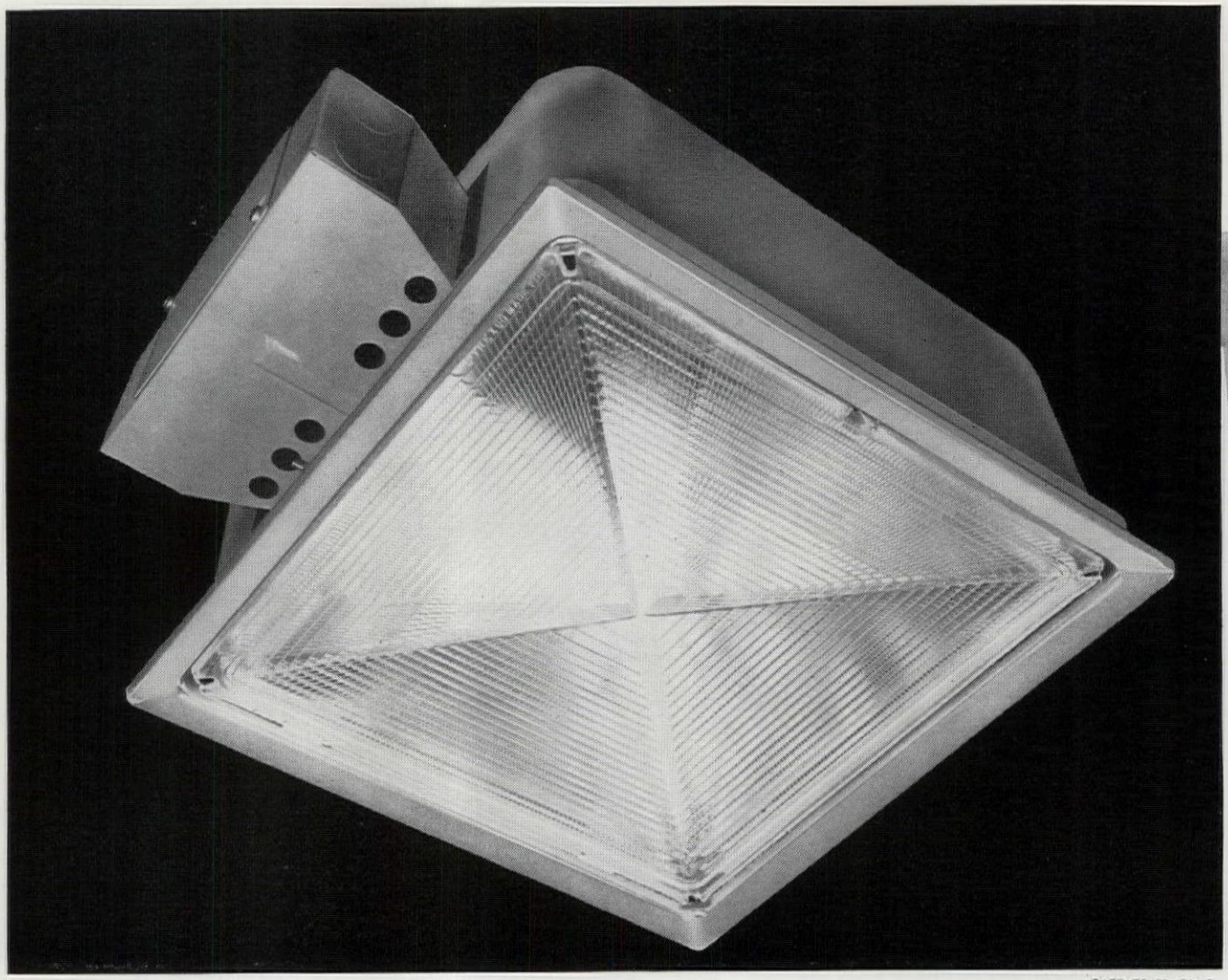
3 Hang the Uni-Race • The rigid Uni-Race is easily lifted and hung in any of several different ways. Lengths up to 200′ can be hung as a unit if supported every 24′ while being raised to mounting position. When the branch-circuit connection is made, the Uni-Race is ready for the fixtures.



4 "Plug In" the Fixtures • The fixtures are merely "plugged in" on the Uni-Race. Hooks on the fixture engage in slots on one side of the Uni-Race, acting as hinges. The fixture is swung closed and latched. The built-in plug on the fixture automatically connects with the receptacle in the Uni-Race.

* **UNI-RACE NOW U. L.-APPROVED AS A 225-AMP RACEWAY** • The Gibson Uni-Race is now U. L.-approved as a raceway with capacity for five No. 8 AWG wires or eleven No. 14 AWG wires. It will house the circuitry for a 200-foot continuous run of two-light fixtures (either 40 or 75 w.) or a 100-foot run of 4-light fixtures.

WRITE FOR COMPLETE INFORMATION ABOUT THE GIBSON ORTHO LINE



PATENTS PENDING

NEW DAY-BRITE

UNI-FRAME

fits every lens box application...beautifully!

New THINcandescent design! Single, narrow, tapered frame fits flush with plaster or acoustical tile for happy blending of light and ceiling. No plaster frame needed.

New modular light pattern! Prismatically-accurate Pyrex* lens is largest available for 12″ lens box. Equalizes light distribution over square area. No light leaks.

New flexibility! One box size, in two look-alike series, accommodates any medium-base lamp (100-300 watts). Choice of three finishes: white enamel, aluminum or brass.

For additional information about UNI-FRAME, call your Day-Brite representative listed in the Yellow Pages. Or write . . .

Day-Brite Lighting, Inc., 6254 N. Broadway, St. Louis 15, Mo.
Day-Brite Lighting, Inc., of Calif., 530 Martin Ave., Santa Clara, Calif.

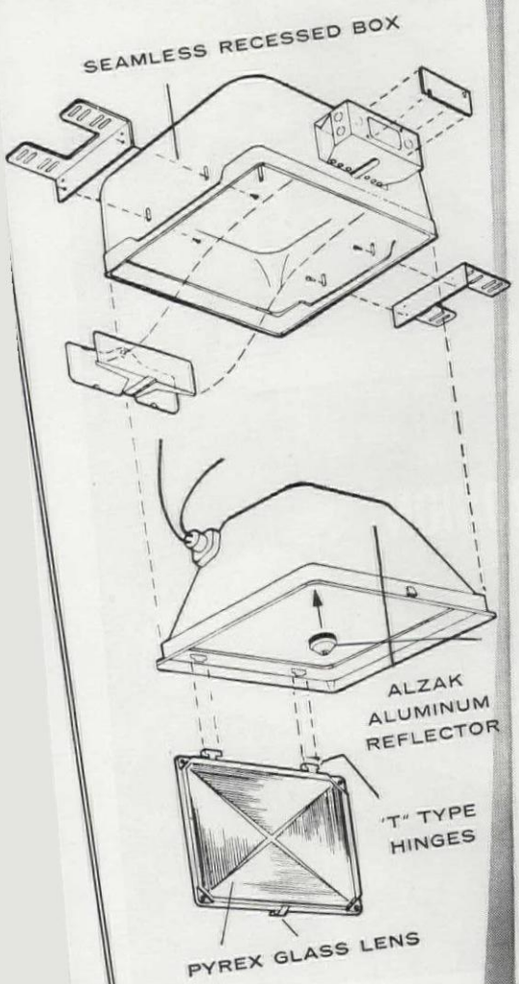
DECIDEDLY BETTER
DAY-BRITE
LIGHTING FIXTURES

*Registered trade name of Corning Glass Works

NATION'S LARGEST MANUFACTURER OF COMMERCIAL AND INDUSTRIAL LIGHTING EQUIPMENT

ENGINEERING NEWS LETTER

DAY-BRITE LIGHTING FIXTURES

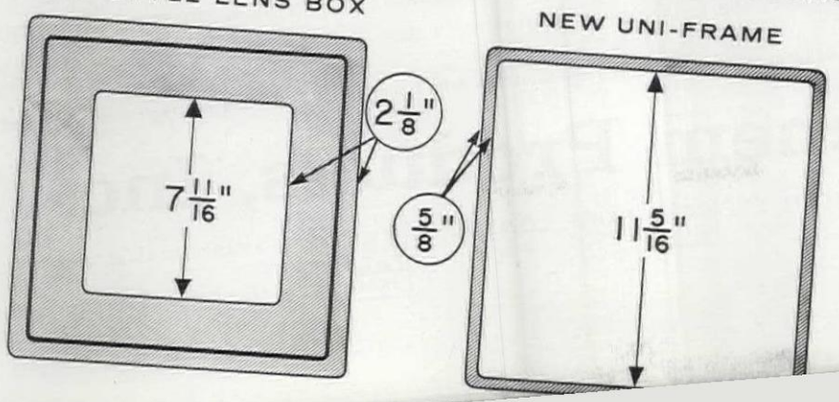


CHECK THESE UNI-FRAME FEATURES AGAINST ANY OTHER LENS BOX...

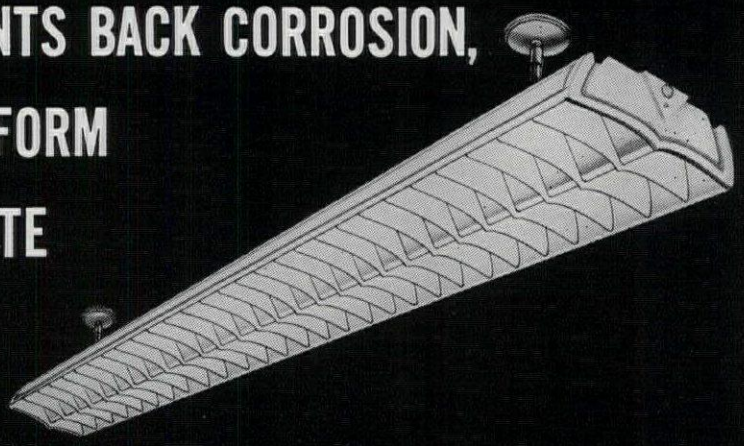
- √ Sculptured one-piece frame . . . first concealed hinged lens frame!
- √ A modular lens box . . . replaces 12" acoustical ceiling tile. For plaster ceilings, too.
- √ No light leaks! Lens is set like a jewel in hidden inner frame, held by stainless steel clips.
- √ Prismatic lens projects square (not elliptical) light pattern. No illumination drop-off in corners!
- √ Pyrex lens is standard . . . no extra charge.
- √ One-piece drawn aluminum Alzak reflector and angle lamp mounting for increased lighting efficiency.
- √ For commercial and residential use. Aluminum frames can be used outdoors.
- √ Snap-type latch and separable hinges speed installation and maintenance.
- √ Check the price advantage when you standardize on UNI-FRAME. One box size does it . . . throughout the job.

LUMINOUS AREA MORE THAN DOUBLED!

UNIQUE, NEW FRAME IS LESS THAN ONE-THIRD THE WIDTH OF FRAME ON OLD STYLE LENS BOX. SIZE OF LENS IS INCREASED FROM 59 TO 128 SQUARE INCHES!



ACP GRANODINE PREVENTS BACK CORROSION, PRODUCES A MORE UNIFORM PAINT FILM ON DAY-BRITE LIGHTING FIXTURES



Especially adapted to high-level school and office lighting, the Luvex is a typical example of the highly efficient lighting fixtures produced by Day-Brite Lighting, Inc. One of the features of these outstanding light sources is the use of a zinc phosphate coating to provide a better paint bond and prevent underpaint corrosion. ACP GRANODINE was selected for the job because it proved superior to other methods of prepaint treatment. The process is carried on in a 5-stage system which includes preclean, water rinse, the GRANODINE treatment, water rinse, and final acidulated rinse. It takes only minutes to complete the treatment and to provide a uniform, long-lasting finish for the lighting fixtures.

Perhaps you have a problem of bonding paint to metal, of improving corrosion resistance, of preventing impact damage. Our technical people will be glad to discuss it with you and give you the full story of ACP chemical prepaint treatments. To have an ACP man call on you, write us at Ambler.

Day-Brite and Luvex are registered trademarks of Day-Brite Lighting, Inc. GRANODINE is a registered trademark of Amchem Products, Inc.

Amchem Products, Inc. Ambler 46, Pa.

Formerly AMERICAN CHEMICAL PAINT COMPANY

CHEMICALS ACP PROCESSES

DETROIT, MICH. • ST. JOSEPH, MO. • NILES, CALIF. • WINDSOR, ONT.

New Chemical Horizons for Industry and Agriculture

There was magic in Aladdin's lamp...

...and there's magic in KLIEGL Lighting Equipment, too!

KLIEGLIGHTS can't make a mystic Genie appear, but they do produce distinctive lighting installations.

Kliegl equipment is designed with your requirements foremost in mind. Whether your plans for lighting include; *a room, a home, auditorium, suite of offices, a church or a stage* . . . Kliegl equipment will do the job more effectively.

Kliegl equipment is engineered with top priority on *performance, clean design, simple installation, easy relamping and minimum maintenance.* Our engineers are equipped to assist you in solving any lighting problems that you may have. They will also assist with lighting layouts as well as collaborate in designing custom equipment to meet individual job requirements.

Your inquiry is cordially invited and will be given prompt, courteous attention. Catalogs and illustrated literature sent upon request.

lighting

ARCHITECTURAL DIVISION

KLIEGL BROS.

UNIVERSAL ELECTRIC STAGE LIGHTING CO., INC.

321 W. 50th ST., NEW YORK 19, N.Y.

ORIGINATORS AND MANUFACTURERS OF KLIEGLIGHTS

G-E ballast design opens new horizons

"C" RATING

"D" RATING

"E" RATING

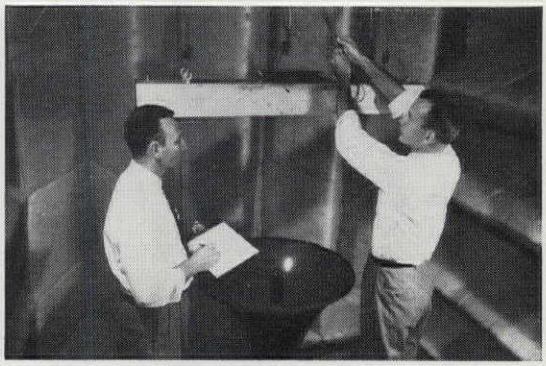
New G-E ballast brings "C" sound rating to 800 MA applications

new General Electric 6G1140 ballast is two sound ratings quieter than any "E" rated ballast for two 96T12/HO rapid-start lamps

The demands of lighting progress have again been answered by *the leader* in the ballast industry. General Electric engineers have effected reductions in size, operating temperature, weight, and sound level in designing the new 6G1140 ballast. The new 6G1140 is two sound ratings quieter than any "E" rated high-output rapid-start ballast on the market, and operates at less than 90 C in a two-lamp, eight-foot, louvered commercial fixture, surface mounted against an acoustic tile ceiling. This latest development in ballast progress is the result of two specialized General Electric facilities:

In General Electric's modern sound testing laboratory, engineers perform actual sound tests in an anechoic chamber designed and developed by G-E engineers exclusively for ballast testing. General Electric's investment in laboratory equipment has led to a complete ballast sound rating system that has been adopted by the ballast industry. The copyrighted G-E Ballast Sound Rating Calculator helps you select the proper rating to satisfy the sound requirements of every installation.

G.E.'s fixture test laboratory is believed to be the only one of its kind in the ballast industry. Lamps, fixtures, and ballasts are tested together in a controlled, draft-free ambient of 25 C, without heat dissipating devices. Thermal measurements are taken only after the ballast has reached a stable operating temperature. G-E heat measurements reflect actual, modern operating conditions. You get lamp-matched ballasts from General Electric.



Actual sound tests, performed in General Electric's anechoic chamber, help G-E engineers develop lamp-matched ballasts to answer the needs and demands of lighting progress.

Each fluorescent lighting application is accepted as a separate challenge by General Electric engineers who know there is no one ballast that will act as a solution for all lighting problems. The new 6G1140 ballast is another example of General Electric leadership in ballast progress . . . another example of General Electric's OPERATION UPTURN . . . extra value for your ballast dollar. *Section 401-69, General Electric Company, Schenectady 5, N. Y.*

1958 GENERAL ELECTRIC BALLAST PROGRESS		
NEW 6G1020 operates at LESS THAN 90 C in four-lamp 40-watt T12 fixtures	NEW 6G1140 brings "C" SOUND RATING to two-lamp 96T12/HO-RS applications	WATCH FOR NEW BALLAST PROGRESS FROM GENERAL ELECTRIC . . . the leader in the ballast industry

OPERATION upturn — Buy now for extra values — GENERAL ELECTRIC

Progress Is Our Most Important Product

GENERAL ELECTRIC

Mr. BEN ROISMAN
Executive Lighting Designer
Litecraft Manufacturing Corp.

MR. MARK EITINGON
Cosentini Associates:
Mechanical Engineers
Eitingon & Schlossberg:
Electrical Associates

Mr. CHARLES RAO
Arc Electric Construction Co.

Mr. ROBERT CARSON—A.I.A.
Carson & Lundin Architects

teamWORK...

Yes, the all important factor required in successful modern day building practice is teamwork.

LITECRAFT – creator of distinctive lighting equipment – is proud to have been a part of the team effort, which created and developed 666-5th Avenue, in the city of New York.

LITECRAFT'S primary function was to engineer and supply illumination in the proper quantity and quality. However, by working as a part of the team, our creative engineering contribution resulted in equipment which went far beyond the mere function of lighting. A lighting fixture was created and developed that gave complete flexibility in application and installation . . . it actually became an integral part of the architectural design . . . truly the ultimate in application-engineered architectural lighting.

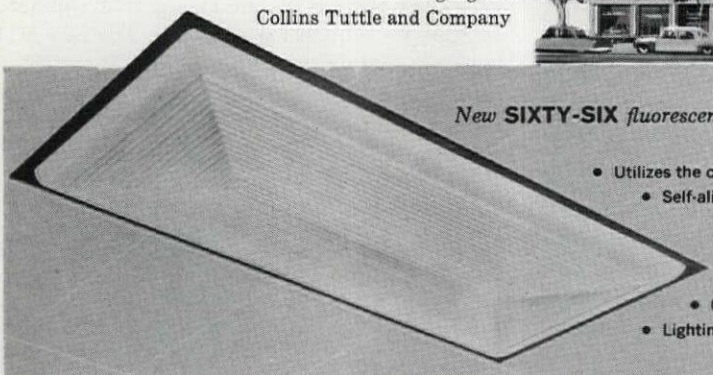
LITECRAFT'S proven talents in the field of creative illumination are available as a member of your team in planning and developing your lighting requirements – large or small.

Contact our Architectural lighting department for consultation without obligation.

Lighting by

LITECRAFT
MANUFACTURING CORP
General Offices: 100 Dayton Ave • Passaic N J

Renting Agent:
Collins Tuttle and Company



New **SIXTY-SIX** *fluorescent series, created by Litecraft for* **666** *Fifth Avenue:*

- Utilizes the ceiling's suspension system for total support—no additional bracing required
- Self-aligning locking arms assure straight and level ceiling and fixture mounting at all times
- Shallow-depth—no cutting or fitting of ceiling carriers—no interference with duct work
- No tools required . . . easiest, fastest installation
- Complete flexibility and accessibility at installation . . . or for future relocation
- Lighting layout flexibility . . . modular and linear application can be used as individual units or in continuous runs

OTHER EXAMPLES of
LITECRAFT
TEAMWORK

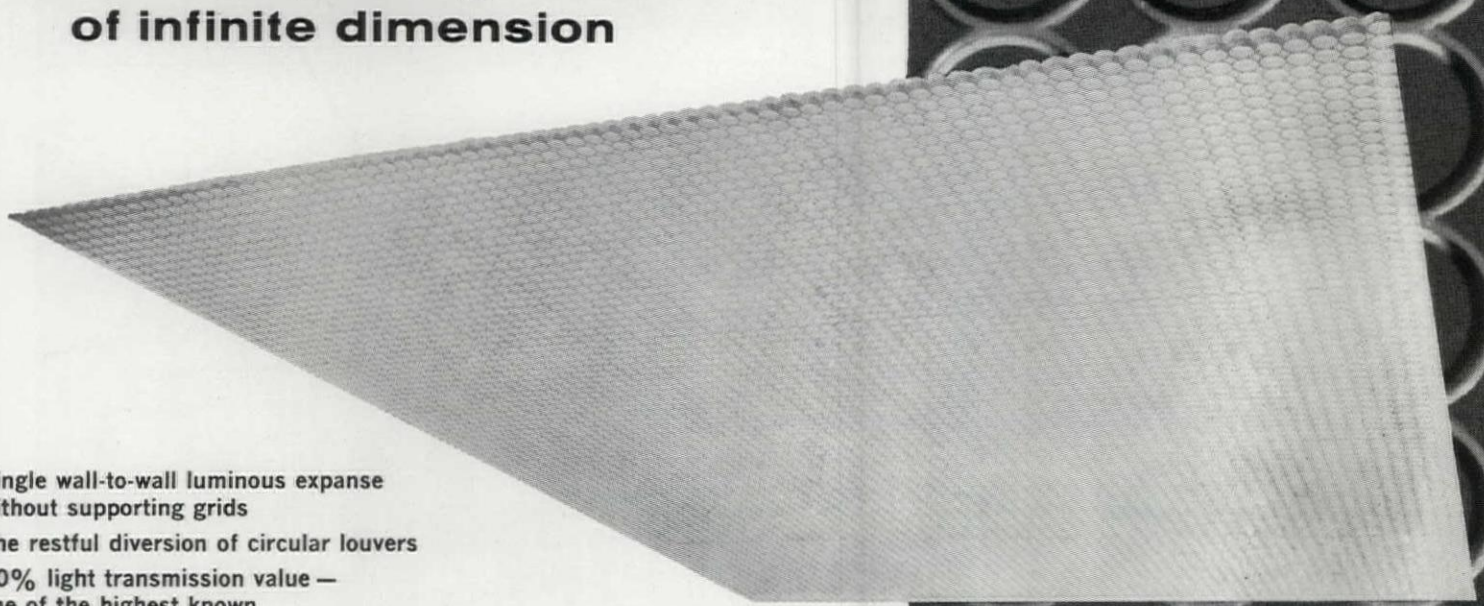
- **STATLER HOTEL**
  DALLAS, TEXAS
- **INTERNATIONAL AIRPORT**
  NEW YORK, NEW YORK
- **EASTLAND SHOPPING CENTER**
  DETROIT, MICHIGAN
- **HIPPODROMO NACIONAL**
  CARACAS, VENEZUELA
- **MACON HOSPITAL**
  MACON, GEORGIA
- **3325 WILSHIRE BOULEVARD**
  LOS ANGELES, CALIFORNIA

introducing–

a true non-modular suspended ceiling

INFINILITE–

the new luminous grillework of infinite dimension

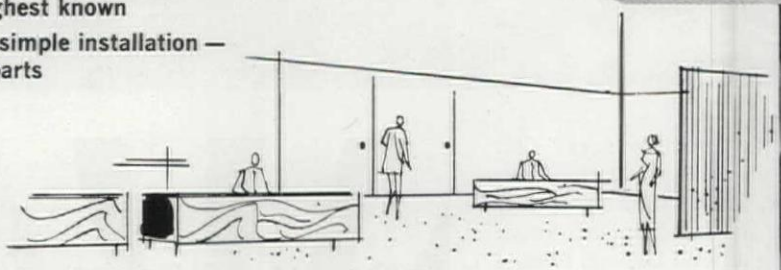


Single wall-to-wall luminous expanse without supporting grids

The restful diversion of circular louvers

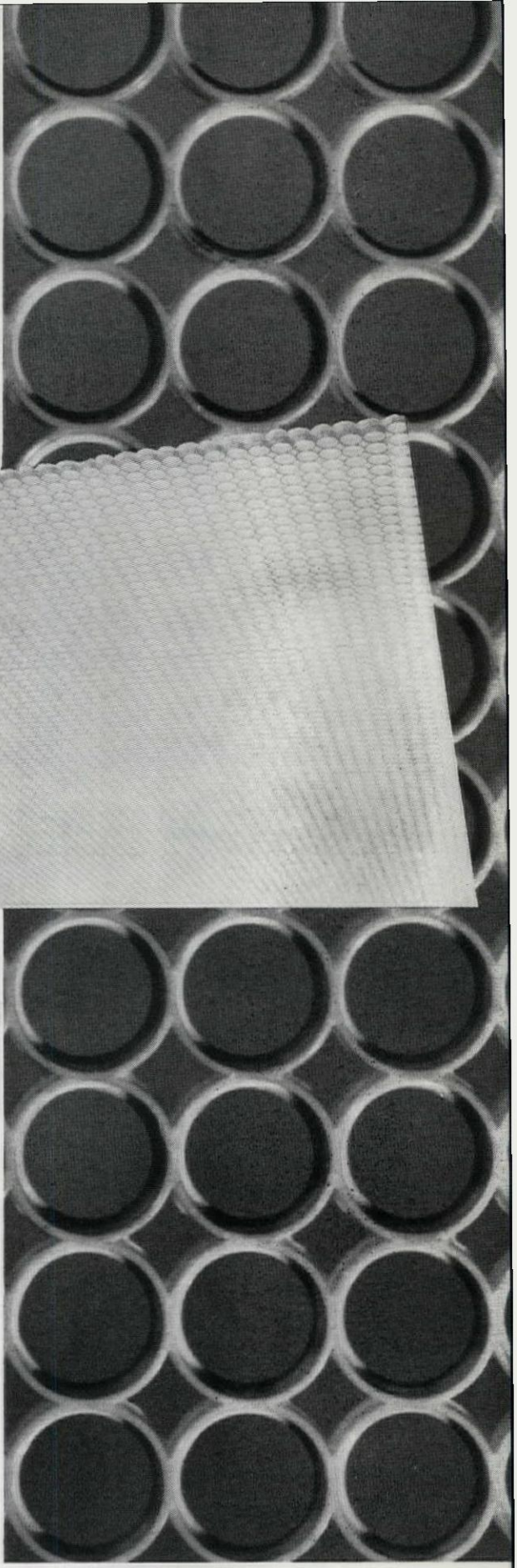
80% light transmission value — one of the highest known

Astoundingly simple installation — only 4 basic parts



INFINILITE WAS DEVISED as the only feasible architectural lighting solution for irregularly shaped ceiling areas. Today INFINILITE is installed in many of America's foremost new buildings. 24 x 25 inch interlocking panels snap on with no over-lapping double edges or seams.

Manufactured from new light stabilized plastic, INFINILITE is first with Drop-Strip Fixture with V.T.S. diffuser to completely eliminate direct view of lamps. We invite your inquiry.



INFINILITE*

A product of INTEGRATED CEILINGS, INC.

* PAT. PENDING – T.M.

9011 Beverly Boulevard • Los Angeles 48, California

INTEGRATED CEILINGS, INC. PA
9011 Beverly Boulevard
Los Angeles 48, California

Please send me free Infinilite brochure

NAME_____

FIRM_____

STREET_____

insist on wafer-thin

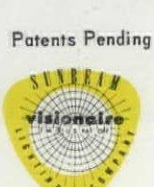
SHALLORAMA®

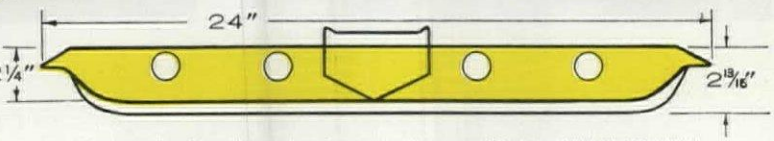
for modern, custom-styled lighting

Smartly styled, incomparably shallow, sturdily constructed, the SHALLORAMA® brings a new dimension to architecturally designed lighting. Surface mounted, these fully enclosed, self-luminous Visionaires® look recessed. They are amazingly simple to install and have wide application in both new and remodeled interiors. Handsome, translucent white, high-stressed formed Plexiglas diffusers open by hand from either side on concealed "hook-on" ledges. The plastic diffusers are guaranteed for long life and freedom from discoloration. Unique leveling jacks compensate for uneven ceilings and assure precision alignment. Normal maintenance accomplished without use of tools. For the finest general lighting with wide distribution and even brightness characteristics insist on SHALLORAMA.®

Write for bulletin #A-91

Patents Pending





New peaks of engineered performance is exemplified by SHALLORAMA's soft, uniform diffusion of light and efficient ballast heat dissipation.

Sunbeam Lighting Company, 777 East 14th Pl., Los Angeles 21, California & Gary, Indiana

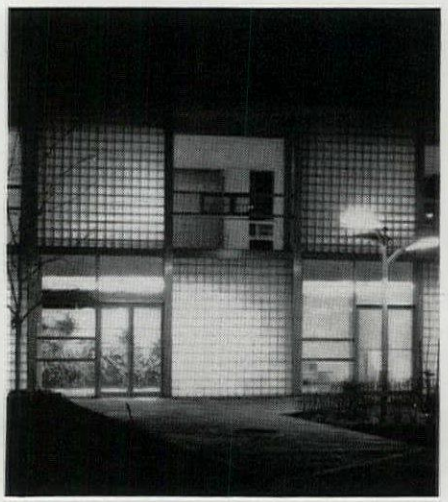
CURTAIN WALL IN A CORE BUILDING

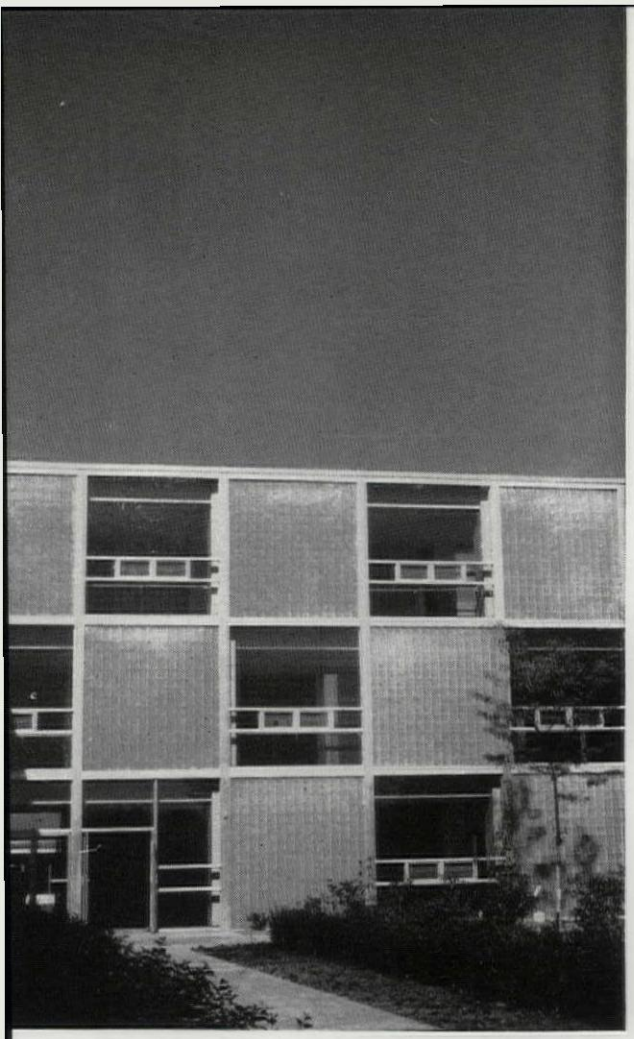
The structure that links together the three basic units of Pittsburgh's John J. Kane Hospital is called the Core Building. This facility is an orderly system of corridors that serves as a main traffic artery for staff and patients. In a way, the Core Building functions as a "Public Square" within this Hospital City of hope and rehabilitation for the aged.

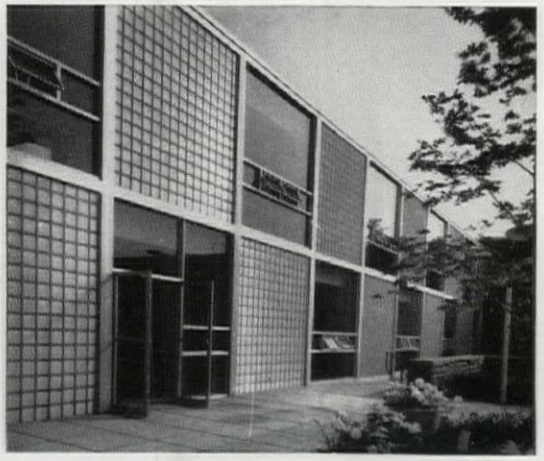
With the exceptions of two passageway connections, both sides of the Core Building are uninterrupted curtain walls of alternating panels of functional Glass Blocks and plate glass.

Psychological security dictated part of the thinking behind this design. The Glass Block panels, set at regular intervals, help create the feeling of solid protective balusters in a huge railing. This aspect of the design works toward overcoming the "falling off" sensation that many people, and particularly the aged, experience when walking near the outside edge of a multi-storied building. The need for this security impression is heightened here because handrailings, close to the curtain wall, support feeble, halting patients as they move from one area to the other, or pull themselves in wheel chairs.

Therapeutic value provided additional support for the curtain wall design. Because monotony is so much a part of the lives of so many of the patients, the Kane Hospital planners





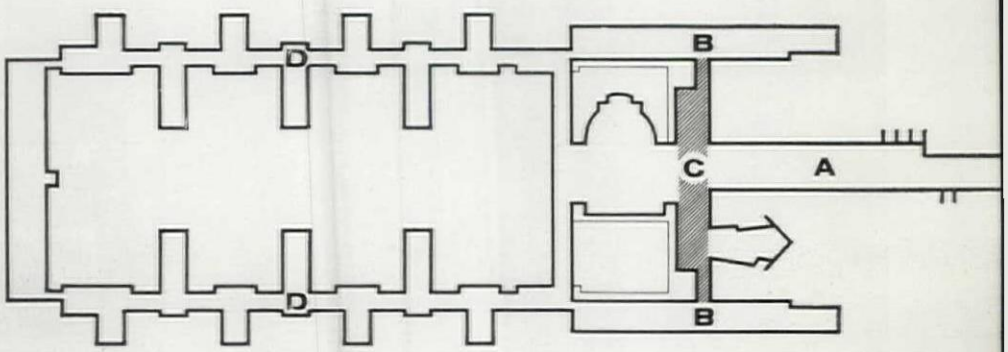


determined that the interplay of voids and solids, and the varied effects of incoming light in the corridor areas, would considerably increase the interest level of the environment.

Exterior interest and harmony were final considerations. Texture, substance, and a non-institutional appearance were all requirements that the Glass Block panels helped to satisfy.

The Glass Blocks used in the Kane Hospital were manufactured by Pittsburgh Corning Corporation. These Glass Blocks, identified as Prism B, are designed to reduce glare and heat, and transmit diffused and softened daylight. Their insulation value is equal to an eight-inch thick masonry wall. This feature lowers heat loss. And the maintenance-free characteristics of the PC Glass Block panels blend effectively with the other materials used in the curtain wall.

For product details on conventional PC Glass Blocks, and our new Color Glass Blocks, write for our General Catalog. Pittsburgh Corning Corporation, Dept. AC-98, One Gateway Center, Pittsburgh 22, Pennsylvania. In Canada: 57 Bloor Street West, Toronto, Ontario. Also manufacturers of FOAMGLAS® insulation.

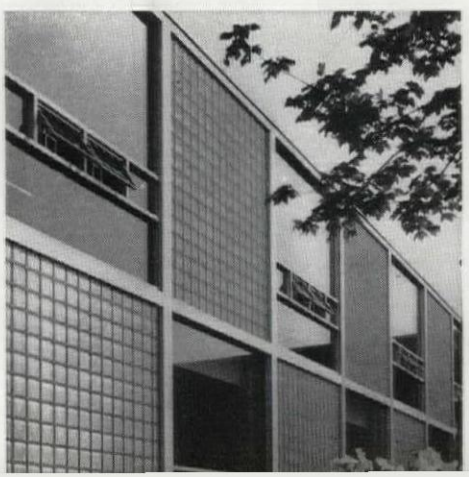


A. Main Hospital B. Semi-ambulant C. Core Building D. Ambulant

John J. Kane Hospital, Pittsburgh, Pa., is owned by Allegheny County Institution District.

Architects: Button & McLean—Mitchell & Ritchey, Pittsburgh, Pa.

General Contractor: Sherry-Richards Company, Chicago, Ill.



CORNING

4'-square PLEXIGLAS diffusers at Park Avenue office of a large New York City bank

PLEXIGLAS

...for lighting that stands out and stands up!

For lighting equipment that matches the beauty of a handsome interior, choose luminaires incorporating PLEXIGLAS® acrylic plastic. Then you can be sure of clean, uncluttered appearance, and highest efficiency in transmission and diffusion. You can also be sure these advantages will last, because PLEXIGLAS has freedom from discoloration, resists breakage, is a rigid material with a smooth, easily cleaned surface.

We will be glad to send you white translucent samples and a copy of our brochure, "Architectural Lighting with PLEXIGLAS".

Chemicals for Industry

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Representatives in principal foreign countries

Canadian Distributor: *Crystal Glass & Plastics, Ltd., 130 Queen's Quay East, Toronto, Ontario, Canada.*

Striking architectural effect achieved with RS ceramic tile Curtain Wall Panels

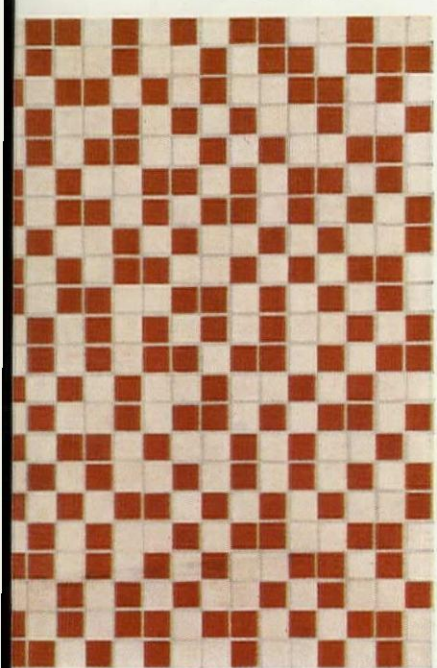
Plate No. 1069

FIRESTONE SALES-SERVICE STORE
Akron, Ohio

Architects:
WILLIAM F. KINKOPH—D. W. GOODWIN
The Firestone Tire & Rubber Co., Akron, Ohio

General Contractor:
J. G. RUHLIN CONSTRUCTION CO.
Akron, Ohio

Close-up shows 1″ x 1″ Romany • Spartan tile in a random 50/50 mixture of Spartex White and Decorator Cherry Red.



Offering unlimited color and design possibilities, RS Panels were the architect's logical choice in designing the exterior of this handsome sales-service center.

These panels are of ceramic tile and reinforced lightweight concrete, cast monolithic and grouted with permanently resilient latex. Each vertical panel is made up of two 5′ x 5′ sections 2¼″ thick, with tongue and groove joint between sections and square edges on outer perimeter. Concrete backs provide finished interior walls.

RS Panels are available in thicknesses from 1⅜″ to 4″, with or without insulation, and in a complete range of sizes and edge conditions to meet your specific requirements. For complete information on RS Panels, including "U" values, weights and short form specifications, write for Bulletin RSP-201. Ceramic Tile Panels, Inc., Dept. P-24, Canton 2, Ohio.

RS Panels®

CERAMIC TILE PANELS INC.

MEMBER: THE PRODUCERS COUNCIL, INC

lighting is architecture

by Henry Wright, Guest Editor*

Lighting has always been an integral part of architecture. In our own time, while daylighting techniques have greatly advanced, emphasis has shifted from window illumination to electric lighting. The most significant recent effect of the electric lamp on architecture has been the tremendous freedom it has given to planning. In the space of a generation, improvements in lighting, along with air conditioning, have greatly reduced—if not entirely eliminated—the distinction between "inside" and "outside" space.

This major shift is nowhere more dramatically evident than in the large architectural-drafting room, where it is now common to arrange blocks of drawing tables in rows of five or more in both directions. In such rooms, windows become framed pictures of the outdoor world rather than significant sources of light. The electric lighting may, and often does, leave something to be desired—the "task," after all, is an exacting one. But here, as elsewhere, the efficiency and convenience of furniture—and "people"—arrangement it permits have proved irresistible. Similarly, large business organizations need no longer evaluate office space in terms of so many windows—one per employe—and office planning has been freed of the necessity of arranging bands of minimal cubicles around second-class interior space.

Electric lighting has played a major part in "opening up" such plans—giving more people more interesting views of the outside through larger and larger windows. As the window has ceased to be a necessity from an illumination standpoint, it has paradoxically become more important lightingwise: as an important part of the "brightness pattern," larger and larger windows necessitate better and better electric lighting.

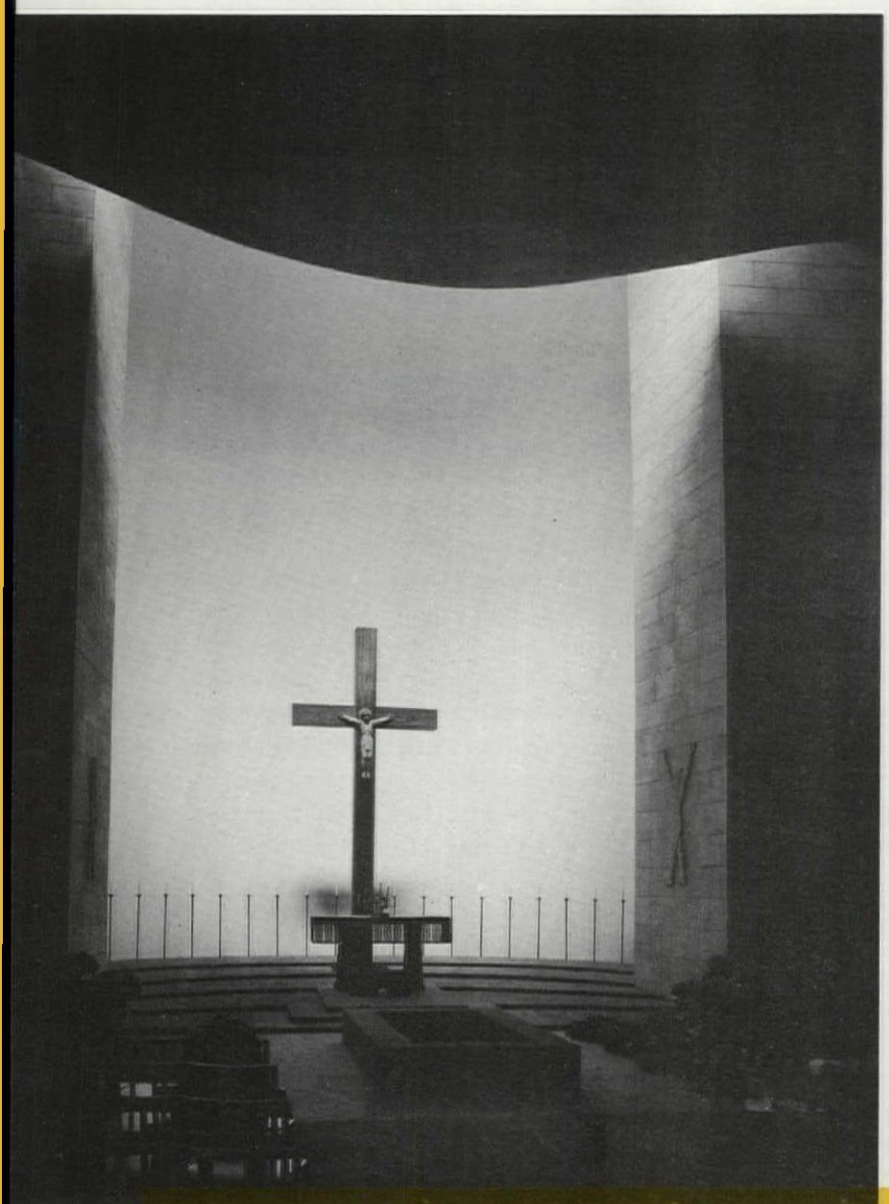
This is only one of the ways in which modern lighting techniques have revolutionized interior and even exterior design. Another, and highly significant change, is that the designer has been given complete control of the "mood" of interior space—a choice of atmospheres ranging from the antiseptic quality of uniform high-level illumination to the utmost in "glamour." At the same time, lighting equipment—always an attention-commanding adjunct of design—has become more integrally related to structure as a potent pattern-producing design element within buildings, which at night may completely transform their exterior aspect as well.

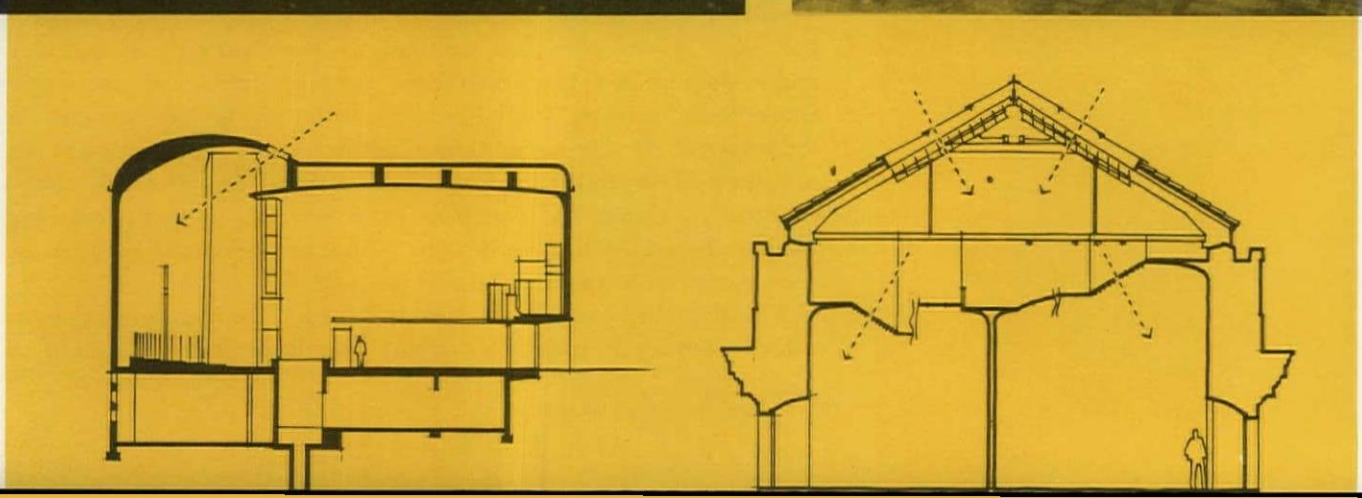
Finally, the control of lighting which modern equipment affords makes it possible (if not mandatory) to use light to

---

* *Consultant on Building Product Research and Promotion.*

Daylight, in skilled hands, can be controlled almost as precisely as electric light. The altar (below) *in a Swiss church is "spotlighted" from a narrow skylight in the roof just behind the proscenium* (see section). *Notice that the light is strongest on the lower part of the wall, focussing attention on the cross. In the museum* (right) *the light from a roof-top skylight is filtered and controlled by louvers in a suspended ceiling, keeping it off the floor and on the walls. For credits for all pictures in this section, see page 278.*



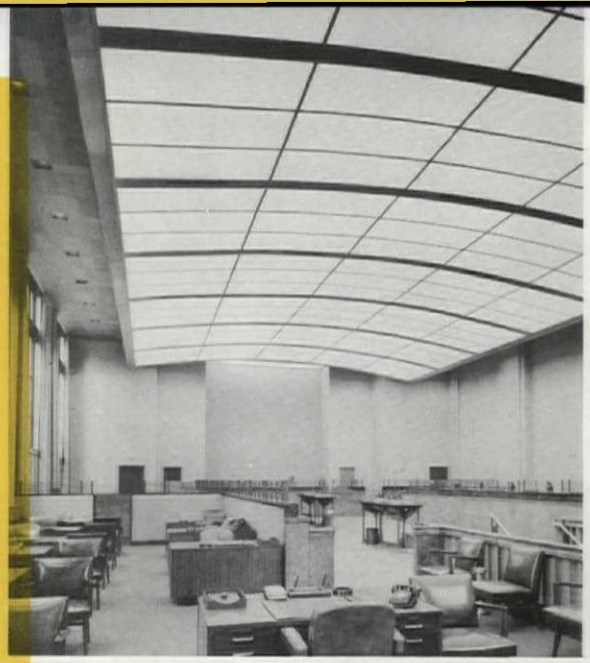


emphasize or understate textures, to bring out the sheen of polished materials and surfaces, to highlight interesting shapes, and even to alter the apparent proportions of entire rooms. In a word, more than ever, lighting *is* architecture. Far from being an accessory element to be added to buildings at a certain stage in their construction, it is a central design determinant which must be planned as part of the structural envelope and should influence decisively the choice of finishing materials.

Does this mean that the architect must become fully familiar with available luminaires, wattages, lamp spacing, and the like? In view of the increasing complexity of his other involvements, this is manifestly impossible. Although his responsibility for the lighting effect, the appearance of the light sources, and their relationship with finishing materials is the central one, he must rely on the lighting designer, illuminating engineer, and electrical engineer for projects of any magnitude.

Here, as in so many other areas of today's building, the solution lies in the right procedure. Like other consultants, lighting specialists yearn to be called in at the formative stages of a design, when they can make their greatest contribution. But even this, when it happens, does not relieve the architect of the responsibility for determining the desirable "lighting mood" for the various spaces and functions under consideration. He should also have an idea of the intensity of illumination appropriate to various parts of the building, taking into account indoor-outdoor relationships, fenestration, orientation, and so on. *And he must give these considerations priority over the appearance of the lighting equipment, as such.*

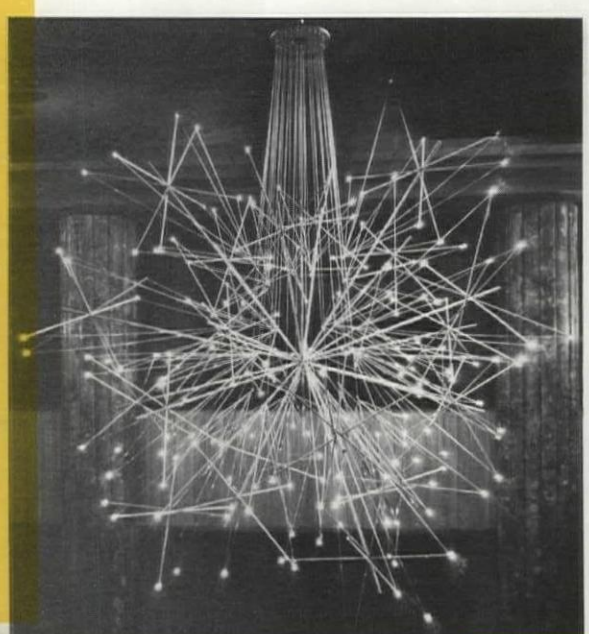
The contributors to this issue, while differing on details and even in their philosophical approach to lighting problems, are unanimous in urging the choice of an appropriate lighting "mood" as the jumping-off point for the solution of all lighting problems. Lighting Consultant Richard Kelly has suggested three broad terms for types of illumination which elucidate this point. The first general type he calls "ambient luminescence." Ambient luminescence, in the pure sense, is achieved only under conditions like those on the beach, on an overcast day, where completely diffused light is coming from all directions, but its effect is akin to the kind of flat, over-all illumination provided by indirect lighting and large, luminous ceilings, as in 1. This kind of lighting is usually regarded as functionally necessary for general office spaces and other areas, such as schoolrooms, where close visual work may be carried on at almost any point. As Architect Kenneth Welch points out, in his discussion in this issue, this type of illumination calls for the use of strong color contrasts to relieve visual monotony, and may well be enhanced with direct lighting of greater intensity to concentrate interest. Attention-commanding light, when dominant, Kelly calls "focal glow," 2, citing its ability to make small objects visually important, as in shops and display work. His third broad category is "play of brilliants," 3—the lighting art so well understood in the days of the candelabra, where a multiplicity of small but intense light sources impart sparkling accents to every reflective object and surface within range. What Kelly means by these terms is further illustrated in the presentation of his own apartment in this issue; the same general theme is developed and copiously illustrated in an article by C. M. Cutler of General Electric Company. A somewhat different approach—by way of light "forms"—is presented by Lighting Consultant Abe H. Feder, and a variety of related design points are made by pictures on the pages immediately following.



1

2

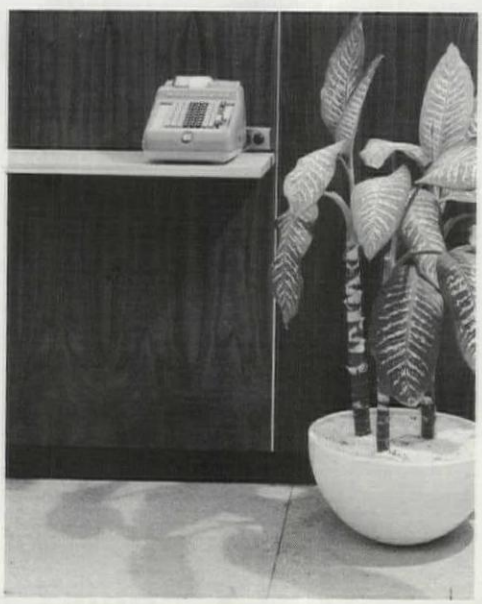
3



1

Beamed light, from concentrated sources and concentrating housings (employing reflectors and/or lenses), is useful for focussing attention, for vigorous modeling of shaped solids, and for creating brightness patterns of strongly illuminated and less brightly lit areas—"focal glow" **1**. *Where more varied activities are to be carried on the less-concentrated and more evenly distributed "beams" from recessed ceiling fixtures may be used for general lighting, while still giving emphasis to display material* **2**. *Combinations of diffuse and direct "beamed" light—the kind of lighting we get outdoors on sunny days with a good many white clouds—can provide excellent seeing conditions along with a modest sort of dramatic emphasis and modeling of solids* **3**. *Notice the extent to which the over-all appearance of the first and second rooms is influenced by the kind of lighting employed; and how easy it is to identify the kind of lighting present in the third example, even though the light sources are not visible in the photograph.*

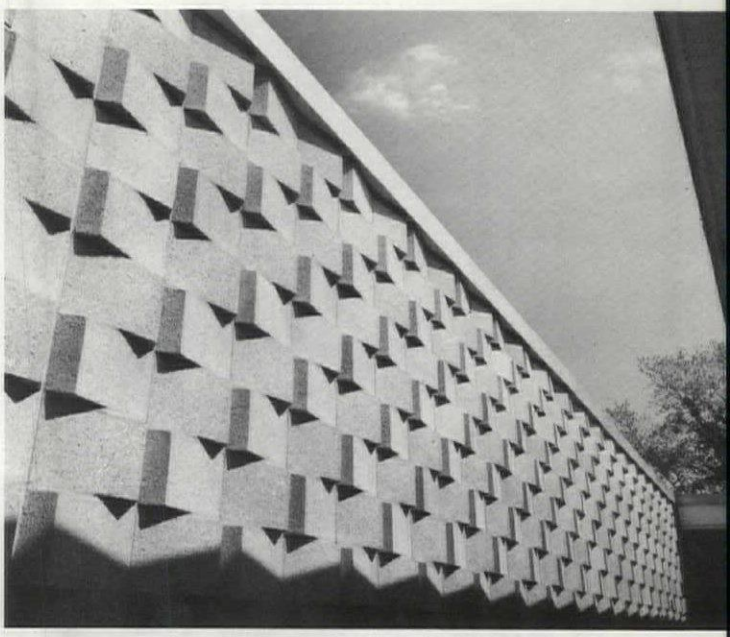
2



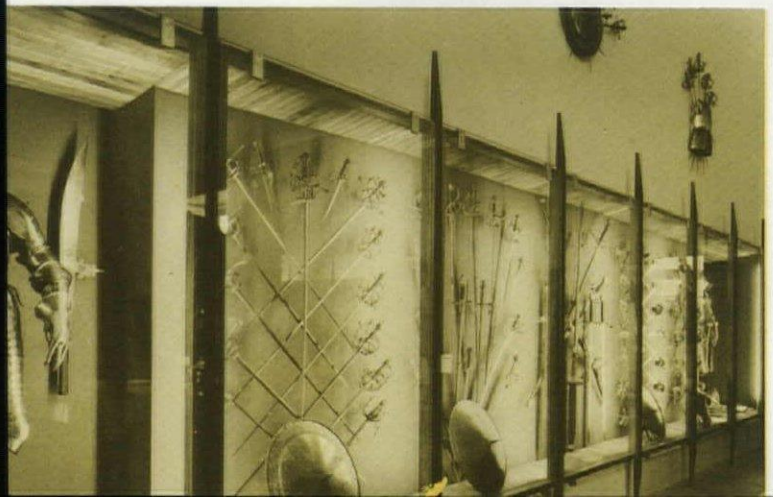
3

4

The huge glass roofs of the Victorian era—especially when high and narrow—were capable of providing a quality of over-all illumination hard to equal by any means today. This gallery, **4**, *would be almost ideal for the display of automobiles, as the directional band of overhead brightness would reflect as somewhat softened, linear highlights in the shiny parts of the car bodies much as a Detroit air-brush artist would render them. Hard, "beamed" light—like sunlight,* **5**—*emphasizes textural patterns. Not only should it be used for this purpose, the converse is equally true: use such patterned surfaces where beamed light is available and appropriate; forego them where it is not. Concentrated, concealed light sources,* **6**, *are capable of creating a luminous pattern even in a brightly illuminated room, and are thus an excellent means of overcoming the monotony of "flat" lighting. In this respect, the "palette" of the lighting designer is almost unlimited—no room is so brightly lighted that specific areas within it cannot be made many times brighter, and the adaptability of the eye is such that the result will be much the same when light is piled on light as when it is contrasted with a dimly lighted space or area.*



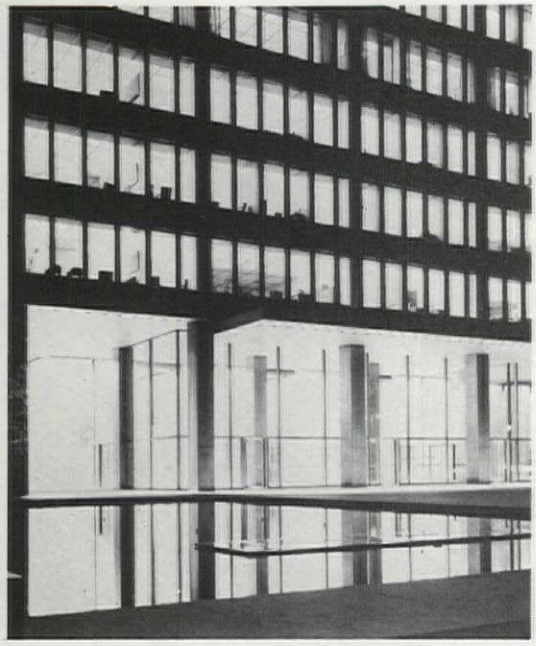
5



6

1

2



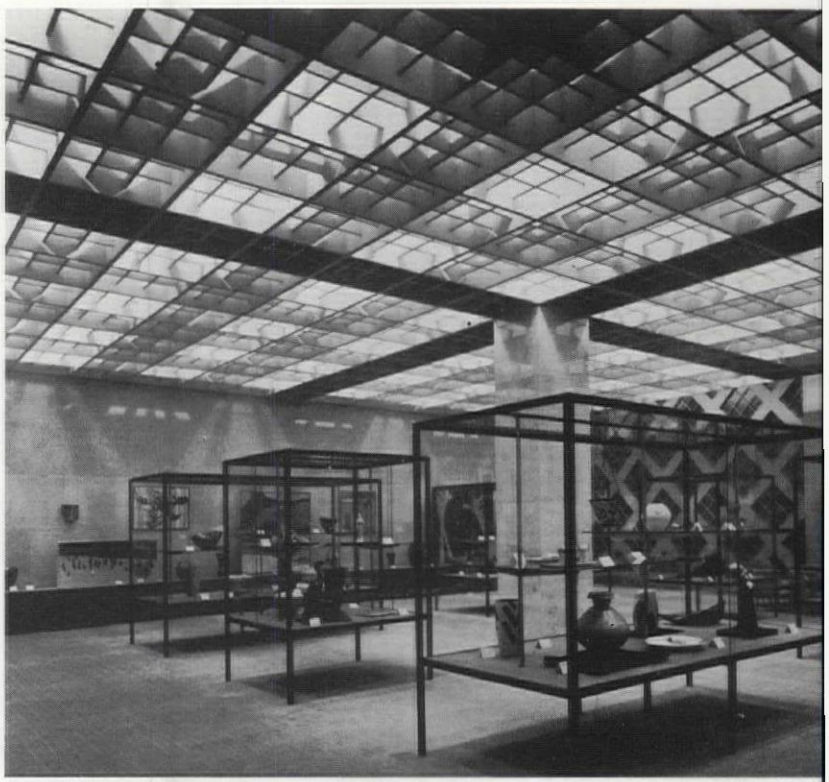
3

4

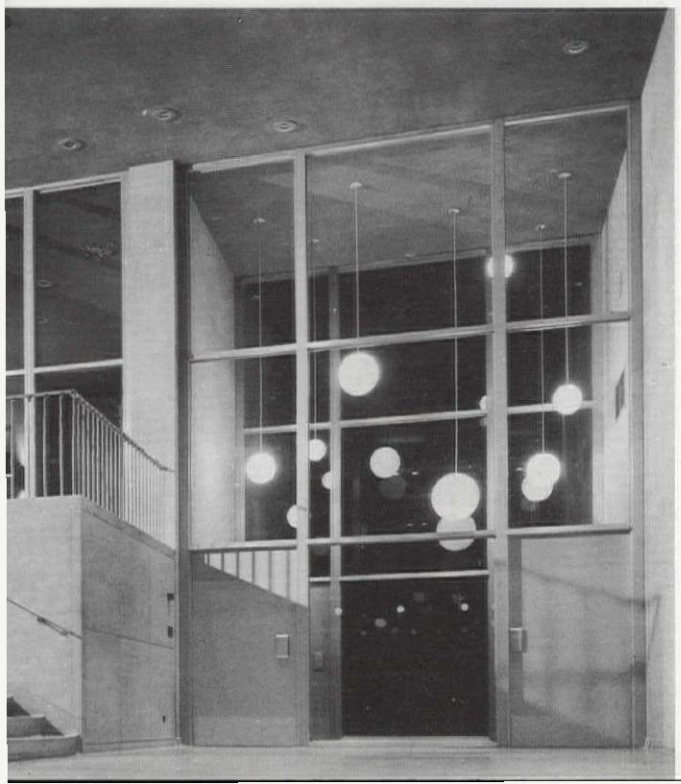
Outdoors, at night, light becomes the primary design material, as all else at the designer's command—color, texture, even form—either disappears or loses most of its daytime impact **1**. *Seagram House,* **2**, *demonstrates an awareness of this, as unique as it was inspired, and a skilled touch which included "matching" the incandescent lighting of the lobby floor with the fluorescent lighting above by the use of tinted darkening glass on upper floors. Recessed ceiling fixtures,* **3** *and* **4**, *become not only a part of the structure inside the building, but also an integral part of the curtain-wall design as well—in cloudy winter weather by day as well as by night. An irregular pattern,* **3**, *creates less of a "parallex" effect behind a grid wall than one whose regularity,* **4**, *leaves you a little confused as to which is behind and which in front—the ceilings or the wall.*

The pattern-producing potential of indoor lighting is still far from being understood or fully exploited. There is no technical reason why, for example, luminous ceilings must be uniformly lighted or even uniform in color; the designer is free, if he wishes, to create plaid patterns, **5**, *and introduce silhouetted members at will. Similarly, skylights need not be spaced with mechanical regularity unless we happen to want them that way. These,* **6**, *are full-size skylights scattered at random over a huge dome, with combination acoustical and electric-lighting panels floating between. Nor need lights be hung at uniform height,* **7**. *If we want a bit of playfulness, even a carnival spirit, lights are an inexpensive (since they are needed anyway) way to get it.*

5



6

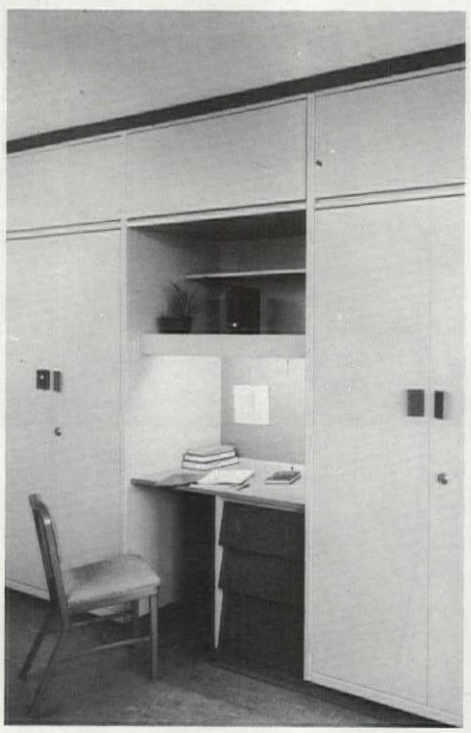


7

1

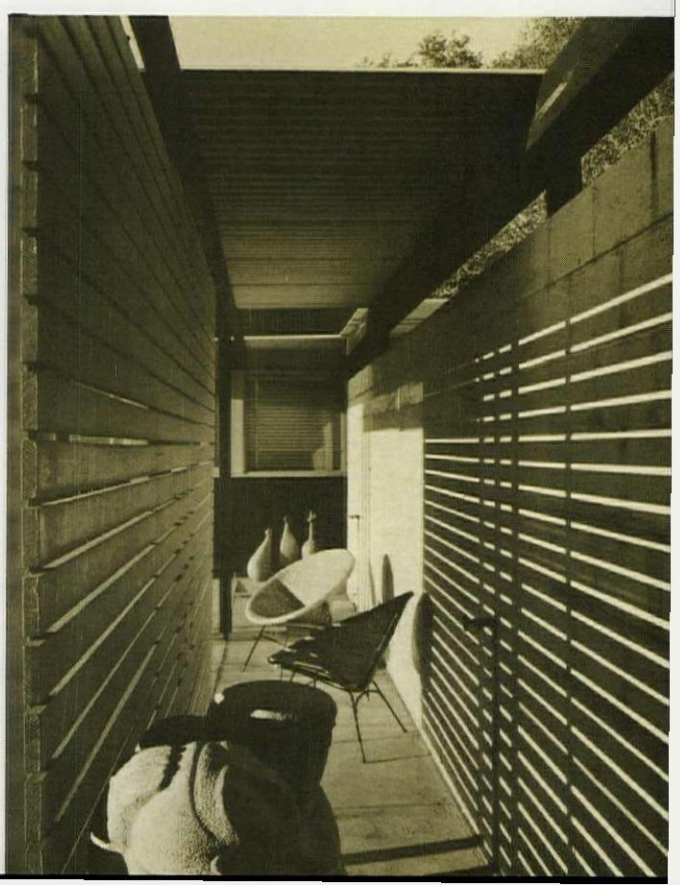
The room at **1** *demonstrates vividly that lighting patterns in inside rooms are independent of intensity. Although it is lighted to only about 10 footcandles it presents a full and decorative brightness range. Everyday utility offers decoration as well, since wherever light is concentrated,* **2** *and* **3**, *so is visual interest.*

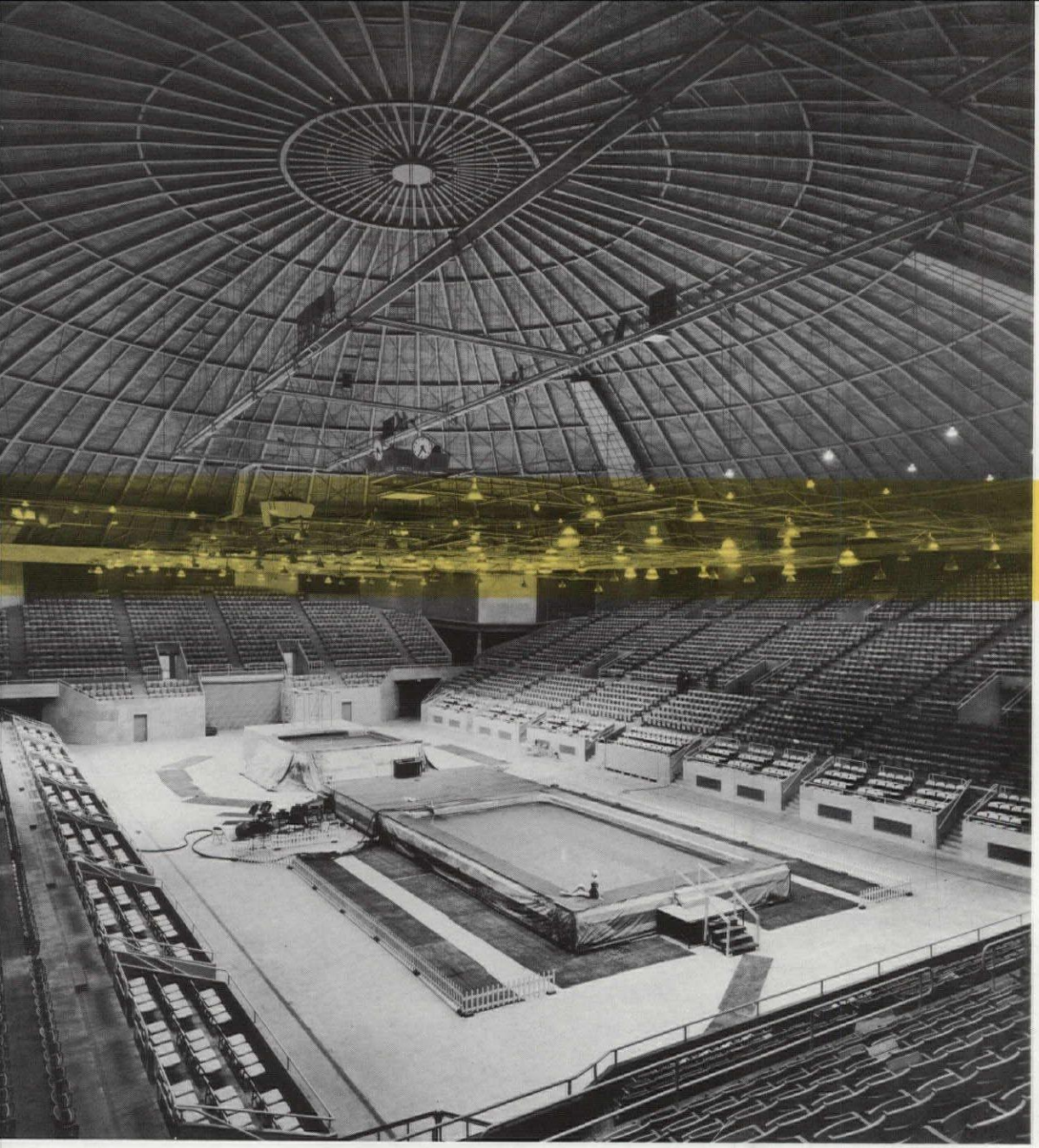
Lighting problems of sufficient magnitude, **4** *and* **5**, *sometimes call for solutions involving special structures. In the first case, a suspended grid midway between floor and ceiling simplifies the problem of lighting an auditorium floor (and concentrates interest where it belongs); in the second, auxiliary structures within a huge geodesic dome are utilized to support "long-throw" luminaires of special design.*



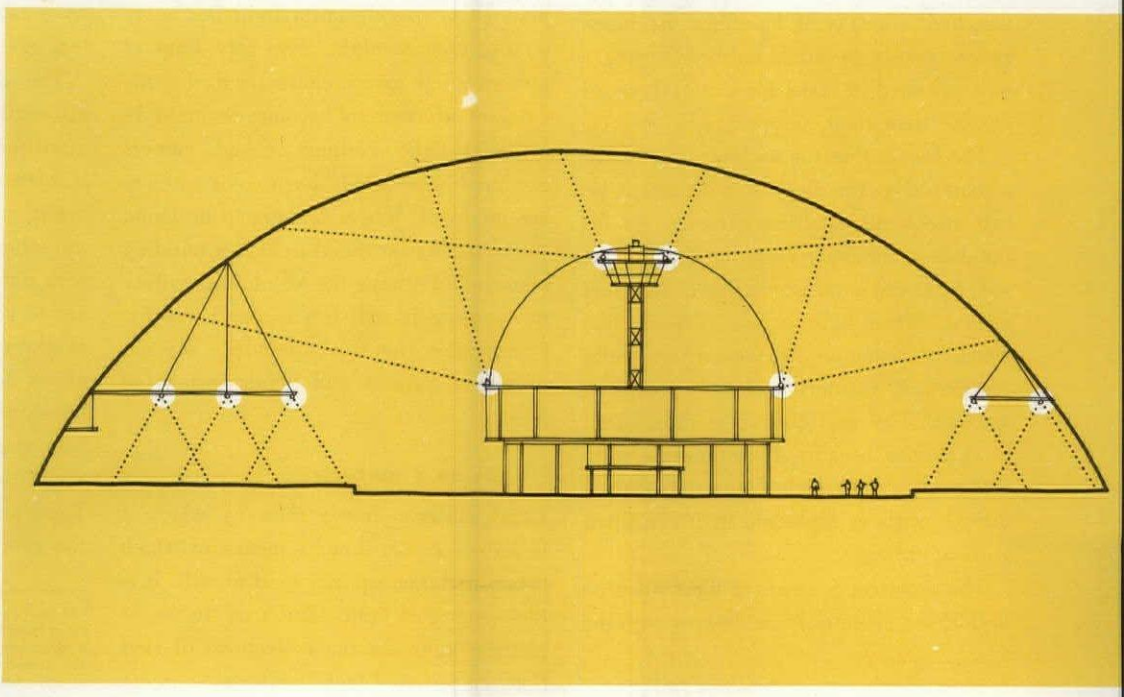
2

3





4



5

light as an architectural material

by Abe H. Feder*

the inner space

A building is constructed in order to cut off a segment of space and bring it inside. The real function of the building is to surround this inner space and be the material for its form. How the inner space is to be lived in and by whom, gives the building its definition. Concrete and stolid, it remains less real than the space it surrounds.

As the culture in which he finds himself becomes increasingly attuned to the subtleties of human living, the architect's attention is likewise increasingly concerned with building from the inside out. His focus is the inner space, but he cannot literally get his hands on it. He is forced to seek more and more flexible materials for his building, so that it can express as closely as possible the variable meanings of the living that exists inside. In a sense, the building is a skin which must be pliant enough to permit the inside organism to breathe. Unfortunately, neither bricks nor steel, nor glass, nor aluminum, nor what you will can be endowed by even the most gifted imagination with the qualities of skin. If the architect had a means of handling the inner space directly, he would not have to strain quite so hard to make his materials more flexible than their natures.

The fact is that the architect does have a material at his disposal with which he can attack his problem directly. As intangible as the inner space itself, light and only light can enter where bricks and steel cannot. Since light is not obvious, like wood, its potential has never been fully realized. It is, nevertheless, a building material. The most difficult medium of all to work with, because it is intangible, light is the only material which can shape space directly without replacing it. It can fill it without filling.

The architect is aware of light when he builds, but essentially he designs with the daytime-look in mind. Light is everywhere outside and he uses it indirectly by permitting it to enter the inner space in deliberate patterns. Windows are set high to achieve a downward sweep of light; rooms are oriented within a building to benefit from a northern light or the morning sun. Windows themselves can be stained glass or prismatic to color or direct the daylight coming through. Glass walls, translucent roofs, and the like are used to suffuse the inside with light, instead of merely allowing it to seep through relatively small openings in the walls. No matter how cleverly the architect makes use of daylight, however, he never touches it. That is to say, he never picks it up and puts it exactly where he wants it. By its very nature, he uses daylight indirectly; saying, here I shall let it in and here I shall not.

Primarily, buildings are daytime ideas; from the first, designs are set against daylight. The nighttime-look most often comes off second best, showing a willingness on the part of the architect to settle for the loss of his deliberate definition of the inner space. The room that was planned to sparkle in daylight lies heavy on the eyes at night. The very lines of a room which give it character during the day are allowed to become distorted in artificial light—ceilings recede, corners are harshly revealed, sharp color patterns are muddied. Where is there to be found the sense that artificial light is a building material? Perhaps the key to our failure in handling it well lies in our being fixture-minded, not result-minded. We are providing fixtures and lamps instead of results.

light as a material

Every material has a form by which it is known to us, and by means of which it can be taken up and used at will. It is the same for light. The true forms of electric light are the collections of rays that are radiated from luminous sources; these are light beams, in the broadest sense of the term.[1] To say that there are light beams is stating the obvious: to say that beams are the forms of light is not, at least not while fixtures and lamps are being mistaken consistently for the forms of light.

Today, we work with a great variety of light forms. As we learn to produce more types of artificial luminous bodies (filaments, gaseous, etc.) and find more ways to modify them (reflectors, lenses, etc.), we increase the variety of beams.

Beams vary in dimension and quality. Some beams can cut a swath through the dark as long as 350 feet and more; spherical beams are dissipated within a short distance of the source. Some beams will hit the floor, the ground, the wall, in a pool of light several hundred feet in width; others are mere pricks of light at that point. The shapes of beams are just as variable, and each shape is as marked as that of any other material. A beam can cover its target in a circle, an oval, an ellipse. Sometimes, it is true, a beam is shapeless, too tired by the time it reaches its object to hold itself together in any recognizable pattern. But this very shapelessness is also usable.

The dimensions of beams are easily discernible, but their qualities require a more subtle detection. The prime quality is intensity. A beam can overwhelm, striking its target with ferocious power, or, at the other extreme, gently spray its target with light. In between lie an infinite number of gradations. Married to intensity is brightness, not the same as intensity at all. A light form can be bright without having the strength to project that brightness any distance. Color is the quality to which the emotions respond most overtly. Together, the qualities of a light form are the sum of how light "feels" to us. We

* *Lighting Designer and Consultant, New York, N. Y.*

[1] *It has been suggested that what is meant here might be termed the "geometry of light flux"—which can be a shaft of parallel light rays, or, at the other extreme, the complete spherical emination from a point source, or any complex combination of the two.* Editor.

speak of an object being "gaily lit" or "harshly revealed." We discern a "soft radiance" or a "rosy glow." We ask to be bathed in "warm light" and become despondent in "cold light." We respond one way to light when it is directed on something other than ourselves, and differently when it is we who are in it. In a sense, the dimensions are the body of a beam, the qualities its emotions; and we, let us hope, are the mind directing it.

the use of light forms

The problem of choosing just the right type of light should be solved with the same care that the architect uses when he chooses between types of wood. As with any other material, the choice depends on the kind of living anticipated in the inner space. Will people be living intensely here, or will they be seeking quiet relaxation? Will they be learning (and probably with an increasing number of visual aids), or will they be reading just for entertainment? Will they be legislating or turning out machinery? What people will be doing, determines to a large extent their light needs.

Quite often there seems to be a total lack of understanding of the simplest light needs of the people living in the inner space. Why, even in newly refurbished churches and synagogues, is it frequently painful to try to read the very prayer books with which one is expected to participate in the services? In lighting practice, one also finds a confusion between one kind of living and another. For example, we still find theatrical lighting moving into homes. Theatrical lighting is designed to be looked at within a kind of picture frame by the audience; it is quite another thing to ask the audience to live inside that picture-frame lighting.

In choosing the type of light forms to be used in a given area, one other prime consideration is involved: How should people feel while they are living there? To see well is not enough; the architect is always concerned that the people for whom he is providing should feel right about where they are and what they are doing. It is true that a romantic glow is hardly appropriate for the sharp efficiency expected of factory workers, but it is equally questionable whether the stark light provided by unbroken lines of bright luminaires is any more conducive to happier people and better working habits. Machines do not respond to the qualities of light, but men do. Thus, when light forms are used quantitatively only, footcandles become the prime concern and human beings incidental.

Knowing the kind of living to be expected in the inner space tells us something about the kind of light forms to be used, the kind of beams we are looking for. The next problem is to take these beams and relate them to the inner space as such. This is the most obvious step in building with light forms. Do we want to pull in the ceiling and walls to create a sense of intimacy? Do we want to divide the inner space, giving some of it over to reading, some to talking, some to eating? Do we want to create a focal point in the room, dramatizing, let us say, the speaker's dais, so that there is no doubt where the center of interest should be? Or do we want to fill a room with daylight, keeping its character the same at all hours? Once more, light is the only material that can mold the inner space directly, and should be exploited relentlessly.

Many, many considerations go into the choice of light forms. Carefully as room layouts are plotted, so too are beam layouts. The kind of beam that will do a particular job is chosen; the layout is made to determine how many of these forms will be needed in a given area. Again, it is a question of quality before quantity, and light forms before lamps.

It may seem impractical to determine beam patterns before the type of lamps to be used. Yet it is the only practical way of using light as a material. The choice of lamps must depend on the kind of light forms we need; otherwise, it is a case of the tail wagging the dog. We are all of us overimpressed by what is available, although we are the ones who do the buying. If we need certain light forms which available lamps cannot provide, as customers we are in a fine position to do a little screaming for what we want. The lamp companies are not indifferent to our needs. Many a new type of lamp has come into being to meet the needs of a particular lighting design. It is the architect who is building; let him be the one to define the kind of sources he needs.

light sources

Unlike any other material, light is controlled through another medium, its source. A knowledge of light is not to be used wrongly. To abuse a lamp by trying to force out of it a light form it was not meant to project, by believing certain housings can change its essential nature, is to use a material wrongly. As Frank Lloyd Wright stated in his *Testament:* "Each material may become a happy determinant of style; to use any one material wrongly is to abuse the integrity of the whole design." No housing can change the essential nature of a lamp; no housing can produce a light form which the lamp is not inherently able to produce. Therefore it is of the utmost importance to determine lamps before housing. Lamps are the primary sources of light; luminaires are not sources but modifiers.

Today, we are dependent on three main types of light sources and therefore three main types of light forms. The oldest source in common use is the incandescent bulb; the fluorescent lamp has been widely used for about two decades now; and the mercury-vapor lamp, designed some time ago, is now coming into common usage. Yesterday, the story of light sources was different; and tomorrow, light sources as we know them may disappear entirely. If we think of light forms first, this should not bother us.

The incandescent bulb radiates light from a single source, a filament. It is comparatively simple, therefore, to gather up this light and throw it out in any direction, either spreading it thinly over a wide area or pulling it together into a single hot, narrow beam. Built-in reflectors and lenses can change the dimensions and even qualities of a beam. The first intensify it, making it travel farther in a given direction; the latter make it narrow or wide, diffuse or harsh, at the point of target. In terms of color, no other light form can match that projected from the incandescent source. The color curve of the incandescent light form rises gradually from the far-violet band in the spectrum to its height in the far red. Incandescent is kind to the warmer colors. If we paint a room a subtle pink, we can feel secure that under such light at night, it will still be pink. People look "right" within the incandescent light form, and feel normal.

The fluorescent lamp was hailed as the solution to all light problems, for it had two characteristics the incandescent could not begin to match: it gave triple the light output at a given wattage, and it more

than tripled the life span of a lamp. But the light form it projected was something else again, and it is no surprise that the incandescent bulb did not become obsolete.

The fluorescent tube contains a drop of mercury which, when heated to a certain point, emits ultra-violet radiation. The tube is coated with phosphor particles which absorb this radiation and convert it to visible light. These particles are the light sources basically affecting the light form projected from the fluorescent lamp. First, the form is shapeless, since light is emitted from an infinite number of points, flying away from the lamp in all directions. When we stand under a fluorescent lamp, we are literally being "sprayed" with light, and so too is everything else around us. Such an amorphous light form cannot be directed, or aimed with any real success. The fluorescent source is therefore ideal for providing general lighting; indeed, there can never be anything specific about it. Within the six sides of a room, we can be sure the light is not being lost, that it is hitting at all sides in every direction and bouncing back somewhere into the inner space. Outdoors, it is another matter.

By its nature, the fluorescent source has little "reach" power. It cannot hold its light rays together long enough to travel any great distance to a given point. Outdoors, for example, without walls and ceiling to act as salvagers, some of the light rays "hover momentarily" around the lamp, and the rest tear off into space.

In dimension then, the fluorescent light form is amorphous; in quality it is bright, but not intense, spraying light gently. As for color, here we have a basic problem. To put it simply, some phosphors radiate light in one color band others in many. Those phosphors primarily of the red group do not radiate enough light under the carefully regulated conditions of the fluorescent lamp to warrant their widespread use. In mixing phosphors to produce the various kinds of "white" light now being used, phosphors of different color groups are used to produce a lamp which radiates throughout as much of the spectrum as possible. The problem has been to find a phosphor which will provide the necessary red component, but which is efficient enough not to reduce sizably the lumen output of the lamp. A fairly good balance between efficiency and color can be obtained today in the warm-white deluxe fluorescent lamps, but the problem of color distortion is far from solved.

The highly loaded lamp, a newer type of fluorescent tube, permits more wattage and phosphor particles to be used within a given length. This intensifies the light form considerably, and gives some reasonable basis for trying to control it. Because of the shape of the tube, too, more light is directed downward to begin with. In situations where an intense overall illumination is called for, the highly loaded lamp has proved ideal.

The third light source in common, if not household, use is the mercury-vapor lamp. Here mercury is vaporized by a high pressure until it emits light within the visible spectrum. The mercury charge is contained within a small quartz tube which is then placed within an outer casing, either linear, like the fluorescent tube, or pear-shaped, like the standard incandescent bulb. It is the pear-shaped mercury-vapor lamp which is being most exploited, because its light form is more controllable.

With almost the same lumen output per watt of the fluorescent source, the mercury-vapor source pours out its bright light from a single point, and as with the incandescent lamp, self-contained reflector casings are used to great advantage. The mercury-vapor light form has three times the efficiency of a comparable incandescent lamp. The lamp itself has the life span of a fluorescent. It would seem to combine the advantages of the incandescent and fluorescent sources. But it has marked disadvantages. At the moment, it cannot provide the light form needed to pin-point a tiny object, for example, as the incandescent source can. The smallest mercury-vapor lamp available is that containing a 100-watt charge, projecting a light form three times the output of a 100-watt incandescent bulb. So the very size of available mercury-vapor lamps is a limiting factor in their use.

Color is also a limiting factor. Emitting light waves in the green and yellow color bands only, the mercury-vapor lamp muddies almost everything that falls within its light form. Orange and red appear brownish or black. The effect, however, is good when red is added. This is done by coating the bulb (or its self-contained reflector, if it has one) with a phosphor which emits red light or by using incandescent bulbs along with mercury-vapor lamps. By adding red, mercury-vapor light contains a fairly complete set of color components (green, yellow, red).

What fluorescent light sources lost to us was the prerogative of picking up light forms and placing them where we want them. This can be done to an amazing degree with incandescent, because of its very nature. Fluorescent, the undisciplined of the light sources, defies this kind of control. But for the sake of efficiency alone, if nothing else, the fluorescent source was adopted almost universally for almost every purpose, and attempts were made to force on it the duties of the incandescent source. Now, however, the mercury-vapor lamp, particularly those with reflector casings, gives us an easily controlled light form almost as efficient as the fluorescent and certainly more intense.

We have been examining light sources on an elementary level, not to find out about their physics or even their economics, but rather to discover what type of light forms each can project into the inner space. The incandescent source remains the most clearly defined and hence the easiest to control; its dimensions can vary exceedingly; its light output (for a given wattage) is the least of the three forms discussed; its color quality is excellent. The fluorescent light form is amorphous in shape and size; of the three forms, it is the most efficient, but the least intense; its color factor can be good, but color distortion is still present. The mercury-vapor light form is once more easy to control; it is both efficient and intense; its color factor is the poorest of the three but potentially should equal at least that of the fluorescent form; at the moment, its dimensions are limited. Without these distinctions in mind, we cannot build with

By floodlighting, we reclaim the outdoors for night use.

light forms. All we can do is install luminaires with an on-and-off switch.

housings

Light forms, light sources, light-source modifiers—this is the order in building with light. There is no doubt that there are many light controls other than housings. Ceiling contours; wall, floor, and ceiling finishes and colors; dimmer equipment—all these help to change the light forms in some way. But none does it as obviously and easily as the housings, the luminaires. Glass or plastic set in front of a beam can diffuse it, widen it, sharpen it. The configuration of the housing itself can shape to some extent the light form in space and at the point of target. A tinted housing can change the color quality of the light form. But the housing remains essentially a modifier, and unless it is used in the right context, it can nullify the meaning of the light form. It must belong so completely to a specific light source, that switching a lamp to another type would destroy the form of the second.

No housing can change the nature of a light source. The most expensive reflector housing will not change the amorphous fluorescent source into a beam with shape. The best it can do is to act as a mirror for some of the light rays going directly upwards, sending them back down. But the infinite number of light rays involved will still spill out in an infinite number of directions, once released from the housing. In the same way, the curve of the reflector housing which directs the light form of a given incandescent floodlight most successfully is not the one to be used for the same size mercury-vapor floodlight; in the first instance, the light source, the filament, is set parallel to the front of the lamp, and in the second, the light source is a gaseous arc set perpendicular to the front. The light rays of the first hit the reflector at a different angle from the light rays of the second, and the angles at which these rays are to be thrown out into space differ as well. In fact, this is, in essence, the problem of the reflector curve, and the reason why each type and size of lamp requires its own curve.

The housing which modifies a light form in many directions is suspect, since, as a rule, each modification is a light absorber. Start with a very powerful lamp and put it in a housing; this is the first loss of light. Add a tint for color correction, add a reflector to direct the light and put a lens in front to intensify the beam; increase the volume of the housing for heat dissipation and decrease the aperture for still better direction. Add to the housing indefinitely and at the same time subtract from the illumination indefinitely. The resulting illumination is still very powerful—inside the housing where it is bottled up. Outside, despite all the niceties of a refined light form, the very powerful lamp might just as well be a quiet night light on a bedside table. When too many modifications of a light

form are called for in order to use it exactly as one wants, the time has come to look for the light source which by nature can produce a form closer to what we want. If the light source doesn't exist, it may be worthwhile to start needling the lamp companies.

The "don'ts" of housing are simple: don't try to change the nature of a light source with a housing; don't put one type of light source in a housing designed for another; don't bottle up the light inside an ingeniously designed housing, forgetting that lamps are supposed to provide illumination; use only necessary modifications, and these to the least possible degree. The "do's" are not so simple. The housing *can* extract from a light source the full potential of a light form. The right tint of bluish or yellowish red added to the housing which holds a mercury-vapor lamp can make the resulting light form pleasant to be with. But the shade used outdoors is different from the one used indoors; the shade used when incandescent light forms are filling the same space is different again. The subtleties of sound housing design are as varied as the different situations in which light forms are used. Even within the same situation, the housings for two of the same type of lamps may be dissimilar. For example, a light form may have to fill a space 300 feet in length from light source to target. The light form placed next to it, however, may only have to be 250 feet in length. Both are projected from the same type of lamp, but the shorter light form might prove too "hot" at the point of target unless it is diffused more than its sister. Some etching, just the right amount, on the inside of the housing would solve the problem. But that particular degree of etching belongs to that particular lamp used in that particular situation. The more we particularize our housing designs in terms of the lamps used in a given situation, the more we use light forms as a building material.

light levels

What drives most of us toward thinking of luminaires and lamps before light, is the problem of light levels. This leads us toward giving more emphasis to statistics (the lumen output per watt and the footcandle measurement) than quality. Put a meter near a window during the day, and the needle flies to the 200 footcandle point and above. The same needle in normal electric light registers a reluctant 10, 20, 35; it may even register 50 footcandles, if the building is one of the newest. So while we push toward daylight levels, we are still far below where we think we should be.

Ours is a culture of the written word and precision instruments, and such a culture requires comparatively high levels for seeing and doing, particularly in our commerical, industrial, and public buildings, and in some areas of our homes. The question is whether we have to reach much further than 50 to 75 footcandles. No matter how many lamps we may install, we are still producing light in patches. Daylight is all around us, from the ground up to the sky, and as far off as one can see. Once we turn on the lamps, however, we are constantly having to adjust from feeble light to a blaze of light to darkness, and back and forth in no pattern. A level of 50 footcandles seems twice as bright during the night as during the day. The contrast between a dimly lit outdoors and a blazing interior is painful. The contrast between corridors and rooms, and even one room and the next, can be no less painful. Short of hanging another sun over the world at night, these sharp contrasts will always exist and will become sharper as we raise our footcandle levels. The emphasis should be on *comfortable* levels, not daylight levels.

What is comfortable will vary with the type of living in a given area. Daylight forces on us a certain outgoingness; however we may enjoy it, we also prize the intimacy of a dimly lit room, a shadowy corner, a feeble circle of light which doesn't revel everything to the point of nakedness. One footcandle may produce the exact comfort we want for chatting with intimate friends, listening to music, just sitting and thinking.

It is time for us to stop and consider what the ideal levels of illumination should be for *electric* light. These must be based on the qualities of the light our present means produce, and our reactions to this kind of light. Electric light imposes on us as daylight does not, since we are always aware of it.

number and economics of luminaires

The statistical approach to lighting can be disastrous economically. The wiring and fixture budget of any building project today is a shock. The purchase and installation costs are only the beginning, since they are over when the building is up. The real story is the maintenance—and this is never over.

The economics of lighting does not begin by deciding on the footcandle level for a given inner space, and installing the right number of luminaires to provide for this illumination. It begins with considering light forms first. In providing the required level of illumination by the measurement method, we may be using uneconomic lamps and luminaires. We look for the lamp which provides a greater lumen-output per watt than another, since it is more economical to maintain in terms of the electric bill. But if the illumination is not intense enough to reach the working plane, and desk and floor lamps have to be added, once the architect has departed, that particular lamp is costing a lot of money.

This is really part of the question of providing higher and higher footcandle levels, and another reason why a point must be reached where good standards stay put. More lamps, more fixtures, more wiring, more maintenance—all increase the lighting budget proportionately. And there is a further factor—heat. Every additional luminaire radiates additional heat which the air-conditioning plant has to remove. The excessive number of luminaires will show up on two budgets—the one for air conditioning as well as the one for lighting. Statistics play their part in a lighting design, but only a part. The search for the right statistical balance cannot be undertaken without a sound knowledge of light forms.

When we use light forms unwisely, we abuse our purses. A light source too dim

or too bright for its purpose is wasted; a housing that is designed contrary to the nature of its light source is also so much waste. We do not use diamond dust to fill in the crevices of a stone fence; we know our materials here. Unwittingly, however, we often use luminaires that are gold-plated in more than one sense, because of our confusion about light as a material.

lighting organically

Lighting organically means lighting up the inner space in relation to the needs of the people who use it. Remembering that a light form has more than width and length at the point of target—length from light source to target and breadth, as well —we can use light forms as bricks, placing one on top of the other. We literally can pick up a form and place it anywhere in the inner space and be sure it will stay put. Darkness has a way of covering up everything—the most ambitious man-made structures, the tiniest ant hill. We are struggling constantly to push it aside. One beacon of light is like the fabled needle; two beacons are just two needles. But if we place light forms side by side in space, the darkness cannot seep through.

The clearest example of the use of light forms as a building material is the floodlighting of an unconfined outdoor area. No project is more challenging, for here light is called on not only to shape the inner space, but to create the outer dimensions of that inner space. It must serve as the building itself.

When outdoors during the day, we feel we are somewhere, because we can see where we are going. At night, we are nowhere, and our urge is toward light, to get inside, to be somewhere again. The trick of using light outdoors is to create an inside, a place. This means creating a sense of walls and ceiling, as well as an inner space. The walls are not difficult to determine; they are set along the perimeter of the given area. The ceiling is not as easy to set in place, but we do know that the sense of place would be gone if the ceiling were not higher than any ceiling indoors, even out of sight. The sense of security of an inner space would be lost if we felt the darkness were about to fall on our heads. By targetting light forms from a given height to the ground, by lining up these forms out to the perimeter of the area and no further, we create both a structure and an inner space. Again, the kind of light forms used depends on the beam shape, dimensions and intensity needed to fill the inner space, and the qualities required to define the kind of living to be done in it. Are people motoring, promenading, playing, selling, buying? One outdoor inner-space is different from the next.

When we floodlight not just to target an object or the ground, but also to fill a volume of space with light, we recreate the quality of daylight so familiar to us that we never discuss it: its all-aroundness. An even blanket of light starts from the ground and reaches upward evenly, over a vast area, to almost as high as we would wish. This can mean reclaiming the outdoors for night use. We can build not merely places for recreation and sales, but also we can return to the city streets and parks a daytime security.

Staying outdoors for the moment, we can move on to the use of light as an adjunct to architecture, where it is handled more as a decorative than a building material. Yet even when it is being used essentially to dramatize, the lighting must grow out of the architecture, underscoring its intent. A modern office building, a shaft 40 to 50 stories high, is pointed at the sky. For all the practicalities of building high to provide a lot of floor space, there is also the sense of man refusing to stay in bounds and insisting on getting off the ground. Yet, at night, his rebellion is a nothing, since even the enormous shaft he pushed upward is obliterated. Floodlight it, push the darkness away from it, and let everyone see it. This is using light within the architectural intent, even while it is a subsidiary material.

Sometimes, the darkness is used deliberately as part of the lighting design by carefully separating light forms. For example, to dramatize a store, we may wish to create a maypole effect by rolling out colored bands of light from one pole. The effect is gay, a natural "come-on" to customers. If the intent of the architect was to build his store in a manner that would turn passers-by into customers, he has used light to preserve his intent.

Moving inside, where once more we are concerned with light as the only material which can penetrate the inner space, we come to the architect's use of light as one of his basic materials. This is most clearly evident when he keeps his luminaires invisible, and when he is forced to concentrate on the use of light as such. When it is important not to introduce forms extraneous to the meaning of the inner space, luminaires are to be avoided. In a chapel, where all embellishments are in themselves religious symbols—and at best a luminaire would be ornamented to be a symbol of a symbol—invisible light sources might be called for. The light would be used to dramatize the true symbols, to emphasize the meaning of the altar, to provide illumination for reading the services. In other instances, on the contrary, it might be desirable not merely to show the luminaires, but to show them off. A crystal chandelier can be the very center of the entire decor of a dining room.

Light can be used in many ways; at all times, it is used to fill out the inner space with illumination. Sometimes it is used to strengthen the architectural lines of a room, as in the case of a luminous plane shaped to match the contours of what it is defining below. Sometimes light is used as an architectural form in itself. A luminous "fin" might be constructed to jut out below a high ceiling to bring a room down to the human scale, without necessarily destroying the grandeur of the room.

Light can set up the kind of living to be done in the inner space, sometimes obviously, sometimes too subtly to be noticed. The most obvious is theatrical lighting, in which shafts of light are poured within a picture frame or onto an arena stage, calling everyone's attention to the area blatantly, announcing that something larger than life is about to happen, a drama. This kind of lighting, the deliberate exposure of light forms to view, is too oversized for normal-sized living. There are

occasions, however, for an unsubtle use of light to create certain moods deliberately. In a night club, a good deal of the inner space is left unfilled, making use of the darkness to separate each table into an island; each island is given its own pool of light. The qualities of the light forms are soft and colored to the subdued tints in which almost anyone can look and feel glamorous. Everyone is aware that the mood is being "planted" on them by means of the lighting; but everyone is seeking such a make-believe world. What makes people comfortable about it is that they can see with their own eyes that it is make-believe.

Light, however, can define the living intended within the inner space with as much subtlety as the nightclub design lacks. We can take an exhibition hall where wares are hopefully displayed to the public. What is needed here is to make the wares look good and the people feel expansive. The general lighting has to be pleasant enough to make people look well to one another and to themselves, to put them in a good mood, but also sharp enough to keep them alert. The wares, on the other hand, have to look precisely what they are and still be made a center of attraction. In other words, different light forms are called for within the same design. A little color distortion will go a long way in making people look (and feel) better, while the same distortion is disastrous for exhibits. In this instance, the light forms might have to originate from inconspicuous luminaires which remain a rather monotonous background so that the people do not become charmed with the ceiling instead of the exhibits. We may look at such a hall filled with sparkling displays and rosy people and think the lighting adds nothing; it was not meant to. It was never meant to detract from either the wares or the public, but only to define an inner space used primarily for exhibiting and buying.

Some discussion of luminaires and their use architecturally is also in order. If luminaires are visible, they should be part of the architectural design from the beginning, not appendages. When they are afterthoughts, the deliberately planned lines of a ceiling are broken up by the "right" number of luminaires to provide the "right" number of footcandles. They look like the afterthoughts they are, and no amount of ornamentation can hide the clutter. In the design stage, ceilings can be planned with vaulted recesses to hold certain types of luminaires, or with allowances made for recessed fluorescent coves set along the perimeter, or as an entire luminous plane, and so on indefinitely. All ornamentation, even where luminaires are concerned, should be organic, growing out of the architectural design. The less a luminaire announces itself as a lighting fixture and the more it appears as an integral part of the deliberate design of an area, indoors and out, the nearer it gets to being organic ornamentation.

Often a luminaire can serve as a "conversation piece," in itself the center of the eye's attraction on entering a room. We have to have light. Why not make a "thing" of it? But again, the conversation piece, however lovely in itself, serves no purpose unless it is part and parcel of the entire decor.

We could go on at length, discussing how light can not only shape the inner space to suit it to different kinds of living, but also how it can make a given space flexible enough to contain different kinds of living. Luminaires as ornamentation and as architectural forms also deserve more attention. However, after a lengthier discussion, the conclusion would be the same: everything depends on how well the architect relates light forms to the inner space.

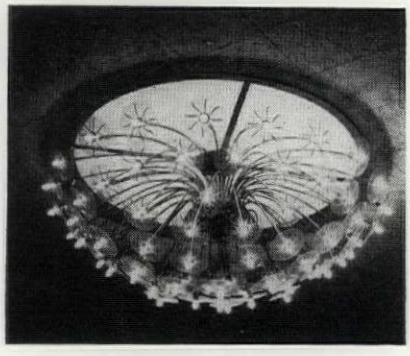
conclusion

Light is the one material which can shape space directly. Unlike daylight, electric light can be picked up and placed exactly where we want it. The forms of light, by which it can be handled, are its beams. A knowledge of light sources is essential to a knowledge of light forms. Luminaires are only the modifiers of light sources. No housing can change the nature of a light source. To approach a lighting design statistically, deciding first how much illumination is required and how many luminaires can do the job, can prove disastrous both architecturally and economically.

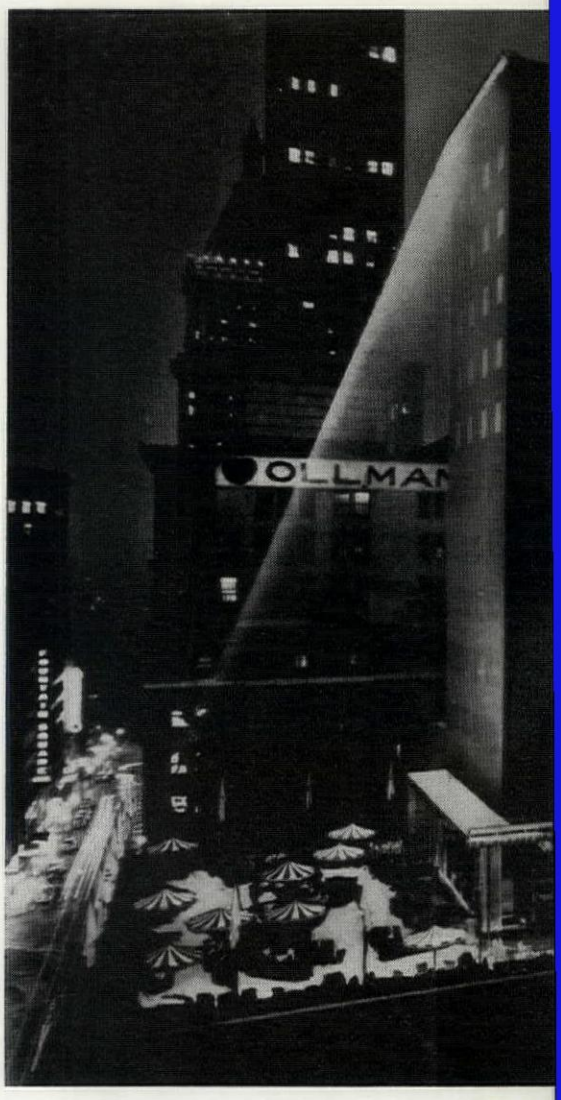
When we relate light forms to the inner space and the living anticipated in it, we are building with light and lighting organically. The lighting design should be part of the initial architectural plans, and not an afterthought. The most fruitful way, in every sense, of using light is to use it as a material in itself.

1

1 *When one fills a volume of space by floodlighting, the quality of daylight—its all-aroundness—is created.* **2** *In some instances, it may be desirable to show off the luminaire: a crystal chandelier can be the center of the entire decor of a dining room.* **3** *Floodlighting a building—pushing the darkness away from it—is using light with an architectural intent, even while it is a subsidiary element.* **4** *All ornamentation, even where luminaires are concerned, should be organic, growing out of the architectural design.* **5** *A maypole effect can help to dramatize a store: the effect is gay, a natural come-on to customers.*



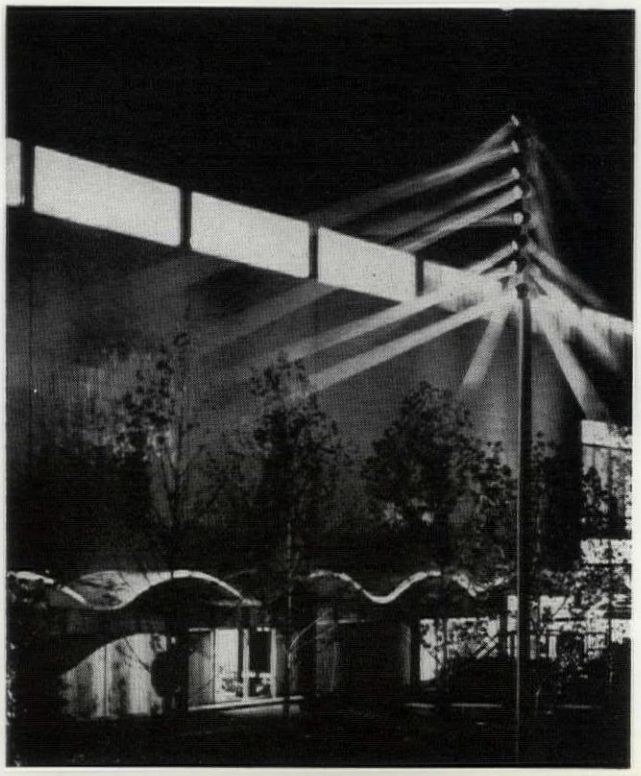
2



3

4

Illustration credits: page 278



5

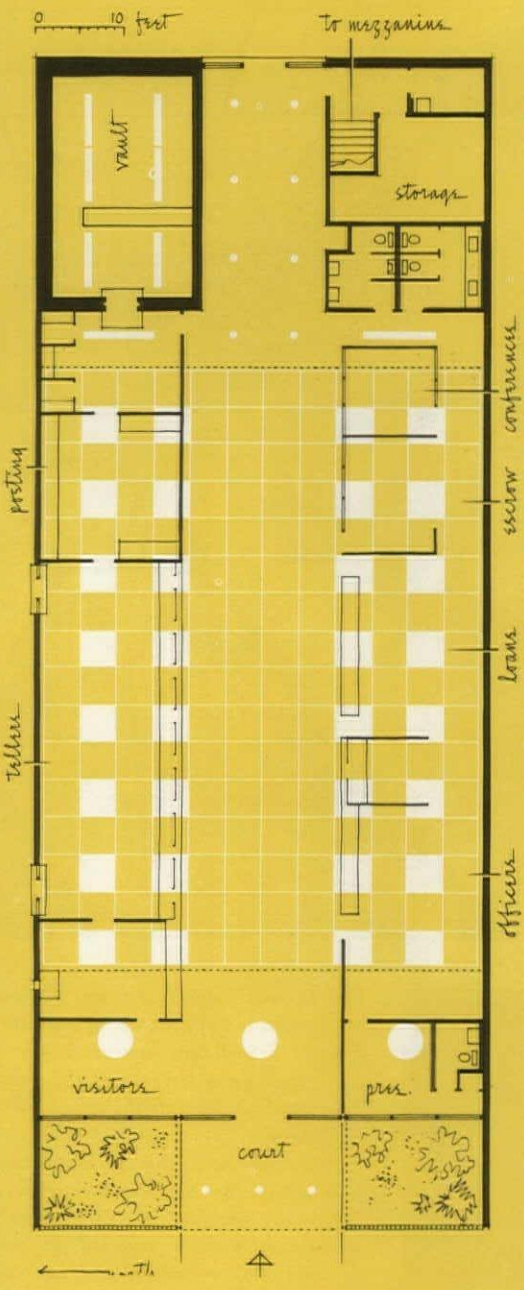
LIGHTING IS ARCHITECTURE

enrichment of materials

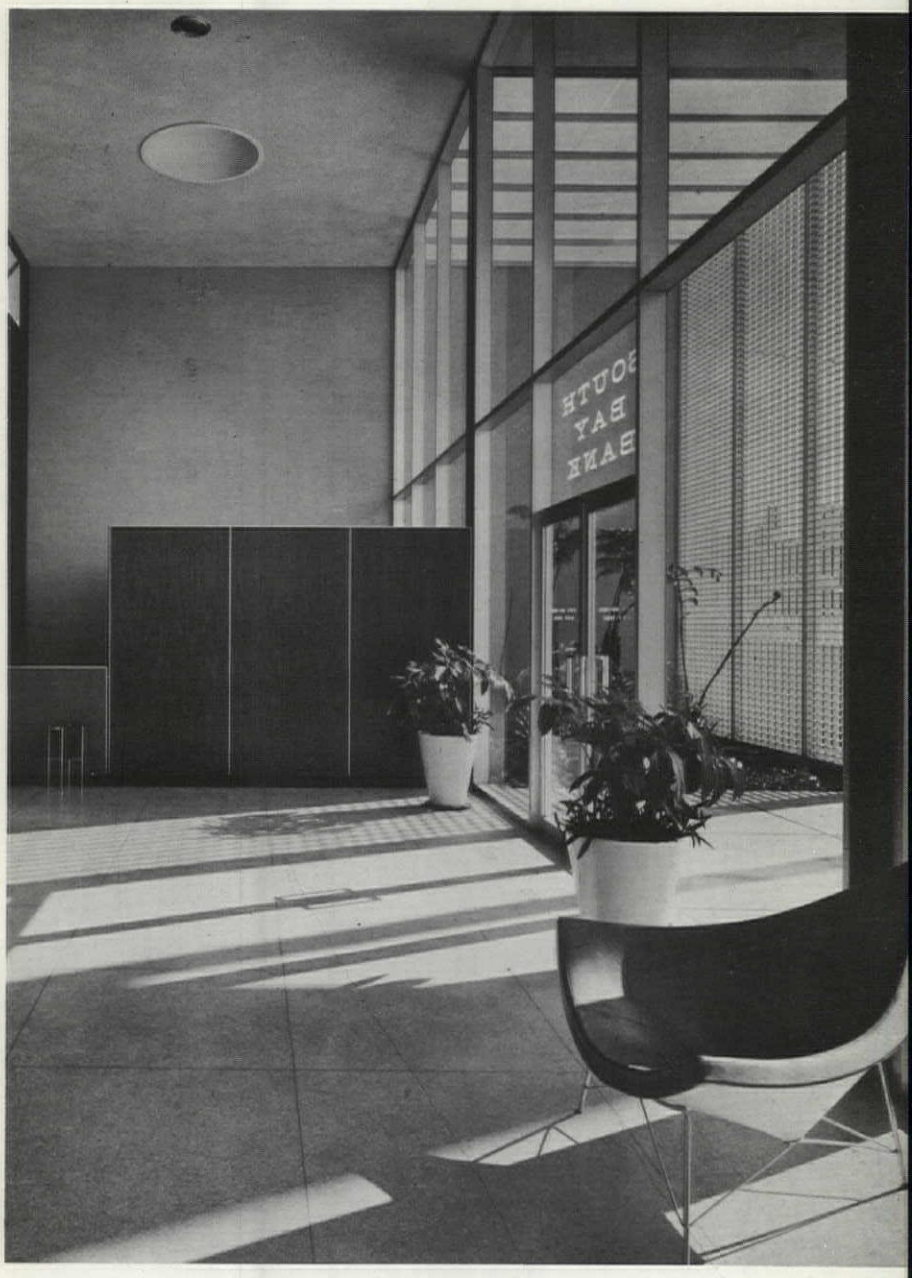
Architecture, interior planning, and graphic design for the South Bay Bank of Manhattan Beach, California, is the work of Craig Ellwood Associates with Jerrold E. Lomax as Associate, Norman N. Rosen as Consulting Architect. Albyn & Charles Mackintosh were Consulting Structural Engineers; Jack Miller, Mechanical Engineer; Jocelyn Domela & Warren Walz, Landscape Architects; Gattmann & Mitchell, General Contractor.

While it was one of the chief design aims of the architects to express lightness—that is weightlessness of structure—note the lightness in the sense of illumination, which they have simultaneously achieved. Structural means toward lightness were the steel and aluminum members which, with concrete block, also gave the bank the desired quality of permanence and solidity. Chief means of artificial illumination were the 8-tube fluorescent fixtures, recessed into the ceiling on a 4-ft module. These squares, rendering 45° shielding through miniature-celled plastic louvers, alternate with square of perforated hardboard for acoustic purposes. For design contrast three circular, 8-tube fluorescent fixtures are recessed in the acoustic-plaster ceiling in front of the steel truss. These fixtures are not lighted during most of the day, since this area is amply daylighted through the glazed west façade. Two aluminum grills filter the daylight before it reaches the glass wall.

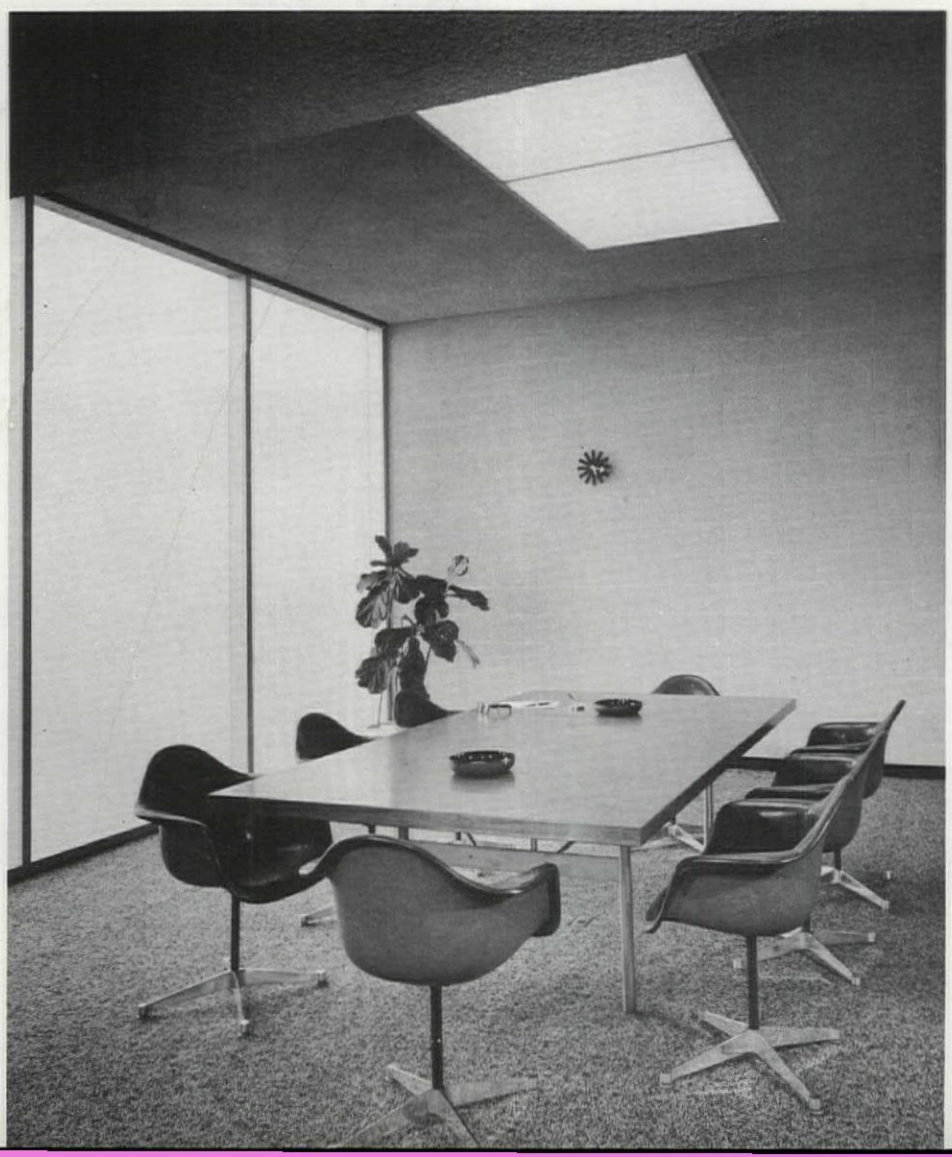
The interior space is entirely clear of structural members. Columns and fascia are exposed and painted blue. Girders are inverted and tapered and span 50 ft. At the open face of the structure a rigid frame was required for seismic forces. This frame was placed on module and constructed of I columns and a parallel chord-type steel truss.



Photos: Marvin Rand



The east entrance (above) *is directly accessible from the parking area. Entry from the west is between two garden courts* (left) *enclosed by aluminum grills, glazed wall, and concrete block side walls. For further sun protection these garden courts have been roofed with blue, heat-absorbing wireglass. The grills were constructed of satin alumilited bars, 3" o.c. horizontally, 6" o.c. vertically.*



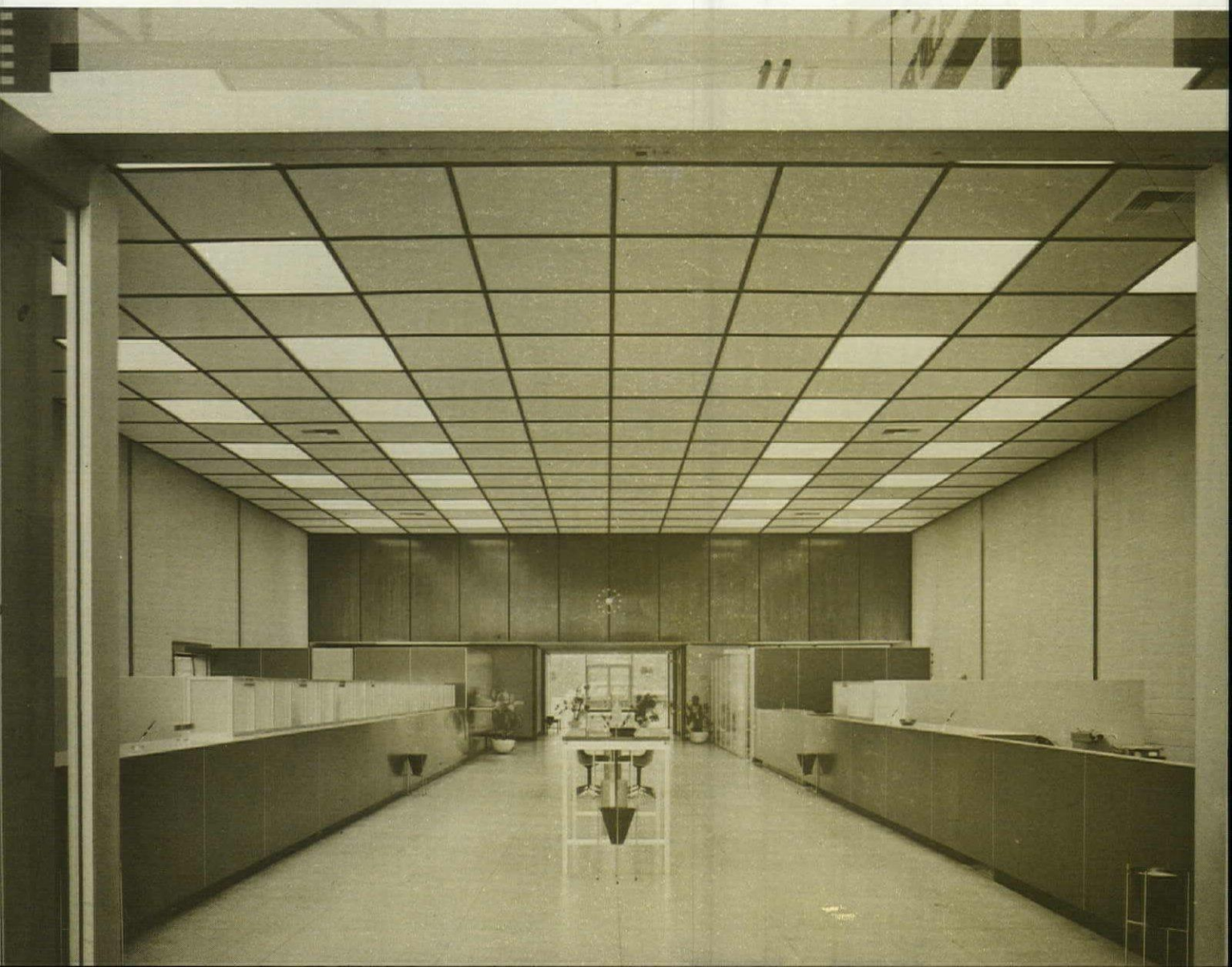
Teller space (above) *receives 60 ft-c of illumination at counters of standard height. Translucent wireglass partitions, with gates for each of the eight teller stations, separate the public from work areas.*

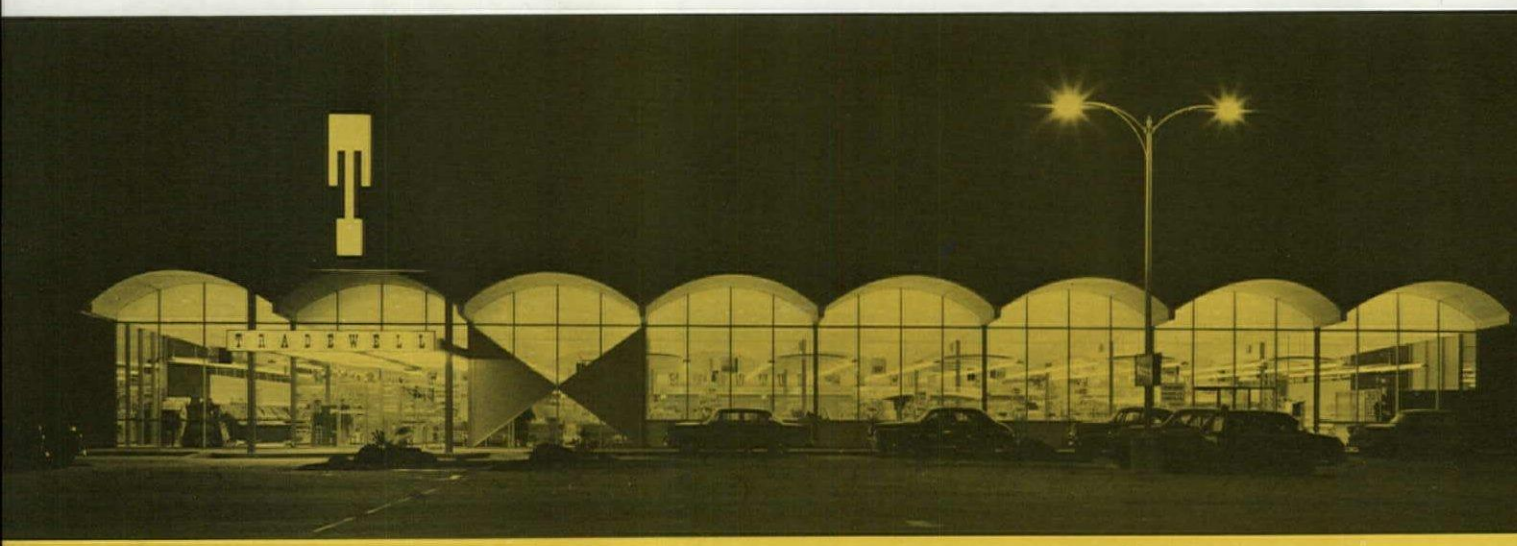
In the directors room, on the mezzanine above the east entrance (left), *75 ft-c are provided by two 4'-square fluorescent fixtures recessed in the acoustic plaster ceiling, and two incandescent, louvered fixtures.*

The dining room (acrosspage top), *also on the mezzanine, has kitchen facilities for the employes, and receives natural light supplemented by 8-ft-long recessed troffers.*

The interior space is air conditioned by a 3-zone double-duct system which automatically heats, cools, ventilates, dehumidifies, and filters.

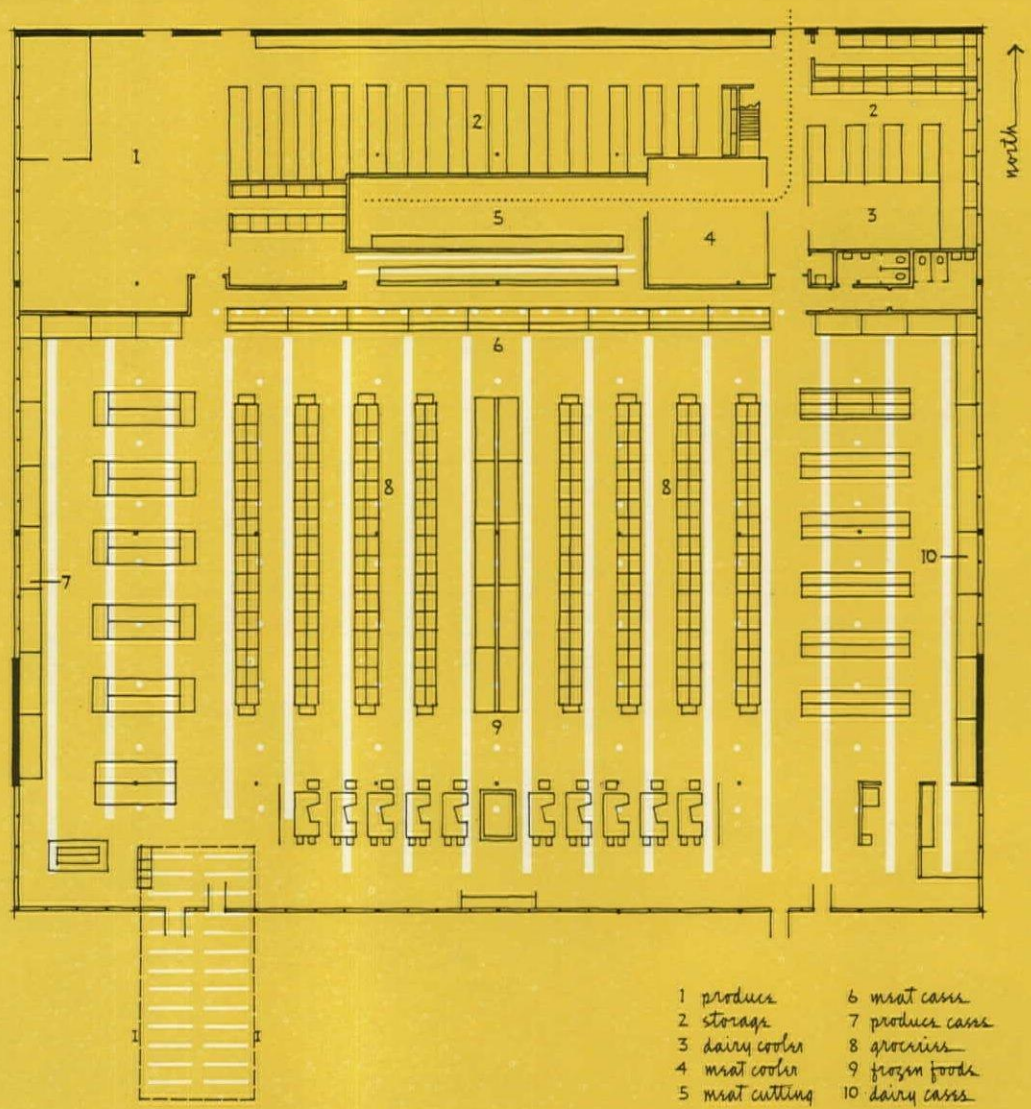
Materials used for interior fixtures and partitions are: plastic laminates, walnut plywood, gypsum board, and translucent wireglass framed in aluminum sections. The floor is terrazzo with white marble in gray cement. For sound absorption, perforated hardboard was used in the posting room; sheet cork, acoustic plaster, carpeting in other areas. Neutral grays and whites form the background for bright accents of orange, citron, and blue.





LIGHTING IS ARCHITECTURE

development of function

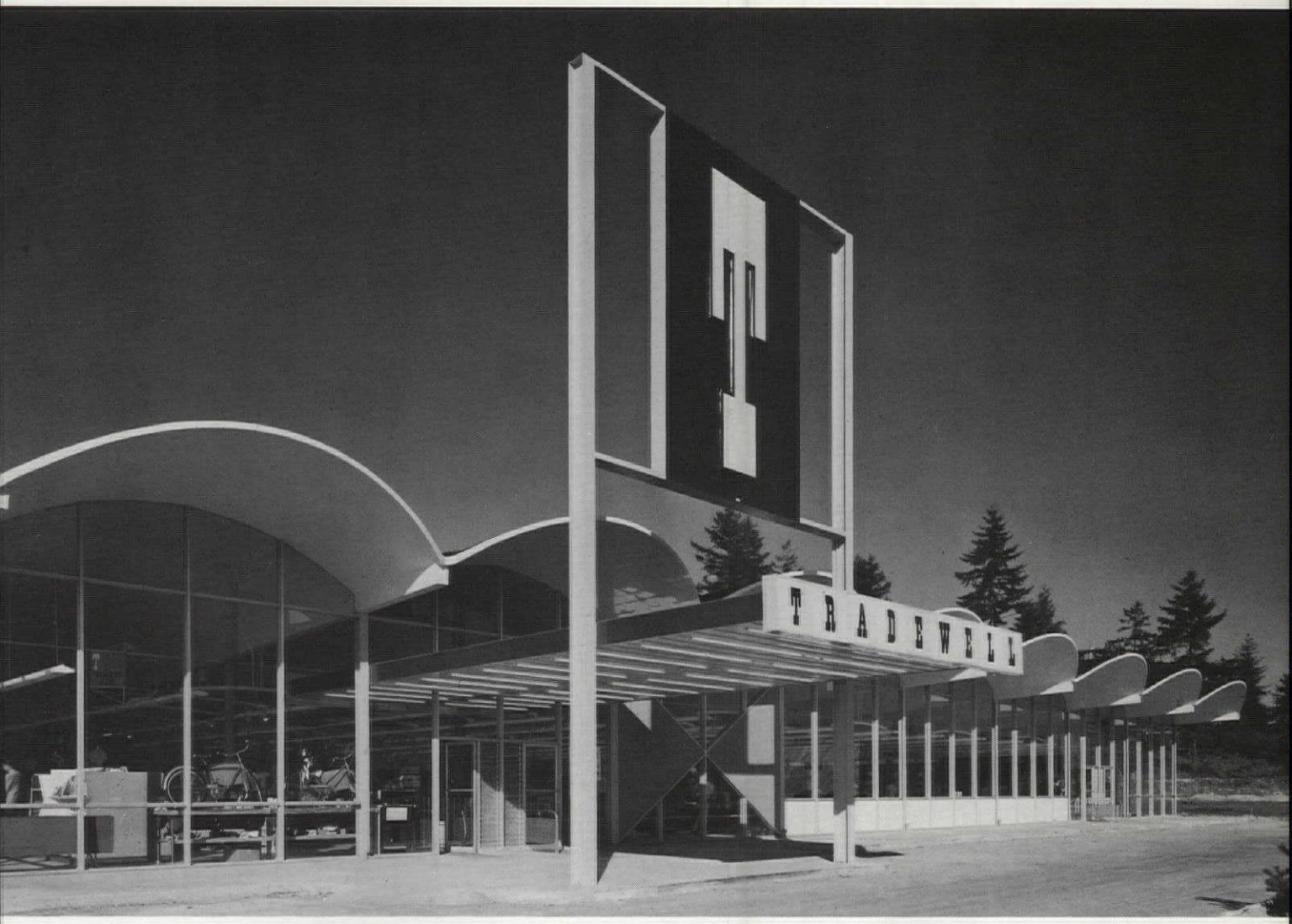


1 produce
2 storage
3 dairy cooler
4 meat cooler
5 meat cutting
6 meat cases
7 produce cases
8 groceries
9 frozen foods
10 dairy cases

This supermarket in Burien, Washington, was designed as a prototype for possibly 30 additional units to be built in the Tradewell chain. Hence, an important design goal, in addition to providing an efficient plan solution, was to develop a readily identifiable symbol that would immediately register "Tradewell" in the public mind. This is apparent in every aspect of the building—in the plan scheme, in the structural system, in sign co-ordination, in the lighting. The night view *(acrosspage)* demonstrates how effective the combination of distinctive structural form and high-level lighting is in creating an arresting beacon. Architects were Welton Becket & Associates; Associated Architects, Rushmore & Woodman. Interiors and sign design were handled by the Becket office. Structural Engineer: Richard R. Bradshaw; Mechanical Engineers: Levine & McCann; General Contractor: Jentoft & Forbes.

The economical structure employs common materials in an uncommon way. The steel frame, left exposed, is painted brilliant orange; thin-shell concrete forms the 8-bay, barrel-vaulted roof, with 12-ft overhangs providing covered walkways. Filler walls are glass, concrete block, or stone masonry. A focal point *(bottom)* is a "bow tie" bracing panel of blue porcelain enamel on aluminum.

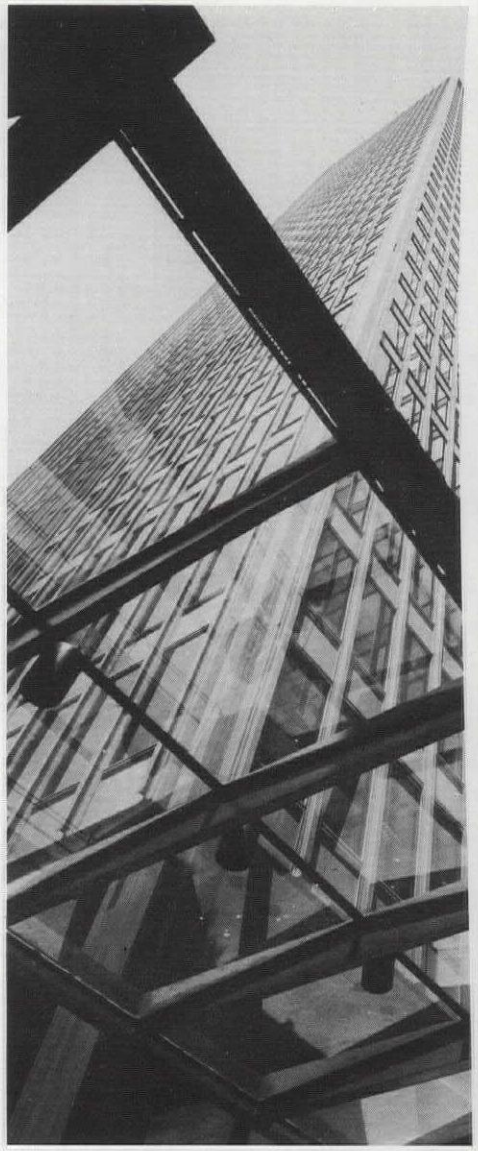
The functional lighting system has an intensity of 60 footcandles. Fixture brackets occur on beam extensions where the roof vaults join. These brackets, spaced 10 ft o.c., support bowed-steel arms, from which fluorescent fixtures with plastic edging are suspended on cantilevered, pressed-steel channels that also serve as wiring raceways.

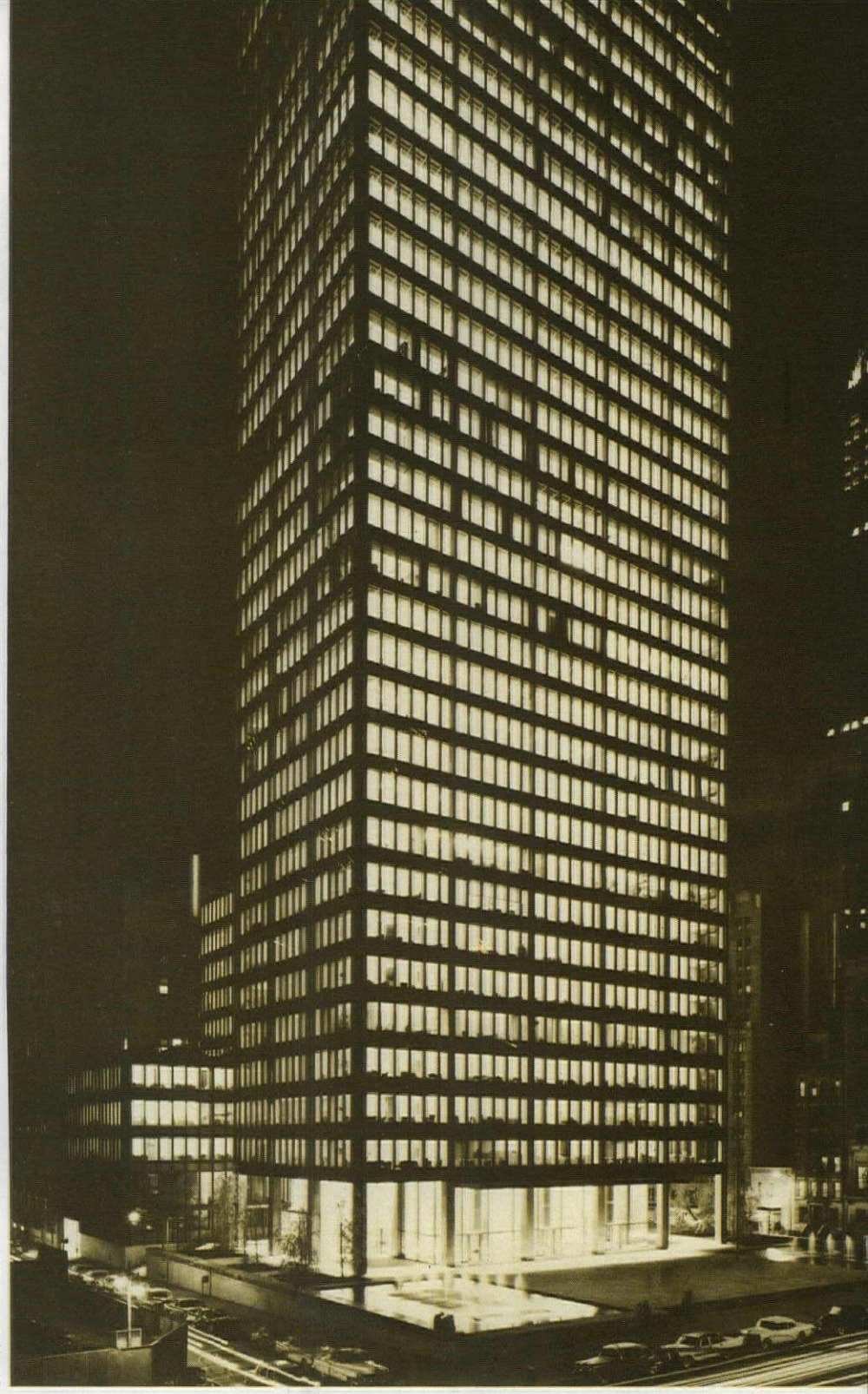


Photos: Chas. R. Pearson

Terrazzo surfaces the market's concrete-slab floor; fixed sash are aluminum. A radiant, floor-slab heating system is supplemented by unit heaters behind the rear sales wall.

In addition to the fluorescent lighting system, incandescent lights are used in clusters over certain areas for spot merchandising. Over the meat-sales counter (right) *recessed squares of incandescent lighting are used to enhance the food display; however, fluorescent tubing covered by plastic diffuser gratings light the meat processing area in back.*





Photos: Ezra Stoller

LIGHTING IS ARCHITECTURE definition of structure

In making its Awards for the best commercial buildings built in the years 1956-57 on Fifth, Madison, and Park Avenues, in New York, the Committee of Architectural Awards of Fifth Avenue Association selected 375 Park Avenue (otherwise known as the Seagram Building or the House of Seagram) as the best to appear on Park Avenue in this period. Among the words of praise, they included the following: "At night, the building glows with great distinction by means of skillful interior lighting designed to achieve this effect." Richard Kelly was the Lighting Consultant who developed the scheme with the Architects (Mies van der Rohe and Philip Johnson; Kahn & Jacobs, Associated). Around the perimeter of all 38 floors there is a band of luminous ceiling 20 ft in depth. In the daytime, this band, which provides toward 100 ft candles of illumination, effectively minimizes the glare brightness contrast between ceiling and sky. At night, fully lighted by a secondary wiring system at one-fifth of the daytime intensity, it not only provides the glow to which the Awards Jury referred

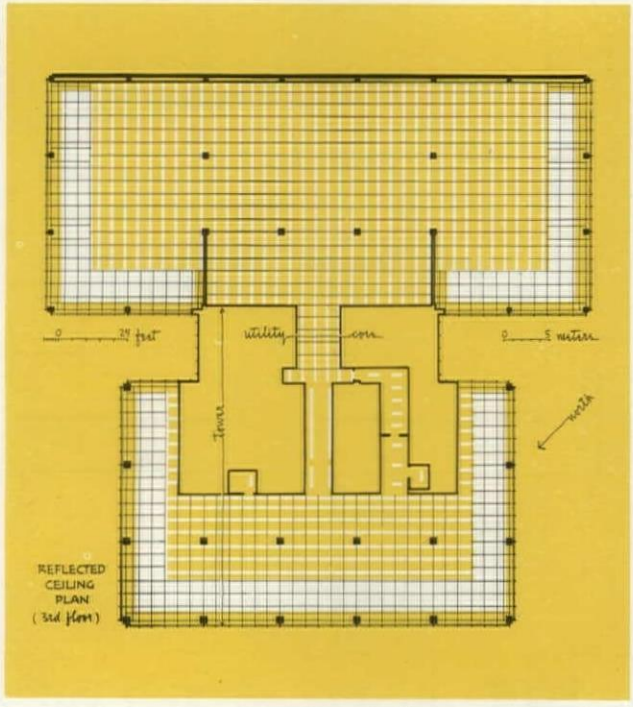
but boldly silhouettes the 27'-9" bays of the structural steel frame and the mullions that occur at 4'-7½" centers. Because of the warm-gray, polished-plate glazing, which extends for most of the height of each floor, the night glow of the great shaft is warm in hue. Interior spaces enclosed within the luminous-ceiling band are illuminated by low-brightness reflecting troffers that produce approximately an 80-ft-candle level. With reflection from light floors, distracting contrast between troffers and ceiling is minimized. Special wall-wash lighting in the Seagram Company's own offices (J. Gordon Carr, Architect for interior architecture and planning) adds many sympathetic luminous walls that make an ideal environment for each type of conference space.

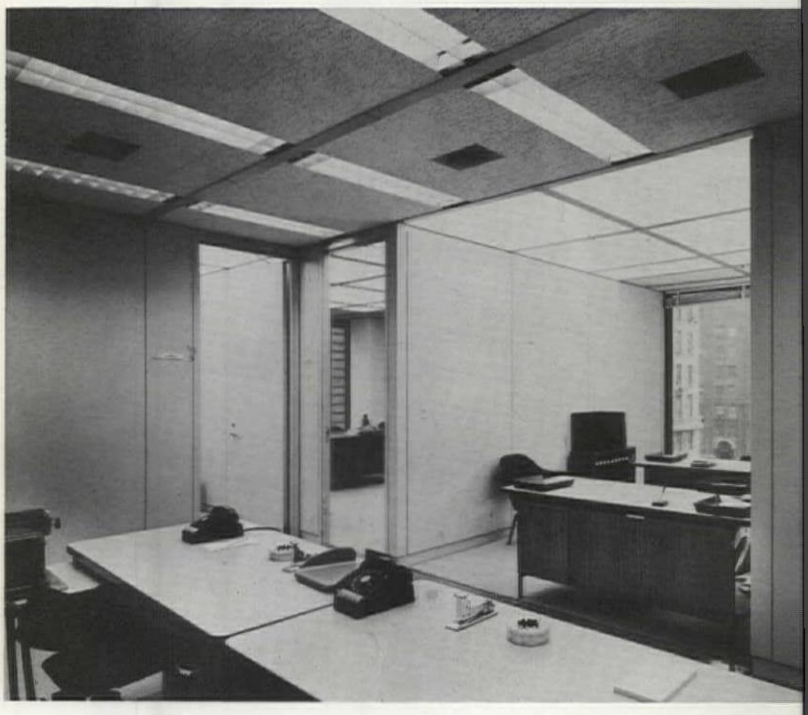
After the creation of a tower of light as the Seagram symbol in the New York night cityscape came the basic architectural problem of centering the focus on the building entrance. Mies van der Rohe and Philip Johnson had conceived the continuation of Plaza space into elevator corridor space with only large planes of plate glass to weatherproof the lobby.

Uniform intensity of brightness over the lobby walls (*above*) with fixtures minimized was the design goal to achieve simple monumentality effortlessly and elegantly. It required courage to spend enough wattage to achieve the minimum intensity that could be expressive. It is probably the highest wattage per foot yet used in a lobby. An astronomical and a numerical clock together adjust the balance of brightness relative to midday sun, twilight, and night blackness as well as the density of usage. Bands of very strong light on the floor derive from "dark lights" (look black in unretouched photo) of 500 w each. Troffers for the wall washing also appear dark in the photo.

In the street-level lobby (acrosspage), *clock controls vary the light intensity, depending on time of day.*

In the Seagram offices (two upper photos), a conference room (left) *has a luminous ceiling. In more typical office space* (below), *as well as in offices for the Olivetti Corporation of America* (bottom), *the basic lighting scheme is evident—20-ft perimeter band of luminous ceiling; low-brightness reflecting troffers above interior spaces.*



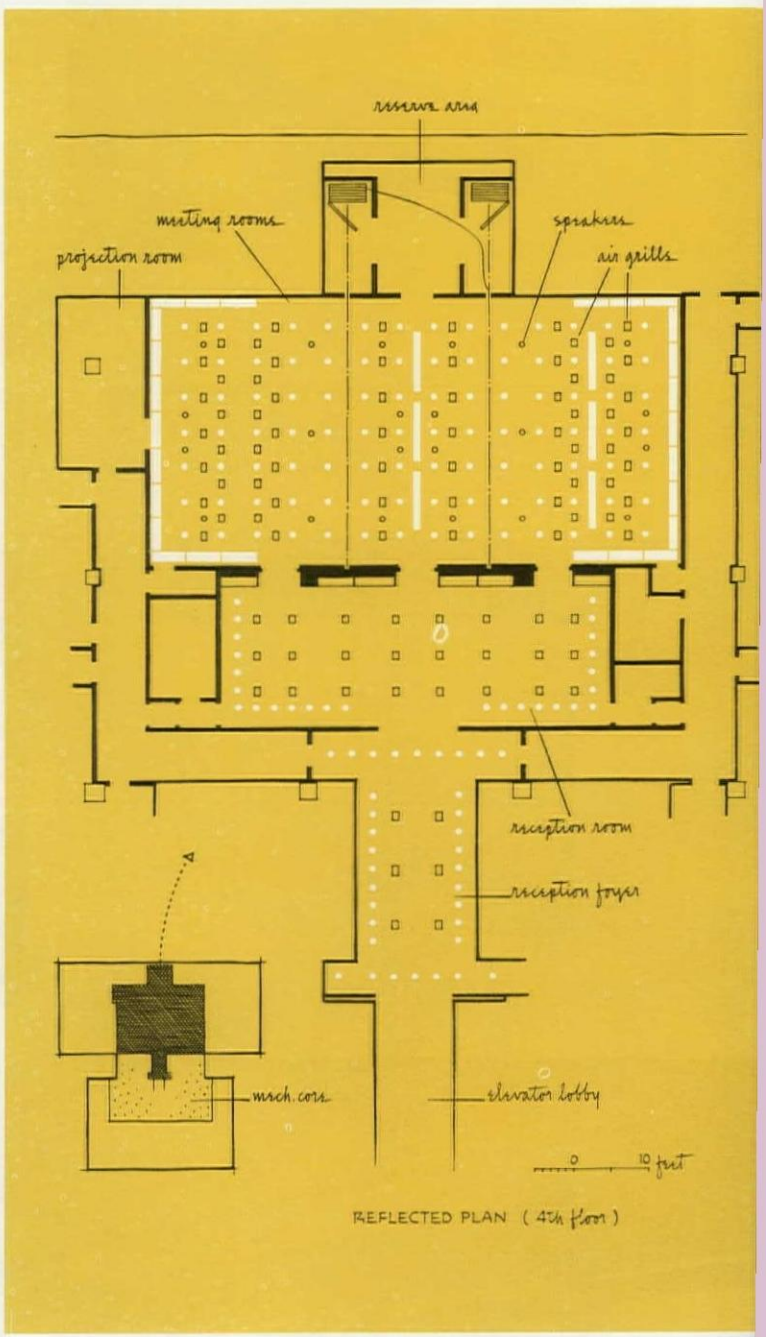


1

2

3

4



REFLECTED PLAN (45th floor)

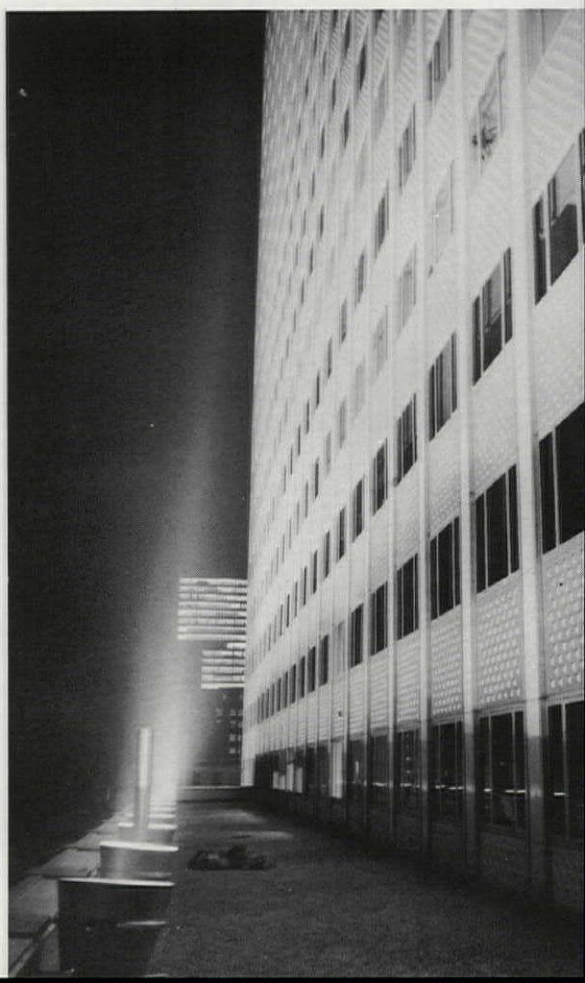
5

The Seagram Company's fourth-floor, multipurpose meeting space can be divided into any combination of three parts by sliding wall panels of oak. Perimeter walls are washed with light spread to nearly uniform intensity by a specular concentrating Alzac reflector and 800 m.a. deluxe warm-fluorescent tubes. This background lighting, diffuse and indirect, creates "space" in a windowless room.

Table surfaces and floor receive direct light from 3-in. regressed 8-in. concentrating lenses, closely spaced for a brightness cutoff of about 40° from vertical. Banks of sealed-beam, adjustable spotlights for demonstration material or entertainment are built into troughs behind hinged ceiling panels, like disappearing footlights, that are retractable by motor and dimmed by motors controlled by low-voltage positioners.

Reading from top to bottom (across-page): **1** room lighted by wall washing only, as might be used for a reception; **2** lighted by downlights only, as might be used for note-taking with clear contrast for slide or movie projection; **3** seen through half-opened partition with both wall washing and downlighting; **4** with projection spotlights all on, as might be used for sales meeting with promotional material on display; and **5** showing mechanism of lowered banks of spotlights.

Gottscho-Schleisner



Photos (except as noted): Alexandre Georges

LIGHTING IS ARCHITECTURE

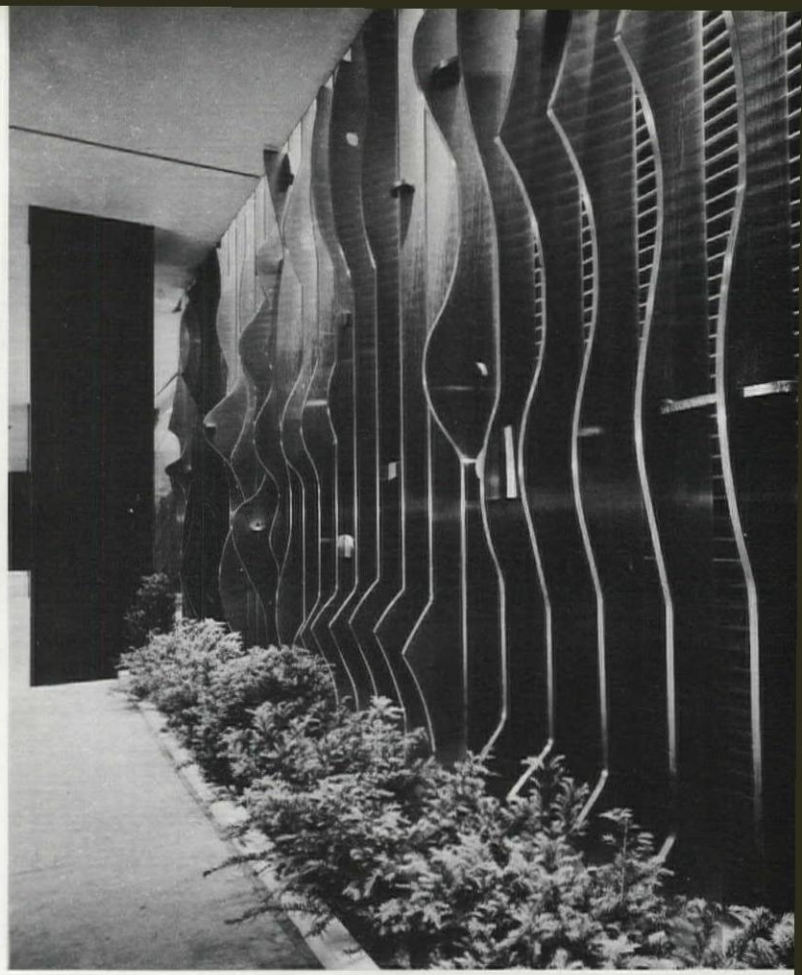
assertion of purpose

The Fifth Avenue (New York) Association's Committee on Architectural Awards recently named 666 Fifth Avenue, 38-story speculative office structure built for and by the Tishman Realty & Construction Co., as "the best new commercial building on Fifth Avenue," constructed during the period January 1, 1956, to December 31, 1957. The Committee praised it for being "simple in form and rich in its patterned, textured, aluminum panels. Between windows and panels, a vertical emphasis is achieved by porcelain-enameled mullions. Exterior lighting makes the design equally effective at night. . . ."

Night floodlighting of the building, for which Carson & Lundin were the Architects, was by no means an afterthought; one of the prime requirements of the design was that it assert itself, call attention, and otherwise advertise its existence. The night-lighting scheme, designed by Abe Feder, of Lighting by Feder, consists of 72 mercury-vapor, reflector-type lamps, with a total of 9.7 millions candlepower, mounted on the 10th- and 15th-floor setbacks of the building. The system used here, giving the building form much the same appearance that it has in the daytime, is the direct antithesis of the scheme worked out for the Seagram Building, which glows warmly from within at night. Others involved in work on the steel-framed building were Victor Mayper, Structural Engineer; Cosentini Associates, Mechanical Engineers; and Eitingon & Schlossberg, Electrical Associates.

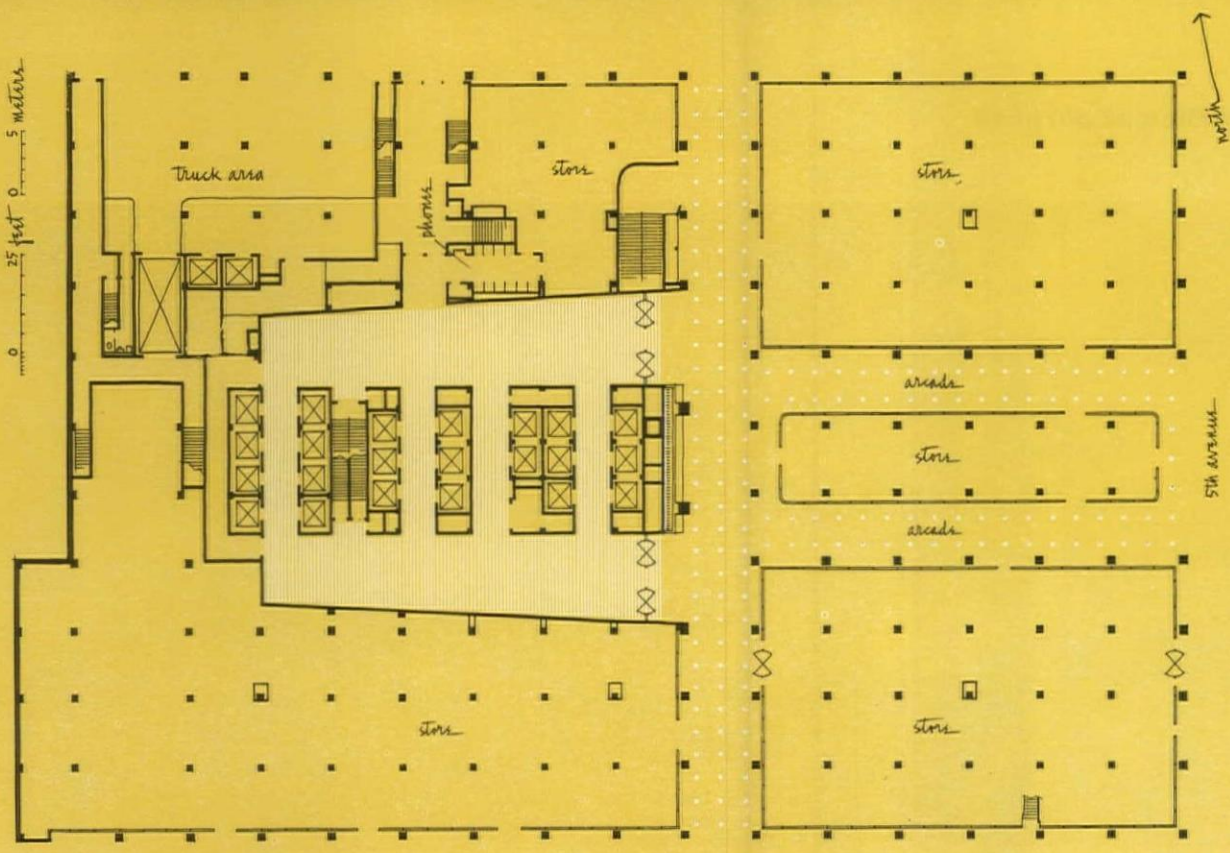
Among the exceptional features of the design are open, through-building shopping arcades at street level; 70-car basement garage; steel, movable-wall units that allow ready rearrangement of office space; and year-round, multizoned air-conditioning system that includes a 3000-ton steam-turbine-driven refrigeration plant located at the roof serving the 2nd to 38th floors; 400-ton, electric-driven refrigeration plant located in the subcellar supplying chilled water to all stores; high-pressure induction system with individual automatic controls for all exterior spaces from 2nd to 38th floors; and moderate-velocity air system supplying air to interior spaces.

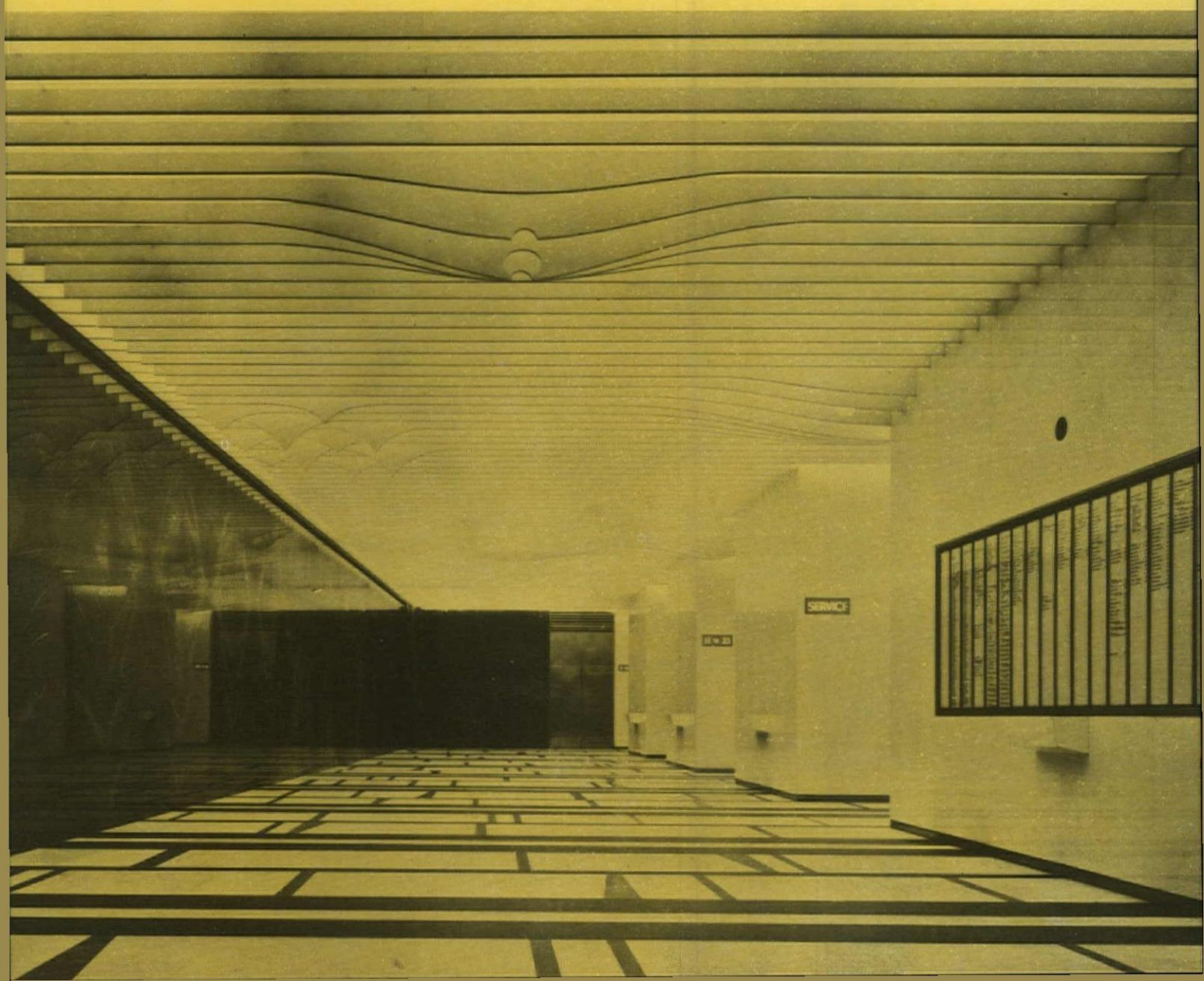
assertion of purpose

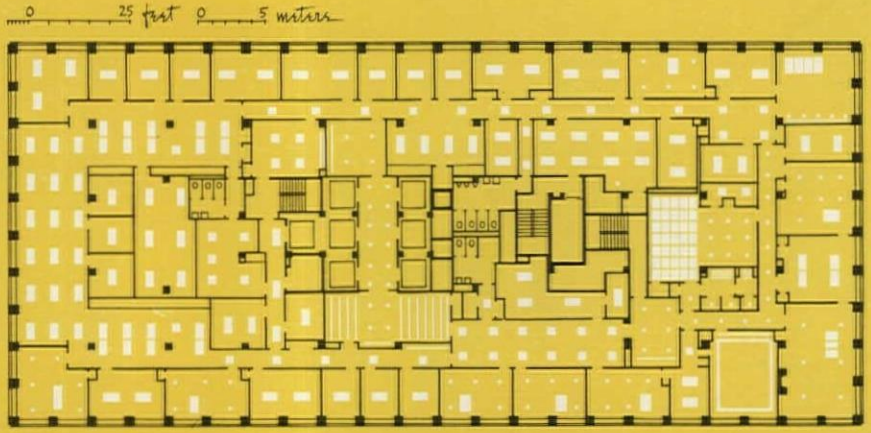


Open, shop-lined arcades (below) *are a striking feature of the street-level design. The arcades are lighted from flush-mounted incandescent downlights, and the flooring is the same crab-orchard stone that is used for the sidewalks bordering the exterior of the building. Major focal point of the arcade area is a 40-ft-long waterfall* (right) *that cascades down over a sculptured glass background and is broken up by free-form, vertical, stainless steel fins. Sculptor Isamu Noguchi assisted in the design of this arresting area.*

The paired elevator lobbies (acrosspage bottom), *opening off the arcade area, employ cold-cathode fluorescent light sources above translucent light panels, that echo the fountain treatment with horizontally applied enameled-steel, sculptural fins. Noguchi worked with the architects on this portion of the design also. Side walls of the lobbies are surfaced with red marble, while floors are of red, black, and white marble; elevator doors are stainless steel.*

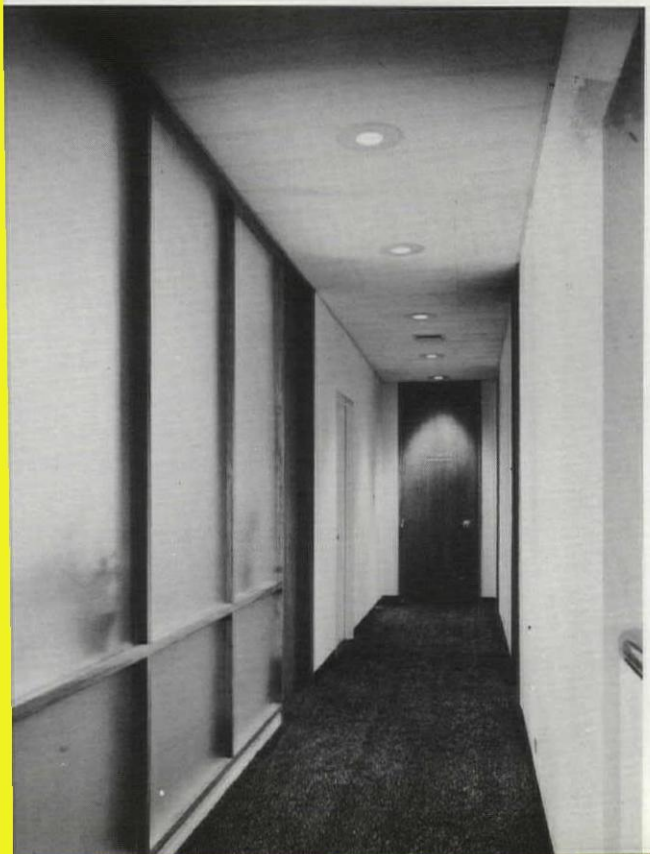

0 25 feet 0 5 meters
Truck area
phone
store
store
arcade
store
arcade
store
store
5th avenue
north


SERVICE



TYPICAL TOWER PLAN

In all, the building contains 1,000,000 sq ft of office space; each of the 24 upper tower floors contains about 18,000 sq ft. On these two pages, we show the plan and a few photographs of the offices of the building owners, the Tishman Realty & Construction Co., which are located on the next to the top floor. Carson & Lundin, architects for the building, designed the spaces illustrated.



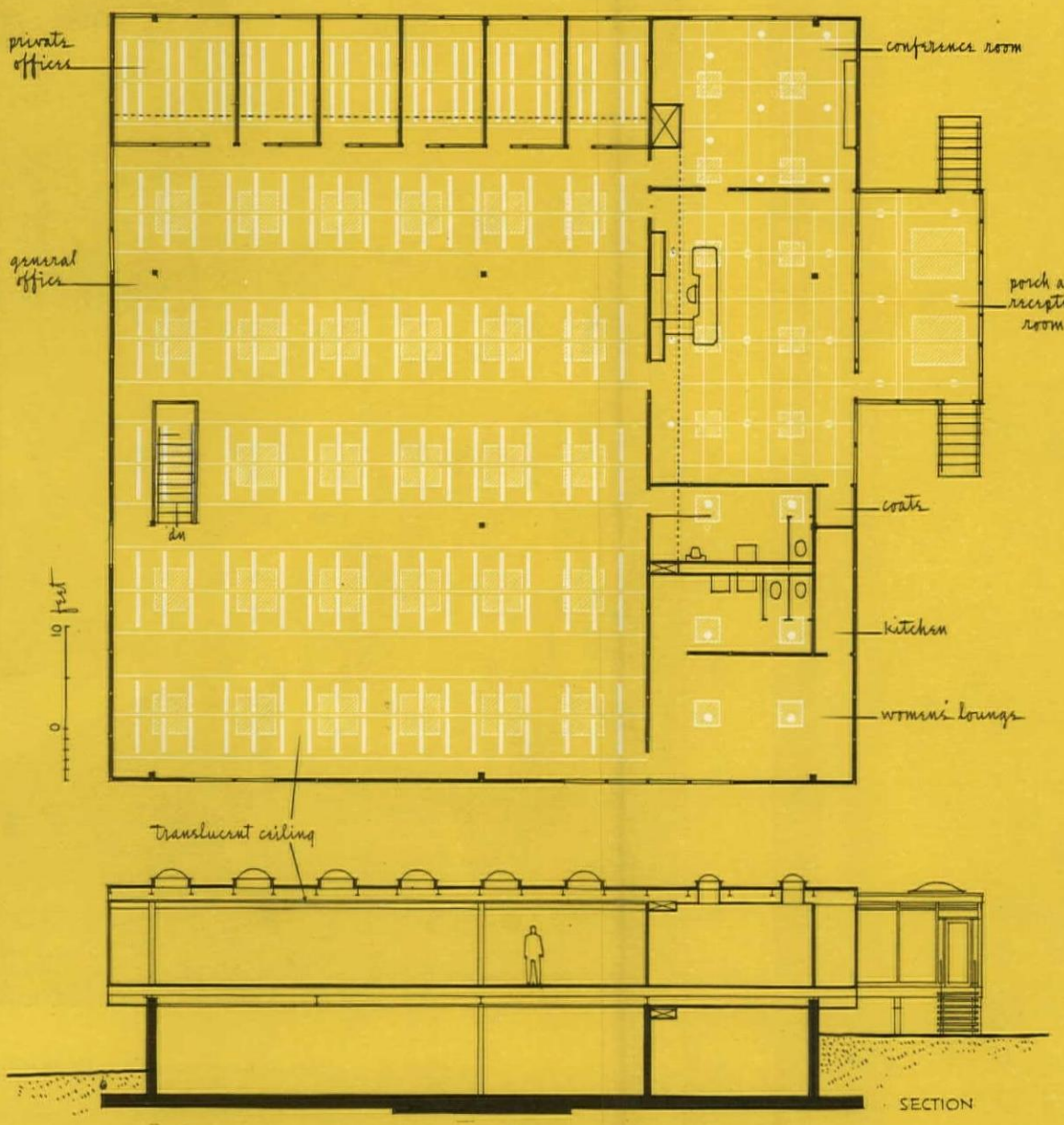
Photos: Joseph W. Molitor

LIGHTING IS ARCHITECTURE **use of space**

When Wasco Products, Inc., decided to build its new headquarters building in Cambridge, Massachusetts, one could fairly assume that there would be generous, even experimental, use of the company's own products. And one would have assumed correctly—flashings; plastic wall and ceiling panels of several types (smooth; opaque; translucent; corrugated; laminated); and, of course, the familiar Wascolite domes, of various sizes and properties. In fact, the structure, in addition to serving as the company's home office building, is used as a continuing experimental product laboratory, wherein new materials are tested in use.

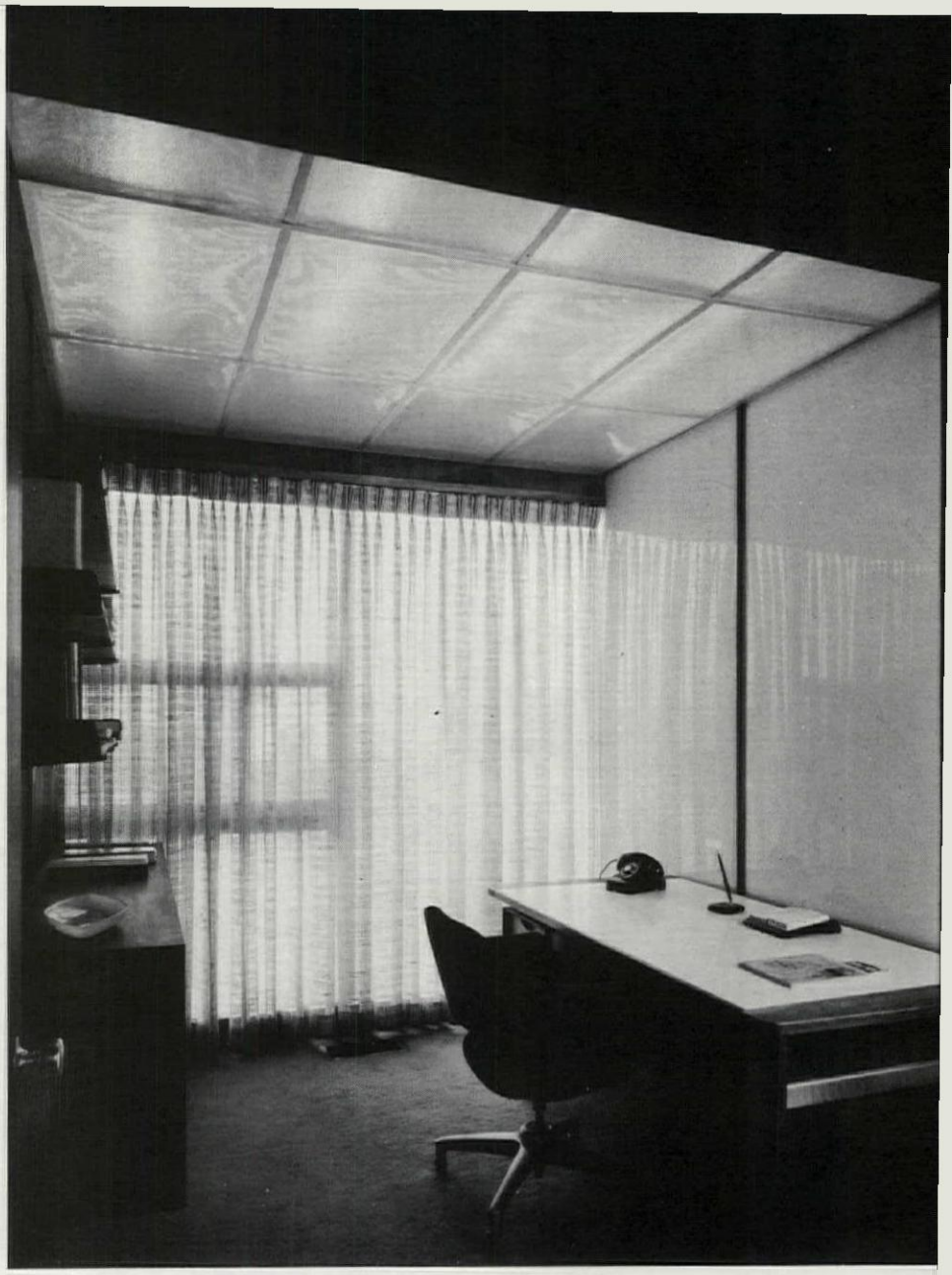
In recognition of this fact, the architects, The Architects Collaborative, worked from the start toward modular flexibility, with most spaces developed on multiples of 4'-0", the basic module for most of Wasco's products. In addition to window areas on exterior walls, daylighting throughout the building derives from a multiplicity of plastic skylights, which feed light down through suspended, plastic, ceiling paneling to the spaces beneath. Supplementing daylighting, there are electric lamps mounted above the ceiling panels—fluorescent over the general-office space; incandescent above the lobby/reception area. The lamps are carefully arranged in relation to the roof domes so that the general effect is sustained, whatever the time of day.

In the general work space *(above)* the

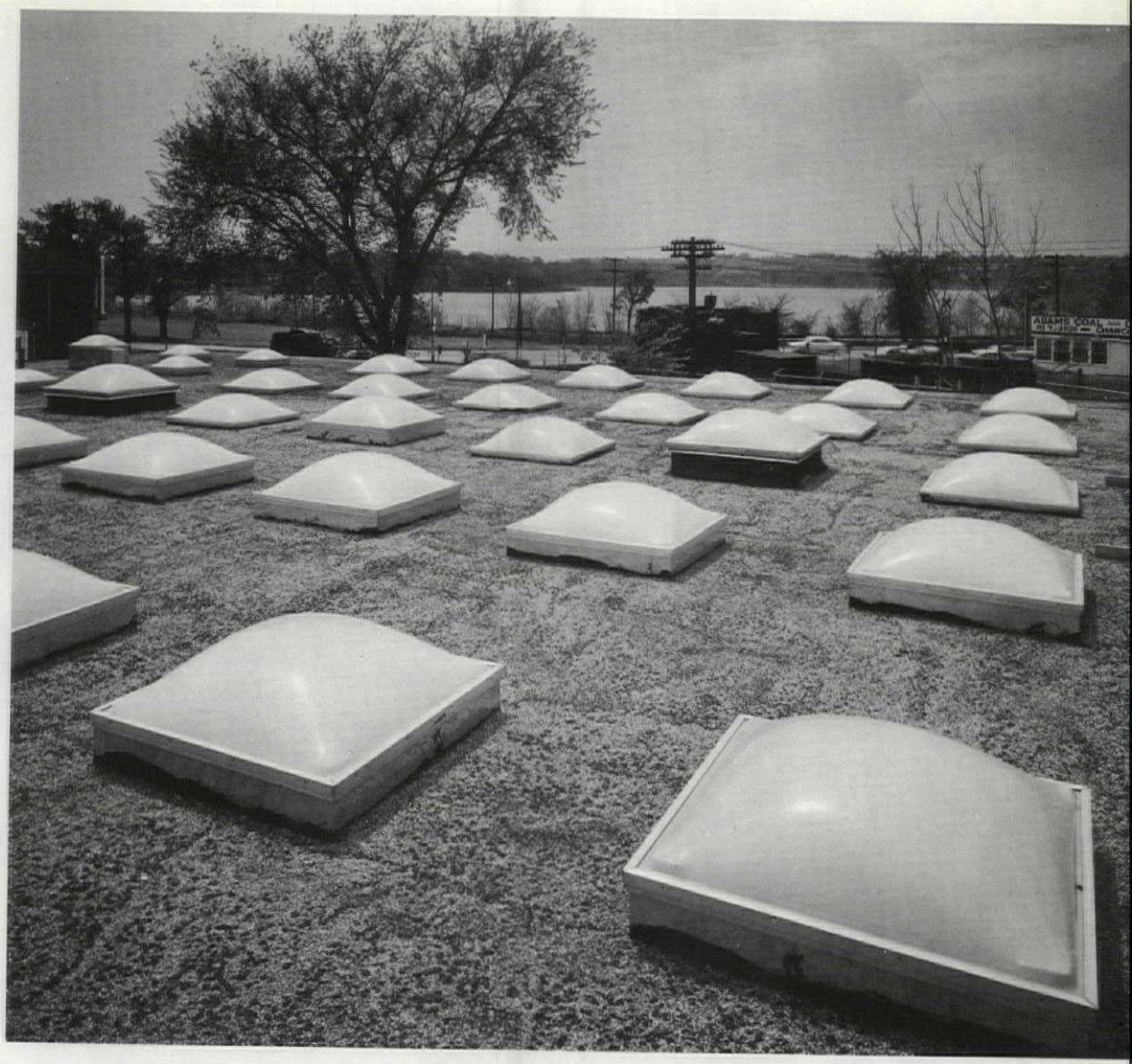


translucent ceiling is of corrugated plastic. In the roof view *(right)*, several types of domes are apparent—the Ventdome (top left); the Pyrodome (with top sprung open); and Reflectadome (foreground). In the background are Skydomes.

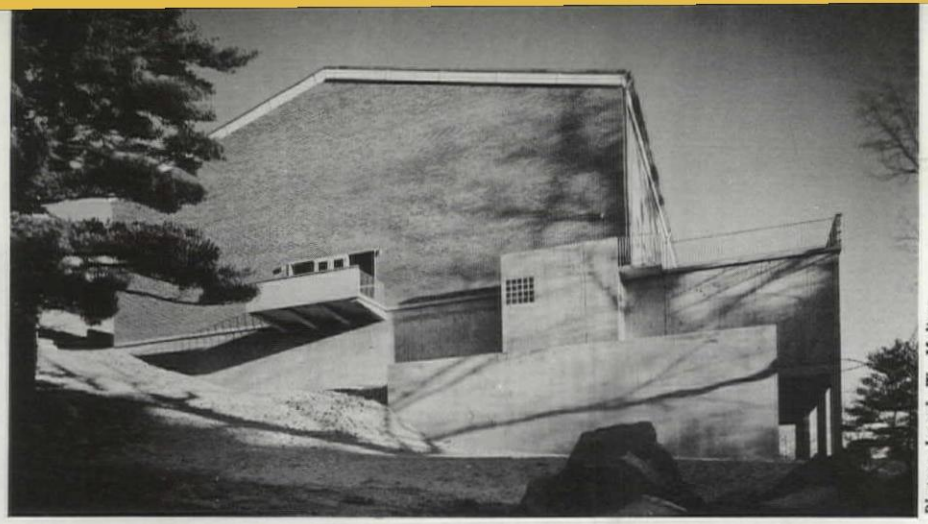
Associated with TAC in the development of the building were Goldberg, LeMessurier & Associates, Structural Engineers; and Bernard F. Greene, Mechanical-Electrical Engineers. Wasco Products, Inc., was its own General Contractor.



From whatever angle the building is viewed—in a private office, in the conference room, from the roof, or in the reception lobby—the sensible concern with imaginative use of plastic products is evident. Note the varying types and textures of paneling, on both walls and ceilings, and the high-level illumination that the combined daylighting and electric-lighting system produces.



LIGHTING IS ARCHITECTURE **definition of varied spaces**



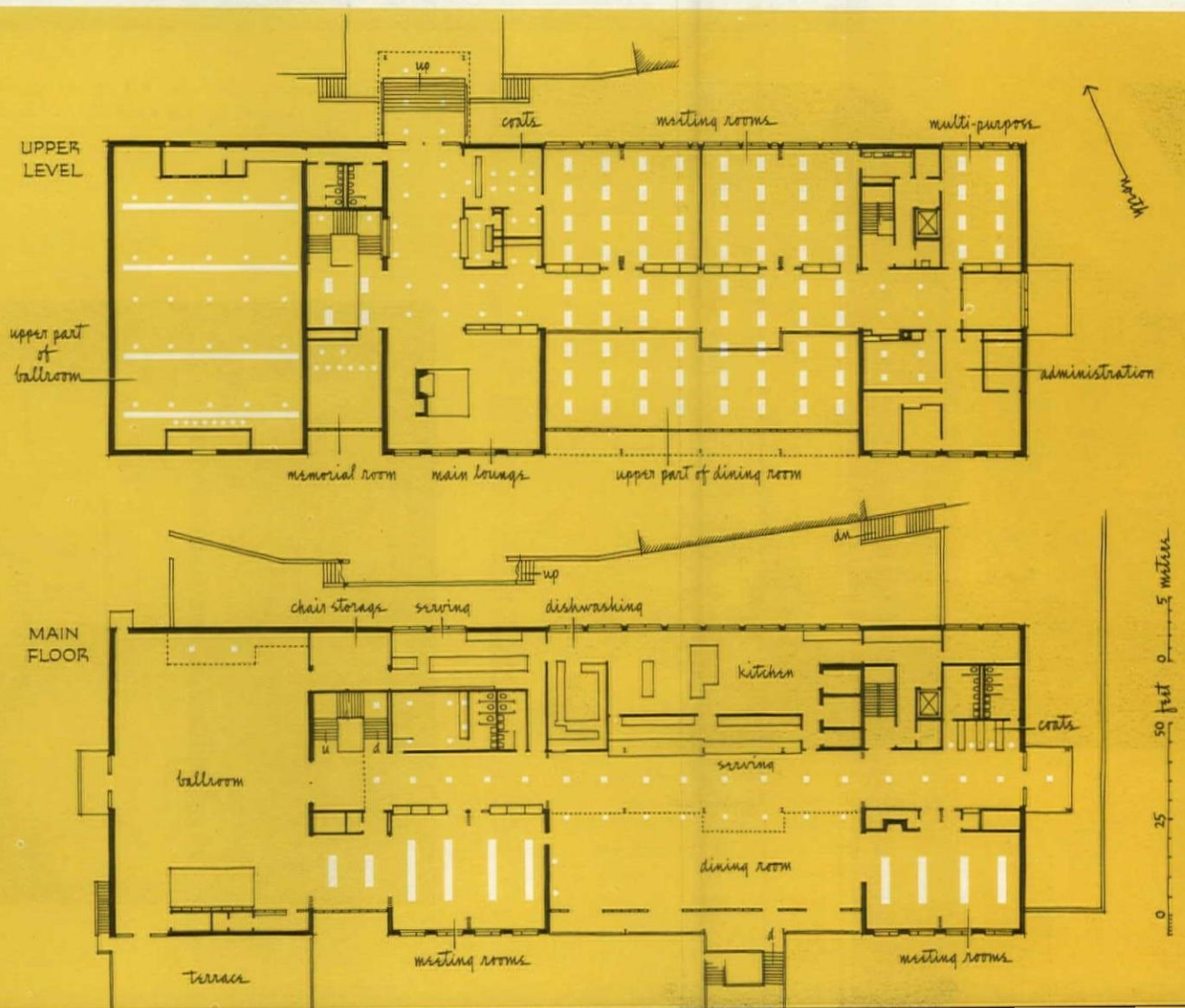
Photos: Joseph W. Molitor

This Memorial Union Building for University of New Hampshire, Durham, was winner of an architectural-design competition. Ronald Gourley was the Architect; Porter Butts, Director of the University of Wisconsin Union, Planning Consultant; Dan Kiley, Site Consultant; Paul Weidlinger, Structural Engineer; Thompson Engineering Co., Electrical Engineers; The Jennison Co., Mechanical Engineers; Bolt, Beranek & Newman, Acoustical Consultants; John A. Volpe Construction Co., General Contractor. Prof. Lawrence B. Anderson, of MIT, was Professional Adviser for the design competition.

Requirements were for the many, varied uses typical of a student union—flexible spaces for meetings of different sizes; large central dining room; snack bar; lounges; ballroom; bowling alleys; offices. The site, at the crest of a ridge, slopes abruptly to the south, overlooking a ravine. This condition was exploited by making the main dining room two stories in height, bordered on the north, at upper (main entrance) level, by a balcony lounge.

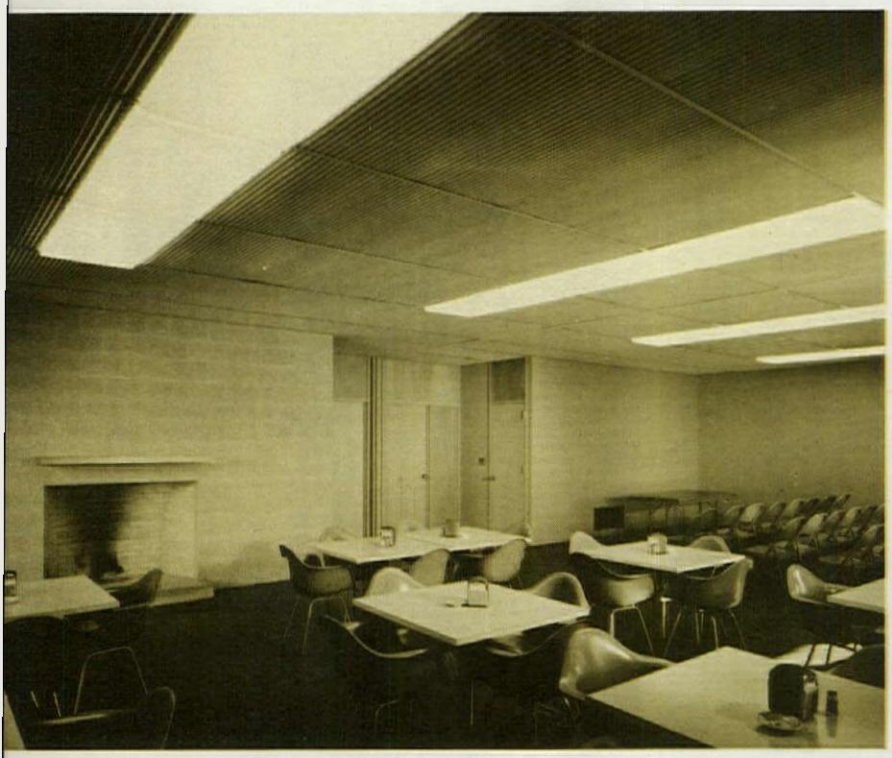
The design approach, whether in structural or lighting terms, was to make maximum spatial and volumetric exploitation within the rather severe gable-roofed, brick building. The light steel-frame of the upper levels (above the concrete frame up to this level) is clearly revealed. Electric-lighting fixtures are made as inconspicuous as possible, with the square lights of the upper floor used to bring out the great roof plane; suspended ceiling elements are accented by spotlighting; lounge areas are lighted by lamps alone.

Heating, by hot water and steam from a central plant, is handled through convectors, fin tubes, unit vents and unit heaters.



definition of varied spaces

North-facing meeting rooms at left of the upper-level balcony lounge (above) *borrow south light through partition glazing.*



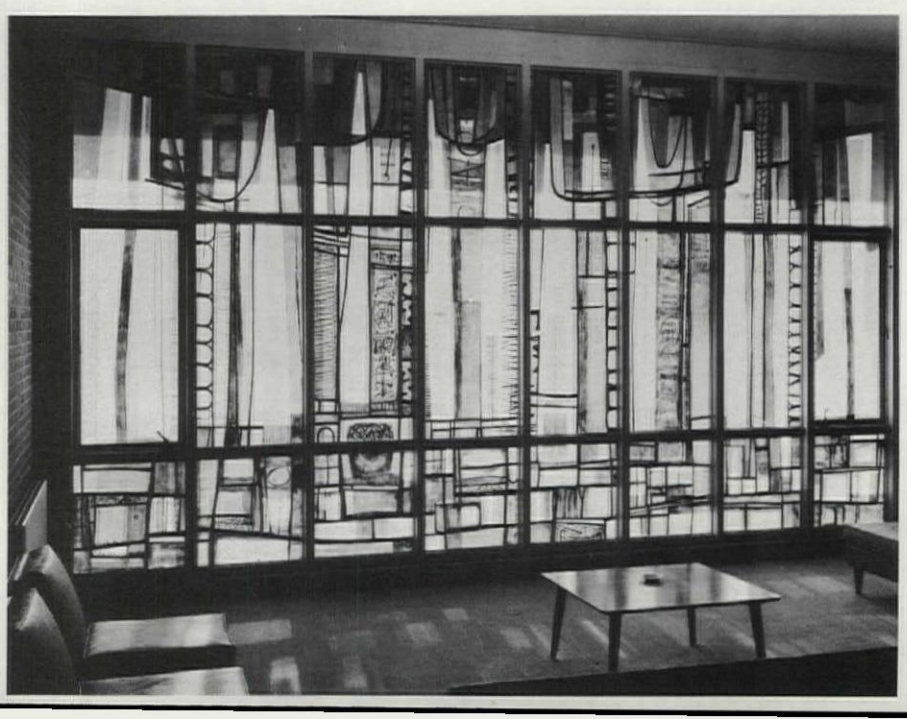
Lightweight block is used for partitions in such rooms as the card room on the main floor (above) *or offices on the lower floor* (right). *Ceilings, in the main, are corrugated, perforated aluminum supporting an absorptive, acoustical blanket.*

"The total effort in light, both natural and artificial, was to emphasize the space forms and uses," comments Gourley, "thereby making use of this means to strengthen the architectural concept." The main stair and balcony lounge areas are lighted through clerestories. All interior materials are clearly articulated, with brick cavity walls used throughout and brick carried through to relate interior and exterior surfaces.

definition of varied spaces

Finish flooring is used as the surface of the suspended ceiling in the upper-level lobby (above), *outside the main lounge* (left), *and Memorial Room* (below).

The 24-panel Memorial Window, the work of John W. Hatch, is actually laminated safety glass. The artist painted directly on glass, and the laminated panels were then made by sandwiching three layers of tough-plastic sheeting between the painted glass and a sheet of unpainted glass, the five layers then being bonded under heat and pressure.



The upper-level meeting rooms (above) *gain cross-lighting through glass panels at top of corridor partition.*

The ballroom (below) *has a minimum of natural light, since it is frequently darkened in the daytime. Numerous different effects are possible at night—soft, multicolored ceiling lighting for dances; direct lighting for banquets and assemblies; spot lighting for stage use.*

brightness relationships in classrooms

by Kenneth C. Welch*

There has been a great deal of comment from architects designing such work spaces as schools and offices, that uniform "flat" lighting recommended for the best visual performance, under certain conditions, creates a monotonous, uninteresting environment. No doubt this has been the case in many installations, but it need not be. The best in lighting environment can be produced and it can be made bright, cheerful, and most interesting.

When determining lighting requirements—or a better expression would be interior brightness patterns, both daylight and artificial—it behooves the architect to think primarily in terms of brightness. This is what the eye and the brain see—not the footcandles. The latter is only one part of a formula which states: footcandles multiplied by the reflection factor—or transmission factor—of a material or surface equals brightness, which is measured in foot-Lamberts.

It is important to remember that our field of vision extends in a lateral 180-degree arc, and with the flexibility required for the changing uses of modern interiors, we must consider the brightness ratios in almost all directions—a circle 360 degrees down to the floor and upwards 45 degrees from any point in a given room that is occupied for any length of time. In today's educational process, students may face any direction in any interior work space. The directional fixed seats of the 1920's are gone, except in the auditorium.

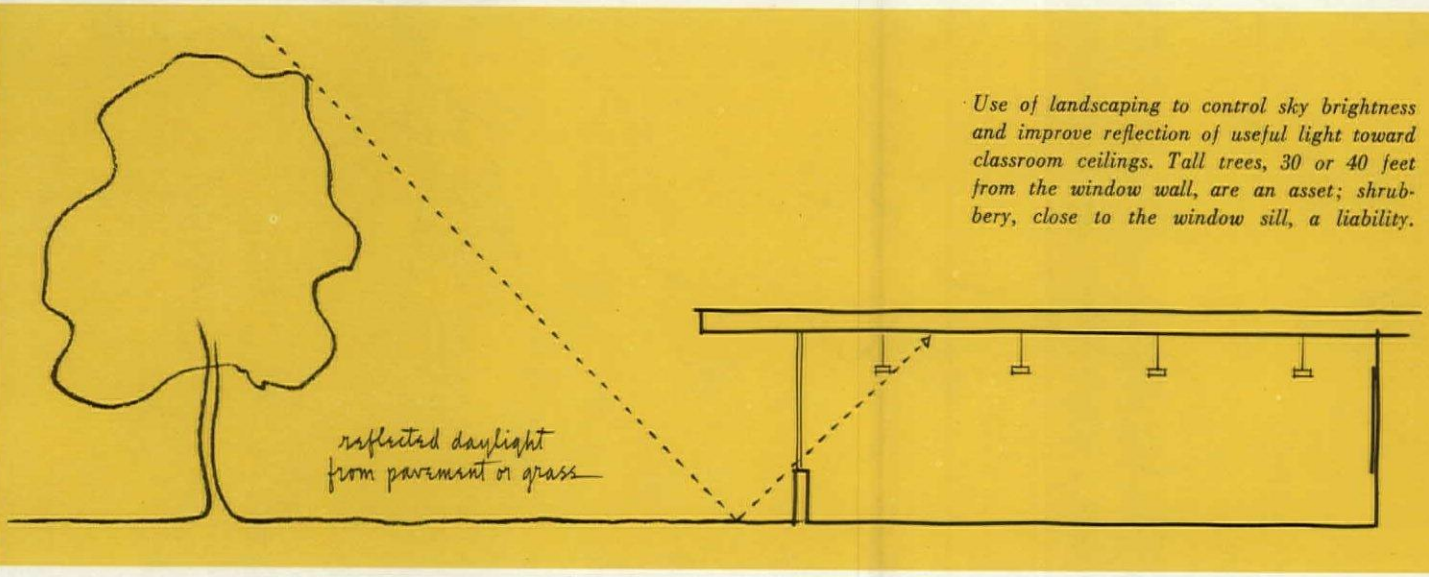
Architecture is a play of color and forms, and increasingly the forms in nature have become a vital part of our interior environment, because much of our architecture today is glass. Clear glass, except as it mirrors certain daytime brightnesses, has no form in itself except for the pattern of its supports which frame the exterior view. Perhaps this is a good thing, because certainly nature's forms—clouds and planting, even when man rearranges the planting—are never monotonous and they have a beauty that is noncontroversial. We must know and understand the brightnesses of nature and how they can be best transmitted to and enjoyed in our interiors. Further, we must know the best methods to integrate daylight and electric light.

The IES School Lighting Committee, commenting on the revision of its section in the forthcoming third edition of the *IES Lighting Handbook*, makes a statement to this effect: "The goal in school lighting is to produce a visual environment in which seeing may be accomplished efficiently and without hindrance or distraction from any part of the luminous elements of that environment. Adequate levels of illumination with properly balanced brightness help the educational process by making seeing quicker, surer, and easier. Good lighting aids impaired vision; reduces visual fatigue; and helps create a cheerful and pleasant atmosphere."

The considerable amount of research that has been done on this subject tells us, without question, that we should eliminate excessive brightness ratios in the field of vision in our work spaces. The IES School Committee is currently considering recommending 70 footcandles and more for difficult tasks, and up to 150 footcandles on chalkboards. With the availability of new light sources that have doubled the efficiency of the 1957 lamp, these levels have fortunately become economically feasible. In lighting language this means that we can create a brightness of 50 to 60 foot-Lamberts on a piece of white paper at desk height, and, on the proper kind of desk top, a brightness of 30 to 35 foot-Lamberts. We now know that, ideally, it is better to have the immediate surround of the visual task about half the brightness of the task. That is why many contemporary desk tops have light-toned mat (or dull) finishes.

Sky brightness varies tremendously. On a bright day it can be over 6000 foot-Lamberts near the sun; at 10 a.m. and 4 p.m., an average sky can get down to 1500; under certain cloud conditions, and depending on the latitude, brightness to the north can vary from 400 to 500 foot-Lamberts. This situation indicates that sky brightnesses of even 1000 foot-Lamberts, which can be 17 to 20 times the brightness of our task, should not be visible anywhere within the normal field of vision. Further, the reflection factor or other characteristics of the task often cannot be controlled or regulated, and cer-

*Architect, Grand Rapids, Michigan. FAIA The American Institute of Planners, American Marketing Association, Illuminating Engineering Society.



Use of landscaping to control sky brightness and improve reflection of useful light toward classroom ceilings. Tall trees, 30 or 40 feet from the window wall, are an asset; shrubbery, close to the window sill, a liability.

tainly we do not want them to be. Under some circumstances, however, a brightness ratio of 50 could easily result. With sky brightness commonly twice 1000 foot-Lamberts, brightness ratios of 100 or more —an unbearable condition and approaching what we call disability glare—could be created if we did not plan otherwise.

With 70 to 100 footcandles and corresponding task brightnesses from 30 to 90 foot-Lamberts, sky brightness of 500 to 600 foot-Lamberts in December are not too objectionable. This level can reach 1400 foot-Lamberts during school hours at 34 degrees north latitude. To the South, the brightness can be over four times this amount in December. Of course, with atomic power in the offing, 200 to 300 footcandles may be entirely feasible and desirable. A 500-footcandle level is marvelous to work in, if diffuse illumination is provided and if there are no disturbing reflections from specular and partial-specular tasks. Accordingly, when these higher levels are economically possible, we will not have to worry about sky brightnesses of 1000 foot-Lamberts.

The eye, one of the most wonderful and amazing parts of our anatomy, has the power of adaptation to a considerable range of brightness environment through the adjustment of pupil size. Most of us can read news print in 5 or 500 footcandles. But when we concentrate our eye and brain on a task of 25 foot-Lamberts, and any appreciable area of 100 foot-Lamberts comes within our total field of vision, our poor eyes and brain do not quite know how to cope with the situation.

Many devices have been created to control nature's excessive brightnesses—overhangs, draperies, shades, louvers (which include the difficult-to-maintain venetian blind), directional glass block, and tinted, light-absorbing glass. Some of these devices can add considerably to the cost of a building and, if the budget is limited, their use can often mean sacrificing other desirable features and comforts. Louvers in modern architecture are often not only functionally desirable, but also add a directional rhythm that can be very attractive.

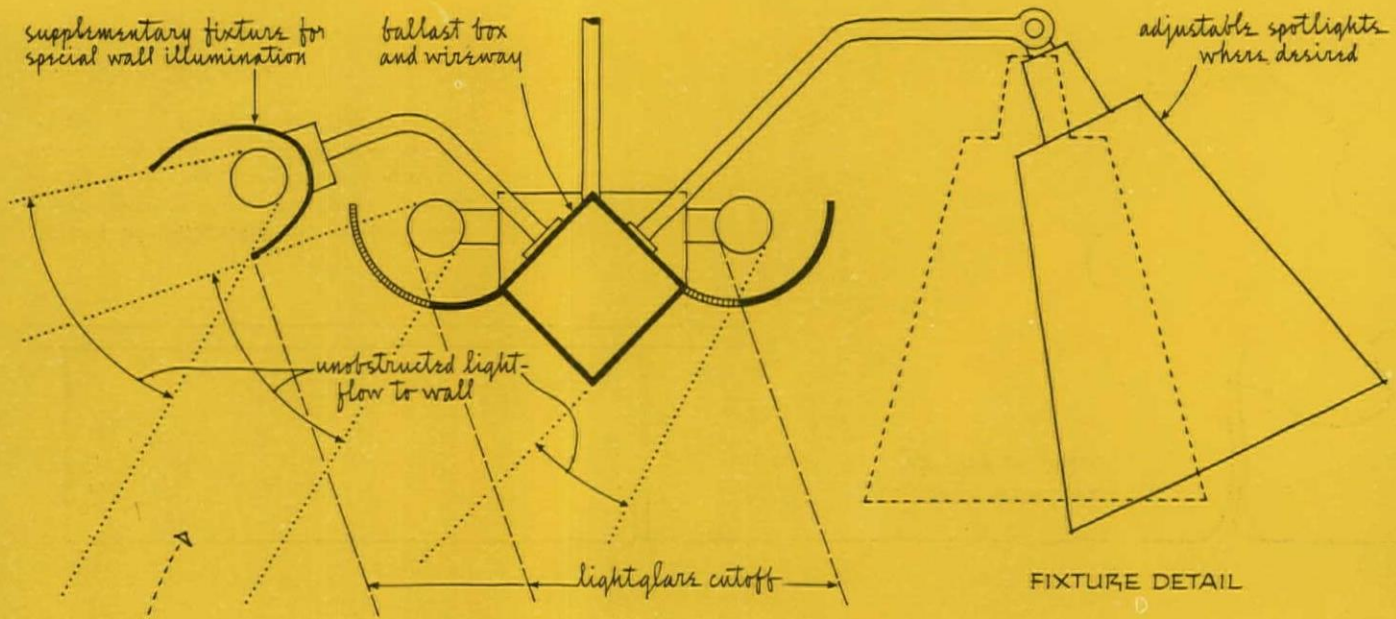
Using funds from the IES Research Fund, the Engineering Research Institute of University of Michigan published a comprehensive report by Prof. H. S. Bull entitled *Controlling and Redirecting Daylight with Louvers.*[1] Six IES members, including the writer, acted as an advisory committee. This study was conducted by means of a complex model. Various sky and sun conditions could be simulated and both horizontal and vertical louvers were adjustable. Studies could be made with a viewing strip or without and with varying exterior conditions. The results show conclusively that louvers not only produce acceptable brightness ratios by screening sky glare, but also materially help create a more uniform interior daylight illumination. It showed, for example, that by increasing the exterior ground reflectance from the standard 1 percent to 50 percent—with horizontal louvers tilted to eliminate sky glare—light at the work floor was increased 10 percent and average ceiling brightness 17 percent. Professor Bull concluded in part:

"*A. Louvers to be used in rooms with northern exposure.* The results of this investigation clearly indicate that either horizontal or vertical louvers may be used to advantage in northern exposures. Horizontal louvers, tilted slightly, give a better footcandle distribution than do vertical louvers. Vertical louvers, with little or no twist or tilt, result in a noticeably higher coefficient of utilization than can be obtained with horizontal louvers. Brightness control is accomplished slightly better by the use of vertical louvers.

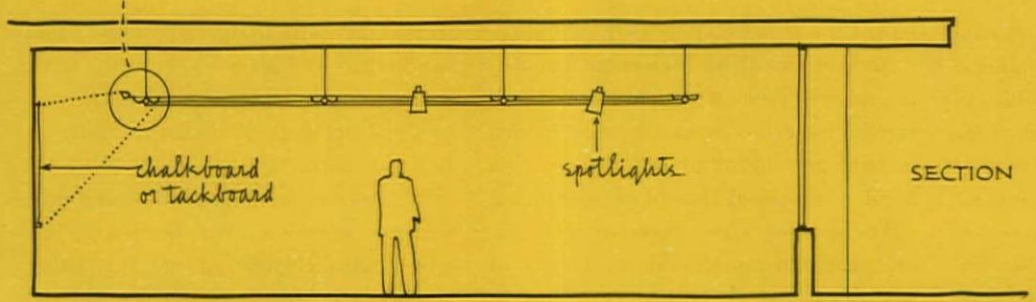
"*B. Louvers to be used in rooms with southern, western, or eastern exposure.* For rooms having other than northern exposure, the vertical louvers did a better job of light control on all counts from the aspect of all room occupants who happen to be facing the front wall. The inherent lack of symmetry about an axis perpendicular to the window plane would seem, however, to rule out the use of vertical louvers for these exposures.

"What can be done to improve the performance of horizontal louvers? One improvement, suggested by a more or less random choice of louver adjustment, would be to use two or more angles of tilt simultaneously in different sections of the louver system. The louver blade adjacent to the window sill and, if necessary for proper cutoff, the one next above it,

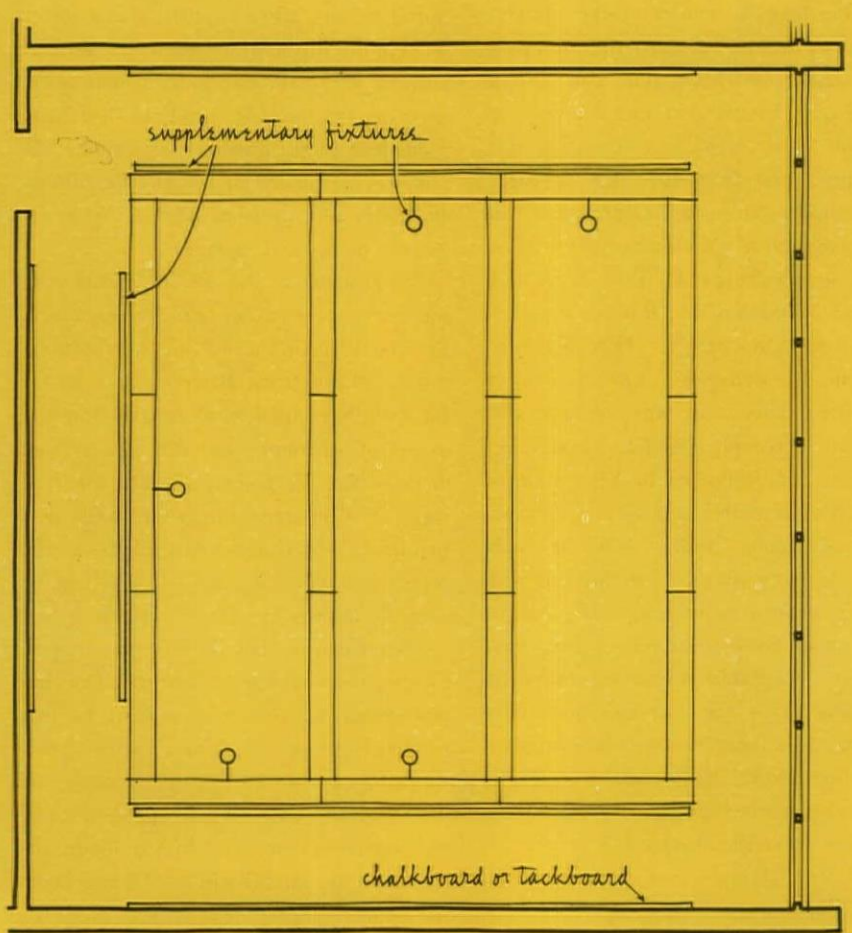
[1] *January 1953* Illuminating Engineering.



FIXTURE DETAIL



SECTION



PLAN OF CLASSROOM LIGHTING

Suggested direct-indirect luminaire and wireway for schoolrooms makes flexible provisions for additional lighting of chalkboards and student work. By eliminating a portion of the side baffle and adding strip lamps on the sides of the fixture, brightness can be considerably increased; spotlights, attachable at any point, are for modeling solid objects and creating "focal glow." Combination of incandescent and fluorescent improves color quality.

should be set at a 20- to 30-degree tilt. All blades above these should be set at 0-degree tilt. This would improve the coefficient of utilization without permitting a direct view of the sky. It is probably that there would be many days during which no readjustment of the tilt angles would be necessary to maintain continuous cutoff of the sun's rays with the suggested setting."

are windows necessary?

The matter of daylighting *vs.* electric light is a subject that probably will never be resolved. It would be a dull architectural world if it could be. We know that daylight in most geographical areas varies tremendously, and for varying lengths of time during the day we have to depend almost entirely upon electric light. Further, it is obvious that this electric light must be co-ordinated and harmonized with daylight, such as it is, at a given time.

Studies made five years ago[2] indicated that it is uneconomical to provide too much daylight, where an efficient electric-light system is required a good deal of the time. It was also shown that an electrically lighted classroom, with fenestration for view only, can be as much as six percent cheaper to build, and no more expensive to operate and maintain than classrooms having large glass areas for daylighting. The savings, due to the lesser loss of heat and fewer window panels to clean and maintain, balance the cost of operating the electric lights for the longer period of time.

Now that many of the restraining laws regarding classroom design have been sensibly repealed, we are able to save costs with lowered ceilings and accordingly new opportunities have been created. The IES School Lighting Committee is currently making a special study of low-ceiling classrooms which have a height of less than 10′-6″ at the fenestration. However, for many reasons, we must assume that we often will utilize fenestration for lighting as well as for view.

Last September, the IES Daylighting Committee formally requested of the IES Research Institute "that the Technical Advisory Committee on Daylighting be asked to formulate an appropriate research program." This will have to do with the need for more data relating to the effect of large luminous sources (i.e., large glass areas, etc.) on visual performance and visual comfort. A great deal of useful information should result from this study. Further, this committee in revising the section on Daylighting prediction methods in the *IES Lighting Handbook* is adding a section concerning inter-reflection of interiors—not only from ceilings, walls, and floors, but also from the outside ground which reflects a considerable amount of daylight to the ceiling when clear glass fenestration is used.

[2] *"Low Cost of Electric Light," October 1953* Architectural Forum.

use of landscaping

We are all aware of the importance of co-ordinating other art forms, such as sculpture and painting, in architecture. As a general rule, though, we have been overlooking what the landscape architect can contribute in helping to resolve the problem of daylight brightness control and adding to the level of illumination within accepted brightness ratios. Too often the approach has been limited to what he could provide esthetically to enhance our architecture from both an exterior and interior point of view. Proper landscaping can do much to simplify the now generally accepted concept—but certainly too often violated and neglected—that requires us to minimize excessive brightness ratios in the field of vision in work spaces. The landscape architect can locate various species of trees so that they will not only enhance the architecture but also create a proper sky screening. Careful landscaping permits the use of clear glass which materially increases the indoor-outdoor concept. If the designer seeks the best environment for a growing child, the writer feels that one should create a residential rather than institutional effect—and, to that end, clear glass is beneficial.

In order to increase the use of daylight on the interior, areas of comparatively high reflection can be created adjacent to the building. Some of these devices are lighter-colored grass areas, hard-surface walks, and play areas—all of which permit a maximum amount of ground reflection to reach the ceiling. It is possible by using cement or light aggregate in a bituminous binder to get reflectances of 25 to 35 percent. At 38 degrees latitude in December, sunlight can produce 2000 footcandles on a horizontal area at 10 a.m. In June, at noon, it can reach over 8000 footcandles. This means that such an area can produce from 500 to nearly 3000 foot-Lamberts of brightness, 50 percent of which can be reflected to the ceiling adjacent to the window to create a partial luminous ceiling of 250 to as high as 1500 foot-Lamberts. When this is possible, the reflection factor, of course, should be reduced since this condition would produce too bright an area in the field of vision.

use of color

Proper use of color, with considerable change of pace in hue and saturation and even changes in small quantities of value, can do wonders in relieving the so-called flatness and monotony. Of course, ceilings should be white with as high a reflectance as possible. With today's paints it is possible to reach 90 percent. It is recommended that side walls in large areas be kept between 50 and 70 percent reflectance.

The addition of adjustable movable spot lights in combination with cool-white fluorescent to make a minor color change permits the proper lighting of three dimensional objects—as found in many art and educational aids today—and can do a great deal to highlight certain spots and relieve uniformity. Some directional lighting or so-called direct light is a *must* for modeling in an art class, or for sewing and similar tasks.

Ideally, classrooms should be treated like a combination work-space, art gallery, and auditorium. There can be a dimmer system for the spots and an arrangement (through proper circuiting) to change the level of diffuse illumination. These are specially desirable when certain visual aids are being used or when creating mood lighting to help dramatize certain modern educational processes, exactly as we dramatize by light in the theater. Certainly the children's own art work should be treated and lighted as well as art work is lighted in a well planned art gallery.

With all the wonderful tools that the lighting industry has given us—and fortunately they are still continuing with their research to give us better tools in the future—we should be able to flip a few switches and at will produce various luminous patterns to suit a given purpose. This can vary considerably in a modern school. If a teacher respects her job she is always intelligent enough to use this new kind of tool to the best possible effect.

design results through variations in lighting

by C. M. Cutler*

At the heart of every creative idea in electric lighting is an electric lamp. This highly precise, mass-produced instrument provides the flow of energy which the designer may direct and control toward the consummation of his idea. Lamps exist in a multiplicity of types, sizes, and colors. Many are capable of a great range of control, and they may be dimmed or brightened for mobile or sustained values. Let us consider how we may relate their use to other elements of interior design.

The way an enclosed space "looks" generates the impression we have of it. If there is light in it, of course, our impression will be as complete as the illumination permits. How it appears, therefore, depends a great deal on how the lighting of it affects us. Designers and architects are keenly sensitive to the part lighting plays. Does the space speak to us because the lighting creates the mood intended? Does it unify the space and contents giving us a particular view of everything within its dimensions? Does it provide for the visual tasks so fully that it creates a completely livable environment? These questions give us some idea of the contributions that well designed light and lighting ought to make. The appropriateness of an interior to the use intended depends very largely on how successfully light is applied and integrated in the design.

How does the competent lighting designer approach the problem of a specific interior?

One of the most formidable tasks at the outset of the design process is to set up a mutuality of objectives with the architect and interior designer. He must then express these in terms and illustrations that register fully with those involved in executing other elements of the design effect. Thereafter, as a matter of course, the steps in collaboration of the planning follow easily.

However, to set up such mutuality of objectives, the designer must have an intuitive grasp, as well as technical competence of what can be done. He must decide what effect will produce the result that is most relevant to the problem. Obviously, the alternative possibilities are tremendous! In a short article only a mere reference of how various lighting treatments affect the visual impression of a space can be attempted. Illustrations must be counted on to amplify what we can only infer.

The illustrations here show a sequence of views, the same space and the same camera position, with only the lighting pattern varied. The location is the Restaurant Area of the Lighting Institute at Nela Park, Cleveland. This space, with its great flexibility of light control provided in the many forms of illumination techniques, offers a way to appraise design alternatives. All of these techniques may be studied separately, without the distraction of unlighted elements in the space intruding forms extraneous to the design under construction. While there is a good deal of color in the Restaurant Area, for the comparison purposes of this article values of black and white will suffice. The introduction of another vari-

* *Large Lamp Department, General Electric Company, Nela Park, Cleveland, Ohio*

1

2

able of great range (color) lies beyond the scope of this discussion. (Actual demonstration with color confirms the evidence indicated by the illustration sequence of this article.)

The designer in lighting art commands a wonderfully facile medium. His resources are very large and varied. No one has utilized more than a fraction of them so far. The artist is challenged by the potentials of his medium quite as fully as the musician or the writer. Lighting, of course, is a relative newcomer to the arts. To date the chief claims upon the artist in this field have been to give a lift to the treatment of interiors; to moderate the raucous effects of crude attention-getting uses on city streets. So far the designer has not been taxed creatively to accomplish these objectives. But the opportunities ahead are sure to become more exciting as client awareness, and designers' skills develop the growing opportunities.

Different treatments of the individual elements are now compared and analyzed to show the range of techniques. And with these comments are included some design considerations that guide the choice of light sources. These are not discussed in detail. Rather they suggest the great variety of choice from the many sizes and light outputs available to the designer. Detailed electrical characteristics, dimensions, and other essential information for the designer are available from the various manufacturers.

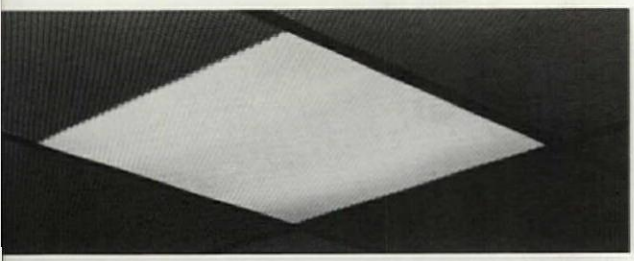
In the Restaurant Area there are several lighting patterns available for the ceiling and for the walls **1**. The whole ceiling may be devoted to the overhead lighting element or only a small portion of it, or some percentage of area between these limits. Note how the form and impression of the space changes with different brightness patterns **2**, **3**, and **4**. While the range of tones possible through black-and-white photography is far more limited than the brightness values of the lighting elements, still they suggest clearly what takes place in sense reception as human response is led through the changes of a truly flexible lighting facility.

Here we see small squares arranged in an irregular or random pattern **2**. The freedom of such a pattern and those that follow, compared to a conventional application suggests where the imagination may go. The scale is small in comparison to the whole area. The squares provide diffuse light. Distribution of light in the area below is generally uniform because the distances between elements are usually less than the height above the table tops. In elements or individual luminaires of similar characteristics, the brightness depends on many things—such as the amount of light to be provided, type of shielding, finish, as well as reflectance and transmittance. The units stand out in sharp pattern because of the contrast with their surroundings. *(Note reverse pattern in* **3**.*)*

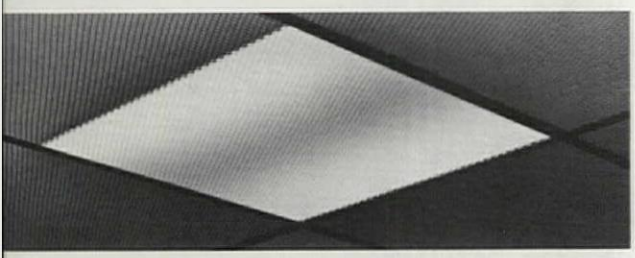
The effect is different if the whole ceiling panel is brought up in brightness **4**. It defines the space . . . still the random pattern of squares suggests the many possibilities in pattern, scale, and brightness that may be designed to achieve a given objective. Lighting may be used to unify the ceiling treatment.

3

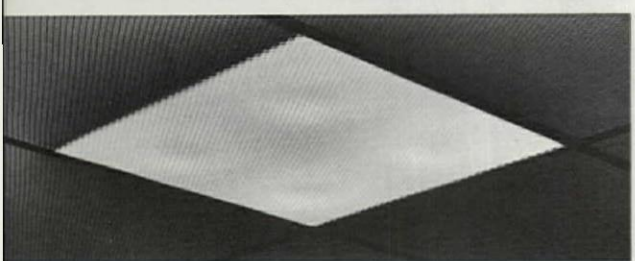
4



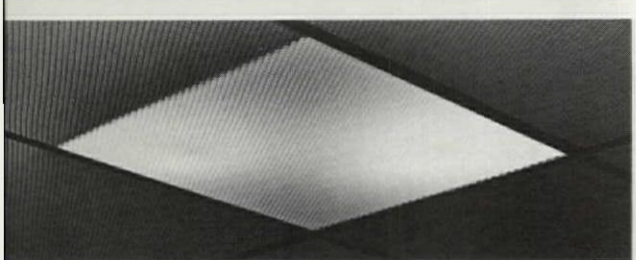
1



2



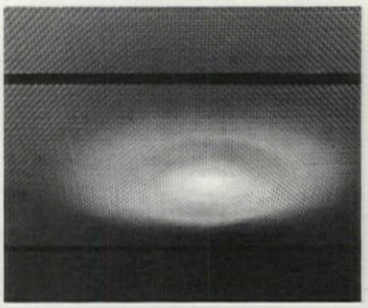
3

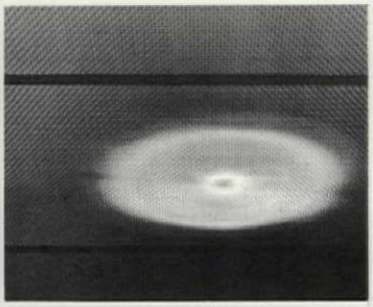


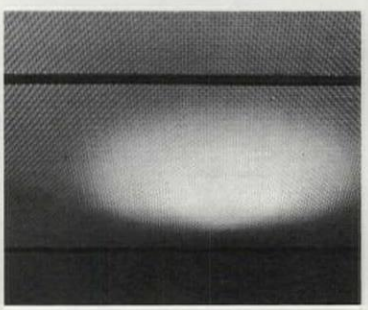
4

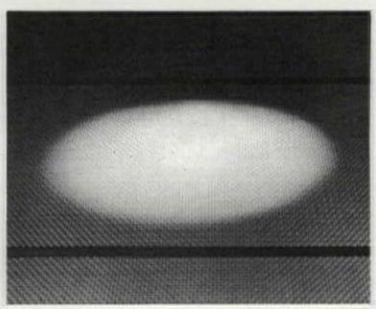
5

12 13









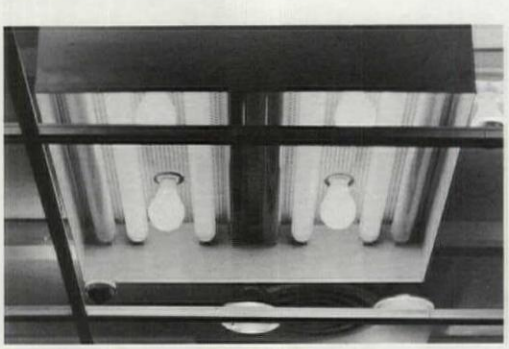
14 15

The small squares may be uniform in brightness or the brightness pattern may be varied for textural or tonal effect. Several close-ups help visualize some of the possibilities **1**, **2**, **3**, **4**, **5**, and **6**.

Another approach is the use of a pattern of circular spots of brightness in ceiling treatment **7**. In creating the impression conveyed by the space they are a dominant influence. The light is directed downward in cones which create sharp shadows and brighter highlights in comparison with a diffuse effect **4** (page 165).

Highlights on silver and glassware and sharp shadows from flowers stand out **8**. These effects are virtually eliminated in the effects of diffuse illumination **9**.

The principle of reducing contrast and bringing the whole ceiling into the design



6

7 8

16

17

18

19

is accomplished in a new version by lighting the panel areas surrounding the bright over-all pattern of spots **10**. Now note the effect on the table setting which modifies the extremes **8** and **9**. The shadows are present with the modeling and detail they emphasize in the centerpiece, as well as soft, defining highlights **11**.

There are many ways to get variety in the circular pattern. The choice of equipment with different beam patterns produces important and subtle differences of distribution. Compare the effects of various source combinations **12**, **13**, **14**, and **15**.

It was pointed out that lighting may be used to unify a ceiling treatment. It may also be employed as means of distinguishing and separating adjoining space **16**.

The ceiling panels beyond the columns are five or six times as bright as that in the foreground. This technique can be used to direct traffic as well as to mark the area by higher level lighting.

Note difference in apparent value between the dark squares in the two areas. The greater amount of reflected light raises the value of the squares in the background. Some further possibilities of relating the two areas are indicated **17**.

Thus far we have considered only the possibilities for ceiling pattern as an element in the design of the space. As all designers know, the handling of wall areas or vertical surfaces, have great influence on the ultimate effect. The range of brightness values, patterns, textures, and colors that may be introduced is limited only by the imagination. Practical considerations can usually be accommodated. See what happens **18** when we begin to develop vertical surfaces with wall lighting. Separating the drapes in the background is accomplished by light from a row of fluorescent lamps concealed above. With this treatment the ceiling panels get stronger attention. Light grading up from the floor in the translucent panel *(left background)* brings that area into the space effectively.

There are many combinations for integrated handling of the various elements. The ceiling pattern, the translucent wall, and the featured modeling of the weathered wood decoration are unified by imaginative lighting **19**.

9

10

11

2

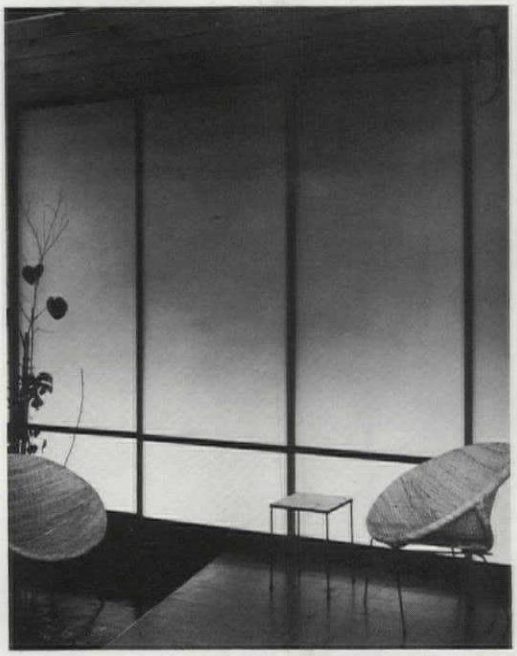
1

3

The variations which the wall area may develop indicate how significantly the whole ensemble may be altered by alternative treatments **1**, **2**, and **3**. A dark silhouette in **1** is created with uniform back lighting from the luminous panel. Front lighting from several spots above creates form in the branches as well as introducing a pattern on the wall **2**. Adding back lighting produces a more subtle effect which is very spectacular when color is introduced **3**.

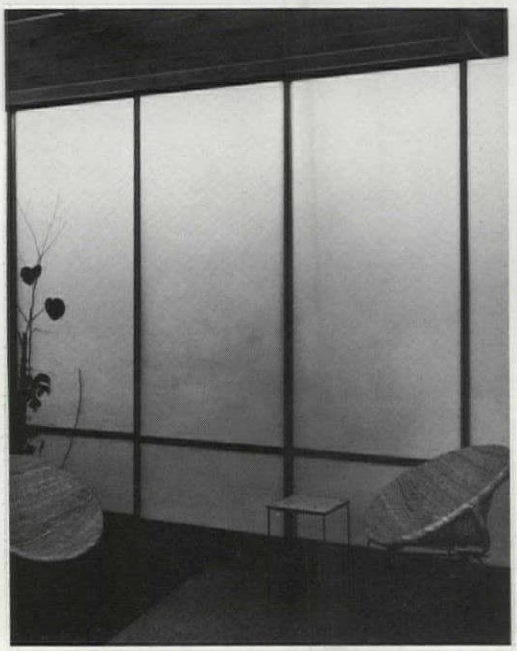
Methods of lighting translucent material are many and varied. Fluorescent lamps arranged according to a basic rule of space and depth ratios can provide uniform brightness as shown **4**. The higher brightness may be at the bottom or top **5** and **6**, or these effects may be combined **7**. For some purposes a random pattern may be desirable by merely placing filament lamps in such a manner as to generate areas of dark and light **8**.

4



5

6



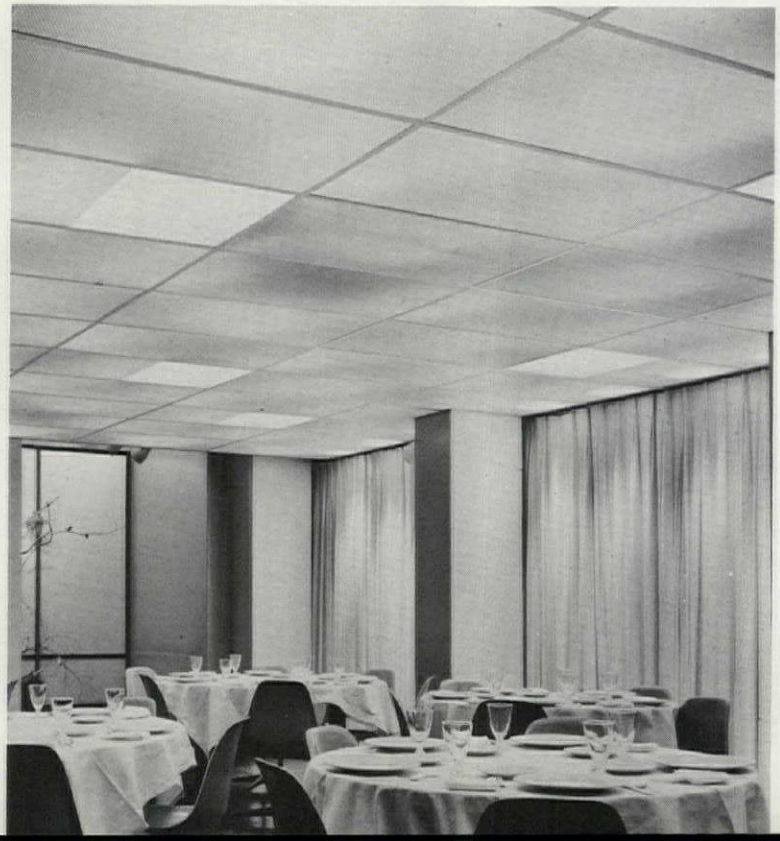
7

8

Often it may be necessary to curtain off a space as in **1**, depending on light from the ceiling to illuminate the draperies. Specific lighting brings out texture and color. It also raises the brightness of the draperies, adding another quality to the new dimensions indicated **2**. In addition, the plane of the ceiling is separated from the high ceiling *(left)*.

Accents introduced on the weathered wood give it still another way of displaying its attractions.

1



2

a case study: apartment lighting

by Richard Kelly*

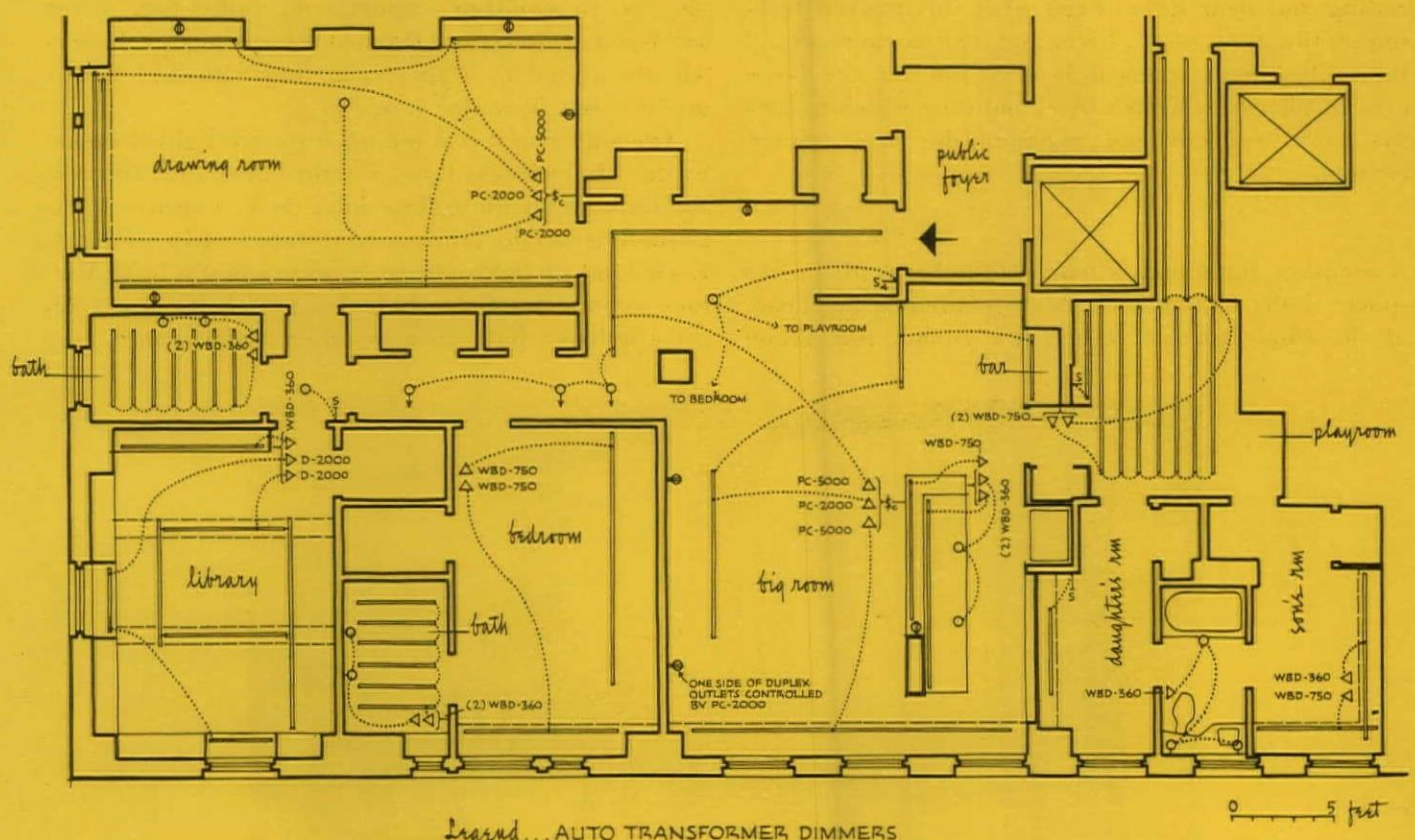
Architecture has been defined as one of the fine arts and, as such, has changed its forms through the ages. A major change has been made in this century: we have all striven with fervor and haste to express living functions by stripping away the lifeless and meaningless remains of old architectural languages. This preoccupation with function has almost made architecture an applied art instead of a fine art.

At first thought, this statement may seem little related to a small apartment in which little real architectural work or freedom exists. However, it does explain the basic attitude with which this apartment was planned. As the apartment of an architectural design consultant on light control, it is used to receive many, many architects and their clients. It is used to stimulate the imagination and to show to what extent feeling can be controlled by visual environment. Therefore, this apartment must receive people as pleasantly as possible. A succession of changing space experiences had dominated the planning: presentation of space is of first importance. The central space was enlarged by connecting the foyer to a big room that also includes the kitchen work area. By making the foyer column free standing, a former bedroom corridor is used to further extend this central space. The separation of children's rooms and playroom from entertainment space eliminates clutter, and reclaims the outdated service hall (made bright and happy by a luminous ceiling).

The former living room is now used as a separate after-dinner drawing room without functional encroachments. The keynote of this room is a collection of pages from the Nuremberg Chronicle which covers two of the walls. A new, hidden door in one of these walls provides the next link connecting to the library.

For strength of concept, lighting techniques are similar from one space to the next, but atmosphere is made to vary extremely. Everywhere there is much ambient luminescence, or indirect lighting, for the purpose of space *presentation*, in the sense the école des beaux arts used the word. The extreme of indirect lighting takes a great deal of wattage, so that a special electric service was necessary from the street. About 800 amps are now available for the use of this apartment alone.

Architectural Light Design Consultant, New York, N. Y.



Legend... AUTO TRANSFORMER DIMMERS

PC-5000	POSITIONER CONTROL - 5000 WATTS CAPACITY
PC-2000	POSITIONER CONTROL - 2000 WATTS CAPACITY
D-2000	MANUAL CONTROL - 2000 WATTS CAPACITY
WBD-360	WALL BOX DIMMER - MANUAL CONTROL - 360 WATTS CAPACITY
WBD-750	WALL BOX DIMMER - MANUAL CONTROL - 750 WATTS CAPACITY

Entrance space is an extension of the big room (*behind camera in photo above*). Door is at far right; painting by Ellsworth Kelly (no relation); floor is of 40-year-old, individually backed, teak planks, newly laid in 5′ module squares. Column was freed in rebuilding.

White wall is directly washed with strong light, like a cyclorama which always opens an internal space. Greatest footcandle-intensity is achieved at the center of the wall area. Light is less intense toward ceiling and near floor. Even with this proved technique, the door edges, base, and wall corners would limit illusion of space if it were not for the large area of Ellsworth Kelly's black painting which widens the space concept and expands the area toward infinity.

A complete functional kitchen is the heart of the big space of the apartment, which in turn is the heart of the whole plan. A large, low island, the major piece of furniture (*below*), is anchored by a pylon, which carries a mural painting by Peter Shiel and encases water-supply pipes to the floors above.

One generous counter includes (left to right) four drawers of utensils, large sink and utensil cabinet, electric dishwasher, two ovens, two broilers, six-burner gas stove, and cabinet for towel bars, trays, folding table, etc.

Wall (left) is a complex of seven double kitchen cabinets, 12-cu-ft refrigerator, 4-cu-ft deep-freeze, passage to children's apartment, buffet-bar, silver and linen drawers, and three other accessory cabinets. All are united by walnut paneling with 15″ minor module and 5′ major module.

The sink recess and pot on stove are lighted inside by downlight from above. Because of optical control, the fixtures on the ceiling look dark. Counter background is bright from a continuous strip of light. Each kind of light is turned on gradually by a dimmer volume knob instead of a switch. Cabinets receive indirect light from counter and room.

The big room is oriented between the apartment entrance space and the south exterior wall of three ordinary-size windows. The wall is covered with a pale-gold glass-fiber net curtain, washed in light, day and night. This orientation is emphasized by the three walls of dark walnut panels. The teak floor is considerably lighter, to lower visually the average level of attention. Focal glow in pools of lamplight organizes the visual composition of attention. Hanging lamps move up and down and along a track, leaving the glowing space under them open for use and beauty. Built-in linear lamplight is used in an island case.

By day (*below, top*) the hard light from three small, rectangular windows is diffused by soft, glass-fiber, net curtains. This also softens the edges of the windows and relieves the contrast between outdoor light and dark, unlighted wall. In addition, the electric light projected to the curtain adds more light between and below windows. This eliminates contrasting daytime glare and also fills in when daylight fails. Thus, even far from the window wall the room is comfortable, cheerful, and glare-free by day.

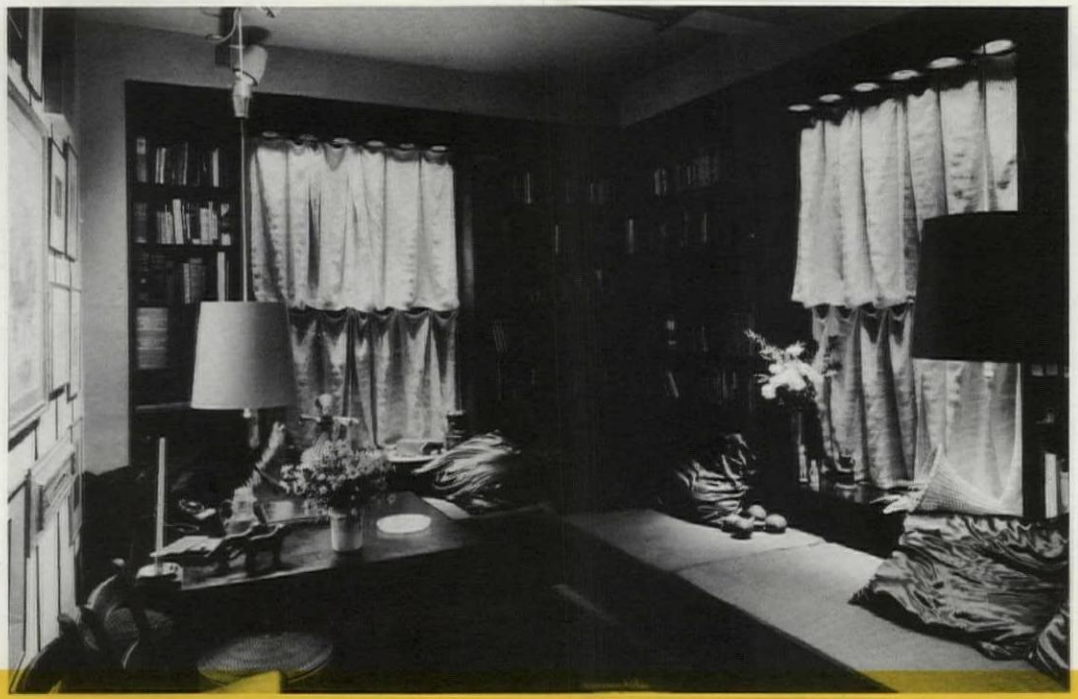
By night (*bottom*) room arrangement is also oriented to the exterior wall, because of the electric light which is focused down over the continuous

curtain. This curtain has more horizontal fibers than vertical, for the purpose of intercepting and reflecting nearly all of the obliquely projected light. Being a pale yellow-gold light, the effect is of soft sunshine miraculously opening up the room space. The surface brightness is slightly less toward each end, as well as less at top and bottom, to reduce hard line of contrast to adjacent materials.

The library is a small retreat. The wall opposite the windows, which receives the most daylight, is used for hanging many favorite pictures. It is covered in rough, pale, natural pandanus to permit picture rehanging and to reflect light for general room lighting as well as for the bookshelves. This picture wall is dappled with projected electric light at night to illuminate the pictures and to soften general room light. The intensity can also be dimmed to fire-light glow (*below*).

The bookshelf cabinetwork was designed to include the windows. This, together with continuous hikiee lounge-seating around three walls, makes an architectural unity in this small room. The continuous hikiee is covered in a glowing, textured fabric of vivid, varying, red yarns, with oversize down cushions of tete-de-negre satin, which darkly reflect the light projected from over the windows. The large table on wheels moves to people for architectural plan discussion—or for canapés before dinner.

At night, the extra horizontal fibers catch more of the vertically projected light, and reflect it to the room. The bottoms of the curtains are brighter than the tops, which adds to room intimacy. The hikiees which catch light are major highlights. When major bright accents are above eye-level, the light seems above people, making them inferior: this creates a restrictive, formalizing atmosphere. When major bright accents are below eye-level the reverse is true: the light is below people like a campfire, they

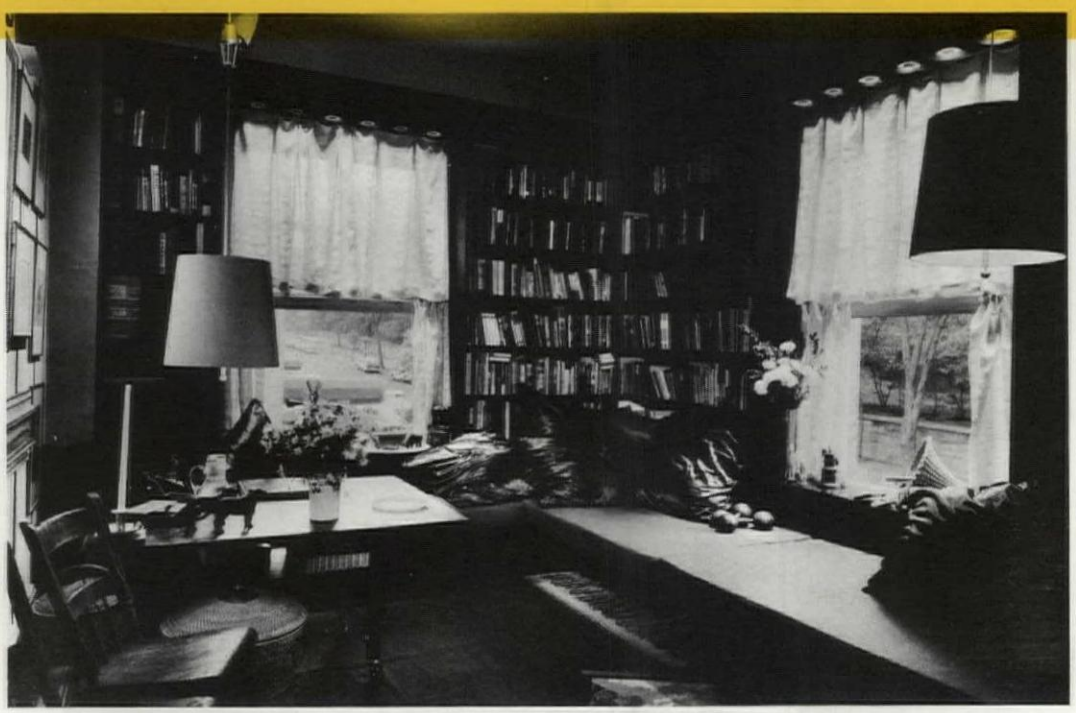


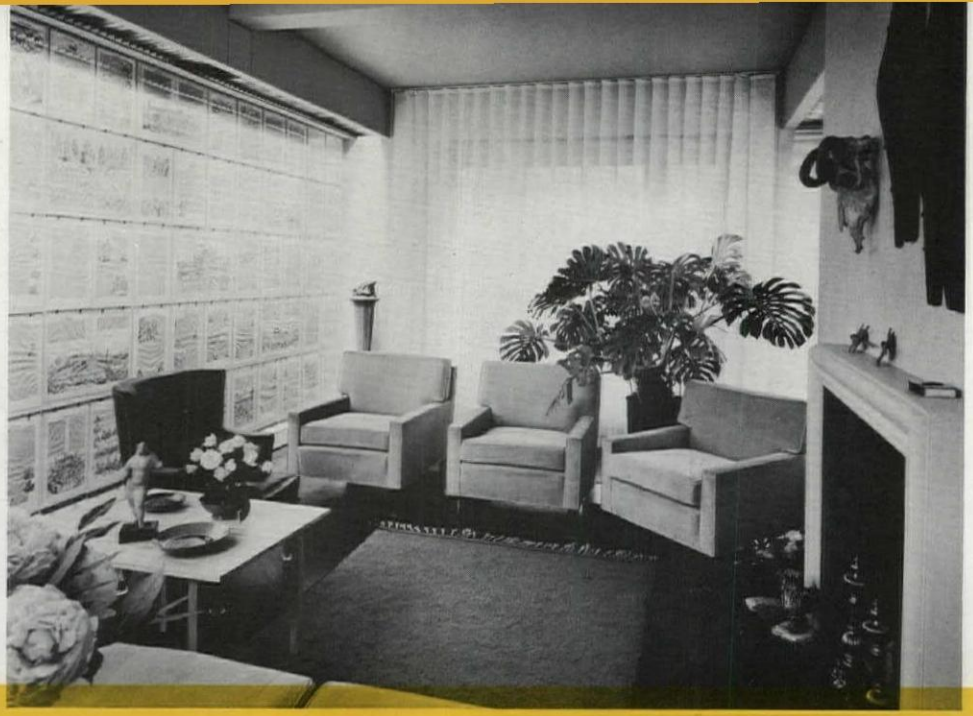
feel in control, at ease, and cozy.

Two hanging lampshades (eight bulbs in each) provide soft lamplight. These travel on a brass trolley track and reel up and down. A low valance-shield lumiline strip is lamplight source for hikiee next to the entrance.

The windows are hung with two tiers of fine, nubby linen with more horizontal flax fibers than vertical. With this detail one can see out clearly, but at high angles the sky glare is shielded; more horizontal fibers also refract more daylight flux into the room. By day, the lower tier of curtains is opened to an unobstructed picture of park and parkside (*below*). By projecting narrow-beam electric light through black honeycomb, the bright daylight exterior is thus framed with a very light, yet relatively less bright, transitional material. The horizontal hikiee around the room also catches most of the daylight. This so spectacularly softens the contrast between inside and outside light that the view sensibly becomes a comfortably bright-colored picture.

This lighting technique is unorthodox. It is only to be used in close collaboration with architecture and decoration. Under controlled conditions it is magnificent for many kinds of conference rooms in both commercial and professional offices. Generally speaking, it is also adaptable to the Classic, Renaissance, and "beaux arts" interiors, in which many other contemporary lighting techniques are difficult to use sympathetically.





The drawing room is used for conversation after dinner. Its two walls flanking the chimney breast and the one long wall facing them, are hung with glass-covered pages of the Nuremberg Chronicle, printed in 1493, with many woodcuts depicting all notable cities of the time. The room is thus paneled in glass, which adds the stimulation of an infinite play of brilliants in reflections. The chimney breast, end wall, and window flanks are covered in natural pandanus; woodwork and cealing are painted pale mustard; seating is upholstered in matching pale mustard to complete a monochromatic color scheme. Floor is black, furred oak to heighten effect of lighted walls.

By day (*above*) the window wall is covered with 6″-strips of silky, natural-abaca fiber, mounted on through-view blind hardware with traverse cords for occasional unobstructed view. The transparent curtain diffuses and relieves the edge-contrast glare of the brilliant western exposure to Central Park. In addition, the walls are strongly worked with light by day to make outdoor brightness compatible to the room brightness.

One of the most noticeable changes in contemporary building is the use of large, glass, window walls. The old balance of daylight brightness in interiors is violently changed to uncomfortable contrasts too great for the human eye muscles to take. The supplementary architectural change in electric lighting has lagged. It is now evident that sudden splashes of strong daylight must be modulated by electrically lighted areas adjacent to them. Indoor-outdoor spatial planning is incomplete without planned continuity of brightness ratios, with or without electric light.

By night (*below*) a heavy, loosely woven curtain is drawn across the windows, 18″ behind the sheer-abaca panel strips. Like small stars, 342 tiny light bulbs are placed in vertical rows through the depth of the fabric. Though the maximum design voltage is 14, these stars become visible by gradually bringing the voltage up from zero with an autotransformer

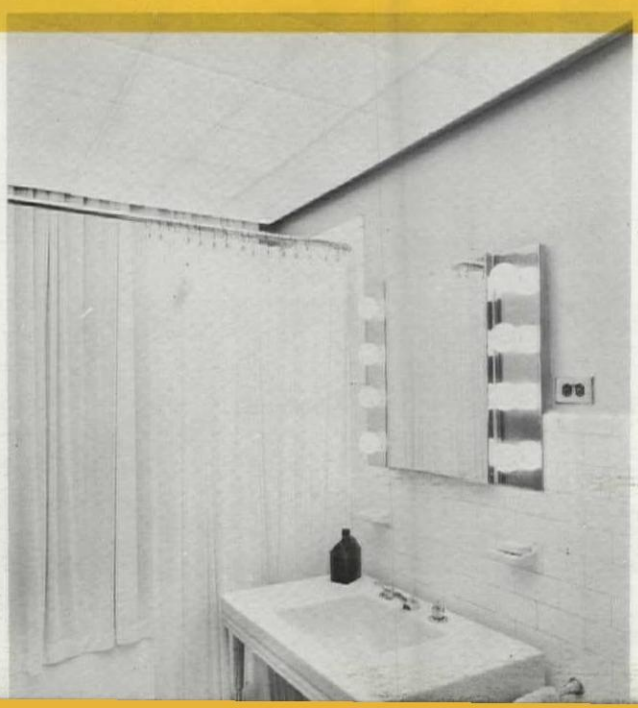
dimmer. At other times, the heavy fabric is strongly and obliquely lighted from continuous spotlights through a black honeycomb above the window soffit. These effects are usually seen through the sheer abaca, which gives an illusion of depth and suggests greater space. So, also, a large plant in front of both curtains adds another plane in space depth.

At night, all the lighting is kept at a lower intensity than by day. The daytime ratio of brightness is required because of the large window which reveals sunlight extremes of brightness. The night ratio is geared to our awareness of the darkness outside and related to the number of people; the ambience brightness sometimes being reduced to softest glow, for two.

At night, people receive no direct light. The center of the room and chairs are less light than the surround. The walls are interesting and lighted. Not only is this condition flattering to people physically, but it is more comfortable and reassuring to sit in less bright areas and to look at brighter areas. Almost all conference environments, social or business, should be planned with this condition made possible.

In the otherwise conventional bathroom (*below*), the powerful effect of extreme light diffusion can be noticeably felt. Gleaming white-tile walls reflect all the shadowless, soft light from the luminous ceiling. The ceiling is made of one-ft-sq vacuum-formed vinyl diffusers. The source is deluxe warm rapid-start tubes with individual ballasts made for autotransformer dimming. When dimmed, such infinite directional diffusion creates a feeling of luxurious softness. For grooming at the mirror, highlight must be added by a manicured version of the stage make-up mirror lighting.

Such extremes of softly diffused light are good for environments planned for complete relaxation. This technique should be used in varying degrees, usually with some harder directional highlight or focal light added or mixed. Luminous ceilings must be used carefully, with a full consciousness of all the combination effects on people.



critique

IS LIGHTING ARCHITECTURE?

When the material for this issue was assembled in more or less final form, it was distributed to the various contributors. Instead of preparing written comments, the authors met in New York before the issue went to press, for a general discussion and criticism of one another's articles.

The first section to be analyzed was the Introduction, "Lighting is Architecture," and particularly the question of what specialists were needed to aid the architect in the solution of his lighting problems. The panel went on to a consideration of the shortcomings of architects' attitudes and training with respect to lighting.

CUTLER (to Wright): You refer to the lighting consultant and the electrical engineer. Shouldn't you add one more—the illuminating engineer?

WRIGHT: I am not clear as to the distinction between him and the lighting consultant. Let's define the three functions.

KELLY: I think that the most creative part of lighting is often the integration of all phases which serve the many purposes of a building—the mapping out of objectives. This requires considerable time to resolve in detail and actually precedes illuminating engineering. Although there is a distinct separation in the two phases, the same man may frequently handle both. As problems become more complex, however, the two are separated. This is so in my own office. I have some people working entirely on the lighting design of a project; and usually before any illumination engineering is done needs are mapped out carefully. We decide what foot-Lamberts certain surfaces will have; we also decide what footcandles we wish to have, where they are to go, how they fit into the structure. We go a long way before we begin any illumination engineering. Then *how we achieve these results* is the illumination engineering; i.e., the selection of certain equipment, the weighting of one mechanism over another, and lots of calculations.

WRIGHT: You're suggesting that the architect needs three kinds of help.

WELCH: But he still should know a lot more about light and how things should be done than he now does.

FEDER: I think the basic problem is that the architect has been trained inadequately insofar as the whole light story goes—in terms of his total project. Because of the way he has been taught, he thinks in terms of renderings; his thinking has not progressed to a consideration of the relationship of light to his forms. So, the architect hopes that the electrical engineer will come up with the answer to his lighting problems. He doesn't realize that the illuminating-engineer phase—footcandles, foot-Lamberts, and so forth—is only background information for lighting design.

WRIGHT: What I have argued is that the architect should remain in the dominant role, but I'm afraid what happens in real life is that the architect fails to appreciate his responsibilities and hands over a large part of his *design* to the lighting consultant.

KELLY: I am inclined to think of the lighting consultant (to the degree that he contributes to creative design) as being a specialized architect, not divorced from the architect in charge, but rather his collaborator.

FEDER: The architect is still back in the 1920's. The men responsible for much of the architecture in this country are still laboring under the delusion that the electrical engineer will give them the mechanics and that they will find their answers in the catalogs. But things have gone way beyond this. Forms have changed: the standards shown in the catalogs are usually at least 10 years behind, and there is a great void.

CUTLER: But don't most architects become familiar with materials? They can talk the language of the masonry contractor for example—they must know that.

WRIGHT: You're convincing me that I should state what I have said even more strongly. I think that it is fatal for the architect to relinquish responsibility for the over-all results of the design. He has to think in terms of moods—he has to distinguish between a space that should have one kind of effect and a space that should have another.

FEDER: We have to resolve things in terms of people. You can never light form by itself—unless you're dealing with a stage or a motion-picture screen, where you see one view and then go on to something else. You've got to go inside the thing to really have a feeling for light. And this the average architect doesn't realize.

KELLY: Many are afraid of it. Many sense that a monster has developed, and it is a part of architecture. That's why the lighting consultant is so important to the architect. Whether the architect ought to absorb an understanding of that work is debatable. Maybe he should, but, if he did, all our architectural schools would have to

Questions raised by this Special Subject Issue *are discussed by Kelly, Feder, Welch, Holmes, Cutler, Wright.*

have very different curricula.

CUTLER (to Kelly): I wanted to ask whether you are going to explain in your discussion the terms, "ambient luminescence," "focal glow," "play of brilliants"? Personally, I think it would be helpful to the architect and others to get the exact meaning of these terms.

KELLY: There are one or two points that I want to make about these terms. In the introduction they were referred to as "three kinds of light" and that seems rather loose to me. I prefer to say "kinds of light *play*," because that is more accurate.

FEDER: Something else should be clarified, too, on that level. Phrases may capture the imagination, just as poetic phrases capture the imagination on other emotional levels. Actually the big point here is that light, too, causes an emotional reaction. For example, the "play of brilliants" or the "focal glow." When you think of them imaginatively, they take on a kind of excitement. If these terms became part of the language, it would be a tremendous thing for the architect—it would enable him to think in terms of the human imagination.

KELLY: I am glad you mentioned that, because I think it must be clarified that the primary reason for establishing these categories is that they are significant in the immediate visual appreciation of the scene; and secondarily, they're significant in terms of human reaction. Naturally, one combines all three for almost all uses, but you can analyze most reactions in terms of three kinds of light play.

use of terms

The concentration on light forms in Abe Feder's article, "Light As An Architectural Material," and particularly his use of the word "beams" to describe the essential inherent quality of each source type, and some of his other key terms, generated a good deal of discussion.

CUTLER: Your thesis seems to be that light is a material which is flexible—something you can't touch or feel, but which gives a greater flexibility to every other material with which the architect works. In describing it, you talk of various light forms. I am not sure whether you mean the design, or the appearance of a luminaire plus the other brightness patterns that are in the space. To me, the final result in the space is a series of brightness patterns. Now, do you mean by "light form" the same thing that I think of as "brightness pattern"?

FEDER: I think of a light form in terms of what it does to the final appearance: the foot-Lamberts, the final brightness, of the thing, itself. To me it's a composition of many things.

CUTLER: Well, then, isn't that term "brightness pattern" a pretty good one?

FEDER: I believe it's too diffuse. I think that if you said "brightness pattern" to someone, he would not associate it properly.

WRIGHT: I am sympathetic with the concept that Abe is driving at. I think there's some language problem here that is insoluble, but to use this room we are in as an example: I believe he is suggesting that we consider a step along the way which is terribly important to the end result. Namely, that out of such and such a source comes a chunk of light. Here, the resulting shapes happen to be lapped by virtue of the numerous recessed troffers. One might completely ignore how this result happened to come about, yet the thing one manipulates in the beginning is the combination of a series of cylindrical chunks of light striking room surfaces.

WELCH: The sources have a certain nature because of their spacing and the distribution of light from each one. The final result down here is more or less monotonous, uniform illumination—at least on the table.

FEDER (to Cutler): On the other hand, I look at you and I see you highlighted from both sides. I see reflections, on your forehead, which are actually giving off a kind of glazed reflection. That's a big consideration when you are talking about brightness pattern—people.

CUTLER: People *are* part of the brightness pattern.

FEDER: Yes, but there has been a failure to treat them in terms of their importance in a space.

WRIGHT: I think Abe is closer to *getting the designer to think in design terms.* If you substitute in this room a series of downlights, you would get a series of cones coming down. These you can think about, work with.

KELLY: Now, to go on from there, what is the emotional effect of this so far as the human being is concerned?

CUTLER: Different patterns will have a different effect on many people; the same pattern may have a different effect on a number of people.

FEDER: Has the architect gone into this aspect of lighting as deeply as we have? Does he have a basis upon which he can act at this creative level? Does brightness pattern, in itself, give him the total story?

CUTLER: In your discussion, you state that the architect thinks of what happens to his renderings from the daylight standpoint, and he produces his renderings that way. Now, if he were in a position to analyze where the light was coming from in a given space and produce his renderings in that fashion, then he could convey to the lighting designer what he wanted as a final result in the space. Right?

FEDER: Yes, but when he starts to put that down on paper, he has to master the mechanics of the given material in order to know what it does. I feel that from the architect's point of view, what is required isn't so much mastering a language as an awareness of the sources of light and forms.

KELLY: I see what you're getting at. The brightness-pattern concept is something that should come before the study of distribution pattern and beam shapes.

WRIGHT: I have a chance to stand up for Abe's "beams." In my own dining room there is a 13-ft-high ceiling. I knew at the outset what light I wanted on the dining table—I wanted light that would make things sparkle, I wanted focal glow on the table, and so on. In this instance, I could think of a type of light source capable of producing this kind of beam or light form, and I could lay it on the table to get the desired result. That's the "brightness pattern." But the beams were a very decisive element to me, as a designer working out a problem.

WELCH: That cone coming from the 13-ft. height: you don't see a cone of light unless there is something in the air—smoke, dirt, or moisture.

CUTLER: Of course Abe, with his experience in the theater, sees them where no one else would.

FEDER: I wish that were true. Half of the time in the theater you wish you could get rid of them.

CUTLER: In your procedure, Henry, it seemed that you wanted to put emphasis on the center of the table and shield the eyes to a large extent from the source.

WRIGHT: This conception of light forms is to my mind a valuable one for the de-

signer who thinks essentially in terms of geometry and shapes. When you say you can wash a wall with light, one has to think of a spread-out spray. Beginning with the nature of the source that makes the light, and how it can readily and practically be modified, is a good way to think about lighting.

CUTLER: Then if you wish to think of light forms in that way, I'd pin it down—from an engineering standpoint—to the distribution of light in some geometrical form, such as a cone.

FEDER: I agree! It's another way of saying that we use this apparatus to get this particular form, this kind of pattern.

classroom lighting

Kenneth Welch then explained his classroom-lighting proposal. (Refer to Welch's article for description and sketches.)

KELLY: I have only one immediate comment. The kind of classroom that this is, should be defined more carefully. There are lots of classrooms. This one is obviously for a children's classroom where there are a great many children all working at one time. They need light of the same intensity everywhere.

WELCH: Not entirely. I can make this a sewing classroom by putting in more spots. This is flexible. I don't want to make it simply a classroom—I want to make it a workspace, an art gallery, maybe.

KELLY: This is primarily an elementary-school classroom. That's one limitation, because a college classroom wouldn't be like that.

WELCH: It could be.

KELLY: That's suitable for an elementary school, but it makes for an uneven light most of the time. The cost wouldn't be justified.

WELCH: I conclude my discussion by saying that I have found the average elementary-school teacher to be a dedicated person who loves children and is intelligent enough to use a system like this. She can get many effects, and create different moods by setting a few switches.

KELLY: I'm getting very skeptical, though, about the wisdom of too much flexibility. People use it badly.

WRIGHT: The switching should be five times as good as it is, if you are ever going to have flexibility. You have a bank of 14 switches; even the lighting consultant, when he comes back, can't remember which switch is supposed to do what.

CUTLER: You know that's true of a lot of stores you've done, Ken.

WRIGHT: Abe tends to take a point of view, somewhat softened, which might be said to be against higher levels of illumination. Ken, as I do, emphasizes the need for illumination to compete with outdoor brightnesses, particularly in rooms such as classrooms. The architect is creating tremendous glass areas and in so doing he is creating new and difficult problems which, technically, electric lighting is capable of solving. The architect should be made aware of the fact that he's posing problems that call for a lot of light indoors, or else use darkening glass.

KELLY: Relative to what you have said about glass: the biggest change in architecture in the last two or three decades probablly is the increased use of glass. It has changed all sorts of concepts and it has changed lighting. I have arrived at the point where I can make a statement that may be rather shocking: the more daylight allowed into a building, the more additional so-called artificial light needed. You cannot bring in more daylight—use more glass—without requiring more amperage in electric current for additional light control—just to control daylight glare, sky glare, or reflected daylight, or sun glare.

WELCH: Glare is not, under normal conditions, a quantity of light. Glare is excessive brightness ratio.

WRIGHT (to Kelly): I don't know where you stood in the process of developing the Seagram House solution but I've lived with Seagram-type darkening glass in my office for more than a year and my conviction is that it could be twice as dark, and one would be twice that much better off.

KELLY: You have to be careful in using it. It is wonderful in Seagram House. There are places where it might not work so well, if one is moving in and out all the time.

WELCH: I'll never forget the time I opened a window in the Commodore Hotel to take a picture of Macy's roof. It was like letting the rosy-fingered dawn in there, after that blue glass.

WRIGHT: Its use is logical in office buildings, where one moves into a sealed world. It seems important to me to underscore the fact that for the architect this is all part and parcel of the same problem. You do it by jacking up the light or toning down the glass (to reduce light from outside).

KELLY: With the use of more glass, architecture now involves a continuity of spaces. People are moving about more than they used to. We are dealing with daylight values, inside and outside, and the problems of intensity become a great deal more serious when that happens. We are forced to high-key intensities for comfort. As soon as we require higher footcandles everywhere we demand controlled temperature and air conditioning becomes essential.

WRIGHT: While Abe has taken a slap at the lamp companies for not dreaming up new things, what about the air-conditioning people developing a more efficient means of getting rid of this heat? It's been done in some places. This air-conditioning bugaboo is not quite so great as it's made out to be. We don't have to pump lamp heat out through a refrigeration machine.

KELLY: I think there could be more ingenuity. Air conditioning can be planned to take out the heat generated by the lighting at its source, so much more efficiently. It's getting to be so costly that that would be a very important thing to do.

variations in lighting

Discussion then shifted to C. M. Cutler's article, "Design Results Through Variations In Lighting."

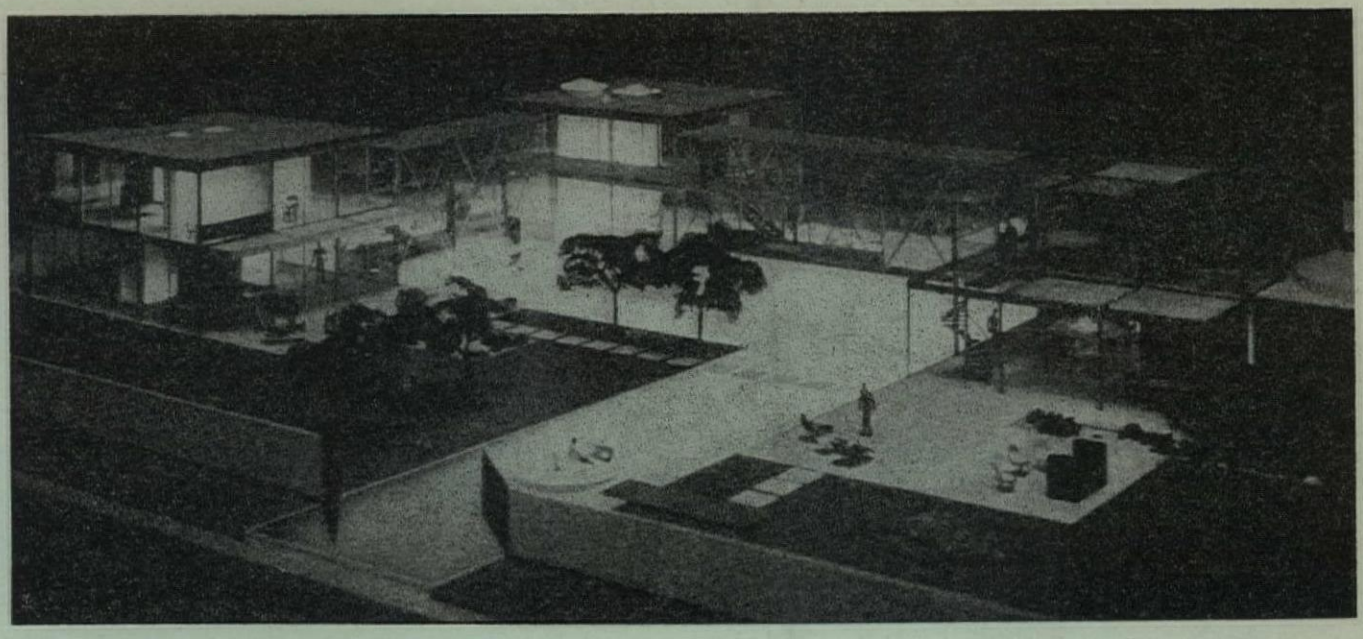
KELLY: I believe the effects on the table setting are of great importance to architects. The more they know about that the better it is for me.

WRIGHT: And yet you know that this merely scratches the surface. You know immediately that there are thousands of additional things.

KELLY: I have a little reaction against the visual, the artistic impact, of some of these pictures the way they are. You get good quality from certain kinds of lighting involved here, but the pictures make the ceiling look unpleasant—which isn't so.

WELCH: You wouldn't do it that way anyway. It would be too darned expensive.

CUTLER: Of course we are trying to do a lot of things. If you set out to accomplish just the effect shown, you wouldn't have quite the same situation. I tried to get this into the text; that this isn't the only way to do it.



p/a design awards seminar II

There follow two more of the Seminar discussions, edited from tape recordings, of 1958 P/A Design Awards Program Award-winning projects. These case-study critiques were held in January this year, with the co-operation of the Department of Architecture of University of Pennsylvania.

Project: **Exhibition House**
Client: **Theme House, Inc.**
Location: **New York area**
Architects: **Antonin Raymond & Ladislav L. Rado**

Presentation:
Ladislav L. Rado

I must admit that I approached this project with some misgiving. I am quite impatient with the trend in recent years that everything has to be exciting and unusual, and here I found myself faced with the task of designing an exhibition house. How can one design an exhibition house without being an exhibitionist? Shortly I realized that the function of an exhibition house is just another facet of architecture that has to be fitted together with all the other factors into a balanced organism. And after I found my peace of mind as far as that was concerned, philosophically, I still was worried somewhat about the esthetic problem of creating and maintaining order and harmony within the function of an exhibition house. And there I found that what I had learned in Japan was very helpful to me. There one can observe a very strong sense of order and discipline — including structural order and otherwise—but within their homes, and other buildings, in their streets and landscapes, human beings can compose flexible secondary elements almost at will, and life goes on quite freely within that order. I thought that this could apply to an exhibition house: if one could establish a certain order, by using the same module and by some unity of composition, then within that anything might go, and be right.

Now this being an exhibition house, it isn't literally a residence. We decided that it wouldn't be a model residence because a certain amount of license and poetry would have to apply—just as, in a novel, the author is trying to create real characters, but somewhere there is a footnote: "Any similarity between these characters and real characters is strictly coincidental." To approach a residential scale I decided to use three elements that would be near the size of a house.

There must be freedom of movement for people in an exhibition house, so the three elements are joined by two bridges, to allow people to move about in bad weather. The landscaping and terraces will create other architecturally defined areas around and within the buildings. On the first floor, one unit is for more formal living and entertaining away from the children; another unit has the family living room, sun room, playroom, hobby room and so on; in the other element we have the dining area, kitchen, and adjoining the kitchen a small auditorium with a turntable, so that people can watch kitchen demonstrations or be turned around toward other displays. On the second floor above the formal living space is the master bedroom and dressing suite; above the family room are two children's rooms; and above the dining-kitchen unit is a solarium with space for recreation, a small dressing room, and stairs leading down to the swimming pool and dining areas.

Discussion: **Grant Manson**

I think Raymond & Rado's design is very handsome, very beguiling, and a very beautiful object. It shows, to my way of thinking, wonderfully calculated harmony of shapes, and spaces, and patterns, repeated again and again. I've been deep lately in the early work of Frank Lloyd Wright and I keep thinking of this as a sort of Coonley House (with all the roofs pulled off and all the casements yanked off) in the extraordinary luxury with which the thing is approached: the opulence, the elegance of a 100 percent zoned plan. It

is a very peculiar, very unusual, and very specialized building. Notice that it is given a P/A Design Award in the category of commercial architecture. That leaves us to think of it in one particular way, and yet from what we have heard Mr. Rado say, it is a building in residential scale. It is a building designed to exhibit materials, methods of construction, and equipment suitable for *domestic* architecture. And I think that the three pavilions hooked up by those connecting links seem to suggest that the people who are in the building are looking at *domestic* life. So I have to look at it, I think, primarily as a house, secondarily as commercial architecture.

Now quite aside from whether you consider it as residential or commercial I think it is extremely inviting; you want to go in it, to explore it. It is very interestingly defined, and you want to experience all the definitions. It is, of course, nicely adapted to the accommodation of crowds, which is one of the functions that Rado had to fulfill. There is good freedom of movement in the building, which he tells us he derived, more or less, from the Japanese attitude toward freedom of life within a building. Furthermore, the architecture has another quality that to me is very appealing, and that is a commendable modesty. While it's extremely elegant in detail, and you see that nothing is left to chance, nevertheless the building as a whole takes a back seat and the structure doesn't demand the prime attention of the observer. Furthermore, it seems to me that the building is in beautiful scale, with its landscaped setting, its pools, and its gardens.

It is above all, I suppose, trying to avoid this question of whether it's residential or commercial. It is above all else a very handsome and beautifully designed showcase; it makes one think of a showcase in a magnificent store, like Cartier's. But I think it attempts to do something more than be a showcase. I think it does two other things. It does suggest, as I said, residential architecture; and I think it attempts to demonstrate the universality of the metal frame and the glass skin for architecture in general. Now I have a few objections to these things. I ask myself: is the metal box, with a glass membrane, a proper solution for domestic architecture? I've always cavilled at that myself. I think it fails altogether to provide proper privacy, seclusion, shelter, in the spiritual sense of those words, and I've always suspected, as a matter of fact, that Dr. Edith Farnsworth was probably quite right when she said that she couldn't live in the house that Mies van der Rohe provided for her. I feel that the exposed metal module is too impersonal, probably too monotonous, for residential architecture. Although the building does provide for wonderful, free circulation inside, I think it rather precludes a richness of spatial experience. While it may be permissible to provide the living rooms with glass walls, I wonder whether it really is a sensible thing to design bedrooms with glass walls. I think that it gives the occupants too much light—one of the problems in a bedroom is, very often, to reduce the amount of light when you are sleeping—and it disregards the very practical problem of the bed that hasn't yet been made, and the problem of the clothes that you haven't yet had a chance to put away.

However, if we come back to the argument that we should view it as a showcase, the Raymond & Rado design is an admirable building, extraordinarily handsome, and I like it very much.

Rado: Again I say that this really is an exhibition house. That's the way we thought of it, the way we designed it, and we felt that it's just as important for the people to look outside as for people to look in; that's why we designed it in such an open way. I agree with you that one cannot live all the time in a space that is entirely open to the outdoors because one has to have a feeling of shelter, of intimacy. But that can be achieved in a house that has much glass for exterior walls. I would like to invite you to visit my house, that I designed and built recently. It has a lot of glass, it has a pretty regular structure, and yet I feel that all kinds of moods are possible there. We have glass walls in our bedroom, but screens that close it off when we want it to be shut off. One thing that came as an extra bonus and surprise in the bedroom of my house was that, in addition to getting the patterns of the sun and shadows of trees during the day, we get shadows of moonlight at night — very poetic, very pleasant, very exciting. We don't have the feeling that we are unsheltered or unprotected.

Alfred Clauss: I think the Jury should say whether they looked at it as a house. An exhibition house used to show furniture and products is different from an exhibit sample house in a project of houses for sale.

Creighton: The Jury, as Professor Manson pointed out, classified it as a commercial project, and that is certainly the way Mr. Rado has demonstrated it and explained it.

Holmes Perkins: There is in my mind some question about the setting in which you will show home furnishings. Whether you are showing furnishings for a playroom, or a hobby room, or a living room, or other spaces, I am not sure it's being fair to the public to show them in a setting which is quite different from the setting in which they will ultimately be. As Grant Manson pointed out, the problem of furnishing a bedroom in this house is entirely different from the problem the normal customer would face in trying to furnish a bedroom in even the most modern house. I therefore rather wonder whether this does produce the best environment for showmanship.

Rado: We thought that to attract people to see things that they may be interested in the house need not be literally realistic—that we could give it more flavor, and showmanship. But I really do not think that it will be an environment very different, or foreign. It may not be usual for the average environment now, but we are pointing to the future.

Frank Hunt: I'd like to speak of circulation again. This exhibition house, from a circulation standard, presents an entirely different atmosphere from what we are used to. Normally you walk in the front door of an exhibition house and they have everything roped off, with white canvas covering the floor, and you're pushed and shoved through and you come out the other end and that's it. It seems to me that control here is in the whole site, and with the area that's available—which isn't in the usual exhibition home—if they can control the number of people that come in then you can have complete freedom to wander wherever you choose within that space.

Manson: I don't see how you can possibly avoid believing that anybody walking through this building would automatically be thinking in terms of "how I live" or "how I would like to live." They wouldn't be saying to themselves every five minutes "well, after all, this is nothing but a commercial venture." You are suggesting to them, everywhere they look, and at every step they take, a life in a house along certain lines and that's why I found it so very difficult to come to any conclusions about it because I couldn't decide which side of the fence it is on.

Rado: Well, it is on both. And as a house, I say again, that I don't think it is so far apart from something we might do today, or from the way people want to live, especially if they learn more about it; I don't see any great discrepancy.

p/a design awards seminar III

Project: **Olympic Arena for 1960 Olympic Winter Games**

Client: **Organizing Committee, 1960 Olympic Winter Games**

Location: **Squaw Valley, California**

Architects: **Corlett & Spackman and Kitchen & Hunt**

Presentation:
William Corlett

When we were successful in obtaining the commission for this project we organized a team, which has functioned remarkably well: two architectural offices, two structural engineering offices, and mechanical, electrical, civil, sanitary engineers. On obtaining this commission we were informed that the project was a "turn-key job" and that our first act was indeed to write the program. When we asked the client how many athletes were coming they had no idea. How many of these would be women; they had no idea. They had only a rough idea of what events would be staged. So that our first order of business was to develop a program, based on what little was available in terms of the staging of the Winter Olympic Games in various European countries. Most of them had been held in highly developed resort areas, containing all the necessary athletic facilities and where there were existing hotels. For the first time all the athletes from some 45 countries would have to be housed in an Olympic Village and all events would be held in one very compact area. We are here today to discuss the Olympic Arena, which is the hub building of what is virtually a small city.

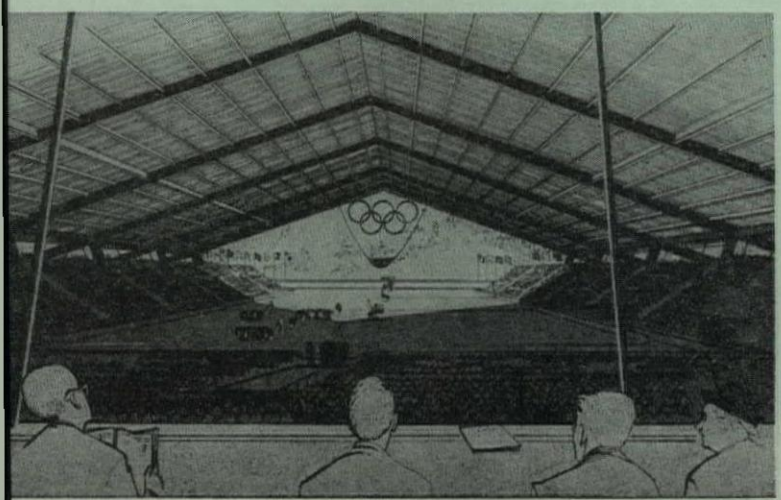
Presentation: **Frank Hunt**

The program for the Arena itself developed as we gathered information from the various Federations all over the world: authorities in ski jumping, ice skating, and so on. We were to design a permanent ice arena, partly enclosed, and partly or completely covered, suitable for the Olympic Games and suitable for use after the Games as a year-round skating facility, as a convention center, and for the holding of other miscellaneous revenue-producing events.

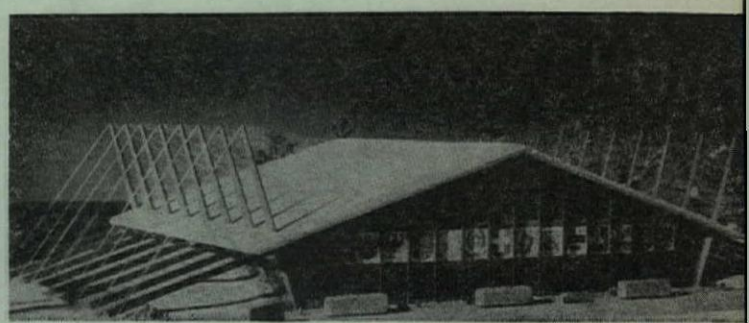
As Bill Corlett has mentioned, we have certain meteorological conditions in the Valley which have greatly influenced the design, not the least of which is the heavy snows. We can get three feet of snow in a couple of hours there; we can have rain at any time of the year, summer or winter; we can get a wind and sun combination at the time the Games will be scheduled which would make it impossible to hold an ice surface suitable for these events. The temperature to expect at the time of the Games will be 50 to 60 degrees maximum and 5 to 15 degrees minimum. In addition, Squaw Valley is a glacial valley filled with silt, sand, and gravel deposits, which have presented somewhat of a construction problem. We have had to preload the areas in which the rinks are located in order not to get uneven settlement. We used cast-in-place concrete piles to support the Arena and to eliminate differential settlement between the frames.

Of course we were very much interested in getting a building of a character suitable for Squaw Valley, and we felt that we should capture some of the festivity connected with these Games. Another feature that became very obvious as we studied the program was that a clear span was highly desirable. The disposal of the snow was of considerable importance; we could build a flat roof and support it, or we could build a pitched roof and slide it off—where it would not be a hazard to the public. One of the requirements our client placed on the building was that it be oriented toward the ski jump. We felt that the pitched roof answered these problems. It was appropriate to the Valley. It provided a good seating layout, as we held the ridge perpendicular to the longer axis of the rink, which gives us the better seats parallel to the long side of the rink. We had a large opening toward the ski jump, looking across the speed skating rink.

One of the major program require-



". . . the open end is the far more dynamic thing."



". . . we don't know what the scale will be in your building."

ments was that we provide at least 30,000 sq ft of space for the athletes and officials to congregate for the opening and closing ceremonies, which are of the utmost importance for pageantry. As the plan evolved, two movable sections of bleachers can be swung around on portable tracks, so that the whole end of the Arena is thrown open for these ceremonies, with almost unlimited space for the public who weren't able to obtain seats in the Arena.

Structural engineering was done by the office of H. J. Brunnier. The design was developed initially on the basis of taking care of 100 lb per sq ft of snow, but obviously that was a tremendous problem. We feel that in our final design we saved upwards of half a million dollars. We reduced the snow load to 50 lb a sq ft (which will take care of the worst storm we could get on a 50-year basis) with a system of snow melting, accomplished by heating the entire roof surface. The stuctural design has a safety factor which will permit a temporary loading of up to 80 lb a sq ft without any structural damage. The principal structural feature of the Arena now is the 300 ft clear-span roof. The roof structure consists of a cellular-steel deck, spanning about 12 ft, rolled-steel purlins spanning 32 ft, and the main supporting frames, consisting of tapered columns built up from steel plates, tapered steel box girders and inclined-cable tension members. Each half of the main supporting frame acts independently, somewhat on the order of a guy derrick, with the roof girder functioning as the boom and the column as the mast, and the inclined cables as the guys. Cable anchorages are provided by dead men of concrete, with the roof girders extended to resist the horizontal thrust. We heat the roof by a reverse-cycle heat pump system from the refrigeration unit; we have a continuous duct that extends along the eave line and each one of the cells in the steel deck gets its share of the heat. The heat rises up to the ridge, through the cells, and the melting snow gives us control of the snow load on the roof. Mechanical, electrical, and refrigeration engineering was by the office of Vandament & Darmsted.

***Discussion:* Dean G. Holmes Perkins**

In this Arena, a great simplicity results from a very close examination of the problems of the structure. This is the kind of thing that results from a really close collaboration from the very start among people who are working in these various technologies. You get the high point of the roof in the place where you need the greatest number of seats. You also have the opportunity thereby to see the people coming off the ski jump at the end.

Perkins: The question on the roof that I might have is whether a system like this, which seems to me to be to some extent a two-dimensional system, really provides the greatest economy. All of the wires I see seem to be going in straight planes. The roof seems to be a series of flat panels. But in general I get a very fine impression of this simple form.

Vernon DeMars: I would like to say something about scale. I think the entrance elevation — with what appear to be posters—is an excellent example of one use of scale. These posters—the coats of arms of the various nations, it must be a very colorful thing—would appear to be something like 20x30 ft. This of course is on the scale of St. Peter's. You see a thing which you are normally ready to accept as something 5 x 7, and then it isn't. At this size, I think this gives one a marvellous sense of the bigness of the whole thing. It finally makes this fit into this valley, which is a big thing. It's the direction to go in—to have certain things much bigger than you expect them to be—rather than to have little dinky things.

Hunt: On this point that Dean Holmes Perkins raised of the structure being in a sense a series of two-dimensional structural systems, I think that possibly some deeper structural system for that roof deck, which might have spanned a longer dimension would have been good. We do, however, have a problem in conveying the heat from the eaves to the ridge and if you developed something that spanned in the other direction, between those frames, then possibly you would lose the duct system to the roof.

Grant Manson: I am worried about the visual aspect of the connection of the cables to the roof. If that deep snow were there what would signify the fact that they are picking up some of the load? There is nothing visible there that shows how satisfactorily the load is being picked up by those cables. They just seem to penetrate the roof deck. I find that a little disturbing.

Corlett: That's an interesting comment. I think we tried very hard *not* to have that connection strongly articulated—to get through the roof as simply as possible.

Alfred Clauss: I think this is an exciting structure, but the columns at the entrance front give the impression that they carry the roof. . . . Could not the roof have been more free? You don't see the roof as a whole; you don't actually see the real beauty of the structure.

Hunt: I think you'll see the roof through the glass wall. We were a little concerned about our original design and in our final design we do not carry down the main columns from the roof to the ground. They'll rest on concrete piers, which are part of a retaining wall for the earth bank.

Clauss: I think the effect is good, but the posters going across in a straight line give the effect that you need them as a spandrel. With the posters grouped loosely all over the façade you might get a more plastic feeling.

Hunt: Actually, that "spandrel" develops at the top of the grandstand; behind it are rooms for the press, television, and radio.

DeMars: What does one do with forms that hold themselves up, when you have to close them in? I think there's a danger of a kind of structural exhibitionism, when we are so excited about the fact that we held something up differently that we must advertise it. Obviously, this roof can hold itself up, except for the cables, but I wonder if, necessarily, we must have a large red flag at each point where the cable enters the roof, and must leave a space between the top of the columns and the roof on the front. I think we'll just have to sense, as we get a little more used to seeing buildings of this sort, that it needs only the cables to hold the roof up, and that the columns are there to take the windload.

C. J. Wisniewski: I think I agree with Clauss on his criticism; if you look at the closed end and the open end in fast succession it is very obvious that the open end is the far more dynamic thing. In this building the architects did have an excellent opportunity to do away with the enclosure, which we very seldom find. At MIT, for example, the dome by Saarinen was a very exciting structure until they enclosed it and put in mullions. On the other hand, I think that even though this is not a three-dimensional structure, it is still a very exciting one. We comprehend the complete syntax of every structural element. We know and understand the columns. We comprehend the girder members. In fact we see the whole structural thing working in this building. I think that is the very nice thing about it.

Now! CHOOSE FROM A RAINBOW OF COLOR IN LIGHTING!

A wide choice of colors, diffusing media and shapes available in one ceiling system for complete aesthetic freedom in lighting design

View of test ceiling at our plant.

Electro Silv·A·King **LUMENAREA** ceiling system

The simplest, most versatile installation system ever developed!

Here is the world's first large area lighting system that gives you practically unlimited variety of form, as well as color and diffusing media. Now you can design lighting layouts, from the conventional to the abstract, curved or straight in any combination of louver, molded forms, glass and accent lighting . . . in soft pastel pink, blue, green and white . . . in a ceiling completely free of any visible screws, bolts or mechanical devices.

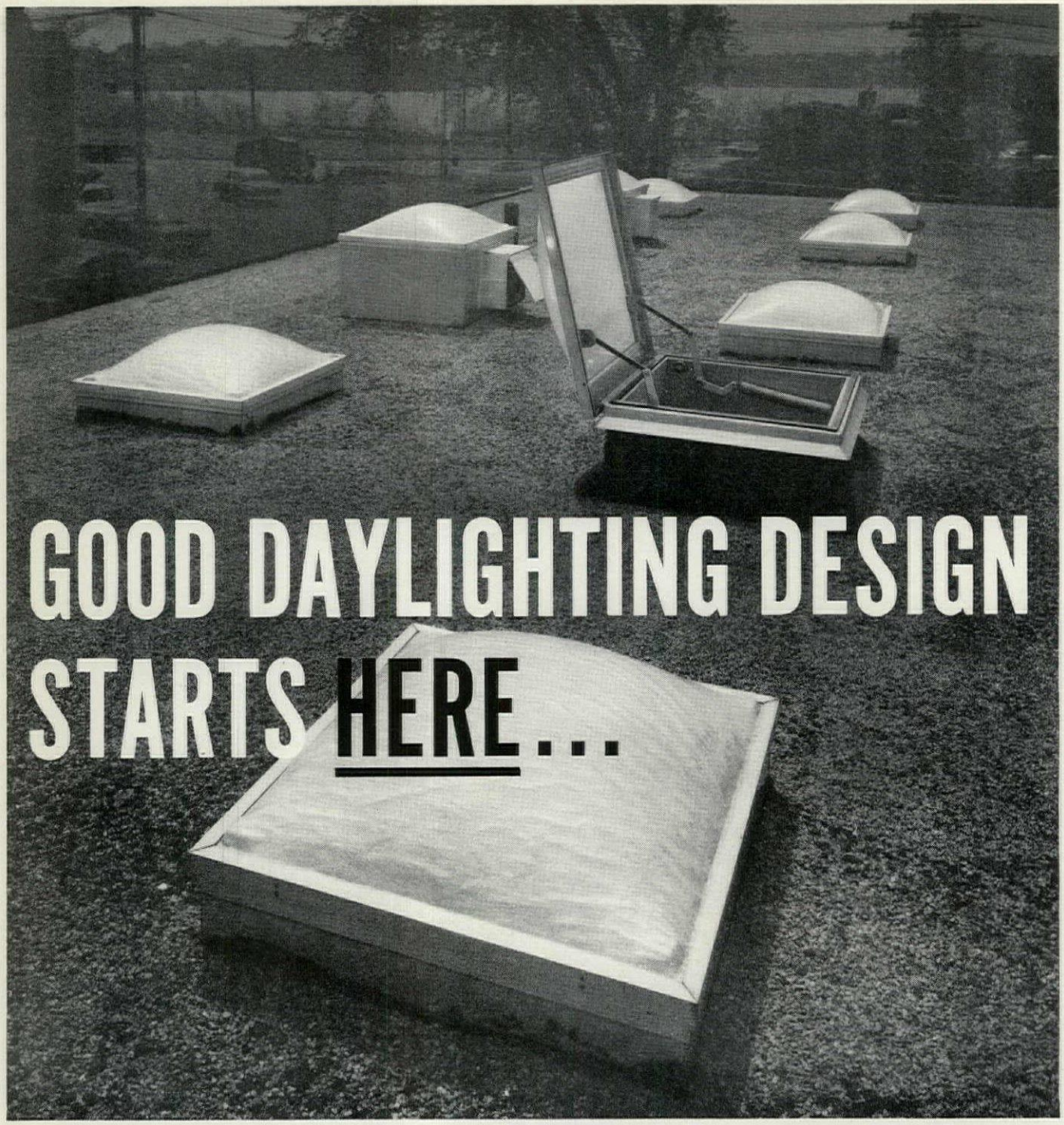
And with all that, the new Electro Silv-A-King LumenArea System, incorporates Slide Adjustment and Adjusto-Lok hanging devices which adjust for spacing and depth *without tools!*

Design of our Overlap Polycube® Louver (½" cube), on 2-ft. wide modules eliminates the necessity for crossbars, regardless of how long the run . . . also provides 45° x 45° shielding for optimum seeing comfort.

Dished plexiglas ceiling with perimeter of green "Polycube" Louvers helps give this office a distinctive appearance.

For your Free Specification and Data Bulletin, write to:

Electro Silv-A-King Corporation, 1535 SO. PAULINA ST., CHICAGO 8, ILL. • SPRUCE & WATER STS., READING, PA. • REDWOOD CITY, CALIF.



. . . here, with Wascolite® cast acrylic Skydomes embedded with crinkled-reflective fabric. This material, exclusive with Wasco, reflects 80% of the solar heat — yet transmits 40% of the light.

Reflective embedment may be specified with any of 10 types of Wascolite Skydomes, including Pyrodome and Ventdomes illustrated above. See Sweet's Architectural File, $\frac{20a}{Wa}$

WASCO
PRODUCTS, INC.
CAMBRIDGE 38, MASS.
TORONTO, CANADA

Failure of White-Coat Plaster

by Harold J. Rosen

Some years ago, National Bureau of Standards made an exhaustive investigation to determine the reasons for the appearance of blisters and bulges in white-coat plasters. The findings were reported in *BMS Report No. 121, Investigation of Failures of White-Coat Plaster* and in *BMS Report No. 127, Effect of Aging on the Soundness of Regularly Hydrated Dolomitic-Lime Putties.* As a result of these investigations, *ASTM Specification C 206* was developed for special finishing lime and a tentative amendment to *Federal Specification SS-L-351* for hydrated lime was prepared to overcome the deficiencies in the earlier standard specifications. In spite of these reports and specification changes, contractors and materials manufacturers still try to substitute normal dolomitic hydrated finishing limes which can be furnished under *ASTM Specification C 6* and *Federal Specification SS-L-351 Type F* which may cause blisters and bulges in white-coat plasters.

These reports were made public in 1951 and 1952 and it might be well to review them for the benefit of those who may never have seen them and also to refresh the memory of others who may have reviewed them but have forgotten their significance.

The chief cause of plaster failures has been of a type that appears as a bulge or blister ranging up to several feet in extent. Usually, the white coat is found to have separated from the base coat; but the latter is also occasionally loosened. Even before the bulge is visible it may be evidenced by a hollow sound when the plaster is struck. As the action progresses, bulging and cracking occur, and ultimately the plaster fails and falls. This type of failure usually occurs after 5 to 10 years or more, and is more common in humid climates. So far as is known, it occurs only where a dolomitic lime has been used in the white coat. As ordinarily manufactured, "hydrated" dolomitic lime may contain up to 30 percent or more of unhydrated magnesium oxide. Much of this remains unhydrated after soaking and even after plastering and hardening. It has been shown that this oxide is slowly hydrated by the moisture in the air, resulting in marked expansion. If this continues beyond the capacity of the plaster to accommodate itself to the stress, the plaster will buckle.

The usual white coat of plaster is prepared from a lime putty mixed with calcined gypsum (also known as gypsum gaging plaster or plaster of Paris). This is generally mixed in volumetric proportions of three parts lime putty to one part gaging plaster. The function of lime in a finish plaster is to provide the spread and plasticity to permit fast, easy application with full flexibility. Lime does not "set" but hardens slowly. It likewise shrinks on drying. Therefore, gypsum gaging must be blended into the lime in proper proportion to provide initial set and strength, and to avoid shrinkage cracks. Lime putty is prepared on the job either by slaking quicklime with an excess of water or by soaking a dry commercial finishing hydrated lime with water. The tendency is very strongly in favor of the hydrated lime over the quicklime because of its greater convenience, the quicklime having to be seasoned for at least three days before using.

Lime, chemically speaking is calcium oxide (CaO), but the commercial article may differ widely from this composition. Lime is obtained from limestone ($CaCO_3$) by burning and during this process carbon dioxide (CO_2) is liberated. Natural limestone may vary in composition from pure calcium carbonate ($CaCO_3$) to a mixture of calcium and magnesium carbonates in equal proportions, known as dolomite. The chemical composition of lime therefore depends on the limestone from which it is made. Lime may therefore contain from 0 to 42 percent of magnesium oxide (MgO) depending on whether the lime was prepared from pure calcium carbonate or pure dolomite. In the lime-burning process of reducing limestone to lime, if dolomitic limestone is used, the magnesium carbonate is decomposed into MgO and CO_2 long before the calcium carbonate is decomposed into its constituents. In this process the magnesium oxide becomes overburned and its reactivity toward water or hydration is greatly reduced.

The National Bureau of Standards, at the time of its investigation of white-coat plaster failures, analyzed 88 samples of plaster that had failed; and in each instance it was found that a dolomitic lime had been used in the preparation of the white coat.

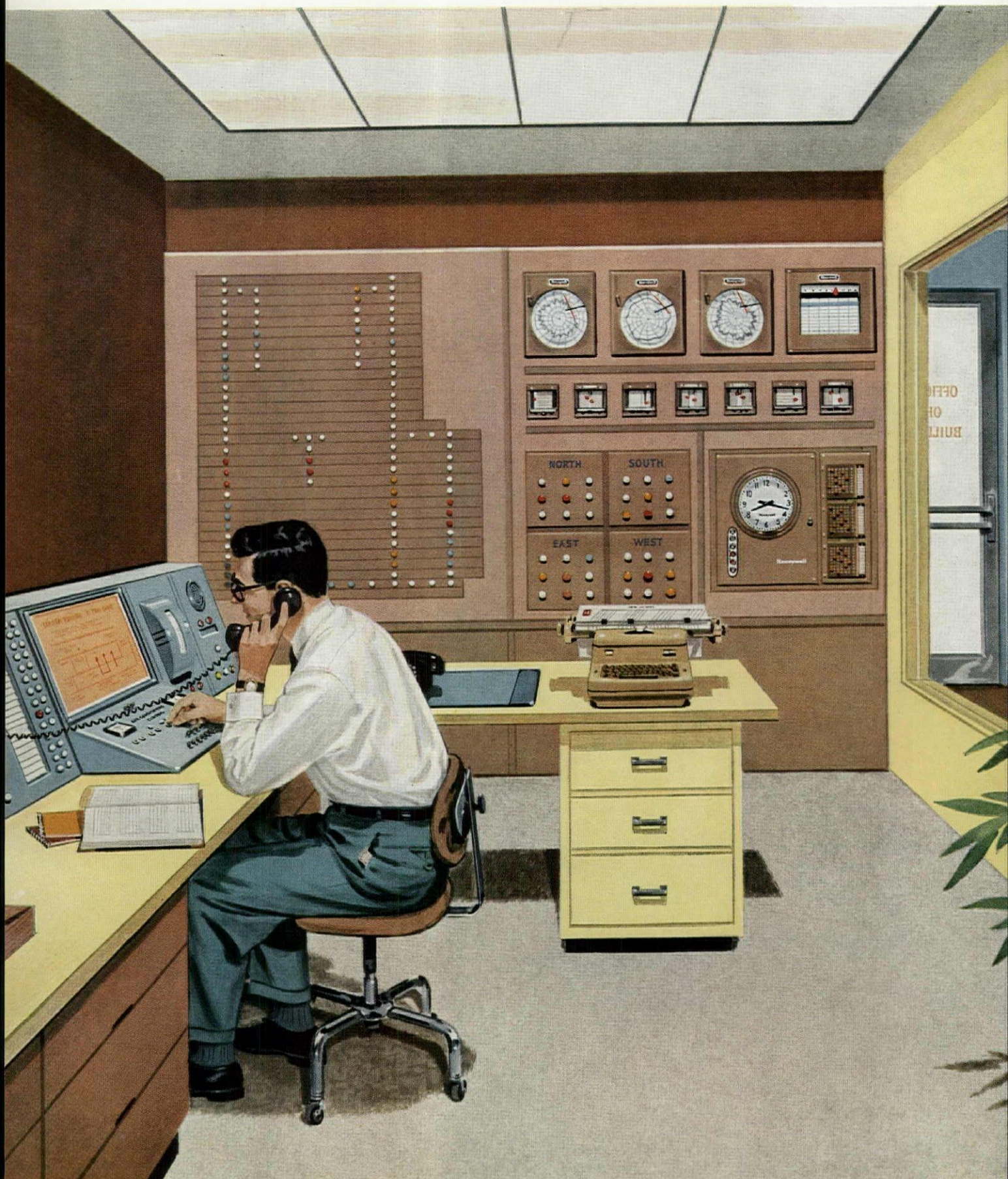
Regularly hydrated dolomitic limes contain about 32 percent of total magnesium oxide, of which only about 5 percent is hydrated and the remaining 27 percent is still present as unhydrated magnesium oxide. This highly incomplete hydration is due to the fact that the magnesia has been badly overburned in the process of making quicklime and thus is inactive toward hydration in the usual hydrators. The National Bureau of Standards found in investigating hydrated limes at that time that only 55 to 65 percent of the water required for complete hydration of regularly hydrated dolomitic lime was present because of the slowness of hydration of the magnesium oxide. Furthermore it developed that even after soaking of dolomitic hydrated limes for a 24 hour period only about 20 percent of the hydration of the magnesia is completed.

It therefore follows that the hydration of the magnesium oxide takes place on the walls and ceilings over a period of time, generally from 5 to 15 years with the creation of blisters or bulges as the magnesia expands due to hydration. These failures occur more extensively and rapidly during the warm weather of summer and during periods of high relative humidity.

To overcome this difficulty, specifications were formulated that exclude partially hydrated limes containing an undesirably high percentage of unhydrated oxides. *ASTM Designation C206 Type S, Special Finishing Hydrated Lime* provides one of these specifications. *Federal Specification SS-L-351 Type F* may be used provided that it is modified as follows: "The total free (unhydrated) calcium oxide (CaO) and magnesium oxide (MgO) in the hydrated product shall not exceed 8 percent by weight (calculated on the 'as received' basis)."

Certain manufacturers of regularly hydrated dolomitic limes have been producing more completely hydrated lime. In most instances this is being accomplished by using autoclaves to hydrate the lime at elevated temperatures and pressures.

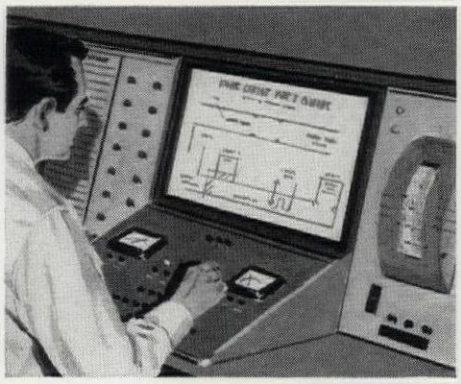
Now buildings can practicall



Supervisory DataCenter. More than 350 control centers using the basic principles outlined here, have been sold by Honeywell for all types of buildings throughout the country—including hospitals, schools, hotels, office buildings, banks, shopping c
They range from a square foot to far larger than that sho
complete list for your area furnished on request.

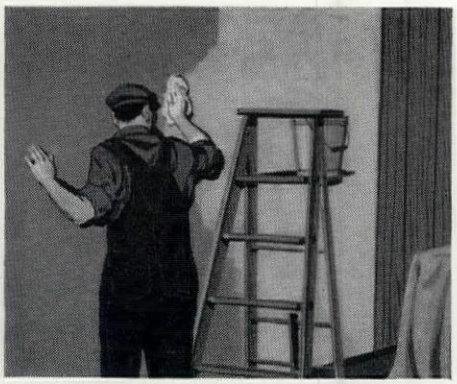
manage themselves!

Honeywell now centralizes supervision of building functions —replaces legwork with cheaper, faster electrical signals.



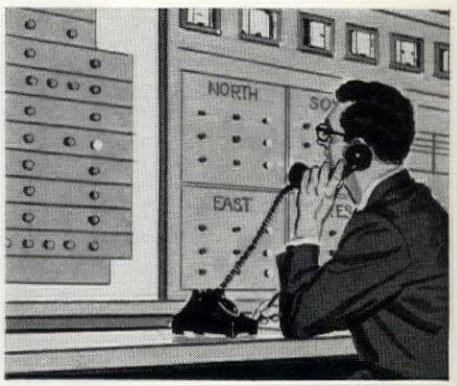
Air conditioning supervision

One set of controls regulates entire system. Operator pushes button; diagram he wishes to check is projected on screen; controls switched automatically to system shown.



Air cleaner supervision

Cleanliness of building is controlled by electronic air cleaners which remove 90% of all air-borne dirt. Panel supervision assures their continuous, efficient operation.

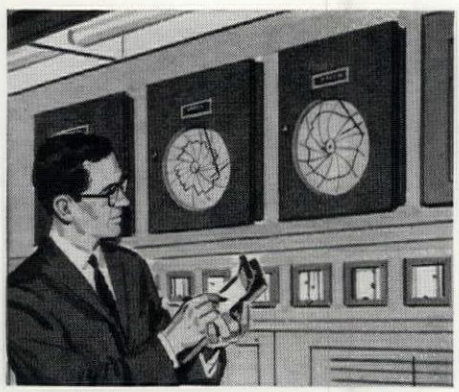


Fire detection and alarm

Sounds alarm and flashes light showing fire's exact location. Supervisor can take measures to put out fire quickly. Fire-sprinkler system, if used, can be tied in to same panel.

Master clock and programming

Allows supervisor to pre-set all plant functions occurring regularly—signals, heat, lights, air conditioning. They and all clocks controlled by master clock in panel.



Utilities consumption records

Gives a daily departmental metered record of power, steam and chilled water used. Can be connected to high speed typewriter to fill in regular accounting department forms.

Light Saver*

Programmed from control center, this system adjusts artificial lights automatically to perfectly supplement natural daylight. Has reduced lighting costs up to 80%.

THIS NEW control concept from Honeywell enables a building to almost take care of itself—automatically.

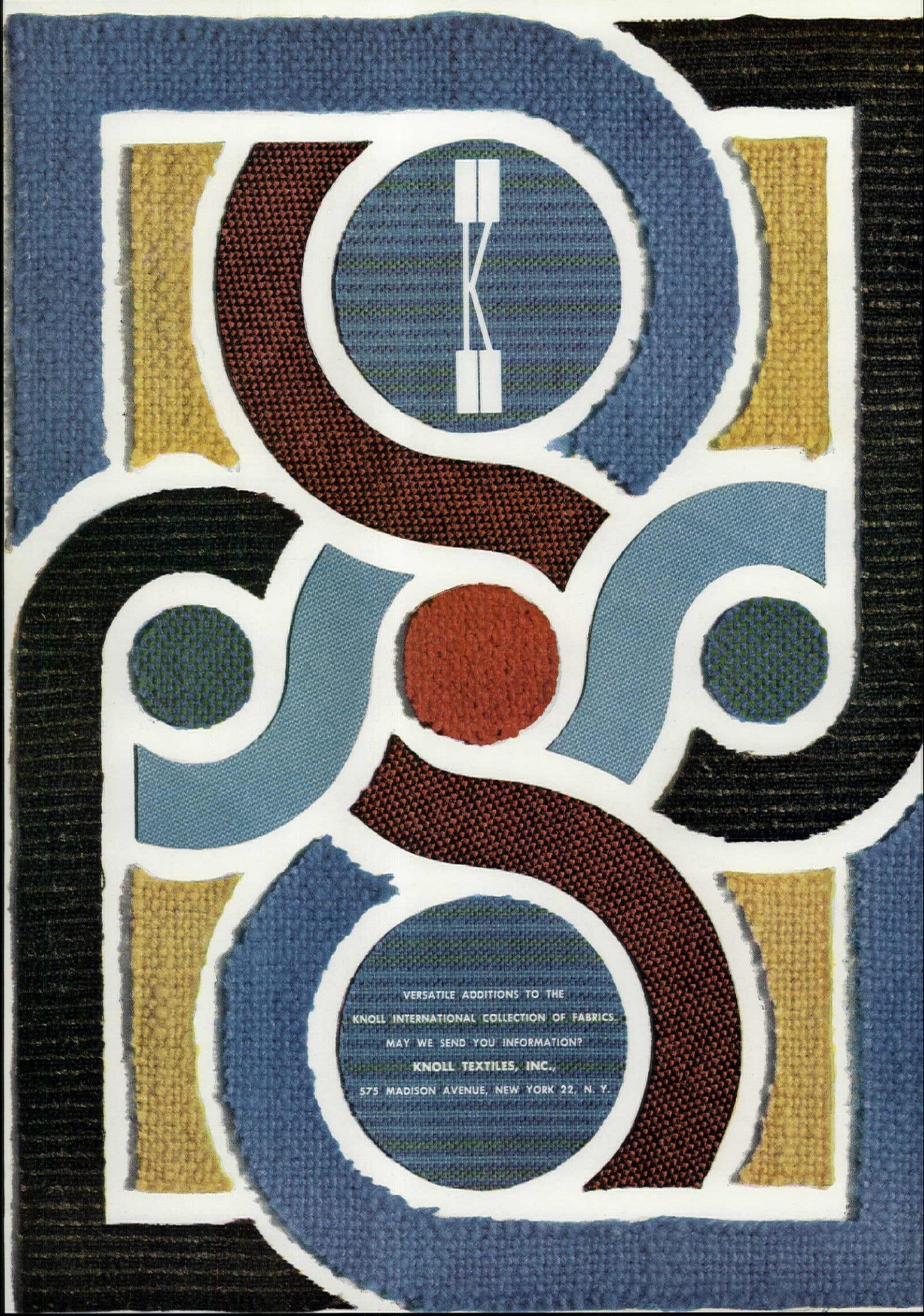
Called a Supervisory DataCenter,* it lets one man do the work of crews. For it places all the functions shown above —and any others that benefit from centralized control—under the supervision of a single control center. It's easy to operate, requires no special training. And its maintenance can be handled through a low-cost service agreement.

Each control center is custom designed. Even before blueprints are started, a Honeywell specialist will work with you and your engineer to allow free expression of your ideas, as they apply both to design and function. It's at this original planning stage that his specialized control knowledge can be useful in developing a system that will save the most money for your client. For more information about this new concept, call your local Honeywell office, or write Minneapolis-Honeywell, Department PA-9-105, Minneapolis 8, Minnesota.

*Trademark

Honeywell

H HONEYWELL *First in Control*


VERSATILE ADDITIONS TO THE
KNOLL INTERNATIONAL COLLECTION OF FABRICS.
MAY WE SEND YOU INFORMATION?
KNOLL TEXTILES, INC.,
575 MADISON AVENUE, NEW YORK 22, N. Y.

Louise Sloane

office lighting

Four entirely different types of lighting, each to meet a different need, are represented in the four offices we show this month.

A special lighting problem was created in the Hillyard Chemical Company's offices when it was decided to convert the first five floors of the original building into a windowless structure: to eliminate heat loss and restrictions on partition location. All light, therefore, is artificial. Luminous ceilings were installed throughout. These are constructed of continuous corrugated-plastic panels and equipped with projected acoustical baffles. The wall-to-wall plastic luminous ceilings are designed to maintain 50-footcandle intensity at the working level.

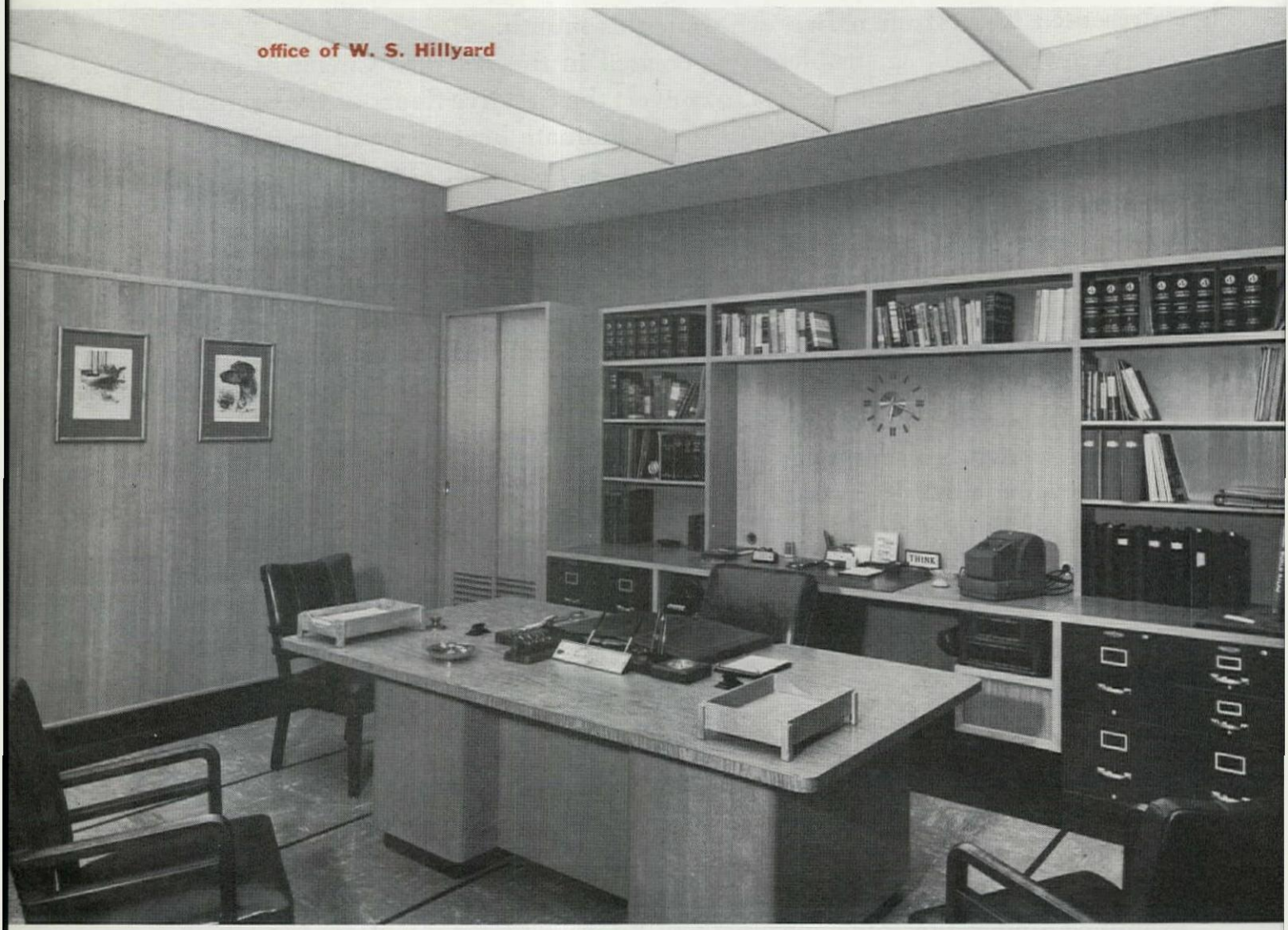
Mood lighting contributes to the client-appeal in Henry End's interior-design offices. It is effectively achieved with a wall of light before the windows. Through the teak-framed polyplastic panels, natural light is supplemented by fluorescent tubes. Supplements to the illumination and to the decor are three portable lamps.

Key to the versatility of Leon Gordon Miller's own executive office/conference room is the flexible lighting plan. Except for a corner table lamp, all light is from two sources: the ceiling fixture and the corkboard cove light. They were conceived and designed to supply many levels and color temperatures of light, from 25 to 60 footcandles. Placement of these two fixtures controls the light level at the conference table and the corkboard, the two main work surfaces. As each fixture houses a combination of incandescent and fluorescent light, the desired degree of warmth or coolness is available as well as an increase or decrease of brightness for conferences or work-sessions. Of special importance in the work of a design office is precise color determination, therefore light here is so switched that colors may be examined under the same incandescent-fluorescent combination for which they are being selected.

In the offices of Cluett Peabody & Co., Inc., the lighting plan is appropriately varied for each area. Low-level lighting in the reception area gives softly suitable illumination. A luminous ceiling provides efficient working light in the filing end of the general offices, at an even 60-footcandle level, eliminating glare, and supplying uniform illumination that permits complete flexibility in furniture placement. In the conference room, a series of six 3-ft-diameter domes deliver from 20 to 85 footcandles (through a rheostatic control), extending the range of levels from comfort lighting for informal conferences to laboratory-type illumination for examination of new products, advertising material, etc. At one end of the room, a flexible series of surface spotlights serve for displays and presentations, while a rheostat-controlled, recessed cove light illuminates the pin-up wall.

office lighting

client	Hillyard Chemical Company
location	St. Joseph, Missouri
architects-engineers	Turnbull-Novak, Inc.
chief architect	Harlan E. Rathbun



office of W. S. Hillyard

data

Design Theory: Building is windowless, hence fully artificial illumination and cheerful colors for interior lighting and atmosphere were required. Luminous ceilings conceal sprinkler system, ductwork; electric-wire bases throughout provide flexibility for wiring-change requirements.

office of W. S. Hillyard

Cabinetwork: Philippine mahogany/Frank Canterbury Cabinet Shop, 11606 Truman St., Independence, Mo.

Doors: Philippine mahogany/Roddis Plywood Corp., Marshfield, Wis.

Equipment: central air conditioning, heating, and ventilaton/York Div. of Borg-Warner Corp., Roosevelt & Thomas Sts., York, Pa.

Furniture, Fabrics: mahogany finished to match woodwork/leather upholstery.

Lighting: plastic luminous ceiling with acoustical baffles/The Wakefield Co., 731 S. Water, Vermilion, Ohio.

Walls: Philippine mahogany/frosty finish/General Woodworking Co., St. Joseph, Mo.

Flooring: rubber tile/Goodyear Tire & Rubber Co., Inc., 1144 E. Market St., Akron, Ohio.

secretarial area

Doors: natural frosty finish birch/Roddis Plywood Corp.

Furniture: steel/gray finish.

Walls: plaster/painted "eye-ease" green.

Flooring: asphalt tile/Azrock Products Div., Uvalde Rock Asphalt Co., Frost National Bldg., San Antonio, Tex.

second-floor corridor

Equipment: air-diffusing outlets/Anemostat Corp. of America, 10 E. 39 St., New York, N.Y.; temperature controls/Minneapolis-Honeywell Regulator Co., 2954 Fourth Ave., S., Minneapolis 8, Minn.

Walls: "Fabrikona"/burlap over plaster/The Chandler Mfg. Co., Inc., 100 Old Colony Ave., East Taunton, Mass.

Flooring: plastic magnesia/green with black and white marble chips/Mar-Flex Corporation, Rockford, Ill.

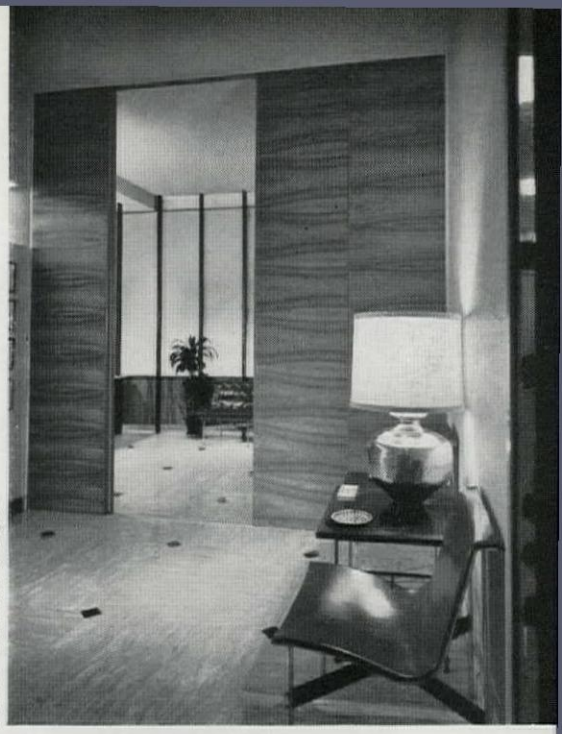
Photos: The Bray Studio

secretarial area

second-floor corridor

office lighting

client	own office
location	Miami, Florida
designer	Henry End



Photos: Alexandre Georges

data

Design Theory: An interior designer's own office must be a show place and, at the same time, present a serene and orderly background that will not conflict with client presentations. Here natural materials (wood, travertine, mosaic) together with black and white leathers, vinyl, and plastic achieve rich and interesting contrasts, yet quietly.

doors

Sliding Doors: French-walnut/alternating hollow cone with white vinyl/custom-made/Pavlow-Barnett Office Furniture, Inc., 837 Biscayne Blvd., Miami, Fla.

furniture

Desk: brass-finished aluminum, travertine top/custom-made.

Reception - Area Chairs: chromium, natural-tan hide/Laverne, Inc., 160 E. 57 St., New York 22, N. Y.

Private-Office Sectional Chairs: black calf/Laverne, Inc.

Pull-Up Chair: ebony with white leather/S. J. Campbell Co., 1750 W. Wrightwood, Chicago, Ill.

Reception-Area Table: Directional, 41 E. 57 St., New York 22, N. Y.

Corner Table: white-and-gold mosaic top/Stewart Studio, 12 E. 62 St., New York 21, N. Y.

lighting

Illuminated Wall: ebony-finished teak verticals with translucent white polyplastic/daylight from windows behind panels/night-light from fluorescent "Daybrite" tubes/custom/Pavlow-Barnett Office Furniture, Inc.

Desk Lamp: Nessen Studio, Inc., 5 University Pl., New York 3, N. Y.

Table Lamp: Mutual-Sunset Lamp Mfg. Co., Inc., 350 Fifth Ave., New York 1 N. Y.

walls, flooring, ceiling

Walls: covered in Imperial Silk white vinyl "Vicrtex"/L. E. Carpenter & Co., Inc., 350 Fifth Ave., New York 1, N. Y.

Flooring: vinyl tile, 36" squares, 3"-sq brass inserts/Gardenia white "Renaissance"/Amtico, Div. of American Biltrite Rubber Co., Trenton 2, N. J.

Ceiling: acoustical plaster, sprayed white.

accessories

Wastebasket: Raymor, 225 Fifth Ave., New York, N. Y.

Painting: Edmond Kohn.

data

Design Theory: For the executive office/conference room in his own industrial design offices, the designer required a versatile background to serve for client conferences, staff conferences, and as private office. The flexible results are achieved unobtrusively with neutral wall and floor colors; accents of alizarin, purple, and blue for liveliness; books and original art pieces for warmth and interest.

doors

All: white "Modernfold"/New Castle Products, Inc., I Ave., Newcastle, Ind.

furniture

Conference Table: inlaid tropical mahogany center, tapered mahogany edge/designed by Leon Gordon Miller/custom-made.

Sofa: upholstered in "Bahia"/L. Anton Maix, Inc., 162 E. 59 St., New York 22, N. Y.

Conference Chairs: oiled walnut/designed by Leon Gordon Miller/Taylor Chair Co., Willis & Taylor Rds., Bedford, Ohio.

lighting

Ceiling Fixtures: oiled-walnut frame/aluminum - honeycomb louver/Hexcel Products, Inc., 2741 Ninth, Berkeley, Calif.; "Hi-Hat" floods/General Lighting Co., 248 McKibben St., Brooklyn 6, N. Y.; fluorescent tubes/General Electric Co., Nela Park, Cleveland, Ohio/unit designed by Leon Gordon Miller/custom-made.

Cove-Lighting Strip: oiled - walnut housing/bottom strip white "Satinal" glass/Blue Ridge Glass Corp., Kingsport, Tenn.; DeLuxe Warm White and Cold White fluorescent strips/General Electric Co./unit designed by Leon Gordon Miller/custom-made.

Table Lamp: off-white and gray ceramic/Design-Technics, 4 E. 52 St., New York, N. Y.

walls, ceiling, flooring

Walls: painted platinum gray/Pratt & Lambert, Inc., 92 Tonawanda St., Buffalo, N. Y.

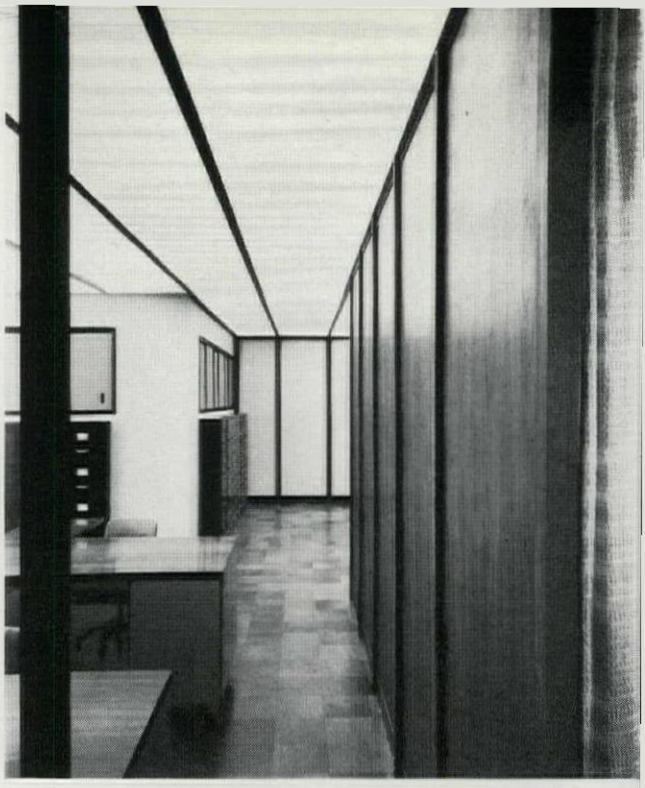
Ceiling: white "Travertone"/Armstrong Cork Co., Lancaster, Pa.

Carpet: gray-textured "Ridgemore"/James Lees & Son Co., Bridgeport, Pa.

Photo: Denny Harris

client | own office
location | Cleveland, Ohio
designer | Leon Gordon Miller

office lighting



filing area

client	Cluett Peabody & Co., Inc.
location	New York, New York
designers	Designs For Business, Inc., G. Luss, Design Director
project designer	Maria Fenyo
project director	Dora Schaefer

Photos: Bra Schnall

reception room

data

Design Theory: Reception area is provided with warm, inviting atmosphere, with no mention of client's products (the famous Arrow shirts) on the assumption that visitors know whom they are visiting. Emphasis is on comfort, charm, relaxation, welcome. Modular design, with utmost flexibilty for changing needs, is key to filing end of general offices. Conference room provides maximum facilities for meetings that range from small and informal to total and policy-making.

reception room

furniture, fabrics

Desk: cane and walnut/designed by G. Luss/Ezra Blank Associates, Inc., 117 Lombardy St., Brooklyn, N. Y.

Fabric: red, orange, black, yellow-striped wool/Isabel Scott Fabrics Corp., 515 Madison Ave., New York, N. Y.

lighting

Recessed Ceiling Lights: mat white enamel/Lightolier, Inc., 346 Claremont Ave., Jersey City, N. J.

Hanging Lamp: polished-brass and white milk glass/Finland House, 41 E. 50 St., New York 22, N. Y.

walls, ceiling, flooring

Walls: plaster, painted white sand.

Ceiling: canvas, painted white and gold.

Flooring: terrazzo, white - and - gray chips with brass divider strips/A. Tozzini Tile Works, Inc., 103 Park Ave., New York 17, N. Y.

filing-end, general offices

cabinetwork

All: walnut frames/blue Masonite sliding doors/walnut posts and panels with mat-black glazing strips and white milk glass/designed by G. Luss/Ezra Blank Associates, Inc.

furniture, fabrics

Desks: off-white pedestals, walnut tops/Globe-Wernicke Co., 5029 Carthage Ave., Cincinnati, Ohio.

Files: black/Globe-Wernicke Co.

Upholstery: black "Kalistron"/United States Plywood Corp., Flexible Materials Div., Box 85, Shelby Station, 2921 S. Floyd St., Louisville 17, Ky.

lighting

Luminous Ceiling: vinyl plastic on aluminum T-bars/designed by G. Luss/Lightolier, Inc.

walls, flooring

Walls: white "Kalistron" covering/United States Plywood Corp.

Floors: natural cork/Kentile, Inc., 58 Second Ave., Brooklyn 15, N. Y.

conference room

cabinetwork, doors

All: walnut/boiled-linseed-oil finish/designed by G. Luss/Ezra Blank Associates, Inc.

furniture, fabrics

Chairs: Jens Risom Design, Inc., 49 E. 53 St., New York, N. Y.; upholstery, red-orange wool/Isabel Scott Fabrics Corp.

Lounge Chairs: black leather/Lehigh Furniture Corp., 16 E. 53 St., New York, N. Y.

Sofa: gray wool upholstery/Lehigh Furniture Corp.

Walnut Conference Table: 14-ft-diameter/designed by G. Luss/Ezra Blank Associates, Inc.

lighting

Surface Spots: satin aluminum/Century Lighting, Inc., 521 W. 43 St., New York, N. Y.

Plexiglas Domes: 3-ft-diameter/Lightolier, Inc.

walls, ceiling, flooring

Walls: far wall, white burlap over Homosote for pin-ups/others, white burlap on plaster.

Ceiling: white sand-finished plaster.

Carpet: black wool/V'Soske, Inc., Lord & Adams, 4 E. 53 St., New York, N. Y.

accessories

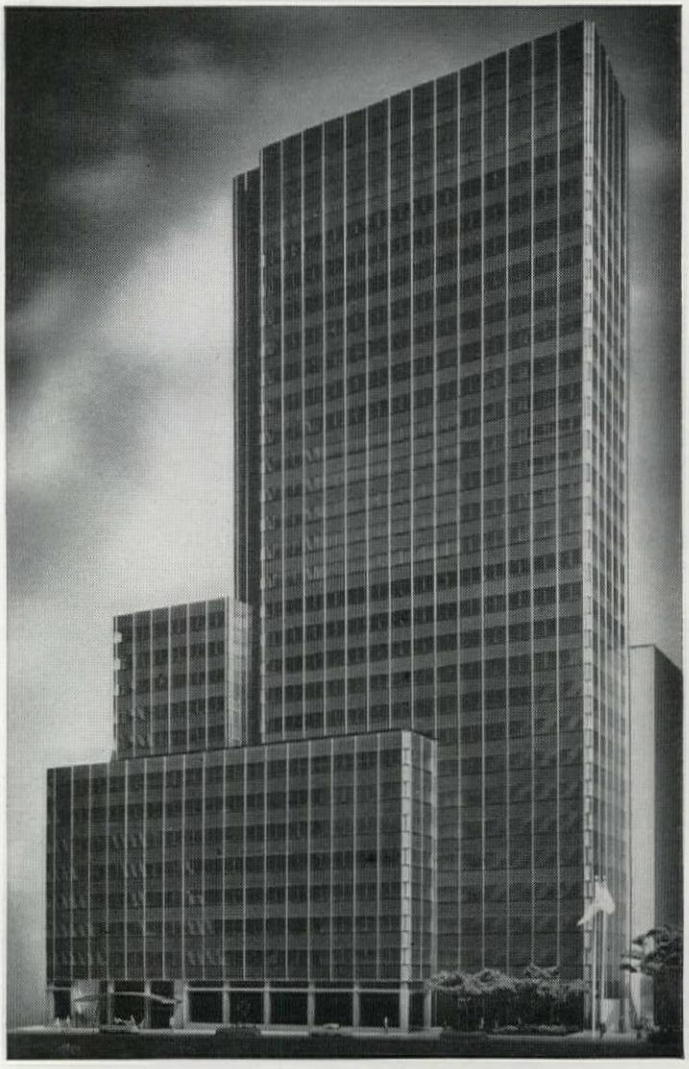
Plants: Kottmiller, Inc., 371 Madison Ave., New York, N. Y.

Ashtrays: Berrier-Gnazzo, 212 E. 49 St., New York, N. Y.

conference room

THE VAST MAJORITY OF THE NATION'S FINE BUILDINGS ARE SLOAN EQUIPPED

HARRISON & ABRAMOVITZ & ABBE
architects
JAROS, BAUM & BOLLES
mechanical engineers
GEORGE A. FULLER COMPANY
general contractor
C. H. CRONIN, INC.
plumbing contractor
NEW YORK PLUMBERS SPECIALTIES CO., INC.
plumbing wholesaler



© EZRA STOLLER

CORNING GLASS TOWER—

NEW JEWEL ON NEW YORK SKYLINE

• Standing majestically at 717 Fifth Avenue, New York, is the 28-story office building of the Corning Glass Works. The main building, towering above the lower structures, is placed on the 30,000 square foot plot so that part of the entire frontage is left open for a picturesque pool and landscaping. The entire "skin," both vision and non-vision areas, requires nearly 200,000 square feet of green-tinted, heat absorbing glass. The building has year 'round air-conditioning throughout its 365,000 square feet of office space, with windows permanently sealed for uniformity of appearance from the outside and freedom from dust and dirt inside. The main lobby and 100-foot corridor which joins entrances from two streets contains displays of the uses and history of glass. Two banks of automatic elevators serve all floors. As are thousands of other fine office buildings, the magnificent Corning Glass Tower is completely equipped with SLOAN *Flush* VALVES.

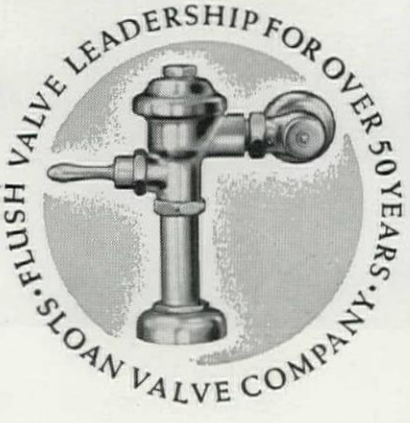
SLOAN *Flush* VALVES

FAMOUS FOR EFFICIENCY, DURABILITY, ECONOMY

SLOAN VALVE COMPANY • CHICAGO • ILLINOIS

Another achievement in efficiency, endurance and economy is the SLOAN *Act-O-Matic* SHOWER HEAD, which is automatically self-cleaning each time it is used! No clogging. No dripping. Architects and Engineers specify, and Wholesalers and Master Plumbers recommend the *Act-O-Matic*—the better shower head for better bathing.

Write for completely descriptive folder



walls with the enchantment of a dream

turned to reality... walls of new

VICRTEX V.E.F.* KUSA-TO

VINYL WALLCOVERINGS

**vinyl electronically fused, needs no lining however used.*

A design pattern so true to its natural counterpart that the willowy reeds seem suddenly to be arrested in motion. Yet here is wear-resistant, literally *permanent* wall decoration..... the newest addition to Vicrtex' long line of distinctive, textured, tri-dimensional patterns that make walls come alive with interest and color.

Plan your walls with Vicrtex originals. They are as easy to care for as they are beautiful. Write NOW for samples, exciting color brochure.

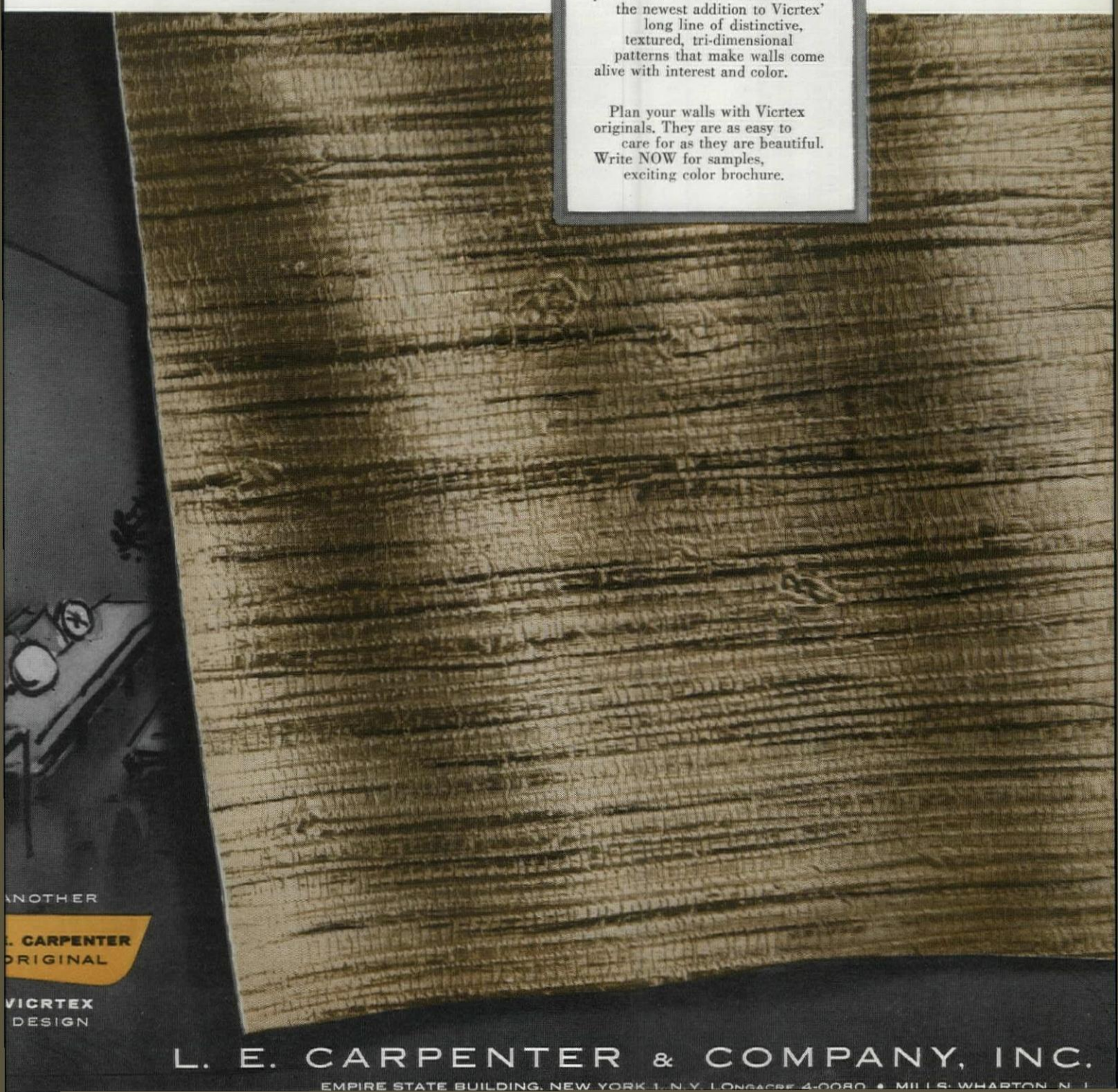
CONGRATULATIONS

to the new

HABANA HILTON

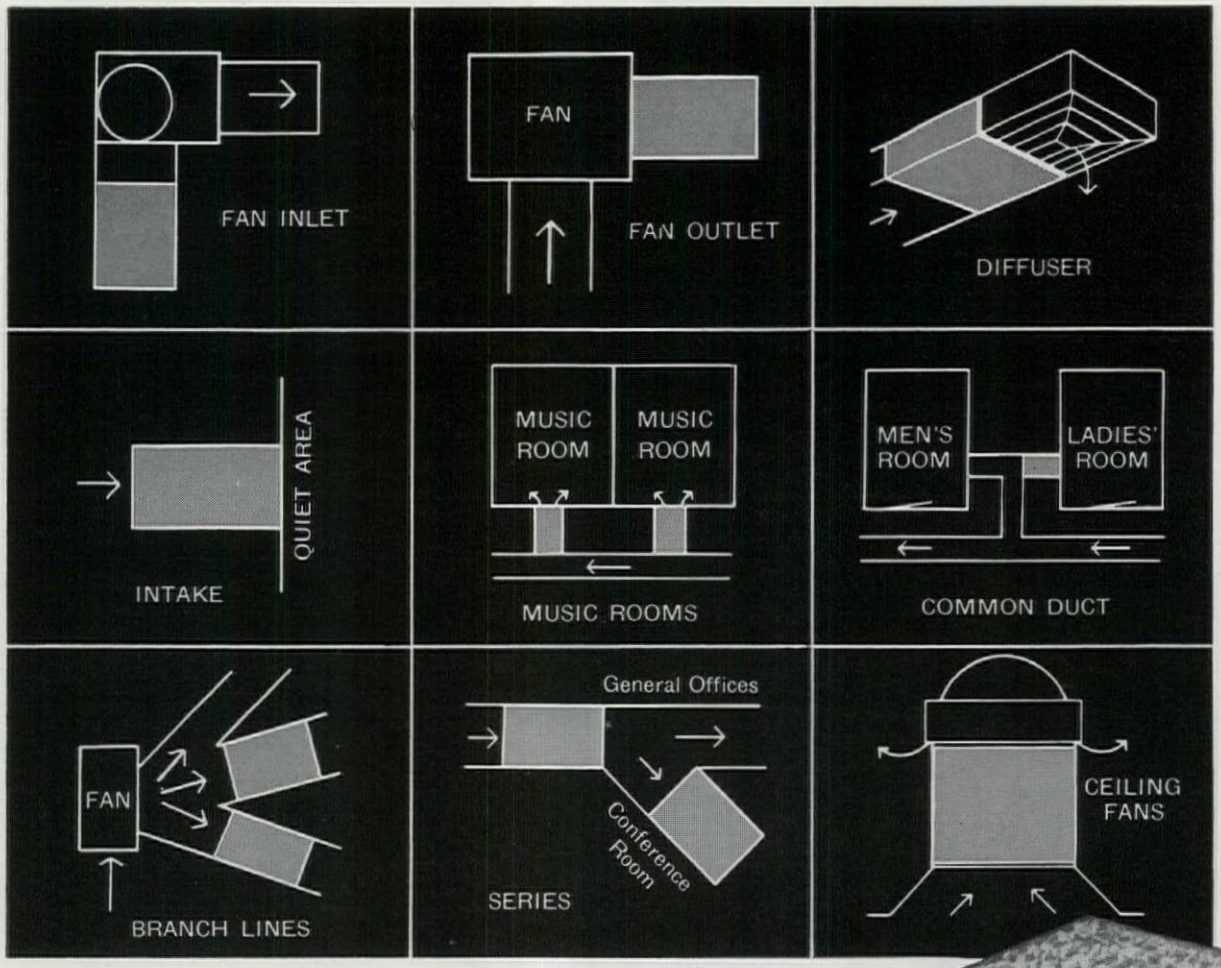
HOTEL

Vicrtex V.E.F. Fabrics for this important installation supplied by L. E. Carpenter's distributor, Rafael Battista, A. Habana

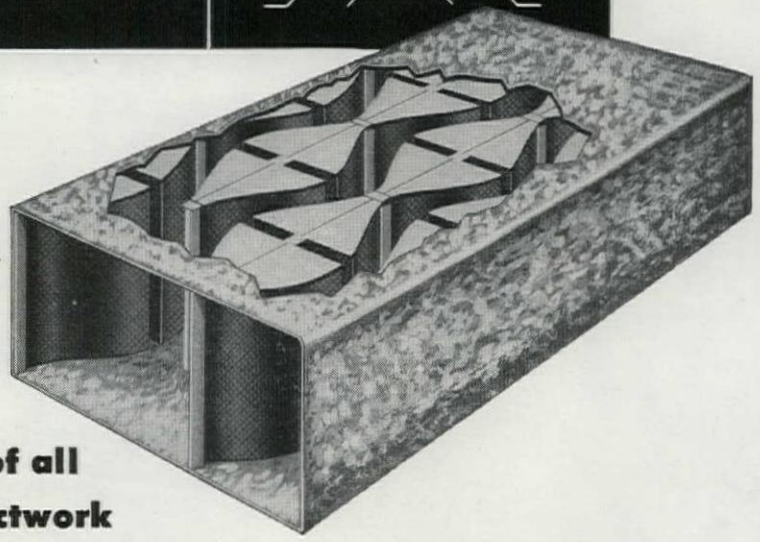


L. E. CARPENTER & COMPANY, INC.

EMPIRE STATE BUILDING, NEW YORK 1, N.Y. | ONGACRE 4-0080 • MILLS: WHARTON, N. J.



Every Building Needs Aircoustat® Sound Traps



AIRCOUSTAT silences all noise of all frequencies traveling through ductwork

Eliminate disturbance, distraction and irritation caused by noises escaping from one area to another through ductwork.

Install AIRCOUSTAT Sound Traps. AIRCOUSTAT eliminates guesswork, wasted space and unnecessary expense of duct lining. You can guarantee your client trouble-free performance. You can estimate with complete confidence the performance of particular applications. If AIRCOUSTAT fits geometrically, it fits acoustically.

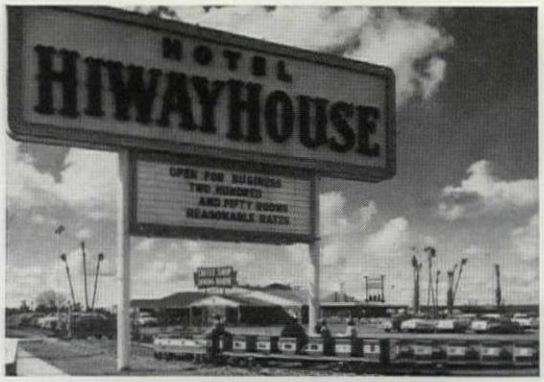
AIRCOUSTAT saves you space. Its greater effectiveness permits smaller-sized ducting. It eliminates bulky mufflers.

For more details, write to KOPPERS COMPANY, INC., Industrial Sound Control Dept., 9007 Scott Street, Baltimore 3, Md.

KOPPERS

INDUSTRIAL SOUND CONTROL

Engineered Products Sold with ***Service***



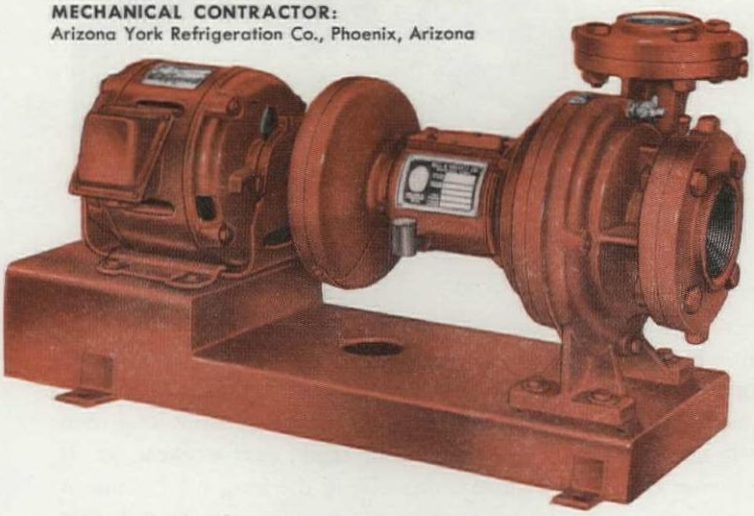
Luxury MOTEL solves noise problem by changing to

B&G

UNIVERSAL PUMPS

The seven-acre, landscaped patio of HiwayHouse includes a swimming pool, children's playground, golf putting area and a miniature railroad. Year 'round air conditioning is provided by a central circulated water system.

MECHANICAL CONTRACTOR:
Arizona York Refrigeration Co., Phoenix, Arizona



HiwayHouse, fabulous 250-room motor hotel at Phoenix, Arizona, was planned and built by Del E. Webb Construction Co. with the comfort and convenience of guests as the only consideration. Among its features is a circulated water heating and cooling system, which required corrective measures because of noise.

The mechanical contractor describes the cause and the remedy as follows:

"A conventional type of pump was originally used in the air conditioning system. When the system was turned on, a motor hum and water noise was transmitted through the units in the motel rooms. The room units with their copper coils and radiator fins acted as sounding boards, particularly at night when fans were off.

"To correct this problem we replaced the conventional pumps with Bell & Gossett Universal Pumps properly sized for the job. This completely eliminated transmission of noise and there is now 100% quiet operation in all rooms of the motel.

"In general, it has been our experience that B&G Universal Pumps for this type of operation are far superior to any other type of pump and we recommend them highly."

HIGHLIGHTS OF B&G UNIVERSAL PUMP DESIGN

● Non-overloading motor—constructed, selected and stamped for *extra quiet* operation ● Sleeve bearings, oil lubricated, in both pump and motor ● Motors ring-type mounted, suspended in rubber ● Spring-type quiet coupler ● Oversized special alloy steel shaft with integral collar which absorbs thrust ● Removable bearing frame—no need to break pipe connections or remove motor ● "Remite" Mechanical Seal, diamond hard, prevents water leakage ● Hydraulically balanced impeller

Reg. U.S. Pat. Off.

BELL & GOSSETT
COMPANY

Dept. FK-37, Morton Grove, Illinois

Canadian Licensee: S. A. Armstrong Ltd., 1400 O'Connor Drive, Toronto 16, Ontario

Help your clients to run top quality kitchens

. . . *at rock-bottom cost!*

Write for your copy

"STAINLESS STEEL for STORE FRONTS and BUILDING ENTRANCES"

Either for modernization or new construction, this 40-page booklet contains many ideas on handsome treatments for you. (Note: A new booklet on "AL Stainless in Food Preparation and Serving Equipment" is in process—write for one of the first copies when available.)

ADDRESS DEPT. PA-9

Sure, the owners will need a good chef and good management in their kitchen and dining-rooms—but first of all, they'll need stainless steel equipment! That's where to start for the highest sanitary standards—the easiest, quickest cleaning and lowest-cost maintenance. And that's where to start for the greatest long-term economy, too—because stainless steel can't chip, crack, peel or wear off. It costs a building owner much less than anything else in the long run because it literally lasts for a lifetime . . . stands up under the heaviest service and stays beautiful all the way. ● In the kitchen, in the dining-room (and for structural details, too) specify *stainless steel* . . . it pays! *Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.*

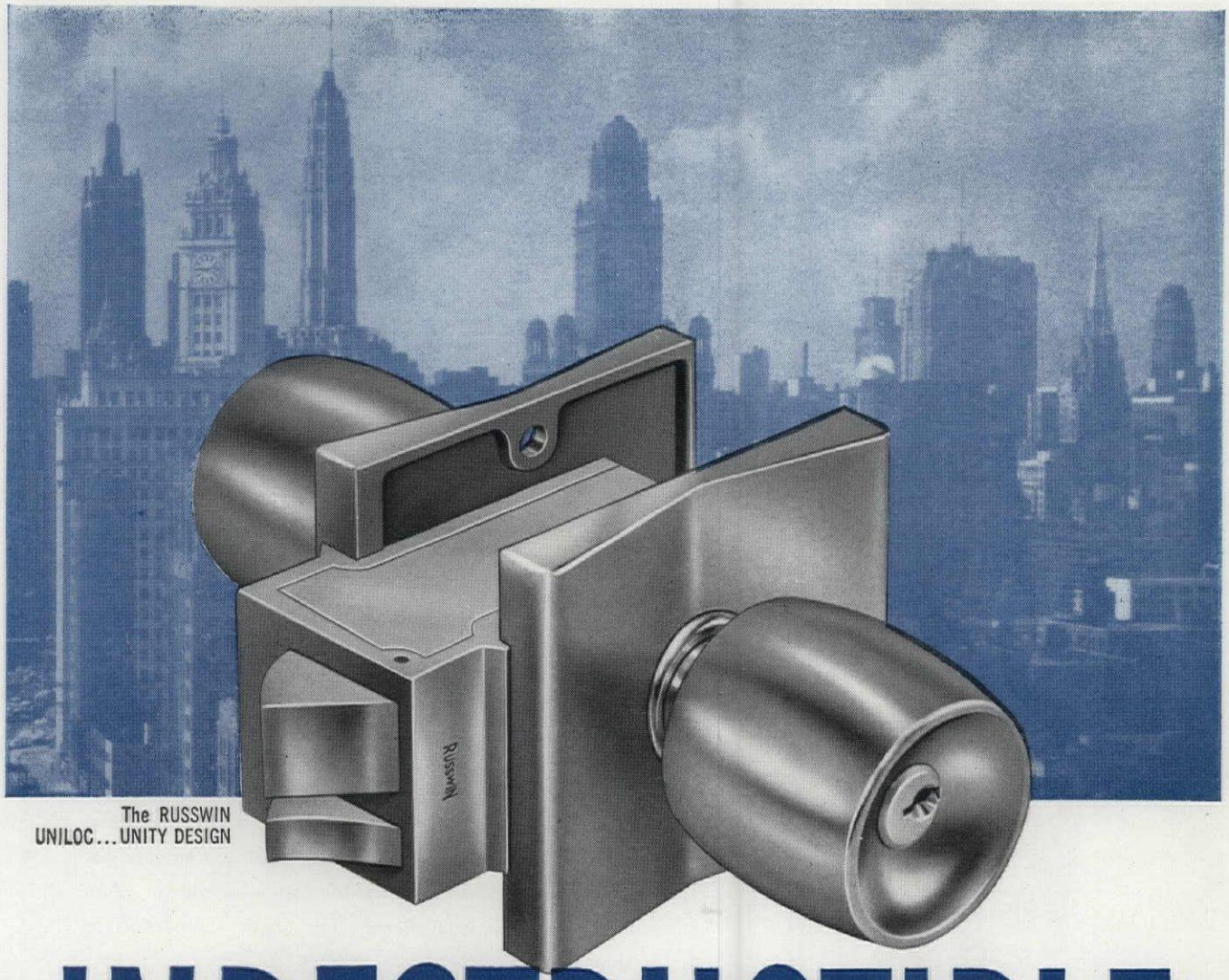
WSW 6070 B

Make it BETTER-and LONGER LASTING-with

AL Stainless Steel

Warehouse stocks carried by all Ryerson Steel plants

AL ALLEGHENY LUDLUM ®



The RUSSWIN
UNILOC...UNITY DESIGN

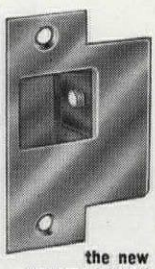
INDESTRUCTIBLE

as a lock can be!

You get a lot of lock with this handsome heavyweight . . . a Masterpiece of Lockmaking! Every component is of rugged section. Almost all parts are extruded brass. The entire mechanism is precision made . . . and factory assembled to be mounted as a unit.

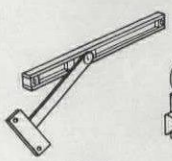
For installation, the Uniloc requires only a simple notch in the door, plus holes for through-bolts. No mortising . . . nothing to take apart or put together . . . virtually no chance of misapplication. Parts remain in factory-perfect fit and alignment. Installation time is cut to a minimum.

Ask your Russwin Consultant to show you the Uniloc. Examine it for yourself. You will understand why this fine lockset is specified for so many outstanding buildings. Russell & Erwin Division, The American Hardware Corporation, New Britain, Connecticut.

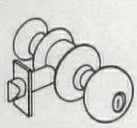


the new
UNILOC STRIKE
with Nylon
Screw Adjustment

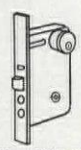
"400"
Closers



Overhead
Door Holders

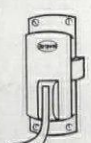


Stilemaker
Locksets



"Ten Strike"
Cylinder Locks

Surface
Door Closers

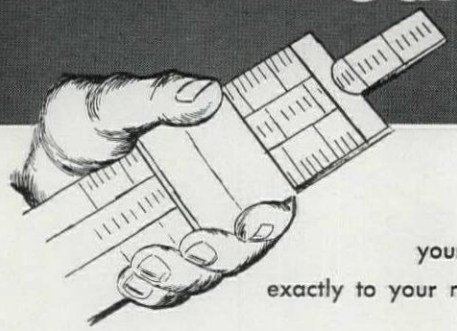


Fire
Exit Bolts

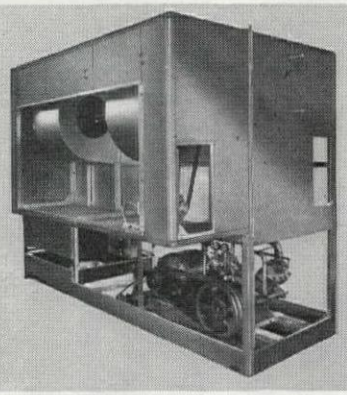
RUSSWIN
distinctive doorware

Unusual air-conditioning needs? . . .

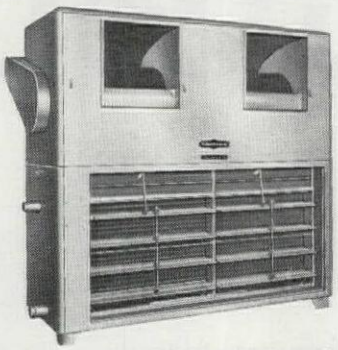
YOU CAN "DESIGN" YOUR OWN ©*Satisfabricated* PACKAGE . . . AT GOVERNAIR!



Yes, working with numerous basic models, Governair will incorporate your specifications and modifications to SATISFABRICATE the package exactly to your needs. You can be sure of its quality, too . . . for every Governair unit is constructed by expert craftsmen. This is your assurance of dependable performance and exact fit. Why not consult us on your next air conditioning project . . . from 3 to 100 ton units.



SELF-CONTAINED MULTI-ZONE AIR CONDITIONERS— with evaporative condenser. Zoned conditioner section — hot and cold deck, with mixing dampers for each zone. Sizes 7½ to 80 ton — single or dual refrigeration circuit. Ready for simple connection to duct system.



FAN AND COIL CABINETS — cooling, heating, humidifying, dehumidifying, ventilating, 1 to 100 ton, 500 to 30,000 cfm, vertical or horizontal types. Governair multi-zone fan and coil units are available in sizes ranging from 5 to 80 ton capacities, suitable for individual zoning.

Also: Blast Coils, Cooling Towers, Packaged Water Chillers, Low Temperature Coolers.

FOR FULL DETAILS WRITE

GOVERNAIR

THE GOVERNAIR CORPORATION

Originators of Completely Packaged Air Conditioners

4840 NORTH SEWELL • OKLAHOMA CITY, OKLAHOMA

Removable muntin feature

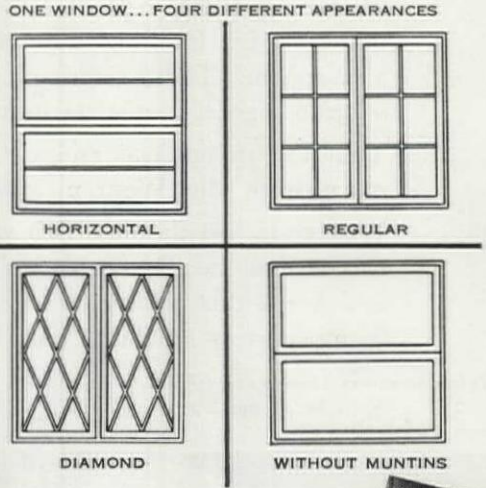
TAKES "PANES" OUT OF WINDOW CLEANING

SHE'S SOLD ON THIS WINDOW right now! It's the only window for those who like the beauty of small multiple panes, and for those who don't like to clean them. It's a snap-in, snap-out PELLA sales feature you can demonstrate in seconds.

Several styles of removable muntin bars are available, including new diamond patterns — and you can get them with *all* PELLA WINDOWS — CASEMENTS, MULTI-PURPOSE and new TWINLITE combination fixed and ventilating units.

Get *all* the good news about these more convenient wood windows! See our catalog in Sweet's or mail coupon today. Distributors throughout U. S. and Canada. Consult classified telephone directory.

ONE WINDOW... FOUR DIFFERENT APPEARANCES



Pella®

WOOD multi-purpose windows

SEND COUPON TODAY

ROLSCREEN COMPANY, Dept. J-95 Pella, Iowa
Please send data on PELLA WINDOWS with removable muntins.

NAME

FIRM

ADDRESS

CITY ZONE STATE

Mountain Savings and Loan Association, Boulder, Colorado
Architect: Hobart D. Wagener, Boulder, Colorado
Contractor: Wilkins Company, Inc., Boulder, Colorado

This bank wanted a fresh approach—commented the architect, "A building to show the cordial comfortable informal glow. Banking institutions often are cold and forbidding . . . we thought that people coming to discuss home loans would like the atmosphere of a home.

"We believe the exposed RILCO laminated wood beams and posts are successful materials for fulfilling the requirement of both the residential and commercial atmosphere. The warmth of wood and the clear expression of the fine material seem to suggest simple clarity to those visiting the building."

That this design was eminently successful is evidenced by the regional award of merit from the Western Mountain Division, American Institute of Architects.

We like to feel that the rich warmth of the RILCO laminated members helped win this coveted award. For RILCO brings the functional beauty that only wood possesses, and keeps this beauty for years with minimum maintenance . . . because RILCO members resist cracking, warping.

RILCO laminated wood beams and columns inside and out. Beams 3¼" x 9¾" x 24' 1"; and 3¼" x 9¾" x 21'; Columns 3¼" x 4⅞".

To quote the contractor—"Well pleased with cost results . . . accuracy of construction . . . careful attention to finish and protection of members in shipment."

For additional information contact your nearest RILCO *office.*

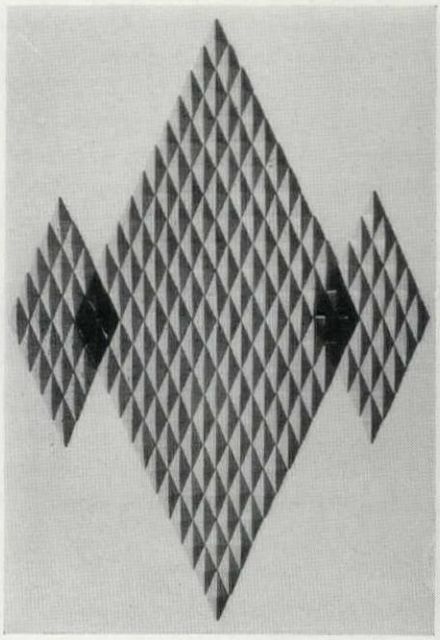
RILCO
works wonders with wood

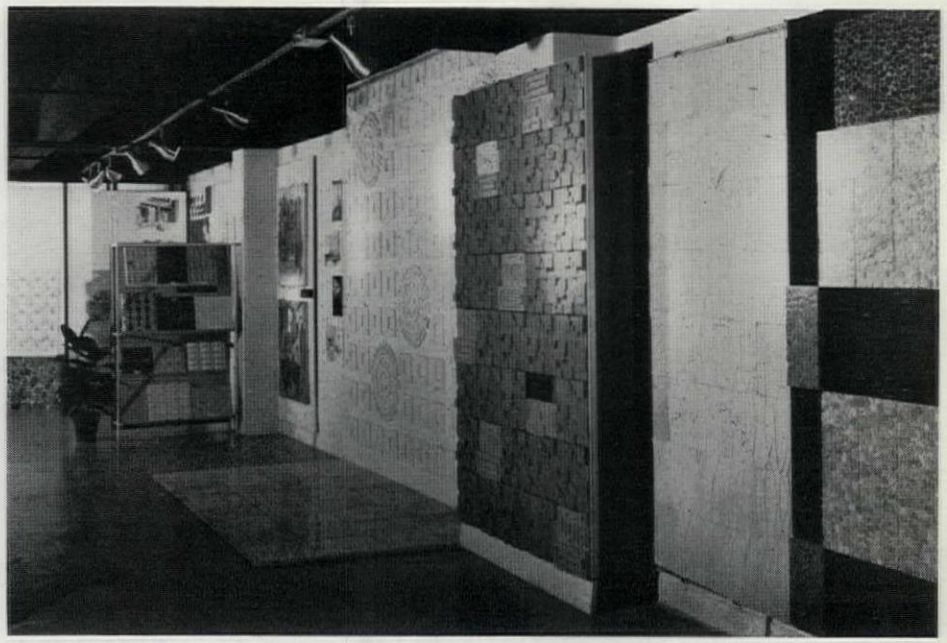
RILCO LAMINATED PRODUCTS, INC.

W817 First National Bank Building • Saint Paul 1, Minnesota

District offices: Tacoma, Wash. • Fort Wayne, Ind. • Newark, N. J.

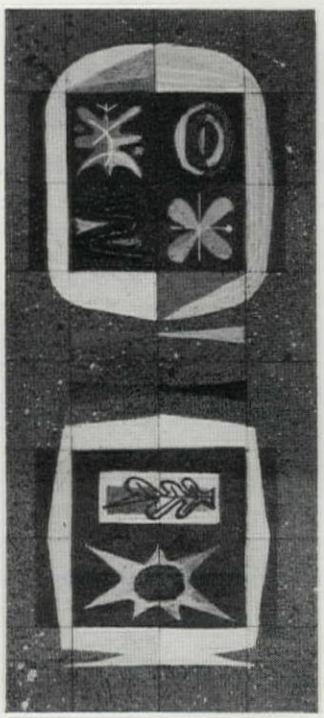
Wall decorations, for both interior and exterior use and of outstanding design and diversity, are presented by James Seeman in his new "Art for Architecture" showroom. Featured in this flexible collection are: tile murals by Anton Refregier, a highly imaginative multipurpose system executed in ceramic tiles one-foot-square; three-dimensional tiles designed by Gio Ponti; sculptured-concrete blocks by Erwin Hauer; Yucatan Stone sculptured blocks, in classic designs of that culture, and in modern abstract designs. Murals, Inc., 16 E. 53 St., New York, N. Y.

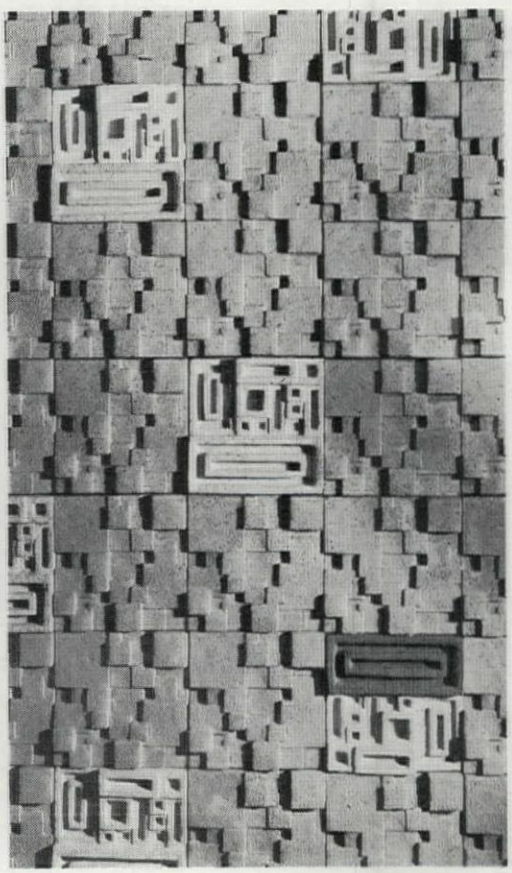


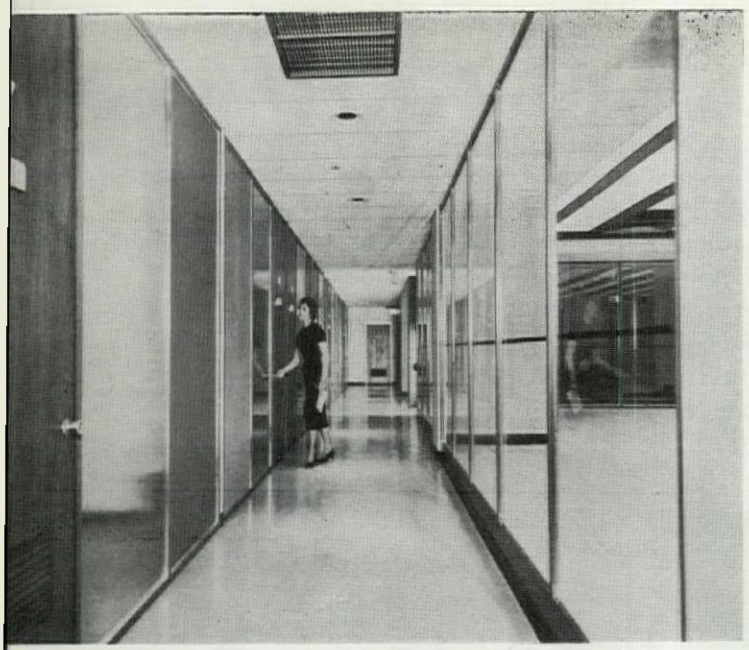


Gio Ponti tiles

Anton Refregier tile mural (below)
Yucatan Stone blocks (right)

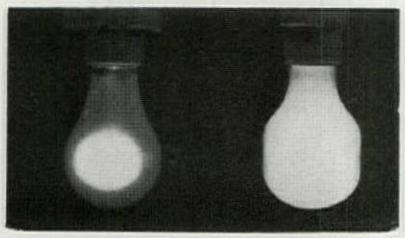






Partition System Developed for Offices

ColorLine partition system can be either permanent or movable, due to Unistrut metal-framing which does not require drilling, welding, or riveting. Any type paneling may be used—plywood, plastic, expanded-metal, glass—from 1/8" to 1/2" thick. Framing will also accommodate doors and shelving; installation is easily accomplished.
Unistrut Products Co., 933 W. Washington Blvd., Chicago, Ill.

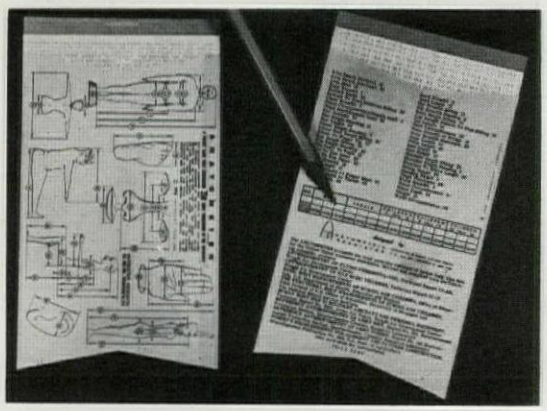


Pine Panels Have Color and Texture

A textured look and a variety of color contrasts distinguish new "Decrobord" ceiling panels and wall plank. Made of clean-pine fibers, and factory-furnished with flame-resistant surface treatment, the ceiling panels come in 12"x12"x1/2" squares, the wall plank 12" wide by 8' long, 1/2" thick. Ceiling colors are Gold on Ivory, Silver on White, Gold-and-Gray on White, and 3-D Fissure Print. Wall colors are Gold-and-Brown on Ivory, on Dust Rose, or on Buckskin Tan; and Dark Green-and-Silver on Antique Green.
Johns-Manville Corp., 22 E. 40 St., New York 16, N. Y.

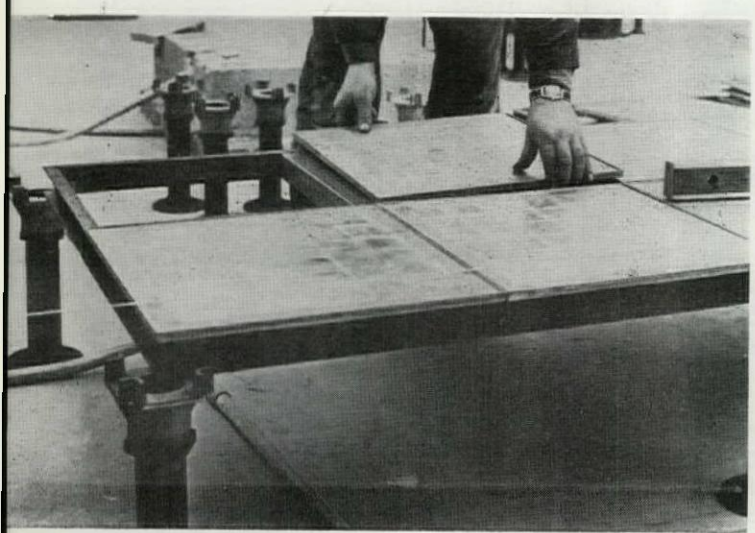
Light Bulbs Now Silica-Coated Inside

New cylindrical-shaped incandescent light bulb has special, electrostatic, silica coating on interior surface to give effective light diffuson, and to eliminate "hot spot" of conventional light bulbs. Greater interior surface gives more light for exacting tasks.
Westinghouse Electric Corp., Bloomfield, N. J.



Slide-Rule Tallies Human Dimensions

Slide rule of human dimensions has been developed to aid product designers. Data, compiled from numerous sources, includes 750 body measurements—such as arm span, nose length—for males and females of high, average and low stature.
Anatometric Associates, P.O. Box 204, Rochester 10, N. Y.
$2.00



Package Heat-Pump Installed Horizontally

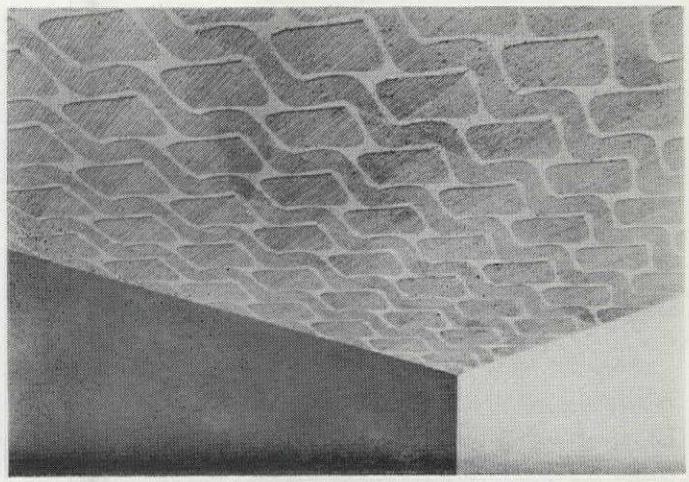
Horizontal heat pump allows installation flexibility. Indoor and outdoor sections can be close-coupled into one unit or installed separately. Complete package can be set on flat roof or at foundation line; indoor section will fit above closet or in crawl space, while outdoor element can be placed under window sill. Models available in 3- to 5-ton cooling capacity, 12,500 to 21,500 Btu heating capacity.
Lennox Industries Inc., Marshalltown, Iowa.

Movable Flooring Eases Mechanical Layout

Raised "Floating Floor" can support 275 psf, does not require permanent substructure, and can be laid on existing floor. Assembled by placing 36 1/2"x36 1/2" cast-aluminum plates in steel frame on adjustable pedestals, sections are easily removed with hand suction-cup lifter, to be relaid where desired.
Floating Floors, Inc., New York, N. Y.

Patterns Added to Acoustical-Ceiling Tile

The application of surface depth to individual tiles adds a sculptural dimension to "Sculptured Travacoustic" acoustical-ceiling tiles. Three new designs ("French Curve," "Aztec," "Prism") offer decorative pattern in shadowed curves, lines, or angles. Made from incombustible mineral wool, the material provides high sound-absorption and light reflectance.
National Gypsum Co., Acoustical Products, 325 Delaware Ave., Buffalo 2, N. Y.

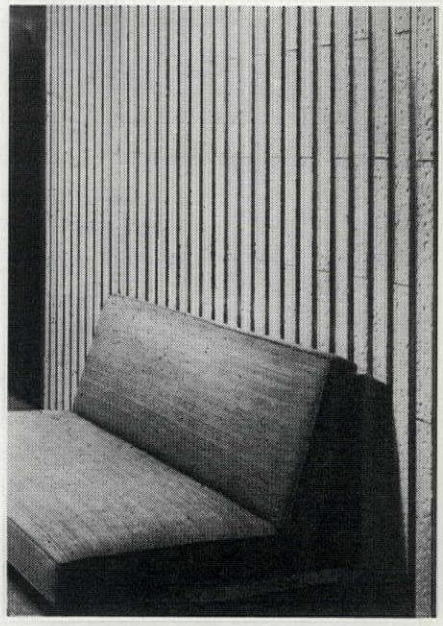


Drafting Medium Offers New Advantages

A transparent, tear-proof drafting material, made from duPont Mylar base, should exceed most other tracing media in strength and longevity. Folding, handling, erasing will not harm surface. Tensile strength is 20,000 psi with a flex life of 20,000 cycles. Diazo and photo-type sensitized surfaces are also available for obtaining print copies.
Eugene Dietzgen Co., 2425 N. Sheffield Ave., Chicago 14, Ill.

Aluminum Wall Panels Offer Insulation

Ribbed-aluminum building sheet is combined with industrial cork and "Firtex" acoustical board for an effective wall treatment. The aluminum sheet is called "Diamond-Rib." It is embossed in a diamond or quilted pattern, each rib configuration having a flat top with sloping sides. Sheets are available in 50.3" widths, providng 48" coverage after lapping, and in lengths from 6' to 16'.
Kaiser Aluminum & Chemical Sales, Inc., 919 N. Michigan Ave., Chicago, Ill.

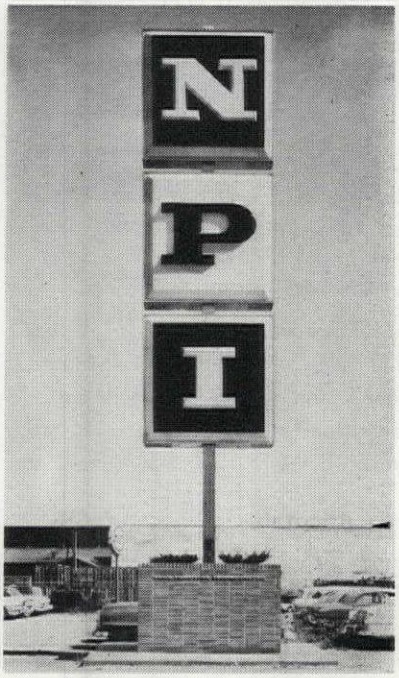


Dimmer Control Developed for Individual Lamps

Autotransformer for use in homes allows gradual light dimming for individual lamps. Two models—in shape of small drum, pointer on top, or clock, pointer on side—are said to provide finger-tip dimmer control. Control is by converting watts, with movable-brush contact riding on bared part of winding. Handling up to 360-w of lamp load, unit can be easily wired into circuit.
The Superior Electric Co., Bristol, Conn.

Plexiglas Sheets Improve Identification

Recently marketed 8'x10' colored Plexiglas acrylic-plastic sheets allow striking building identification when used on internally lighted signs. One typical installation utilizes three 8'-sq colored sheets containing nine high-output fluorescent lamps, each.
Rohm & Haas Co., Philadelphia 5, Pa.



Framing Anchor Speeds Construction

New framing anchor is especially useful for secondary structural framing. Fabricated from 18-gage zinc-coated sheet steel. Du-Al-Clip—available in both lefts and rights—will be used with nominal 2" lumber. Clips are said to form strong connection and rigid joint. A "pre-fit" projection allows tacking in place before nailing, to speed installation.
Timber Engineering Co., 1319 18 St., N.W. Washington 6, D. C

p/a products

Rexalum Siding Has Insulating Properties

Contour-face aluminum clapboard, laminated with thick glass-fiber insulation blanket, has coated-aluminum reflective-insulation sheet. Siding is said not to warp or rust, and will keep homes warmer in winter, cooler in summer. Noise and shock will be absorbed. Material available in seven colors, in panels 8" by 12'6" or 6'3".
Consolidated General Products, Inc., 24 & Nicholson Sts., Houston 8, Tex.

Receptacle Improved for Dual Electric Grounding

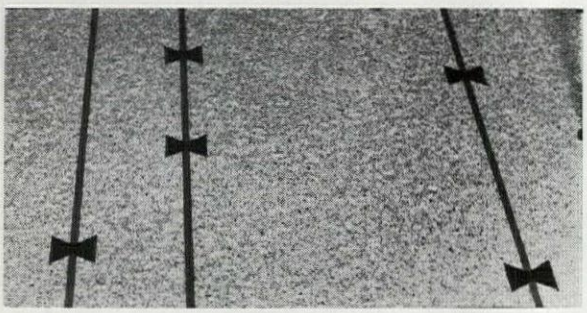
Newly designed receptacle for dual electric grounding in Baseduct wiring systems is rated at 15 amps, 125-v. Fabricated from molded plastic, receptacle has brass clip circling code-green grounding conductor and protruding through back. Grounding-type coupling gives continuous system ground.
National Electric Products Corp., Gateway Center, Pittsburg 22, Pa.

3-D Effect Created for Vinyl Tiles

A three-dimensional surface effect achieved by combining colored vinyl chips in homogeneous tile—characterizes "Cloisonne" new vinyl-tile flooring. Available in 11 colors, mostly pastel hues, in residential gage only.
The Goodyear Tire & Rubber Co., 1144 E. Market St., Akron, Ohio.

Vinyl Flooring Features Decorative Inlays

Vinyl-plastic "Decorator Corlon Inlays" and "Strips" add interest to "Terrazzo Vinyl Corlon" floor. Other inset shapes are the octagon, square, triangle, circle, Chinese square,



four-point star, and diamond. Strips are made in 1" and 1/2" widths. Gage is .070", colors are Metallic Gold, Metallic Silver, Black, White, Chocolate Brown, Red.
Armstrong Cork Co., Lancaster, Pa.

Hi-Thred Screw Resists Stripping

Developed for use with thin-gage metal sheets, this self-tapping screw is threaded full to the head. Resistance to stripping out is improved—fastenings will hold without slipping or spinning, because thread ends in head.
Parker-Kalon Div., Clifton, N. J.

Hospital Furniture is Adaptable

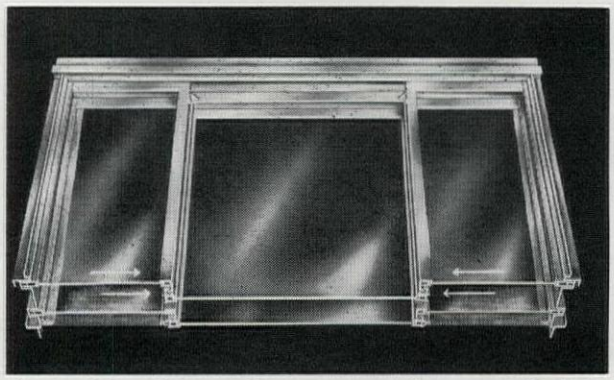
Furniture series is designed for hospitals and convalescent rooms. Six basic units, 20" high, can be combined to give any desired cabinet arrangement. Surfacing—interior and exterior—is high-pressure laminate which will not chip, crack, or require refinishing. Smooth-sliding drawers and square, hollow-metal legs are other features.
National Store Fixture Co., Inc., Odenton, Md.

Rotating Blinds Provide Light and Air

Flexible louver-type blinds can rotate 180 degrees, partially or fully, to allow any desired amount of light and air. Various fabrics available, including new opaque material which provides up to 63 percent reflectivity. Vinyl-impregnated material lessens maintenance load because louvers do not absorb dust. Traversing and nontraversing models may be specified.
Vertical Blinds Corp. of America, 1936 Pontius Ave., Los Angeles 25, Calif.

Double-Sash Windows Provide Insulation

Fleetlite Picture Slide window has center picture-window flanked by sliding units in same frame. Air between double sash reduces need for insulating glass; controlled ventilation



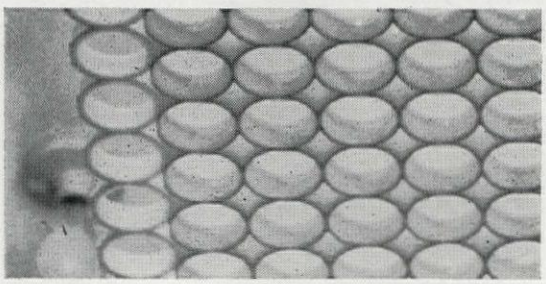
is obtained by sliding side units toward center. Sash is removable.
Fleet of America, Inc., 2015 Walden Ave., Buffalo 24, N. Y.

Mat-Faced Form Board is Versatile

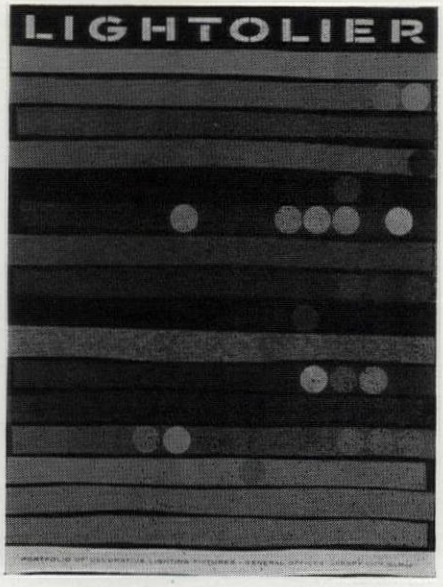
Mat-faced form board is suitable for several uses in industrial construction. Glass-fiber board, available in 1" to 2" thicknesses, can act as permanent form for poured-in-place lightweight roof deck, interior ceiling, acoustical ceiling, or roof insulation. Material is incombustible and absorbs noise.
Owens-Corning Fiberglas Corp., Toledo 1, Ohio.

Ceiling for Light Transmission

New translucent ceiling does not reveal supporting grid, seams, over-lapping double edges, or visible means of support. Polystyrene circular louvers give nonmodular appear-



ance; said to have highest transmission value of any luminous diffuser now available. White or in colors.
Integrated Ceilings, Inc., 9011 Beverly Blvd., Los Angeles 48, Calif.



Lighting fixtures offer both a decorative value and a modification of the light source to achieve the desired effect for particular areas. In an introduction to this catalog,* Lightolier Portfolio of Decorative Lighting Fixtures, *Lighting Consultant Richard Kelly defines three kinds of lightplay—focal glow, ambient luminescence, play of brilliants—used to create good lighting. Almost 100 designs of lighting luminaires for all types of applications are presented in this booklet—with photo and short description included for each fixture.

Lightolier (AIA 31-F-23, 40-p.) **478**

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

AIR AND TEMPERATURE CONTROL

Herman Nelson Unit Ventilators

Unit ventilators feature draft/stop system to control downdrafts at windows. Particularly adaptable to schoolroom use, ventilators comprise following elements: pressure-equalizing unit, floating heating element, demountable wall intake, automatic back-draft damper, air discharge grills. Style, operation, engineering data, capacity tables included.
American Air Filter Co., Inc. (28-p.) **187**

Square and Rectangular Air Diffusers

Newly designed diffusers—TMD series—are available in two types: one-piece units for surface and exposed-duct mountings and two-piece units with mounting frame and removable core. All models are depicted with photos, installation data, detail drawings. Combination supply-and-return diffusers—both square and rectangular—are described with throw characteristics; performance tables included.
Titus Manufacturing Corp. (20-p.) **188**

Dust-Stop Air Filtration Banks

For commercial and industrial central air-cleaning systems, these replacement filters, used where air velocities do not exceed 300 fpm, will perform well. Units are composed of frame, adapter, v-bank uprights, resistance indicators, removable filter. Design and installation details featured, plus performance data and test results.
Owens-Corning Fiberglas Corp. (AIA 30-D-2, 8-p.) **189**

Vornado Complete Home Air Conditioning

Stressing advantages of home air conditioning—allowing sleep, relaxation, better health, etc.—folder explains system giving adequate air movement, properly controlled humidity, nonfluctuating temperature level. Components include cooling unit (twin-refrigerant), duct system, room outlets, central filtering system, condenser. Cutaway photo with complete description explains working system. Low cost is a prime interest factor. Various types of installations suggested. Specifications.
The O. A. Sutton Corp., Inc. (8-p.) **190**

CONSTRUCTION

★ Modern, Versatile Building Material

Translucent glass-fiber panels with chemically glazed surface offer design advantages. Complete specifications given for low heat- and light-transmission panels, high light-transmission panels, and flat panels for industrial-window glazing. Technical data on flammability, load strength, chemical resistance, insulation value, etc. listed.
Alsynite Co. of America. (AIA 26-A-9. 4-p.) **247**

Lupton Aluminum Curtain Walls

General design data is presented for curtain-wall systems for use in schools, hospitals, office buildings. Two types—H, limited to 5' spacing of vertical mullions; G, with heavy, deep, frame spaced on 8' mullions—depicted by detail drawings for both insulated and noninsulated types. Mullion, corner, and anchor drawings included for type H, as well as details for specific buildings where this system has been installed. Write direct: Michael Flynn Mfg. Co., 700 E. Godfrey Ave., Philadelphia 24, Pa. (14-p.)

Espro Structural-Steel Tubing

Steel plates formed into two channel sections, fused together by arc welding, form-steel tubing used for load-bearing beams and columns. Mechanical properties—including girth, size, wall thickness, weight, etc.—for square and rectangular tubes listed by tables. Sizes given, as well as tolerances.
Equipment Steel Products, Div. of Union Asbestos & Rubber Co. (4-p.) **248**

Introductory Manual.
Ceco Electro-Channel Steel Joists

Photos and diagrams illustrate how underfloor electrification can be achieved by use of electro-channel joists. Joist is standard open-web, having a steel raceway instead of usual top chord. Raceway acts as both underfloor electrical distribution duct and as structural member. Detailed joist construction, typical installations, advantages listed.

Ceco Steel Products Corp. (AIA 13 G, 25-p.) **249**

★ **Translucent and Opaque Building Panels**

Building panels for use in spandrels, curtain, window, or interior walls are discussed in this bulletin. Core of translucent or opaque panels is an aluminum grid. Fastened to core by means of synthetic resin is glass-fiber reinforced sheet. Test results support claims of good light transmission, resistance to fire and acids, shatterproof qualities. Suggested installation drawings, plus individual details for many panel systems are included.

Kalwall Corp. (4-p.) **250**

Colorcron

Coloring and hardening agent is distributed evenly over surface of freshly floated concrete and troweled to desired finish to form alkali-fast colored concrete. Nonabsorbent, and wear-resistant surface is especially suitable for floors, showrooms, patios, terraces. Available in 10 colors and can be scored to desired pattern.

The Master Builders Co. (AIA 3-K, 3-B-1, 23-D, 4-p.) **251**

Rugasol for Exposing Concrete Aggregate

Chemical coating used during construction obtains exposed-aggregate surface, allowing a rough bonding surface or giving color and texture. Rugasol is applied on formwork or on freshly placed plastic concrete, to retard set of surface mortar. Description, application, coverage, penetration given.

Sika Chemical Corp. (AIA 4i, 4-p.) **252**

Moynahan Curtain Walls

Curtain-wall guide features AW series—aluminum-grid system designed to accommodate expansion and contraction —illustrated by isometric detail and drawings. Companion AW-F series can be used with variable, flush mullion to create shadows. Specifications.

Moynahan Bronze Co. (8-p.) **253**

Specification for Vermiculite Insulating Concrete

Data sheets for vermiculite-concrete roof insulation and roof decks contain drawings, technical data, U values for 1:6 and 1:8 mixes over vented galvanized-steel roof decks, structural- or precast-concrete decks; vermiculite decks over fiber insulation and acoustical form board; glass-fiber form board; paper-back wire lath. Write direct: Vermiculite Institute, 208 S. LaSalle St., Chicago 4, Ill. (8-p.)

The George Nelson Sketchbook

Booklet features black-and-white sketches by George Nelson, utilizing expanded metals in a variety of designs. Expanded metals, available in aluminum or steel, have advantage of being lightweight, yet strong. Freedom of design allows numerous uses such as sliding screens to cover sun deck, patio screens, sliding shutters, walls, ceilings—all illustrated.

United States Gypsum Co. (10-p.) **254**

DOORS AND WINDOWS

Hollow Metal Doors & Frames for Commercial Buildings

More than 28 styles of flush and recessed-panel doors and companion steel frames offer a style for any purpose. Frames can be "knock-down" form or assembled, welded units. Rail-and-stile construction uses enclosed tubular framework of 16-gage steel, interlocking panels of 18-gage steel. Design features depicted, detailed; installation details given.

Amweld Building Products (AIA 16-A, 8-p.) **358**

★ **Door Hardware: Advanced Collection**

Advanced collection includes complete line of hardware for all types of doors—stock and custom. Section 1 is devoted to handles for wood, metal, metal-framed, and custom-tempered glass doors; Section 2 concerns handles for same types; Section 3 describes lever handles, rosettes, escutcheons. Wide choice of finishes available. Photos, drawings, dimensions for each model.

House & Co. (AIA 27, 21-p.) **359**

Model "B" Slide-A-Fold Hardware for Folding Doors

Har-Vey line of hardware is easy to assemble and install. Components include extruded-aluminum track, nylon guide, built-in door-stop, adjustment slots, reversible jamb hinge, rigid guide hanger. Arrangements suggested.

American Screen Products Co. (4-p.) **360**

Aluminum Church Windows

Aluminum windows have integral provision for double glazing, particularly useful in church applications for preserving stained-glass. Catalog depicts typical Twin-Beam designs: standard Gothic head, heavy-duty Gothic head, circular head, rose. Half-size cross-sections of structural parts are featured. Projected-type ventilators are suggested, though other types are available.

Industrial Engineering Works (8-p.) **361**

Drapery Hardware, Venetian Blinds, Vertical Blinds

"Sunaire" series of venetian blinds detailed and described with mounting methods shown, as well as similar data for vertical traverse blinds. Drapery hardware shown for all types of installations, including cut-to-measure traverse rods, swinging door rods, oval rodding, auditorium track parts. Installation tips included.

Kirsch Co. (16-p.) **362**

Pam Plastic Skylights

Guide to skylights for industrial, institutional, commercial installations features construction qualities: lightweight, one-piece, high-efficiency daylighting (clear or translucent plastic), resistance to breakage, extruded aluminum frames, standard sizes. Dubl-Dome series presented—drawings show preformed Plexiglas dome and flat center-stress member which acts as permanent stabilizer. Specifications.

The Pam Co. (12-p.) **363**

ELECTRICAL EQUIPMENT, LIGHTING

Nilex

Nonglare, rough-service incandescent lamp will give up to 11.040 hrs service on 120-v line. Shock-absorbing filament construction allows rugged use; unit has been exposed to bump and shock tests. Recommended for work benches, machine shops, printing shops, engineering departments.
Nu-Lite Corp. (2-p.) **473**

Photoswitch Light Control

Automatic on-off control for controlling illumination of streets and highways, other outdoor-lighting applications. Control reacts to daylight intensity and is not affected by seasonal changes. Photos of components illustrate descriptive data on features, such as one amplifier tube, compactness of unit, plastic covering, automatic reset, etc. Specifications and mounting arrangements included.
Photoswitch Div., Electronic Corp. of America (4-p.) **474**

Howard Miller Clocks

Line of contemporary wall clocks designed by George Nelson is illustrated in this brochure. Dimensional, material, and price information supplements photos. Series of portable clocks also discussed.
Howard Miller Clock Co. (8-p.) **475**

Specification Grade Wiring Devices

Index chart acts as reference for specifying wiring devices. Included are descriptions and catalog data for frequently used units, such as tap-action switches, ac, dc, combination switches, grounding and polarized receptacles. Cutaway photos give dimensions data for each type.
The Arrow-Hart & Hegeman Electric Co. **476**

Precast-Grid Toplite Panels

New line of roof panels consists of glass units spaced 10' on centers, supported by reinforced structural grid formed of new high-strength cementitious material. Units are durable, strong, have high insulating value. Panels offer use of daylight in homes, offices, shopping centers, as primary or supplementary light source. Diagrams, construction drawings, illumination data; installation steps given.
Owens-Illinois Glass Co. (16-p.) **477**

FINISHERS AND PROTECTORS

Rubatex Closed-Cellular Neoprene Closure Strips

These closed-cellular Neoprene strips form a good seal against air, water, and dust when used with corrugated-metal, asbestos, glass, or plastic roofing and siding. Installed under aprons of ridge roll, with flashing sections at roof junctions, side or end walls. Types for all kinds of corrugation listed with width, depth of corrugation, pitch, valley thickness, length. Suggested building applications.
Rubatex Div., Great American Industries, Inc. (6-p.) **558**

Plextone Specification Data for Architects

File includes specification sheets for nonlacquer, resinous, odorless multicolored wall enamel, which can be sprayed from one gun. Laboratory test results, technical data bulletin, undercoat chart, suggested uses are given. Standard color sheets—perforated for attachment to specifications—form a large part of the publication.
Plextone Corp. of America (40-p.) **559**

Reflecto-Barrier

New flexible plastic film for application over steel, wood, concrete roof decks is self-extinguishing, reflective, moisture-proof, impervious to liquids, easily applied. Application directions given. Technical data, installation methods shown.
Reflecto-Barrier Sales Co., Inc. (8-p.) **560**

INSULATION

★ Foamglas, The Cellular-Glass Insulation for Curtain-Wall Construction

Thermal-glass insulation is said to possess both rigidity and compressive strength in a lightweight, rigid-block form. Inorganic material is rot and vermin proof and a constant insulating value. Booklet lists properties and shows applications of finished installation where porcelain and other curtain-wall materials have been laminated to Foam-glas —panel details shown.
Pittsburgh Corning Corp. (AIA 37-B, 12-p.) **667**

Cafco Spray

Blend of mineral and asbestos fibers, mineral binders is

PROGRESSIVE ARCHITECTURE, 430 Park Avenue, New York 22, N. Y.

I should like a copy of each piece of Manufacturers' Literature circled.

187	250	360	476	668	844
188	251	361	477	760	845
189	252	362	478	761	985
190	253	363	558	762	986
247	254	473	559	841	75
248	358	474	560	842	
249	359	475	667	843	

please print

Name

Position

Firm

Mailing Address

City *State*

sprayed on to give effective acoustical and thermal insulation. Spray is permanent, inorganic, lightweight, incombustible, rust and rot proof, sound absorbent. Characteristics; light reflection, U-factor, sound absorption figures given. Material should be sprayed over special adhesive.
Columbia Acoustics and Fireproofing Co. (AIA 39-B-1, 37-C-2, 4-p.) **668**

SANITATION, PLUMBING, WATER SUPPLY

Cutler Toilet Compartments, Dressing Enclosures, Hospital Cubicles

Construction details for ceiling-hung, floor-supported, and overhead-braced toilet compartments are featured in this bulletin. Fabricated from heavy-gage furniture steel, with galvanized, bonderized, and primer coats applied under vinyl-alkyd enamel finish, units are durable and attractive. Available colors, description and specifications for all units given.
Cutler Metal Products Co. (AIA 35-H-6, 12-p. **760**

Residential Water Filter

Two models provide 15 and 20 sq ft of filter area, adequate for residential-sized swimming pools. Filtering element is perforated metal, covered with woven-plastic sleeves coated with diatomaceous fluid. Cutaway photo shows filter flow and principle of operation with top-mounted, integrated pump and motor of either 1/3 or 1/2 hp.
Bowser Inc. (4-p.) **761**

★ Plumbing Layouts that Save Materials, Time, and Money

Featuring two-bathroom layout used in 1957 NAHB Research Institute "Home of the Year," booklet shows how end outlet bathtub and wall-hung closet combinations can be utilized with built-in lavatory. Dozen layout suggestions are detailed—for single, one-and-a-half, double baths in conventional and slab construction. Units are fabricated from enameled cast-iron, porcelain on steel, vitreous china.
Ingersoll-Humphreys Div., Borg-Warner Corp. (8-p.) **762**

SPECIALIZED EQUIPMENT

Library Shelving

Description of open-type and closed-back library shelving, counter-height shelving, small book cases comprise this brochure. Dimensions, colors, construction features included, as well as colored photos of actual installations.
Deluxe Metal Furniture Co. (4-p.) **841**

Stratapanel

Combining modular drawers and slide-panels of high-impact styrene, Stratapanel system provides low-cost storage. Storage becomes integral part of structure, while inner frame and center-slide case is eliminated. Basic components pictured, combination arrangements suggested. Design specifications include drawings.
The Moulded Structures Div., Robert A. Schless & Co., Inc. (AIA 28-A-5, 8-p.) **842**

Store Equipment for Store Planning

For more effective display of goods and materials in showrooms, Serva-Sel line of store equipment offers numerous units of various types—knock-down telescoping and regular garment racks, bolt-goods rack and stanchion, metal counters, exhibit stanchions, trolley merchandisers, open selling fixtures, seating accessories. Dimensions and construction features illustrated.
Frederic Weinberg Co. (AIA 35-H-5, 38-p.) **843**

Special-Hazard Fire Protection

Four principal means of fire-fighting and protection are described—water spray, foam, carbon dioxide, dry chemical. Photos illustrate text, as well as cutaway drawings. Equipment is presented, devices shown. Selector chart featured.
Grinnell Co. (42-p.) **844**

Stacor Lifetime-Quality Equipment

Catalog concerns equipment for drafting room, artist's drawing board, schools. Files for drawings, blueprints, included; sectional cabinets shown; tables for drafting, tracing included. Available in steel, wood. Dimensions, capacities.
Stacor Equipment Co. (26-p.) **845**

SURFACING MATERIAL

★ Technical Notes, Harris BondWood Flooring and Harris Adhesive Mark 10

Concentrating on the features and properties of BondWood flooring and Adhesive Mark 10 in numerous installations, booklet gives technical data on application of flooring material. Dryness of building interior, subfloor, and testing of concrete dryness discussed, as well as installation over concrete subfloors, resilient tile, and wood subfloors.
Harris Manufacturing Co. (AIA 19-E-9, 18-p.) **985**

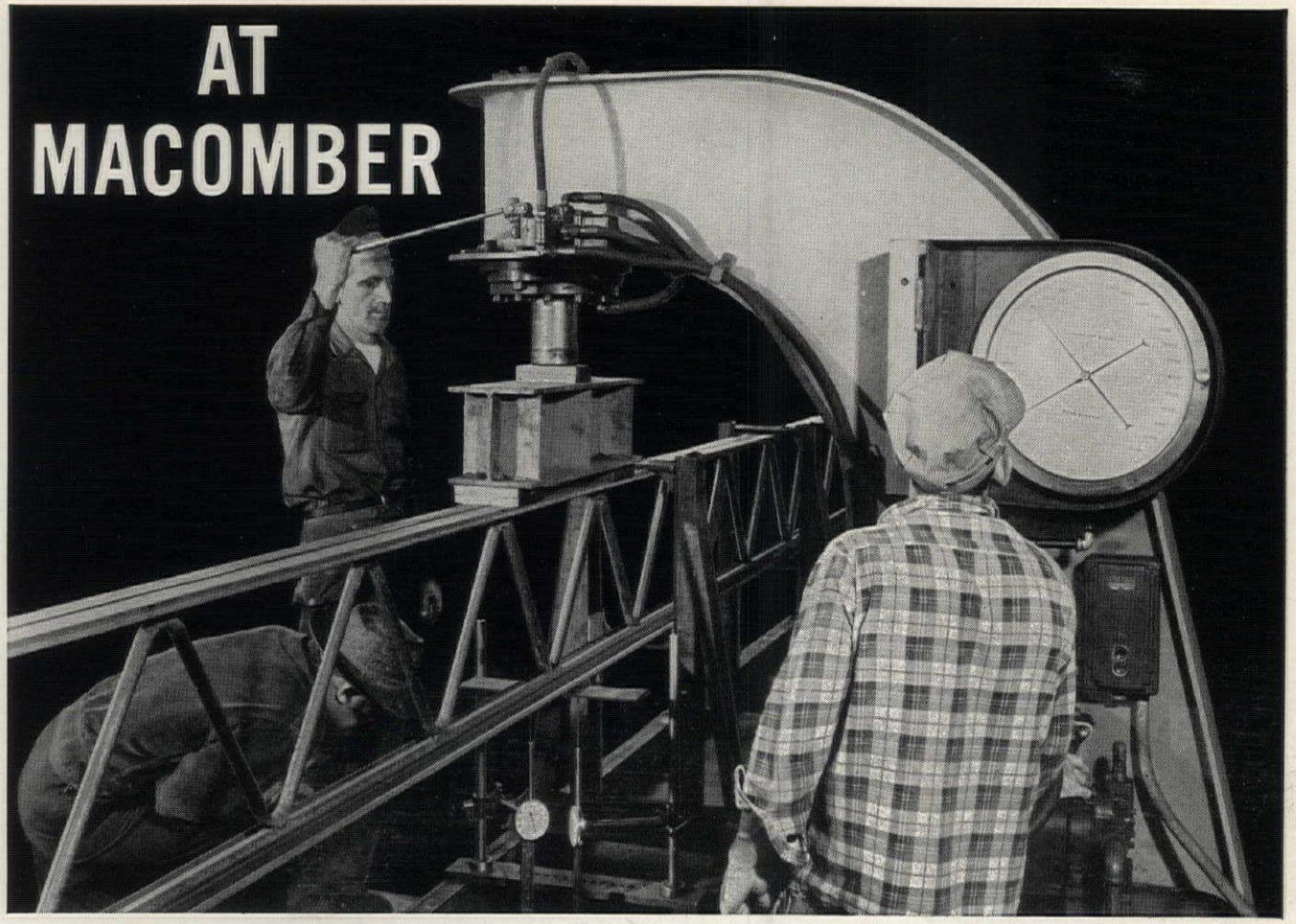
Ceramic Veneer

Booklet on modern architectural terra cotta includes discussion of color, finish, texture, form, economy, pattern, decorative value of this ceramic veneer. Color photos show installations. Prefab curtain wall uses adhesive and anchor types of panels. Standard specifications, including erection, suggested.
Architectural Terra Cotta Institute (8-p.) **986**

INTERIOR FURNISHINGS

Furniture Accessories for Interior Planning

Featuring accessories such as exhibit stanchions, trolley servers, benches, stools, vases, planters, decorative sculpture, this publication includes all types of accessory equipment used in decorating offices, homes, commercial showrooms. Construction description, finishes, dimensions given for each item, illustrated with photos and some drawings.
Frederic Weinberg Co. (64-p.) **75**



...Quality Control is CONTINUOUS

Macomber insists every steel framing member must exceed the strength requirements for its job. To assure this, the company employs a crew of trained inspectors who are continuously checking workmanship at every step in production.

In addition, Pittsburgh Testing Laboratory maintains Resident Inspectors to supervise the program. These inspectors are daily load-testing products chosen at random from production runs.

This Continuous Quality Control program is your assurance of the outstanding structural ruggedness of Macomber products.

Specific catalogs are available on all Macomber products.

MACOMBER

CANTON 1, OHIO

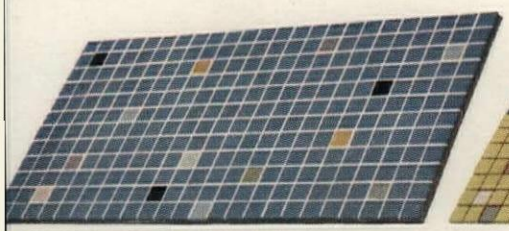
Wall Motif is Suntile Design No. 12 COLOR GRAPHS IN GRANITE, mounted with the graph pattern in vertical position for increased room height effect. Floor is No. 11 FOREST TRAILS on 157 Ivy Field. Scene photographed for normal interior-light color values.

new designs in *Suntile* ceramics

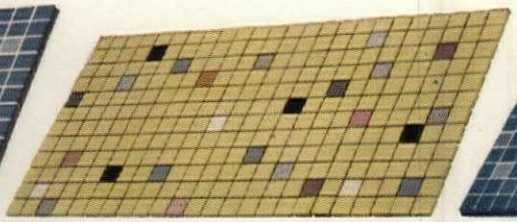
by noted modern artist Max Spivak

Here are new patterns to give your creative talents wider scope in ceramics.

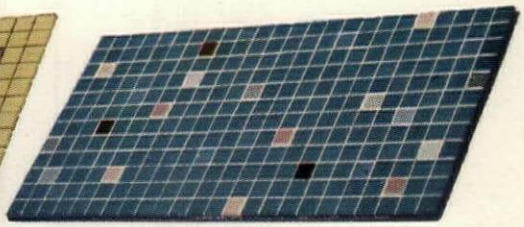
You can originate fresh wall and floor treatments, form subtle decorative harmonies, and use the motifs as insets, stripes, murals, borders, and geometric or random designs.



No. 15 DRESDEN BLUE BUCKSHOT

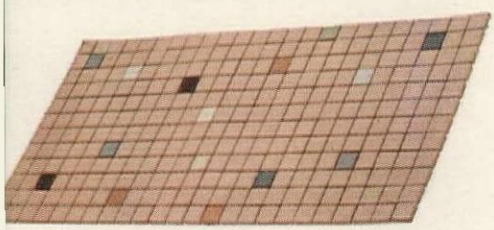


No. 19 CITRUS YELLOW BUCKSHOT

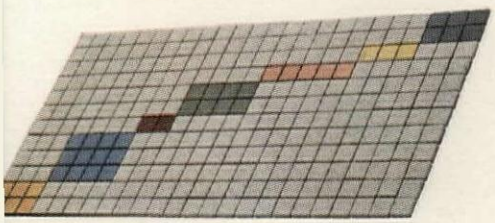


No. 17 TURQUOISE BUCKSHOT

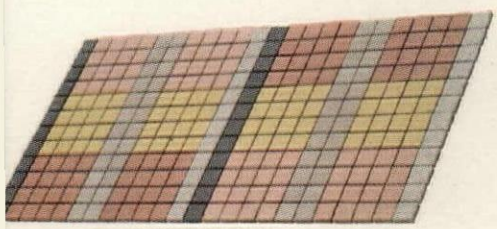
No. 11 FOREST TRAILS on 157 Ivy Field



No. 18 CAMEO PINK BUCKSHOT



No. 12 COLOR GRAPHS IN GRANITE



No. 5 PINK DAWN

Suntile designs are economical, because the 1″ x 1″ tiles are pre-mounted on 1 x 2 foot SETFAST* sheets for fast installation with strongest bond.

Your Suntile Dealer's telephone number may be found in your classified telephone directory. For special assistance with design write Harry J. Macke, Director of Design, at the Cambridge Tile Manufacturing Company.

How SETFAST insures strongest, fastest, most economical installations

*SETFAST is an exclusive development of the Cambridge Tile Manufacturing Company, and, together with the popular Spivak designs, has helped make possible the current renaissance of ceramic tile. SETFAST allows labor-saving application of tile in 1 x 2 foot sheets, and puts a durable, flexible unit between tile-and-tile and tile-and-wall! . . . like the ribs in reinforced concrete!

Both Suntile Wall Tile and Spivak ceramic patterns are manufactured in SETFAST.

*Pats. Pending

Send for color folder of Suntile designs

THE CAMBRIDGE TILE MFG. CO.

P. O. Box 71, Cincinnati 15, Ohio

Cambridge Tile Mfg. Co.
P. O. Box 71, Cincinnati 15, Ohio

Gentlemen:
Please send me color brochure of Suntile designs.

Name_____

Company_____

Address_____

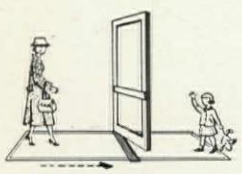
City_____

there's *EXTRA* safety

when the RIXSON *automatic* opens and closes the door

The **RIXSON *automatic*** has been carefully engineered to offer many new advantages of safety and function. It opens the door by hydraulic power and closes the door by hydraulic power—no springs required. A dry-sump system avoids damage from fluid leakage on floor.

The **RIXSON *automatic*** is completely concealed in the floor—no arms or other hardware are visible. In addition to mat actuated styles, the ***automatic*** can be actuated by floor, desk or wall switch.



If a person steps on safety mat after door is in opening swing, door will not strike him, but will STOP.

If person is on safety mat, another person stepping on actuating mat will not cause door to swing open.

If a person walks off safety mat and then, while door is closing, steps back on mat, door will stop and not swing suddenly open.

A break-a-way that allows doors operating IN to be forced OUT in emergency (if there are no door stops) is standard equipment.

A safety trip prevents motor from running continuously and avoids danger of overheating.

Rixson engineers will gladly work with you on your original plans or special applications. Complete template and installation instructions furnished.

Write for complete description and details

THE OSCAR C. RIXSON COMPANY

9100 west belmont avenue • franklin park, illinois

CANADIAN PLANT: 43 racine road • rexdale, ontario

Amtico Renaissance...

Lustrous vinyl flooring creates dimensional splendor

Its handsome beauty surpasses that of natural marble. Its striking elegance achieves a new dimension in vinyl flooring . . . a wonderfully different translucent quality. *This* is Amtico RENAISSANCE Vinyl Flooring, in nine delicate color hues that capture subtly the infinite shadings and variations of marble. Amtico RENAISSANCE has the vital added advantage of being all-vinyl . . . colors go through and through each tile. So little care is needed to keep it looking new always. And Amtico RENAISSANCE withstands a lifetime of wear.

To achieve any effect, to set off any decor handsomely, turn to the *complete* line of the world's finest and most colorful floor coverings—Amtico Vinyl or Amtico Rubber Flooring.

aul MacAlister utilizes every Amtico enaissance Vinyl color on this striking alian-style floor design and wall mural.

Amtico Renaissance Vinyl floor and objets d'art enhance this fabulous bath-dressing room by Barker Bros.

A floor of Amtico Terrazzo Design Vinyl sets off a colorful grouping in this showroom by Tommi Parzinger.

Amtico
PERMALIFE
VINYL FLOORING

1908-1958 . . . 50 Years of Growth and Progress

AMERICAN BILTRITE RUBBER COMPANY

TRENTON 2, NEW JERSEY

Showrooms: 295 Fifth Ave., N.Y.C. • 13-179 Mdse. Mart, Chicago • In Canada: American Biltrite Rubber Company, Ltd., Sherbrooke, Que.

AMTICO, Dept. PA-3, Trenton 2, N.J.
Please send detailed literature and FREE complete set of Amtico Vinyl and Rubber Flooring samples to:

NAME_____

FIRM_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

(Please attach coupon to your business card or letterhead)

the spontaneous genius

Frank Lloyd Wright to 1910. *Grant C. Manson. Reinhold Publishing Corp., 430 Park Ave., New York, N. Y., 1958. 228 pp., illus. $10*

Unlike the more recent illustrative or autobiographical publications, *Frank Lloyd Wright to 1910* by Grant C. Manson, is a critical, scholarly study intended to document and evaluate Wright's work and to delve into the thorny problems connected with the development of his highly personal style. In the fulfillment of this task the author has met with admirable success.

The present volume is the first of a series of three projected by the author to span Wright's entire career. Although the most ambitious inquiry into this fascinating subject that has yet appeared, this book is not intended to supplant the existing publications, but rather to supplement them by introducing new and valuable material—both factual and interpretive—and arranging this into a total perspective view of the master.

The text of this first volume, liberally supported with illustrations and plans, divides naturally into two major periods: the formative years before 1900 during which Wright was to assimilate certain external environmental influences and gradually formulate his own more personal expression and, secondly, the first decade of the new century when complete maturity was realized in the Prairie Houses and such designs as Unity Church and the Larkin Building.

The first portion of the book proves to be the most illuminating, for here the author has assembled a large body of material which heretofore has received insufficient documentation and interpretation. While the Froebel kindergarten games and Japanophilia are acknowledged as the major influences upon the young architect, the importance of Louis Sullivan to Wright's development is minimized. In fact, the author suggests that, "it is open to question whether any influence that may have been exerted in the relationship did not flow more in Sullivan's direction than in Wright's." Turning next to the controversial question of whether Japanese influence on Wright came about primarily through the medium of color prints (as Wright maintains) or from architecture, Manson leaves it as a moot point while stressing Wright's affinity of architectural concept with the Japanese. Although this is safe ground, it would seem to the reviewer that a stronger case for a direct architectectural influence was perhaps in order.

There follows a discussion of the "bootlegged" houses (designed incognito before 1893) which is probably the most interesting and enlightening portion of this first section of

(Continued on page 229)

reviews

(Continued from page 226)

the book, both because of the author's penetrating analysis and because of the obscurity which has so long clothed most of these early designs. This early period is then terminated after tracing Wright's development through the Helen Husser house (1899) which was to set the stage for the mature Prairie Houses of the next decade.

The latter half of the book, entitled "The First Golden Age" and encompassing the years between 1900 and 1910, treats the more widely publicized Prairie designs which range through such outstanding examples as the Ward Willits house (1902) and the Robie house (1908). Ecclesiastical, commercial, and industrial architecture of this period is approached in the same readable and informative manner.

The author utilizes the departure of Frank Lloyd Wright for Europe during the autumn of 1909 as the logical termination for his discussion of the first phase in the architect's career.

Throughout the book, Grant Manson remains very close to his immediate subject—the architectural designs of Frank Lloyd Wright. Little insight is gained into the mind or underlying philosophy of the architect, either through interpretation or by analyzing his writings. One seems no closer to fathoming his genius, other than to accept it as spontaneous.

Likewise one might have wished for a more thoroughgoing discussion of the external forces rampant in the art of that day—from eclecticism to the avant-garde movements—in relationship to Wright's position among them. For this we must rely in large measure on the appropriate and pithy foreword by Henry-Russell Hitchcock.

The bibliography, which includes periodicals, and the several appendices constitute a valuable addition to the text. It is regrettable, how-

(Continued on page 230)

(Continued from page 229)

ever, that the book does not function more effectively as a reference volume. The index does not differentiate between textual and pictorial references (italics for illustrations would be helpful), and building dates are not included either in the index or with the captions for the plates. The plates, also, are often of irregular quality. It is to be hoped that the forthcoming volumes will take these matters into account.

In summation, *Frank Lloyd Wright to 1910* stands as a valuable and welcome addition to our knowledge of this great American architect. The readable text and numerous illustrations make the volume of primary interest to layman and professional alike so long as they share an interest in this most important aspect of our architectural heritage.

H. ALLEN BROOKS, JR.
Department of Architecture
University of Illinois
Urbana, Ill.

scholarly account

The English Cathedral Through the Centuries. *G. H. Cook. Phoenix House Ltd., London, England, 1957. Distributed by The MacMillan Co., 60 Fifth Ave., New York, N. Y. 384 pp., illus. $9*

No doubt this work will be accepted by architects and students of church history alike as the most comprehensive and authoritative single-volume work now available on the subject of the greater English churches. Following the author's *The English Medieval Parish Church,* now regarded as a standard book, this volume of some 140,000 words, 96 pages of photographs, and over 60 plans, presents a broad view of the planning and purpose, the construction and architectural treatment, and the subsequent development of the English cathedral. Considering the varied facets concerned with establishment of the cathedrals throughout a period of almost 14 centuries and scope of the field involved, what the author has so capably accomplished in an ordinary sized book is really remarkable. This is much more than a general outline or casual survey; it is a complete and scholarly account of the story of the English cathedral. But it is a most interesting and readable account, to boot, which adds immeasurably to the book's appeal.

For many, a great cathedral church is probably first, perhaps only, an architectural monument of national and antiquarian importance, the chief interest—all religious purposes aside—being in the style of building and the skilled workmanship of construction. However, as the author points out and treats so clearly, a knowledge of the diocesan system, of the establishment and history of the several bishoprics and

(Continued on page 232)

Porcelain Enamel adds colorful beauty

TO CHICAGO'S MICHIGAN BOULEVARD

The distinctive new Borg-Warner Building in Chicago typifies modern architecture in both design and use of materials. Porcelain enamel curtain walls were selected because they assured attractive, durable color and enabled the architects to effectively express form and function in their design.

Porcelain enamel on Armco Enameling Iron has been proved by a quarter-century of use in architecture . . . offers a unique combination of advantages for modern design.

PORCELAIN ENAMEL

- . . . provides unlimited color.
- . . . assures lasting durability.
- . . . keeps maintenance costs low.
- . . . offers freedom in design.
- . . . is keyed to modern architecture.

New steels are born at Armco

For more information on this architectural metal, write for a copy of "Architectural Design with Porcelain Enamel on Armco Enameling Iron." Armco Steel Corporation, 2638 Curtis Street, Middletown, Ohio.

The Borg-Warner Building, Chicago, Illinois
Sponsor: National Properties, Inc.
Architects: A. Epstein and Sons, Inc.
William Lescaze, F.A.I.A., Consultant
Porcelain Enamel Panels: The Erie Enameling Company
General Contractor: George A. Fuller Company

ARMCO STEEL

Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

(Continued from page 230)

how they are constituted and function, is quite essential for an understanding of the cathedral as an institution. The early chapters of the book show how the diocesan system was developed and provide the reader with the background necessary to appreciate fully the subsequent chapters which take up the ecclesiastical changes that occurred throughout the ages and the architectural accomplishments that resulted.

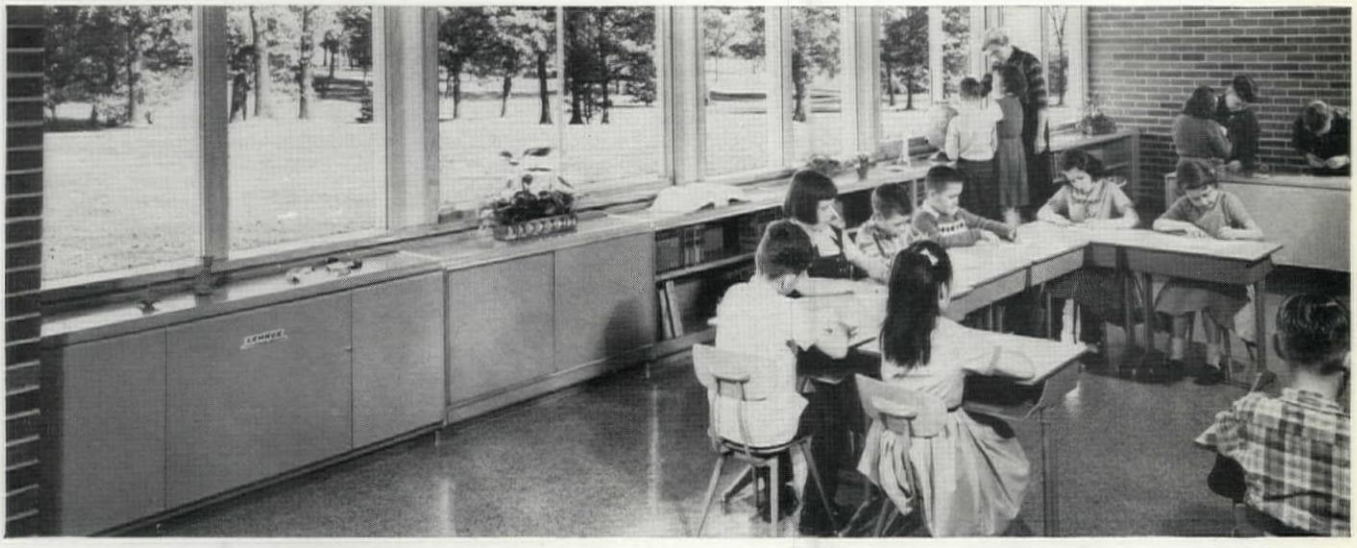
The author shows that the interior of the English cathedral, as one sees it today, is vastly different from that of the Middle Ages. He traces, in the sections devoted to cathedral planning and building, the influences that transformed the early Norman solidity into the great Gothic structures of today. From his concise but well presented descriptions of the interior arrangements of the early cathedrals, their furniture and decoration, the reader will be able to visualize what an English cathedral was like before the ardor of the Reformers and the Puritans and the ruthlessness of the Restoration enthusiasts left their mark in the wholesale destruction of shrines, altars, screens, glass, and many other elements. But from what remains of the ornaments, fittings, and furniture, a quite complete picture can be obtained, as is so well presented here.

From the architect's standpoint, by far the most rewarding are the chapters devoted to the building and rebuilding of the ancient cathedrals and their architecture. In chronological sequence, the author deals first with the Norman style and its emergence into the Transitional, then follows on with Early English Gothic, then Decorated Gothic, and finally the Perpendicular Gothic. So over a period of slightly more than four centuries the course of English cathedral architecture, as one sees it in the great churches of today, can be readily traced and studied.

Although this book is largely concerned with the historical phases, it is interesting to note that the development of great English churches still goes on. All cathedrals recently built or now building are fully recorded in this book, such as the vast Liverpool Cathedral, designed by Giles Gilbert Scott, which, when completed (since King Edward VII laid the foundation in 1904, more than half of it has been finished) will be the greatest achievement in religious architecture in England since the rebuilding of St. Paul's by Wren. Another is Coventry to replace the old one destroyed by incendiary bombs from German planes in 1940. Still on paper, though the plans of Basil Spence have been approved and the site for the foundation has been cleared, the new Coventry Cathedral will break sharply with medieval traditions as regards both plan and design. As

(Continued on page 238)

Fresh air heating and ventilating for classrooms...for as little as $1.03 per square foot!



New Lennox Comfort Curtain system automatically draws in fresh air from outside...warms, cleans, circulates air... provides tons of needed cooling without the cost of refrigeration!

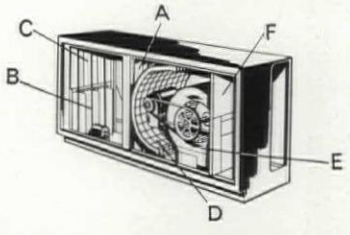
Across the country, the Comfort Curtain system is drastically reducing the cost of school heating and ventilating. Costs per square foot of $1.03 in Indiana, $1.15 in Montana, $1.12 in South Dakota are typical. One job went in for *just 65c per square foot*, in Potosi, Missouri!

These exceptional savings are the result of a new approach to classroom heating and ventilating, provided by the Lennox Comfort Curtain system. This new system applies to schoolrooms the sound, tested principles of warm air heating, thus eliminating the cost of pipes, boilers, towering chimneys and inflexible heating plants.

And most important, the Lennox Comfort Curtain system actually does a *far better* job than costlier systems used previously. It provides a full, even flow of air throughout its entire length along the exposed classroom wall. It is amazingly quiet. And it holds room temperatures to a variance of six-tenths of one degree, circulates air continuously for perfect distribution, introduces a continuous supply of fresh air during the daytime heating cycle, and provides *tons* of needed cooling without the cost of refrigeration.

Extensive surveys show that on almost every day when the temperature is above freezing, the classroom no longer requires heat, shortly after pupils assemble. True, at 33° the average classroom needs about 20,000 Btuh. But 30 pupils will generate about 12,000 Btuh, lighting will add another 8,000 to 10,000 Btuh, and the sun load can account for as much as 15,000 Btuh. Since the amount of heat being generated exceeds the classroom heating requirement, it becomes necessary to *cool* the classroom to maintain a healthful, comfortable temperature. The Lennox Comfort Curtain system does this automatically by introducing cool, fresh outside air.

There is today no possible way to achieve all these advantages at so little cost—except with the Lennox Comfort Curtain. The system is completely flexible, uses child-proof wall- or bookshelf-ducts, installs readily in any size or design of school, comes completely equipped with a "laboratory matched" control system. Send coupon below for free booklet.



The Lennox Air Processing Unit introduces fresh air in adjustable volumes (A); transmits warm air (B) from adjacent or remote heating unit; continuously recirculates indoor air (C); filters air clean (D). Lennox' exclusive floating blower (E) and acoustical lining (F) assure a degree of quietness never before achieved.

LENNOX®

Lennox Industries Inc., Dept. PA-84
1701 E. Euclid Ave., Des Moines 5, Iowa

Gentlemen: Please send me your free booklet on the Comfort Curtain system of classroom heating and ventilating.

NAME_____

ADDRESS_____

_____

CITY_____ ZONE____ STATE_____

New HAUSERMAN Walls

are low in cost, long on beauty

For office, plant, laboratory, hospital, or school... there's a Movable HAUSERMAN Wall to meet your specific need and budget.

In the business office... new HAUSERMAN "HP" Walls, flush and trim, are attractive in smart colors and are readily movable when space division must be changed. Purchase price, including installation by HAUSERMAN erectors, is amazingly low... minimum maintenance and ready reusability further increase the value of having HAUSERMAN "HP" Walls.

For handsome executive reception rooms, HAUSERMAN HORIZON*, finest of all walls, offers widest freedom of design, material and color choice in a full range of decorator tones and panel finishes.

To solve any space-dividing problem, get the complete story on the full line of HAUSERMAN Walls from your local HAUSERMAN representative. He's listed in the Yellow Pages under PARTITIONS. Or write to address shown below for full-color literature.

*Pat. Pending

A complete line to meet every space division need

THE E. F. HAUSERMAN COMPANY • 7466 Grant Ave., Cleveland 5, Ohio
Hauserman of Canada Ltd. • Mallard Rd., Don Mills, Ontario

MOVABLE

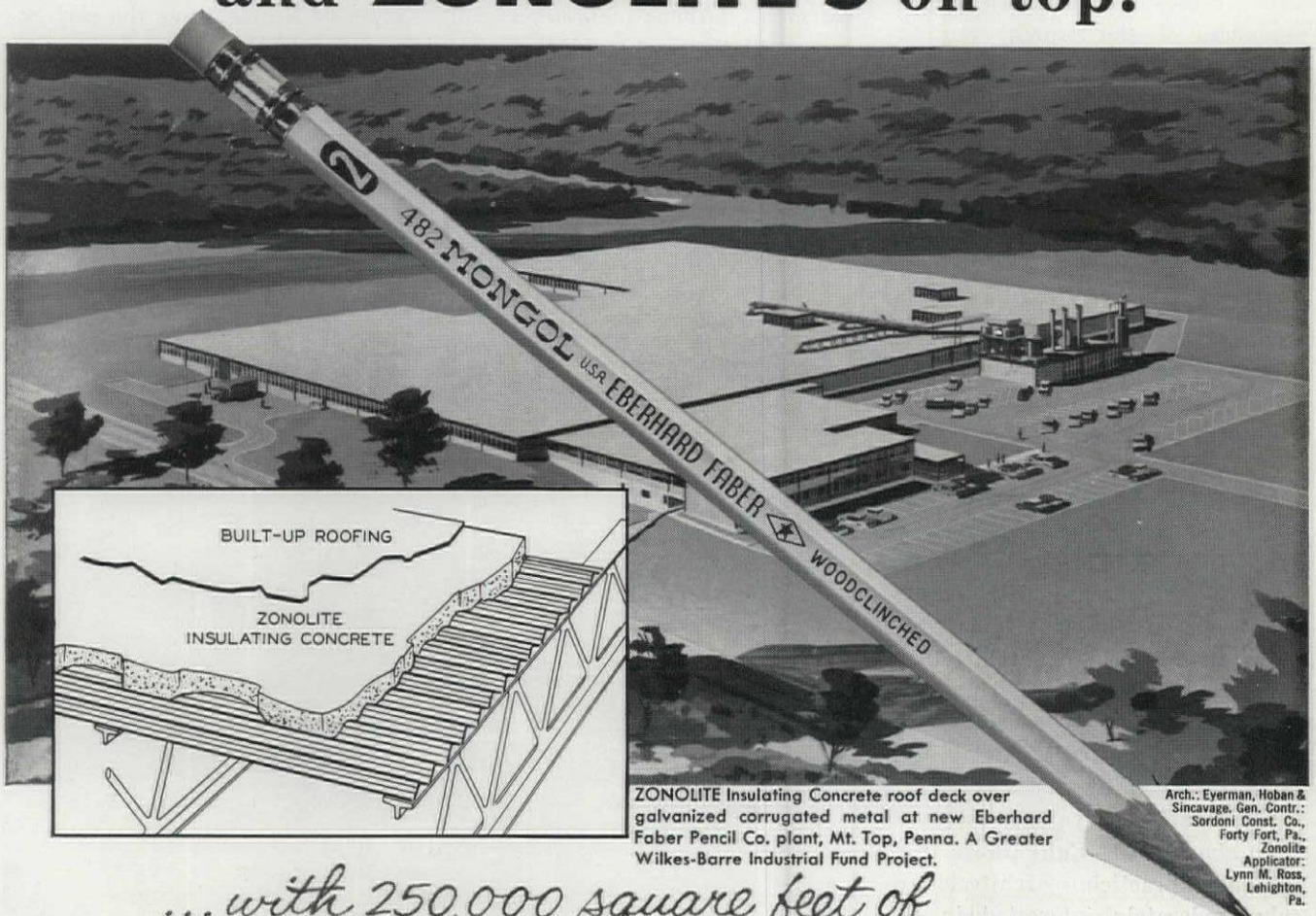
lget-priced HAUSERMAN Industrial Walls any space dividing need . . . salvageable l reusable . . . glass and solid panel combi- ions are available in decorator colors.

Low-cost privacy with HAUSERMAN Divider-Wall, waist-high or head-high, with clear or translucent glass. Space division readily rearranged . . . minimum maintenance cost.

High quality, smart and attractive . . . HAUSERMAN Series CC Walls can be readily relocated for space-division changes. Many colors, finishes and panel combinations.

HAUSERMAN INTERIOR WALLS

EBERHARD FABER sharpens pencil and ZONOLITE'S on top!



ZONOLITE Insulating Concrete roof deck over galvanized corrugated metal at new Eberhard Faber Pencil Co. plant, Mt. Top, Penna. A Greater Wilkes-Barre Industrial Fund Project.

Arch.: Eyerman, Hoban & Sincavage. Gen. Contr.: Sordoni Const. Co., Forty Fort, Pa., Zonolite Applicator: Lynn M. Ross, Lehighton, Pa.

... with 250,000 square feet of **ZONOLITE® CONCRETE** *over corrugated metal deck*

Welding trussed tees to purlins.

Placing corrugated decking on trussed tees.

Hoisting mixed Zonolite concrete to concrete pump on roof deck.

Pumping and screeding Zonolite concrete.

Part of 250,000 sq. ft. roof deck. Pipes used as screed bars.

One more big structure gets a permanent monolithic roof that weighs less... is strong, insulating and fire-safe...was speedily built...and cost less. Such Zonolite roofs suit any design; the base may be metal, various form boards, metal lath, paper-backed wire mesh, or structural concrete.

You are sure of expert installation by one of a national network of certified Zonolite roof deck applicators. Zonolite not only supplies materials but provides on-the-job supervising concrete specialists. Mail coupon for booklet.

Handy Reference Booklet FREE

"*Systems of Roof and Floor Construction*" includes sectional drawings, design and load data, and thermal properties—a constant reference on these increasingly popular roof decks. No obligation.

Zonolite Company, Dept. PA-98
135 S. La Salle St., Chicago 3, Illinois

Send me booklet CA-19.

*Name*_____

*Firm*_____

*Address*_____

*City*_____ *Zone*___ *State*_____

☐ Architect ☐ Builder Other_____

(Continued from page 232)

Cook explains, "the plan was devised to meet the needs of Christian observances of the present century, and the style is conceived in terms of contemporary architecture, the character of which is largely dictated by modern materials and methods of construction."

FRANK A. WRENSCH
New York, N. Y.

research evidence

Bramante. *Otto H. Förster. Verlag Anton Schroll & Co., Wien-München, West Germany, 1956. Distributed by Wittenborn & Co., 1018 Madison Ave., New York, N. Y. 302 pp., illus., German text. $20*

Prof. Otto H. Förster's work on Bramante represents without any doubt one of the most important books in the field of architectural history to be published during this generation. It is revolutionary, insofar as it destroys fundamental beliefs in which the last and preceding generations have been educated since about 1580. Fully aware that, generally, practicing architects are only moderately interested in the history of architecture, this reviewer thinks this new publication deserves being reviewed here. It will shatter basic ideas about St. Peter's as the most typical great architecture of the Renaissance and especially as the most splendid specimen of the revival of architectural forms of antiquity. Although the text is written in German, the study of the exhaustive illustrative material, photos, and drawings, carefully selected and in part newly discovered, will be sufficient to explain the gist of the book for the American reader. The sequence of the successive stages of the project by Bramante, Giuliano da Sangallo, Fra Giocondo, Raphael, and Antonio da Sangallo, until the time when Michelangelo took over (1547), 33 years after Bramante's death, prove the author's thesis. The figure of Bramante as an architect becomes still greater now than in the well known earlier concepts of him as the "classical" architect, the father of all subsequent classicist developments.

This is not the place to follow step by step the development of Förster's research. Although Förster's study deals with the totality of Bramante's life and work, it may suffice to bring out here only the essence of this study as far as it concerns *St. Peter's.* Bramante's project for St. Peter's was *not* conceived as a central-domed building; he planned it as a Latin cross with a long nave, exactly as Raphael did some years later when he had to take over. The myth of Bramante as the reviver of classical architecture and as the originator of the Greek cross as the scheme of High Renaissance architecture was based especially on

(Continued on page 242)

Naess and Murphy, *Architects - Engineers*
Maria Bergson Associates, *Designers*

MODERN DOOR CONTROL BY *LCN* Closers Concealed in Head Frame

OFFICES OF LEO BURNETT COMPANY, INC., PRUDENTIAL PLAZA, CHICAGO

LCN CLOSERS, INC., PRINCETON, ILLINOIS

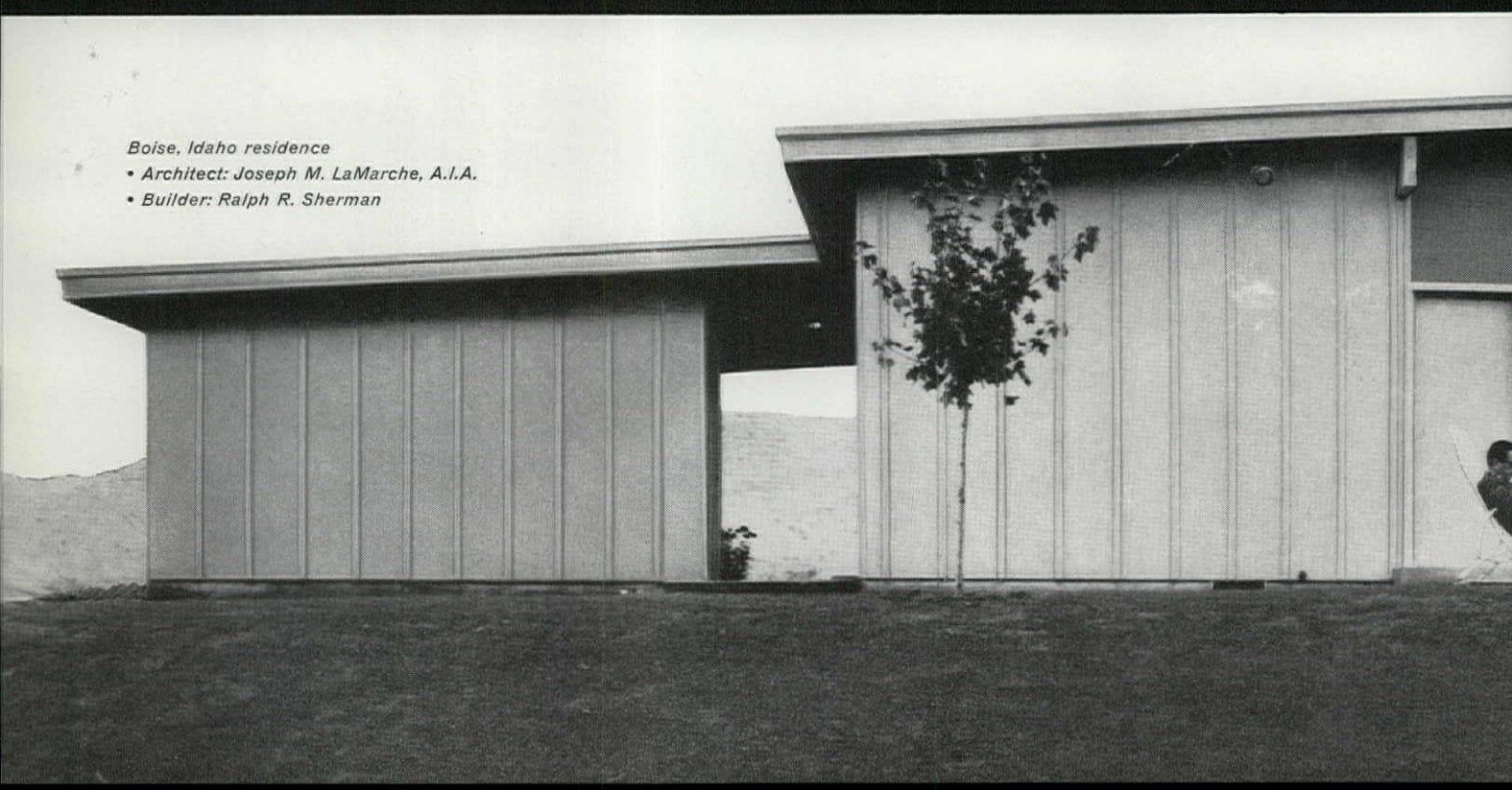
Construction Details on Opposite Page

Carpenters take special pride in the hairline joints and perfect alignment they get with Insulite Primed Siding. Sawing is fast and easy. Every piece is flat, square, clean edged. Here, men are working with 12′ horizontal lengths and 4′ x 8′ vertical grooved panels.

No painting had been done, when photo at left was taken. Excellent, uniform coverage of the factory-applied prime coat is evident; and job can safely wait through rainy days, if necessary, for finish painting. Notice pleasing combination of horizontal and vertical grooved Primed Siding.

Home shown below is electrically heated, tri-level design featured editorially in LIVING For Young Homemakers. Here, Architect Joseph M. LaMarche, A.I.A., Boise, Idaho has used plain 4′ x 8′ panels of Insulite Primed Siding, with battens.

Boise, Idaho residence
- *Architect: Joseph M. LaMarche, A.I.A.*
- *Builder: Ralph R. Sherman*



In first 12 months of production...15,000 homes built with Insulite Primed Siding!

In April, 1957, Insulite made the first announcement of its new Primed Siding, calling the product "revolutionary."

> **Today we can report that by the end of March, 1958, approximately 15,000 homes were built with Insulite Primed Siding. Homes in every section of America; in every broad class of design; and at prices ranging from $11,000 to $80,000.**

Here, at last, is an exterior finish material that looks like wood, and works like wood, but which is man made. In Insulite Primed Siding, density and weight and stability are made to order. Width, length and thickness of all pieces are determined by your wants and needs—not by the shape of a log. Special fabrication of grooves and edges is skillfully engineered, and perfectly controlled. Factory prime coating is handled under ideal conditions. And this beautiful, uniform product is delivered to the job in compact, easy-to-handle packages.

Is this the kind of new-day building material architects and builders have been looking for? The 15,000 Primed Siding homes now built give the answer emphatically: *yes*.

For detailed information on Primed Siding, write us—Insulite, Minneapolis 2, Minnesota.

build better, save labor, with

NEW INSULITE® Primed Siding

***Insulite** Division, Minnesota and Ontario Paper Company, Minneapolis 2, Minnesota*

reviews

(Continued from page 238)

Serlio's book (1537), and on his woodcut of the alleged, but actually altered, plan of Bramante, and on Vasari's writings. It was the monumental work of Heinrich von Geymüller (1880) on which all modern research has been based.

Bramante's decisive feat was not the realization of a second Pantheon in the architectural language of his time. It was rather the discovery of the static possibilities of the four colossal pillars which were to later on carry Michelangelo's cupola over the crossing. But even Michelangelo developed his centralized plan believing (erroneously) that he had followed Bramante's plan. The individual phases of Bramante's projects, the fluctuations of his ideas, his continuous struggles with Pope Julius II and with Giuliano da Sangallo, cannot be referred to here, nor can the fate of the earlier Rosselino apsis, the problem of the lateral smaller cupolas, the internal semi-circular rows of smaller columns, etc. At any rate, Bramante allowed himself a central-domed architecture only as part of a more comprehensive architectural organization or, as the author formulates, as "a blossom growing from a bush" (*"eine Blüte, die an einem Strauch wachsen muss"*). And he finally succeeded in winning the Pope over to his ideas.

Whether one should go so far as to say (as does the jacket synopsis) that Bramante's concept was connected more closely with the creations of the medieval builders of Northern cathedrals than with the ideals of the later High Renaissance and Classicist architects who always referred to him, seems doubtful to this reviewer. However, this slightly exaggerated statement seems understandable after the author has so successfully proved that Bramante's allegedly basic idea was actually a myth.

PAUL ZUCKER
Architectural Historian, Professor
New York, N. .Y

(Continued on page 246)

HAVANA RIVIERA...

grace and permanency

through extensive use of Penmetal products

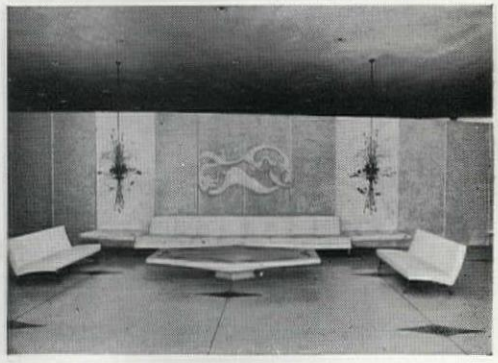
One of the most imposing buildings on Havana's famed Malecon, the new Havana Riviera Hotel retains an air of elegance yet symbolizes a new and growing city.

This unusual "Y" shaped structure has excellence of construction in keeping with its luxury. Interior partitions are built of Penmetal studs, track, base and Studlock clips for attachment of gypsum lath. Ceilings, which incorporate many sculptured forms, used metal lath . . . the strongest, safest plaster base possible.

To protect against corrosion, galvanized metal lath and cornerite were chosen. What's more, all corner bead is made of zinc of a special Penmetal analysis.

Havana Riviera is typical of many fine buildings, the world over, in specifying "Penmetal throughout." Why not do the same? For further details, send for a copy of *new* 28-page catalog 624-L.

Photos of interior illustrate how ceilings of Penmetal lath readily take any attractive form.



PENN METAL COMPANY, INC.

General Sales Office: **40 Central Street, Boston 9, Mass.**

Plant: Parkersburg, W. Va.

District Sales Offices: Boston, New York, Philadelphia, Pittsburgh, Chicago, Detroit, St. Louis, Dallas, Little Rock, Seattle, San Francisco, Los Angeles, Parkersburg

METAL MARK Penmetal 1869 OF QUALITY

a name to remember

HAVANA RIVIERA:

Architects, Polevitsky, Johnson & Associates, Miami, Florida

General Contractors, Feldman Building Corporation, Miami Beach, Florida

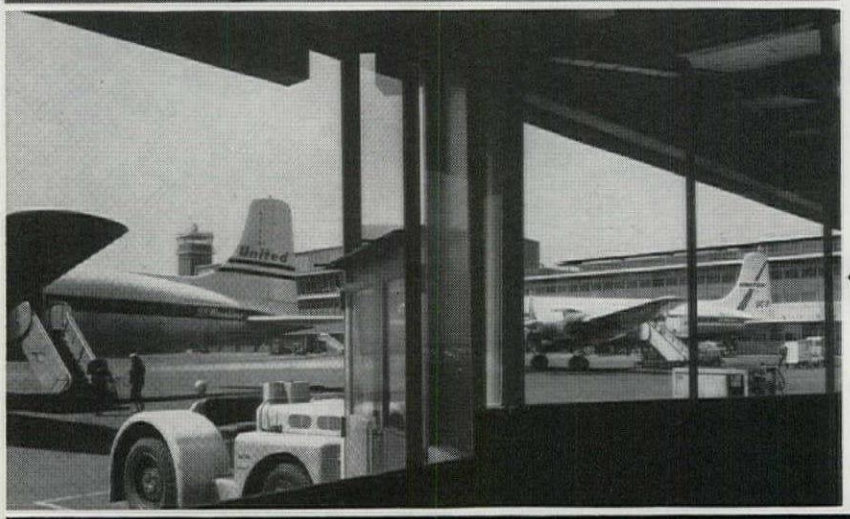
PM-176

There is no substitute for safety, and Polished Misco (wired) affords proven protection for youngsters in the new Walt Disney Elementary School, at Tullytown, Pennsylvania.

Architect: John Carver,
2112 Spruce St., Philadelphia, Pennsylvania

Heat absorption provided by 38,750 sq. of Mississippi Coolite glass make patients more comfortable in the John J. Kane, Allegheny County Institution District (Hospital for the Indigent Sick).

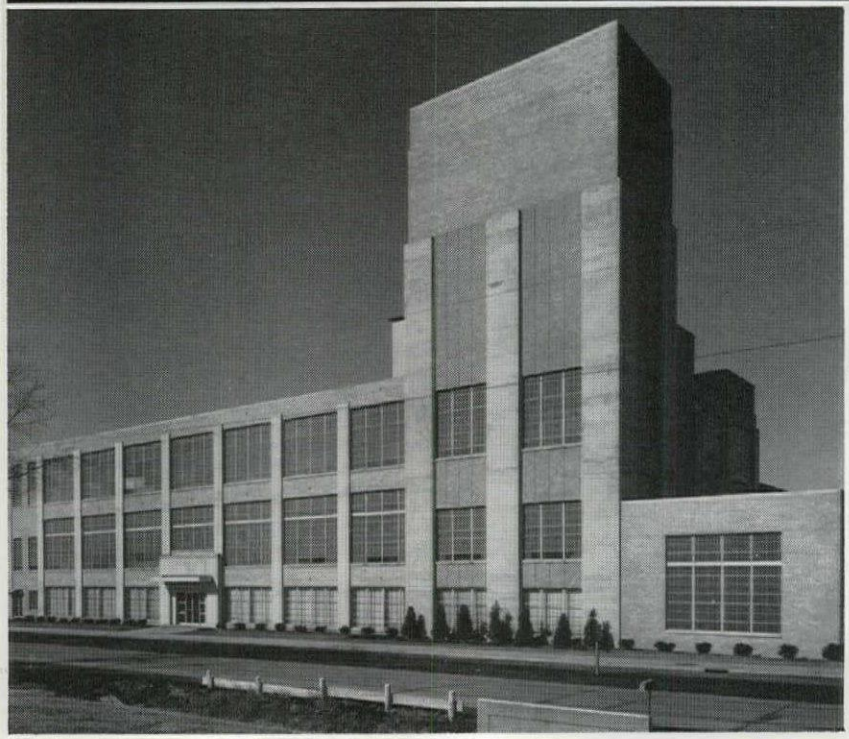
Associate Architects: Button & McLean—Mitchell & Ritchey, Pittsburgh, Pennsylvania
General Contractor: Sherry Richards Company, Chicago, Illinois
Glazing: United Plate Glass Company, Pittsburgh, Pennsylvania



At the Philadelphia International Airport, modern vistas are created by 10,000 sq. ft. of 60" wide lights of Polished Misco (wired glass).

Architect: Carrol, Grisdale and Van Allen, Philadelphia, Pennsylvania
Glazing: Pittsburgh Plate Glass Company

ROLLED GLASS . . . .



New factory of American Chicle Company, Rockford, Ill. where 14,000 sq. ft. of Coolite Wire glass, Glare Reduced, combines heat absorption with protection.

Architect: William Higginson & Sons,
New York, N. Y.
General Contractor: Sjostrom & Sons, Inc.,
Rockford, Illinois
Glazing: National Mirror Works, Rockford, Illinois

SEE OUR CATALOG IN SWEET'S OR WRITE FOR COPY

MISSISSIPPI GLASS CO.

WORLD'S LARGEST

today's best buy in *Daylighting*

The versatility of Rolled Glass provides architects with a practical solution to a variety of daylighting problems. Glass for daylight control, glass that absorbs heat, glass that decorates and glass that protects—they're all available in translucent light diffusing patterns, plain or wired (the latter for obscurity or clear vision) to meet every requirement. For utility, beauty, and economy unmatched by any other glazing medium, specify Mississippi Glass. Write today for free catalog. Address Dept. 8.

MISSISSIPPI GLASS COMPANY

NEW YORK • CHICAGO • FULLERTON, CALIFORNIA

88 Angelica St. • St. Louis 7, Mo.

MANUFACTURER OF ROLLED, FIGURED AND WIRED GLASS

reviews

Continued from page 242)

a "coherent whole"

Architecture You and Me. *S. Giedion. Harvard University Press, Cambridge, Mass., 1958. 221 pp., illus. $5*

The title of this book is misleading. In scope, Giedion goes far beyond the field of architecture and touches on esthetics in general and such arts as painting and sculpture in particular. One may also question the "You" in the title. Giedion stands in a highly personalized relationship to his subject matter and his concern is not so much with how *you* actually feel but with how *he* (Giedion) thinks *you* ought to feel.

The book itself is almost as misleading as its title. It is not really a book. Giedion has joined together a series of articles, other writings, statements, and interviews, some previously unpublished, into this larger work. Some of the items were written in the 1930's; others, within the last year or two. To supply continuity, linkages entitled "Marginalia" have been added. Superimposed on this is a loose organization consisting of six topics which range from "On Monumentality" to "On the Demand for Imagination." The result is a book which is uneven both as to style and as to the ideas presented. It is a peculiar mixture of the new and challenging and the dated. Some of Giedion's ideas, such as his views on the need for a new monumentality in architecture, are no longer controversial. They have become accepted. Others, and this includes some of his early views, have not worn well. To further involve matters, Giedion has incorporated a number of statements, letters, and writings by others—such as Fernand Leger.

Despite its handicaps, the book is well worth reading. Giedion's dragons at which he so busily tilts may appear far less formidable to others, but the important thing is that he

(Continued on page 250)

Office area in Connecticut General Life Insurance Building. Movable partitions, dividers, walls, doors and planter boxes are all surfaced with Consoweld laminated plastic. (Upper right) Luncheon tables in employees' lounge, also Consoweld surfaced.

7 Uses for Consoweld in new Connecticut General Offices

Movable Partitions • Dividers • Walls • Doors • Planters • Luncheon Tables • Work Surfaces

By design, a new concept in modern office efficiency . . . by specification, a showplace of proved modern building materials and techniques—Connecticut General's new home office in suburban Hartford stands out as a product of creative vision and planning.

Consoweld was one of the advanced products specified for this outstanding new building. Hundreds of thousands of square feet were used on movable partitions, dividers, walls, doors, planters and luncheon tables.

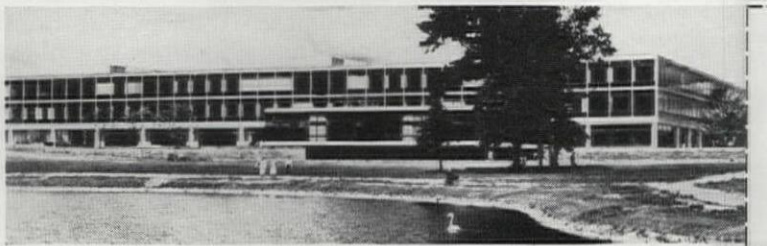
Colorful . . . durable . . . functional, Consoweld laminated plastic surfacing is a product *designed* for new ideas—to bring out the best in *your* ideas. A full line of research-tested patterns and solid decorator colors provides an unlimited variety of eye-pleasing combinations. Consoweld is available in stock panels up to 12 feet long and up to 60 inches wide, for use in a wide range of interior applications, horizontal and vertical. Postforming material is also available for use on contoured surfaces, such as countertops, window stools, and other specialized installations.

Send coupon for facts about Consoweld. Free Data File folder serves as an idea starter.

Ⓢ 14a / Co

CONSOWELD® LAMINATED PLASTIC

Connecticut General Life Insurance Company Building, Hartford, Connecticut



ARCHITECTS: *Skidmore, Owings & Merrill*
INTERIORS: *Florence Knoll, Knoll Associates*
CONTRACTOR: *Turner Construction Company*

CONSOWELD CORPORATION
Wisconsin Rapids, Wis.—Dept. PA-98—

Please send me, free, Data File Folder and name of nearest Consoweld distributor.

Name_____

Firm_____

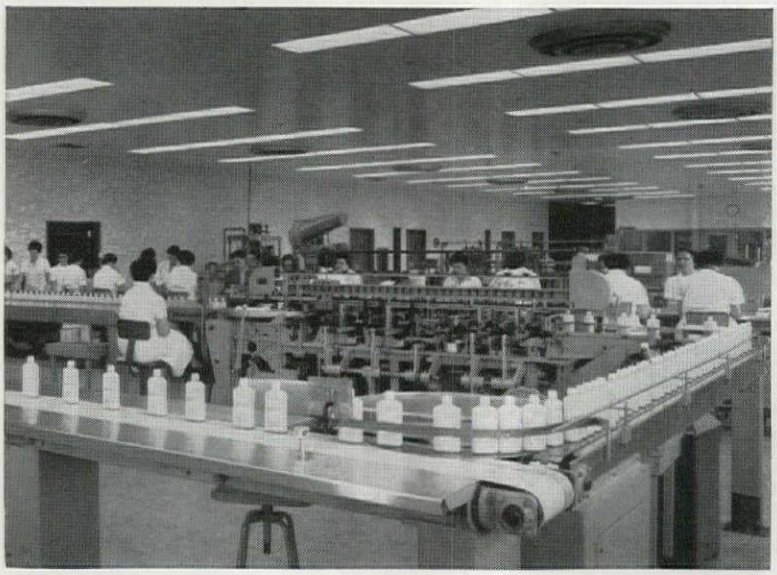
Address_____

City_____ Zone____ State_____

Please check: ☐ Architect ☐ Builder ☐ Other 69

A. I. A. FILE NO. 35-C-12 & 23-L

Johnson Controls Provide Ideal Working Climate in This Award-Winning Plant



Listerine, Richard Hudnut, Du Barry and other famous name products are made here. Johnson Controls keep this air conditioned packaging area as comfortable as an executive office.

One of the outstanding assets of the efficient new Lambert-Hudnut plant in Lititz, Pennsylvania, is its physical environment. Its striking design, scenic setting, spacious, bright plant and office areas and excellent employee facilities rate with the best anywhere! *Factory* magazine named it one of the top 10 plants in 1957.

A key feature of this modern environment is a specially planned Johnson Pneumatic Temperature Control System that operates the plant's high velocity, dual duct air conditioning systems, the high temperature (350 F) hot water heating system and the ventilating systems. Flexibly engineered so that each room or work area is individually controlled, the Johnson System assures an ideal working climate for Lambert-Hudnut employees.

Lambert-Hudnut Manufacturing Laboratories, Lititz, Pa., subsidiary of Warner-Lambert Pharmaceutical Co. A. M. Kinney, Inc., architect and engineer, Cincinnati; R. E. Lamb, general contractor, Philadelphia; Howard P. Foley Co., mechanical contractor, Pittsburgh.

Such an environment makes important contributions to working efficiency, helps attract and hold good employees and cut absenteeism and costly turnover. (In many plants, too, products must be handled and processed under closely controlled temperature and humidity conditions.)

A nearby Johnson engineer will welcome the opportunity to demonstrate how Johnson Pneumatic Controls can help provide your clients' buildings with similar benefits. The specialist Johnson organization has installed the pneumatic temperature control systems in a majority of the nation's leading buildings, of all types and sizes.

Johnson Service Company, Milwaukee 1, Wisc. 105 Direct Branch Offices.

GET THE "PLUS" VALUES OF PNEUMATIC CONTROLS BY JOHNSON

- **Widest Application.** Johnson Controls are applied to all types and makes of air conditioning, heating and ventilating equipment, and can meet any comfort or process requirement. Each system is engineered to meet the exact needs of the individual plant.
- **Greater Simplicity.** Pneumatic control involves far fewer and much simpler components than anything else you can use. There are fewer components to check, fewer parts subject to failure.
- **Choice of Features.** Johnson makes the most complete line of pneumatic temperature, humidity and pressure control equipment to match your needs.
- **Reliable Performance.** Johnson Pneumatic Controls are unaffected by short circuits, electrical overloads, voltage variations and humidity. You get continuous, accurate control.
- **Complete Safety** . . . even in the presence of explosive gases, solvents, dusts and other hazardous materials.
- **Dependable Service** . . . Johnson maintains the oldest and largest service organization in the industry. Full time, factory trained service men are on duty in 105 direct branch offices and over 200 other cities.

JOHNSON CONTROL

PNEUMATIC SYSTEMS

DESIGN • MANUFACTURE • INSTALLATION • SINCE 1885

TEMPERATURE CONTROL SYSTEMS FOR SCHOOLS, OFFICES, FACTORIES, STORES, HOSPITALS, HOTELS, PUBLIC BUILDINGS

reviews

(Continued from page 246)

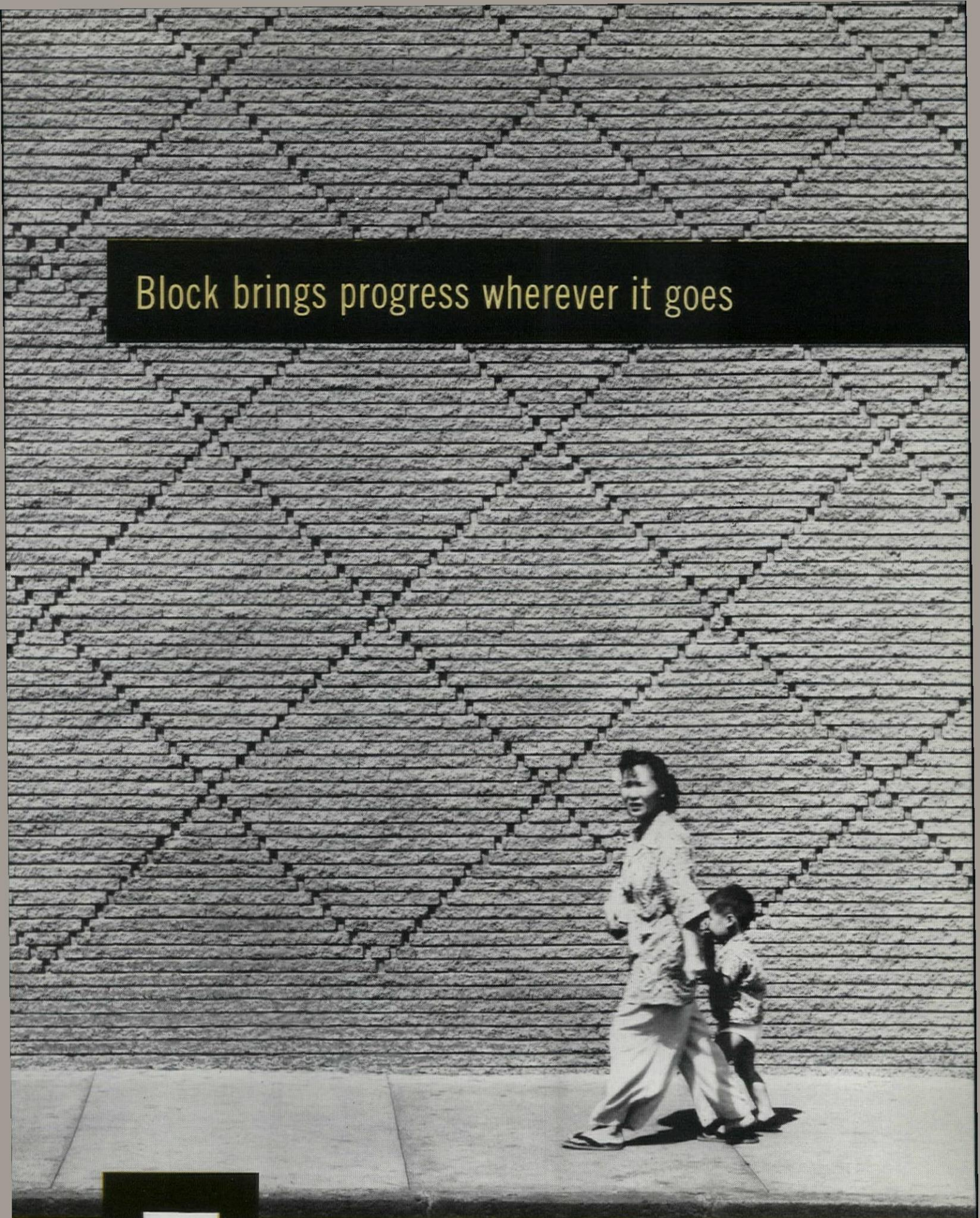
does ride at them. One need not agree with everything he says or advocates. One may feel that he often slights the very practical problems presented to architects by such items as the "ruling taste," or that he forgets that architects are not free agents but do have clients to consider. Giedion however does one thing—he makes his reader think—and this is the necessary first step to finding a solution.

The book has one thread, which runs through all of Giedion's thinking. He invariably opposes the compartmentalization and specialization which characterize much of today's attitude toward architecture. In 1947, CIAM (at Giedion's suggestion) sent a letter to UNESCO, "On the Education of the Architect," which contains a summation of the author's views. The letter states in part: "The attempt is being made to turn the architect into a specialist in an ever-increasing number of continuously expanding disciplines: into a dilettante mathematician, engineer, statistician, art historian, sociologist, etc. . . ." To counter this trend, it is pointed out that, ". . . the most vital task of this period is to learn again how to *co-ordinate human activities* for the creation of a coherent whole . . . "

The idea of the "coherent whole" is carried by Giedion beyond the confines of architecture and the role of the architect, to embrace man and his environment into one, into the concept of the community and of community life. It is here that Giedion touches upon one of the very real and pressing problems of the world today, namely the interrelationship of man and the city. This problem, if it is not solved, may well spell the end of culture as we know it. Today's city gives its inhabitants no sense of belonging. It is impersonal and it dehumanizes its citizens, who have no contact with their neighbors. The city is becoming a

(Continued on page 252)

Block brings progress wherever it goes



Split block used in the Liberty Bank Building, Honolulu, Hawaii. Vladimir Ossipoff, Architect.
Ask your local NCMA member for a copy of the new booklet "Split Block Architecture."

National Concrete Masonry Association · 38 South Dearborn Street · Chicago

reviews

(Continued from page 250)

hive but it has no unity. The city ought to be the highest expression of our culture, a "coherent whole." In his insistence on the unity and interdependence of art, architecture, and esthetics, Giedion sounds a note that must not be forgotten. If nothing else, one should leave this book with a memory of the following words: "if we look at the city as a place in which private life and community life find a meeting place, then the mark of a true city is the balance between *you* and *me*. It is this *you*-and-*me* relationship that we must build again . . . to enable this to occur, special receptacles are required. . . . What is needed to bring these into being is imagination on the side of the planners, and a sensitive understanding on the part of the clients . . ."

DR. FREDERICK HERMAN
Dept. of Social Studies
College of William & Mary
Norfolk, Va.

manual completed

American Civil Engineering Practice. *Volume III. Robert W. Abbett. John Wiley & Sons, Inc., 440 Fourth Ave., New York, N. Y., 1957. Illus. $15 each, Volume I and II; $25, Volume III*

Architects and engineers, especially those engaged in structural design, will welcome the appearance of Volume III of *American Engineering Practice*. Volume I and II were reviewed in JUNE, 1957 P/A. The three volumes, comprising 34 sections, serve the profession in the application of scientific thought and rational development to the solution of engineering problems. For one who visualizes a broad practice and who takes pride in facing varied challenges, the three volumes represent the complete manual of practice. Sixty or more distinguished contributors assure a breadth of approach to the subjects treated.

Volume I included the subjects of community planning, highways, airports, railroads, soil mechanics, site planning, and tunnels. Volume II dealt with hydraulics, and harbor and sanitary engineering.

Beginning with the theory of structures by Dohrenwend and Trathen, Volume III presents the theory and application of design to structure of wood, steel, masonry, and reinforced concrete. Each of the sections is written by a specialist. All phases of design and practice have been brought up to date. The section on prestressed concrete will be of special interest to many. It includes methods of pretensioning and post-tensioning, properties of special steels, a comparison of American and European practice, behavior, the design of statically indeterminate members, stress analysis for bending, end block requirements, examples of design and construction and continuity in buildings, prestressed domes, tanks, and concrete pipe.

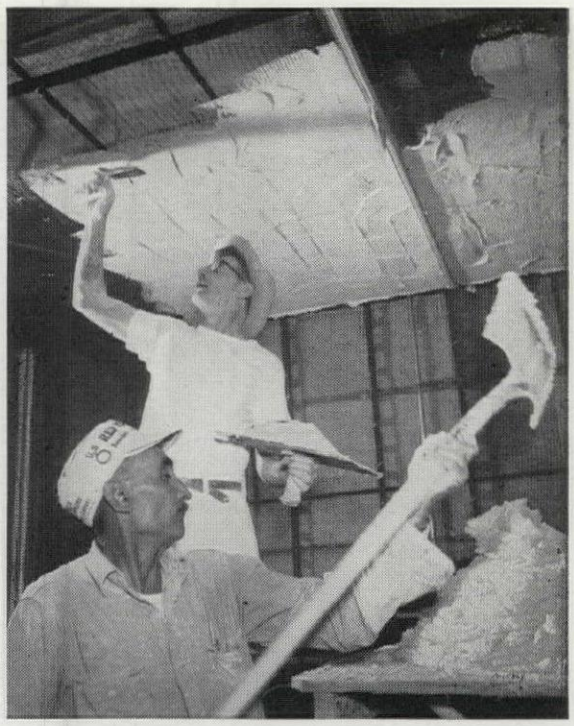
Equally complete treatment will be found in other sections. In the subject of "Buildings" by Harold D. Hauf in collaboration with others, much emphasis is placed upon modern light-weight construction like steel decks, metal spandrels, and thin shells. This is done without neglecting the more traditional methods of framing. Wind bracing is given generous attention; this is a subject on which information has been hard to find.

The increased use of wood, even as exposed construction, has prompted the inclusion of the latest methods of building including the use of glue-laminated members, structural plywood, the design of ring-connectors, and the use of preservative treatments. This section on timber structures is by Howard J. Hansen.

Reinforced concrete is covered by Hardy Cross and Paul J. Brennan. It includes the best thinking on the subject of design analysis of continuous frames.

(Continued on page 260)

THE AMERICAN HARDWARE MUTUAL INSURANCE BUILDING in Minneapolis consists of two main elements: (1) a four-story office unit and penthouse; (2) a wing combining auditorium, employee dining facilities, and garage. Republic ENDURO® Stainless Steel is used for elevator doors, moldings, and fluted wall panels in lobby area. The softly finished metal enhances the beauty of the Monte Verde marble floor and Italian Cippolino marble walls. Yet, does not compete for attention.



TRUSCON METAL LATH and plaster provide flexibility in ceilings that are sometimes level, sometimes domed, sometimes formed into unusual contours. And you get additional structural advantages, such as rigidity, resistance to cracking and impact, sanitation, relative lightness of weight, and long-term economy. Write today.

TRUSCON VISION-VENT® WINDOW WALLS are an exciting type of fast, economical wall construction. Vision-Vent goes up quickly and efficiently! And offers this important plus—it's a wall with the window already in place, completely contained within the depth of window-framing members. In planning, designing, building—Truscon Vision-Vent Window Walls offer many advantages in all types of single story and multi-story applications. Truscon window engineers will be glad to work with you in developing design details and costs. Call your Truscon representative, or write today.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. PA-5920-A
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Please send additional information:
- ☐ Republic ELECTRUNITE E.M.T.
- ☐ ENDURO Stainless Steel for architectural applications
- ☐ Truscon Metal Lath
- ☐ Truscon Vision-Vent Window Walls

Name_____ Title_____
Firm_____
Address_____
City_____ Zone____ State_____

reviews

(Continued from page 260)

therefore, become the "work unit" around which the factory is designed. Other plants and other operations might include two or more individuals in a single work unit, probably with more area involved. The important idea is that, if we can standardize on a work unit and express it in terms of square feet, the design of any factory or industrial plant becomes much more simple.

The module concept is one of the 10 presentations under the major heading of "Sites and Layout." Under "Construction" appear 16 problems and their handling, not the least interesting being the suggestions for planning a radioactivity laboratory. Originating in the Brookhaven National Laboratory, this discussion points out that not all laboratories are dangerous in the same way, and that their design is affected by their purpose, whether for research, development, or schooling. Even the construction of a lead "sandwich" door for X-ray shielding is described in detail.

Less foreign to most of us will be the treatment for noise, since most of us have designed at one time or another to keep noise out of a building—or to keep it in. However, there is much here that is new, and the choice of sound absorbers comes in for detailed treatment. We can learn a great deal about the relative functions of the cone, box-kite, and compartmented areas in absorbing noise close to its source.

Among the 23 subjects examined under the major heading of "Housekeeping and Safety" is the problem of providing adequate medical facilities. Small industries may limit their on-the-job assistance to a simple first aid station and an emergency telephone number; larger ones will provide a miniature hospital with examination room, sterilizer, beds, and a doctor or nurse, or both, continuously available. The designing architect or engineer can find much helpful data in this section, a particularly

valuable service since few clients are aware of the difference between simple first aid and a really useful medical facility.

Other major categories in this book cover "Materials Handling" (ever run into a zipper conveyor?); "Maintenance"; "Paints and Protective Coatings"; "Mechanical Power and Piping Systems"; "Electric Power"; "Lighting" (a good discussion on emergency arrangements); "Utilities"; "Heating, Ventilating, and Air Conditioning"; "Instrumentation and Quality Control"; "Shopwork"; and, finally, an index.

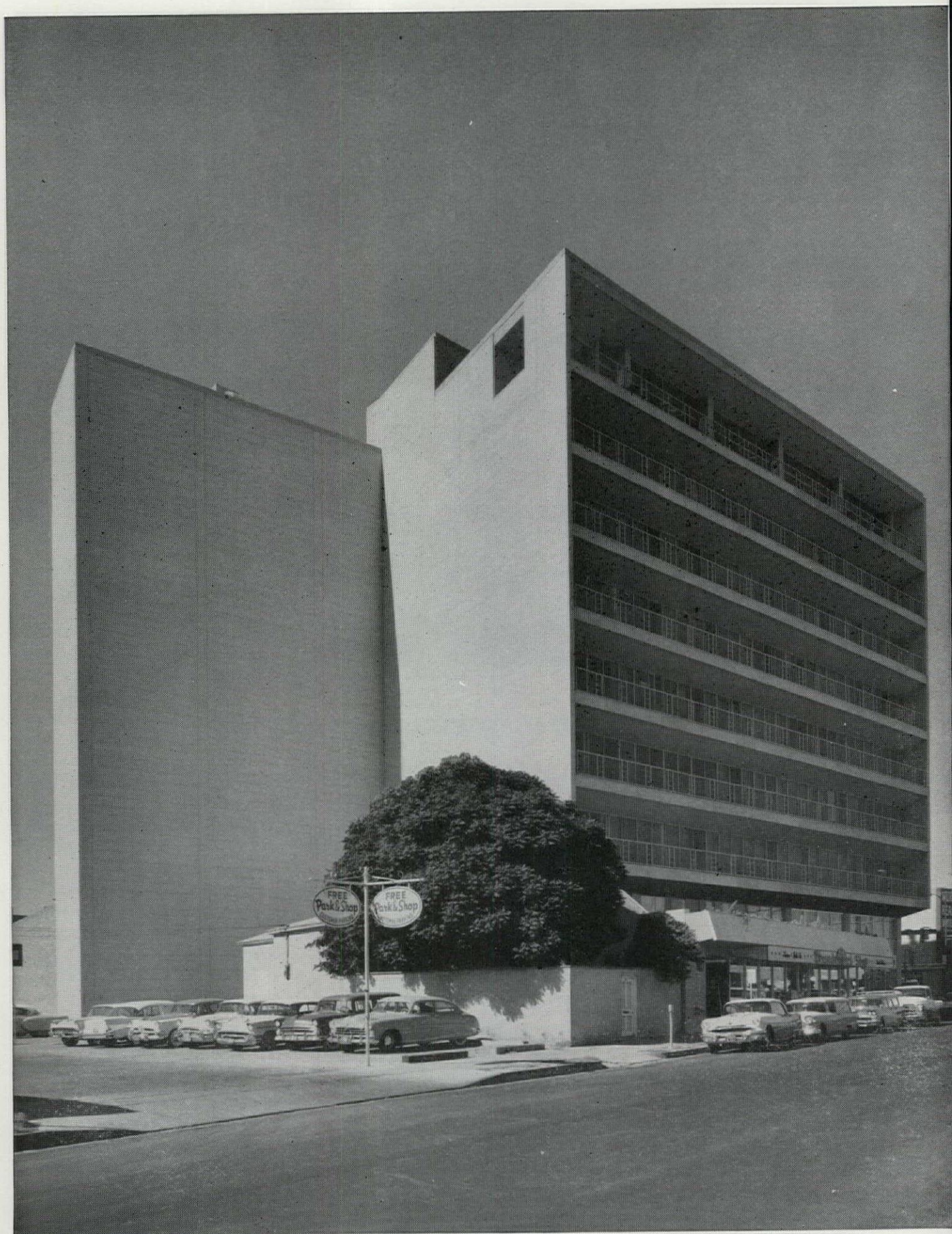
Under each of these major headings will be met problem subjects of direct interest to the architect and engineer. For example, maintenance is strongly affected by the plant design. How far must maintenance personnel travel to a broom-and-bucket closet? How much space shall we allow to a machine for its later maintenance, and on what side? There are 25 facets of maintenance treated in this section, all important.

Color dynamics, long of interest to architects and industrial designers, are evaluated in the major section on paints and protective coatings. So are plastics, and the interior finishes of tanks.

In-plant feeding is one of the utilities problems, and Western Electric reports on their "supermarket" system at Winston-Salem, North Carolina. By using this scheme instead of the straight-line technique, a time saving of nearly 4 minutes per cafeteria customer is realized between picking up the tray and paying the cashier. Floor layout plans are provided to show how it is done, from the designer's side of the railing.

At first glance, the "Shopwork" section seems to have small interest to architects, but this wrong impression is quickly corrected when we examine the 24 detailed discussions. What do we know about adhesives, for instance? Do we ever write up

(Continued on page 268)



North and east walls of the 9-story Arizona Land Title Building are insulated with Styrofoam. Glass paneling with overhanging balconies to protect against bright sun comprise the south wall. Building contractor: The James Stewart Company, Phoenix, Arizona, Owner: Lawrence D. Mayer, Tucson.

Tucson architect uses Styrofoam® to cut wall costs 30%

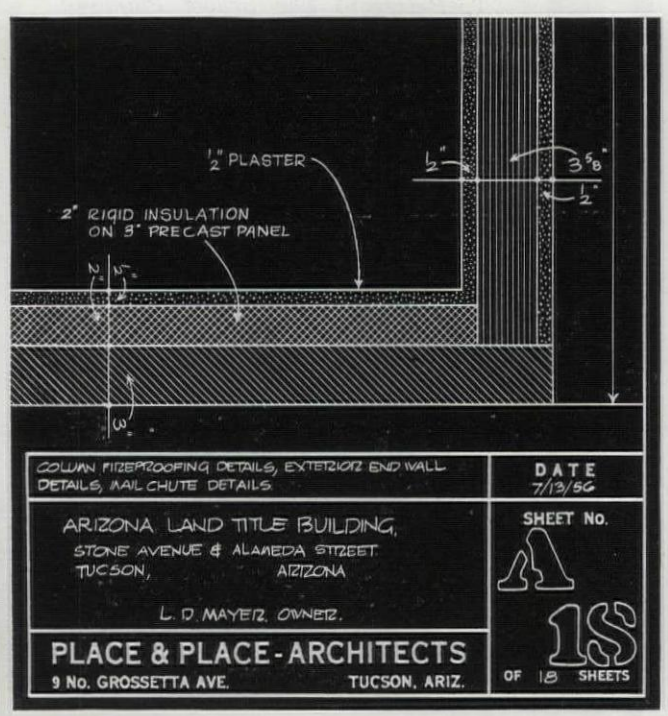
"Summer temperatures here in Tucson average between 90 and 105 degrees," says Lew Place of Place and Place Architects. "That's why insulation plays such an important role in the Arizona Land Title Building. By using Styrofoam*, we found that central air conditioning units of 300-ton rating have ample capacity to keep the interior comfortable. Without such effective insulation, an air conditioning system of much greater capacity would be required.

"We used Styrofoam as a plaster base and eliminated the need for supporting metal lath and furring. As a result, labor and material costs were 30% less than if we had used conventional methods.

"Cutting Styrofoam to fit in small spaces or around structural steel framing was a simple matter, too, as it can be easily cut with an ordinary pocketknife. Interior finishing was greatly simplified because the surface of Styrofoam forms an excellent base for plaster."

For more information about Styrofoam and a folder of construction details, write for A.I.A. file no. 37-B. THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Department 1925F.

*Dow's registered trademark for its expanded polystyrene



2" Styrofoam bonded to a 3" concrete panel and overlaid with ½" of plaster was specified in this construction detail from the Arizona Land Title Building plans.

Easy installation with Portland cement mortar makes Styrofoam ideal for wall insulation. It has permanent insulating efficiency, is lightweight, clean and rigid.

YOU CAN DEPEND ON DOW

reviews

(Continued from page 265)

specifications calling for the use of adhesives in applying glass-fiber insulation to walls and ceilings? This is worth some thought. Another possibility: how sound are we in our specifications for silver brazing? Do we recognize the six steps for a good job?

The fact is, this book is filled with meat. There is nothing theoretical here; it is the record of somebody's success in solving the same problems that come to us from time to time.

It is recommended for the reference shelf of every architect and engineer who is practicing his profession.

ROBERT H. EMERICK
Consulting Mechanical Engineer
North Charleston, S. C.

co-operative effort

Creative Planning of Parks and Play Areas for Learning, Living, and Leisure. *Edited by Raymond C. Schneider, R. Dudley Boyce, and Ted T. Peterson. The School Planning Laboratory, School of Education, Stanford University, Stanford, Calif., 1957. 68 pp., illus. $2.50 (paperbound)*

Community and school co-operation in the use of recreation facilities is the theme of this report from The School Planning Laboratory's 1957 summer institute. A series of articles written by park planners and directors, landscape architects, educators, and businessmen, are grouped under three parts dealing successively with co-operative planning, creative designing, and balancing quality and economy in selection of materials.

Part I stresses the importance of having a master plan for developing parks and recreation places, especially in metropolitan areas. Other articles report on planning in middle-sized cities and rural communities where co-operative financing and provision for joint use provide exceptional facilities. "Design for

(Continued on page 272)

VAMPCO adds doors, frames, side lights and transoms to their Aluminum Window Line

Valley Metal Products Company announces a new line of Aluminum Entrance Doors which includes a diversified selection of Standard as well as Custom Units. A "Package Door" is also available as a complete unit through our regular channels of distribution. Like Vampco Aluminum Windows and Curtain Walls, the new Vampco Doors are being manufactured from Vampco's own aluminum extrusions under fully controlled conditions from billet to the finished product.

The Black River Country Club at Port Huron, Michigan (pictured above) is a fine example of how architects are turning to Vampco Aluminum Windows, Doors and Curtain Walls for streamlined beauty, functional design, structural strength and durability.

Vampco Aluminum Windows are available in the widest range of types to meet every architectural need. They include: casement, combination casement, awning, intermediate projected, curtain wall of varying sizes and thicknesses, heavy construction, glass block and custom-designed types. Find out how VAMPCO'S special designing service can help you solve your unusual building problems most economically and efficiently . . . mail coupon below, today!

VALLEY METAL PRODUCTS CO.

PLAINWELL, MICHIGAN

SUBSIDIARY OF
MUELLER BRASS CO.
PORT HURON, MICHIGAN

See Complete File in Your Current Sweet's Catalog

VAMPCO

A NAME THAT MEANS THE VERY FINEST IN LIFELONG ALUMINUM WINDOWS

VALLEY METAL PRODUCTS COMPANY
Dept. PA-98, PLAINWELL, MICH.

- ☐ Send 56-page Industrial-Institutional Window Catalog.
- ☐ Send Light Construction Aluminum Window Catalog.
- ☐ Send Curtain Wall Catalog.
- ☐ Send Entrance-Door Catalog.

NAME .....

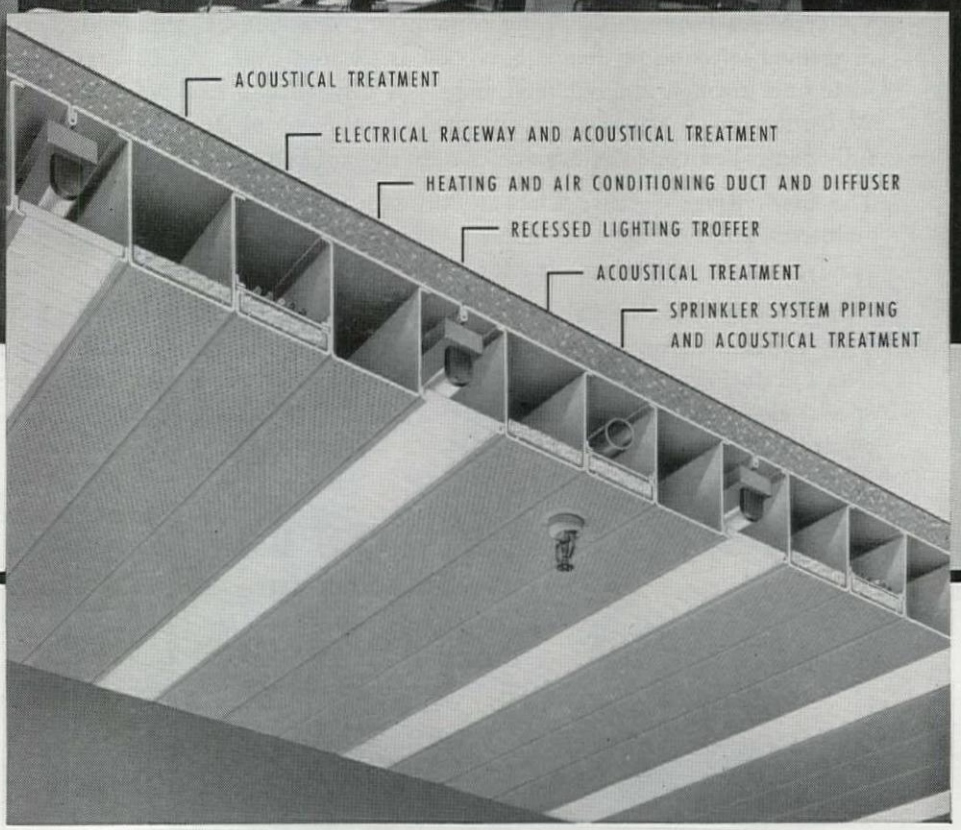
COMPANY .....

ADDRESS .....

CITY ..... ZONE .... STATE .....

Mahon M-FLOOR Is Utilized

Above: Interior View of Office Building for Whirlpool Corporation, Clyde, Ohio. In this building the Heating and Air Conditioning Ducts and Diffusers, Recessed Lighting, Electrical Raceways, Acoustical Treatment, and Sprinkler System Piping are all contained in the Combined Structural Floor and Ceiling constructed with modified M-Floor Sections. See Detail at Right.

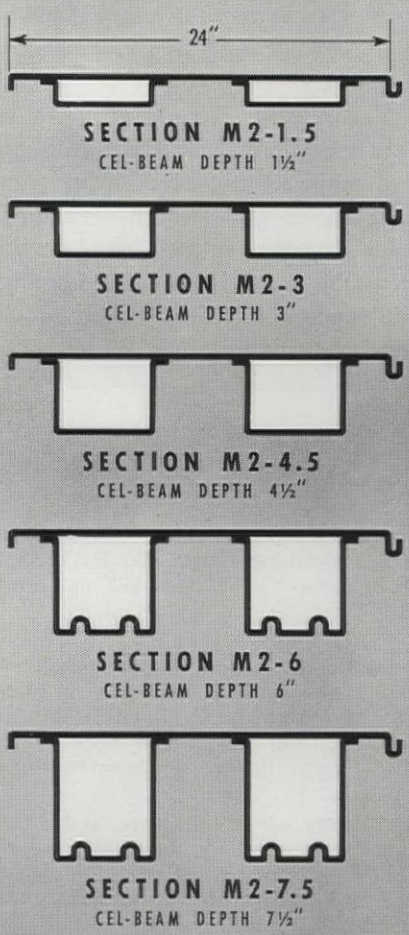


The Cross Section above shows a unique adaptation of M-Floor Construction to provide both the Structural Sub-Floor and Acoustical Ceiling. In this application, Cel-Beams and Channels between Cel-Beams in the M-Floor Sections are ingeniously utilized for several other functional purposes.

for SIX PURPOSES in Addition to Its Primary Use as a Light-Weight Structural Sub-Floor!

Modified M-Floor Cel-Beam Sections Provide: (1) Finished Ceiling Material. (2) Acoustical Treatment in Ceiling. (3) Troffers for Recessed Lighting. (4) Air Ducts and Diffusers for Heating and Air Conditioning. (5) Raceways for Electrical and Telephone Circuits. (6) Housing for Sprinkler System Piping.

MAHON M-FLOOR SECTIONS



☆ OTHER MAHON BUILDING PRODUCTS and SERVICES:

- Insulated Metal Curtain Walls
- Underwriters' Rated Metalclad Fire Walls
- Rolling Steel Doors (Standard or Underwriters' Labeled)
- Steel Roof Deck
- Long Span M-Decks (Cellular or Open Beam)
- Permanent Concrete Floor Forms
- Acoustical and Troffer Forms
- Acoustical Metal Walls and Partitions
- Acoustical Metal Ceilings
- Structural Steel—Fabrication and Erection
- Steel Plate Components—Riveted or Welded

☆ *For INFORMATION See SWEET'S FILES or Write for Catalogues*

THE R. C. MAHON COMPANY • Detroit 34, Michigan

Sales-Engineering Offices in Detroit, New York and Chicago

Representatives in all Principal Cities

MAHON

reviews

(Continued from page 268)

Learning, Living and Leisure," part II, discusses the role of imaginative design in creating imaginative play experience for children. Interesting free-form play equipment is illustrated in photographs of Mitchell Park, Palo Alto; "Terrace Park Playground," Berkeley; and "Dennis the Menace Playground," Monterey, California. There are also articles on designing for accident prevention and minimum maintenance. The miscellaneous reports in part III include: selection of resilient floor coverings, use of ceramic tile, economies in year-round air conditioning, site choice, and schoolhouse planning.

Though the report seems to be concerned only with California, its two main ideas—co-operative planning and creative design—are applicable elsewhere in the United States. It would be helpful reading for anyone concerned with planning or designing community and school recreational facilities. A. L.

BOOKS RECEIVED

Creative Gardens. James C. Rose. Reinhold Publishing Corp., 430 Park Ave., New York, N. Y., 1958. 208 pp., illus. $10

A Guide to Cleveland Architecture 1796-1958. Cleveland Chapter American Institute of Architects. Reinhold Publishing Corp., 430 Park Ave., New York, N. Y., 1958. 64 pp., illus. $1.50 (paperbound)

A Library of Architecture and Planning. Compiled by Jane D. Spoore. School of Architecture, Rensselaer Polytechnic Institute, Troy, N. Y., 1958. 20 pp. $1 (paperbound). Guide for establishing and developing personal, company, and small public and college libraries.

Philosophy of Structures. Eduardo Torroja. English version by J. J. Polivka and Milos Polivka. University of California Press, Berkeley, Calif., 1958. 416 pp., illus. $12.50

Record Houses of 1958. F. W. Dodge Corp., 119 W. 40 St., New York, N. Y. 230 pp., illus. $2.95 (paperbound)

Western Ranch Houses by Cliff May. Editorial staff of *Sunset* Magazine and Books. Lane Publishing Co., Menlo Park, Calif., 1958. 176 pp., illus. $7.50

art

Juan Gris. James Thrall Soby. Museum of Modern Art, New York, N. Y., 1958. Distributed by Doubleday & Co., 575 Madison Ave., New York, N. Y. 128 pp., illus. $5.50

The Materials and Techniques of Medieval Painting. Daniel V. Thompson. Dover Publications, Inc., 920 Broadway, New York, N. Y., 1958. 240 pp. $1.85 (paperbound)

The Perspectivist. R. Myerscough-Walker. Pitman Publishing Corp., 2 W. 45 St., New York, N. Y., 1958. 280 pp., illus. $15

planning

High Rent Housing and Rent Control in New York City. Temporary State Housing Rent Commission, 280 Broadway, New York, N. Y., 1958. 200 pp. (paperbound)

Retail Trade. Department of Planning, 400 Municipal Building, Baltimore, Md., 1957. 96 pp., illus. (paperbound). Planning report on the changes in downtown and older shopping districts as affected by growth of new urban shopping centers, the automobile, and population increase.

technical

Composite Construction in Steel and Concrete for Bridges and Buildings. I. M. Viest, R. S. Fountain, and R. C. Singleton. McGraw-Hill Book Co., Inc., 330 W. 42 St., New York, N. Y., 1958. 192 pp. $7.50

Douglas Fir Use Book. 1958 Edition. West Coast Lumbermen's Association, 1410 S. W. Morrison, Portland, Ore. $5. Structural data and design tables.

Heating Ventilating Air Conditioning Guide. 36th Edition. American Society of Heating and Air-Conditioning Engineers, 62 Worth St., New York, N. Y., 1958. 1775 pp. $12

Theory of Structural Analysis and Design. James Michalos. The Ronald Press Co., 15 E. 26 St., New York, N. Y., 1958. 552 pp. $12

The Weather Conditioned House. Groff Conklin. Reinhold Publishing Corp., 430 Park Ave., New York, N. Y., 1958. 256 pp., illus. $14.75

UNDERFLOOR ELECTRIFICATION

RACEWAYS...FOR ONLY

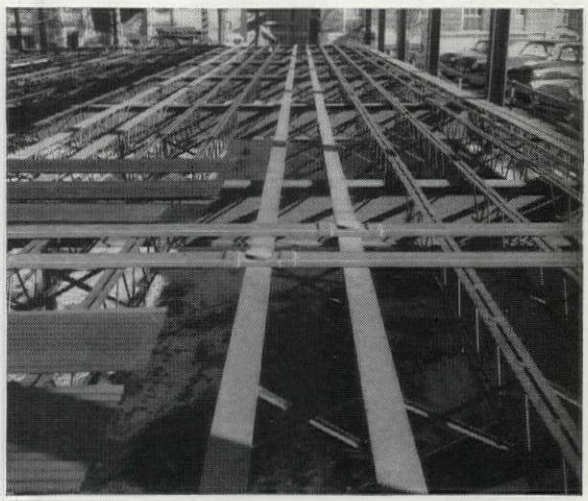
50¢ A SQUARE FOOT...

half the cost of the next most
economical quality system

The E/C Joist is a standard Open-Web Steel Joist with an electrical raceway substituted for the conventional top chord. Each E/C Joist has the same load-carrying capacity as a comparable standard joist, and the same load table applies. Patents applied for.

APPROVED BY U.L.—Ceco E/C Joists are listed by the Underwriters' Laboratories for use with electrical header ducts and accessories manufactured by General Electric Company, National Electric Products Corporation and Walker Brothers.

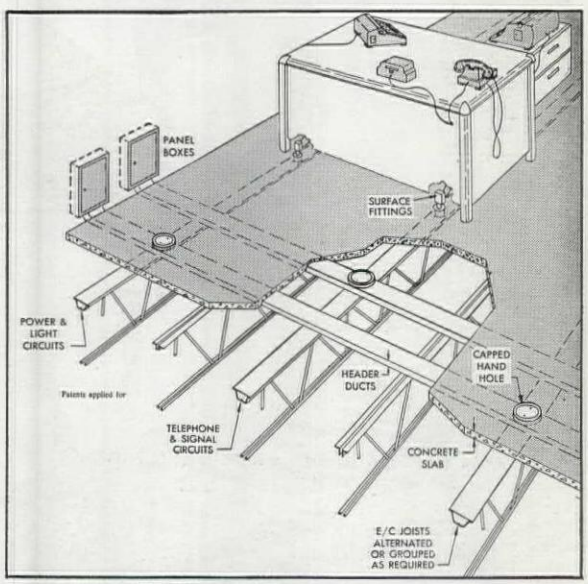
In this case, pairs of E/C Joists are alternated with pairs of standard joists at 18" o.c., and tie in with a two-duct system at 6'-0" o.c. The header ducts here were installed during a 4" snowfall, demonstrating that construction can proceed in bad weather.



E/C Joists can be substituted directly for standard joists to provide as many electrical raceways as desired. The two header ducts, shown horizontally in the foreground, feed wires into the E/C Joists through the hand-holes in the center of the photograph.

You save with Ceco Electro-Channel Steel Joists because they serve a double purpose...

A new product that reduces costs and increases utility makes welcome news. Such a product is the Ceco Electro-Channel Steel Joist, which provides raceway systems for top-quality underfloor electrification for as little as 50¢ a square foot. This is half the cost of the next most economical quality system. The saving is possible because E/C Joists do two jobs . . . carry the electrical as well as the structural loads. Included with the Ceco system are header ducts, hand-holes and markers, installed—as well as the E/C Joist integral raceways. The 50¢ buys a two-duct system on 6'-0" centers, and represents the cost over and above standard steel joist floor framing. Comparable savings are offered in three-duct arrangements. Call your Ceco engineer or send coupon for manual. Ceco Steel Products Corporation—Sales offices, warehouses and fabricating plants in principal cities. General offices: 5601 West 26th Street, Chicago 50, Illinois.



Electrical, telephone and signal wires can be run from the panel boxes down through the heater ducts, into the top chord of the E/C Joist and up through the surface fittings to desks located anywhere on the floor. Whenever desks are moved, surface fittings can be placed along the joists to service the new positions.

CECO STEEL®

IN CONSTRUCTION PRODUCTS CECO ENGINEERING MAKES THE BIG DIFFERENCE

Steel Joists / Steelforms / Concrete Reinforcing
Curtainwalls, Windows, Screens, Doors / Cecoframe
Buildings / Roofing Products / Metal Lath

CECO STEEL PRODUCTS CORPORATION PA
5601 West 26th Street, Chicago 50, Illinois

Please send Introductory Manual No. 3011 covering Ceco Electro-Channel Steel Joist Construction.

name_____ position_____

firm_____

address_____

city_____ zone____ state_____

Management "learns new tricks"

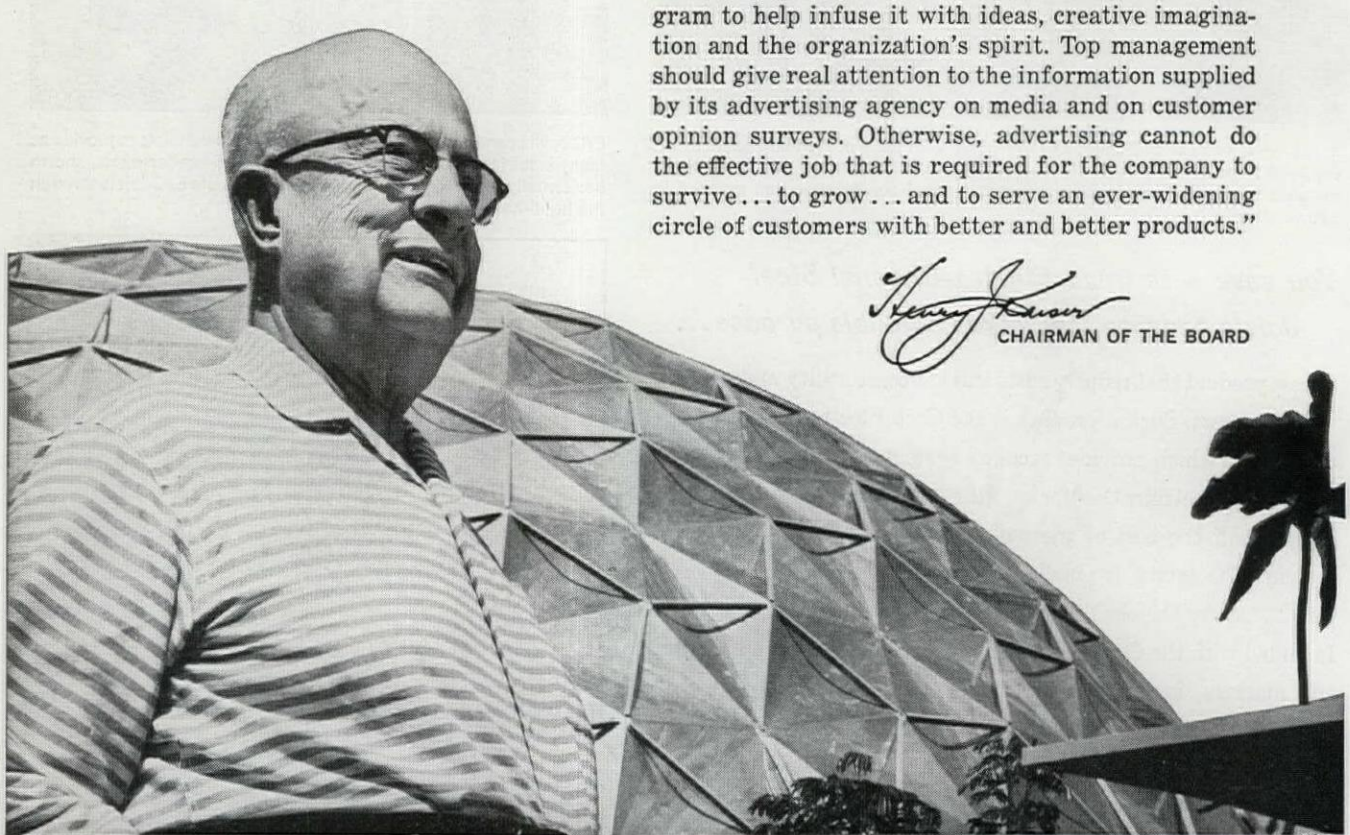
...THANKS TO ADVERTISING!

Says Henry J. Kaiser:

"I confess I was not always advertising-conscious..."

"American management cannot afford to relegate advertising to a secondary role. Management cannot afford to budget funds begrudgingly to advertising and then proceed to forget it, except perhaps to make an occasional carping criticism. Instead, advertising men must be taken closely into inner management counsels—for able advertising men can make a fantastically tremendous contribution to a company. I confess that I was not always advertising-conscious. In many years as a builder, I wouldn't permit the Kaiser name to be painted even on a steamshovel. If I have today reversed this attitude completely, it is because advertising has proved its worth—many times over—in practical business applications. Now, our whole organization is advertising-minded. Top management should take constant interest in the advertising program to help infuse it with ideas, creative imagination and the organization's spirit. Top management should give real attention to the information supplied by its advertising agency on media and on customer opinion surveys. Otherwise, advertising cannot do the effective job that is required for the company to survive... to grow... and to serve an ever-widening circle of customers with better and better products."

Henry J. Kaiser
CHAIRMAN OF THE BOARD



Thanks to the advertising pages of the trade press, American Industry today has a wide choice of advanced techniques and improved tools and materials. This speeds production, steps up quality, cuts production costs. Then advertising, in return, lowers selling costs to the consumer. Result:

AMERICA IS A BETTER AMERICA—THANKS TO ADVERTISING!

NEW SIZE LOW COST 1¾" FOAMGLAS ROOF INSULATION

Now you can use FOAMGLAS® on roofs requiring less than 2″ of insulation. This unique, multi-benefit insulation is available in a thickness of 1¾″. And this new thickness makes possible a new 25% lower price.

With the new 1¾″ FOAMGLAS, you enjoy the same insulating efficiency at the same cost per square foot installed as with any other insulation board, including wood fiber. One reason is the low cost of the new thickness. Another is that FOAMGLAS does not require the vapor barrier recommended with other insulating boards. The closed cells of FOAMGLAS form a natural vapor barrier which maintains original thermal efficiency.

And, the new 1¾″ thickness retains all of the many extra benefits of FOAMGLAS roof insulation. It is strong enough to take all roof and traffic loads during and after installation, but it is lightweight for easier handling. It can't burn. It is easy to cut and fit . . . and a new quick opening carton eliminates bothersome paper separators.

Write today for complete information on this new roof insulation development by Pittsburgh Corning Corporation, Dept. AB-98, One Gateway Center, Pittsburgh 22, Pennsylvania.

PC Glass Blocks are another outstanding building product of Pittsburgh Corning Corporation.

PITTSBURGH PC CORNING

LIGHTING IS ARCHITECTURE

illustrations

Page 116
Crematorium, Boras, Sweden; architect: *Harald Ericson*; from *Sweden Builds*, p. 178-179; photo: *G. E. Kidder Smith*.

Museum and National Gallery of Capodimonte, Naples, Italy; architect: *Ezio De Felice*; photos: *Paolo Monti* (top), *"Fotogramma"* (bottom).

Page 117
1 Manufacturers Trust Co., New York, N. Y.; interior design: *Eleanor Le Maire*; photo: *General Electric Company*.
2 Ceramic Exhibit, XI Triennale, Milan, Italy; photo: *Authenticated News*.
3 Wireless chandelier; designed by *Richard Kelly* for Barbizon-Plaza Hotel, New York, N. Y.; photo: *Dave Royter*.

Page 118
1 Yale University Art Gallery and Design Center, New Haven, Conn.; associated architects: *Douglas Orr* and *Louis I. Kahn*; photo: *Lionel Freedman*.
2 Girl Scouts of the U.S.A. National Headquarters, New York, N. Y.; architect: *William T. Meyer*; consulting architects: *Skidmore, Owings & Merrill*; photo: *Gottscho-Schleisner*.
3 South Bay Bank, Manhattan Beach, Calif.; designed by *Craig Ellwood Associates*; consulting architect: *Norman N. Rosen*; photo: *Marvin Rand*.

Page 119
4 Royal Scottish Museum, Edinburgh, Scotland; photo: *Authenticated News*.
5 Osborn Road School, Rye, N. Y.; architects: *Sherwood, Mills & Smith*; photo: *Ezra Stoller*.
6 Museum and National Gallery of Capodimonte, Naples, Italy; architect: *Ezio De Felice*; photo: *Paolo Monti*.

Page 120
1 Seagram Building, New York, N. Y.; architects: *Mies van der Rohe* and *Phillip C. Johnson*; associated architects: *Kahn & Jacobs*; photo: *Ezra Stoller*.
2 430 Park Avenue, New York, N. Y.; architects: *Emery Roth & Sons*.
3 Lever House, New York, N. Y.; architects: *Skidmore, Owings & Merrill*.
4 Miramar Chapel, San Diego, Calif.; architects: *Neutra & Alexander*; collaborators: *Dion Neutra, Robert R. Pierce, Howard Miller*; photo: *Julius Shulman*.

Page 121
5 Aichi Cultural Center, Nogayo, Honshi, Japan; architect: *Hideo Kosaka*; photo: *Aichi Prefectural Government*.
6 Ciudad Deportiva, Havana, Cuba; architects: *Arroyo & Menendez*; photo: *Republic of Cuba*.
7 St. Louis County Court House, Hibbing, Minn.; architects: *Jyring & Whiteman*; photo: *Warren Reynolds, Infinity, Inc.*

Page 122
1 Offices of Jewels Food Store, Melrose Park, Ill.; photo: *General Electric Company*.
2 Residence Hall, Southwestern Louisiana Institute, Lafayette, La.; architects: *Ricciuti Associates*; photo: *Frank Lotz Miller*.
3 Studio-house, Cleveland, Ohio; architect: *Robert A. Little*; photo: *C. W. Ackerman*.

Page 123
4 Coliseum, Charlotte, N. C.; architects: *A. G. Odell, Jr. & Associates*; photo: *Alderman Studios, Inc.*
5 Union Tank Car Co., Baton Rouge, La.; designed by *Synergetics Inc.*; lighting by *Abe Feder*.

LIGHT AS AN ARCHITECTURAL MATERIAL

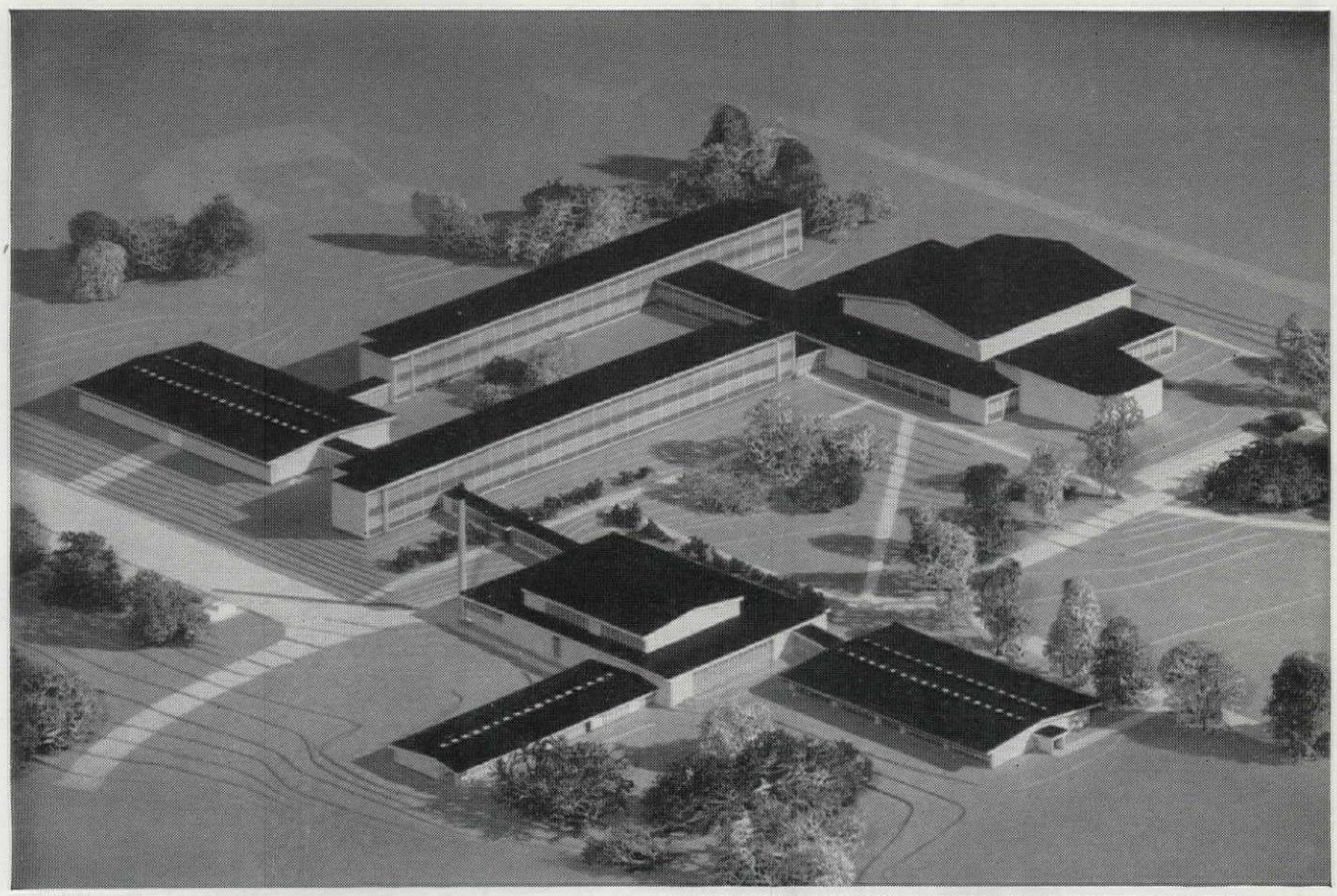
illustrations

Page 127
Metropolitan Sports Area Stadium, Bloomington, Minn.; architects: *Thorshov & Cerny, Inc.*; lighting engineers: *Toltz, King, Duvall, Anderson & Associates, Inc.*; photo: *Warren Reynolds, Infinity, Inc.*

Page 131
1 Light Standards; New York International Airport, New York, N. Y.; lighting consultant: *Abe H. Feder*; photo: *The Port of New York Authority*.

(Continued on page 280)

A continuing series of outstanding schools, churches, office buildings, hospitals and industrial structures using NORTON DOOR CLOSERS



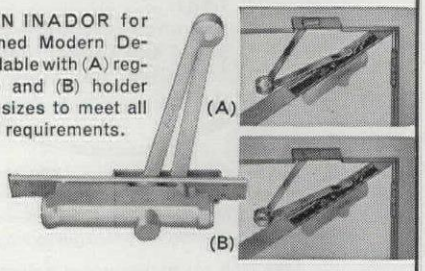
HAARSTICK LUNDGREN AND ASSOCIATES INC.—ARCHITECTS, ENGINEERS
HARDWARE DISTRIBUTOR: WHEELER HARDWARE CO., ST. PAUL, MINN.

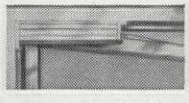
SCHOOL PLANNING THAT LOOKS AHEAD SPECIFIES NORTON DOOR CLOSERS

Burnsville School—Independent District No. 191—Savage, Minnesota

Complete Norton Line Meets Every Door Closer Need

NORTON INADOR for Streamlined Modern Design available with (A) regular arm and (B) holder arm...4 sizes to meet all standard requirements.





NORTON 750: New corner design with concealed arms for all type doors, particularly narrow rail doors.

Norton Surface-type Closers are available for all installations where concealment is not essential.

NORTON 703E: Compact surface mounted type...first closer with extruded aluminum alloy shell.

Here's an outstanding new school building—the result of plans that were made to meet some twenty carefully considered objectives. Among them: (1) The building must be functional; modern beauty without waste. (2) It must be of good materials to stand the test of time. These two factors governed selection of door closers.

Interior doors have NORTON INADOR Closers mortised into the top rail. Their compact, fully concealed mechanism packs all the rugged dependable power of true liquid-type closers plus the reliability, low maintenance and precision workmanship common to all *Norton Door Closers*.

Exterior doors use Norton Surface-Mounted Closers, modern counterparts of Norton Closers still in daily use after serving continuously up to 30 years and longer in some of America's most famous public buildings. For fully illustrated data on these and other models, consult the current Norton Catalog. Write for it today.

NORTON® DOOR CLOSERS

Dept. PA-98 • Berrien Springs, Michigan

LIGHT AS AN ARCHITECTURAL MATERIAL

illustrations

2 Candelabra; Bankers Trust Company, New York, N. Y.; lighting consultant: *Abe H. Feder;* photo: *The New York Times.*

3 Terrace Plaza Hotel, Cincinnati, Ohio; architects: *Skidmore, Owings & Merrill;* lighting consultant: *Abe H. Feder.*

4 Richards Department Store, Miami, Florida; architects: *Office of Meyer Katzman;* lighting consultant: *Abe H. Feder;* photo: *Hinman Photography.*

5 Rich's Department Store, Knoxville, Tenn.; architects: *Stevens & Wilkinson;* lighting consultant: *Abe H. Feder.*

notices

new offices

CITY PLANNING ASSOCIATES, Urban Planning - Design - Renewal Consultants, 223 Lincolnway, Mishawaka, Ind.; 6 N. Michigan Ave., Chicago, Ill.; 20061 Burgess Ave., Detroit 19, Mich.

JEFFREY ELLIS ARONIN, Architect, 101 Park Ave., New York 17, N. Y.

ROBERT E. L. PETERSON, Architect, 409-410 Piedmont Bldg., Greensboro, N. C.

BRADLEY RAY STORRER, Architect-Interior Designer, 22148 Michigan Ave., Dearborn, Mich.

GUY G. ROTHENSTEIN, Planning-Design - Consultation for Structures-Interiors-Products, 99-05 63 Dr., Forest Hills 74, N. Y.

WILLIAM T. COLLINGS and EMIL F. VRANICH are principals in the firm of COLLINGS-VRANICH & ASSOCIATES, INC., Consulting Engineers, 625 N. Milwaukee St., Milwaukee 2, Wis.

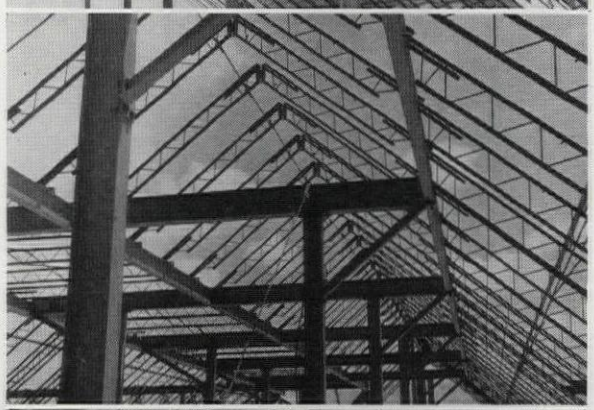
ALBERT A. ERKEL & ASSOCIATES, Consulting Structural Engineers, 3515 Cahuenga Blvd., Los Angeles, Calif.

FRANK SCHLESINGER. Architect, 341 Nassau St., Princeton, N. J.

LEO L. FISCHER, Architect/Consultant, 341 Nassau St., Princeton, N. J.

JOHN DIEHL ASSOCIATES, Architects, 40 Witherspoon St., Princeton N. J.

(Continued on page 282)



LACLEDE STEEL JOISTS

...facilitate interesting roof construction of new seminary

The roof of the new Marillac Seminary, St. Louis, forms an interesting pattern of intersecting planes.

This hip-and-valley type of construction is typical of today's modern approach to architectural design.

In the case of the Marillac Seminary, progress from architect's plans to finished roof was accomplished with a minimum of time and effort, through the use of efficient lightweight Laclede Steel Joists.

These high strength open web joists are adaptable to a wide variety of structural design. They are easy to handle and place, easy to bolt together, and are available in a choice of sizes and specifications for varying needs.

Marillac College, Normandy, Missouri
Architects: Belli & Belli of Missouri, Inc., St. Louis
General Contractor: Gamble Construction Co., St. Louis

STEEL JOIST INSTITUTE MEMBER

LACLEDE ®

LACLEDE STEEL COMPANY

SAINT LOUIS, MISSOURI ◆ Producers of Steel for Industry and Construction

notices

(Continued from page 280)

JOHN ALEXANDERS, Consulting Engineer, 122 Phelps Ave., Cresskill, N. J.

CURRY, MARTIN & TAYLOR, Architects, 201 N. Craig St., Pittsburgh 13, Pa.

MCHUGH & HOOKER, BRADLEY P. KIDDER & ASSOCIATES, Architects, 717 Canyon Rd., Santa Fe, and 316 W. Broadway, Farmington, N. Mex.

PACKAGING & PRODUCT DEVELOPMENT INSTITUTE INC., Industrial-Package-Interior Designers, 1077 Celestial St., Mt. Adams, Cincinnati 2, Ohio.

PANERO-DE CHIARA ASSOCIATES, Designers-Urban Planning Consultants, 136 W. 42 St., New York 36, N. Y.

KEN WHITE ASSOCIATES, Industrial Designers, Design Production Center, 11 Madison Ave., Westwood, N. J.

HAARSTICK LUNDGREN & ASSOCIATES, Architects-Engineers, open San Francisco branch office at 333 Montgomery Street.

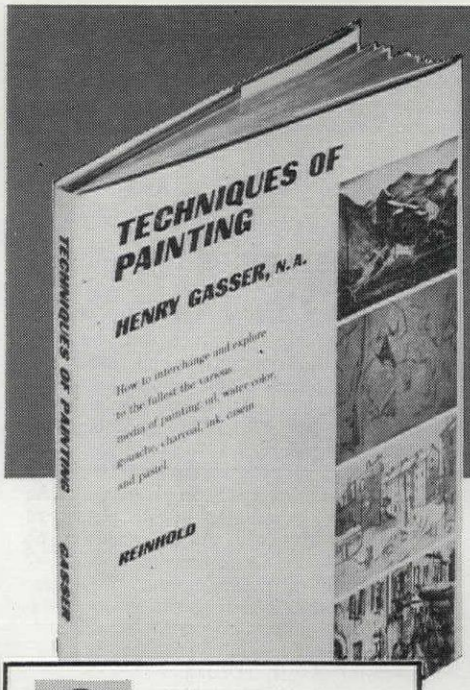
ADRIAN WILSON & ASSOCIATES, Architects & Engineers, open Las Vegas, Nevada, branch office at 320 Carson Ave.

JOSEPH H. RUDD, Architect, 602 Hughes Building, 115 S.W. Fourth Ave., Portland 4, Ore.

DESIGNS FOR INDUSTRY, Interior-Product-Packaging Designers, 205 E. 69 St., New York 21, N. Y., formed by ALBERT LEFCOURTE.

D. K. RITCHEY ASSOCIATES, Architects, 2007 Clark Building, Pittsburgh 22, Pa.

THE ARCHITECT ARTIST GROUP, Architects-Artists-Engineers, 200 E. Boston St., Seattle 2, Wash., includes Architects WENDELL LOVETT, DANIEL STREISSGUTH, GENE ZEMA; Landscape Architect ROBERT CHITTOCK; Painter SPENCER MOSELEY; Sculptor CHARLES SMITH; Structural Engineer GERARD TORRENCE.



EVERY ASPECT OF PAINTING DEMONSTRATED IN FULL COLOR

IT'S ALMOST LIKE HAVING HENRY GASSER, HIMSELF, RIGHT AT YOUR ELBOW!

HENRY GASSER, N.A. is now lecturing and demonstrating painting techniques for art groups and schools in various parts of the country. He served as Director of the Newark School of Fine and Industrial Art from 1946-54. He has received the Hallgarten prize of the National Academy; prizes at the American Water Color Society; and many, many others. A life member of the National Arts Club, he is also a member of the National Academy of Design, and recently has been elected a Fellow of the Royal Society of Arts. His paintings are in more than 26 museum collections.

EIGHT INFORMATION-PACKED SECTIONS!

I HOW TO INTERPRET YOUR SUBJECT
II WHAT STYLE SHOULD YOU USE?
III FIGURE COMPOSITION
IV THE PHOTOGRAPH CAN BE A BIG HELP
V WORKING WITH COLOR. Over 47 separate subjects discussed and demonstrated. See partial list.
VI CASE HISTORIES OF PRIZE WINNING PICTURES
VII PAINTNG A MURAL FOR THE HOME
VII PICTURE PRESENTATION

PARTIAL CONTENTS FROM CHAPTER V ON WORKING WITH COLOR (This chapter alone is worth the price of the book)

Choosing a medium for painting on the spot • The same subject in watercolor and oil • Underpainting in oil • Imprimatura in oil painting • Imprimatura in watercolor • Gouache painting • Gouache on a toned paper • Casein—The most versatile painting medium • Charcoal base for watercolor • Charcoal base for color washes • Ink undertone for watercolor • Colored ink demonstrations • Ink combined with watercolor • Fountain pen • Brush drawing • Brush and ink base for color overpainting • Using a brush outline to strengthen a weak painting • Drybrush • Dry brush with gouache. The felt pen base for color • The pencil study as a tonal drawing • Painting directly over a pencil sketch • Conte • Crayon • Watercolor pencils • Pastel • and many other topics!

128 pages, 8½ x 10½, over 300 illustrations in four colors and black and white. Only **$6.95**

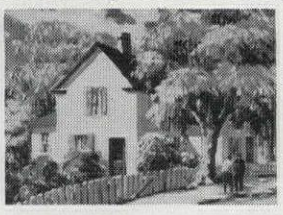
A COMPLETE COURSE IN EACH MEDIUM—ALL IN ONE VOLUME

Henry Gasser's unique approach gives you a full course in what goes on behind the scenes while creating a painting in each medium. You'll quickly learn scores of valuable tricks and methods for every vehicle: how to arrive at dramatic color composition, how to build up texture, how to achieve certain color affects, how different mediums help one another to capture mood and atmosphere.

NEW APPROACHES TO STYLE AND COMPOSITION

In addition to a mastery of color techniques for each medium, Gasser gives you graphic instruction on the importance of viewing a subject in more than one way (using 48 compositions to demonstrate different effects), and discusses interpretative approaches: detailed style, free and decorative styles (using a series of 25 compositions). In short, here in one encyclopedic volume is everything you need to know to approach any picture in any medium.

To expand your native ability and provide yourself with superior skill, you must explore and master all techniques. You owe it to yourself to order your copy of TECHNIQUES OF PAINTING today!



CASEIN— VERSATILE MEDIUM

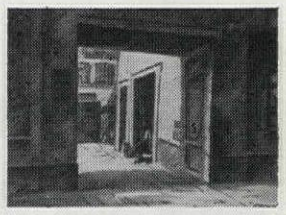
Henry Gasser shows you how Casein allows you to work in a variety of styles – water color, gouache, and in an impasto that when varnished resembles an oil painting. Here is the fourth plate of full color composition demonstration.

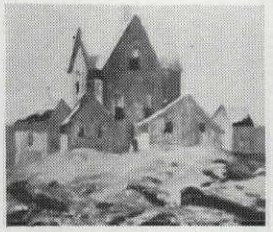
HERE IS HOW YOU'LL LEARN CHARCOAL BASE FOR WATERCOLOR

Main lines are indicated in charcoal on a rough watercolor board.

Apply charcoal in a direct manner. Avoid rubbing and keep strokes clean and crisp, allowing white surface to come through.

Spray charcoal drawing with fixative to prevent smudging or smearing before watercolor washes are applied. Cover large areas first. Use opaque color where necessary.





ACHIEVING TEXTURAL QUALITY BY UNDERPAINTING

Two of a three plate series in full color illustrating for you how surface color can be influenced by underpainting. You'll learn both glazing and impasto techniques in this information-packed book.

It doesn't cost you a cent to examine Henry Gasser's new book **TECHNIQUES OF PAINTING.** Take advantage of this Free Examination offer by mailing the coupon Now!

RESERVATION CERTIFICATE with Free 10-Day examination

To your bookseller or REINHOLD PUBLISHING CORPORATION, Dept. 5285 430 Park Avenue, New York 22, N. Y.

Please send me for 10 days FREE EXAMINATION Henry Gasser's new book TECHNIQUES OF PAINTING. If after using it for 10 days I am not completely delighted, I may return the book and owe nothing. Otherwise you will bill me at the regular retail price of $6.95 plus postage.

NAME_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

SAVE POSTAGE . . . include check or money order now (no cash) and we will pay postage. Same return privilege; refund guaranteed. Add 3% sales tax in N. Y. C.

p/a jobs and men

situations open

ARCHITECTURAL DESIGNER — large commercial firm with long range building program has a stimulating position for a designer in contemporary architecture. Skills in interiors and color combinations important. This is a top job. Salary is not an issue. Washington D. C. location. Reply giving full details on experience and personnel data. Box 663 PROGRESSIVE ARCHITECTURE.

ARCHITECTURAL DRAFTSMEN—Good opportunity to grow with a growing organization that presently is enjoying a large volume of work. The majority of the present employees are young, progressive men, flexible and interested in doing a good job. If you are interested in being a member of this fine association, please give full details on experience, starting salary and age. Write to Box 664 PROGRESSIVE ARCHITECTURE.

ARCHITECTURAL DRAFTSMAN — Design or engineering, experienced man for small expanding office doing contemporary work only. Backlog includes schools, commercial buildings, shopping centers, theatres, motels, residences, etc. Pemanent position for right man. Send full qualification sheet covering experience, samples, references, salary expected, availability and snapshot. Bernard A. Webb, Jr., 763 Pine Street, Macon, Georgia.

Advertising Rates

Standard charge for each unit is Five Dollars, with a maximum of 50 words. In counting words, your complete address (any address) counts as five words, a box number as three words. Two units may be purchased for ten dollars, with a maximum of 100 words. Check or money order should accompany advertisement and be mailed to Jobs and Men, c/o Progressive Architecture, 430 Park Avenue, New York 22, N. Y. Insertions will be accepted not later than the 1st of the month preceding publication. Box number replies should be addressed as noted above with the box number placed in lower left hand corner of envelope.

ELECTRICAL ENGINEER—licensed, also specification writer to head specification department. Institutional, schools, commercial, and industrial work. Please give full details on experience, starting salary, age, etc. Frank L. Hope & Associates, 1447 Sixth Ave., San Diego, California.

STRUCTURAL ENGINEER—wanted by a small architectural office in Middle West. Salary between $150 to $200 per week depending on experience. Duties will include structural design, drafting and on the job supervision. Write Box 665 PROGRESSIVE ARCHITECTURE.

situations wanted

ARCHITECT—43, family, university degree, 17 years experience, diversified building types; schools, commercial and industrial. High quality designer, able administrator and supervisor, seeks position of responsibility on associate basis. Write Box 666 PROGRESSIVE ARCHITECTURE.

ARCHITECT—registered Pennsylvania, A.I.A., 45, 18 years' experience in all phases of architecture. Presently project architect on hospitals, schools, governmental, including client interviews, programming, production and supervision. Desire position in Philadelphia area, preferably with small firm, leading to partnership. Write to Box 667 PROGRESSIVE ARCHITECTURE.

ARCHITECT—A.I.A., 32, married, Pennsylvania registration by examination, seven years diversified experience including three years of mechanical design and coordination. Desires responsible position with small or medium size firm offering opportunity for associateship or partnership. Will consider position outside the United States. Write to Box 669 PROGRESSIVE ARCHITECTURE.

(Continued on page 286)

p/a jobs and men

(Continued from page 284)

ARCHITECTURAL DRAFTSMAN—49, unencumbered, with best of references as to ability, credit, and character, wishes to make a change. Harmony more important than "last dime." Write to Box 670 PROGRESSIVE ARCHITECTURE.

ARCHITECTURAL DRAFTSMAN — Designer, registered architect looking for employment anywhere. Long experience in different types of buildings, industrials, churches, commercials, public schools. Excellent recommendations from previous employment. Outstanding renderer. Ederly man. Moderate requirements. High efficiency. Write 6046, Dorchester, Apt. 3B, Chicago, Ill., for A. Z.

SEMI-RETIRING? Built the business up through the years? Have the contacts that mean future business? Need chief architect to help with part or all of the load? If conditions warrant would consider eventual purchase of interest in firm. Box 671 PROGRESSIVE ARCHITECTURE.

SENIOR STRUCTURAL ENGINEER—with thorough supervisory experience with leading engineering and construction firms. Large industrials, power plants, waterfront structures, dams, airfields, bridges, etc. Excellent estimator and spec. writer. Desire position with architectural, consulting, or industrial firm. Box 672 PROGRESSIVE ARCHITECTURE.

SPECIFICATIONS WRITER — Long experience on hospitals, industrial, schools, military and other public work, multi-story buildings. Also co-ordinate and "edit" mechanical and electrical trades specifications. Expert knowledge: construction, procedure, materials, methods. Up-to-date, competent, rapid, accurate, concise, dependable. Now employed. Interview solicited. Member A.I.A., A.S.T.M., C.S.I. Box 673 PROGRESSIVE ARCHITECTURE.

WANTED — A particular architectural firm-preferably a long-established firm whose name is well known and highly respected in the area. A firm whose overworked principal(s) would prefer spending more time golfing, fishing or in any other suitable manner cultivating the all-important client. A firm who therefore will need someone with a congenial personality to meet the client and the principal, develop sketches, preliminaries, renderings, etc. When approved, complete the architectural, coordinate the structural and mechanical, etc., and be responsible for a professional and economical set of drawings. One who has over sixty projects to his credit as chief architect in charge of a 35 man office doing banks, schools, office buildings, hospitals, shopping centers, etc. Excellent education, background and experience in both architecture and construction. Registered, A.I.A., 39, M., two boys. Resume on request. Box 674 PROGRESSIVE ARCHITECTURE.

ARCHITECT—Desire to relocate with progressive firm in mountain states, Arizona or west coast. Now associated with progressive midwest firm. Seeking responsible position with future associate possibilities. Masters Degree, M.I.T. considerable office and client contact references. Married, age 29. Box 668 PROGRESSIVE ARCHITECTURE.

ARCHITECT—university graduate from Hungary, age 29, 7 years' experience in Europe and Canada with wide variety of designing, detailing and supervising, desires designer-

(Continued on page 289)

Directory of product advertisers

* *Special Lighting Section*

430 Park Avenue, New York 22, N. Y. MUrray Hill 8-8600

BRAD WILKIN, *Vice-President & Publisher*

H. VICTOR DRUMM, *Advertising Sales Manager*

JOSEPH M. SCANLON, *Production Manager*

NEW YORK OFFICE:

WILLIAM R. EVANS, *New York State District Mgr.*
ROBERT L. BASSINETTE, *New England District Mgr.*
DONALD W. THOMPSON, *District Mgr.*
JAMES T. BURNS, JR., *Research & Promotion Mgr.*

CLEVELAND OFFICE:

815 Superior Ave., N.E., Cleveland 14. PRospect 1-5583
JOHN F. KELLY, *District Manager*
ALBERT E. McCLIMANS, *District Manager*

CHICAGO OFFICE:

111 W. Washington St., Chicago 2. RAndolph 6-8497
ARTHUR W. GORHAM, *District Mgr.*
CHARLES A. ULLRICH, *District Mgr.*
RALPH E. PETERSEN, JR., *District Mgr.*

SOUTHERN ADVERTISING REPRESENTATIVES

Atlanta, Georgia—Blanchard-Nichols-Osborn
75 Eighth Street, N. E. TRinity 5-7995

WEST COAST ADVERTISING REPRESENTATIVES

San Francisco, Calif.—Duncan Scott & Co., 85 Post St., GArfield 1-7950
Los Angeles, Calif.—Duncan Scott & Co., 1901 West 8th Street, DUnkirk 8-4151

LONDON ADVERTISING REPRESENTATIVE:

R. A. Butler, Butler's Advertising Service, 22 St. Giles High St.
London W. C. 2, England, TEMple Bar 5905

p/a jobs and men

(Continued from page 286)

draftsman position with progressive office. Imaginative designer, works enthusiastically. Will go anywhere in North America. Address: J. Gaspar, 25 Balsam St. South, Timmins, Ontario, Canada.

ARCHITECTURAL DESIGNER—age 29, single, with twelve years experience desires to associate with building or architecture firm doing luxury houses. Well qualified in traditional and contemporary designing, building, decorating and estimating. $25,000 annual. Box 674 PROGRESSIVE ARCHITECTURE.

ELECTRICAL PROFESSIONAL ENGINEER — 33, desires association with consulting engineer's or architect's office. Presently in charge electrical design section of midwest consulting firm. Design of power, lighting, controls and communications systems. Previously managed and supervised design and construction Air Force family housing projects. Other electrical military construction experience. Box 675 PROGRESSIVE ARCHITECTURE.

REGISTERED ARCHITECT — age 32, married, European education, desires to relocate in Southeastern state. Would like responsible position in small progressve firm, preferably with possibility of future partnership or associateship. Seven years of small and large office experience in all phases of work, particularly in design. Box 676, PROGRESSIVE ARCHITECTURE.

---

miscellaneous

MAKE big money doing architectural illustrations for architects, builders, etc. in your home. Monocrome color pencil, and watercolor rendering taught by mail. For information on this amazing home study course send one dollar to: Architectural Illustrations, 802 North 49, Seattle, Washington.

ARCHITECTURAL & DESIGN PERSONNEL AGENCY—a personalized placement service for top-level architects, designers, engineers, draftsmen, estimators, and interior designers; selective contacts arranged in a confidential and professional manner. Interviews by appointment. 58 Park Avenue, New York. MUrray Hill 3-2523.

CAREER BUILDERS PLACEMENT SERVICE—for Architects, Architectural Designers, Interior Designers, Industrial Designers, Draftsmen and Office Personnel. Interviews by appointment. PLaza 7-6385, 35 West 53d Street, New York 19, N. Y.

HELEN HUTCHINS PERSONNEL AGENCY—Specialist Architectural, Industrial, Interior, Design; Decorative Arts and Trades; Home Furnishings Field, Architects, Designers, Draftsmen, Administrative Personnel. Interviews by appointment. 767 Lexington Ave., New York 21, N. Y. TE 8-3070.

INTERIOR DECORATION HOME STUDY—Announcing new home study course in Interior Decoration. For professional or personal use. Fine field for men and women. Practical basic training. Approved supervising method. Low tuition. Easy payments. Free booklet. Chicago School of Interior Decoration, 835 Diversey Parkway, Dept. 3046, Chicago 14, Ill.

P.S.

nonreading

For a number of generations we have been familiar with the glib comment that "architects don't read." It has been stated and it has been denied; it has become the basis for advertising methods, teaching procedures, programming of meetings, and styles of journalism. Like all generalizations, it is untrue generally; and like all clichés, it has some basis in fact. There is a certain number of nonreaders in the profession of architecture who deserve to be studied and understood.

Nonreading is an obvious phenomenon in other segments of the population: the picture magazine and television are dominant factors in contemporary life which have worried most social students and titillated many entrepreneurs. (There is a successful business enterprise potential to every characteristic of a sizable enough group—and nonreaders, in the total population, are a very large group.)

The thing that makes nonreading architects somewhat peculiar is that architecture is a respected and a learned profession. Among professionals practicing on a plane this high, nonreading is not common. If the reading of creative literature (to enjoy an artistic accomplishment) is not a characteristic of the profession; or if reading of "nonfiction" (for intellectual pleasure or fulfillment) is not a trait of the group; then at least the reading of technical literature (for professional refreshment and advancement) is normally necessary.

Let me repeat that generally it is untrue that "architects don't read." We have every evidence that critical articles, as well as technical literature in P/A, are well read. What intrigues me is how some individual architects—and a number of the most respected among them—*can* remain nonreaders. This phenomenon has never, to my knowledge, been studied. It may be true (but I am not at all sure that it is the only reason) that architecture is a visual art, and fundamentally an architect "talks with his pencil." Thus, the argument goes, his training, thinking, professional growth and creative accomplishments can all be based on graphics, to the virtual exclusion of communication by the printed word.

I had not realized until recently the existence of absolute nonreading habits among educated and intelligent people. A more observant colleague brought it home to me when he commented, speaking of a prominent architect-educator, "You know, he never reads anything."

I smiled and said yes; I knew. But he insisted: "No; I mean *literally:* he never reads *anything.*"

This intrigued me, and I studied the man and his habits. It's true; he reads no magazines, no books, no newspapers. And yet he is an extremely well informed man. He has developed substitutes for reading, and some very effective ones.

There are, for example, people who *tell* him things. His associates in the school and in his office, his secretary, and his wife are all readers; he becomes informed through them. Then, also, he is a capable and intelligent conversationalist. His social life is active, and it consists very little of the cocktail-party time-filling talk. Informed and sometimes deeply speculative discussions take place at his house and often at other people's houses when he is present.

If a man can thus keep his creative powers lubricated through talk and avoid reading, I suppose that's a perfectly good way to develop. In too many cases, however, the substitutes are skimpy, and the excuses for not reading are likely to be phony.

The magazine-nonreader-who-pretends-that-he-reads-the-magazines, for instance, is not uncommon. A "reader" in Connecticut told me recently that he enjoyed *Pencil Points* every month and particularly like the water-color illustrations it publishes; actually, though, he admitted, he prefers the *Record,* because it has its feet on the ground and publishes traditional design. Closer to the present, Carl Feiss, whose OUT OF SCHOOL column has not appeared in P/A for three years, told me last week of meeting an old friend who remarked "I read you every month in P/A."

And there is the magazine-nonreader-who-doesn't-let-that-stop-his-comments-on-the-magazines. One prominent architect had often said publicly that a certain magazine published abroad was, in his opinion, the only really good professional journal, because its approach was critical. I cornered him at a meeting one evening and said, "Joe, I know that you love the *Review.* Just what, in its last few issues, particularly appealed to you as good criticism: that critical-historical piece in May? The discussion of monumentality in June? The technical survey of modular curtain-wall components that month—or what?"

Joe had the grace to blush, as he admitted that he never *read* a word in that journal he so admired. He "looked at" it. An article by Pevsner he would judge, he admitted, by the type in which it was set ("They use mighty handsome typography, but I know it must be difficult to read."), by the color of the paper on which it was printed, or by the illustrations chosen to adorn it.

These are, of course, self-deluders. They are related to, but not as frank as, the man who popped up in a meeting in New Jersey recently and said, "I'm so busy that of course I don't have any time to read." This is the greatest hallucination of them all. There is always time to read if one wants to read. The best-read people I know (and many of them are architects) are those who have the busiest work days. It would have been interesting to compare the daily activity of the "I'm so busy" protestant with the complicated life of Richard Neutra, for instance. Neutra reads, with catholic interests in many fields, to a fantastic extent. He also draws, and paints, and teaches, and lectures, and writes, and creates architecture, and runs a busy office. It isn't a problem of time; it's a question of desire.

There's nothing wrong, I'm sure, with lack of desire to read. The *faults* are in (a) delusion and guilt, expressed in false excuses, and (b) lack of substitutes for reading, to provide the expanding knowledge and professional development that *is* necessary. It might be worthwhile for all of us to ask ourselves very seriously, at regular intervals:

What have I read (not skimmed, *read*) recently that might help me grow, personally or professionally?

What have I read recently that was truly interesting and enjoyable as an esthetic experience (not only superficially "entertaining")?

If I can't think of anything; why? Am I a nonreader?

If I am becoming a nonreader, is it because of laziness; do I make up excuses about being "too busy"? Or have I really found—or could I develop if I wanted to—valid substitutes for reading?

It occurred to me, about halfway through this piece, that of course the nonreaders won't read it. Hail to the rest of you!

Thomas H. Creighton