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August 1955

According to latest estimates from U. S. Dep'ts. of Commerce and Labor, construction spending will top last year's record by wider margin than previously expected. Gains in virtually all types of construction indicate annual rate of \$41.8 billions—11% above 1954. Increases of 30% in commercial outlays, 21% in private home building, 8% in industrial, and 4% in public construction are predicted.

Resolution protesting alterations to historic East façade of U. S. Capitol Building (WASHINGTON PERSPECTIVE July 1955 P/A) was unanimously approved at AIA Convention last month. Services of committee of distinguished architects—to aid Congress in finding adequate restaurant space—are also offered in resolution.

Original documents of White Pine Series of Architectural Monographs have been presented to AIA Library in Washington, D. C., by the Weyerhaeuser Timber Foundation. Known as George F. Lindsay Collection of Early American Documents, the drawings and photos were edited by Russell F. Whitehead and published in part in "Pencil Points."

"ARCHITECTURE—U.S.A.," Ralph Myer's film report on contemporary architecture in America, now is available through AIA. Collection of 140 slides, with sound, may be presented before service groups, schools, and similar organizations.

Hugh Stubbins, Jr., has been selected by AIA President's Committee to design U. S. exhibit in Berlin Building Exhibition, to be held from July through September, 1957.

Producers' Council is again sponsoring Caravan of Quality Building Products. Completely new exhibit of building materials will begin touring 36 major marketing areas next month.

Five leading architectural firms have been commissioned to design classrooms for SCHOOLROOM PROGRESS U.S.A., a traveling exhibit sponsored by The Henry Ford Museum and The Encyclopedia Americana to stimulate interest in better educational facilities. Display of latest in modern-classroom design and schoolrooms of past century will tour 250 cities in two railroad cars. Architects selected were: Perkins & Will, Curtis & Davis, John Lyon Reid & Partners, John Carl Warnecke, and Smith, Powell & Morgridge.

Honorary Doctor of Arts degree was awarded to R. Buckminster Fuller at University of Michigan.... University of Wisconsin gave honorary Doctor of Fine Arts to Frank Lloyd Wright.... Honorary Doctor of Laws degree was presented to Robert Moses at Pratt Institute.

New York Chapter, AIA, is accepting applications for 1956 Arnold W. Brunner Scholarship—\$2400 grant for advanced study in specialized field of architecture. Contact chapter office at 115 E. 40 St., New York 16, before November 15. . . . Several Fulbright awards for 1956-57 academic year will remain open until October 1, 1955. Lecturers in architectural design are needed in Copenhagen, Aachen, and Baghdad; opportunities for architectural research are available in Finland and Greece.

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newsletter

Frederick Gutheim Washington Perspective

My friendship with Marshall Shaffer began in Chicago in the fall of 1933 when we met at a Hull House dinner for Sir Raymond Unwin. Shaffer was convalescing from tuberculosis of the eyes and was living at Hull House as a resident. Work on Neutra's Rush City had aroused his interest in planning and housing, and launched him in a sea of social-welfare speculation. I was fresh from Washington and the first six months of the New Deal, so we had much in common. There was never any question in my mind that his determination to become an architect originated in an idealistic desire to use that profession as a means toward greater service to humanity. (He had been educated and had practiced for several years as a mining engineer.) Shaffer was never a great designer, but had an unshakable conviction about the purposes of architecture, leadership and organizing ability, an understanding of shock appeal, a strong sense of method and a willingness to undertake arduous studies, and a pronounced bent toward practical things.

These qualities were not especially desired in the architectural offices of the 1930s. The unconventional career Shaffer followed in the next few years led him to Washington, where he applied Neurath's "little men" to a WPA statistical drafting project, and did some mysterious work for Dave Williams' housing programs; and to Pratt Institute as architectural instructor, displaying unique teaching abilities. Before he joined the U. S. Public Health Service in 1939, almost by accident and certainly not as the result of formal selection, his architectural experience had been extremely limited. Dr. Mountain at USPHS did not expect him to design hospitals.

That gifted official saw ahead a vast Federally aided hospital building program, on the model of the Federal highway program, and appreciated Shaffer as a man with a belief in such a program and a capacity to promote it; and later on he recognized his abilities to formulate its architectural standards and criteria and to direct its architectural program. What deceptions and rationalizations he practiced to justify this appointment I can only imagine, but there is no question that Mountain knew what he wanted and what he was getting—an unconventional but dedicated man.

So it happened that when the hospital demands of congested war production areas had to be met by some form of Federal action, USPHS was ready with the basic data that could be readily converted to design and construction standards. Before he started on the Hill-Burton program, which became his monument, Shaffer sharpened his tools on the wartime hospital building program. And when the war ended USPHS was ready with its program enacted by Congress in 1946. The Hill-Burton legislation (P.L. 725) was a milestone in Federal aid programs, and a whole decade later only the National Science Foundation act deserves to be compared with it. Federal aid proposals in



school building, the arts, and other fields have been modelled on it.

The law authorized surveys of hospital needs and the preparation of state building programs, described administrative procedures, and set program standards. The authority under which Shaffer operated was contained in two sentences authorizing the formulation of standards and requiring approval of plans and specifications. The assurance of architectural standards was provided chiefly by the Federal Hospital Council and equivalent state councils which, in effect, have reviewed and approved the program's regulations.

These observations on Marshall Shaffer's career are not prompted by any desire to document or eulogize the man who at his death was the most significant architect in the Federal service. They are the result of a somber reflection on our incapacity to secure any continuity from one such creative individual to another. It is not to deprecate Shaffer's assistants or his successors to imply that they are unable to carry on as he did. They know it better than anyone else. But they know, too, that within the structure of government, with its continuing responsibilities, little attention is paid to building architectural careers of the special nature government work requires. Good architects drift from their pigeonholes, where there seems so little chance to advance and to develop one's abilities; or they tend to dry up, to lose their perspective, or to succumb to that dry dot of bureaucracy-timidity. We are failing to secure and keep in office the very men who are needed if the talent of private architects is to come to fruition in government work. Not efficient bureaucratic rubber stamping, or merely keeping out of the way of private architects, but executive and creative abilities of the first order are needed to sustain architectural programs from year to year at the political level. And we have not found the way to get them.

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August 1955

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222 P.S.

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Try this experiment. Take a piece of multiple accordion aluminum. (We'll send you some free samples.) Hold it very close to your cheek without touching. You'll be surprised! Notice how, in seconds, your cheek feels a glow of warmth. Why? Because the heat rays which are leaving your face (although without temperature), are being thrown back again at a 97% rate by this amazing insulation. Reflected to your cheek, the rays are now reabsorbed at a 90% rate and turned into heat.

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*Patent applied for.



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p/a progress preview





prestressed lift-slab hospital

Litchfield County Hospital in Winsted, Connecticut, to adjoin and eventually replace the present 50-year old structure, will be the first hospital designed by Sherwood, Mills & Smith, Stamford, Connecticut Architects. It will also be the first multistory prestressed lift-slab structure in this area. The new five-story building, housing operating, emergency, pediatric, obstetric, and general nursing facilities, will be joined to the existing hospital by a glass-enclosed corridor. During a second construction stage the old hospital will be rebuilt to provide out-patient departments and administrative facilities. The first new structure, indicated on the plan above, will consist of four-way cantilever floor slabs, combined with light screen walls on all four sides. Rendering of south-west façade (above) indicates use of brick-faced cavity wall at basement level. Upper stories employ metal spandrel panels and fixed or operating glass panels. The penthouse is faced with metal siding. This new method of erection should result in a saving of approximately \$50,000 over conventional construction. Marchant & Minges of West Hartford, Connecticut, are the Engineers.



regional high school

Ramapo High School, also designed by Sherwood, Mills & Smith, will serve the towns of Oakland, Franklin Lakes, and Wykoff, New Jersey. Fine views, proximity to an existing residential street, and the need for a large outdoor playground determined the placement of the building on the high northern part of the site. The floor levels of this one-story school closely follow the contours of the site the only basement is on the east side where the land falls away sharply.

"Heart" of the school is the student commons and the library. Grouped around this core are the classrooms for languages, business education, social studies, science, home making, industrial arts, and music. Gymnasium and auditorium, each with a seating capacity of 750, are located so that they may also be used by the community without interfering with the school program. Garden courts have been introduced to separate the many activities, to provide an alternate passage between most elements of the plan, and to permit spacious outdoor extensions for large gatherings. The structural frame, based on a 6' 8" module, will be of rectangular hollow steel beams, girders, and columns, forming continuous steel bents. Wherever possible, glazed partitions are used for a sense of openness. Partner-in-charge of this project is Thorne Sherwood; job captain, Gray Taylor; site consultant, Bryan Lynch; educational consultant, Dr. Walter Cocking. Mechanical Engineers are Muzzillo & Tizian; Structural Engineers, Fraioli, Blum & Yesselman. Rendering: Schwartz

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The fact that the exposed surface of Waylite is one of the most efficient acoustical treatments known is in part responsible. Rooms that are comfortable to the ear are equally important in churches, auditoriums, offices, and many other structures.

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You will find 24 pages of engineering data on Waylite in Sweet's Catalog. Additional information is available on request. Address the Waylite Company, 20 North Wacker Drive, Chicago, Illinois or Box 30, Bethlehem, Pennsylvania.



N

p/a progress preview

Lutheran church





The first award for churches under construction or definitely commissioned, was recently given to Grace Lutheran Church, Teaneck, New Jersey, by the Church Architectural Guild of America. Paul Schweikher, New Haven, Connecticut Architect (also chairman of the Department of Architecture, Yale), and his Associates Earl P. Carlin and Roy Harrover submitted this design. To create a separate cloistered environment within walls, and an atmosphere not unlike that found in medieval monasteries, all of the functions of this church have been provided for within a large rectangular enclosure. The elements-a main sanctuary, a smaller chapel, a school with gymnasium and cafeteria-are divided from each other by interior courtyards. These openings not only segregate various activities, and provide pleasant vistas, again reminiscent of early church traditions; they also permit construction of 52,000 sq ft building complex in stages. Since each unit is complete in itself, the usual truncated appearance of partly finished work, during the course of construction, is averted. For the structural frame the architects have chosen exposed concrete, combined with curtain walls of masonry, glass, or metal panels. Cylindrical intersecting vaults over the main sanctuary will also be of concrete. The estimated cost of the project is approximately \$1 million.



marble ...

Writes Architect G. J. Maguolo: "It seems quite surprising, in view of the profuse use of marble throughout, that the entire marble installation in St. John's Hospital was but 1.4%of the total construction cost of this building. That, however, is not the entire story, for aside from the beauty and durability of the material there is an all-important factor – marble's minimum annual maintenance – a point which all of our clients have been quick to understand and appreciate."

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QUALITY CONTROLLE

detail analysis

Dear Editor: Please refer to page 137 of March 1955 P/A. Several elements of the details seem less satisfactory than they might be.

1. Sloping cuts of the cantilevered members look well, and have been used much lately. The principal objection is that the bottom edge of the web is in compression and is very inefficient. Particularly the notch at the sash is very disruptive, as it invites serious concentration of stress even with light loading. A straight cut with a lightly but continuously welded flange would be much more effective.

2. The jump in the top flange is troublesome to make and interrupts the bedding of the deck as well.

3. The spacing of bends is not indicated, but for any distance the 6I12.5 (least r = .72) would not be as strong as a 6B12 (least r = .90). A wood strut might look better and would shrink and swell with the deck.

4. The roof curb is very low and would invite leaks.

5. Streaking of the soffit of the upsweeping overhang seems inevitable without a deep drip-edge at the fasçia. A three-foot overhang is certainly a minor matter, but greater extensions are inviting.

Engineers are a serious nuisance to architects, I know. RALPH E. BRADDON Cleveland, Ohio

Dear Editor: The following is our answer to the statements made by Braddon:

1. The objection raised to the sloping cut on the cantilevered members is perjectly true, however, since the stress at the bottom (compression) edge of the resultant "T" is only 9.35 KSI when the jull depth of section is taken into account and also because the stress in the "T" is not in excess of 20 KSI when calculated in accordance with AISC Specifications (Section 18, Paragraph c), the additional expense of welding a sloping bottom flange on the beam to produce a theoretically more efficient section is not justified. The sloping cuts on the cantilevered beams were not made for the purpose of obtaining the implied cliché; they were so cut to maintain a maximum head room in the corridors while keeping the total height of the building to a minimum, thus resulting in a more economical job.

2. The "jump" in the top flange of the beam, although somewhat troublesome to make, was necessitated by the continuous stock windows. It was more economical to "jump" the beam than to place special windows fitted to each side of the beam or to place a metal closer at each beam.

3. In California all school buildings are designed for seismic loads and this strut is designed to act in a series of portals to resist the longitudinal seismic loads. It is utterly fantastic to think of making a moment connection with a wood beam. (Incidentally, the connection shown was not the same as built.) The reason a 6112.5 was chosen was that the Kaiser Steel Mill in California rolls this beam and it is cheaper and more readily available than a 6B12 imported from the east, so the local steel fabricators informed us.

4. The writer in making this criticism does not realize that this building has been in use about $3\frac{1}{2}$ years without any leaks and that the average rainfall for this area is about 8 or 9 inches. (There is no snow condition to worry about.)

5. Again there is not any streaking of the soffit in $3\frac{1}{2}$ years. The writer's attention is invited to the fact that this is an economical job and the roof was extended out only far enough to shade the skylight sash from the sun.

This office does not regard engineers as "a serious nuisance to architects," as we know that a complete synthesis is not possible for a working whole without the engineers' knowledge and ability. Designing a building is not a separate series of acts but an integration of related thinking and feeling. Architecture cannot be broken up into separate entity for design, but design must be a synthesis of related matter. Braddon should keep in mind . . . a broader view. ROBERT C. KAESTNER Visalia, Calif.

letters to the schoolmaster

Dear Carl Feiss: As a teacher, I have thoroughly enjoyed our of school a pair of years past. As a student, I have found much of instruction for myself there.

Now I take pen in hand (purely allegorical, since the typewriter is my only means of written communication other than engineering lettering) to comment on the first paragraphs of your column in February 1955 P/A.

The Supreme Court decision and your comments thereon are dear to my heart. As an engineer, I have been a misfit among my contemporaries, for I firmly believe that things are subordinate to people. The function of a machine, a road, or building is to serve people-and to serve people, that design must be of pleasing appearance to those who see it and not exacting upon the physique of those who would use it. The design of any thing must be sited to people in all respects, including the esthetic. This I have attempted to impart to my students, for development of personality and talent must be development of the whole man. The architect or engineer who is able to design only for function, without regard for esthetic appeal, is reflected by the city with a beautiful modern business district surrounded by slovenly tenements.

Some would say that this viewpoint is more that of the architect than of the engineer. But I find architects to be as faulty as engineers—too many ascribing beauty to that which is merely "different."

Returning to the Supreme Court, the thesis of the decision was most admirably expounded about two years ago in a sermon by the Rev. Robert C. Howe of First Methodist Church, Pittsburgh, Pa. Com-(Continued on page 16) p/a views

(Continued from page 15)

menting upon the rehabilitation of the Golden Triangle, he said, "The places where men sleep, eat, and spend their leisure time are of as great importance as the places where they work."

THOBURN F. PETERSON Assist. Professor, Engineering Drawing University of North Dakota Grand Forks, N. Dak. Dear Carl Feiss: It has come as a great surprise to me that with the extensive educational facilities devoted to architecture in this country, there seems to be almost no part of these aimed toward the further education of the practicing architect. I have written to several universities on this matter and with the exception of one (the University of Florida), there has not been forthcoming the slightest spark of interest or encouragement.

From your articles in P/A it would



Here, in our quality-control laboratory, an important routine check is being made to pre-determine thermostat efficiency. It is but one of many constant tests, using the very latest equipment, which assure that the various components of a Halsey Taylor Cooler meet the high standards of quality and performance we have established. That's why architects and schoolboard officials recognize the value of specifying Halsey Taylor, for coolers

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appear that you are the authority on this subject. I should like to put my problem before you in the hope that you may have a suggestion to offer.

My background is as follows: limited higher education consisting of two years of junior college, a year of painting and two years of evening school in architecture; extensive experience since 1940 in leading offices in New York and Florida; registered by examination in Florida in 1952 and certified by NCARB this year. Moderately successful practice in my own office since 1952 consisting of residences, development houses, stores, apartments, a chapel, a clinic, a restaurant.

Strangely, the thing that is separating me from architecture is the practice thereof. Daily association with businessmen who consider the architect as a trade to be bargained with and directed, monthly meetings with architects who advise that modern architecture "can't last"-these do more to harm than experience with clients, contracts, and materials does good. I require intimate association with trading of ideas with men striving toward an esthetic ideal. Perhaps I need to trade some of my practical experience for the bright impossibilities of the undergraduates. Mostly I require the guidance of men unquestionably my superior in vision and technique.

The course I seek should cover a month in the summer or fall of each year. It should be without credit, marks, attendance records, or formality. It should consist of design problems related to normal practice, given at a rate of at least three per week, plus lectures or demonstrations pertaining to esthetic concepts and presentation techniques. Criticism should be given in group seminars and should concern itself equally with planning, architectural beauty, and presentation. In short this course should help to improve the everyday architecture of the average practitioner and give him a tool to sell this better architecture to his average client.

It may be that, having found such a curriculum, I shall be unable to attend due to pressure of work or, if the present picture persists, infirmity of age. However, it would be comforting to know that the responsibilities of practice will not condemn me to eternal mediocrity.

> EDMOND A. PACHNER Palm Beach, Fla.



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Scorching utensils, acids, rough abrasions, anything that mars ordinary hard surfaces has no effect on Pomona Tile's "Space-Rite" Perma-glaze deck tile. Fused by an exclusive Pomona process, Perma-glaze has flint-like hardness. That is why this steaming kettle and potent lemon juice acid prove harmless to its lifetime jewel-like surface. Note the smart, new 6" by $4\frac{1}{4}$ " size tile in Pomona's textured Sun Yellow Perma-glaze. To guarantee complete client satisfaction, specify Pomona "Space-Rite" tile. Write for free catalog with actual tile samples of full line of colors.

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Parkland Union Junior-Senior High School. Architects: H. F. Everett and Associates, Allentown, Pa.; General Contractor: William Doall, Inc., Bangor, Pa.; Structural Steel Erection: Bethlehem Contracting Co., Bethlehem, Pa.; Steel Joist Erection: Posh Construction Co., also of Bethlehem.

NEW RURAL SCHOOL IN PENNSYLVANIA OFFERS MANY SPECIAL FACILITIES

Parkland Union Junior-Senior High School in Lehigh County, north of Allentown, Pa., is a new 2,905,000 cu ft steel and brick building with remarkably complete facilities. Built to serve nearly 1400 students from the surrounding rural communities, the school is situated on a plot of 88 acres.

Besides classrooms, library, gymnasium, pool, auditorium and cafeteria there are many special facilities. These include a complete print shop and photographic darkroom; a ceramics workroom; band and chorus practice rooms and a soundproof instrument-practice room; wood, metal and agricultural work and classrooms; a complete "family life" center, and fully equipped medical and dental examination rooms. Here, as in so many of today's new schools, the planners wanted spacious and up-to-date facilities, housed in a structure of strength and durability. For this reason the school building was framed with structural steel, with Bethlehem Open-Web Steel Joists spanning rooms and hallways to provide rigid, nonwarping construction, without the need for interior supporting columns.

In addition, the use of Bethlehem Joists also facilitated the installation of ducts and recessed lighting, because wires and conduits could be run right through the open webs. And in combination with the brick and concrete exterior of the building, Bethlehem Open-Web Steel Joists provide maximum fire-safety.

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BETHLEHEM OPEN-WEB STEEL JOISTS



notices

elections

HARVARD GRADUATE SCHOOL OF DESIGN Association, recently formed to act as liaison between Harvard and its graduates in Architecture, City Planning, and Landscape Architecture, announces election of the following officers: President, ROBERT A. LITTLE, Cleveland; Vice-Presidents, GARRET ECKBO, Los Angeles, ROBERT GEDDES, Philadelphia; Secretary, JAMES L. HARRIS, Cambridge; Treasurer, JOSEPH P. RICHARDSON, Boston; Alumni Director, CHARLES W. ELIOT, Cambridge.

LEWIS G. ADAMS has been elected to a second term as President of the Architectural League of New York. Vice-Presidents elected are: LUMEN M. WINter, Painting; MOISSAYE MARANS, Sculpture; WOLCOTT E. ANDREWS, Landscape Architecture; HAROLD BARTOS, Design and Craftsmanship; JOHN G. SKIDMORE, Engineering; and WALKER O. CAIN, Architecture. FERDINAND EISEMAN was elected Secretary; HENRY C. EIPEL, Treasurer.

awards

RICHARD VROOMAN, Assistant Professor of Architecture, AGRICULTURAL AND ME-CHANICAL COLLECE OF TEXAS, was awarded First Prize in a recent competition to select an architect to design and supervise construction of a nondenominational chapel on the campus of that college.

At the first annual CIVIC PRIDE LUNCH-EON, sponsored by CHICAGO ASSOCIATION OF COMMERCE AND INDUSTRY and CHI-CACO CHAPTER, AIA, held in Chicago on April 12, Alexander Hamilton monument in Lincoln Park (Architects MARX, FLINT & SCHONNE) and 18 buildings were cited as outstanding architectural contributions to a new Chicago. Honor Awards went to: St. Patrick's High School (Architects BELLI & BELLI); Veterans Administration Research Hospital (Architects SCHMIDT, GARDEN & ERIKSON); Village Market (Architects MITTEL-BUSHER & TOURTELOT); Sawyer Biscuit Co. factory and Lake Meadows Apartments (Architects SKIDMORE, OWINGS & MERRILL); American Bar Center (Architects HOLABIRD & ROOT & BURGEE).

Honor awards for superior craftsmanship in the building trades allied to architecture went to: WOODWORK CORP. OF

America; Hartmann-Sanders; Rippel Architectural Metals; Hagerstsrom Metalcraft Studio; American Terra Cotta Corp.

new course set up

COLUMBIA UNIVERSITY School of Architecture has set up a graduate program leading to the degree Master of Science in Architecture. The course, which will be conducted by the faculties of the school and University, and 22 professional consultants, requires one year of residence and is open to graduates holding degrees of Bachelor of Architecture or equivalent. Applications should be made as early as possible.

(Continued on page 20)



DIRECT ADHESIVE ROMANY TILE SETTING

Direct adhesive ROMANY tile setting makes possible the difference of 7/16" wall thickness from rough block to finished tile, as opposed to approximately 1-1/2". This space saving, applied to a long school corridor becomes a very interesting item. Even when figured in terms of an average classroom, say 20 x 30 ft., the area saving amounts to about 8-3/4 sq. ft., a saving which can be applied to additional floor space or to reduce high cubic foot costs in school work.



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UNITED STATES CEPANIC TILE COMPANY

Member: Tile Council of America and Producers' Council, Inc. 217-G FOURTH ST., N.E., CANTON 2, OHIO (Continued from page 19)

new partnerships

STEPHEN F. VOORHEES, RALPH T. WALKER, PERRY COKE SMITH, and BEN-JAMIN LANE SMITH, upon retirement of MAX H. FOLEY, announce the formation of a partnership under the name of VOOR-HEES, WALKER, SMITH & SMITH (as successor to firm of VOORHEES, WALKER, FOLEY & SMITH). The new firm also announces the association of MAURICE GAU-THIER, JOSEPH L. HAUTMAN, HARRY TAY-LOR GHERARDI, CHARLES L. MACCHI, CHARLES HAINES, CARLTON P. ROBERTS, and FRANK J. ROORDA as JUNIOF Partners; and JAMES J. BUCKRIDGE, COMptroller.

FREDERICK E. EMMONS, ARTHUR B. GAL-LION, DOUGLAS HONNOLD, A. QUINCY JONES, MAYNARD LYNDON, JOHN REX, and RAPHAEL S. SORIANO have formed the firm of PROJECT ARCHITECTS, Suite 1007, 3460 Wilshire Blvd., Los Angeles 5, Calif.

business notices

JOHNSON SERVICE COMPANY, Milwaukee, Wis., manufacturers of automatic temperature control systems, announces opening of new branch offices at Akron, Ohio; Mobile, Ala.; New Haven, Conn.; Sacramento, Calif.; Springfield, Mass.; Tampa, Fla.; Wilkes-Barre, Pa.; and Youngstown, Ohio.

Formation of The Allied Masonry Council was announced March 30. The Council supporters include Structural Clay Products Institute, Marble Institute of America, Building Stone Institute, Indiana Limestone Institute, Mason Contractors Association of America, and Bricklayers, Masons and Plasterers International Union of America, AFL.

P/A congratulates

W. C. JONES, manager of Heat Transfer Section, WESTINGHOUSE ELECTRIC CORPO-RATION, newly elected President of the HEATING AND COOLING COIL MANUFAC-TURERS' ASSOCIATION; and L. A. CHILDS, assistant to the president of AEROFIN CORPORATION, newly elected Vice-President of the Association. R. C. MAHON and WALTER F. SHEETZ, recently elected Chairman and President respectively of R. C. MAHON COMPANY, Detroit, Mich.

GEORGE C. SMITH, recently appointed architectural representative for THE PHILIP CAREY MANUFACTURING COM-PANY, greater New York area. R. F. BARKER, recently appointed General Manager of Planning, glass manufacturing division, PITTSBURCH PLATE GLASS COMPANY, Pittsburgh, Pa.

W. A. MATHESON, JR., newly appointed Vice-President for Sales and Director, MAMMOTH FURNACE COMPANY, St. Paul, Minn.



CONSTRUCTION DETAILS

- for LCN Overhead Concealed Door Closer Shown on Opposite Page The LCN Series 200 Closer's Main Points:
 - 1. Efficient, full rack-and-pinion, two-speed control of the door
 - 2. Mechanism entirely concealed; arm disappears into door stop on closing
- 3. Hydraulic back-check prevents door's being thrown open violently to damage walls, furniture, door, hinges, etc.
- Hold-open (optional) set at any one of following points: 85°, 90°, 100° or 110°
- 5. Easy to regulate without removing any part
- 6. Used with either wood or metal doors and frames. Complete Catalog on Request—No Obligation or See Sweet's 1955, Sec. 17e/L

LCN CLOSERS, INC., PRINCETON, ILLINOIS

Earle L. Sheppard, F.R.A.I.C., Architect

(25)

MODERN DOOR CONTROL BY LCN . CLOSERS CONCEALED IN HEAD FRAME

1940

25 ADELAIDE WEST, TORONTO, ONTARIO LCN CLOSERS, INC., PRINCETON, ILLINOIS Construction Details on Opposite Page



Mississippi Wire Glass Helps Protect Buildings Against Tragic, Costly Fires

When fire utterly gutted this building, it was unable to spread to the neighboring structure because Mississippi Wire glass windows, in metal frames, efficiently prevented windblown sparks and searing heat from reaching the interior. For though cracked by heat or smashed by a blow, wire glass tends to remain in the opening . . . continues to offer utmost protection at minimum cost.

And these same properties enable Mississippi Wire Glass (Approved Fire Retardant No. 32) to help bottle up fires and prevent them from roaring into a costly tragedy like that above.

Mississippi Wire Glass has saved many lives and millions of dollars' worth of property from fiery destruction. It is recommended for installation in windows, skylights, partitions, doors and in all other vulnerable locations where fire or breakage protection with daylighting is desired.

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offers freedom of design. Saving of space and exceptional strength

PRACTICALLY IMPERVIOUS TO THE FORCES OF DESTRUCTION • RESISTS FIRE, SOUND, SHOCK AND EXPLOSION

METAL LATH for LASTING QUALITY JENUINE ECONOMY

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PLASTER ON



Partition end cap being applied to Alabama Studless Partition in the Herman E. Perry homes, Atlanta, Georgia. (198 buildings — 1,000 apartment units.)



A labama studless partition cut costs three ways

Four "A" Quality

METAL LATH and accessories

Full scale laboratory tests have proved the quality constrution of metal lath and plaster 2" solid partitions. Experien has proved they offer these economic advantages:

 Reduced material and lower erection costs because studs a eliminated.

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Specify Plaster on Metal Lath f



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ou get better looking, longer lasting building interiors . . . at ess than half the cost of other wall opening finishes . . . when ou specify Bostwick Door and Window Casings. Only one nstallation operation is required because these casings provide oth screeds and trim.

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Every Bostwick Casing is perfectly formed.

Installation of Quarter Round Casing with Expanded Metal Flange.



In construction products CECO ENGINEERING makes the big difference



 $\label{eq:SUSPENDED CEILING UNDER CONCRETE JOISTS - In the foreground, Ceco Steel Furring Channels are shown beneath Ceco-Meyer Concrete Joist Construction, ready for application of metal lath for a fire-safe ceiling. In the background, Ceco Diamond Mesh Lath has been tied to channels, forming the plaster base for a fire-safe suspended ceiling and wall.$



FURRED CEILING ON STEEL JOISTS — Here you see how Diamond Mesh Metal Lath is tied to furring members attached to Open-Web Steel Joists. Notice also that Rib Lath has been used for centering above the joists.



SUSPENDED CEILING WITH MACHINE-APPLIED PLASTER — Scratch coat as well as brown coat can be successfully applied to Ceco Metal Lath, as demonstrated by this plasterer at the San Mateo County Community Hospital, San Mateo, California (Architects: Stone and Mulloy; General Contractor: Robert E. McKee Company; Lathing Contractor: Jack Dymond Lathing Corporation; Plastering Contractor: E. E. Parker, Inc.).





CECO 3/8" Rib Lath



World's finest firesafe ceilings proved by test of time





Modern CECO Metal Lath and plaster provide high fire resistance...yet can be easily shaped to any design

For imperishability, the ceilings of a caveman's home set a standard that is hard to beat. Formed of solid stone, hese monolithic structures are in as ine condition today as when inhabited housands of years ago. But now that Man has come out of the ground and reated his own ceilings, materials nust be more adaptable. And filling his bill best, as proven through a half entury of use, are metal lath and plaser — easily shaped to any design . . . and permanent. When plaster is bondd to a continuous web of Ceco Metal Lath, the result is a ceiling resistant to re, cracks and earthquake . . .

- a truly monolithic ceiling, with the characteristics of a single solid slab of stone . . .
- a ceiling easy to decorate, easy to keep clean, easy to live under . . .
- a ceiling ideal for the finest modern structure

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Flames naturally rush upward in a burning building. The most effective ... least expensive . . . way to fireproof is to place a fire-safe membrane between the floor structure and the fire below. This is best done by providing a *suspended*, *furred* or *contact* ceiling made of plaster on Ceco Metal Lath.

Write Ceco for fire ratings of various types of material and construction. Specifications for lathing and furring also are available on request.

Specify Ceco Lathing Products for your next fireproofing requirement. Ceco manufactures a full line of quality Metal Lath and Accessories, warehoused coast to coast. See your Ceco dealer for fast service — or write us.

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Quality and Genuine Economy

SUSPENDED CEILING — Diamond Mesh Lath is tied to channels with tie wire to form a non-combustible plaster base for a suspended ceiling. With plaster applied, this creates an insulating membrane between the floor structure and any possible fire below . . . eliminates need for encasing each individual structural member . . . provides fireproofing to satisfy codes.





METAL LATH



Machine applied, lightweight-aggregate plaster may now be used in almost any type of building, bringing costs of the finest interior surfacing well within those of lesser materials.



Membrane fireproofing of beams and girders is machine applied. Modern plastering machines move lightweight-aggregate plaster up to a distance of 75 feet for fast, uniform application.



Detail shows membrane fireproofing with Milcor lath suspended from Milcor CELLUFLOR.

New Methods Cut Costs in Fireproofing Cellular Steel Floors

Specify Plaster on Metal Lath for



Machine-application of plaster to metal lath marks dramatic progress in membrane fireproofing

In recent years the use of cellular steel floors has established a new concept of electrical flexibility, as well as erection and maintenance economies in modern buildings.

Now the increasing use and acceptance of the plastering machine is proving to be another revolutionary development in the industry. The application by machine of scratch, brown and finish coats of plaster to metal lath is thoroughly practical. Savings in time and cost are substantial.

Membrane fireproofing of cellular steel floors by machine application of plaster over metal lath affords the advantages of practical fire protection in combination with important cost-reducing factors. Together these developments make one of the building industry's most interesting stories.

Write for Catalogs on Milcor Metal Lath Products and Milcor Celluflor, also for Bulletins on Membrane Fireproofing and Machine Application of Plaster.

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Metal lath membrane fireproofing of steel columns is unequalled for simplicity and economy.

Build better with Gold Bond[®] Building Products





Gold Bond "Z" Ceiling Runners are easily attached with concrete stub nails or rawl drives. Steel channel studs fit into runners and the vertical web compensates for variation in ceiling height automatically. Gold Bond Metal Base Clips are nailed to floor every 12 or 16 inches. Sections of Gold Bond Metal Base are quickly snapped on both sides of base clips, and the framework is ready for lathing. Big, easy-to-handle 27" wide sheets of Gold Bond Diamond Mesh Lath are fastened to studs with tie-wire. Maximum sound insulation and floor-line partition strength are assured by filling base with a plaster grout.

TECHNICAL DETAILS



Perspective of 2" Solid Plaster Partition Showing Assembly With Gold Bond Fluth Type Metal Base

Save money from 2" solid metal



Four separate parts, easily combined, form the basic framework for the 2-inch solid partition assembly: A) Gold Bond "Z" Ceiling Runner; B) Gold Bond Channel Studs; C) Gold Bond Metal Base; D) Gold Bond Metal Base Clip.

Specify Plaster on Metal Lath for

Gold Bond 2" Solid Metal Lath and Plaster Partition System

Gold Bond 2-inch Solid Metal Lath and Plaster Partition System with channel studs occupies a minimum amount of floor and building space. The four metal units making up this economical system form a durable, space-saving, non-bearing partition for use in interior wall construction.

Gold Bond Hollow Wall System

Gold Bond Hollow Wall System is the companion to the Gold Bond 2" Solid Partition. It uses the same basic com-

ponent parts as the 2-inch System but is a double wall rather than a single wall with no connections between partition faces. It is excellent for party walls where reduction of noise transmission is required. Installation and concealment of utilities is greatly simplified. The Hollow Wall System has a one-hour fire rating and a 48.1 decibel sound-insulating rating.



"start to finish" with Gold Bond"

lath, plaster, and channel partitions

IN CONSTRUCTION — No other durable construction with comparable fire and sound resistance can be built as inexpensively as a solid partition.

IN SPACE — Architects of buildings costing \$12 per sq. ft. save \$3 on floor space for every lineal foot of 2-inch solid partition compared to wood studs or masonry partitions.

IN WEIGHT—Metal Lath solid partitions with sanded plaster weigh less than 18 pounds per square ft. This low weight can save over 100 pounds per lineal foot of 10-ft. high partition compared with cinder blocks.

Quality and Genuine Economy

IN MAINTENANCE — Metal Lath reinforces the partition to make it highly shockproof. Impacts are absorbed with minimum chances of cracking plaster. Smooth plaster surfaces are easy to clean and redecorate whenever necessary.

IN ADDITION — the Gold Bond 2" Solid Metal Lath, Plaster and Channel Stud Partitions form an effective sound barrier with a sound transmission loss rating of 39.4 decibels. The combination of steel and gypsum plaster has a one-hour fire rating.

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For complete information on Gold Bond Metal Lath and Plaster, write to:

NATIONAL GYPSUM COMPANY BUFFALO 2, NEW YORK



Penn Metal Company manufactures a complete line of metal lath and accessories in addition to LIGHTSTEEL sections



Here is a

low-cost, easy-to-erect partition with

load-bearing studs

This "packaged" load-bearing partition consists of Penmetal LIGHTSTEEL structural studs, fastened at top and bottom to LIGHTSTEEL track and braced with LIGHTSTEEL bridging. With metal lath wire-tied to both sides of the studs, and then plastered, it provides a light-weight, fire-safe construction that cuts the transmission of sound by as much as 46 decibels.

Specify Plaster on Metal Lath for



No. 330 clip furnished for $2\frac{1}{2}$, 3'' or 4'' base to provide $\frac{1}{2}$, $\frac{1}{$



Wall panels are easy to handle and erect. Photo also shows the use of LIGHTSTEEL joists.

The sections are fabricated from structural grade steel by cold forming and are designed specifically for strength, light weight and low cost. They offer all the benefits of conventional steel sections, yet you do not pay for extra load-carrying capacity you do not need.

You save on erection, too. Sections are designed to fit together for ease of assembly and welding in the shop or at the job site. Because of their light weight, complete wall panels can be readily trucked to the job site and erected in short time. Still further economies can be effected by using openings in the studs for the installation of wiring and piping.

An additional feature of this partition is the exclusive Penmetal No. 330 clip which firmly attaches metal base to the studs. Flush with the plaster surface, the base is in keeping with modern trends toward simple lines and straight surfaces.

Write for answers to any questions you may have about this "packaged" partition.

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The Metal Lath Accessories illustrated above are among the more than 40 different items for better plastering in Truscon's complete line. They are easy to erect, easy to form, easy to work over, and assure the finest quality of finished work because of their precision manufacture.

Truscon metal lath accessories assure finest plastered interiors

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The extreme rigidity of this lath is due to the $\frac{3}{2}$ ribs spaced on 4" centers. It is a perfect lath as a combination form, centering and reinforcement for concrete slabs in steel joist construction. The lath is securely attached to top of joists with top lath clips or by wiring.

Truscon 3/4" Self-Sentering

This lath is most effective as a centering and reinforcement for concrete roofs and floors, and for use on much greater spans than are permissible with 24° Ribplex. $24^{\circ\prime\prime}$ ribs are spaced $356^{\circ\prime\prime}$ on center and connected by a diamond mesh — cut and drawn from one sheet of steel.

Truscon Rib Laths offer maximum centering advantages

Metal Lath Centering with Truscon Rib Laths offer an economical method which provides both reinforcing for the concrete and a rigid form which does not need to be stretched taut. The Rib Lath is quickly placed and tied or clipped to the supporting steel joists. After concrete has hardened, the slab and steel joists are bonded together in a rigid floor system.

Truscon $\frac{3}{8}^{"}$ Ribplex, used as a centering for the top slab, will not exert a lateral pull on the top chords or flanges of the steel joists. Consequently, there is no need for costly temporary bracing. $\frac{3}{8}^{"}$ Ribplex centering eliminates any danger of twisted or weakened joists.

Truscon $\frac{3}{4}$ " Self-Sentering Lath comes in sheets 29" wide, widest of any material made for a similar purpose. The decreased number of laps results in substantial savings in erection labor.

For complete information on Truscon Metal Lath Centering, write to



Lasting Quality and Genuine Economy

Thickness of Slab Above Mesh	Weight of Concrete (Lbs. per Sq. Ft.)	Weight of Lath	Safe Superimposed Loads (Lbs. per Sq. Ft.) Span in Inches			
		Sq. Yd.)	12	16	19	
2"	24	3.4	950	536	380	1

5.4

3.4

50 30 36

Loading Table for 3/6" Ribplex

Loading Tables for 3/4" Self-Sentering

766 815

1450

Thick- ness of Slab	Weight of Slab Per Sq.	Weight of Lath Per Sq.	Maxi- mum Span for Centering	Safe Superimposed Loads: (Lbs. Per Sq. Ft.) Span in Feet		ads:	
Above Mesh	Ft. (Lbs.)	Ft. (Lbs.)	Wet Concrete	3'	4'	51	6"
2" 2"	24 24	.60 .75	3'-3" = 3'-7"	325 438	170 233	98 138	55 87
21/2" 21/2"	30 30	.60 .75	2'-11" 3'-3"	422	222 302	129 180	78 114
3" 3"	36 36	.60 .75	2'-8" 2'-11"	518	273 373	160 224	98 142
31/2"	42 42	.60	2'-5" 2'-9"	*****	325 442	190 267	117
4"	48 48	.60	2'-3" 2'-6"		378 514	222 310	138

to lower costs . . . to simplify installation of services . . . specify this

fireproof, fast-erecting hollow partition system

using TRUSSTEEL* studs and U.S.G. metal lath

FIREPROOF—one to 21/2 hour rating, depending on type of metal lath and plaster used.

GOES UP FAST—TRUSSTEEL Studs require little, if any, cutting or fitting on the job. Attachment shoe allows quick adjustment (up to 4 in.) for varying ceiling heights. Metal lath is easily attached with wire ties.

ECONOMICAL—TRUSSTEEL Studs cost no more than wood yet permit easier concealment of conduits, ducts, plumbing and other services; ample strength without bulk for savings on structural steel.

LIGHTWEIGHT—finished partition weighs as little as 11½ lbs. per sq. ft. permitting installation most anywhere without additional structural framing.

RESISTS SOUND TRANSMISSION—sound ratings from 40.5 db. to 54.7 db. depending on lath attachment.

STRONG-equal in strength, *after plastering*, to any comparable non-bearing steel stud partition.

VERSATILE-TRUSSTEEL Studs are available in various widths for finished wall thickness of 4 to 8 in. *T. M. Reg. U. S. Pat. Off.



FOR MORE INFORMATION AND DETAILS:

See Sweet's, section 11; contact your U. S. G. Architects' Service Representative or Sales Representative; or write Dept. PA-5, 300W. Adams St., Chicago 6.





STATES



Fire Safety-Number One Concern of Every Architect

In spite of organized effort against it, the nation's annual fire toll continues its appalling increase. Ten years ago losses averaged a million dollars a day. Last year they averaged more than two and a half million dollars a day. The architects and builders of America hold

the key to eventually winning the fight with this ruthless destroyer of life and property.

Plaster on Metal Lath-Number One Fire Protection

The built-in fire protection of metal lath and plaster has been demonstrated again and again during the past half-century. Repeated tests have established authoritative fire resistance ratings for plaster on metal lath. Countless fire tragedies have been prevented in existing buildings because architects have specified plaster on metal lath.

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Complete technical data on fireproofing, partitions, ceilings and other types of metal lath and plaster construction is available from the Metal Lath Manufacturers Association. Products or systems of each of the member companies, whose advertisements are on preceding pages, are not confined to those listed in their individual advertisements. See Sweet's Files, Architectural, for general specification data and for manufacturers' catalogs.

Engineers Building * Cleveland 14, Ohio





Design For Modern Home Entrance by The Architects Collaborative

WHAT A WEALTH OF COLOR AND SERVICE CERAMIC TILE GIVES ... INSIDE AND OUT."

Walter Groping For The Architects Collaborative

Architect Walter Gropius and his TAC colleagues captured the beauty and practical nature of ceramic tile in this forward looking home entrance and patio. Making the most of their material, they compel ceramic tile to contribute the maximum in design and service.

This project shows graphically the wide range of colors, surface textures and unit sizes available in ceramic tile. Note the heavy duty floor tiles on the patio ... the matte finish glazed tiles on the exterior sidewall ... and the small floor units surfacing the decorative

pool. They all resist water, wear and weather.

Ceramic tile surfaces can help you put your clients miles ahead on maintenance, too. Tile floors, walls and counter tops never need strenuous cleaning, waxing, painting or replacement.

When you plan your next residential, commercial or institutional project, remember you can save your client future maintenance expense. In addition, you can give the distinction of custom installations by the imaginative use of standard ceramic tiles.

The Modern Style is



TILE COUNCIL OF AMERICA, Room 3401, 10 East 40th St., N.Y. 16, N.Y. or Room 933, 727 W. 7th St., Los Angeles, Calif. PARTICIPATING COMPANIES: American Encaustic Tiling Co. . Architectural Tiling Co., Inc. . Atlantic Tile Mfg. Co. B. Mifflin Hood Co. + Cambridge Tile Mfg. Co. + Carlyle Tile Co. + General Tile Co. + Gladding, McBean & Co. + Jordan Tile Mfg. Co. Mosaic Tile Company • Murray Tile Co., Inc. • National Tile & Mfg. Co. • Olean Tile Co. • Pomona Tile Mfg. Co. • Robertson Mfg. Co. Royal Tile Manufacturing Co. • Sparta Ceramic Co. • Summitville Tiles, Inc. • United States Ceramic Tile Co. • Winburn Tile Mfg. Co.

You can save \$100 on every door!

Multiply the number of door openings in your next building by \$100, and this quick arithmetic will give you the total savings you can realize with Fenestra* Door-Frame-Hardware units. These big savings are possible because of a new concept in the building and installing of doors.

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Duriron Acid Proof Drain Pipe will probably outlast the new Science Building at Howard College. At least, this has been the history of Duriron installations. The reason is that Duriron's extremely high resistance to corrosion is present through the entire thickness of the pipe wall. Installed by ordinary plumbing methods, the first cost is the last cost. For the life of the building, insist on Duriron. Available from stock in principal cities.

> THE SCIENCE BUILDING Howard College Birmingham, Alabama

Architects: VanKeuren, Davis & Co.



The Duriron Company, Inc. Dayton, Ohio

These Pittsburgh Architectural Representatives invite you to visit their exhibit on the Producers' Council Caravan

Again this year, the Producers' Council Caravan of quality building products brings you a collection of displays of the most significant building product developments of our time.

Pittsburgh's display is certain to hold your interest. For here are included some of the Glass Products manufactured by Pittsburgh Plate Glass Company which are finding increasing preference among architects, builders, and home owners all over the country. You will find this display very interesting and informative on the new spandrel glazing construction. Descriptive literature will be available to you for permanent reference.

For any detailed information you may require, we suggest that you get in touch with your nearest *Pittsburgh* Architectural Representative. He will be on hand to offer every assistance.

Pittsburgh Plate Glass Company, Room 5330, 632 Fort Duquesne Boulevard, Pittsburgh 22, Pennsylvania.



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42 Progressive Architecture



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Like the ancient coppersmith, our pride of product is that of the *integrated specialist*. And the Lewin-Mathes nation-wide supply facilities serving you, we believe, are second to none.



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JOHNSON CONTROL at NORTHLAND Insures

Expert opinion rates Detroit's remarkable Northland Center as not only the largest of all shopping centers, but as the most nearly perfect in providing *total* comfort and convenience for its patrons.

The comfort *control* problems involved here are particularly interesting. The year 'round air conditioning system involves 72 air handling units in the six buildings. For economy, a central plant supplies all steam and chilled water.

The number and sizes of the individual stores are important considerations. The 90 tenant stores range upwards in area from a few hundred to tens of thousands of square feet. Comfort requirements also differ by *types* of stores—nearly every kind of retailing operation is represented at Northland!

Occupancy levels change throughout the day. An average of 45,000 people shop here daily. Peak traffic reaches 68,000. Other variables include outdoor temperatures, wind, exposure and large glass areas.

To solve these and similar comfort control problems correctly, Northland Center depends on a comprehensive system of Johnson Automatic Temperature Control. Johnson engineers designed an up-to-the-minute control system that provides *ideal temperatures in every sales area in every store at Northland*. It insures tenant satisfaction and caters to customer comfort. And, equally important, the superior economy features of Johnson Control make it possible to accomplish all this at the *lowest possible* operating cost.

Next time you have a temperature control problem, give yourself the benefits of this kind of modern temperature control engineering skill. Whether it's a shopping center, store, office building, school, hotel, hospital or factory, a nearby Johnson engineer is ready with the best answer. JOHNSON SERVICE COMPANY, Milwaukee 2, Wisconsin. Direct Branch Offices in Principal Cities.



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Appealing displays and assured comfort tempt customers to Hudson's Basement Store. More than 300 Johnson Thermostats at key locations in Hudson's and the 90 other stores respond to the slightest demand for more or less heating or cooling.



Conditioned air for small tenant shops is supplied by multi-zone air handling units, A single unit may handle 2, 4, 6 or 8 shops. *•* Each shop has individual temperature control. Entrance heaters are also controlled.



Larger tenant spaces have separate air handling units and controls. Solving the great variety of control requirements at Northland is an excellent example of the flexibility of Johnson Control.

Northland Regional Shopping Center, Detroit, Michigan. Architect: Victor Gruen Associated Architects & Engineers, Inc. Consulting mechanical engineer: H. E. Beyster & Associates, Inc. Heating contractor: The Donald Miller Co. Air conditioning contractor: Carrier Corporation.

NORTHLAND HIGHLIGHTS. World's largest shopping center. Includes The J. L. Hudson Co. Department Store (over 470,000 sq. ft.) and 90 shops in 5 other tenant buildings (over 525,000 sq. ft.). Hudson store is the largest built in over 25 years. Center is completely air conditioned, with 3,600 ton central refrigeration plant and 900 hp central steam plant. Store frontage totals 1¼ miles. In Hudson's alone, there are nearly 10 miles of heating, ventilating and air conditioning ducts.



Ideal Temperatures for 45,000 Shoppers a Day!

READ HOW THIS JOHNSON-ENGINEERED CONTROL SYSTEM PROVIDES MADE-TO-ORDER WEATHER FOR EACH OF 90 STORES...HELPS LARGEST SHOPPING CENTER GET THE ECONOMIES OF CENTRAL STEAM AND REFRIGERATION PLANTS



Multi-zone air conditioning unit serves a group of small tenant shops. Johnson Room Thermostats in individual shops regulate mixing dampers through T-800 Low Limit Thermostats on panel at right. At left, T-901 Submaster Thermostat varies the hot duct temperature in accordance with outdoor temperature. Another Thermostat controls the cold duct by operating a V-95 Water Valve on the chilled water supply.



Panel mounted controls for twin air handling units in the Hudson store. On each unit a Johnson Submaster Thermostat controls a Steam Valve on the reheat coil to regulate final discharge temperature of conditioned air. Correct discharge temperature is determined by strategically located Room Thermostats that average sales area temperatures and pilot a Pressure Regulator which resets the Submaster Thermostat.

> On adjoining units, powerful Johnson Damper Operators regulate Dampers on minimum and maximum outdoor air and return air as determined by Dew-point Thermostats. Another Thermostat on the unit at right acts as a Safety Thermostat on the Steam Valve. Hudson store is served by 18 large built-up units, 14 of which are installed in pairs as shown.



Good idea from Insulite Roof



HOUSE & GARDEN'S 1955 House of Ideas, Birmingham, Mich. Designer-builder: Richard B. Pollman, Richard B. Pollman Building Co., Detroit. Architects: Irving Palmquist, A.I.A., & Clifford Wright, A.I.A., Detroit.

"House of Ideas"... Deck combines 3 jobs in 1

Insulite Roof Deck goes on fast and combines three jobs in a single operation. It's roof deck, roof insulation and finished ceiling all in one. It reduces costs \$80 to \$300 per thousand square feet of surface.

Yet this money-saving product is just as at home in this luxurious HOUSE & GARDEN'S 1955 House of Ideas as it is in an economy 3-bedroom rambler.

In any home, Roof Deck's white pre-finished underside adds a definite touch of quality. The big, two-foot wide units contribute to that free, open look and complement the design aims of exposed beam ceiling construction. Here's how Roof Deck can help you build better for less on your exposed beam ceiling jobs . . .

1 It's a roof deck. Cuts application time as much as 45%. Only one material to handle. New Insulite Roof

Deck eliminates need for separate roof boards, insulation, lath and plaster and ceiling finishing. Roof Deck can save 12 man-hours per 1,000 sq. ft. of surface compared with 2"x6" D&M roof sheathing.

2 It's insulation with vapor barrier. No need for other insulation. Two-inch Roof Deck, for example, is comparable to 2" wood deck plus 1" fiberboard insulation and meets heat loss requirements for roof and ceiling construction. Exclusive built-in vapor barrier protects against condensation within the unit.

3 It's a finished ceiling. The underside of Roof Deck is factory-finished in white. Lay Roof Deck over prefinished beams—and ceiling is done. No need to plaster, paint, stain or wax. Available in 2'x8' units, $1\frac{1}{2}''$, 2" or 3" thick with or without exclusive vapor barrier.

Build better and save with



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Send for complete information now. Actual on-the-job pictures and construction details show how to use new Insulite Roof Deck to build better for less. Write Insulite, Minneapolis 2, Minn.

INSULITE IS A REGISTERED TRADE MARK

Multi-purpose Cemesto Panels* with stone-like beauty build permanent, insulated curtain walls...quickly, economically!

ST. JOHN SHOPPING CENTER, St. John, Missouri, showing how Cemesto Panels combine with aluminum accessories to provide handsome, modern exterior. Architect and Contractor: Fischer and Frichtel, Inc.

Unlimited designs made possible with attractive new metal accessories

More and more architects who seek versatility and low cost in building materials are specifying Cemesto Panels. Because here are Structural Insulating Panels that build attractive curtain walls when used alone . . . or blend harmoniously with other wall materials such as brick, stone, wood, glass, and metals.

MANY BENEFITS

Each Cemesto Panel is a complete self-containing curtain wall unit with high insulation value, exceptional structural strength, and pleasing finish. The hard, smooth, stone-gray surfaces afford excellent light reflection and add new beauty. Panels can be worked with ordinary tools on the job, or pre-cut at the mill for faster application. Quickly attached to steel framing with metal accessories, or to wood framing with nails or screws.

DOUBLE-PURPOSE ACCESSORIES

New extruded aluminum accessories aid Cemesto Panels in lending beauty to curtain walls. They have built-in Neoprene gaskets for weather tightness. Exterior face of these battens has a regular-or satin-finished-surface which harmonizes with gray Cemesto Panels.



To the architect, Cemesto Panels bring a remarkably versatile building material that can be used for curtain walls, roof decks, partitions. Write today for New File 5500... 52-page simplified data book on design and application details of Cemesto Structural Insulating Panels. The Celotex Corporation, Dept. PA-85, 120 S. LaSalle St., Chicago 3, Ill.

*Cemesto Panels are strong, rigid, permanent insulating structural units! Their core is Celotex cane fiber insulating board effectively protected against dry rot and termite attack by the exclusive Ferox® Process. Non-combustible cement-asbestos facings are bonded to both sides of this insulating core by a moistureproof adhesive. Cemesto Panels resist fire, weather, and wear, need no painting or maintenance.



KEARNEY-TRECKER PLANT, Special Machinery Division, Milwaukee, Wis., presents striking exterior of Gemesto Panels with harmonizing stainless steel accessories. Total Cemesto Panel footage, including curtain walls and department partitions...70,000 sq. ft. Designer and Engineer: V. K. Boynton.

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NOW Mengel has done it again with Gold Coast Cherry — the newest addition to our extensive line. In a few short months, Mengel Doors in rotary-cut Gold Coast Cherry have bounded to *sensational* popularity!

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- Grooves either 2" or 4" o.c. Panels available in several stock sizes.
- EXT-DFPA® on panel means waterproof glue.

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Introduced only last year, Texture One-Eleven has already stirred the imagination of countless architects and builders. Here are a few of the ways it's being used—for accent or feature...outdoors or in...for residential or commercial buildings.



ACCENT flat plywood, masonry and other materials with Texture One-Eleven. Fits new panelized exterior treatments.



ACCENT residential or commercial interiors with Texture One-Eleven. Deep parallel grooves create striking shadowline pattern.



ACCENT your homes with Texture One-Eleven patio fences and outdoor storage units. Adds sales appeal at little extra cost.



ACCENT lines created by bold grooves add high style to strength, durability and economy of Exterior fir plywood.



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ACCENT carport walls, add extra bracin strength with Texture One-Eleven. Pane weather well, made with waterproof glue



ACCENT on savings. Builders report panel slash application time and labor costs. Ca be applied without sheathing.

See your lumber dealer. He stocks Texture One-Eleven or can get it for you

Looking Out

through Parallel-O-Plate you see every detail distinctly.





Looking In

through Parallel-O-Plate you hardly know the glass is there.

Looking At

merchandise through Parallel-O-Plate you see it å as it <u>is.</u>





Architects: Weinberg and Teare, Cleveland, Ohio.

Shoppers see better through new Parallel-O-Plate glass

You are looking at the most distortion-free plate glass ever made in America-Libbey Owens Ford twin-ground Parallel-O-Plate Glass!

It makes quite a difference to the shoppers here at Lamson's great new suburban department store in Toledo, because they see things in the windows and display cases more clearly and distinctly than ever before.

It makes quite a difference to the store owners, too, because the perfection of the glass carries out the whole atmosphere of fine merchandise and service.

Parallel-O-Plate makes a difference wherever it's used—in homes and fine buildings as well as in stores. Considering all of the things, every day, that you see through glass, freedom from distortion is vitally important.

In most localities, Parallel-O-Plate Glass costs no more than ordinary plate glass! Call your local Libbey Owens Ford Distributor or Dealer-he can give you estimates, take care of installation, provide all kinds of service. You'll find his name listed under "Glass" in phone books.

P.S. You can get mirrors made of Parallel-O-Plate from your department store.



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BRIGGS MANUFACTURING CO. 300 Buhl Building, Detroit 26, Michigan

with their old homes ____

BEAUTYWARE bathroom

The bathroom (like the kitchen) has become one of the most important "showplaces" in the home. Also, it is often in the bathroom that an old home shows its age most.

That means that bathroom fixture design and styling are of greater importance today than ever before. A colorful, modern bathroom with new Briggs Beautyware dramatizes the disadvantages of the old home - - adds many powerful extra reasons for getting out of the old place, and into the new one.

The outstanding features listed below are making Briggs Beautyware the first choice of more and more value-minded builders, architects and plumbers - - more and more qualityconscious home owners and buyers.



Newest Sea-tone Colors The fresh, bright, unfading shades of Briggs fixtures add beauty and distinc-tion to any bathroom—make decoration easy, impressive and tasteful.



Trouble-Free Fittings All Briggs fittings are specially designed, precision manufactured and thoroughly tested to assure a long life of enjoyable and dependable service.



Hi-Style Vitreous China Vitreous china Beautyware is made from carefully selected clays-scientif-ically worked, glazed and fired to produce ceramics of highest quality.



Glass-Hard Surfaces All Briggs fixtures—porcelain enameled steel or vitreous china—have glass-hard surfaces which are stain-proof and fade-

proof-and so easy to clean.



Rugged Construction Beautyware fixtures-from rugged bathtubs of reinforced steel to sturdy fittings of quality brass-give a lifetime of satisfaction and service.

Compare features with any other fixtures



Safety-First Design The exclusive safety bottom of Briggs bathtubs is a great safety feature. In addition are safety hand-grip, wide rim seat and leak-proof wall flange.



Time-Saving Installation Beautyware offers builders and plumbers many exclusively designed features-which facilitate installation and speed. up home building schedules.



Superior Value Beautyware quality is also economical' -putting finest color fixtures and an extra bath or lavatory within reach of more people than ever before.

Do glass blocks give a "COOPED-UP" feeling?

Some people are more sensitive to claustrophobia than others. To these folks, a solid panel of glass blocks *seems* to be a barrier between them and the outside. We'll agree that even the abundant daylight transmitted doesn't quite relieve the situation for these sensitive people. But even for them there is no reason to think that glass blocks give a "cooped-up" feeling. When people want to see out there are three easy solutions:

First, and most popular, you can in-

stall clear-glazed vision strips below the glass blocks as shown in the photograph.

Second, you can install glass block ventilator units. Special tinted glass is available for these units (and for vision strips) so that their brightness will match that of the glass block panel.

Third, install some PC Vue Blocks in the block panel. They are made from clear glass, visibility is good, and there are no openings to maintain.

Your PC representative will help you pick the best system.



PC Glass Blocks Pittsburgh Corporation, Pittsburgh 22, Pa. • In Canada: 57 Bloor St. W., Toronto, Ontario Who is more sensitive to a "cooped-up" feeling than school children? That's why the vision strip beneath the glass block panels is a good solution in this classroom in the Edison Junior High School, West Mifflin Borough, Pennsylvania. Architects: Lamont H. Button and Paul F. McLean, A.I.A., Pittsburgh.





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A TRUE AND LEVEL CEILING

In the face of rising building costs it is important that every possible economy be made, without sacrificing quality, or disturbing the safety factor. Securitee 11/2 System, for the erection of acoustical tile, is the outstanding mechanical suspension system on the market. It fulfills each requirement with complete satisfaction and offers, in addition, the best possible base for troffer type lights.

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Design fundamentals of the

ALL-AIR HIGH VELOCITY distribution system

By F. J. KURTH

Vice President of Engineering

Anemostat Corporation of America

A national survey reveals that today, more than ever, engineers are studying, learning and using high velocity-high temperature differential air distribution. Here is a brief discussion of the advantages of the all-air high velocity system over conventional and mixed cycle (air and water) systems.

1. No Coils — No Clogging — No Odor — There are no coils in the all-air high velocity units. Damp coils collect lint and emit dank odors, and the coils must be cleaned periodically.

2. No Individual Fans — Filters — or Electric Motors — The all-air units operate entirely with air which is processed in the main equipment rooms. The 100% induction units utilize the kinetic energy of the high velocity air to mix primary air with the room air.

3. No Conflict of Trades — The all-air units are installed by the sheet metal trades only.

4. More Effective Use of Outside Air in Spring and Fall— More primary air is delivered to the all-air units than to induction coil units. This allows the engineers to operate in the Spring and Fall on outside air and thereby save refrigeration.

All-air high velocity units offer scientific air diffusion. Each high velocity unit is provided with an aspirating or high induction type air diffuser which is scientifically designed to diffuse air without drafts. Each unit can be pressure balanced by an easy-to-operate balancing device and a calibrated orifice. In fact, the Anemostat all-air high velocity system can be balanced more accurately than other systems and in less than half the time required to balance a low velocity system. High velocity units require practically no maintenance after installation. They have valves of the non-corrosive, die-cast, "rocket-socket" type, which are patented by the Anemostat Corporation of America. All units can be adapted for the following variations:

1. Single duct for zone control or individual thermostatic or manual remote control.

2. Dual duct for thermostatic control or any other type of control.

3. Single or dual duct units with the diffuser fastened to the unit, or remote from the attenuating unit.

4. Under-the-window, sidewall or ceiling type installations.

5. Can be provided with standard aspirating diffusers or 100% induction type diffusers.

6. Induction type units handle temperature differentials up to 33° below ambient.

Selection Manual Contains Data on High Velocity Units

New Selection Manual 50 gives extensive selection and application data on high velocity all-air distribution systems. Write on your business letterhead for



Selection Manual 50 to the Anemostat Corporation of America, 10 E. 39 Street, New York 16, New York.



The best cellars feature Chase Copper Tube

You add *extra-value* to the whole home with hot and cold water lines of Chase copper tube. *More years* of trouble-free service, *more efficient* water flow with little or no increase in cost!

That's because Chase copper tube *resists* corrosion—can't clog with rust! Diameter for diameter, this copper tube passes *higher water volume* than lines of rustable metal! Its smoother inside surface cuts friction to a minimum, assuring fast and efficient discharge of fixtures.

Chase copper tube is easier to handle. Can be *quickly* cut to the required length with ordinary tools. Rugged, leakproof solder joints are made *without* time-consuming threading. Long lengths are available; require *fewer* joints.

Specify Chase copper water tube for hot and cold water lines. Add extra quality at little or no extra cost!



Chase copper drainage lines, too, give superior service over the years...add extra-value to any home!



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(Pittco extruded mouldings

There is almost no end to the attractive patterns you can create from the wide variety of extruded and rolled mouldings in the Pittco[®] Store Front Metal line. Profiles have been designed to obtain a high degree of architectural symmetry. You can combine these mouldings into many pleasing patterns, a few of which are illustrated here. See your Pittco representative, or Store Front Detail Book for more detailed information.



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Now every room and office can be comfortable

Iron Fireman SelecTemp heating has a thermostat in every room

The *ultimate* in heating comfort—*a thermostat* in every room—is both simple and practical with the Iron Fireman SelecTemp heating system. Occupants of each room or office can select any temperature desired, at any time. Rooms stay at the selected temperatures. Each room unit automatically compensates for heat gains and losses caused by changes in outdoor temperature, cold winds and warmth from the sun increasing or decreasing heat output.

SELECTEMP HIGHLIGHTS

THERMOSTAT IN EVERY ROOM. Temperatures can be varied in every room to fit the "activity plan" and personal preference of the occupants.

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Views of the two new Ford Plants, one in the Engineering and Research Center, Dearborn, Mich. (upper picture) and the new aircraft wing plant at Claycomo, Missouri, show the use of fluorescent lighting installations. Both installations use ADVANCE "Certified" fluorescent lamp ballasts, specified by the fixture manufacturers responsible for the lighting efficiency. Why not take a tip from successful contractors and use dependable ADVANCE Ballasts too.

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p/a news reports

TRANSPORT CENTER ground broken





PHILADELPHIA, PA., July 8, 1955—The model and detailed plans of this City's great new Transportation Center, for which Vincent G. Kling (*left of photo below*) is the Architect, and McCloskey & Co., the builder-entrepreneur, were revealed here this morning.



Part of the vast new Penn Center that is emerging on the former site of the Broad Street Station and railroad viaduct, running west from Philly's monumental, old City Hall, the Transportation Center (Cited in P/A's most recent Awards Program) will occupy an entire block, just across Pennsylvania Boulevard from the new Sheraton Hotel (see page 86).

Kling explained the high points of the (Turn to page 76, column 3)

New Office Building Will House Ford Central Staff

DEARBORN, MICH., July 1, 1955-Visitors to the Detroit area this week could see a notable instance of the office-building-inthe-country concept nearing realization as the mass of the main office building of the Ford Motor Company's vast, decentralized administrative center here approached its finished appearance. Skidmore, Owings & Merrill are the Architects for the center; Jaros, Baum & Bolles, the Consulting Engineers; and Bryant & Detwiler, General Contractor.

To provide complete flexibility within the air-conditioned building, exterior columns project beyond the curtain wall (spandrels of dark-green, insulated, porcelain enamel panels), and inner columns occur within the building's central service core. Thus, work space is entirely uninterrupted. A combination of moving stairs (up to the seventh floor) and elevators was specially developed for efficient handling of peak traffic loads as well as normal circulation.

When all units are completed on the rural site, 3000 persons will work here.

CO-OP FOR THE GRAPHIC ARTS

facility is the inclusion of

1: Entrance lobby. 2:

Office areas. 3: Club

I DE LE CHER LE



KING OF PRUSSIA, PA., July 15, 1955-An unusual, if not unique, business building is scheduled for construction in this Philadelphia suburb-a Graphic Arts

Co-operative Center, designed by Hugh Stubbins Associates. Planned to house advertising agencies, branch offices of publications, and related graphic-art services, it is situated near homes of many who would work here. It is expected that a developer will build the building and sell the space within so that each occupant would become part owner.

To be completely air conditioned, the building is to have a nonfireproof steel frame and floors of cellular steel. Exterior surfacing consists of alternate glass and insulated panels.



Transportation Center

(Continued from page 75)

scheme. Across the east end of the site is an 18-story office building, about a third of which will be occupied by the Pennsylvania Railroad offices. At the west end is a 3-story parking garage, with the Greyhound Lines bus terminal at basement (concourse) level. Buses will gain access to the terminal by a ramp starting at 19th Street. The ramp will also be used by trucks for delivery to or pickup from the various rental areas. The garage will be operated by the Sheraton Hotel and joined to it by underground passage. Connecting the vertical and horizontal elements is a onestory unit organized around a landscaped courtyard (at concourse level).

P/A News Reports

Corbu's Second "Unite d'Habitation" Dedicated

NANTES-REZÉ, FRANCE, July 2, 1955—In the presence of Roger Duchet, France's Minister of Reconstruction, Le Corbusier's Dwelling Unit of Optimum Size #2 (free translation of *Unité d'habitation de grandeur conforme #2*) was formally dedicated today at this busy inland port on the River Loire.

Less complex and smaller in every respect than the initial one at Marseilles, the Nantes-Rezé building also differs in that it includes no commercial elements. Like Marseilles, however, the 294 apartments (most of which have both east and west exposures) are duplex units, and the 18-level building sits up off the ground on pilotis. Tenants are from the lower middle income group. The allconcrete structure utilizes a box frame —like a giant house of concrete cards.



Experimental Shelter

SEATTLE, WASH., July 6, 1955-In developing this structure, Ted Bower, local



The pipe frame consists of two pairs of simple curves which, joined, continuously define a space. Covering the space is a plastic membrane (glass fabric impregnated with vinyl coating) lashed to the frame with specially made nylon cord that can stretch 1 in. to the foot under load. Idea for the shelter, which can carry a 3-ft snowfall, was originally worked out in a string model (*far left*).



designer, thought in terms of what Bucky Fuller calls "ephemeralization"—doing more and more with less and less.



Bernard Tomson it's the law

It is within the power of the legislature to determine that the community should be beautiful as well as healthy, spacious as well as clean, well-balanced as well as carefully patrolled. Berman v. Parker

By its decision in *Berman v. Parker* the Supreme Court recognized the validity and importance of the Congressional mandate for "comprehensive and co-ordinated planning of the whole territory." In doing so, it has made possible the redevelopment of entire communities within our cities into areas consistent with present-day thinking about the planning and integration of residential and business structures.

Such planning and integration has done much to develop the suburban areas around our larger cities into attractive, balanced, self-contained communities. However, partly because of the legal uncertainty which existed prior to this decision, the need of the inveterate city dweller for similar developments has gone almost unheeded. The *Berman* case puts an end to that uncertainty and so clears another obstacle from the path of "comprehensive and co-ordinated planning."

It is important to note that the decision was based partly on esthetic considerations which up to now the courts have generally refused to recognize. The Court considered the validity of intangible factors in the following language:

"Miserable and disreputable housing conditions may do more than spread disease and crime and immorality. They may also suffocate the spirit by reducing the people who live there to the status of cattle. * * * The concept of the public welfare is broad and inclusive. * * * The values it represents are spiritual as well as physical, aesthetic as well as monetary."

The importance of the above language lies in the Court's recognition of esthetic considerations as an integral part of the "public welfare." Traditionally, the courts would not allow esthetic reasons to be the sole basis for zoning regulations, let alone condemnation of property. As a result, communities that wished to preserve their appearance or attractiveness had to invent other criteria to achieve their purposes. Zoning regulations were therefor phrased in terms of restrictions on "maximum height." or "minimum area," or "number of inhabitants." Although their purpose was really esthetic, the courts held them valid on the ground that they were necessary for the public safety to minimize fire hazards. However, such zoning regulations were usually held invalid whenever the esthetic purposes did not appear to be auxiliary to some longrecognized standard of public health, safety, or morals.

Even before the *Berman* case, however, a few bold courts recognized the importance of esthetic considerations. A Texas Court of Civil Appeals found that esthetic standards may properly be used in zoning because they "tend to conserve the value of property." The New York Court of Appeals has stated that esthetic considerations are "not wholly without weight." But even in such instances, the courts betrayed a reluctance toward giving full legal status to esthetic values and usually phrased decisions in terms of property values instead of human values.

Why has it taken the courts so long to arrive at the language in the Berman case? Because the judicial branch is in a very real sense the guardian of individual freedom, including the freedom of individual taste and esthetic judgment. There is a danger that legislatively inspired esthetics might be reduced to the lowest common denominator, as well as stifle creative architecture and personal taste. Although that danger is always present, it is not a sufficient reason to deny esthetics its legitimate place. The language in the Berman case gives such a place to esthetic considerations.

Although the Berman case does not hold that esthetic considerations can be the sole basis of zoning regulations or redevelopment statutes, it is a significant step in that direction. Inherent in the Supreme Court's language is an appreciation of the role the architect must play in planning for the public welfare. The ultimate impact of the Berman case can not now be measured. Nevertheless, esthetic values in commercial and residential housing can be expected to play a greater role in future legislation. Finally, when such legislation is enacted, the Berman case may come to be reflected in an increased public demand for attractive communities in which to live and work.

Again I wish to point out that in all of this the architect is the professional the expert best qualified for leadership in this field. This leadership he must assume or the profession, as a profession, fails. Banking and architecture show increasing comity of interest. A recent example is the granting of an Award of Merit in the AIA Seventh Annual National Honor Awards program, to the Bank of Apple Valley, California.* Here the design, blending into the landscape, is strikingly conformable with the spread-outinto-country tendencies displayed nowadays by business and population.

Not long ago, banks as well as retail and residential structures stuck to the semblance of compacted cuboid units, no matter how open the surrounding area. Of late, as all the world knows, sweeping horizontals are in the ascendant wherever available land permits.

This design drift has more than esthetic or even functional implications. It connotes, among other things, a decentralization that has behind it the wellnigh explosive force of private and public credit. For the first time in history no stigma attaches to the mortgage. The millions who dwell under it enjoy uncrowded comfort and deem it a protective shade rather than a minatory shadow. In like manner, schools and other publicly financed institutions begin fingering forth for ample space before they reach the drafting table. Therefore it has come about that design itself is increasingly within the reciprocal influence of finance. More land is required to meet prevailing needs and preferences; the land, in turn, requiring more dollars as values rise accordingly. The architect is thus concerned not only with a proper balance of structure and land area, but also with money pattern and at what cost.

Interest rates are on the upcurve at this writing. The movement, heralded as slow but sure in \$ DETAILS for May, has since gained impetus following a slight decline during that month. Two factors have been chiefly responsible: a mounting demand for funds and the Federal Reserve Board's quiet shift from "active ease" to "ease," followed more recently by a hands-off attitude. In other words the Board, no longer loosening the money supply to encourage business, has slid into neutral, preparatory to taking restrictive measures if, in its judgment, "boom" conditions are getting out of hand.

William Hurd Hillyer **\$ details**

This technique strives by turns to "avoid deflation" and to "restrain inflationary developments." It has the practical effect of making plentiful money cheaper and scarce money more expansive. Consequently, we may look for a rather sharp upturn in interest rates when the almost inevitable restrictive measures are applied. Based on past actions of the Board, such expectation points to late fall of this year, unless borrowings and quasi-speculative activities decline. The latter have shown no diminution in the market for "equities" including stocks, as reflected by bank loans to brokers and others for "carrying securities."

However, the effect of rising interest rates on building activity is not immediate. Particularly noticeable is the lag between short-time rate rises—such as those in commercial paper—and interest yields on long-term municipal and mortgage obligations. Concretely, the impact of Reserve restrictions, when applied, will not be felt in building fields until it can be cushioned by normally seasonal slackening of construction activity.

Meanwhile ample mortgage funds are available in most areas, according to Federal Reserve Board survey, despite a doubling of VA loan applications since '54, coupled with a 40% increase in FHA requests on one-to-four-family houses, a growing stricture of terms to borrowers, and a hold-up of all "speculative" commitments. Nevertheless, the housing-start up-trend shows symptoms of slackening and for the year will likely keep within the 1,400,000 total heretofore estimated.

Municipal bond money is still accessible, while huge new issues in both architectural and nonarchitectural sectors are readily absorbed. The "Bond Buyer's" yield averages entered the summer unchanged at 2.37 and 2.22%, with school bonds preferred by purchasers. At the same time, "inflation is currently not a problem," says the securities analysis executive of a Chicago trust company long and closely identified with municipal bond financing. From the same source comes confidence that "1955 will attain a new all-time peak."

.

A roster of current facts and figures tends to confirm this opinion, despite signs of overdue slowdown:

High homebuilding activity will continue, at least into the near future, Federal Reserve Board expects, with more new dwellings on the market than at any similar period;

Industrial production will average 8% above 1954 level for current year, paced by "gross national product" of some \$375 billions surpassing previous twelvemonth by about 4.5%, traditionally cautious bankers believe;

Small decline in government spending is more than offset by year's foreseeable 18% rise in business investment;

Business activity continues to increase, Commerce Department reports, noting advance in retail sales, seasonal employment rise, sustained demand for consumer goods and industrial equipment, general desire for "bigger and better" dwellings;

Steel production should remain excellent, barring unscheduled developments, qualified executives believe;

Factory orders are touching top record, being more than \$5 billions ahead of '54 at last reporting;

Annual average requirement for educational and institutional buildings during 1955-64 period will be \$6.75 billions, or more than double the '54 total, Department of Commerce estimates;

At least \$4.74-billions outlay in school, hospital and related building fields is planned, programmed, or ready-to-go, Government sources reveal, though only \$1.5 billion of the projects have reached or passed the drawing-board stage;

Banks are buying mortgages and municipals faster than they are lending to business, the combined increase in such investments being around 15% for twelvemonth as compared with some $2\frac{1}{2}\%$ loan rise;

Business failures are fewer than at comparable periods, and so are consumer credit delinquencies;

New orders and shipments of machine tools continue to rise by last report, though still far below the 1952-53 peaks;

Bank activity is climbing, but not so rapidly as earlier in the year;

Savings of public reach new high of \$222 billions, a 6.8% increase since 1953, Home Loan Board computes.

Such brave marshalling of facts is indeed a temptation to that overoptimism decried in our April column. Resisting the urge, architects may sanely look forward to sustained demand for sound construction during the remainder of the year, though at a somewhat slower pace until money costs and stock market conditions become more nearly stabilized.

Cited were McFarland, Bonsall & Thomas of Los Angeles, Architects; William T. Wheeler, Los Angeles, Structural Engineer; Bennington & Smith, Apple Valley, General Contractors.

group housing



motel

A relatively new adaptation of the motel concept is the in-city accommodation that offers all the convenience and service of the better motels, plus proximity to the big city's interests and diversions. In fact, the Motel de Ville, shown here-less than 20 blocks from the central business district of New Orleans-is one of the first of its kind actually to be built. Located on the most heavily traveled artery into the city, it has enjoyed almost 100 percent occupancy since its doors were opened. In addition to the parking and guest-room facilities, it offers 24-hour room service; a swimming pool; television and radio; trained baby sitters; restaurant; and cocktail lounge. The building is completely air conditioned.

Basically, as the architect states it, the problem was "to build the greatest possible number of rental units for the least cost on a small site within the heart of a city restricted by an archaic building code." And the land to build on was "spongy, alluvial soil, composed largely of decayed vegetation."

The solution is a logical answer to these given conditions. The motel, organized around open courtyards, is supported on untreated pine pilings capped below the watertable by lightweight steel tubes filled with concrete. To implement the desired scheme of having cars parked beneath the rental units, the pilings were extended as concrete columns to the second-floor level, where the floor is of formed slab-and-beam construction. This raised slab also provides the required three-hour fire separation between the carparking level and rental units above.

On this raised slab, in effect, five separate frame structures (limited to two stories to meet other code requirements) were constructed, and these are connected by incombustible catwalks that serve not only as corridor extensions but also as fire breaks between the frame buildings. Both stairs and push-button elevators join the three levels.

The redwood screens that border large areas of the exterior corridors and form so striking an element of the design also act as sound and light buffers, reduce the air-conditioning load, and serve as structural supports for the framed, cantilevered verandas.

Both owner and General Contractor of the job was the Shelby Construction Company, Inc., Paul Kapelow, President. Landscape Architect was R. F. Schneider, Jr.; Interior Decorator, Henry End; Mosaic Muralist, Jean Seidenburg; Structural Engineers, Linfield & Kelly; Electrical Engineer, E. Carlton Guillot, Jr.; Mechanical Engineer, Richard Y. Cheatham; Electronics Engineer, Macy Teetor.







group housing-motel



Ends of the units and most of the side corridors are partially enclosed by spaced, vertical, redwood boarding (above). Beneath the reinforced-concrete "tables" at either

Beneath the reinforced-concrete "tables" at either side of the courtyards are the convenient, out-of-sight parking docks (below) arranged in sawtooth bays. Guests may register from their cars, and proceed to their rooms by the covered stairs or the elevators. Photos (except as noted): Frank Lotz Miller Photos (this page): Roy T.ahan









Exterior walls of the five 2-story frame structures that rest on the raised concrete slab are of $\frac{1}{2}$ " cane-fiber insulating board, surfaced with $\frac{1}{2}$ " plywood. Balcony, stair, and catwalk railings are of pipe.

group housing-motel



An outdoor lounging deck (above) adjoins the second-floor cocktail lounge (right and below), which has an acoustical ceiling and wall-to-wall carpeting. The deck and lounge may be reached directly from the street by means of outside stairways (see SELECTED DETAILS).







At four locations on each floor, two typical rental units (unit plan below) are joined to form a luxury unit (above). The sawtooth plan of the exterior wall of the restaurant (right) echoes the plan of the bordering parking docks. At the west end of the central courtyard is the motel's swimming pool (below) for the guests.









location Philadelphia, Pennsylvania architects Perry, Shaw, Hepburn & Dean

hotel

The new Sheraton planned for the Penn Center development in the heart of downtown Philadelphia will contain 900 bedrooms. The plans shown here are admittedly still somewhat schematic and subject to revision as working drawings progress, but they do indicate the basic ideas and relationships. The typical guest-room floor plan is essentially as it will be.

A major conditioning factor in developing the design was the existing, unorthodox column spacing. During construction of the near-by Pennsylvania Railroad Building and concourse below, this spacing was established, with the base of the columns starting at the railroad track level beneath the concourse, rising through the concourse, and being capped at street level. Size and placement of the railroad tracks determined the column spacing. Not only did the plan have to be worked out within this condition, but because of the existing tracks and concourse, there could be little basement space for housing mechanical equipment. Space for this purpose was allocated on the fourth floor of the hotel—along with various service and storage areas—and this unusual situation is clearly expressed in the façade design. This level also separates the three lower floors of public rooms from the 17 guest-room floors above. The 21st floor (see composite plan) consists of luxury suites with balconies, including a Presidential Suite.

Car parking will be handled in a new 800-car garage to be built across the street, but directly accessible from the hotel at the concourse level. Other concourse corridors will lead to the Suburban Station and the new Transportation Center designed by Vincent G. Kling. Various concession areas—a rathskeller, pastry shop, barber shop, etc.—will open into these underground passages.

Bedroom floors will be 3-in. concrete on steel mesh, on bar joists, while the roof slab and floor slabs for the first through the fifth floors will be reinforced concrete. Exterior materials will include granite (under show windows and at base of exterior columns); limestone (where called for in drawings); and spandrels and panels, louvers and column coverings of porcelain enamel. Floor surfaces will include marble, terrazzo, quarry tile, and asphalt tile. Aluminum sash will be of the type that permits window washing from inside.





apartments

In the case of this five-unit group, the architect, owner, and builder are one. The objective, to use Maston's words, was "the creation of an income-producing investment with a minimum of capital." Initially, lending agencies took a dim view of the steep, hillside site; but the choice was more than justified when all apartments were leased before completion of construction—and at rentals substantially higher than the average prevailing in the area. "This popularity," in the architect's opinion, "was due in great measure to the private gardens integrally incorporated in each apartment." With the exception of the second-floor unit at the rear—included to justify the land cost economically—the apartments were designed as individual, repetitive, walled enclosures with roofed indoor living spaces. The framing system is quite orthodox, but much attention was given to simplifying the over-all structural shape and the detailing.

Considerable variation is possible in the use of the living spaces, as the main dividers are storage elements, and each tenant can place these as he sees fit. Maston reports that at first he was concerned about the unorthodox use of the garden-wall door as the locked "front door," with the sliding glass door at the entrance to the enclosed portion. But "the tenants take this entry system for granted and they enjoy this extra buffer."

Exterior surfacing is 1" x 6" redwood, while gypsum board is used on interior walls, a material that also forms the finished ceilings. Glass-fiber blankets between staggered wall studs provide acoustical insulation between the apartments; and thermal insulation is handled by glass-fiber bolts installed between the roof joists. Electric unit heaters are provided in each of the rooms.

location Los Angeles, California architect Carl Louis Maston





group housing-apartments



Opening of the door in the garden wall, released by a buzzer system from within, allows a view across the garden and into the sheltered portion. The tall garden fence and trees to the west screen unwanted late-afternoon sun. Photos: Julius Shulman





The photo above, taken in another apartment, shows the totally different effect obtained by an alternate arrangement of the storage units; folding panel at left leads to sleeping area; kitchen screened by double cupboard at right.



This subtle design received an Award Citation in this year's P/A Awards Program (page 80, January 1955 P/A). Looking across the living area (below), the integration of indoors and out is apparent. Among the factors that produce this extraordinary result are floor-to-ceiling fixed and sliding sash; garden fence continued at height of room wall beneath clerestory; continuing planes of floor and paving; roof overhang located at ceiling level.





To conform to the established neighborhood pattern, it was originally intended to distribute the required apartments in two- and three-story buildings. However, land acquisition problems reduced the original area, making high-rise buildings,

two- and three-story buildings. However, land acquisition problems reduced the original area, making high-rise buildings, (permitted by local ordinance) necessary. The resulting eight-story structures developed by the Stamford Housing Authority in co-operation with the Public Housing Administration of the U.S. Housing and Home Finance Agency, set an architectural standard that may well influence future design and construction of much public as well as private housing.

The open-air galleries featured by these buildings offer unique advantages: cross-ventilation for all apartments, semiprivate balconies, and the elimination of dark and ill-ventilated interior hallways. Southfield Village North marks one of the

public housing

first applications of this theory in the northern U.S. And, the architect states, after one year of occupancy "the basic design of the galleries has proved extremely satisfactory from a physical standpoint." A similar development, designed by Ballard, for moderate income families, is under construction near by.

The open-air galleries employed on the upper six stories of these eight-story elevator units give access to 24 one-bedroom apartments, 144 two-bedroom apartments, and 24 three-bedroom apartments. To provide large families with direct access to the ground without adding to the elevator load, the first and second floors are devoted to 64 three-bedroom duplex apartments. (Still larger families, requiring four bedrooms, are housed in separate two-story buildings on the site.) Basements of elevator buildings contain laundry facilities, drying racks, perambulator and wheeltoy storage.

Structural frames and floor slabs are of reinforced concrete. Exterior cavity walls have outside face of common brick and interior withes of light-weight aggregate blocks, exposed to match interior partitions of the same material.

All buildings receive steam heat from a central plant employing two oil-fired, low-pressure boilers. A continuous flow, up-feed system and motorized control for vacuum return regulate steam distribution to the eight-story buildings.

The Structural Engineers for the project were Fraioli-Blum-Yesselman; Mechanical Engineers, Muzzillo & Tizian; Site Engineer, Ralph Eberlin; Landscape Architect, Marianne MacMaster; General Contractors, Frouge Construction Co., Inc., and C. E. Youngdahl & Co., Inc. architect | William F. R. Ballard







From south-facing galleries of three of the four elevator buildings (above), families have distant view of Empire State Building across Long Island Sound. The fourth unit has open galleries on the opposite side affording an unobstructed view north, with living rooms and bedrooms oriented south. A playground originally on the site of the new buildings has been relocated to the southern end of the property, and enlarged to serve the earlier Southfield Village as well as the new Southfield Village North.

group housing-public





Pleasant touches of color and thoughtful architectural details lend these buildings a human quality often lacking in low-rental projects. Brick grill (photos above) closes off elevator lobbies on upper six levels. Similar pierced wall (acrosspage top) forms firestair enclosure at ends of buildings. Undersides of the fire stairs have been painted clear blue, entrance doors yellow or green, to complement the pink brick. Galleries widen before each pair of apartments (sketch acrosspage) to provide space for play pens, baby carriages, and sitting area. Kitchens (with special windows overlooking the balcony play area), bathrooms, and storage closets face the gallery. For greater privacy, bedrooms and living rooms are on the opposite side. Gallery railings, with wire-mesh panels, are 5-feet high and designed to rule out all possible footholds for climbing children.

Photos (except top): Gottscho-Schleisner







materials & methods

construction

Foundation: reinforced-concrete piers: reinforcing steel - Bethlehem Steel Company. Frame, walls, floors, roof: reinforced-concrete: cement-Lehigh Portland Cement Company. Wall surfacing: exterior: brick-Jova Brick Works; interior, rest rooms, toilets: lightweightaggregate block-Plasticrete Corporation. Floor surfacing: asphalt tile-Armstrong Cork Company: vinyl-plastic sheet flooring-Sloane-Delaware Floor Products. Roof surfacing: built-up roofing-Koppers Company, Inc.; shingles-Bird & Son, Inc. Waterproofing & damp-proofing: silicone-Toch Brothers, Inc. Insulation: thermal: cane-fiber roof insulation-The Celotex Corporation; rockwool blankets-National Gypsum Company; glass-fiber roof insulation-Owens-Corning Fiberglas Corporation. Roof drainage: copper gutters and downspouts-Revere Copper & Brass Inc.; cast-iron drains-East Penn Foundry Company. Partitions: toilet -Flush-Metal Partition Corporation. Windows: aluminum and steel sash-Ceco Steel Products Corporation; glass-Libbey-Owens-Ford Glass Company. Doors: interior: fir panel-Georgia-Pacific Plywood Company: elevator: vitreous enamel-Williamsburg Steel Products Company: entrance: solid-core flush (Duplex Apts.)-Ipik Plywood Company, hollow metal (Balcony Apts.)-World Steel Products Corporation. Hardware: locksets and door closers-Yale & Towne Manufacturing Company; panic exit: main entrance-Von Duprin Division of Vonnegut Hardware Company, balconies-Exit Lock Company. Paint & stain: exterior and interior -E. I. du Pont de Nemours & Company (Inc.).

equipment

Appliances: refrigerators-Frigidaire Division of General Motors Corporation; gas ranges-J. B. Slattery & Brother, Inc. Elevators: General Elevator Service Company. Lighting fixtures: incandescent ceiling and wall fixtures-Pass & Seymour, Inc. Electric distribution: service-entrance switch, panelboards, and multibreaker-Cole Electric Product Division of Federal Pacific Electric Company. Plumbing & sanitary: water closets, tubs, and lavatories-American Radiator & Standard Sanitary Corporation; toilet seats-C. F. Church Manufacturing Company; water heater-American District Steam Company, Inc.; accessories and medicine cabinets-Miami Cabinet Division of The Philip Carey Manufacturing Company; incinerator-Sargent Building Specialities Inc.; pneumatic water tanks -Federal Pump Corporation and Buffalo Tank Corporation. Heating: type: two-pipe steam vacuum system-Pacific Steel Boiler Division of United States Radiator Corporation: fuel-oil; convectors-Kritzer Radiant Coil Inc.; unit heaters and controls-C. A. Dunham Company.



apartments

The architect-owner of this small apartment house, who is a partner in the firm of Fisher & Jarvis, states his design intent as follows: "To design four 1-bedroom apartments, with not less than 600 sq ft in each apartment, and so planned as to maintain visual openness in the apartments and avoid the closed 'cubby hole' feeling." How well he has done just this is apparent from a study of the plan and photographs.

The 150-ft-deep lot, with the access

street on the west, is but 50 ft wide. To provide good orientation as well as privacy for the apartments, the building (and the four identical units) run the long way of the site. Access and services are kept to the north of the building, while private outdoor living spaces patios, downstairs; balconies, upstairs are on the south. The roof overhang and the balcony govern southern sunlight. Only the bathroom in each unit is completely partitioned; elsewhere, roll-down slat blinds open or partition the spaces as desired.

The frame building has brick-veneer exterior walls, and plywood surfaces within. Wool batts and acoustical-panel ceilings control sound in the building, while aluminum sheets provide thermal insulation. Each apartment is heated by a centrally located, vented, wall-type, gas-fired furnace; and air conditioned with one-ton individual capacity units. General Contractor was Fred Johnstone.

architect J. Herschel Fisher

The south walls of the apartments consist of fixedglass panels above and out-swinging ventilating sash in bottom panels. Bordering these are either sitting balconies or private patios (top photo).

Apartment entrances and access lane leading back to parking space are on the north side (bottom). Photos: Hence Griffith







GROUND FLOOR

group housing-apartments



The living-dining-bedroom space is uninterrupted, though roll-down blinds provide partitioning as needed.

A storage wall partially separates the kitchen from the dining-living area (acrosspage, right of photo). The window walls may be wholly shielded by lowering wood-slat blinds.







urban neighborhood redevelopment

Detroit's Citizens Redevelopment Committee has taken concrete action to rehabilitate its downtown district by assigning architects from three experienced offices (Leinweber, Yamasaki & Hellmuth, Oskar Stonorov, and Victor Gruen Associates) to prepare a comprehensive plan. The specific area, a 142-acre site near the Wayne University Medical School, will be a self-sustaining neighborhood unit with its own schools, playgrounds, parks, food markets, and service facilities. Despite the size of the Gratiot Neighborhood and its self-sufficiency, the architects state that "we feel that its development makes sense only if looked upon as an integral part of an over-all urban-renewal program for Detroit." It is envisioned that about 25 neighborhoods similar to Gratiot-Orleans will eventually encircle the downtown business district.

"The assignment calls for the creation of a new way of life, in tune with the age of the automobile, as well as the need for rest and quiet-a concept which must combine the advantages of living on the surburban lot with the desirability of being close to the center of a big city." From the minutest details of individual apartment plans to the bold and distinguished pattern of the total site plan, the architects have clearly expressed and executed this philosophy. A small portion of the over-all Gratiot plan-a residential square—is presented on these pages as a sample of the sound and imaginative architectural solutions throughout. (See May 1955 P/A, page 12, for Master Plan and model of Gratiot development.) Of the ten different housing units developed as basic plan elements, two are illustrated: the square tower plan and the six-family court units.

In the square tower the basic plan has been reversed on alternate floors. "By staggering the balconies and establishing a '2-story' scale in the 20-story building," comment the architects, "a very pleasant effect is gained." The structural system for the tower has been the subject of extensive investigation. Under consideration is a new and economical method of construction, developed by the architects, combining steel columns with flat concrete slabs. These will be poured starting with the top level and the forms, after each slab has set, will be successively lowered from floor to floor, without disassembly, and reused.

location | Detroit, Michigan



group housing-urban neighborhood redevelopment





Three sides of a central and common courtyard are formed by six two-story houses—the fourth side is enclosed by a carport. In addition to this common court and well-protected play yard, each four-bedroom duplex has its own private garden. "The possibility of combining the typical elements of the court units in different arrangements," the architects suggest, "provides a potential for variety within an orderly environment and pleasant intimate scale properly contrasting with the openness and rise of the multistory building."

Distinctly different from the typical urban housing project or the standard suburban tract so prevalent today, these two-story houses with their private gardens are intended to satisfy the demand for comfortable living within the city, combined with immediate access to outdoor activities, and facilities requiring a minimum of maintenance. Further, in deference to the world's auto-richest city, the architects have provided 100% parking for all families, supplemented by (almost) 100% for visitors or second-car owners. Carports for the six-family court units are located toward the street and close off one side of a common court. The other three sides of this entrance court are bounded by typical two-story dwellings. Living-dining areas and kitchens face onto the private gardens, which are enclosed by a solid fence for greater privacy and a heightened visual impression of one large room. Thus, downtown will again offer comfortable and attractive living accommodations where middle-income families may live close to their work, and near civic and cultural facilities.







neighborhood group

Detroit's counterpart in South America may be found in Rio de Janeiro's Pedregulho section, where the city is financing and constructing a neighborhood group for its municipal employes. Like Gratiot, the development is self-sustaining, with its own nursery schools, elementary school with gymnasium and swimming pool, market with central laundry, play areas, health center with a number of rooms for patients, and a club house (planned for the future). Again, the main object was to provide adequate and comfortable housing for persons working in the nearby center of the city, with the added advantage of independence from Rio's erratic system of public transportation.

Architect Reidy, who is also Rio's chief city architect, has taken full advantage of a steep and irregular site measuring 12.8 acres. At the top of a 164-ft incline he has sited Block A, an apartment house which is now the dominant element of the development. A graceful curve following the top contours of the site keeps the 826-ft-long structure from inhuman proportions. Slender columns touching the uneven ground reappear in the open third floor and again help to break up the large mass. Access to the apartments is gained from the rear of the structure across bridges connecting with the open third floor, whence tenants go either upstairs or downstairs. Duplex apartments

above this third floor, as well as the apartments on the first and second stories, have cross-ventilation due to the use of the open access gallery. Rectangular Blocks B1 and B2, consisting of duplex apartments, are grouped together, in strong contrast to the sinuous structure above. Block C is still in project form. Apartments are available at a nominal rental to families and single persons who have been carefully selected according to their economic and social status.

Reinforced-concrete frame has been used throughout, in combination with brick, left exposed in parts. Striking color accents and the masterful landscape design of Burle-Marx give unity to the whole.



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group housing-neighborhood





Apartment-Block A (above), at the highest point of the site, is 826 ft long and contains 272 apartments. The third floor of this seven-story building is completely open (section below) and serves as promenade and access gallery to upper and lower floors. Entrance to the building is across two pedestrian bridges (left) connecting promenade with upper roadway. All apartments have cross-ventilation due to use of exterior access corridors. Photos: Aertsens Michel







Apartment-Block B2 (right) showing health center in foreground and viewed again from one of the interior gardens of the health center (above). Rear façade of Block B1 (below) illustrates use of open galleries giving access to duplex apartments. Photos: Marcel Gautherot





upper levels





group housing-neighborhood






Looking past the pivoted glass doors of the market (acrosspage), one sees the health center and Apartment-Block B2. End wall of gymnasium (above) is faced with colorful glazed tiles after a design by Candido Portinari. Classrooms, gymnasium, dressing rooms—all parts of the elementary school—are interconnected with ramps and covered walkways.

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Hi-Fi: architectural considerations

by Howard Sterling* and Groff Conklin**

The rapid growth in popularity of recorded and broadcast music in the home has brought into being a number of new technical problems for the architect. This is particularly true of planning homes for clients who desire a music area for the installation of what is known as "highfidelity" receiving and recording equipment.

The average listener may continue to be satisfied with standard music-reproducing systems—mass-produced units with record player, radio tuner, amplifier and controls, loudspeaker, and sometimes a television receiver as well, all in one cabinet. He may be satisfied—but only because he does not understand or appreciate the values of accurate and undistorted musical reproduction.

The over-all problem of high fidelity is divided into two major parts. First, the architect can help the client obtain good results by assisting in the selection, location, and, in some instances, the design of equipment. Second, he can plan the music room and specify its surface treatments for optimum music reproduction.

The problem of component selection is not exactly simple, but it has been made to seem much more difficult by the controversial and often inflated claims of manufacturers of various types of equipment. The problem of room acoustics is better understood and less complicated by competing claims, but even here some misconceptions still arise as a result of the erroneous application of industrial. commercial, and professional acoustical practices to the very special situation that exists with home music reproduction. For example, the carefully-worked-out acoustical techniques used in broadcasting studios are not applicable to home music rooms. The purposes of the two are entirely different. A sound studio does not make music sound well (within the studio, that is); it makes it transmit well through microphones so that it will deliver full fidelity in the home receiver. Room acoustics in the home, on the other hand, are intended to make full fidelity possible by controlling the movement of sound waves as they reflect from room surfaces. But before discussing the problems of acoustics further, it might be

best to answer the basic question: "What is *high fidelity* in music reproduction?"

definition

"Hi-fi" can be most easily defined as an organization of electronic, mechanical, and acoustical components so designed that it will provide the most clear and full-valued reproduction possible, of all sounds. These sounds range from the longest wave lengths (low tones) of 16 to 30 cycles per second (c) to the shortest wave lengths (high tones) of 15,000 or even 18,000 c. Until relatively few years ago, even the best amplifiers and loudspeakers-and records as well-were capable of reproducing sound with accuracy only from a low of around 150 c to a high of 5000 c, more or less. Musical notes would be transmitted with great trueness in such instruments, but the great wealth of overtones that gives music its richness were cut off by the inadequacies of the equipment.

One of the curious aspects of real high fidelity is its thus-far relatively limited appeal. Most listeners still do not like or want genuine high fidelity; their ears have not been trained for it. Harry F. Olson, Director of Radio Corporation of America's Acoustical Laboratories, has reported¹ on a series of tests of frequency-range preferences among average listeners, i.e., persons who were neither sound engineers nor high-fidelity addicts.

For recorded music, Olson reports in his book that tests made by Chinn and Eisenberg showed that about 75 percent of the listeners preferred a narrow or medium range of frequencies to a wide range. Part of the reason may well have been the inadequacies of the records themselves which, at the time the tests were made, were not nearly as good as they are today. They probably had a fairly high level of distortion, noise, and record scratch when played at full-frequency range. However, even taking this into account, it still was true that the extraordinary brilliance and fullness of wide-range reproduction was not favored by these listeners.

On the other hand, when Olson made tests with live musicians performing on a small stage equipped with acousticalfilter arrangement for controlling fre-

¹ H. F. Olson, Musical Engineering (New York: McGraw-Hill Book Co., Inc., 1952), p. 349, f. quency ranges of the music, it was found that the full-frequency range was preferred by nearly 75 percent of the listeners.

The reasons for the difference between preferences for live-action and recorded music are two. First, and probably less important, the average listener (who rarely hears full-range, live-action music) has-as Olson says-"become conditioned to a restricted-frequency range (through listening to commercial radio, television, or recorded music) and feels that this is the natural state of affairs." Second, and considerably more basic, is the fact that much recorded music suffers from many types of distortion, including some that may be extremely irritating without being audible. Certain distortions are almost unavoidable in the present status of the art of recording and others (like surface noises of records) are due to poor handling and operation of records and equipment by the owners.

The point is that the architect will not very often be confronted with a client who fully understands and appreciates full-frequency-range music in the home. When he does, the suggestions given below will help him to produce what is wanted.

the problem

Basically, the major difficulty in true high-fidelity reproduction lies in the equipment, particularly in the loudspeaker and its enclosure.³ Emphasis is placed on the enclosure, since few persons, even among the "hi-fi experts," admit or even realize how much depends on the type of enclosure, the way it is built, and its location.

This is not the place to recommend record players, tape recorders, radio tuners, amplifiers and their various accessories, and even loudspeakers, although one recommendation in the latter category will be made. The one exception is the loudspeaker designed by Olson (quoted from previously). This unusual and almost perfect speaker, which is unlike any other on the market today, is RCA's Model LC-1A. It is in the higherprice bracket, but the results are worth

^{*} Electronics Engineer and President of Waveforms, Inc., New York, N. Y. * Free-lance writer who has frequently contributed to P/A.

² There are thousands of excellent high-fidelity recordings now on the market, so that the problem of inadequate musical resources is no longer so great as it once was. However, as this article will show, it is now poisible to build reproducing systems so sensitive and accurate that the major problem may again become the relative paucity of really-perfect musical source material.

it. If there are other speakers to equal it, they are not at the moment known to the authors.

The over-riding difficulty in most existing musical systems lies in the fact that no prefab speaker enclosures can deliver *ail* the tone range of the music as it was recorded or played for radio broadcast. This is not primarily the fault of the equipment, although this plays a considerable part, but it is due rather to the very nature of sound itself.

the nature of musical sounds

All sounds, including music, cause vibrations in the air which impinge on the ear and cause the hearing mechanism to vibrate similarly, reproducing the sound with a fidelity dependent upon the aural acuity of the listener. These sounds come in all sizes, so to speak. The highest notes of a piccolo may cause overtone vibrations up to 18,000 c; the lowest notes of an organ may descend to 16 c—a pitch at which one actually *feels* the sound as well as hearing it. There is no single way to achieve perfect reproduction of this enormous range of wave lengths from highest to lowest notes.

Complicating the matter even more, from the point of view of reproducing sound electronically, is the fact that music also comes in assorted volumesfrom the most hushed attenuation of an offstage horn to the almost frightening volume of a full orchestra playing Wagner at his most bellicose. Using today's excellent components and with special handling of the speaker enclosures, the hi-fi addict gets almost everything that was present in the softest or loudest music as originally played. But to achieve nearperfection, both in fidelity of sound transmission and control of volume, is a complex matter.

arrangement of components

There is nothing at all against a collection of all necessary components except the loudspeaker—in a single cabinet, if the manufacturer is well known and of good reputation. Indeed, such a unit is more often desirable, since such "matched components" are usually balanced by the manufacturer for optimum sound reproduction. The purchase of separate components made by different manufacturers often results in relatively poor musical reproduction, since the units were not made to work smoothly with each other.

There is a reason for not including the loudspeaker in the same cabinet with the rest of the equipment. One might almost say that true high fidelity is impossible with the loudspeaker in such close proximity to the mechanical and electronic parts that create and transmit energy to be reproduced as music. This is because most cabinets are not large enough to permit adequate handling of long-wave low frequencies and, even more important, because mechanical feedback of vibrations from the loudspeaker can occur. This can be very annoying, indeed, and may damage the equipment over a period of time.

A separate loudspeaker enclosure, some distance from the rest of the components, is essential for true high fidelity as it is desirable to have remote control of sound volume and quality away from the loudspeaker.

loudspeaker systems

Everything else being equal in terms of quality of components, the loudspeaker and its enclosure are the crucial limiting elements in high-fidelity reproduction. For this reason, it is worthwhile to describe what a loudspeaker actually is and does. Olson describes it as "an electro-acoustic transducer actuated by energy in an electrical system and delivering energy to an acoustical system, the wave form in the acoustical system being substantially equivalent to that in the electrical system."

The simplest form of loudspeaker is a single cone or horn. For true high fidelity it is necessary to have at least two speakers-usually called a "tweeter" and a "woofer"-which may be placed in the same enclosure. These speakers are essentially the same but the tweeter is much smaller than the woofer. True fanatics have been known to prefer threespeaker units: the tweeter, a midfrequency speaker, and a woofer-but this refinement is not necessary for good high fidelity if the speaker enclosure is correctly designed. (If it is not, even a three-speaker system will not result in perfect reproduction!)

Each of the speakers may be one of two types: the simple cone, known as a *direct radiator*, or the more complex *exponential horn*. In the first case, the cone is itself the radiator or power unit; in the second case, the horn must have a separate small driver unit. Technically defined, the driver is the diaphragm of the speaker plus the voice coil and the magnet. It actuates the air into vibration with waves of sound. Almost all generalpurpose loudspeakers for home use today are of the direct-radiator type.

While it is true that good high fidelity

can be obtained with two speakers, better results will be achieved with a more elaborate loudspeaker enclosure. In this case, the enclosure itself becomes a sound magnifier. However, elaborate installations with several sizes of speakers in a cabinet are not necessarily going to provide better results-although they operate on the theory that each speaker has an optimum range much smaller than the range it is capable of reproducing without noticeable distortion. Actually, little if anything is gained by such a setup. A good single tweeter will perform just as well as a series of increasingly larger ones in most conditions.

Nevertheless, it is desirable to break the sound spectrum from 16 to 18,000 c into three separate groups. Of the three, only two need be electronic. A firstclass tweeter will reproduce sounds as low as 2000 c with excellent fidelity; a high-quality cone-type woofer will be equally faithful down to 200 or 150 c before its power capability begins to fall off. (For better low-frequency efficiency, the woofer "should be a 15-inch rather than a 12-inch speaker. Eighteen-inch speakers have been made, but they are not really necessary or desirable in most home installations.)

The fundamental tones below 150 c need further assistance from the soundreproducing unit, for accurate reproduction without distortion.

Curiously, it is a basic condition of sound — musical and otherwise — that audible waves in the upper ranges travel from the loudspeaker cone in a straight line; where the wave length is short with respect to the dimensions of the reproducer, there will be a "beam" effect. In a sense, these wave lengths are aimed or funneled by the speaker, which has a considerable degree of directionality (except for RCA's Model LC-1A, which has remarkably little).

Conversely, when wave lengths are long with respect to the dimensions of the source—cone or horn—the result is spherical propagation.³ Furthermore, at low frequencies the acoustical power produced for a given electrical-power input (efficiency) falls off and the amount of sound the speaker can produce without serious distortion drops sharply. This is particularly true below a few hundred cycles. Any effort to increase the volume of sound in this situation will merely result in a greater confusion of sound or distortion—in the lower frequencies. This results in muddy or incoherent re-

³ A wave length, or complete cycle, is 1090 (ft per sec, the speed of sound in air) divided by the frequency.

Recommended minimum dimensions,

SPEAKER CHAMBER, 1 CH. St. THROAT, 70 Sq. M. MOUTH, 1500 Sq. M. FLARE CUTOFF, 25 Cyclas

COURTESY DR. H.F. OLSON







FLARE CHARACTERISTIC FOR EXPONENTIAL HORN

production of the music.

The best way to correct this basic characteristic of any loudspeaker mechanism is by changing the design of the loudspeaker enclosure.

enclosures

There are three types of loudspeaker enclosures: infinite baffle, bass reflex (or phase inverter), and exponential horn.

The infinite-baffle enclosure can be almost any size from one or two cu ft on up. For reasonably good results it should be at least 12 cu ft $(2' \times 3' \times 2')$. The most effective type of infinite baffle is one in which the speaker is set into a wall with its back open into a closet, utility room, or other large space. Woofer installations with the speaker in the floor or ceiling, using the cellar or attic space as the baffle, will work very well provided the tweeter is mounted normally for horizontal radiation. This type of baffle provides as good a low frequency reproduction as is possible with this simple variety of enclosure.

However, an infinite baffle cannot, by the very physics of sound, deliver maximum effective reproduction of very low frequencies. For one thing, it does not compensate for loss of speaker efficiency at these frequencies and, for another, it is subject to resonances-particularly if the baffle is a box, rather than a closet or other large space at the rear of the speaker. Resonance in such box enclosures can be partly controlled by lining alternate sides with insulation batts, thick felt, or other sound-absorbing materials. It is not necessary to line all of the inside of the box, provided that no

two opposite sides are unlined.

On the other hand, the lining technique does nothing to solve the problem of efficiency. Power requirements at the lowest frequencies are still unsatisfied. The bass-reflex enclosure, known professionally as a phase inverter or vented box, helps to supply this need. It is a completely enclosed unit in which there is a vent near the speaker opening. The box should be lined with sound-absorbing materials as in the case of the infinitebaffle box.

At some particular lower frequency, where the regular speaker and its own opening in the box have begun to fall off in efficiency and power capability, the box and the lower vent will resonate so that the low tones from the back of the speaker are radiated out through the vent, supplementing those from the front. The efficiency of a bass-reflex cabinet at this resonant frequency may be twice as high as that of an infinite-baffle enclosure. However, since this is effective only at a single frequency, the reproduction tends to "boom." This is not a general solution to the problem.

An exponential-horn enclosure is the best solution yet developed for perfecting music reception in the lower ranges (Figure 1). It is based on the same principle as the tuba or any wind instrument and will magnify the low tones seven or eight times as much as the infinite-baffle box. The principle of the exponential horn is most easily understood, from a pragmatic point of view, by detaching the mouthpiece from any wind instrument and blowing through it. The sound it makes is ridiculously

minuscule. Put the mouthpiece back on the rest of the instrument and the sound is magnified astonishingly.

This is an acoustical method of magnification. In an exponential-horn enclosure for a loudspeaker, the lower frequencies are picked up and magnified without any electronic means. Such a loudspeaker system should be used in a cabinet so designed that the spherically propagating low-frequency sounds can radiate not only through the exponential horn (often called a "rearloaded" horn) but also directly from the cone face of the speaker itself (this is called "front-loading"). Only in this fashion will the full values of the lowfrequency sounds be delivered to the listener.

While the exponential-horn loudspeaker cabinets on the market at present are superior to most other prefab systems, they are not as effective as they should be. For one thing, the total dimensions of the low-frequency horn must of necessity be small; otherwise, the cabinet would become a monster, dominating the room. In addition, most of the models currently available have the woofer speaker buried in the box, so that it cannot function as a direct radiator (front loaded) as well as an exponential horn (rear loaded). The result is that it takes the low frequencies only from the rear of the woofer. There is no direct radiation of the midfrequency sounds from the woofer and an additional speaker is required to take care of the midfrequency range with its associated electrical crossover. A certain amount of fidelity is thus lost.

The best answer, for the architect whose client demands perfection, is to build the horn into the house itself. For optimum reproduction of low-frequency sound, the horn should be very large indeed. Theoretically the mouth of the horn should be equivalent to a circle 10 ft in diameter; however, in practice, an opening for the horn mouth equivalent to a circle three to five ft in diameter will suffice.

A correctly designed exponential horn will improve the efficiency of low-frequency reproduction in a degree roughly proportional to the ratio in area between the mouth of the horn and that of the cone of the speaker itself. The larger the ratio, the greater the effectiveness. For a speaker cone of 175 sq in., an exponential-horn mouth of 1500 sq in. is, according to Olson, the minimum area that will produce satisfactory results (*Figure 2*). When the architect is designing a house he can, of course, provide a much larger mouth area for the horn.

An exponential horn would be almost entirely impractical, in most dwellings, if it had to be laid out in a straight line. It would have to be a minimum of 11 ft long. (Of course, this can be done if there is unused space in an attic or cellar.) However, the same acoustical principles which make it possible in a tuba or french horn to wind the horn into a series of loops applies in the case of an exponential horn for a loudspeaker. Furthermore, it is entirely unnecessary for the sides of the horn to be rounded or smoothly continuous as they are in musical instruments. The horn can be constructed in a series of successively larger square or rectangular sections (Figure 1). As long as each section is not more than half as short as the shortest wave length which is to be transmitted through the horn, the cross-section shape is unimportant. It could even be triangular.

It is true that unless the "folded" type of exponential horn is constructed with the greatest possible attention to tightness and rigidity of the pieces, there may be some vibration set up between the sections, causing unpleasant noise in the unit as sounds batter the sides of the horn. This might also happen if a horn were built in a straight line without equal attention to good construction.

An exponential horn can be located in any part of the house where there is sufficient room, but the mouth of the horn (like the whole loudspeaker setup) should always be in or near a corner of the room, as will be pointed out in more detail in the next section.

General specifications for making a horn follow. It should be fabricated of plywood not less than 3/4 in. thick and all joints should be firmly nailed and glued. Superior workmanship is essential. Seams and joints which are not airtight will rob the horn of efficiency. Furthermore, as pointed out above, any loose parts will cause annoying vibratory noises. The mouth of the horn can be left open or it can be covered with a loosely woven fabric or any other soundtransparent material that will not make a noise when vibrating. The throat of the horn can be placed in any part of the loudspeaker chamber, even in the bottom of the unit if the horn is to be located in the basement.

speaker location

Obviously, provision for a custom-made exponential horn, folded or otherwise, calls for a certain amount of special design in the house itself. Not only must room for the horn be provided, preferably in a space outside the music room, but both loudspeaker enclosure and exponential-horn mouth must be located in the room with several principles of acoustics in mind.

A sound source in open space radiates its energy spherically whenever the source is small with respect to the wave length. Thus, at any one point in such an open space the listener will hear only a small amount of the sound energy produced. Of course, he will hear some of the sound radiating from parts of the room other than that in which he is listening, since those sounds are reflected off the surfaces and back to him. This reflectivity of sound can be more annoving than no reflectivity at all. Sound takes time to travel and the reflected sounds will arrive at the ear just slightly after direct sounds, causing fuzziness and, in exceptionally bad cases, a sort of echo. Open space is obviously not an efficient location for a speaker.

When a speaker is placed in or against a wall, the sound power reaching the listener will increase by a factor of roughly two, since the sound is inhibited from going through the wall and thus radiates over a hemisphere. When a speaker is in a corner, the sound radiates only through a quarter sphere and the sound power is increased by a factor of four. Finally, when the speaker is located both in a corner and at or near the floor or ceiling, the angle of sound radiation is so reduced that the effective power is increased by a factor of as much as eight. Since one would rarely want a speaker suspended in midair, it is common practice to consider the effectiveness of a ceiling-corner installation in comparison with that of a flat-wall placement. The ratio is then 2:8, or 1:4, and the ceilingcorner enclosure increases the effective acoustical power of the speaker at low frequencies about four times that of a flat-wall location.

Therefore, a music room should be planned with the loudspeaker and the exponential-horn mouth in the corner near the ceiling for highest fidelity. In any event, the speaker should be above normal seated listening level, because sound, particularly in a room where the ceiling has no acoustical treatment, will be enriched musically by reflection from the ceiling. If the speaker were at the floor level the sounds would be clobbered by the interference of furniture, rugs, and so on.

But—and this is a very important but —the speaker should be so placed that it is not *exactly* in the center of the corner angle. In other words, the mouth of the enclosure should not be beamed directly at the corner of the room diagonally opposite. It should aim slightly away from that corner. Otherwise the high frequencies may strike the opposite corner in such a fashion that they would be reflected directly back, causing what sound engineers call "standing waves." These waves can result in a certain amount of aural confusion.

In addition, it is advisable to place the speaker enclosure, if it is at the ceiling level, so that it is tilted slightly downward, perhaps 10 to 15 degrees. This serves to direct the high-frequency waves toward the center of the room, rather than along the ceiling, and results in greater clarity. This is particularly important if the ceiling is to be acoustically treated.

Excellent results can still be obtained if the speaker is placed in or against a wall—one of the shorter walls if the room is rectangular. Fidelity of the lower frequencies will not be quite so great as it would be if the speaker were high in a corner, but there are not many untrained ears that could tell the difference.

the room

There are two or three basic principles to be observed in designing a music room for residences. The major objective is to achieve as high a degree of sound fidelity with as low an amount of distortion (due to room shape and surface finishes) as possible.

The first and perhaps the most important of these principles is that walls and, if possible, floor and ceiling, should not be parallel or unbroken. A modern home with a shed-type roof and exposed-beam ceiling automatically makes for good music reproduction as far as the "top and bottom" of the room goes. As for wallsnonparallelism need not be achieved by the expensive and sometimes unesthetic method of setting the walls at odd angles. as is often done in auditoriums. Any room with an ell, such as a living room with a dining alcove off it, provides adequate discontinuity of surfaces to break up echoes and reverberation. A living room with an angled fireplace in one corner will also provide sufficient irregularity in wall surfaces to assure the best possible music reception.

For really first-rate music reproduction, the room in which the loudspeaker is located should not be a small one. According to G. A. Briggs, British expert in home-music systems, the room should be not less than 18 feet long, with the speaker placed in a corner facing the long axis of the room.' Actually, there is no truly scientific way of stating what would be the smallest permissible room size for good reception, for the size will depend to a considerable degree on the power of the amplifier. The stronger the amplifier, the larger the necessary room size; however, the size of the loudspeaker should not be varied with the size of the room. The better the loudspeaker (not the larger), the better the reproduction regardless of room size. Thus, the tweeter should be of the standard small size and the woofer should be 12 or, preferably, 15 inches in diameter.⁵

Very little in the way of specific standards can be suggested for the treatment of room surfaces. Since every person's requirements will differ, much of the room treatment should be left until the music unit has been played enough so that the client can decide what is needed in the way of sound-deadening materials. Some prefer a very clear, almost reverberant, type of musical sound; others

want it muted way down. It is not even wise to make a standard recommendation that acoustical tile should be used on the ceiling if one or more of the following conditions are present: if the ceiling is to have exposed rafters, the floor is to be carpeted or large parts of it are to be covered with deep-pile rugs, the walls are to be provided with high bookshelves, there is to be a large fireplace, and if there will be a number of pieces of upholstered furniture placed in the room.

The various methods of deadening sound in a music room include those mentioned above plus heavy drapes or any other sound-absorbing material for deadening aural "glare" at major points of sound reflection (large glass areas, hard plaster or wood surfaces, and so on). If the room is large and will be used for parties as well as for music, ceiling acoustical tiles might wisely be specified at the time of construction, more for the deadening of the "confusion of voices" than for the control of musical reverberation. Care should be taken to select a type of tile that can be redecorated without damaging its acoustical qualities, i.e., a perforated tile with holes large enough so that paint cannot bridge them. Pantype tiles with sound-absorbing materials behind them are to be preferred in general to perforated-fiber tiles, since the low density of the fiber material affects acoustical performance just as much as the surface perforations.

There is one other aspect of musicroom acoustics that deserves attention: that is the resonant vibration of inanimate objects in the room when music is being played, particularly at large volumes. When a frequency in the music happens to hit a certain mode of vibration that matches that of an object, it can cause that object to rattle or rumble quite unpleasantly. Damping in the speaker enclosure with insulating materials can help reduce this if it is the enclosure itself that is vibrating, but it sometimes may be necessary to move-or remove -objects which exhibit a tendency to vibrate sympathetically with specific musical tones. Of course, the vibration can be considerably reduced by mounting or supporting the objects on sound-deadening pads and providing the speaker enclosure wiith acoustical-insulating mounts if it is on the floor.

the "binaural" problem

There is a considerable amount of skepticism among professional sound engineers concerning the general effectiveness of this new type of recording and playing. Even the terminology currently in use is misleading. Binaural music is a system which requires the listener to use headphones. Stereophonic music is a mixing of sounds in the rooms before they are heard, which is often ruinous to the effect. Stereophonic music is only too often called binaural and the listener is greatly disappointed at the messy effect his expensive new equipment gives him.

The basic principle of stereophonic sound is that the music should appear to "come at you" from a broad source, as it does with an orchestra in an auditorium, rather than from a point source such as a loudspeaker. Stereophonic records are made with two or more microphones. Sometimes they make use of electronic networks that provide optimum recording of the lower frequencies on the right side (where the heavier instruments often are) and of the higher frequencies on the left (where the violins and other higherpitched instruments are frequently placed). Then, when the record is played in the home, two or more loudspeakers are located in approximately the same position as those in the recording studio. The effect is supposed to be more vivid and true than in standard recordings.

This may be so-but only in one particular case. This is when the listener sits in a positively fixed relationship to the two speakers, preferably on a chair that is permanently fastened to the floor. Otherwise, he is likely to get a confusing and unpleasant imbalance from the dual system. If he is too near the loudspeaker for the highs, for example, he will not get a stereophonic effect. Instead-particularly if the room is large-he may be subjected to a quick echo or resonance. Stereophonic sound is extremely tricky.

Any attempt to achieve a true sense of broad-source music origination, one that is foolproof and does not require a rigidly fixed position in the room, must of necessity require a strictly binaural (two-ear) system, such as headphones, where the two ear pieces are wired into a permanently fixed relationship to the two speakers. With such a system the balance can be made perfect and it does not matter where the listener sits.

However, who wants to listen to music through headphones? If the client demands a stereophonic setup (he will inevitably ask for a binaural complex, but the above information will enable the architect to know what he really wants!) the best bet is to call in a consultant for advice on the special problems the particular room presents and to persuade the client to accept a fixed listening position.

⁴G. A. Briggs, Loudspeakers, the Why and How of Good Reproduction (London: The Whardale Wireless Works, 1953), p. 58. Incidentally, since the subject of loudspeakers and their enclosures is about as controver-sial as the question of the relative merits of other types of components, the reader will find a considerable amount of material in the Briggs book which differs from the recommendations presented in this article. Naturally, the present authors feel that their point of use is the correct one! ⁸ It is of no importance whether the woofer and tweeter are combined into one loudspeaker unit or whether they are separate. There will be no noticeable difference in the quality of music reproduction whichever type of loudspeaker is used, except where the two cones are so arranged that they are congruent. In this case the crossover region provides much smoother reproduction. This is true of the RCA LC-VA.







Thirty-five high-frequency fluorescent luminaires will produce almost three-million lumens in this field house. A group lampreplacement schedule is expected to be used on a two-year basis.

Small capacitor, used in place of conventional ballasts, weighs only three ounces and is smaller than a pack of cigarettes.

high-frequency fluorescent:

Union College at Schenectady, New York, has unveiled a new 400-cycle fluorescentlighting system that has just been installed in its Alumni Memorial field house —the first instance of such a system to be used for high-bay general-area lighting. By use of this lighting method, a playing area of approximately 40,000 sq ft will be maintained at an illumination level of between 45 and 50 ft-c.

When the field house was planned several years ago, it was tentatively decided that fixtures with a combination of filament and mercury lamps would be used. Being a high-bay structure, the recommendations were in keeping with those for buildings of this type. Because the field house will be used for baseball and football practice as well as for basketball games, it was soon recognized that the relatively bright filament-mercury sources would have certain disadvantages for the players-particularly those attempting to catch fly balls. Conventional 60-cycle fluorescent lighting was considered, but finally rejected because the inside contour of the structure did not lend itself to continuous row fixtures. Although it was realized that large fixtures containing a number of lamps in each could be easily adapted from a lighting standpoint, weight and cost seemed to be prohibitive.

High-frequency operation, however, made fluorescent lighting practicable. This 400-cycle system permits relatively lightweight fixtures-each unit weighs 110 lb less than one for a comparable 60-cycle system. The individual fixture is eight ft square, contains fourteen 96" T-12 slimline lamps, and although each has a low brightness it produces a total of 84,000 lumens. Thirty-five of these giant luminaires, mounted at heights varying from 60 ft at center to 34 ft on the sides, will produce an illumination level that is reported to be more than twice the amount provided by most field-house installations.

Increasing the frequency to 400, from the standard 60 cycles, is accomplished by means of two 30-kw rotating-type package-unit frequency converters. Installa-



Control equipment for the operation of heating and ventilating motors, 120-v incandescent lighting, and the 400-cycle, high-frequency lighting system (right).

One of the two 30-kw rotating-frequency converters (below right) packaged in a self-contained housing. It functions as both "transformer" and frequency changer for the conversion of 208-v, 60-cycle power to 600-v, 400-cycle power.

Union College Field House

tion of these converters (which are comparatively low in cost) allows the use of ballasts that are simpler, more efficient, and about one fifth the size and weight of regular ballasts. The lighting layout is so arranged that each of the two converters operates the lamps, allowing for approximately equal distribution of light. A simplified wiring system, also considerably lower in cost, reduces the number of circuits from 84 (for the lighting method originally considered) to 14, for the highfrequency design.

The primary power source is 220 v, 3 phase, 60 cycles, and the secondary is 575 v, 3 phase, 400 cycles connected to be under 300 v to ground. Since 400-cycle power is available, it is possible to use a simple series capacitor and series choke for ballast on alternate lamps. The split-phase circuit produces unity power factor to obtain maximum utilization of the converters.

The system at Union College cost approximately 10 percent less to install than the incandescent-mercury lighting system originally considered. In addition, the 400-cycle system offers an estimated 50 percent savings in annual operation and maintenance cost while producing 20 percent higher levels of comfort light. This installation was designed and developed by the General Electric Company at Nela Park. John H. Campbell, illuminating engineer, conceived and developed the technique; Carl J. Allen designed the fixtures; and Howard D. Kurt made the wiring layout and also helped design the power system. Fixtures were manufactured by Curtis Lighting, Inc.

Comprehensive tests made on experimental high-frequency fluorescent-lighting systems over a number of years indicate that the 400-cycle system may offer the best method of economically obtaining the long sought-for higher lighting levels and should find wide application in commercial, industrial, and institutional buildings. (For more detailed discussion of this lighting system see "High-Frequency Fluorescent Lighting," by J. H. Campbell and J. L. Tugman, November '54 P/A.)



The great annual loss of life and property in the United States due to fires has prompted many states and municipalities to enact legislation that protects both buildings and occupants against these disasters. The U. S. Government has issued specifications to cover construction of government-owned buildings and related equipment in the interest of fire safety. Many industrial firms, as well, have set up their own fire-safety codes specifically directed to the fire hazards present in their plants. Because it is recognized as an effective means of contributing to fire safety, a firealarm system is generally required by all of these codes or regulations.

The specific intent of this article is to assist those who prepare specifications and requirements for fire-alarm systems that operate under the control or domination of the owner of the property to be protected. The discussion will be concerned primarily with those types of fire-alarm systems that can give a fire signal to all occupants of the building being protected (such as schools, hospitals, dormitories, hotels, and factories). These systems, therefore, are usually designed to assist in the evacuation of the occupants by giving an immediate warning the moment a fire is detected.

Specifications, codes, and regulations for fire-alarm systems must be written to provide reasonable safety for life and property and should avoid provisions involving inconvenience and expense not essential to the objective of reasonable fire safety. However, since the lives of individuals are often dependent upon these systems in the event of fire, careful consideration should be given in the selection of the proper system for each specific installation.

As previously noted there exist many laws, ordinances, and other measures covering fire-alarm systems; therefore, before a specification is written, all local and state codes should be reviewed to make sure that the specification to be prepared will not conflict. Usually the local representatives of fire-alarm manufacturers are familiar with codes that apply to the locality of a specific job and can be of assistance. Specifications for those jobs where public funds are used must be so written that they do not limit procurement to any one manufacturer. As there are several recognized manufacturers of the fire-alarm equipment described in the recommendations of this article, competitive bidding is assured.

national fire-protection association codes

Fortunately we have in this country the National Fire Pro-

fire-alarm systems, part 1

tection Association¹ which is an international, nonprofit, technical- and educational-membership organization devoted to the reduction of loss of life and property by fire. This organization, often referred to merely as NFPA, has set up the National Fire Codes. These standards are purely advisory as far as the NFPA is concerned, but are widely used as a basis of good practice by property owners and others, and for legal and insurance purposes in the United States, Canada, and other countries. Government, state, municipal, etc. codes often make reference to the NFPA standards-some of them have been prepared in the form of model ordinances or have been otherwise arranged to make them suitable for regulatory purposes.

The specific NFPA codes concerning fire-alarm systems that will be discussed in detail are:

No. 70 National Electrical Code-1953, and Interpretations and Interim Amendments.

No. 72 Proprietary Signaling Systems-1954²

(Note: It is recommended that the latest issue of these codes be obtained from NFPA and kept as a reference at all times.)

It is recommended that specifications state: "The fire-alarm system shall be supplied and installed to meet NFPA No. 70 and No. 72." It should be understood that NFPA does not "approve" individual items of fire-protection equipment, materials, or services. The suitability of devices and materials for installation under these standards is indicated by the listings of nationally recognized testing laboratories, whose findings are customarily used as a guide for approval by agencies applying these standards. For example, the Underwriters' Laboratories, Inc., is such a testing laboratory and NFPA Code No. 72 has been adopted and published by the National Board of Fire Underwriters as NBFU Pamphlet No. 72. Most manufacturers of fire-alarm equipment required for the standard types of systems, as will be discussed, have their equipment listed by Underwriters' Laboratories and must use the NBFU Pamphlets for the basic design and application of their fire-alarm systems. All fire-alarm equipment listed by Underwriters' Laboratories is found in its annual publication "Fire Protection List" and the "Bi-Monthly Supplement."

Since NFPA No. 72 is the standard to be used for the specification of fire-alarm systems, this standard will be outlined and certain sections that concern systems to be

¹ Executive office: 60 Battery March, Boston, Mass. ² The full title of NFPA No. 72 is "Standards for the Installation, Maintenance and Use of Proprietary, Auxiliary, Remote Station and Local Protective Signaling Sys-tems, including Local or Isolated Systems for Watchman, Fire Alarm and Super-visory Service."

by L. T. Chandler*

specified will be quoted verbatim and then explained in detail.

systems listed in NFPA No. 72

The types of systems listed in NFPA No. 72 are as follows:

Proprietary Systems (Article 400). These systems are supervised by competent and experienced personnel in a central supervising station at the property protected. The system is to include equipment and other facilities required to permit the operators to maintain, test, and operate the system and upon receipt of signal, take such action as shall be required under the rules established for their guidance by the authority having jurisdiction. The central supervisory station should be located in a detached buildingor suitably isolated room-and shall have reliable means for transmitting fire alarms to the fire department over wire electrically supervised and under the control of the plant owner or occupant. Such a system would apply principally to large factories and groups of buildings having fire-fighting personnel and thus is not within the scope of this article.

Auxiliary Fire-Alarm Systems (Article 420). These systems shall be used only in connection with a municipal system which is suitable for the service and is well maintained and when a permit for such connection has been given by the municipal authorities. By auxiliarizing a municipal fire-alarm system the delay in traversing the distance from the fire to the street box is eliminated. Many municipalities recognize that elimination of this delay is considered of primary importance for safety of life in buildings where a fire department will be needed for rescue work and to control the rapid spread of fire. This auxiliary feature is often combined with private, local fire-alarm systems in schools, hospitals, and other institutions so that automatic transmission of alarms, indicating fire directly to the municipal fire department, may take place. This system will be covered in this article as an available feature for the basic local fire-alarm systems to be described later.

Remote-Station Fire-Alarm Systems (Article 430). This type of system employs a direct-circuit connection between alarm-signal initiating devices in protected premises and signal-indicating equipment in a remote station, such as fire or police headquarters or other places acceptable to

* Chief Sales Engineer, Edwards Company, Inc., Norwalk, Conn.

the authority having jurisdiction. The circuit between the protected premise and the remote station shall be reserved solely for fire-protective signaling services and not employed for a municipal fire-alarm system. This system is also an addition to the basic local fire-alarm systems.

Local Systems (Article 440). These systems consist of electrically supervised devices whose signals are transmitted to one or more places in the premises covered, primarily for the notification of occupants. It is this type of system which is usually required for schools, hospitals, dormitories, hotels, etc., and, therefore, is particularly applicable to the scope of this article.

Miscellaneous Systems—Watchmen's Time-Recording Apparatus (Article 450). This type of system is not considered applicable to the scope of this article. It would be used in large public and government-owned buildings, banks, warehouses, etc., where the use of watchmen would be deemed necessary. This involves special treatment or application since the number of watchman's reporting stations, their locations, and the route to be followed by the watchman for operating the station must be approved for the particular installation.

General (Article 200). Chapter 2 of NFPA No. 72 outlines common requirements. Although most of them concern the manufacturer of fire-alarm systems and the electrical contractor who installs the system (assuming that "the system shall meet the standards of NFPA No. 72" is specified), certain of these requirements should be understood by those who specify the system. It is recommended that some of these be specially mentioned in the specifications as will be indicated, to insure proper supply and installation of equipment.

The requirements and their paragraph numbers, which concern the systems within the scope of this article, are as follows:

2030. Approval.

2031. Information. At the request of the authority having jurisdiction, complete information regarding the system including specifications, wiring diagrams, and floor plans shall be submitted for approval prior to installation of equipment or wiring.

If there are no local or state codes that apply or request this information, it is suggested that the architect or engineer request in the specification that wiring diagrams and outline drawings of the equipment being supplied, be submitted to him for approval. **2032.** Equipment. All devices, combinations of devices, and equipment constructed and installed in conformity with this Standard shall be approved for the purposes for which they are intended.

It is recommended that this be included in the application and the approving authority be named.

2033. Acceptance Tests. Upon completion of a system, a satisfactory test of the entire installation shall be made in the presence of the authority having jurisdiction.

It is recommended that this be included in the specifications and the "authority having jurisdiction" be named.

2034. Maintenance Agreement. Where required by the authority having jurisdiction, a satisfactory agreement on the maintenance, operation, and efficiency of the system shall be provided. All systems shall be under the supervision of qualified persons satisfactory to the authority having jurisdiction. These persons shall cause proper tests and inspections to be made at prescribed intervals and shall have general charge of all alterations and additions to the systems under their supervision.

The maintenance and operation of the system does not usually concern the supplier of the fire-alarm system and these arrangements, if required by some authority, can be made by the owner; therefore, this paragraph would not usually be included in the specification.

2040. Installation and Design.

2041. Systems. All systems shall be installed in a workmanlike manner and in accordance with specifications and standards approved by the authority having jurisdiction.

It is suggested that this be placed in the specifications naming the authority having jurisdiction.

2043. Grounding. All systems shall test free of grounds except parts of circuits or equipment which are intentionally and permanently grounded to provide ground fault detection, emergency ground signaling, or circuit protective grounding. All systems shall be so designed that they do not depend upon the effectiveness of any ground connection for normal operation.

It is recommended that the first sentence of this paragraph be included in the specifications.

2044. Pre-Signal Feature. It is recommended that systems in hotels, department stores, hospitals, and similar institutions having sounding devices within the protected premises, be so designed that initial fire signals will sound only in department offices, engine rooms, fire brigade stations and other central locations, with provision whereby authorized persons may subsequently sound a general alarm.

Systems with this feature, known by fire-alarm manufacturers as a Presignal Coded System, will be described later.

2045. Use Restriction. Fire alarm systems shall be used for no other than fire protective signaling purposes, except that local control functions, necessary to make the premises safer in the event of fire, or to make it possible to hear fire alarm signals, may be automatically performed. In no case shall such circuit breakers or engine stops be installed in such a manner as to cut off the power for lighting or for operating elevators.

It has been noted that those who are not familiar with this restriction have sometimes attempted to combine other systems with fire-alarm systems or vice versa; i.e., paging, public-address, program-bells systems. This is in violation of the Use Restriction as quoted above.

2048. Coded Alarm Signal. A coded alarm signal shall consist of not less than three complete rounds of the number transmitted.

The standard for the number of complete rounds by most manufacturers of fire-alarm equipment is four.

wiring (article 210)

The provisions of Article 210 apply to installation wiring for interconnecting-system components. Generally, all wiring shall be installed with the requirements of the National Electric Code for Class I signal-systems circuits. (Note: Signal-Circuit wiring is found in Article 725 of NFPA No. 70 National Electrical Code.) Some exceptions to the Class I requirement are permitted in Article 210, principally in the case of limited-energy fire-detector circuits where the open-circuit voltage does not exceed 50 v, overcurrent protection of not more than 2-amp rating is provided, and capacity of the supply circuit is limited in its maximumrated output not to exceed 100 va. A fire-alarm system designed to take advantage of this type of wiring will be described later.

power supply sources (article 220)

The provisions of this Article apply to sources of power supply which shall be used, for the type of system involved, subject to acceptance by the authority having jurisdiction.

Reliable electric-light or power service, motor generators, and storage batteries are all approved sources of power supply, with certain requirements for each as outlined in this Article. Since the great majority of installations have reliable electric-light or power service available, this is the usual type of power source used since there is no powersupply equipment to be purchased or maintained by the owner.

The local fire-alarm systems will use a light and power service as permitted—such as a 1-phase, 3-wire, 115-230 v, 60-cycle supply circuit having a continuous unfused neutral conductor or a polyphase 115-v 60-cycle supply having a continuous unfused neutral conductor where interruption of one phase, with one side or phase for the main operating-power supply and the other side of phase for the trouble-signal power supply of the Signaling System.

2222. Point of Connection. The conductors of the signaling system power supply circuit shall be connected on the line side of the main service or a commercial light or power supply circuit or to the main bus bars on an isolated power plant located on the premises.

Since it is usually the responsibility of the specifying engineer to show the point of wiring connection to power supply on the plans, this should be noted.

2223. Fuse. A fuse enclosed in a locked or sealed cabinet located immediately adjacent to the point of connection to the light and power conductors shall be provided in series with each ungrounded conductor. A suitable resistor connected between the supply source and the fuse shall be provided, where necessary, to limit the short-circuit current at the fuse to not more than 10,000 amperes.

This should be included in the specification.

electrical supervision (article 240)

2411. Except as otherwise indicated in this Standard, a system shall be electrically supervised so that the occurrence of a break or a ground fault condition of its installationwiring circuits which prevents the required operation of the system, or failure of its main power supply source, will be indicated by a distinctive trouble signal. NOTE: (a) The provision of a double loop or other multiple-

NOTE: (a) The provision of a double loop or other multiplepath conductor circuit to avoid electrical supervision is not acceptable except as indicated in Paragraph 2424a.

(b) Electrical supervision of conductors for a short circuit fault is not contemplated by this requirement. 2420. Electrical Supervision. The electrical supervision

shall include: 2421. Power Supply Circuit Supervision. All sources

of energy except the following secondary sources: a. One employed for the operation of trouble signal circuits and appliances. b. One employed as an auxiliary means for maintaining the normal operation of the system following trouble signal indication when the main supply source is interrupted.

c. One employed as a means for operating a supplementary circuit for alarm bells, annunciators, time stamps and similar circuits, the failure of which will not prevent the operation of the system for the required signals.

d. The battery leads of a trickle-charged battery.

e. The neutral of a three, four or five wire a-c or d-c supply source.

2422. Signal Initiating Circuits. All circuits for signals initiated by the operation of firealarm boxes, fire detectors, automatically operated transmitters, or other appliances or devices which initiate or transmit signals either manually or automatically, except:

b. The circuits of a supplementary signal annunciator, provided that the fault condition of this circuit wiring results the non-interfering feature of operation.

b. The circuits of a supplementary signal annunciator, provided that the fault condition of this circuit wiring results only in the loss of annunciation.

2423. Supplementary Control Circuit. A supplementary circuit for operating fan motor stops or similar industrial control equipment intended to be actuated at the time of an alarm signal, need not be electrically supervised, provided a fault condition of the circuit in no way affects the normal operation of the signaling system.

2424. Alarm Signal Sounding Circuits. All circuits for operating alarm sounding devices and appliances except:

a. Alarm signal sounding appliances employing self-contained vibrating armature contacts for signal operation when (1) alternately connected to two or more circuits and approximately equally distributed throughout the building, or (2) connected to a double loop circuit so that a break or a ground fault does not prevent the operation of any sounding appliance.

b. A circuit employed to produce a supplementary local alarm signal to indicate the operation of an automatically operated alarm transmitter or a manual fire alarm box provided that an open or ground fault of the signal circuit conductor results only in the loss of the supplementary signal. c. The circuit of an alarm bell installed in the same room with a system control unit, provided the bell circuit conductors are installed in conduit or equivalently protected against mechanical injury and tampering.

d. A trouble signal circuit.

2425. In a Supervising Station. Where personnel responsible for the supervision and operation of the system are on duty continuously, the following features or facilities located in the supervising station need not be electrically supervised.

a. The station circuits for alarm bells and registers which are controlled by devices which have their operating circuits electrically supervised.

b. Main power supply failure if the condition is otherwise indicated so as to be obvious to the operator on duty."

It will be noted from the above Article 240, that particular stress and importance is placed upon electrical supervision of fire-alarm systems. The basic reason for this, of course, is to assure that the system is in operable condition at all times. An unsupervised fire-alarm system would be similar to the wiring of a light switch and lamp and such a firealarm system would be wired as follows:



Note that there is no indication in such a system that the power supply, wiring, stations, or signals are in an operating condition. Such a system will not meet the code.

A supervised noncode manual local fire-alarm system in accordance with NFPA 72 has a schematic wiring diagram as follows:



As explained previously, most installations use a 3wire, 115-230 v, 60-cycle power supply with grounded neutral. Therefore, A-B would be 115-v a-c and D-B, 115-v a-c.

The two relays shown are in a normal energized condition with a supervisory current flowing in the circuit from A to B. When a fire-alarm box is operated its contacts close, the box relay BR is shunted and de-energized causing its contacts br to shunt out and de-energize the signal supervisory relay SSR. Full voltage is now placed on the series fire-alarm signals causing them all to sound. When the SSR relay was de-energized, its contacts ssr closed causing the trouble bell to sound.

Examination of this circuit will reveal that it meets the requirements of electrical supervision for this type of system. (Refer to Par. 2411, 2421, 2421a, 2421e, 2422, 2424, 2424d quoted above which apply to this circuit.)

2430. Trouble Signals.

2431. Distinctive Trouble Signals. Trouble signals shall be distinctive from alarm signals and shall be indicated by the continuous operation of a sounding appliance, which may be common to several supervised circuits.

2432. Silencing Switch. A switch for silencing the trouble signal sounding appliance may be provided only if it transfers the trouble indication to a lamp or other acceptable visible indicator adjacent to the switch. The visible indicator shall remain operated until the silencing switch is restored to its normal position unless the audible trouble signal will be obtained when a fault occurs without restoring the switch to normal.

The schematic diagram above shows such a trouble-bell silencing switch with lamp as required. It is considered good practice to include this feature so that the trouble bell may be silenced while fault is being investigated and corrected. Therefore, it is recommended that "fire-alarm control panel be equipped with a trouble-bell silencing switch and transfer lamp," be specified.

2433. Location of Trouble Signal. Trouble sounding appliances shall be located as required by the authority having jurisdiction.

Usually the fire-alarm control panel is located in the basement or in the boiler room and the trouble bell is mounted adjacent to the panel. Sometimes it is desirable to have an additional extension trouble bell to assure that the trouble signal will be heard immediately by the operating personnel of the property being protected.

^a Author's Note: 2425 would apply principally to Proprietary Systems which are not within the scope of this article.

Part II will appear in September 1955 P/A.



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school rules

Speaking of schools, that venerable dean of school building planners, Dr. N. L. Engelhardt, Sr., asked me to remind you to remind your school district that there are three major steps in the creation of a new school facility. They are: *The Educational Specifications*

The preparation of a comprehensive program of educational and community requirements, which portrays the educational specifications and professional aims of the school system. Thus, the foundation for the second stage is created.

The Drawings and Specifications of the Architect

The architectural planning processes, resulting in final working drawings and a volume of specifications covering materials and workmanship. Thus, the third stage can be advanced.

The Construction of the Building

The school business officials administer the problems of public letting of building contracts, and a school building is completed in conformity with the requirements of the first and second stages.

End of reminder.

in Easter's wake

Around this time of the year I usually tell you about my Spring vacation. This year it was a brief sentence served with my boys who were a'hittin and a'spittin from here to there. My spouse thought it terribly unfair to leave our dynamic issue at home whilst we cruised to Bermuda. Of course you know I am the dominating one in our family and make all the decisions-so the four of us landed in Hamilton bright and early, day after Easter. Many shillings later, after touring the island in a vehicle that looked fresh from an encounter with trolley cars going in opposite directions, I noticed the Island's architectural common denominator. It was the lime-washed roofs. With rare exception, they were all pitched and stepped not unlike Cheops with its limestone capping stripped. I later learned that the roofs serve as a water catch, since the major source of drinking water is by courtesy of nature. The rainwater, slowed by the stepping and purified by the yearly renewed lime wash, is caught by gutters and leaders and stored in buried tanks containing a gold fish or two (to feed on stray insects, naturally). The water is then pumped to wherever required. Almost all buildings are stuccoed. Stand still for five minutes and you will be "rendered" with a 1:1:4 mix topped with Snocem, Kyanize, or approved equal. If it is a home you be hankering to build

(contractors will charge you about \$20,-000 for five rooms), buy a parcel, strip the topsoil, saw up the soft coral stone to sizes modular or standard, and you have your major building unit. You need not engage a registered architect. for the law does not require it. But there are five architectural firms listed in the telephone directory. One firm of Bermudian architects is called Onions (honestly) & Burchard, I sought out Architect Onions several times without success. I can report, however, that he has a peaceful-appearing office, complete with my book, Architectural Practice (Reinhold, four guineas thruppence, and still doing nicely, thank you).

Just in case you won't sleep tonight without knowing, let me put your mind at ease by telling you that Juan de Bermudez discovered Bermuda in 1515 and that it cost me far too many pounds, shillings, and pence to find out; however, we did observe the enfleurage process by which scents are extracted from Bermuda flowers such as the Easter lily, passion flower, jasmine and oleander.

Note to my hayfevered partner—did you know that the island passed a hundred percent as sanctuary for hayfever sufferers?

Note to my drinking partner-stopped at an old Bermuda home, circa 1652, where the Irish poet, Thomas Moore, visited in 1804. He wrote:

Friend of my soul, this goblet sip 'Twill chase that pensive tear. 'Tis not so sweet as woman's lip, But, oh! 'Tis more sincere.

Note to my landscape architect partner —the ligustrum lucidum is peachy keen here—stood up heroically against the exceptionally severe and prolonged gales



last January (forgive me, Bermuda Chamber of Commerce—P/A insists upon the truth). Ligustrum lucidum, you will be pleased to know, does not suffer from chlorosis, but occasionally from a virus disease which causes the foliage to become crinkled. Happily, its growth is improved by the application of farmyard manure.

And so, my friends, we find ourselves back at this crazy mixed-up mess we call living.

bidding blues

I don't know . . . I just don't know . . . You figure and figure and calculate and calculate and reckon and reckon and the prices on public work come in scrambled from here to there. You look your client square in the retina while you are clinching that job and allow as how you are reasonably certain you can get it built at that figure. Then ensues the ulcer-producing phase. It appears that the contracting fraternity of late seem to be acting more like the gambling fraternity. Figures do not make sense anymore. I once took a course in estimating. Nothing was ever said about hunger of contractors, neat timing of bid requests, fortuitous bond markets (in the case of schools), busy subs, very busy subs, and modulus of contractors' bonding elasticity.

If you put out a job complete with a passel of inquisitive alternates you lose sensitive bidders. If you put out a job with no alternates you have no previously prepared position to which you can retreat. If bids are due on Monday, you should have made it Tuesday-the weekend does not count as useful time for contractors' receipt of sub bids, for the subs prefer to submit their figures at the last possible moment to prevent horsetrading tactics. If bids are due on Friday, you should have made it Monday-for weekend pencil sharpening. If your bid due date follows a holiday, then you had better leave town-for you have committed a mortal sin. "Why did you have to have so many unit prices? . . . The Proposal form looks like vesterday's final stock prices . . . And look at those al-ternate prices!"

One feller says if you add plaster, add umpteen thousand dollars to the base bid which by this time is not base enough. Another feller says *deduct* umpteen thousand dollars for the same blankety blank plaster work. From goings on like this we learn what to do the next time? I should say nay. I've had it. I'm beat. I'm going home to mother.

the architect and his consultants

While the architect must have a basic knowledge of the structural, mechanical, and other systems required to make a building function, he must draw on outside specialists to solve the detailed problems. Since, in general, the specialists are independent practitioners who maintain their own professional or business organizations, a basis must be found in each instance for establishing sound working relations between them and the architect. These relations will fall into two categories: professional and business.

professional relations and job co-ordination

The number of specialist-consultants required to collaborate with the architect will vary from project to project. Frequently one project will unite the joint efforts of such consultants as structural, mechanical, electrical, and civil engineers, landscape architects, specification writers, and possibly others. While some architects' offices may have some of these specialists on their staffs, this practice is generally restricted to relatively large offices.

When various independent firms of specialists are called upon to collaborate on one project, the problem of over-all co-ordination becomes apparent, and that co-ordination, to be effective, must obviously begin at the outset of a project.

Just as the number of specialists required will vary from job to job, so will the scope of co-ordinating efforts. The following procedure will help get things off to a good start and on a sound basis:

- a. Once the commission is received by the architect and he is in the process of making early sketches, he selects the various consultant firms needed to contribute to the project.
- b. As soon as this selection is completed, representatives of all participating firms who will handle the work meet together, so that the architect can present the problem and explain the over-all objective. Although he may be an expert in

many things, the architect may well learn from the consultants at such a conference that some of his preconceived ideas may be economically unfeasible or otherwise impractical. It is then that the over-all problem is analyzed from the various architectural and engineering points of view. Obviously, only an open-minded approach to the problem-by all participantscan lead to a successful solution. Constructive critique at that time, before major expenditures in any of the offices have been incurred, will be most valuable as it will ultimately save time, corrective work, and money. In addition to resolving major problems at such an early stage, each participant will become aware of the problems confronting the other specialists.

- c. When the over-all scope has been determined, it is essential that a detailed division of work and responsibility be determined as well, in order to reduce overlapping functions.*
- d. After a tentative time schedule has been determined, a detailed project schedule of all phases of the work can be made available to all participants as quickly as possible. (See "Production Schedules—A Necessity," April 1954 P/A.)

Recognition by each participant of the other specialists' roles will help the over-all project co-ordinator in execution of his duties. Regular checks on production of all member firms are essential, and exchange of information among all participants must be kept at a steady flow. Consultants should be encouraged to have direct contact with each other, provided the architect is informed of all decisions reached between them. The architect might well make a point of going personally to his consultants'

^{*} Though specifically intended for "Collaborate Efforts," rather than relationships between architects and their consultants, a recent publication prepared by the Joint Committee of the Design Professions, bearing the title, Division of Responsibility Among the Design Professions, is a useful guide indeed as well as a check list.

by Siegmund Spiegel

offices during the job, to form the team relationship required to make a job go well. Occasional project conferences attended by all may be necessary at various important stages of the work. This will insure that unforeseen deviations from the original concept made by one of the participants are known to all, and will serve as a check on the individual firms and the over-all production schedule.

business relations

Architects rightly object to the practice of obtaining quotations for their services on a competitive basis. In many cases, as in work for the Armed Services, agreement has been reached that award of work will be on a basis of negotiation with only one firm of architects at any one time. Yet the architect does not always adhere to the same standard when he requires services from a consultant. The practice of "shopping," though considered unprofessional, still prevails. This should and can be avoided. It is only natural that the consultants, professionals in their own right, condemn the practice.

The consultants are generally aware of the inherent problems encountered by the architect in obtaining a commission and in properly correlating the project. The architect's "selling expense"—to use a commercial term—is higher than an engineer's. The engineers are aware of this fact and fee scales for engineering services to an architect will differ from scales pertaining to services for clients directly.

A valuable contribution toward better understanding of business relations among the professions is a booklet published by the New York Association of Consulting Engineers and sent by them to the architects in the New York area. This covers plainly such subjects as Code of Professional Practice, Schedule of Fees, and Standard Form of Agreement Between Architect and Engineer. Discussed in detail are such methods of payment as Per Diem Rate, Fixed Fee, Percentage of Cost of the Work, and Cost Plus Overhead and Profit. Separate percentage schedules are shown for structural engineers as well as mechanical and electrical engineers.

Joint efforts of the New York Chapter, AIA, and the New York Association of Consulting Engineers have brought forth five types of Standard Forms of Agreement Between Architect and Engineer, thus dispensing with the need for drawing up individual contract forms. With architect-engineer teams becoming more common, joint efforts of this and other items of administrative and business nature will greatly benefit the design professions.

Once an Agreement is executed between an architect and his consultant, there is no longer cause for discussing the consultant's fee. In no case can it be allowed to influence his services during the duration of the project.

Depending upon the type of project at hand, an architect may wish to base his contractual arrangements with his consultants on his own contract with the owner. This may be particularly true with respect to such items as scope of work, completion dates, and stage payments (especially if the latter are based upon receipt of payments from the owner). In such cases, it may be wise to make available to the consultants a copy of the architect-owner contract, modified to show fee and stage-payment items in percentages rather than in dollar amounts. A copy of such contract will help clarify whatever terms may have been discussed verbally between the architect and his consultant.

Although fees theoretically do not influence design and performance, past experience has proved that if an architect pays his consultants as promptly as his contractual arrangement may call for, he will receive more prompt and efficient service. Though overloaded with other work, an engineer may "coincidentally" finish on time the project of that particular architect who paid his fees when due.

p/a selected detail



MOTEL, New Orleans, La. Charles R. Colbert, Architect

p/a selected detail

fireplace



Section 3/16" SCALE



STUDENT CENTER, Raleigh, N. C. Wm. Henley Deitrick—John C. Knight & Associates, Architects



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Louise Sloane apartment interiors

Designing the interior of an apartment, already basically frozen in its architecture, might seem to be purely a decorator's job. Yet the two designers and the architect whose work we show on the following pages have approached their problems with sound architectural viewpoints from which the work has clearly benefited.

• Faced with the space limitations of one static room to be converted into a 24-hour dwelling, Architect Felix Augenfeld devised a furnishing plan (and created most of the furniture to fulfil it) as activity-diversified as a many-roomed house. With great ease, the interior makes the transition from the client's personal needs (sleeping, eating, storage, work, relaxation) to serving as a handsome and efficient background for entertaining. Key furnishings are the sofa-beds and three cabinet units, all designed by the architect. The sofa-beds are extraordinarily flexible, with their sectional elements, reversible or removable backs, pillows, and coverings. Multipurpose, storage-engineered, and, above all, beautifully proportioned and agreeable to the eye, are the cabinet units. Against a quiet white background, splashes of brilliant fabric color; textured carpet; wood, metal, marble, and plastic surfaces provide interest and contrast. Thoughtfully placed fixtures and wall lamps fill special lighting needs.

• Designer David G. Whitcomb's solution for an architecturally uninteresting, lowceilinged, large room in a converted New York brownstone, introduced four contrasting wall treatments. Walnut paneling on the fireplace wall, sheer fabric around the window corner, an illuminated floor-to-ceiling screen, and a wall of mirror at the dining end provide architectural interest without intruding or making excessive demand on the eye. Slate, marble, cork, lacquer, and natural walnut of the designer's custom furniture contribute enriching surfaces. Judicious use of the owner's antique lamps and decorative objects lends warmth and grace to the interior.

• With great skill and taste, Interior Designer Bertha Schaefer opened two small useless rooms in a family apartment to create a beautiful and comfortable room for family dining as well as large dinner-parties. Every element in the new design was chosen to overcome an existing (and unchangeable) liability. A close color scheme unifies and enlarges visually the poorly proportioned space; subtle wallpaper and a delicately drawn mural seem to widen the narrow dimension; a hand-woven fabric divider not only shields the kitchen entrance but also cuts off the room's too great length. The inventive ceiling panels serve both to light and to camouflage ugly beams. When the room acts as only a foyer, or for family dining, the furniture takes a minimum of space, yet the expandable table opens to seat 12. Behind the fabric divider is a storage-serving pantry.



area	0	
location	١	
1	-	

one-room apartment

New York, New York

architect Felix Augenfeld



dining near view window





data

Design Theory: Maximum utilization of limited space; uncluttered appearance; living functions distributed through room area, as in the different rooms of a house. To achieve this economy of space, most of the cabinetworkespecially those pieces that serve the highly mechanized needs of videoaudio entertaining-was architect-designed, custom-made. Conversation group near window is oriented to park view.

Color Plan: All-white background, walls and ceiling, Yellow carpet, Multicolored accents in pillows and upholstery fabrics.

cabinetwork

Bar Cabinet, Television, Radio, Recordplayer, Desk: architect-designed/ executed by Payer & Wangemann, 1797 First Ave., New York, N. Y.

equipment

Video, Audio, Tape Recorder Equipment: Custom Television, 1947 Broadway, New York, N. Y.

furnishings and fabrics

Dining Chairs, Cocktail Table: Knoll Associates, 575 Madison Ave., New York, N. Y.

Fireplace Chairs: Baker Furniture, Inc., Exhibitors Bldg., Grand Rapids, Mich. Dining Table: Herman Miller Furniture Co., Zeeland, Mich.

Round Magazine Table, Daybed, Ottomans: architect-designed, custombuilt.

Linen on Dining Chairs: Knoll Associates, Inc.

Silk on Fireplace Chairs, Pillows: Thaibok Fabrics, Ltd., 3 E. 52 St., New York, N. Y.

Horsehair Drapery: Marie Nichols Fabrics, 300 E. 61 St., New York, N. Y.

room divider

Blind: Thru-Vu Vertical Blind Corp., Box 266, Rye, N. Y.

lighting

Ceiling Fixture: Finland House, 41 E. 50 St., New York, N. Y. Wall Light: Plus Studio, 713 Madison Ave., New York, N. Y. Portable Floor Lamp: Altamira, Inc., 10 E. 54 St., New York, N. Y.



white rubber-tile floor

serving-accessory cabinet



p/a interior design data



one-room apartment by Felix Augenfeld (continued)





reverse-back sofa-bed

3ª



video-audio-desk unit

sofa as bed







area	living room	
location	New York, New York	
designer	David G. Whitcomb	



Photo: Gene Heil

data

Design Theory: Social use of room dictated a "retiring" background, accomplished by close relationship of surfaces and colors. To create architectural interest in the large, lowceilinged room, four co-ordinated elements were introduced: plain walnut paneling, large area of fabric panel, large mirrored area, free-standing illuminated screen of walnut and translucent white plastic—all extending from ceiling to floor.

Color Plan: Low-key neutrals. White walls, ceiling, draperies; white repeated in some chairs and marble. Natural wood tones-walnut, teak. Olive, gray, brown, black accent colors.

furnishings and fabrics

Round Marble Table, Walnut and Slate End Table, Walnut and Cork Cocktail Tables, Walnut and White Lacquer Storage Commode: custom-designed by David G. Whitcomb, 5 E. 73 St., New York, N. Y.

Walnut Drop-Leaf Dining Table: Dunbar Furniture Corp., 305 E. 63 St., New York, N. Y.

Painted Chairs: French Provincial, Inc., 840 Third Ave., New York, N. Y.

Lounge Chairs, Sofa: Widdicomb Furniture, Inc., 305 E. 63 St., New York, N. Y. Drapery: white "Orlon"/ Cheney-Greef, 4 E. 53 St., New York, N. Y. Upholstery: Weavercraft Fabrics, 18 E. 53 St., New York, N. Y. Pillows: Thaibok, Inc., 3 E. 52 St., New York, N. Y.

walls, flooring

Mirrors: Sutton Glass & Mirror Co., 891 Third Ave., New York, N. Y. Walnut Plywood: U. S. Plywood Corp., 55 W. 44 St., New York, N. Y.

55 W. 44 St., New York, N. Y. Free-Standing Screen: natural walnut and "Polyplastex"/ standard fluorescent and incandescent bulbs for illuminating.

Floors: oak-stained teak/ executed by City Service Floor Co., 124 W, 63 St., New York, N. Y.

area dining foyer







data

Design Theory: The problem was to transform two tiny, useless rooms into an inviting foyer and a comfortable dining area for 12. Removal of separating wall created a larger but overlong area, 9'x28' with 8' 6" ceiling. A close color scheme, a fabric divider, subtle wall interest, and a ceiling treatment combining color, design, and lighting, are skilfully chosen elements that correct the architectural misproportions.

Color Plan: Variations in a single color family-off-white to black, beige to dark-brown, gold to orange. Much of the room's distinction lies in the expert handling of color and the use of refined textures to achieve color variants.

furnishings and fabrics

Dining Table and Chairs: table, walnut/ oval/ 3 leaves/ opens to seat 12; chairs, walnut frame/ upholstered seat and back/ M. Singer & Sons, 36 E. 19 St., New York, N. Y.

Dining Chair Upholstery: orange Viscose and Fortisan texture/ S. M. Hexter, 509 Madison Ave., New York, N.Y.; yellow rayon and cotton textured repp/ Howard & Schaffer, 509 Madison Ave., New York, N.Y.

Window Shade: woven blind/ Jack Lenor Larsen, 68 E. 58 St., New York, N. Y.

Divider Panel: ceiling-hung on circular track/ screens closet door and entrance to kitchen/ executed by Franklin Colvin, Bertha Schaefer Gallery, 32 E, 57 St., New York, N. Y.

lighting

Ceiling Panels: "Gratelight" honeycomb combined with transluscent plastics/ white with blue, burnt orange/ Jason Harvey, 436 E. 85 St., New York, N. Y.

walls, flooring

Wood Veneer Paper: diamond pattern, off-white/ Louis W. Bowen, 509 Madison Ave., New York, N. Y.

Mural: Rowe Langston, 411 E. 52 St., New York, N. Y.

Carpeting: cotton/ wall-to-wall/ Sandalwood color/ Vogue Carpet Corp., 17 E. 53 St., New York, N. Y.

accessories

Bowl, Jar: Wildenhain/ Bertha Schaefer Gallery.

p/a interior design products

In a 27' x 50' area (Space 1802 Merchandise Mart), Du Pont dramatizes the extensive story of nylon in fabrics and floor coverings. Exhibit includes samples of upholstery fabrics from more than 30 mills, carpeting from more than 20 mills, upholstered furniture, and a range of sheer fabrics. Keying the entrance are a Dorothy Liebes woven panel in hot pinks, orange, and red; a brass Baker chair covered in Claret Pink and Lacquer Red spun nylon with Lurex; a red, black, and white handwoven scatter rug. Nye-Wait wall-to-wall carpeting is black-and-white tweed. Mirror reflects Finland House fixtures above divided carpet sample display unit. Display designed and built by General Exhibits & Displays, Inc., Chicago, with Donovan Worland as designer. Exhibit arranged and color co-ordinated by Dorothy Liebes. Nylon fibers: E. I. du Pont de Nemours & Co., Wilmington, Del.



Chicago market highlights

You, the architect, have become the "customer who is right" to the home-furnishings manufacturer. Speakers at the June furniture market showings in Chicago emphasized that "architecture is a major reference point in today's design"; that "we think of function in relation to architecture"; that "furniture is something to be integrated into the architecture of the home." Manufacturers consistently referred to new merchandise as architectural in character, in scale, in function.

This focus on the architect has gradually been developing as your own work more and more encompasses interior planning, more and more influences the values of the ultimate consumer.

In the new furniture, you will find a "custom approach" to simplify your interior planning. Virtually all manufacturers are offering "component collections." There are case pieces designed to fit flush, to stack or to line up, ready to be unified to fill storage needs. There are upholstered pieces that permit custom selection both of design and size through a diversity of arm, leg, back, and tailoring treatments. Occasional tables to fit particular areas may be specified in many finishes, heights, lengths.

Two other marked trends are present, closely related to each other. One is the

craftsmanlike use of natural and manmade materials for surface enrichment. adding discreet texture, sparkle and elegance. The other is the softer, warmer look that results both from such materials usage and from the effect on design inspiration of past periods and of foreign countries. This does not mean that the new "modern" is "traditional." It does mean that a fine feeling of design continuity has been achieved by relating the emotional satisfaction of classic design to the living habits of today. Although the new furniture has the curved lines and the rooted quality of familiarity, it could have been designed only in this time.



With an eye to the architect's practical problems, Ben Rose puts his print designs on two durable new fabrics: "Gem" Boucle, a heavily nubbed Fiberglas with three times the abrasive resistance of previous weaves and new translucent-opaque qualities; and a linen-and-mohair blend developed for institutional hard usage. Shown is "India," in large and small scale mosaic squares, three-color overprint. Ben Rose, Inc., 1129 W. Sheriden Rd., Chicago 40, III. Edward Wormley's curvilinear mahogany-and-cane dining chair from his new Contour Collection epitomizes the grace, lightness, and sculptured look of the market's new furniture. Dunbar Furniture Corporation, Berne, Ind.



p/a interior design products

Chicago market highlights

1, 2. Light scaling, slimly modelled lines in a "Flip-Flop" sofa that converts to a 30" x 84" sleeping surface by flipping back cushions on attached cloth hinges, flopping wedged seat cushions from front to back. Foam-rubber construction, mahogany trestle base. Designed by Edward Wormley. Dunbar Furniture Corporation, Berne, Ind.

3. Comfort and curves combine with mechanical ingenuity for a convertible sofa that is adjustable to eighteen positions. Either side may be raised or lowered, both sides may be flattened for sleeping. Foam rubber, removable zippered cover in 11 colors. Tubular steel frame. 76" long, 45" wide when opened, 33" high, seat 14" high. Retail: \$495. By Tecno of Italy. M. Singer & Sons, 32 E. 19 St., New York, N.Y.

4, 5. Fine wood graining creates its own pattern, cabinetwork its own design interest in a walnut storage unit with four 41" drawers on one side, compartment with adjustable shelf on the other. Designed by Gio Ponti. Pull-up chairs covered in synthetic washable "Gloveskin," imported from Italy, are light, compact, comfortable. M. Singer & Sons, 32 E. 19 St., New York, N.Y.

6, 7. Expressive examples of enrichment through sensitive use of materials are these two pieces. The Cocktail Table with solid plank walnut top in "perique" finish is inlaid with elongated butterfly splines of ebony. H-shaped supports are ebony-stained, small drawers are ebony-fronted. 72" long x 24" wide x 16" high. The Storage Unit conceals shelf and drawers behind a drop front door patterned of teak, walnut, beech, and ebony. Narrow drawers at right are both served and decorated by ebony shaped pulls. Slim metal I-bar pedestal base has the new floating look. Both designed by Milo Baughman. Arch Gordon & Co., Inc., 1335 N. Wells St., Chicago 10. 111.

8. Nostalgic yet entirely contemporary, upholstered tub chair with cantilevered armrest. Construction is foam-rubber slabs over coil springs. From the Planner Collection. Designed by Paul McCobb. B. G. Mesberg National Sales, Merchandise Mart, Chicago, III.







5







4



• No one knows better the value of CERTIFIED CBM BALLASTS than the manufacturers of fluorescent tubes. For the satisfactory performance of their lamps is vitally dependent on the ballasts that operate them. They know CERTIFIED CBM BALLASTS are Tailored to the Tube.

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"The life and light output ratings of fluorescent lamps are based on their use with ballasts providing proper operating characteristics. Ballasts that do not provide proper electrical values may substantially reduce either lamp life or light output, or both. Ballasts certified as built to the specifications adopted by the Certified Ballast Manufacturers (CBM) do provide values that meet or exceed minimum requirements. This certification assures the lamp user, without individual testing, that lamps will operate at values close to their ratings."

SYLVANIA says:

"The light and life ratings of fluorescent lamps are based on three hour burning cycles under specified conditions and with ballasts meeting American Standards Association specifications. Ballasts marked with the CBM emblem and certified by Electrical Testing Laboratories, Inc., meet ASA specifications."

WESTINGHOUSE says:

"Use ballasts that are tested and Certified by Electrical Testing Laboratories or ones that are otherwise known to meet the specifications of the lamp manufacturer. These will give best results with Westinghouse fluorescent lamps."

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FIED BALLAST MANUFACTURERS

Makers of Certified Ballasts for Fluorescent Lighting 2116 KEITH BLDG., CLEVELAND 15, OHIO



p/a interior design products

Chicago market highlights

New Carpets introduced at the Merchandise Mart offer a gratifying diversity of textures, tweedy effects, subtle fashion colors. Strongly conscious of contract use of carpeting in hotels, motels, offices, churches, and other heavy traffic areas, carpet manufacturers stress sturdiness and durability of construction, pile-height contrasts and color effects that show least soil.

 "Pepper Ridge," tufted, all-wool loop pile in variegated colors for a nubby, hand-braided effect. A. & M. Karagheusian, Inc., 295 Fifth Ave., New York, N. Y.

2. "Dignity," multilevel looped texture Wilton, all-wool face yarns. James Lees & Sons Co., Bridgeport, Pa.

3. "Mayan," all-wool Wilton in 4-1-1 ratio color-combination design with figured colors accented above ground pile surface. Nye-Wait Company, Inc., Auburn, N. Y.

4. "Rippletone," all-wool double-pile construction, basket-weave base, multitone texture colorings. C. H. Masland & Sons, Carlisle, Pa.

5. "Charonne," sculptured-wool Wilton broadloom, small leaf design in high-cut pile and low loops. Archibald Holmes & Son, Philadelphia, Pa.

6. "Ebb Tide," two-level cut pile in all-wool, random texture weave, heavy latex-coated backing. Artloom Carpet Co., Inc., 295 Fifth Ave., New York, N. Y.

7. "Tamarack," round-wire texture, all-wool loop pile high and low, rubberized back. Mohawk Carpet Mills, Inc., Amsterdam, N. Y.

8. "Corday," all-wool, looped varied pile heights. Bigelow Rugs & Carpets, 295 Fifth Ave., New York, N. Y.





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Landscape Lighting Unit: mercury vapor floodlight for landscape lighting/ high intensity light source enhances foliage with blue-green light/ all aluminum watertight construction/ bullet-shaped reflector with 45 degree cutoff to prevent glare/ rust-proof, manually operated swivel/ self-draining, selfcleaning shade/ may be placed on ground, fastened to a tree or building, or set into ground/ retail: \$66/ Lightolier, Inc., 11 E. 36 St., New York, N. Y.

Blackout Venetian Blind: overlapping slats cut off light infiltration/ flutter-proof/ may be tilted to provide any degree of light control/ in "Linen Fresh" color and other standard colors/ plastic tape has dust-rejecting smooth surface, cross-fiber construction for extra strength and tear-resistance/ Levolar Lorentzen, Inc., 720 Monroe St., Hoboken, N. J.

Teller's Counter: permanent, fully equipped teller's unit for banks/ may be relocated easily for temporary use also/ 40" high, counter-top 5' x 3'/ of steel, Decoral-color to harmonize with metal, wood, or marble/ top of Textolite bonded to steel/ sound-proof felt backing/ assembly includes grill wicket, two drawers, storage lockers, electrical outlets/ two-position currency tray turns 90 degrees/ also available with electrically operated remote-control teller's gate/ Mosler Safe Co., Hamilton, Ohio.

Enclosed Lighting Fixtures: "Wallite"/ singlelamp model, incandescent only, of die-cast aluminum, available in satin natural finish or green, yellow, or beige baked-on lacquer/ high-reflective interior directs light through prismatic diffusing plate/ ready-mount back plate carries all wiring, weighs 4 oz./ retail: \$14: double-lamp model of #20 gage coldrolled steel with heavy plastic end plates, medium gray/ incandescent/ retail: \$21.60; fluorescent/ retail: \$22.60 with low-power factor ballast, \$28.40 higher power/ both sizes designed to provide plentiful diffused illumination wherever localized lighting is required/ Gotham Lighting Corporation, 37-01 31 St., Long Island City I, N. Y.

Fiberglas Swatch Book: over 300 swatches of piece-dyed fabrics and photographs of more than 250 prints with accompanying swatches of 24 print cloths/ book is 12" x 14" with 1" multiring binding/ samples included are from: Ben Rose, Inc.; Charles Bloom, Inc.; Cheney, Greef & Co., Inc.; Cohn-Hall-Marx Co.; Dan

p/a interior design products

Cooper, Inc.; Covington Fabrics Corp., Eaglesham Prints; Elenhank Designers; Knoll Textiles, Inc.; Jack Lenor Larsen, Inc.: Laverne, Inc.; Moss Rose Mfg. Co.; Quaintance Fabrics; F. Schumacher & Co.; Isabel Scott Fabrics Corp.; Thortel Fireproof Fabrics, Inc.; Titus Blatter & Co.; Norman Trigg, Inc.; Witcombe, McGeachin & Co./ retail: \$10/ Owens-Corning Fiberglas Corp., Department 210, 598 Madison Ave., New York 22, N. Y. Decorative Lumber Planking: "Surf Plank"/ grain of wood stands out in relief from etched-out background, suggestive in appearance of driftwood/ in short lengths for wainscotting, longer planks for full length room paneling/ long edges are ship-lapped, eliminating need for vertical joint treatment/ 5/8" thick; 6", 8", and 10" wide; lengths from 4' to 10'/ United State Plywood Corporation, 55 W. 44 St., New York 36, N. Y.





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p/a manufacturers' literature

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

air and temperature control

1-42. Ceiling Diffusers (F-6597), 28-p. catalog containing information on square and rectangular ceiling diffusers, designed to match acoustical tile in size appearance. Also describes linear-design diffuser for either supply or return air, available with integral fluorescent-lighting units. Photos and dimensioned drawings; performance-data tables. Barber-Colman Co., Rockford, III.

1-43. Sizing Cooling-Tower Pumps and Piping (GR-155), 8-p. guide outlining procedure for most efficient, economical selection of cooling-tower pumps and piping. Includes sketches of typical-design problem and cooling-tower installations; gives selection charts for pumps as well as sample work sheet. Bell & Gossett Co., Morton Grove, III.

1-44. Absolute Filter (CC-202-AF). 8-p. brochure explaining development of highefficiency air filter designed to control minute dust particles carrying pollen, bacteria, or radioactivity. Contains charts on performance, pressure drop, and dimensions; drawings, specifications. Cambridge Filter Corp., 738 Erie Blvd., E., Syracuse 3, N. Y.

1-45. Propeller-Fan Unit Heaters, AIA 30-C-43 (1301-A), 12-p. bulletin giving data on unit heaters for installation with steam or hot-water heating systems. Charts provide basic information on conversion factors, capacities, and dimensions; drawings show construction features in addition to typical piping arrangements. C. A. Dunham Co., 400 W. Madison St., Chicago 6. Ill.

1-46. Utility Blowers (BC-11), 48-p. catalog covering line of nonoverloading blowers with backward-curved blades. Contains performance data for belt-drive or directdrive blowers; describes double and tripleblower units. Drawings, dimensions. Hartzell Propeller Fan Co., Piqua, Ohio.

1-47. Utility Fans (DS-348U), 24-p. booklet describing centrifugal fans. Outlines construction features of belt-drive or direct-drive fans; provides data for selection of fan. Also includes information on special installation requirements. Drawings, specifications; tables of dimensions and capacities. The Trane Co., La Crosse, Wis.

construction

2-57. Architectural Woodwork: Exterior and Interior Solid-Core Flush Doors, AIA 19-E1 (5), 12-p. brochure—fifth in series on woodwork—describing construction of solid-core flush doors. Presents general information on lights, special hardware, flashing, weatherstripping, and veneers; explains characteristics of standard, flush-framed, and mineral cores. Also gives data on special-purpose doors; drawings. Architectural Woodwork Inst., 332 S. Michigan Ave., Chicago 4, III.

2-58. Berylex Concrete Admixture, 34 pages of data sheets on chemical compound developed to produce quick-setting concrete. Describes properties of admixture as well as its use in salt-proof roads, acid-resistant floors, and retopping of monolithic slabs; provides formulas for typical mixes. Berylex Co. of Conn., P. O. Box 255. Norwalk, Conn.

2-59. Structural Clay Products Catalog, AIA 10-A (55-A), 16-p. publication featuring brick and structural clay tile manufactured in modular sizes. Gives dimensioned drawings of all products including facing, load-bearing, and nonload-bearing tiles. Also contains list of references on specifications and modular co-ordination. Clay Products Assn. of the Southwest, 109 Perry-Brooks Bldg., Austin, Tex.

2-60. V-Lok Steel-Framing Design Details (55-V), 40-p. reference manual

for architects and engineers containing typical details for interlocking, steel structural members. Photos and drawings illustrate several recent projects; framing plans show typical layouts for industrial buildings and schools. Macomber Inc., Canton Ohio.

2-61. Medusa Cements Manual, 28-p. pocket-size booklet discussing uses, applications, and specifications of portland, waterproofing, or tile-grout cements. Contains data on gray, white, air-entraining, or highearly-strength portland cements; gives recommendations for proper proportioning, mixing, and curing of concrete. Tables for estimating cement quantities. Medusa Portland Cement Co., 1000 Midland Bldg., Cleveland 15, Ohio.

2-62. Metal-Lath Membrane Fireproofing for Steel Buildings, AIA 20-B-1 (3), 16-p. paimphlet on fireproofing of steelframe buildings. Typical details show methods of fireproofing columns, ceilings, and beams; tables provide data on physical properties of assemblies. Also includes material on fireproofing of double-hung ceilings, cellular-steel floors, and air-conditioning outlets. Metal Lath Manufacturers Assn., Engineers Bldg., Cleveland 14, Ohio.

2-63. National Design Specifications for Stress-Grade Lumber and Its Fastenings, AIA 19-B-1, 72-p. guide to assist in design of more efficient, economical structures. Gives general specifications for stress-grade lumber in addition to detailed requirements on allowable unit stresses, design loads, recommended-construction practices, and connections. Also contains information on glue-laminated structural members. Timber Engineering Co., 1319 18 St., N. W., Washington 6, D. C.

2-64. Weldwood Plywood Panels, AIA 19-F (1034B), 32-p. brochure containing details and specifications for architecturalgrade plywood panels. Gives basic information on characteristics and manufacture of veneer; provides data on design of paneling as well as details of construction. Also discusses surface finishes. U. S. Plywood Corp., Weldwood Bldg., 55 W. 44 St., New York 36, N. Y.

2-65. Welded-Wire Fabric Design ★ Manual, AIA 4-E-2 (BC-50), 48-p. manual covering use of welded-wire (Continued on page 149)

PROGRESSIVE ARCHITECTURE, 430 Park Avenue, New York 22, N.Y.

I should like a copy of each piece of Manufacturers' Literature circled. We request students to send their inquiries directly to the manufacturers.



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See "MEET THE PRESS" on NBC-TV, sponsored on alternate Sundays by Johns-Manville

Johns-Manville
p/a manufacturers' literature

(Continued from page 147)

fabric in reinforced-concrete construction. Explains design procedure for short-span construction including tables and detail of framing; discusses use of wire fabric in poured-in-place, lightweight-steel, or tilt-up construction. Also contains data on fireproofing, temperature reinforcement, and cement-gum work. Tables for estimating weight, sectional area of wire fabric; photos, drawings, specifications. Wire Reinforcement Inst., Inc., National Press Bldg., Washington 4, D. C.

doors and windows

3-40. Arcadia Sliding-Glass Doors and Windows, AIA 16-E (1955-75), 12-p. booklet illustrating steel-framed doors and windows. Describes features of construction: gives data chart covering glass, frame, and rough-opening dimensions. Details show installation and operation of windows in frame, concrete, or brick-veneer construction. Specifications. Arcadia Metal Products, P. O. Box 657, Arcadia, Calif.

3-41. Fenestra Panels, Sash, and Doors for Schools, folder enclosing 16 data sheets on steel building panels for school construction. Drawings and details show acoustical-panel ceiling₈ and cellular-steel roof construction; photos illustrate description of doors and windows. Detroit Steel Products Co., 2250 E. Grand Blvd., Detroit 11, Mich.

3-42. Kawneer Flush Doors, AIA 16-B, 4-p. circular illustrating aluminum flush doors of sandwich-panel construction. Drawings show installation of louvers, window frames, and door closers in honeycomb-core door; also contains specifications and standard sizes. The Kawneer Co., Niles, Mich.

3-43. Hardware for Hospitals, AIA 27, 20-p. booklet containing up-to-date recommendations on hardware for hospitals of all types. Outlines basic requirements for hardware; gives hardware schedules for general-purpose areas in addition to labs, radiographic suite, nursing unit, psychiatric ward, operating suite, and nursery. National Builders' Hardware Assn., 515 Madison Ave., New York 22, N. Y.

3-44. Roddiscraft Doors, AIA 19-E-1 (RPC 5), 8-p. pamphlet describing construction of flush-yeneered doors. Contains information on fire doors, solid-core, hollow-core, and lead-lined doors; provides diagrammatic details of hardware, lights, and standard types. Drawings, specifications, Roddis Plywood Corp., Marshfield, Wis.

3-45. Vampeo All-Aluminum Products, 40-p. catalog giving information on alumimum windows. Provides details of intermediate-projected and ribbon windows; also includes data on heavy-section custom classroom windows and curtain wall. Photos, drawings, specifications; material on sun canopies. Valley Metal Products Co., Plainwell, Mich.

electrical equipment, lighting

4-29. Kliegl Architectural Lighting (A-11), 36-p. catalog on lighting fixtures suitable for commercial or residential installation. Illustrates recessed and suspended aluminum fixtures; contains information on pin-hole down lights, accent lighting, and dimmers. Drawings, dimensions, engineering data. Architectural Div., Kliegl Bros., 321 W. 50 St., New York 19, N Y.

4-30. Scotch-Brand Electrical Products, 12-p. specification guide on plastic product for electrical construction and maintenance work. Describes applications of tape, spring connectors, insulating putty, and pipe insulation; lists properties of cach product. Photos, specifications, chart illustrating typical applications in industrial plant. Minnesota Mining & Mig. Co., St. Par.I 6. Minn.

4-31. RLM Standard Specifications, AIA 31-F-233 (55), 48-p. manual containing re-(Continued on page 150)



1443 FOURTH STREET (Since 1909) BERKELEY 10, CALIFORNIA

p/a manufacturers' literature

(Continued from page 149)

vised standards for incandescent and fluorescent industrial-lighting units. Explains increased requirements of reflection factors, light output, shielding angles, and lamp spacing. Gives specifications for individual fixtures as well as for testing and inspection procedures. Drawings, performance charts. RLM Standards Inst., Inc., 326 W. Madison St., Chicago 6, III.

sanitation, plumbing, water supply

7-13. Wrought-Iron Pipe Catalog, 52-p. manual covering technical information most often requested by architects and engineers. Contains general notes on wrought iron including specifications, mill standards, and ordering instructions. Tables list properties of piping; charts give data on



P.O. BOX 4, EAST SPARTA, OHIO

decimal equivalents, gages, water flow, and conversion factors. Also provides material on heat-exchanger and condenser tubes in addition to piping for special uses. Engineering Service Dept., A. M. Byers Co., Pittsburgh, Pa.

7-14. Ric-wiL Insulated Piping Systems, 90-p. notebook providing information on prefab, insulated piping for underground or overhead use. Outlines procedure for design of piping system; explains fabrication of piping for special requirements. Also gives specifications, details, and installation instructions. Ric-wiL, Inc., Barberton, Ohio.

specialized equipment

8-11. Wayne Rolling Gymstands, AIA 35-F-11 (R-54), 16-p. catalog on gymnasium seating which folds away when not in use. Describes operation and construction of fixed as well as movable models; gives suggestions for layout of seating. Photos and drawings; dimensions, specifications. Wayne Iron Works, Wayne, Pa.

surfacing materials

9-13. Nevamar Surfacing (N-107), 4-p. circular illustrating plastic-finished laminate. Color samples show solid, pearl, and linen patterns in addition to large selection of wood-grain finishes. Gives data on properties and sizes of material; describes optional hardboard backing. The National Plastic Products Co., Odenton, Md.

interior furnishings

11-5. American-Standard Kitchen Products (K55), 52-p. booklet presenting new line of kitchen cabinets and counter tops. Features steel cabinets with interchangeable drawers or shelves and snap-lock construction; gives drawings and dimensions for each unit. Also includes information on sink cabinets as well as plastic-laminate counter tops. Color chart for accessories. Plumbing and Heating Div., American Radiator & Standard Sanitary Corp., New York 18, N. Y.

11-6. American Seating School Furniture (6074G), 24-p. brochure showing line of schoolroom furniture. Gives data on several styles of classroom units; also describes folding chairs, church pews, and auditorium seating. Drawings, dimensions. American Seating Co., Ninth and Broadway, Grand Rapids 2, Mich.

11-7. Weber Equipment for Homemaking Education, 22-p.

11-8. Modulart Hardware, 28-p.

11-9. Weberwa'l Movable-Partition Systems, (W-155), 44-p.

Three booklets showing cabinet and partition units. First brochure illustrates cabinets, desks, and chalkboard units designed for homemaking classes; includes several layouts for home-cronomics classrooms. Second booklet details hardware and accessories for retailing; gives specifications as well as photos. Third one shows movable wood or steel partitions; provides specifications. Weber Showcase & Fixture Co., Inc., 5700 Avalon Blvd., Los Angeles 11, Calif.

VENTILATOR/LIGHT COMBINATION UNIT

Revolutionary... New ...

TRADE-HIND

for Bathrooms

HANDSOME CHROME AND GLASS DESIGN...

MOUNTS

OFFERS UNUSUAL APPEAL TO HOME BUYERS

Another outstanding first from Trade-Wind! A combination bathroom ventilator and illuminator beautifully designed in a flush-type ceiling unit. Two 75-watt bulbs provide brilliant illumination. And the time-tested Trade-Wind 100 CFM blower unit assures complete ventilation-for both inside and outside baths-eliminating steam, lingering dampness and odors.

Easiest to install ...

Trade-Wind Model 1701 installs between joists and the single installation gives you both light and ventilation, thus cutting installation expense. The unit is pre-wired, further eliminating extra work in running asbestos leads. It can be wired to a single switch or 3 wires run to a double switch. The Trade-Wind Time-Delay Switch also can be used.

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Trade-Wind has priced the Model 1701 at a rock bottom figure, making this new light/ventilator combination an outstanding "buy" for every type of home.

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CONVENTENTLY PACK-AGED — Complete lightweight packages in only two lengths are easy to stock... easy to handle on the job.

SIMPLE TO INSTALL—All components perfectly fitted . . . many simply snap in place. Dampers or air splitter optional.

Perimaheat" Baseboard Convectors

at lower cost with ...

DCEC.

Advanced Perimaheat Baseboard design produces high efficiency heating, the result of more than 28 years of YOUNG specialized heat transfer engineering and experience.

Perimaheat heating elements feature aluminum fins mechanically bonded to copper tubes to form a double-walled continuous metal heat transfer surface that produces maximum heating efficiency. Cushion strip and free-hanging elements eliminate contraction and expansion noises. Smooth, attractive Perimaheat Cabinets are easy to keep clean.

For further Perimaheat details, see your Young Representative listed in the yellow pages of your telephone directory, or mail coupon below.

Perimaheat is a Young Radiator Company Trade Mark.



JOINT COVER



INSIDE CORNER



RIGHT OK LEFT-HAND END CAPS



OUTSIDE CORNER

The Young Radiator Company is a member of the Convector Manufacturers Association and subscribes to the engineering standards of that association.



p/a products



Stud welding permitted utilization of specially designed, preassembled, aluminum window-wall panels on San Francisco skyscraper. During construction, steel inserts were cast in top and bottom of concrete surrounding spandrels; standard threaded studs, $\frac{3}{6}$ " x 1¹/₄", were end-welded to inserts (left). Angle clips, fastened to studs (below), provided anchor for bolting of window units (right). Quick, accurate placement of studs was facilitated by template. Nelson Stud Welding Div., Gregory Industries, Inc., Lorain, Ohio,





New ceiling light and ventilator combination for bathrooms incorporates two 75-w lamps located on either side of single blower wheel, which exhausts 100 cfm. Translucent ribbed glass conceals lamps; expanded metal protects blower. Entire assembly, measuring 13%" wide x 7 3/16" deep x 8" high, is recessed between ceiling joists; unit is prewired to external junction box. Trade-Wind Motorfans, Inc., 7755 Paramount Blvd., Rivera, Calif.

Central-control system follows preset programs to switch on or off up to 40 groups of remote operations in industrial plants. Commands originate in centraloperations panel (on left side of exhibit) and are automatically programmed to provide efficient use of electrical facilities. In most installations, satisfactory coverage is obtained by direct coupling with 115-v lighting-distribution system. International Business Machines Corp., 590 Madison Ave., New York 22, N. Y.





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LACLEDE STEEL REINFORCEMENT



Laclede reinforcing steels—including multi-rib round reinforcing bars, spirals, tie wire, welded wire fabric and accessories—give vital strength and permanency to this new St. Louis housing project.

Scheduled for occupancy early in 1956, the Darst Homes will provide attractive and comfortable living quarters for 1,238 families.



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ACLEDE

Producers of Steel for Industry and Construction

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Modern, step-saving telephone conveniences are marks of the well-planned home, especially when you specify built-in conduits. Wire-free walls add beauty and satisfaction at little extra cost. Be sure to specify telephone conduits.

Your Bell telephone company will be glad to help you work out economical conduit installations. For details on home telephone wiring, see Sweet's Light Construction File, catalog 8i/Be, or just call your nearest business office. BELL TELEPHONE SYSTEM



The The INDUSTRIAL WORKER WORKER

-and he knows at close range-that an accident means serious personal tragedy to the worker as well as financial and production problems to the plant.

It's a fortunate worker who is employed by one of the progressive firms which have taken the practical step that assures safety against slipping accidents... by installing ALGRIP... the world's only Abrasive Rolled Steel Floor Plate. Oily, wet or greasy—level or on slope—the ALGRIP floor is foot-safe for the worker...safe against skidding for material-handling equipment ... because ALGRIP's uniformly and deeply embedded abrasive keeps it safe ... year in, year out.

ALGRIP maintains itself ... cuts accidents ... and insurance costs ... to help pay for itself.



p/a products

(Continued from page 153)

air and temperature control

Absorption Refrigerating Machines: now available for large-capacity air-conditioning and process-cooling installations, refrigerating machines utilize existing source of steam to produce chilled water at low operating cost. In addition, new absorption machines automatically adjust from 100 percent capacity down to zero load with little loss in efficiency; because of light weight and elimination of moving parts, unit can be installed on roof or intermediate floors without special supports. Manufactured in capacities ranging from 100 to 700 tons. Carrier Corp., Carrier Bldg., Syracuse 1, N. Y.

Zone-Air Conditioning Units: room air conditioners are designed for hospitals, hotels, and offices where silence is considered essential. Individually controlled units require only connection of piping to cooling or hot-water system, thereby eliminating costly duct work and insulation. Conditioners consisting of flat, continuous aluminum fins with full-length collars and copper tubing, have two separate motor-driven blowers to assure operation in case one motor fails. Made in 14 sizes in capacities of 300 to 1200 cfm. A. H. Witt Co., Los Angeles, Calif.

doors and windows

Vinyl-Clad Flush Doors: plastic surfacing, in variety of colors and textures, permits interior doors to harmonize with design scheme. Doors, of sandwich construction, have honeycomb core and aluminum outer sheet to which semirigid vinyl sheet is bonded. Textured pattern comes in yellow, gray, red, or green; leather finish in red, green, or tan; also available in ribbed-aluminum surface. The Kawneer Co., Niles, Mich.

Springtite Screen: aluminum screen is held snugly against window by tension. Two coil springs in top rail keep screening from sagging or loosing shape; clips at bottom rail unfasten, allowing screen to swing out for window cleaning. Screens may be left up year-round or rolled for storage. The Springtite Screen Mfg. Co., 1671 Jonesboro Rd., S. W., Atlanta, Ga.

Model-100 Sliding-Glass Doors: designed primarily for builder homes, new slidingglass doors feature all-steel construction at low cost. Completely weatherstripped doors slide on adjustable bottom rollers; frames are equipped with precut and drilled steel glazing bead to receive standard 1¹/₄".plate or 3/16"-crystal glass. Slide View Steel Door Co., Los Angeles, Calif.

electrical equipment, lighting

Thin-Lite Luminaire: surface-mounted ceiling fixture measures only 25%" in depth, giving appearance of recessed troffer. Lamp (Continued on page 160)

NOW-low-cost walk, window and entrance weather protection



KAWNEER all-aluminum prefabricated CANOPY : K-LOUVER





window protection

ARCHITECTURAL PRODUCTS DIVISION

entrance protection



School design can be simplified with Kawneer's Sun-Control and weather protection products. You have great flexibility with the prefabricated sections enabling you to cover almost every glass opening and passageway to design specifications. The advantages far exceed the relatively low cost. Both products are made of heavygauge alumilited aluminum which means long, maintenance-free life. The reflective surface assures cool areas. The unique shapes such as the "W" of the canopy sections provide and encourage ventilation, yet protect from rain, and snow. The quick and easy erection means a faster completion date and fewer labor hours. Fill out the coupon below to learn more about Kawneer Sun-Control and Weather Protection products, and how they can be adapted to your school plans.

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Have your re Name School or Firm Street	epresentative contact	me.

August 1955 157

Grating made from Yoloy Esteel meets the test for outside stair treads and floors

THE YOLOY FAMILY

High in resistance to corrosion, shock and vibration, easy to fabricate, easy to weld.

YOLOY (Nickel-Copper) Low Alloy High Strength Steel

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• Safety - durability - atmospheric corrosion resistance - good appearance - all are inherent in this grating f a b r i c a t e d from Yoloy E highstrength steel. The design of such grating contributes toward a non skid surface. The Yoloy family of steels includes several types. For details, write our nearest District Sales Office.

THE YOUNGSTOWN SHEET AND TUBE COMPANY Carbon, Alloy and Yoloy Steel General Offices: Youngstown, Ohio - District Sales Offices in Principal Cities SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT - MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - BAR SHAPES - WIRE -HOT ROLLED RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - RAILROAD TRACK SPIKES

Photo courtesy Blaw-Knox Company.

HOW A KEWANEE INSTALLATION AVOIDED COSTLY

STRUCTURAL CHANGES-CUT FUEL COSTS \$2,000



Hartford National Bank & Trust Company, Hartford, Connecticut. Consulting Engineer: Paul D. Bernis, C. W. Freeman Associate; Heating Contractor: Libby & Blinn, Inc.

Two—No. 5188 Kewanee Firebox Boilers 圭



Kewanee



Replacing heating equipment often poses the question of how installation can be made without incurring costly structural changes in a building. Such was the problem when the Hartford National Bank & Trust Co., Hartford, Connecticut, decided to modernize its heating system. Comparison revealed that Kewanee Reserve Plus Rated Boilers could solve the problem. Installation was made in existing space — no structural change was necessary — this was possible because a Kewanee Boiler with its reserve capacity delivered sufficient steam to satisfy heating needs.

Kewanee Boilers are certified to deliver 50% extra power to meet fluctuating demands . . . to answer emergency when it calls. Rated against nominal capacity, Kewanee Boilers have sufficient reserve for future expansion. A boiler rated on maximum capacity, constantly operating at full speed, is underpowered the moment additional steam is needed. So when you face replacement problems—look to Kewanee. Chances are we can

boilers solve replacement problems

help you avoid costly structural changes by using a compact Kewanee Boiler with reserve power to meet heating needs present and future.

P. S. The Hartford Bank saved \$2,000.00 per year on fuel using Kewanee Boilers combined with 3 zone Webster Moderator Control System.





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Only stainless steel can offer the combined qualities of appearance, corrosion resistance, strength and durability, with ease of cleaning and maintenance. No other commercial metal today has the same high degree of corrosion resistance as stainless steel. When properly maintained, stainless steel not only resists corrosion and pitting, but also, is unaffected by the attack of food acids.

Because it is a hard metal, stainless steel is able to take the infinite amount of physical punishment usually found with everyday use. It continually resists the nicks, dents, and scratches which mar the beauty and reduce the service life of lesser metals. In terms of durability and service, stainless steel will long outlast all other materials.

Stainless steel is by far the easiest of all metals to maintain and keep clean. It neither requires the amount nor the degree of cleaning necessary in other metals. For retaining its original beauty, stainless steel has no equal. It does not produce any obnoxious film.

Remember too, with stainless the *first* cost is the *last* cost! It is wise to investigate the use of stainless steel in applications such as refrigerators and other allied products in food service equipment.

Washington Steel Corporation, producer of MicroRold Stainless Steel sheets, is a supplier to fabricators engaged in the manufacture of these and similar stainless products. Your inquiries are welcomed.

*Photo courtesy of STAINLESS FOOD EQUIPMENT CO.



p/a products

(Continued from page 156)

is shielded from view by die-formed plastic louvers; invisible hinges provide easy access from bottom. Series consists of four luminaires: 49" and 97" in length, with 2 or 4 lamps. Lighting Products Inc., Highland Pk., Ill.

Corridor-Liter: new lighting fixture is designed especially for effective illumination of long, narrow areas. Vertical louver of aluminum, finished in white enamel, shields lamp; one-piece louver is held by clips and swings aside for relamping. Units are made in 4' or 8' lengths for regular or rapid-start lamps; patented lamp holder simplifies wiring connections. Smithcraft Lighting Div., Chelsea, Mass.

Fluorescent-Lamp Dimming System: nonelectronic unit dims hot-cathode fluorescent lamps. Components—including autotransformer dimmer, auxiliary transformer, and specially designed ballast (one for each lamp)—control light output of rapidstart or standard fluorescents. One unit handles from one to 160 40-w lamps; dimming range is 750 to 1 in intensity. Ward Leonard Electric Co., 45 South St., Mount Vernon, N. Y.

finishers, protectors

Waterfoil Coating: new ready-mixed, cement-base paint prevents water seepage through masonry or cinder-block walls. Addition of self-hydrating agents makes paint self-curing, to form surface which permits breathing of masonry without allowing passage of water. Paint can be used on wet or dry wall and will withstand hydrostatic pressure of 500 psf; coating, applied with ordinary brush, dries within 10 hr. A. C. Horn Div., Sun Chemical Corp., Tenth St. and 44 Ave., Long Island City, N. Y.

specialized equipment

Pressurized-Water Fire Extinguisher: new extinguisher operates on water and pressurized air instead of soda acid or CO₂ cartridge. Unit carries Underwriters' Laboratories approval for Class A-1 incipient fires, covering wood, cloth, paper, and rubbish; extinguisher sprays steady stream of water 35 to 40 ft in length. Unit is housed in seamless-brass shell with forgedbrass parts; recharging is done by replacing water and air. Elkhart Brass Mfg. Co., Elkhart, Ind.

Wayne Folding Gymstands: gym seating provides adequate seating for athletic events, yet folds into small area when not in use. Closed-in stands give neater appearance as well as added sense of security; vertical risers also distribute weight to columns. Both footboard and seat are constructed to take live load of 120 lb per lin ft; assembly will resist sway load of 24 lb per lin ft. Wayne Iron Works, 122 N. Pembroke Ave., Wayne, Pa.



The Rapidograph is most versatile for general writing, drawing (straight line and curve), lettering, commercial art work, music writing and arranging, carbon copies, etc.

"Ask your dealer to show you Rapidograph for writing, drawing, and lettering!"

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Macomber Did Something About The Time and Cost of Erecting Steel Buildings

With V-LOK Steel Framing, an industrial building like this is a real source of pride to the owner, the structural engineer who designed it and the contractor who watched it go together faster than any job he ever erected.

All of these things are fine but COST and EARLIER OCCUPANCY sell V-LOK to School Boards, Shopping Center Owners, Medical and Insurance Building Owners, Parking Facility Owners, etc.

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Steel Framine DESIGN DETAILS

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ITRACITE

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Model house built by students at University of Florida. Design, selected by competition, was by Lee Ogden. Edward Camner tied for first place.

SBESTOCITE



The Record shows... Claridge pioneered a phenomenal number of Chalkboard FIRSTS!... new improvements now nearly all adopted by the Industry. This quest for better materials and manufacturing continues... helping further to make CLARIDGE a distinguished name in the field. Hundreds of Architects and School Administrators enthusiastically recommend CLARIDGE Chalkboards.

GRAPHOLITE.. low price, good quality. **STRUCTOPLATE**.. fine performance under all conditions, all types of buildings. **DURACITE**.. 100 years performance under average use. **ASBESTOCITE**.. most revolutionary cement asbestos chalkboard in 25 years! **VITRACITE**.. vitreous porcelain enamel steel chalkboard, guaranteed for life of any building.



For full information refer to our complete Catalog in SWEET'S FILE 21e

CLARIDGE PRODUCTS & EQUIPMENT INC. 6729 N. OLMSTED AVE. • CHICAGO 31, ILL. "That our universities have grave shortcomings for the intellectual life of this Nation is by now a commonplace. The chief source of their inadequacy is probably the curse of departmentalism. Among students, as well as among teachers, there has been a tendency to regard courses as something which exist in nature, instead of artificial simplifications for the mastery of what are complicated organisms, whether of nature, or reason or society."

> Felix Frankfurter, New York Times, January 7, 1948

Departmentalism is a curse of the university. And it may well be a curse to itself as it grows into itself, forms its own habits and customs, and throws its walls higher and higher about itself. This is so often the case of the architectural school. It becomes a little exclusive country club to which the rest of the university looks, if it looks at all, with uneasy tolerance as an expensive luxury, probably required for prestige. Politics in universities being what it is in any large institution, there is a constant battle waged for budgetary crumbs for any specialized school, and the more rarified the atmosphere of the architectural school, the more bitter the battles at the top.

Occasionally by special acts or activities within an architectural school, the interest and imagination of the rest of the university is fired. A successful example of a special effort of this type forms the subject of this article. Other universities than the one cited have attempted similar (Continued on page 164)



ARCHITECT'S AND ENGINEER'S FACT SHEET



Corning uses pyramidal and linear prisms to get maximum light control in this interesting new low-brightness lens panel.

ANNOUNCING...

Corning's New Low-Brightness Curved Lens Panel

Corning has put two kinds of prisms and a curve in one new panel to give you a new combination of beauty and utility in your lighting design.

Pyramidal prisms in the panel's center section concentrate light from the tubes and reflector at angles below the glare zone. Linear side prisms have a uniform down-bending action on light that might otherwise escape at higher angles. You get a high coefficient of utilization.

Away with monotony

With the new Corning Curved Lens Panel, the architectural boredom of "flat" ceilings with recessed troffers is no more. Lighted or unlighted, the curved contour and the prism pattern lend new interest to ceilings and fixtures.

You can get this *new* lightweight Corning panel in lengths up to 48", with open or closed ends. They're easy to maintain, will never discolor or sag.

To get complete information on Corning's Low-Brightness Curved Lens Panel, simply mail the coupon. Or, contact your Corning lightingware representative.



Pyramidal prisms in the center portion concentrate light from the tubes and reflector so that it leaves the fixture at angles below the glare zone. The linear prisms have a uniform down-bending action controlling the light which might otherwise escape at higher angles from the slanted sides.

Information on Corning Low Brightness Lens Panel LENGTH: Code 541371—47%" both ends closed. Code 541372—12", 24", 36" or 48" both ends open. Code 541373—11%", 23%", 35%", 47%" one end closed. LENGTH TOLERANCE: ±1%". On 541372 only +0 -1%". WIDTH: 10%" ±1%". DEPTH: 2%2". THICKNESS: .180". WEIGHT: 2.0 lbs. per running foot.

SUGGESTED SPECIFICATIONS

The lens panel for the fluorescent fixtures shall be a continuous curved lens made of colorless crystal glass. It shall be of the low brightness type, with configuration of six-sided pyramids in the center section, with linear down-bending prisms in the side areas.

Dimensions and suggested specifications.

	2480 L	umens	2560 Lumens				
Angle	Across Axis	Along Axis	Across Axis	Along			
85°	302	233	312	240			
80°	320	252	330	260			
75°	295	313	304	323			
70°	300	412	310	425			
65°	315	532	325	549			
60°	375	607	387	626			
55°	504	723	520	746			
50°	682	841	704	868			
45°	885	967	913	998			
40°	1047	1077	1081	1112			
35°	1137	1142	1174	1179			
30°	1155	1182	1192	1220			

Title

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CORNING GLASS WORKS, 67-8 Crystal Street, Corning, N. Y.

Please send me information on Corning's New Low-Brightness Curved Lens Panel.

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Send me withou the new "Doors	t obligation my personal copy of for Industry'':
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another industrial leader—



Pictured above are typical installations of International Turnover Doors at training centers established by a major American industry.

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Every year adds an ever-greater number of names to the growing list of American industries using International-Engineered doors — a list that is a cross-section of the small, medium, and major industrial firms constantly seeking greater efficiency in their expanding facilities.

International Doors

- assure fast, easy operation plus permanent dependability
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How well International engineers meet the growing demands to which doors for industry are put is best evidenced by the widespread installation of International doors in more and more structures.

Mail coupon now for your new, complete International Doors Manual. Also, see Sweet's Architectural or Industrial Construction Files.

2052 EDGAR STREET . EVANSVILLE 7, INDIANA

INTERNATIONAL STEEL COMPANY

out of school

(Continued from page 162)

efforts, and it is hoped that many more will try and that in time a new and friendly set of traditions will develop which will bring the architectural schools not only into close harmony with their mother institutions but also will make them as one.

From Thursday, April 21, 1955 through Sunday April 24 the College of Architecture and Allied Arts and the University of Florida Student Chapter of the AIA held a series of exhibitions and events on the Gainesville Campus. Included were an astonishingly fine Student Art Show distributed in several buildings, including the Student Union, and in attractive outdoor displays. Simultaneously held were a Florida High School Art Exhibition and Conference, an Art Auction, a Fashion Show, and a very amusing Beaux Arts Ball. I was privileged to be the guest speaker at the luncheon which was a lively and festive occasion.

Along the entire length of the Stadium Concourse the students had arranged a large exhibit of their work, distributor's and home builder's exhibits, and models of various projects. To cap the show they had built a full-size, two-bedroom exhibit house; well designed, well built for display purposes, and attracting large crowds of the denizens, not only of the university, but also of Gainesville and the surrounding areas. Whole families came by the dozens and spent extended time discussing the various features of the building-its interesting kitchen, its good plan, the excellent furniture and decoration. The student architects served as guides. How did the house get built? Here is what the students have to say about it in their own eloquent and selfrevealing words. The authors are Jack Wholberg, Walter Stanton, John Shoup, and Carl Decker:

"The Chapter is a Student Associate Chapter of the Florida Association of Architects of the American Institute of Architects. Our Constitution and By-Laws are set up similar to the regular Chapters of the American Institute of Architects. The Florida Association of Architects has given us a great deal of encouragement and support.

(Continued on page 168)

HERE'S REINFORCED VIBRIN

- dent-proof
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- · rot-proof
- translucent or opaque
- unbothered by weather
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- high in impact strength
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AWNINGS AND WINDOW BOXES



Lightweight breezeway roofs of reinforced Vibrin[®] can't rust, rot, or corrode. These colorful translucent panels can be made in various degrees of light transmission; for appearance sake, all panels can reflect the same degree of color.

Reinforced Vibrin termite caps will outlast the house. Easily fabricated and attached, they are not affected by moisture or the chemicals in soils and masonry. They will not harbor or support maggot or insect life. And on top of all this, reinforced Vibrin is an excellent electrical and thermal insulator.

Ventilator hoods of Vibrin will deaden sound...are not affected by oils and greases...can't absorb any cooking odors. Because they are rust- and corrosion-proof, run-off water cannot stain or discolor the siding. The color is built in. No painting is necessary.

Translucent window-well covers will allow plenty of light into the cellar. And they never need painting—playful children, sharp garden tools, and errant lawnmowers cannot scratch, scuff or even dent Vibrin.

These are just a few of the many home applications of reinforced Vibrin. So why not consider Vibrin for greenhouses, patio dividers, doors, and garden houses wherever economy, light weight, beauty, and practicality are called for?

For resin information, expert technical assistance, or the names of current manufacturers, write to us on your company letterhead.



BRANCHES: Akron • Boston • Gastonia, N.C. • Chicago • Los Angeles • Memphis • New York • Philadelphia • IN CANADA: Naugatuck Chemicals, Elmira, Ontario Rubber Chemicals • Synthetic Rubber • Plastics • Agricultural Chemicals • Reclaimed Rubber • Latices • Cable Address: Rubexport, N.Y.

"Most Modern Structure in Tri-State Area"...



Interior of Guaranty National Bank, Huntington, W.Va. • Certain-teed Plasters were used here exclusively. • Architect: Bank Building and Equipment Corp. of America, St. Louis, Mo. • General Contractor: C. H. Jimison & Sons, Huntington, W.Va. • Plastering Contractor: J. C. Hicks, Huntington, W.Va. • Supplier: Carolina Lumber Company, Huntington, W.Va.

Certain-teed PLASTERS USED EXCLUSIVELY FOR INTERIOR WALLS AND CEILINGS

Better Working Plaster... Gives Me More Yardage

-says plastering contractor

Called the "most modern structure in the Tri-State area of West Virginia, Ohio and Kentucky," the Guaranty National of Huntington is a handsome example of modern bank design.

All interior plastering was done with Certain-teed materials: Certain-teed Fibered Plaster, Satin Spar Gauging Plaster, Sunflower Moulding Plaster.

Mr. Hicks, plastering contractor, and a member of C.P.I.A., says:

"I've tried them all, and I think Certain-teed is best. Certain-teed is more uniform, bag after bag. It is a better working plaster, it's easier to mix and it gives me more yardage. I stick with Certain-teed because I find I do a much better job with it."

Certain-teed makes a complete line of

base coat plasters, including Lite-Mix,[®] finishing plasters, including Kalite[®] Acoustic, as well as gauging, molding and casting plasters; also famous Beaver[®] Gypsum Lath. All our base coat plasters are "Plastisized," Certain-teed's exclusive manufacturing process that gives a finer grind, greater plasticity and better workability.

Write us direct for the specific information you need about Certain-teed Plasters now.



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EXPORT DEPARTMENT: 100 EAST 42ND ST., NEW YORK 17, N.Y. ASPHALT ROOFING • SHINGLES • SIDING • ASBESTOS CEMENT ROOFING AND SIDING SHINGLES GYPSUM PLASTER • LATH • WALLBOARD • SHEATHING • ROOF DECKS • FIBERGLAS BUILDING INSULATION ROOF INSULATION • SIDING CUSHION



MUTEL MAGI

What special magic will attract business to a new motel? That's an important design consideration. Motel customers are first attracted by a smart, colorful, eye-catching exterior . . . such as the ones you can provide with the varied colors, textures, sizes, and wall patterns in concrete masonry. If they stop, they get their next impression on the inside. Here exposed block walls offer unique decorative possibilities, and give a warm, inviting atmosphere to your rooms. They also save on interior finishing costs,

mside and out its

and provide a built-in "sound-conditioning." Motel owners will appreciate both the low construction cost and low upkeep of concrete masonry construction, too.

See your local NCMA member for your copy of "Ideas for Wall Patterns with Concrete Masonry." It's full of smart, new design ideas.



e Maso

everyone talks about the weather

...But Arcadia solved the weather problem with Twin-Seal Wool Pile Weatherstripping—another important point of difference between Arcadia and other sliding glass doors.

Twin-Seal Weatherstripping on Arcadia's new custom aluminum door is shown below in a section at the latching jamb. A positive weatherseal between jamb and sliding panel is made by a double row of opposing wool pile weatherstrips. Wind, rain, cold and dirt are locked out tightly. Identical wool pile strips at head and interlocker, and a spring-loaded wool pile sill strip complete the four-side weatherseal. Arcadia's aluminum-backed weatherstripping, fully silicoated for moisture and abrasion resistance, is easily replaced without dismantling the sliding panel.

Twin-Seal Weatherstripping is just *one* Arcadia point of difference you should know about. Other important Arcadia features are detailed in our expanded 1955 Catalog 55-A. For a copy, phone your Arcadia distributor or wire us *collect*.



help build a better america ...see an architect

ARCADIA METAL PRODUCTS - ARCADIA, CALIF. Distributors in Canada, Puerto Rico, and throughout the United States. National Member Producers' Council, Inc., and National Association of Home Builders.

out of school

(Continued from page 164)

"The actual work of the show was started in October of 1954 with the selection of committee heads and committee members. From October to February work was done on setting up the program, sending out correspondence and contracts to commercial houses, and arranging for publicity.

"The house competition took place in February and this was followed by weeks of material hunting. The competition winners were Lee Ogden and Edward Camner tying for first place. Ogden's project was chosen for construction which was done in cooperation with the Student Contractors and Builders Association of which Charles Worley is President. Much of the material was loaned or donated and the rest we bought with money from the commercial exhibits, Florida Association of Architects and the College itself.

"Whenever the question arose as to why we had taken on this seemingly impossible project, the answers always came back that it satisfied a lack that we all felt in our education as future architects. We all agreed that the intangible nature of an academic curricula left much to be desired. After all, weren't we being trained to 'build'? Weren't we preparing ourselves for the very tangible occupation of planning shelters for people? Where in theoretical and cloistered study was there any contact with the actual construction of these spaces we so innocently inscribed.

"We asked ourselves, 'Wasn't there more to selecting materials than how tooth brush splatter fell on the board; wasn't there something more important in material selection than how cleverly it could be indicated?' And, embarrassed, we admitted, 'We and materials had, at best, howdied, but really had never "shook."'

"In our introspection we happened onto another 'little' consideration, people. We began to realize how little we knew about these future occupants of the 'Brilliant' structures we are someday to build. Or, more exactly, it may have, for the first time, occurred to us that these animated forms would be a part of our monuments in 'steel and glass.' They did vaguely re-(Continued on page 172)



stage lighting controls system



Stage Lighting Control Systems by (are a popular feature of more than 500 theaters, high school and college auditoriums in this country and elsewhere.

That's because
Stage Lighting Controls add tremendously to the color, beauty and enjoyment of these structures.

Built on the unit basis,
Stage Lighting Controls can be made to fit any type of auditorium or theater. All are approved by the Underwriters' Laboratories, Inc., for label service and will give long lasting and trouble free service.

Include an @ Stage Lighting Control System in all school, college or other auditorium you are called upon to design. For further details contact your nearest @ representative listed in Sweet's.

Frank Adam Electric Co.



Stage Lighting Control Board installed in Parma, Ohio School.

Illustrative of the wide range of control systems produced by (7) are the following:

CONTROL BOARDS for Manual Control, Modified Pre-Set Remote Control, Multiple Pre-Set Remote Control, Motor Driven Control, Electronic Tube Control, Mobile Color Lighting Control.

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A salute to the National Electrical Contractors Association for their forward attitude expressed in the resolution "Honoring the Specifications"...

A resolution adopted unanimously by the National Electrical Contractors Association in Convention at New Orleans, Louisiana, October 30, 1954.



Fidelity in carrying out the wishes of the customer and an eagemess to give the customer the benefit of the contractor's experience and knowledge in specialty application engineering is a hallmark of the qualified electrical contractor.

When the customer by his own request or by specification drawn by his architect or engineer designates a specific material or equipment, the electrical contractor has the obligation to quote on that material as specified. In the event he should include in his bid an alternate he should specifically describe the suggested substitute and list the alternate price.

In this manner the interest of the customer is well served and it would seem appropriate for architects and engineers not to reject bids with alternate proposals stated in this manner and that regulations and practices be adjusted to accommodate this more definitive bidding practice.

'I he practice of taking advantage of the ambiguity in the frequently abused specification, "or equal," to substitute inferior or less costly material or equipment is an unethical practice that should be condemned and rejected by the contractor as not being to the best interest of the publie.



Good business practice, proper standards of ethical conduct and the public interest demand adherence to this simple, honest procedure in the conduct of this important part of the process of construction. It is a necessary foundation for the building of sound and progressive organizations needed to serve the public in the vitally important field of electrical contracting.



This advertisement is sponsored by Day-Brite Lighting, Inc., of St. Louis in the interests of clients of Architects and Engineers.





OWENS-ILLINOIS GLASS BLOCK PANELS daylight this huge gymnasium... INSULATE LIKE AN 8" WALL

Gymnasium at Northeastern University, Boston, Massachusetts. Shepley, Bulfinch, Richardson and Abbott, Architects. Volpe Construction Company, Contractor.

Panels of Owens-Illinois lightdirecting Glass Block provide even distribution of daylight throughout the gymnasium area. They eliminate "hot spots," glare and harsh contrasts.

The insulating efficiency of glass block makes designs like this possible. Glass block permit use of large glass areas without excessive heat loss.





BECAUSE OWENS-Illinois Glass Block insulate as effectively as an 8" thick brick wall, huge expanses of glass block are practical even in a cold climate.

Glass block are strong and hard to break—perfect for a gymnasium use like this. They need no maintenance—perfect when panels are put in inaccessible places. The complete Owens-Illinois Glass Block story is yours for the writing. Send for it and see how glass block can mean better sight, better light, lower maintenance and great new design freedom in school planning. Address Kimble Glass Company, subsidiary of Owens-Illinois, Dept. PA-8, Toledo 1, Ohio.

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Write for Architects Kit No. SP-1021

Describes scores of standby models with com-plete engineering specifications and information on installation.



out of school

(Continued from page 168)

semble shapes that sometimes appeared on our two-dimensional approximations.

"The full scale house was conceived as the main attraction. For the design of the house we set up a school-wide competition with the winning design to be built and the designer to act as supervisor. The idea took well among the students as was evidenced by the general excellence of the entries submitted. It was, in fact, considered the best group work that had ever been submitted in the school.

"Our thought was to get a house that could be built in a relatively short time with the least possible framing and detailing and at a minimum cost, without sacrificing the design. The very fact that the house was to be built proved to be a major incentive.

"We were aware of the fact that the undertaking of this project would require financial support and this was done by inviting commercial houses to exhibit materials and equipment that would be of interest to both us and the visiting public. Fortunately, we were in a position to be selective as far as the quality of exhibited material was concerned.

"By actual contact with the business world we learned the value of a contract and necessity for business procedure in any dealings. This contact experience proved one of the most interesting phases of the whole affair.

"Aside from the business relations we had our own related professions to consider. We attempted to recognize the allied fields as competent and appreciate their ideas and thoughts. We, in the School of Architecture, learned to respect the building construction problems, the interior design ideas and landscape necessity; learning from them and realizing the important part the related fields play in the completed effort.

"With a majority of the equipment and materials arranged for and other departments consulted, we were ready to start pounding nails. The building construction students and architecture students combined their efforts to put the house up in four days and nights. We all knew that without the combined efforts of each, the project would have been impossible and (Continued on page 174)



Staedtler has been coming up with something new in pencils ever since the first Staedtler pencils were made three centuries ago.

Now it's the new, sturdy, solid brass lead sharpener built into the Technico Mars-Lumograph push-button lead holder. Saves you work, time, money.

Get the imported Mars Technico lead holder and leads todaythey are the best, yet cost no more.

The 1001 Mars Technico clutch mech-anism holds leads securely; light in weight, perfectly balanced; \$1.50 each, less in quantity. 1904 Mars-Lumograph leads are so

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The school building budget-One way to help meet its limitations

Too often, in the jargon of selling, economy is glibly paired with quality. It isn't good enough to say so—it has to be. You are confronted with problems imposed by economy, nevertheless you want to provide the best facilities you can for the money. To fulfill your responsibilities to the community, you have to be sure of both.

Amarlite production is geared only to quality a quality we believe is unquestioned. And yet, on a cold cost analysis, this is the entrance picture:

					11			
STEEL	ENTR	ANCE		WOOD	E	TRAN	ICE	AMARLITE ENTRANCE
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Doors (2)— Hollow Metal Doors, Frame, Transom and Trim	\$50.00	\$488.00	in a close	Doors (2) Birch Frame, Transom & Trim Butts3 Pair	\$30.00 20.00 10.00	\$196.00 90.00 21.00		with Hinges, Closers, Thresholds and Amarlite Concealed Panic Hardware \$566.00 Glass & Glazing 76.00
Overhead Closers (2) Threshold Surface Mounted	2.00	45.C0 15.00		Closer (2) Threshold Surface Mounted Panic Hard-	6.00 2.00	45.00 15.00		TOTAL \$642.00
Panic Hard- ware Glass & Glazing. Painting	10.00	142.00	\$63.00 18.00	ware Glass & Glazing Painting	25.00	142.00	\$52.00	NOTE: These costs have been provided by representative general contractors of high
	\$62.00	\$711.00	\$81.00		\$93.00	\$509.00	\$70.00	standing in metropolitan areas. They re- flect no intention to set prices. While some

TOTAL \$854.00

TOTAL \$672.00

variation can be expected, they will hold relatively true in most localities.

Savings mount considerably when you consider the fact that the Amarlite Entrance is complete. There are no costs for fittings, painting, applying hardware. This favorable comparison is the direct result of standardization and increasing efficiency within the Amarlite system. The finest entrance in the industry now *costs less* than products less distinctive. The savings are yours.



August 1955 173

¹⁵/₃₂" OR ²¹/₃₂" Homasote

¹⁵/₃₂" HOMASOTE—WITH LINEN, STRIATED, WOOD-TEXTURED OR CEMENT-ASBESTOS SURFACE BALSAM WOOL ENCASED IN VAPOR-BARRIER PAPER

- 1/8" SPONGE RUBBER GASKET

ANNOUNCING WILSON AIR-COR ROOF DECKING

 makes condensation problems a thing of the past
 custom-made to your specifications

No matter what the interior or exterior conditions—of climate, temperature or humidity—you need no longer have a condensation problem. The solution—as presented in Wilson Air-cor Roof Decking is scientific, unique, yet amazingly simple.

Two air channels, running the length of each 2' x 8' panel, insure continuous air circulation across the entire roof-automatically and in sufficient volume (1945 cubic inches per panel) to absorb all normal condensation. For extreme conditions, forced air could be used.

Use this scientifically engineered roof decking on flat or pitched roofs—and on any type of structure. Then apply built-up roofing, shingles, slate or metal, as your design requires. The panel is designed for rafter spacing up to 48" o.c.; nail holes are pre-drilled to your order.

The strength is there; the insulation value is there. (With built-up roofing and 15/32'' Homasote, the U factor is 0.15.) Here is new insurance on air-conditioning investments.

Each panel is made up of three 2" x 2" wood members, 12" o.c., horizontally. On one edge is a wood tongue; on the other a groove. Within the groove a sponge rubber gasket insures a tight seal. The top and bottom sheets are *weatherproof* Homasote. According to your specifications, the top sheet may be either 15%2" or 21%2" in thickness; the bottom sheet (which can serve as finished ceiling) may have a linen, a striated, a wood-textured or a cement-asbestos surface. The top piece overlaps $\frac{9}{16}$ " on the groove side, thus shutting out moisture (and also the asphalt of built-up roofing). The bottom piece has a 45° bevel on each side. This overlaps the wood members by $\frac{1}{32}$ " to insure a tight joint between sections. Between the wood members—under the top piece—a barrier of $\frac{5}{6}$ " Balsam Wool, completely encased in vapor-barrier paper, is glued. At each end of each panel two wood blocks—2" x 2" x 8"—provide for satisfactory nailing to rafters or joists. Panels are easily cut to any dimension (or supplied in special lengths, to order).

Sound-deadening partitions and sub-flooring. For interior, sound-deadening partitions, Wilson Air-cor Panels are supplied in 2', 3' and 4' widths and in heights up to 11' 2". The combination of Homasote and Balsam Wool creates an unusually efficient sounddeadening barrier...For use in partition walls, the Homasote surfaces are applied as panels beveled on both sides—and without overlap ... For sound-deadening between floors, use the panels as sub-flooring; nail the finished flooring direct to the wood members of the panels.

Wiring—An additional advantage of the air cores is that electric wiring—whether conduit or cable type—may be passed across the roof, thus wiring the building from above. This is not only the most

economical method, but permits the placing of light fixtures wherever desired.

Our Engineering Service is available to work with you on any specific problems of roof decking, partitions or sub-flooring. Let us give you complete details and specifications. Kindly address your inquiry to Department 41-6.

HOMASOTE COMPA

TRENTON 3, NEW JERSEY



out of school

(Continued from page 172)

with this realization the inevitable conflict was, to a degree, lessened.

"With hands blistered, backs aching, and thumbs swollen, architecture lost its distant, intangible approach. We fell right into the middle of it and began to see the transition from plan to three dimension. We could feel the scale of the space and we could now recognize what was wrong and how it might have been done.

"It was evident that regardless of simplicity, each condition must be detailed and well thought out. Our details were all kept as simple as possible to facilitate ease of construction. We also learned that it was necessary for us to think in terms of the people who actually do the work.

"We could see that a house without the right furnishings and the proper treatment of the interior would lose any design merit it may have possessed. We could also feel the importance of furniture placement, in both the esthetic sense and again with the new thought of livability.

"It was interesting to see and hear the comments of our visitors, to learn what was important to them in that it indicated both of our lackings, they as 'clients' and we as 'architects.' Many of their comments were revealing and excellent criticism, and of course, others were indicative of their lack of understanding.

"As we watched the people strolling through the show, as we chuckled over their comments on the house, as we gloried in their compliments, we could not but question how successful the whole project had been. Certainly we became more acquainted with our failings and we definitely developed some idea how far an illustration board presentation is from actual building.

"With all of the negative affect, there was real pride in the completed job, and belief that it was the most fortunate single experience in our education. There is no doubt in our minds that it should be continued and as a part of the curriculum. We feel that in this way many very necessary elements of architecture can, if nothing more, be introduced to the student."



HIGH PRESSURE DIFFUSERS ...how they work

Kno-Draft Dual Duct Air Diffusers are designed for central station high pressure systems where precise automatic compensation for fluctuations in inside and outside loads is required.

Warm and cold air are supplied through two separate ducts to a mixing chamber, which equalizes temperatures throughout the combined air stream. The outer perforated sleeves of the inlet dampers are operated by a thermostat-governed motor. They act simultaneously to control the proportion of warm and cold air and the delivered air temperature. In addition, each inlet tube has a damper piston which is adjusted separately for the different static pressure in each duct.

For example, the illustration shows a Kno-Draft Dual Duct High Pressure Valve with inlet dampers set for 50 per cent warm air and 50 per cent cold air. Static pressure in the warm duct is 3 in. wg; in the cold duct, 2 in. wg. So damper pistons have been individually adjusted to compensate for this difference. Fewer rows of perforations are exposed for warm air flow than for cold, keeping maximum warm and cold air volume equal and total air delivery constant.

For a more detailed explanation of Kno-Draft High Pressure Air Diffusers—both single and dual duct—write, on your letterhead, for a copy of Bulletin K33, an authoritative textbook on high pressure air distribution systems.

Connor Engineering Corporation, Dept. N-85 Danbury, Conn.



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the Backbone of Steel for EVERY masonry wall

Architects from coast to coast have acclaimed the plus features of patented Dur-O-waL, the steel reinforcing that means lasting beauty for all masonry construction. Electrically butt welded in a single plane of high tensile steel, Dur-O-waL's trussed design puts more steel in the wall economically. Join the trend to Dur-O-waL. It's backed by laboratory findings . . . time tested . . .

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4. MEMBRANE FIREPROOFING - combines pleasing appearance with effective fireproofing. Wheeling Corner Bead, or Chan-nels and Metal Lath provide an economical plaster base for crack-resistant, fire-resistant surface.



8. HOLLOW PARTITION STUDS - provide passage of normalsize pipe and conduits, with no chases to cut. Wheeling Bar-Z System available complete with Studs, Track, Shoes, Tie Wire and Bar-X-Lath.



1. DOOR AND WINDOW CASINGS AND BEADS-requires only one installation to provide both screed and trim. Available with or without expanded flange in standard lengths; required grounds.



5. STUDLESS 2" SOLID PARTITIONS-durable, economical, fire and crack resistant. Shown here using Wheeling Bar-X-Lath, Ceiling "L" Runner on ceiling and floor and 3/4" Channels placed horizontally for temporary bracing.



9. RADIANT PANEL HEATING - Wheeling Metal Lath nailed to wood joists, and in direct contact with the tubing, actually increases the heat transfer from the coils to the radiating ceiling surface, distributes the heat more evenly.

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Lath and Plaster CAN DO IT!



2. FLOOR AND CEILING REINFORCING—for light concrete floors laid over steel joists or junior beams and plastered contact ceilings, Wheeling Bar-X-Lath, with or without paper backing, provides a strong, reinforced slab.



6. 2" SOLID PARTITIONS, METAL BASE SYSTEM — easiest, most economical solid plaster partition possible. Here, Wheeling Bantam Diamond Lath is attached to Channels with Wheeling Hank Tie Wire.



10. PACKAGING ECONOMY—Wheeling's "Engineered Metal Lath Package" — lifts of 500 sheets in 50 10-sheet bundles — increases storage space, saves handling, counting and identifying time. Provides flatter sheets with truer corners.

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The complete line of Wheeling Building Materials includes Metal Lath and Accessories, Steelcrete Reinforcing Mesh, Steelcrete Bank Vault Reinforcing, Expanded Metal, ExM Gratings, ExM Angle Frame Partitions, Tri-Rib Steel Roof Deck, and SofTite Cop-R-Loy Galvanized Sheets.

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a

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Convertible Cabinets of Durable Steel. The exclusive American-Standard convertibility feature provides more usable kitchen storage space. Sliding wire shelves and drawers of various depths can be specified for any of dozens of different, efficient storage combinations in the same base or undersink cabinet. The owner can add or relocate shelves and drawers at any time — quickly and without tools—to meet new storage needs.

Combination Lavatory and Vanity Shelf. This smart-looking one-piece Guestledge lavatory-counter combination is especially suitable for use in hotel or motel baths. It's a notable spacesaver, since the toilet in the bathroom can be so positioned as to serve as a dressing table seat. Of genuine vitreous china with nontarnishing Chromard fittings, the Guestledge is low on maintenance, high on guest appeal.



Picture studies in function and

Temtrim Finned Tube Radiation. Hundreds of steel fins bonded to a steel pressure tube make Temtrim one of the most efficient, economical types of radiant heating ever built. Temtrim can be used with forced hot water or two-pipe steam systems. It is mounted on simple wall brackets, and can be installed with fins exposed or with any one of three attractive covers — shown left to right: a snap-on expanded metal grille, a flat top cover, a sloping top enclosure.





design by American-Standard





Satin Aluminum Track with Apron— Adjustable Hangers With Nylon Rollers





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Sterling is the most imitated sliding door hardware.

The new locks, hardware and T-Erame pictured here embody/many new ideas.

Builders everywhere depend on Sterling Hardware for advanced design and trouble-free operation.

Specify Sterling Hardware for your sliding door installations.





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HERE'S HOW ORIGINAL VICRTEX V.E.F.* FABRIC save maintenance dollars...and make decorating sense!

The beauty of Vicrtex V.E.F.* Fabrics is self-evident! Its deep, 3-dimensional textural interest enriches everything it covers. But its hidden qualities make it second to none for the money it saves year after year! When you specify Vicrtex, even for the busiest spots, you know it will look bright and fresh always with a minimum of care. Won't chip, crack, or peel — almost never needs replacing. Needs no backing or lining, however used. It's economies like these that keep clients happy — for years!

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Sales - wise merchants know the importance of proper merchandising sur-

roundings. No part of the store "backdrops" goods for sale more than the floor.

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PROGRESSIVE ARCHITEGTURE



Reporting on an AIA Convention is difficult-especially when one is still recovering from the social festivities that go with it. It is difficult because the report could be written from so many points of view. From, for instance, the purely social: the large parties and the small gatherings in homes; the flow of visitors through the P/A room; formal banquets. and quick drinks with a seldom-seen friend. Or it could be written from the point of view of the serious seminar student, who had good fare this year. Or even from the position of Institute "politics"-the progress or lack of it in the workings of the organization itself. Then this year another theme ran through the meetings and discussions and behind-thescenes committee work: preparation, education, apprenticeship for the profession.

I know that my own reactions varied. There were times during the week in Minneapolis when I was excited at progress being made, at the mature approach to many professional problems; when Jim Hunter and Alex Cochran announced to the ACSA group meeting before the Convention that the Board had appropriated \$3000 for a study of aptitude testing for architecture; when I saw the Log Book that the Education Committee is preparing to test out as apprenticeship procedure; when the various groups concerned agreed to investigate collegiate education for building industry careers under the egis of the architectural schools. And in the talks, when Albert Mayer gave the keynote talk on planning for the community, when Bob Alexander spoke on the architect's role in planning; when Victor Gruen described the community aspects of commercial planning; when Dudok outlined steps that could be taken toward better-planned cities. Even in the "business" sessions, when moves were made to study interests of younger architects; to bring to the membership new studies in office practice; to permit architects' photographs in advertising (subject to certain restraints); to proceed with an expanded public-relations program, and so on.

There were other times when I felt that some of the same old mistakes were being made; that a large number of delegates (in the final business session, a majority) still insisted on maintaining a structure which others consider not truly democratic. For instance, when a resolution proposed by a committee of younger architects asking the AIA to support competitions for public work "whenever reasonably feasible" was defeated; when the letter-ballot method of election of officers was again rejected; when a move to base representation by Chapter delegates at Conventions on a more accurate ratio to membership was tabled. I have written before of the fact that the all-important meeting on Resolutions comes on Friday, on the morning after the Annual Banquet, with the result that all too many delegates are packing to go home, are out sightseeing, or are sleeping off effects of the late night before.

It was fun, at times it was exciting, and no one can deny that the Institute is live and kicking. I just made a quick check through the items in the Suggested Program that P/A published last December, and of the 19 activities which seemed important to its sponsors at that time 15 are at least underway now. Some of them are *well* underway, and several of the national Committees (I think it is fair to say, notably the Education Committee, with great assist from Walter Taylor) have done a tremendous job this past year.

I heard several people discussing the fact that architects, in Convention assembled, seldom seem to produce the important "papers" that other professional groups hear at their meetings: announcements and expositions of new studies, findings, hypotheses. The doctors may listen, for instance, to reports of new research or newly tried therapies in one specialty or another. Architects are more likely to hear that buildings should be better designed and cities should be more beautiful. This is certainly not as exciting news, and probably not as useful knowledge to take home.

I wonder if we aren't missing the boat by ignoring the architects' traditional method of expression—graphic and visual exposition. Wouldn't it be interesting at a Convention sometime to forego speeches entirely and ask the seminar participants to present, explain, and defend projects? If open discussion could be encouraged, the result might be both informative and newsworthy. I know this has been done at some local meetings; wouldn't it be worth trying on a national level?

I stopped abruptly last month in my reporting of a trip through Tennessee and Texas and I want to go back to comment on something that happened en route. In Memphis, at an unusually well-attended meeting, I had the privilege of handing to Al Aydelott a Resolution which his Chapter had previously adopted, commending him for his work.

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Nothing has given me more pleasure in a long time, because I have followed Al's stormy career through several of its phases (described in APRIL 1955 P/A) and have been in Memphis in the past when the organized architectural fraternity was not so sure of the value of his architectural achievements. It was a deserved tribute and a touching one. P/A and its Editor are very proud of the part we may have played in this unusual recognition of the importance to the entire architectural group of recognized achievement by one member of the group.

The WHEREASes of the Resolution mentioned the fact that architects "often miss the opportune time and occasion to commend a fellow member." even though they do realize that "the effort involved in producing good architecture should be justly recognized." They then go on to say that Aydelott's "sensitive design has produced architectural works of significance, recognized as such by authoritative books on architecture and by professional journals published in this country and in Europe and South America, and most recently by publication in one of the leading architectural journals, PROGRESSIVE ARCHITECTURE, of a portfolio of buildings, exemplifying a high standard of professional responsibility."

After applauding his success in competitions and his work as a teacher, the Resolution then concludes by commending "Alfred Lewis Aydelott for his achievements in Architecture and for his effect upon the culture of the South."

At that Memphis meeting I spoke on the desirability of competitions for public buildings, supporting a stand that the Chapter had taken, urging a competition for a Fine Arts Center being proposed. The Mayor, who was there that night, *seemed* to be impressed. I believe he hasn't yet made a decision. The refusal of the AIA Convention to support the competition principle actively was a bitter blow to the Memphis delegates.

Another very handsome parchment I would like to quote from is an Award made to Reinhold Publishing Corporation at the Convention, for having published the Report of the Commission for the Survev of Education and Registration (The Architect at Mid-Century). Bill Atkin, Architectural Editor of our Book Division, received it proudly. It says, in part: "Holding to the well established principle too often forgotten in our day that there are publishing responsibilities above that of profit making, you have demonstrated that the impossible in volume of work and rate of progress can, by skill and devotion to a worthy cause, be transformed into the possible.

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