largest architectural circulation in the world

hospitals

apartment house construction
Integral expansion wing — provides perfect plaster bond right up to nose of bead.

Broad face — 1 inch wide, 3/4-inch radius.

Strong, rigid — made from galvanized sheet steel. 16-gauge nose — 26-gauge wing.

Free Catalog 251 — gives complete data on No. 10 Bull Nose Corner Bead, shown above, and on all other types of Milcor Metal Lath Products. Write for your copy.

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teamwork!

kwikset's team of time saving installation aids cuts costs, saves money.
every kwikset lock is **precision manufactured** and **unconditionally guaranteed**.
A remarkably pure instance of integration of plan, structure, and finished design, Flamingo Apartments, built with an FHA-insured mortgage, contains 300 rental units—46 bachelor apartments, 198 apartments with one bedroom, and 56 with two bedrooms. The 14 typical upper floors contain 21 apartments each, while on the ground floor there are 6 apartments, in addition to the main lobby, a drugstore, coffee shop, restaurant, 3 stores, and 5 suites of professional offices. The site is in a commercial area about one mile from City Hall; to the west is a near-slam area of old row houses. Tenancy in the new building is not restricted to any one creed, or color.

A stringent budget led to selection of the straight, flat-plate concrete construction system (discussed in detail, p. 80), wherein the concrete frame, curtail walls, and steel casements constitute the finished design expression.

Interior walls are plaster on metal lath; flooring is mainly wood parquetry on concrete; asphalt tile is used in service space and carpeting in corridors. For their insulation, there is glass fiberboard on roof and a loose fill on the suspended ceiling of the top floor.
The hot-water heating system is served by an oil-fired boiler, with distribution through continuous convectors along exterior walls. This system was selected because it required minimum risers and eliminating much costly furring. Apartments were pre-painted, using a light gray as the base color, but some partitions painted in one of the remaining colors—grayed rose, salmon, or blue. The warmer colors were in north apartments, and the cooler for apartments with southern exposure.

Photos: Cortlandt V. D. Hubbard
apartment house Savannah, Georgia

architects Cletus W. Bergen & William P. Bergen
structural engineers William H. Armstrong; William Edwards, Asso
mechanical engineer Donald F. Lindstrom
 electrical engineer L. Ralph Bush
Built under FHA Section 608, this 12-story apartment building has 198 apartments—88 efficiency units and 110 apartments with a separate bedroom. On the ground level, in addition to the lobby, there are several stores and a sizable restaurant and bar. At the rear of this floor is the mechanical plant, since soil conditions made a basement impracticable.

Photos: Gabriel Benzur

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Fronting on one of Savannah’s tree-lined cross streets, the Drayton Arms Apartments are within easy walking distance of the business center. The architects give much credit to the FHA office in Atlanta for the quality of the design: “The building is an example of their willingness to further contemporary design.”

Not the least of its refinements is the pan-band concrete construction cantilevered out from a structural core, in which elevators, stairs, halls, storage rooms, incinerator closet, etc. are located. The core also provides a reassuring shelter area for each floor. This notable structural scheme is discussed on page 83 in full detail.

All apartments are on the building perimeter and enjoy wall-to-wall windows. Perlite plaster on metal lath is used for all partitioning; between apartments, partitions are double and contain a layer of wool felt to insure good sound control.

The building is year-round air conditioned and has a circulating ice-water system as well. There is independent air-conditioning control for each apartment, with remote air units consisting of fans and coils. In winter, hot water is supplied from oil-fired boilers in the central heating plant, using steam boilers and heat exchangers. These same boilers provide domestic hot water throughout the year.

300-ton turbine compressor is automatically operated and capacity controlled to provide cooling water for refrigerated summer. Chilled water is circulated in the air-handling units in each apartment.

A separate system of exhaust-air ducts carries off cooking odors and other objectionable odors from the apartments. Between each pair of bathrooms, there is a 12-inch shaft that contains not only plumbing pipes, but also air ducts for the central heating and refrigeration plant.
Although the building is air-conditioned, the bands of aluminum windows are awning type, to permit window cleaning from the inside and also to provide natural ventilation in event of mechanical failure.

The cocktail lounge (two photos below) occupies the west end of the ground floor. The wall mural depicting old Savannah landmarks is the work of Nancy Gibson.
The owner of these apartments, who was also the builder, wanted a revenue-producing property and wasn't certain whether this should take the form of a one-story office building or an apartment group. Research determined that the apartment group, built with an FHA-insured loan, under Section 608, would be the more advantageous undertaking. The site is an inside lot facing one of Houston's oldest and finest streets with a landscaped esplanade down the middle. Flat and practically treeless, the plot had the advantage of an access alley on the north.

The solution consists of two separate, but related, two-story buildings. Along the west side of the property, the longer structure contains eight "3½-room" apartments, each complete on one floor. The breezeways, with open staircases that give access to second-story apartments, avoided the planning problems—and cost—of entrance halls and back stairs. At right angles to this building, toward the rear of the property, is the smaller structure in which there are two 2-bedroom duplex apartments. Off the rear alley is a carport for 10 cars, while laundry facilities and a drying yard occupy the area between the carport and the larger structure.

The building is of standard wood-frame construction, selected for its economy and speed of erection, built on a floating concrete slab. Double-stud construction provides acoustical control between adjoining apartments. Exterior walls are of shake-second-hand brick, or cement-asbestos boards and battens. Interior walls and ceilings are surfaced with rigid wallboard; the flooring is oak. Wool-type insulation occurs in the roof construction and the apartments are heated by gas-fired wall heaters.

*Photos: Dorsey & Peti*
apartment house  Atlanta, Georgia

architect  John W. Cherry
associated architect  William H. Evins
structural engineer  Harry G. Hunter
mechanical engineer  E. W. Klein Co.
electrical engineer  Charles Howe
The original proposal for Barbizon Tower apartments was to build a two-story, 14-unit building; but when it was discovered that local zoning would allow buildings up to 100 feet in height, the program changed to a multi-story scheme with 60 units, built under FHA Section 608. Because of the narrow site, a problem was meeting the city requirement that on-site parking for tenants' cars be provided.

Advantages of the site were near-by transportation, stores, etc.; ideal east-west orientation; relatively high elevation providing good views. Disadvantages were limited area and the fact that higher surrounding lots made necessary costly retaining walls.

To solve the car-parking problem, the entire building enclosure (except for the main entrance, and the mechanical and storage rooms) was raised one floor off the ground, creating a protected, ground-level shelter. Cars enter a drive on one side, park in the under-building space, and drive out the other side. The 10 apartments on each of the six floors are symmetrical around a central corridor.

Detailed discussion of the structural system, using ribbed concrete slabs cantilevered out from interior column pairs, appears on page 83. Interior wall finishes are sand-finish plaster or (instair towers) concrete; floors are asphalt tile. Thermal insulation includes glass-fiberboard on the roof and vermiculite plaster under the first floor. The projected sash, glazed with 3/16" sheet glass; entrance door and window frames, aluminum.

The heating system, served by natural-gas fired boiler, uses baseboard radiation; outside controls modulate water temperature. Each apartment has its own individually controlled air conditioner; refrigeration equipment, on the ground floor. Photos: Frank Willard's Photocraft
apartment house construction methods

Although erected in different areas of the country (two in Georgia and one in Pennsylvania), all of the multistory apartment houses presented on the previous pages were constructed of reinforced concrete for reasons of economy. In each instance, the architects and engineers were of the opinion that for structures of this type, a skillfully executed, reinforced concrete design offered more opportunities for economy than would have been possible through the use of structural steel.

Two of the designs not only utilized the most recent technological advances in reinforced concrete engineering, but also, by exploiting the characteristics of cantilever construction, decreased the amount of reinforcing steel that normally would have been required. This saving was accomplished by capitalizing on continuity and by allowing the combined weight of the cantilever and the exterior wall to reduce the positive bending moment in the slabs nearer the interior of the building. The elimination of dropped beams and girders in all three structures simplified the installation of mechanical services, permitted a freedom of partition arrangement, and provided smooth ceilings for all individual apartment rooms.

Forcefully expressing the character of the structural design, two of the apartment buildings have exposed concrete framing. Properly controlled concrete mixes insure the durability of these surfaces. Although none of the buildings have prefab exterior walls, two firms reported that metal wall spandrels were investigated during the early design stages. At that time, cost prohibited the use of that type of spandrel; further, neither structural nor thermal properties were as advanced then as they are today.

flamingo apartments

Competitive bids received by the architects of this apartment house have demonstrated that a concrete structural system is usually more economical than steel framing for a multistory building. It has been estimated that the nearest comparable concrete framing for this structure would have been at least five percent more expensive and that steel framing with concrete floors would have been about 12 percent more. Of the several concrete designs that might have been selected, the architects and engineers considered the flat-plate method the most economical (there are no applied structural steel shapes in the entire building).

Within the experience of this firm, flat-plate construction has cost about $2.00 per sq ft of supported slab for an entire structure, including the foundations. The Flamingo is said to have been built for about $0.10 per cu ft less than comparable apartment houses erected in nearby areas. Among the principal economies permitted by the elimination of the beams and girders are the reuse of formwork and the reduction of floor-to-floor heights—requiring less masonry, paint, piping, and work performed by other trades. In deciding whether to use a flat-plate system, it was agreed that the small savings of concrete from ribbed-slab construction would be more than expended by the necessity of a hung ceiling. In the final design, the only suspended ceiling is on the top floor, where it was necessary to accommodate mechanical work and thermal insulation; all other ceilings are painted concrete.

During the preliminary design stages, it was agreed to use exposed concrete as a finish material—both inside and out. It was decided that an exposed exterior frame would not only be more in keeping with the interior exposed surfaces but would also permit savings in finish material that might otherwise be required for an exterior of conventional design.

In plan, the columns are spaced 17 ft apart transversely and 15 ft on center longitudinally; the inner row is staggered about halfway between the exterior columns (see plan across page as well as plans on page 71). For this scheme, the transverse spans are thought to be the

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1 That this principle can also be used to advantage in structural steel design has been discussed in the following articles: "Construction Techniques That Conserve Steel," by Ronald Alborn, November 1951 P/A; "Steel Design Economy," by Julian Swartha, October 1952 P/A.
CONTINUOUS STIRRUP

TOP BARS

SPliced BARS

SPliced BARS

BOTTOM BARS

L1/4  L1/4  L1/4

L2/4  L2/4

L1/4

SECTION 1-1

1/2 LONG SPAN

1/2 LONG SPAN

BEHIV SECTION ARE SYMMETRICAL ABOUT CENTER LINE

LONG SPAN L2

SHORT SPAN L1

SECTION 2-2

TYPICAL WALL SECTION

PLACING

CONC. BEAM 7 1/4" x 2'-0"

STEEL SASH

METAL STOOL

FLASHER

PLASTER

METAL FURRING

CONVECTOR

WOOD FL AND BASE

LONC. BEAM 8 1/8" x 2'-0"

SHORT SPAN L1

LONG SPAN L2

SHORT SPAN L1
apartment house construction methods

The core of the Drayton Arms, designed as a rigid frame, resists all horizontal loads and supports vertical loads. In the event of an aerial attack, the occupants would be afforded some measure of bomb-blast protection by the core.

Photo: Andrew Bunn

maximum economical length. Floors were assigned for a live load of 40 psf with an owance of 20 psf for partition and finish reinforcement pattern of slabs on preceding page); 3000 psi concrete was cited and although no admixture was used, careful control of proportioning and mixing resulted in extremely durable concrete surfaces.

Footings were placed on a soft mica fist rock and no special problems were countered except for some minor undermining of adjacent structures.

drayton arms apartments

e core of this building, containing elevator and stair towers, halls, storage closets, etc. (see detail drawings across page and plans on page 73) was designed as a rigid frame to resist all horizontal (ind) loads as well as to support vertical ids. Wind beams and columns were minimized as the slab and beam construction outside of the core acts as a horizontal cantilever laterally braced and transmits all horizontal loads to the core. Wind computations for wind were based on 30 lbs per sq ft of vertical projection. In rechecking, it was determined that by setting local and national building codes verning minimum wall thicknesses, the present construction can actually resist a load several times greater than 30 psf.

Spans between peripheral columns presented no particular problems, as the design followed conventional pan-band design procedures. The cantilever was definitely helpful in reducing the positive bending moment in the ribbed slabs between columns and core. In addition, the cantilever was so proportioned that the negative moments at each side of the peripheral columns were equal, as well as being equal to the negative moment at the core wall. By such a balance, the moments in the exterior columns were minimized so that the columns could be kept to minimum size. Approximately 30 ft is considered the maximum economical span between columns and core walls for a building of this character and occupancy (many factors, of course, could alter this figure). Given a 30-ft span, a cantilever of about 10 ft 6 in. is required to balance the positive and negative moments described above. (The span between core and exterior columns in the Drayton Arms is actually 20 ft 7 in. and the canitlever extends 7 ft 3½ in.) For the apartment rooms, the design load included 40 psf live load and 15 psf for partitions; corridors were assigned a live load of 80 psf.

Like the designers of the Flamingo apartments, these architects and engineers investigated the possibility of using pre-fab metal walls; at the time, however, these had not yet been fully developed. In the final solution, lime-faced spandrels were backed with 8 in. x 12 in., hard-burned structural terra cotta tile.

barbizon tower apartments

Undoubtedly, the ground-floor garage was a prime factor in the flexible and economic plan that was developed for this building (see plan next page and plans on page 79). A ribbed-slab floor system (see reflected ceiling plan) was selected because its extra depth was needed to provide a rigid cantilever, and also because it reduced the amount of reinforcing steel that would otherwise have been required. Wide flat beams reduced the framework and produced a smooth ceiling without breaks to which contact lath could easily be applied. It was felt that these features more than outweighed the additional reinforcing normally needed for flat-beam construction. Both the flat-band, cantilevered-slab structural system and the constant floor-to-floor heights made the repeated use of forms possible. Rubbed-concrete-bearing walls at each end of the structure were designed

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Not only for architectural effect but also for the stability that they lend to the structure.

Two lines of struts were required in the 28-ft span (see detail drawings below) for both stiffness and even distribution of the partition loads. These struts were located so that they would frame the service shafts; only minimum reinforcement was placed. To limit deflection, spans in excess of 22 ft (in a longitudinal direction) would not have been advisable unless the depth of the beams and joists was increased. As in the Drayton Arms, a balanced rectangular section determined most economical length for the cantilever.

In general, a 40 psf live load was used and the total load used for the joist system was 140 psf. An admixture in the 3000 concrete provided a smooth flow—leaving the concrete free of voids when the forms were stripped.

Spread footings resting on clay were suitable for the support. As any wall insulation in this area of the country comparatively rare, uninsulated cavities were considered adequate.
HOSPITAL CONSTRUCTION SHOULD BE THE CONCRETE REFLECTION
OF A BROAD FUNCTIONAL PROGRAM WHICH TAKES INTO CONSIDERATION PAST EXPERIENCE, PRESENT COMMUNITY REQUIREMENTS, AND A REASONABLE ANTICIPATION OF FUTURE NEEDS BASED ON TRENDS IN MEDICAL CARE. SINCE THE INITIATION OF HOSPITAL CONSTRUCTION MUST INTERSECT A TEMPO-URAL PERIOD OF CHANGE IT CAN ONLY APPROXIMATE ITS EFFECTIVE. THE HANDS OF THE CLOCK CONTINUE TO MOVE. AS IT IS TRUE THAT THE RESEARCH OF TODAY IS THE UNE Of TOMORROW, SO TRUE MUST IT BE THAT THE SPACE OCCATIONS OF TODAY ARE NOT LIKELY TO BE THE SPACE OCCATIONS OF TOMORROW.

ARCHITECTS ARE TOO FREQUENTLY LEFT TO THEIR OWN UNLEASHED DEVICES WHEN THEY ARE COMMISSIONED TO BUILD HOSPITALS FOR ANY GROUP WHICH HAS NO CLEARER CONCEPTION OF ITS DESIRES THAN THE GENERAL ONE OF BUILDING A HOSPITAL. WHERE ARCHITECTS ARE COMPELLED TO PROVIDE ON SUCH MEAGER TERMS OF REFERENCE THEY WORK UNDER A HANDICAP, AND NOT THE LEAST ASPECT OF THEIR INCAPACITY IS THE CRITICISM WHICH THEY INVITE WHEN MALADJUSTMENTS RESULT FROM ILL-FITTING SPACES. FURTHERMORE, VERY FEW ARCHITECTS ARE EQUIPPED PROFESSIONALLY TO SURVEY THE PRESENT AND NEAR-FUTURE MEDICAL REQUIREMENTS OF A COMMUNITY WITH REASONABLE ACCURACY, EVEN IF THEY ARE EXPERIENCED IN THE SPECIALIZED AREA OF HOSPITAL DESIGN IN ALL OF ITS DETAILS. IT IS, INDEED, ALSO TRUE THAT NOT MANY HOSPITAL EXECUTIVES ARE IN POSSESSION OF THE REQUIRED IMAGINATION AND GIFT OF PROPHESY NEEDED FOR SUCH A STUDY, EVEN IF THEY ARE THOROUGHLY FAMILIAR WITH ADMINISTRATIVE TECHNIQUES AND WITH THE RELATION BETWEEN SUPPLY AND DEMAND IN HOSPITAL SERVICE. PLANNING FOR MEDICAL CARE REQUIRES THE HIGHEST OF COMBINED PROFESSIONAL SKILLS.

JUST HOW THE FUNCTIONAL STUDY SHOULD BE UNDER-TAKEN, AND IN WHAT FORM IT CAN BE MADE MOST USEFUL TO THE ARCHITECT, IS A SUBJECT WITH WHICH I HAVE ALREADY CONSIDERED. IN THIS PRESENTATION I WANT TO CALL ATTENTION TO CERTAIN TRENDS IN MEDICAL CARE WHICH MAY HAVE TWO BASIC PURPOSES: (1) TO INFLUENCE THOSE WHOSE AUTHORITY IN SUCH MATTERS, PARTICULARLY IN HOSPITALS, AND (2) TO PREPARE THE ARCHITECT FOR IMPENDING CHANGES IN MEDICAL CARE WHICH HE WILL HAVE TO TAKE INTO ACCOUNT AS THE FACTOR OF DISTANCE.

BEFORE ALL ELSE, ALL PARTIES TO THE NEW PLANNING WILL HAVE TO BEAR IN MIND THAT HOSPITAL WALLS ARE PLACED NOT ONLY FOR THE PURPOSE OF ENCLOSING WORKING SPACES (THEY ENCLOZE THE ENTIRE HOSPITAL OR ANY OF ITS INNOMENT PARTS) AND GIVING PRIVACY AND PHYSICAL PROTECTION TO THE ESTABLISHMENT. THESE WALLS ARE NOT ONLY FOR THE PURPOSE OF CONTAINMENT; IF THE HOSPITAL IS TO BE THE BEST AUTHORITY ON MEDICAL CARE IN ANY COMMUNITY, WHICH IT IS IN ANY CASE, IT CAN NO LONGER LIMIT ITS FACILITIES TO THE PATIENTS WITHIN ITS WALLS. IT MUST MAKE THESE FACILITIES AVAILABLE TO PATIENTS OUTSIDE OF ITS WALLS. IT MUST HELP TO PREVENT DISEASE EITHER ON A CO-OPERATIVE OR ON AN INTEGRATED BASIS AND, IF IT FAILS TO PREVENT DISEASE, IT MUST DEVOTE ITS ENERGIES TO THE PREVENTION OF ITS SPREAD, THE PREVENTION OF CHRONICITY, THE PREVENTION OF COMPLICATIONS, SEQUELAE, AND RELAPSES, AND, WHAT MAY PROVE TO BE MOST IMPORTANT, THE PREVENTION OF SOCIAL DEPENDENCE WHICH SO OFTEN RESULTS FROM FAILURE OF SOME KIND.

WE NOW SPEAK OF INTRA-MURAL AND EXTRA-MURAL HOSPITAL SERVICES AND THESE SHOULD BE DISTRIBUTED IN ACCORDANCE WITH CLINICAL URGENCY. IF THE PATIENT NEEDS A HOSPITAL BED, IT IS THE BEST THING FOR HIM. IF HE DOES NOT NEED IT, IT MAY VERY WELL BE THE WORST THING FOR HIM. CLEARLY THERE CAN BE NO SUCH RIGID LINE OF RESTRAINT BETWEEN THE TWO SERVICES AS A FIXED HOSPITAL WALL. MEDICAL CARE MUST NOT ONLY BE COMPREHENSIVE AND COMPLETE—IT MUST, ABOVE ALL, BE CONTINUOUS, AND RADIATE ITS SERVICES ON A MOBILE BASIS INTO THE COMMUNITY IF IT IS TO SERVE THE REQUIREMENTS OF A SCIENCE. FURTHERMORE, MEDICAL CARE MUST BE AVAILABLE TO EVERYONE, REGARDLESS OF HIS LOCATION.

THE HOSPITAL MUST TAKE UNDER ITS PROTECTIVE WING (1) THE NEAR-SICK, (2) THE SICK, AND (3) THE RECENTLY SICK. MEDICAL, NURSING, AND SOCIAL ORGANIZATION MUST BE ADJUSTED TO THE DISTINCTIVE REQUIREMENTS OF EACH OF THESE GROUPS. THIS BELONGS IN THE REALM OF FUNCTION. THE HOSPITAL ARCHITECT WILL HAVE TO TAKE SUCH ADJUSTMENTS ON THE PART OF HOSPITALS AND OTHER MEDICAL CARE AGENCIES INTO CONSIDERATION AS A BASIS FOR INTELLIGENT PLANNING. LET ME ILLUSTRATE BY SPECIFIC EXAMPLES.

The new Greenwich Hospital is a notable instance of the increasing willingness of even conservative communities to accept progressive architecture. The hospital building committee presented the architects with a thoroughgoing program; then gave them whole-hearted support as the forward-looking design was worked out.

The restricted site, on high land that slopes abruptly to the west, was difficult. After painstaking analysis, the architects found they could organize the building in a T, with patients’ rooms in the crossbar facing south and commanding a fine view of Long Island Sound; the stem being devoted to administrative offices, operating rooms, and ancillary services. The slope also permitted, at the west end of the building, two above-grade levels below the main entrance floor. At the lowest (basement) level is a complete emergency department, served by a drive that leads on up to the service court. The latter adjoins the ground-floor level, where the main kitchen, housekeeping offices, locker rooms, and morgue are located.

While there are several four-bed wards on the second floor, most rooms are for one or two patients and there is even a number of rooms for private nurses—provisions that echo the type of health care that this wealthy community affords.

The structural system is reinforced concrete frame, with two-way ribbed concrete floor slabs. Expansion joints are complete structural separations, two inches wide, that divide each wing from the other two. At floor level, a sliding plate covers the joint; and at walls, a copper dam keeps out weather but permits relative motion. Double columns at the joints maintain the separation.

The choice of the two-ribbed floor construction was made after girders had been rejected, both because of the high cost of form work and interference with ventilating and air-conditioning ductwork. Plate floors, though eliminating girders would have required undue thickness weight to span the 22’ column space. The adopted system employs pairs 8” x 16” precast, hollow-concrete bl (forming 16” x 16” square panels) with properly reinforced concrete ribs extending in both directions between the pair to form a grid. In the east and west wing the 9” floor slab is supported by a spider beam at the walls and by a shallow beam over the corridor. In the north wing, where spans are smaller and ductwork more extensive, a 9” thick slab without girders is used in areas over interior columns, where stresses in shear and bending are high, the low-concrete-block panels are omitted and the floor is solid concrete. On the southwest elevation, reinforced concrete sunshades and canopies are cantilevered out 3’-6” at window-head. Photos: Lionel Freed

HOSPITAL: GREENWICH, CONNECTICUT
The public entrance is from the east (acrossge); rear of the nursing unit, at left.

Patients' rooms are all in the south-facing wall (below), with windows sun-protected by 6" cantilevered, reinforced concrete eaves. Exterior finishes are light-gray face brick and architectural concrete; projected steel sash are painted white.

Photo at right: Salvatore C. Valastro

architects | Skidmore, Owings & Merrill
partner-in-charge of co-ordination | Robert W. Cutler
partner-in-charge of design | Gordon Bunshaft
structural engineers | Weiskopf & Pickworth
mechanical engineer | Guy B. Panero
landscape architect | Henry T. Marquardt
furnishings consultant | W. & J. Sloane, Contract Division
general contractor | George A. Fuller Company
The drop in grade at the west end of the nursing wing made possible the bridged entrance to the basement emergency department (right). The drive continues around and up to the service court at the next higher level in the rear.

Photo acrosspage and below: Torkel Korling

Designed to supersede an old hospital that its community had outgrown, the new 211-bed hospital (later to be expanded to 300) adjoins the old structure (left, photo above), which has been remodeled for the outpatient department and nurses' school and residence. An enclosed passage joins the two buildings at ground- and first-floor levels.
First-floor lobby

1. Nurses' station
2. Chart room
3. Nurses' rest room
4. Single-bedroom
5. 2-bedroom
6. Private nurse
7. Treatment
8. Utility room
9. Flower room
10. Pantry
11. Play room
12. Major operating room
13. Minor operating room
14. Orthopedic operating room
15. Sterilizing
16. Scrub-up
17. Storage
18. Cystoscopy
19. Nurses' locker room
20. Doctors' lounge
21. Doctors' locker room
22. Recovery
23. Anesthetist's office
24. Supervisor of nurses
25. Instruments and workroom
26. Clean-up
27. Stretcher storage
28. Tank storage

NURSING UNITS

CONFERENCE
SUPERVISOR
SOLARUM

SERVICE

OPERATING WING

NURSING UNITS

CONFERENCE PM

ADMINISTRATION OFFICES

TERRACE

SERVICE

SLOW

DIETING ROOM

GARAGE

1. Bakery
2. Butcher shop
3. Pot washing
4. Day refrigerators
5. Vegetable preparation
6. Salad preparation
7. Dieticians
8. Special diets
9. Truck storage
10. Dishwashing
11. Storage
12. Receiving
13. Receiving office
14. Housekeeper and assistant
15. Manufacturing and testing
16. Solution
17. Office
18. Dispensing
19. Rest room
20. Locker room
21. Telephone switchboard
hospital: Greenwich, Connecticut

Interior wall surfaces are plaster or ceramic tile. Flooring in the main lobby is terrazzo, with asphalt tile in corridors and patients' rooms. In operating rooms, conductive terrazzo is the flooring; in treatment and utility rooms, toilets, and bathrooms, ceramic tile; and in the main kitchen, quarry tile. Corridor ceilings are suspended acoustic tile; elsewhere, plaster is used. Roofing is built-up, surfaced with slag.

Thermal insulation is handled by two 1" layers of cane-fiberboard under the roof. Partitions are plastered cinder block or (in toilet rooms) steel. Various types of glazing are used in the steel sash—½" DSA; ¾" polished plate; double-insulating glass. Door types include flush wood and hollow metal, manually operated rolling steel, painted flush hollow metal (elevator doors), and aluminum frames with polished plate glass (entrance doors).

To increase the efficiency and safety of the electrical installation, several signaling systems are used. One of the most recently developed detects "grounds" in operating-room wiring. If a ground occurs, a red light goes "on" in the service engineer's room and also in the electric closet; the serviceman then throws off switches in the panel until the ground is located and cleared.

The nurses' call system includes a combination microphone-speaker for every two beds. By pushing a button, the patient flashes a light at the nurse's station and speaks directly, thereby saving one trip; if the nurse is away, a dome light over the door of the originating room informs her that a call has been made; if she is in the pantry or utility room, she receives both a light and a buzzer signal.

Doctors' paging is done by a loudspeaker system and "in and out" doctor register. When the doctor arrives, he pushes a button beside his name indicating that he is "in," reversing the procedure as he leaves.

General illumination produces 30 to 60 foot-candles from fluorescent fixtures, while lower intensities are furnished by incandescent fixtures. Air conditioning is maintained by means of a conventional all-year system using chilled water for cooling, steam for heating, and pan-type humidifiers maintaining proper moisture content. For the most part, the hospital is heated by a two-pipe forced-circulation hot-water system, using convectors for heat radiati
Typical nurse’s station

Nursery

Private room

Four-bed ward

Nursing floor lobby
Awarded the Massey Foundation Medal by the Royal Architectural Institute of Canada as "the outstanding hospital designed in Canada between 1945 and 1950," the Humber Memorial Hospital is a 58-bed facility, dedicated to Canadians who lost their lives in World Wars I and II. It is the first unit of an extensive health center being planned for the level 14-acre site.

The solution is a three-story building (the nominal basement is half above grade), with all patients' rooms facing south-southeast. To minimize traffic disturbance, the main entrance is on the east side of the building. This placement also establishes plan relationships making it possible to have the records office double as an emergency-admitting office and to join the functions of night-inquiry window with the first-floor nurse's station. Perhaps most important, it results in the location of the emergency clean-up room in close relation to the operating suite so that a separate emergency operating room is not required. Regarding this controversial detail, the architects comment: "Locked doors prevent street infection developing in the operating suite, while the close relationship means that only one staff is required for both departments—a very economical advantage." Another plan innovation is the use of paired corridors, at either side of the central sterilizing room, one leading to the operating suite, the other to delivery rooms. Each suite is served from the central supply through a pass door to the particular corridor, while soiled material is returned through separate hatches.

Structurally, the building combines steel frame, brick bearing walls, and concrete floor slabs over bar joists (nursing unit wing) with reinforced concrete construction (low, rear section). Ceilings are plaster or acoustic tile. Wood sash have sheet, plate, or obscure glass.

Conditioning the design of the unusual combined heating system was the desire for maximum comfort with minimum cost. For patients' rooms, a hot-water system using convectors was chosen as "the most flexible, easily controlled form of heat"; in the operating and delivery suites and other windowless rooms, where mechanical ventilation was required, warm air seemed the best answer. For the toilet rooms along inside walls of each ward, removal of 3400 cubic feet of air per minute was involved. Since it was impractical to replace all this air with fresh air through windows of patients' rooms, a separate system of supply using steam coils to temper the air was installed, with the air-handling unit in the penthouse. To service this hot-water, warm-air, and low-pressure steam combination seven small boilers are used. Three boilers, activated in series by outside thermostat, do the bulk of the heating; room thermostats and three-way valves control room temperature by zones. One low-pressure steam boiler supplies steam for the air-handling unit, and a domestic hot-water boiler supplies the hospital's hot-water needs. The two remaining boilers produce steam for sterilizing, cooking, and operating-room air conditioning.
The main entrance (left, top) is located at the side of the hospital; a deep, overhanging canopy extends from the door out to the sidewalk line. From the memorial entrance hall (left, bottom) there is direct access to the business offices, the elevator, and first-floor maternity and medical nursing unit; nurse's station (and night-inquiry window) at left.

Photos: Panda

The typical nursing-unit corridor has plaster walls and ceiling, and linoleum floor. Elsewhere, both asphalt tile and terrazzo floors are used, while the basement flooring is colored concrete.
In the four-bed wards, a low partition separates pairs of beds. For the success of the design (the hospital has operated "in the black" since the third month after its opening in 1950), the architects ask that special credit be given to Gordon Hughes, Chief of the Hospital Design Division of the Federal Government, Ottawa, and to the hospital's Board of Governors, which tied no strings to the design other than it be an economical, efficient health facility.

The second-floor (surgical ward) nurse's station (left) faces the elevator; beneath the window is a built-in waiting bench for visitors. Each two-bed room (two photos below) has its own private toilet. Wall-to-wall windows combine fixed and double-hung sash. Exterior structural sunshades, 3'-6" in depth, also serve as window-cleaning platforms.
HOSPITAL: ESCONDIDO, CALIFORNIA

associated architects Louis C. Dixon and Lee B. Kline
structural engineers Brandow and Johnston
mechanical engineer R. G. Ojeda
 electrical engineer Fred Pierson
color consultant Ferne Irwin
general contractor Hvistendahl, Inc.
The Palomar Memorial Hospital was erected in 1950 "in recognition of all who in time of war served our country and in sacred memory of those who made the supreme sacrifice." At present, it is a 37-bed hospital, plus nursery and outpatient facilities. Eventual plans—and the size of the surgery, kitchen, outpatient department, laundry, and boiler room—anticipate future expansion to 50 beds.

Built on top of a hillock, with agreeable views in every direction, the hospital is on a cruciform plan. The maternity suite occupies the southwest wing; the surgical and medical nursing unit is in the northwest wing; the southeast wing contains the entrance lobby, business office, outpatient department, and operating rooms; while the main kitchen and staff dining room constitute the short wing to the northeast. Beneath the kitchen area is a storage basement, which, due to the ground slope, extends at this level in an abovegrade wing housing the laundry and mechanical-equipment room. Future additions will extend in a north-westerly direction from both of the nursing-unit wings.

Seen from the north (top, acrosspage), the building steps down to follow the slope in grade; laundry-boiler room wing, at left. The main entrance of the hospital (above) faces southwest and is near ample parking space.

Photos: Julius Shulman
Construction consists of reinforced concrete foundations, reinforced brick walls, and wood-framed roof. The lower level of the two-story portion of the building (under the kitchen wing) is of reinforced concrete construction. Sash are of steel, and floors are either terrazzo or asphalt tile over reinforced concrete.

Acoustic tile is used on corridor ceilings; walls, other than where tile wainscots occur, are painted plaster. Thermal insulation is provided by wool-type batts, and in the reflective values derived from white marble chips used on the roof.

Heating is handled by two boilers furnishing steam to equipment as required. The sterilization and laundry equipment are steam heated, while all patient and living areas employ radiant floor heat, using copper tubing. Only the surgery, delivery rooms, and nursery are fully air conditioned.
Tile wainscots are used on walls of sub-sterilizing room between operating rooms (right, top), scrub-up area of surgery corridor (center), and major operating room (bottom); conductive terrazzo flooring.

The main kitchen (below) has wall-to-wall windows facing northeast.

The radiant floor-heating system is serviced by a battery of pumps (top page).
The real value of publicity for the architect depends largely on how results are merchandised.

Of course, the constant appearance of an architect's name in national publications enhances his reputation, especially when it is linked with a specific field of architecture—schools, industrial, public buildings, or mass housing. This association, repeated often enough, raises his public status to that of a recognized authority in his field of endeavor.

It would seem obvious then that potential clients in that field would seek out the architect they've “been reading so much about.” But don't bank on it; some undoubtedly will, and some won't because they've never heard of you. Remember, everyone doesn't read everything, and many people don't remember all they read.

Although nothing is older than yesterday's newspaper or last month's magazine, a good publicity story can be kept alive for as long as it serves your purpose. Keep it breathing and you'll catch those who may have missed it previously and refresh the memory of those who have read it.

There are many methods of merchandising useful publicity, each depending on personal discrimination or office tradition.

For example, a favorable publicity story—in reprint form or photostatic copy—can be used to bolster direct-mail presentations or newsletters to former and prospective clients. There are varying viewpoints among architects on the use of such mail promotions, but even the most discriminating have no objection to brochures which sing their praises. It's all a matter of opinion.

In any event, remember that reprints are usually cheaper than photostatic copies of your article. Thus, when planning a direct-mail promotion, place your reprint order in advance or immediately after the wanted story hits print. Publishers are glad to furnish these reprints but the price may go up—and justifiably—if you order too long after an issue has appeared.

Such an article in your newsletter or brochure has unusual appeal. It's an authentic report on your talents and accomplishments by an impersonal authority. It's believable because it lacks any suggestion of self-aggrandizement; someone else is handing out the plaudits.

This kind of material also is of estimable worth when you're exhibiting at local or national conventions. Photographic blowups or praiseworthy publicity are “stoppers”; people take time to read them. And the fact that some national publications devoted its space to you and your creations may be noted and remembered long after a perspective of your newest work is forgotten.

People are influenced by what they see and read, so exhibit your reprints in modest frames or try them on easels in your office.

The more important the publication, the harder the impact. Readers have real respect for prominent magazines and newspapers, and the same esteem goes out to those the editors bless. But moving publicity into big-league publications constitutes a real problem in time and effort for the architect.

Thus far, this discussion on publicity and public relations has been devoted to proving how publicity yields tangible dollar and cents results; how the architect seeking national notice can achieve such results on his own.

The first success in this field, however, will make it evident that publicity should be a continuing operation to assure full value. Granting that such an operation is a useful sales tool, the busy architect may well ask: How can I find time to do justice to such an operation?

Very often, he will require help of some kind. Perhaps that aid can be drafted from his own staff, or the architect may employ a professional stenographic agency. Another suggestion for a low budget operation is the enlistment of the part-time help of a local newspaperman; he knows news, how to write, how to make editorial contacts—and he might appreciate extra income.

These arrangements are suggested to meet individual publicity needs. If your projects warrant it, investigate a professional publicity agency. If your special interests only a limited audience, you probably won't require the services of an agency. If what you design touches an appreciable worth of people, perhaps an organization may return sales dividends.

A publicity agency offers the specialized talent and know-how required to turn usually surprising results. You may have stored material right under your nose that could be developed into suitable articles of all kinds for important mass-circulation publications—material which you lack the skill to develop—which you may not even recognize as news.

The inclusion of articles about you and yours from such imposing publications as The Saturday Evening Post, Life or Collier's can have terrific impact in your brochure or convention exhibits—not to mention nationwide prestige.

Attaining such publicity outlets entails considerable creative ability, good editorial contacts, and a working knowledge of markets. And there are a lot of surprising markets for architectural articles.
If, for example, your specialty is school design, top-ranking women's magazines—such as McCall's, Parents—may show interest provided the story factors fit their requirements and the reading tastes of their dienices.

Editors of many magazines other than those in the fields of architecture and building will welcome a school story where emphasis is on humanity rather than the structure.

Is there a good story in the community that might raise funds to build the school? Is it a symbol of the growth and development of an area and its people? Has it lived any specific problem of health and life?

Not only does this apply to schools, but any type of architecture where the human interest angle is rich and exciting.

Important farm publications, religious, business, and service club magazines—many with amazingly large circulations—are among the many that may accept your story if it is "slanted" to theiritorial needs and readers. In other words, you may be missing a lot of bets.

If your activities warrant the services of an agency, choose yours with care. Don't procrastinate to open the classified telephone or dial; shop around. Remember at your needs are special ones requiring special—and dignified—operation. Various agencies have varied specialties and because architects have neglected publicity, architecture is rarely one of them.

A good agency currently handling industrial accounts which frequently require me architectural writing should be able to meet your specifications. Finding such an agency is no hardship. Editors, who receive and examine the output of a great number of publicity agencies, may be willing to make recommendations; publicity departments of materials manufacturers also may prove helpful in suggesting an agency particularly suited to your needs and budget.

Right here is the time to do your careful shopping. Don't decide on the first agency you approach—or which approaches you—without examining the presentations of several others.

It might be noted that any publicity agency worth its salt will prepare and submit a publicity program developed especially for you and your office together with a collection of sample results they have obtained for other clients.

Study these presentations carefully. The created program provides an insight into the ability of the agency, indicates whether it has grasped understanding of the unusual problems of the architect and is temperamentally equipped to handle your account.

The work samples are equally illuminating. They will show the type of accounts the agency handles, the creative ability, and the caliber of publications with which the agency has good relations. If these samples tend toward the flamboyant and heavy editorial acceptance among publications with more flash than solidity, tread easy. Such an agency may be ideal for soap, soup, or chanteuses; but slightly out of character in the role of representative for the architect.

The type of service required of the agency you select depends on the setup of your organization and its output. If you can provide a flow of newsworthy projects, there's need for a continuous publicity operation. If your creative efforts are sporadic—say only one or two major projects a year—a "spot" or "one-shot" operation is indicated. There's a vast difference between the two.

The steady publicity operation, contracted for by the year (or a portion of a year) entails the outpouring of a variety of material on both products and personnel into all available media—newspapers, magazines, even radio and television where possible. Its principal advantage is ample time to permit creative development of a good working publicity program.

The "spot" operation, one geared to a single project rather than a program, is extremely effective under proper circumstances. The type of project dictates the action.

Generally it entails the preparation of press and magazine material to be distributed at a press conference—a cocktail party, a tour, or a trip to a site. This is prefaced by intensive editorial contacts, photographic arrangements, and radio and television planning if the project warrants it. In contrast to the continuing publicity operation, it's the big intensive single push. And it can produce results.

What about the costs? As previously pointed out, publicity can cost as much as you want to spend for your needs. Most architects must be content with low-budget operations, some can spend much more, but few can afford or need all-encompassing multi-thousand dollar programs.

Thus the emphasis on the small reputable agency has been fully intentional. In contrast to the larger publicity agencies, the smaller firm has a number of advantages for the architect seeking national recognition for his office.

It is as interested in developing a successful program for the low-budget account as for the client with a fatter pocketbook. It has unusual flexibility to operate at all levels, the ability to create and produce, and to gain acceptance of its work in all media.

For the architect, such an agency is not only adequate, but ideal.
house: Memphis, Tennessee
In designing this pleasant suburban house for a family consisting of parents and two young sons, the architects sought “to create a relaxed atmosphere.” The plan of the living side of the house, they point out, is “similar to the Cape Cod house, being built around a big chimney.” The relation between the entrance, living, and dining areas and the kitchen, utility, and breakfast-room space, was devised to make circulation possible in any direction with a minimum of disturbance from cross traffic.” An admirable provision is the screened summer house connected to the main house by a covered way—“an insect-free eating and gathering place in summer weather.”

Construction is standard frame, on a concrete slab; exterior walls are t&g V-joint redwood; interior walls are oak plywood, plaster, burlap, corrugated asbestos, or ceramic tile. Terrazzo, brick, or asphalt tile are the floor surfaces. For ceilings, both acoustical plaster and gypsum-sand plaster were used. Thermal insulation consists of wool-type batts in walls and ceilings. Sash are intermediate steel casements, fixed or projected types. Incandescent light fixtures are supplemented by fluorescent cove lighting in the living-dining space. The hot-water radiant heating system—a combined floor and ceiling installation—is served by a gas-fired furnace.

architects  A. L. Aydelott & Associates
landscape architect  Wiley T. Jones
house: Memphis, Tennessee
The east-facing dining-living space (below and two photos at right) opens up generously to the handsomely landscaped terrace and garden; flooring here is terrazzo. In the bath-dressing room (bottom, right), walls are oak plywood, and floorings are asphalt and ceramic tile.

Photos: Lionel Freedman
New concepts of curtain-wall construction have brought the use of steel from galvanized roofing and siding for industrial buildings to the installation of porcelain-enamel spandrels for the General Motors Technical Center (near Detroit) and to the erection of the stainless-steel-concrete panels at Gateway Center (Pittsburgh). Outstanding examples, appearing with increasing frequency, illustrate that steel is one of our most versatile mediums for freedom of architectural expression in the design of contemporary structures.

The use of steel for exterior walls of buildings is not limited to those structures currently being designed; numerous modernization and remodeling programs have made extensive use of the metal facade. Even many of the humble army barracks that were built as temporary structures during World War II have been redesigned so that they can be prefabricated of steel.

For the architect considerable steel curtain walls there are many fresh approaches. Various grades of steel that can be used include corrosion-resistant architectural metal of the stainless-steel family and the multi-hued, porcelain-enamel-on-steel finishes. On industrial buildings, special zinc-coated surfaces for immediate erection of the stainless-steel-concrete panels at Gateway Center (Pittsburgh). Steel is the most versatile medium for erection of several stories. Saarinen, Saarinen & Associates produced one of our most versatile mediums for modernization and remodeling programs have currently being designed; numerous modernization and remodeling programs have made extensive use of the metal facade.

The design of steel curtain walls there are several problems that must be considered before selecting the grade of metal. These may be listed as:

1. Wind and weather—selection of a suitable grade to meet wind-loading and atmospheric conditions.
2. Joints and framing—a simple, weather-tight joint and the necessary framework for attaching the panels and transmitting dead and live loads to the building frame.
3. Maintenance factor—selection of a material that will eliminate or reduce maintenance cost.
4. Existing building codes—what is permitted at the building site.
5. Insulation—wet or dry.
6. Vapor.
7. Finish.

The wind-and-weather problem requires that the curtain-wall panel must withstand the attacks of the elements; must maintain a good appearance throughout its useful life; and that it must be designed to transmit the wind loads to the structural frame. Both stainless-steel and porcelain-enamed panels should be satisfactory for the life of a building; however, it has been found that a peculiar problem exists in certain locations where curtain-wall installations are exposed to moisture-laden wind. For example, in the United Nations Secretariat it was discovered that winds driving over the East River forced moisture through normal weep holes and resulted in leakage. Corrective measures required special study and solutions, both in the window area and in the wall itself.

The joint of the steel curtain wall must be designed so that it is weather-tight. Wind-and-rain action must be prevented from driving water through any crevices that may be present in the wall. There are many methods of securing a weather-tight joint—perhaps the best method is a self-flashing joint member. With metal panels this may be readily accomplished by flanging the joint in such a manner that wind and weather will be excluded.

 Provision for expansion must also be made in the joint so that the metal facing will not show the effects of thermal movement. A common method calls for the use of depressed areas in the metal panel; movement will not be noticeable in those areas after the panel is fixed. If the panel “floats” and is calk-bedded, the calking compound may be fractured by movement of the metal panel. Regular expansion joints, at such points as column covers will have obvious advantages for either floating or fixed panels; the life of the calking compound, nevertheless, is of major concern in any joint system requiring that material.

Closely related to jointing is the way the building is framed. Although there are many different methods of applying the panels, all seem to be fairly well centered in one of three types: (1) horizontal panels between columns; (2) vertical panels, either cantilevered from the floor slab or continuous from floor beam to floor beam; or (3) the grid type, which is the combination of the first two. Selection of the framing method depends on the architect’s judgment and the treatment desired for a particular structure. Most panel possess an intrinsic strength that will help to reduce the required framing.

Regardless of the framing system, the
The importance of the maintenance factor cannot be overstressed. First, the material used must be a lifetime material; that is to say, one that will last as long as the building itself. All too often, first cost is the primary consideration of the owner, and few, if any, buildings are seen as other than capital expenditure and a maintenance expense. Building accessories are usually purchased on a cost-per-year basis, but this type of accounting is rarely applied to the structure itself. It is strange, indeed, that such a large item as upkeep is not given more thought in the planning stage, and that cost-per-year, rather than first cost, is not the deciding factor.

Use of steel for curtain walls obviates many of the maintenance expenses ordinarily associated with building upkeep. For example, the stainless-steel pilasters on the Empire State Building and the porcelain-enameled spandrels on the General Motors Technical Center were both designed to require no maintenance. In the 20-odd years since the Empire State Building was erected, the stainless-steel pilasters have never had to be cleaned or maintained in any way. The General Motors spandrels are permanently colored and will retain their bright hues indefinitely. Weigh these distinct advantages against biennial painting, or the repointing of masonry about every decade.

In addition, the self-flashing joints of metal wall panels usually prevent corrosive attack by eliminating leaks in the

Prefab, stainless-steel-concrete spandrel at Gateway Center being set in heavily caulked joints (right). Detail (above) shows relationship of metal skin, coarse-aggregate concrete, and perlite concrete. Architects: Eggers & Higgins and Irwin Clavin. Photo: Jay-Bee Studio

Porcelain-enamel-faced panels combine weather-tightness with corrosion resistance, as well as satisfy color requirements for the design of the General Motors Technical Center (below). Individual panel being placed in supporting channels (below right). Architects: Saarinen, Saarinen & Associates and Smith, Hinchman & Grylls, Incorporated.
exterior wall. In a recent survey, an eastern city found that many columns had been severely corroded and had to be replaced. Such a situation not only required huge expenditures but was a safety hazard for personnel using the building in its weakened condition. With proper design, the metal curtain wall eliminates this leakage danger and excessive maintenance cost.

Perhaps the biggest hurdle in the path of steel curtain walls is existing code regulations. Current building codes are based on combustible construction such as wood floors, stairways, and windows plus combustible drapes, floor coverings, and furniture. Requirements for a four-hour fire rating are such that the combustible load must be about 35 pounds per sq ft of floor space. Even in the most crowded filing areas this load is seldom reached; requirements for a two-hour rating are about 15 pounds of combustible material per sq ft of floor area. With today's steel desks and furniture, incombustible drapes and floor coverings, and metal partitions, very few rooms in present buildings even approach the two-hour requirement.

If this is so, are many of today's buildings truly modern? Setback requirements for a contemporary, multi-story building, of course, tend to eliminate the fire hazard from adjoining property. Fortunately, modernization of building codes is now under way in most major cities.

In the selection of insulation for a curtain-wall panel, many types have been considered. Undoubtedly the cheapest method is the use of dead air space, yet this solution increases wall thickness and decreases usable floor area. A balance must be struck between these cost variables.

The type of insulation may be either wet-wall or dry-wall construction. New techniques of pumping plaster and aggregate lower the cost of the conventional wet wall. The dry-wall technique requires assembly near the job site in order to reduce freight charges, and may in some cases create handling and scheduling problems. Dry walls prefabricated with an exterior and interior face pose another problem, namely, openings and variations in structural steel setting. As panels are often prefabricated to tolerances of a few thousandths of an inch, they are not too compatible with structural variations of 1/2 in. or more throughout the building. The best solution of this problem seems to be in the window surround; errors usually can be discounted in mullion, head, and sill members.

Vapor is a problem in any type of wall. Warm, moisture-bearing air will lose its moisture content on striking a cold surface—regardless of material. Conventional wall materials tend to absorb this moisture and thus seemingly dispose of the problem. However, it must be remembered that when moisture is absorbed by a wall material, the U factor increases greatly. Also, the possibility of structural damage at points where steel members pass through moisture-laden insulation creates a corrosion hazard. The new techniques using metal-foil vapor barriers and mastic coatings are extremely helpful in minimizing this problem in today's curtain wall. There are many impervious materials high in insulating value now available to the architect and contractor.

Finish, both interior and exterior, is an important consideration in the metal-panel wall. With steel, finishes may range from the dull, metallic sheen of stainless steel through the spectrum of colors offered by porcelain enamel. Interior finishes may be metallic or plaster, depending upon the panel types selected. The metallic panel may also be designed for interior location of convector or panel heating.

Let us discuss a few buildings clothed with steel curtain walls that present individual solutions for the various problems previously cited. Although the building types range from monumental to industrial structures, all demonstrate the versatility of steel as well as other valued characteristics inherent in that material.

The General Electric Turbine plant office building at Schenectady, New York (November 1949 P/A), illustrates the structural-steel conservation possible with steel curtain walls. The structural steel was designed and erected for a conventional construction of three floors. When a planning change required additional floor space, however, the foundations and structure could not take added loads. By the use of cellular, stainless steel curtain-wall panels, a penthouse was permitted on the existing structural members, through reduction of dead weight in the walls.

In Minot, North Dakota, an insulated ribbed-steel panel was used for the Northern States Power Company Building. Provision for future expansion was of utmost importance and the use of a demountable panel system solved the architect's problem. Expansion may proceed in any direction, and panels will be 100 percent reusable. Interesting architectural effects were obtained by reversing panels in the pilasters. A combination of flush and ribbed areas adds to the vertical effect and is easily achieved. Panel lengths up to 15 ft are standard.

Co-ordinated planning and scheduling by the architects and builders of the Equitable Life office towers in Pittsburgh made it possible to enclose each structure at the rate of one floor per day. The wall is already insulated when installed and requires only bolting and welding for erection (see illustrations). Panels are shop made, filled with concrete and cured, then set with heavily called joints. The inside finish (the face of the cast slab) is covered by a continuous air-conditioning enclosure. Important savings were gained due to only 4 1/2-in. thickness of the wall.

Use of stainless steel goes beyond the actual panels in curtain-wall construction. Buildings like Lever House in New York or the Federal Reserve Building in Detroit utilize the high-strength feature of stainless steel for framing members holding glass and marble curtain walls. The low maintenance feature and freedom from weakening by atmospheric corrosion found in stainless steel ideally adaptable for those important frame members.

While porcelain enamel is a comparatively old architectural material, its use in curtain-wall construction is somewhat new. Probably the most impressive use of this wall material is in the General Motors Technical Center. The double, porcelain enamel-faced panels float on a calcite base and are placed in channels as shown (see illustrations). Panel insulation can be either calcium silicate tiles, lightweight concrete, or honeycomb paper, depending on the use of the panel for the particular area. A cap channel serves as the stop for the window sill.

In the recent remodeling of the 12-story Security Building in Denver, the porcelain
E. F. Hauserman Company plant (near land) was originally built with stainless panels and measured only 100' x 250'; addition of 250' x 300' was easily accommodated through the use of demountable panels.

Right photo: Robert E. Burke Studios

Enamel facing material which replaced approximately 900 tons of brick and terra cotta weighed only 30 tons. Utilizing these panels in the renovation of old buildings offers a solution for the reduction of high construction costs. Further, the metal panels usually reduce the amount of framing needed for hanging and the job proceeds faster.

It is conservatively estimated that there are now about 40 companies in individual research on the various aspects of the curtain wall problem. Some of these systems have already emerged from the research stage, while others are still closely guarded by their developers and have not as yet been offered for any job.

The Porcelain Enamel Institute, whose members are leaders in the porcelain-enameling industry, has retained New York Architect William Lescaze for a full-scale research program to produce a marketable curtain wall. This program is proceeding under the direct supervision of three enameling plant executives who are assisting Lescaze in the important manufacturing phase of the research. Three basic structural systems are being studied, and it may be possible that a total of three solutions will result from the work of this committee.

This undertaking is not purely theoretical research which would require production modifications before manufacture, but is a constructive program based upon a combination of porcelain-enameling knowledge and architectural experience.

One of many companies conducting individual research on lightweight curtain-wall panels is the Washington Steel Corporation. Several panels of the type shown (below, left) are now undergoing thorough testing at their Washington, Pa., plant. Thin, rigidized, stainless-steel skins (Type 302) .015 in. thickness, protect the perlite concrete backing.

Another curtain-wall material just introduced to the building market by Seaporseal Metals, Incorporated, Long Island City, is a lamination of porcelain-enamelled steel to thermal and acoustic insulation materials (below, right).
Progressive Architecture

Expansible concrete forms that can be put to use as often as 100 times, are constructed on the extension principle of lazy tongs, permitting immediate adaptation of panel size to a wide variety of dimensions. The Rubora construction form, used extensively in Europe to cut time and costs on cast-in-place concrete jobs and now patented in this country, consists simply of latticed wood struts which are hinged at all intersection points. After the form has been adjusted to whatever panel dimension is required (see various proportions in photo above), it is covered with Sisalkraft paper, for rough finished work (left), or with a concrete liner of ⅜” composition board, for a smooth finish. The paper or board is easily tacked into place on the form and stripped off after the concrete has set, leaving the form clean and ready for future use.

A typical Rubora form, Type A, for example, can be expanded to cover a 12’ sq ft area at an initial cost of $1 per sq ft. The same form can be adjusted to any set of dimensions between 5’-8” x 1’-4” and 10’-4” x 9”. Weighing only 50 lbs., it is easily carried by one man and adjusted to desired size by two men. Because of their flexibility, the forms may

Air and temperature control
Aeropel: kitchen ventilating fan, recommended for installation near cooking range, has certified capacity rating of 400 cfm; costs only few cents per month for operation. Wall box constructed of rustproof steel; white-plastic grille offers minimum resistance to air flow, is easily wiped with damp cloth to free surface of dust. American Radiator & Standard Sanitary Corp., Bessemer Bldg., Pittsburgh, Pa.

F610 Combination Horizontal and Downflow Furnaces: packaged oil-fired units can either be fired as downflow furnaces in vertical position for perimeter heating or as horizontal units for installation in attics, crawl spaces, or suspended from ceilings. Cabinets finished in white gloss enamel for attractive appearance in kitchen or utility room. In 80,000 and 100,000 Btu models. Borg-Warner Corp., Norge Heat Div., 346 E. South St., Kalamazoo, Mich.

Thermo-Base: baseboard warm-air heating units in 3’ 5’ and 8’ lengths, accurately rated for all static pressures and air temperatures; especially suited for small-pipe distribution systems. Equally adaptable for old or new construction. Gerwin Industries, 214 Spring St., Michigan City, Ind.

Highboy and Lowboy Furnaces: fully assembled, oil-burning, forced-warm-air units, available in output capacities of 65,000 and 85,000 Btu. Resilient mounted blowers with permanently lubricated bearings assure quiet operation; burner, controls, and wiring are all enclosed within furnace casing, yet readily accessible through service door. Iron Fireman Mfg. Co., 3170 W. 106th St., Cleveland 11, Ohio.

No. 5 Thrush Air Vent: chrome-finished valve for installation on all types of hot-water radiators, baseboards, convectors, unit heaters, and high points of mains for fast, efficient venting. Packed 12 to a box with complete installation instructions. H. A. Thrush & Co., Peru, Ind.

Radiant Front Radiator: new cast-iron unit combines radiant and convected heat; low in height, only 20” high, it forms its own cabinet and requires no separate enclosure. Matching snap-on grilles provide complete concealment of piping. U.S. Radiator Corp., 380 Buhl Bldg., Detroit 26, Mich.

Heatcrete: chemically stable densifier makes possible high heat-conductive concrete for radiant heating and structural applications; claimed to produce substantial economies in construction and operation; also provides quicker low-temperature panel heat production. Use of densifier reduces water in portland cement mixes up to 40%. Lee-Don, Inc., Harnarville, Pa.


Riding Aluminum Storm Sash: frame a sash unit for casement windows “ride” along with casement as it swings in and out. Permanently attached to window with weathertight sealing strip; sash is quickly slipped out of frame from inside for washing. Inconspicuous appearance permits it to be used with almost any architectural style of residence. Alumatic Corp. of America, 2081 S. 56 St., Milwaukee 14, Wis.

Vinylite Plastic Sheeting for Window custom-cut plastic sheeting for direct application to glazing; particularly useful in reducing sun glare in hospitals, factories, or washable, is easily applied, removed, and reused. Material is resistant to tearing, abrasion, moisture, oils, alcohols, and many chemicals. Available in eight colors, from frosted translucent to blackout black, varying degrees of glareless light transmission. Transeal Ltd., 821 North Ave., Plainfield, N. J.

Tubular Latch No. R 1952: newly signed tubular latch for screen, storm, combination door. Longer bolt throw (1 7/16”) allows for greater door shrink and also gives positive latching action. A steel construction withstands hardest kinds of use. Adjustable for door thickness from ⅜” to 1⅜”. Wright Products, Inc., Paul Park, Minn.
nonmetallic perforated sheets

Of new interest to architects is a nonmetallic perforated material, Fiberok, which compares favorably with conventional perforated sheet metals, at greatly reduced cost. Providing high acoustical properties, Fiberok has characteristics similar to those of laminated plastics or vulcanized fiber. According to the manufacturer, the material is quite strong mechanically and, unlike most metallic sheets, can be stapled, nailed, glued, screwed, cut with shears or knife. Standard sheets are manufactured in sizes ranging from 40" x 21" to 44" x 60"; gages run from .010" to .125" in steps of .010". A variety of perforated patterns, both on square and staggered centers, are obtainable (below). Pearson Industries, 4554 N. Broadway, Chicago 40, Ill.

so be used for circular walls, thus eliminating the expense of constructing circular ood forms. Further savings result from a crossed-beam action of the struts, which gives additional structural support and reduces shoring by 50 percent.

Four standard sizes of Rubora forms would cover most requirements; special sizes can also be supplied, Kurt Orban Co., Inc., 205 E. 42 St., New York, N. Y.

electrical equipment, lighting

Diffuser Unit: fluorescent fixture with indirect lighting to modify contrast between right-lighted work areas and dark upper areas. All-steel construction, available in open or closed end styles for two or three 38-w lamps. Reflector finished in choice of high-gloss baked enamel or porcelain enamel. May be used singly or in continuous rows, ceiling mounted or suspended by variety of hangers. Leader Electric Co., 600 N. Kedzie Ave., Chicago 18, Ill.

Paralight Downlight: series of square or round bulbs, fully recessed except for one-piece, die-cast, hinged frame. Concealed hinges and latch; "finger pull" permits quick opening when relamping or cleaning is necessary. Completely packaged, wired, ready to install. Pittsburgh Reflector Co., 31 Oliver Bldg., Pittsburgh 22, Pa.

Switchmats: line of extended-area electrical switches, in form of sheets or mats, are isolated by predetermined pressures ranging from few ounces to several tons. Typical uses are as foot switches for industrial and commercial electrical equipment; actuators for automatic door operators; entry alarm systems; automatic lighting of yards, signs, ad advertising displays, etc. Mats can be applied on floors, platforms, and stair treads without obstructing foot or vehicle traffic. Ecora Co., 7419 S. Western Ave., Chicago 3, Ill.

Cere Lamp Luminaries, Type BB: simply designed fixtures for general lighting in chain stores and supermarkets, available for use with two 40-w standard fluorescents or with two 38-w, 58-w, or 75-w slimline fluorescents. Ease of installation provided for by swiveled socket assembly and by mounting connector. Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa.

Day-Flo Uplifter: single or double-length industrial fixtures, for use with single-pin or bi-pin fluorescent lamps. Approximately 28% light distribution is upward and 72% downward, thus providing greater seeing comfort, better brightness ratios, and higher quality illumination. Special design permits constant flow of air through fixture, thereby reducing dust accumulation. Wheeler Reflector Co., 275 Congress St., Boston, Mass.

Steel Kitchen Cabinets: new line of steel cabinets designed to meet trend to combination "living areas," are finished in wide range of wood grains: oak, birch, maple, cherry, and pine. Cabinet styles include custom sink, range, and refrigerator centers, and such standard units as fruit and vegetable bin, open-end base, lazy corner, storage and wall cabinets. Cabinet tops available in either Formica or inlaid linoleum. Harrison Steel Cabinet Co., 4718 W. 5 St., Chicago, Ill.

surfacing materials

Tee-N-Gee Panel: lightweight, natural wood color tongue-and-groove hardboard panel, 16" wide x 8' long, permits fast, easy application of wall panelsing over studs, furring strips, or over old plaster by unskilled worker or professional builder. Panels may be sliced, planed, drilled, nailed, stapled, or glued in place. Forest Fiber Products Co., Forest Grove, Ore.

Shuteck Firecode 60 and 45: two gypsum-wallboard products, incorporating specially developed gypsum core with additives to give them fire-resistant characteristics. Wallboards are 1/4" and 1/2" thick, with 60 min and 45 min fire resistance, respectively, permitting use of single layer drywall in areas where codes require extra fire-resistant construction between attached garages and homes, around stairwells, or around heating unit enclosures. U. S. Gypsum Co., 300 W. Adams St., Chicago, Ill.
1-207. June-Aire, 8-p. brochure describing winter air-conditioning systems, central plant heaters, unit heaters, and storm-proof ventilating wall louvers, for schools, churches, stores, factories, industrial buildings, residences, etc. Operational data, application methods, sizes, ratings, photos, drawings. American Foundry & Furnace Co., 1209 W. St., Bloomington, Ill.


1-209. The Finest Industrial Heaters for Your Plant, AIA 30-C-43 (NGC-18-52), 8-p. catalog describing various models of independent heating unit utilizing economical principles of direct heat transfer, operating at over-all efficiencies of 82-86%. Types, applications, full-color cutaway, and other illustrations, advantages. Pratt-Daniel Corp., Thermocube Div., 2 Meadow St., South Norwalk, Conn.

1-210. Titus Perimeter Diffuser, 4-p. folder. Illustrations of baseboard diffusers delivering heated or cooled air in complete coverage over entire outside wall area; exposed surfaces made of extra-heavy gage steel to withstand floor-level abuse. Design data, typical layouts for small homes. Titus, Inc., Waterloo, Iowa.


1-212. York-Heat

1-213. The Newest of Warm Air Heating Systems (RD-1256)

construction


3-171. Rigid-Tex Metal (DR-352-10), 6-p. folder outlining many uses of rigidized metal sheet, ferrous or nonferrous, solid or perforated, available in variety of textured patterns. Advantages, patterns, finishes, applications. Rigidized Metals Corp., 655 Ohio St., Buffalo 3, N.Y.

3-172. Stresssteel (1), 4-p. booklet describing lightweight, dimensionally stable building panels comprised of incom bustible core and two metal faces, for curtain-wall construction. Types of core and faces (or skins), properties, suggested design details for application, graphs illustrating insulation values, weights, fire test performances; specifications for manufacture of architectural porcelain enamel skins. U. S. Plywood Corp., 55 W. 44 St., New York 36, N.Y.

doors and windows

Three folders illustrating many applications of steel-framed, sliding glass doors, weatherstripped for all-season protection, equipped with neoprene guide rollers for easy, close rolling and silent operation. Photos, types, sizes, details, specifications, segments of actual hospital plans. Arcadia Metal Products, 324 N. Second Ave., P.O. Box 657, Arcadia, Calif.:

4-208. Arcadia Sliding Glass Doors, AIA 16-E (SL-4)

4-209. Remodel Easily, Economically (SL-1)

4-210. Arcadia Sliding Glass Doors in the Modern Hospital (SL-16)


4-212. Daylight Walls That Don't

Oceanic Vision (M-12), 24-p. booklet listing requirements of American Standard Practice for School Lighting, explaining "recommended practice," and showing how prominent architects build schools to meet requirements and fit resid en tial environment. Case histories, typical cost figures, diagrams; photos of schools glazed with Thermopane insulating glass.

Libbey-Owens-Ford Glass Co., Nichol's Bldg., Toledo 3, Ohio.

4-213. For Beauty and Duty, Flexolite AIA 26-A-9, 4-p. brochure on structure shatterproof, glass-fiber plastic sheet in coagulated form; transmits light freely, especially suitable for skylighting, window applications, patios, sunporches, etc. Standard types and stock sizes, strength data and static loads, uses, accessories. Flexolite Corp. of California, 4223 W. Jefferson Blvd Los Angeles 16, Calif.

4-214. Pella Venetian Blinds (221), 8-p. booklet plus two specification sheets. Actual applications shown of Venetian blinds equipped with concealed operating mechanism and new end brackets, enabling entropy to be taken down for cleaning and replaced without aid of tools. Photos, advantages. Rolscree Co., Pella, Iowa.


5-140. Stahl-Lok Panelboards (PD 500) 16-p. booklet on new circuit-breaker panel board system which makes possible on-the-spot arrangement of required panelboard assemblies without need of waiting for factory assemblies. Installation data, advantages, wiring diagrams, purchasing information, types of enclosures, photos. Federal Electric Products Co., 50 Paris St., Newark 5, N.J.


finishers and protectors

Two circulars, one describing Portland cement grout sealer for use on cinder concrete block or very porous masonry surfaces; specifications, method of application. Other circular features new, washable, rubber latex resin wall paint, available in 20 pastel tints; uses, properties, advantages. California Stucos Products of New England Inc., 169 Waverly St., Cambridge 39, Mass.

6-80. Porseal

6-81. Raylite

6-82. Martin-osen Wood Stains (8) 8-p. catalogue showing 40 new wood stains

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.

MANUFACTURERS' LITERATURE
6. Industrial Insulations. 28-p. catalog describing insulating materials—insulation cement, felted block, blanket, felt, and e covering—with temperature ranges n -150°F to 1800°F. Typical uses, sizes, location methods, thermal-conductivity units, heat loss charts, photos, list prices. Dvin-Hill Co., 1183 Breunig Ave., Trenton, N.J.


98. Wolverine Water Tube (K, I.). 8-p. booklet describing three types of cinder copper tubing for use in underground installations, interior and exterior tubing installations, and for stack waste vent lines or other nonpressure appli- Anations. Specifications, sizes, tolerances, application data, ordering directions. Calumet Steel Consolidated Copper Co., Wolverine Tube Div., 1411 Central, Detroit, Mich.


19-301. Modern Firescreens, 32-p. catalog offering custom-designed mesh-curtain firescreens of antique or standard brass, copper, satin chrome, and combined metals, to fit any type of fireplace, from period to modern. Illustrations, sizes, finishes, specifications, prices, index. Portland Willamette Co., 906 S.E. Alder St., Portland 14, Ore.


19-303. Ludowici Roofing Tiles, 8-p. booklet with full-color illustrations of clay roof tiles for both traditional and contemporary residences. Types, installation sketches; also, color photos of vitrified floor tile, available in square, rectangular, and curved shapes. Ludowici-Celadon Co., 75 E. Wacker Dr., Chicago 1, Ill.


19-305. How to Improve Factory Methods with Masonite Preswood (5202), 12-p. brochure. Types and uses of hardboard panels made of processed wood chips, pressed into panels of various thicknesses. Architectural applications, minimum bending radii chart, illustrations. Masonite Corp., 111 W. Washington St., Chicago 2, Ill.


19-307. Philippine Mahogany for Residential Building, 6-p. folder showing use of mahogany in residential construction, including paneling, trim, fixtures such as mantels, bookcases, cabinets, etc., and exterior siding. Full-color plates. Philippine Mahogany Assn., Inc., 111 W. Seventh St., Los Angeles 14, Calif.

Vertical Traffic
20-11. Marshall Elevators, 4-p. folder on passenger and freight elevators, either oil-hydraulic or electrically operated, for commercial and industrial buildings; also, brief data on loading platforms and trucking docks. Illustrations. Marshall Elevator Co., 345 Mary St., Pittsburgh 3, Pa.

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lobbies
by Page Beauchamp

No matter what the building, the lobby is one of the most important areas. As the introduction to the building, it should make the best impression. Consider the way the lobby will be used—as simply a corridor to the building itself, as a reception area, as a waiting room, as a meeting place—since any mood or effect may be created through choice of lighting, color, and scale. A lobby may be serene and restful, dramatic and exciting, or awesome and impressive. Functions of the lobby must not clash. Traffic lanes should be direct and ample, yet not infringe upon seating accommodations when those are wanted. Lighting may have to create several effects for really adequate atmosphere—and decoration must be carefully chosen.

On the following pages we show three examples: the lobbies of a hospital, a business concern, and an apartment house. Each has its own services to perform. In the Greenwich Hospital, ample provision has been made for seating arranged in several comfortable groups, to accommodate visitors who are strangers to each other. A cheerful residential atmosphere has been created through furnishings and decorations, to make waiting time seem shorter, and the hospital corridor is partitioned to conceal hospital activities. The business office lobby, on the other hand, is more dramatic though at smaller scale. This area expresses progressiveness and business success. Surfaces are plain in texture and have definitely background character, as the lobby serves as a passage to the many interesting displays created by The American Crayon Company to assist artists as well as to present its own products to best advantage. A still different conception is demonstrated by the lobby of Manhattan House, whose tenants can take pride in the first impression made on visitors. In four lobbies, opening at intervals from one long glass-walled corridor, seating groups are carefully disposed to suggest separate conversations. The decoration is a little more impersonal than that in the hospital lobby, yet the atmosphere is homelike. The result is quiet in key and taste.

Each of the lobbies is successful in atmosphere as the floor surfacing materials were well chosen or traffic, the lighting well handled for the various functions required, and the furnishings and decorations well chosen.
p/a interior design data

lobbies

opaque-glass dividers

acoustic tile

asphalt tile
No one has ever said that a hospital lobby must look like the operating room. And yet, too often, lobbies in hospitals are cold, uncomfortable, and institutional. Waiting in a hospital lobby can often be fraught with uncertainty and uneasiness. How nice that this lobby doesn’t look like a hospital! It has a comfortable atmosphere—its neatness and organization nicely relaxed through softening effects of an informal furniture arrangement. Another pleasant aspect is that the working part is screened from the lobby by an opaque glass wall.
location: The American Crayon Company, Los Angeles, Calif.
architect: Richard J. Neutra
The American Crayon Company's Pacific Coast Studio is located on the second floor of the Northwestern Mutual Fire Association Building. The lobby-reception room is dual-purpose. Besides serving its normal function it can become a well integrated part of the studio proper when a dividing curtain is drawn aside. Since the studio is used for a variety of purposes—displays, lectures, discussion groups, consultation sessions, and demonstrations of art techniques—it is particularly valuable to have a flexible area in which to work. How much better to have the function designate the area, than the area limit the function.

An especially pleasant effect in the lobby is created by the combination of planes of glass, smooth wood veneers, sleek tile flooring, and the knowing use of foliage. Photos: Julius Shulman
The huge area which is Manhattan House’s lobby has been so well handled that one is not overwhelmed by its size. Not that largeness is a fault, but this space is used for guests of those who make their home in the building and therefore should not have the look of an office building or a railroad station. At any of the four entrances, one comes into a lobby separate and distinct from the whole, and one long hallway connects the four lobbies. Probably most outstanding features are the continuous glass walls on either side of the lobbies, and the framing of the windows by yards and yards of neatly tailored glass curtains and textured draperies. One side opens onto landscaped terraces where people may sit out-of-doors. In all, the appearance is light yet intimate. Coloring is serene—all is restful and comfortable with no attempt at foolish little decorative bits that would be completely lost. The dark greens of the foliage are repeated in much of the upholstery and carpeting—coupled with either quiet grays or beiges.

*Photos: Gottscho-Schleisner*


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Carpets: designed by Marianne Strengell/Mohawk Carpet Mills, Inc., 295 Fifth Ave., New York, N. Y.


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concentration for medical care

(Continued from page 85)

centric circles which surround the rim of this wheel, as an extra-mural activity reaching out into the patient's home.

All of this is logical and, in fact, compulsory, in view of the latest developments in medicine and surgery as well as in the social sciences. Changes in structure and in space allocations will be the inevitable result. The criteria for admission to a hospital will depend entirely on clinical rather than on social need, the home being available in adequate housing programs. Only those patients will qualify for admission to a hospital who require technical procedures of one kind or another which cannot be applied in the home. Whereas the proportion of beds allocated to medicine and to surgery in the voluntary general hospitals of this country have been about equal until recently, it is reasonable to expect that an extra-mural home-care program will draw away from the hospital far more medical than surgical patients. Home care will reduce the demand on beds within the hospital and, as a result, it will force an expansion of diagnostic and therapeutic hospital facilities for home use. Provisions for sufficient intra-mural facilities to serve extra-mural areas will therefore have to be made. Also, there will be far greater co-operation with the practicing medical profession in this regard, with a consequent increased call on these intra-mural facilities. The result of all this will be a preponderance of surgical over medical beds within the hospital, a greater emphasis on operating room facilities, expanded laboratories, and expanded out-patient departments of all kinds.

Medical education is already beginning to shift some of its emphasis from the in-patient department to the out-patient department of the hospital, where the student finds a greater wealth of pedagogically useful clinical material, and this tendency too must be taken into account. Moreover, research laboratories will have expanding opportunities in the continuity of intra-mural and extra-mural care. Thus will enable the physician to cling tenaciously to the stubborn cases of prolonged illness, and give him much stronger scientific foundation for his work than we have thus far seen in the limited time, space, and energy at our disposal within hospitals. The same goes for X-ray departments, diagnostic and therapeutic departments of basal metabolism, cardiography, encephalography, hematology and the like. The ratio of cubic feet of service space within the hospital will have to be increased, apart from the rapid advance in medical science, because this cubic footage...
be required to serve beds outside as well as inside.

In such an integrated setup, the nursing office will preside over a wider area of nursing service, and the same can be said of the social service department. The dietetic department similarly will expand its area of usefulness.

I would, in fact, urge that all future hospitals be geared to the care of the difficult, complicated, and tenacious, cases of prolonged illness. Only then will we be sure that such patients will receive the right kind of care, while acutely sick patients will be easily dealt with as part of the day's work, since all facilities for their care will be available. As matters now stand, the care of the patient suffering from prolonged illness, such as it is, is an outgrowth of the work of the so-called acute general hospital. We have reached a point in the history of medical science where we can start from the other end and gear the hospital to the care of the most difficult scientific problems. It goes without saying that the easier problems of acute medicine and surgery are more successfully assimilated in the environment of such a hospital. The criteria for admission to this kind of hospital, which would make no distinctions between "acute," and "chronic," will be based solely on the need for the hospital and not on the duration of the illness. Distinctions, from the standpoint of service, between "curable" and "incurable" patients will more readily disappear in such a hospital than in any other type of institution, if we will only remember that hospitals are not established for curable patients only. We can relate acuteness to urgency, but it is not generally appreciated that lessened urgency can be chronic, and to some extent compelling, for varying periods of time. In our planning for medical care, we should never lose sight of the fact that most people take a long time to die. This problem in medical care is still largely neglected.

These are trends for the architect as well as trustee to ponder because he will be called upon to interpret them on his drawing boards. It is to his interest that the product of his skill be good for as long a time as possible. He will be far more valuable to his employers if he is handed a sound functional basis for his designs, and this is something too for his employer to ponder. The need for co-operative structural planning based on a solid functional program is greater today as we emerge from the pre-scientific era. The social worker and the physician are joining hands in the beneficent practice of social medicine which has all of these lessons, and more, to teach us. We must be more alert than ever to adjust our sketches to the increased tempo of medical and surgical invention and discovery.
SAG-PROOF HINGES
Rugged 5-knuckle hinges, with ⅜" semi-recessed pins, are made of 14-gauge steel, both welded and bolted into place.

GREATER SECURITY
Only Medart Lockers have this patented pick-proof "dual latch" mechanism concealed in the lock rod channel. It's pre-locking, positive in action whether door is slammed or gently closed.

STURDY BOTTOMS
Built to take brutal punishment—won't break or sag. Full ¼" flange of bottom is tied solidly to steel frame. Compare this feature with ordinary lockers!

STRONGER
Entire frame—top, bottom and sides—is channel-shaped steel electrically welded into a single solid, rigid unit that stays square and true.

ADJUSTABLE LEGS
Heavy malleable iron. Front legs are adjustable up or down to compensate for unevenness of floor.

MEDART
STEEL LOCKERS
A better constructed, stronger, more serviceable locker can't be bought! More than that, because Medart originated virtually every practical feature used in modern steel lockers, Medart builds the locker that includes them all—not just those above, but many more!

By actual comparison you'll find the skillful engineering, best quality metals and precision manufacture in Medart Lockers are a better paying long-term investment in extra years of service, far less maintenance, appearance that stays new indefinitely, and thoroughly dependable tamper-proof protection.

Medart offers 80 years of engineering experience to help analyze and solve the most complicated locker problem. No matter how modest your budget, Medart Lockers give you more for the money!

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World's Only Complete Single Source For Gymnasium Equipment

Telescopic Gym Seats Lockers & Wire Backstops Physical Fitness Basketball & Football
Basketball & Grade-Rubes Apparatus Scoreboards Physical Therapy Equipment

 melee
the effective art


Poster art is at once the oldest and the newest form of mass communication. The oldest, because the drawings of bisons made by Neolithic cave men may be assumed to have been propaganda, either for the prowess of the hunter or for the location of a good hunting ground. The newest, because the ingenuity of the contemporary artist seems to express itself more freely in posters than in other forms of advertising. Consequently, poster art of the present day shows more variety, more ingenuity, more cope, more direct impact than other forms of advertising. That this should be the case is no accident, since the poster is—more than any other form of advertising—almost entirely the creation of the artist, and depends for its effectiveness primarily on what the artist does with it.

Public reaction to posters indicates that people are ready and willing to follow the artist in his flights of imagination wherever he wants to take them—provided that his point of departure is sound artistically and psychologically. Thus, we have already been conditioned to accept shapes or forms, color and line, as symbols, sufficient within themselves to convey a selling message. Shapes have become more interesting and more provocative than merchandise and services; an exaggerated, asterized worm's-eye view of a liner's prow suggests the whole ship, foreign countries, the sea air and everything else that goes with an ocean voyage. The Bengerstaff Bros. and Toureuse-Lautrec, etc., supplanted the cluttered, over-elaborated posters of the late 19th Century when today's streamlined automobiles replaced the horse and buggy. The posters of today tend more and more toward simplicity. And insofar as they achieve it, they gain in directness, in effectiveness, in artistic, and psychological integrity.

This is beautifully illustrated in W. H. Allner's new book, Posters. It is a representative collection of contemporary poster art—not a complete selection, but a good cross-section of what is being currently done.

With this important reservation in mind, the reader will find that some of the posters reproduced in this book are not posters at all. They

(Continued on page 148)
Haxby, Bissell & Belair, architects chose FIAT Duro Flush Type Toilet Compartments to complement the splendid architecture of this fine new school. Naugle-Leck, Incorporated was the contractor. Compartments are finished in FIAT baked enamel rose stone color to harmonize with the rose-colored tile and light green plaster walls. Floor is green, rose and beige tile.

WHEN YOU SPECIFY FIAT...YOU SPECIFY QUALITY
TOILET COMPARTMENTS
DRESSING COMPARTMENTS
HOSPITAL CUBICLES
PRESSEDWOOD COMPARTMENTS*

"Being used extensively for Army and Navy installations.
Catalog on request.

FIAT METAL MANUFACTURING COMPANY
THREE COMPLETE PLANTS—ECONOMY • CONVENIENCE • SERVICE

- These sturdy compartments will withstand the rough usage of school children for years. Panels, pilasters and doors are made of two sheets of .020 gauge stretcher leveled steel, with fiber board sound deadener core cemented uniformly to the metal, and interlocked under tension the entire length of the edges. Pilasters are securely anchored to the floor with an adjustable floor saddle and locking bolt. Durable hardware is chrome plated. Bases of pilasters and floor connections are concealed by 3" high brass chrome plated plinths. Unique low doors were chosen to facilitate supervision of elementary school children.

When you specify FIAT...you specify quality

Anchorage, Alaska
Chicago, Illinois
Los Angeles, California
New Haven, Connecticut
New York, New York

In Canada: FIAT COMPARTMENTS are made by Porcelain and Metal Products, Ltd., Orillia, Ontario

May be excellent design or tasteful layout or both, but they are not posters in the true sense of the word. Saul Steinberg’s poster of “Rigoletto,” for example, has simplicity, directness, and good design—but by no stretch of the imagination can it be called a poster. Similarly, Ladislav Sutnar’s contribution has good design, telling color, excellent layout—but as a poster it defeats what it is trying to say. Here the message, “It’s Safe...“ is confused by the way type is used—and that element alone is enough to destroy its poster quality.

The exact opposite is true of Leo Lionni’s poster, “Listen to...” Here design, lettering, and all other elements combine to create a perfect poster. Other splendid posters in the book include A. F. Arnold’s poster for LEE Work Clothes, and Allner’s own superb poster for Life magazine.

In fact, most of the selections are excellent, and should serve as comprehensive copy for the student and inspiration for the professional. A good book on poster design has been long overdue, and Allner’s is the best and freshest book on the subject published in at least a decade. Eight dollars and fifty cents seems a modest price to pay for so many fine posters—11 of them in color and the rest in black and white—when we consider that each one of the fifty artists represented here is exemplified by an outstanding example of his best work.

ERVINE METZEL

student expression

Perspecta. The Yale Architectural Journal, Schools of Architecture & Design, Yale University, 2121 Yale Station, New Haven, Conn., 1952. 56 pp., illus., single issue $1.50

The first issue of this new and ambitious student undertaking (Summer, 1952) is a hand some and intelligently edited publication. Well printed on heavy stock, with a 10" by 12" format, its avowed purpose is to create a medium of expression... through which the potentialities of contemporary expression might be explored without programmatic implications.” At least that is the way George Howe, Chairman of the Department of Architecture at Yale, expresses it in his introduction to the first issue. What the student editors have done with the issue is to establish a
Tile Council of America announces the publication of Thin Setting Bed Methods and Materials, K-400

The THIN SETTING method of installing clay tile has been widely used throughout the United States. To provide an impartial summary of the experience of representative and responsible members of the building industry, the Tile Council of America engaged Don Graf to make a national survey. His study covered hundreds of building professionals in 49 cities in every section of the U.S.

As a result, the Tile Council announces publication of K-400 compiled by Don Graf. This summarizes the present status of the thin setting bed technique, and provides specifications for three basic types of thin-setting installations. (This complements the "Tile Handbook" which gives specifications for conventional mortar installations.)

We wish to call attention to the fact that the U.S. Department of Commerce has just announced minimum performance requirements for water resistant organic adhesives for clay tile installation. (Commercial Standard CS-181-52).

**WHAT “THIN-SETTING” OFFERS YOU:**

- Important savings in time, weight and materials, under favorable conditions.
- Opportunities for wider, more flexible use of clay tile. Greater scope for Tilework on more varied surfaces and in additional areas.

Distribution of "K-400" is being made to the architectural profession. For additional copies, please send requests on your company letterhead to:

10 East 40th Street, New York 16, N.Y.
Extra-Safe Underfoot!

Arraflor Vinyl Plastic Asbestos Tile is glossy in appearance, but it’s safe to walk on, because it has an anti-slip surface.

B. F. Goodrich Arraflor offers owners of professional, commercial and residential buildings many long-sought flooring advantages: rich colors which blend with any decorative scheme; super-resistance to greases, oils, fats and acids; anti-slip safety; suitability for installations on, above or below grade.

Moreover, maintenance costs are low, for Arraflor never needs waxing. It stays fresh and beautiful with just an occasional washing and dry buffing.

Investigate the many benefits that Arraflor offers your clients. For complete information on Arraflor and other B. F. Goodrich Flooring Products, see Sweet’s Catalog or write: Dept. P11, B. F. Goodrich Co., Flooring Division, Watertown 72, Mass.

You can depend on B.F. Goodrich FLOORING PRODUCTS
RUBBER TILE • ASPHALT TILE • VINYL PLASTIC TILE • RUBBER COVE BASE • ACCESSORIES

REVIEWS

(Continued from page 148)

theme of architectural development in relation to architectural education, beginning with an article by Howe on “Training for the Practice of Architecture,” following with an interesting piece by Henry-Russell Hitchcock on the formative years of Wright, Mies, and Le Corbusier, continuing with studies of the development of Paul Rudolph, Philip Johnson, and Buckminster Fuller, and ending with a useful discussion of Michelangelo’s development of the “reflex diagonal” as indicated in his drawings for the fortifications of Florence. Two additional pieces which follow (a transcript of a broadcast by Fello Atkinson and a transcript of a speech by Henry H. Reed, Jr.) are perhaps out of place in this issue, unrelated as they are to the established theme.

The issue seems to this reviewer to indicate the possibilities and the dangers of a student publication. If student authors truly find an original approach to editorial matter—as they did in the main subject of Perspective—they can do a job which deserves doing and is not being done elsewhere. If they yield to the temptation to publish articles which could find another outlet if they were good enough, they will inevitably produce a pale copy of the established professional journals.

There are now several serious attempts at student journalism in architecture. It will be interesting to see which ones remain and improve; it seems certain that only the original and creative ones will find a continuing audience.

T. H. C.

language of materials

The Art of Ancient Peru. Heinrich Doering. Frederick Praeger, Inc., 105 W. 40 St., New York, N. Y., 1952. 260 pp., illus., $12.50

In the growing flood of books on Aboriginal Art, this publication is an exception of outstanding merit. Its format is large enough to allow photographs of impressive size and precision, and the text is concise and informative. But the strongest feature of this rare work is the range of its subject matter. Like a gigantic scroll there unfolds before our eyes one of the most visual civilizations created by man. Through a succession of form revolutions, the beholder is carried back in time from intricately engineered palace walls like those behind which Atahualpa, the last Inca ruler, was
These two outstanding installations are typical of the wide range of interesting applications architects and designers are finding for the distinguished PARKWOOD series of high-pressure laminates.

PARKWOOD DECORATIVE — Rich tints and lovely pastels, in solid color or intriguing patterns, including wood grain Rotowoods . . . , protected by a lamination of 100% Melamine, for maximum resistance to abrasion, alcohol, boiling water, common acids and alkalis; minimum cleaning and maintenance worries.

PARKWOOD GENUWOOD — Genuine precious wood veneers . . . , sheer beauty, protected for life by 100% Melamine lamination. Needs no refinishing; is immune to dropped cigarettes and overturned drinks; easily cleaned. Traditional and exotic woods. Cross-grained panels and special inlays to order.

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murdered by Pizzaro in 1533, to stone slabs, with magic incisions, from a Chavin temple of the first century A.D. Every form concept Western man has reached in slow and arduous steps is represented here. There are portrait heads of the Mochica culture (between 400 and 600 A.D.) that have the stylized naturalism of Renaissance busts, but on a page later a head from the same era has the abstracted spirituality of an early Gothic Saint, down to elongation and headdress. The fierce magic of an African mask alternates with an Inca gold statue that seems purest German Expressionism, and pottery pictures of Hellenic composition were created side by side with carved posts that seem to come directly from the South Pacific.

The strongest proof of universality is furnished, however, by the examples of Peruvian architecture. The examples, reproduced in magnificently clear and detailed photographs, reach from Cyclopean walls of primitive force, to the faultless horizontal courses of ashlar masonry that could be part of any Renaissance palace. Unlike other peoples, the ancient Peruvians combined with equal perfection the rock-cut architectural form and the intricate assembled structure. Walls of jointed stones that follow the curve as well as the incline of the ground and still stand today, merge almost imperceptibly with horizontal planes cut from the living rock. This gives unique emphasis on organic growth, in a landscape of gigantic mountains. The trapezoidal doors of Egyptian Pylons are anticipated here—so is the Late Roman reuse of facing rubble walls with finished stone slabs. The ruins of Greece and Rome become fragmentary indeed, when compared to these remnants of a creative civilization that had been spared the deadening influence of verbalization. Stone, fiber, and clay were their only language. All the vapid talk about an integration of the arts and of the "mysteries" of building site and structure becomes reality, in this proud testimony of the truly American civilization of ancient Peru.

SIBYL MOHOLY-NAGY

Citizens of tomorrow

Children and the City. Olga Adams, Michael Reese Hospital Planning Staff, 29 & Ellis Ave., Chicago 16, Ill., 1952. 29 pp., Illus. $1

This is a very elementary book on city planning, designed for teaching five- and six-year-old children. It is not in any sense a text book for the child to use, but rather a description of a teaching technique for creating an awareness of city responsibility in children of early school years. It is illustrated with drawings made by children who have attempted to visualize the city as they would like to see it, and photographs of the teaching technique as it has been used. The booklet is published by Reginald Isaacs on a non-profit basis and is sponsored by six Chicago planning groups.

Walter H. Blucher says in his introduction that "the place to begin training people about"
GREAT BEND KANSAS HIGH SCHOOL EQUIPPED WITH—

Powers Pneumatic System of

Temperature Control

Assures utmost comfort and efficiency of teachers and pupils—less maintenance—bigger fuel savings.

Simplicity and Continuous Dependable Operation of Powers unit ventilator control is due to the design of its Low Limit Airstream Thermostat. Since unit ventilators operate on minimum discharge temperature much of the time the following advantages are important:

1) Powers 2-line non-waste Airstream Thermostats have a graduated dial for ease of adjustment—also Adjustable Sensitivity for precise control.

2) With its ingenious non-waste double air valve mechanism there is no continuous waste of compressed air. It is not a "leakstat."

3) Once set for the proper temperature a Powers Low Limit Thermostat requires no re-adjustment—there are no fine restrictions to be serviced.

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Engineer: Oakle P. Bullock  Contractor: Davidson Plumbing Co.

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REVIEW

(Continued from page 144)

Their civic responsibilities is in the kindergarten." Certainly no architect or planner would argue with this fact and it is important to know that a teaching manual for this purpose is now available.

T. H. C.

collaborative research
Design For Therapy. American Psychiatric Association. 1785 Massachusetts Ave., N.W., Washington 6, D.C. 80 pp., illus. $1.25

This is a report of a conference held at the Mayflower Hotel in Washington, D.C. on April 6th and 7th, 1952, under the auspices of the American Psychiatric Association. The two-day meeting was attended by a large group of psychiatrists and architects who were invited to meet together to discuss the possibilities of collaboration in developing basic information for the design of mental hospitals.

The booklet contains a number of prepared papers and transcripts of some of the informal discussions which followed the reading of these papers. The final chapter develops the proposal which came out of the meeting; that the American Psychiatric Association establish facilities for research and analysis of the information which becomes available on the design, construction, and equipment for mental hospitals.

The idea is that the American Psychiatric Association will cooperate with the American Institute of Architects on a two-year program which, it is estimated, would cost $180,000. At the end of that time it is assumed that the research group will be sufficiently established so that a part-time director and consultant architects and engineers can continue its operation on a yearly budget of $25,000, which the American Psychiatric Association hopes would be returned for services paid for.

T. H. C.

NOTICES

new practices, partnerships
DAVID B. LIBERMAN, Architect, announces the opening of his office at 605 Walnut St., Knoxville, Tenn.

(Continued on page 150)
Handsome efficient Kno-Draft Air Diffusers bring conditioned air—gently, evenly, and without drafts—into The Hecht Co.'s new "Parkington" store at Arlington, Virginia.

The Kno-Draft Air Diffusers shown are installed in combination with unit heaters in a "hung" ceiling. This makes a simple, compact and automatic source of heating with easy access. It solves the difficult problem of perimeter heating that must curtain the entrance vestibules with a blanket of warm air.

Kno-Draft Adjustable Air Diffusers are being specified for more and more commercial and industrial applications. Get the full story on their many engineering advantages. Mail the coupon today to W. B. Connor Engineering Corporation, Danbury, Connecticut.
JOHN B. PARKIN ASSOCIATES, Architects and Engineers, Toronto, Canada, announce the following associates of the firm; R. V. B. BURGOYNE, B. Arch., M.R.A.I.C., Director of South Ste. Marie, Ont., office; J. E. MEWS, B.A.Sc., P. Eng., Mechanical Engineer, Director of Mechanical Engineering Dept.; P. T. MIKLUCHIN, D. Eng., P. Eng., Structural Engineer, Director of Structural Engineering Dept.; E. WILBEE, B.A.Sc., P. Eng., Mechanical Engineer, Director of Process Engineering Dept.; The partners of this firm are JOHN B. PARKIN, JOHN C. PARKIN, and EDMUND PARKIN, 717 Church St., Toronto 5, Ontario.

The office of DONALD L. HARDISON has announced the formation of an associateship in the practice of architecture, as follows: DONALD L. HARDISON, Architect, and HARRY B. CLAUSEN and S. RICHARD KOMATSU, Associate Architects, at 225 Broadway, Richmond, Va.

HENRY J. EULER, JR., A.I.A., announces the opening of an office for the practice of architecture at 17 Street and Pacific Avenue, Virginia Beach, Va.

HAROLD S. PAWLAN, A.I.A., has established offices for the practice of architecture at 111 W. Washington St., Chicago, Ill.

The Architectural-Engineering firm of KISTNER, CURTIS & WRIGHT which has had main office activities in Los Angeles, Calif., for many years, with branch offices in San Diego, Calif., and Los Alamos, N. M., has been reorganized as two separate firms. The new firms are now KISTNER, WRIGHT & WRIGHT in Los Angeles, with project offices in San Diego and Los Alamos; and KISTNER, CURTIS & FOSTER in San Diego.

PHILIP WADSWORTH, A.I.A., and ROYAL BOSTON, A.I.A., announce the resignation of WILLIAM D. TUTTLE from the firm of WADSWORTH, BOSTON & TUTTLE. WADSWORTH & BOSTON, Architects, will continue practice at 57 Exchange St., Portland 3, Maine.

SARKIS M. ARKELL, A.I.A., announces his association with the firm of SARGENT, WEBSTER, CRENSHAW & FOLLEY, Architects, Syracuse and Watertown, New York. This firm recently opened a branch office at 311 State St., Schenectady, N. Y., which will be under the management of ARKELL.

GEORGE F. DENNISTON has joined the firm of KELLY & GRUZEN, Architects and Engineers, as Executive Manager of the firm. DENNISTON is an Associate member of the A.I.A. and is on the Board of Governors of the New York Building Congress. He had been associated with the firm of Eggers & Higgins, Architects, New York, since 1939.

(Continued on page 153)
Formed PLEXIGLAS Lighting Panels Provide Decorative Appeal at Gateway Center

All lobby corridors of the Gateway Center buildings in Pittsburgh are lighted as shown above, by custom-formed panels of PLEXIGLAS acrylic plastic suspended beneath cold cathode tubes.

The architects wanted a faceted ceiling design that would give sparkling texture to the lighting. The designer achieved this by having multiple pyramids formed into each acrylic plastic panel; mounted wall to wall along the corridors, the panels contribute marked decorative appeal to the lighting installation.

Thermoplastic PLEXIGLAS panels can be formed easily to almost any shape or design. This makes it possible to combine lighting with decorative treatments of ceilings—frequently at substantial cost savings. In addition there are the advantages of diffused illumination, low brightness ratios, and fixture-free appearance.

We will be glad to send you design details of the luminous ceiling shown above.
"AKBAR"
The Kinnear Steel Rolling Fire Door with
EXTRA SAFETY Features

Akbar Fire Doors — another famous Kinnear product—combine quick, positive, automatic fire protection with features that provide maximum safety.

When fire threatens, the doors are automatically pushed downward by a strong starting spring... yet their downward speed is controlled, for the safety of anyone passing through the opening at the time of emergency release.

As another safety measure, Akbar Doors feature separate counterbalance and starting springs. For emergency exit, the doors can be opened after automatic closure.

Another Kinnear device stops the door at sill level even if the sill is burned away. This assures maximum closure of the doorway area, even under adverse conditions.

When not in use, Akbar Doors remain coiled overhead, out of the way. Approved and labeled by Underwriters’ Laboratories, Inc., they have saved as much as one third of their cost per year in reduced insurance rates. They are built any size, to fit each specific opening—for either old or new buildings.

Akbar Doors can also be used for regular daily service, with Kinnear Motor Operators for electric push-button control if desired. Where maximum fire protection is not essential, unlabeled Kinnear Steel Rolling Doors are recommended. Write today for catalog or specific information.

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Offices and Agents in All Principal Cities

NOTICES

(Continued from page 150)

PETER K. OGDEN announces opening of offices for the practice of architecture at 92 Orchard St., Greenwich, Conn.

DAN KILEY, Architect, announces opening of his office at Wings Point, Charlotte, Vt.

CHARLES GORDON LEE, Architect, announces reopening of his office at 515 Mercantile Bldg., Denver 2, Col.

DONALD R. HOLLINGBERRY announces opening of his office for the practice of architecture at Moses Lake, Wash.

RICHARD M. WILKES, Public Relations and Editorial Representative, announces opening of his office at 1350 N. Highland Ave., Los Angeles 28, Calif.


DONALD J. STEWART and K. E. RICHARDSON, Architects, announce formation of a partnership, STEWART & RICHARDSON, with offices in Vancouver, Wash., and Portland, Ore.

EARL C. HAYES, JR., Architect, announces opening of his office at 718 Sixth St., Portsmouth, Ohio.

ST. JOHN & PLATT, Consulting Engineers, announce admission to partnership of RAYMOND C. CARLSON, Professional Engineer. The firm will practice under the name of ST. JOHN, PLATT & CARLSON, 212 Kresge Bldg., Binghamton, N. Y. and 527 Genesee Bldg., Buffalo 2, N. Y.

GEORGE FARKAS announces dissolution of his partnership with WALTER BAERMANN. The Farkas organization is operating under the name of GEORGE FARKAS, INC., established in 1942 for Industrial Design, Interior Planning, and Consultant for Land Development.

CARL B. STOYE, Architect, 22 Main St., Sayville, N. Y., will continue the practice of the firm EDWARDS & STOYE. His partner, ROBERT H. EDWARDS, died in August 1952.
BRIXMENT MORTAR
Helps Prevent Efflorescence

To test two mortars for resistance to efflorescence, "cap" two brick heavily with the mortars—let harden, and keep both brick for a few weeks in a shallow pan of water, as shown. Try this with Brixment mortar!

HERE'S WHAT CAUSES EFFLORESCENCE—AND WHY BRIXMENT MORTAR HELPS CONTROL IT

Efflorescence is an outcropping of minute white crystals on brickwork. When these crystals occur on colored mortar joints, the condition is sometimes mistaken for fading.

Efflorescence is caused by the presence of soluble salts in masonry materials. When reached by water, these salts dissolve, and are drawn by evaporation to the surface of the wall. Brixment itself does not cause efflorescence because it is practically free from soluble salts. Even when such salts are present in the sand or brick, the air-entraining and waterproofing agent in Brixment usually prevents them from coming to the surface.

Bricklayers who have used Brixment mortar for years say they have far less efflorescence with Brixment than with any other mortar.

LOUISVILLE CEMENT COMPANY, Incorporated, LOUISVILLE 2, KY.
"We might say further, then, to differentiate between art and technics, that art is that part of technics which bears the fullest imprint of the human personality, technics is that manifestation of art from which a large part of the human personality has been excluded, in order to further the mechanical process. No matter how abstract art is—and even in the most realistic convention every work of art is an abstraction—it can never be entirely impersonal or entirely meaningless. When art seems to be empty of meaning, as no doubt some of the abstract paintings of our own day actually do seem, what the painting says, indeed what the artist is shrieking at the top of his voice, is that life has become empty of all rational content or coherence. And that, in times like these, is far from a meaningless statement."

Art And Technics—LEWIS MUMFORD

During the past year we have been subjected to a phenomenon on which none of us has commented. Architectural periodicals—led by F/A—have been discussing art. It is as though, after years of wandering in a desert of abstract, smooth monotones of plaster, plywood and glass, the architect has fallen by accident into an oasis of warm, friendly, humorous, and human design. The discussion has become quite frenetic. Mitzi Solomon, Walter Grapius, Richard Bennett, Sibyl Maholy-Nagy, and others: they've been good, each in his or her own fashion.

It is not as though architects had ever really forsaken the muse. Quite the contrary! Isamu Noguchi, Alexander Calder, Picasso, and Henry Moore, I am happy to say, have retained a continued popularity through the past years. I will admit to a slight malaise every time I see that famous Museum of Modern Art reproduction of Picasso's bland and classic seated lady, in published photos of every contemporary interior. I grant that she is quite harmless as a "modern" and goes well with bland woodwork. There has also been the introduction of that much overworked and badly shaped, abstract free-form which, being standardized into a mildly diseased kidney, sets the pattern for crud boxes and even swimming pools. This shape is in profile horrifically reminiscent of those hydrocephalus and pimpled weirdies by Aubrey Beardsley—later by Salvatore Dali. I don't like them and never did.

All things considered, I am greatly relieved that there seems to be some relaxation of aesthetic tensions and some hope that such clichés as mentioned above may be superseded by less self-conscious and more relaxed acceptance of other art forms. I sincerely hope that the indications we have been seeing recently of a greater interest in brilliant color and warm textures, of a slight playfulness in lighting fixtures, and the occasional suggestion of ornament may indicate that the cycle is revolving again, after a period of quiescence. We may be returning to that most natural of all instincts, that of adornment. Despite Mies van der Rohe and his school of "purists" (and I consider even their choices a form of decoration), it is a healthy and happy trend. May it flourish!

* This will in time, bring us, logically to the responsibility of the schools to foster and co-

(Continued on page 156)
DRAVO HEATERS have a certified High Standard of Safety!

ALL STANDARD MODELS, BOTH GAS-FIRED AND OIL-FIRED, LISTED BY UNDERWRITERS' LABORATORIES, INC.

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(Continued from page 154)

ordinate the arts. But first, besides architecture, what are these socially acceptable media? Drawing, painting, sculpture, music, the drama, landscape design, interior decoration, clothing, and light. Some of these overlap into the physiological, psychological, and sexual pleasures, and are difficult to separate out. There is nothing like combining them, for instance, in a well-ordered ensemble. A Cordon Bleu dinner with champagne, a seductive and appropriately draped blonde, muted lights, soft music, comfortable furniture in a pleasant room with perhaps a Tongue escape, and a glimpse into a garden with a sculptured fountain in moonlight! The drama ensues in due course, and all of the arts meld pleasantly. I am not quite sure how this is taught in school, but it might be tried.

Setting aside temporarily these sybaritic impulses with which some of us would like to while away our time from here on out till the last bomb falls, let us pursue this question of architectural education and the allied arts. Matisse's little chapel in the south of France proved a different kind of bombshell. A silly situation, when a tiny building decorated with some bright-stained glass and black-and-white tiles takes the architectural world by storm! We seem to have forgotten completely the lesson of that warm, glowing interior of St. Mark's in Venice, and all of the other equally great combinations of art and architecture with which our history books and history classes are filled. I'm not belittling Matisse; I own an "Odalisque" of his, and have always admired him as the one real easel painter who feels color as part of his paint and not as an application. But that is neither here nor there. What I am wondering is, where in the devil we've been these last twenty-five years? It now takes an old man with a sincere religious impulse coming in his last years, to awaken all of us to the foolish fandom that has made us deny our own heritage of art and design. We have been relegating the visual arts to the false peacock colors of the Juke Box and the emasculated pastels of both the German and French contemporary architects. Even F. L. W., who has never quite gotten away from the Art Nouveau in his detail, has felt the need for a more lively decor—mostly in spots and squares of color and hardly any of it integral with the structure.

We experienced an iconoclasm from the Bauhaus some twenty-five years ago, with an attendant disruption of standard art relation-
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Eleanor Bittermann, in Art in Modern America, does a clever and valuable reporting job in an attempt to identify key mural and sculpture work allied to contemporary American architecture by nearly all accepted or general media. The author does not cover furniture, light, or textiles. I can recommend Marshall Fredericks' statement on pages 85-87. This book, however, does not actually analyze the causes or effects—it just reports. In a sense it can serve as the badly needed illustrations for Mumford's latest Art and Technics, which should be a "must" in all architectural schools, if not in all art schools: preferably both. I quote from it at the beginning of this article. There is a third and not very revealing book on the subject by Bruce Allsopp, Art and The Nature of Architecture, also part of this revival of interest, which has become so noticeable and which should become important.

(Checked from page 156)
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While architects have been cleaning ornament off of their forms to find what the structure beneath the decoration meant, and while they sought out of pure form the meaning of, or the essence of, beauty in pure form, the rest of the art world on the whole has been enjoying a quiet cultural lag of its own. I am not implying that the movement towards architectural hygienics of the past twenty-five years has been a cultural lag. Quite the contrary! The Corbusier-Bauhaus sanitary systems have been intellectually stimulating and in most instances as salutary as Lysol to a badly infected kitchen sink. In the hideous residue of art heritage with which we have been infested—and in particular, our architecture—it has been a great aesthetic relief to see gleaming and simple surfaces and clearcut structure revealed. And now Mrs. Bittermann has well documented the facts, we begin to see a hesitant movement to amalgamate what might be called residual arts with the newly cleaned structural forms. While Mumford pleads eloquently and in philosophical error for the humanizing expression of art to counteract the absorption of man into the Frankenstein machines of his own making, the artist sticks to his old easel and hopes to hang in the nirvana of a museum. It is this which remains the artist's prime cultural lag.

The average art school today has little to offer in architectural school. They seem to be many miles farther apart than in the old days of common classicism. We seem farther than ever from those great integrations which created Chartres—or even Boston Public Library. (I never particularly cared for the latter, but will admit that it did integrate the arts.) And the average artist has little to offer an architect. Framed paintings for the walls? A dime-a-dozen genuine eris at any department store! Sculpture? Sure—a nude figure for the garden or an animal in ceramics for the coffee table. Trivia for the most part. Maybe a few new areas and Penates, to be moved with the Bendix when the time to change houses comes. Perhaps we do a little better on public buildings: a plaque or an appliqué relief panel over a door, a good crucifix in a church, a carved post, a high relief casting long shadows on a simple surface. These may be good! Or an over-bar wall in a theatre lobby may have offered oom for fantasy and scale, or even just a little experiment with light and materials. They may be good too. But on the whole not very much has really happened since "Guernica" and the

(Continued on page 162)
WPA Artists Project. Both were genuine and something to remember! Neither, however, generated the dynamics of the recent Scandinavian or Mexican art eruptions, which like Paracutin may have been short-lived but certainly were volcanic in origin and in grandeur.

Part of the reasons for our problem was hinted at above. The usual art course emphasizes easel painting. All painting students of a conservative bent want to be hung in the Metropolitan Museum of Art, those more liberal in the Museum of Modern Art. They hope to find their futures through local galleries and museums, and objectives are largely directed towards "shows." It is the rare school that develops other ambitions in the budding artist these days. Sculpture and ceramic classes seem equally limited in purpose, although there may be some little more emphasis occasionally on the broader, architectural uses of sculpture. It is all part of that strange, egotistical, and semi-psychotic situation that has made it more fashionable in some of the arts to attempt to publicly express the artist's personality, no matter how unimportant or unpleasant that personality may be, than it is to express or interpret anything else. The worlds of the human, the spiritual, and the physical, all suffer accordingly through a lack of genuine interest in them. The world of art suffers from the inconsequential.

Perhaps it is just as well that artists do not read these articles. In re-reading what I have just written I find that I sound almost bitter. Perhaps I am influenced in part by Mumford's stinging blows. Actually I am motivated by disappointment that in recent years my own experience has not revealed any improvement in the alliance between the arts and architecture.

In the schools and universities, where real leadership should occur, I find schism and indifference. For a period, you may remember, there were some interesting and exciting experiments — under the elder Saarinen, at Cranbrook, under Josef Albers, at Black Mountain, under Gropius, at the Bauhaus, among others. These three, in particular, were laboratories of invention in education, each in its own way, to try to form new alliances among the arts and architecture, and at the same time to explore new fields of artistic expression. There have been all too few of these laboratories, and they have all been too short-lived. American universities have not yet succeeded in providing the freedom of work-

(Continued from page 161)

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(Continued on page 164)
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out of school

(Continued from page 164)

shop experiment and the free interplay of personalities and experience which these special schools have afforded. The bondage of the degree with its attendant strictures on freedoms—a bondage many times discussed on these pages—again interfere with the co-ordination and mutual stimulation so badly needed in the visual arts.

Architecture and architectural education will always pose particular problems in the development of the desired correlations of the arts. Except in those rare instances when its function is that of pure symbolism (see Mumford), it must ally esthetic design with the general welfare. No other visual art is at present regulated by the police power—health, safety, and the general welfare. If the pursuit of happiness were a responsibility of the police power, then other arts had better look to their latest monstrosities (including such objects as are to be found back of the Lincoln Memorial, in Washington, D.C.). On the other hand, beauty is obviously not the only function of the visual arts. Neither Signorelli’s frescoes at Orvieto, Goya’s bullfights, Aztec sculpture, nor the “Guernica” of Picasso are art—if pleasure is the only emotion to be derived from art. But we do expect and hope for evidences of the human spirit from all art forms, irrespective of media or place. Even in advertising art we should hope for something of this!

If we are to hope for a further development of art and architectural relationships, the schools will need to become the incubators of the movement. This does not mean subserviency of any one medium to another—it means an interdependence so closely welded that it is impossible to discern the separate arts and crafts. It means, in a sense, the elimination of the picture frames and the niches for objects of art. It means that buildings on the site and in combination with each other in a community be designed as a sculptural aggregate. It means also that the best in humanity’s traditions be one with the best of humanity’s objectives.

I suppose that this Utopian dream is silly to consider, what with the utter debasement of human taste with which we are so constantly surrounded. I suppose it is too much to hope that our miles and miles of hideous street fronts with their cheap and ugly colors, forms, and souls can be converted by popular will to things of beauty. I suppose that the Juke Box is the popular art form. It is certainly to be found in its many manifestations in the ten cent store, the home furnishings department in any department store, and in the vertical acres of advertise-

(Continued on page 164)
Congratulations
to G. A. Pehrson & Associates, architects for this smart new J.J. Newberry store in Spokane, for planning an excellent job of fire protection. Of the 1252 Grinnell Sprinklers installed, 626 are the Grinnell Flush-type ceiling sprinklers — inconspicuous, yet providing the trustworthy fire protection for which Grinnell has been noted since 1878.

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All of the recipients are recent graduates of the institutions named and will use these scholarships to enter accredited colleges of their own choice.

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This month's column and IT'S THE LAW for December, related to the question of bonds, supplement Tomson's Architectural and Engineering Law (Reinhold 1951).

BONDS AND INSURANCE
Architects and others concerned with the problem should realize that all bonds are not the same in scope or coverage. A bond is a contract made with an insurance company or similar organization, and is enforceable only according to its terms. It is therefore important to look at the terms to determine whether the owner is properly covered. Sometimes matters outside of the apparent expressed language of the bond determine the coverage of the bond. Of paramount importance in considering a performance bond is the construction contract itself. If the performance bond guarantees performance in accordance with the terms of the construction contract, it is obvious that an inadequate construction contract will make inadequate the performance bond.

Bonds and insurance have been and remain essential provisions in construction contracts to protect the owner against liability. In public construction, legislative bodies have enacted laws making it mandatory for most governmental bodies to require construction bonds when entering into any building contract. Some jurisdictions have gone so far as to require private construction to be covered by such construction bonds. (Continued on page 170)

1 A typical statute to this effect is: “Any person, or persons, entering into a formal contract with the State of Florida, any county of said State, or any city in said State, or any political subdivision thereof, or any public authority, for the construction of any public building, or the prosecution and completion of any public work or for repairs upon any public building, or public work, shall be required, before commencing such work to execute the usual penal bond, with good and sufficient sureties, with the additional obligations that such contractor, or contractors shall promptly make payments to all persons supplying him, or them, labor, materials and supplies, used directly or indirectly by the said contractor, contractors, sub-contractor or sub-contractors in the prosecution of the work provided for in said contract; and any person, or persons, making application therefor, and furnishing affidavits to the Treasurer of the said State of Florida, or any city, or county, or political subdivision, or other public authority, having charge of said work, that labor, material or supplies for the prosecution of such work has been supplied by him or them, and payment for which has not been made, shall be furnished with a certified copy of said contract and bond, upon which said person, or persons, supplying such labor, material or supplies shall have a right of action, and shall be authorized to bring suit in the name of the State of Florida, or the city, county, or political subdivision, or other public authority, prosecuting said work for his, or their use and benefit, against said contractor, and sureties, and to prosecute the same to final judgment and execution: Provided, that such action, and its prosecution, shall not involve the State of Florida, or any city, or any political subdivision, in any expense. (Ch. 667, Acts 1915, §1; Ch. 10555, Acts 1925, §1.)” (Comp. Gen. Laws of Fla., 1927 Ann., Sec. 5397.)

2 “The owner of such work shall require of such undertaker, contractor, master-mechanic, or engineer, a bond with good and sufficient sureties as follows: For all contracts not exceeding ten thousand dollars ($10,000) the amount of the bond shall be the amount of the contract. If the contract is over ten thousand dollars ($10,000), but does not exceed one hundred thousand dollars ($100,000), the bond shall be not less than fifty per cent of the amount of the contract, but not less than ten thousand dollars ($10,000) in any event, if the contract is over one hundred thousand dollars ($100,000) but does not exceed one million dollars ($1,000,000), the bond shall be not less than thirty-three and one-third per cent of the amount of the contract; and if the contract exceeds one million dollars, the bond shall be not less than fifty per cent of the amount of the contract. The bond shall be attached to and recorded with the contract in the office of the clerk of court or recorder of mortgages, or as otherwise required, and the condition of the bond shall be the true and faithful performance of the contract and the payment of all subcontractors, journeymen, workmen, laborers, mechanics, and furnishers of material, machinery, or fixtures jointly as their interest may rise.” (Louisiana Gen. Stats. 2, Sec. 5107.)
Why Burn Down Your House for Roast Pig?

In ancient China, men ate meat raw. But one day, while Ho-ti the swineherd gathered mast for his hogs, his stupid son Bo-bo, playing with fire, burned down their straw hut. Bo-bo sniffed the odor of burnt pig. He touched one to see if it was still alive, scorched his fingers, put them in his mouth and was amazed at the delicious taste. Father came home and caught his son devouring a pig. Ho-ti tried one, too, found it intoxicatingly sweet and satisfying.

Thereafter, neighbors observed feverish building of new straw huts at Ho-ti's, followed always by conflagrations. The secret leaked and fires became widespread. In a few weeks even his Lordship's town house was on fire. Finally, straw for hut building disappeared from the market and young pigs could not be had for love or money. At last, after many generations, a wise man arose who said that a pig could be roasted without burning down an entire house.

Thousands of years later, we Americans feast deliriously on "roast pig." Accompanying our delights are fires of inflation, which can destroy our values just as certainly as the roasting of Ho-ti's pigs consumed his earthly possessions. But surely we need not await the coming of a sage to tell us not to burn down our houses to enjoy the delights of roast pig!

Let us unite to stop the ruinous flames of inflation. Curb wasteful and unnecessary government spending. Balance our Federal budget. Control our national debt and reduce taxes. Only in this sane way can we produce more straw and enjoy our houses, raise more pigs and eat them, too.
The law with regard to the construction and application of construction bonds generally, is governed by the law of suretyship. This series of articles on construction bonds and liability insurance will confine itself to a discussion of problems faced by architects, engineers, contractors, and owners.

A. Performance Bonds

The problem which usually arises in connection with such construction bonds is an inspection and interpretation of the bond, so as to determine whether or not a given claim may be recovered against the surety. It is fundamental law that a surety cannot be held for any claim beyond his obligation, as set forth in the written agreement of suretyship. Thus, the courts of the various states have been frequently called upon to determine the extent of the surety's liability upon a given bond.

At the outset, it should be stated, that it is to the best interests of the architect, owner, contractor and the parties dealing with them, to have the terms of the bond (coverage) as broad as possible. This, however, is not possible if the construction contract be ineffectually drawn. It is the provisions of the construction contract which determine the degree of protection afforded an owner (and the parties dealing with him) under a Performance Bond. That which is omitted from the construction contract is automatically omitted from the coverage of a Performance Bond. It is therefore of paramount importance that construction contracts be completely and carefully prepared so as to express all of the contractual obligations of the owner and contractor. Even a casual inspection of various parts of a Performance Bond form shows the incorporation of the construction contract into the terms of the bond, and the limits beyond which a surety may not be held liable.

"WHEREAS, Contractor has by written agreement dated . . . entered into a contract with Owner for . . . in accordance with drawings and specifications prepared by . . . which contract is by reference made a part hereof, and is hereinafter referred to as the CONTRACT.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly and faithfully perform said CONTRACT, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

Whenever Contractor shall be, and declared by Owner to be in default under the CONTRACT, the Owner having performed Owner's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

1. Complete the CONTRACT in accordance with its terms and conditions, or
2. Obtain a bid or bids for submission to Owner for completing the CONTRACT in accordance with its terms and conditions, and upon determination by Owner and Surety of the lowest responsible bidder, arrange for a contract between such bidder and Owner and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term 'balance of the contract price,' as used in this paragraph, shall mean the total amount payable by Owner to Contractor under the CONTRACT and any amendments thereto, less the amount properly paid by Owner to Contractor."

B. Labor and Materials

The problems presented under a Labor and Materials Payment Bond are somewhat similar to those of a Performance Bond. Here, however, the type of bond purchased (some types of bonds afford greater coverage and protection) is an important factor. In performance bonds, the surety merely insures performance of the construction contract by the contractor, whereas under a Labor and Materials bond, the surety may guarantee payment of all claims or of enumerated claims arising from and dealing with the particular construction job. The coverage provisions of a desirable Labor and Materials Payment Bond are, as follows:

"WHEREAS, Principal has by written agreement dated . . . entered into a contract with Owner for . . . in accordance with drawings and specifications prepared by . . . which contract is by reference made a part hereof, and is hereinafter referred to as the CONTRACT.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Principal shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1. A claimant is defined as one having a direct contract with the Principal or with a sub-contractor of the Principal for labor, material, or both, used or reasonably required for use in the performance of the contract, labor, and material being construed to include

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2. The above named Principal, and Surety hereby jointly and severally agree with the Owner that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant may sue on this bond for the use of such claimant in the name of the Owner, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon, provided, however, that the Owner shall not be liable for the payment of any costs or expenses of any such suit."

As a general rule the terms "labor" and "materials" have been held to mean that labor and materials necessary for the construction under the terms of the construction contract. Where just the above quoted items of "labor and materials" are used in the coverage of the bond, some courts have refused to extend the liability of the surety to those claims arising from the rental of machines and equipment by the contractor. In Southern Surety Co. v. Municipal Excavator Co., 160 Pac. 617, the court refused to hold the surety liable for the rental of trenching machines used in the construction of a public sewer project. The court stated:

"It cannot be said that the excavator company furnished either labor or material for the public works, or that it sustained any contract relation to such public works. It merely furnished two machines to the contractor that he employed in the construction of this public work. It is true that the excavator company furnished the skilled operator and retained the right in its contract to furnish an engineer and fireman, but it expressly stipulated that such employees should be the employees of the contractor, and should be paid for by him. It therefore performed no labor in connection with the operation of the machine. Its claim is only for a stipulated rental for the use of the machine. Such a claim was not within the letter or spirit of the bond and was not protected thereby."

The Oregon Supreme Court, in School Dist. No. 6 of Wallowa County v. E. E. Smith, et al, 127 Pac. 797, held that material furnished to a partner of the contractor, and which material was used in the construction job, was not covered by the bond, which was given to the contractor in his name alone. The Court, in its opinion, stated:

"The conditions of the bond are for the individual liability of Smith, and not for the liability of a firm of which Smith was a member. The bond, being statutory, should be strictly construed, and sureties thereon have a right to demand that plaintiff shall bring itself fairly within its terms."

Other jurisdictions, in dealing with the same problems, have held to the contrary. It cannot be overemphasized that the determining feature in all coverage litigation is the specific language of the bond.

In United States Fidelity & Guaranty Co. v. R. S. Armstrong & Bro., 142 So. 576, the Supreme Court of Alabama, in discussing whether or not the rentals of equipment were included in the coverage of a construction bond, made this curt statement:

"Claims for rentals of machinery and equipment are within the coverage of such bonds."

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In a later case the same court stated in *John F. Ballenger Construction Co. v. Joe F. Walters Construction Co.*, 184 So. 277, reaffirmed this position, as follows:

"No one now contends that the rental of such appliances is not within the obligation of such a bond."

These and other cases seem clearly contrary to the *Southern Surety case*, supra.

With regard to the liability of a surety, where the legal organization of the principal has been altered, and where the surety then claimed he was no longer liable, the United States Supreme Court stated:

"The purpose of the act was to provide security for the payment of all persons who provide labor or material on public work. This was done by giving a claim under the bond in lieu of the lien upon land and buildings customary where property is owned by private persons. Decisions of this court have made it clear that the statute and bonds given under it must be construed liberally, in order to effectuate the purpose of Congress as declared in the act. In every case which has come before this court, where labor and materials were actually furnished for and used in part performance of the work contemplated in the bond, recovery was allowed, if the suit was brought within the period prescribed by the act. Technical rules otherwise protecting sureties from liability have never been applied in proceedings under this statute. As the basis of recovery is supplying labor and material for the work, he who supplied them to a subcontractor may claim under the bond, even if the subcontractor has been fully paid."

Therefore, while some courts have now adopted a more liberal view with regard to the determination of the scope of coverage of a construction bond, the best insurance obtainable against possible liability is a bond which contains broad coverage terms.

**Performance Bonds**

(a) Be certain that the terms of the written construction contract are complete since a performance bond is limited to the terms and conditions expressed in the construction contract.

**Labor and Materials Bond**

(a) Make certain that the labor and materials bond cover the following possible debts:

(1) Debts of contractor or his firm in connection with your construction.

(2) Debts of subcontractors in connection with your construction.

(3) Debts for rental or hiring of machines and equipment.

(4) Possible debts for water, gas, power, light, heat, oil, gasoline and telephone.

(To be Continued.)