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veterans hospital

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second-story level by huge elevators or hauled to designated stages via a ramp running around the second floor. Set-storage rooms, property storage, paint shops, and carpenter shops, are located to form a “production line” to speed technical steps that must precede the TV broadcast. The initial unit will have a production capacity of 28 hours a week.

For the present, administrative offices, space for writers, directors, producers, and clerical offices will be accommodated in a four-story structure. Near the TV studios are located dressing rooms for the actors and entertainers, three large rehearsal halls, and other related facilities. Pereira explains:

“The entire facility of the initial unit is really an experimental workshop and we intend, in the future, as the plant expands, (Continued on page 18)
Initial unit of the C.B.S.—TV Center in Hollywood, California, designed by Pereira & Luckman, Los Angeles architects and engineers, is scheduled to open in October. The architects “tried octagons, pentagons, and round structures” to express TV needs, then chose the simpler rectangular buildings shown here, which afford maximum plan flexibility.

The first building group designed exclusively for TV begins coast-to-coast broadcasting this fall from an initial 13-acre unit of structures in Hollywood, California, designed by Pereira & Luckman, Los Angeles architects and engineers. Ultimately, the Television Center now under construction for C.B.S.—TV will cover 25 acres and include expanded TV facilities grouped around a 13-story administration building. The first unit is built around a core of four spacious studios (each containing 12,100 sq ft) and will cost $12 millions. It includes facilities for design of sets (which will be lifted
VA HOSPITAL

location
architects-engineers
partner in charge of co-ordination
partner in charge of design
structural engineers
mechanical engineers
general contractor

Fort Hamilton, Brooklyn, New York
Skidmore, Owings & Merrill
John O. Merrill
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Weiskopf & Pickworth
Jaros, Baum & Bolles
Cauldwell-Wingate Company

Built and supervised for Veterans Administration by the Corps of Engineers, Department of the Army
The first phase of the urgent postwar
program of design and construction of
Veterans' hospitals, several commissions
nately went to top-ranking private
firms. During this period, distinct
contributions were made not alone to the
solution of proper health-care facilities
for veterans, but to the field of hospital
architecture in general.

Of the first—and, in our opinion,
of the best—of these units built by
Corps of Engineers for the Veterans
Administration is this giant, 1000-bed
federal hospital adjoining Fort Hamilton,
Brooklyn, New York. In addition to all
standard medical facilities, the hos-

dial includes fully equipped physical and
vocational therapy departments, arts
and crafts rooms, and various recrea-
tional-cultural areas such as a canteen,
patients' library, a P-X, game rooms, etc.

Two top floors of the 17-story nursing
wing are given over to patients requiring
psychiatric care and treatment; neurological
units occupy the two floors below.

The architects took bold advantage of
the magnificent, 17-acre site that, toward
the south, overlooks the Narrows, the
lower entrance to New York Harbor
through which the great transoceanic liners
pass. An early decision was to align
the tall, 490-foot-long block of nursing
units so that as many bedrooms and wards
as possible would have southern windows
and look out over the widespread view of
the water and its ocean traffic.

As the plot plan shows, this nursing-
unit wing forms the longer leg of an H-
shape plan, the shorter and lower (6
stories) leg on the north containing the
outpatient department, public entrances,
therapy departments, laboratories, and oper-
ating suites. The connecting link
(which extends the full height) constitutes
the mechanical core of elevators and stair-
ways, around which are organized the lobb-
ies, records rooms, and various special-
ized offices. Among the adjacent structures
are a laundry-powerhouse (to the west)
and a nurses' residence, attendants' build-
ing, and some staff housing, at the north-
east corner of the extensive site.

The original design, which had to be
curtailed somewhat to meet budgetary re-
quirements, included a low structure con-
tecting toward the south, in which an
auditorium, cafeteria, and chapel were
planned. These facilities were later in-
corporated within the main building.

Structurally, the building consists of a
rationalized steel frame, in which the lay-
out is entirely symmetrical and there are
no offset columns, with floors and roof of
concrete-arch construction. The exterior
walls are of light gray brick, with cinder-
block backup.
Soil investigation at the site revealed a layer of silt and fine sand with little supporting power for a depth of roughly 20 feet. Below this, the sand was firmer and coarser and capable of sustaining load. Ground water occurred about 15 feet below grade. Driven piles proved to be the most economical method of transferring the load to the bearing stratum. Several types of cast-in-place concrete piles, capable of supporting 30 tons, were specified.

The size and shape of the main block—490 feet long, 46 feet wide and 17 stories in height—required exceptional analysis on the part of the structural engineers. “It was important,” they point out, “to select an economical type of floor, and economy involved not only the cost of the floor itself but also the depth occupied between the ceiling and finished floor above.”

Too great a depth would obviously have increased the height of the building, involving greater cubage and the additional costs of walls, partitions, and all vertical elements, such as elevators, piping, duct work, etc. Another important structural design factor that had to be considered for such a narrow building was the horizontal force from wind. After a number of structural systems were studied, a system employing a two-way ribbed-concrete floor panel was selected.

“The ribs were formed by precast slag blocks” the engineers report, “and thus the load was carried to girders on four sides of each panel. The load was shared by the girders extending along the corridor and the spandrel girders (east and west) with the transverse girders (north and south). This proved a happy solution in reducing girder depths.” The transverse girders along the corridors could not be very deep because of ducts over the corridor ceilings which turned under the tower ceilings. “Distribution of the load to both systems of girders enabled all to be as shallow as possible,” the engineers concluded.

In the typical floor, the girders all
corridors were generally 12” WF
was. The transverse girders were made
double channels all the way across the
ling. The double channels straddled
columns and were fastened to their
substantial wind connections. These
nels were 12” deep in upper floors,
in the eighth and seventh floors,
15” in the sixth floor and below.
ue sunshade eyebrows above the bands
thern windows in the main hospital
are of reinforced concrete. Double-
, casement, and projected sash are all
, and glazing includes plate, window,
obscure glass as well as double-in-
ing glazing (the latter, mainly on the
elevation of the north wing, as fixed
ng for the operating rooms).
The two-level entrance—one for patients, the other for visitors—is made possible by the dramatic curved ramp at the front of the hospital that carries both automobile and foot traffic (photos above and across page). The visitors' lobby (right) has a terrazzo floor, columns sheathed in stainless steel, and end walls surfaced with marble.

Photos: Torkel Korling; Martin Helfer

Hospital: Brooklyn, New York

road curved ramp, supported on a central arc of columns, provides levels of access to the hospital on the entrance front. The lower level is for patients, whether hospital- or outpatients; the upper level is forors chiefly. Further separation derives the fact that all outpatient facilities located in the six-story block of the tal, and separate elevators are pro- for outpatients’ use. At basement (plan not shown) is the central supply and storage space, mechanical equipment, orthopedic brace rooms, and morgue.

The adjacent power plant supplies steam for heating, water heating, sterilizing, etc. The basic heating system consists of radiators or convectors, controlled by outside zone thermostats. Some areas—notably the psychiatric floors—utilize a radiant panel heating system. Electrostatic air filters serve both the ventilating system (tempered outside air distributed to rooms from corridor-ceiling ducts and exhausted by fans) and areas that are fully air-conditioned—operating rooms, recovery areas, allergy rooms, and the like. In the isolation nursing unit and in certain other areas, the air is further treated by germicidal devices that destroy all but a fragment of air-borne bacteria. Incandescent fixtures are the rule for artificial lighting, although fluorescent units are also employed, in lobbies, corridors, and various specialized areas.
The first floor includes the main public entrance, social-service offices, and dental unit; recreation facilities and administrative offices. The second floor is chiefly given over (in the forward block) to therapy departments and (in the rear) to food service. On the fourth floor are the operating suites, recovery unit, surgical nursing wing, and women’s nursing unit, with a few rooms for use of relatives.

The third floor (not shown) also occupies the entire floor area. Here, the south wing is divided between an isolation nursing unit and quarters for residents. The connecting link, in addition to the mechanical core, has five double rooms, and (on the west side) experimental animal cages. The forward unit houses X-ray therapy; X-ray radiography, and hospital laboratories.

Typical upper-floor finishes are asphalt tile flooring; acoustic-plaster ceilings; lobbies and corridors, with furred-pleat ceilings elsewhere; plaster walls, except for glazed structural tile in the lobby and corridors and ceramic tile in toilet utility rooms, operating rooms, etc. On lower lobby floors, the walls around elevator core are surfaced with a roughfinish porcelain-enamedeled steel sheet.

Looking from the west end of the first-floor public lobby (above) one sees through to the corridor leading to the social service and volunteer service offices. The elevator core of this lobby (left) is paneled with rough-surfaced porcelain enameled steel that symbolizes the mechanical nature of the area it encloses. Photos: Martin Helfer; Torkel Korling

VA Hospital: Brooklyn, New York
The typical upper-floor elevator lobby (left) has walls of glazed structural block, asphalt-tile floor, and acoustic-plaster ceiling. A nurses' station (below, left) occurs at the center of each of the paired nursing units on the typical floor. Clean simplicity marks the typical patient's room (below, right).

The lower plan on the facing page is the typical nursing-unit floor, with 40 beds in each of the nursing units that are almost symmetrically arranged on either side of the central solariums, along the southern wall. The thirteenth and fourteenth floors (not shown), are used by neurological patients, and are practically identical, except that two 8-bedroom wards occur at the ends in place of the 16-bed wards of the typical floor. The fifteenth floor, also not shown, is for quiet psychiatric patients.

An audio-visual system is used for paging doctors; a light and buzzer equipment constitutes the nurses' call system. From the medical-records room on the first floor a 4-inch pneumatic tube system provides direct, speedy communication with a nursing floors, treatment areas, and some offices; a bank of dumbwaiters serves a floor kitchens, which are located on the west wall of the central block. Other special equipments include a central chiller, drinking-water system; radio outlets beside every bed; telephone booths for ambulant or wheel-chair patients, and a portable plug-in phone unit that may be wheeled to the patient's bedside.
A 16-bed ward (below, left) occurs at either end of a typical nursing-unit floor. At the center of the floors are the solariums (below, right) with their south-facing windows. Photos: Martin Helfer
F:ach 40-bed nursing unit has its own utility room (top photo), with ceramic-tile floor and walls. The typical operating room (center) has ceramic-tile walls, terrazzo floor, and double-insulating glazing. Mounted flush on side walls are bands of germicidal lamps. Also on the fourth floor is the surgical recovery unit (bottom). Photos: Martin Helfer

VA Hospital: Brooklyn, New York


equipment


The past, nearly all hospitals have employed a lamp-signaling system from patient to nurse which, briefly, consists of a calling button with cord at the patient’s bedside, a corridor lamp over each room entrance, a pilot lamp in the duty rooms, and a lamp annunciator in the nurses’ station. When the patient presses his calling button, the lamps in the corridor, in the lobby, and in the nurses’ station (indicating the room calling) are lit and remain until the bedside calling button is reset.

These systems have a buzzer associated with the utility station and an annunciator which sounds momentarily when the button is pressed, so that the nurse will know that someone is calling even though she may not see the lamps at that moment. This mechanism necessitates the nurse going to the bedside of the patient who is calling to determine his needs. Many times the nature of the need is such that the nurse must go to the duty room or diet kitchen for special equipment. It has been recognized recently that a communicating system could be made that would permit a two-way conversation between patient and nurse, not only saving the nursing staff many steps, but also giving the patient better service and assurance, through the instant conversation with the nurse, that his need will be attended.

The continued shortage of nurses justifies the use of any system which will help the nurse in caring for more patients without reducing nursing standards. A patient-nurse two-way communication system will contribute greatly to the efficiency of patient care; however, the following should be carefully considered by those responsible for specifying such a system.

requirements of system

Certain desirable features of the straight visual system as used in the past should be retained. These are:

(a) The use of corridor dome lights over room entrances, since there will be cases—especially in the smaller hospitals—where the nurse leaves the nurses’ station to answer a patient’s call and in the interim misses another call. The corridor lamp will then warn the nurse to go to the second room before returning to her station.

(b) Easy removal of any patient’s calling-button cord set from the system, so that the button and cord may be cleaned periodically or, if necessary, repaired or replaced after long usage. During removal, a means should be provided to cancel the automatic disconnect feature (described below) so that, when the new or cleaned cord set is installed, the automatic disconnect feature is immediately and automatically restored.

(c) The use of the automatic disconnect feature in the patient’s calling button and cord: In the event the patient accidentally pulls his calling-button cord from the wall or if the cord plug is not properly engaged in its receptacle, all lamps in the system associated with that room will be lit and the buzzers in the utility room and nurses’ station will sound continuously, thereby signifying to the nurse which button is inoperative.

(d) The use of a pilot lamp and buzzer in each duty station and diet kitchen, or at any point where it is desirable to notify a nurse that there is a call registered at the master station. This is especially desirable for night duty where the nursing staff is reduced to a minimum and it is impossible to have a nurse continuously at the nurses’ station (where the master station is located).

(e) Emergency calls from rooms where no microphone speaker is desired (toilets, bathrooms, and operating rooms) should register on a small lamp annunciator having a continuous sounding buzzer or bell in the nurses’ station. It is usually not practical or economical to have these calls come in on the nurses’ master station which handles all calls from the rooms equipped with microphone speakers.

All equipment should be designed to have a pleasing appearance, with minimum space requirements. This is especially true of the equipment used in the patient’s rooms, since the combination speaker-microphone and calling cord receptacle must be mounted in a prominent place on the wall over the bed. The use of a single stainless-steel or sprayed satin-aluminum plate for this equipment is desirable from appearance and utility considerations, as it will match other electrical devices in the room, such as switch and duplex receptacle plates, etc. The patient’s room station illustrated (Figure 1) is the same size as a standard 3-gang electrical face plate; measures only 6¼” wide and 4¼” high; and requires a standard 3-gang outlet box 2¼” deep.

Since the equipment of the system requires 24-hour use because of its important function, all parts should be made of the highest quality material and extremely rugged. For example, the switches on the master station (Figure 2) receive hard usage and should be of a telephone-cam-key construction with silver contacts. These should be mounted in a vertical position so that dirt and dust cannot easily lodge there and cause faulty operation. The calling button should be shock resistant; its electrical cord should have quality insulation with an outside covering of neoprene to assure long life and to remove the danger of electrical shock to the patient.

The system should be designed for minimum servicing and where replacements will eventually be needed, such as in the tubes of the amplifier, accessibility to those parts must be of prime consideration, to keep maintenance costs as low as possible. To ensure continuous operation, the amplifier which is the heart of the system should be designed so that it can be completely removed and a new one installed in a few minutes time.

The electrical circuit and its components should be as simple as possible and designed so that the average hospital maintenance personnel may make repairs and replacements, thereby keeping maintenance costs comparable with those of the lamp signal systems used in the past. For example, the complicated locking or sequence-type relays and other devices, which are difficult to adjust and maintain, should not be used. As is true for other hospital electrical equipment, the system should be manufactured by a company that is reliable and has a record of experience in signaling, backed up by a nationwide service organization with readily available parts and personnel for assistance when needed.

The equipment should be so designed that it can be easily and economically installed, as the cost to the hospital is the installation plus the maintenance expense. Use of electrical back boxes, where possible, is desirable for this reason.

The system should be able to transmit clearly the faintest voice from the patient and also transmit the voice of the nurse to the patient so that it may be clearly understood. The volume of the conversation should be such that it is not carried into the corridors or, where speakers are used in wards, be annoying to the other patients. It is desirable to have a 3-level volume key on the master station which a nurse may immediately adjust to take care of very weak or very loud voices and thereby assure a proper volume at all times.

Privacy of conversation between patient and visitors, without eavesdropping by the nurse at the master station, is a question of debate by hospital authorities. Some contend that the nurse has neither the inclination nor the time to eavesdrop. However, the system which will be described later is so arranged that the patient must first operate his calling button in order that the nurse may hear his (or the visitor’s) voice —unless a monitoring feature is desired.

Most hospitals agree that monitoring of the patient’s speaker by the nurse has doubtful value. The monitoring feature would mean that the nurse could call or listen into any room from the master station without the patient pressing the button. Although claims have been made of the nurse being able to listen in for patients’ abnormal breathing, this is debatable. Also, this feature may create a tendency to neglect established routine visits to the patient by the nurse. If monitoring is possible, it would void the privacy advantage unless a cutoff switch is placed at the room speaker. This would increase the costs and permit the possibility of the patient’s neglecting to throw the switch back to its normal operating position.

Since the spaces assigned as nurses’ stations are usually open to the corridor and not behind closed doors, the master station should be equipped with a handset so that the patient’s needs are confidential to the nurse. This gives the patient more confidence in the use of this type system and is an advantage over the loud-speaker type of master station. Furthermore, a lower volume booster is required of the handset type, keeping distortion to a minimum and permitting greater sensitivity in picking up the patient’s voice. The handset also permits the nurse to use a normal speaking voice and prevents background noises and conversations in the nurses’ station from being broadcast into the patient’s room.

It is very important that the system assures that all calls are indicated at the master station and that it is not possible for a call to be intentionally or accidentally canceled by the nurse at the master station. Resetting should therefore be done only at the patient’s bedside. This is accomplished by having the calling button the locking type, with a reset means in button. The reset device in the button should not only be designed so that a patient can easily reset the button when questioned to do so by the nurse, but also be accidentally reset at any time.

In order to keep the system an efficient and easy-to-operate device, it must perform only the service for which it is intended. Trying to use or design the system for functions as public address, intercommunication throughout the building, piping music, pinging doctors, fire alarm, etc., destroys the efficiency of performing its prime purpose with generally disappointing results.

How the system operates

When a patient wants assistance, he presses his calling button (Figure 1) which causes a lamp to be lit and remain lit while the call is in progress. When the lamp is lit, it means that all calls are indicated at the nurse’s station and that the nurse may hear the patient’s voice. The call is transmitted to the master station and flashes all associated pilot lights. The nurse at the master station picks up the handset, Figure 2, and, using the talk-listen key, he converses with the patient. At the end of the conversation, the nurse requests the patient to reset his button, which extinguishes the associated lamps. The nurse then resets the station back to normal and is now ready to answer the next call. The system is designed that in the event the patient does not receive immediate attention, he repeatedly press his calling button which momentarily operates the buzzers in the system and flashes all associated lights as mentioned above.

Proper placing of equipment

The microphone-speaker and calling button receptacle combination should be installed on the wall at the head of the patient’s bed. The system is designed so the patient need not face the microphone.
Figure 1—patient initiates conversation by pressing call button (below, left). Figure 2—master station combines built-in amplifier and double-throw cam keys to increase room station capacity and reduce size of cabinet (below, right). Figures 3 and 4 (center and bottom) illustrate the eight stations of the system and a conventional conduit layout.
speaker during conversation. The calling cord which plugs into its receptacle (which is in the same face plate as the microphone-speaker) is 6' in length. In semi-private rooms and wards, it is often most economical to use only one speaker between each pair of beds and a double calling cord which has only one plug and receptacle.

The master station can be installed on any convenient desk space in the nurses' station. Although the unit is portable, it is equipped with cables approximately 9' long. These cables end in a terminal box, usually mounted in one of the walls. Sometimes certain locations for the terminal box are more advantageous from the electrical contractor's viewpoint and this, therefore, often determines the location of the master station and the desk on which it is to be mounted.

**wiring requirements and power supply**

Most systems permit the lamp, audible signal, and speaker wires to be run in the same conduit. However, this should always be checked with the manufacturers whose equipment is to be specified. Installation costs are naturally higher for those systems that are not designed to permit the one-conduit layout. The speaker wires should be shielded, twisted, pair No. 18 or larger. The signal wires should be No. 16 and the common feed wires run from the transformer secondary should be No. 14.

The eight stations of the system are shown in conventional conduit layout are shown in Figures 3 and 4. Conduit layout costs will be dependent on the type of construction used for the particular hospital. The wire sizes and number required are shown in the wiring diagram (Fig. 5).

The system operates from the 250-volt secondary of a N.E.M.A. Standard low duty signaling type of suitable capacity, light at least one quarter of the lamp on the system simultaneously.
hospital lighting
by Howard Haynes*

ing requirements should be con-
in hospital lighting than in the
of other interiors. Hospitals en-
ance cleanliness—and a lighting system
ple, neat design can add much in-
ing this impression. Lighting fixtures
be washed and cleaned, not only to
aining efficiency but also, more
ant in hospitals, as part of the regu-
tine of keeping all surfaces clean.
ost of cleaning fixtures can vary con-
dably, depending on the types used. A
xtra dollars spent to obtain easy-to-
lighting units may save many times
ount during the life of the fixture.
 meet these requirements, a variety
escent and filament fixtures are
le. For general lighting, the trend
 to be toward recessed ceiling fix-
covered with diffusing plastic or
 with the ceiling; either fluo-
t or filament lamps can be used.

comfortable lighting
chieve comfortable lighting sharp dif-
ces in brightnesses within the field
of must be avoided. Lighting units must
e too bright and bare lamps must,
urse, be shielded. Often overlooked
are lamp brightness as reflected
pecular metal or glossy paint; mat,
r than glossy, paints should be used.
should be relatively light in color;
have pleasing colors and re-
50 percent of the light; ceilings
d reflect even more but need not
arily be white. Good lighting fix-
alone do not assure comfortable
—the whole interior of the hospi-
just be taken into consideration in
ning the lighting.

amount of light
atter how clean and sanitary a hospi-
ay be, dim lighting can create the
ite impression. But even more im-
nt than appearances, it has been
 that for quick, accurate, easy see-

fluorescent or filament lighting?
Either fluorescent or filament lamps can
used in most locations. For simplicity,
lowest initial cost, and low maintenance
cost, filament lamps can be recommended.
Fluorescent lamps are more efficient; less
heat is generated and the surface bright-
ness is relatively low. As for over-all cost,
when lamps are operated many hours per
day and/or the electric rate is relatively
high, fluorescent lamps are generally pre-
ferrable. In the past, the principal ob-
ction to the use of fluorescent lamps in
hospitals was the color they produced. The
lamps were deficient in red and people
under them looked less healthy than they
really were—psychologically bad in hospi-
tals. However, recently developed fluo-
rescent lamps that radiate red light give
complexions a more natural appearance.
As this is accomplished at some sacrifice
in efficiency, their use is recommended
only for patients' rooms, operating and
examining rooms, and in the cafeteria and
dining room. Eventually they may be used
more generally.

emergency electric power
Failure of the electric supply in a hospital
can well be a matter of life and death; an
emergency supply is imperative. Unless
the emergency source has sufficient capacity to
take on the requirements of the entire hos-
pital, certain lights throughout the hospital
should be put on a special circuit that is
controlled by the auxiliary power supply.

Good lighting is essential in surgery where a
life may depend upon the ability of the
surgeon to see clearly. Because the
surgeon may be looking deep into a
cavity of low-reflection factor, he should
have a lighting intensity of 1800 foot-
candles or more. This light must
come from several wide-angle directions
to decrease the shadows from the sur-
geon's head, his hands, and the surgical
tools. Heat-absorbing glass filters are used
to reduce the radiant heat and provide
color correction. A system of concentrating
lens plates mounted in the ceiling is also
available. The choice of which of the sev-
eral available operating lights to use can
best be left to the surgeons.

The operating light should be supplied by
a branch circuit independent of all other
lights, and this circuit should be connected
to the emergency bus. An automatic throw-
over switch should be provided to connect
the operating light directly to the emer-
gency supply in case of failure of the main
power supply.

General lighting in operating rooms has
sometimes been neglected. Occasionally a
surgeon will insist that he can see better
without the general lighting, but when he
says this it can be assumed that his gen-
eral lighting system undoubtedly gives light
of poor quality and low quantity. A good
general lighting system providing 50 foot-
candles of light will increase the surgeon's
comfort, since it will reduce the contrast
between the operating area and the sur-
rounding area. The operating staff will
have good light to see quickly and easily in
carrying out the instructions of the surgeon.
Fixtures built into the ceiling—covered
with glass or plastic and flush with the ceil-
ing—are being widely used in modern con-
struction. Either filament or fluorescent
lamps may be used. Cool, white fluorescent
lamps give a pleasant color that approxi-
mately matches the hue of the color-cor-
rected operating light; they also give the
anesthetists an excellent idea of the true
coloring of the patient's face and lips.

Outlets should be provided for portable
operating lights which may be used by the
surgeon. All lighting fixtures and electrical

* Division, General Electric Company, Nela Park,
nd, Ohio

July 1952 79
materials and methods

Figure 1—the concentric-ring fixture with silvered-bowl lamp blends well with the ceiling. Fort Hamilton VA Hospital, Brooklyn, N. Y.

Fort Hamilton photos: Martin Heller

Figure 2—this premature nursery is comfortably lighted to a level of five footcandles by coves containing continuous rows of fluorescent lamps. George Washington University Hospital, Washington, D. C.

Figure 3—lighting in a children's ward. There are two rows of fluorescent lamps behind the shield above blackboard. Rainbow Hospital, Cleveland, Ohio.

Figure 4—many architects prefer to dispense with ceiling fixtures in patients' rooms; the upward component of light from the bed lamps supplies the general illumination. George Washington University Hospital, Washington, D. C.

fittings below the 5' level must be explosion-proof because of the danger of igniting anesthetic gases. (For additional data refer to "Safe Practice for Hospital Operating Rooms, 1950," by National Fire Protection Association.)

air disinfection

The Council on Physical Medicine of the American Medical Association recognizes the value of ultraviolet air disinfection in reducing the known high concentrations of airborne organisms in hospitals. Germicidal lamps should be used only in fixtures specially designed for their use. Only louvered germicidal fixtures should be used in patients' rooms where there is continuous exposure of patients, and where the ceiling height is 10' or less. Germicidal units should be installed in the nursery, in the operating rooms, and in the contagious disease wards, if not throughout the entire hospital.

In the operating room of the Fort Hamilton VA Hospital the fluorescent light fixture over the doors contains germicidal lamps for irradiating the upper air with exposing the people in the room to ultraviolet radiation. The four germicidal lamps recessed into the ceiling on one side of the surgical light can be used to clean the air in the operating room between operations (while the room is cupped) or can be left on during operations and thoracoplastics by shining the face of the surgeon and his staff.
Figure 5—Isolation-ward corridor looking into solarium. Two 60-watt tungsten filament lamps in each recessed louvered fixture provide an average of approximately 10 footcandles. A 15-watt filament lamp in each unit is for night lighting. Fort Hamilton VA Hospital.

Figure 6—the corridor and reception room in the dental section are comfortably and adequately lighted to a level of 10 footcandles with two continuous rows of fluorescent lamps in an indirect fixture. Fort Hamilton VA Hospital.

Figure 7—This surgery corridor is exceptionally well lighted, an average of 40 footcandles, with recessed fixtures containing two 40-watt fluorescent lamps. Fort Hamilton VA Hospital.

Figure 8—This chemistry laboratory is well lighted to a level of 50 footcandles. Two rows of 8' cool-white slimline-fluorescent lamps are used in each fixture. Glass coverplates diffuse the light. St. Francis Hospital, Hartford, Conn.

lighting requirements should be considered in the patient's room; they are: general lighting (5 footcandles); a light for reading (20 footcandles); an escape light for the doctor (100 footcandles); and a night light giving a fraction of a footcandle. Sometimes four different fixtures are used to meet the needs and at other times two or more of these lighting requirements may be built into one fixture.

In considering the general lighting, it is well to remember that, to the patient, the wall at his head is the "ceiling" and the ceiling is a "wall" which he is facing. To provide him with the most comfortable general lighting possible when using a ceiling-hung unit, it is necessary that the fixture brightness, as seen by the patient, be nearly the same as the brightness of the ceiling surrounding the fixture. This rules out enclosing globes and recessed fixtures, as being too bright, and totally indirect fixtures, as being too dark against a bright ceiling. Fixtures of plastic or glass are available that meet the requirements. Perhaps the simplest fixture that approaches the requirements is a silvered bowl lamp with concentric-ring louvers (Figure 1).

Cove lighting can be designed so that it will give very uniform and pleasant general
lighting (Figure 2)—particularly when instant-start, warm-white fluorescent lamps are installed in such coves. However, cost generally rules out cove lighting. A simplification of cove lighting would be a modified form of the fixture used at Rainbow Hospital in Cleveland (Figure 3).

Many hospitals prefer to provide the general lighting by units on the wall behind the patient. In such cases, a reading light is generally incorporated into the fixture, thus making one fixture serve two purposes. Such a solution, however, fixes the position of the beds—which is considered objectionable in some hospitals.

For casual reading, 20 footcandles of light is adequate. In the few hospitals where the patient does prolonged reading before being discharged, a level of 30 footcandles is required.

Where there is more than one patient in a room the light from the reading unit should be well controlled—confining the light, as well as possible, to the patient’s bed (Figure 4).

Many reading lights are attachable to the head of the bed. These units are simple and generally adequate, but the maintenance cost of repairing frayed lamp cords and broken lamps can be high.

Floor stands give a homelike atmosphere, but as such a light might annoy other patients in the same room it should be considered for private rooms only. Maintenance cost of floor stands is usually high.

Sometimes the patient’s reading light can be moved or taken apart to give the doctor a small examining light. In other cases a special examining light can be kept in a nearby closet.

A 25-watt filament lamp in a wall-recessed unit, mounted 18 inches above the floor and provided with a lens or louver to direct the light downward, is generally used for the night light. Another method of providing night lighting, is to have an additional low-wattage lamp in the general lighting fixture. The night light should be shielded from the patient’s eyes and it should be located to avoid distracting shadows.

Mercury switches are suggested for use in the patient’s room to reduce noise. An automatic door switch on closets is a worthwhile refinement.

As the ceiling is a “wall” to the patient, it would be logical to paint the ceiling a pale color—as long as its reflection factor is kept above 50 percent.

corridors
The intensity of light in the corridors outside the patients’ rooms should be approximately five footcandles, to blend with the general lighting in the patients’ rooms. Care must be taken that no corridor lighting fixtures are visible to patients in their beds. Corridors are frequently lighted with units recessed into the ceiling and containing one or more filament lamps. Very pleasant corridor lighting is obtained with a continuous row of slimline fluorescent lamps operating at 200 milliamperes. Crosswise louvering is used. While this system gives a higher lighting level than suggested above, it is a very comfortable system and worthy of consideration. (Figures 5 and 6 illustrate corridor lighting at Fort Hamilton VA Hospital.)

Night lights should be provided in the hall. With recessed fixtures in the ceiling it is a simple matter to have an additional low-wattage lamp in each unit to serve as a night light. If fluorescent lamps are used for the regular hall lighting, a separate form of night-lighting units may be required.

Corridors in other locations in the hospital can take higher levels of illumination (Figure 7).

nurses’ stations
For reading charts, writing, and performing miscellaneous duties, the night light should be provided with a general illumination of 30 footcandles. (Excellent lighting of a nurses’ station is illustrated on page 72.)

laboratories
Here the work is of a precise nature, the laboratory workers must be able to see easily and efficiently to achieve accurate results. Thirty footcandles of light should be the minimum. There should be 50 footcandles on the table (Figure 1) and special provisions for 100 footcandles for such difficult seeing tasks as the reading of pipettes, burettes, etc. Daylight or color of light is desirable, or colorimetric measurements.

offices, laundries, kitchens, etc.
These areas should be lighted to a minimum of 30 footcandles, with good overhead or industrial-type lighting units and in accord with the practice for office and factory lighting. In selecting fixtures, there should be recalled that the psychologist, sanitation carried out elsewhere in the hospital has some influence on these areas.

In offices where difficult seeing tasks exist (auditing and accounting, business machine operation, transcribing and translation, bookkeeping, drafting, design) a lighting installation providing 50 footcandles is advisable.

### RECOMMENDED FOOTCANDLES (maintained in service)

<table>
<thead>
<tr>
<th>Showing</th>
<th>Footcandles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autopsy room:</td>
<td>30</td>
</tr>
<tr>
<td>Consultation rooms:</td>
<td>30</td>
</tr>
<tr>
<td>Delivery rooms:</td>
<td>50</td>
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<td>Emergency rooms:</td>
<td>20</td>
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<tr>
<td>Examination rooms:</td>
<td>100</td>
</tr>
<tr>
<td>Kitchen:</td>
<td>30</td>
</tr>
<tr>
<td>Laboratories:</td>
<td>50</td>
</tr>
<tr>
<td>Library:</td>
<td>30</td>
</tr>
<tr>
<td>Nurses’ stations:</td>
<td>30</td>
</tr>
<tr>
<td>Offices:</td>
<td>30</td>
</tr>
<tr>
<td>Patients’ rooms:</td>
<td>20</td>
</tr>
<tr>
<td>Pharmacy:</td>
<td>30</td>
</tr>
<tr>
<td>Solaria:</td>
<td>30</td>
</tr>
<tr>
<td>Sterilization rooms:</td>
<td>30</td>
</tr>
<tr>
<td>Surgery:</td>
<td>50</td>
</tr>
<tr>
<td>Operating table:</td>
<td>30</td>
</tr>
<tr>
<td>Therapy:</td>
<td>10</td>
</tr>
<tr>
<td>Toilets:</td>
<td>30</td>
</tr>
<tr>
<td>Utility rooms:</td>
<td>20</td>
</tr>
<tr>
<td>Waiting rooms:</td>
<td>30</td>
</tr>
</tbody>
</table>

82 Progressive Architecture
Conspicuous record of names of donors whose gifts built Valley Hospital, Ridgewood, New Jersey, was a requirement given special attention by Eleanor Pepper, Interior Consultant, New York. In selecting colors and furnishings for the new hospital, Miss Pepper had attempted to stress a homelike atmosphere and she wished to avoid placing a funereal plaque or solemn “memorial book” in the prominent memorial alcove at the right of the main lobby (photos below). She turned to Louis Ross, New York painter whose colorful gesso decorations are well known, for a lively translation of the hospital plan that graphically reveals the functions of the various rooms and at the same time lists the donors on scrolls painted below (detail at left). Fine & Miltonberger, New York and Ridgewood, were the architects-engineers.

Photos: Ernst Weitz
Like most tradition-rooted communities, Montgomery, Alabama, has long clung to its architectural heritage and taken a dim view of more recent trends in architecture. It is, therefore, extraordinary that a firm such as Sherlock, Smith & Adams, Architects and Engineers, has been able not only to do reputable contemporary work throughout the area but also to apply it to buildings in almost every category. This renaissance of good architecture in the area cannot, of course, be attributed to this one firm, or even to the increasing group of forward-looking younger firms in the southeast, nor to any single factor. Rather, a happy coincidence of the mood of the times, the performance of these knowing architectural offices that have worked so conscientiously toward contemporary expression, and increased understanding of the dynamic quality of progressive architecture has brought about its local acceptance. Thus, as the illustration below emphasizes, the old and the new often stand in startling contrast; in the foreground, an agreeable instance of the inherited architecture; in the background, the uncompromising mass of the Walter Bragg Smith Apartments in Montgomery, designed by Sherlock, Smith & Adams.

The firm was established in 1945 as Sherlock and Smith, when Sherlock, the engineer, and Smith, the architect, returned from war service. In the following year, Adams, a young Montgomery architect, became the third partner. Chris J. Sherlock, the head engineer and president of the firm, had his professional training at the Georgia School of Engineering and Georgia School of Technology. After numerous local assignments, chiefly with the Alabama Highway Department...
e joined Smith to launch the firm. Sherlock devotes his main efforts to the solicitation of the bigger commissions; hence, spends much time traveling and conferring with prospective clients. Officially in charge of the engineering work of the firm, he now leaves more and more of this in the hands of his capable staff. Moreland Griffith Smith is a graduate of both the Alabama Polytechnic Institute (B.A. Arch.) and l'Ecole des Beaux Arts in Paris, and he received his Master of Architecture degree from M.I.T. After working in offices in Detroit, Nashville, and Montgomery (including his own practice in the last city), he founded the firm with Sherlock at the war's end and now serves as the office treasurer. Although the financial responsibilities have deprived him of the privilege of overseeing design details, he concerns himself with the general tack of each major project, and is insistent on even obscure esthetic points. This dual activity, and his ability to divorce the role of financier from that of esthete, has occasionally been the despair of the treasury, and the delight of his starry-eyed, fresh-out-of-college draftsmen. Richard J. Adams, also an architect, received his B.S. Arch. from the Alabama Polytechnic Institute and worked with various Montgomery firms before becoming a partner in 1946. His chief official functions are with the design and drafting rooms. As one of the staff describes his activity, "he is a tireless and nerveless man who works with no apparent order or system. When his desk or drafting board becomes completely smothered in sketches, overlays, salesmen's samples, and work sheets, he merely appropriates another desk and moves on. But from under these great piles of disorder comes an amazing amount of work, all of which is thorough, correct, and definite."
Montgomery is a growing city—75,000 in 1934; 125,000 in 1951—but still small enough to please the partners, all of whom prefer to live and raise their families in a friendly, smaller community. While Montgomery is their base of operations, however, the practice extends over practically the whole state, excluding only Mobile and Birmingham proper. As a result, "we keep three jeep station wagons covering the state at all times on survey and inspection work."

The only disadvantage they cite about working in a community of this size is that the firm finds they constantly have to combat the idea that the big-city architect must be a better architect or he couldn't survive in the big town; but add, "we seem to get around this fairly well by hitting the client 'first-take the mostest.' " Emphasizing that a firm devoted to contemporary work not only can survive but prosper in such an environment—by enlarging the sphere of activity well beyond the immediate community's bounds—they report that they now have a $6,200,000 warehouse project for the Corps of Engineers; a $3,500,000 warehouse and refrigeration storage job for the Navy; a $1,500,000 hospital offshore for the Corps of Engineers, and a very large overseas project for the Department of Defense. The partners feel that one of the most important ingredients in the firm's success is the fact that they maintain a complete engineering department. While they question whether this is expedient financially, "it has made possible a more eloquent expression of structure as a basis for design," and they would not operate on any other basis. Indeed, they say, "no firm can afford to be without this so-called luxury."

It is noteworthy that both of the architects in the firm—Smith and Adams—had traditional schooling. No small factor in bringing them into the contemporary realm, as well as facilitating local acceptance of the progressive approach, is the close physical and cultural proximity of Auburn, where Alabama Polytechnic Institute is located. Of the firm's 35 employees, the great majority are young Auburn graduates. And out of the ranks of these come the junior designers and junior engineers who serve as job captains in their respective departments.

When a job comes to the office, a party is developed by one of the architect principals. Then, it is handed over to a job captain for development and follow-through, the amount of authority delegated being dependent on the size and nature of the project and the job captain's ability. Daily critiques are held by the principals. This policy has justified itself repeatedly by producing fresh—"and often practicable"—ideas. But, the firm points out, while this is the habit, it is by no means the rule, "for in this office, there is no definite rule . . . The partners know that creative work must not be mortgaged to a mechanical schedule."

In working to produce progressive work in this tradition-imbued area, the partners subscribe to the doctrine that half a cake is better than none at all, although they feel that sometime "we should have been more bold and tried for 3/4 of the cake at least." In dealing with a client "we take him along the road as far as he is ready and willing to go, with the most persuasive means at our command. But we do not claim to be purists . . . Our aim is to do good jobs, so that they will lead to better jobs. And, regardless of the degree of success in particular designs, the sum total, we believe, will add up to a better community."
First unit of a vast Agricultural Center that is being built for the State of Alabama on a 70-acre tract near Montgomery's city limits, this dramatic coliseum has permanent seating for 9060. To be used primarily for fairs, livestock shows, and large statewide meetings, it will also be available for rodeos, concerts, etc.

The eventual center will include an administration building and various auxiliary structures (plot plan, preceding page). Without question, the most remarkable things about this concrete structure are the round plan, roofed by a barrel arch of thin-shell (3-inch) concrete, the axis of which runs at right angles to the axis of the arena, and the fact that the frame and the seating are independent structures. Thus, the greatest height—and consequently, most seating—occurs at the ideal, 50-yard-line zone. The firm of Ammann & Whitney were consultants for the thin-shell roof.

Photos: Jack Holmes; Construction Details: Cleveland Lane
For such events as boxing matches, political conventions, etc., removable seating is placed in the arena, increasing the capacity to 15,000. Height of the coliseum at the center of the arches is 100 feet.
The 286-foot clear span encloses a 2600-arena. Below the seating are two level concourses for exhibits and livestock stalls. Since the roof structure and seat frame were kept separate, the formwork for roof could be reused on each pair of spans. On completion of the roof, construction of the stadium proceeded independently. The formwork will include an outer shell of blue-gray heat-resistant glass, gray porcelain enamel, and gray-and-terra cotta glazed brick. Jones Construction Company built the 81,000 initial structure in fourteen months.
An office building for Dr. E. Kocour (two photos at top), this small frame structure has a waiting room, office, X-ray room, three treatment rooms, and a small lab and dark room. One of the earliest completed health-care facilities designed by the firm is the McLennon Clinic at Opp, Alabama (photos immediately above and at right).

Photos: F. S. Lincoln and Jack Holmes

Rendering of St. Margaret's Hospital, a 272-bed project for Montgomery. Among the plan refinements are oxygen outlets at each bed, complete air conditioning, and an electronic device that allows the nurse on duty to check each patient's respiration without leaving her station.

health facilities
Bullock County Hospital, built under the Hill-Burton Hospital Act in Union Springs, Alabama, is a 30-bed general hospital designed to meet the needs of a rural, agricultural County. Patients' rooms face north or south. To provide efficient operation with a minimum staff, the nurse's station is centrally placed and controls all corridors. A service core in the center of a double-corridor scheme in the nursing wing is lighted and ventilated by motor-operated clerestory windows. Structurally, the hospital is steel framed, with brick cavity walls and structural glazed facing on spandrel walls. The roof deck is vermiculite concrete. Operating rooms and delivery suites are air conditioned. A nurse-to-patient call system allows direct communication between patients and the nurse's station.
Grand Floor Plan

NURSING 15 BEDS

KITCHEN

WAITING

DELIVERY

SURGERY

AMBULANCE

DIAGNOSIS

NURSING 5 BEDS

SERVICE

CENTRAL STORAGE & SUPPLY

1. SUPERINTENDENT
2. GENERAL OFFICE
3. NURSE'S OFFICE
4. NURSERY
5. SUSPECT NURSERY
6. 2-BED ROOM
7. 1-BED ROOM
8. FLOWER ROOM
9. BED PANS
10. UTILITY ROOM
11. JANITOR
12. FORMULA ROOM
13. NURSES STATION
14. DRUG ROOM
15. SNACK BAR
16. STAFF DINING
17. HELPS DINING
18. FEMALE HELP
19. MALE HELP
20. JOINED LINEN
21. SPECIAL STORAGE
22. TOOLS
23. CAN WASHING
24. ANESTHESIA STOREROOM
25. ICE MACHINE
26. DAY STORAGE
27. KITCHEN
28. FAMILY ROOM
29. X-RAY
30. X-VENT
31. CONSULTATION
32. EXAMINATION
33. LABORATORY
34. NURSES LOUNGE
35. EMERGENCY OPERATING
36. CLEAN-UP
37. SCRUB-UP
38. MAJOR OPERATIONS
39. SUITS-STERILIZING
40. DELIVERY ROOM
41. LABOR ROOM
42. STERILIZED STORAGE
43. CENTRAL STERILIZING
44. DOCTORS LOUNGE
45. HOUSEKEEPER
46. CLEAN LINEN

July 1952

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St. Andrew's Episcopal Church, Tuskegee, Alabama, serves an active faculty and student group at Tuskegee Institute. The completed unit is but a portion of the eventual scheme that will include a bell tower, cloistered courtyard, parish house, and church school. It was the Bishop's specific request that the church be "very simple and modern." The site slope allowed a two-level scheme that appears to be a one-story structure from the street. Below the church is an assembly room, opening on its east side to the court. The principaling material is brick, exposed insidout—12-inch cavity walls, 12 feet Spanning from piers built into the walls, wood trusses encased in 1/2" pl support 3" cypress roof decking.
The top chords of the roof trusses extend as outlookers to support the roof overhangs, which shield the high windows between trusses. All exposed wood is natural cypress; the copper-surfaced roof will be allowed to acquire a natural patina. The glazed stair well (left) will connect the future parish house (containing classrooms, offices, and library) to the church. Photos: Jack Holmes Betty Baldwin
Built around a central courtyard on top of a wooded knoll near Hurtsboro, Alabama, this is the country retreat of a prominent local lumberman. A requirement of the program was to utilize the various woods that are his stock-in-trade. Hence, exterior walls are varnished poplar; different rooms feature such native woods as pine, magnolia, pecan, red gum, and hemlock. Floors throughout are oak. To offset the extensive areas of light-golden-brown natural wood, gravel guards and louvered screens were painted light blue; window frames, white.

Photos: Jack Holmes
One of the important contributions the architects have made to the community is the face-lifting of numerous commercial structures. In each design, a careful attempt has been made to establish a character that is appropriate for the type of store involved: Willie's (two top photos) is an elegant version of the typical sports center and pool hall with wide use of natural wood, stone, and leather; Lilienthal's (left) is a men's clothing store, with a front of natural cypress, stone and glass, upper "billboard" of marine-striated plywood stained gray-green; and Bronson's (two bottom photos) is a children's shop with a billboard front, the upper panel of which is natural corrugated asbestos while the lower walls are structural glass and travertine.

Photos: Rodney McCay Morgan; Jack Holmes
On this page, we show the merest sampling of work in other categories that Sherlock, Smith & Adams are doing in their area: the Booker T. Washington School, in Montgomery (two photos above) is a fireproof structure built to a minimum budget; a projected plant for a woolen company (top, right); rendering of the huge Anniston Ordnance Depot, near Anniston, Alabama (center, right) done by the architects for the Corps of Engineers, U. S. Army; and (below, right), a court room in the DeKalb County Court House, Fort Payne, Alabama. The firm has also done several of the big buildings in the State Capital group in Montgomery and has developed a "grand scheme" incorporating all existing buildings with several proposed new units into an integrated civic center.

Photos: Jack Holmes; F. S. Lincoln
sprayed-on vinyl-plastic sheeting

by Guy G. Rothenstein*

applications, it was first used for packaging industrial equipment for outdoor storage or overseas shipment; then for repair and rehabilitation work on existing structures. Roofs and stucco, brick, and concrete walls were successfully covered with plastic spray. A good number of these applications were made in Florida and in the Midwest. After some time, the material was also applied to some new structures as a weatherproofing material as well as an interior wall covering. An important early use, developed in 1948 by the Department of Agriculture was for sealing tobacco warehouses during the fumigation process. Through all these various applications, members of the architectural profession became, little by little, acquainted with plastic-spray materials and aware of the tremendous potentialities for new construction.

The revolutionary aspect is that here is a durable material which can be applied by simple means on surfaces of any kind, size, and shape, to form a flexible, continuous, jointless “skin,” not affected by movements of the structure. Furthermore, this “skin,” of leatherlike texture, has an attractive appearance and comes in a large range of colors.

One of the main struggles throughout the history of building construction has been man’s effort to master the technique of joining materials. Sprayed-on plastic sheeting is one of the greatest factors for progress in the struggle, to date. Actually, the construction of the joint between structural materials becomes in many respects secondary, because the sheeting covering the joint will now perform vital functions which previously had to be engineered, often at great expense, within the materials.

Other unique features of sprayed-on-vinyl sheeting are that it is adaptable to three dimensional shapes and that there are no limitations as to size. A convex dome, several hundred feet in diameter, can be as easily covered as a concave bowl a few inches in diameter.

longevity

For all building materials, the question of length of life is very important. Resins used to formulate these materials are completely polymerized and the sheeting is formed only by the evaporation of solvent; no embrittlement or shrinkage is experienced with the aging of the material. Unpigmented vinyl, however, should not be exposed to the rays of the sun. The materials should always be pigmented with aluminum, vinyl-plastic dispersions in colors, or both. If used for weather protection, it is important to specify the material in sufficient thickness. Generally, horizontal exterior surfaces are more exposed than vertical ones; therefore, the recommended thickness for a horizontal exterior surface is at least 30 mils.

The writer has examined sheetings that had been exposed for eight years: they did not show any sign of wear or deterioration. Accelerated weather tests indicate actually a much longer life span for these materials. It may therefore be considered a conservative conclusion that plastic spray will still be in good condition after 8 to 10 years of outdoor exposure and 12 to 15 years of indoor use. After such periods of time, it is advisable to spray an additional 10 to 15 mils on the original sheeting. The plasticizer contained in this material will partially penetrate the old material and has the tendency to reactivate it. This rejuvenation process may be repeated during the normal life span of a building. (Contrary to paint, the strength of vinyl-plastic sheeting increases as its thickness is built up.)

Another suggested means to co-ordinate the life span of sprayed-on vinyl-plastic sheeting with the life span of structures is to apply mastic or vinyl-based paints.
as top coatings, then to replace this top coat when required.

new concepts
If the concept of a “continuous skin” over structures is fully analyzed, it has the greatest repercussions on the selection of the other materials going into the structure, and their methods of erection.

Facts: Materials classified for “interior use only” may now be used for exterior wall construction as well. Precast elements, building panels, or boards may be erected with butt joints. Such units may be held in place by means of countersunk nails, screws, or bolts which will not be visible through the surface of sprayed-on vinyl-plastic sheeting.

Examples: In frame construction, the materials used on the outside of the wall may be simply plaster, ordinary plywood, or boards of gypsum, fiber, or cement asbestos.

In fireproof construction, columns, spandrels, or concrete masonry no longer require the application of heavy and expensive brick, stone, or metal facings.

In load-bearing wall construction, walls built of cinder or concrete block faced with plastic spray are attractive and absolutely waterproof.

Canopies, balconies, and other projections of buildings, as well as fascias and soffits, can now be covered with the same “continuous skin” as the vertical surfaces.

Roofs (except for load requirements) may be built in the same manner as walls. Projections such as upset beams, skylights, etc., do not pose any flashing or water-proofing problems.

exterior surfaces
From an economic viewpoint, the greatest interest lies in the use of sprayed-on vinyl-plastic sheeting as a facing material for the outer face of exterior walls of multistory structures of fireproof construction.

In general, the most common method for this type of construction consists of a skeleton of fireproofed steel or reinforced concrete, filled in with back-up masonry and windows; columns, spandrels, and masonry are then faced with a more expensive type of brick or other masonry materials. This “masonry curtain,” supported by shelf angles, is expensive and its weight adds further cost to the skeleton and its foundations. The windows set in the openings are called for weather-proofing. Even though this type of construction is referred to as “permanent,” experience shows that repairs and maintenance are needed over the years; the windows have to be recalked, joints re-pointed, and the entire façade steam-cleaned.

If the realities of maintenance for any type of wall are recognized, tremendous savings in construction cost result when the “curtain” of masonry materials is omitted and replaced by vinyl-plastic sheeting sprayed on columns, spandrels, and back-up masonry. This original covering will stand up for at least 8 to 10 years; after that time it will have to be sprayed again as part of the regular building maintenance. In evaluating the savings, it should be considered that the cost of concrete and back-up masonry for a plastic-sprayed wall will be slightly higher because of desirable higher standards of workmanship. Besides the omission of the masonry curtain, however, savings will result through the absence of calking and additional materials for sills (the plastic spray seals the joint between window structure).

Buildings faced with sprayed-on plastic sheeting are of monolithic texture and are washable. They can be practically color and can do wonders to break up the monotonous appearance of our cities. (Point should be of special interest to housing authorities and builders of developments.)

The same principle of exterior “plastic skin” may be applied to nonfireproof construction by substituting more econon materials and methods of assem “under the skin.”

Sprayed-on plastic sheeting also fits excellent roofs; however, for a roof of conventional design, there seems to be a particular saving unless special problems such as unusual movements of the structure or upset beams, skylights or open requiring flashings and counterflashings are present which would increase the cost of conventional roofing or make it impractical.

interior wall surfaces
Of equal importance to the new use of construction of walls and roofs is the interior use of sprayed-on vinyl-plastic sheeting which bring about a complete new concept of finishes.

In geographical areas where winter heating is required, walls covered outside with a plastic spray “continuous skin” should also receive an interior vapor seal. This is necessary to prevent vapors captured inside the structure from attacking the insulation and wall materials. The conventional vapor seals usually placed inside the wall have the disadvantage of leaving the wall finish exposed to attacks by vapors. If, instead, pl

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**CHARACTERISTICS OF SPRAYED-ON VINYL-PLASTIC SHEETING**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Exterior: 8 to 10 yrs</th>
<th>Interior: 12 to 15 yrs</th>
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</thead>
<tbody>
<tr>
<td>Longevity (pigmented):</td>
<td></td>
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</tr>
<tr>
<td>Weight (2 oz. per sq. ft)</td>
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<td></td>
</tr>
<tr>
<td>Adhesion (on glass: up to 25 psi)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On porous materials: nonstrippable</td>
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<tr>
<td>Tensile strength:</td>
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<td>1200 to 1400 psi</td>
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<tr>
<td>Elongation:</td>
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<tr>
<td>Flexibility:</td>
<td>-32F: can be bent 180° over a 3/8&quot; mandrel</td>
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</tr>
<tr>
<td>Color</td>
<td>Natural: ivory, grey, opaque. Pigmented with aluminum: metallic grey. Pigmented with dispersions: all colors</td>
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</tr>
<tr>
<td>Texture</td>
<td>Smooth with leatherlike grain</td>
<td></td>
</tr>
<tr>
<td>Abrasion (loss of 75 mgm after 5000 revolutions of Taber abraser)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wear (loss of .001&quot; after 1000 revolutions of Taber abraser)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**Radioactive resistance:** Reduces the penetration of radiation into the surface to which applied.

---

**Chemical resistance:** Not affected by acids, petroleum solvents, aromatic gasoline, alkalis, alkaline chlorides, oils, fats, grease, and salt.
is applied to the interior surface wall, it forms a vapor seal at the location and becomes at the same time a decorative finish, not vulnerable to the corrosive structures that are air cooled during summer, the "continuous skin" vapor seal on both surfaces of the exterior wall is highly desirable.

The usefulness of plastic spray vapor seal, this material makes a desirable interior wall finish, the quality which should not be restricted to the side of exterior walls. It may be wherever it is desirable to have a surface of better wearing qualities than paint or wallpaper. Pigmented with colorless vinyl-plastic dispersions and sprayed in thicknesses varying from 10 to 30 mils, plastic spray forms a jointless sheet that attracts appearance, in performance similar to the well known and used calendered vinyl-plastic sheet which are cemented to walls. The obvious advantage of the sprayed-on plastic wall covering is the complete absence of joints and a better bond to the wall. Another advantage is that three-dimensional shapes can be covered without difficulty.

Mostly because of the simplified installation process, the plastic-spray wall coverings are considerably lower in cost than comparable cemented-on types. In instances where the maintenance budget of a building is considered while selecting wall finishes, this new material will, over a period of years, actually produce considerable savings over paint. This fact is being recognized by building owners. For instance, the New York Waldorf-Astoria Hotel has used plastic spray for a number of bathroom walls and ceilings, and one of the Henry Hudson hotels has made an even more extensive use of this material. Other significant applications are in the elevator lobbies of the new Lever House and the Knoll Associates New York showroom, as well as in various public areas of apartment houses, and, to some extent, in homes. Considerable interest has been shown by architects already acquainted with this material, in its application on cinder or concrete block and on lightweight masonry materials such as precast wood-fiber cement panels, etc., in order to save plastering and painting and yet obtain smooth, washable surfaces. With some care to the treatment of the joints, practical and handsome surfaces may be obtained in this manner. When applied on plaster, the finish coat of plaster can be omitted, which results in further savings.

**new architectural details**

Besides the use of these new materials to cover entire exterior and interior building surfaces, there are numerous smaller applications where the combined characteristics of vinyl-plastic sheeting and its spray application permit the development of simplified architectural details. This technique stays entirely within the concept of conventional construction.

Membrane waterproofings, flashings, copings, and corrosion-protection of metals can be done advantageously by the plastic-spray.
spray method. The plastic-spray gun will become a commonly used tool on construction jobs, and will eliminate the need for many expensive and elaborate details, saving considerable drafting and specification time for the architect.

prefabrication
Poor solutions of joint engineering have caused many systems of prefabrication to fail. The entirely new concept of waterproofing and vaporproofing joints on the surface, brought about by plastic spray, has most interesting possibilities for prefabricated civilian and military structures.

One system designed by the writer consists of shop-finishing panels with plastic spray, then coating the specially designed joint in the field by a simple vinyl-plastic application—it can even be applied by brush. Shop and field coats will fuse together to form a flexible “continuous skin.”

industrial construction, mechanical work
In view of the excellent protection which vinyl-plastic provides against corrosion of any sort, the spray application of this material is of greatest interest to industries with either high humidity conditions (bakeries, dairies, laundries, etc.) or problems of acids, alkalis, salt spray, etc. Interiors, exteriors, ducts, hoods, tanks, and miscellaneous equipment may be lined with plastic spray. In New York’s new Lever House, an air shaft built of cinder blocks is faced with this material.

Of special interest is the use of this material where radioactive radiation occurs. As a strippable film, this material is used extensively by the Atomic Energy Commission. Used as a permanent finish, it will greatly reduce the penetration of radiation into surfaces to which it is applied, and it may be cleaned with a solution of nitric acid and live steam after exposure. A recent development of pigmenting sprayable vinyl plastic with lead powder, permits the spraying of lead linings in areas to be protected (X-ray rooms, laboratories, etc., and also for civil defense purposes).

flooring
Plastic spray applied to heavy felt or foam rubber pads forms a highly resilient and sanitary wall-to-wall carpeting. Joints between the pads (these come in rolls up to 12’ widths) and the baseboard may be sprayed over so that the entire area, regardless of size, will form a waterproof and washable surface.

This flooring has approximately the same wearing qualities as linoleum and it is excellent for stores, hospital rooms, nurseries, halls, corridors, stairs, bathrooms, kitchens, etc.

fabrics
Vinyl plastics of the strippable types, sprayed on engraved, embossed, or textured surfaces, form very attractive three-dimensional sheetings when stripped off. Various structural-glass and embossed-metal designs are readily available for this purpose.

furniture
One of the most exciting applications of plastic spray is for upholstered furniture. Sprayed directly on foam rubber, it will mold its contours and form a seamless, washable, leatherlike cover, expressing the intended design shape in its purest form. Plastic spray is also an excellent finish for wood, metal, or fiber furniture as imperfections of surface or joint will not show in the finished piece. Color and washability suggest its use for children’s furniture, store fixtures, etc.

sculptures
The quality of webbing of plastic spray which permits the spanning of open spaces up to 24” has very interesting possibilities for sculptural applications, where the tension of materials defines pure geometric forms.

miscellaneous applications
Weatherfast outdoor movie screens can be obtained by spraying aluminum- and white-pigmented vinyl on stucco or concrete surfaces. The same material may be applied to interior walls which then become decorative washable surfaces, also fulfilling the function of projection screens.

Swimming pools of any type of construction may be lined with sprayed-on vinyl-plastic sheeting.

One manufacturer of insulating materials is considering a plan to enclose glass-fiber insulation with sprayed-on vinyl plastic in order to provide a vapor seal and to facilitate the handling of the material.

application
Despite similarities in the type of material used, the spraying of vinyl requires a completely different technique than the spraying of paint, and technique of plastic spraying may be considered as a new craft. In view of fact, and because of the important function which plastic spray is to fulfill in construction, this work should be formed only by highly trained crafts available through contractors specializing in architectural applications of this material, such as 20th Century Building Tampa, Florida, or Progressive Industries Inc., of New York. As to specifics, it is recommended that this work be classified in a separate section under the heading: Sprayed-on Vinyl-Plastic Sheetings.

The spraying is a very clean operation because the liquid plastic, even after atomized, does not form a mist. Ther operators do not have to wear face masks and only a few inches immediately adjacent to the sprayed area need to be covered or masked. The odor of the spray, somewhat unpleasant during spray operation, dissipates comp within a few hours. The cured material has no odor or taste whatsoever and is absolutely non-toxic.

outlook for the future
Already, original design solutions on this new material have come from drafting boards of professionals. Two and Rudolph’s guest cottages at Sarasota, Florida, with their plastic-sprayed curved under tension, are presented following P/A feature. Engineer Frey Severud, besides proposing this material for atomic blast blowout panels and partitions (page 70, September 1951) is considering roofing an arena of a span by stressing wire mesh over a steel structure and spraying a vinyl roof directly on this mesh.

The often attempted perfect geometric form for “floating structures” on stilts now be materialized with unbroken lithic surfaces of even texture and controlled color on all planes of the structure.

Undoubtedly, plastic spray in the hands of designers with imagination, fulfilling the possibilities of this skin, will bring about great changes in the design, detailing, and construction buildings.

* In New York City this work is generally performed by the cement finishers.
guest houses with plastic roofs

location | Sarasota, Florida
architects | Twitchell & Rudolph

Section through Living Room looking East

Ridge Section

Floor Plans
One of the most recent architectural applications of sprayed-on plastic sheeting (pages 99-102) is in the construction of the roofs of these two small guest cottages that were built for rental on an estate on Siesta Key.

As indicated in the sectional drawing on the preceding page, the tent-like tension roofs are made up of catenary curves formed by flat $\frac{3}{8}$" x $\frac{1}{2}$" mild steel bars, spaced 1'-4" on center, to which are clipped large sheets of $\frac{3}{16}$" insulating building board, over which there is a 1" layer of glass-fiber insulation which, in turn, is surfaced with the sprayed-on vinyl plastic, 1/16" thick. Tension and compression members along the north and south walls of the structures are designed to compensate for the inward thrust of the roof. Soffits of the portions of roof that project beyond the building line are surfaced with plywood.

Opening out to the south to overlook a grove of beautiful oak trees, the cottages are so located that they cannot be seen from any other structures of the property—the main house, a studio, a swimming pool, and another guest house. Living privacy for each cottage derives from staggered placement of the units.

The framing of the houses, which built on reinforced-concrete grade on piles to wet sand stratum is of and-lintel construction down the and along the north and south wall exterior masonry walls are of lime flooring is terrazzo, and partitions a wood on standard stud frame. To air movement, certain window and operable glass jalousies in place of windows. Electric unit heaters and fireplaces supply the heat needed.
The two cottages are blended together by use of the same structural systems, general pattern of fenestration, and same materials. In the living room of the larger house (across-page and immediately below) the entrance is around a small interior garden, and the exterior walkway pattern extends inside the house. Photos: Jack Holmes

The west wall of the smaller cottage (two photos above), windowless except for the glazed gable end, and the offset placement, provide privacy for both units. The detail (below) shows the pattern of the curved plastic roof, insloping paired posts, and 9⁄16" steel tension rods that keep the whole structure in equilibrium.
Examples of HB-construction in Sweden: Framework for a barn erected at Staløf; span 40', height 43' (above). Decking for bridge over Viskan River at Rydal is carried on four HB-beams, continuous overhead piers supports; spans are 49', 66', and 49' respectively (below).

An unusual form of wood-beam construction that will carry heavy loads and span long distances economically was used recently in a recreation hall-theater at Naples, Maine. It is believed to be the first wood-truss framework of its kind to be erected in this country.

Known as the HB-beam system, this type of laminated wood trussing (formed of standard timber sections) is named after its inventor, Prof. Hilding Broussineus of the Royal Institute of Technology, Stockholm, who holds the patent in Sweden and in several other foreign countries. Since its inception in 1939, the system has been employed in the construction of over 2000 factories, schools, warehouses, aircraft hangars, theaters, bridges, and other diverse structures in many parts of the world. In their simplest form, the beams consist of laminated webbing (two layers of 1” boards nailed at right angles) flanked at top and bottom with a laminated flange. Dimensions are computed on the assumption that the flanges take the entire bending moment on the beam, and the web resists all shearing force. The carefully calculated methods of nailing are reported to attain tangible savings in materials and labour and, as well, eliminate the many ties and braces found in bolted structures without loss of structural strength. Beams show considerable reduction over-all dimensions and dead weight compared with timber-framed girder equivalent strength. These factors contribute to easier handling and erection; furthermore, the beams are fabricated with ordinary woodworking tools.

The basic system of the HB-beam is extremely flexible; it may be applied straight, flat-topped, and continuous too and to two- and three-hinged, rigid-arches. These arches can be fabricated in any roof pitch, any height, and to loading that the building requires.

**HB-arches use standard timber sect**

**air and temperature control**

Low-Cost Gravity Furnace: oil- or gas-fired warm-air furnace, with bonnet output of 75,000 Btu, designed primarily for low-cost housing. Casing measures 52” high, 22½” wide, 28½” deep; unit is factory assembled with full-sized bottom plate to prevent air leaks when installed on uneven floor. Delta Heating Corp., Trenton 8, N.J.

Horizontal Winter Air Conditioner, Type 253: oil-fired unit, available at present in one size only, 110,000 Btu; may be suspended as unit heater in all types of residential installations, also in garages, shops, schools, and other commercial buildings. Unit is completely up-draft in design; casing is lined with asbestos insulation laminated with aluminum foil, serving to reflect heat back into heat exchanger and also reduce noise. L. J. Mueller Furnace Co., 205 W. Oklahoma Ave., Milwaukee, Wis.

Vertical Discharge Fan: “flat-as-a-flounder” design allows residential installation in lowest pitched roofs. Unit is framed of 1” seamless tubing, housed in heavy-gage steel, is installed unattached, riding vibration- and noise-free in foam rubber. Available in five sizes with either 1/3 or 1/2 hp motor. Murray Co. of Texas, 3200 Canton, Dallas, 1, Tex.

Circle Air Electric Convection Heater: electric convector draws in cold air through lower vents of metal cabinet enclosure; air then passes around fins which warm it to desired temperature; upper vents of cabinet distribute warm air into room area. Unit can be recessed or set against wall. Suitable for heating entire house or sections only; may also be installed in stores, plants, new construction, etc. Paley Mfg. Corp., 244 Herkimer St., Brooklyn 16, N.Y.

Home Air Conditioner: compact summer air conditioner converts any forced warm-air heating system into all-year conditioning system; can be installed in either new or existing homes. Built in 2, 3, and 5 hp models; heavy glass-fiber insulation used throughout for thermal and sound insulation. U. S. Air Conditioning Corp., 3300 Como Ave., S.E., Minneapolis, Minn.

**doors and windows**

Insulux Panel-Vent: glass block ventilator, for installation in glass-block paneling; consists of actual half-block in pattern matching surrounding panel blocks, and hinge which swings outward whenever ventilation is desired. Aluminum screen on inside keeps out insects. Can also be used alone with concrete, brick, or other materials to provide ventilation for hallway, garage, closet, bathroom, etc. No special tools or equipment needed to install. American Structural Products Co., Nicholas Blvd., Toledo 1, Ohio.

Ra-Tox Shades: made of strong, resilient, basswood slats woven together with heavy-duty seine twine into rugged, durable fabric, said to outwear shades made of cloth or similar materials; resists rain, sunlight, grease, fumes, dirt, and abuse. Originally designed for industrial use, now available for school applications. Wide range of colors, including natural finish. Hough Shade Corp., Janesville, Wis.

Pella Wood Folding Door: fully aseemed "accordion" door that folds against jamb, consists of wood panels, 3½” thick, joined together by series of sealed hinges acting as springs; door is ported at top by metal track. Availal sizes up to 12’ in height and 20’ in Holsscreen Co., Pella, Iowa.

**electrical equipment, lighting**

PB Electri-Center: general purpose breaker, for use in commercial and industrial buildings for control of lighting and ancillary circuits. Unit contains both a two 15 amp. and two 20 amp. breakers, plus two additional breakers, filler plates, and (flush and surface) are supplied at full purchase to suit specific needs. Availal 14 or 20 circuit. BullDog Electric Pry Co., 7610 Joseph Campau St., Detroit Mich.

“Chieftain” Commercial Fixtures: open-type fluorescent fixtures, finished in baked on enamel, phosphatized to provide maximum resis to oxidation in installations where corrosion prevails. Adaptable to all replacements. Gibson Mfg. Co., Atlanta, Ga.

Hinged Drum Fixture, Series 110 candlestick fixture, enclosed in glass “bowl,” utilizes ventilating and insulating vice that insures cool operation and prevents peeling discoloration and breakdown of bulbs; particularly suitable for areas of continuous lightging operation is necessary. Especially designed hinges simplify replacements, eliminating necessity
of HB-structures is achieved with single cranes, derricks, or winches. Any staging is necessary.

Beams may also be used for portal arch frames; transportation difficulties, however, preclude complete fabrication before delivery. To overcome this, a diagonal construction has been devised which allows the frame to be set on site from prefab straight sections, approximately 80’ and joined at the top. The beams are delivered in lengths of 48’, 60’, and 72’ standard.

The roof trusses in the Naples theater (above) were constructed by a Maine builder from plans sent by the HSB Building Association of Sweden, especially for that building. John M. Dennerlein, New York architectural designer of the theater, is the exclusive agent in this country for the HSB Building Association; his address: 209-45 112 Ave., Queens Village, N.Y.

Progress photos of recreation hall-theater at Naples, Maine. Design data for beams: 3-hinge type, 11’-6” on center; 48’ span with 12” cantilever for porchroof and 24’ height from floor to crown. Flanges are 2” x 6” Douglas fir while webs consist of two layers of 1” x 6” local spruce. Portable saw and hammers were only equipment used to make the trusses.

Photos: Roger Flint

**Glass Bowl.** Gruber Brothers, Inc., 1 First St., Brooklyn 11, N.Y.

**“T” Lights:** weatherproof, conical, horizontal fluorescent fixtures, commonly wired for immediate installation, for or on use. Units are 30” wide, in 4’ and 12’ lengths, can be fitted to existing poles, some already equipped with manufacturer’s 9” or 12” standards. Guardian Light 301 Lake St., Oak Park, Ill.

**Concrete Floor Hardener No. 860:** clear, colorless liquid forms dense, nonporous, flintlike surface on concrete floors to withstand extra heavy traffic; easily applied by brush or mop. Recommended for use in warehouses, garages, schools, institutions, and factories. Monroe Co., Inc., 10703 Quebec Ave., Cleveland 6, Ohio.

**Apex Anti-Rust Paint:** aluminum paint for application over rusted surfaces (no wire brushing or scraping necessary) to prevent further rust action. Recommended for protection and preservation of new metal against future rust attacks. One-coat coverage sufficient, even over black surfaces. Paramount Industrial Products Co., University Center Station, Cleveland 6, Ohio.

**Hydrocide S.X. Colorless:** invisible penetrating water-repellent silicone compound for all types of above-grade, porous masonry; sheds dirt, controls efflorescence, will not discolor or wear away. L. Sonneborn Sons, Inc., Building Products Div., 80 8th Ave., New York 11, N.Y.

**Sanitation, water supply, drainage**

**Electro-Matic Water Softener:** automatic, home water softener, electrically operated, enables homemaker to reduce soap consumption by as much as 80%, depending on hardness of water supply. Unit contains special water-softening resin element, “Permutit Q,” and simplified valve assembly which reduces number of moving parts, thus simplifying service problems. Manufactured in two sizes.

**Permutit Co.,** 330 W. 42 St., New York 36, N.Y.

Model “B” 4” Electric Submersible Pump: packaged, 3/4 hp unit developed especially for domestic water supply system. Operation is noiseless since pump and motor operate completely under water. Compact size permits its use in wells as small as 4” in diameter; capacities range from 520 gph at 150 ft. to 100 gph at 320 ft. Sumo Pumps, Inc., 375 Fairfield Ave., Stamford, Conn.

**Specialized equipment**

**“N” Line of Surveying Instruments:** new, moderately-priced line consists of four instruments: convertible transit-level, heavy-duty 12” Dumpy level, service transit-level (farm level), and hand level. Constructed of brass and bronze; simplified design combines rugged construction plus precision required by builders’ and contractors’ applications. C. L. Berger & Sons, Inc., 37 Williams St., Boston 19, Mass.

**Upright Freeze Pantry:** 19 cu. ft. home freezer stores 665 lbs. of food, yet occupies less than 1 sq. yd. of floor space. Among other desirable features, are electronic warning alarm and signal light that guard against food spoilage should temperature rise for any reason. No special installation required; plug fits into any 110v a-c outlet. Ryan Industries, Refrigerator Div., 1025 Excelsior Ave. E, Hopkins, Minn.
MANUFACTURERS' LITERATURE

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

air and temperature control


1-180. Ess Air-Conditioning Smoke Indicators (521), 4-p. bulletin describing three types of smoke-control alarm systems that automatically stop air circulation within air-conditioning ducts and give visual or audible signals at first sign of smoke; acts as guard against panic hazards, fire and smoke damage. Features, mounting diagrams, photos. Ess Instrument Co., 96 S. Washington Ave., Bergenfield, N. J.


1-183. Air Handling, Air Cleaning, AIA 300 (600), 60 p. catalog offering complete line of equipment for air-conditioning and air-handling systems; industrial units, application charts, capacity and dimension tables, engineering data, photos, drawings, cross-reference index. Westinghouse Electric Corp., Sturtevant Div., 200 Readville St., Hyde Park, Boston 36, Mass.

construction

3-151. Precast Prestressed Concrete Slabs, AIA 4-K, 8-p. bulletin on hollow-core build-

ing slabs, capable of clearing spans up to 26', for roofs and floors. Diagrams illustrating uses with all types of construction; load chart, advantages, specifications, new ways of installing heating systems, including two hot-water radiant methods and a warm-air split system that combines circulating air with radiant floor. Flexicore Co., Inc., 1932 E. Monument Ave., Dayton 1, Ohio.

3-152. Concrete Masonry Handbook, AIA 10-C (227), 64-p. manual designed to assist architects, engineers, and builders in designing or constructing masonry buildings that meet modern requirements, varying with purpose of building. Latest recommended practices in concrete masonry construction, suggested details, technical information based in field and research laboratory, photos, drawings, bibliography. Portland Cement Assn., 33 W. Grand Ave., Chicago 10, Ill.


3-155. Use Marble Window Tools, 4-p. folder illustrating step-by-step method of setting marble window sills which can be used with any type of sash—wood, steel, or aluminum. Details of window installations in various types of wall construction. Carthage Marble Corp., Carthage, Mo.

3-156. For New Design Flexibility (2287), 4-p. folder showing in detail the daylighting function of new 12" light-directing and light-diffusing glass block, also 8" glass block. Recommended elevations, advantages. Pittsburgh Corning Corp., 307 Fourth Ave., Pittsburgh 22, Pa.


3-158. Steel Windows and Doors, AIA 16E (1952), 111-p. catalog. Specifications and installation details given on complete line of residential, commercial, industrial, and institutional steel windows and doors. Information, data, and sizes, photos, thumb index. Truscon Steel Co., 1300 Albert Youngstown 1, Ohio.

4-187. SLI-D-O-O-R (1137), 4-p. describing prefab, ready-to-install sliding doors made of laminated wood-flake p guaranteed not to warp; equipped with sliding doors in three-door units, advantages, application and installation data. U.S. Plywood Corp., 544 St., New York, N. Y.

4-188. 62% More Overhead Daylight (290), 4-p. describing prefab, ready-to-install sliding doors with glass blocks; sliding doors in three-door units, advantages, application and installation data. U.S. Plywood Corp., 544 St., New York, N. Y.

4-189. Electric Availability Is Important (287), 4-p. bulletin on importance of electrical appliances in residential living areas, for convenient and safe operation.

5-121. Electric Availability Important Architectural Design, 16-p. booklet. Recommended layouts plans for wiring devices for residential living areas, for convenient and safe operation.

5-122. Exit Lighting, AIA 31-F-2 (341), 8-p. bulletin supplement containing 31 different types of electric, directional sign lights. Types of use, sizes, specifications, specifications, names, and location of manufacturers.

5-123. Auxiliary Electric Power for Public Utilities (A-292), 8-p. bulletin. Types of electric power for public utility need. Specifications given units from 400w to 5000w size in both a-c and d-c models; also brief descriptive housed standby plants and automatic controls; photos. D. W. Oan & Sons, Inc., University Ave., S.E., Minneapolis 5, Minn.


5-125. Flex-A-Power (TEB-2), 50-p. catalog. Details of various types of trolley busways, each of which serve specific distribution system requirements. Sign characteristics, features, application...
19.254. BruteX (A-2029), 4-p. folder describing a new tracing cloth, resurfaced to a velvet matte finish that will receive graphite from the hardest pencil grades; will not smudge under ordinary use, yet is easily erased with water.

Advantages. Charles Bruning Co., Teterboro, N.J.

19.255. Hospital Equipment Layout and Planning Service

19.256. Design Achievement in Treatment Room Furniture

19.257. Thermatic System (T), 8-p. bulletin describing automatic process control system for surgical sterilizers, which insures safe standardization of time-temperature performance, mechanical accuracy, and safety for patients: readily adaptable to both old and new sterilizer installations, geared to accommodate all types of loads. Safety and other features, operational data, photos. Wilmot Castle Co., 1255 University Ave., Rochester 7, N.Y.

19.258. Institutional Cabintories and Casework, 4-p. folder showing typical applications of wood cabinetry and casework in institutional areas. Specifications, photos. Wood-Metal Industries, Inc., 101 Park Ave., New York 17, N.Y.


19.260. Tiles and Faience, AIA 23A, 16-p. catalog presenting groups of imported and domestic faience and decorative, hand-made tiles, all designed by international ceramic artists. Illustrations, sizes. Vanderlaan Tile Co., 103 Park Ave., New York, N. Y.

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patients' rooms
by Eugene D. Rosenfeld, M.D.*

Hospital administrators would be to have the interior design of hospital rooms handled by professionals. The design and equipment of patients' rooms in particular, have long been the interest of well meaning, well-meaning Ladies' Auxiliary. Professional advice is badly needed in color selection, furnishing, lighting, accessories, materials used in the patient areas of the room. The patient's room is no longer a temporary home on the way to recovery. As such, it deserves the same attention that is given to the design of a home, or even an office or public building.

A the administrator's point of view, a patient's room should be of such dimensions as to require a minimum of maintenance and housekeeping, while

- fixtures should be flush-mounted; and door frames and bucks should flush with the wall as possible; radiation and interior sills should be used; all oxygen outlets, suction, electrical receptacles, intermediate equipment should be flush-mounted with stainless steel plates (or some easily maintained material); all wall and wall-to-ceiling joints be smooth and without moldings. Beings are best treated with some maintained, soundproofed surface, ached a subdued eggshell (or off-white).

- Ceilings, walls, and floors should be treated with a material that can shed easily and will not streak. In particular, require a material, some of the new plastics, which are stain, crack, chip or mar when other items of equipment are thrust upon them. Painted walls must be refinished every two or three years; investment able and appropriate wall covering is nical in the long run and an esthetically important step.

- Draping is always a difficult problem—polishing is to be avoided. Slick, highly polished floors are dangerous, particularly in patients' rooms. Probably the best material available, but one of the most expensive as well, is cork. The floor coverings most widely used in hospitals today are asphalt or rubber tiles, or linoleums with flush-cove bases. Such floors are satisfactory and certainly preferable to wood, carpeting, or most other types.

- Lighting of patients' rooms is seldom given enough thought. It would be of great interest and therapeutically valuable, perhaps if experimentation in hospital lighting were encouraged to determine the effect of various intensities, hues, and lights upon hospitalized patients, their rates of recovery, their response to therapy, etc. Perhaps, a rheocontrolled system regulating hue, intensity, and color will some day be standard equipment in hospitals and available as a therapeutic device. Present-day patients' rooms all too frequently contain overhead fixtures and exposed lamps which are disturbing to bedridden people. Indirect lighting is always desirable. Floor lamps, found so often in hospital rooms, are hazardous; cords get in the way or become frayed and eventually become fire hazards. If proper sources of light are provided for reading, safety, and examination purposes, general illumination may be kept at a minimum. For these purposes, wall-mounted lamps, with direct and indirect beams, using fluorescent bulbs of the new daylight variety, so designed as to yield general and specific illumination, best meet the requirements. They have the additional advantage of not producing heat and, of course, use less electricity. Lighting should be controllable both by the patient and the nurse, and adequate night and safety lights are needed in a patient's room.

- In designing the furniture and accessories for patients' rooms, thought should be given to the scale of the furnishings in relation to the room. The present trend is toward lighter, smaller pieces and in-the-wall storage units. It is vital that all materials used in hospital furniture be fireproof, stainproof, chip-proof and devoid of unnecessary frills, carvings, surfaces, and joints. A minimum number of pieces, consistent with actual needs and aesthetic sensibilities, should be used. Overcrowded rooms are a danger to patient and staff, require more upkeep, and are generally unattractive. The average patient requires only a catch-spring-equipped bed, a bedside table in which most of the utensils for patients' care can be stored, an overbed table-vanity combination, a rubber mat covered stool, and several chairs for visitors.

- Fabrics for draperies, curtains, and upholstery should be carefully chosen for durability and beauty. Those which are flammable, dust-catching or difficult to keep clean should be avoided. We should not be afraid to use color in hospital rooms, to harmonize color schemes, to attempt to achieve esthetically attractive effects. Paintings, sculpture, and ceramics, intelligently used, would help reduce the atmosphere of cold sterility of the hospital room of the past.

The ideal patient's room—the administrator's dream room—would be a single-bed room which could be converted to a two-, three-, or four-bed room in a few seconds when it is desirable for a patient to have company. It would be inexpensive to build, equip, maintain, and service. It would satisfy the esthetic needs of the patient, the staff, and visitor alike. It would seldom have to be re-equipped, refurnished or re-decorated; yet it would always look new, clean, fresh, and attractive. It would have a pleasant view, be soundproofed, air conditioned, and so designed that color harmony and lighting could be modified at will. All the necessary equipment for complete nursing service of the patient would be immediately at hand, in properly designed storage units, but the room would look like a well designed combination sitting and bedroom, rather than a traditional hospital room. The equipment and furnishings would be so designed as to encourage a maximum of self-service by the patient, and at the same time allow maximum servicing of the patient by nursing and medical staffs, without unnecessary energy expenditure. The room would be equipped with safety devices, modern audio-visual communication equipment and passive as well as active signal systems, so that self-endangering movements by the patient would immediately summon the nurse. It would be isolated from the hospital hubbub and situated off quiet corridors, but could open up, through windows and flexible walls, to project the patient into a wider environment. This room is worth striving for, even if it can never be attained.

* Director, The Long Island Jewish Hospital

interior design data

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This is one of those rare instances where the hospital architects were given complete control in the design of the patient’s room. The strikingly pleasant environment speaks well for this approach. Although we know that the choice of one night table or another is not the most crucial aspect in the design of a hospital room, it is a fact that the architect can create that harmony which results from approaching the interior as a whole. On looking at this room, one is immediately impressed by its taste and design integration. Certainly the bed would work as well with less handsome end panels and certainly there are other chairs as comfortable; but these are discriminating choices—not only for comfort and ease of maintenance but also for compatibility of good looks, and the serenity that is essential for a patient’s room.

An adequate-sized room is made to seem larger by the generous windows and the generous overhang, which is painted the same inside and out.
The double-hung window is out of with the patients and accessible to the, even when the cubicle is enclosed. lighting is from the fluorescent beds which direct light above for general ination and below for reading. On the opposite, there is a night light, op­ by a switch at the door. The wardrobe at entry has two identical closets, each containing hanging space, drawers for folding wear, shelves for blankets, and a compartment above for suitcases. Heating is by tempered air through the grille over the entry and by convector type radiator under the windows.

All walls are painted gray-green. One washable fabric which matches the wall color is used for curtains and bedspreads. Ceiling is white, floor is black asphalt tile, and wood is birch. The floor in the bath­room is green mat-finished ceramic tile. Window shades are linen. All metal is brushed chrome, aluminum, or stainless steel. Room Photos: Roger Sturtevant
The model room was a laboratory for the architects and hospital staff. After being submitted to rigorous tests, the following revisions were made:

Wardrobe was relocated to provide more clearance. In its original position opposite bathroom door, it was found to be in the way when beds and wheeled stretchers were moved in and out of the room. Room side of wardrobe was also found to be vulnerable when furniture was moved.

Offset hinges were put on corridor door for complete clearance when opened and bathroom wall was brought forward to form a recess for the door at wardrobe.

Bathroom door was placed on room side with three ordinary hinges. In original arrangement, door swung into bathroom because of the restricted space in entry. It was necessary to design a special door stop, installed in the jamb, in case patient was trapped in bath or fainted against door. Special door stop and double acting hinges were considered complicated and expensive.

Bathroom was reduced and enclosed with partitions only 3" instead of 6". This made possible a wider entry and more space between bed and bathroom when oxygen cabinet was used.

End of projecting wall was protected with stainless-steel edge casing.

A cabinet for patients' personal medicines was substituted for the mirror.

The water closet was raised 2" higher than conventional height.

Towel rod was increased from 18" to 24", so that towel and wet wash cloth did not be placed over each other.

A projecting member was added to base along bed wall, to protect patient from beds and bedside tables.

A valance was considered desirable to cover window shade rollers.

An outlet for a wall receptacle
to wall opposite bed, because fluorescent lamps cast an unflattering pallor and used alone.

clear traction bars, bed lamps and ' call plates were raised.

central oxygen outlet was added to per-bed plates.

n was painted a lighter green.

deck outside window was painted green to minimize reflected glare.
give a sense of protection and to it safer for window washing, flower were added to the outer edge of Drain for overhang could be com

with drainage for flower boxes.

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Bathroom Fixtures: Crane Co., 926 S. Michigan Ave., Chicago 5, Ill./ 301 Bronn St., San Francisco, Calif.

Bed: H-817-L-190/ patient-operated "All Purpose Bed"/ 39-1/2" x 86"/ price range about $104.00 to $140.00, dependent on quantity and zone/ Simmons Co., 1 Park Ave., New York 16, N. Y./ Merchandise Mart Plaza, Chicago 54, Ill./ 353 Jones Ave., N. W., Atlanta 1, Ga./ 295 Bay St., San Francisco 11, Calif.

Bedspread: #20540/ "Sea Green"/ cotton, mohair, and rayon mixture/ 76" wide/ list: $1.80 per yd./ Goodall Fabrics Inc., 135 Market St., San Francisco, Calif./ 525 Madison Ave., New York 22, N. Y.


Cabinet: (between beds) discontinued.

Cabinet: (built-in wardrobe) architect-designed/ birch doors, drawers, and adjustable shelves/ The Fink & Shindler Co., 502 Bronn St., San Francisco, Calif.

Cabinet Hardware: (built-in wardrobe) architect-designed/ E. M. Hundleby Hardware Co., 662 Mission St., San Francisco, Calif.

Ceiling: plaster painted white.

Chair: #251C/ Alvar Aalto design/ birch frame with curved back lamination seat and back/ list: $31.00/ Fiesven, 870 Madison Ave., New York, N. Y.

Curtains: same fabric as bedspread.

Curtain Track and Hardware: Grant Fuller and Hardware Co., 31-86 White-stone Pkwy., Flushing, N. Y.

Doors: flush/ birch plywood.

Door Hardware: (bathroom) "Mercury"/ dull chrome 5" backset design/ The Schlage Lock Co., 2201 Bayshore Blvd., San Francisco, Calif./ 350 Fifth Ave., New York, N. Y.

Door Hardware: (entrance-door hinge) LA-475/ special extra heavy 5" throw-back hinge/ Stanley Works, New Britain, Conn.

Door Hardware: (entrance-door pull) Glone Johnson, Laporte, Ind.

Floor: (bathroom) ceramic tile/ pastel green/ mat-finish/ Olean Tile Co., Olean, N. Y.

Floor Covering: B 204/ "Grand Antique"/ "Kentile"/ black/ David E. Kennedy, 58 Second Ave., Brooklyn, N. Y.

Lighting Fixture: (bathroom) #7271/ 18x2" long x 3" wide/ extension 4-1/2"/ "Color Corrected" fluorescent/ 2 light-IBM lamps/ "Alachrome" and white/ keyless/ list: $15.90/ Lightolier, 11 E. 38 St., New York, N. Y.

Lighting Fixture: (overbed lamp) architect-designed/ stainless-steel with 2 lamp fluorescent/ 4-way switch activated by pull chain/ for direct and indirect light/ California Electric Supply Co., 1485 Folsom St., San Francisco, Calif.

Lighting Fixture: (recessed) dull chrome/ exposed ring/ Sunbeam Inc., 777 E. 14 Pl., Los Angeles, Calif.


Shelf: birch/ Morris Cabinet & Fixture Co., San Francisco, Calif.

Wall: (bathroom) Keene's cement painted grey-green.


Windows: (glass) W. P. Fuller & Co.

Window Screen: "KoolShade Sunscreen"/ bronze louvers set at 17° angle/ aluminum, wood, or "Quick-on" frame/ Ingersoll Products Div., Borg-Warner Corp., 321 Plymouth Ct., Chicago 4, III.

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July 1952 117
A pressing need for low-cost private and semi-private accommodations was the spur behind the development of this prototype for Peter Bent Brigham. The answer was to design the most minimal room with maximum self-help facilities. Concern is not so much with perfect colors, finishes, and furniture as with economy without sacrifice to comfort or a pleasant environment.

Walls are angled, corners utilized, and door swings carefully manipulated to achieve a room that totals only 112 square feet. The result compares favorably with the conventional standard which is 300% larger. To create a sense of spaciousness, the outside wall from bed level to ceiling and from wall to wall is a single sheet of insulating glass. A continuous catwalk of rectangular bars at each floor level shades the room from summer sun and simplifies window cleaning. The room is mechanically ventilated and all piping (electric, telephone, plumbing, oxygen, etc.) is housed in a single service core. Since walls are free of piping, these need be only 2½" thick—a further space saver.

For a double room, a curtain takes the place of the non-structural partition.

Adjacent to the patient are large drawers for personal belongings, and curtain controls, and a two-way speaker to the nurse. Thus, self-help is encouraged for ordinary routine and are freed for more crucial tasks. The floor is as shown and the wall opposite the bed is covered with a washable patterned paper in gray, brown, and yellow. Other walls are papered to match the gray-green background paper, floor is terra cotta, and curtains are yellow. All furniture is hospital style.

Photos: Creative Photographer
The room is typical of the 50-bed hospital and is part of a rural health center. Though economically built, the rooms are appointed with comfortable beds of the variety, generous wardrobe space, overbed tables that boast a multitude of uses. The walls are green and gray for south rooms, and gray for north. Plans, exterior, public spaces were shown in July P/A.  

**Photo: R. Neil Rhodes**

<table>
<thead>
<tr>
<th>Room Type</th>
<th>Location</th>
<th>Architect</th>
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<th>Contractor</th>
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</table>

**Data**

- **Bed:** H-817-1-L-190/ self-adjusting/ 35½" x 86"/ price range: about $104.00 to $140.00 dependent on quantity and zone/ Simmons Co., 1 Park Ave., New York 16, N. Y./ Merchandise Mart Plaza, Chicago 54, Ill./ 353 Jones Ave., N. W., Atlanta 1, Ga./ 295 Bay St., San Francisco 11, Calif.
- **Floor Covering:** "Kentile"/ David E. Kennedy, 59 Second Ave., Brooklyn, N. Y.
- **Lighting Fixture:** (floor lamp) Faries Mfg. Co., 1017 E. Grand Ave., Decatur, Ill.
- **Lighting Fixture:** (wall bracket) #364/ Peters Jr. Model R/ Luminous Equipment Co., 900 W. Van Buren St., Chicago 7, Ill.
- **Paints:** "Wallhide"/ Pittsburgh Plate Glass Co., 632 Duquesne Way, Pittsburgh 22, Pa.
- **Table:** (overbed) F-881-F/ "Formica" top/ 14½" x 48½"/ adjustable height from 34¼" to 52½"/ double acting center with mirror on underside/ list: $70.00 to $84.00 dependent on quantity and zone/ Simmons Co.
Design ideas seem to spring naturally from the versatility of lovely, lasting Micarta® plastic surfaces. The smart, efficient appearance of the United Fuel Gas Company installation, shown below, was made possible by Micarta's combination of long-lasting beauty and year-after-year utility. Micarta's ability to handle daily dealings with the public without showing the effects of wear and tear.

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The Hill-Rom Modern is a new and handsome answer to hospital furniture needs. The extensive line was designed by Harry Weese, architect, and Fran J. Burst, head of Hill-Rom's design department. Included are a large variety of storage units, beds, tables, and chairs thoughtfully detailed to suit the function, maintenance, and visual requirements of hospital rooms.

Furniture is a combination of anodized aluminum and "pencil stripe" American walnut or rift oak/ exposed edges banded with matching solid wood/ all tops laminated with cigarette-proof plastic/ Shown: Bed: #10/ 3' x 7'/ ball bearing casters/ approx.: $85.00/ Bedside Cabinet: #10 NA/ 20" wide x 17" deep x 36" high/ formed aluminum drawer/ slide-out shelf under/ cabinet with shelf, basin ring, and expanded metal bottom/ reversible door/ aluminum back panel with hinged towel rod/ approx.: $62.00/ Flower Table: #10/ also for use as writing table/ 14" x 30" x 27" high/ approx.: $26.00/ Overbed Table: #614/ 34" x 14" with adjustable height from 28" to 43"/ lift-lid center section with mirror on underside and compartment below/ approx.: $47.00/ The Hill-Rom Co., Inc., Batesville, Ind. Prices for Hill-Rom hospital furniture are approximate retail for the Eastern district. These are subject to variation according to locality and quantity. Inquiries for exact prices are recommended.

New Hospital Lighting Fixture #B27-786 specified for patients' rooms at Montefiore and L. I. Jewish Hospitals/ designed by H. M. Van Duzer and J. George Blumenthal, lighting engineers/ 5" x 19"/ 4--15W. fluorescent lamps/ "Alzac" reflector/ polymerized white metal with "Plexiglas" top and bottom panels hinged for access/ individual controls for direct and indirect light/ net: $30.00/ Lightolier, 11 E. 36 St., New York, N. Y.
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Gas Room Heater is completely automatic, warm-air circulating with adjustable louvers and thermostatic control/ uses natural, manufactured, mixed, or LP gases/ gray-green "Perlite" finish/ available in three sizes; 25,000, 50,000, and 75,000 Btu capacities/ FM 25: 18 3/4" wide x 19 3/4" deep x 29" high/ FM 50: 24" wide x 19 3/4" deep x 36" high/ FM 75: 24" wide x 24 3/4" deep x 36" high/ approx. retail: $180.00, $202.00, and $237.00/ Resnor Manufacturing Co., Mercer, Pa.

Sash Light: shatterproof "Resolite"/ translucent flat-plastic sheets in standard and special sizes/ 70% polyester resins reinforced with 30% glass fibers. (Owens-Corning Fiberglas mat) said to resist severe vibration, concussion, radiant heat, and other causes of glass pane breakage/ also unaffected by extreme weather, fumes, acids, or alkalis/ for glazing partitions sizes up to 42" x 96"/ sheets or lights cut to specified size at factory/ 8 standard colors/ installed as glass/ Resolite Corp., Zelienople, Pa.
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Section at Well
3\'-scale

End Elevation
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Plan at Corners

TER RESIDENCE, Hanover, N. H.
& M. K. Hunter, Architects

July 1952
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Russell & Erwin Division,
The American Hardware Corporation,
New Britain, Connecticut.

Review


Building Trades Blueprint Reading and Sketching. Basic course. Delma U. Fishers Inc., Albany, N. Y., 1952, 193 pp., illus., $3.25


Sunset Patio Book. Lane Publishing Co., Menlo Park, Calif., 1952, 115 illus. $2


Louis Sullivan. Hugh Morrison, Peter Smith, 321 Fifth Ave., New York, 391 pp., illus., $4


cycles of the slums


The Lower East Side of Manhattan was the scene, during the last quarter of the 19th Century, of the most intensive settlement of immigrants in any single part of this country. The tens of thousands of families from southern and eastern Europe, exploited by sweat-shop employers and ruthless landlords alike, found themselves crowded into a single section of the great metropolis under working and living conditions which soon became intolerable for everything that we now think of as characteristic of the better or the standard area. By the early part of the 20th Century, technical progress in building design had advanced concurrently with aroused awareness of the social dangers implied in having so large a mass of our fellow citizens working and living under such unfavorable conditions. The Lower East Side became the focal point of the many investigations into, and experiments with, the improvement of slums by means of various approaches—the settlement house, school and ground programs, enactment and enforcement of fire and health regulations applicable to factories and dwellings, and finally, the "housing movement" in all of its manifold aspects.

Subsequently, other slum areas in New York, as well as elsewhere in the country, came in for similar but somewhat later attention. By the end of the 1930's and with the coming of the New Deal, the "better housing movement" was fully on the march and many changes—most of them, the better—began to appear in slum areas everywhere. But the East Side had a head start on them all and by now, with many projects adorning it, the remaining but sizable portion of unredeveloped area of the Lower East Side has passed through another phase—"the residential area which is declining through a movement of people away from it. This is due, in part, to the cutting off of immigration by the quota laws of 1924; and, in part, to the fact that second and third generations of the original slum inhabitants have become prosperous and have moved elsewhere. At the present, the Lower East Side is by no means congested or as substandard as it was and much less so than other slum neighborhoods.

But the very fact that an area of this sort should have gone through two complete cycles within the recent past makes it an appropriate...
esearch, whether economic or social. Dr. Grebler's book is, therefore, the most valuable and timely and far every student of city development in general, and of housing in particular, who wishes to get a comprehensive view of the changes that have taken place in such an area. Written from the economic point of view, with somewhat less emphasis on social and technical aspects, Dr. Grebler's book is, nonetheless, as useful for the questions it raises for further investigation as for those it answers with facts and figures.

ROBERT C. WEINBERG

Furniture design

Herman Miller Collection—new edition. The Herman Miller Furniture Company, Zeeland, Mich., 1952. 9" x 11 1/4". 116 pp., 200 photographs, diagrams. $5

Furniture catalogs are becoming ever more elegant. In fact, catalog in additional sense is no longer the word for it! We have here the luce of one manufacturer, file-sized and A.I.A. numbered, but the Herman Miller Collection is called a book, cared for as a book, and is important for anyone interested in contemporary furniture design. Architects and designers specifying from the line, it is a handy or- zonation of the pertinent facts and figures. As for prices, these are in a separate brochure correlated with this volume.

George Nelson and Charles Eames are associated not only in the design of chairs, tables, and casegoods for the company but with the show- ns that display them and the ads and books that tell about them. Herman Miller Company is not one to underestimate the power of il-ect-designers. By giving them jurisdiction over display, presentation, (in a sense) even selling, they have reaped high standards andplete design integration. This handsome volume speaks well for the city. It is a fine book to look at and a pleasure to consult for facts.

The Herman Miller Collection is divided into sections called Storage, ping, Dining, Leisure, and Work. These include the furniture designed Nelson plus some pieces by Isamu Noguchi and by the Danish firm, St-Nielsen. Each section is prefaced by an analysis of the particular emporary living need and of the furniture that follows. A separate section is devoted to the work of Eames. Photographs are used expan -ly and all pieces are well documented by dimensioned drawings,oral and specific data about modular systems, construction, finishes, lware, etc. The documentation takes many forms. For instance, a s of questions and answers is an effective device for giving some c information about storage units.

George Nelson, as Director of Design, writes both the preface and a word to the second edition, telling us in smooth style the history and osophy behind the line. Also included are biographical sketches of designers involved.

The book, in the main, was designed by the George Nelson office, with Eames section by Ray and Charles Eames and their office. Many individuals were involved and all hands are duly credited in the back of the book. Our one criticism of the book is that its permanent binding's not allow for additions that must come from a growing line. Of se, with a flexible binding, scattered pages are a danger. Perhaps thought is that the intactness of the Herman Miller Collection can be er symbolized by the intactness of its binding.

S. S.

(Continued on page 141)
HOW TO SAVE MONEY on yearly maintenance costs, reduce operating exp
that's the big problem confronting school and hospital boards everywhere.
First step in any maintenance-saving program is to specify "Quality-Appr
aluminum windows for all new buildings or additions. In this way you aut
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any plans. For your client's protection insist on "Quality-Approved" windows you
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cut maintenance costs in any buildi

74 Trinity Place, New York 6, N. Y.
In his prominence as an author in the fields of philosophy and architecture, Lewis Mumford, for many years an architectural and cultural critic, was selected to give the Bampton Lectures in America at Columbia University last spring. This book contains the six lectures as they were originally delivered. One might say that it is a "summing up" on the author's part, in this short volume he expresses the essence of the philosophical viewpoints that have won such recognition.

Throughout history there have always been opposing impulses within man—the artistic, which is subjective, and the technical, which is, of course, objective. In lucid manner and with a judgment, Mumford shows the relation of those impulses down through the ages. He also touches upon this relationship as he sees it in these disturbed times and, in a very real analysis, expresses his conviction that there is an over emphasis on technics. Believing man is now at "a moment of splendid possibilities and promise," he strongly urges a forth of personal initiative. He also believes man, if he is so inclined, should make use of machines in a temperate but intelligent and free way and seek within himself a spiritual rebirth which Mumford feels is much needed.

Whether one agrees with the author's views or not, there is no denying that this book will be much interest and stimulate the reader's thought. For to propound his thesis on art and technics, he delves deep into the history of painting, sculpture, architecture, engineering, printing. He drives home his opinions with facts that show how first one and then the other of the two forces has been predominant. He has no snap judgment, for few have behind such a wealth of information based on study.

His article, "Symbol and Function in Architecture," he takes a rather gloomy view of contemporary architecture, feeling that "our best architects are full of technical facility and cold competence but still going through mental motions." This, as well as many other aspects of the author's opinions, will not be shared entirely by members of the profession, but at least the opinions are worth thinking about. One can help but feel the deep sincerity of the author's convictions. FRANK A. WRENCH

Small Homes Council of the University of Illinois. Recommendations are given for correct placement of room thermostats for the most efficient operation; there are also descriptions of suitable controls for different types of fuel-burning systems—coal, coke, gas and oil furnaces and boilers, with four pages of charts to simplify the selection for home owners. E. T.

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PA
out of school

by Carl Feiss

Midsummer madness is upon us. By this time, the student still in school should have found a summer job. The tired professor relaxes with design of a small house or a bit of lollygagging in Europe. Catalogues for the year 1952-53 are at the printer, and the die is cast. There is nothing more irrevocable than a catalogue, once the dummy has been edited and sent back. And it is now that fears set in, because the school year is built and the structure is ready for occupancy and management. Will there be enough tenants and will they pay out? Have competitors figured a new angle?

In previous issues, I have discussed teaching for the building industry and the relationship between the business of building and the art, science, and business of architecture. Frankly, I am not satisfied that adequate progress is being made in the field of business management in the training of builders, nor am I satisfied that the universities and the schools of architecture are sufficiently interested in the subject. There are not enough colleges business administration which consider building industry in their curricula and national lay attitude on the universality of "impractical architect" is so well established that it may take generations to eradicate it.

I am sure that, by this time, I have sufficiently established with you my interest in esthetics of comprehensive architecture. There is more that I ultimately hope to be able to cover in this column in the entire field of sign training. It is a subject of constant concern. But right now the proper integration of business training with the purposes behind progressive architectural design is a fundamental educational issue. You may not be interested, but you should be. I urge you to consider what I am about to say.

When an architectural student graduates today he may have been lucky to have had semester hours in professional practice, which includes study of contracts. He know little or nothing about the financing of the building operations with which he has to spend a lifetime. He will have had little or no experience with the field of investment, including mortgages and loans, taxation, insurance, payrolls, bookkeeping, legal and material costs, accounting, credit financing, overhead costs, salary schedules, office space rentals, travel costs, social security, and many other items on a long list which an architectural student or professor draw up.

It is accepted practice of architectural editors to omit these items from an already gested curriculum, with the certainty that the problems of practice can be and will be learned in the office. So be it, for the moment. Now let us look at the other side of the partition: Where is the business of building being taught? Where should third largest industry in the United States vitally affecting each and every one of us, attain its leadership?

You will notice I use the word "leadership." There is an important distinction between leadership and craftsmanship. I have a great respect for craftsmanship and do not in any belittle it here. Adequate training in the skills of building in the trade schools, the union schools and in certain types of technical institute and junior college work, is as essential as any training to be given anywhere. Comprehensive architecture, the all-inclusive esthetics of all building, depends on many of the sound skills and careful craftsmanship. We find gradually disappearing in the building
he storage wall is a recognized and important new development in modern design. Now it includes "built-in furniture" units. Nova Wall Units can be used individually; each is a finished piece of furniture. Used in combination, there is no need of "sectionalizing". With 2' 2" maximum depth, they save space over conventional storage furniture. Used in new construction, they can save as much as 5' in total house length.

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OUT OF SCHOOL

(Continued from page 142)

trades. While this is a special subject to be discussed later, I want it made clear here that in my discussion of adequate leadership in the business of building, or the business of comprehensive architecture, the training of the man who saw the wood, lay the bricks, handle the plumbing, wiring, glass, steel, and all the rest is fundamental in training for leadership.

It is here that I come back to the thesis I have mentioned in these columns several times before: the architect is a quasi-professional, without the appropriate and proper contract responsibilities which the business of comprehensive architecture requires. The code of ethics which the A.I.A. insists is essential to assure the honesty, integrity, and selflessness of the architect in his business dealings, and which prevents him from contracting and building as he should, is as artificial and unmanageable as the Volstead Act. Every practitioner knows that subterfuges now in use to evade these silly old stipulations, dating back to the day when architecture was primarily a luxury, and the gentlemen who indulged in it (not ostensibly for a profit), were artists and “gentlemen” of the old school. Those days, I hope, are gone forever. May we continue to be gentlemen if not members of the Union League Club!

But, my friends, there are still the gentlemanly ethical practitioners of private enterprise. The American businessman is quite often a honest man. I have even known builders and contractors with standards of practice every bit as high as if they were subject to a so-called professional code of ethics! I am a great believer in codes of ethics, but at the same time I know, and you know, if a man is going to sin, he is going to sin. If he is subject to professional stigma, there may be some hesitation on his part. But I, for one, do not believe that practicing comprehensive architecture, practicing building as it should be practiced, from start to finish, is a sin.

We all know that one of the reasons for the prohibition of the architect in the building and contracting business is the fear that he might make a profit on materials and labor within a fixed contract. I personally wouldn’t begrudge him a profit if he performs as the contract requires. For I am sure that were he to do an entire building job, he would do a better job of building than he does today. Maybe you would inquire whether such a man can still be called an architect. In many parts of South America and in Europe he is. And I like much of the work being done by these generalist architects — who are certainly professionals. 

(Continued on page 146)
"We Saw it With Our Own Eyes! Carey Fire-Chex Shingles are Fireproof!", Say Officials of Mohawk Building Materials Corporation

RENSSELAER, N. Y., December 6, 1951 — The fire that broke out on November 6 and destroyed two sections of the Rensselaer warehouse, owned by the Mohawk Building Materials Corporation, was finally extinguished last night, 30 days after the alarm was turned in.

Although the fire in most sections of the building was brought under control within ten days, it smoldered in the insulation board and roofing section for a full month. In this section, eighteen inch brick walls collapsed during the early stages of the fire, burying the roofing and insulation to a depth of over ten feet. Firefighters scored complete victory last night, when they spread this mass with a bulldozer and extinguished the flames.

As the rubble was cleared away, several piles of Carey Fire-Chex shingles were observed to be still standing. The wood pallets on which the shingles were piled had burned away, and the paper cartons were gone, but the shingles were still in good condition. Officials of the Mohawk Building Materials Corporation stated that the Carey Fire-Chex shingles were just slightly stuck together on the 12" edges, but not enough to prevent sliding them out from beneath the wire ties. "We saw it with our own eyes. Carey Fire-Chex shingles are fireproof," said C. Lawrence Fenner, vice president of the firm.

Fire-Chex asbestos-plastic shingles are an exclusive product of the Philip Carey Mfg. Company. Lockland, Cincinnati 15, Ohio, widely known manufacturer of asbestos and asphalt building materials. Coated with a patented asbestos-plastic, Fire-Chex have been tested by Underwriters' Laboratories, Inc. and found to resist fire so effectively that they are rated "CLASS A" without underlayment by Underwriters — the highest possible rating for fire protection. Fire-Chex are the only roofing material of any kind to carry this highest fire-protective classification.

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July 1952 145
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(Continued from page 144)

Our habits of thinking based on a pertinent tradition limiting architectural practice has constituted a severe limitation on the conversion of the building industry into sound and modern business and industrial enterprise. It has also been responsible for narrowing of the horizons of education and training for the ultimate leadership so badly needed in the conversion of the entire building industry from a scattered handicraft complex into an orderly and enterprising enterprise. It has proven a serious handicap in the field of business research and industrial research in building, has segregated such research from those who could be trained for leadership, has transferred to the universities the same concept disorder generated by present practices, and so doing, perpetuates the untenable.

I know of no educational institution, university, college, or technical institute, which is even approaching the total job which must be done. In a few places, colleges of Business Administration have recently taken on courses even four-year curricula in the building industry—a step ahead. Building research, including "architectural" items, is developing in several research institutes or foundations on a few campuses. In a few instances, there is an attempt to tie some of this research in with the work of an architectural school. There is a slight breeze blowing in the right direction but it is a timid breeze, and hardly stirs the air. We are in the low-pressure area of the doldrums of a bad habit.

One of these days one of our leading educational institutions will take the initiative to train for comprehensive architecture. It will set up a real center for building education—leadership in the field of the design of man's environment. Such a center will combine with the training of the social scientist (including the urban sociologist, and the public administrator), training in architectural design, collateral design, construction and engineering, business administration, labor relations, real estate, and building law. This will take a good deal of effort, and it is not uncommon to our institutions of higher learning these days. In the first place, within the present institutions the hidebound divisions into schools and colleges, the untransferability of credit hours, and the fixations on prerequisites in the hierarchy of courses and the accolades of degrees would have to be broken down. A one of the most difficult problems to be solved would be the bookkeeping—a complex
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out of schoo

(Continued from page 146)

pretty foolish business system in universities these days. Even though all the money comes from one pot, books are kept on student, faculty, and maintenance costs on a student per class per school basis. This throws a gimic into the free movement of both students and faculty between schools. When an engineer in school services an architectural school with a faculty member, the deans begin battles over budgets which loudly reverberate in faculty meetings, further fracturing the campus.

Somewhere, someday, some president, chancellor or provost will say in polite academic terms, "To Hell with this nonsensel Let design programs for service and leadership into the logic of man's requirements and his abilities to fulfill those requirements. We are no longer medieval cloisters, despite our architecture. We are modern educational institutions, training for the best interests of mankind. We should worry less about accrediting our schools in the traditions of accepted practices than we do in the accrediting on the honor roll of the history of mankind's progress. Our students, therefore under the guidance of competent program analysts, shall be free to roam the halls of education to select those courses which will lead to those destinations of service and care to which their aptitudes and interests aspire. I am the Joshua who blows down the walls of Jericho and offers you the Promised Land and your tuition's worth of education on the side."

What could this mean to the training of comprehensive architects? Trouble, I'm afraid, the first place, if our schools were to graduate men with beliefs that they should be free practice architects as any situation might require, including the handling of real estate building and contracting contracts, direct contracting, and the other aspects of the building business, they would be anathema to the A.I.A. and the state architectural licensing boards. Such a graduate would enter a hostile world of traditional attitudes about the inviolability and superiority of our present system of architectural practice. If he were not to fetter himself with an A.I.A. membership (and I have been for years and am a loyal member of the Institute), and if he were to take out a license to perform as a builder or building contractor instead of an architect, he would be free to act and do as he would choose in the building world. Some highly competent men, you know, have signed themselves as "d

(Continued on page 15)
This photograph illustrates what can happen when water penetrates a masonry cornice and parapet. Here frost has damaged the cornice beyond repair.

Had the parapet and cornice been flashed as shown on the drawing, water absorbed by the coping would have been diverted toward the roof. Flashing above the cornice would have prevented the spalling which was caused by water entering the vertical joints and freezing.

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**out of school**

(Continued from page 148)

signer' or 'architectural designer' and avoid architectural restrictions on their business as well as their design abilities. This is not the solution. Running away won't help.

Further problems facing a reform in architectural education in and out of school is the highly conservative attitude of the educators themselves. While many are practicing architects themselves, their experience and training limit their imagination and courage to tackle as large a problem as this reform suggests. This is an easily understood attitude and sympathize with it. Few of these men are acquainted with the collateral business and research fields. Few have had experience beyond certain limited types of contact with local financiers, realtors, and builders. Few merchandisers of building materials and equipment men have bothered to root out the educational needs of these teachers are overworked, underpaid, or subservient to a system. Also they have little or no means of continued intercommunicative relations between schools on a campus or between campuses. The grapevine between schools is large rooted in hearsay, and is anything but strong vine which can bind ideas together. Other words, it is going to be a slow and arduous task to bring about the co-ordination of comprehensive architectural training, badly needed on the campus for the ultimate benefit of the building world.

I would like to think that perhaps, someday the president of a university will call together a conference on architectural practice and education. I would like to hope that at such conference some person of stature in the architectural world would get up and say more forceful terms than I can what needs be said on this subject. I would like to hope that at such conference a carefully select group of curriculum builders from a wide range of educational fields would sit down with a plan to rebuild architectural training, not with conformity but with what America needs from what could be a great fraternity of builders. I would hope that one of the objectives these men would be that no building or community would be too small or too inexpensive or too large to be of the services of the comprehensive architect. The making available to the world of the best in technology and handicraft the best in business and the social science and the ordered planning of the processes of building through the guidance of our scientific and technologists, our philosophers and designers, is a consummation devoutly to be desired. It can be and must be done.
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July 1952
This supplement to Chapter 20 of Tomson's Architectural and Engineering Law (Reinhold) was begun here last month. They should be considered in relation to the principle that there is an implied condition that the architect's plans, when completed, will be suitable and proper for the purposes intended; and that a building ordinance, in effect, becomes a part of the contract between the architect and owner as though it had actually been written into the contract (see pp. 262, 263, 274, and 275).

The previous column (June 1952 P/A—Esthetic Zoning, Industrial Areas) discussed the New York City Zoning Resolution (Art. 2, Sec. 3) relating to the erection of light-industry projects in residential areas. Under that regulation, the City Planning Commission considers esthetic suitability in relation to the facts peculiar to each proposed project and not by any rigid set of rules. One of the factors which received a great deal of consideration by the Commission was, in each case, the appearance of the project at the proposed site and its blending with or enhancing of the immediate area.

This month's column will concern itself with the recent "esthetic zoning," as applied to residential areas. During the past few years, municipalities, faced with expanding housing activity in suburban areas, have enacted zoning laws regulating the character of residential development. These enactments were an attempt to preserve for the residents the advantages of a distinctive and attractive rural environment. Some legislation has concerned itself exclusively with the promotion of esthetic and artistic development of new residential construction in the community. In April, 1950, the Village of Scarsdale (State of New York) enacted a law (December 1950 P/A) by which the Village sought to eliminate "look-alike homes, using indicia of uniformity rigidly forth in its ordinance. (See Footnote 1) Enforcement of the law was left in the hands of the building inspector with a review of his determination, by an appeal to a Building Board composed of three residents, at least one of whom is to be an architect.

On February 15, 1952, the Village of Garden City (New York State) enacted legislation aiming at the accomplishment of this same purpose but by a procedure providing flexibility in operation. (See Footnote 2) The Garden City local law, as did the Scarsdale law, lists the indicia of similarity, but with a great deal less rigidity and employs a new approach. (See Footnote 3)

The law provides for initial consideration by a Board of Review, created under Section 2, which reads in part as follows: "There is hereby created a Board of Review consisting of five members, who shall sit without compensation. All members of the Board shall be residents of the Village of Garden City and shall be persons deemed by the Board of Trustees to be qualified by reason of training, experience, or civic interest, and reason of sound judgment, to determine the effects of a proposed building, group of buildings, or plan of building development on desirability, property values, and development of surrounding areas and on the development of the village as a whole."

In effect, what is provided for, by statute, is a fresh consideration of the "esthetics" of each building, as it is proposed. The procedure is similar to that employed by the City of New York, for the erection of industry projects in residential areas.

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(Continued from page 152)

Board of Review, in disapproving any application, may specify modifications in design of the building or buildings that will be adequate to render them acceptable under the provisions of the law. Other procedural devices which operate to the benefit of the applicant are: (1) the Building Inspector must refer an applicant to the Board of Review within three days; (2) the Board of Review must disapprove an application within eighteen days, or else must issue a permit; and (3) any party aggrieved has a right of appeal to the Board of Zoning Appeals.

The legislation leaves to the Board of Review a great deal of discretion. The indicia of similarity are flexible, and the Board of Review granted the authority to vary (to a degree) other legislation in this same field. Section 6 of the law reads, in part:

"With the purpose of encouraging the most appropriate use of land throughout the Village, the Board of Review may vary the minimum floor area requirements set forth in Zoning Ordinance No. 29 of the Village, as amended so as to reduce said requirements by not more than ten percent, if, by reason of greater frontage or areas or side yard widths or lot percentage or lot coverage by building or than are specified by said zoning ordinance or by reason of the provision of public common open space as a part of the development or exceptionally skillful lot arrangement and site design, the result of said variation will be in harmony with the character of the neighborhood."

For the lawyer, the "Garden City" Zoning law presents some very interesting questions to its enforceability, legality, and constitutionality. For the architect, it raises a further interesting question as to how effective it proves to be in the application of "esthetic considerations to community planning.

1. "Section 2. Except as provided in local law, no building permit shall be issued under the Building Code of the Village for the erection of any building for occupancy as a dwelling for one or two families if it is like or substantially like any neighboring building, as hereinafter defined, in existence or for which a building permit has been issued, in more than three of following six respects:
   "(1) Height of the main roof ridge, in the case of a building with a flat roof, highest point of the roof beams, above elevation of the first floor;
   "(2) Height of the main roof ridge at the top of the plate (all flat roofs shall deemed identical in this dimension);
   "(3) Length of the main roof ridge,
you can spell Selection with a capital "S"!

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in the case of a building with a flat roof shall be deemed to be like another in any dimension with respect to which the difference between them is more than two feet. Buildings between which the only difference in relative location of elements is end to end or side reversal of elements shall be deemed to be like each other in relative location such elements. In relation to the premises with respect to which the permit is sought, a building shall be deemed to be a neighboring building if the lot upon which it is, or any part of it has been or will be erected on any one of the following lots, as shown on the tax map of the Village:

(a) Any lot on the street upon which the building to be erected on said premises would front which is the first or the second lot next along said street in either direction from said premises, without regard to intervening street lines;

(b) Any lot any part of the street frontage of which is across said street from said premises or from a lot referred to in subparagraph (a) of this section;

(c) Any lot any part of the street frontage of which faces the end of, and within the width of, said street, if there is less than two lots between said premises and the end of said street;

(d) Any lot on another street which joins said premises on such other street;

(e) Any lot any part of the street frontage of which is across such other street from said premises or from a lot referred to in subparagraph (d) of this section; provided, however, that, notwithstanding the foregoing provisions of this section, no building shall be deemed to be a neighboring building in relation to said premises if its rear elevation faces the street upon which the building to be erected on said premises would front.
After all is said and done, the first function of a mortar is to form a good, tight bond with the brick. Upon this characteristic depend both the strength and the water-tightness of the wall. A good bond is particularly important in securing water-tight walls, because most cases of leakage are caused by the passage of water between the brick and the mortar.

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(a) that excessive similarity, dissimilarity, or inappropriateness of design in the exterior appearance of residential buildings in relation to the prevailing appearance of residential buildings in the vicinity thereof would adversely affect the desirability of the immediate area and neighboring areas for residential purposes; (b) that inappropriateness or excessive dissimilarity of design in the exterior appearance of residential buildings in relation to the characteristics of design generally prevailing in the village would discourage the most appropriate use of land throughout the village; and (c) that such excessive similarity, dissimilarity, or inappropriateness, would impair the benefits of occupancy of existing residential property, impair the stability and value of both improved and unimproved real property, produce degeneration of residential property, with attendant deterioration of conditions affecting the health, safety and morals of the inhabitants of the village, and destroy a proper relationship between the tax value of real property and the cost of principal services provided therefor. It is the purpose of this local law to prevent in and other harmful effects and thus to motivate and protect the health, safety, morals and general welfare of the community.

3. "The Board of Review shall disapprove any application for a building permit in regard to it if the Board finds by a unanimous vote of all the members present at any meeting at which said vote is taken that a building for which the permit is sought any building of a group of buildings erected by the permit would, if erected, be detrimental to the character, price values, or development of the surrounding residential area or of the village as a whole to produce one or more of the harmful effects set forth in Section 1, by reason that:" (a) excessive similarity of design in relation to any other structure existing on which a permit has been issued, or to any other structure included in the same permit application, on a plot abutting on the street and within two hundred fifty feet of the proposed site, in respect to one or more of the following features of exterior design and appearance:

"(1) apparently identical façade;
(2) substantially identical size and arrangement of either doors, windows, porches or other openings or breaks in the facing the street, including reverse arrangement; or
(3) other significant identical features such as, but not limited to, construction material, roof line and height, or other design elements;
provided that a finding of excessive similarity shall include not only that similarity exists but, further, that it is such a nature as to produce one or more of the harmful effects set forth in Section 1:
"(b) excessive dissimilarity or inappropriateness of design in relation to any other structure existing or for which a permit has been issued, or to any other structure included in the same permit application, on a plot abutting on the same street and within two hundred fifty feet of the proposed or inappropriate or excessive dissimilarity of design in relation to the characteristics of residential building design generally prevailing in the village, in respect to one or more of the following features:
(1) cubical contents;
(2) gross floor area;
(3) height of building or height of building;
(4) other significant design features,
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(Continued from page 158)

as, but not limited to, construction mate-
or quality of architectural design; pro-
vided that a finding of excessive simi-
larity or inappropriateness of design
include not only that such dissimilarity
inappropriateness exists, but, further, if
it is of such a nature as to produce one
or more of the harmful effects set forth
Section 1.

"In disapproving any application for
building permit the Board of Review
shall specify modifications in the design of
building or buildings or any of them
which will be adequate to render the same
acceptable under the provisions of this
law."

NOTICES

exhibition

An exhibition entitled, BROOKLYN IN P-
RESS, by students of the Department of Ar-
tecture, Pratt Institute, in conjunction with
Brooklyn Chapter of the A.I.A., will be on
temporary through September 1. The exhibit offers
account of the progress of the Borough in
fields of architecture and planning. View-
old Brooklyn architecture are included.

exhibition may be seen at the Brooklyn
seum, Brooklyn, N.Y.

conference awards

VINCENT KLING, Philadelphia Architect, won
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of Architects for "most meritorious compl-
work" of the year, at the recent Middle-
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Philadelphia. His citation, read at the
Presidents' dinner at the Bellevue-Strat-
Hotel by J. Roy Carroll, Jr., Chapter Presi-
updated his Kimberton Farm School
and Croft Building and the School Resi-
fully justify this Award to him."

ALFRED BENDINER, Philadelphia Architect
was prominent in arranging the Mid-
American Conference, won the
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KENTILE COMPANY, Second; and PITTS-
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(Continued on page
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