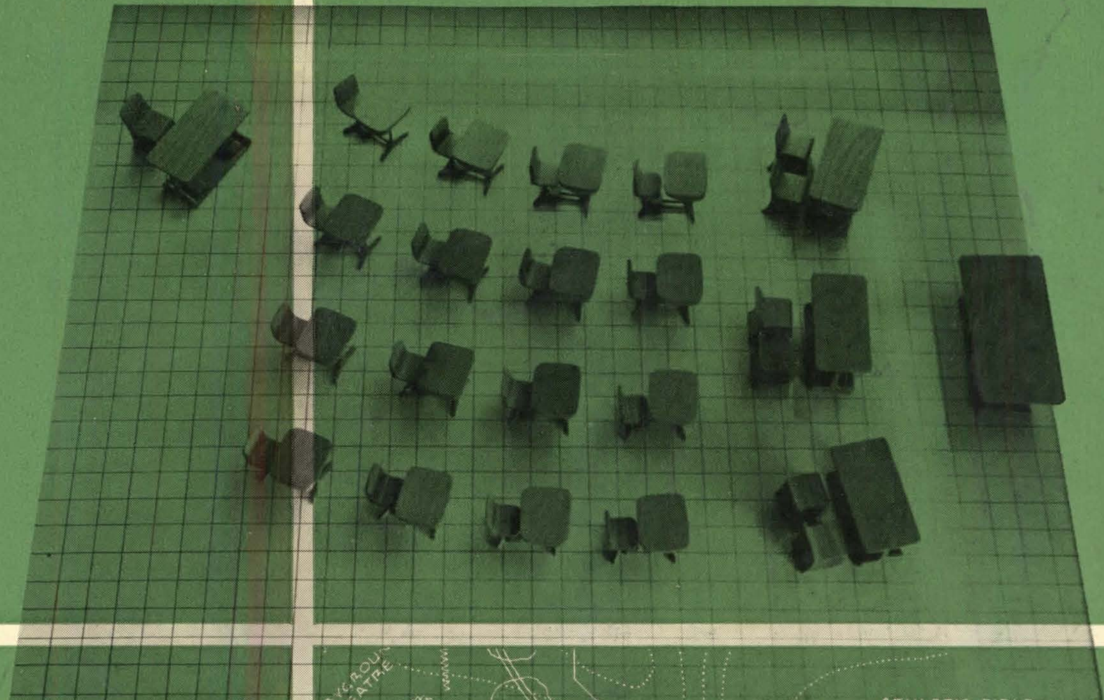
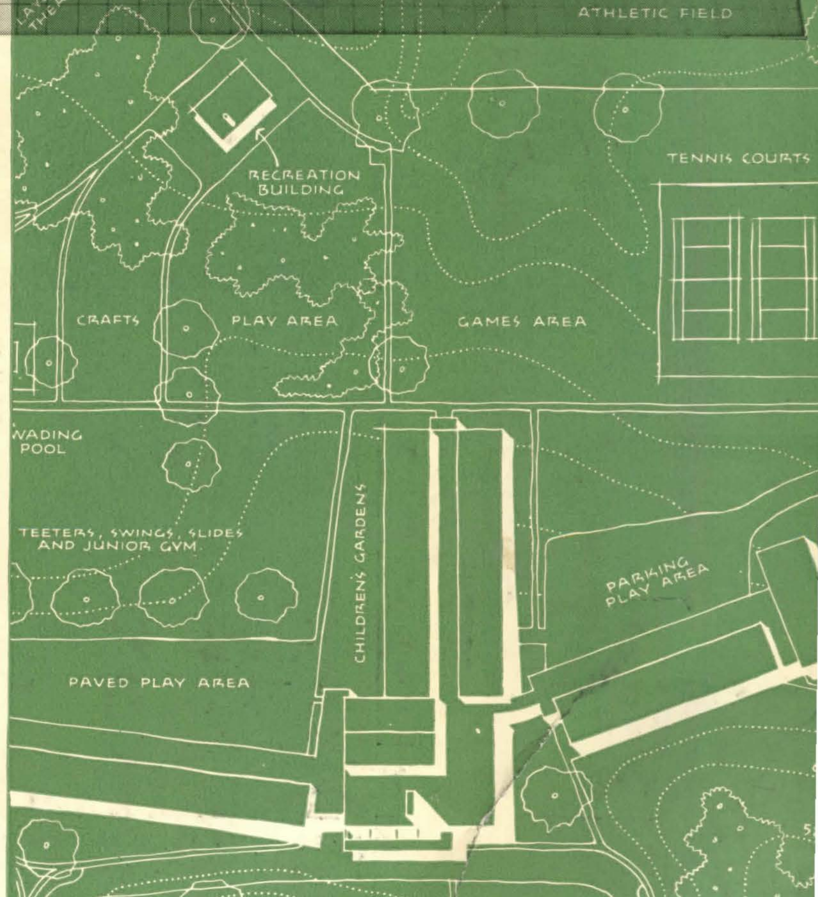
RESSIVE ARCHITECTURE



schools



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september 1952

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PROGRESSIVE ARCHITECTURE

September 1952

more schools–cheaper

*by S. P. Marland, Jr.**

ie marriage of the architect and the
l superintendent, which occurred
1945, has been a happy and fruitful
. Perhaps its most significant off-
g is the demonstrated fact that schools
now be built expressly as places in
to learn and teach. School men have
he architects about modern education
the architects have responded with
ant and imaginative design consistent
modern education. However, all is not
ness and light. The architect and
l superintendent have some serious
ems before them that will call for
brilliance and imagination than has
een displayed by either.

gerous antagonists

ol superintendents and architects are
s business because of children—and
use the American people want success-
better schools and better education for
ildren. Two interesting phenomena
come upon us almost at once:

Our birthrate has increased by
1,500,000 children a year since 1940.
is no indication that this rate of
which is 58% higher than the rate
40, will diminish substantially.

The American people have assumed
rous and articulate role in public
tion and are demanding quality per-
nce in the classroom.

hool superintendents have long en-
ged the latter: they assume only
l responsibility for the former. But,
g at once, these two phenomena may
e dangerous antagonists in the
r which the architect and the super-
ent have so lately contrived—the
n school.

ring the next six years, public school
nent will increase by about 7,000,000
en. The replacement of obsolete
s and the accommodation of new
will require 600,000 new classrooms.

At first blush, this sounds like a glorious architectural commission—40,000 or more beautiful buildings. But a monster could hatch from this golden egg.

the monster

At the present rate of pupil increase we may run short of school building dollars to the extent that not only will the needed schools be denied, but the schools already built will fall back in their quality.

Fundamentally, school men are concerned with education, not buildings. If pressed to the last ditch they will throw their weight in the direction of teachers' salaries, text books, and films. School buildings will have to wait. This means double sessions, overcrowded classes, and substandard facilities. But this is only a last-ditch condition; in the meantime, there is not a school man in the country who will not stand and fight for more buildings, if he needs them for his children.

the last ditch

The dollars for school buildings are getting fewer. There are several reasons for this:

1. There is a very real tightening of the public attitude toward taxation. Federal expenditures in the face of an uncertain military future continue to dominate the tax scene. The taxpayer, frustrated by taxation in general and unable personally to influence federal tax conditions, works off some of his vexation at the local level. Bond issues for schools are voted at Town Meetings (and that is where they should be voted—not in a Washington office) where the vexed taxpayer can say "Nay."

2. Statutory limits on bonded debts of municipalities are being reached. In other words, there are state laws prohibiting communities from borrowing money to build schools. Connecticut, which ranks third among all states in its individual dollar income, should be in a relatively prosperous condition. About two years ago, the state legislature doubled the statutory bond limit to accommodate school buildings. This allowed communities to borrow up to 10% of their Grand List, as distinguished from the former 5%, provided the additional 5% was used for school buildings. Today, out of 171 communities in Connecticut, only 67 have a balance in their bond limit of $1,000,000 or more. Seventy Connecticut communities have less than a $500,000 margin for borrowing. We all know that most economical schools today cost upwards of $750,000.

3. The unit cost of operating the schools has doubled. In our town, we paid $149.02 to educate each child in 1940. Last year, we paid $302.07, and there were twice as many of them. In other words, ten years ago $200,000 paid for education in a middle-sized town like ours. Next year it will require a million dollars. These figures include nothing for buildings on bonded debt—just salaries, books, and running expenses. Some of my school colleagues may disagree, but I am firmly convinced that there is a point beyond which local taxes cannot go without major detriment to the community. Whether state and federal aid accrue to the schools, the budget will continue to be decided locally, and the tax dollars, ultimately, will be produced locally.

4. The teacher, when all is said and done, is the substance of education. About 75% of the school budget goes to teachers. Even so, the average teacher is being paid only $3167 a year. His salary has increased 108% in the past ten years while the average salary of the employed person has increased 132% in the same period. In the bitter choice of finding money for the improvement of teachers' salaries or building needed schools, teachers' salaries will take first place.

This condition does not spring solely from a sympathy for the teacher. Sharp competition for securing and retaining teachers in the profession, against the attractions of more remunerative industry, will force some action. Further, boards of

tendent of Schools, Darien, Conn.

education and communities are awakening to the fact that the teaching profession at large is sick for lack of material prestige. Graduating from our colleges and universities this year, there were 32,443 beginners to fill 160,000 jobs. The number of teacher graduates last June was fewer than the year before. Project this condition for fifteen or twenty years, and visualize the kind of society that will be breeding in our fine buildings of 1952. Many dollars will be needed to persuade good young men and women that teaching is an attractive profession.

the other monster

Parents are demanding that the schools do an increasingly better job. Unlike industry, the more refined and exacting our school standards become the more people we need to do the job. Not long ago, parents were satisfied with 40-pupil classes, obsolete books, and non-existent pupil services—such as health, speech, psychological, and guidance services. Today we seek 25-pupil classes; and pupil services are expected. School leaders have educated communities to demand these things for the good of children. This is as it should be. But in our little town, to lower the average class size from 27 pupils to 25 pupils takes 6 teachers, or $25,000. This is about three-quarters of a mil on our tax rate. In New York City, the reduction of one pupil in average class size costs $1,500,000 for salaries alone, not to mention buildings. We want smaller classes.

The wise parent today will refuse to permit double sessions. Double sessions, to a school man, are about as desirable as a set of stock plans, to a good architect. But they mean we would need only "half as many schools."

In short, even if school men wanted to cut down on the quality of education, the public would not let them. Most parents would rather see their children attend small classes under a good teacher and with fine and ample teaching materials, in a two-car garage; rather than have forty-pupil classes with a second-rate teacher and poor materials, in a fine new building.

where are we?

As a school man, I do not think we have reached the last ditch, nor do I think the problem is a desperate "either-or" matter. But I do believe that this marriage has reached the point where it calls for sitting down at the kitchen table on a Saturday night and doing some hard thinking. Two or three possible solutions occur to me, all of which depend upon the architect. He must consider the school in an altogether different light. Some of the things he might do:

1. Invent some kind of revolutionary structure that will exploit the peculiar characteristics of a school building in the interests of economy. The peculiar characteristics which may be the key to his solution are:

a. The building is used for its primary purpose fewer than half the days in the year.

b. The building is occupied for its primary purposes for about six hours a day, those hours being the brightest and warmest.

c. Broad flat expanses of roof may have some imaginative use; do not eliminate gymnasium, auditorium, and dining room possibilities. (A football stadium in late November could be worse.)

d. Some of the standard codes for ventilation, fire safety, lavatory frequency, corridor width, ceiling height, and hardware are obsolete. There are millions of dollars in school ductwork and fans that have never yet overcome the human impulse to open the windows for fresh air.

2. Give some thought to a $10,000 classroom. I do not mean a shoddy portable, but an architect's creation, with wholly new materials put together in a new way. I do not mean a prefab sheet-steel affair designed as an industrial building and called a sch
I mean a modular assembly, wisely
ceived as nothing but a school, blended
conventional design and set easily upon
ground.

3. Help us make wise use of the cu
we have. A long empty corridor does
ing for education. Let us roll back a
as needed, and double a dining spac
library by moving a few tables and ch
We want auditoriums in all our scho
but we admit they are empty more
than active. Help us find a use for
cubage that will not be a "multi-purp
atrocity.

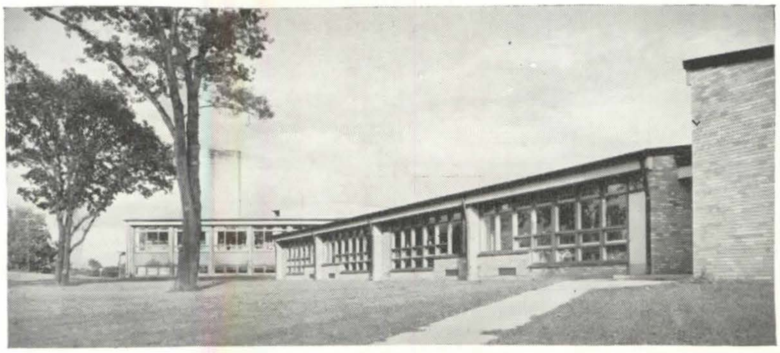
4. About half the weeks of the sc
year are comfortable out of doors. Ca
do anything about that, without simply
ing empty classrooms during good weat

These may be pretty hare-brained
tions. Frankly, there is not a little des
tion in their origin. We school men
proud of partnership with architects,
we take a lot of satisfaction in what
been done. We know, however, that
are dark days ahead. We must have sch
for many more children; we must mai
and improve the quality of education
must have smaller classes; we must pay
teachers much better salaries; we
have adequate instructional materials
all these things, if anything has t
dropped, it may be the new schools.
must invent ways to prevent that.

Far-sighted school men are worried
that their communities will vote down
issues for schools—for if it were ju
matter of a vote, we are prepared to
the responsibility for leading our comm
ties to a realistic understanding of the
—but whether there will be any mon
appropriate for new schools, irrespecti
the willingness of the community t
taxed. This is a joint problem for a
tects and school men. Somehow, we
have quality education and space fo
children. We must have our cake an
it, too—perhaps without the frosting.

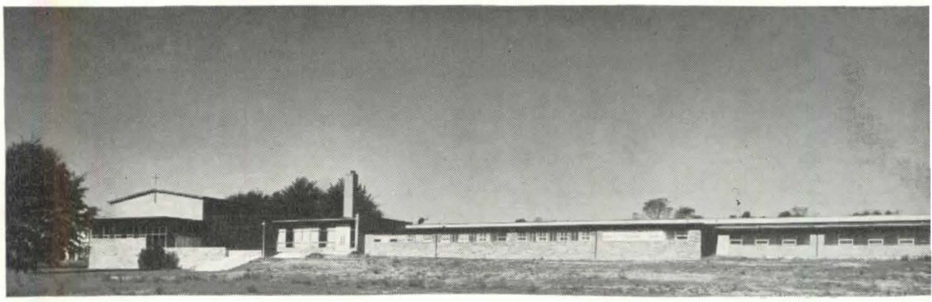
kers, New York

round-robin critique



Minneapolis, Minnesota

ance, California



Philadelphia, Pennsylvania

elementary schools

any meeting in which architects are asked what's wrong with professional magazines, some-e is sure to rise and say: "Give us more criticism." So far, so good: but of whose work and whom?

There are numerous choices as to who might do the criticizing. The Editors might under-e it, and that's all right with us, except that our selection of the work is first evidence of our inion that a job is pretty good. Furthermore, you hear from us a great deal as it is. Another ssibility would be to call on some High Priest architectural critic. Again, perfectly OK, pending on how much faith one has in the particular High Priest. A third approach—and one we use in our round robins—is to have the work analyzed by one's peers, the fellow hitects each having a go at the work of the others.

In analyzing the four elementary schools that constitute the subject of this month's round in, we followed the procedure that has typified all of the previous ones. Each participating archi-t was sent summary data on the schools designed by the others and was asked for his comments l criticism of the work. When these were received, they were routed on to the originating hitect—for rebuttal, explanation, or maybe, concurrence. From this total resource, we then veloped the presentation that appears on the following pages.

Architect-critics for this round robin are Daniel, Mann, Johnson & Mendenhall (Torrance ool); Edward Fleagle (Yonkers school); James A. Nolen, Jr., and Herbert H. Swinburne hiladelphia school); Magney, Tusler & Setter and Perkins & Will (Minneapolis school).

THE EDITORS

Yonkers, New York

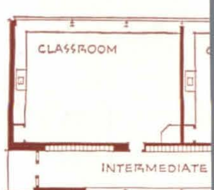
architect	Edward Fleagle
educational consultants	Engelhardt, Engelhardt & Legg
mechanical engineers	Jaros, Baum & Bolles
structural engineers	Edwards and Hjorth
general contractors	Arthur D. Stolle-Delval Corpora

The program called for "an elementary school that reflects, in its planning and spaces, the educational needs of children." Facilities to be designed to differentiate between needs of primary and intermediate grades; planned also as a community center, inviting and useful to adults in carrying out community functions. The result is the present Colonial Heights Elementary School—10 classrooms—including a kindergarten, 6 primary, and 3 intermediate rooms—for 300 pupils; future expansion to add another kindergarten, 3 more primary and 6 more intermediate classrooms, for a maximum of 600 pupils. The central administrative and health unit includes a general-purpose room, planned to serve as playroom, assembly room, and cafeteria for both school and community use. The sloping site is 4 acres in extent.

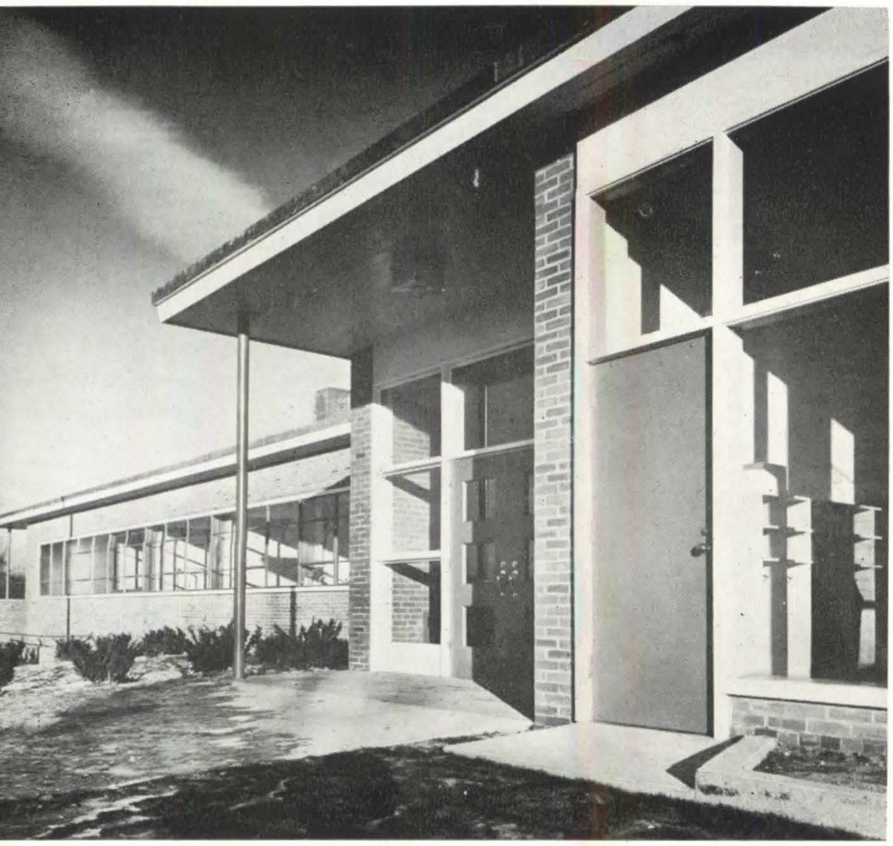
Structurally, the building is of fireproof construction, with concrete slab on grade and perimeter pipe trenches. Exterior walls are of light-steel framing, with steel sash and brick facing; interior masonry walls are load-bearing. A cast-in-place gypsum roof slab is supported on open steel joists with rigid insulation and built-up roof finish. Interior wall finishes are painted lightweight aggregate block, eliminating all plaster; glazed tile is used in corridors and toilets.

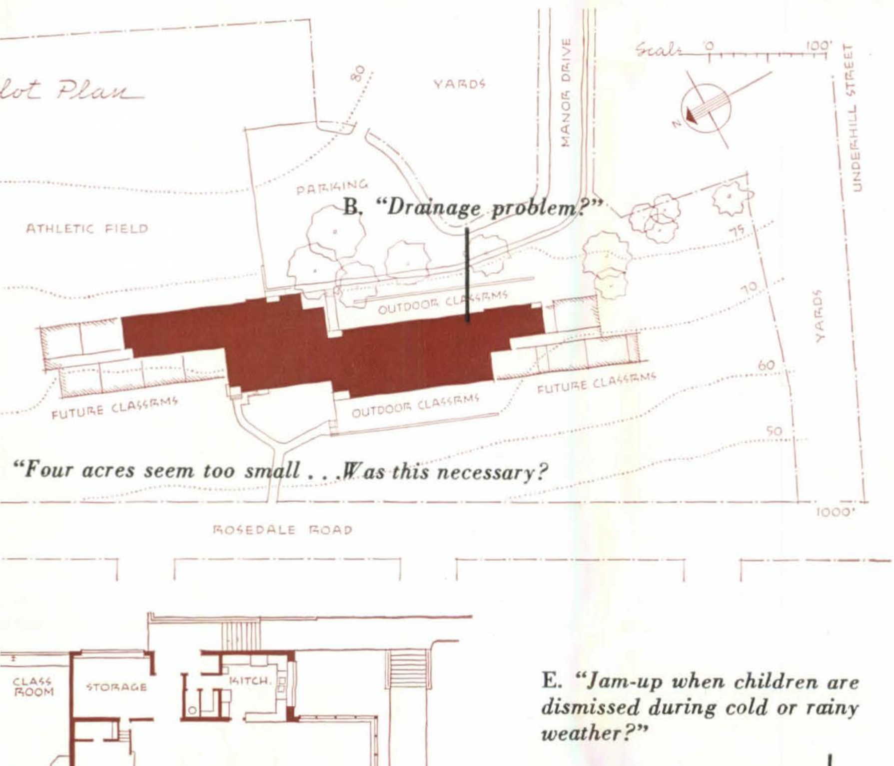
The heating system is vacuum-steam type with automatic temperature control; automatic dampers control mechanical exhaust ventilation from each room. All rooms have acoustic tile ceilings.

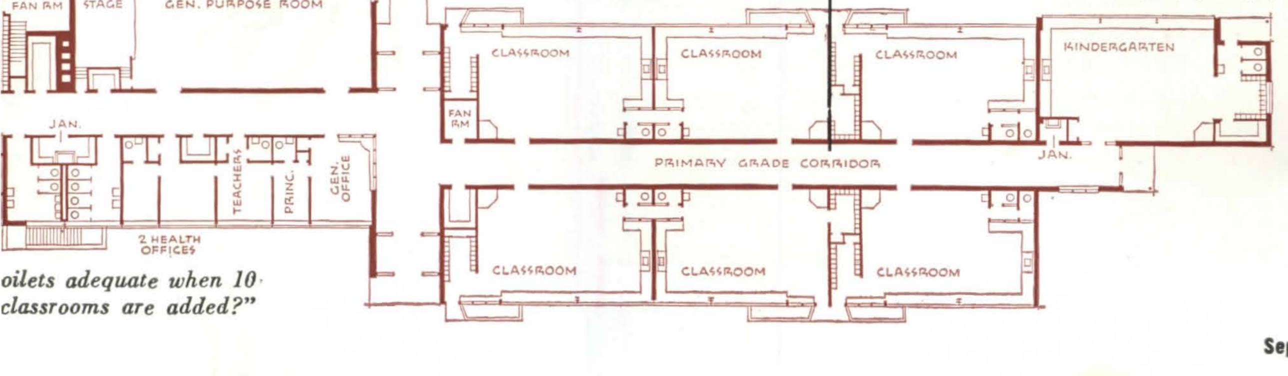
C. "*Are room shap adaptable to flexib rangement?*"



First Floor Pl







One analyst says "general character is excellent; clear details." "Very well integrated," comments another, "but not particularly exciting—at least from the photographs." A third hails the "quiet, dignified, restful aspect, with firm, logical disposition of plan elements."

Most admired points about the floor plan were "the simplicity in organization; effortless ease in expanding for future classrooms" and "the remarkably fluid pattern of circulation, yet with definite separation in elements of plan."

rebuttal

To questions raised about size of site (A on site plan), *the architect admits "four acres is a small site for the eventual school," but reports that "the owner has provided 6 acres for a subsequent school and is now contemplating an 8-acre site for a future school—all steps in the right direction."*

To the second question (B), *Fleagle replies that a "drainage system is provided along the east primary wing, and there is no water seepage at all in the pipe trenches."*

Flexibility of classroom arrangement (C), *the architect points out, is made possible "with portable, modular cabinet units. As to the adequacy of toilets* (D), *"when the classrooms are added, these facilities will be increased accordingly."*

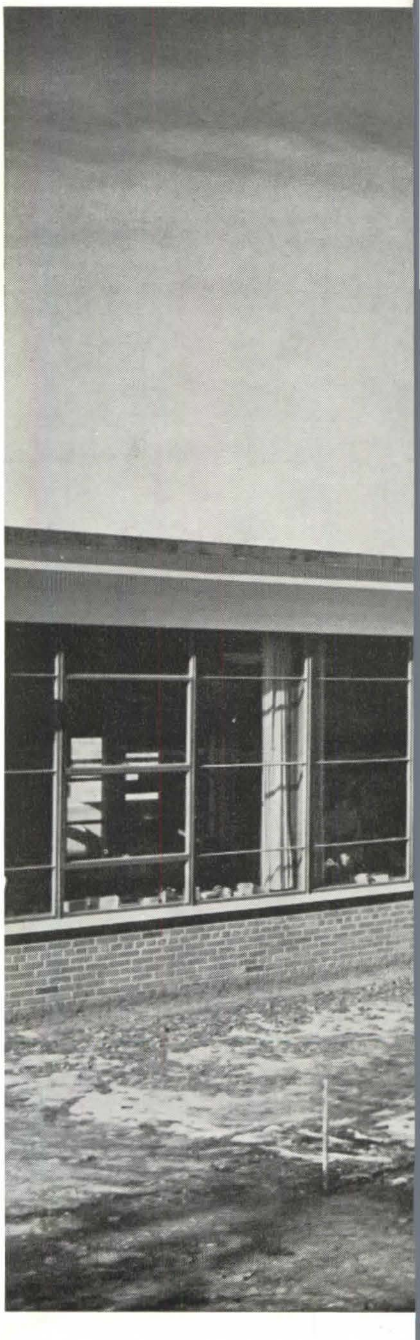
Apparently there has been no difficulty with the cloakroom scheme (E): *Lockers in the corridors and cloakroom alcoves were used in this school, and the teachers prefer the alcoves."*

Answering the question (F) *about the drainage of outdoor classrooms, Fleagle explains that "there are paired catchbasins in outdoor classroom areas."*

This school was one of the winners in t
recent competition for Better School D
sign conducted by *The School Executi*
One of the critics adds the following tri
ute: "We want to walk through it, leisure
inside and out. The pace is slow, the
mosphere conducive to eager, willing stud
Walt Whitman would want his descendar
to join up here, and get out on some
those nature studies."

All of the co-critics objected somewh
to the checkerboard floor pattern of t
asphalt tile; and one commented that t
terrazzo used for corridors is "undoubtec

Typical intermediate classroom and the kindergarten (two photos below) *and general view from south* (large photo). *Projecting element at left is the kindergarten. Metal Venetian blinds in all classrooms (and draw curtains in kindergarten) assist light control; artificial lighting consists of concentric-ring, incandescent, silvered-bulb fixtures in classrooms and fluorescent lighting in administration and health suite.* Photos: Richard Garrison



l-proof, " but "do you really dislike kids at much?" "On the contrary," Fleagle plies, "we like kids very much. So much that we want them to have clean, durle corridors that are cheerful and color- and easy to maintain."

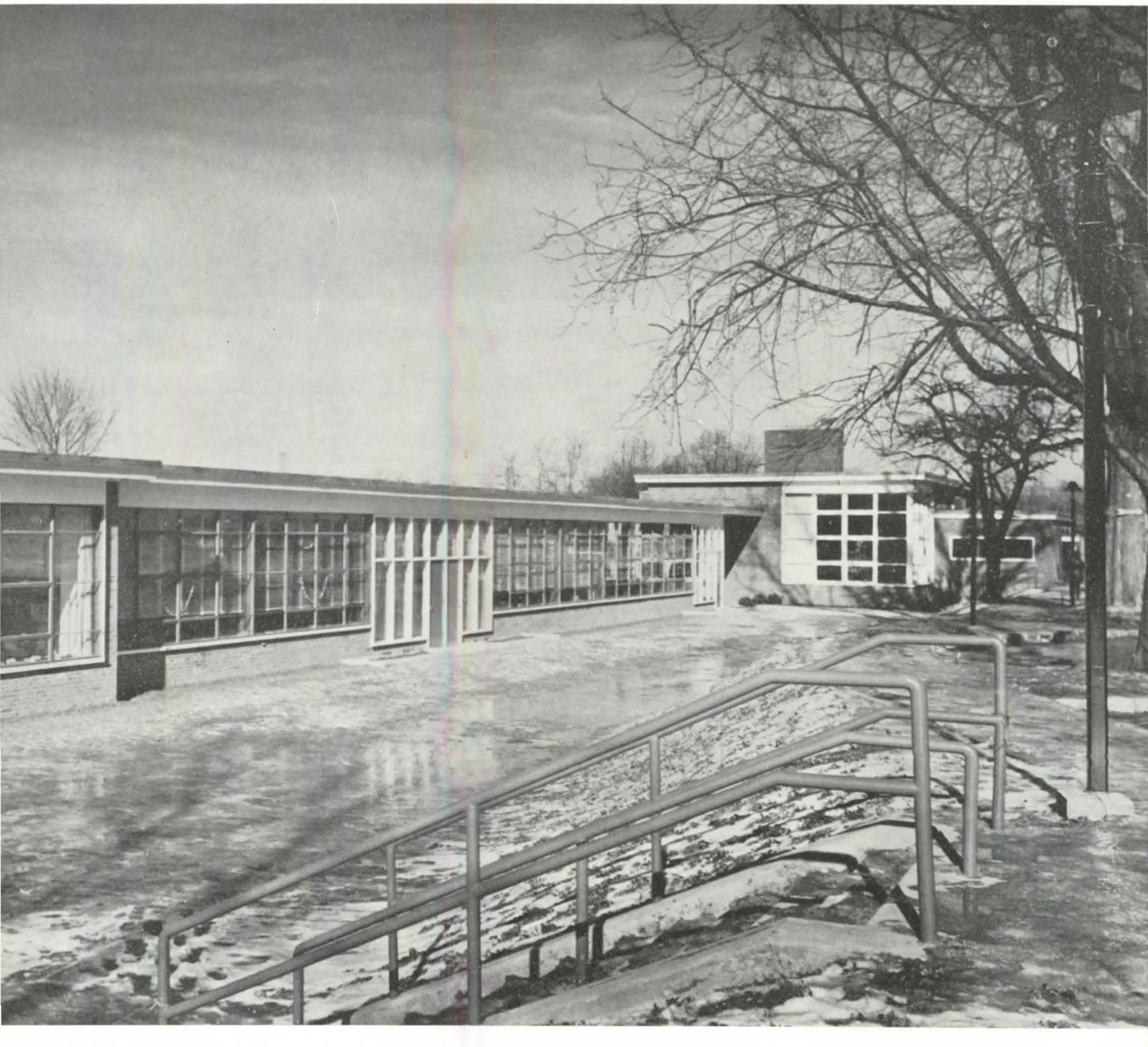
While one commentator finds the strucre "very clean, with materials practical maintenance, yet preserving informal aracter," another regrets "the narrow ips of masonry over long windows, as own over corridor windows in the interdiate-classroom wing." The architect s simply: "We like the masonry, in contrast to the other type of construction over windows. The possibility of this becoming a double-loaded corridor is quite remote."

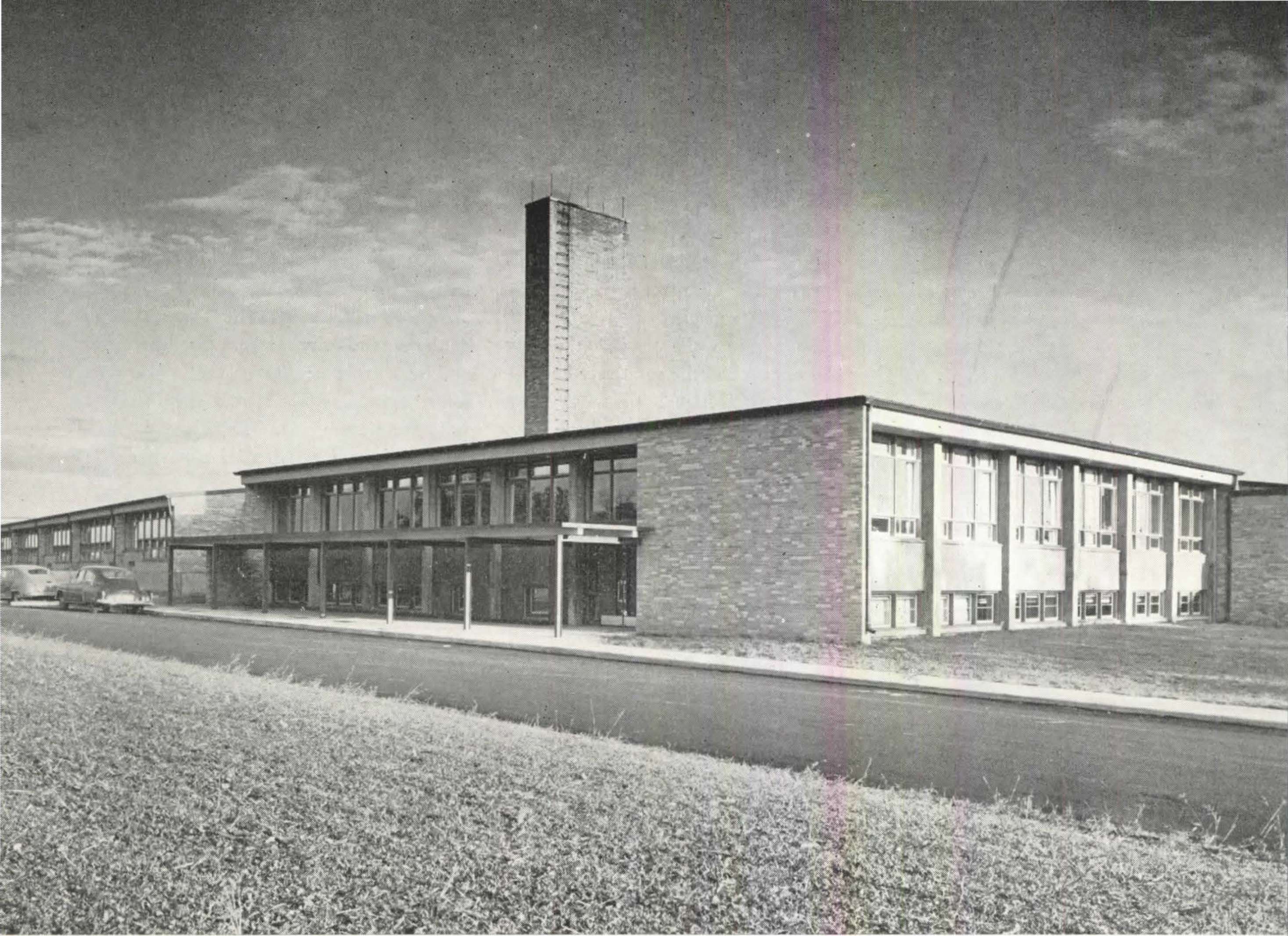
The bulletin board in the kindergarten coming right down to the floor is a "fine idea," says a critic, who asks: "Might not the chalkboards have been handled in the same way?" The architect agrees that this would have been good.

Another admires the provision of outdoor classrooms and the relatively low sills —"still not low enough but a move in the right direction. Have you gone far enough with it?" he asks. "With the sill one foot off the floor, we've gone as far as we can," says Fleagle "and still have space for a heating unit under the windows."

Three of the analysts felt that the close-mounted ceiling light fixtures resulted in a spotty distribution, an effect emphasized in black-and-white photography; and one calls "obsolete" unilateral daylighting and the need for Venetian blinds to control both sunlight and sky glare. To which the architect rebuts: "We think Venetian blinds provide sunlight and sky-glare control at minimum cost. They also contribute to the informal, residential atmosphere."

Yonkers, New York





Minneapolis, Minnesota

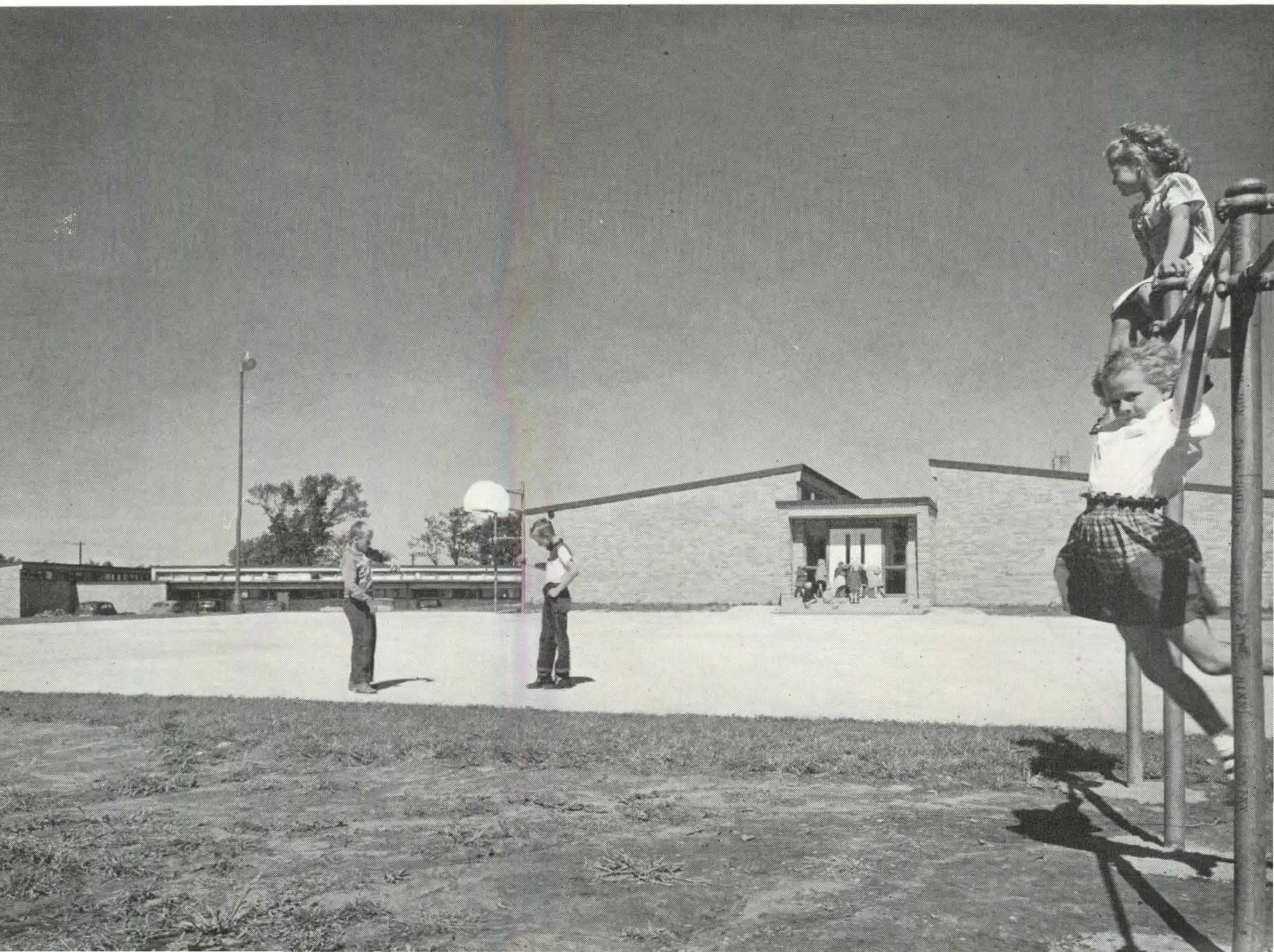
associated architects	Magney, Tusler & Setter and Perkins &
mechanical engineer	E. R. Gritschke
structural engineer	P. F. Griffenhagen
landscaping	Minneapolis Park Board
general contractor	Knutson Construction Company, Inc.

"Scale, warmth, and intimacy; all say here is a building for children," comments one critic of the Waite Park School, built in a fast-growing section of Minneapolis. "A good educational tool," echoes another. "It deserves special commendation for its obvious civic aspect and logical plan. Space, structure, and materials are all competently handled." The school, consisting of 22 classrooms, 2 kindergartens, a library, an auditorium, a gym, and various meeting rooms, is designed as both an elementary school and a community facility. It is built on a 15-acre site, 9 acres of which are owned and developed by the Board of Park Commissioners, 6 by the Board of Education. The building group, organized with 3 classroom wings radiating from a central, administrative core, is placed at the north end of the park-school tract.

In the main, the structure is of steel-frame and bar-joist construction, though bearing walls and reinforced concrete are also used for certain portions. Walls, inside and out, are of brick and floors are concrete. In most rooms, rubber tile is the floor surface. Hard maple is used in the gymnasium. Ceilings are finished with acoustic tile, and thermal insulation is of cellular glass. The heating system is coal-fired steam type, all classrooms being equipped with unit ventilators and baseboard radiation. The basement playroom and southeast kindergarten employ a radiant floor-panel system. The entire buildi has a pneumatic day-night automatic te perature-control system. Lighting throug out is fluorescent, clerestories provide lateral natural lighting in classrooms.

One of the commentators found t school "well planned and a very efficie looking plant," but added that the finish design is rather "institutional in cha acter." A second was a bit critical of t rambling plan scheme and felt that t building "lacks unity as a total compo tion." With the "institutional" observatio the architects partially concur, but go to say that "we believe that landscapi and color, particularly on the interior, much to retrieve this situation."

l view of main entrance and adminis- core (acrosspage) with lower-grade extending at left. Viewed from the (below), the double-loaded corridor houses the third and fourth grades, wing at left is for fifth and sixth s. In the main entrance lobby (right), er of the lounge appears at right, while ss partition in the background marks om outside the principal's office.
: Warren Reynolds, Photography, Inc.



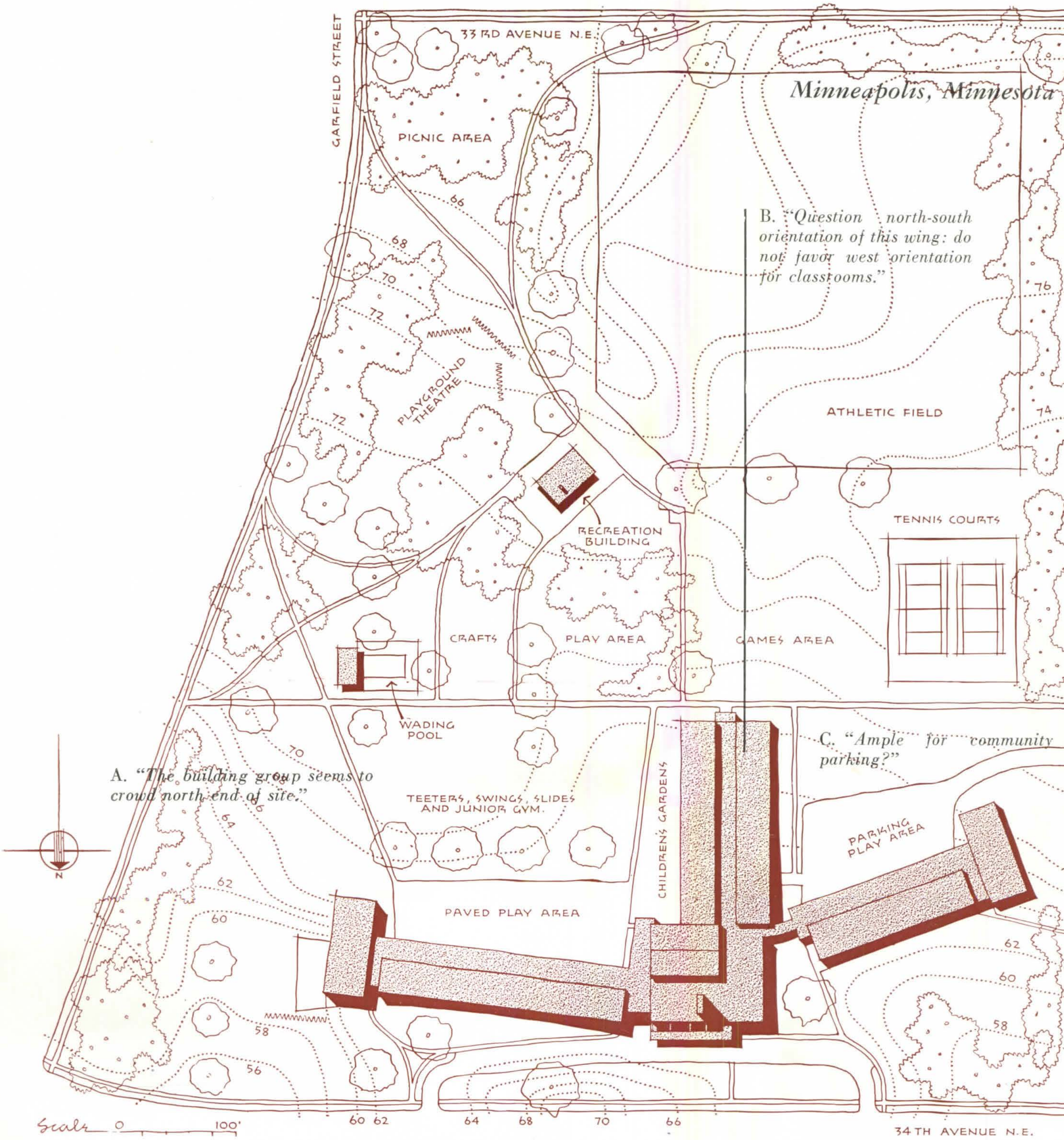
"Excellent community use and separation of play groups"; "Separate playgrounds particularly admired"; "Co-ordination with Park Department commendable."

rebuttal

Answering the first question (A on site plan): *"Perhaps not too serious," say Perkins & Will, "since next-door neighbor is a park," which, as Magney, Tusler & Setter emphasize, "is used as a play area as well as community playground."*

Magney, Tusler & Setter agree orientation (B) *is "debatable" but "so is any other orientation. We feel the worst is south and that the two middle-ground ones are east and west."*

"So far as we know," say Magney, Tusler & Setter, "the parking area (C) *has proved ample; we have never seen the front drive crowded with parked cars."*



Especially admired: Relation of class-m groups to each other: the library-nge-corridor relationship, and a feeling intimacy"; "Separate wings for the ious grade levels."*

ebuttal

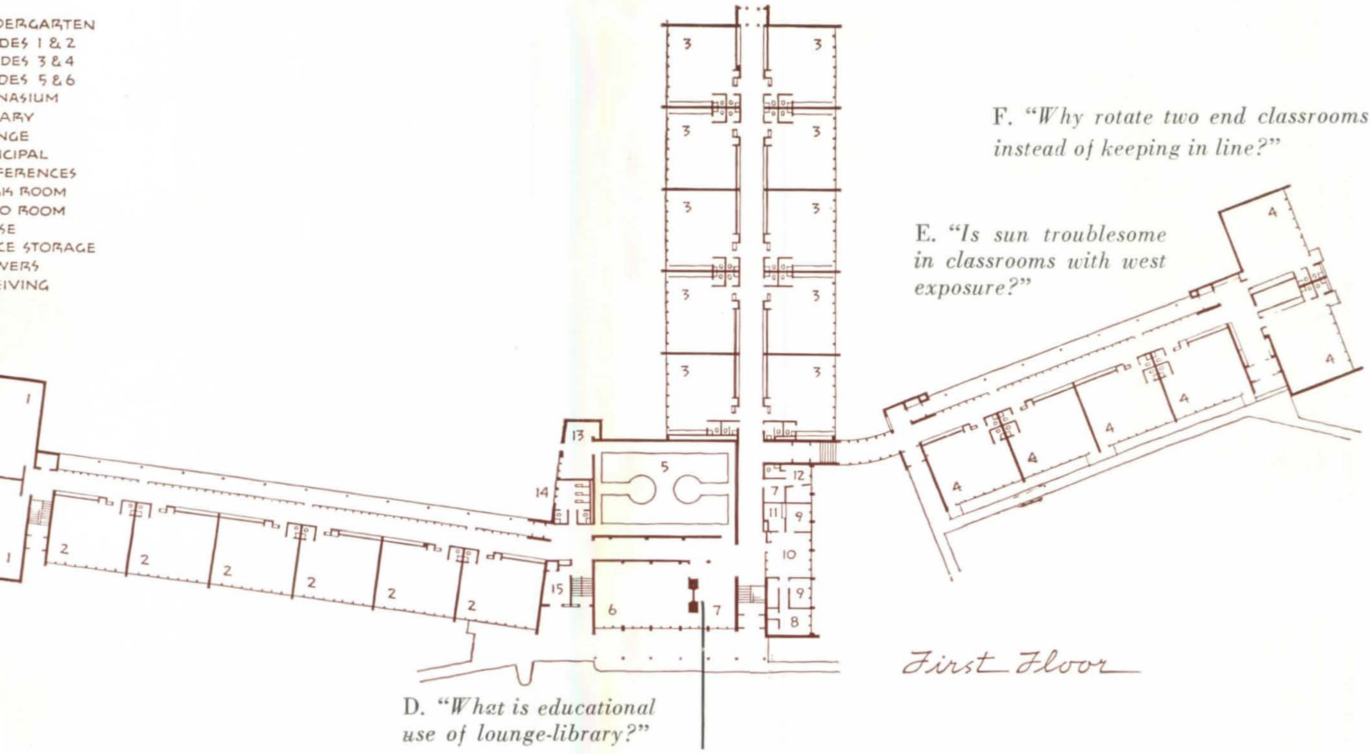
agney, Tusler & Setter explain that library (D) is designed not only to ide for school library functions, but also as a branch of the Minneapolis library system."

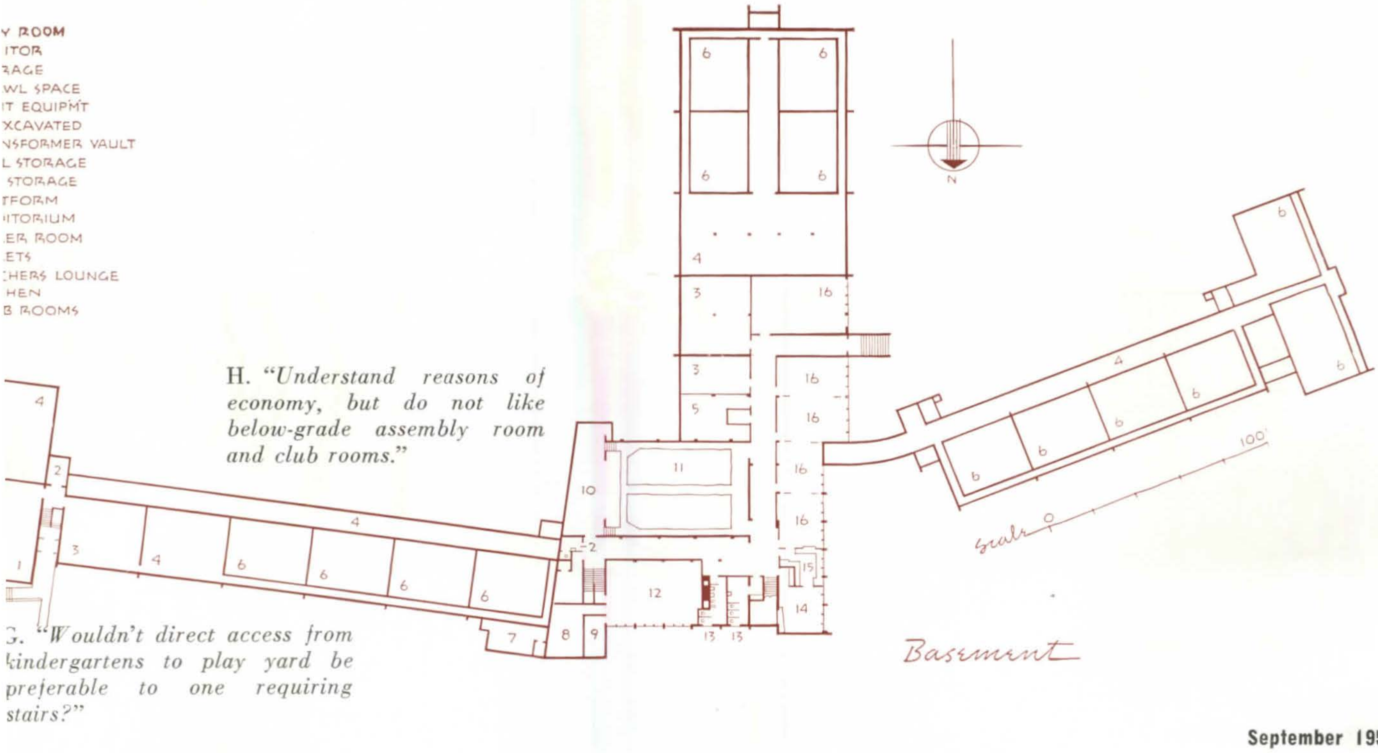
Perkins & Will admit that sun in western classroms is "unarguable" (E). However, "the overhang, plus the jib wall, seem to keep this problem from being serious." Magney, Tusler, & Setter comment: "We think there are times of the teaching day when sun can be very pleasant."

End classrooms were rotated (F), according to Magney, Tusler & Setter, "because of the property restriction along west side."

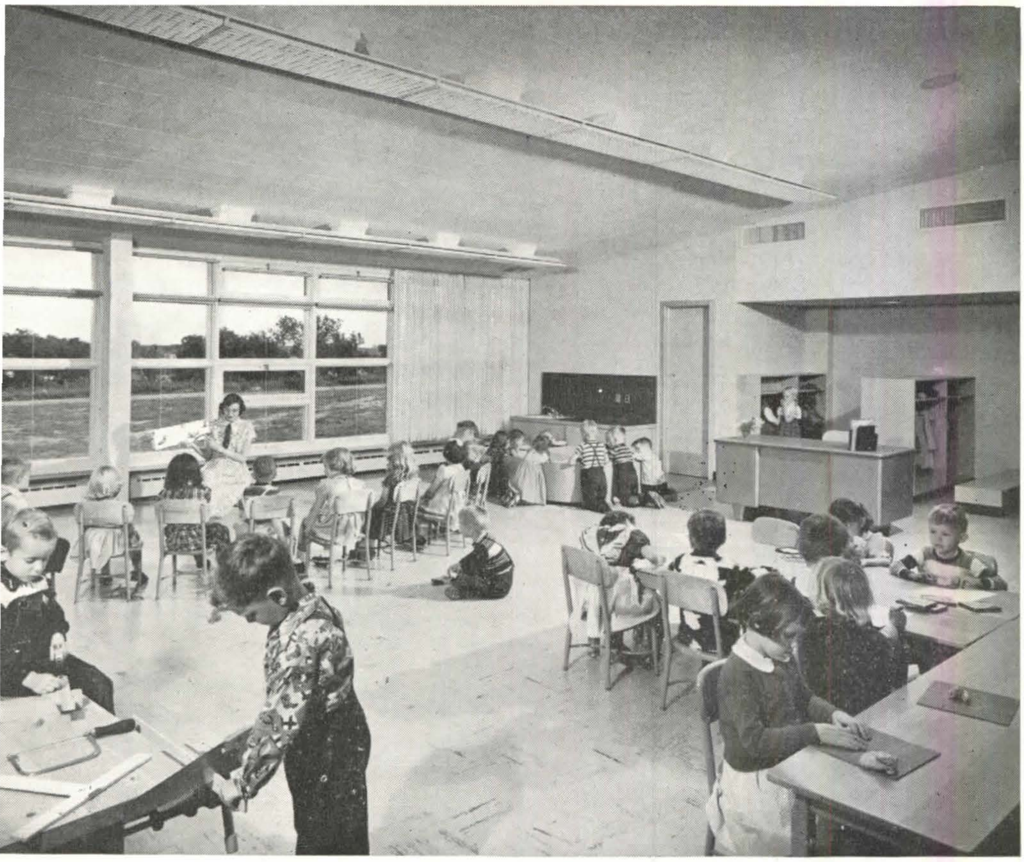
"We, too, wish that kindergarten youngsters did not have to maneuver stairs" (G), agree Magney, Tusler & Setter, "but the kids seem to cope with them well."

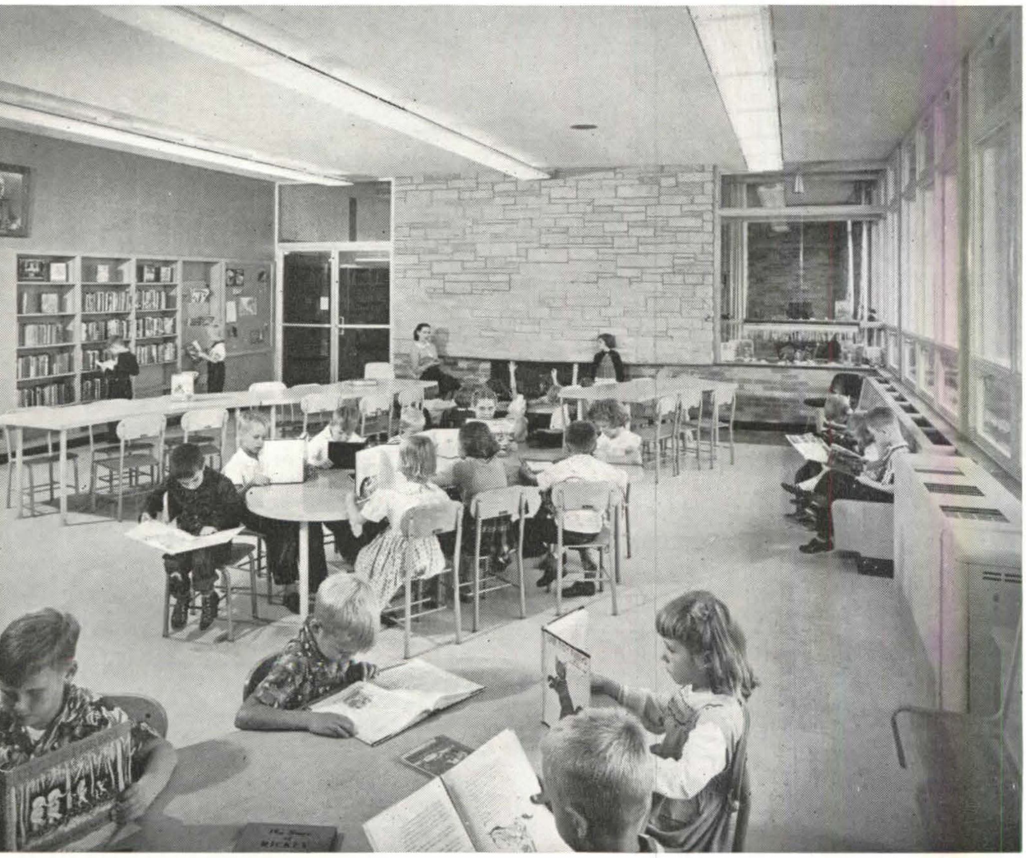
Perkins & Will comment: "We have visited several auditoriums (H) where windows were heavily curtained to eliminate the disturbing sunlight."

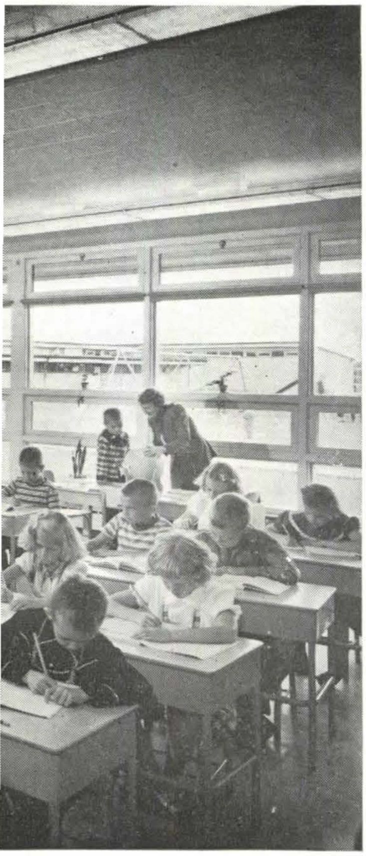


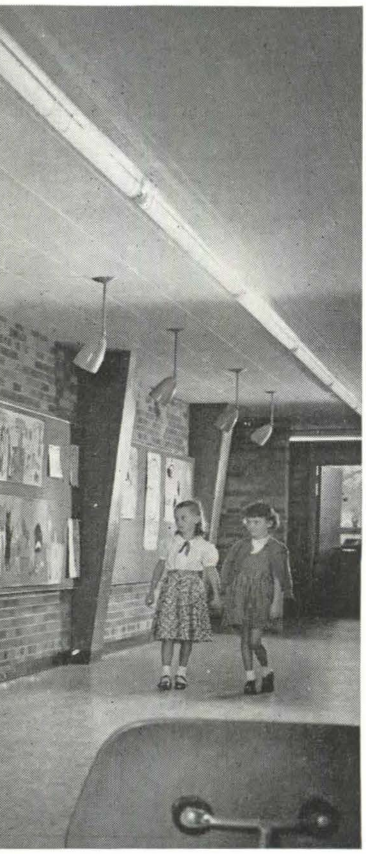


round-robin critique: elementary schools









Minneapolis, Minnesota

A kindergarten *(top, acrosspage)* and typical classroom *(immediately at left).*

The library *(bottom, acrosspage)* and a corridor with painted acoustic-tile display panels, floodlighted from above *(immediately at left).*

One co-critic found the structure "good in every respect," with wood windows "commendable." A few points questioned: "Have snow and wind conditions in Minneapolis given water trouble at clerestory sash along the double-loaded corridor?" "Does sound travel from one classroom to opposite one when sash are open here?"

"We think we now know the answer to the problem of snow conditions over the double-loaded corridor," reply Perkins & Will. "We saw eight of them through our worst snowstorm and had no spot of moisture from leakage in any of them."

The problem of sound travel seems not to be serious, for "we have had no complaints . . . Actually, it is seldom in this climate that the operating sash are used during the normal school year."

One analyst applauds the bilateral daylighting, but questions "glare condition from sky in clerestories and fluorescent fixtures." A second questions "location of chalkboard below clerestory, with seats facing this wall."

Magney, Tusler & Setter "agree that sky glare is a problem, and do not think that the bilateral section is the answer to the problem of brightness ratios in classroom design." Perkins & Will comment that the fluorescent fixtures are "relatively low brightness light sources . . . This office attempts to combat glare by pouring so much light into rooms that the contrast with the outdoors is not as great as unconventionally lighted or over-shielded classrooms."

Location of chalkboard below clerestories "is *questionable," Perkins & Will admit. "This was done in recognition of the superior importance of tackboard in this particular program."*

While admiring the lighting scheme, one of the critics questioned the ventilation aspect of the design: "We have never solved the problem of how to handle the exterior appearance of intakes for unit ventilators and don't think the problem was successfully solved here."

The architects generally concurred. "We agree that the sill line bouncing up and down is mildly disturbing," say Perkins & Will, "but far less so than not having some *low sill to look over."*

Torrance, California

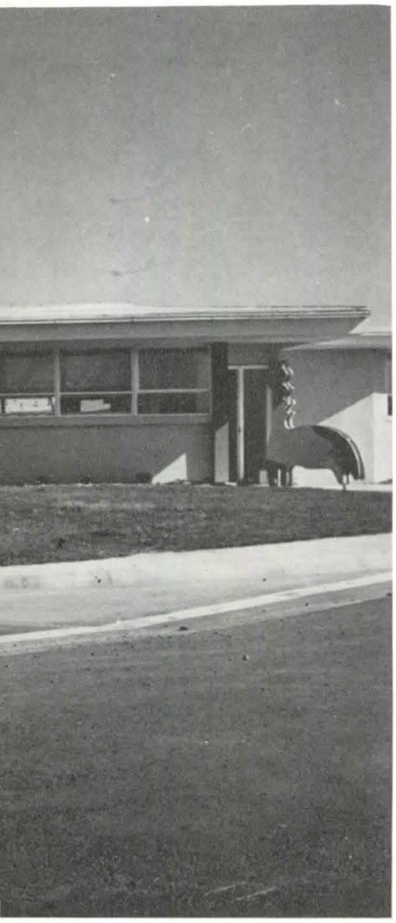
architects	Daniel, Mann, Johnson & Men
mechanical engineer	Chester Walz
electrical engineer	Foster K. Sampson
general contractor	Harry Heirshberg

The program for the Seaside School, Torrance Unified School District, included: 12 initial classrooms with provisions for expansion to 16; homemaking room; shop; kindergarten, a multi-purpose building (cafeteria-auditorium), and kitchen. Located in a mushrooming residential community, the site is a hilly 10-acre area near the ocean. To utilize the major portion of the site for playground, the buildings are placed laterally along the contours, with playgrounds divided into areas for different age groups. The kindergarten has a separate location and its own playground. Each classroom has its own outdoor instruction area.

"A very honest, clean, contemporary, design," comments one of the critics. Another calls the school "a handsome, well-integrated structure." Particularly admired by a third are "the strong, horizontal, earth-hugging ties formed by classroom louvers, covered walks, and roof lines." The fourth names it "a competent, smooth solution."

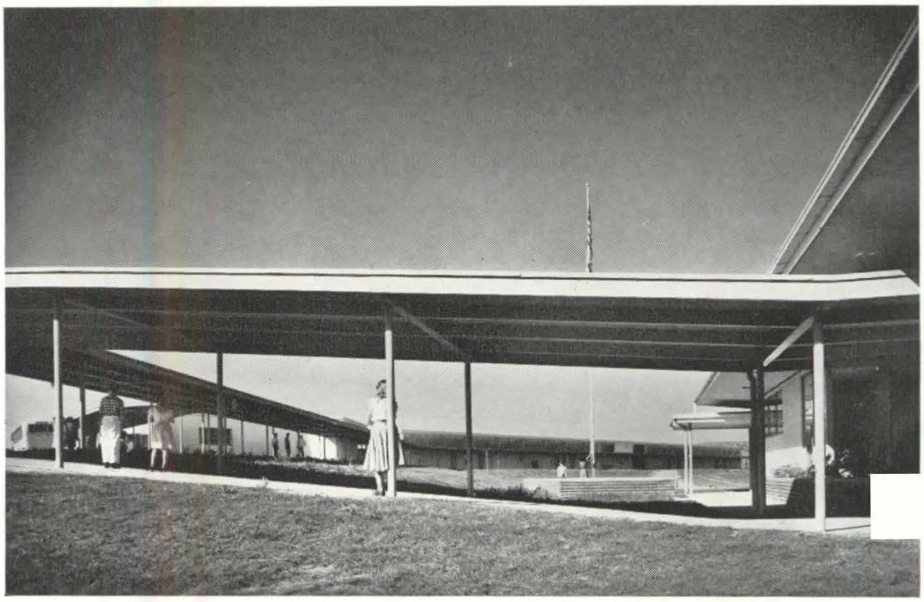
The structural system is steel frame—columns, beams, and trusses. Shear walls (end walls of units) are 2″ x 6″ stud with solid sheathing for a diaphragm. Other walls are 2″ x 4″ nonbearing partitions "allowing complete flexibility of room expansion when new teaching methods require more space." Floors are concrete slab; exterior walls are stucco or plywood, while plaster and plywood are used inside. Flooring is cement, asphalt tile, or terrazzo. Wool batts handle thermal insulation. Sash is steel, with DSB glazing. Natur lighting is bilateral, with windows o louvered to eliminate glare. Heating main consists of gas-fired unit h though a radiant system, with copp ing in the slab, is used in the kinder

One critic finds the structure "v gional in character; simple and ec cal." Another asks: "How does st struction affect client's fire-ins rates?" They also wonder if the st painted, and if this isn't a maint problem. The architects explain t this locality, wood frame constructi not impose excessive fire-insuran miums." As to the stucco, "it *does* a maintenance problem; used only interests of initial economy."



Viewed from the southwest (left), *the kindergarten structure is at right of the photo, classroom wing at left. Covered walkways* (below) *connect most units, and south sides of the buildings are fitted with aluminum, louvered sunshades. A criticism was that the over-all design seemed "a bit dramatic." To which the architects reply that "the drama is mostly a by-product of the extensive horizontals. A serious attempt was made to reduce the scale vertically, so that children would not be overwhelmed."*

Photos: Julius Shulman



Generous applause greeted the site plan; one commentator finding it "most commendable; difficult to improve on this comprehensive study of building-site relationship." "A tremendously difficult site," comments another, "but the relationships were excellently handled." "Bus-loading dock and relation to buildings and Sharynne Lane most admired," says another firm. "We like classroom units at level between street and playgrounds."

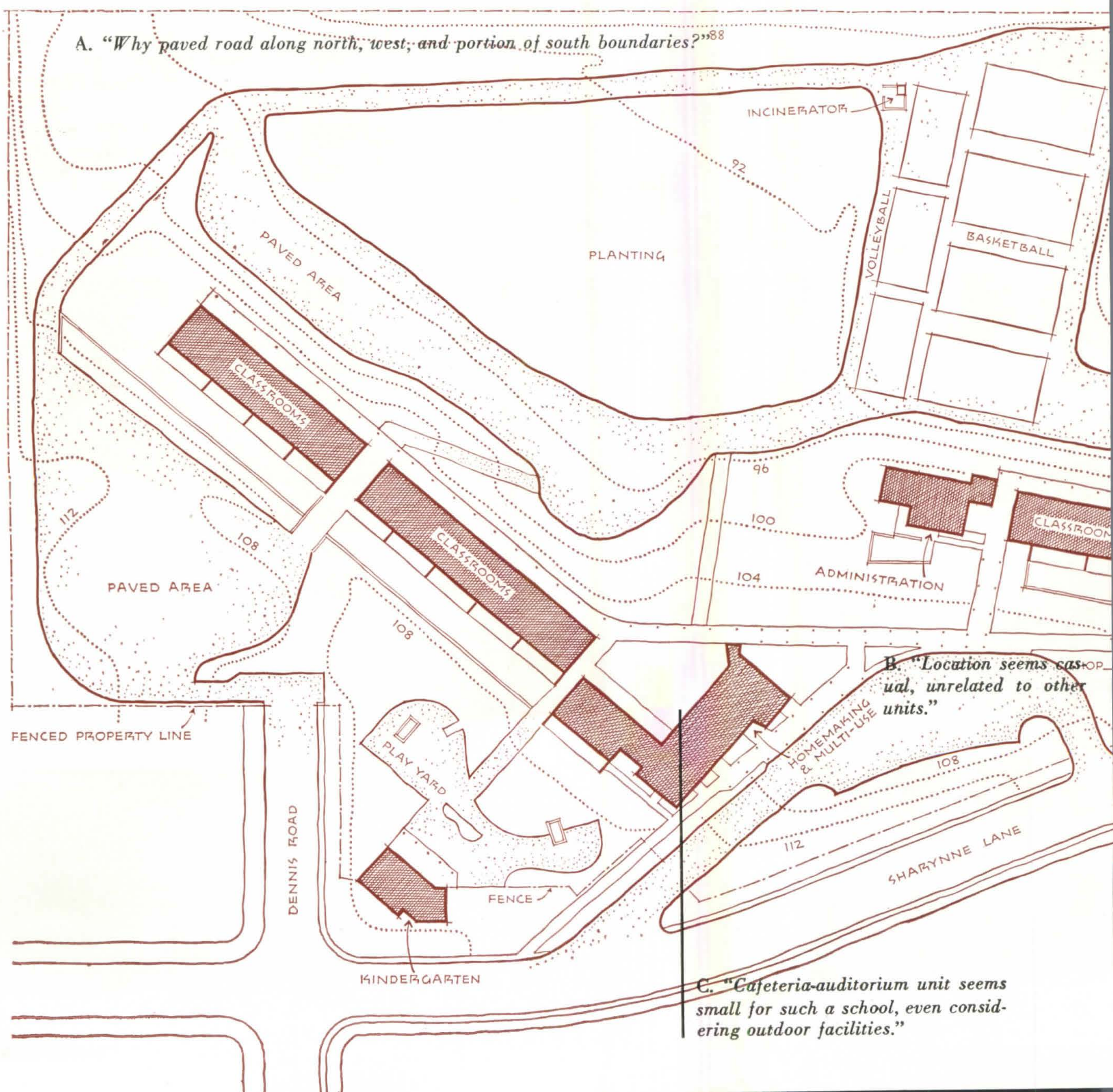
rebuttal

In answer to the question about paved roads (A, on site plan), *the architects explain that the roadways are "for maintenance access over sandy soil." The second comment* (B) *brought the rebuttal that "the shop building and homemaking room are for use also by uppergraders from other near-by schools, transported here by bus. This, plus need for sound isolation, dictated the shop location. We agree that the problem of related form was incompletely solved." Regarding the third point* (C), *the architects quote Dr. J. Henrich Hull, Superintendent of Schools: "The cafeteria-auditorium has been completely adequate and never overcrowded. The building of large auditoriums that are standing idle a great deal of the time are not within District policy."*

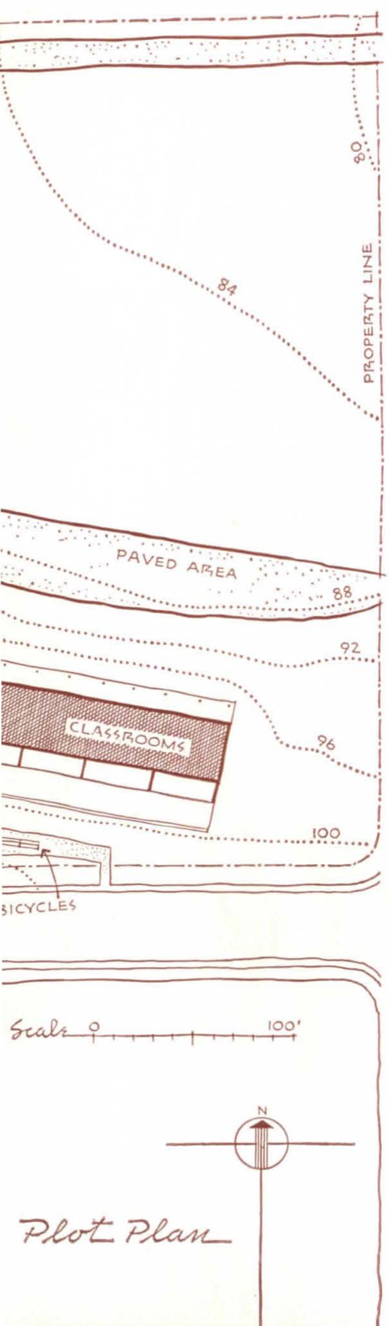
In the handling of classroom units and the typical classroom, an admiring critic applauded the "freedom in the concept of the entire plan, and the centralize ministrative and multi-use facilitie second says "the classrooms, singly units, are beautifully straightforwar direct." "I believe the inverted trus the louvers provide excellent ligh trol," comments a third.

rebuttal

In reply (D), *the architects "Classrooms are expandable in terr radical departure of teaching techn requiring the division of a 4-class block into two or three spaces." " has been no damage to louvers from ning,"* (E) *the architects tell us, " struts at bottom are stiff and uncor able." The choice of the inverted*

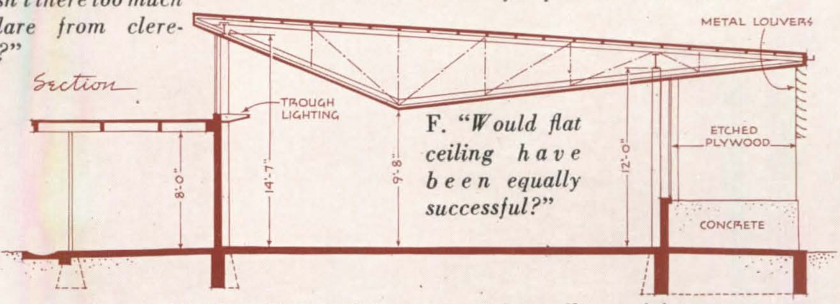


for the ceiling was made "to
erior scale of room and to assist
ribution and acoustics." As to
the daylighting works out in ac-
G), "there seems to be great di-
opinion about what good class-
ting consists of. We feel the
and foot-candle problems have
tty well solved. Most of our
ffort is aimed at holding foot-
ariations within a good comfort
hout sacrificing foot-candles." To
about California sunshine (H),
tects reply: "Direct sunlight is
Even the north sky-glare in this
source of some discomfort and
60 foot-candles at working sur-
aring to be inadequate."



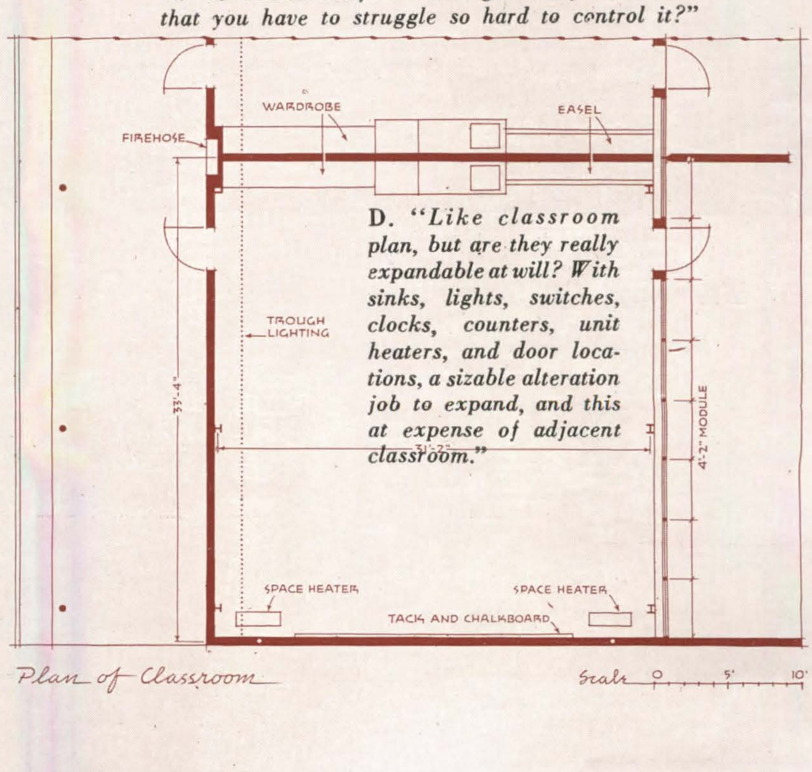
G. *"Don't think this daylighting system works well. Isn't there too much sky glare from clerestories?"*

E. *"Are louvers built to withstand show-offs who want to jump and chin themselves?"*

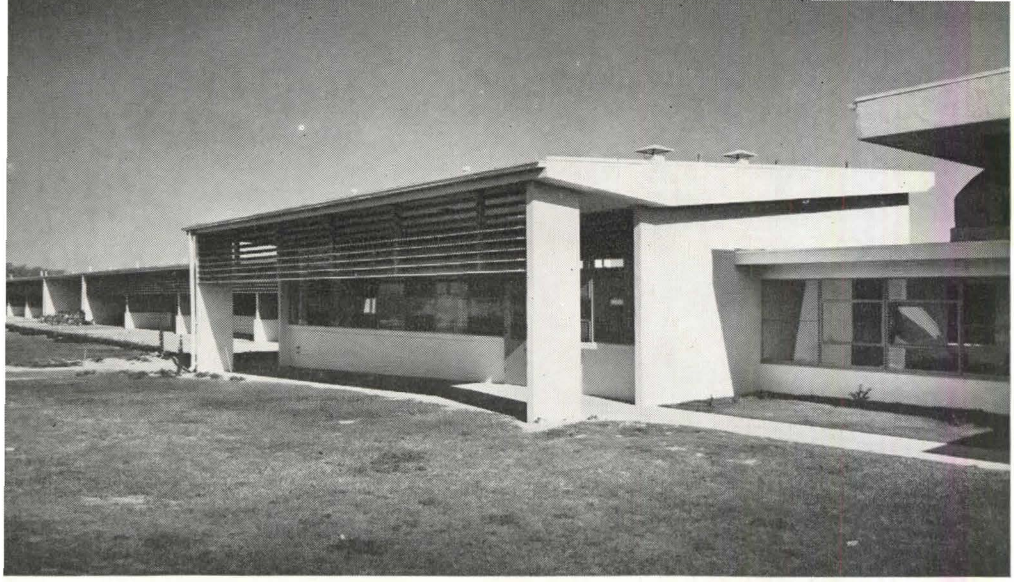


F. *"Would flat ceiling have been equally successful?"*

H. *"Is a little California sunlight really so vicious, that you have to struggle so hard to control it?"*



D. *"Like classroom plan, but are they really expandable at will? With sinks, lights, switches, clocks, counters, unit heaters, and door locations, a sizable alteration job to expand, and this at expense of adjacent classroom."*



Torrance, California

Exterior and interior of homemaking unit *(two photos above)* and detail of typical covered walkway *(right)*, the latter being a detail especially admired.

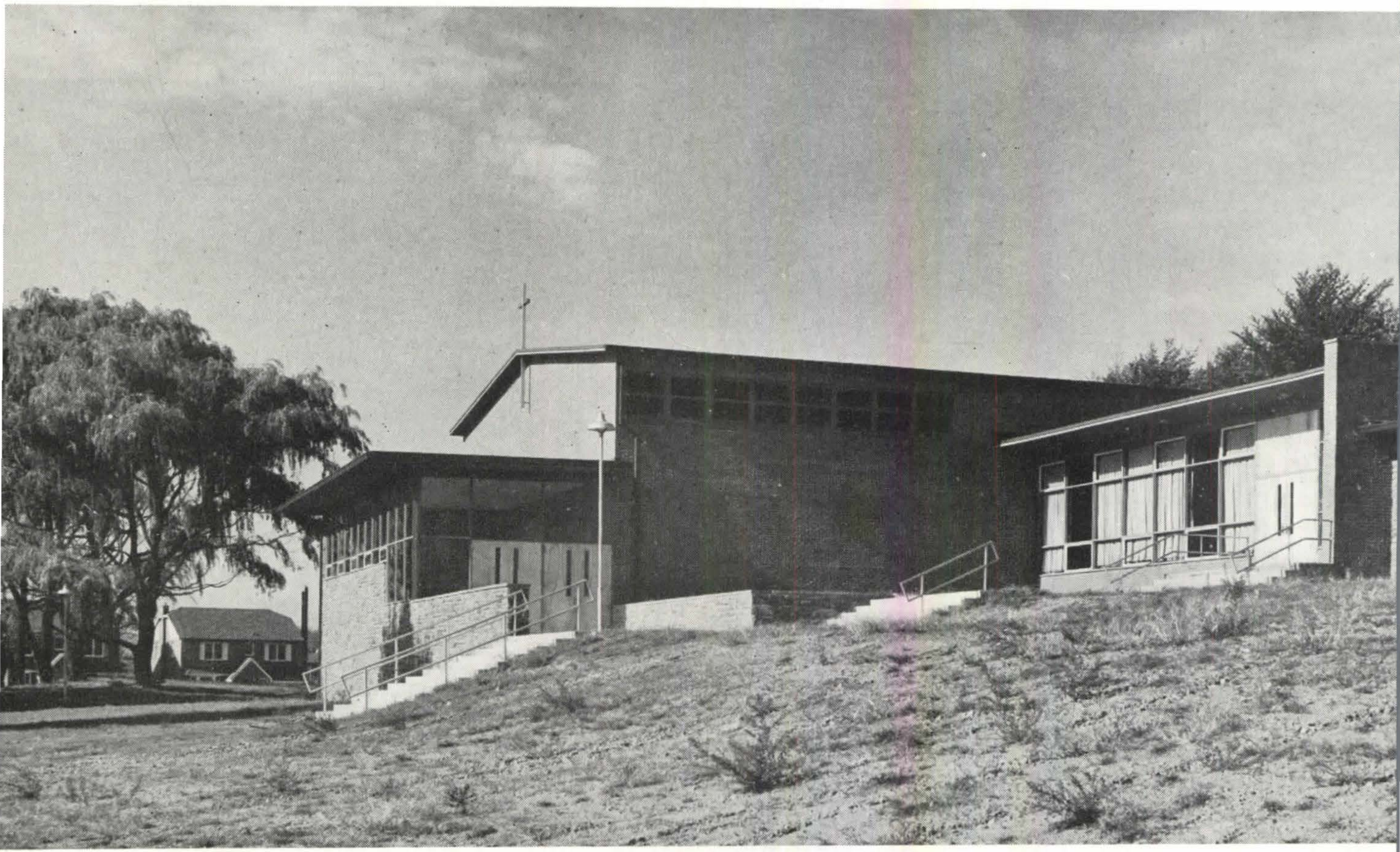
Exterior and interior detail of kindergarten building (*below*). The play area is on the north; strong southwest winds dictating this protected orientation. The north skylight in the kindergarten roof has heat-absorbing glass.

o of the critics commented on lack of dscaping—"regret lack of trees, but s is hardly the architects' fault"; "land-ping would soften the entire group, and feel that a primary school should in- softly rather than beckon urgently." e architects simply say that "landscap- is a hope of the future."

'We like that ceiling line in the class-m from the point of view of natural ht distribution and improved acoustics," s a comment, "but can figure no reason the roof treatment at end walls out- e the units. The slope does not seem follow line of truss." The reason is ir-utable—"straight poetic license," the chitects explain.

The photograph of the kindergarten ottom, at right) *brought the observation t "the only thing out of place here is children. It seems like a needless nplication of forms, and I wonder if the uggle accomplishes enough to justify ' The architects say "the complexity of kindergarten ceiling is a result of an empt to get benefit of silver-bowl lamps, hout low-pendant fixtures. The con-ion in the flesh is not as spotty as the otograph suggests."*

architect	James A. Nolen, Jr.
associate architect	Herbert H. Swinburne
structural engineers	Earl P. Allabach Associates
mechanical engineer	A. Ernest D'Ambly
general contractor	L. F. Driscoll Company



Philadelphia, Pennsylvania

According to one analyst, the St. Therese of the Child Jesus Parochial School is "a very satisfactory whole, taking advantage of a beautiful site." Another calls it "good architecture—pleasing exterior achieved by simple use of materials." In the opinion of a third, "adjusting two levels to the drop in grade interestingly done." The fourth also finds this aspect of the building "excellent."

The program called for 12 classrooms and an all-purpose auditorium, to be used for saying Mass, holding assemblies, staging plays, and for athletic activities. A cafeteria was also needed, both for school lunches and parish social activities. Other needs were: library, clinic, and administrative offices. All to be built within a $400,000 budget. The site was an irregular shaped area of 8 acres.

Basic structure of the building is reinforced concrete: frame, floor slabs, and roof slabs. Exterior wall surfaces are stone or brick; inside walls are limestone-concrete block, with ceramic tile used in toilets. Flooring is variously asphalt tile, flagstone, ceramic tile (toilets), and maple (auditorium). The concrete ceilings are left exposed in classrooms, though acoustic tile is used in the lobby. Sash are either architectural or wood projected. The school has a master intercommunication public-address, radio, and phonograph system; also a master clock and fire-alarm system. Lighting is fluorescent in offices; incandescent in classrooms, lobby, an ditorium.

The heating is by a split system, wi percent distributed by radiant coils i floor slab and the remainder supplie forced hot-air, with individual contro each classroom.

Two commentators question the gency of exterior materials, one com ing "would prefer brick throughout r than stone at lobbies and retaining w The architects reply simply: "We c agree." To a comment that it was u tunate to omit acoustic tile in corr and classrooms" the architects reply "corridors certainly need it"; how sound conditions in classrooms show such treatment "is not necessary."

participant asks about use of reinforced crete structure on a restricted budget. The hitects say: "Our engineers figure the roof $2.50 per sq ft in place, and we have no ection to the exposed beam ceilings. By time a finished ceiling is provided to cover iter materials of construction, it costs t as much as to provide a fireproof type ucture. . . . All formwork is standard and etitive . . . forms were used over and over in." Photos: Hagan-Halvey

Among the admired elements of the site plan: "Good disposition on difficult site"; "Commend segregation of play area from future church and rectory; two-story wing, with grade entrances at each level, well planned"; Placing of the building to separate parts of site is good"; "Site plan exceptionally well handled."

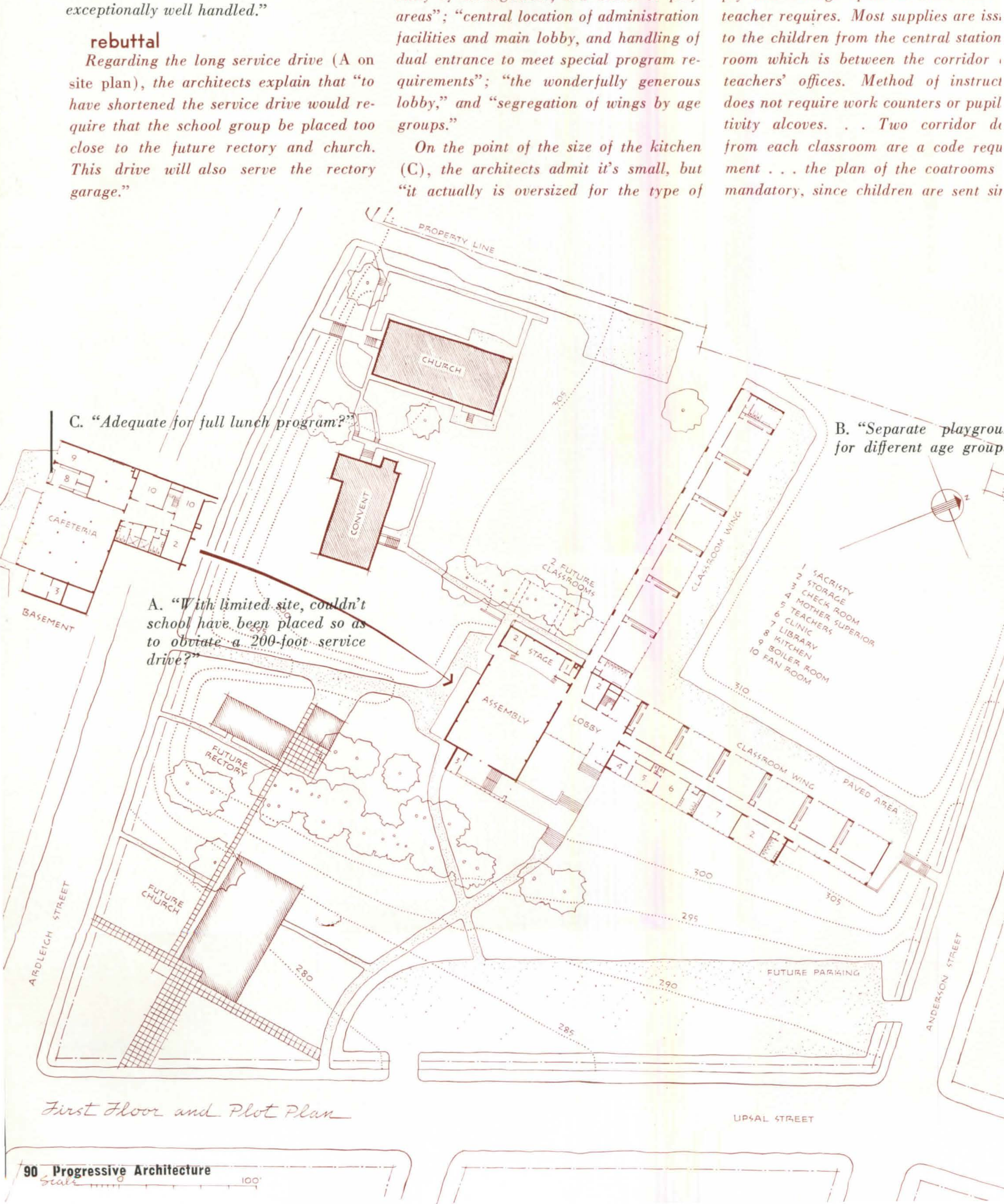
rebuttal

Regarding the long service drive (A on site plan), *the architects explain that "to have shortened the service drive would require that the school group be placed too close to the future rectory and church. This drive will also serve the rectory garage."*

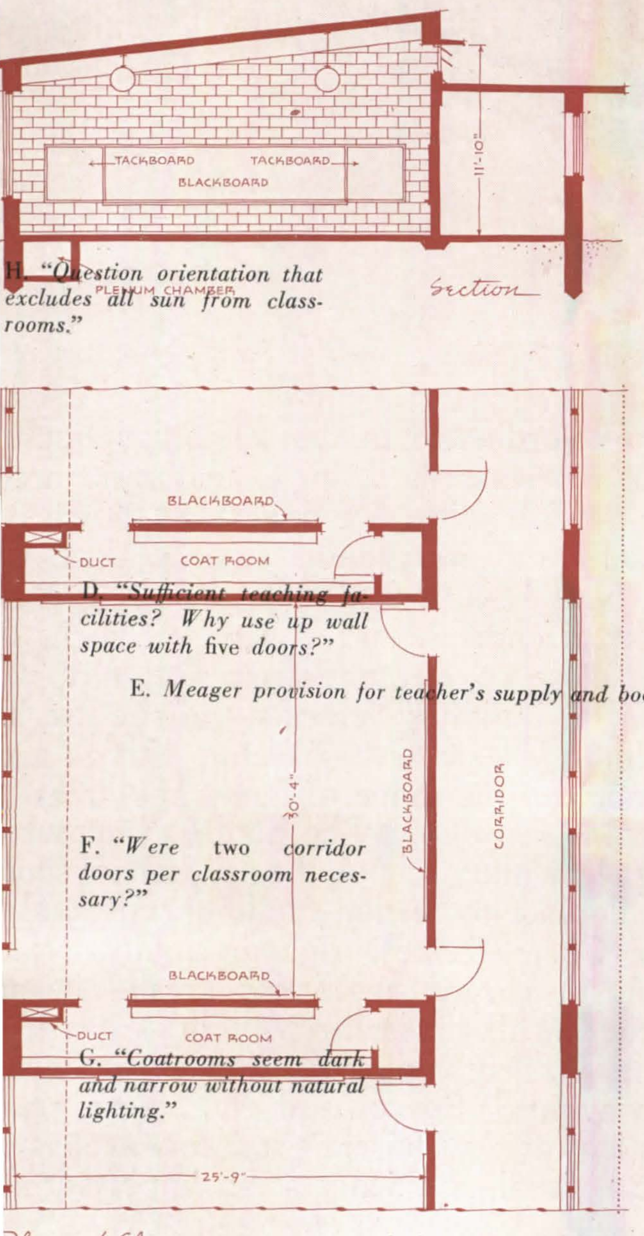
The fact that there are not separate playgrounds (B) *is explained by the fact that "a common playground easily supervised was a program requirement."*

Most admired in floor plans was "a basic classroom unit that provides good flexibility of arrangement, and access to play areas"; "central location of administration facilities and main lobby, and handling of dual entrance to meet special program requirements"; "the wonderfully generous lobby," and "segregation of wings by age groups."

On the point of the size of the kitchen (C), *the architects admit it's small, but "it actually is oversized for the type of lunch program conducted here. . . M storage is about the only item that must accommodated. The kitchen is more serving refreshments for social and par activities." Regarding other points* (D, F, and G), *they reply that "actually, s ply and storage space is more than teacher requires. Most supplies are iss to the children from the central station room which is between the corridor teachers' offices. Method of instruct does not require work counters or pupil tivity alcoves. . . Two corridor d from each classroom are a code requ ment . . . the plan of the coatrooms mandatory, since children are sent si*



Philadelphia, Pennsylvania



H. *"Question orientation that excludes all sun from classrooms."*

D. *"Sufficient teaching facilities? Why use up wall space with five doors?"*

E. *Meager provision for teacher's supply and book storage."*

F. *"Were two corridor doors per classroom necessary?"*

G. *"Coatrooms seem dark and narrow without natural lighting."*

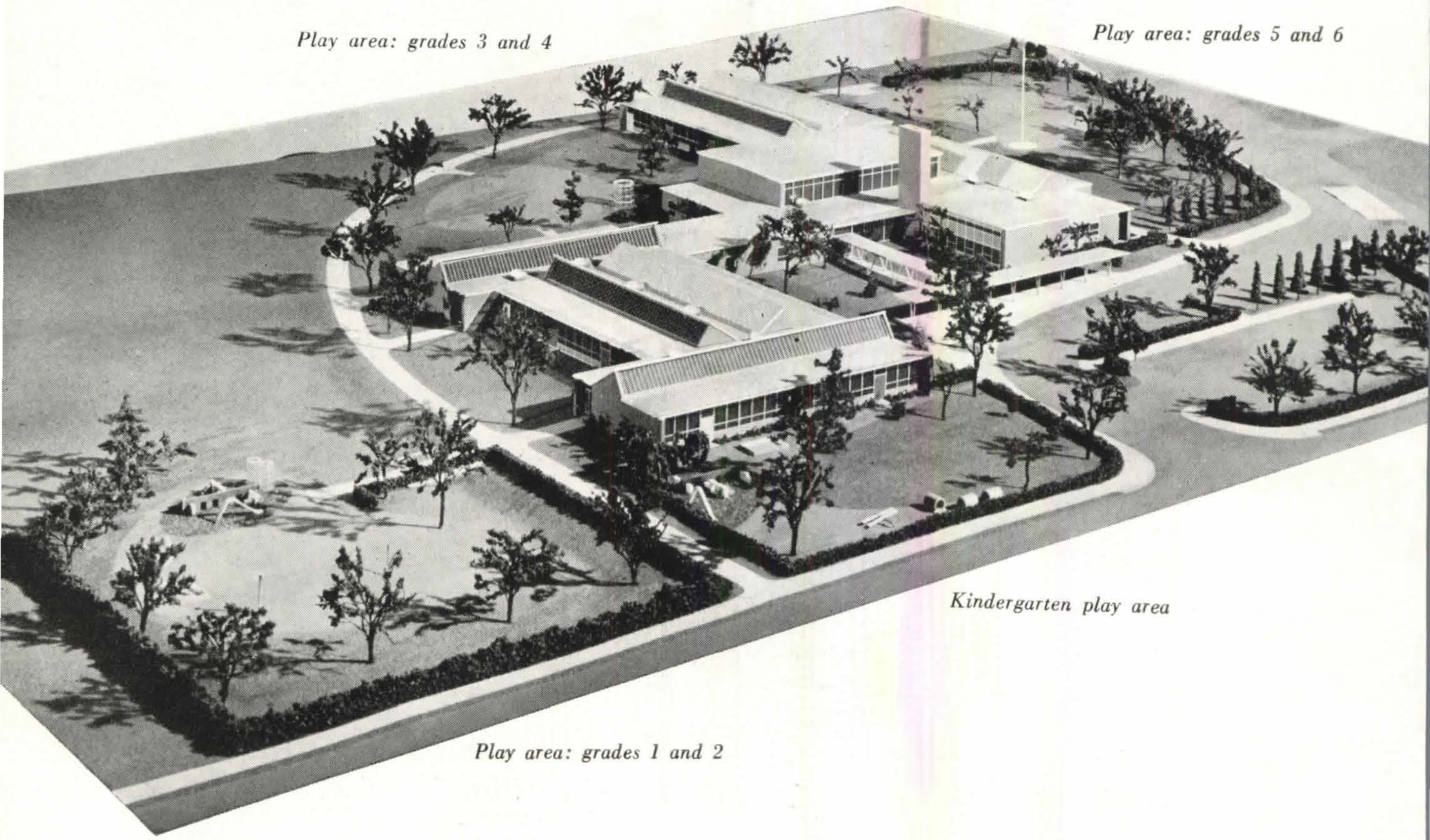
file in one door and out the other as they pick up their wraps."

Most discussion surrounded the north-oriented classrooms, with no sunlight. While two participants criticized this, the others agreed with the architects that "elimination of sunlight is certainly desirable." "Shades and Venetian blinds are difficult to maintain and keep clean," the architects point out, "they slap and rattle when the wind blows and, above all in our opinion, a traveling line of sun slanting across a wall and shifting from desk to desk is more disturbing than excessive glare and certainly builds up brightness contrast ratios." Whatever the final answer, "the users of this school comment very favorably on this aspect of the design."

Questioned was the adequacy of the bilateral lighting, from "shaded and rather small clerestory." This was echoed in the comment: "We have found this size clerestory too small to move either light or enough air to justify the struggle—feel it should be substantially larger or not at all." "Could be," rebut the architects. "On the other hand, we also object to excessively high ceilings in classrooms or the more steeply sloping ceilings that would be required to give additional height to clerestory sash. Do not agree that it does not move enough air. Every alternate sash is operable and quite sufficient."

One analyst found the incandescent classroom fixtures "out of scale." "We like them," parry the architects. "The bowls are oversized to reduce surface brightness of the fixture."

school site / school building: New York



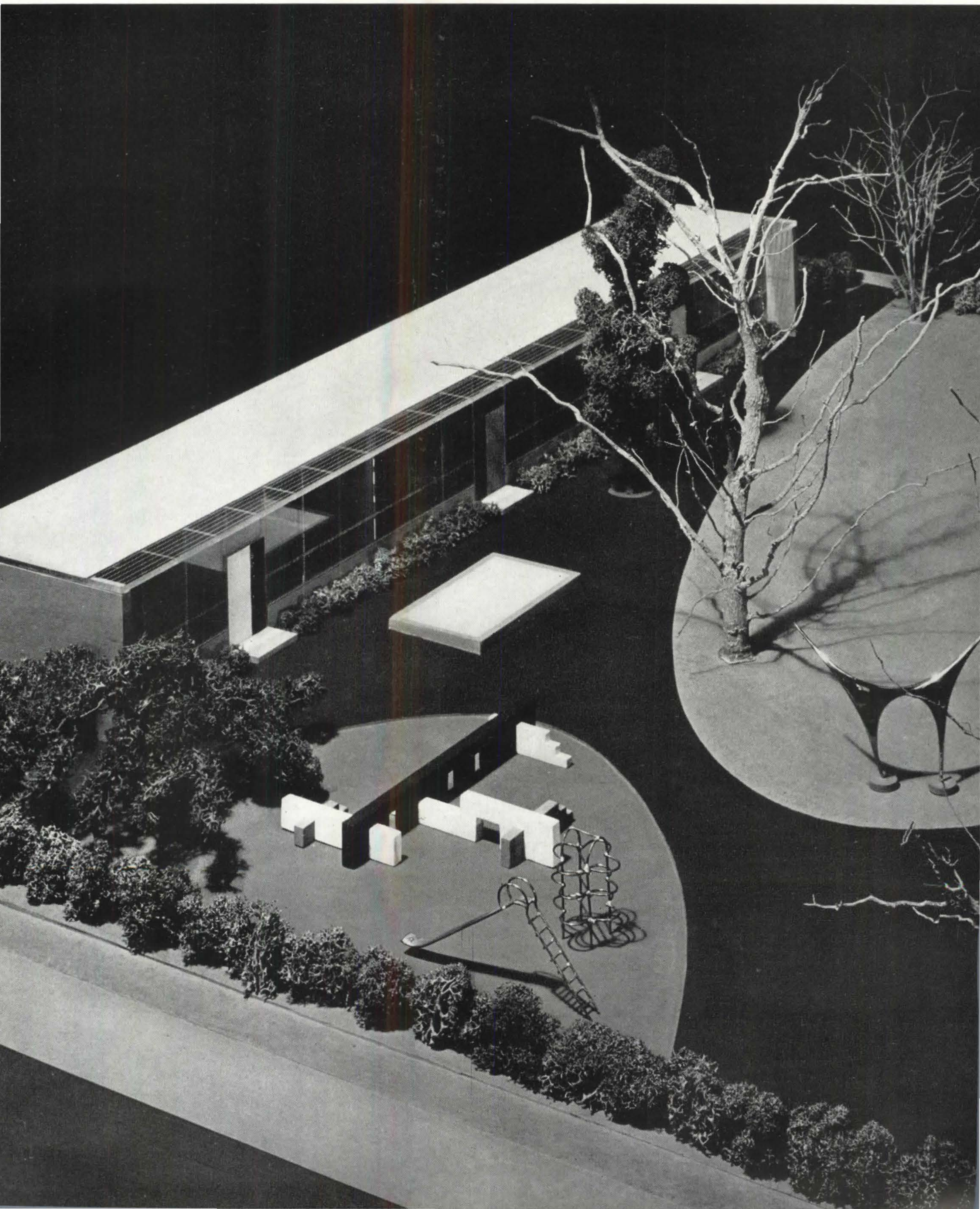
With the use of outdoor play and study so co-ordinated in the school curriculu today, site and landscape development become necessarily closer related to the arch tecture of the building itself. On this and the following five pages are shown tw examples of successful "school site/school building" integration. Cherry Lane El mentary School, Carle Place, Long Island, N. Y. *(illustrated here and acrosspage* was designed by LaFarge, Knox & Murphy, architects, and Bryan J. Lynch, si planner and landscape architect. There was close co-operation from the start, wi give and take until a satisfactory relationship of building elements and site use ha been achieved. Lynch consulted with Sculptor Jose de Rivera, feeling that an arti interested in pure form could contribute much to the shape of landscape areas.

Cherry Lane is an elementary school at the southeast corner of a tract whic will total 46 acres and encompass an existing elementary school, the new school show here, and a future high school. Although ultimate recreation facilities will total 3 acres for 2700 children, the present site for Cherry Lane is tight in outdoor spac and the design solution is based on intensely developed small play areas. Site an building plans are based on the primary criterion that a children's school should b planned for children—not as a civic monument. There is no suggestion of regiment tion; bleakness and vast open spaces are avoided. Spaces and equipment are child's scale. Direct access from classrooms is provided. Rivera's stainless-steel scul ture suggests a plastic form which might be a visual experience at an important ag

Play area below is for kindergarten wing; like others it consists of lawn space for good weather and paved play areas developed in free playful forms. Special play spaces within paved areas, where play equipment is provided, are surfaced with shredded tanbark and are also given forms consistent with their use. For the higher grades, progressively more uninterrupted play space is provided.

Model *(acrosspage)* by Joseph Giordano; photo by Ben Schnall

Model *(below)* by Jose de Rivera; photo by Gottscho-Schleisner



school site/school building: California

location	El Segundo, California
architects	Flewelling & Moody
landscape architect	Fred Barlow
structural engineer	Carl Johnson
electrical engineer	Harry Gailey
mechanical engineers	Hilburg, Byler & Hengs

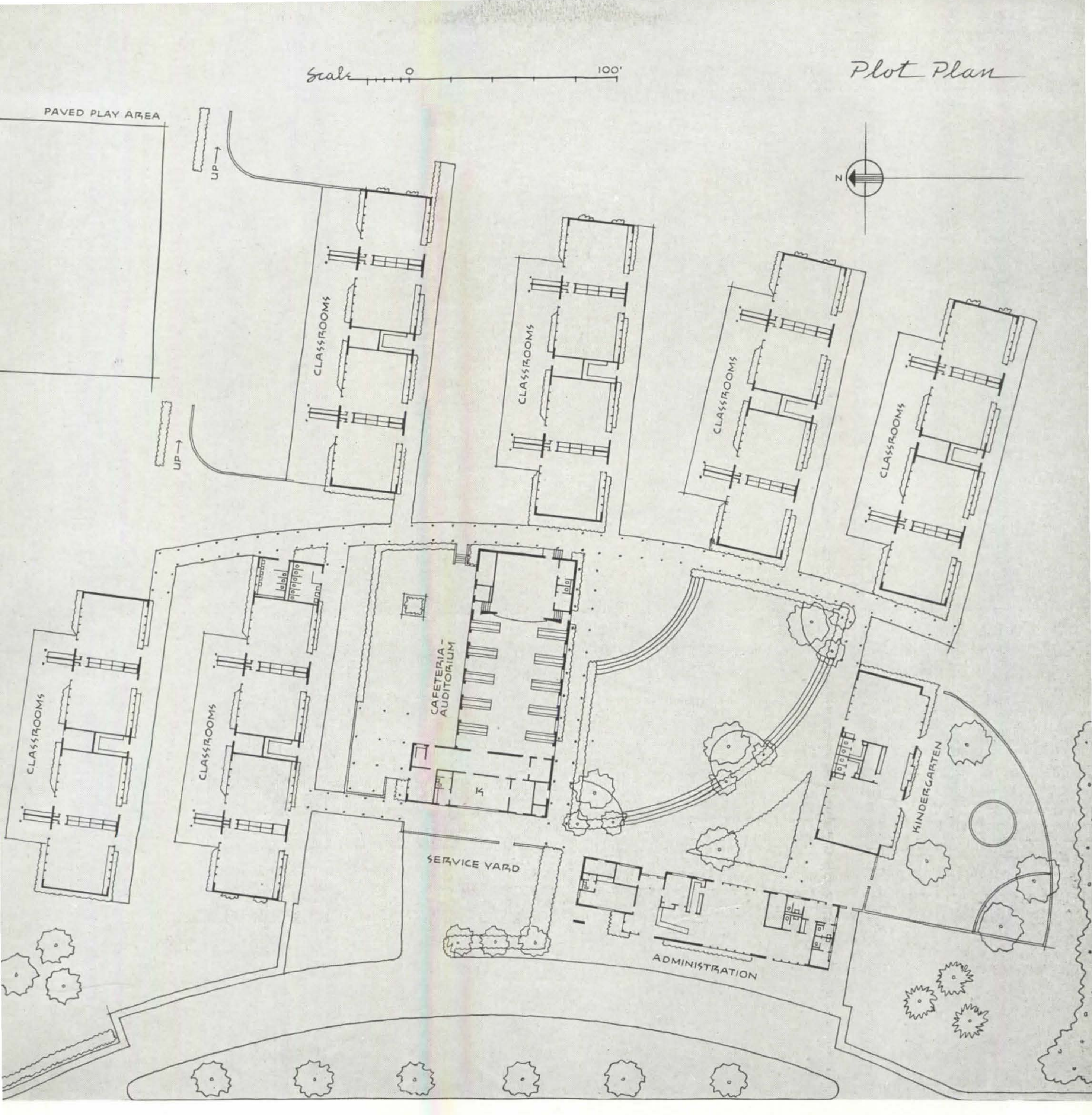
In its designing, the firm of Flewelling & Moody has long thought in terms of school site-school building—that is to say, designing the landscaping into the buildings, right on the drafting boards. This elementary school, for which Fred Barlow was landscape architect, is an excellent example. At the design stage, definite areas for the planting were provided—and for particular kinds of planting.

In Barlow's opinion, this "built in" approach has numerous salutary aspects:

1. Keeps maintenance to a minimum.
2. Cuts down on amount of planting.
3. Landscaping does more for buildings at less cost (for this school, $1000, plus $500 for the lawn).
4. With planting kept to restricted areas, the buildings retain the clean lines of architecture down to the lawn or paved areas.

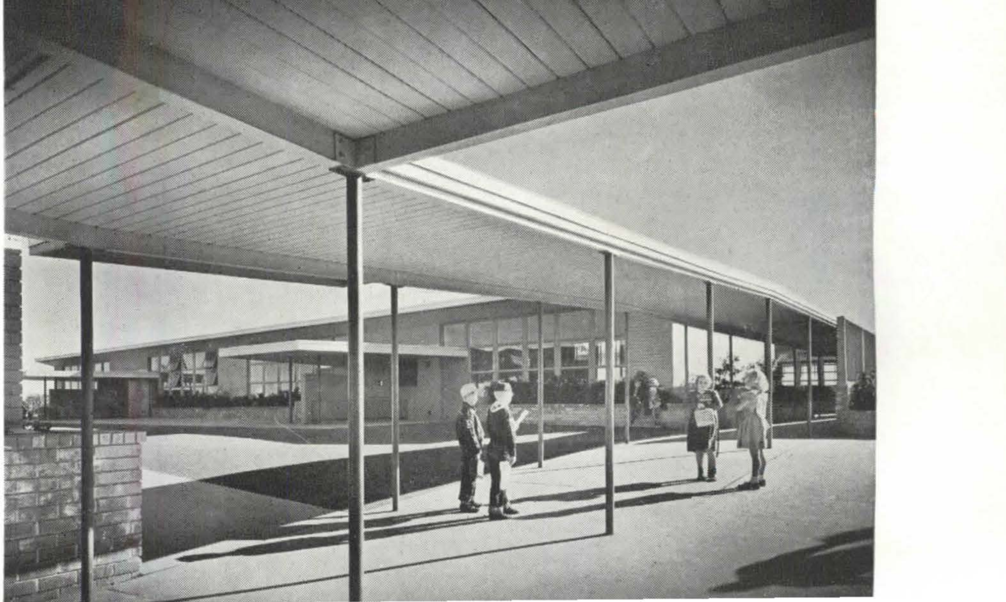
Barlow emphasizes the functional sense of proper use of plant materials. Far from being window dressing, "one or two trees can make a great difference in use of an area . . . Trees provide shade from sky glare even on a foggy day." He urges use of native materials, rather than exotics—"less expensive and simpler to maintain." Use of medium-growing material or material that matures well is also re mended: "If quick-growing materia used, it makes a fast showing, but it h be replaced. No economy there."

Though emphasis here is on the l scaping, the excellence of the school i should *not be* overlooked—one-story b ings, a decentralized plan of connec buildings, spacious open areas, l window spaces, a permanent type of struction with obvious advantages of m tenance economy. The kindergarten an play area are on the south; middle gr are generally in the center, and u grades are to the north.

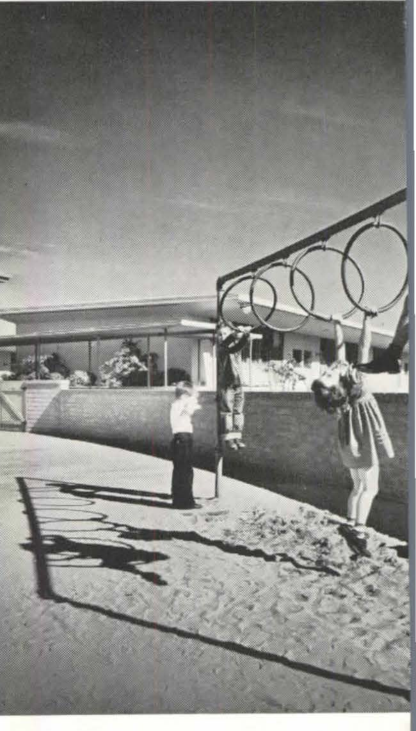


…outdoor "amphitheater" (acrosspage) *…es a spacious area for outdoor meetings, … pageants, etc. It also serves as a space …r, opening the whole plan, separating … and age levels. Covered walks connect …rious units* (right) *and, according to … Superintendent Roger Everly, "dis… is no longer a matter of the teacher's …nd perserverance; the buildings and …s a whole create a natural discipline."*

Photos: Julius Shulman

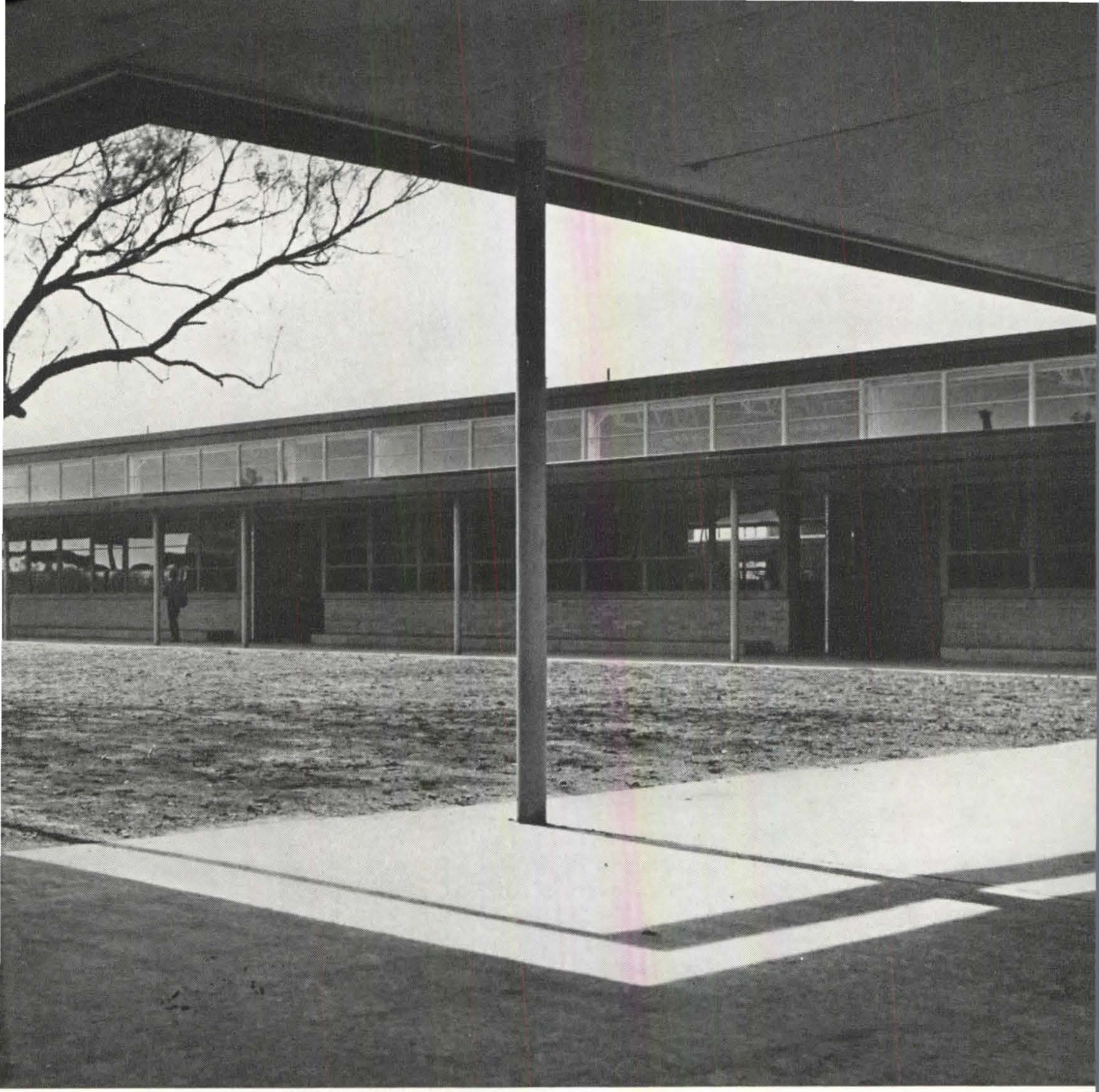


school site/school building: California



The kindergarten (photos this page) *has own walled and landscaped play area. T site is ample for any foreseeable expansi Construction is of reinforced brick, w concrete-slab floors and prefabricated st roof trusses; both inside and outside, the posed brick masonry is painted.*

Entrance bus-loading dock in front of administrative unit (right) *and a fifth-grade classroom* (below). *Note exposed interior brick; inverted truss ceiling, with sprayed-on asbestos acoustical surface. All furniture is movable, except for cabinets housing lavatory units. Heat is from forced-air units, and lower classroom units have radiant heating as added heat source.*



ing/school lighting: Texas

location	Albany, Texas
architects	Caudill, Rowlett, Scott & Assoc
educational consultant	Dr. George B. Wilcox
electrical-mechanical engineer	J. W. Hall, Jr.
general contractor	Templeton-Cannon

ıble factors that his new 20-room perhaps the out- wing:

ı that involved esign team right on-the-spot pre- oblem.

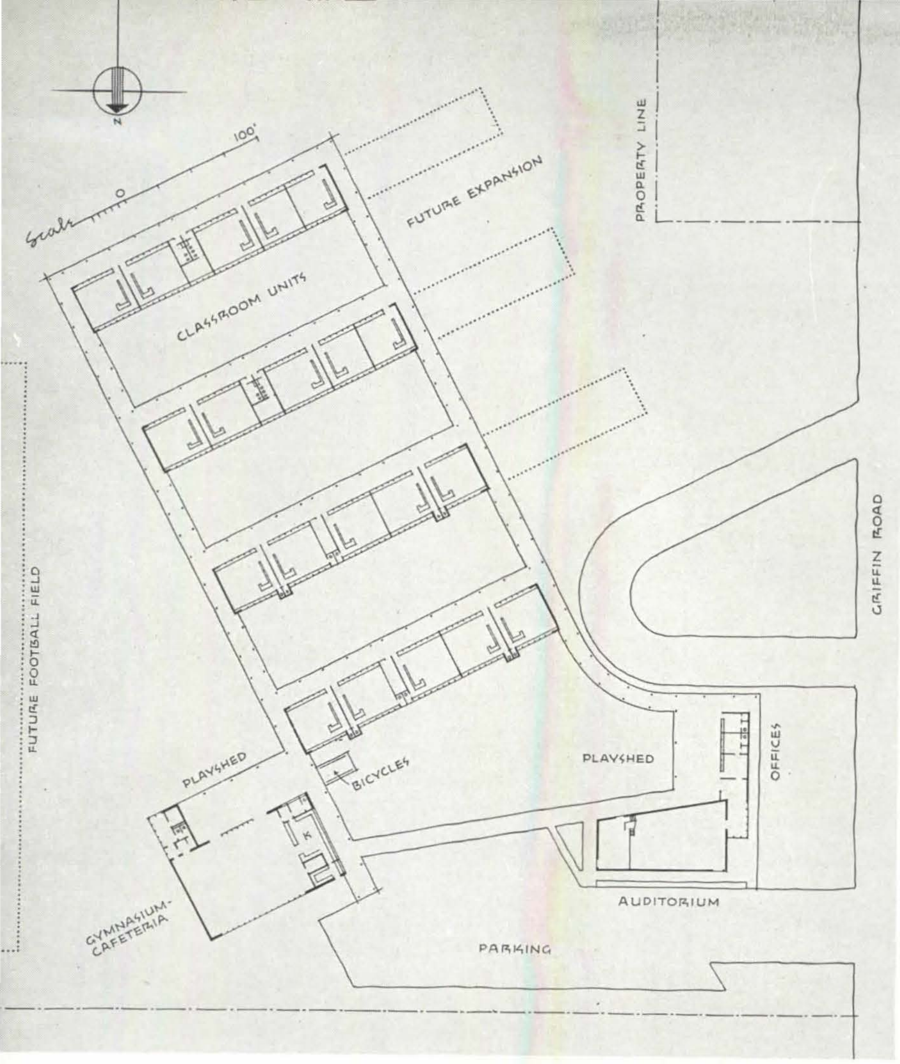
the finger plan rent age groups) to provide the ssrooms.

tegration of the ng. See page 102 tional collabora- and mechanical cted the finished

tely started out with a forward looking program, written by Robert E. Nail, Jr., secretary of the school board. Typical statements: "It should be a one-story building . . . The primary rooms should be scaled to the small size of the students using them . . . Money should not be spent on making an architectural monument, but upon acquiring a building of good modern design, functional and sound." The irregular site is 15.3 acres in extent.

Seven men from the architects' office moved to Albany and set up an office in the high school. While one investigated local climatic conditions, another looked into local building practices. A third held conferences with principals and teachers, a fourth talked to service clubs, etc. They were assisted by Dr. George B. Wilcox, Head, Department of Education and Ps chology, Texas A. & M. Thus, the familiarized themselves with the needs their "client"—the children of the area the curriculum, the site, and other cond tioning factors.

The end result is a campus-plan schem with four classroom blocks (two for th lower grades; two for older children spaced nearly 70 feet apart, and entere from outdoor (south) corridors. Ready e pandability is an inherent characteristic the plan. Related units are the administra tion-auditorium building, with adjacen bus-loading dock, and the combinatio gym-cafeteria, each with a sheltered pla shed for use in bad weather. All of th elements are connected by concrete covered walkways.



Steel columns,
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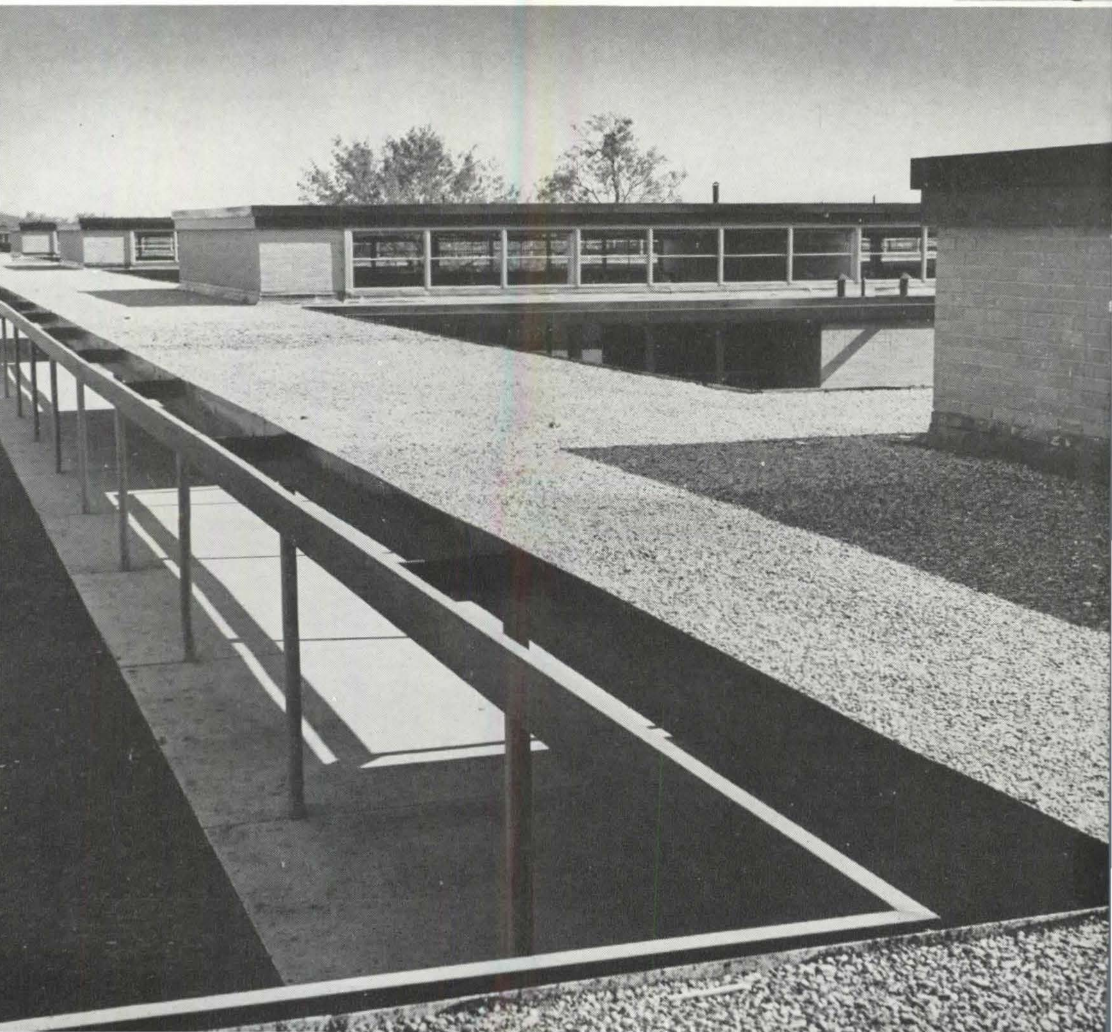
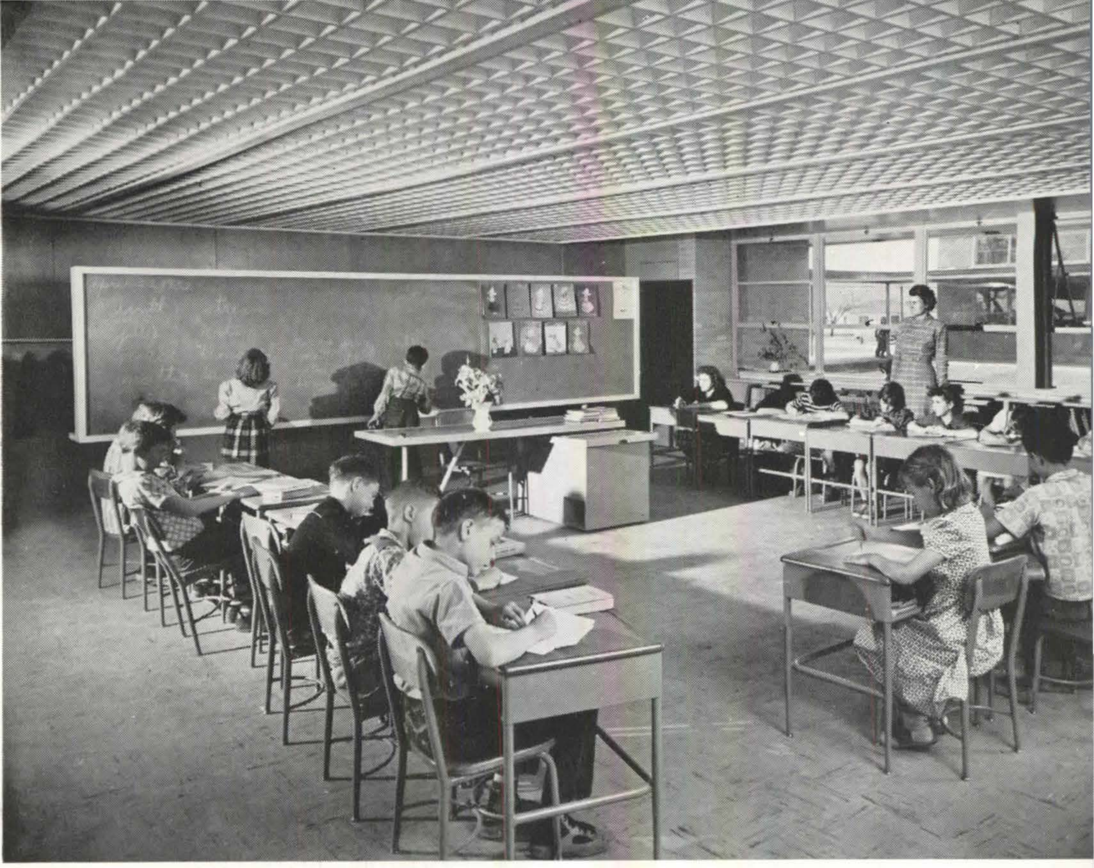
Photos: Photo

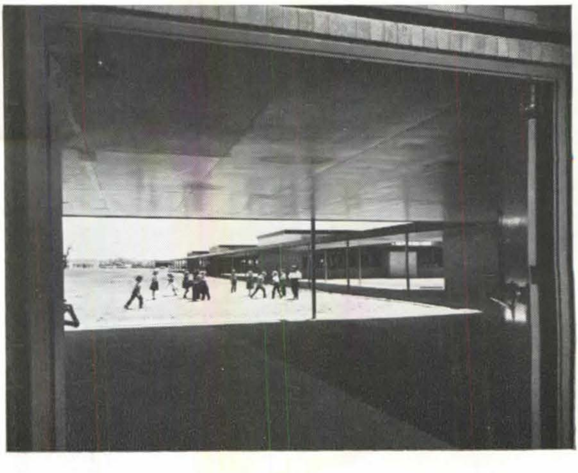




In the typical "child-scaled" classroom (above), *a freestanding partition that shields the coatroom has chalkboard (for teaching purposes) on one side, tackboard (for display) on the other; the opposite wall has 16 ft of chalkboard and 3 ft of corkboard; the latter usually displays an art print from a circulating library. Hat and coat storage was solved by a simple shelf with pegs beneath. Flooring is asphalt tile; the 7'-6" light-diffusing "ceiling" is a wood eggcrate of 1 x 6's, 6 in on centers both ways* (sectional drawing, *page 103). Interior partition surfaces are plywood.*

A curved outdoor corridor that also serves as bus-loading dock (above) *joins the administration-auditorium unit and the classroom blocks.*

From the playshed attached to the gymnasium-cafeteria building (right) *the four classroom units, joined by covered walks, appear in the distance at right.*



auditorium (exterior, right; interior, be-
) *seats 300, and makes use of the adjoin-
playshed as an outdoor lobby. Except for
glassed-in lobby corner, the unit is
dowless. Walls are nonparallel and the
ustical ceiling is broken in section, to
imize reverberation.*

school planning/school lighting: Texas

light—a design tool

by J. W. Hall, Jr.*

Technicians in each phase of a building program are prone to give their specialty item a sort of top priority in the function of a building problem. Thus, each of the design elements of a structure may become isolated and too little regard given to the whole. The mechanical functions of a building may be subdivided as: electric light and power, heating, air conditioning, mechanical ventilation, and plumbing. No one would would attempt to construct a present-day school without providing light and electric power; nor would he place children in a space for learning that was not properly heated. Health regulations insist upon suitable sanitary facilities and the standards for these have become higher and higher in recent years. Concurrently, lighting standards, which were at one time set at 5 foot-candles, have been raised to well over 25 foot-candles.

The time has long passed when an architect could design a convenient space arrangement, then tolerate "squeezing-in" electric wiring or heating facilities in a "catch as catch can" manner. As more and newer devices are made available for the improvement of our environmental circumstances, we in turn find more demands for the employment of these devices. The point has now been reached where mechanical functions in building are so important that the architect must consider them during *all* stages in the development of his structure. Because designers (and here we mean architectural designers) cannot be expected to have a working knowledge of all elements of mechanical design, a situation has developed which requires them to have certain specialists at hand. These men must have the mechanical knowledge and, at the same time, must give sympathetic understanding and appreciation to the architectural designer's ideas. They must bring to design an approach far removed from the strictly technical step-by-step or slide-rule solution which leads to the determination of a fixed quantity. Thus, a new type of mechanical specialist.

A man picks his clothes according to the occasion or the job at hand. So lighting a classroom must be considered according to its intended use and environmental impression. For this particular case study, we must first recognize the design conditions —the basic assumptions and compromises which are the foundation of all building design.

the design group

It is generally true that one major condition thrust upon the design is *cost*—the need for more space for less money. Further, there are conditions of climate, orientation, special site requirements, durability for low maintenance, flexibility for multiple use—and many others—that must be met. A designer or design team rolls out fresh, clean paper, reaches for pencils, and starts to give form to ideas that will fit together in a pattern fulfilling as nearly as possible the design requirements.

Because of their special gifts and skill, good designers are inherently dreamers and, in some instances, must be held in check by the laws of nature and the physical limitations of materials. Otherwise, the dream solution may take a form comparable to someone dressed in formal attire for a mountain-climbing expedition. In an attempt to give sun control, maximum ventilation, or protection against north winds, some architects have arranged structures which offer almost no space for the accommodation of mechanical features tha as basically necessary as substantial dations and proper space arrangemen

The mechanical designer (with hi responsibility to the design unit) will, necessary, find new uses for old devic create new devices for recognized r We must be prepared to question seri any standard practices that seem unre able or not feasible during the stu new problems arising in the planning

a specific problem

The lighting of the elementary sch Albany, Texas, is a case to illustrat working of this design approach. I instance, we were very fortunate in able to work closely with the archit Caudill, Rowlett, Scott & Associates— phases of their design work. Design ditions, in keeping with the general pa were dominated by the cost factor. thermore, climate conditions on the Texas plains made it necessary to porate large sun- and brightness-c devices in order to maintain a reaso brightness relationship between the light source and the working areas. architects were to follow their own c criteria by maintaining the balan values in a trinity represented by *education* and *environment*, the contr elements would be *cost* and *environm*

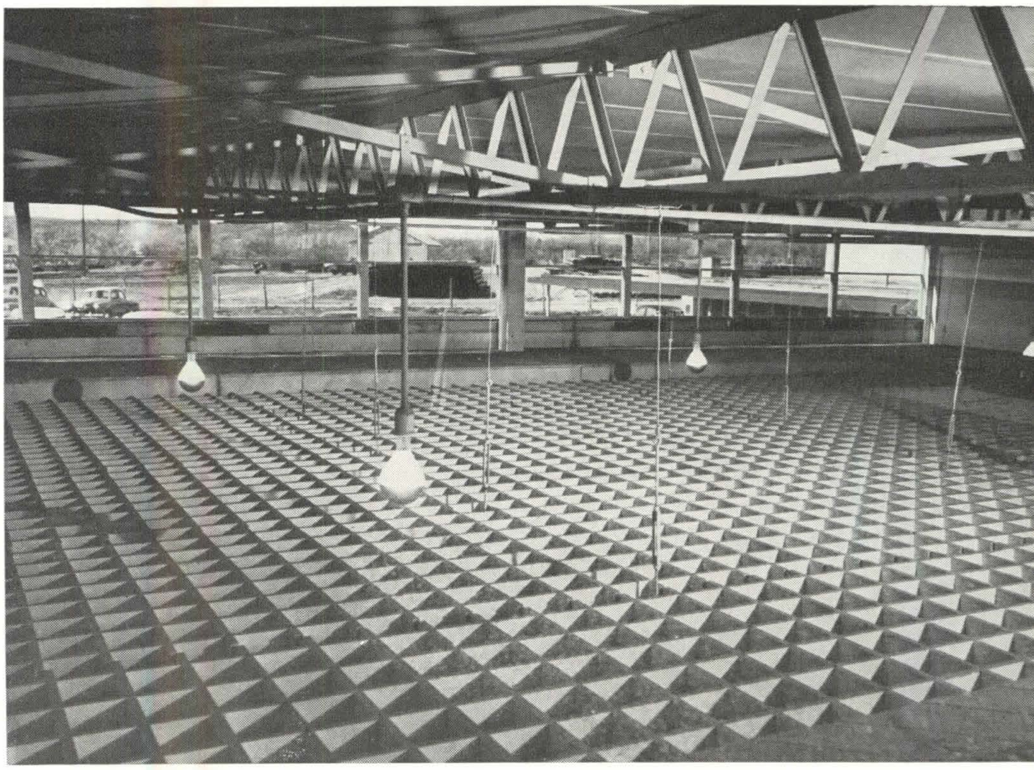
These controlling elements necess *models of several sections* for test pur The models showed that, for the A orientation, a clerestory-type, ove light was most desirable under norma ditions of climate. However, the or clerestory complicates the problem structural engineer and adds consid to the cost of construction. At the time, cost also indicated the use of re

* *Consulting Engineer, Bryan, Tex.*

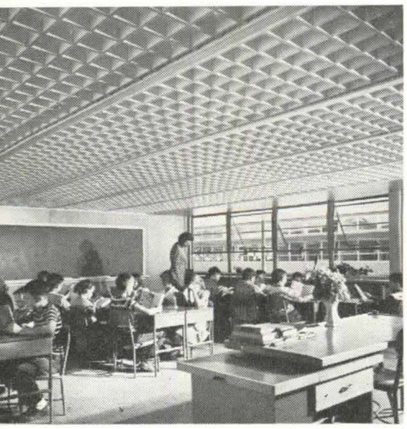
able, simple, standard materials. A ion was finally found in altering what ually thought of as a typical section; a 12 ft wall height with light from one In this instance, the room width was eased, light introduced from both sides, the out-of-scale 12 ft room height low- to 7'-6" by means of light control es and louvers forming a room-wide estory. This low ceiling may be con- red undesirable by some, but in the Al- School it adds very materially to the e appropriate for small children.

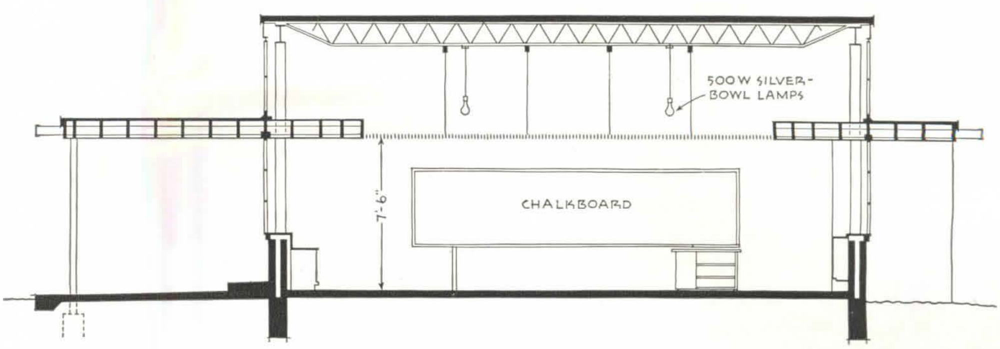
The sun control devices on the south serve the multiple purpose of providing a covered corridor and shade. The overhangs on the north act as sky controls by providing shade against the high brightness of the upper portions of the north sky. By painting the top of the sun control devices with a highly reflective finish, more light is thrown in a diffused pattern to the upper portion of the clerestory.

The room dimensions are 27 ft x 28 ft, and the space normally occupied within each room is approximately 20 ft wide; therefore, with an almost square room, there was a need to give the space apparent rectangular length. This was done by introducing light through a diffusing source which continues and connects the sun- and light-control planes (*see section*). Bids were taken on both wood and plastic eggcrate light-diffusing devices. The plastic material was much desired, but its excessive cost prohibited its use and a wood eggcrate, composed of 1 in. x 6 in. members 6 in. on center both ways, was finally installed. All of the space within the clere-



highly reflective white paint was sprayed r the entire surface area of the clerestory l eggcrate louvers. The low ceiling, which uired that luminaires be placed above the vers (right), *gave the classroom an appro- ate scale for small children* (below). *tural light was introduced from both sides the clerestory* (see section, below right).
Photos: Ulric Meisel





story and the eggcrate was sprayed thoroughly with a highly reflective white paint, for which the manufacturer claims 85 percent reflection.

All during the process of developing a typical section of the lighting scheme and testing the various qualities and quantities of each type of material, we were also responsible for providing space to accommodate mechanical functions. Our lighting problem and its solution progressed continously with the development of the section. (Heating mains and water pipes were run directly on the inner part of the deck created by sun-control devices.)

Since the ceiling itself is so low, it would have been impossible to introduce light at a reasonable cost by luminaires placed below or on the finished ceiling. Test sections proved that luminaires with built-in reflectors, placed high against the roof deck, would require 18 to 24 units for effective distribution over the eggcrate. Fluorescent lighting was considered, but rejected for two reasons: difficulty of changing tubes and the interference of roof framing with continuous-strip mounting. At this point during the design studies, it became necessary to decide what level of artificial illumination would be required. The test model showed that during cloudless and bright cloudy days, artificial illumination would be unnecessary as a uniform curve of 40 to 70 foot-candles obtained at the working level. Since the classrooms normally would not be used at night, 20 to 25 foot-candles at the working level were adequate. Test data indicated that this amount of artificial illumination on dark cloudy days would be adequate as supplementary light. For these reasons, incandescent silver-bowl lamps were chosen as luminaires. These lamps give a warm light that has reds and oranges in its normal application and acts as supplementary lighting on dark days when light from the skies tends to the blue end of the spectrum for a cold light. This incandescent-type illumination adds the necessary warmth for cheerful space environment.

variations from the norm

Calculations to determine the level of artificial illumination at night required certain broad assumptions, as well as taking liberties with standard practice. As indicated earlier, a design group must have a flexible and exploratory approach to the solution of problems brought about by integration of design.

The known, measurable quantities for determining artificial illumination included: lumen output of lamp—9400 for 500-watt silver-bowl lamp; reflection factor of clerestory space — approximately 85 percent; area of eggcrate over normally occupied space—540 sq ft.

Because the louvers were placed between the illumination source and the working level (source in this instance is assumed to be the underside of the finished roof or the top of the clerestory), they will have a light-passing capacity of 60 percent. We arrived at this 60 percent figure with simple test models and a completely diffused light source. Accepting an 85 percent reflection factor from the painted surfaces in the clerestory (with allowance for loss in reflection because of dust and deteriorati we found that six luminaires of 500 w each, without reflector, if placed imm ately above the eggcrate, would light clerestory space sufficiently to distri the desired amount of artificial light ev to the working level—even on a pitch-bl night.

a sort of summary

For those who will question our comp tion of desired light level, we should plain that the assumed light source, w is the reflecting area of the upper clerest with many irregular surfaces, would reflect the full 85 percent usable light, approximately half the light received f the direct source.

Using the common formula for light l (where foot-candles equal total lumen put of light sources multiplied by factor utilization and maintenance, then divi by area served), we get the computed l of 20 to 25 foot-candles. Measurem taken after the building was occupied p our point, with levels of 21 to 26 f candles obtaining 30 in. above the finis floor.

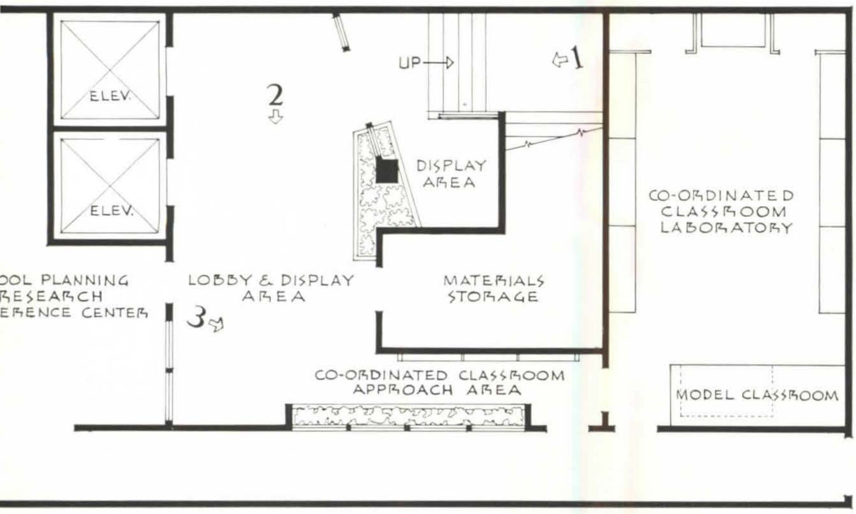
This successfully completed installa is a result of the co-ordinated effort of rious technical specialists, working toget as an integrated design group. For case, design conditions were recognize guides to a successful culmination of specific project. In addition to the suc of the project and the satisfaction of edu tors and patrons involved, the entire des group found both esthetic and personal isfaction in the job.

Stanford School Planning Laboratory

The School Planning Laboratory, part of the School of Education at Stanford University, is a center for advanced teaching and research in physiological and psychological relations between certain physical factors in the classroom and the processes of learning, development, and performance of the child. Its creator, Dr. Darell Boyd Harmon, insists that the laboratory is not an architectural exhibit, nor is it intended to demonstrate architectural, engineering, or structural principles, as these activities belong in the schools of architecture. When structural details are shown, they are presented to emphasize some principle of child health, safety, performance, or development and not to stress a particular design solution.

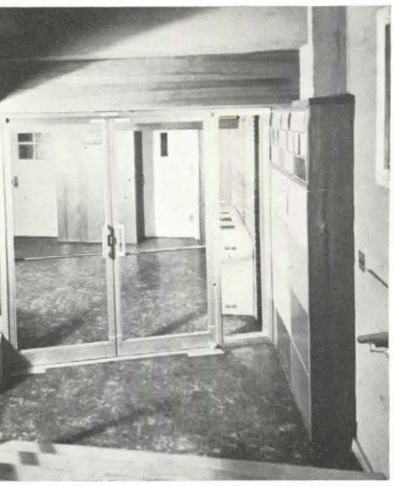
In addition to the rooms shown *(photos are keyed to plan below)*, the laboratory will contain a reference and research center, an administrative center for the school-planning program, a school-planning fundamentals laboratory, a study area for the doctoral candidates in school planning, and a shop area.

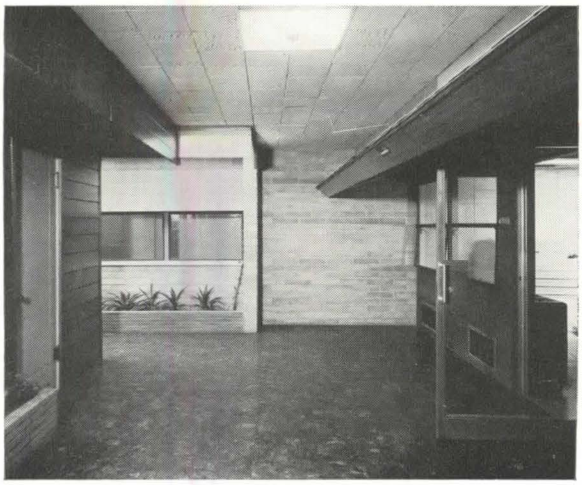
On the following pages, C. A. Winkelhake, Co-ordinated Classroom Fellow, reveals a few of the important technical aspects of the activity and functioning of the laboratory.



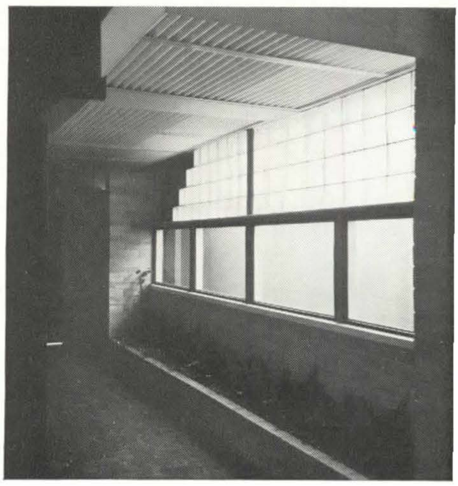
The woodwork of the entrance to the School Planning Laboratory (photo 1) *is natural-finished redwood; doors and door framing are aluminum, and the floor covering is a dark green asphalt tile. Lobby* (photo 2) *was designed to give the effect of school building exteriors; its tile floor is scaled so that classroom models can be set up for study by research groups. The approach area reproduces the exterior of a co-ordinated school* (photo 3) *and its luminous ceiling can be operated to simulate three levels of lighting: a bright day, a moderately bright day, and an overcast day. Glass blocks produce the effect of daylight directed to a classroom ceiling and illuminate the corridor behind the vision strip. This "night" view shows the details of the luminous ceiling.*

1. Entrance *2. Lobby*



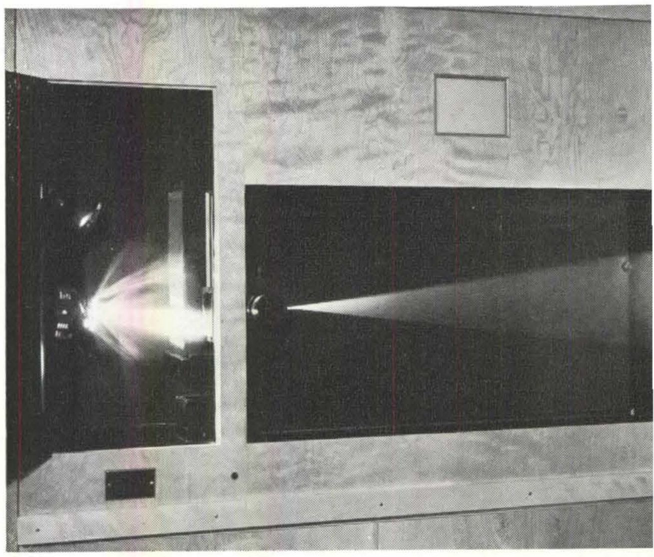


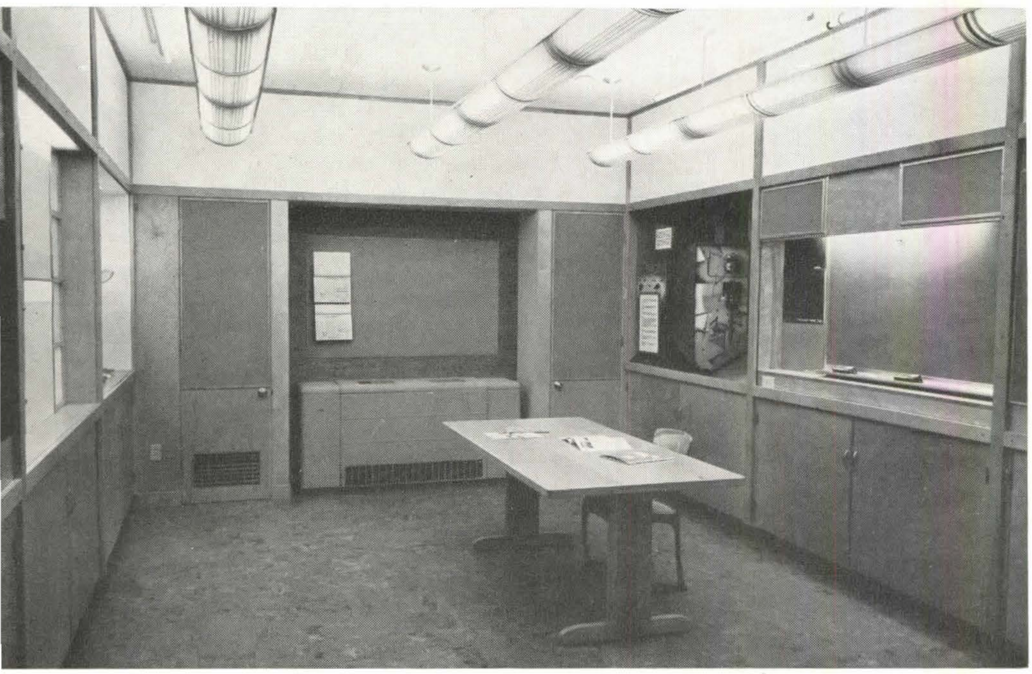
3. Approach to classroom laboratory

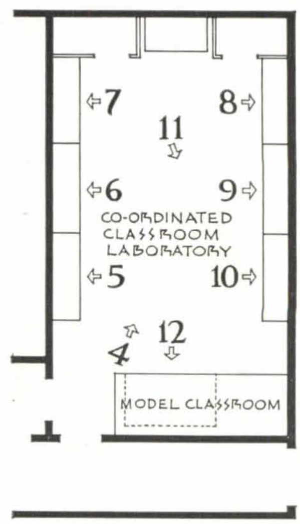


5. *Daylight control demonst*

Demonstration equipment, required to teach the principles of control, is found in the co-ordinated classroom laboratory (photo 4); *when needed for seminars, the classroom will seat 25 persons. Ceiling-mounted bare lamps and luminous, indirect luminaires—each row* (both types) *is on a separate circuit—can be lit independently to duplicate any lighting pattern that can be set up in the daylight and artificial lighting demonstrators* (photos 5 and 7). *In this laboratory, students can see lighting principles demonstrated as well as work under divers light patterns to test their effects on vision. A similar control has been installed for heating and ventilating the room. The daylight control demonstrator* (photo 5) *teaches the elementary optics of light control and demonstrates room applications of daylight control methods; surface color comparison tests are made at the decoration control demonstrator* (photo 6); *construction characteristics of various kinds of lighting equipment are visible at the artificial lighting demonstrator* (photo 7); *in a break-away of an installed unit ventilator at the thermal environment demonstrator, all control devices actually operate* (photo 8); *chalkboards of different colors or reflectances are placed in panels to make comparative studies* (photo 9).







4. *Classroom laboratory*

planning research and educational function

by C. A. Winkelhake*

Recently opened for the investigation of school planning problems and the training of educators, the School Planning Laboratory in the School of Education at Stanford University engenders a fresh perspective and approach to the task of planning and designing environments for teaching and learning.

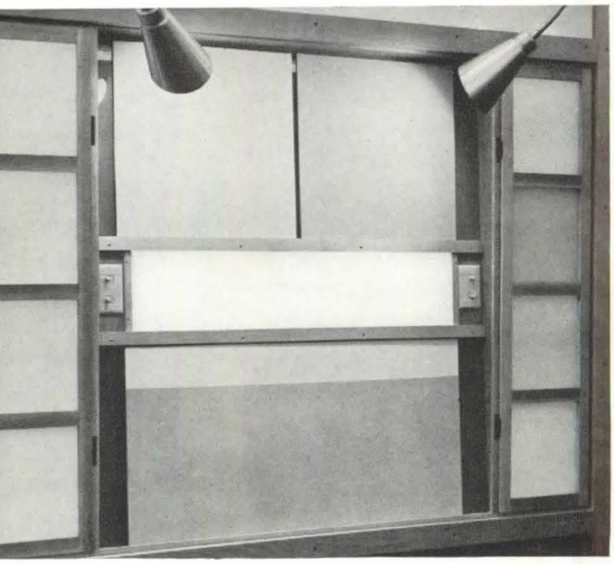
The physical attributes of the laboratory (*described pictorially*) serve primarily as a planned space arrangement for the conduct of *research and educational ac* and only incidentally as visual displa

The major premise of laboratory is to investigate the effects of enviro tal factors in the classroom and upon the development, health, and ing of school children. The Labo plays its role within the bounds o premise.

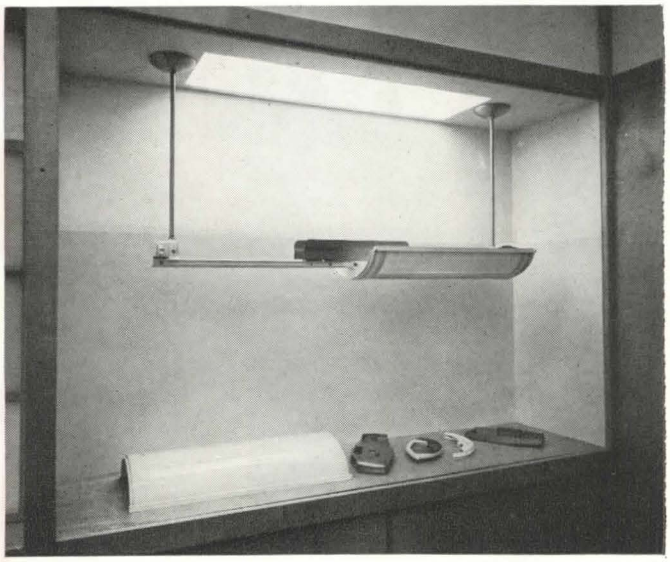
Analogously: the Laboratory's rol be considered an integral part of a scopic approach to school planning lems, as compared to the scale of ob tion implied in a *telescopic* app

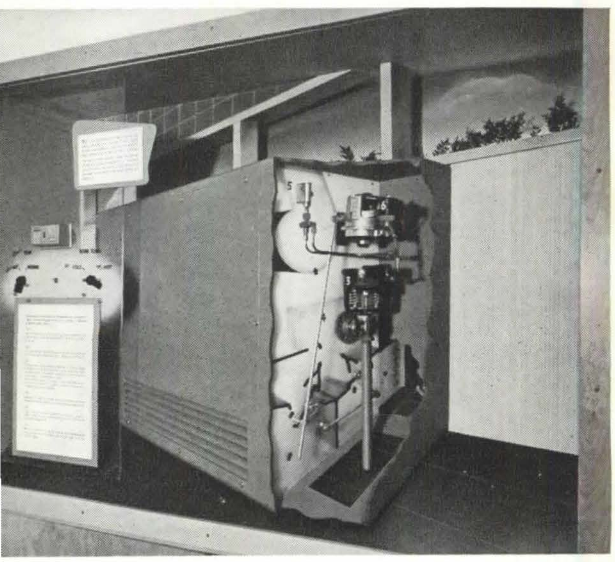
**Co-ordinated Classroom Fellow, School of Education, Stanford University, Stanford, Calif.*

oration control demonstrator

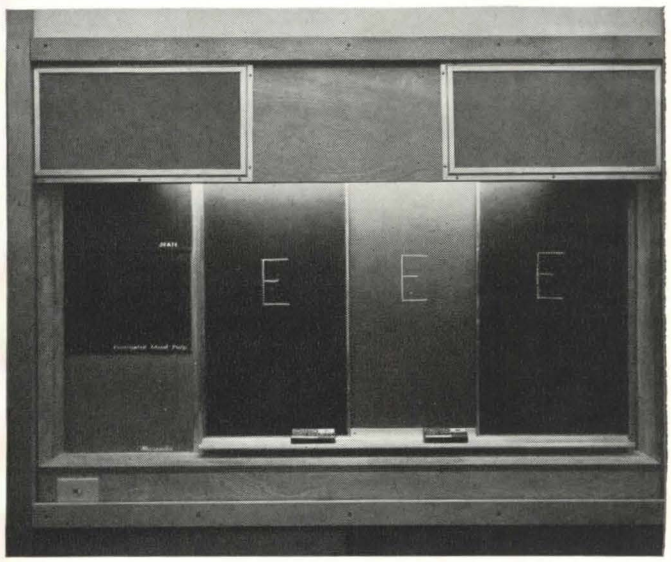


7. *Artificial lighting demonstrator*





:rmal environment demonstrator



9. *Chalkboard and sound-control demonstrator*

ıtion studies, school district organi- gross building-need analyses, fi- g methods, etc., would be typical :s in the telescopic approach to planning. The effects of environ- factors in the classroom and the upon the development, learning, and of children would be included in the *copic approach.*

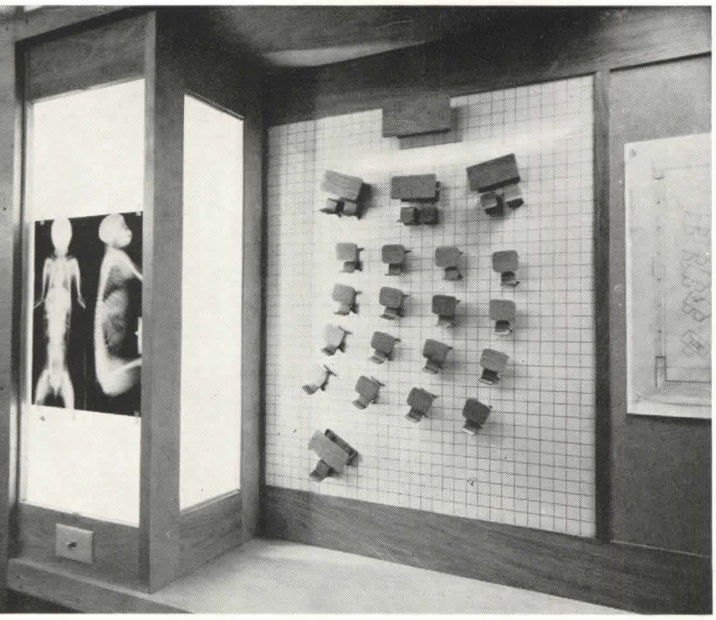
nction

.d, unified frame of reference is req- to bringing into our microscopic planning focus the research endeavors and results of various fundamental sciences and disciplines which are pertinently relevant to a basically "reasonable" standard of design criteria (1952).

That a good working standard of design criteria is needed today may be seen clearly. Evidences of this need are numerous — for example, the many instances (with which anyone reading these lines must be familiar) of "striving for design expression" from incoherent, inconsistent, inarticulated points of departure.

Educational psychology (1952) indicates to us that the way a person perceives is a function of all the *experiential meanings* that the person has.

That a concept includes all that we have learned about a subject from many experiences infers, among other possibilities, that a variable degree of misconceptualization is possible in the concept building of school children. This should cause us to pause and reflect: we must not overlook the fact that the experiential meanings of the school child include not only direct, intentional factors but also those unintentional factors completing the immediate context of his learning situation. For in-



10. Equipment arrangement demonstrator

11. Instructor-conducted demonstr

Adjoining the chalkboard center, an equipment arrangement demonstrator (photo 10) *houses a light-gray steel plate on which a one-inch co-ordinate system has been ruled. As this surface can be marked with pencil, different room plans and furniture arrangements may be sketched directly on the steel plate. All types of furniture, fitted with magnets, can be moved about to facilitate, visually, the planning of a particular curriculum. As body mechanics and posture problems also concern the educator in studying the functions of lighting equipment, an X-ray viewer has been provided to help study these problems.*

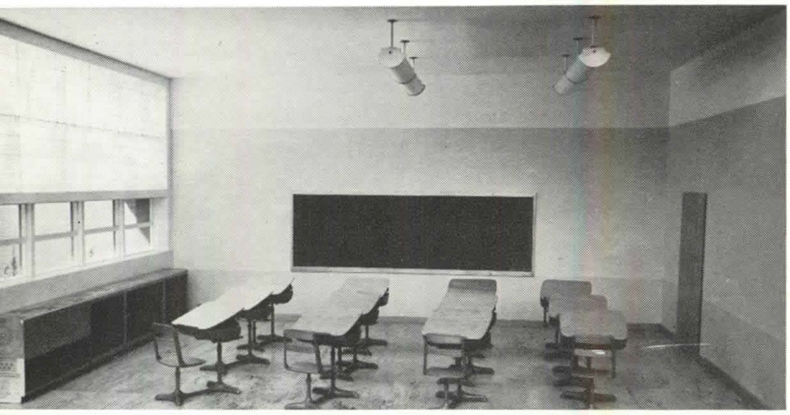
stance: the distribution of light as well as the object illuminated and the control of sound as well as the thing said enter into the meanings acquired of the perceived object (form) and words (sounds) heard by the child.

The validated psycho-physiological contention that "the meaning of an object for the child *is* the response made to the object by the child," leads to the conclusion: it is important to the young child in a learning institution that the *context* in which objects appear or events occur to him should be such that meanings acquired in it should be as highly *consistent* as is possible, within the limits of optimum consistency, for the child's reality. For instance: the way an object "looks" to the child should not be contra-distinctive to the way *he* discovers it to be through "handling."

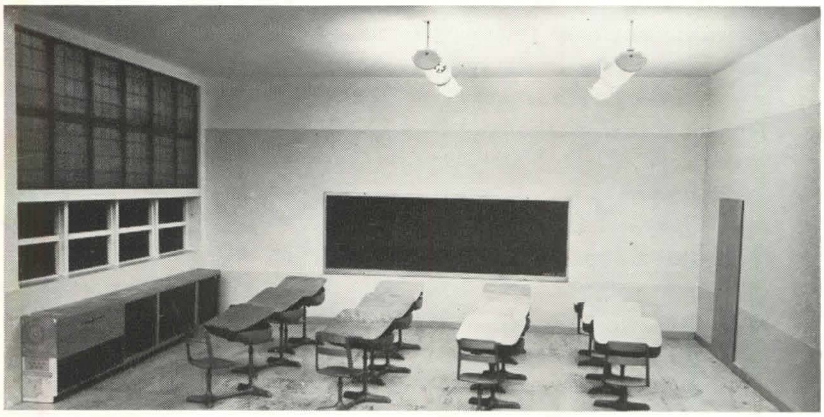
Relating the evidence of the developmental growth of the school child in acquiring meanings and concepts to his schooling environment, it follows that the child's school living quarters—his classroom—must be interpreted not only in terms of materials, engineering, cost economics, and the official course of study, but in terms of THE CHILD, his psychological nature, his growth, and his developmental needs.

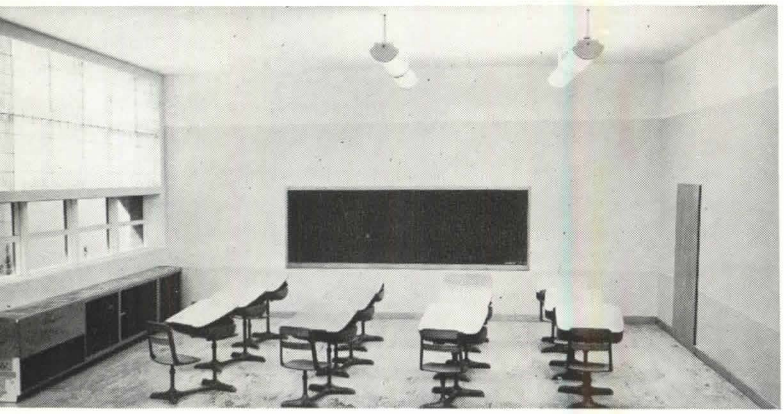
For instance: certain educationall poseful meanings and concepts mea a child may be overpowered unpu fully if he conjointly finds it necess go to the toilet by way of an "open dor" with wind whipping down its and breadth, giving him an abrupt i of insecurity.

And complementary to his psychol and developmental needs (the acquir meanings and concepts), the child's p logical well-being is of great impo if his *organic and educative growth* is efficient and effective.



12. *Model co-ordinated classroom*





The front of the co-ordinated classroom laboratory is for instructor-conducted demonstrations (photo 11). *A luminous ceiling (with integral acoustical baffles) used by the speaker does not interfere with the lighting in the model classroom. A built-in front-half of a 24' x 12' x 32' classroom, at three-inch scale, is set up as a formally arranged co-ordinated classroom. Lighting equipment (in control room at left of model classroom) can duplicate practically any type of daylight condition. Close-ups of the model show late afternoon daylight (top), artificial light needed to supplement daylight (center), and combined daylight and supplementary artificial light (bottom).*
Photos: Jack Lawrence

pporting evidence indicates that the room itself is often the source of *unned educative growth.* For instance: oper lighting and heating and seating t in organic child adjustments and ides that reduce the child's learning ency. When the child's classroom enment requires some of his energy to its unusual demands *less* is available earning.

e problem posed to a child in his room may not be clearly and uniquely ced and defined as the teacher comently imagines it to be. For instance: n as related to the solving of a problem is much more than the central optics of the eye. To think the child's problem (school task) involves only what he may be "directly" perceiving (i.e., what is in his central field of vision), is naively to overlook the information and overtones he may be getting that are important or supplementary to his problematic situation (i.e., what he "sees" in his peripheral visual field).

That behavior which is problem-solving for the child is not preclusive of the various energy manifestations and modalities (light, heat, sound, etc.) bearing upon him concurrent with his school task problem in his classroom.

A unified frame of reference for the working out of school planning and designing problems should include the child's biologic response activity (the surroundings of his schooling task and of himself), his physiclogic activity (the specific energy modalities related to his immediate task), his growth and development status, and the various socio-psychological aspects involved in and with his schooling task.

In such a frame of reference, the "social aspects" of the child's development (his social needs, interests, etc.), may be considered *organic* needs. Here's how:

A child's *response* to social demands

is a product of his activity and functioning. And his response, for school planning purposes, whether aroused by organic and/or social needs, interests, demands, forces, restraints, etc. (all physically provocative stimuli upon definitive analysis) should be thought of as "a unified process." For example: an instance of "frustration" due to a child's inability to "read" a certain word in his story book (because of a light distribution pattern of brightness difference between type and background paper) upon definitive analysis may be the organic child's not having the immediate necessary patterning combinations of neuralphysiologic response mechanisms to satisfy the immediate social (organic) need mentioned. To label it "frustration" is not to facilitate function-structure translation. However, to refer it to a biophysical frame of reference is to render it accountable in a reasonable working hypothesis.

The implications for school planning in the above are not insignificant. A unified biophysical frame of reference permits a working function-structure translation, i.e. school function:: school structure. Hypotheses capable of developing into more fruitful forms may be constructed on such a unified frame of reference.

Herein lies the key to an adequate statement of school-function for school planning and designing purposes. The writer regrets that the discussion cannot be put in more simple and forceful terms without destroying its quantitative and qualitative significance.

the status

The School Planning Laboratory should be looked upon as a source of school-function statement. A statement of school-function capable of being translated into school-structure by the planner and designer.

These derivatives of school planning and designing activity and of a school design should be grounded fundamentally. They should be established on a sound foundation of *basic knowledge efforts with their concomitant supporting evidences.* They should be capable of successive addition—reaching higher and higher levels of fundamental knowledge.

In comparison: present day modes of school planning are prejudicial, unsupportable, "popularly" opinionated.

Before reacting too vigorously to the above comparison, each individual school planner and designer ought to use some reasonable measure of evaluation on himself. A crude, but fairly good, measure is here suggested: how often did you consider and reconsider seriously in the planning and designing of your last school "the fact that a child's *response* is not inherent?"

These school-structure derivatives should not delimit (in any reasonable approach to the planning of a school) the designer's possibilities of expression. Rather, they provide a springboard of multi-possibilities which *really* may tax the designer's ingenuity.

As a working "family-living" statement or specification (to include the philosophy of the owner, etc.) is required for residential structure, so, too, a working "educational" specification or statement including the "owner's" philosophy is required for school-structure.

Then, for authentic information (the materials appropriate for that kind of education-function stated as an outgrowth of School Planning Laboratory effort and result), the competence of architects and schools of architecture is necessary.

The problems to be dealt with by the School Planning Laboratory, though posed by the child and his curriculum, must be interpreted by educators and architec

The interpretation of the problem the educator is essential, for it carries it the know-how of educative funct The interpretation of the school plann problem by the architect is essential it carries with it the knowledge of st ture. To omit either of these essential terpretations is to defeat the purpose formal schooling, for both interpretati are, by the necessities of the task, clo interrelated.

Based on the objective of evolvin *working statement of school-function,* boratory research activity in the use control of natural light, supplement light, light and color, classroom ther environment, problems of sound cont seating equipment, etc., should evolve an educationally biased environment. erating as an integral part of the Schoo Education facilitates this necessary edu tional emphasis for the Stanford Sch Planning Laboratory.

Complementary to its planned space rangement in the School of Educat experimental classrooms in local comm ties, relevant fundamental science di plines in other departments and divisi of the university, and the resources support of those industries with assu confidence in education and research c plete the Laboratory picture.

Our technical discussion concludes propriately with a comment:

There is still much that is unkn about adequate design criteria for cl rooms and schools toward achieving o mum benefits for *students.* Stanfo Laboratory is just beginning to bud as *operating* entity—an activity center. potential for the clear articulation school-function statement (school-struct derivative) offers promise to an alm limitless extent.

The following co-operating firms supplied funds and equipment for the construction of the School Planning Laboratory:

American Seating Company
American Structural Products Company
Darell Boyd Harmon
Minneapolis-Honeywell Regulator Company
Luminall Paint Division, National Chemical & Manufacturing Company
Herman Nelson Division, American Air Filter Company, Incorporated
Pittsburgh Corning Corporation
Trane Company
F. W. Wakefield Brass Company
Weber Costello Company

These companies furnished sample material used in construction of the laboratory:

Aetna Manufacturing Company
American Desk Manufacturing Company
American Tile & Rubber Company
Armstrong Cork Company
C. T Bakeman & Company
Basalt Rock Company
Beronio Lumber Company
Ceratile Corporation
Chatfield Clarke Company
Colonial Electric Products, Incorporated
Continental Building Company
H. S. Crocker Company
Davidson Plywood & Lumber Company
Educators Furniture & Supply Company, Incorporated
Electric-Aire Engineering Corporation
Fir-Tex of Northern California
Flintkote Company
Formica Company
W. P. Fuller & Company
Gladding, McBean & Company, Incorporated
Haldeman-Langford Manufacturing Company
Haws Drinking Faucet Company
Heerwagen Acoustical Tile Company
Howe Folding Furniture Company, Incorporated
Hurlbut Laminated Plastic Products
International Business Machines Corporation
Johns-Manville Corporation
Kawneer Company
Kentile, Incorporated
David E. Kennedy, Incorporated
Leader Electric Company
Maple Flooring Manufacturers Association
Merner Lumber Company
Mosaic Tile Company
Owens-Corning Fiberglas Corporation
Pacific States Sales Corporation
Pacific Tile & Porcelain Company
Pittsburgh Plate Glass Company
Pittsburgh Reflector Company
Robbins Flooring Company
Rohm & Haas Company
Sanymetal Products Company, Incorporated
Schlage Lock Company
Schmitz-Horning Company
Sloane-Blabon Corporation
Smoot-Holman Company
Structural Glass Company
Sylvania Electric Products, Incorporated
U. S. Gypsum Company
U. S. Plywood Corporation
U. S. Stoneware Company
Varlar Division, United Wallpaper, Incorporated
Western Cooperage Company

economy in school building design

by I. E. Morris*

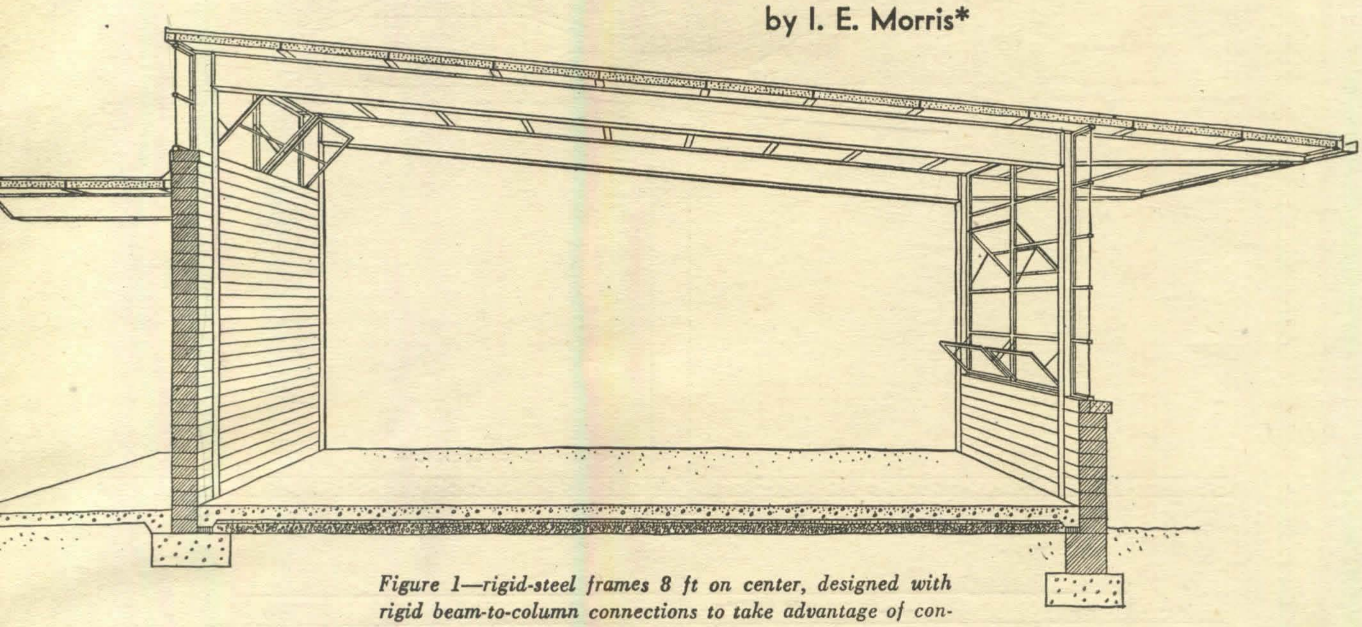


Figure 1—rigid-steel frames 8 ft on center, designed with rigid beam-to-column connections to take advantage of continuity, are suitable for most types of roof decking.

many sections of the United States ching huge school-building programs, tects and engineers are in an excellent ion to do their communities a real ce by striving for economy in design. aximum economy is attained only by ul attention to detail; this attention involve an intimate knowledge of tural design as well as a thorough ledge of material and labor costs. For ple, in the design of a one-way solid-ete slab, there are several reinforcing-sizes and spacings which will provide steel area required for bending mo-; however, there is usually one com-ion which, in addition to meeting de-requirements, involves the least nt of labor in the field.

order to space the bars properly, a man must mark the intervals on the form. Obviously, he can make 500 s in less time than he can make 1000; er, it requires less time to hoist 500 bars than to hoist 1000 small ones. e considerations also apply to work-carrying the bars from the hoist and ng them in the forms. Consequently, igner requiring 0.33 sq in. of steel per a slab can almost double the labor of ng the bars by requiring 3/8 in. rounds n. instead of 1/2 in. rounds at 7 in.

other consideration is the cost of the bars themselves. The base price of steel per ton is only the beginning—there are size extras, bending extras, quantity extras, etc. The size extra on a 1/4 in. round bar is $1.90 per hundred while on a 5/8 in. round bar it is only 25¢ per hundred; therefore, 100 pounds of 1/4 in. round bars cost $1.65 more than the same weight of 5/8 in. rounds. In order to reduce the cost of bending reinforcing-steel, the obvious procedure is to require a minimum amount of it to be bent.

In the case of structural steel frames, there is no economy in using innumerable small members in place of a few larger ones —even if the latter involve slightly more tonnage. As the structural steel manufacturers also have an imposing list of extras, the job with the least tonnage is not always the most inexpensive.

Maximum economy, perhaps, is realized from uniformity (or symmetry) of frame layout, whether it be of steel or concrete, as the saving is largely one of man-hours. In the steel-fabricating shop, less time is required to fabricate 100 identical beams than to fabricate 100 beams involving a dozen slight variations. The same considerations, of course, apply to work in the carpentry shop.

Today, concrete is one of the cheapest materials used in construction; therefore, in the monolithic concrete building, particularly in schools with several identical wings, there is an inherent economy which few people understand, and even these few are reluctant to believe what they see. The basic explanation is that we have relatively cheap concrete placed by unskilled labor, as compared with more expensive masonry placed by skilled labor. When the former two factors are combined with many re-uses of formwork, they produce a truly economical structure.

For one-story schools composed of multiple wings, there are several framing schemes which are economical:

1. Rigid-steel frames on 8 ft modules produce, or can produce, a repetition of detail which escapes most of the annoying extras mentioned; further, the 8 ft spacing is suitable for most of the various types of roof deck *(Figure 1)*. Also, the top members of the frame may pass over the columns to support a canopy if desired. The principal consideration is a rigid beam-to-column connection in order to take advantage of continuity.

2. The corrugated slab, which was introduced in this country by the writer early in 1951, makes an ideal roof for the one-story school *(Figure 2)*. It is adaptable to almost any classroom arrangement and, because of the pleasing ceiling effects which may result, it is particularly effective over auditoriums and cafeterias where longer spans are involved. Such construction requires about 20 percent less steel and concrete than conventional types of framing.

*nsulting Engineer, Atlanta, Ga.

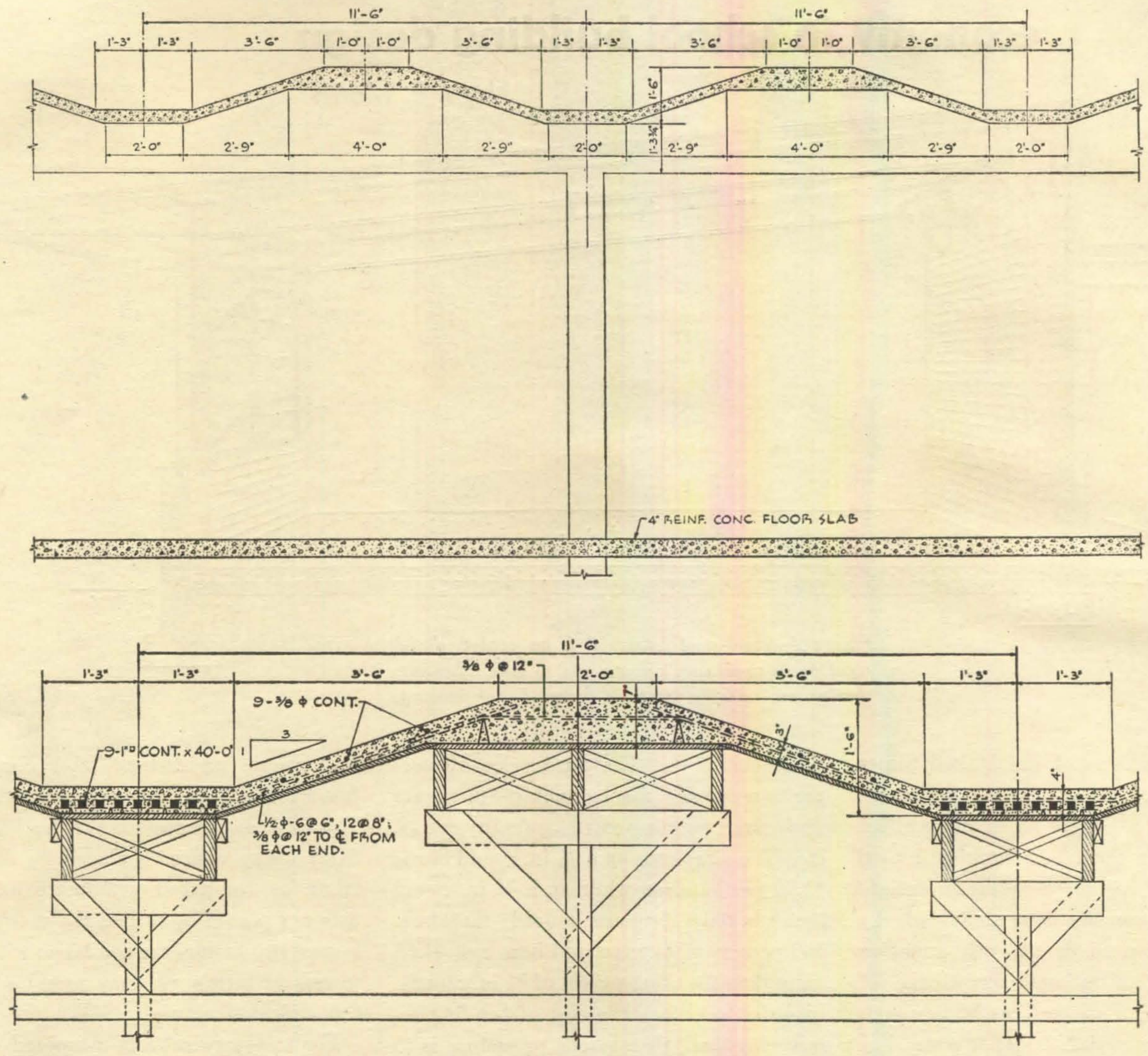


Figure 2—corrugated-slab construction (top) *is ideal for the one-story school and is particularly effective where longer spans are required. Suggested formwork is shown* (bottom).

3. The well-known wall-bearing construction with open-web steel joists is also a solution. But, as the present tendency is to place windows continuously along at least one wall of school buildings, a wall-bearing job without walls becomes somewhat complicated.

Another important feature for a building with a large perimeter, say 2000 ft, involves architectural as well as structural cost. Suppose one structural frame permitted window heads to extend to the underside of the roof deck while another frame, slightly less expensive, required a foot of masonry above the window heads. If we were to consider only the comparative cost of the two frames, we should be misled. The building with the less expensive frame would require an additional 2000 sq ft of wall, which would change the picture entirely. In either case, should a parapet 2'-6" high be included in the design, an additional 5000 sq ft of wall would result. It follows that maximum economy can be attained only by elimination of all nonessential features. In some cases, however, a parapet is no doubt essential.

Column spacing is a problem which cannot be solved satisfactorily by a general rule. In the case of a steel frame, suppose a series of beams supported by columns spaced 20 ft on center, cover a distance of 100 ft (normally, this is not a bad spac
Then suppose the spacing is reduce
16'-8", which would require an extra
umn. If the beam tonnage saved b
shorter spans was materially more tha
weight of the added column, the sh
spans would, of course, be more eco
cal. The saving in beam weight is no
only consideration, however, as the
tional column requires another conne
another pair of anchor bolts, another
plate and, if the columns are conce
more furring involving skilled labor.
excavation and the concrete for the
tional footing would not add an apprec
amount because the area of footings u

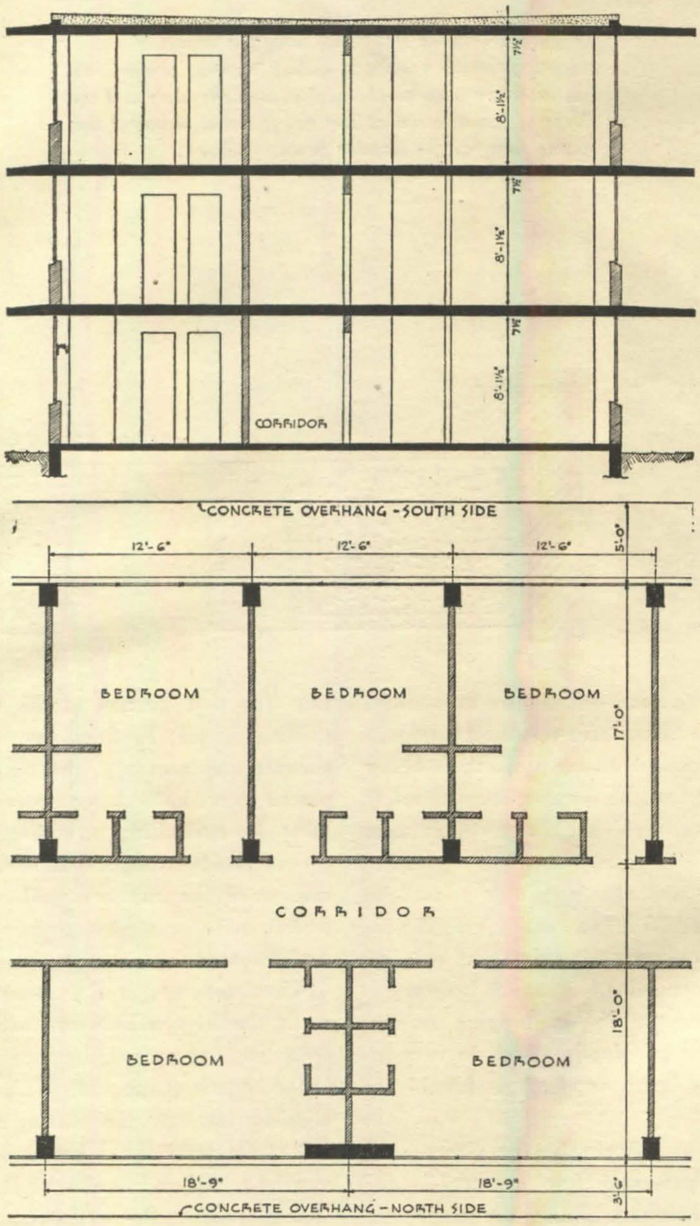


Figure 3—flat-plate slabs permit reduced story heights and require only simple formwork (left). *Flexibility of column spacing is an additional advantage of this construction technique* (below).

ıns at the greater spacing would be r than those for the shorter column ng. So a saving at one point some- increases costs at other points. The ıer should also recall that there is n economy in making a beam deeper ighter, if the increased depth requires ater story height.

ere is one school of thought which itently extols the virtues of bearing and open-web steel joists. Although dmitted that this type of construction doubt, the easiest to design and to , its economy is open to argument. terior building wall has two primary ons: one is to protect the interior of the building from the elements; the other is to produce a reasonably pleasing appearance. If a wall of minimum permissible thickness, after performing these two functions, will also support floor or roof loads, it is economical. If the thickness must be increased, or if the wall must be strengthened in some other way merely as a substitute for a few light beams and columns, then its economy begins to disappear. When open-web joists are used for a floor system, the total floor thickness on a 15 ft span can hardly be less than 10 in.; a concrete slab, however, would normally be 5 in. thick. Since window heads would not be above the bottom chords of the open-web joists but could extend to the underside of a concrete slab, the latter would save about two courses of brickwork in each story. Therefore, in figuring relative costs, it is incorrect to compare only the square-foot cost of the floor system. The writer has known this to be done when one system required a depth of nearly 3 ft from ceiling to the finished floor above, while the other system required less than 18 in. Obviously, such comparisons are very misleading.

The all-concrete frame building can be divided into three major types: the beam-and-solid slab, the flat-plate slab, and the ribbed slab (either with dropped beams or with wide flat beams having a depth equal to the depth of the joists). The wide flat-beam type is, as a rule, most economical, as well as being most satisfactory from many other viewpoints.

The beam-and-solid slab type is particularly suited to schools requiring spans of 15 ft to 22 ft, the goal being to hold the slab thickness to 6 in. or less. Solid slabs create a a considerable dead load on the beams when the thickness exceeds 6 in. With beams placed along corridors, there are no unsightly projections into the rooms and, with attention given to forming, a smooth ceiling requiring no plaster is easily obtainable. A column spacing of 14 ft to 20 ft in the direction of the beam span is good practice, requiring a beam depth of 14 in. to 20 in. which produces a reasonable balance between concrete and steel.

Flat-plate slabs *(Figure 3)* have become quite popular in recent years, and their economy may seem incredible to one accustomed only to thin slabs and deep beams. The economy of the flat plate lies in the simplification of formwork and in the reduction of story height below that required for dropped beams. These two items, simplification of formwork and re-

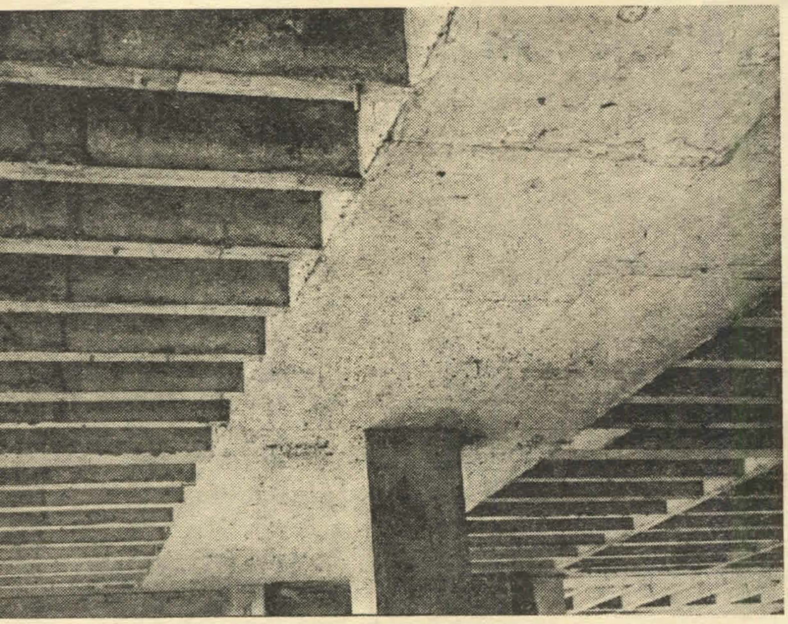
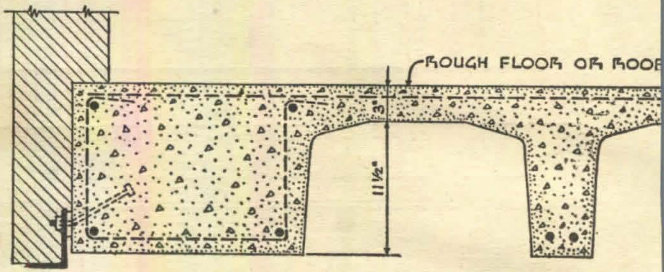


Figure 4—ribbed slabs with wide flat beams of equal depth produce a smooth ceiling without projections to interfere with mechanical equipment (left). *This type of construction utilizes flat spandrel beams of the same form as the interior beams* (below).



duction of story height, play a most important part in cost reduction. If a concrete slab 7 in. to 8 in. thick can replace a floor system 2 ft thick, it permits a possible reduction of 1'-4" in each story height. And the saving applies not only to masonry but also to columns and vertical runs of pipes and ducts, plus many other items less tangible.

The best column spacing for the flat-plate floor is from 12 ft to 20 ft, although a high degree of economy has been attained with column spacings up to 30 ft and slab thicknesses up to 12 in. It is difficult to believe that such slabs could be economical, but bids turned in by many contractors tell the story. Often, the alternative to these slabs is a floor construction involving huge beams, with doubled form-cost and much greater story heights.

The ribbed slab with wide flat beams has also been used extensively *(Figure 4)*. Its economy has been proved again and again. Normally, the ribs are made deeper than is required by moment and shear, but the additional concrete is negligible since it is added only to the narrow ribs or joists. The extra depth reduces the steel for the joists and gives additional depth to the wide flat beams, which are the same depth as the joists. The result is a smooth ceiling with no projections to interfere with mechanical equipment. Moreover, where it is necessary for vertical runs of pipe to pass through beams, the metal forms at these points may be held back in order to widen the beam sufficiently to compensate for the loss of area resulting from passage of pipes. With no projections below the ceiling line, the forming consists solely of slab forms which are cheaper than beam forms.

As for spans, ribs 5 in. wide and 12 in. deep, spaced 25 in. on center, with 2½ in. topping, develop a total depth of 14½ in. and will economically span 24 ft or more. By retaining the 2½ in. topping and increasing the rib depth, which in turn increases the beam depth, it is feasible to span 40 ft.

The column spacing in the direction of the beam spans should not exceed 16 ft for maximum economy, although much greater spans have been employed successfully. Since the depth of the beams remains the same as the depth of the ribbed slab, the greater cross-sectional area required for bars and for shear is obtained by widening the beam.

The foundation of a wall-bearing structure having considerable perimeter is another instance where economies may be realized. Frequently, because of soil conditions, the wall footing may be 5 ft or more below existing grade. Current practice is to excavate by hand for a footing 14 in. to 24 in. wide. After the wall is built up from the footing, the trench is backfilled.

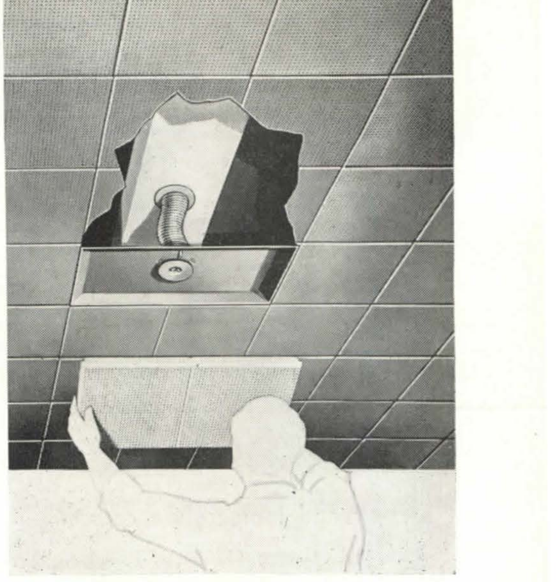
But with a trenching machine, it is cheaper to excavate a trench 12 in. wide and fill the excavation with concrete having a 28-day strength of about 1500 psi. In this way that portion of the wall b existing grade is filled by a mat cheaper than masonry, and the materi placed by unskilled labor instead of sk labor. No backfilling is required. The psi concrete is stronger than most maso and, since the masonry wall is not forced, there is no point in reinforcing concrete wall.

When concrete is thus poured ag earth, the friction between earth and crete tends to spread the load on the at the bottom of the wall. With a wall high, for instance, the bearing area or soil at the level of the bottom of the may be considered as about 3 ft to 5 f foot of wall. As the wall height incre the equivalent footing width bec greater.

In several recent instances, the w has obtained comparative costs from tractors. For only materials in place, average figures were 60¢ psf for the crete wall poured into the excavation, 75¢ psf for 12 in. masonry walls buil from footing to underside of first floo these instances, however, the walls built of 12 in. concrete block. The fig are even more favorable when we cons that the poured-in-place wall requires excavation, and cheaper excavation wit backfilling.

A careful study of each individual b ing is required to attain maximum ec my; this study should begin with the architectural sketches.

Modular Multi-Vent air-diffusing panels for heating, cooling, and ventilating systems using either duct or plenum air supply, can be incorporated into any standard acoustical metal-pan ceiling at lower cost than other air diffusers, according to the manufacturer. The new diffuser consists simply of a 12" x 24" panel, adjustable orifice valve, and flexible glass-fiber tube for connecting the panel with the air-supply duct. The components are easily assembled, attached, and aligned in the ceiling by hand, without use of tools. Conditioned air is delivered at low velocity with over-all distribution by pressure displacement, not by high-velocity injection, so that strong air streams and "blow" are comfortably absent. Pyle-National Co., Multi-Vent Div., 1334 N. Kostner Ave., Chicago, Ill.



air and temperature control

:" Series Agitair Air Diffusers: square rectangular units incorporating patented t-in vanes and new mounting frame with ovable diffuser core for quick, easy in-lation. Available in wide range of sizes; es and louvers assembled in variety of erns to provide blows in 1, 2, 3 or 4 direc-s, with 100% control of air volume and ction of discharge. Air Devices, Inc., 17 2 St., New York 17, N.Y.

imetaire: combined perimeter and base-rd heating system provides filtered, hu-ified, warm-air circulation, is adaptable summer cooling. System functions equally with standard basement ductwork or 4" basement pipes. Fully automatic, be used in both old and new dwellings. ger Furnace Mfg. Co., 5920 Centre Ave., sburgh, Pa.

n Air-rad: low-priced radiator equipped individual thermostatic control, sized to between standard studdings. Is recom-ided for residences and motels (as each n is rented, temperatures are raised from nomy-level to comfort-level at forced hot r speed). Available in single and dual lels; 9000 and 18,000 Btu capacities. Penn ler & Burner Mfg. Corp., Lancaster, Pa.

lel 606 Therm-O-Dial: built-in, electric heater with supersensitive thermostatic trol that automatically turns fan and heat-element on or off as temperature in room es. Suitable for bathrooms, nurseries, and r hard-to-heat locations. Unit remains to touch, even after hours of operation. n Mfg. Co., Inc., 701 Seneca, Buffalo, N. Y.

doors and windows

Aluminum Storm and Screen Door: bination storm and screen door consists strong, hollow-aluminum frame, upper lower storm sash and screen panels, and y aluminum jamb; interchangeable units choice of all storm protection—all n, or part screen and part storm at same Complete with automatic closer, es, and hinges. Alumatic Corp. of Amer-2081 S. 56 St., Milwaukee, Wis.

mo-Sash: fully-insulated, aluminum ow frame built to match double-paned ating glass. Aluminum-alloy construction nates condensation and frost on interior metal surfaces at normal room temperatures and humidity, even when outside temperatures drop below —20F. Available for all windows ranging from modern floor-to-ceiling window wall to smaller combinations of windows suitable for Colonial type architecture. Fittings and hardware included. Kesko Products, Inc., Bristol, Ind.

Rancho Door: three-paneled residential door made of ponderosa pine, treated for maximum resistance to shrinkage or warping due to atmospheric changes. Ponderosa Pine Woodwork, 38 S. Dearborn St., Chicago 3, Ill.

Artex Darkening Draperies: lightweight, opaque, plastic draperies for darkening classrooms in which visual education programs are conducted. Material is permanently flame-resistant, moth- and mildew-proof, will not sun-rot; no dry-cleaning necessary, cleaned merely by wiping with damp cloth. Available in solid, fast colors and in variety of patterns and designs. Art Zeiller Co., Inc., 26 Hudson St., Ridgewood, N.J.

electrical equipment, lighting

RCDE-8 Explosion-Proof Light Fixture: 200w industrial unit for flush mounting in ceilings. Eight-in. lens with symmetrical lighting distribution for general illumination or with prismatic lens with asymmetric distributions for special applications. Crouse-Hinds Co., Wolf & Seventh St., N., Syracuse, N.Y.

Low-Brightness Fluorescent Fixture: furnishes abundant, glare-free light; ideal for use in schoolrooms, libraries, drafting rooms, and other locations where light for close seeing is constant requirement. Unit is made of diffused Alzak aluminum, with true parabolic side and center reflectors; uses two T-17 tubes. May be installed as individual fixtures or in continuous rows, either ceiling mounted or suspended. Leader Electric Co., 3500 N. Kedzie Ave., Chicago, Ill.

Uni-Flow Troffers: line of matched, recessed troffers in all useful lengths offers selection of 2442 different lighting combinations; almost unlimited applications for stores, schools, offices, commercial and institutional installations of all kinds. Complete choice of shielding equipment. Mitchell Mfg. Co., 2525 Clybourn Ave., Chicago, Ill.

insulation (thermal, acoustic)

Acousti-Celotex Random Pattern Tile: sound-absorbing tile in new over-all pattern of scattered perforations of varied sizes; highly light-reflective, linen-textured surface is durable and washable; may be repainted without impairing sound-absorptive capacity. Celotex Corp., 120 S. La Salle St., Chicago 3, Ill.

sanitation, water supply, drainage

Roto-Tray Automatic Dishwasher: dishwasher-sink combination and two free-standing models, built so as to assure equal cleansing for all dishware in upper and lower racks by eliminating "blind" spots which water cannot reach; both racks are individually mounted, sliding out freely on nylon bearings for easy loading and unloading. All models are front-loading. Avco Mfg. Corp., Crosley Div., Connersville, Ind.

Beverly Lavatory: designed by Henry Dreyfuss, made of acid-resisting vitreous china with sloping panel back, plain apron, and smooth lines; Dial-ese control unit and chromium-plated lever handles. Over-all size 20" x 18", size of basin 14½" x 11". Suitable for low-cost houses and in supplementary bathroom in larger houses. Available in eight colors. Crane Co., 836 S. Michigan Ave., Chicago, Ill.

specialized equipment

Gli-Dor: mirrored sliding-door medicine cabinet, recessed except for laminated plastic frame; full-mirrored doors move easily on noiseless roller bearings; heavy, beveled plate-glass shelves are adjustable to any required height. Cabinet made of ¾" plywood finished with laminated plastic; two sizes available. Atkins Wood Products Corp., 103-12 101 St., Ozone Park, N. Y.

surfacing materials

Gothic Oak Flooring: ready-finished hardwood squares, capable of withstanding alternate periods of dry heat and excessive moisture with minimum dimensional change, recommended for floors in structures utilizing radiant heat; installation is quick and economical. Flooring is available in two sizes: 8" x 8" and 12" x 12". Parkay, Inc., 5000 Crittenden Dr., Louisville 9, Ky.

MANUFACTURERS' LITERATURE

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

air and temperature control

1-191. Airtherm (1209), 15-p. catalog presenting line of propeller-fan unit heaters, both horizontal and vertical units, in wide range of types and sizes for installations in schools, offices, showrooms, warehouses, etc. Descriptions, applications, specifications, photos, illustrations, capacity charts, recommended mounting heights. Airtherm Mfg. Co., 700 S. Spring Ave., St. Louis 10, Mo.

Three bulletins, covering, respectively: baseboard convectors, space-saving radiant convectors, and propeller-fan unit heaters for commercial, industrial, and institutional installations. Construction, capacities, photos, diagrams. C. A. Dunham Co., 400 W. Madison St., Chicago 6, Ill.:

1-192. Baseboard Heating, AIA 30-C-44 (639D)

1-193. Fin-Vector Radiation, 30-C-4 (1251)

1-194. Propeller Fan Unit Heaters, AIA 30-C-43 (1301)

1-195. In Modern Schools (G), 16-p. booklet describing selection of automatic temperature controls for school heating and air conditioning systems. Advantages, typical installations, photos, drawings. Johnson Service Co., 507 E. Michigan St., Milwaukee 2, Wis.

1-196. Automatic Controls for the Modern School, AIA 30-E (SA1238B), 12-p. booklet. Automatic temperature, refrigeration, and ventilation controls especially designed for classrooms. Types, applications, advantages, photos, drawings. Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis 8, Minn.

1-197. National Gas-Fired Unit Heaters, AIA 30-C-43 (596), 4-p. bulletin illustrating new line of gas-fired unit heaters with welded-steel heat exchangers, ranging from 55,000 to 200,000 Btu per hr input. Components, cut-away and full-view illustrations, ratings, dimensions, ordering data. National Radiator Co., 221 Central Ave., Johnstown, Pa.

1-198. Royal Family Gas Boilers, AIA 30-C-1 (A-439), 6-p. folder. Cast-iron boilers with steel base, insulated with glass fiber on all four sides and top, for heating systems in homes, commercial and institutional buildings. Advantages, jacket models, ratings, dimensions, elevation drawings, cross-section. U.S. Radiator Co., 300 Buhl Bldg., Detroit, Ill.

construction

3-162. Architectural Terra Cotta and Ceramic Veneer, 12-p. brochure containing specifications for furnishing and erecting terra cotta and adhesion-type ceramic veneer. Construction details, color plates of veneers and typical installations. Architectural Terra Cotta Institute, c/o Structural Clay Products Institute, 1520 18 St., N.W., Washington, D.C.

3-163. Corrosion-Proof Cements, AIA 3-B (5-2), 12-p. bulletin providing technical data on four basic types of corrosion-proof cements for use in all standard constructions of acid-proof brick or ceramic tile. Requirements, properties, resistance characteristics table, illustrations. Atlas Mineral Products Co., 76 Walnut St., Mertztown, Pa.

★ **3-164. Chromedge Mouldings and Metal Trims** (153), 66-p. catalog presenting comprehensive line of extruded aluminum alloy and rolled metal retaining shapes for use with all types of floor and wall coverings; other special applications. Descriptions, uses, methods of application, details, general data, visual index, contents table. B & T Metals Co., 425 W. Town St., Columbus, Ohio.

Two circulars, one describing lightweight, precast concrete, long-span channel slabs for commercial and industrial building construction; advantages, specifications, details, photos. Also, folder illustrating nailable concrete planks, either t & g or cast with square edges, for roofs and floors; drawings, specifications. Porete Mfg. Co., North Arlington, N.J.:

3-165. Lightweight Channel Slabs (59-B)
3-166. Porete Plank (69-B)

doors and windows

4-195. Insulux Glass Block, AIA 10-F, 24-p. catalog illustrating types and sizes of hollow glass block, available in six face patterns. Advantages, dimensions table, installation data, details, basic specifications, technical data. American Structural Products Co., Ohio Bank Bldg., Toledo 1, Ohio.

4-196. Austral Windows, 8-p. booklet. Structural advantages of draft-controlled, wood windows for school buildings; shades already attached to sash regulate light without obstructing air circulation. Typical details, specifications, photos, illustrations of hardware. Austral Sales Corp., 101 Park Ave., New York 17, N.Y.

4-197. The Shades That Last as Long as the Windows (S-309), circular describing ventilating shades made of kiln-dried basswood slats woven together with seine twine into rugged, durable fabric; specifically designed for dormitories and other school applications. Construction features, advantages, photos. Hough Shade Corp., Janesville, Wis.

4-198. Architects Manual for Venetian Blinds, AIA 35-P-3 (AM-1), 18-p. booklet giving general data on construction of all-metal venetian blinds with enclosed heads and bottom bars. Types, installation m[e]ods, specifications, advantages, illustrati[c] Levolor Lorentzen, Inc., 391 W. Broadw[ay] New York 12, N.Y.

Full-color catalog illustrating wide vari[ety] of plywood sheets and plywood doors (b[oth] panel and flush); tables showing plyw[ood] grades and dimensions; uses, types of ap[pli]cations, door selector guide, advanta[ges,] characteristics, specifications. Also, file fol[der] containing five actual samples of fir [and] redwood plywoods. M & M Wood Work[ing] Co., 2301 N. Columbia Blvd., Portland [...] Ore.:

★ **4-199. Malarkey Plywoods [and] Doors,** AIA 23-L, 19-E-1

★ **4-200. 5 Great Malarkey Plywo[ods]** AIA 23-L

4-201. Hardware, 20-p. catalog and p[...] sheets. Collection of decorative hardware [for] doors, cabinets, and chests, including kn[obs,] keyplates, levers, pulls, knockers, hin[ges,] cremones, and espagnolettes, in contem[po]rary and period styles (both antiques [and] reproductions). Photos. Charles A. Mc[Car]thy, 48 E. 57 St., New York 22, N.Y.

electrical equipment, lighting

5-132. Electrical Fittings (52), 12-p. [cat]alog describing complete line of solder[less] wire connectors, cable and conduit fitti[ngs,] and wiring devices. Dimensional data, ap[pli]cation and ordering directions, specificati[ons,] illustrations. Buchanan Electrical Prod[ucts] Corp., Hillside, N.J.

5-133. Skandia, 8-p. booklet. Illustrat[ions] of directional, metal lights in variety [of] styles, for wall and ceiling mounting. [Fin]ishes, illustrations. Eagle Mfg. Co., 350[...] Avalon Blvd., Los Angeles 11, Calif.

5-134. Arealux, AIA 31-F (470), 4-p. f[old]er describing shallow, large-area lumin[aire] for panel or louverall lighting applicati[ons;] individual, removable louvers may be qu[ick]ly detached and wiped clean with d[amp] cloth. Construction features, diagrams, or[der]ing data. Lighting Products, Inc., High[land] Park, Ill.

5-135. Kliegboards for Lighting Con[trol] (SB-2), 24-p. catalog on self-contained, l[...] control units of various designs with sw[itch]ing, circuiting, connecting, dimming, an[d re]lated electrical devices for theaters, televi[sion] studios, school auditoriums, and other a[ppli]cations. Recommended stage-lighting p[...] wiring diagrams, specifications, design [ele]ments, photos, drawings. Kliegl Bros., 32[...] 50 St., New York 19, N.Y.

5-136. America's No. 1 Lighting Eq[uip]ment Manufacturer, 48-p. catalog pre[sent]ing full line of fluorescent and incande[scent] light fixtures of all types for comme[rcial,] industrial, and institutional uses. Types, [con]struction features, specifications, distrib[ution] curve diagrams, photos, drawings. L[...] Electric Co., 3500 N. Kedzie, Chicago[...]

insulation (thermal, acoustic)

). Specifications for the Application Foamglas, AIA 37-B (G21122), 16-p. klet specifying cellular glass insulation ow temperature installations (—50 F to). Properties, data on new application hods of insulation in ceilings, walls, rs, columns, and beams; recommended esives, sealers, finishes, paints, and acceses. Pittsburgh Corning Corp., 307 Fourth , Pittsburgh 22, Pa.

). Pomeroy System of Mechanical tenings for Acoustical Materials (1952), folder describing dry-wall and ceiling-orting system for installation of acous- materials of all kinds. Installation de-, description of component parts. S. H. neroy Co., 25 Bruckner Blvd., New York N.Y.

sanitation, water supply, drainage

270. Quality Soap Dispensers, 4-p. hure offering various models of stainless soap dispensers pumping soap in lather, id, or powder form. Specifications, os, accessories. American Dispenser Co., New York 10, N.Y.

271. Bradley Group Washing Equipt, AIA 29-H (5204), 24-p. catalog. Adages of stone, stainless steel, and enam- iron group-washing fixtures for schools, pries, and institutions of all kinds. Feas, types, roughing-in dimensions, descrips of multi-stall showers, suggested lava- layouts, photos. Bradley Washfountain 2203 W. Michigan St., Milwaukee 1, Wis.

272. Brulé Quality Incinerators, 8-p. hure. Illustrations of various types of nerators for industry, municipalities, mercial and institutional users. Construc- data, specifications tables, capacities, di-sions. Brulé Incinerator Corp., 36 W. Buren St., Chicago 5, Ill.

273. In-Sink-Erator Telex Model 99, 35-J-41 (153), 4-p. folder on full-sized, powered garbage disposer with rough-in e extending from 6" to 11", to meet allation requirements in any residential nen. Advantages, operational data, illusons. In-Sink-Erator Mfg. Co., 2101 14 St., ne, Wis.

274. Modern Water Storage (101), brochure. Data on five types of elevated r-storage tanks of steel construction, ing in capacities of from 5000 to 3,000,000 recommended for public and private r systems, hospitals and institutions, ge warehouses and depots, etc. Dimen-s, capacities, accessory equipment, instal-n photos. Pittsburgh-Des Moines Steel Neville Island, Pittsburgh, Pa.

75. Recommendations and Specifin Data, AIA 29-H-3, 8-p. booklet. De-tions of shower and lavatory fixtures wer heads, mixing valves, flush valves, n fixtures). Advantages, illustrations. Speakman Co., 30th & Spruce Sts., Wilmington, Del.

specialized equipment

19-276. Kemtherm Sinks, 4-p. folder. Illustrated data on chemical and industrial laboratory tub sinks, wall sinks, and center tables equipped with storage cabinets. General data, dimensions table. Kewaunee Mfg. Co., Adrian, Mich.

Two 18-p. catalogs on steel lockers and wardrobes for use in schools, hospitals, industrial plants, country clubs, etc. Types, sizes, specifications, details, photos. Fred Medart Products, Inc., 3535 De Kalb St., St. Louis 18, Mo.:

19-277. Steel Lockers, AIA 35-H-6

19-278. Steel Lockerobes, AIA 35-B-4

19-279. Portable Folding Stands (B56), 4-p. folder describing two types of portable stage stands for seated or standing groups, available with either three or four elevations. Advantages, photos. Mitchell Mfg. Co., 2740 S. 34 St., Milwaukee 15, Wis.

19-280. Welded Steel Bleachers, 6-p. folder describing rigid steel-frame portable bleachers, available with 3 to 30 extra-wide (12") seat-boards, for all sports-seating requirements. Structural features, typical installations, specifications. Playtime Equipment Corp., Mars, Pa.

19-281. School Equipment (66), 36-p. catalog containing wide selection of desks, desk-and-chair units, blackboards, bookcases, tables, storage and filing cabinets, laboratory and library furniture, and other classroom equipment. Illustrations, prices, index. E. W. A. Rowles Co., Arlington Heights, Ill.

19-282. Unaflex Laboratory Furniture (LA-51), 16-p. catalog describing flexible, functional, laboratory furniture designed especially for secondary schools. Construction details, dimensions, seating arrangements, suggestions for laboratory planning, illustrations. John E. Sjostrom Co., 1717 N. 10 St., Philadelphia 22, Pa.

19-283. Architectural Data for Electric Clock and Program Systems (181-A), 4-p. pamphlet giving specifications for electric clock and program systems, and also for fire-alarm equipment in schools. Photos. Standard Electric Time Co., 81 Logan St., Springfield 2, Mass.

surfacing materials

19-284. New Dramatic Wall Creations, 4-p. folder announcing new plastic wall tile with striated pattern on opposite sides, either side providing excellent bonding surface for mastic adhesive; available in nine colors. Advantages, types of applications, illustrations. Industrial Plastics, Inc., 1351 W. 73 St., Cleveland 2, Ohio.

19-285. Spongex Safety-Cushion Wainscot, 2-p. circular describing protective wainscoting, consisting of laminated plywood panel, to which rubberized hair and cellular rubber covered with vinyl sheeting are bonded. Erection data, installation detail, photos. Sponge Rubber Products Co., Shelton, Conn.

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1-191	1-192	1-193	1-194	1-195	1-196	1-197	1-198
3-162	3-163	3-164	3-165	3-166	4-195	4-196	4-197
4-198	4-199	4-200	4-201	5-132	5-133	5-134	5-135
5-136	9-79	9-80	19-270	19-271	19-272	19-273	19-274
19-275	19-276	19-277	19-278	19-279	19-280	19-281	19-282
19-283	19-284	19-285					

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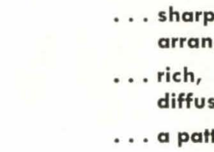

Completely new and unlike any other Sound Conditioning material in appearance, Acousti-Celotex RANDOM PATTERN Perforated Tile brings you an exciting new range of decorative possibilities for interiors of every type.

- ... **sharply profiled perforations of varying sizes, arranged in random fashion**
- ... **rich, linen-like surface that gives better light diffusion**
- ... **a pattern that minimizes joint lines, for beautiful over-all effects**

... these are the new, exclusive features of Acousti-Celotex RANDOM PATTERN Perforated Tile that enable you to create striking, dramatic decorative effects impossible with any other Sound Conditioning material!

But beauty is only part of the story. Like all Acousti-Celotex Sound Conditioning Products, RANDOM PATTERN Perforated Tile has high sound-absorbing value. And it also has a remarkably durable *new washable finish* that keeps its smart, soft-white beauty after many washings.

ASK YOUR DISTRIBUTOR of Acousti-Celotex products to show you a sample of new Acousti-Celotex RANDOM PATTERN Perforated Tile. If you don't know where to reach him, write to The Celotex Corporation, Dept. C-92, 120 S. LaSalle St., Chicago 3, Ill. In Canada, Dominion Sound Equipments, Ltd., Montreal, Quebec.

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libraries

ollege libraries are still storehouses many books but the undergraduate gets more attentions than he used to. a user he may be *not* a reader but a ver (art gallery), a listener (record ing room), or a typist (places to use ewriters without bothering others). sic lounges or projection rooms are no ger strange in the college library. Propes may be found in the best that comcial studios and auditoriums offer, and best is neither too good nor *infra dig* the college today.

till, books and readers occupy most of space. In the public spaces, the reader uld have most of it and shelving be kept only the most-used reference material books; in the stacks for scholars and ors men, the ratios are sharply reversed. he tower containing a self-supported k stack is obsolete. Flexibility required the contemporary library results in rs of one stack height (modular) or, at st, of two (mezzanine). Shelves are efore supported at not more than two- intervals. Modern steel-shelving coments, produced in a very competitive ket, offer a wide variety of arrangeits for the imaginative architect to ipulate. Far more can be done with e standard parts than has yet been e. Only the unresourceful will require d shelving for some room of archaic e. Any building of reasonable size can its own color standards for the metal ves. The principal decorative effect of room can be attained by brave and ightful management of the colored ends helves, of special arrangements for disred bibliographies, of shelves and file inets as partitions. Only at the card logue will the investigator challenge l drawers in favor of wood (reason— e). Card catalogue, book shelves, and r devices now pay attention to how and how low a boy or girl can be exed to see or reach. To encourage flexiy, as much furniture as possible is on . Thus the floor is cleared and cleaning isier.

Circulation desks, reference desks, and other control points are lower and friendlier than before—about the height of an office desk, so that seated librarian and the caller can carry on a face-to-face conversation. The charging shelf may be higher. Behind these desks or counters, a welter of specialized tasks calls for imaginative use of standardized file drawers and other units —a problem not unlike that of putting together a good kitchen. This has not often been well solved. Librarians, like cooks, know what they do but not why they do it nor how they could do it better.

Readers are now entitled to a wide choice of seats—upholstered chairs, hard armchairs, or stools. Each seating apparatus has to withstand tipping on half of its support, dirty feet on the arms, and all the other tricks of adolescents to smash the property provided for their use. "Tough and comfortable" is the motto. Tables also should provide variety, single-work spaces, group-work spaces, tables in rows with high baffles between them. Working surfaces are light in color (reason—to produce less contrast between book pages and adjacent surface). Maintenance requires imperviousness to the carving of initials or entwined hearts, to doodling with pencils, to the scuff of saddle shoes which will be on the desk as much as books are. Light woods have not proved a happy answer.

Sound control is still an important library problem, although no one can really specify the levels of outside or inside noise which are tolerable. Ceilings will almost certainly be sound absorbent, floors of nonechoing surface. For most rooms this will be enough. Parquets, ceramic tiles, sheet glass, and other noble floor surfaces are impractical in libraries—even if they were to cost less than they do. Floors must also stand wear of feet and the concentrated loads of the heavily laden book trucks. Compositions are most common; and you get what you pay for. Plain, dark colors, but not drab ones, are popular on reading-room floors; in stacks, the color can profitably be a light gray or even off-white (reason—to reflect light on books on lowest shelf, which are otherwise hard to identify).

Theory of conspicuous waste is taboo in most university architecture today. Thus, in many recent and elegant buildings, cinder blocks have been used extensively and have proved handsome and reasonable for all partitions; and even for the interior finish of exterior walls, when painted well and boldly.

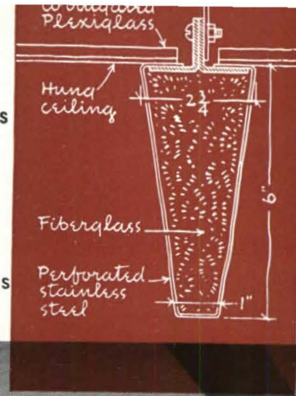
The perfect illumination is still not known and the subject is one of intensive argument. Every contemporary system has been used somewhere. None has seemed infallible. Most people will be satisfied with 20-30 footcandles on the working surface, but some experts cry for 50. Those who believe in control of contrast to a high degree can make convincing calculations, but they end with color schemes which are monotonous and uninteresting. Most people (including the writer) would, in the present state of the science, prefer to gamble on more interesting color (and perhaps more light contrast). Ceiling should have relatively uniform illumination, fluorescent tubes should be shielded. Since the eyes of college library users are from sixteen to eighty years old, the individual demands for light intensities run a wide range. There may be genuine promise for the architect who can work out a respectable return to individual desk lighting, with the wrinkle of individual control of intensity.

Universities and colleges like to build something exciting, but their maintenance usually suffers from frugality. Some of the things which work well in a sales department or on Fifth Avenue may look shabby soon after they have reached the campus. You build at the university something which will not soon be changed. So, durability and easy and inexpensive maintenance are essential for all the parts—probably, in this case, an essential counsel and not merely a desideratum.

John Ely Burchard
Massachusetts Institute of Technology

libraries

ceiling details



corrugated translucent plastic

perforated steel supporting fins

gray linoleum

Crab Orchard stone

control desk

	Fitchburg Youth Library
location	Fitchburg, Massachusetts
architect	Carl Koch & Associates
staff architects	Frederic L. Day Jr. and Leon Lip

The story of this library is about a building and a co-operative community action. It was the school children of Fitchburg who decided they needed a library and who, by working and saving, contributed a healthy sum toward it. They were supported by citizens and local business firms, who donated more than half of the building cost. The remainder was appropriated by the City of Fitchburg.

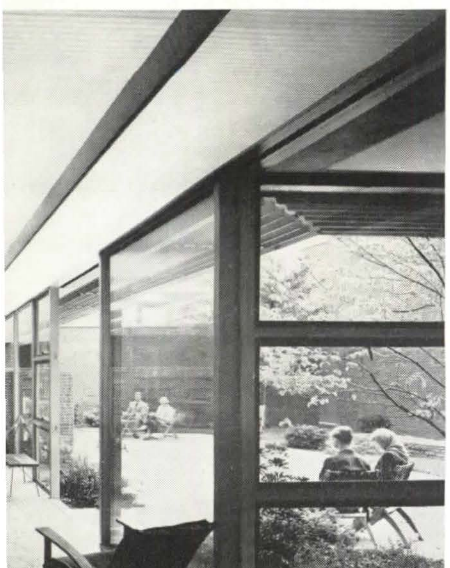
The architect did well by his young clients. He and a group of specialists responded to the assignment with imaginative understanding. This children's library is a feat outstanding for performance, freshness, and careful warm detail. The simple plan puts reading rooms and an auditorium around a central garden. The main reading room has books for the young children, reference books, magazines, mobile card catalogue and book units. Behind the control desk is the librarian's office, enclosed by translucent glass, and adjacent is a workshop. Sliding glass doors open the room to the garden, fireplace is usable on both sides.

The teen-agers have a reading room of their own, the "garden room," which is also used by them for meetings and radio or record playing. This room, too, can be opened to garden or completely separated from main reading room and entrance hall. In the garden are sculptured owls on skylight sides, a decorative frieze that continues around the exterior, a fountain, and some lively planting. Industrial materials such as rigidized steel and porcelain enamel make the art new in form, weather resistant, and easily maintained.

If a library needs ample, even, shadowless light, the luminous ceiling seems a perfect answer. Thin, translucent, corrugated plastic is hung below fluorescent lamps, spilling 50 footcandles at table level. Supporting fins are perforated, rigidized steel, incasing glass fibers for sound absorption. Daylight, too, pours through glass walls and saw-tooth skylights at center of the main reading room. Walls at skylight sides are faced with acoustical tile.

Colors of books and the natural materials predominate. Floors are flagstone or gray linoleum, solid walls are brick, all wood is red oak, and fireplace tile is gray-blue. The control desk is topped with gray-green linoleum and, besides natural rawhide, there are touches of blue, brown, or green for chair and sofa covers. Except for some seating, all cases, desks, and tables were designed by the architect. Artists were Juliet and Gyorgy Kepes; the sculptor was William Talbot. Engineers were Bolt, Beranek & Newman (acoustics), Dr. Domina Spencer (lighting), and Adolph Ehrenzeller (heating and ventilating).

Photos: Ezra Stoller



"Sno-Shu" armchair and footrest

data

Cabinet Hardware: Independent Lock Co., Fitchburg, Mass., and Lockwood Hardware Mfg. Co., Fitchburg, Mass.

Cabinets and Cases: (stationary and mobile bookstacks, reference cases, book trucks, etc.) architect-designed/ Schultz Woodworking Co., Cambridge, Mass.

Ceiling: "Marlux"/ corrugated translucent vinyl plastic/ Martin Electric Products Inc., 346 Somerville Ave., Somerville, Mass.

Ceiling Fins: rigidized perforated steel/ Rigidized Metals Corp., 658 Ohio St., Buffalo 3, N. Y.

Ceiling Lamps: G. E. "Slimline" fluorescent lamps; ballasts: Sola Electric Co., 4633 W. 16th St., Chicago 50, Ill.

Chair: S915 "all-purpose chair"/ tubular-steel frame with baked-enamel finish in "school brown" or "cocoa"/ birch saddle-seat and birch bentwood back/ retail: $19.00/ Heywood-Wakefield, School Furniture Div., Menominee, Mich.

Chair: ("Sno-Shu" armchair) #60 Wallingford/ architect-designed/ white ash/ laced-natural rawhide seat and back/ weather resistant for outdoor use/ list: $34.50/ list for #71 footrest: $10.50/ Vermont Tubbs Inc., Wallingford, Vt.

Chair: ("Sno-Shu" folding chair) #30/ architect-designed/ white ash/ laced-natural rawhide back and seat/ list: $22.50/ Vermont Tubbs Inc.

Chair: (upholstered) #48/ Albini design/ birch frame/ natural finish/ net: $49.00/ Knoll Associates, 575 Madison Ave., New York 22, N. Y.

Chair: (webbed) Mathsson design/ birch/ retail: $40.00/ Bonniers, 605 Madison Ave., New York 22, N. Y.

Chair Webbing: "Saran"/ 2" wide/ green/ retail: approx. $.35 to $.50 per yd./ Webcraft, Box 51,, Oxford, Mass.

Control Desk: architect-designed/ red oak rubbed with white lead/ Schultz Woodworking Co.

Control Desk Top: jaspe linoleum/ Congoleum-Nairn Inc., 195 Belgrove Drive, Kearny, N. J.

Doors: (sliding glass) "Twindow"/ Pittsburgh Plate Glass Co., 632 Duquesne Way, Pittsburgh 22, Pa.

"Fiberglas": Owens-Corning Fiberglas Corp., Lucas County Bank Bldg., Toledo, Ohio.

Fireplace Tile: "Suntile"/ 1" x 2"/ The Cambridge Tile Co., Box 71, Lockland Sta., Cincinnati 15, Ohio.

Floor Covering: Velvet-Lino Cork Carpet from the Netherlands.

Paints: Pratt & Lambert Inc., 79 Tonawanda St., Buffalo 7, N. Y.

Porcelain Enamel: (sunshades and sculpture)/ Bettinger Corp., Waltham, Mass.

Sofa: #9016/ 34" x 54" x 31" high/ foam rubber over "no-sag" springs/ laminated birch legs/ 6 yds. req./ list: $229.00/ Pascoe Industries Inc., 10 W. 55 St., New York 19, N. Y.

Sofa: (at fireplace) #27 "settee"/ 32" x 60" x 30" high/ laced curled hair, cotton felt, and coil spring/ foam rubber back and seat cushions/ birch legs/ 10 yds. req./ net: $250.00/ Knoll Associates.

Sofa Fabric: "Cartree"/ cotton 54" wide/ K130/6 "mocha" or K130/8 "slate"/ net: $5.50 per yd./ Knoll Associates.

Tables: architect-designed/ tops by Schultz Woodworking Co.

Walls: Gonic Harvard antique waterstruck brick/ New England Brick Co., Boston, Mass.

Walls: (glass) "Twindow"/ Pittsburgh Plate Glass Co.

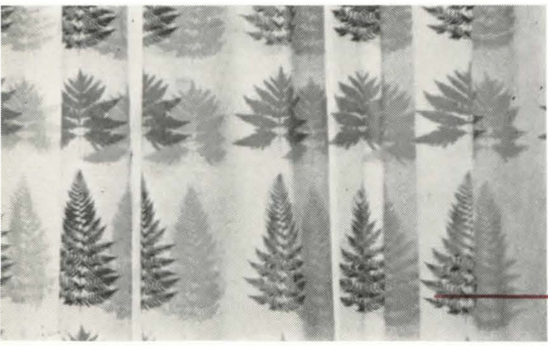
Window Glass: "Twindow"/ Pittsburgh Plate Glass Co.

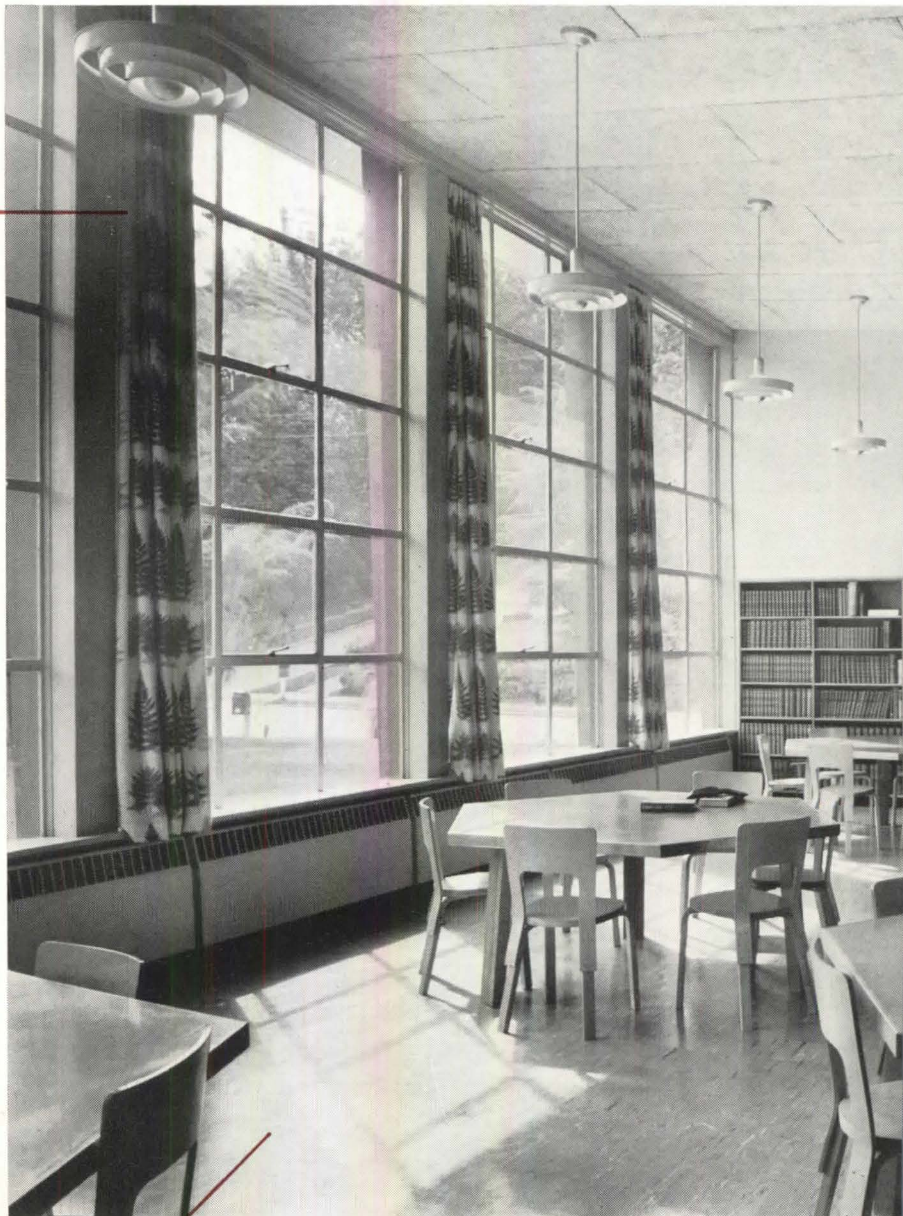
Window Sash: Hope's projecting sash/ Hope's Windows Inc., 84 Hopkins Ave., Jamestown, N. Y.

libraries

	Helen Bush School Library
location	Seattle, Washington
architect	Victor N. Jones & Associates
interiors	Mary Bassetti
special furniture	Fred Bassetti

cotton twill curtains





asphalt tile

data

Ceiling: "Rockwood" structural insulation board with sound-absorptive qualities/ wood fiber (excelsior) in fine or coarse grass texture/ sheet sizes: 32" x 48" or 32" x 96"/ tile sizes: 16" x 16", 16" x 32", and 32" x 32"/ thickness for sheet: ¾", 1½", or 2¼" with square edges/ thickness for tile: ¾" with square or beveled edges/ natural gray or factory-painted white/ fire-resistant, fungus and termite proof/ price including labor: approx. $.21½ per sq ft/ Manufacturer: Rockwood Corp., Issaquah, Wash./ Distributor: Noise Control of Seattle, Inc., 2107 N. 34 St., Seattle, Wash.

Chairs: #66/ Aalto design/ natural birch/ list: $22.50/ Finsven, Inc., 870 Madison Ave., New York, N. Y. Also Baldwin-Kingrey, 105 E. Ohio St., Chicago, Ill.

Control Desk: designed by Fred Bassetti/ birch wood/ hung from posts.

Curtain Fabric: #171220/ "Double Exposure"/ Vera design/ cotton twill 50" wide/ list: $4.95/ F. Schumacher & Co., 60 W. 40 St., New York, N. Y.

Door Hardware: The Schlage Lock Co., 22-01 Bayshore Blvd., San Francisco, Calif.

Doors: Austin Millwork Co., 800 W. 46 St., Seattle, Wash.

Floor Covering: #C-222/ medium gray/ Kentile, 58 Second Ave., Brooklyn, N. Y.

Lighting Fixture: "Draco"/ satin-aluminum hanger/ baked-eggshell enamel rings/ 3-S-523 for 300-500 wattage/ 18" dia. x 31" long/ list: $17.60/ 3-S-1023 for 750 or 1000 wattage/ 24" dia. x 42½" long/ list: $29.70/ Kurt Versen Co., Englewood, N. J.

Lighting Fixture: "Draco-cu"/ satin-aluminum husk/ eggshell enamel rings and canopy/ 3-S-223 for 200 wattage/ 3-S-323 for 300 wattage/ both 18" dia. x 12" long/ list: $15.40 and $16.50/ Kurt Versen Co.

Radiator Covers: Warren Webster Co., 17 & Federal Sts., Camden, N. J.

Radiators: Trane "Wall-Fin"/ hot-water fin-type continuous convector/ The Trane Co., La Crosse, Wis.

Table Tops: linoleum/ Armstrong Cork Co., Lancaster, Pa.

Tables: designed by Fred Bassetti/ birch.

Walls: painted plaster.

Windows: center-vented steel sash/ Fentron Steel Works, 2801 Market St., Seattle, Wash.

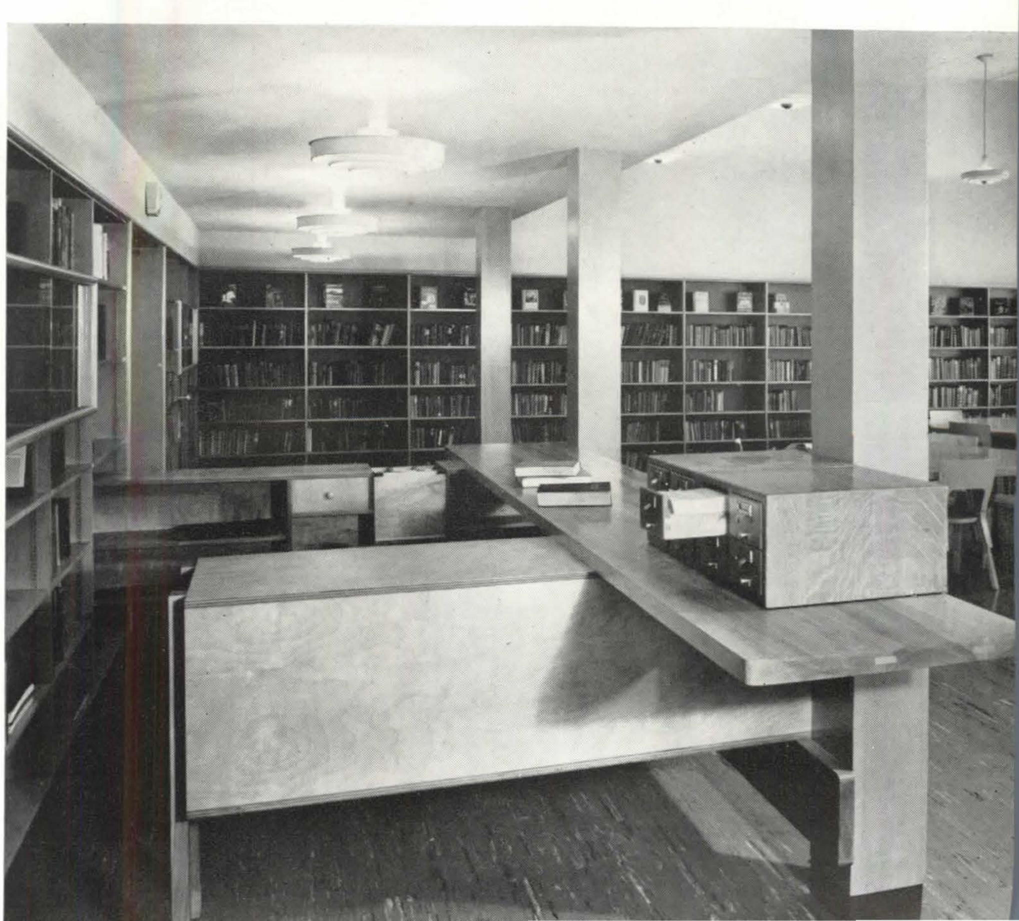
acoustical fiberboard in fine and coarse textures—actual size

To be conducive to quiet study and yet the show place of the school were the somewhat conflicting functions required of this room. Qualities appropriate to a calm environment are nicely combined with fillips of color and a background pleasant for social gatherings. Forty-five upper-school students are accommodated in this spacious library. Tables are shaped for comfortable study: and for teas, receptions, and displays, the hexagons can be banked together in useful and interesting ways. These are topped with linoleum in gray, yellow-green, medium and dark green. The color scheme is an important and purposeful feature of the room. Large areas are mild—such as the gray floor covering, the light-toned wood, and the gray-blue walls—all meant to be neutral and minimum in contrast. For added restfulness, the asphalt tile, unlike the conventional installation, is laid with striations in one direction only. Other rooms in the school were budgeted to allow for one big "splurge" in the library. This was the leafy curtain which was carefully chosen for, among other things, a calm directional pattern, scale, color, weight, and price. Ferns and leaves are yellow-green, gray, and blue-green on a white ground. The fiber ceiling panels are sprayed a bright yellow, window frames are white, and walls behind bookstacks are a deep green.

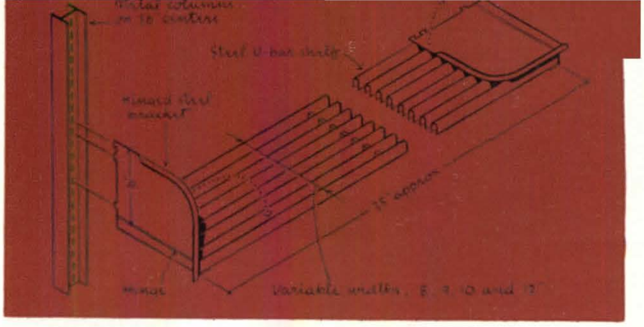
Photos: Dearborn-Massar

noleum table tops in different colors

control desk hung from posts



libraries



adjustable metal bookstacks

acoustical tile

cypress

18″ asphalt tile squares

librarian's desk

	Fine Arts Center Library
location	University of Arkansas, Fayetteville
associated architects	Edward D. Stone and Haralson & Mott

ayetteville is host to one of the most advanced fine arts colleges in the ɔuntry. This is its library, which houses 10,000 books in stacks lining ll walls. Entrance is at upper level, which is arranged for casual use. /ith its magazines and lighter books, it is a pleasant place for leisure ıoments or a gentle conditioner for the sheltered area below. There the ɘference books and ample table surfaces facilitate more serious work.

The open well, the penetration of stair and chandelier, make a spa- ally exciting two-level scheme. Architects used standard furniture and xtures to advantage. They composed the chandelier with stock domes, ɔecified a desk and bookstacks manufactured for library use. The desk ı provided with fittings needed for a librarian's use, and metal book- acks finished with baked enamel are designed to be flexible and tough. hairs are pleasantly domestic, the upholstered ones covered with dur- ble fabric.

The color scheme is cool and restful. David Durst, chairman of the rt department, is responsible for it as well as for the color throughout ıe building. Walls are gray, ceilings are white, columns are yellow. sphalt tile squares are black and green. Stair and balcony facing are atural cypress, furniture is birch or maple, and all metal is gray. abric is green for large chairs, brown for small.

Photos: Lionel Freedman

lower level

data

Bookstacks: free-standing or multi-tier/ single- or double-faced/ open or closed ends/ slatted or solid shelves and tilting shelves for periodicals/ vertically adjustable without bolts or screws/ gray baked-enamel/ Virginia Metal Products Corp., Orange, Va.

Ceiling: acoustical tile/ travertine finish/ U. S. Gypsum Co., 300 W. Adams St., Chicago 6, Ill.

Chair: #N20/ Nakashima design/ clear birch in natural finish/ also available in walnut or cherry/ mortised and tenoned joints/ net: $30.00/ Knoll Associates, 575 Madison Ave., New York, N. Y.

Chair: (upholstered armchair) #70/ Saarinen design/ molded-plastic shell covered in foam rubber/ foam-rubber seat and back cushions/ steel rod cradle in black-enamel finish/ net: $150.00/ Knoll.

Chair: (upholstered side chair) #72USB/ Saarinen design/ molded-plastic shell/ back and seat covered in foam rubber/ steel legs in choice of brushed-chrome or dull-black finish/ net: $51.00/ Knoll.

Chair Fabric: "Prestini"/ cotton and rayon/ green-and-natural, brown-and-natural/ also available in red-natural and gray-natural/ 54" wide/ net: $4.40 per yd./ Knoll.

Desk: #182 "librarian's desk"/ 30" x 60" x 30" high/ maple plywood/ hardwood drawers/ gray linoleum top/ satin-bronze pulls/ center drawer/ left pedestal: reference shelf, drawer with removable trays for index cards, file drawer with bars for hanging folders/ right pedestal: reference shelf, drawer with dividers, open compartment below/ list: $303.00/ John E. Sjostrom Co., 1717 N. 10 St., Philadelphia 22, Pa.

Floor Covering: asphalt tile/ Kentile, 58 Second Ave., Brooklyn, N. Y.

Lighting Fixture: #291/ 24" dia. x 30" over-all/ "shadow gray" finish/ list: $44.00/ also available in 17", 30", and 36" dia./ Ledlin Lighting Inc., 49 Elizabeth St., New York 13, N. Y.

Lighting Fixture: (chandelier) special design by Stone Associates using standard #290 domes/ Ledlin.

Stair: cypress treads and balcony facing/ posts enameled gray.

Table: (rectangular—lower level)/ Democrat Litho Co., Little Rock, Ark.

Table: (tripod—lower level) Hans Bellman design/ 48" dia. x 28" high/ birch plywood top in natural finish with wood legs in ebony finish/ net: $117.00/ Knoll.

Table: (round—upper level) special/ Democrat Litho.

Table: (small tripod—upper level) #103/ Hans Bellman design/ 24" dia. x 20" high/ birch plywood top with wood legs in ebony finish/ net: $20.00/ Knoll.

Walls: "Haydite"/ artificial lightweight aggregate produced by burning shale or clay/ 30% to 40% lighter than natural aggregate concrete/ American Aggregate Co., 1002 Walnut St., Kansas City 6, Mo.

Windows: "Fenestra"/ Detroit Steel Products Co., 2250 E. Grand Blvd., Detroit, Mich.

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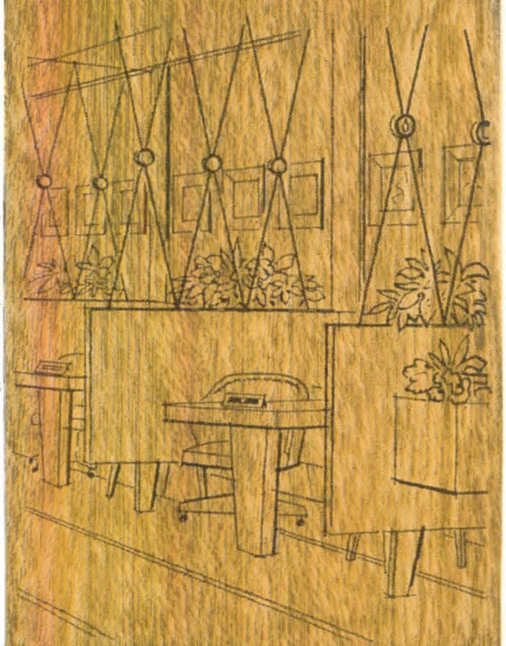

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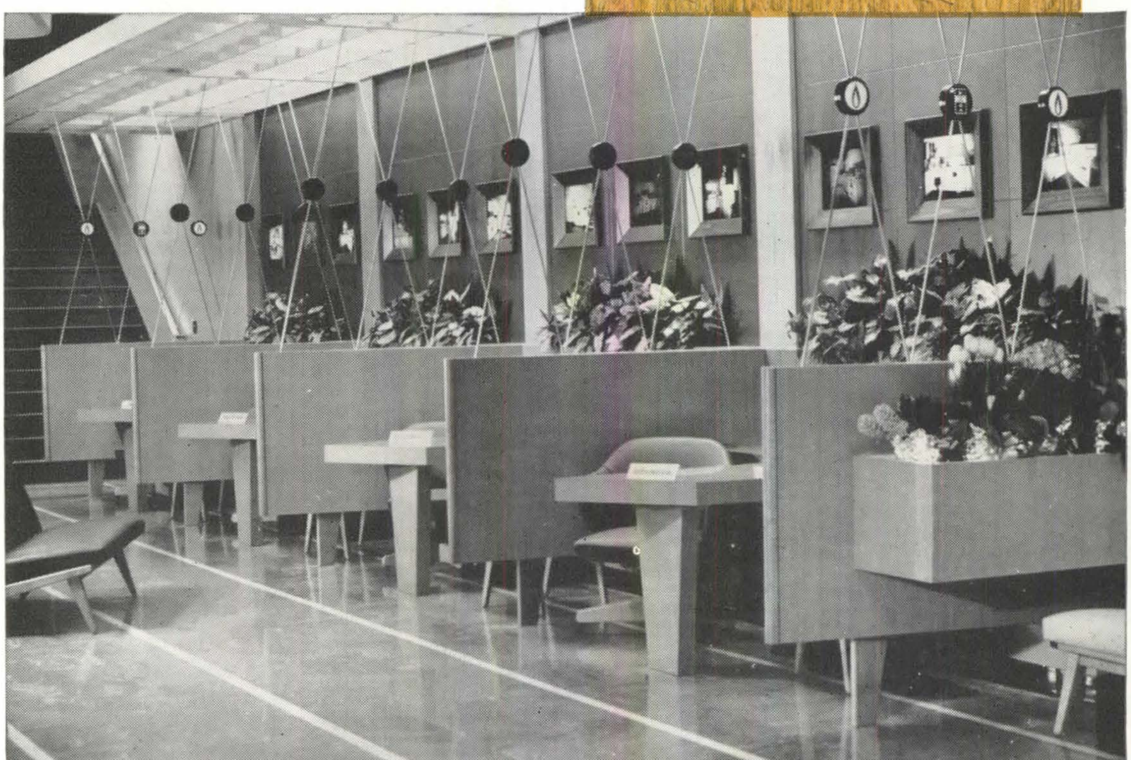

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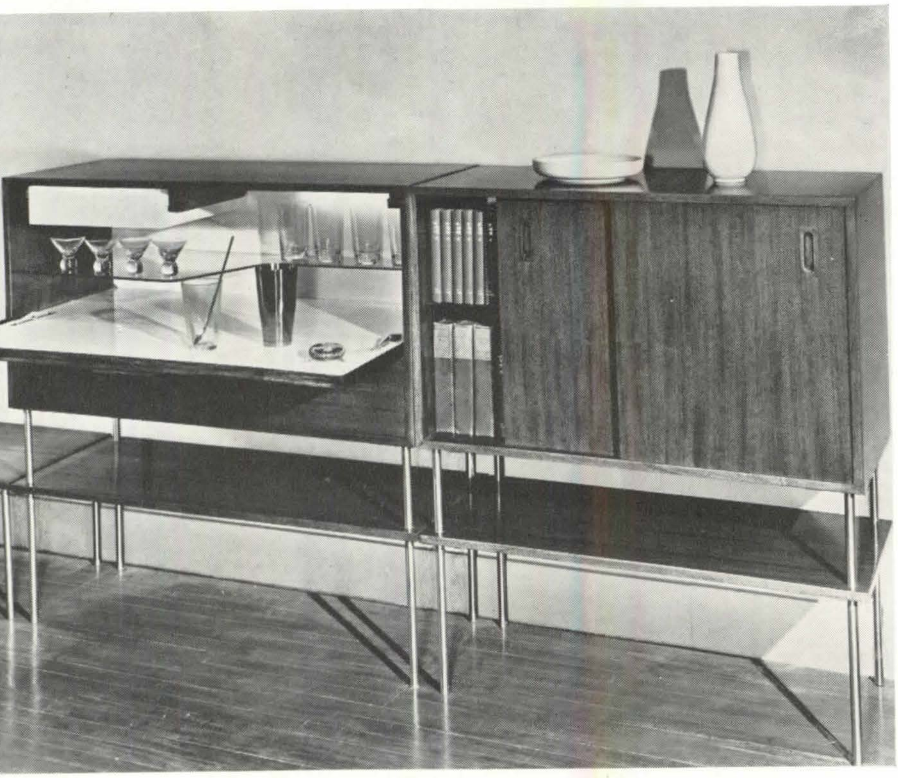
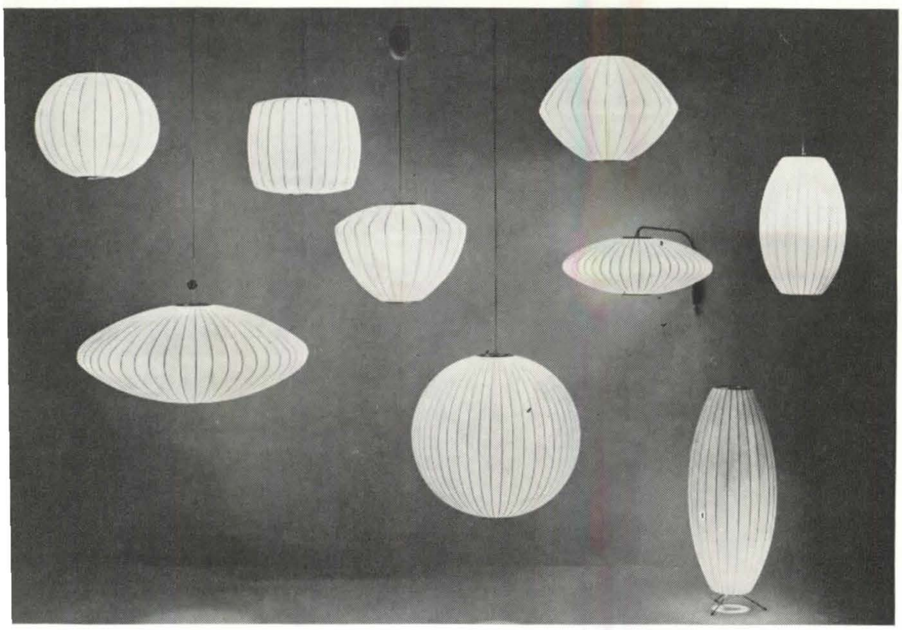
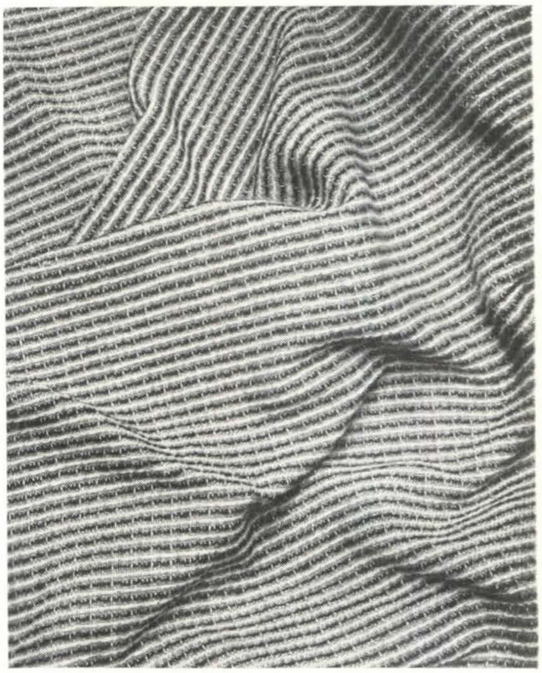


Bar cabinet and sliding door cabinet mounted on 21" base bench and 8" separating shelf/ cellarette of bar lined in white plastic/ fitted with carved glass shelf, interior light/ deep storage drawer below drop lid front/ **sliding door cabinet** has interior adjustable shelf/ available with glass, cane, black lacquer, or wood finishes—hazelnut, mellow amber, rich bone/ **list:** $340 for bar cabinet; $175 for sliding door cabinet/ **Harvey Probber, Inc., 136 Fifth Ave., New York, N. Y.**

Bubble lamps/ designed by George Nelson/ understructures of hard-drawn steel-wire-covered with white vinyl plastic/ translucent, odorless, washable/ range in size from 20" sphere to gourd shape 36" in diameter/ may be suspended from ceiling with pulley attachment, attached to wall with swingarm bracket, or standing on 3" three-legged base/ **retail:** $20 to $50/ **Richards Morganthau Co., 225 Fifth Ave., New York, N. Y.**

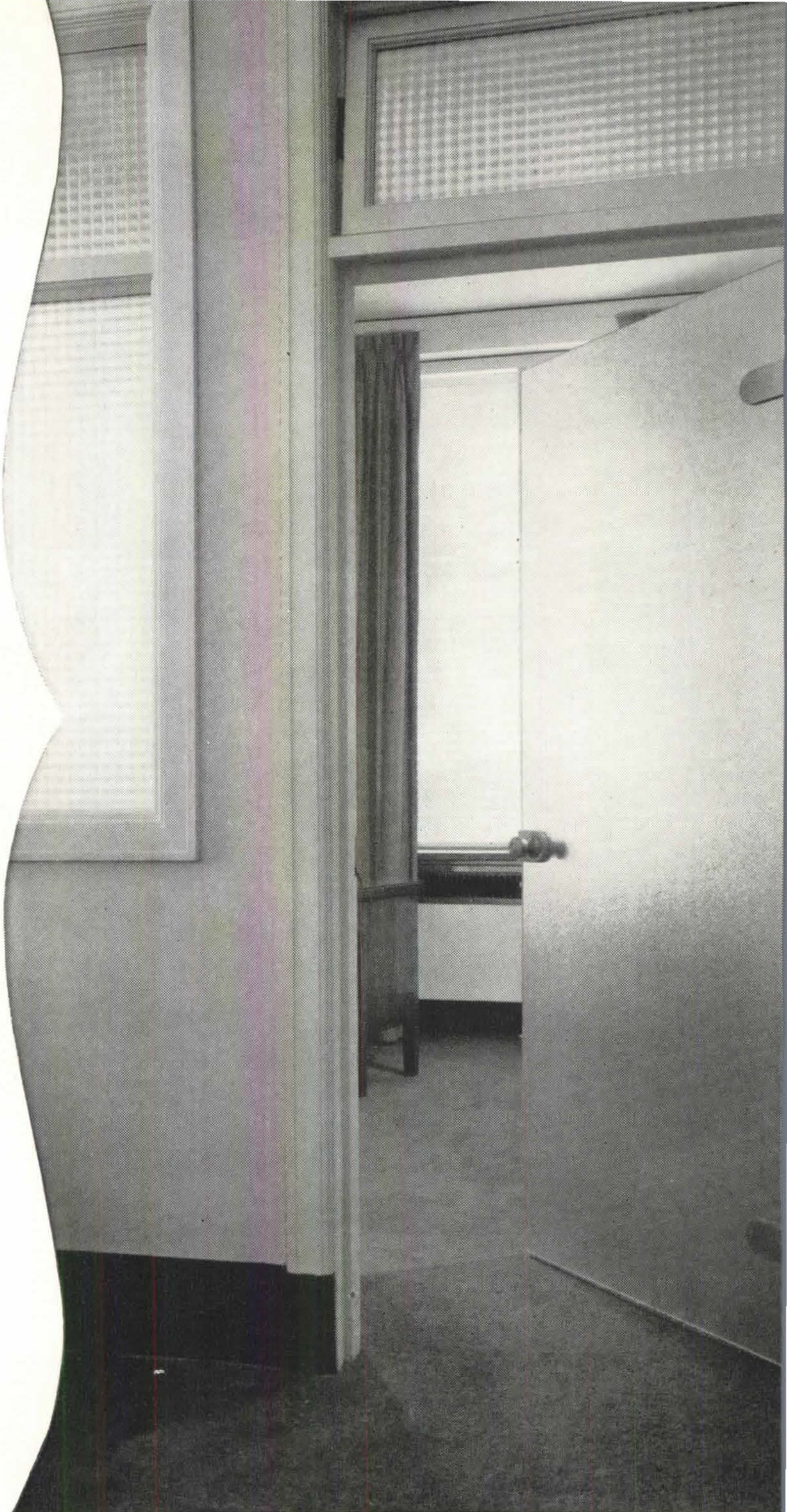




"Web-Rib" fireproof fabric: combination of Dynel and Saran/ designed by Marli Ehrman/ inherently flameproof, mildewproof, mothproof/ has dimensional stability, drys easily, and needs no ironing/ 50" width/ available seven colors/ **retail:** $8.25 per yd./ **Edwin Raphael Co., Inc., 157 Central Ave., Holland, Mich.**

For Elegant Simplicity...

SECURIT® INTERIOR GLASS DOOR



From the design standpoint . . . from the practical standpoint—here's the most interesting thing that's happened in doors for a long time.

The *Securit* Interior Glass Door is a flush door—a single sheet of translucent glass and lovely, modern hardware. Its attractive Muralex pattern creates a rich, textured effect. It transmits light to brighten interiors. Yet, it guards privacy.

Practical? Very much so. This door is so toughened by a tempering process that it can take the rough treatment of use in offices and commercial buildings. You can get this door already drilled to take Sargent door closers or concealed LCN closers. The *Securit* Door is easy to hang—no cutting, mortising, drilling or painting. All hardware and complete instructions come with each shipment.

Here's smartness for interiors—for offices, stores, hotels, hospitals. And a note of striking beauty for homes. The *Securit* Door is priced so reasonably that you can afford to use it in almost any type of building. Ask your L·O·F Distributor or Dealer for further details. Or mail the coupon.

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BRIEF DATA

Glass—3/8″-thick Muralex pattern on both surfaces.

Tempered—3 to 5 times stronger than untempered glass of same thickness.

Reversible—can be used right or left hand.

Standard Sizes—2′ 6″ x 6′ 8″ 3′ 0″ x 6′ 8″
2′ 8″ x 6′ 8″ 3′ 0″ x 7′ 0″
—also 4 sizes for openings of these dimensions with proper allowance for clearances.

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INTERIOR GLASS DOORS

Libbey·Owens·Ford Glass Company
Patterned & Wire Glass Sales
B-2292 Nicholas Building, Toledo 3, Ohio

Please send me your folder, *"Blue Ridge Securit* Interior Glass Doors".

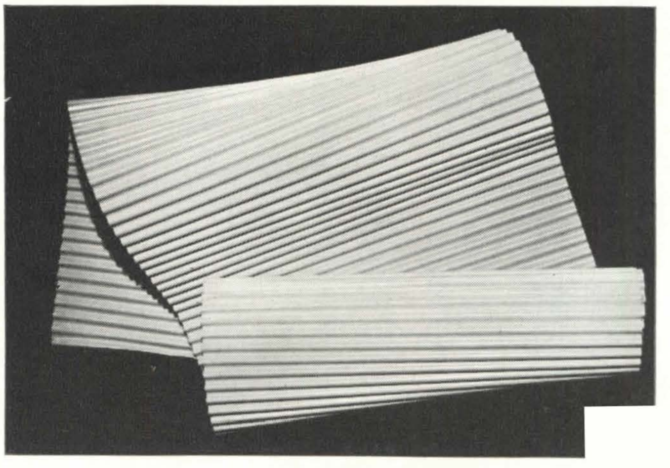
Name (please print) ________________

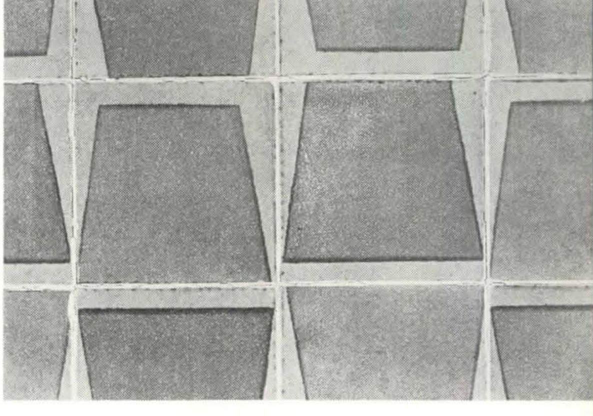
Address ________________

City ________ State ________

Angle iron armchair: #5069/ designed by George Nelson/ natural cane seat and back, birch arm rests/ available with black or white metal frame/ **retail:** $78/ **Herman Miller Furniture Co., Zeeland, Mich.**

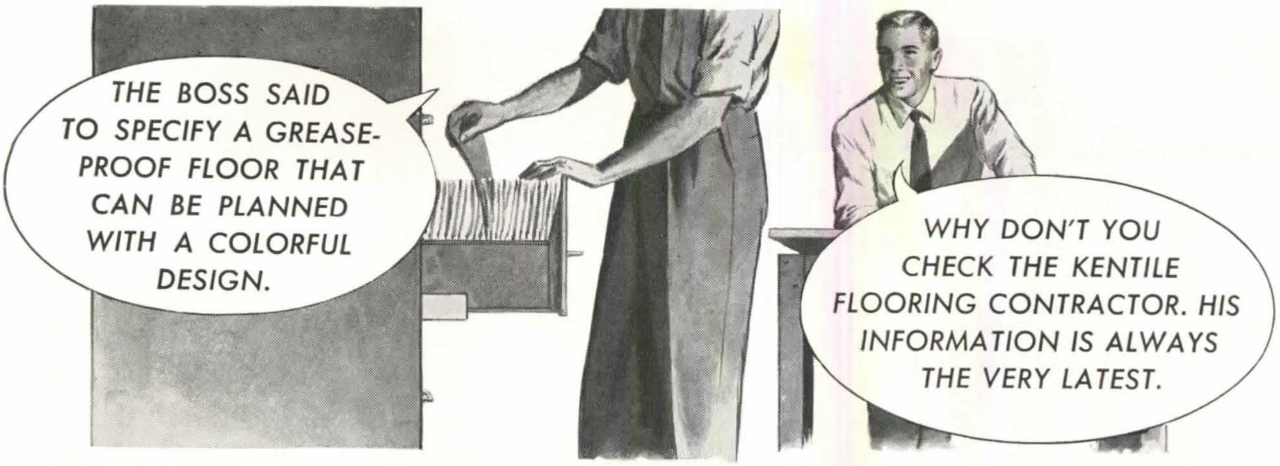
Marlux ceiling: corrugated, translucent plastic sheeting/ makes a luminous ceiling available with reduction of glare/ **installed cost:** between $1.80 and $2.00 a sq. ft./ **Martin Electric Products, Inc., 346 Somerville Avenue, Somerville 43, Mo.**





"**Themetile**"/ maple leaf in Toledo Red and yellow/ standard 9" square/ design precision die-cut/ **retail:** $1 a pair./ **David E. Kennedy, Inc., 58 Second Ave., Brooklyn 15, N. Y.**

Kerama-Tile: ceramic wall covering/ available in variety of colors and designs/ manufactured by Ceramic Trends/ **retail:** $3 a sq. ft./ **Janet Rosenblum Inc., 602 Madison Ave., New York, N. Y.**



In a cafeteria like this, the Kentile Flooring Contractor would recommend SPECIAL (greaseproof) KENTILE because of its resistance to greases and oils; its colorful beauty and ease of maintenance.

The information the Kentile Flooring Contractor gives you is always accurate, up-to-date and complete

EVERYBODY knows that certain flooring materials are better than others for specific installations! But, not everybody realizes that it takes a trained and experienced Flooring Specialist to recommend the one floor that is exactly right ... the one floor that combines minimum expense with maximum wear... eye appeal with ease and economy of maintenance. The Kentile Flooring Contractor is such a man... qualified by years of training and experience to decide which of the countless products and materials available today are best for your needs. Be sure to call on him whenever you need his technical knowledge. No obligation, of course.

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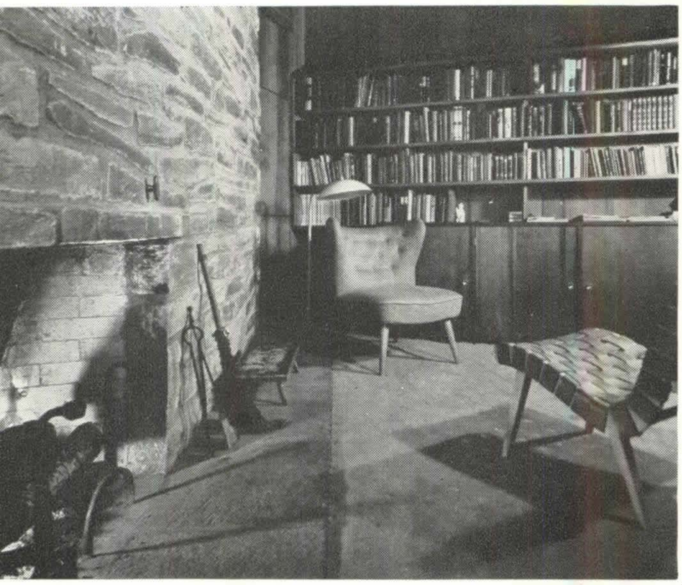
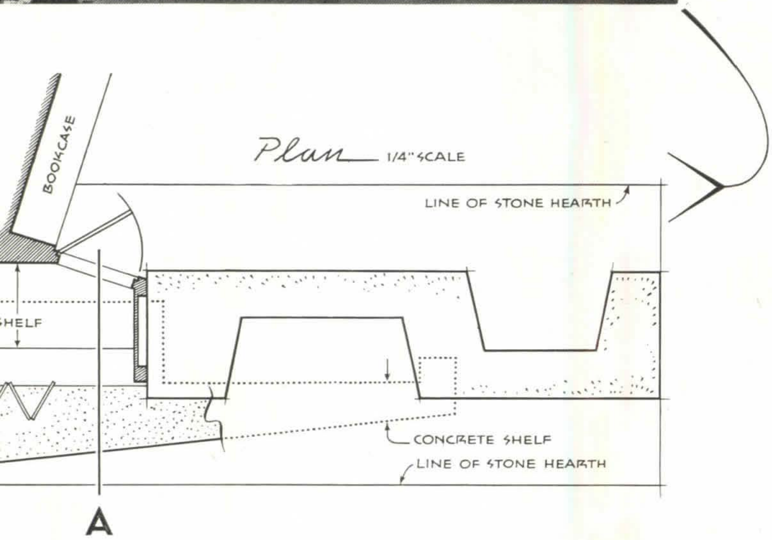
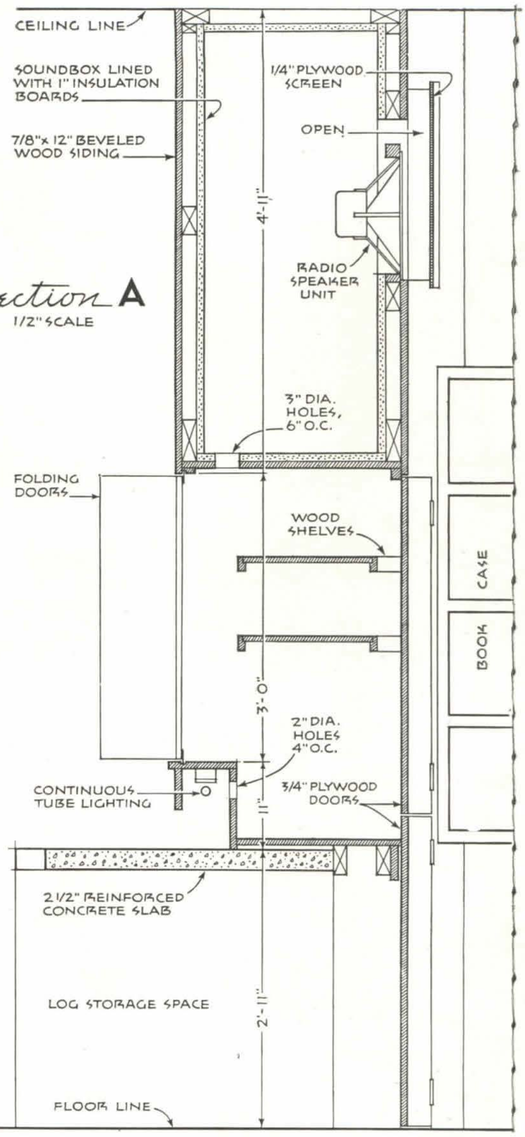
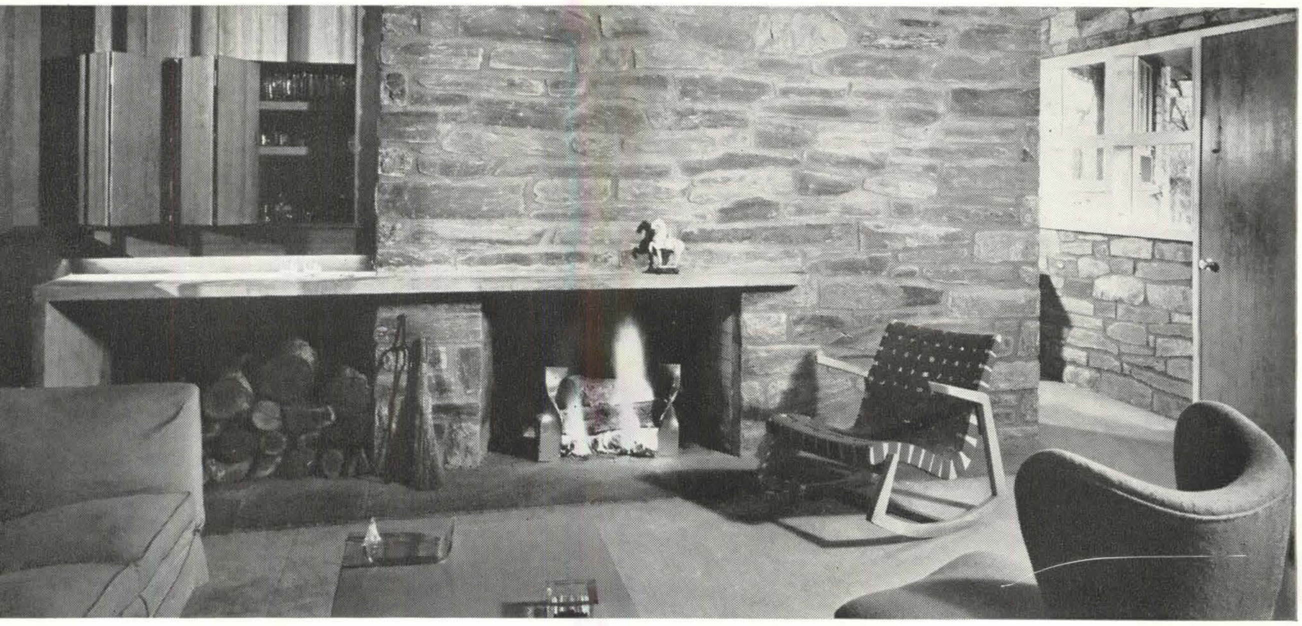
residence: 2-way liquor cabinet







...OS BY ROBERT C. LAUTMAN



...NEY RESIDENCE, Washington, D. C.

...n P. Trouchaud, Architect

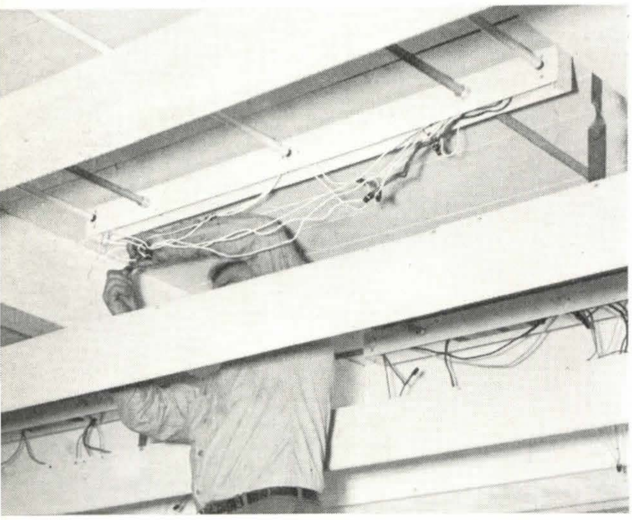
Carl Koch & Associates, Architects
Martin Electric Products, Inc., Lighting
Sola Electric Co., Fluorescent Ballasts
Photography by A. P. Miller

SOLA VENTILATED BALLASTS SELECTED FOR FITCHBURG LIBRARY

Handsome Fitchburg Youth Library (in Fitchburg, Massachusetts) h set many new standards of excellence. The lighting treatment is especial noteworthy because of its completely luminous ceiling.

Ballast performance was particularly important in the lighting pla Sola Ventilated Fluorescent Ballasts were selected because of their effic ency, dependability and long life.

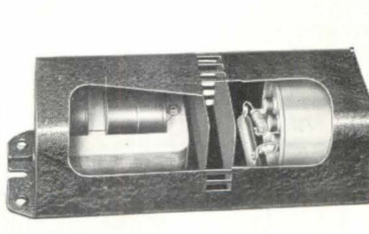
If you specify lighting components, you should know about the superior ties of Sola Ballasts that led to their selection for Fitchburg and oth important buildings. Write on your letterhead for Bulletin H-PFL-164 Sola Electric Co., 4633 West 16th Street, Chicago, Illinois.



Sola Ballasts are easy to install because of their light weight and compact size. They fit into standard Slimline channels; leads are color coded and secure.

Marlux Luminous Ceiling eliminates glare and provides 50 foot-candles at the desks. Maintenance of this level of illumination was an important consideration in the selection of Sola Ballasts.

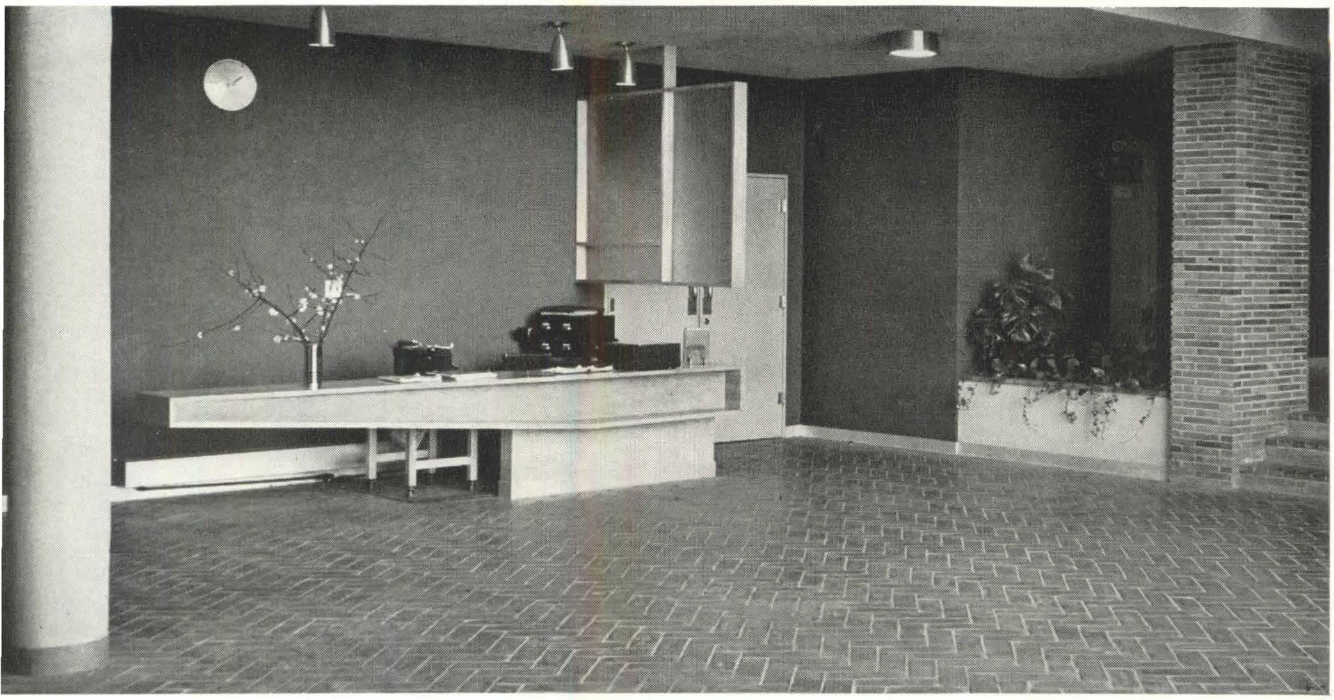
Long, trouble-free life is another Sola Ballast feature. This cut-a-way view illustrates the patented Sola Ventilated Capacitor Compartment. The single greatest cause of ballast malfunction is capacitor failure due to high ambient temperatures. This Sola design protects the capacitor against core-and-coil heat with a buffer of air. The additional two end caps also add rigidity which minimizes case vibration noise.



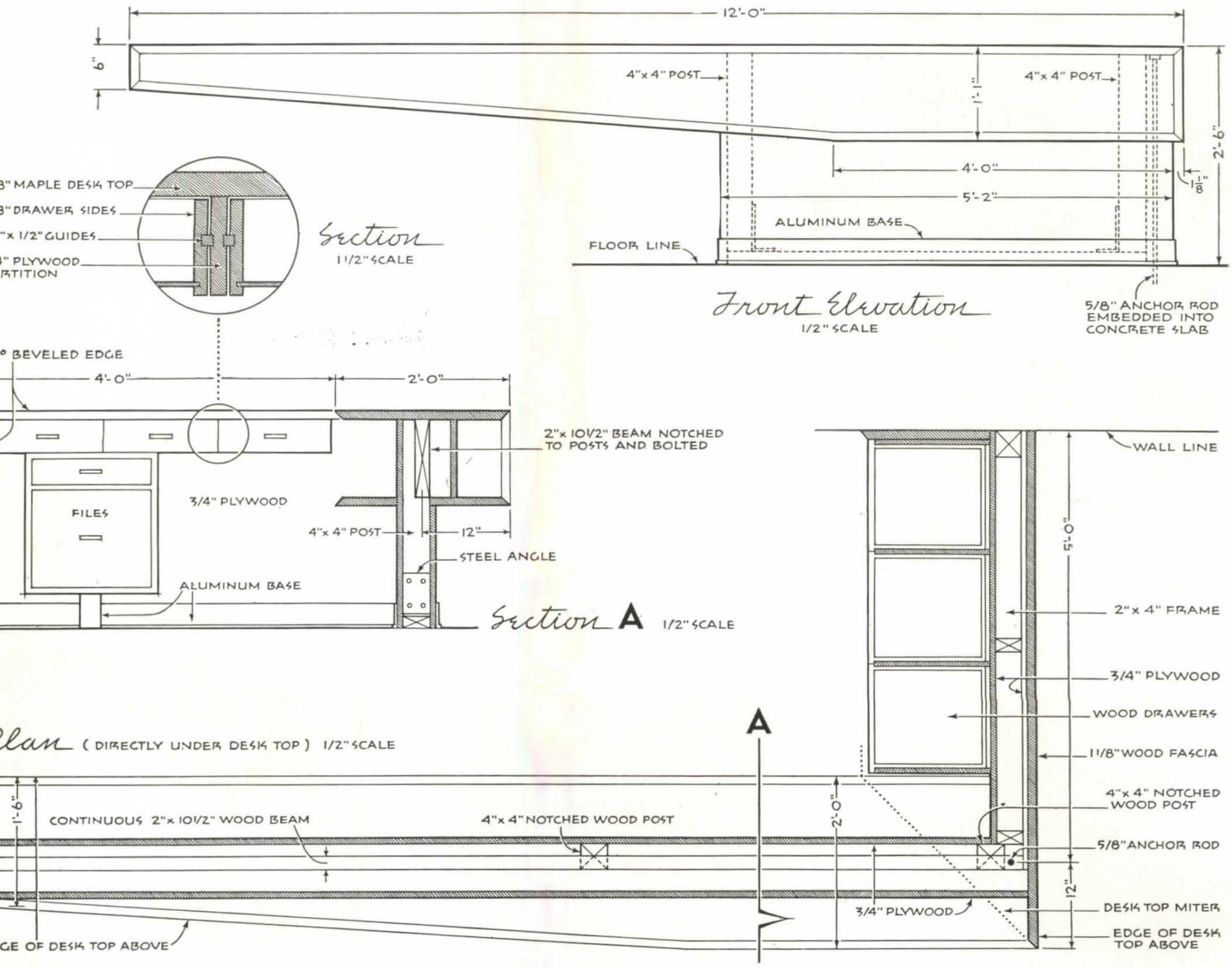
designed in the tradition of Sola engineering leadership

SOLA *Fluorescent* BALLAS

administration building: receptionist's desk



EARBORN – MASSAR

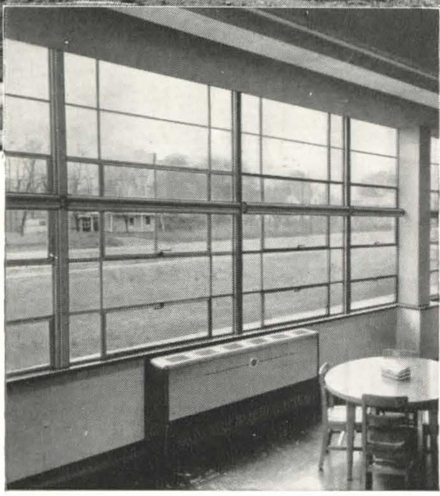


HOOL ADMINISTRATION BUILDING, Seattle, Wash.

Lister Holmes & Associates, Architects

Where the *other* services also count – it's always BAYLEY WINDOWS

Elementary School, Bexley, Ohio
Sims, Cornelius & Schooley, Archt., Columbus, Ohio
Altman Coady Company, Contr., Columbus, Ohio



Highlights of this New Popular BAYLEY Product

- Carries Quality Approved Seal of the Aluminum Window Mfgrs. Ass'n. for materials, construction, strength of sections and air infiltration.
- Modern Appearance.
- Economical — Painting unnecessary.
- Permanent — Long carefree life.
- Simplicity — No complicated mechanism.
- Adaptable to all types of construction.
- Glazing outside — flat surface inside.
- Extra deep sections — Accommodate "Thermopane" or "Twindow" glazing.
- Easily washed from inside.
- Prepared for screens.
- Permits use of accessories, such as draperies, shades, curtains, venetian blinds or awnings.
- Positive acting hardware of white bronze.

QUALITY APPROVED P-A2

73 *Years of* RELIABILITY

Bayley Aluminum Projected Window

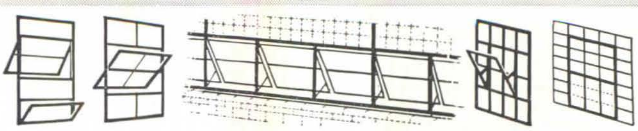
Offers New Features for Modern Schools of All Types

The *first* essential to a truly satisfactory relationship is a fine quality product. But much more is also required. Full appreciation of this fact is the bedrock of Bayley's policy — and is the reason descriminating designers from coast to coast have so highly favored Bayley for so many years.

Bayley's determination to better serve through all the building stages — from the building's inception to its occupancy — is again exemplified in the Bayley Aluminum Projected Window. It represents the culmination of years of conscientious endeavor. First to fully recognize the universal advantages of the projected window, Bayley refined its desirable features in the most enduring construction material developed through long research by the Aluminum Industry. The result is an ideal window for schools, hospitals, institutional and commercial buildings — but equally suited for private living units — that reflects Bayley's years of specialized window experience.

Regardless of window requirements, you too will find *extra values* in discussing your needs with Bayley. Write or phone.

See Bayley in Sweet's. Complete catalogs on aluminum windows, 17a/BA; steel windows, 17b/BAL; Saf-T-Gard Hospital Detention Window, 17b/BAY.



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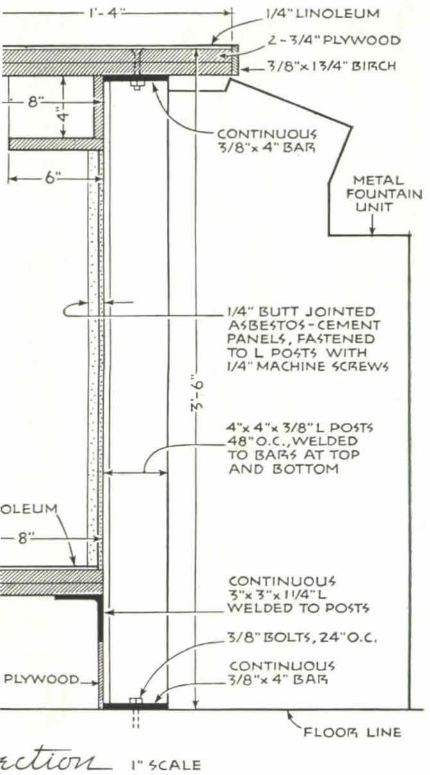
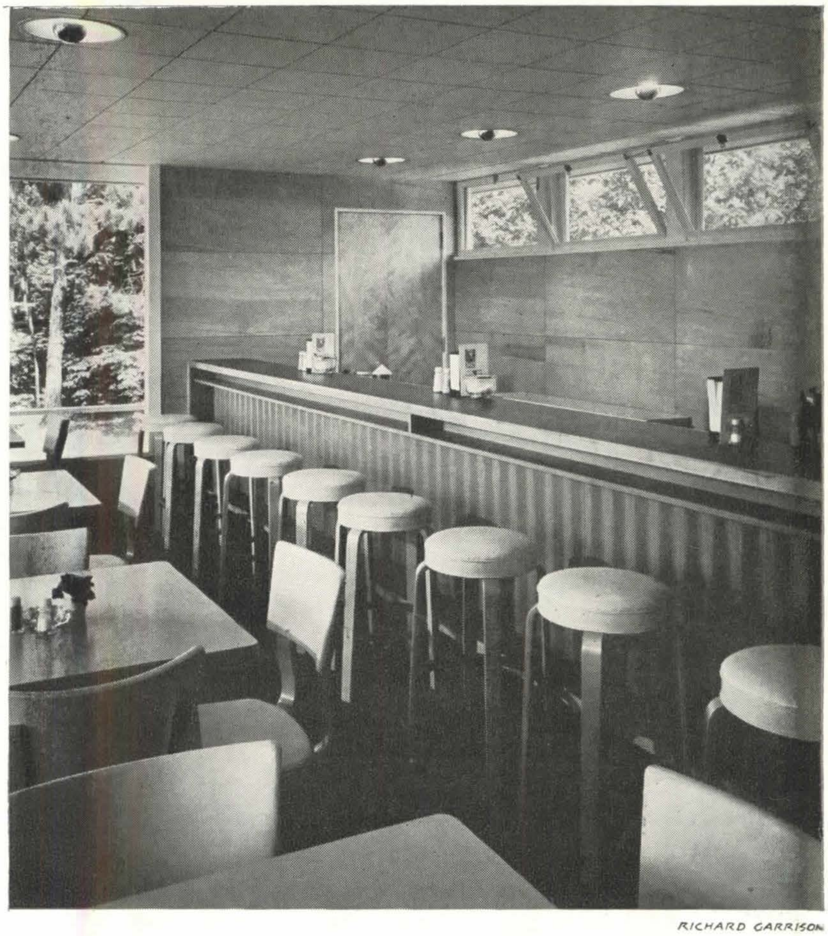
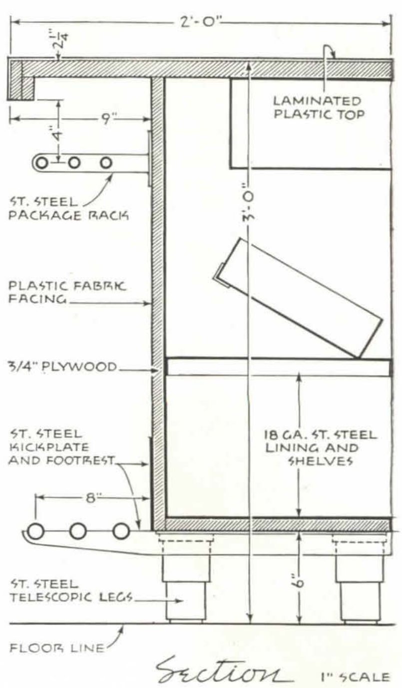




RICHARD GARRISON

OT SHOPPE, INC., Washington, D. C.
aurice B. Gill, Architect



PANEL DISCUSSION

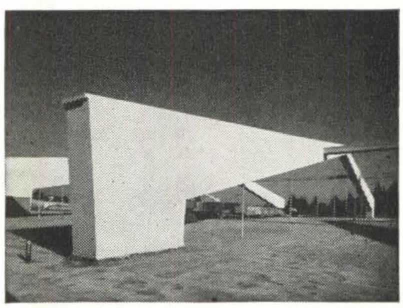
California Architects Use Plywood Shear Walls

Architects Smith and Williams, Pasedena, Calif., are making use of plywood shear walls in many of their current homes to permit use of large glass areas on exterior walls. Box-girder type shear walls compensate for loss of rigidity and also permit great freedom in placement of nonbearing interior partitions.

The shear walls are carefully engineered to handle the wind and seismic loads which might be encountered. Calculations are based on the weight of the house, exterior surface area and floor area. Studs 2x4, 2x3 and 1x3 are used depending on strength requirements. According to the architects, plywood is the only material which can be used satisfactorily with such small studding. In the photo above, shear wall is at right; it is the only one in this particular home which uses 2x4 studding.

Where the shear wall is on the inside, ⅜″ PlyPanel grade plywood is generally used. Exterior plywood is used for the occasional short shear wall that is on an outside wall. Nailing is important and proper nail placement must be calculated; usually it is on six-inch centers. For additional information on shear walls and other plywood use-data, write Douglas Fir Plywood Association, Tacoma, Wash.

Plywood Shapes Unusual Concrete Roof Frames

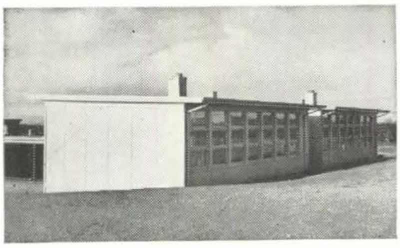


Plywood-formed concrete frames were used to replace conventional posts and roof trusses to achieve an unusual degree of interior flexibility in the Fred Meyers Burlingame Shopping Center Building, Portland, Oregon. Photo shows frames viewed from roof; vertical haunches project down through the roof to ground. Trussed wood joists are suspended from tie-beams secured to the frames. Because the frames are a definite architectural feature, concrete had to be smooth, fin-free. According to Leslie E.

Poole, engineer in charge of construction, plywood offered the simplest, least expensive method for obtaining the smooth surfaces. In fact, because of its smooth, neat appearance, the concrete required no further finishing once forms were stripped. Exterior PlyForm panels were re-used up to eight times in forming the five frames. The building was designed by Engineer Leslie E. Poole; contractor: H. M. Hocken, Portland.

Portable Units Help Solve Schoolroom Shortage

To solve pressing classroom shortages due to shifts in population, school systems in many communities are turning to portable classrooms as a quick and economical solution. In Tacoma, Washington, 60 are used by the city's schools. Thirty-five are of lightweight plywood construction; ten were built last year by E. Goettling & Sons, general contractors, from revised designs by Mock and Morrison, architects.

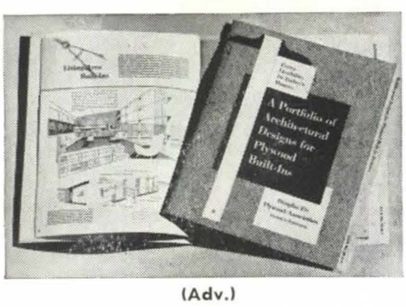


"We've been using plywood for four years," says James Hopkins, assistant superintendent of schools in charge of construction. The portable schoolrooms are fully as well built as the average house and we expect them to be good for 50 years. Plywood construction is lighter and gives maximum bracing strength—a must in movable buildings."

Each building is 24'x36'. Plywood is used for subfloors, roof sheathing, paneling, built-ins and exterior siding. Modular design, based on standard plywood panels, helps speed work and cut costs. Plywood not only makes a sounder, tighter building, but it presents a clean, modern appearance—a far cry from the unpleasant "temporary look" of other similar structures.

Design Portfolio Available

A portfolio of prize-winning designs for plywood built-ins is now available to architects, designers and builders. The booklet contains over 50 designs judged best in the "Better Living Home" architectural contest. For free copy write Douglas Fir Plywood Association, Tacoma 2, Wash.



(Adv.)

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THE REAL STORY of construction costs isn't always shown on the bill of materials. It's the *applied* cost that counts! PlyScord subflooring can be laid in less than half the time required for lumber subflooring. Big, work-speeding panels are light, easy to handle . . . cover large areas quickly . . . fit standard joist spacing without wasteful sawing and fitting . . . require far fewer nails.

PlyScord subflooring means *better* construction, too. Plywood's rigid plate-like action protects against violent racking action of wind or earthquake. Strong, rigid panels provide a solid, squeak-free base for finish flooring . . . protect against drafts from below. PlyScord subfloors won't cup, shrink or swell. Result: finish floors look better, last longer.

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Announcing the mos

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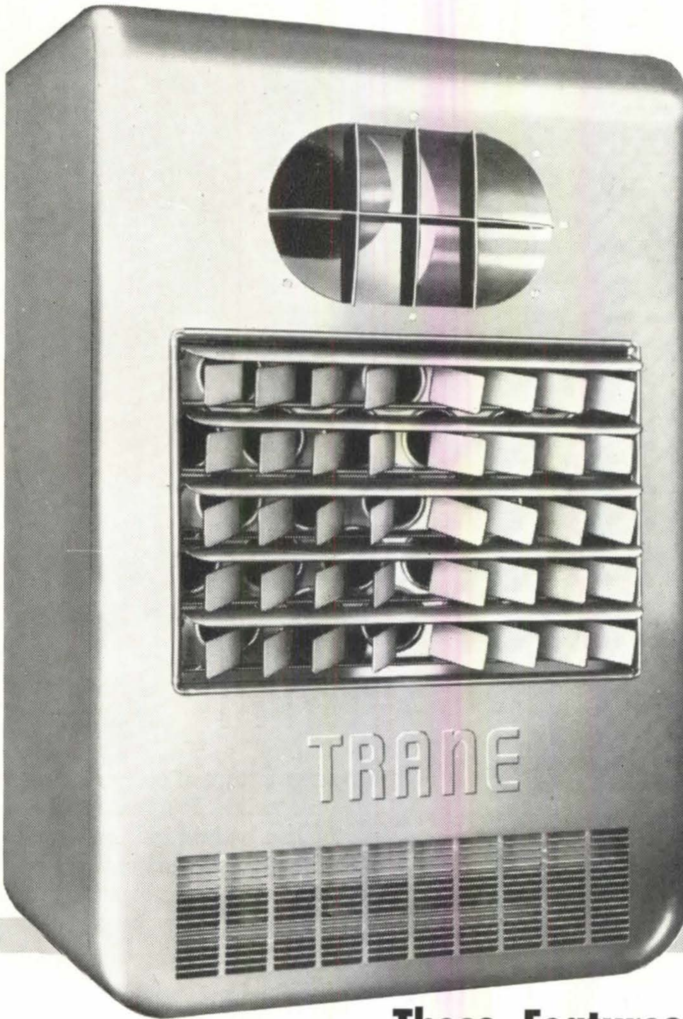
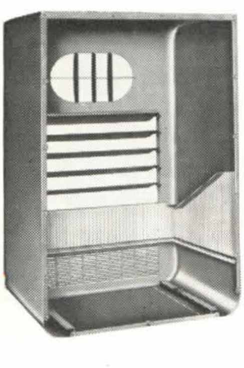


These Features Mean Extra Y



Rugged Construction—Heavier gauge metal throughout means extra safety, extra years of service. For instance, 14 gauge end sheets and 16 gauge tubes in heat exchanger.

Built Like a Boiler — N
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Across the nation *the military bases of the Armed Forces are expanding . . . offering evidence of America's might. . . . Aiding in this immense effort . . . Ceco Steel Products Corporation brings a one-source service to the military, speeding the all-important task . . . saving money, too . . . For Ceco's network of coast to coast plants means men and materials can be quickly brought to the area of need.*

When concrete floor joist construction, steel windows and screens, reinforcing bars and accessories were required for permanent buildings at Ft. Kn[illegible] Ky., Ceco's Birmingham office was on the job "on th[illegible] double" . . . in addition, supplying materials and servic[illegible] at Ft. Campbell, Ky.

Halfway across the nation another Ceco office, Los Angeles, met the need with reinforcing steel, architectural projected windows and screens for Camp Pendleton, Calif. . . . Ceco's Washington, D.C. office gets the call . . . at Ft. Eustis, Va., concrete joist construction, steel windows and screens meet the need . . .

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and at Chanute Field, Illinois, apartment casements and metal screens are provided.

Then Ceco's Dallas office met job requirements at Sheppard Air Base, Wichita Falls, providing steel windows, steelforms, and reinforcing steel . . . while Omaha was serving the Offut Air Force Base with einforcing steel, Meyer steelforms and welded wire bric plus residence casements.

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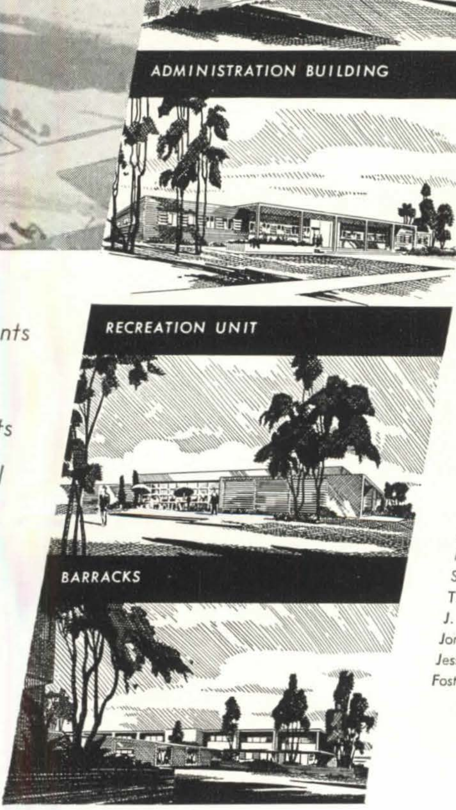

Here are those Ceco served in the nation-wide military expansion program.

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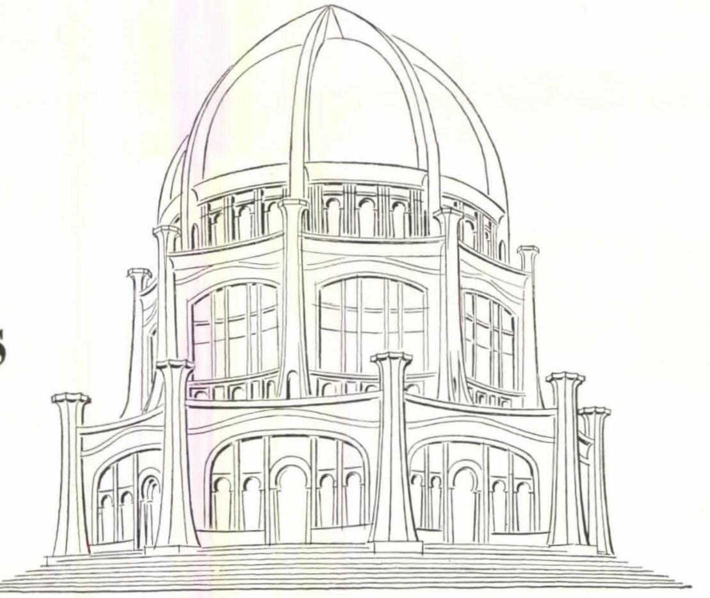
Temple in Illinois



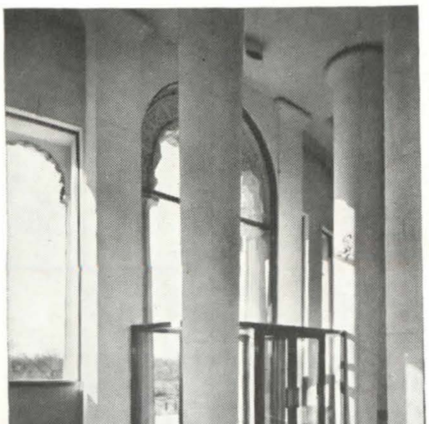
BAHÁ'Í HOUSE OF WORSHIP, Wilmette, Illinois. Louis J. Bourgeois, original architect for *exterior*. Shaw, Metz and Dolio, architect for *interior*. George A. Fuller Company, general contractor.

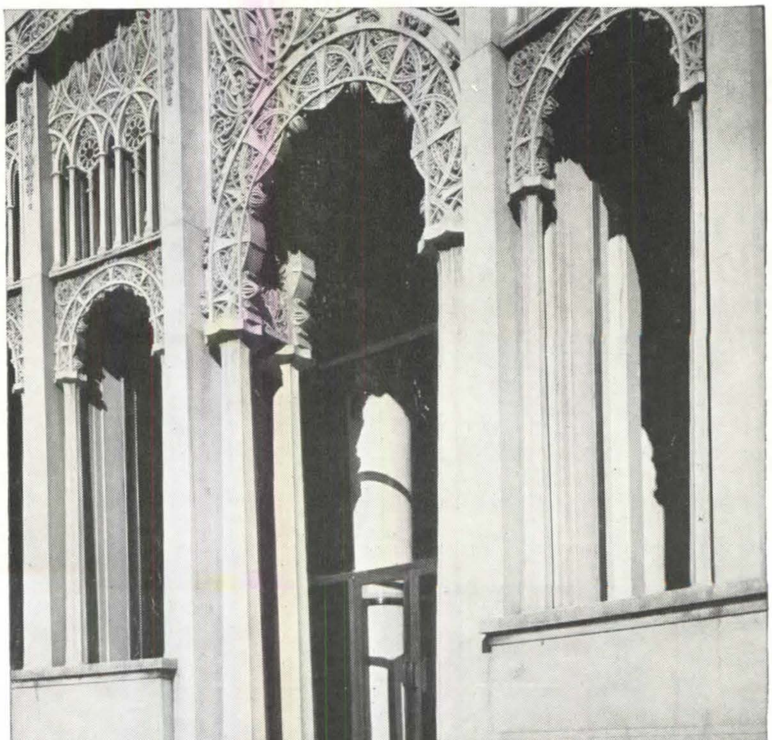
THIS IMPRESSIVE TEMPLE was started in 1920 by members of the Bahá'í faith to express Bahá'í teachings in progressive revelation and spiritual unity of East and West.

In the doors and windows of each of the nine sides of this Temple, the beauty of ANACONDA Architectural Bronze will outlast generations of worshippers. For no other metal surpasses bronze for monumental endurance, warmth or grace of effect. It is the oldest metal known to man — traditional in centuries of noteworthy architecture. Bronze creates the impression of stability and dignity so desirable in public, private and commercial buildings. 5203

Bronze doors and window frames in the Bahá'í Temple were fabricated by Waukegan Architectural, Inc. from extrusions and sheets. For information about ANACONDA Architectural Bronze, write The American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda-American Brass Limited New Toronto, Ontario.

One of the nine entrances (right, exterior; below, interior). Original wood and steel frames were replaced with ANACONDA Bronze. First floor took ten tons.





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We welcome your inquiries. If you wish a copy of our new brochure on Modular Masonry, or other information, just write us on your own letterhead. Address your request to Dept. PA-9. See Sweet's Catalog 4f-St.

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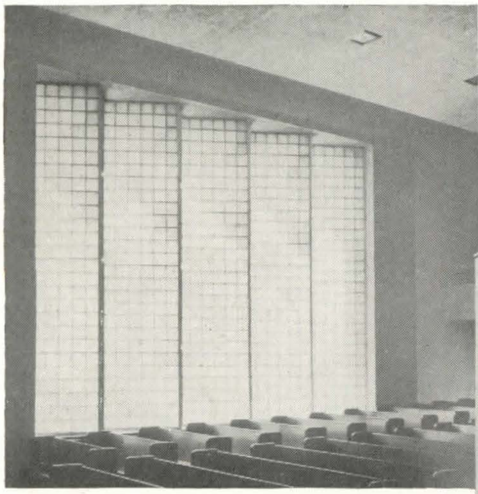
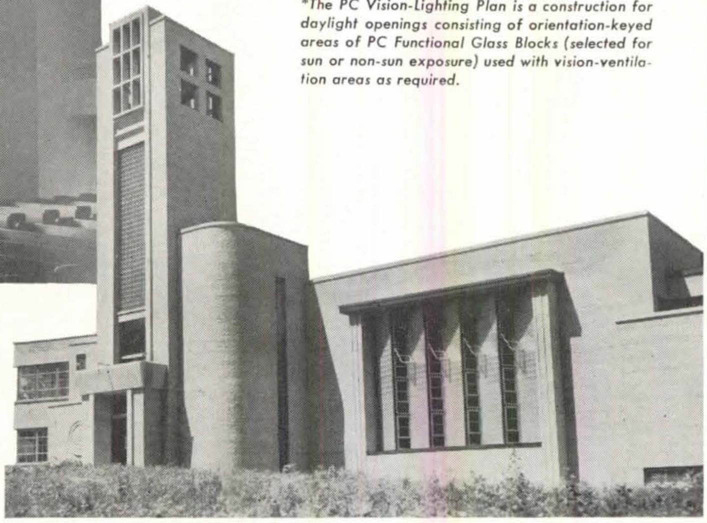
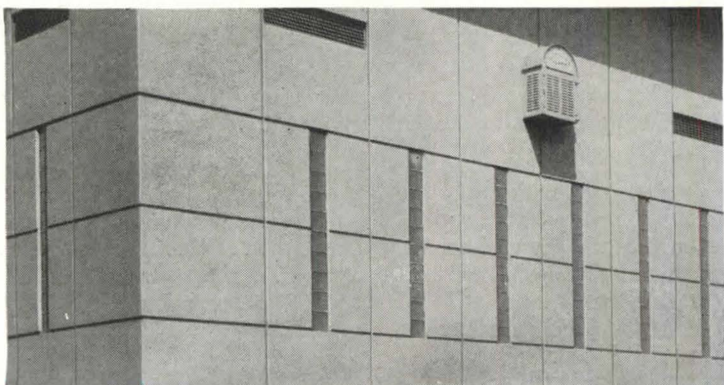
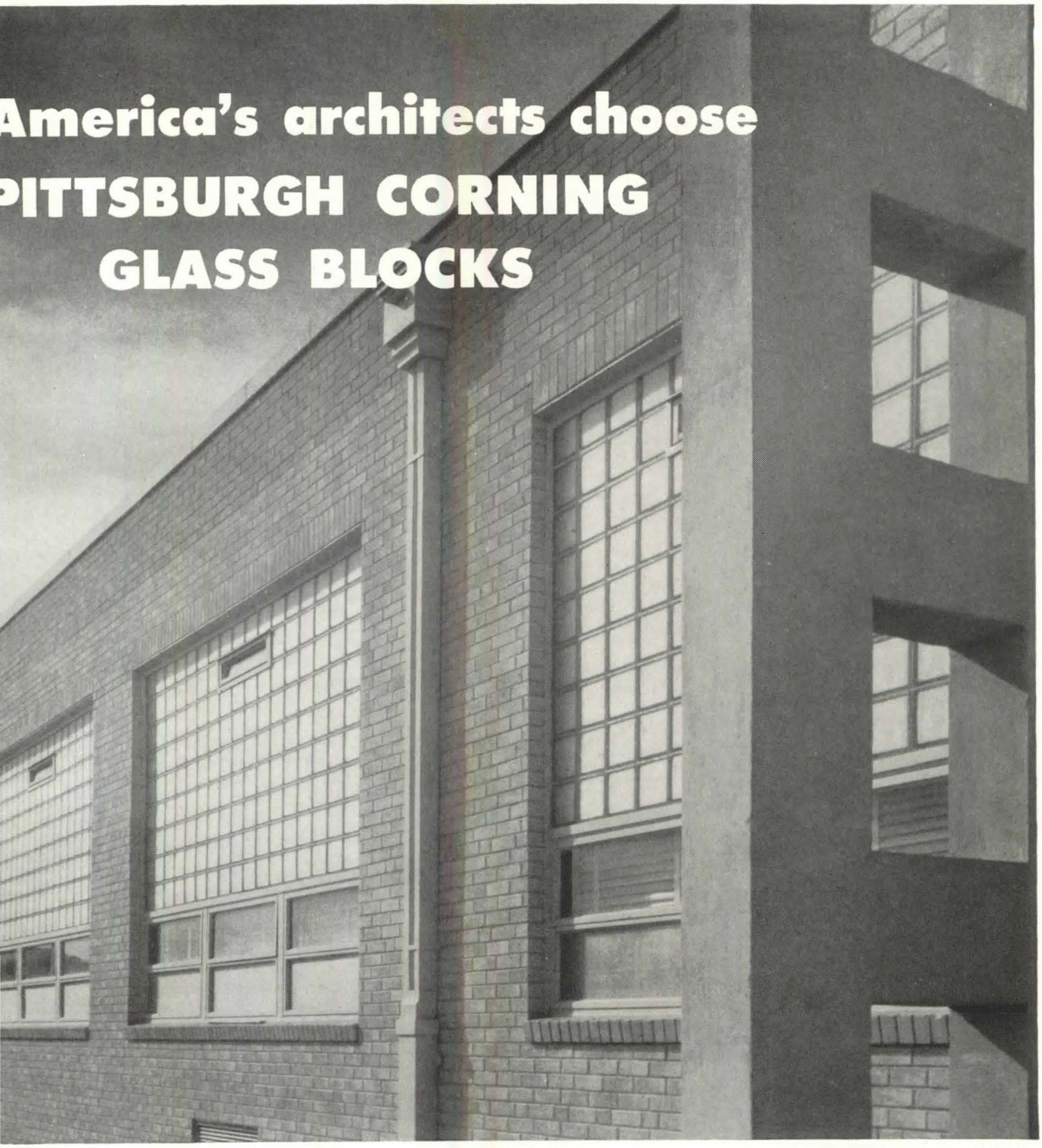




THIS beautiful edifice is the Reorganized Church of Jesus Christ of Latter Day Saints at Lamoni, Iowa. The exterior and interior illustrations here show how PC Glass Blocks were utilized decoratively in the campanile and to provide softly diffused daylighting for the congregation. Architects: Robert B. Bloomgarten and D. Kent Frowerk, Kansas City, Missouri.



THESE two views indicate an interesting use of PC Glass Blocks in a modern bank building—the Bank of America in Los Angeles, California. The series of PC Functional Glass Block panels in the walls is an effective design detail. Each panel is ten blocks high and one block wide, providing adequate daylighting and maximum security for the vault areas inside. Architect: Raymond R. Shaw, Los Angeles, California.



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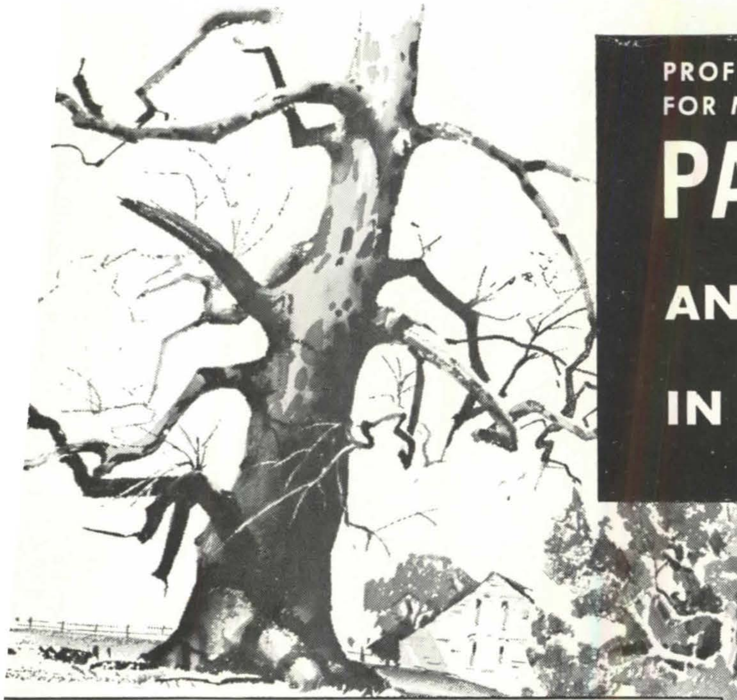

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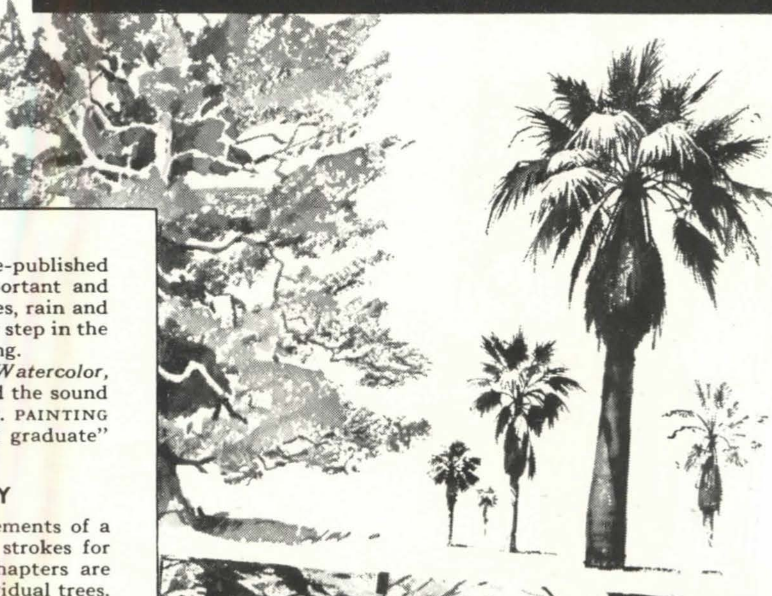
By TED KAUTZKY



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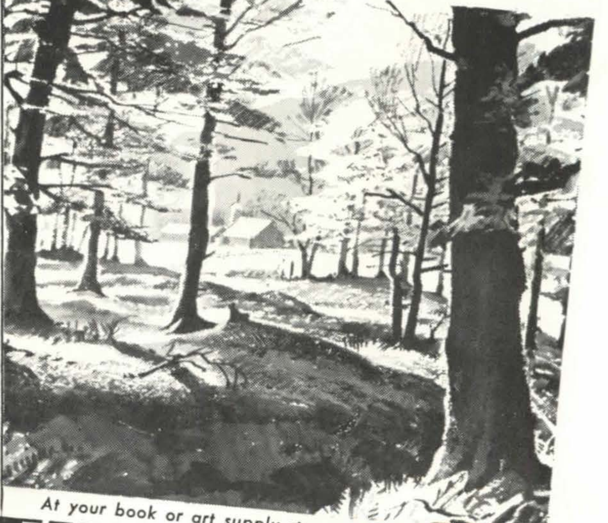

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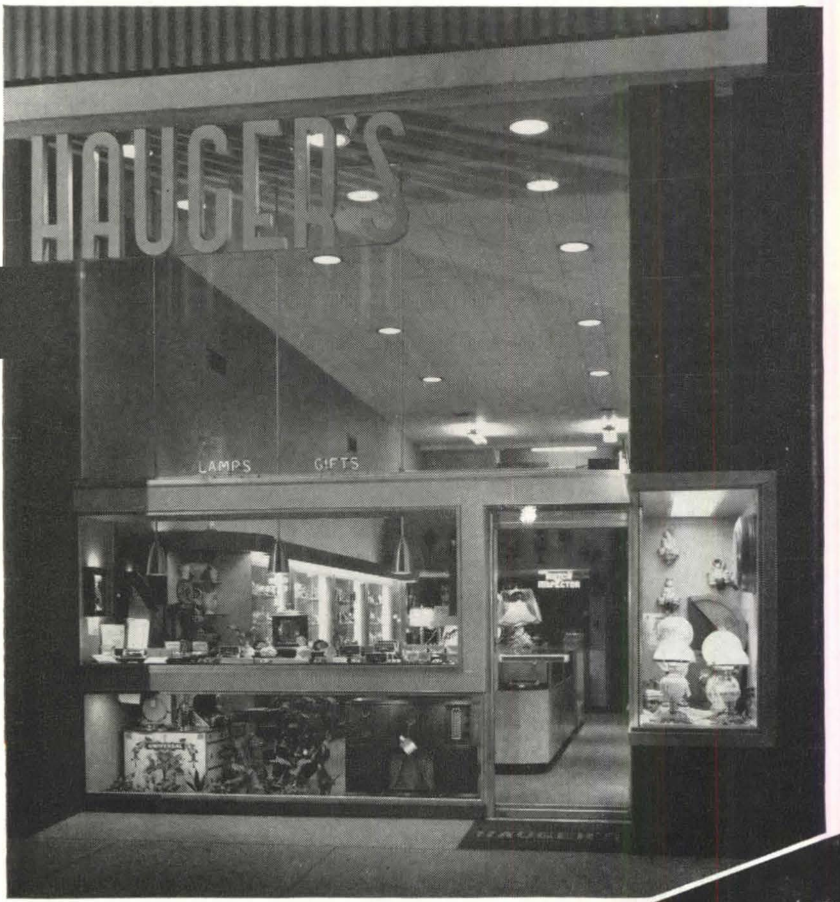

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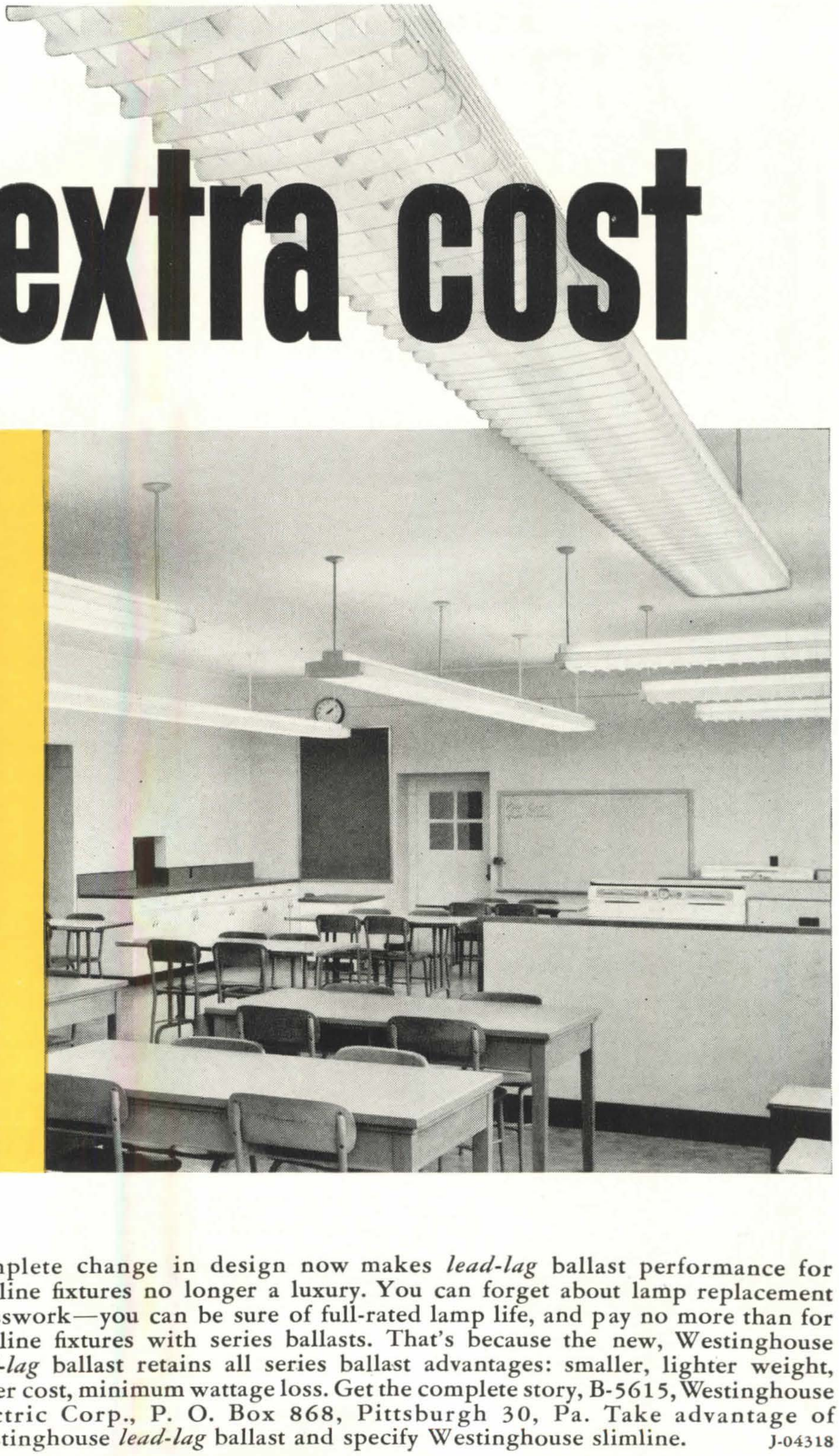

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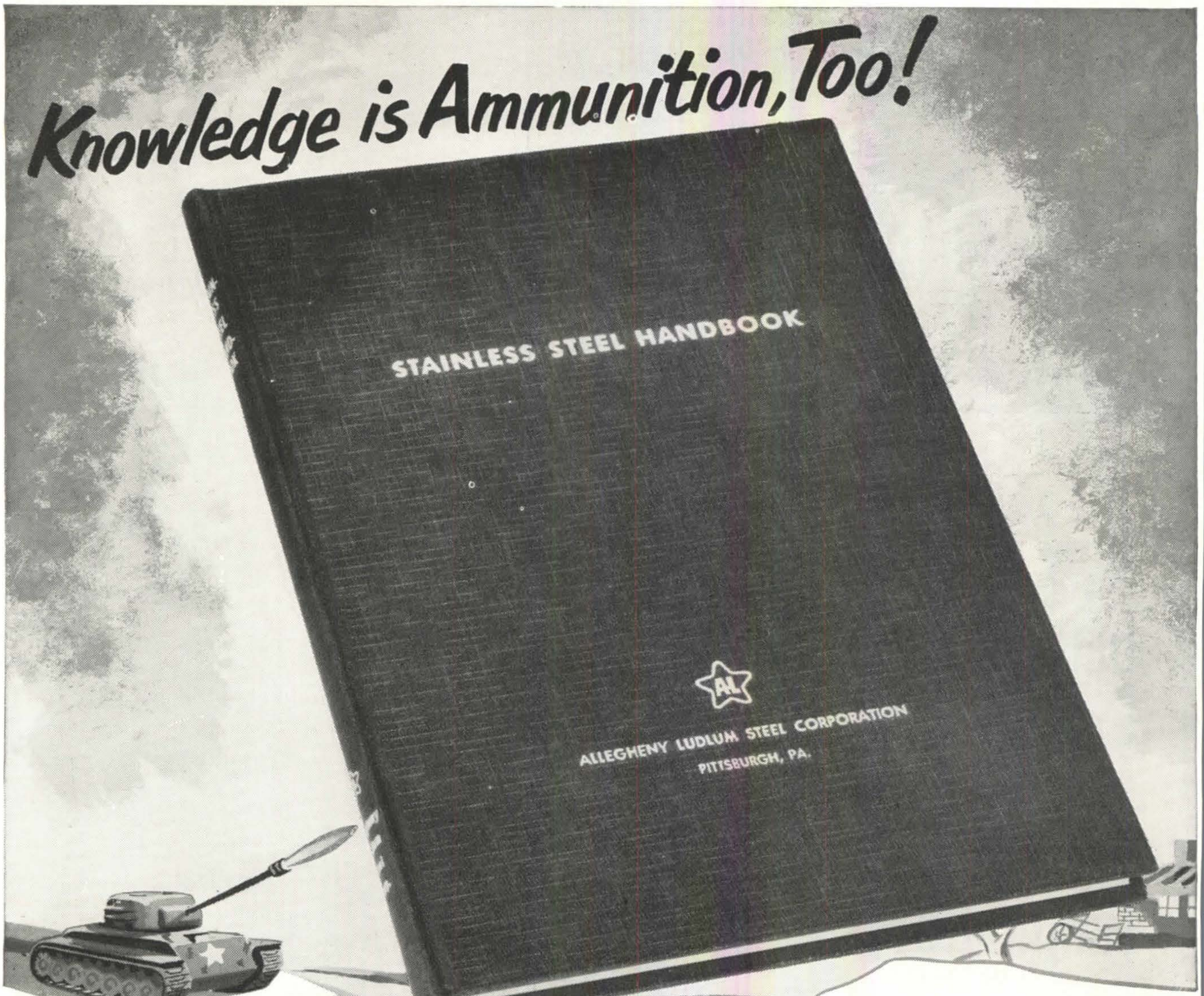

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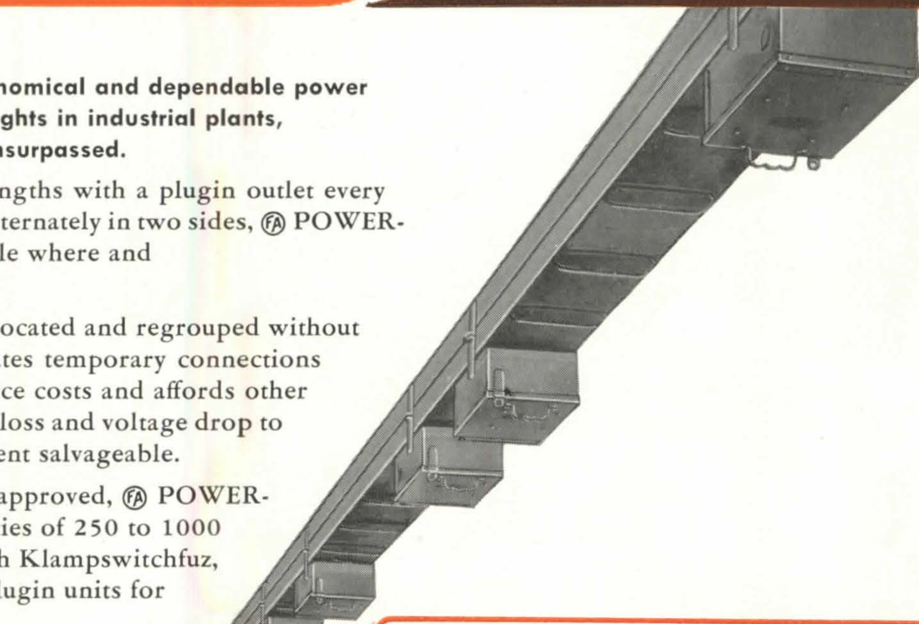

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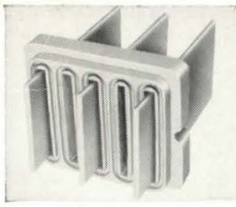

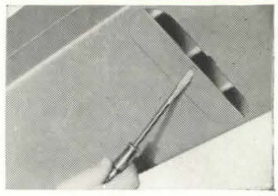

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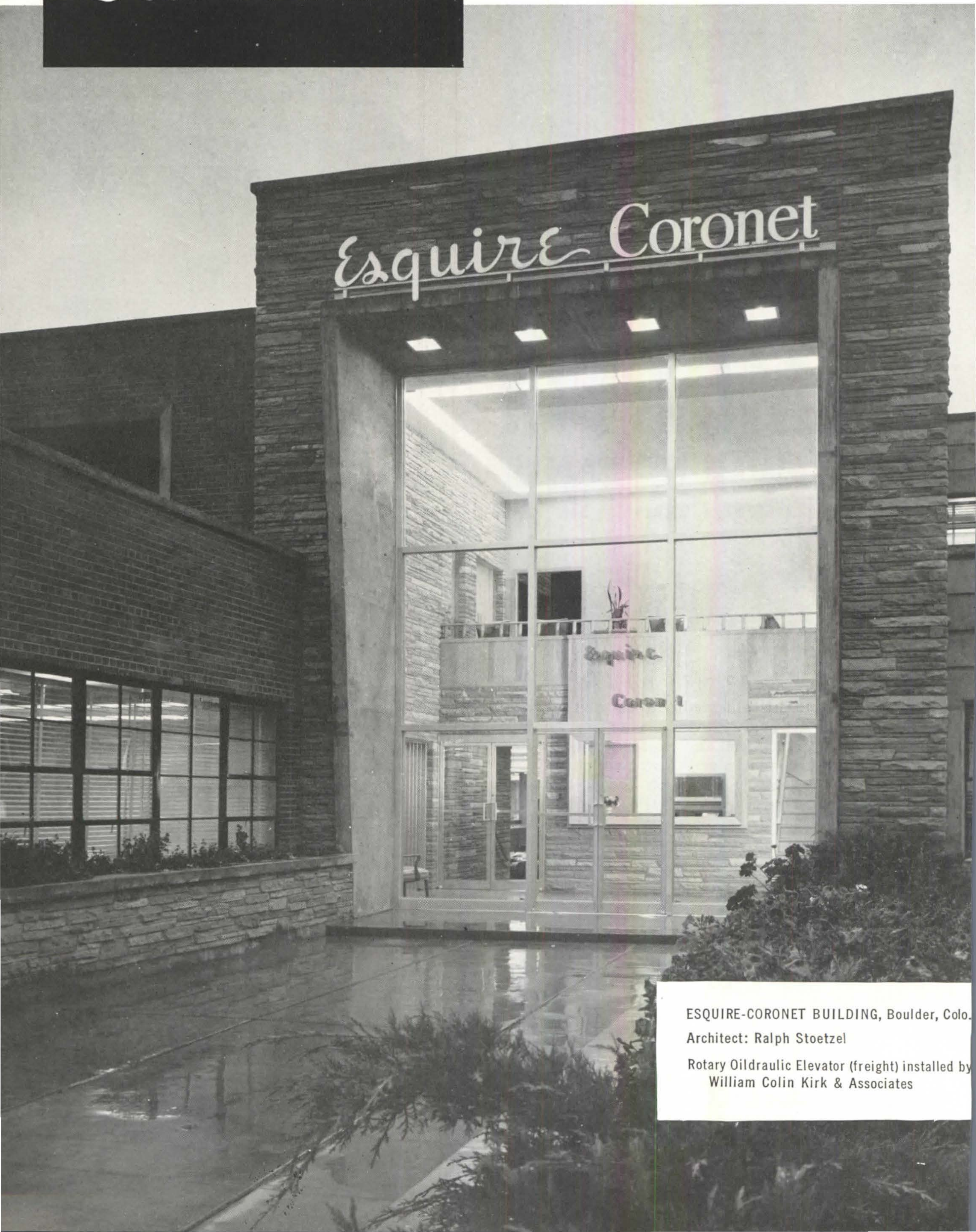

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a matter of light

By Stanley James Goldstein, A. I. A.

There has been much talk about the amount and quality of light to be desired in school classrooms. Most, if not all, of the discussion, whether in technical journals or in the architectural press, has been based on ignorance more than on knowledge of the subject. I propose to delineate some of the areas of our ignorance, in the hope that the painstaking research necessary for further progress will soon be sponsored by individuals, organizations, or corporations.

It has long been assumed by the architectural profession that "research" must be done by "longhairs" in laboratories, that such research must be concerned with essentially abstract reasoning in the pure or applied sciences, and that we architects couldn't understand such scientific explorations even if they were explained to us. If these three dicta were not writ upon our foreheads, they were certainly cast integral in the curricula of all of our architectural schools during the first four decades of this century. In other words, it was implied that science was for others, but ART was for us!

The metamorphosis in architectural education, in the last ten years in this country, has produced an uneasy (some would say "unholy") alliance of many disciplines in the new curricular—social "sciences," physical sciences, engineering subjects, and city and regional planning. The alliance is bound to be uneasy, for we are all unsure of our goals—hence, a confusion as to means. Let us hope that there will continue to be a diversity of approaches to the teaching of architecture, for there is no one answer, in physics, nor in social system, nor in architectural "styles." Experimentation *is* life itself, as it *is* science *and* architecture.

•

How does this philosophical stuff apply to school lighting? It appears to me that mathematical analysis and laboratory experimentation in daylighting and electric lighting have erected a body of principles and a system of analysis that seem to be as fool-proof as Newton's Three Laws of Motion. But just as the study of physics has today gone beyond Newton in the application of relativity, so the study of the architectural environment must go beyond more illuminating engineering formulae. There must be a disciplined statistical study of minutiae, of exceptions to general cases, of day-to-day variations in human existence, that will enable us to judge for ourselves the quality of our work as architects. So we must absorb enough technical knowledge to be *capable* of judging for ourselves, whether in structure, heating and ventilating, acoustics, or illumination.

Let me bring home the point: There are two variables that have been omitted thus far in all lighting research that I have been able to uncover. These may be described as the "statistical summaries of variations" in:

(1) the amount of daylighting incident upon the fenestration of a particular classroom (specified as to cross-section, orientation, fenestration, and latitude and longitude).

(2) the interflectance reduction due to variable unit absorbers (people) in a particular classroom.

The statistical summaries of variations in (1) above should be presented finally in a form similar to that used in illustrating the ranges of temperature and humidity for a particular locality in the A. I. A. *House Beautiful* climate survey reports of two years ago. The results of a study of (2) above should be presented in the form of graphs picturing the range of significance in sizes of students, percentage of occupancy, location in room, and reflectances of students.

•

I have outlined above the lack of certain data, and the form of final presentation, after such information has been collected. What does it all mean? It means that the lighting engineers and physicists have given s formulae for achieving certain levels of illumination in classrooms. hysiological research has determined (and *is continually* raising) desirable" levels for different tasks. What we do not know is the ctual effect in real classrooms of seasonal, daily, and even minute-by-iinute variations in lighting due to the height and bearing of the un and the state of the weather. Especially, we do not know how ›ng we have high, medium, or low levels of illumination in a particular ›om.

Furthermore, all current formulae for calculating the quantity of illumi-ation at desk height do not take into account the effect of people ı the room. Now it may well be that the reflectances and shadows of, ıy, thirty students in a classroom, do not change the illumination calcu-ıtions more than five or ten percent. It's high time, though, that some-ody determined the answer to this problem by actual study of cases. "people" are significant acoustical absorbers, then they're probably ght absorbers, too.

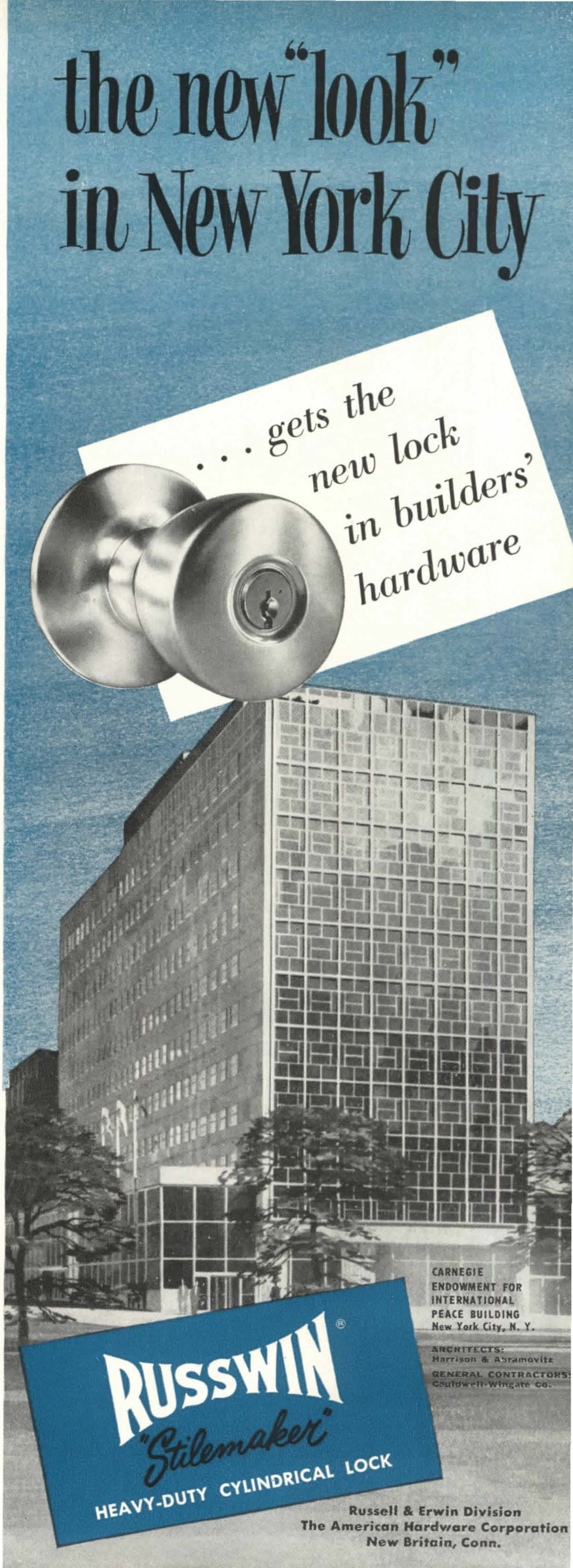
Incidentally, there may be a revision in the existing formulae for ghting design after the results of this new research have been analyzed. he current concepts of lighting hold that the distribution of energy to ifferent surfaces is independent of the intensity level of the sources f illumination. In the May 1951 issue of *Architectural Forum*, there was ublished a report of the research being done at Texas A & M College y William Caudill and associates: it was stated by the magazine that ;audill had turned to the study of models because, among other easons, the distribution of light in full-size classrooms varied with the egree that the sky was overcast. Of course, that's not a good scientific eason for using models, but the real significance of the change in istribution seems to have been missed by the Texas researchers. If istribution IS markedly affected by source intensity, as Caudill seems › have found, then his own further studies, as well as most current iinking, will have to be thoroughly revised.

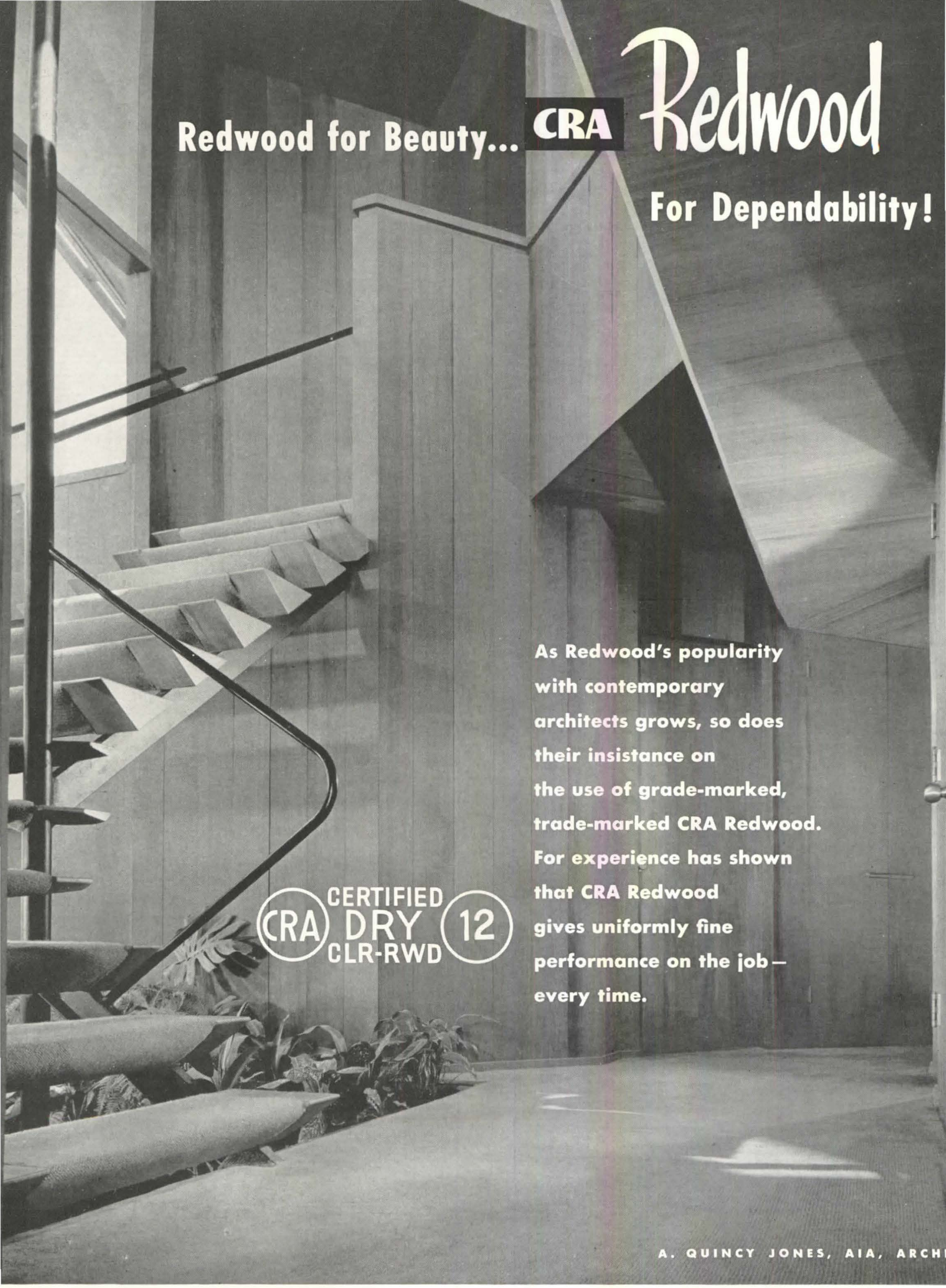
•

ccording to all the architectural magazines, lighting is the one factor ıat has done the most to influence the shape and orientation of today's assrooms. The research data accumulated thus far has resulted from hat I choose to call "spot-testing" of real classrooms and of scale odels. This sort of data is analogous to the use of a new and untried ntibiotic on a single patient. If the drug works, the patient is saved, ut the medical profession will *consider* the merits of the drug only fter controlled dosages have been submitted to a large number of ersons having the same initial symptoms. We of the architectural pro-ession must be similarly skeptical of formulae thrown our way by ver-specialized technicians. We must learn to demand field research bring together theoretical studies and our own preliminary designs.

Can the studies, that I have proposed, actually be carried out? I ncerely believe they can. The first requirement is the design of a ery small lightmeter, analogous to the "SR-4 strain gage" used in ress-strain studies of metal and cementitious materials. Such small ghtmeters would be located by the scores in all the surface of a articular classroom to be analyzed. Continuously recording ammeters ould be attached to these lightmeters, and left to run for 365 days. e data would be corrected for climatological variations in the par-cular locality for that year, and then presented in the forms I have tlined above. If this experiment is repeated in various localities, for fferent orientations, room shapes, and fenestrations, then, and only en, will we have enough raw material for an intelligent discussion the quantities and qualities that give good classroom lighting.

According to the *First Progress Report of the School Facilities Survey* om the office of the U. S. Commissioner of Education, this country ust spend about $10 billion in the next five years to build 600,000 w classrooms and their supplementary facilities. That averages over irty (30) classrooms per registered architect in the United States. agine! With these figures before us it is easy to see the importance an adequate program of research in school classroom lighting.





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spurious ancestors

Towards Modern Art, or King Solomon's Picture Book. *Art of the New Age and Art of Former Ages. Edited by Ludwig Goldscheider. Phaidon Press, London, England. Distributed by Garden City Publishing Co., Garden City, N. Y. Introduction, 98 plates. $5.95*

Much has been made of the return to visual instead of verbal explanations in our time—and the old saw that one picture is worth a thousand words is currently one of the most overworked quotations. This book demonstrates the potential fallacy of this attitude, when taken literally. Ludwig Goldscheider, in juxtaposing ancient and modern painting, tries to establish an historically significant affinity between all styles at all times. But all he achieves is a superficially visual resemblance.

The undeniable fact that a Roman mural from the reign of Augustus and a garden scene by the French primitive, Henri Rousseau, both show a simplified realism in rendering foliage and in displaying a limited knowledge of linear perspective, does by no means bridge the 1900 years that separated their dates of origin. The Roman painting represents for its own time a high point of sophistication and craftsmanship. It was a revolutionary adventure in visual depth that went far beyond anything that had been done in antiquity. Henri Rousseau's painting is a regression. In 1910 it was an attempted return to untaught primitivism, a denial of advance and craftsmanship.

The same holds true for all other juxtapositions in the book. A mosaic head of a Byzantine saint is the exact opposite in concept from a portrait head by Derain, with which it is paired. The work from 1140 A.D. is expressive of highest stylization—a conscious obliteration of individuality in an age of hierarchic feudalism. Derain is an Expressionist from the 1920's, who tries to paint the free soul of the inviolate individual—he makes a statement of the unchallengeable validity of the ego. The facial resemblance—sunken cheeks, bony eye-ridges, wrinkles that follow the elliptical shape of the face—testify to no other identity than that of the Caucasian race.

The most bewildering fact about this book is that Ludwig Goldscheider in his one-page introduction claims the connotations "abstract" and "nonrepresentative" meaning perhaps non-representational?) for his selections of Modern Art. But none of the contemporary pictures shown is abstract, or nonobjective, and there-

(Continued on page 166)

books received

Acoustics in Modern Building Practice. Fritz Ingerslev. The Architectural Press, 9-13 Queen Anne's Gate, S.W. 1, London, England, 1952. Also distributed by British Book Centre, Inc., 122 E. 55 St., New York 22, N.Y. 290 pp., illus., 35s. 0d

Art in Modern Architecture. Eleanor Bittermann. Reinhold Publishing Corp., 300 W. 42 St., New York 36, N.Y., 1952. 178 pp., illus., $10

Figure Indication for the Artist, Art Director & Layout Man. Harry Dreve Schorr. Watson-Guptill Publications, Inc., 24 W. 40 St., New York 18, N.Y., 1952. Illus., $5.50

New Frontiers for Home Builders. C. W. Smith. Housing Research Foundation, 33 W. 42 St., New York, N.Y., 1952. 91 pp., $1

REVIEWS

(Continued from page 165)

fore his whole thesis collapses. If he really wanted to juxtapose "abstract" and historical art, he would be in plenty of difficulty to find traditional equivalents for, say, Mondrian or Ben Nicholson, among Europeans, or Pollok and Hoffman, in America. Theirs is "modern" art; what Goldscheider shows is transitional.

The banality that "there's nothing new under the sun" reveals the basic error. Each age and each society has an art concept that is based on its ethical, social, and material climate. It is this concept that determines its character. Under this aspect, art of the 20th Century is totally unrelated to any art of a preindustrial society, no matter how accidentally similar are certain external forms.

Exemplified by architecture, this means that Goldscheider could have easily composed another *King Solomon's Picture Book of Architecture,* juxtaposing the transitional or "expressionistic" stage of building with historical examples. The Golden Door of Sullivan's "Transportation Building" would have looked fine with a Byzantine portal; Wright's "Larkin Building" would have taken us back to the Palace at Khorsabad; and Hoger's "Chile House" would have recalled the "Knochenhauer Amtshaus" in Gothic Hildesheim. But when modern architecture came of age, it created a style all its own, and all architectural history offers no convincing mate for Gropius' Bauhaus building, Freyssinet's hangars, or the Lever House. Good or bad, the new forms produced by this century stand as undeniable evidence. So far as we can judge today, their only unquestionable aspect is originality. Let us not obscure this contribution by a strenuous search for spurious ancestors. SIBYL MOHOLY-NAGY

catalog reappears

1952 Gold Metal Catalog of the Architectural League of New York. *Architectural League of New York, 115 E. 40 St., New York 16, N. Y. 95 pp., illus. $1*

Excellent photographs illustrate the work of the Architectural League's Gold Medal Award winners in 1950, 1951, and 1952; and also works receiving Honorable Mention, as well as the Finalists in the 1952 Exhibition. Architecture, mural painting, sculpture, landscape architecture, and design and craftsmanship in native industrial art are all represented. E. T

illustrated diary

Impressions Respecting New Orleans. *Benjamin Henry Boneval Latrobe. Edited with an*

(Continued on page 168)


Ralph C. Flewelling & Walter L. Moody, Architects
MODERN DOOR CONTROL BY LCN · CLOSERS CONCEALED IN HEAD FRAME
CENTER STREET SCHOOL, EL SEGUNDO, CALIFORNIA
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REVIEWS

(Continued from page 166)

Introduction and Notes by Samuel Wilson, Jr. Columbia University Press, 2960 Broadway, New York, N. Y. 1952. 196 pp., illus. $8.75

It is always fortunate, at least for succeeding generations, when professional men who have left their mark on the world write diaries and journals which contribute interesting sidelights to a particular epoch in the history of the country. This is especially true when the writers of journals are such men as Benjamin Henry Boneval Latrobe. The first professionally trained American architect, Latrobe was a highly educated and intelligent figure, intimately associated, professionally and socially, with the leaders of the political, cultural, and economic affairs of the country.

Soon after he came to this country from England, in 1796, his personality and remarkable talent won him many influential friends and his reputation as an architect was quickly established. After initial success in Philadelphia, where he created the Bank of Pennsylvania building, which was virtually the beginning of the Greek Revival movement, his close friend, Thomas Jefferson, appointed him Surveyor of the Public Buildings of the United States and he was entrusted with the completion of the Capitol. He resigned the job, due to his difficulty in getting along with various persons involved. Later, President Madison gave him the commission to reconstruct the White House and other parts of the Capital burned in 1814 by the British. Outspoken and impulsive, Latrobe again came into conflict with his colleagues and resigned. He then went to New Orleans to carry on the work of his son Henry, a rising young architect who had died of yellow fever while supervising his father's projects.

This volume contains the copy books kept by Latrobe for three years (1818-1820), describing life in the recently acquired colonist city. All but one of his journals, fortunately, have been preserved. Apparently very little escaped Latrobe's eye or failed to stimulate his mind, and one is amazed at the variety of observations and his keenness of perception. He is not only descriptive, but analytical and *philosophical* as well. Since he was an architect, he naturally has much to say about the style of the buildings and construction and the materials used, but the reader will also find appraisals and descriptions of a host of other facets of New Orleans life—Negro music and dancing, Sunday observances and religious ceremonies, treatment of slaves, the state of

(Continued on page 170)

REVIEWS

(Continued from page 168)

society (with its contrasting French, Creole, and American elements), the soil conditions, cemeteries, fish and flowers, and even the "muskitoes" of New Orleans, to mention a few. Not the least important element of this book is the selection of fine pencil, pen and ink, and water color sketches which accompany Latrobe's notes. His journalistic ability combines with his art to afford a revealing and accurate picture of early 19th Century life as he observed it in New Orleans. Much more, perhaps, would have been written had not Latrobe died of yellow fever three years after his son.

Samuel Wilson, Jr., an architect in New Orleans and a lecturer at Tulane University, has done most thorough and thoughtful work in editing these journals. Winner of an Edward Langley scholarship for European study and research on the origins of New Orleans architecture, awarded by the American Institute of Architects, Wilson became interested in Latrobe in 1933 while investigating architectural activity in New Orleans for the Historic American Building Survey. He is to be highly commended for bringing out this attractive and enlightening book. FRANK A. WRENSCH

layman's aid

How to Plan a House. *Gilbert Townsend and J. Ralph Dalzell. American Technical Society, 848 E. 58 St., Chicago 37, Ill., 1952. 584 pp. illus. $6.95*

The authors have slanted this book for the layman with a view of helping him visualize the planning of his house-to-be, whether he employs the services of an architect or leaves everything to a general contractor. E. T.

spelling and meaning

Dictionary of Architecture. *Henry H. Saylor. John Wiley & Sons, Inc., 440 Fourth Ave., New York, N. Y. 221 pp., illus. $4.50*

Dedicated with "deep respect and affection" to the A.I.A., this pocket-size dictionary provides a convenient guide to architectural terms, periods, and stylistic and construction details. It enables one to find the spelling, pronunciation (if unusual), and definition of words most frequently encountered in the study, historical reading, and practice of architecture. Technical phraseology that might be used by a specialist other than an architect—a heating and ventilating engineer, for example—in discussing a project with an architect, is also included (while terms used by the same engineer in talking over ways and means with his own technicians are not necessarily represented).

Saylor's thumb-nail definitions are concise and clear. He uses phonetic spelling rather than diacritical symbols which, he claims, need a dictionary of their own. Line illustrations are placed in the back pages of the book; these are mostly confined to objects, architectural orders, moldings, arches, crosses, and decorative details which do not lend themselves well to brief verbal explanation. H. T.

symposium report

Laboratory Design for Handling Radioactive Materials. *Building Research Advisory Board, Div. of Engineering and Industrial Research, 2101 Constitution Ave., Washington, D. C., 1952. 140 pp., illus. $4.50*

To meet a growing demand for the design of facilities required for hospitals, and educa-

(Continued on page 172)

Another *FIRST* by Crawford

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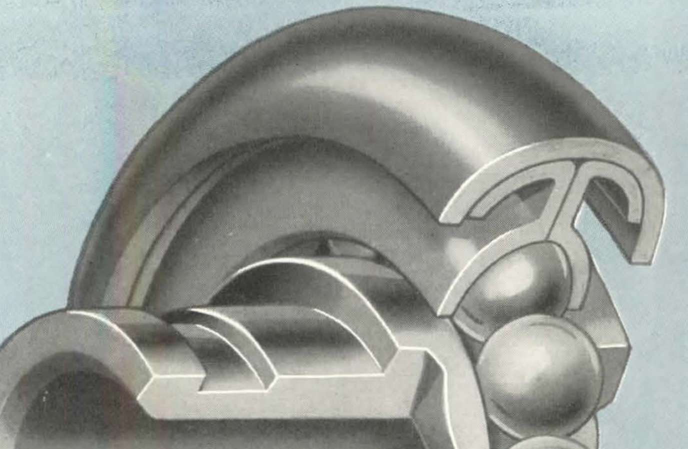

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This roller typifies the quality that goes into every part of the Crawford Marvel-Lift Door.

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Most anywhere in U. S. A.

REVIEWS

(Continued from page 170)

tional and industrial plants, in addition to the new facilities needed by an expanding AEC program, the proceedings of a symposium, conducted by BRAB and sponsored jointly by the A.I.A. and the AEC, have been published for the purpose of equipping architects, engineers, and manufacturers with planning and construction criteria based on the best architectural practice to date. The five sessions that were held are presented here in as many chapters: Architectural Introduction to Radiochemical Layout; Air Supply and Exhaust in Laboratories Handling Radioactive Materials; Control and Shielding of Isotopes in Radioactive Laboratories; Surfaces and Finishes for Radioactive Laboratories; Disposal of Radioactive Wastes. General and panel discussions, summaries of the conference, and a bibliography complete the report. E. T. C.

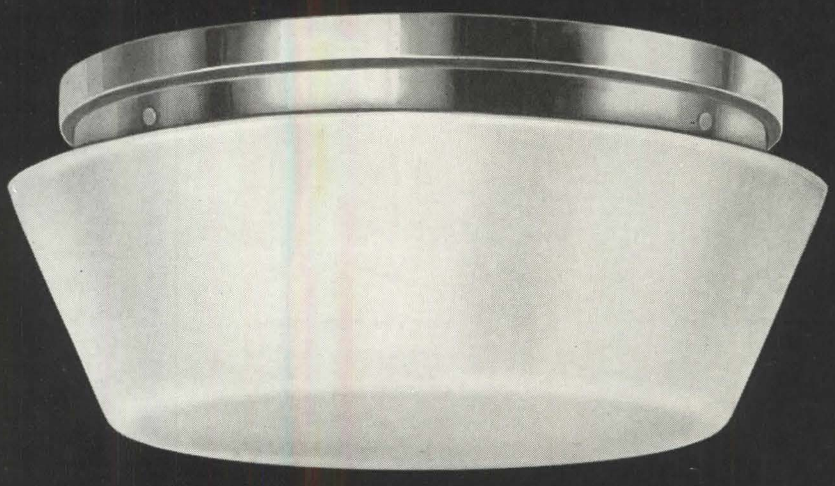
design progress

Architects' Year Book 4. *Jane B. Drew and Trevor Dannatt, Editors. Paul Elek, London, England, 1952. 296 pp., illus. Available at The British Book Center, 122 E. 55 St., New York, N.Y. $10*

In this volume, the usual high standards and comprehensive coverage have been adhered to as in the previous editions of this annual. Anyone interested in the progress and trends of contemporary architecture, whether from the purely professional or the critical viewpoint, will be gratified at the rich material selected by the editors. All the varied articles on matters pertinent, directly or indirectly, to architecture are of value to those concerned with contemporary building and design. And since the contributors are experts in their respective fields, the book offers opinions and viewpoints of an authoritative nature.

Some idea of the diversity of the subjects may be gathered by such contrasting articles as Naum Gabo's "On Constructive Realism" and "Welding and the Architect," by O. Bondy. Another article of a technical nature is "Insulation and Thermal Conductivity," by J. Varming, which should be of use to engineers. "The Social Basis of Town Planning," by Rattray Taylor, and Freda White's "New Towns for Old" are worthy contributions on a subject of current interest to every community. As the chief American contributor, Edgar Kaufmann, Jr. writes about three new buildings on the Pacific Coast, using as examples work of Charles Eames and John Yeon, and the Morris shop in San Francisco by the veteran Frank Lloyd Wright.

(Continued on page 174)



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REVIEWS

(Continued from page 172)

One of the most interesting features of the *Architects' Year Book* is the extensive coverage devoted to London's new music center, the Royal Festival Hall, designed for last year's Festival of Britain. In this detailed account starting with the conception of the building, all the engineering and construction problems, as well as the interior design and decorative treatment, are touched upon fully. There are plans and diagrams accompanying the text and many photographs of the exterior and interior of this somewhat complex building. FRANK A. WRENSCH

planning information

American Planning and Civic Annual. *Edited by Harlean James. American Planning and Civic Assn., 901 Union Trust Bldg., Washington 5, D.C., 1951. 150 pp.*

This year's American Planning and Civic Annual—35 of these Annuals have already been published—includes principal addresses which were delivered at the Miami Conference of the American Planning and Civic Association and at the National Conference on State Parks, held at Lake Hope, Ohio. These papers, read by civic leaders and practitioners, record recent advances in the fields of planning, parks, neighborhood improvement, and conservation of natural resources. In this Annual, it is the publishers' endeavor to meet the need for information of those interested in planning, parks, and conservation throughout the country. E. de S.

projecting shadows

Shades and Shadows. *William Wirt Turner. The Ronald Press Co., 15 E. 26 St., New York 10, N.Y., 1952. Illus., 115 pp. $3.25*

William Turner's aim in this book is to give clear and easily understandable information on the correct determination of shades and shadows of objects, particularly architectural compositions. The text, which assumes a working knowledge of projection drawing, is brief and as nearly self-teaching as possible. The various methods of determining shades and shadows, most commonly used and most easily remembered, are explained and illustrated in detail. To insure efficient coverage of the subject in a minimum of time, a series of twelve, full-size (13" x 17") outline work sheets has been designed to supplement the text; drill problems, set up on these sheets, are ready for the immediate casting of shadows. E. T.

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Lunch Room — Southeastern Greyhound Bus Terminal, Birmingham, Alabama

out of school

by Carl Feiss

"Much of Carl Feiss' literary thunder would peter out into a few insignificant burps if candidates for teaching posts were as well equipped to teach as they are to practice architecture." D. G. W. McRae

It certainly would, if they were. C. F.

McRae's "Letter to the Schoolmaster" (*See* VIEWS) brought me up with a start. School begins this month and I have not discussed the problems of teaching teachers as the feature subject in the previous 36 issues of this c umn. I have talked about the teaching various subjects as *subjects;* design, histo construction, theory, planning, and ma others. But here I begin the fourth year this column without digging into this fund mental problem. Thank you, McRae, for yc excellent letter and for reminding me. A someday, I do hope to come up with "som thing really vital." (What a nasty dig!)

Back in my ninth column (May 1950 P/ I summarized the "to-be-solved problems" Academic or Collegiate Education. On the l were items (b) "How to teach Architectur and (k) "How to teach Teachers." These top have been brought up in one form or t other, ever since. I need not further enlar on my several attacks on the "prima donna in design teaching. The column in Februa 1950 P/A was largely devoted to that subj and there is so much still to be discussed th I see no point in overplaying the issue. Ho ever, the teaching of teachers—even "pri donnas"—needs a great deal of discussion.

It had been my intention to devote this iss to the address before the Annual Conventi of the A.I.A., in New York, by Dr. Edwin Burdell, President of The Cooper Union the Advancement of Science and Art, N York, and Chairman of the Commission on t Survey of Education and Registration, A.I. On June 26, he gave a semi-final summary the recommendations of the Commission. U fortunately, however, this speech is not y available for publication (as was Dr. Burdel Chicago speech a year ago which was pu lished in this column in July, 1951). As Cha man of the Committee on Education of t A.I.A. this year, I have read both Dr. Burdel speech and the Commission report in its pr ent form, kindly supplied me by Dr. Burd and Walter Taylor, Director, A.I.A. Division Education and Research. But your columni assuming his "journalist's" hat, must rema true to his adopted calling (adopted on t 10th of every month) and await the offic release of both the speech and the repo So this column must suffer along, until mo facts are available to the public. This is u fortunate, in terms of time, since school is n opening and there is much material in t

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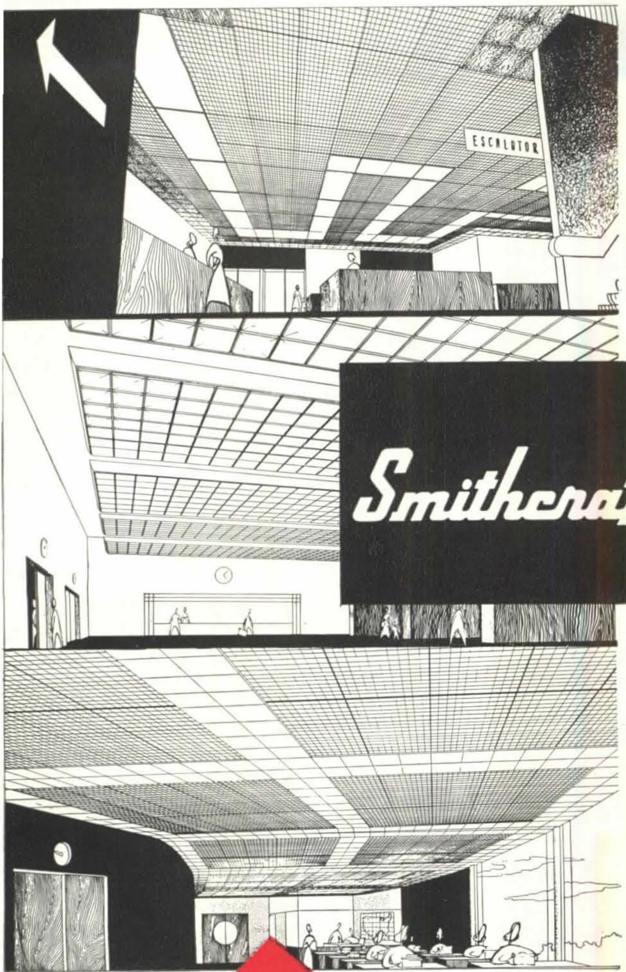

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out of scho

(Continued from page 176)

report worthy of the educator's attention at early date.

●

On page 42 of *Chicago Construction New* for Monday, June 30, 1952, there is a rele with a by-line, *New York*, entitled "Report Committee on Education." Under this p sumtuous headline is the first published "lea that I know of, of the Commission Report. is copied here for the benefit of my read who may have inadvertently missed that pc of the *Chicago Construction News*. The weat was very hot on June 30!

"*New York*—A semi-final report of th A.I.A. commission on education and regis tration made the following recommenda tions to the Institute's 84 annual con vention in New York following its two anc one-half year comprehensive study of the subject:

"1—That the implementation of the findings be undertaken by the Institute. It is the logical body, the commission said, to undertake the continuing work.

"2—That members of the profession, through some continuing agency, define the desirable characteristics of an architect. This includes qualifications for practice, assistance in establishment of curricula to provide better teachers, etc. Failure to adopt some policies in these matters will invite outside pressure and influence to fill the vacuum which these continuing needs present, the report said bluntly.

"3—That A.I.A. assume major responsibility for organizing, co-ordinating, anc promoting supplementary or after-graduate study. These needs are not now being studied, yet 92 percent of the professior has expressed a desire for this. This par of the report covered candidates for registration, practitioners, specialization, text books, and visual aids. It suggested 'University of the A.I.A. or Institute o Architectural Education' might co-ordinate but not teach, all educational and research activities of the Institute.

"The summary of the commission alsc recommended that efforts be made t acquaint the armed forces with versatil services of the architect rendered durin World War II as revealed in the war ser vice questionnaire.

"Also, it was suggested that 'sustained effc be made to bring into A.I.A. as many as p

* *F. W. Dodge Corporation.*

(Continued on page

(Continued from page 178)

sible of the 10,000 non-members, registe architects who are eligible and desirable.

"Finally, another survey along the same l as the 1952 report was called for in ano 10 or 12 years. The continuing need for up date information on the profession shoulc stressed."

•

You may think I have wandered far from subject, McRae: not at all! You cannot k how to train teachers until you know wha train them for. Granted that the Commissi Survey may not come up with all the answ Still it will be, by its very nature, the fession's first real attempt at self-appraisal there should be some positive results.

I know of no educational institution w devotes itself to the training of teachers institutions of higher learning or, specific for the professional schools in such instituti Teachers' colleges are a "dime a dozen" are accepted concepts throughout the Un States and its possessions. They are freque supported by public funds and, in nearly e state, I believe (and hope some expert on subject will volunteer the facts), a degree f such institutions is prerequisite to teaching the public schools. In both state normal sch and the private teachers' colleges, the scie of teaching teachers has advanced to a mar degree. Teachers' College at Columbia versity is perhaps the best known and been, through the years, the most influen of these institutions. Its roster of famous na constitutes professional education's gallery fame. But always we find the training in te niques and methods of teaching directed the primary and secondary schools, pre-sch and kindergartens, vocational schools, schools for the handicapped. There we s to stop. Why?

The best accounting for the situation pears to be the almost universally accep concept that a Ph.D in any subject, or a Ph.D. as such, guarantees teaching com tence. This is a curious myth among the m mythologies of higher education—even some teachers' colleges I could name. instance, a Ph.D. in History may mean a man is a fine scholar—he may even h the *making* of a great scholar and wr His talents as a historian attract the Dea Arts and Sciences and our scholar finds self facing from five to fifty students a instead of as many books on the lib

(Continued on page

(Continued from page 180)

shelves from whence may have come his Ph.D. His only recourse, lacking teaching training, is his experience with teachers, as a student. They were good or bad. They could teach or they couldn't. They left their classes inert, or incited to violence.

If young Professor Zeno has a good intuitive understanding of his former instructors, he may be able to call on his memory, in the avoidance of their errors and in the emulation of their excellencies. The rest is left to experience and chance, just as it was for his teachers, and for their teachers, and so on, back to the monasteries from whence they all sprung.

To be an educator is an exciting and won-

derful experience. I have taught, in my
a total of nearly 14 school years, inclu
night school and summer school. In fact
though these columns certainly do not r
it, I have run the full gamut from instr
through associate, to assistant, and to the
full professorship. I know what young
fessor Zeno faces. I also know what the
dent faces, when confronted with an inex
enced teacher, no matter how enthusiasti
amateur he may be. I am still blushing
it isn't that I didn't try.

•

The real test of any teacher is whether o
he really wants to teach, likes to teach,
believes in teaching for what it really is.
teaching is man's only means of establi
a continuity of culture. By its very natu
the essential personalizing of the transfe
knowledge, it is part of the life process i
It is as essential to the future of man
procreation itself. Without teaching, we w
not fall back to savagery, for savages t
their young, their adolescents and their y
But we would subside, and deservedly so,
the primordial from which we came.

A born teacher is a rare individual, wh
he be a schoolman, a preacher, a pol
leader, or a businessman. We all too
mistake selling for teaching, buying for le
ing. We also cheapen the life proces
teaching with silly fripperies which are
synonymous with the fine exuberances
youth. Therefore, when a man is called
teach he must add to his knowledge and i
ests the zeal to teach, the will to transfe
own little knowledge to others younger
perhaps more eager then he and, above
he must feel that he is contributing his
to the immortalization of truth and the se
business of the perpetuation of knowle
No Ph.D. assures us of that.

For those of us who are not necessarily
teachers, but like to teach and believ
teaching, the teaching of architecture is a n
ending problem. We have not been traine
teachers or teachers of architects. Actually,
is *no place where* we could have gone t
ceive such training. We are no different
all the rest of the professors in institutio
higher learning. And the student, who
well have come from a high school with
trained teachers, is confronted by us,
have only a will and perhaps some pra

(Continued on page

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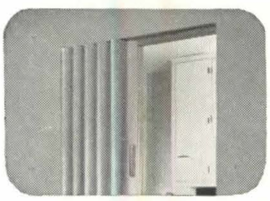

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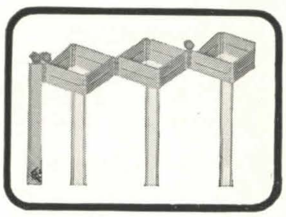

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out of scho

(Continued from page 182)

experience, to serve in lieu of other qu cations.

McRae and I are in agreement that mos our troubles would be cured if our teac were trained to teach. But we are imm ately faced with the who, where, how, the by-whom of the situation. The paraph of the report of the Commission on Educc and Registration quoted above mention "University of the A.I.A., or Institute of A tectural Education." The quote states th might co-ordinate but not teach. This se to be in line with the thinking of several a tectural educators who have been urgin central information service for the preparc of a syllabus series on architectural types an exchange of design problems based common themes. The resemblance of som the features of this idea to the old B.A system may have been responsible for its jection at the hands of the June Conventio the Association of Collegiate Schools of A tecture. But whether an Institute of Arch tural Education is established, we badly r further clearance on ideas as to the teac of architecture in whole and in part. Such institute could be most useful for the furt ance of this purpose.

McRae is correct in feeling that architec practice should not dominate a teacher's reer. This, of course, emphasizes toc teacher shortage and the use of part- faculty drawn from the architectural offices number of schools depend on such ser for the major part of their design trai work. But there is no justification for thought that just because a man is a suc ful architect or designer or builder or anyt else, he is automatically a good teacher. the responsibility of every dean, director department head to see that every tea full or part-time, has continued instructio instruction. Until such time as there is a versity of the A.I.A. or an Institute of A tectural Education, every means available the exploring and analyzing of teaching m ods must be found by the head of each sc I have deplored many times in these colu the lack of intercommunication among schoolmen. I have mentioned the fact even the findings of regional meetings of Association of Collegiate Schools of Arch ture are not disseminated to the Associ at large. I have called attention to the that it is only the deans and department h

(Continued on page

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who go to conventions, seldom the rest of faculty which may equally need retreading

And so what have I to offer in the pre situation? Only the hope that this prob has been explored further than I am aware at present. If it has not been, then the A. and the A.C.S.A. had better begin look to their laurels. Unrest in the schools, m tioned in McRae's letter and reported in th columns, continues. Where such unrest st from poor teachers and poor methods, c wasted years, betrayal of trusts, and p architecture results. If we, as teachers, can feel our responsibilities we must be aware the threats to our complacency.

In fear of ending on a completely nega and despairing note, let me repeat wha have said before: I am proud of the rec of architectural education in the last few ye and of the men who are devoting themsel to the arduous task—the late hours, the pay, and the confusion of training in tr sition. Frank Lloyd Wright is wrong when says, as quoted in the July 12 *New York* "Our schools of architecture are wholly sup ficial." He has never been more mistaken c he knows it. But he is very correct ind when he goes on to say "You cannot teach art. You can only create an atmosphere its comprehension."

NOTICES

credits omitted

We find that names of several persons c nected with the building of St. John's Luthe Church, Fayetteville, Arkansas, were omit (March 1952 P/A). T. Ewing Shelton was local architect in charge of carrying I. J Gural's design through construction, while D idson & Steele were the general contract Gural also asks that particular credit be gi to Marcus Lang, Pastor of the church.

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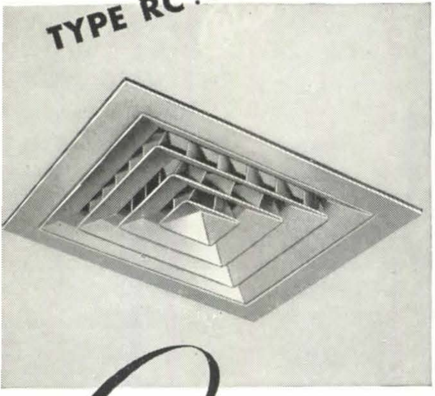
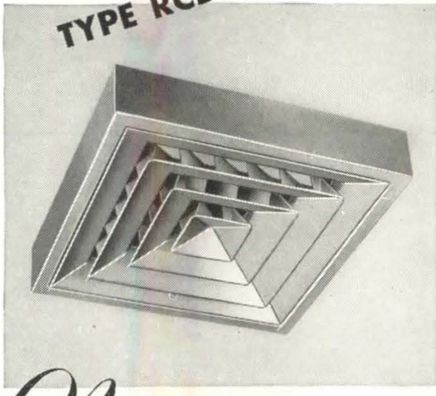
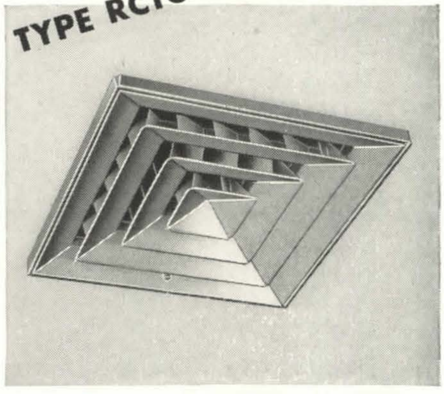


TYPE RCDF . . . For Drop Frame Installations



TYPE RCTC. . .For Tile Ceilings



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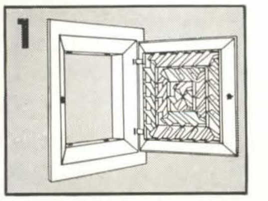
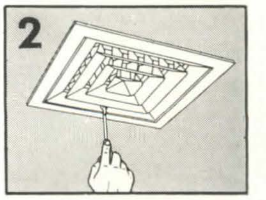


Insert diffuser "slide hinges" into frame slots



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it's the law

by Bernard Tomson

This month's column and IT'S THE LAW for October supplement Tomson's Architectural and Engineering Law (Reinhold, 1951).

Construction bids, private and public construction; withdrawal of bids on grounds of mistake.

Elements to be considered: Excuse for error of a material fact, knowledge of error of party receiving bid, prejudicial effect of error upon party receiving bid, timeliness of notice of error, and negligence on part of bidder.

When may a contractor withdraw his bid? September and October columns will c with this question. Errors as to material f urged as justifying such a withdrawal inclu errors in computing a group of figures, er in estimates of materials, of labor costs, omissions of materials, or clerical errors transposing figures. Such mistakes have bidders in the unenviable position of be faced with the problem of construction o project, at a price far below actual cost the forfeiture of their bonds and deposit

The Courts of the United States have c sidered many cases dealing with this prob and the decisions of the various jurisdicti are by no means uniform. The problem further complicated by legislation in s states controlling the procedures to be lowed in connection with public works c struction bids, at all governmental levels.

These cases arise when a bidder attempt recover the deposit (which accompanies bid) and, by way of equitable relief, seek have the agreement rescinded, and the withdrawn.

●

Although there is no uniformity of opini patterns of judicial inquiry may be ascertai from the opinions of the courts. Equity co have historically placed a great deal of portance upon the actions of the parties bef the court. Therefore, in deciding whether bidder may rescind his agreement, due error in his bid, the courts have sought for following elements of conduct:

1. Was there a reasonable excuse for th error by bidder?
2. Was the error in regard to a materi fact?
3. Did the party receiving the bid hav actual or constructive knowledge o the mistake?
4. Was the party receiving the bid prej udiced?
5. Was there prompt notice of the erro by the bidder?
6. Was there any negligence or careless ness by the bidder?

In discussing those elements the Court, *Conduit & Foundation Corporation v. Atla City, 2 N.J.S. 442, 64A. 2d 382, 385, (19* stated:

"The essential conditions to such relief way of rescission for mistake are (1) the take must be of so great a consequence to enforce the contract as actually made w

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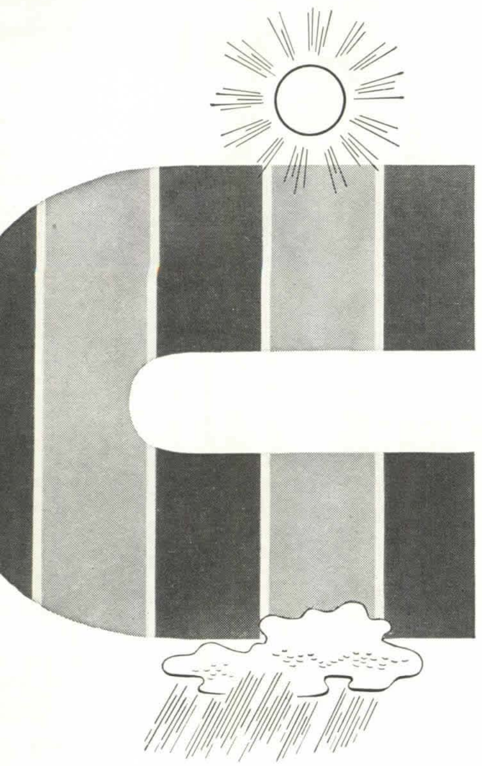
Modern design and



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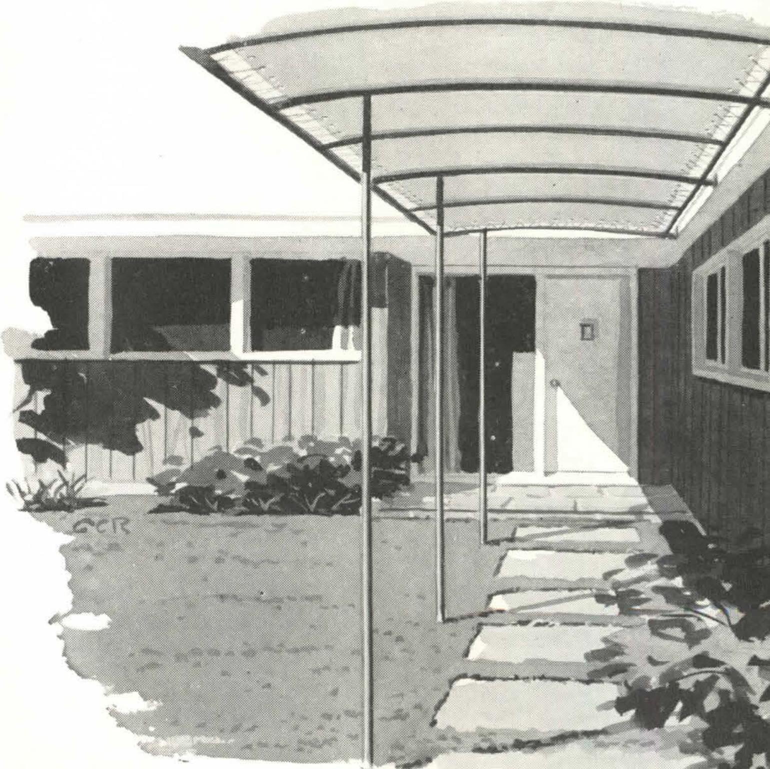

anvas Awning Institute, Inc. THE CANVAS AWNING INSTITUTE INC. and National Cotton Council

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it's the law

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be unconscionable; (2) the matter as to which the mistake was made must relate to the material feature of the contract; (3) the mistake must have occurred notwithstanding the exercise of reasonable care by the party making the mistake, and (4) it must be able to get relief by way of rescission without serious prejudice to the other party, except for loss of his bargain."

•

Private Construction where Withdrawal of Bid Disallowed.

Where the previously listed questions were answered adversely to the bidder, the courts have held the bidder not entitled to rescind and withdraw his bid.

In *Steinmeyer v. Schroepel, 226 Ill. 9 (1907)*, the Supreme Court of Illinois held:

"A mistake which will justify relief in equity must affect the substance of the contract, and not a mere incident or the inducement for entering into it. The mistake of the appellants did not relate to the subject matter of the contract, its location, identity, or amount, and there was neither belief in the existence of a fact which did not exist, nor ignorance of any fact material to the contract which did not exist. The contract was exactly what each party understood it to be, and it expressed what was intended by each. If it can be set aside on account of the error in adding up the amounts representing the selling price, it could be set aside for a mistake in computing the percentage of profits which appellants intended to make, or on account of a mistake in the cost of the lumber to them, or any other miscalculation on their part. If equity would relieve on account of such a mistake, there would be no stability in contracts; and we think the appellate court was right in concluding that the mistake was not of such a character as to entitle the appellants to the relief prayed for."

The Court of Civil Appeals of Texas, in *Brown v. Levy, 29 Tex. Civ. App. 389, 69 S.W. 255 (1902)*, refused to permit a contractor to withdraw an accepted bid where there was an error of over $10,000, contained in a bid for the erection of a building, stating:

"The first count in the petition shows that the plaintiff made a proposition to erect the building for the gross sum of $64,000 and that the defendant accepted that proposition. This shows a consummated agreement, constituting a binding contract, unless the mistake made by the plaintiff in procuring data for his bid should be held sufficient to release him from the contract. That it should not be given that effect is, we think, quite clear. The petition fails to show that the defendant was in any wise responsible for the mistake referred to. When the plaintiff offered to build the house for a specified sum, and the defendant accepted the offer, a binding contract

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was made, and it was of no consequence, in so far as the validity of the contract was concerned, that the plaintiff had made a miscalculation in forming his preliminary estimates."

In another Illinois case *Douglas v. Grant 12 Ill. App. 273,* the court refused equitable relief to a bidder who had erred in the price of a certain brick and who had not discovered the error until after the work was begun.

Public Construction where Withdrawal of Bid is Disallowed.

The rules of law, as applied to public construction are, in the absence of statutory enactments, similar to those applicable to private construction.

Where the bidder was negligent, or where the person receiving the bid would be prejudiced, or where there was a failure to give prompt notice by the bidder of his error, the courts have refused to allow the bidder to withdraw.

In *John J. Bowes Co. v. Inhabitants of Town of Milton, 255 Mass. 200, 151 N.E. 116, 118 (1926),* the court refused to allow a bidder to rescind, although it was claimed that there was an error of over $10,000 in his bid. The court stated as follows:

"The principal ground upon which the plaintiff contends that it is not bound by the proposal and acceptance is that the amount finally bid of $184,020 was due to a miscalculation of the sum for which it would construct the building. It is well settled that where a contract has been entered into under a mutual mistake concerning a material fact a court of equity will grant relief. It is equally well settled in this commonwealth that a mistake of but one of the parties to a contract is not a ground for relief either in law or equity."

"There was no mistake on the part of the members of the committee who acted for the town; they acted in good faith without any knowledge that the plaintiff had made any mistake in the submission of its bid. The mistake was wholly its own; it was not induced in any way by the defendant or its agents. The committee accepted the bid as finally made, and had a right to assume that the plaintiff would carry out its agreement. In these circumstances the plaintiff must be held bound by its preliminary contract."

The rationale of the opinion was the fact that, subsequent to the submission of the bid, discussions were held between the parties, at which time the error could have and perhaps should have been discovered. In *Crilly v. Board of Education, 54 Ill. App. 371,* the Illinois court held that a clerical error of $3000 in a bid could easily have been avoided by the exercise of ordinary care and diligence. Therefore, the mistake was not such as woul entitle him to relief in equity.

In *City of Hattiesburg v. Cobb Bros. Cons Co., 183 Miss. 482, 184 So. 630 (1938),* th Supreme Court of Mississippi refused to allo a bidder to withdraw due to his failure to giv prompt and detailed notice concerning th error contained in the bid. The Court stated:

"The letting of public contracts by competi tive bidding is for the protection of the pub lic, and the public authorities are without th right to permit a bid for the contract to b withdrawn in the absence of circumstance tha would render it inequitable not to permit it withdrawal. The inequitable circumstance her claimed is an honest mistake in determinin the amount of the bid. Unless the mistake wa in fact made, and honestly made, no right o withdrawal would appear. In determinin whether to permit the withdrawal of this bid the Mayor and Commissioners were under th duty to the public to ascertain whether a mis take affecting the amount of the bid had i fact been made. In order to do this, it wa necessary for them to be advised of the cha acter of the claimed mistake, so that the might consider it in connection with the bi and the advertisement therefor. The mere clai that a bidder has 'made a mistake' or 'foun some error' in his bid neither gives him th right to withdraw his bid nor impose on th public authorities any duty to examine the bi in order to ascertain whether a mistake ap pears therein. Another reason for requiring th character of the mistake made to be set fort in a notice of withdrawal of a bid is that, i an action to rescind the contract made by th acceptance of the bid and to recover a bene fit conferred by the bidder on the other part to the contract, the bidder may be confine to the particular mistake claimed to have bee made when the notice of withdrawal wa given.

"But, the appellee says that this rule doe not apply here for two reasons: (1) The appel lant waived the failure of the notice to se forth the character of the claimed mistake i the appellee's bid by not requesting the appe lee, when the notice was given, to then di close the character of the mistake claimed t have been made; and (2) it appears from th evidence that the appellant, prior to the givin of the written notice of the mistake, had bee verbally informed of the character of th mistake.

"The appellant's duty was to act on th notice as given, and it was under no duty t advise the appellee what the notice shoul contain in order to be effective. There is som evidence that prior to the day on which thi notice was given the two Cobbs conferre with the appellant's officers and engineer as t the appellee's bid, but it does not appe therefrom what mistake, if any, in the bid w then claimed."

The October column will discuss the cases pe mitting withdrawal of bids as well as the effe of legislation on public construction bids.