Architect Employs **POZZOLITH**...  
To Improve Control of Concrete Quality...

**POZZOLITH**... the key to—

- lowest possible unit water content*
- close control of entrained air... placing consistency... rate of hardening
- reduced costs

*For a given set of materials and water-cement ratio, unit water content (water required per cubic yard of concrete) is the most important basic factor affecting the quality of concrete. A.C.I., Committee 613, 1944 Report, Page 655. Bureau of Reclamation's current Concrete Manual, Page 130.

Industrial and commercial buildings of all types... schools and hospitals... are among the outstanding structures built since 1932 in which Pozzolith has enabled engineering to better control concrete quality.

Architects and engineers employ Pozzolith with confidence because:

1. **proved performance**... 100 million cubic yards of concrete produced with Pozzolith for all types of jobs.
2. **applied know-how**... over 70 skilled Master Builders' field technical men for product-use consultation.
3. **available everywhere**... 1000 ready-mix and job-site plants now producing concrete with Pozzolith.

Ask us to demonstrate the advantages of Pozzolith for your project.
**TABLE OF CONTENTS**

The Record Reports

<table>
<thead>
<tr>
<th>Perspectives</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.A.S.A. Applauds 23 Schools in 3 Regional Competitions</td>
<td>10, 11</td>
</tr>
<tr>
<td>A Record Special Report: What &quot;Decline&quot; in School Needs</td>
<td>12</td>
</tr>
<tr>
<td>Meetings and Miscellany</td>
<td>15, 16</td>
</tr>
<tr>
<td>Reviewing the Record: George Howe, 1856-1955</td>
<td>20</td>
</tr>
<tr>
<td>News From Canada. By John Caulfield Smith</td>
<td>26</td>
</tr>
<tr>
<td>Washington Topics. By Ernest Michel</td>
<td>38</td>
</tr>
<tr>
<td>Construction Cost Index</td>
<td>42</td>
</tr>
<tr>
<td>Required Reading</td>
<td>46</td>
</tr>
<tr>
<td>Views of Recent Periodicals</td>
<td>303</td>
</tr>
<tr>
<td>Current Trends in Construction</td>
<td>338</td>
</tr>
</tbody>
</table>

**M. I. T. Auditorium**

Discussion about Eero Saarinen’s bold design for the Kresge Auditorium is one of the obvious reasons for building it — it is there to be tested, criticized, debated, as well as used. The Record, withholding its own pearls of wisdom, makes so bold as to turn the task over to one who might be called an expert layman — a layman in architecture, a well known expert in activities that take place in our better auditoriums. A professional criticism is appended for good measure, by an English architect, an M. I. T. graduate, who also uses words to good effect.

"The Opal on the Charles," an article by Eduard Weeks 131

"M. I. T. Auditorium; an English View," by N. Keith Scott 138

**Birth of a Party**

An architect is happiest when he gets a commission with a pioneering program attached to it — in this case a new kind of jail, with courthouse, and no ancient concepts mixed in. This is a visual story of how such a program finally developed into a building design.

Brazos County Courthouse & Jail, Bryan, Texas; Caudill, Rowlett, Scott & Associates, Architects & Engineers 139

**Continued on next page**
Tasteful Bank Remodeling Unifies A Hard-To-Handle Space

Personal Banking Division, Chicago National Bank; Skidmore, Owings & Merrill, Architects

Architectural Interiors — Stairs

Residential Stairs

Architectural Engineering

High-Strength Bolts

Roundup

Product Reports

Office Literature

Time-Saver Standards — Paints and Finishes — Exterior and Interior

Index to Advertising

OFFICERS OF THE F. W. DODGE CORPORATION

James McV. Breed, Chairman of the Board; Paul Abbott and Thomas S. Holden: Vice Chairmen of the Board; Howard Barringer, President; Irving W. Hadsell, Chauncey L. Williams: Executive Vice Presidents; Howard M. Thompson, Vice President and Treasurer; Julius T. Little, Robert F. Marshall, T. Oliver Morgan, H. Judd Payne: Vice Presidents; Carl S. Bennett, Clinton C. Bennett, Ralph M. Haiston, Roy Y. Hard, O. O. Paulsell, Richard H. Ray, John M. Williams: Regional Vice Presidents; Edwin H. Freed, Assistant Vice President and Comptroller; George Cline Smith, Assistant Vice President and Economist; Walter F. DeSax, Clifford G. Dinnells, Jr., Clyde Shute, Marc Wayne: Assistant Vice Presidents; Sanford D. Stockton, Jr., Secretary; William C. Breed, Jr., George W. Morgan, Jr.: Assistant Secretaries; Irving R. Satin, Assistant Treasurer.

OTHER F. W. DODGE SERVICES:


Member of Audit Bureau of Circulations and Associated Business Publications, Architectural Record is indexed in Art Index, Industrial Arts Index and Engineering Index.

Every effort will be made to return material submitted for possible publication (if accompanied by stamped, addressed envelope), but the editors and the corporation will not be responsible for loss or damage.

Subscription rates in U.S., U.S. Possessions, and Canada: $5.50 for one year, $9.00 for two years, $11.00 for three years. Elsewhere, subscriptions from those who by title are architects or engineers, $6.50 for one year, $11.50 for two years, $15.00 for three years; subscriptions from all others outside U.S., U.S. Possessions and Canada, $20.00 a year. Single copy price, $2.00. Circulation Manager: Marshall T. Ginn. Change of Address: Subscribers are requested to furnish both old and new addresses, sending if possible the stencil impression from magazine wrapper. Allow four weeks for change.
THE SKYLINE

with building to June 11.

far bee n absent among those who

dream, says Mr. Mumford, but "it

will require an ability to face realities,

a sense of public responsibility, and a

boldness of imagination that have so

far been absent among those who

have exercised authority." For the

complete series — "The Skyline"

department of The New Yorker,

March 19, April 12, April 16 and

June 11.

PALACES AND PROGRESS: every cen-
tury must have its monument, it

seems — for the eighteenth century

there was Versailles, for the nine-
teenth there was the Crystal Palace,

and now if New York's irrepressible
William Zeckendorf has his way, for

the twentieth there will be an archi-
tectural ode to commerce in the form

of the world's biggest and costliest
building to house an international
merchandise mart and permanent
world's fair on the present site of
Pennsylvania Station (Stanford
White's ode to an earlier concept of
progress). An agreement with the
Pennsylvania Railroad signed last
month gives Mr. Z's Webb & Knapp
a $30 million one-year option for the
purchase of "air rights" for building
above ground level in the area
bounded by Seventh and Eighth ave-
nues and 31st and 32nd streets. The
Pennsy would spend some $13 million
to reconstruct Pennsylvania Station
below ground; Mr. Z would spend an
estimated $100 million to erect "The
Palace of Progress" above it. As cur-
cently projected, the building would
contain 154 million cu ft (for com-
parative cubages of the world's larg-
est buildings, see below). The archi-
tectural concept being developed by
Lester C. Tichy, architect, and the

Webb & Knapp Architectural Divi-
sion, I. M. Pei, director, is in its very
earliest stages; simply stated, it
would put a nine-acre building on the
nine-acre site, with the "permanent
world's fair" occupying the lowest
block of floors, the "international
merchandise mart" the next several
floors and buyers' offices the top
block. Offstreet loading facilities will
be provided, but not off-street park-
ing; traffic and parking, says Mr. Z,
are the city's problems. It is esti-
mated that the building will require
a workforce of 50,000 and that at
minimum it will average 30,000 visi-
tors a day. It will be privately owned
and operated by Palace of Progress
Inc., a wholly-owned subsidiary of
Webb & Knapp Inc., with impresario
Billy Rose as president and general
manager (he also gave the project its
name). As Mr. Z sees it, "only two
question marks hang over this pro-
ject now" — obtaining the necessary
building code adjustments; and the
problem of construction itself. How
do you span perhaps 400 ft and sup-
port an enclosure of 154 million cu ft
above ground level when your foun-
dations must pierce the world's busi-
est railroad terminal to be rooted
between tracks that carry 689 trains
a day — with no interruption in the
railroad's operations? In effect, this
is the structural problem that con-
fronts Paul Weidlinger as consulting
engineer to the designers. The target
date for starting construction is June
1, 1956.

THE RECORD OF A REVOLUTION is in
the pages of any serious journal which
has been publishing without interrup-
tion, as this one has, since 1891; no
matter what the field. The architec-
tural record of the past 64 years is
almost a kaleidoscope of revolution

Contents page of the Record's first issue — September 30, 1931

(Part of counter-revolution) in big and
little things. The pages of the Record
over the years give architectural his-
tory the special perspective of the
contemporary account; the revolu-
tions and the counter-revolutions are
there, but so are a great many mat-
ters with which the architects of their
day often seemed a good deal more
concerned, and so are a great many
with which architects today are still
not enough concerned. For an occa-
sional backward look — informative
or amusing or nostalgic or even hum-
bling — a new department, "Review-
ing the Record," will provide glimpses
of the architectural past as the Rec-
ord saw it. The recollections of the
late George Howe, on page 20, are a
first installment.

THE RECORD REPORTS

PERSPECTIVES

THE ROARING TRAFFIC'S BOOM, Lewis
Mumford's recent series in The New
Yorker, amounts to an impassioned
plea for planned decentralization, as
the "hopeful alternative" to "the
present system of planning and build-
ing 'more and more of worse and
worse.'" Such planning is not an idle
dream, says Mr. Mumford, but "it
will require an ability to face realities,
a sense of public responsibility, and a
boldness of imagination that have so
far been absent among those who
have exercised authority." For the
complete series — "The Skyline"

department of The New Yorker,

March 19, April 12, April 16 and

June 11.
The architectural exhibitions at the three regional conventions held this year by the American Association of School Administrators produced eleven top award winners—the Award of Merit recipients shown on these pages—and 12 Honorable Mentions (shown on pages 292-298). It was the seventh year of architectural exhibitions for A.A.S.A., the second of its award program. Members of the Committee on School Buildings of the American Institute of Architects joined school administrators of the National Council on Schoolhouse

AWARDS OF MERIT

Construction of A.A.S.A. on the award juries.

Judgments in the three competitions, which were open to all registered architects in the U.S., were guided by two fundamental criteria—excellence of the projects as works of architecture and excellence in furthering the local educational program. In the individual school plants juries looked for these features, all of them regarded as of equal importance: adequacy for educational function; grouping of instructional areas; accessibility of facilities; flexibility; community use; environmental controls; adequacy of light, air, sound; safety; expansibility.

At the only one of the three conventions at which there was a formal "jury report," the Cleveland jury expressed itself as "favorably impressed by some good examples of openness of plan and of continued efforts to solve the daylighting problem." On the other hand, the jury noted that in general, secondary school plans "reveal the need for much basic thinking about the nature of the educational programs to be housed";
THE WINNERS IN THREE REGIONAL COMPETITIONS

and "took exception to these features in some exhibits: (1) Play areas, inside and outside the building, located so close to classrooms as to create a noise problem; (2) Stages not accessible to performers without passing through audience spaces; (3) Poor designing for visual comfort and efficiency; (4) Inclusion of statements having the appearance of advertising contrary to the spirit, if not the letter, of the rules of ethics of the American Institute of Architects, and of laudatory statements that were not substantiated."

The jury also suggested that site planning should be given more attention in future exhibits.

The award-winning panels were shown in a special exhibition, "Contemporary Architecture for Schools," in the gallery of the A.I.A. national headquarters in Washington April 25–May 13. They will have a great many future showings in communities throughout the country via a filmstrip prepared for distribution by A.A.S.A.

Selection of the award winners was made by six-man juries each composed of three members of the A.A.S.A.'s National Council on Schoolhouse Construction and three members of the American Institute of Architects. Membership of the three juries was as follows:

A.A.S.A.–A.I.A. Juries

ST. LOUIS — (for the National Council on Schoolhouse Construction)

N. L. George, assistant superintendent of schools, Oklahoma City; George Engelhart, of the Missouri State Department of Education; and Earl A. Stone man, of the University of Nebraska;

(Continued on page 292)


Chief State School Officers replying to a Record query on the need for school building facilities testified three to one that there has been no reduction in the estimates of classrooms needed in their states to erase current backlogs and to keep up with estimated enrollment increases and replacement requirements over the next five years. One fourth of those replying said their needs have, in fact, increased. Of the fourth who did report at least a slight decrease, all denied any lowering of educational standards was implied; most reported legislative action to raise local bonding limits had helped spark local school programs — some, apparently, spurred on by fear of Federal aid.

104,000 Classrooms a Year

The Record's query was suggested by the confusion which arose from testimony of Secretary of Health, Education and Welfare Oveta Culp Hobby before the House Committee on Education and Labor that the prospective classroom deficit by the academic year 1959-60 would be 176,000 classrooms rather than, as previously estimated, 407,000. The lower deficit figure is based on what Mrs. Hobby in her testimony described as "the new State figures of estimated need" and the assumption that the current construction level of 60,000 classrooms a year will be maintained over the next five years. To put it another way, Mrs. Hobby was saying that 476,000 classrooms are needed by 1959-60, and that 300,000 may be built. A construction rate of 104,000 classrooms a year for each of the next four years would be required to erase the deficit.

Needs or Plans?

But Mrs. Hobby's statement has been widely challenged as misleading; the argument is that she was "comparing the incomparable." She was, in fact, comparing estimates by the states in Phase I and Phase II of the School Facilities Survey begun in 1951; and while Phase I required participating states to estimate their classroom needs for the year beginning September 1952, the Phase II figures are simply planned program — not what the States think they ought to do ideally to meet their requirements, but what they believe they can do.

Looking at need rather than program, the U. S. Office of Education has estimated 50,000 classrooms a year are needed to absorb the expected increases in school enrollment (some 1.5 million a year), 20,000 a year for replacements (obsolescence, calamity, population shifts); the present deficit is estimated at 300,000, and to eliminate this by 1959-60 would require another 50,000 classrooms a year. This approach produces a total of 120,000 a year, or double the present rate of construction.

Most of the shortage is concentrated within a few states, according to recent testimony of Commissioner Samuel Brownell before the House Education and Labor Committee. On the basis of data from 34 states, more than half the shortage reported is found in eight states.

Classrooms to accommodate current and expected enrollment increases appear to be the greatest overall need; about 60 per cent of the overall shortage is of this type. The other 40 per cent is for replacement of unsafe or otherwise unsatisfactory school buildings, or abandonment of existing schools as part of a school consolidation program.

Not surprisingly, the shortages are concentrated, in most states, within a few districts — those which have had large and rapid growth. As examples, Dr. Brownell has noted: "California, with a 74 per cent increase in school age population between 1940 and 1952, had 88 per cent of the classroom need concentrated in its metropolitan areas. Similarly, in Florida, with a school age population increase of 50 per cent, nine counties account for 61 per cent of the classroom need. In Oklahoma, where school age population dropped 14 per cent between 1940 and 1952, over one half of the classroom shortage is in two counties — counties which have experienced a heavy growth in the same period. In Maryland, about three fourths of the classroom needs are in Baltimore and the four counties adjacent to Baltimore and the District of Columbia." In general the picture reflects population shifts from central to western states, from city to city, and from the cities themselves to "fringe" areas.

Most States Would Like to Know:

WHAT "DECLINE" IN SCHOOL NEEDS?

STATE SCHOOL OFFICERS SAY:

(Excerpts from some of the responses to the RECORD's telegraphic inquiry to chief state school officers in all the 48 states)

Alabama—"Alabama has no decline in school needs." — A. R. Meadows, State Superintendent of Education.

Arizona—"Question accuracy of figures showing decline from 407,000 to 176,000." — C. L. Harkins, Superintendent of Public Instruction.

Arkansas—"Decline in estimated deficit classroom in Arkansas is due to the reevaluation of present structures to be rehabilitated. . . . No educational standards lowered." — Joe Killbury, School Building Consultant, State Department of Education.

California—"California has made no downward revision." — Roy E. Simpson, Superintendent of Public Instruction.

Colorado—"Estimated deficit in needed classrooms reported in Phase Two of the School Facilities Survey for Colorado has not decreased." — Burton E. Taylor, Assistant Commissioner, State Department of Education.

Florida—"If present enrollment growth rate continues, Florida's estimate of classroom needs . . . will prove too conservative. Most current construction is being financed by debt financing. Many counties have reached their constitutional limitation on bonds. Therefore the current rate of construction cannot be maintained in Florida under the existing methods of financing." — Thomas D. Bailey, Superintendent of Public Instruction.

Georgia—"No reduction in 1960 classroom deficit for Georgia. Estimate is low, since based on 1951-1952 average daily attendance." — Allen C. Smith, Director of Division of Staff Services, State Department of Education.

Indiana—"As far as Indiana is concerned, there is a greater classroom deficit now than when the first report was made to the U. S. Office of Education in December of 1952. This stands to reason since in recent years we have not been building enough classrooms to meet our year-to-year needs. . . . Since there is a reduction deficit for the United States from 407,000 to 176,000, it seems it would only be possible if many states revised their original estimates downward. As stated above, estimates for the State of Indiana increased. It could be that other states have scaled their needs downward by changing the standards used in determining classroom deficits. . . . If this is the answer then it may be that other states have done a lot more about their classroom shortages than Indiana has done in the past three years but it is hard to believe that they have done enough to reduce the anticipated shortage by 1960 from 407,000 to 176,000." — Wilbur Young, State Superintendent of Public Instruction.

Iowa—"National report showing decline in estimated 1960 classroom deficit not applicable in Iowa." — J. C. Wright, Superintendent of Public Instruction.

(Continued on page 329)
The State of Construction
This month the (by now) usual story of new all-time records—for the latest month reported by F. W. Dodge and for the year to date—has a footnote which may or may not be significant: though it hit a total of more than a billion dollars, and was the second biggest monthly total ever reported by Dodge for the category, residential construction in May registered the first month-to-month decline since November. Details on page 338.

Hospital Exhibits Invited
All registered architects are invited to submit hospital or other health facilities projects for the architectural exhibit at the 57th annual convention of the American Hospital Association September 19-22 at Atlantic City. Entry forms, due August 1, from: A. H. A., 18 E. Division St., Chicago.

In Caracas in September
The Ninth Pan American Congress of Architects will be held in Caracas September 18-26, not this month as previously announced (earlier it had been scheduled for March of this year). The "topic" for the Congress is "The Social Function of the Architect; Architect and Planification," and this will consist of the following items: main theme—"Integral Planification of the Living Spaces"; sub-theme—"Living, Education, Assistance and Recreation" (economical, social and technical aspects studied in relation to the "familiar group"); and a "free theme." Complete information on travel and living arrangements for the Congress is available from the Commercial and Convention Travel Department of the American Express Company, 65 Broadway, New York City.

The Photographers Win
Three Awards of Merit in the first annual exhibition of architectural photography sponsored by the American Institute of Architects went to Morley Baer, Berkeley, Cal., for photograph (1) of U. S. Navy Postgraduate School of Engineering, Monterey, Cal. (Skidmore, Owings & Merrill, Architects; Walter A. Netsch Jr., Associate Architect), "best exterior"; Phil Fein of San Francisco for view (2) of Olivetti Showroom and Offices, San Francisco (Leo Lionni of Fortune Magazine, Designer), "best interior"; and Erwin G. Lang of Los Angeles for his photograph (3) of Clothing Factory, Mexico, D. F. (Felix Candella, Architect), "most imaginative photograph." The exhibition, consisting of 35 black and white photographs selected from submissions by professional architectural photographers, will tour the country under the auspices of the Traveling Exhibition Service of the Smithsonian Institution. Selections for both exhibition and awards were made by Beaumont Newhall, curator of George Eastman House, Rochester, New York.

Copyright by Morley Baer 1955
THE RECORD REPORTS:
MEETINGS AND MISCELLANY

(Continued from page 15)

Honors

Sir Patrick Abercrombie of London, 1950 A.I.A. Gold Medalist, has been awarded the Gold Medal for 1955 of the British Town Planning Institute.

Edward D. Stone of New York was the 1955 recipient of the Medal of Honor of the New York Chapter of the American Institute of Architects. Mr. Stone, who received the award at the Chapter's 86th anniversary meeting, was cited as "distinguished designer of buildings and inspiring teacher."

Roy F. Larson, architect and president of the Philadelphia Art Commission, received the 1955 Philadelphia Art Alliance Medal of Achievement. Mr. Larson, a member of the Philadelphia firm of Harbeson, Hough, Livingston and Larson, was honored for his long crusade for restoration of the area around Independence Hall in Philadelphia which has culminated in the Independence Mall development now well under way.

IN THE HEART OF THE CITY, ROOM FOR A CAMPUS

New York's famed experiment in adult education, the New School for Social Research, has announced plans for a $2.5 million expansion program to include an eight-story addition to the present building, a new four-story library and office building, and a miniature campus in the form of a central court planted with trees and shrubbery. The annex, which will get under way this fall, will be set back from the street to make room for a small garden at the entrance. Funds are still needed for the library. New School President Hans Simons notes that the new program will provide "the first real home for the education of adults"; architects Mayer & Whittlesey are asked to embody in their plans the best of what the New School has learned about the needs of adult education since the present building was put up in 1930 — "a building to house an ideal," as its architect, Joseph Urban, described it.

Dr. D. B. Steinman, New York consulting engineer and bridge designer, has been awarded the International Grand Prize of Invention for his inventive and scientific contributions and achievements in the design and construction of bridges. Doctor Steinman, designer of such noted spans as New York's Henry Hudson Bridge, the Thousand Islands International Bridge and the $100 million Mackinac Bridge now under construction in Michigan, is the first recipient of the award, established by the Permanent Committee of the Grand Prix International de l'Invention, an organization founded in Paris in 1954 by representatives of national and international organizations of scientists and inventors.

First place winners in the Second Annual Award of Merit Contest sponsored by Wood Working Digest are the Architectural Woodwork Institute, Dependable Machine Company, West Coast Lumberman's Association, College of Forestry of the State of New York and Mississippi Products Inc. Honorable Mention: The Borden Company, Elliott Bay Lumber Company, Hardwood Dimension Manufacturers' Association, Western Red Cedar Lumber Association, Michigan College of Mining and Technology, and Wood Office Furniture Institute. Awards were to be presented at the annual luncheon of the Forest Products Research Society June 21 at the Olympic Hotel in Seattle.

Education Notes

Emil C. Fischer has been named to succeed Paul Weigel as head of the Department of Architecture and Allied Arts of Kansas State College, Manhattan, Kans., effective July 1. The new head of architecture has been professor of architecture in charge of senior design courses at Ohio State University. Professor Weigel retires after 31 years as head of the department; he is being honored by establishment of the Paul Weigel Foundation to provide scholarships to worthy students interested in careers in architecture. The Foundation will be administered by the Kansas State Endowment Foundation.

Harlan E. McClure, professor of architecture at the University of Minnesota since 1952, has been appointed professor and head of the department of architecture at Clemson College, effective July 1.
HEAVY DUTY UNIT LOCKS

TITAN DESIGN NO. 767

900 SERIES UNIT LOCKS

a smaller UNIT lock designed for schools, hospitals, commercial, industrial, and public buildings

CRESTWOOD DESIGN NO. 905

P. & F. CORBIN Division
The American Hardware Corporation
New Britain, Connecticut

ARCHITECTURAL RECORD JULY 1955 19
Any retrospective look at George Howe's accomplishments must recall, as the Record's pages do, not only his long and diversified career but the dramatic conversion which made him one of the most effective and distinguished pioneers in the battle for modern architecture in America. Having started his professional life in the ranks of eclecticism, he broke with it and took his own gifts and the enthusiasm of a convert into his roles of architect, government planner and teacher.

Mr. Howe, who died April 16 in Philadelphia at the age of 68, received his education at Groton, Harvard (Class of 1908) and l'Ecole des Beaux Arts (1908 to 1913).

As an Architect

His work first appeared in the Record shortly after his return from Paris, when the magazine published the interiors of his own house in Philadelphia (November 1914), designed during his brief association with Furness, Evans & Company.

In 1916 Howe became a partner in the Philadelphia firm of Mellor & Meigs. As Mellor, Meigs and Howe, the firm had a long and thriving practice as designers of country houses, one of which was once described in the Record as "a perfect English type, with a certain suggestion of the old French Gothic house adapted to conform to all our complex modern requirements." Although Howe himself was later scornful of this period of his work (he once dubbed it "Wall Street Pastoral"), the small houses of Mellor, Meigs & Howe were among the pleasantest of their kind.

It was during this period that Howe built his own house, sold in 1928 when he renounced traditionalism and eclecticism and left Mellor and Meigs to set up his own office for the practice of contemporary architecture.

(Continued on page 300)
CUPPLES PRODUCTS CORPORATION USES

Alcoa Architectural Colors
in Multistory Curtain Wall

A leader in curtain wall design, fabrication and erection, Cupples Products Corporation adds the beauty of color to aluminum "skin" construction of a multistory building. The spandrel panels of Alcoa® Aluminum Sheet, fabricated by Cupples for the Henry C. Beck Building in Shreveport, La., are finished in Alcoa Architectural Blue 3020.

One of a range of Alcoa Architectural Colors now available, the new finish is not paint or enamel, but an integral part of the aluminum surface. It is the result of an electrochemical process developed by Alcoa after years of experimentation and testing.

In addition to the spandrels, Alcoa Aluminum has been chosen for the column covers running the height of the building and extrusions for all windows, mullions and panel frames.

For additional information about Alcoa Architectural Aluminum, call your local Alcoa sales office. You’ll find the number listed under “Aluminum” in your classified directory. ALUMINUM COMPANY OF AMERICA, 1888-G Alcoa Building, Mellon Square, Pittsburgh 19, Penna.
$20 BILLION A YEAR FOR 10 YEARS NEEDED TO MEET
STATE-CITY PUBLIC WORKS BACKLOG, STUDY FINDS

A recent Bureau of Census survey showed 71,639 non-Federal public works projects costing an estimated $25.3 billion in various stages of planning by state and local governments. All of these could not be built quickly — only $7.6 billion was at or beyond the drawing board stage — but if they were to be constructed, the projects would constitute little better than one year's need on the basis of a new study recently completed by the Department of Commerce.

Projecting the basic need for these non-Federal public works over the next decade, the Commerce publication Construction Review found the current rate of construction of new highways, schools, hospitals, water and sewer facilities, and like state and local public works far below what it should be to catch up to known requirements. States and their communities would have to spend around $20 billion annually for each of the next 10 years to fill the estimated need; they now are spending $8.5 billion in terms of work put in place. That was the figure for the record-breaking year of 1954.

Said Construction Review: "Expressed in terms of 1954 construction costs, the huge 1955-61 construction requirement is equivalent to nearly four times the amount of non-Federal public works construction put in place during the past 10 years, and one third more than total construction volume for these types in the past 35 years."

Severe community problems loom during the next decade if these deficiencies are not erased, the Review commented. Meanwhile, the backlog constitutes "a strong stabilizing force for the economy" during the 10 years ahead.

It was noted that the marriage boom in 1965-75, reflecting the baby boom of 37 million births in 1945-54, implies an even greater demand for housing and for new community facilities than is presently evident. Long-run stability dictates that extensive efforts should be made to overcome the deficiencies during the decade when new family formation will continue at comparatively moderate rates, said the Review.

The article treated category needs in some detail. Here are excerpts:

Schools — The Office of Education estimates that school building requirements will total $41.5 billion between September 1954 and September 1964. About $31 billion will be needed for increased capacity and replacement of elementary and secondary schools — including private and parochial classrooms. The remainder of $10.5 billion will be required for college and university construction. For the period 1954-59, project plans to meet public school needs have been reported by 35 states. A national need for school facilities costing approximately $16 billion is estimated from information furnished by states to the Office of Education. To this figure is added approximately $2.2 billion to cover private and parochial needs, assuming that these constitute 12 per cent of total elementary and secondary needs (based on the proportion of total enrollment). This gives a total of $18.2 billion to meet public and private needs by 1959.

For the period 1960-64, the cost of needed elementary and secondary school facilities, public and private, is estimated by the Office of Education at $12.8 billion. This estimate includes the cost of schools needed for increased enrollment and for replacement of obsolete buildings and those lost by fire, etc.

In addition to the construction requirement for elementary and secondary schools, a substantial program of college and university construction is required for the next 10 years. Total higher education construction needs by 1965 are estimated by the Office of Education to be $12.5 billion, of which approximately $6 billion represents current deficit. The total requirements figure has been reduced by $2 billion, to $10.5 billion, to omit dormitory and other student housing needs.

Hospitals — Civilian hospital bed requirements as of January 1, 1955, as reported in state plans to the Public Health Service under the provisions of the Hospital Survey and Construction Act, totaled 838,000 beds. Existing acceptable beds totaled 1,009,000. Of the additional 838,000 beds needed, the breakdown by type of bed was: general, 193,000; mental, 352,000; chronic, 272,000; and tuberculosis, 21,000. This current backlog of needed hospital construction would involve approximately a $13.5 billion expenditure. Allowance for obsolescence and population growth over the next 10 years would indicate requirements of close to 450,000 additional beds, at a cost of about $7.5 billion, bringing total estimated civilian hospital needs for the 1955-64 period to $21 billion.

The construction of health centers, clinics, asylums, old people's and children's centers, and similar institutional projects normally account for about five per cent of all hospital and institutional construction. Recent reports from the states as to the prospective volume of work pending and eligible for Federal assistance under 1954 amendments to the Hospital Survey and Construction Act indicate a substantial increase in the rate of building in these categories. Pending further study of the long-term effect of expanded Federal aid in these fields the historical relationship has been used in this presentation even though it is probably low. Thus, a requirement figure of $1 billion has been added to cover such facilities, bringing total hospital and institutional construction needs to $22 billion.

Water and Sewerage Works — Construction needs for water and sewerage works over the next 10 years have been estimated at $25 billion by the Water and Sewerage Industry and Utilities Division of the Business and Defense Services Administration of the Department of Commerce. The total current backlog of needed work amounts to $10 billion; new construction for growth requirements, $9 billion; and construction to offset obsolescence occurring during the next 10 years, $6 billion.

Other Public Works — No independent estimates are available on con-

(Continued on page 318)
NOW!

COMPLETE SCHOOL WALL

READY TO INSTALL

Arnold-modular-built, finished inside and out, complete with lifetime Arnold Aluminum windows or jalousies, blackboards, continuous extruded aluminum chalk rails, display cases, ventilating louvers and rugged, lightweight 4-foot modular doors.*

Panels* used in Arnold School Walls have extraordinary strength in relation to weight, provide "U" factors in excess of conventional construction, and complete a wall unit so light 2 men can enclose an average building in 3 days. Panel exterior may be any color porcelain enamel or any pattern aluminum sheet, either mill finish or anodized (plain or color). Interior may be porcelain, aluminum, tack board, chalk board or peg board.

Arnold School Walls are the answer to construction speed in today's essential school program . . . and there's no maintenance, ever!

Unlimited Variety of Arrangements to Your Specifications

Panel Display Case Panel Panel Window Door Window Jalousie Panel Window Panel Louvers Panel

Black Board on Panel

Louver Jalousie Panel Panel Louvers Window

Write or wire for the name of your Arnold man today!

*panels and doors supplied by Panelfab Products, Inc.

ARCHITECTURAL RECORD JULY 1955 25
1955 MASSEY COMPETITION SCHEDULED FOR NOVEMBER

The Massey Medals for Architecture will be awarded for the third time in November of this year, it has been announced by the Royal Architectural Institute of Canada, which administers the program founded in 1950 by the Massey Foundation. The medals are awarded “every second or third year depending upon the amount of building activity in Canada”; previous presentations were made in 1950 and 1952.

The awards include 15 silver medals to be presented to the best entry in each of the categories, and a gold medal to be given to the best entry in the competition. Winners and other entries will be displayed at the National Gallery of Canada and will be sent on a touring exhibition.

Entries, which are due by October 18, may be submitted by any architect registered in Canada; Canadian buildings completed and occupied for the first time since 1945 are eligible.

Entry forms and further information are available from R.A.I.C. Executive Offices, 88 Metcalfe St., Ottawa 4.

(Continued on page 30)

CURRENT INDUSTRIAL BUILDING IN CANADA includes a research laboratory for Johnson & Johnson Ltd., now under construction at Montreal, designed by architects McDougall, Smith & Fleming; and a newly completed factory for Continental Can Co. of Canada Ltd. at Burnaby, B. C., by architects McCarter, Nairne & Partners

NEW DEVELOPMENT AT DON MILLS TO PROVIDE 120 THREE-BEDROOM HOUSES FOR RENTAL

Believed to be the first such project in Canada, a block of 120 three-bedroom houses, all intended for rental, got under way recently at Don Mills. Planning of the development followed a six-months study of similar projects in the U. S.

The houses, each of which will have private garden space, are being built in four- and six-house units, and have been designed both as two-story and split-level types. (Cut 1: a section of a split-level unit; Cut 2: elevation of one of the two-story, six-house units; Cut 3: model of over-all site development.) Architects Henry Fleiss and James A. Murray, Toronto, designed the project for Roy P. Rogers Enterprises Ltd.
Thousands of dollars

Central control room is key to more efficient temperature control

The new era of electronic efficiency and comfort is coming of age in the southwest. Completion of the new home of the Second National Bank of Houston sometime next year will mark an important step in this era.

The reason for the new efficiency in the Second National Bank is the master control center. Here, a single operator has his finger tips control over temperatures throughout the 24-story building.

The reason for the new comfort is the flexibility and fast response of the electronic controls. The purpose is to create for the client a more productive environment where people feel, think, and work more energetically and efficiently.

Strategically placed Honeywell thermostats will compensate for every possible occupancy, exposure and use comfort factor. The thermostats concealed in ducts will control 318 individual comfort zones, making the new building super-comfortable for employees, clients and tenants.

The techniques used in solving these comfort problems can help you provide the Indoor Weather required for your clients' facilities— for a Honeywell Electronic Customized Temperature Control installation is designed to fit the needs of the building and its occupants.

For comfortable, more productive temperature in new or existing buildings—of any size—specify

Honeywell Electronic Temperature Control

Whether it's a bank, office, church, school, motel, hospital, actory—any building of any size—new or existing, flexible Honeywell Electronic Customized Temperature Control can help meet your clients' heating, ventilating, air conditioning and industrial control problems.

Your clients have more comfort, efficiency and maintenance economy—and they'll save fuel, too.

For full facts on Honeywell Electronic Customized Temperature Control, and the economical Honeywell Periodic Maintenance Plan, call your Honeywell Office. Or write Honeywell, Dept. AR-7-76, Minneapolis 8, Minnesota.

Master Control Center gives quick service to tenants and reduces daily building operating costs.

Proudly displayed before the public on the first floor of the building will be the master control center. The Colorgraphic panel at the rear shows at a glance and records the operating conditions of the basic heating and air conditioning plant, to insure peak efficiency and economy.

A single operator can maintain complete control over the entire heating and cooling system. On his desk, he can read the temperature at 318 key points throughout the building. At the panel on the right, he can adjust any of these temperatures to suit the individual's exact requirements. Ventilation in any area can also be adjusted for maximum economy and comfort.

With this master control center, maximum service is given to the building occupants at a minimum cost. Many thousands of dollars are saved by eliminating trips through the building to check temperatures and adjust thermostats. Only Honeywell can provide this coordinated electronic control and recording system.

For comfortable, more productive temperature in new or existing buildings—of any size—specify

Honeywell Electronic Temperature Control

Without Honeywell Electronic Control, 318 check points
318 points would have to be checked at the thermostat.

With Honeywell Electronic Control, 1 check point
An operator at a panel will be able to check and adjust all 318 remotely.

Honeywell

Electronic Controls

Minneapolis

112 offices across the nation
NEW BRUNSWICK OFFICERS NAMED AT YEARLY MEETING

Convening recently at Saint John for its annual meeting, the Architects Association of New Brunswick elected Neil Stewart of Fredericton to the presidency. Other officers include Stanley Emmerson, Saint John—immediate past president; Rolph Duschenes, Saint John—vice president; H. Claire Mott, Saint John—secretary-treasurer; and Douglas W. Jonsson, Fredericton—councillor.

A NEW ANSWER TO A PROBLEM AS OLD AS THE SUN...

Modern Vent Solar Shades

LOUVERS ARE MADE THREE WAYS:

1. ALUMINUM AIR-FOIL LOUVERS
2. ALUMINUM FACED HONEYCOMB CORE
3. INDESTRUCTIBLE FIBERGLASS

All three available for vertical installation.

MODERN VENT LOUVERS are controlled from the INSIDE of the room by a FINGER-TIP controlled ROTO-OPERATOR, providing control of sun and glare. Harmful sun rays are filtered out—restful, diffused light enters.

Modern Vent is a practical, direct approach to your needs, combining sun and storm protection with distinctive design.

SUPERIOR WINDOW CO.

For Complete Details, write to: SUPERIOR WINDOW CO., 5300 N. W. 37th Ave., Miami, Florida

Spruce Cliff Apartments, at Calgary, Alta., were designed by architects Rule, Wynn and Rule, of Calgary.

TORONTO CHAPTER HOLDS ITS ANNUAL CONVENTION

Concentrating much of its attention on building and zoning problems in Toronto, the Toronto Chapter of the Ontario Association of Architects met late in May for its annual convention.

Committee reports included one from the Toronto Building Bylaw Committee on progress made in establishing a Joint Committee for Metropolitan Toronto, composed of representatives of the municipalities and of professional and trade organizations, to secure the adoption of the National Building Code as the official building bylaw for the area.

The Zoning Bylaw Ruling Committee reported its efforts to prevent “spot re-zoning,” an expediency, the report said, which would be unnecessary if the original zonings were established with foresight.

The new executive officers, who will elect officers from their own number, are George Whale, R. G. Calvert, George Abram, Rolph Smyth, James Craig and Loren Oxley.

HOUSING NOTES

The Central Mortgage and Housing Corporation announced in the most recent issue of its quarterly Housing in Canada that the 1954 total of mortgage loans for housing construction was a record figure: $632 million, against the $374 million total for 1953. Banks, for
THEIR SERVICE ENTRANCE EXAMS?

FULL-POWERED

AT LEAST 100 AMPERES, 120/240 VOLTS

The modern, "Full-powered" house has an electrical capacity of 24,000 Watts — enough power for home lighting and plug-in appliances PLUS the major appliances listed on the right.

- Automatic Washer: 700 watts
- Dishwasher — Waste-Disposer: 1500 watts
- Waste-Disposer alone: 500 watts
- Electric Clothes Dryer: 4500-9000 watts
- Water Heater: 2000-4000 watts
- Home Freezer: 350 watts
- Water Pump: 700 watts
- Built-in Heaters: 1000-1650 watts
- Room Air Conditioner (3/4 ton): 1200 watts
- Room Air Conditioner (1 ton): 1540 watts

ENOUGH FOR THE HOUSES YOU PLAN TODAY!

wired home of today into the underwired home of tomorrow!
Avoid this! Plan your homes with an accent on sound, adequate wiring — your clients will appreciate your foresight in bringing them a home that will stay modern for years!

Free Home Wiring Wall Chart! Send today for Kennecott's handy wall chart showing typical home circuit loads. Use it as a check list when planning home electrical systems. For your copy, write Kennecott Copper Corp., 161 E. 42nd St., New York 17, N. Y.

Kennecott Copper Corporation
Fabricating Subsidiaries: CHASE BRASS AND COPPER CO. • KENNECOTT WIRE AND CABLE CO.
Architecturally... Structurally CORRECT!

In this service shop building, the design and construction of the 25 required doors were of primary importance. Architectural design demanded a large amount of glass area and narrow columns between the doors. Sturdy tubular construction was employed to provide the necessary structural strength and, to eliminate counterweights on the columns, hoist operators were used. The result...a facade of doors of excellent appearance and built for long, dependable service.

Byrne Custom Turnover Doors are manufactured for openings up to 25 feet wide by 25 feet high. Standard Turnover Doors are furnished for openings up to 14 feet wide by 14 feet high. Requiring no more than two feet of head room above the lintel, in open position these doors project back into the building slightly more than half of the door opening height. All are constructed with wedge tight weathering and are equipped with safety operators with integrally mounted, self-adjusting limit switches.

This FREE Catalog provides complete information on the various types of Byrne Doors built for industrial buildings and aircraft hangars. Write for your copy or refer to it in Sweet's.

BYRNE doors, inc.
1603 E. 9 Mile Road, Ferndale, Detroit 20, Mich.
101 Park Ave., New York 17, N.Y.
Casrfitz Bldg., Washington 6, D.C.

THE RECORD REPORTS
NEWS FROM CANADA
(Continued from page 32)

OBITUARIES

John M. Kitchen, of Ottawa, who was a co-director of the National Capital Planning Service, and had been since 1921 secretary-treasurer of the Town Planning Institute of Canada, died recently. Mr. Kitchen was a member of the Council of the Institute of Professional Town Planners and of the Advisory Committee to the Ottawa Area Planning Board. He was also a founder and a member of the council of the Community Planning Association of Canada, and for the past nine years had served as the provincial government appointee to the Registration Board of the Ontario Association of Architects. From 1919 to 1940 he was supervising architect for the City of Ottawa.

Prof. Jules Poivert of Montreal died recently at the age of 88. From 1910 to 1952 he had served first as dean of architecture at l'Ecole Polytechnique and later in the same position at the Ecole des Beaux-Arts. Professor Poivert was also an accomplished musician, and had studied under César Franck.

Walter Seymour Allward, Canadian sculptor and sometime carpenter, brickmaker and architect, died recently. He is remembered for his monumental sculpture, and particularly for the Vimy Ridge Memorial, dedicated to the Canadian dead in World War I.

Mr. Allward, who had been made an honorary fellow of the Royal Architectural Institute of Canada, was the father of architect Hugh L. Allward of Toronto. (More news on page 38)

Contracts Awarded: Comparative Figures*

<table>
<thead>
<tr>
<th>Year</th>
<th>275</th>
<th>250</th>
<th>225</th>
<th>200</th>
<th>175</th>
<th>150</th>
<th>125</th>
<th>100</th>
<th>75</th>
</tr>
</thead>
<tbody>
<tr>
<td>1955</td>
<td>JFMAMJJASOND</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Compiled by the editor and staff of The Building Reporter, from information collected by MacLean Building Reports
Comfort could have been a real problem in this remarkable school. The size of the building itself is a factor... so are the large glass areas... widely varied room sizes... exposure... changing occupancy levels. A busy program of social, athletic and other extracurricular activities is another important consideration.

But comfort isn’t a problem, and never will be, thanks to a pace-setting system of Johnson Automatic Temperature Control engineered to meet the exact needs of this building and its occupants.

Equally important, the special economy features of Johnson Dual Control make it possible to provide the finest in individual room temperature regulation at a large saving in fuel costs. The accompanying plan shows how.

You can easily insure the same degree of comfort and economy for your clients’ buildings that Johnson has provided for this and thousands of other outstanding buildings of all types and sizes. Remember, Johnson brings to each job over 70 years’ experience in solving every conceivable type of temperature control problem—more specialized experience than anyone else!

Why not take advantage of this experience? A nearby Johnson engineer will gladly make recommendations for your next building without obligation. JOHNSON SERVICE COMPANY, Milwaukee 2, Wisconsin. Direct Branch Offices in Principal Cities.
Traditional school building gets sound-conditioned modern wing

In adding to the twenty-year-old Springfield School in Delaware County, Pa., architect Harry G. Stewart joined a new, modern high school wing to an existing junior high of traditional design. His choice of modern design and materials for the new wing kept costs down to 95 cents a cubic foot and provided a more efficient, functional layout than that of the original building.

Many noise-centers in the new addition, including a band rehearsal room, auditorium, and cafeteria, made sound conditioning vital to the architectural plan. To quiet the distracting sounds of footsteps and voices of 1450 students, two of Armstrong's acoustic ceiling materials—Travertone* and Arrestone—were installed throughout the new wing.

In the cafeteria, classrooms, library, and lobby, Armstrong Travertone absorbs up to 80% of the sound that strikes it. Travertone, a handsomely textured, mineral wool tile, is completely incombustible and requires only simple maintenance to stay new looking for years. Its light-reflective white paint finish can be washed or repainted whenever desired.

Metal-pan units of Armstrong Arrestone in the band room help prevent the build-up of distracting noise levels by reducing the reverberation of sound. Arrestone soaks up as much as 85% of sound and is quickly installed by conventional suspension methods. Upkeep is easy and economical, too.

Easily cut and fitted to any shape, Armstrong Travertone is readily installed with lighting and ventilating fixtures. In this school lobby, the Travertone ceiling soaks up the sounds of footsteps and voices, prevents them from bouncing off the many hard surfaces and building to disturbing noise levels.

Proper acoustics in the band room are provided by acoustical ceilings of Armstrong Arrestone. The smooth, white paint surface of Arrestone's metal-pan units can be washed or repainted as often as needed. Installed by mechanical suspension, individual units of the Arrestone ceiling can be readily removed for access to concealed piping and wiring.

Completely fireproof, Armstrong Travertone's mineral wool composition adds a measure of fire-safety to the school cafeteria. The quiet promoted by the Travertone ceiling makes meals more enjoyable, too. Moderately priced, Travertone helped keep construction costs of the new wing down to 95 cents a cubic foot.
Use only VISQUEEN under the concrete slab. This permanent moisture barrier actually costs less in place than inferior, non-permanent types. Widths to 20 feet for economical handling. Get better protection and save on every house you build! For details, clip coupon, attach to your letterhead and mail.

**important!** VISQUEEN film is all polyethylene, but not all polyethylene is VISQUEEN. Only VISQUEEN, produced by process of U.S. Patents No. 2461975 and 2632206, has the benefit of research and resources of The VISKING Corporation.

VISQUEEN® film... a product of
THE VISKING CORPORATION, Box AR7-1410
Plastics Division, Terre Haute, Indiana
World's largest producers of polyethylene sheeting and tubing
In Canada: VISKING Limited • Lindsay, Ontario
In England: British VISQUEEN Limited • Stevenage

Name ____________________________
Title ____________________________
Products ____________________________
THE OPAL ON THE CHARLES

By Edward Weeks, Editor, The Atlantic Monthly

The Massachusetts Institute of Technology to whom one looks for the latest word in science has just unveiled the latest novelty in the field of the humanities. The Kresge Auditorium, a festival hall on the banks of the Charles River, the gift of the Kresge Foundation, will have a lasting effect on the life of the Institute; with its combination of little theatre, large concert-hall-auditorium and rehearsal rooms, each beautifully self contained, it will call forth such a yearly program of drama, music, speaking (and television) as M.I.T. has never participated in before.

Every university in the country ought to possess these facilities and few do. The closest Harvard ever came to having a little theatre of its own was in the early 1920's when Workshop 47 under Professor George Pierce Baker was attracting budding playwrights like Edward Sheldon, Eugene O'Neill, Philip Barry, S. N. Behrman and Sidney Howard to Cambridge. Baker had raised the money — his little theatre would have cost $150,000 then — but President Lowell would not permit the funds to be collected; he thought there were worthier projects. So Harvard has no stage. When people come to hear Mr. T. S. Eliot deliver the Charles Eliot Norton Lectures they crowd — those who get there early enough — into the musty cheese box of the New Lecture Hall (new when I was in short pants). And when Harvard gathers to hear the Boston Symphony or to confer an Honorary Degree on Sir Winston Churchill indoors the audience stuffs itself into Sanders Theatre, a theatre in name only, which looks like an Elocution Room designed by the inventor of the jigsaw. You never saw such fretwork, and that is all you see; the light is dim, the seats hard. Only the hearing is good. If you detect envy in these remarks, it is there all right, for speaking as a Harvard man this is only one of several instances where I had admired and envied the initiative of M.I.T.

The most memorable feature of M.I.T.'s architecture is the great, central cement dome rising above the massive walls and softly illuminated by night. When Bostonians look westwards across the Esplanade this is what they see. It was a national novelty when it was built in 1906 and has been a landmark ever since. So it was natural and fitting that when Eero Saarinen came to design the new Auditorium he should think in terms of a shell concrete dome. The dome is one eighth of a sphere, pinned down, anchored at three points on heavy sunken abutments and then the dome cut away between these points to allow for the rising, segmental glass walls. The building covers about half an acre. Seen by night, with the lights within, it is an opal; by day it suggests one of those curved white hats the ladies have been affecting this spring, or, less elegantly and to the critics, it suggests a diaper. In the married students are housed directly behind the Auditorium it might be that Mr. Saarinen had this symbol in mind, though I doubt it. The opal, the white hat, or the diaper depending upon your point of view.

As you enter the airy glass-enclosed foyer you are on the level midway between the main auditorium and
Kresge Auditorium, Massachusetts Institute of Technology
Eero Saarinen and Associates, Architects
Anderson & Beckwith, Associate Architects
Ammann & Whitney, Structural Engineers
Hyde & Bobbio, Mechanical and Electrical Engineers
Bolt, Beranek & Newman, Acoustical Engineers
George A. Fuller Company, General Contractors

THE OPAL ON THE CHARLES
By Edward Weeks

voices that come from the stage. It is a big stage, some forty-five feet across, and deep enough to seat an orchestra of 250 pieces as well as the dignitaries who assembled for the Dedication. They spoke well and were heard with ease.

The single voice and the solo instrument are beautifully accented, but it is still a question of how true a blend we shall get from the full orchestra. Commenting on the performance of Haydn’s “Creation,” performed by soloists, chorus and orchestra, Rudolph Elie, the music critic of the Boston Herald, wrote: “Acoustically, the auditorium’s properties are inexorably naked, exposing a high fidelity quality equal to if indeed not exceeding that of London’s Festival Hall. . . .” And he went on to add: “. . . it is very evident it will not be kind to the amateur, the dilettante or the improperly rehearsed professional as it reveals the slightest flaw while enhancing the auditory response.” Trust an engineer to be exacting.

Lighting is the second imperative, and here as a speaker I think I have suffered every gradation from lecterns whose little bulb had long ago expired (fortunately I seldom use notes) to that vast hall in Minnesota where I spoke with footlights playing on my face against a backdrop of (artificial) falling snow. I was told to stand in one place and not to use my hands when I talked, for if I did, I should cut off the beams. Since it was impossible for me not to use my hands I kept blacking out myself and soon the house lights were turned on. I remember seeing Edna St. Vincent Millay begin her Reading in a badly lighted hall by brightening up her evening dress and making her way the entire length of the stage unscrewing the footlights which were too blinding.

Dr. James R. Killian, Jr., M.I.T. president, at dedication
for her to see the print. But no such embarrassment will ever afflict a speaker here at the Kresge. The lighting system is the best that engineering skill can devise, and I doubt if any playhouse on Broadway could hope to match it. Indeed, the boys are still working on it: television cameras are to be installed with a direct wire to Station WGBH, the Educational Channel for Greater Boston.

Every entertainment hall should be refreshing—this is the third imperative. Most of them are at the outset, but then the air ceases to circulate, the oxygen is depleted, and the yawning and the nodding begin. In most auditoriums of my experience the yawning increases by the square of the distance from the first number. Through long experience I seem to have acquired the endurance of a camel, but the sight of my wife fighting off sleep all through the second half of a concert is agonizing enough to make me want to leave. The air is notably fresh in the Kresge Auditorium, and thanks to its cooling system it is as fresh at the end as it was in the beginning.

Serenity is my next requirement, and serenity for the spectator depends on how you rest your spine and where you rest your eyes. The seats in both halls of the Kresge are comfortable, they tilt you back at a proper angle, and they give you knee room. But how often elsewhere, as a soliloquies drones on or you become bored listening to Strauss, have you lifted your eyes to count the light bulbs in that fantastically great chandelier, or to chase the painted cupids to their lair in the apex, or to ask yourself if the Greeks really looked like those plaster casts in the niches. The wall space can be a constant detractor in any auditorium, and Mr. Saarinen is well aware of this. He [his father?] handled the problem to perfection in the Buffalo Kleinhans auditorium, and I should say with next-to-perfection in the Kresge where the walls are of oak flooring with an accentuated line between the boards. I find these horizontals rather nerv-

ous as an eye rest. For no reason on Mr. Saarinen's part the sight of all this woodwork reminded me of our old summer cottage at Bay Head, of how damp it used to be in a Northeaster and of how the doors and drawers all stuck.

Serenity for the performer depends upon the properties I have already asked for, upon the stage which should be spacious and resonant, and backstage, upon an attractive dressing room, upon a Green Room where one can greet friends afterwards with a hot or cold drink, and upon a carpentry shop where scenery can be stored and instant repairs effected. They are all here.

The last imperative is that the hall be conveniently accessible. M.I.T. has done its best to provide a parking space in an area which is already pretty crowded. But the architect has made no concessions as yet to the rigors of the New England climate. He might as well have been building for Florida. The performer, if she be a lady in vulnerable evening dress, can be driven dryly into the basement. But the audience, some of whom may also be in evening dress, will have to slosh or run through the snow or rain which so often accompany a Boston entertainment. There is no marquee, no island where people could find shelter as their cars or taxis creep up. And while the undergraduates won't mind the exposure, their elders will.

I have said this building fulfills the functional requirements, and yet something is missing. The Little Theatre on which Winthrop Ames once lavished such care was the most intimate and responsive playhouse I have ever attended. Compared to it this is an impersonal igloo. The comparison is unfair but it points to what is missing. There is a stir and expectancy in going to the theatre—or to any performance—and warmth and light fan both. While there is plenty of light in the Kresge building, there is precious little warmth to be felt on entering this great glass cage on a May evening and there may be still less when snow is banked without and the temperature is down. The warmth I mean is not measured by the thermometer, it is kindled by people as they throng together in the lobby in anticipation. But I was conscious of a feeling of bleakness here as if even the individual had been insulated. The materials threatened to minimize the personal magic which drew you out of home: the naked brick walls of the little theatre are cold, the glass enclosed lobby is cold, and the cement which proclaims itself in the main auditorium has never

"Perhaps . . . they will generate the warmth . . ."
have been remarkable for kindling anything. If in the intermission there should be a choice between continuing with a difficult play or concert or going home to an open fire, I wonder whether the fire would not win.

“What’s the philosophy behind a building like this?” I asked one who had had to do with the auditorium.

“To enclose space at the least possible cost,” he replied.

“Did it?”

“Well, not perhaps this time, but from what we’ve learned if we had three to do each would be cheaper than its predecessor and the third would be considerably less expensive than the traditional form.”

In his address at the Dedication President James R. Killian, Jr., of M.I.T. compared the Auditorium to the early New England meeting-house. “In visualizing an auditorium for M.I.T.,” he said, “we sought a building to provide a similar nucleus for our academic community, especially for our student body. We felt it would be proper and possible to design a building which would be appropriate for worship, for academic ceremonials, for educational meetings and conferences, for music and drama, and for the maintenance of the civil life of our academic community.” I am sure that this will be so, and having had a sampling of such activity this spring I wrote to my friend John Burchard, Dean of the School of Humanities and Social Studies, asking him to give me a glimpse of what lay ahead for next year. “I know,” he replied, “that a group of very good Christmas carol singers would like to give a concert near Christmas . . . and I know that the American Academy of Arts and Sciences will meet in the Auditorium for its Franklin Anniversary in January . . . . I know our students are planning to follow up their very successful national Anti-Discrimination Conference with another conference on a serious topic and that the Auditorium will provide a wonderful place for that. The Tech Show which has had to have its auditions on the curbstone, so to speak, can now do them satisfactorily. There are more requests for nights for the Glee Club concerts and for Gregory Tucker’s Celebrities Series, these being internal to M.I.T., than we have had in past years and I think this does clearly mean an increase in the total musical activity here.

“With respect to the little theatre, I think we can simply assume that the Staff Players who have done a good job of amateur theater for a long time under very difficult circumstances will improve their performances accordingly, but it might be more amusing to think of the things that the students are likely to do under the leadership of Professor Everingham. He has a general plan, with which I certainly agree, that instead of doing Broadway successes with amateur actors a student group should try to do imaginative plays which are hard to see otherwise and which task their ingenuity with respect to all elements of production and do not limit their contribution essentially to that of trying to be actors. There was a good deal of this, I think, in Everingham’s production of “The King and the Duke” and I believe he now is planning to produce next year a play based on an unpublished movie script by Dylan Thomas which was done for the Arthur Rank Organisation but never used . . . . In this sense the kind of theatre and ballet that used to go on at the Bauhaus would strike me as the right kind to be done here at M.I.T.”

Who says scientists aren’t human? Perhaps as these sparks fly upwards they will generate the warmth I have been missing. Perhaps.

“The King and the Duke” produced in the little theatre
M.I.T. AUDITORIUM: AN ENGLISH VIEW

By N. Keith Scott

Reprinted by special permission from the February issue of The Journal of the Royal Institute of British Architects

Under the critical eye of thousands of students and staff at the Massachusetts Institute of Technology, there is slowly arising one of the most controversial buildings of our time. Eero Saarinen was commissioned by M.I.T. to design an auditorium for the school to seat 1,200 persons together with a small intimate theatre to accommodate a further 200, the site to be in the heart of the great campus, which has a superb location on the banks of the River Charles, overlooking the centre of Boston.

The choice of architect was excellently made, for in Saarinen, M.I.T. was assured of a design worthy of the highest attributes of the Institute, with its world-wide reputation for research and for demonstrating the validity of revolutionary theories. Nevertheless, it is true to say that the complete originality of the form and concept of the auditorium caught most architects and engineers (to say nothing of the layman) rather off guard, and there has been a tendency among those who should know better to cover their embarrassment in some premature and ill-informed criticism.

The main shaft of the criticism which has been levelled at this structure concerns the effrontery of Saarinen in daring to call into question the time-honoured credo of Louis Sullivan, "Form follows function." Saarinen has quite obviously challenged the assumption that there is a fixed relationship between form and function and in this building he sets forth the contention that contemporary building materials are so numerous, building types so complex and mechanical installations so varied that many forms may be allied to many functions, the skill and ingenuity of the architect being required to weld these variables into a harmonious whole.

From the start, Saarinen rejected the conventional fan-shaped plan with its post and beam construction, and examined the possibilities of more fluid forms, with the result that he designed a dome, daringly conceived so that it was exactly an eighth of a sphere, and delicately poised on three abutments where the structure comes to earth on its wedge-shaped corners. This resulted in a very light-weight structure — the concrete dome is only 3½ in. thick at the centre — and it has virtually no cladding costs, for the only walls required are simply "weather curtains" dropped from the underside of the arches to fill in the segments of space left on the three sides. The segments will be glass walls through which one can read the shape of the auditorium as it rises completely independent of the dome. Its form may be appreciated even more readily than that of the Royal Festival Hall as seen through the glass screen which composes the Thames façade.

There can be little doubt that the architect's departure from the logical approach to design, as we currently understand that term, has created many structural and mechanical problems and in many instances he has relied upon the sheer ingenuity of modern technology to get him out of difficulties that would have presented insurmountable obstacles a quarter of a century ago. The most pertinent question which the designer of any auditorium must ask, of course, concerns the primary function of the assembly space, and it is equally obvious that the solution to the design is most likely to lie in a structural form which of itself tends to permit optimum hearing conditions. In his choice of structural form Saarinen flouts every precept of basic acoustical design, for the concave ceiling and the curved rear wall combine to prohibit good hearing conditions unless there is a vigorous applique design to counter the tendency to focus sound. On the face of it, therefore, the architect seems to be deliberately running the risk of having the same indifferent acoustical conditions as are to be found in the United Nations General Assembly building with its domed ceiling and concave rear wall.

The rapidly advancing science of acoustics, however, can now come to the architect's aid, and by the introduction of floating "clouds" the section of the room was radically altered and the troublesome rear wall made so absorptive that virtually no sound is allowed to return to give a focused echo on the stage. But there is still the problem of the mechanical equipment, and though the "clouds" hide much of it there can be little doubt left in the mind of one who has seen the building in all its construction stages that contortionist feats have been demanded of pipes and ventilating shafts. They frequently are squeezed into shapes, basically unsuited to their form. All service lines of whatever type rely upon the rectilinear plan for optimum economy; there is scarcely a straight line, much less a right angle, in this building.

These in brief are the arguments put forth by the functionalists, and we must now ask what Saarinen has achieved to justify proceeding with a design which has so many generally acknowledged drawbacks.

In the first place he has designed a building of almost unbelievable purity in line and mass. It is quite apparent that once he had satisfied himself upon the form of his conception Saarinen allowed no practical difficulty to stand in his way, even if the appearance of these difficulties pointed to the basic unsuitability of the form in question. Problems which arose from his design were solved and things were made to work. There is much talk of the economic nature of the structure, the tremendous saving in wall costs, and the almost unbelievable lightness of the dome, but in my opinion these arguments are rationalisations thought up to justify the scheme to its detractors. In fact a study of Saarinen's early sketches reveals that at no time did he strive for a perfect shape for an auditorium as such, but that he embarked on a search for form in terms of the dome from the very beginning.

As the building nears completion it is possible to get a glimpse of the final effect, for it is upon this that the architect stakes his theory and the scheme must stand or fall by its success or failure. To the writer, the M.I.T. auditorium is an outstanding success. From a distance, the dome ties in beautifully with the hitherto somewhat unrelated domes of the main buildings; from close up, the skill and daring of the designer are clearly seen in the stark statement of the structural form; from inside the foyer, the dramatic sweep of the arches looping to earth on all sides is almost overpowering in its emotional content, and in the main auditorium the all-pervading warm white oak lining to the walls contrasts beautifully with the white "clouds" suspended from the vast concave dome which, painted a dark blue-grey suggestive of a night sky, is sensed but not consciously apprehended as one glances around. Although the beautiful texture of the natural

(Continued on page 268)
THE ANALYSIS AND DESIGN OF A COUNTY COURTHOUSE-JAIL

Brazos County Courthouse & Jail, Bryan, Texas
Caudill, Rowlett, Scott & Associates
Architects & Engineers

There are several ways to go about designing a building, each one possessing its own peculiar advantages and disadvantages. There is no method for organizing the work and analyzing the problem that will guarantee an attractive, workable scheme. Such a result can come only when the magic intangible, creative design talent, is added to a careful study and resolution of the needs.

Nevertheless there is merit in an organized approach which is followed by a well ordered analysis of the problem at hand. Many architects have profited from satisfying their natural curiosity about how the other fellow works. Doing things in a logical order, having always a well conceived notion of the relationship of ideas and elements to each other and to the ultimate objective is good practice, good office economy, and brings about the atmosphere for a happy result.

The story of the way this design process was executed by these architects is of interest. Of interest because it gives us a look into the workings of the Caudill, Rowlett, and Scott office and tells us how they arrived at an unusual plan, and why; of interest also because the county courthouse and jail is a typical problem (in the national sense) that begs for widespread and immediate attention.

This design process started with the assemblage of as much information as possible on the nature of the problem, the client, the needs. Data was gathered from observation, conversation, mail inquiries, reading, and also from the investigations of a citizens' committee. Next, a thorough analysis and comparative evaluation of these needs resulted in a listing of 14 "design premises"—actually a set of conclusions which could now become working principles as the process went forward. No drawings or sketches had yet been made.

The third step was the translation of the 14 premises into "idea sketches," 26 of which were made. Their production was the business of thinking graphically. These sketches were intended as guides, concepts for further work—some or all of them might or might not find a place in later designs. The interpreting of ideas into architectural visualizations seemed to help crystallize those ideas.

Thus prepared, the architects then developed four basic schemes, considered (with the client) the strong and weak aspects of each, and ended with a design that gained unanimous approval.

The entire study was reproduced, printed, and bound into a striking 112 page book with colored dividers. The proper persons were given copies and could thus consider—at leisure and privately—the four schemes and all the data that led to each. This made possible a thoughtful, individual evaluation by each interested official.

Such a procedure gives the committee members a sense of active participation in the job; presents effectively the architect's manner of working and a measure of the value of his services; helps promote better understanding and hence better public relations.

—James S. Hornbeck
1. RESEARCH & PROGRAMMING

Space requirements present more than a brief summary of the architects' detailed 65-page report.

After study had revealed the true nature of the problems, possible solutions could be discussed, suggested. Broadly, it was required to (a) provide for present and future needs (b) on a small site (c) within the bond issue sum. What, then, were these needs?

The county and its government were studied; its 3-part function (judicial, business, service) and its steady growth pattern. For the future, flexibility by way of the qualities of expandability, convertibility,

2. DESIGN PREMISES

Following the research that led to a listing of the problems, the next logical step in planning was a statement of conclusions reached; a list of the salient points that appeared as true premises in the light of research and experience. These could then serve as guiding principles for further design development. Much study produced a list of 14 such premises, listed in the chart above. Only a few will require explanation.
versatility. Vaults — for theft? for fire? Everything considered, the reluctant decision: office space only.

Real jail problem was prisoner segregation, although area a question also; settle for 80 prisoners in 18 to 24 cells — plus expansion. No clear-cut decision possible on top-floor vs ground-floor jail — consider either. Provide maximum parking as plot permits.

For further information: eight other jails and courthouses were visited, carefully reported; facts and opinions gathered from experts, administrators, technicians, judges, lawyers, officials; references were assembled into a useful three-page bibliography.

The Citizens' Advisory Committee made a detailed inventory, consulted the officials concerned, then listed space requirements both in detail and in tabular recap; estimated that a 35,600 sq ft building @ $16.50 and a 4000 sq ft jail @ $30, plus fees and equipment, could be built for the $800,000 allotted.

It was felt (2) that the courthouse should have the quality of dignity associated with free people — properly express the idea of a county "capitol," and yet should simultaneously appear friendly, inviting. The business offices (3) are county clerk, county tax assessor and collector; the service offices (4) are those for health, education, welfare, etc. For easier handling of large groups, No. 6 was considered preferable.

In the only county building common (7) to all, stimulating areas and rooms to encourage social exchange of ideas should be provided. Special parking (10) for jail, staff, jurors, public. Jail and prisoners (11) must be completely segregated, secure. Modern materials and building techniques should be utilized for a progressive area (12). Architecture for local government should serve common needs (14) for the benefit of all.
The next step was to begin interpreting the space needs — for the first time — into the three-dimensional language of architecture. Each of the 26 sketches listed (p. 140) stems from one or more of the design premises. Some of these ideas may occur in the final plan — some may not. Nevertheless, principles for guidance as the study proceeds have been restated graphically; crystallized. The architects’ report goes on to state, “A good courthouse does not derive only from good ideas, or careful planning, or proper use of materials, or ade-
quate space and equipment. It must be a proper corre-
lation and synthesis of all these — and many more."

Illustrated above are 12 of the 26 idea sketches. They
were not arbitrarily selected as more interesting or im-
portant than the remainder, but simply as a repre-
sentative sampling for our available space. Observing
these few sketches, note how an idea earlier expressed
in words takes on new and vivid meaning — added life
and dimension — when presented pictorially. Short of
a model, how better to consider design ideas?

The space relationship checklist, item "r," was an
interesting tabular charting of the necessary 22 space
elements and an analysis of their requirements in com-
mon; such as public access, driveway entrance, office
type space, relation to other space, fixed or expandible
areas, etc. Thus a basis for some sort of system of zoning
was drawn. Also, when preliminary plans are made,
such a chart can serve for checking. Incorporating all
ideas is obviously impossible, but now at least one basis
for judgment exists.
4. FOUR BASIC SCHEMES

Of which three are shown here, the selected one overleaf

A. Two part arrangement; an office building with jail on top and a courthouse wing. Advantages: compactness for maximum parking, site development; flexible office spaces; direct access to courts; high units grouped for economy. Disadvantages: top floor jail adds problems and expense of extra elevators, heavy construction, service; judicial offices not ideally located in relation to courts; 2nd floor work areas and expansion for business offices; service offices ideally at ground level.
B. Essentially the same as A except that jail is now located on the ground floor of courthouse wing. Advantages same as for A, plus: ground floor jail solves service problem, eliminates one elevator, can be expanded as needed; direct prisoner access to courts; office wing can be lighter, simpler construction without jail on top. Disadvantages same as for A except: ground floor jail creates a security problem and the possibility of prisoner disturbance to public, staff.

D. A single building with the jail located on the top floor. Advantages: greatest possible compactness permits maximum site development and parking area; flexible office spaces; economy through compactness. Disadvantages: only a few elements can have direct ground-level access; top-floor jail problems as noted before; combining high and low elements creates wasteful high ceilings for office areas; necessity of locating the business offices on two different floors.
This unusual scheme — within our knowledge the first decentralized plan for a courthouse and jail — should turn out to be both good looking and workable. The architects' original recommendation, in view of the budget, was scheme B. However, after the Court allowed a larger amount, the universal choice was scheme C. Under construction, its steelwork is now above ground. The model is pictured above. Shown also — in reverse — is the slightly modified final plan. The na-

5. THE SELECTED DESIGN

Now being built, with minor modifications

BRAZOS COURTHOUSE
ture of its minor modification is unimportant to this study; more properly forms a part of the final story.

Advantages: affords the opportunity for attractive architecture and great public amenity; locates both business and service offices at ground level, with direct and separate entrances; specific units can be separately lighted and heated for night use; three of the wings can be expanded; lawbreakers are completely separated from the public; judicial offices and courtrooms are in the same building; public access to courtrooms is separated from access to other units; direct prisoner access to courts; a surge of people in or out of one unit need not disturb those in other units.

Disadvantages: large site coverage leaves little area for parking; judicial and commissioner offices not ideally located in regard to county courtroom; top-floor jail creates the problems and expense of extra elevator, heavy construction, more difficult servicing.
TASTEFUL BANK REMODELING
THE ARCHITECTS’ PROBLEM was to remodel a relatively small ground floor area in the Chicago National Bank Building, located in the heart of Chicago’s financial district. This space was to be devoted to personal checking, small loan, and savings transactions. The idea of the design was to create an informal, friendly atmosphere — rather in the spirit of a “club for banking” — as opposed to the cool austerity of the institution’s main banking room, located on the second floor of the building.

The existing space, rectangular in shape, was spotted with irregularly spaced columns and an elevator to the second floor (which was to remain). The architects’ solution was to enclose the elevator and all of the columns except two within a central island core and surrounding counter, with the result that the entire area assumed a unified, uncluttered look formerly lacking. The core, which also contains a workroom and lavatory, was — for better appearance — shaped in a form resembling a rectangle with rounded corners and gently concave sides.

Materials, colors and lighting have been keyed to the idea of warmth and informality. The island wall and counter die faces are clad in natural clear white oak flooring, applied vertically with V-joints; the floor is natural red quarry tile in 12-in. squares; the banking counter tops and ledges are gray and white precast terrazzo; all ornamental metal and lighting fixtures are bronze, satin finish; the ceiling is fissured mineral acoustical tile cemented to suspended gypsum board; the lighting is entirely incandescent, a combination of stock downlights and special chandeliers designed by the architects; the furniture and curtains were selected to carry out the “club for banking” theme; the space is air conditioned, with booster heating at the entrances.

On the left page are two views of the remodeled banking area; the photograph above and right shows the bronze and glass entrance-way from the lobby of the existing building.

UNIFIES A HARD-TO-HANDLE SPACE
Both the stand-up and sit-down check desks, above, were designed by the architects. They are topped with 1/2-in. tempered glass, into which the circular pen stands are recessed. The body of the desk and its partitions are of natural unbleached walnut, supported on a satin-finished bronze frame which is secured to the floor. The legs are 1 1/4-in. o.d. tubes, cross-braced by 3/8 by 3/4 bars and longitudinally braced by 3/8 by 1-in. bars. All joints were welded, then ground and polished.

The banking counters, shown in detail below, are topped with a precast terrazzo shelf and ledge, into which the cups for the change-making machines are cast. The support is a welded frame of 3-in. channels, expansion bolted to the floor, rear-faced with painted steel flush panels.
STAIRS are coming into their own again as part of house architecture. Practically extinct in the era of the one-story house, they are an increasingly important design element in today's two- or multi-story residence. Present-day costs do not permit the space-consuming curved stairways or handsomely carved railings of two decades ago, but the best of today's design is equally effective.

The photo below is reproduced from the Record's last photographic study of house stairs some 16 years ago. That at the right (no small children in the family!) and those on succeeding pages are recent.

Red Bank, N. J. Howard and Frenaye, Architects

From ARCHITECTURAL RECORD, February, 1939

1 Hinsdale, Ill.
George Fred and William Keck Architects
RESIDENTIAL STAIRS

2 Ogden, Utah. Stephen L. MacDonald, Architect

3 Cambridge, Mass. Carleton R. Richmond, Jr., Architect


5 Denver, Colo. Norton Polivnick, Architect

6 Honolulu, T. H. Vladimir Ossipoff, Architect
Stair landing in this house was extended to provide space for a dark room with projection windows opening to living room.

RESIDENTIAL STAIRS

7 Akron, Ohio. Victor Hornbein, Architect

8 Hunts Point, Wash. Young & Richardson, Carleton & Detlie, Architects

9 Sausalito, Calif. Shubart & Friedman, Architects

10 Oak Creek Canyon, Ariz. Harold Ekman, Architect

11 Chapman, Ala. Huson Jackson, Architect; H. Seymour Howard, Jr., and Harold Edelman, Associates
YEARS AGO we half suspected that the phrase "school-community inter-
relationship" was high flown verbiage intended to justify a gymnasium
and an auditorium in a school where such luxuries didn't belong. The suspi-
cion may occasionally have been well founded. But the more we see of
schools, the more we realize how intimately they do interact with their
communities, sometimes subtly by simply providing opportunities, some-
times overtly in frontal attack on a community problem; here seizing upon
and thoroughly developing manifest opportunities, there gently urging the
community in the direction its tentative, imperfectly expressed ideations
demonstrate that it would go if it only knew how.

We still suspect that a lot of stuff and nonsense is written about this
romantic, intangible subject, so we have no intention of discussing it here in
the abstract. We won't include stories about the mountain community where
a children's program in the school virtually eliminated certain kinds of
disease, or claim for architects any more than their share of social respon-
sibility. We give you here, instead, four long, thoroughly documented case
histories presented in detail, four different instances of school-community-
architect-educator interaction.

The Maryland school is a small rural plant designed, in a sense, to help
an area lift itself by its bootstraps. It has been operating only a year, and
the community isn't too sure that its new plant is any good. Yet the build-
ings it now offers opportunities which, by their mere existence, can stimu-
late improvement which may some day blossom. The Brooklyn school is an
urban experiment, the best example we have yet seen of great New York
City's determination to improve its educational facilities. What makes it so
exciting is the consciousness of the school's importance and the way this has
been made a design determinant.

The suburban St. Louis school is being built for a community eager for
the most advanced educational theory, beset by unprecedented growing
pains, and pinched for money. This too is an experiment; the intent is to turn
out into the community the best citizen-graduates possible, and that at a
reasonable cost. The history of the suburban New York school is one of
literally thousands of professional man-hours spent leading a newly created
district from disunity and uncertainty to a point where all agree that pos-
tive educational goals seem at last attainable. Here there is an unanswered
question: how is this extra professional guidance, so often and so desperately
needed, to be paid for?

Indeed, all of these case studies raise questions. The values we see in all
of them cannot be proved out now. Years or maybe decades hence perhaps
they can be fairly assessed. That is one of the tantalizing things about school
architecture; proof takes lots of time.

—Frank G. Lopez, A.I.A.
SMALL SCHOOL DESIGNED
This is the countryside: left, air view, Blackwater National Wildlife Refuge, adjoining the school; right, a waterway, Hooper Islands in background

by Stanton Leggett

Water and land, sometimes separate, often mixed and blended, never more than a few feet apart in elevation — this is the southern end of Dorchester County. A part of the sandspit peninsula known as the Eastern Shore of Maryland, the land dips and minglesthe water to form countless swamps, coves and islands, catching a people and a way of life in its intricate pattern.

The highway dwindles to a narrow road that forces passing cars to the sandy shoulder. The road runs through empty miles of freshwater swamp and shallow lakes dotted irregularly with hums of land where trees stand black against the flat sky. The road crosses bridges and long wooden causeways to come to an end at Hooper's Island and Little Hooper's Island.

All down the various points of land that project into the Bay, the roads behave in the same way. At one point a brilliantly white causeway that gets mixed up with gray fish sheds comes to a stop against the vivid green of Taylor's Island. At Golden Hill, eight feet above mean high water, the road forks. The right fork leads to the Hooper Islands while the left fork winds down to Crapo, passing farmhouses in the Early Dorchester style, many of which are abandoned.

The roads are alien; for the villages and the people have turned their backs to the land and faced the Bay and the open water. It was not long ago that the roads were not there, and the water was the highway along which the products of the Bay and, less frequently, the people of the Bay, made their way to the small towns — Cambridge, Annapolis, Salisbury, Pocomoke, or even on to Baltimore.

The land never had been inviting. Water ooze, tufts of dry land, all intermixed and blended, these are not the ingredients of modern farming. The Bay, too, in recent years proved less and less hospitable as its bounty diminished. Overfishing with modern technological devices reduced the harvest to a point
The countryside is far from bleak, though its population has been dwindling; the adjoining states have begun cooperative efforts to conserve the Bay's resources. Above, the town of Nanticoke; right Blackwater Reservation

SCHOOL AND COMMUNITY: MARYLAND

SOUTH COUNTY JUNIOR-SENIOR HIGH SCHOOL
Dorchester County, Md.
Finney, Wolcott & Associates
Architects
Engelhardt, Engelhardt & Leggett
Educational Consultants
South County High School has no classrooms as such; its enrollment is small, its funds scarce. It was designed to help coming generations capitalize on unique regional opportunities yet not limit the pupils’ chances for development. Whether these aims will be achieved it is too early to tell; the school has been in use only one year, and the Superintendent under whom it was designed has been elevated to a position in the state educational system.
where the future is bleak. Rivalry between the sovereign states of Virginia and Maryland did not help as politicians bickered and the fish were obliterated. The resources of the Bay were dwindling and man was to blame and, at the same time, the victim.

Against this background a new high school was to be planned, replacing two smaller schools. The combined enrollment in the upper six grades was estimated to reach 150 pupils. Although far too small a school ordinarily, the sparse population and the great area to be served made the small school unavoidable.

The existing schools were traditional. As the survey by the educational consultants stated: "The students had their noses in the Latin books and their backs to the Bay while their means of future livelihood disappeared." The communities were dwindling and their economic bases were tottering. Can a school and its program be so designed that students are equipped to deal with their environment? Can a school help rebuild its community? It is too early to know in this case, but the attempt was made.

These, in summary, were the basic decisions that were made:

- Since the population was dwindling, give the students the intellectual tools and insights that would tend to retain them with the ability to use the available resources to advantage and to appreciate the values inherent in the community and its setting.
- Since farming was virtually dying out, although the land was fertile, teach the students how to use the land and how to use their intelligence to learn, or develop, farming techniques that would work in this strange half land half water.
- Since the resources of the Bay were dwindling, teach the students how to farm the Bay using sensible measures to conserve and rebuild the water resources.
- Since few students went to college, provide an educational program that would generate enthusiasm for solving their problems in their community. Provide education that would widen rather than restrict their lives. This could be done without blocking any student from further education.

The attack went ahead on two fronts. One was the developing of promising
leads and ideas to further the program of the high school. W. T. Boston, then Superintendent of Schools, found farm machinery, crops and techniques that had been used in similar swampy country. Soil analysis showed that the south county area was more fertile, if also more watery, than the prosperous farming areas of the northern section of the county. Even before the building was underway, cedar cypress and wild rice had been planted, both of which would thrive in the area and represented marketable crops. A large government wildlife reserve adjoining the school site had

South County High's Resource Room, right, was designed to house ideas for use of the environment—an active workroom with storage, display, conference, research areas

The countryside's marine resources have traditionally dominated along the Eastern Shore: facing page, oyster dredgers working in a driving rain; below, dredges (locally pronounced "drudges") in Cambridge harbor; right, "buy boats" at work taking oysters and running them to packing houses.
Other resources of the Eastern Shore: right, muskrat trapping, logging loblolly pine; facing page, pound netting for Chesapeake shad; below, duck hunting, so popular that land like this is astronomically priced though it brings local people comparatively little profit.

School and Community: Maryland

Science laboratory, South County High School, contains a science museum area designed as a live demonstration of the role of science in improving community life, with aquariums on wheels, movable growing beds, access to outdoor growing areas, a large quantity of storage space.
been made available for use by the school. State authorities in conservation were interested in the school and offered help. The State Education Department offered to make additional staff available. It looked as though the resources could be found to do the job.

The second aspect of the attack was the planning of the school building.

The school was to have ten teacher stations, representing a very favorable pupil-teacher ratio, yet a ratio that is forced in part by the small student body. The architects were required to design the building in anticipation of a future elementary school unit that would also use the general spaces, such as cafeteria and auditorium-gymnasium.

A small school is difficult to develop with rich educational resources. Finally, the then Superintendent decided that "we couldn't afford classrooms." Instead, the specialized spaces required were planned together with, in all cases, discussion areas that could also be used for more formal class purposes.

The building was planned about an active resource center. It was the thought that, in addition to a normal library function, this space would serve to collect the materials from any place in the world where people were coping with similar problems.

Here, too, the results of student research would be assembled as a foundation upon which succeeding generations of students would build. The members of the community would find this resource room a treasury of ideas about how to use their environment.

The resource room was conceived of as an active workroom. It was equipped with movable shelf units and storage spaces. The low window wall along the open corridor was seen as a great display window, recording achievements of pupils and community members in meeting some of the challenges of the school. Small meeting rooms were provided off the large resource room.

The science laboratory offered flexibility in arrangement, was heavily loaded with storage, and contained a science museum area. The museum was seen as a live demonstration of the role of science in improving community life. Large aquariums on wheels were provided to allow the reproduction of the bottom of the Chesapeake Bay for study by the students. Movable growing beds indoors and easy access to outdoor growing areas are provided.

Two large work areas are provided for
CRAFTS AND FOR THE INDUSTRIAL ARTS. EACH OF THESE ROOMS HAS A DISCUSSION AREA THAT CAN DOUBLE FOR CLASS USE, IN VIEW OF THE SMALL CLASSES ANTICIPATED. IN THE GENERAL SHOP IT IS EXPECTED THAT BOAT BUILDING AND MARINE ENGINE WORK WILL BE ACCOMMODATED, AS WELL AS REPAIR OF FARM MACHINERY. THE SCHOOL SITE INCLUDES A WHARF AND WATER FRONTAGE NOT FAR REMOVED FROM THE BUILDING. A WELL DEVELOPED HOMEMAKING UNIT IS PROVIDED, AS WELL AS A COMMUNITY STUDY LABORATORY THAT WILL BE THE FOCUS OF THE SOCIAL STUDIES PROGRAM.


THE ADMINISTRATIVE SPACES REFLECTED ALSO THE PIONEER NATURE OF THE SCHOOL PROGRAM. MAIN UNITS ARE HEALTH SUITE, A PLANNING AREA, A CONFERENCE AND WORK ROOM, AND A STUDENT ACTIVITY ROOM. AGAIN, BY PLANNING AND THINKING TOGETHER, WITH STAFF, STUDENTS AND PERSONS FROM THE COMMUNITY TAKING PART, IT WAS HOPEd THAT SLOWLY A GROUP OF PEOPLE OF VARYING AGES WOULD SHOW THE ABILITY OF MAN TO USE HIS INTELLIGENCE TO SOLVE THE PROBLEMS OF LIVING A BETTER LIFE.
People along the Eastern Shore:
far left, a waterman

Left: 300,000 people fish for fun
in the Bay every year

Right: Melvin Collier, blacksmith,
whose oyster “drudges” reputedly
insure profitable hauls

A. Aubrey Bodine
VOCAATIONAL HIGH SCHOOL TO DO A SOCIAL JOB


WILLIAM E. GRADY Vocational High School has existed in Brooklyn for some time, but without buildings of its own. It has used facilities in several school annexes, and has given its series of courses without having any physical entity. Vocational training has not been too popular with pupils; indeed, it is suspected that being sent to Grady seemed only a little worse than being sent to Siberia.

The school, then, has more than a simple vocational job to do. New York City's Board of Education and the city's school administrative staff, acting through their Chief Architect, Michael L. Radoslovich, and the Board's Bureau of Construction, have worked with the architects to produce a design for the $6 million plant that will help city youngsters become both "good providers" and good citizens. Early in the design process it was decided that insistence upon high quality of materials and craftsmanship was one of the best means of inducing an attitude of healthy interest and pride in vocational training; and that the same qualities would, in rousing pride of place, help to curb somewhat the destructive instincts that seem to characterize some city children. Also, there are other institutions on adjoining sites, so Grady could contribute to development of a community cultural center.

The site fronts on Shore Parkway and Brighton 6th St. Its buildable area was severely restricted by a trunk sewer beyond which construction could not be planned, although the remainder of the block is to be developed for school-community recreation by the Department of Parks. In one corner of the site is a Police Force Remount Station,
which is to remain. The school could not be developed horizontally; it had to be multi-story; and design difficulty was increased by the difference in size of the shops (there are 33 of these) and the classrooms as well as the school-community facilities (auditorium, gymnasium, etc.) and cafeteria requirements.

The solution is two “blocks” of buildings with the entrance between them, taking advantage of differences in storey heights by means of ramps and stairs to gain greater height for the first-floor shops that need it. The shop-classroom block, which appears to be one unit, is virtually two, one on either side of the unavoidably long corridor. The shop half is laid out to one large module, so columns will not interrupt shop floor space; the classroom half has a different structural module or bay based on end-on classroom dimensions. The corridor unites them, and, in general, classrooms relating to a particular shop are near that shop. The shops themselves are on several floors, zoned so that noisy areas, shops for light work, those for “heavy” activities, etc. are related and organized in plan to minimize interference.

The School is designed for approximately 2000 boys; another floor can be added to accommodate 500 girls. In keeping with the purpose of making it an example of the creative results of modern technology and fine artisanship, the materials selected include the most modern that the building industry can produce: tempered and heat-resistant glass, glazed brick, enameled metal wall panels, aluminum sash, etc. Included in the budget — and this is something for the city to be proud of! — is a provision for sculpture and murals. Over the main entrance is to be a mural, 50 ft long, by Ben Shahn, which it is expected will depict the impact of the machine age on man’s way of life and the changes in our culture which will enable him to exploit technology fully. This may be executed in terra cotta, or, if funds can be procured, in mosaic. Another wall has been designed to receive an equally important sculpture by Costantino Nivola. Lettering over the entrance is in a special alphabet, to be cast in metal in such a way that the marks of craftsmanship are transferred from the forms to the finished letters; interior directional signs use a similar alphabet executed in terrazzo and outlined with terrazzo dividing strips. The auditorium design is determined by an acoustically correct wall and ceiling surround; its unusual shapes, it was found, were best defined by a single source of illumination from the rear of the seating area. Downlights give enough light for taking notes, etc.
Brooklyn, N. Y. is both like other urban areas and quite different. These views of it are typical: streets that seem crowded even when they are empty, traffic hazards, elevated transit lines, bridges and waterfront where the tall buildings are (mostly, though, its structures are low); a place of many small industries, branches of big industry, of crowded dwellings and playing in the street where many of the best schools — and there are several excellent ones — are architecturally long outmoded.
Throughout Grady Vocational High School efforts are being made to develop interest and pride in schoolday surroundings, to provide more than trade skills for future citizens. Not only are there to be murals and sculpture by excellent artists; materials and craftsmanship of construction will be of high quality; there are such extras as the auto accessory store, above, for the auto shop.
Classrooms are designed to achieve a pleasant atmosphere and to keep maintenance costs low. Chalkboard-cabinet units extend from floor to underside of beams; walls under chalkboards are colorful integrally-faced block. Windows extend to underside of spandrel beams and have cabinets beneath them; corridor walls are permanent cabinets and the same integrally-faced block, the only paint being on the plenum chamber above door height. A complete color specification, for floors, walls and ceilings, including materials, paint, etc., was furnished the Board of Education. Below is one of the 33 shops; on all of these extensive, detailed studies were prepared after research in collaboration with the city's vocational specialists.

SCHOOL AND COMMUNITY: BROOKLYN, N. Y.

Electrical Installation Shop, below, is typical of extensive research; there was no precedent for much equipment
GROUPED SMALL SCHOOLS FORM LARGE HIGH SCHOOL


A new type of high school is being built in the suburban Riverview Gardens district near St. Louis. As the first of its kind, first to have its educational implications fully studied, its pros and cons thoroughly debated in concrete terms, and its buildings actually started, this high school will be carefully watched, verbally dissected, discussed and weighed by educators and architects alike.

The underlying idea, called the "little school" concept, has been talked about for some time. Examples are in various stages of development in a few communities, but in none the editors have seen have the talents applied to the problem been so free and imaginative, or the concept so completely dominant. At the same time, the capacities of teachers to teach, of pupils to learn and grow, of the community to pay, have been constant directives as the design has developed. Indeed, these are fundamental to the 'little school' idea.

One might say that this new approach to secondary education and its buildings is determined, on the one hand, by the desire to treat each pupil as an individual, to place him in an educational environment in which he has a chance to "count" as a human being, to learn and develop within only those limits which his own abilities dictate; and, on the other hand, by the practical considerations: money, staff, efficiency of plant and program, and the like. There are positive advantages as the concept is here achieving reality, and certain difficulties.

As to advantages, which must be fully capitalized upon if the new approach is to prove out satisfactorily in practice: a small building housing, in effect, a small yet complete high school can attain an...
Designed to grow as the community's pupil load requires and finances permit, Riverview Gardens Senior High School is developed as a series of separate high schools, each for 600 pupils, with an ultimate total capacity of 1800 to 2000. In each "little school" are classrooms and some specialized spaces; gymnasium, cafeteria, library, administration, shops, etc. are in other buildings to be built as additional "little schools" are erected. Right, terrace, first "little school," now under construction, opens off student lounge.

**School and Community: Missouri Suburb**

Identity of its own within the larger whole (each little school at Riverview Gardens is designed for 600 pupils; total enrollment may eventually reach 2000). In such a small unit each pupil can be an individual. Contact between pupils and teachers can become personal; instruction, also, becomes almost individual; classes can be smaller. Within such a homogeneous unit it is relatively easy to apply the educational techniques which have, in recent years, been extended to secondary education — the "common learnings" program, for instance, or one of the several parallel pedagogical theories that have been developed and often imperfectly put into practice, quite often (even architects must admit) because the school buildings were not appropriate. A school plant composed of a group of little schools and their jointly used, separately housed general facilities can be designed so that each unit is not only humane in architectural character — that is, so that it furthers the educational ideal of developing the best that is in each student; the whole plant can achieve its own kind of monumentality to satisfy the very legitimate community pride in its schools and their structures. This new kind of monumentality is not one that seeks to over-awe, as do the...
monstrous city and suburban schools we have been used to; it requires of the architect real talent; he must make of the group of buildings a composition that will impress by its perfection; he can no longer pile materials on top of materials, hoping to crush the observer with sheer mass—and often succeeding.

But we were writing of advantages; and this difficulty of design is, after all, an advantage as far as the community is concerned: the layman on a building committee will find it easier to spot the meretricious or the ill-considered! Properly designed, too, a group of small buildings can cost the community less than a huge structure; it can be laid out to turn features of a difficult site into positive values; and it can be built piecemeal, as finances permit.

There are difficulties, some real ones: not every community or school system is ready to undertake a new approach. The right kind of staff is hard to get—though that seems always to be true no matter what the program. The unpretentiousness of each building may be hard to appreciate. Certain facilities required in each little school building if it is to be a nearly complete high school—science laboratories, for instance—may seem hard to justify from the point of view of efficiency, considering the problems of scheduling, full utilization of expensive equipment, etc. More difficulties become apparent as one studies the concept.

Yet in the main the difficulties are due more to a halfway acceptance of the idea than one might suppose. They seem to derive principally from adherence to familiar educational programs and methods. The little school concept, for instance, contemplates a different kind of use of a science laboratory, one in which science becomes a part of other branches of learning and the other branches are, conversely, integrated with laboratory work; this is not the traditional way.

At Riverview Gardens, the responsible citizens of the community, the local education administrators and school staff, the educational consultants and the architects have jointly applied to their secondary school problem a degree of thoughtful imagination which is commonly encountered only in elementary school design. In discussing the building with us, the architects listed certain factors of basic importance which they believe are usually unresolved in secondary schools:

"1. Scale—most high schools are monumental in character and size, overwhelming the pupil; the trend should be away from mass concentration to sizes and scales easily grasped by the pupil.

"2. Growth—the plan should allow for curriculum changes and easy expansion.

"3. Classrooms—should allow for flexible internal arrangements, should consider storage, work counter and display areas.

"4. Circulation—the high school pupil spends as much time in the corridor as in any one classroom; corridors should be designed with care, not just lined with lockers and forgotten.

"5. Social area—space for students to meet and develop extracurricular activities should be considered.

"6. Community use—site plan should provide easy access of public to auditorium and athletic area.

"We have tried to design the Riverview School with these points in mind. The school district serves a section of the northern suburbs of St. Louis, where great tracts of builder houses have over-
night doubled the population. The community needed a senior high plant but had funds available to build only a portion of the total needed. This seemingly negative point was resolved by the educational consultants into an exciting program that fulfilled many of the needs of every high school as we have listed them above."

The educational program prepared by the consultants and accepted by the community contemplates an ultimate capacity of 1800 to 2000 pupils in grades 10–12, although initially the school may accommodate only 9th and 10th grade pupils until additional special facilities become available. The buildings, the program stated, "must be planned for construction in a long series of steps as money becomes available and as enrollments dictate. Additional construction should cause a minimum of disturbance to the existing plant." The program proposed that "the school be designed as a series of three separate 3-year high schools," with "each 600-pupil 'little school' containing 14 classrooms, 3 science rooms, 1 art room, 1 home making room, administrative, guidance, student activity and teachers' rest and work space. Units to be provided centrally are: cafeteria, auditorium, gymnasium, central administration, shops, business education, music, student center.

"The general order of construction, as now envisioned, follows. It should be possible to vary from this order: first 'little school'; cafeteria (ultimately to

SCHOOL AND COMMUNITY: MISSOURI SUBURB
PERSPECTIVE OF INTERIOR COURT (TO BE USED AS OUTDOOR WORK AREA FOR ARTS & CRAFTS)
are grouped at the other end of the central plaza; the gym's lobby will be the student social center, easily reached from the cafeteria.

"Next we developed plans and specifications for one 'little school'; bids were received, and it is now under construction at a cost of $362,310, or $10.85 per square foot. It is completely fireproof, with masonry bearing walls every 25 ft and steel joists supporting a lightweight insulated concrete slab. Ceilings are acoustic plaster, floors in classrooms and offices are asphalt tile. In corridors, locker area and student lounge, floors are terrazzo and walls are masonry block with a special face for easy maintenance. Exterior walls are brick, spandrels under windows are colored, unglazed ceramic tile. Windows are aluminum, door frames hollow metal. There are special hot water units under windows for heating. Classrooms will be lighted by 6 concentric ring fixtures each.

"Since the student spends so much time in the corridor we tried to make this an interesting space. The interior courts, terraces, open locker areas, and daylight from the display area for each classroom should create a number of interesting vistas for the student who is walking between classrooms."

**SCHOOL AND COMMUNITY: MISSOURI SUBURB**
Often an architect working on schools must do much more than design buildings, prepare working drawings and specifications and supervise construction. Sometimes the community’s — and the committee’s — conception of its needs, architectural and even educational, is hazy, and for various reasons the architect has to help the community form its judgments and decide how to vote on bond issues. These are responsibilities beyond normal architectural services; their cost, which at times becomes very great, is not reimbursed by normal fees. The article that follows is the behind-the-scenes history of one such job, told in the words of J. Stanley Sharp, partner in the firm of architects who designed the high school

**FOR A UNIFIED DISTRICT THAT NEEDED GUIDANCE**


**UNION FREE SCHOOL** District No. 1, less formally called the Katonah-Lewisboro, N. Y., District, takes in the towns of Bedford, Lewisboro, North Salem and Pound Ridge. It was created in 1953, and shortly afterward a Citizen’s Advisory Committee began interviewing architects and making recommendations for their selection. I believe Board of Education members sat in at most of these sessions. We were selected; and a series of meetings was held to discuss the program and review the general background of the community.

The Board’s general conception of the way to provide for their needs was to convert a K-12 school in the Katonah area into a junior-senior high school and find a site for a new elementary school which was required by the existing elementary school load in the same part of the District. Our first field job, then, was to inspect eight potential sites being considered by the Board and the Committee. Katonah is in the westerly part of the elongated District; the most acceptable elementary school site, though a little farther south than was desired, was finally agreed on.

With this first step in programming taken, it was decided to present the site question and the budget to the public at one election. We had to develop building programs for both
the secondary and the elementary school. It quickly became evident to us and to our educational consultant, Dr. Walter Cocking, that the District needed real help in its educational programming. We were dealing with very intelligent people, but educationally and architecturally they were of course laymen. We could not expect really definitive educational specifications from them, nor could they be expected to be aware of recent developments in either field. Perhaps, we decided, a presentation of educational objectives and planning would help them. Dr. Cocking and our staff jointly prepared a series of large-scale charts outlining types of educational programs; Dr. Cocking presented and discussed these at length. The Board and Committee, on the basis of this new — to them — approach, could indicate to us where they believed they were educationally and what type of program they wanted to aim for. Although on some points it seemed to us that they were optimistic, we got what we needed to have: a base for our architectural programming. Although we didn’t really realize it then, we were also laying groundwork for a serious cooperative effort by the community and ourselves which has been, we feel, mutually enjoyable as well as architecturally profitable — although financially it has hardly been a howling success for us as architects.

Enrollments were the next question. Projected figures were compiled from various sources — utility companies among others — to help define a logical pattern of community growth. Children born and living there were a known quantity, but forecasting growth from other sources caused consternation. How would adjacent White Plains grow commercially; how would this affect the District as a residential suburb? How many summer homes would become all-year residences? What would parkway extensions do to the community? And so on; the guesses were many and divergent.

We settled on figures that seemed reasonable, but another problem developed. The program was pretty well established

**SCHOOL AND COMMUNITY: NEW YORK SUBURB**
Map above shows school population of the new district. Initial decision to convert the Katonah School into a high school was voted down; a new high school site in the geographic center and more nearly centered in regard to secondary school population was approved; so was a proposition to convert the Katonah plant into an elementary school. The architects furnished the information on which the district acted. At right, population study; note difference between estimates and present enrollment.

Before the first proposal was abandoned the architects prepared reasonably complete preliminaries for converting Katonah plant to a 6-year high school (plan of one floor, right above) and building a new elementary school (left above). These were discarded. The architects were paid in standard fashion for the abandoned work, though payment in such cases barely covers costs and makes no provision for anticipated profit. Below, perspective of new high school now under construction.
by now. We had an elementary site in mind and what seemed to be a good building to convert into a 6-year high school. As we studied the situation, however, some shortcomings became evident and other possible solutions seemed more logical. Pupil distribution over the District would require excessive bus transportation to a high school not centrally located, for one thing. We began to favor development of a high school near the geographic center, and presented some ideas on this; but it would cost $263,000 more to do this than to stick to the initial proposal. The Board and Committee were understandably unenthusiastic about changing course at this time. We went ahead preparing a brochure and presentation for the imminent election. We developed several alternate schemes for the elementary school and the high school (see illustrations) and appeared at four public meetings in different areas, in an effort to reach all the groups in the still unfused District. Citizen opposition became apparent; it can properly be summed up as: "Who said we wouldn't be willing to spend more money for the right program in the right location? 650 students in this converted building, spending all that money and having no room to grow after 1960 — that's shortsighted!"

At the election the whole proposition was turned down. The School Board sent out questionnaires to find out why; results are tabulated in the illustrations. We began, again, to hunt sites, this time in the geographic center. A tract of well over a hundred acres was found to be available for $25,000. The Board had to do a lot of convincing to win over a majority of the people to buying such a large site as an investment for the future — only about 30 acres would be needed for the contemplated high school — and this time the District approved purchase of the site at a special election. We were instructed to develop schematic plans for the new high school, based on the original educational program.

Among the illustrations accompanying this article are several showing parts of the presentation we now made to the Board and later in slide form to the public, to portray the advantages and disadvantages of campus and non-campus

---

SCHOOL AND COMMUNITY: NEW YORK SUBURB

After the adverse vote and return of the questionnaires indicating reasons for it, the architects again helped the Board investigate potential sites; they assisted in explaining to the public the advantages of the central site (see preceding page); the vote this time was favorable. In preparing for the vote the architects studied the new site, developed extensive presentations and discussed the proposition at length before numerous public meetings. At right, top row, site development study and evaluations in terms of cost and area utilization for three types of school plant for the new site; bottom row, schematic preliminaries as presented to the public. Each was thoroughly studied and fairly presented although the architects favored scheme No. 3, the one which was finally adopted

---

RESULTS OF QUESTIONNAIRE

Mailed 10-22-53 by the Board of Education; includes returns received through 11-2-53

57% of those who voted no on October 10th made returns

80% thought that a new junior and senior high school should be built and that the present Katonah School should be converted to a grade school

44% thought that the cost of the new site was too high

36% thought that the proposed location of the grade school was unsatisfactory

29% thought that the cost of converting the Katonah School was too high

26% thought that the cost of the proposed grade school was too high

14% were opposed for miscellaneous reasons

4% thought that no building was necessary

NOTE: The majority of the replies had more than one reason checked. Because of this the percentages above do not total 100%
Final design for library

### AREAS

<table>
<thead>
<tr>
<th>Areas</th>
<th>Scheme 1</th>
<th>Scheme 2</th>
<th>Scheme 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Building Area</td>
<td>80,747</td>
<td>80,971</td>
<td>70,567</td>
</tr>
<tr>
<td>Total Educational Area</td>
<td>47,090</td>
<td>47,165</td>
<td>47,400</td>
</tr>
<tr>
<td>% of Total Area</td>
<td>58.7</td>
<td>58.4</td>
<td>67.2</td>
</tr>
<tr>
<td>Enclosed Corridors</td>
<td>12,414</td>
<td>12,363</td>
<td>3839</td>
</tr>
<tr>
<td>Covered Walkways</td>
<td>1,200</td>
<td>1,363</td>
<td>7,760</td>
</tr>
</tbody>
</table>

Educational Area: Includes all classrooms, laboratories, library, gymnasium, lecture, etc.

### COSTS

<table>
<thead>
<tr>
<th>Costs</th>
<th>Scheme 1</th>
<th>Scheme 2</th>
<th>Scheme 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Costs</td>
<td>$1,372,000</td>
<td>$1,391,000</td>
<td>$1,200,000</td>
</tr>
<tr>
<td>General Construction Incl.</td>
<td>535,000</td>
<td>543,000</td>
<td>488,000</td>
</tr>
<tr>
<td>Work</td>
<td>19,000</td>
<td>8,000</td>
<td>47,000</td>
</tr>
<tr>
<td>Plumbing &amp; Ventilating</td>
<td>67,200</td>
<td>67,200</td>
<td>67,200</td>
</tr>
<tr>
<td>Piping &amp; Heating</td>
<td>137,200</td>
<td>139,100</td>
<td>120,000</td>
</tr>
<tr>
<td>Contingency</td>
<td>$2,256,000</td>
<td>$2,256,000</td>
<td>$2,256,000</td>
</tr>
<tr>
<td>Total Project Costs</td>
<td>$2,044,200</td>
<td>$2,073,000</td>
<td>$2,098,000</td>
</tr>
</tbody>
</table>
plans. We made several photostatic brochures for the Board and key citizens to use in discussing types of development at public meetings. When public approval of a campus plan became evident we refined the preliminary drawings sufficiently to obtain State approval, and prepared another photostatic brochure containing the basic plans for the new scheme. A committee of citizens was very helpful in developing and expediting work on still another brochure developed specially for the election at which bonds were to be voted on. This was very brief because "if they put it down without reading it all the first time they'll never pick it up again." Attendance at some public meetings had at times been spotty, so we and the Board decided to hold only two large public meetings and to have members of the interested citizen's group set up many small meetings at private homes. For these, data and drawings were furnished by the School Board in slide form.

On October 23, 1954, nearly a year after the first proposition was voted down, the citizens approved the campus scheme by a two-thirds vote. Now our work really began — many hours of conference time, of design study, of planning refinement and detailed study ensued. Some of these — space permits including only a few — are illustrated. There were many more. During this period it was very gratifying to work with a school administrator, Charles T. Helmes, and a cooperative Board whose confidence seemed to gather momentum from meeting to meeting. At one session a Board member questioned omission of a section of covered walkway. At the next meeting, finding we had not included it, there was further discussion. Another Board member eventually said, "I know. You fellows just don't want anything to interfere with that big expanse of wall!" He was right. We had neglected what should have received attention: the difficult job of conveying to the Board the importance of esthetic considera-

SCHOOL AND COMMUNITY: NEW YORK SUBURB
On final project, high school site utilization was further developed in conjunction with the developing educational program. Plan at left, site as presented; right, final plan. At first, boiler room was part of shop building; eventually it was separated, its floor slab placed at footing level to reduce exposed height; art rooms were relocated; home making better related to other areas.

Restudy before starting working drawings improved all the buildings. Above, first plan, science building; right, final plan. Note reduction of unneeded lobby space, greatly improved storage facilities.

Corridor, classroom building, is characteristic of whole plant: gayly colorful, open in feeling.
He did it for us, the matter was dropped and the walkway was forgotten. Only weeks later did we realize that, as plans were still further refined, somehow that section of walkway got back into the job!

We went beyond normal engineering services, furnished by our consultants, in employing acoustical engineers to help develop ways to eliminate sound transmission, to improve acoustical qualities, etc. With our mechanical engineers we designed an unusual hot air heating system utilizing peripheral ducts poured in place along with the footings. The electrical system is 227–480 volts rather than the usual lower voltages, the theory being that high voltage reduces current drop where runs are fairly long. We proceeded to refine and develop a type of porcelain enamel panel wall which preceding experience had indicated would be satisfactory, and had the pleasure of seeing bids come in hitting our predicted costs almost "on the nose." We helped the Board select and appoint a clerk of the works, running want ads, screening applicants and interviewing candidates. We are taking out of the general contract, on this job, most of the built-in equipment (cabinet work, etc.) and combining this with the special portable equipment we have designed, in a separate contract. This reduces charges for overhead and profit, gets a better price for the whole because the cabinet work contract is larger, and affords us better control of finished production.

SCHOOL AND COMMUNITY: NEW YORK SUBURB
CLASSROOM DESIGN RESEARCH

For economy, classroom buildings have double-loaded corridors; section was thoroughly studied. Drawings above show, A, bilateral natural lighting—which, on the basis of previous experience, was too costly to construct, somewhat difficult to control, and often ignored by a teaching staff who, forgetting operating cost, neglect to turn off artificial lights when they are not needed. The simple cross-section, B, with flat roof, end-on classrooms, and minimum cubage and perimeter wall, was adopted. Diagrams 1 through 4 are variations of scheme B. 1, unprotected glass from sill to ceiling caused brightness ratios too high for comfort, unacceptably low lighting intensity at interior classroom wall. In 2 the overhang improved brightness ratios but not interior light level. Adding a overhang at the glass, 3, provided acceptable brightness ratios but reduced interior light intensity, cost too much both initially and in maintenance, and did nothing to reduce heat losses. In 4, the adopted scheme, windows are used principally for vision and ventilation; use of gray glare-reducing glass insures good brightness ratios; heat losses are cut considerably; artificial sources are relied on for daytime lighting as well as night. Cost of current is offset by reduced heating costs. At right, two of numerous studies of wall construction costs
Throughout this job—as in any job—the importance of the architect-client relationship was never underestimated. In the ideal case, confidence and understanding increase as the job progresses. I think some of the examples cited, incidents at Board Meetings, and particularly the major issues discussed and resolved, demonstrate how essential such understanding is. Community attitudes are continually being voiced as these matters come up. We usually try to have one staff architect, working closely with a partner, follow a job from beginning to end. In this case circumstances forced us to use three men at different times; one of the original three is now in charge. This caused some discussion by the Board; and certain Board members pointed out that they had engaged a firm, not an individual. Moreover, an experienced partner was following the work closely, and we could assign a staff member well suited to each phase of the project.

— J. Stanley Sharp, A.I.A.

SCHOOL AND COMMUNITY: NEW YORK SUBURB

MAN-HOURS SPENT ON PORTIONS OF JOHN JAY HIGH SCHOOL JOB

Not including any time for principals or any provision for overhead, etc.

<table>
<thead>
<tr>
<th>ITEM OF WORK</th>
<th>DATE COMPLETED</th>
<th>DATE FIRST DISC.</th>
<th>ITEM OF WORK</th>
<th>DATE COMPLETED</th>
<th>DATE FIRST DISC.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conf. with Consultants &amp; Board, Programming Studies, Preparing Brochures</td>
<td>4-13-54</td>
<td></td>
<td>Board of Education approves program</td>
<td>4-15-54</td>
<td></td>
</tr>
<tr>
<td>Prelim. Design (incl. Budgets)</td>
<td>4-15-54</td>
<td></td>
<td>Architects meet with Board of Education and Citizens Building Advisory Committee</td>
<td>4-20-54</td>
<td></td>
</tr>
<tr>
<td>Renderings</td>
<td>4-15-54</td>
<td></td>
<td>Board of Education reviews schematics and decides on direction of final preliminary</td>
<td>4-21-54</td>
<td></td>
</tr>
<tr>
<td>Specification Writing</td>
<td>4-21-54</td>
<td></td>
<td>Conference with State Education Department at Albany to review program and schematics</td>
<td>4-22-54</td>
<td></td>
</tr>
<tr>
<td>Schematics</td>
<td>4-21-54</td>
<td></td>
<td>Architects begin preliminary drawings, outline specifications and budget estimates</td>
<td>4-22-54</td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>7-2-54</td>
<td>5-20-54</td>
<td>Conference with State Education Department, Albany, to review preliminaries</td>
<td>9-8-54</td>
<td>5-27-54</td>
</tr>
<tr>
<td>Supervision (Addenda)</td>
<td>10-1-54</td>
<td>6-3-54</td>
<td>Preliminary drawings, outline specifications and budget estimates forwarded to State Education Department for approval</td>
<td>10-1-54</td>
<td>6-3-54</td>
</tr>
<tr>
<td>26 HOURS</td>
<td></td>
<td></td>
<td>First advertisement for bond vote</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervision (Bidding)</td>
<td></td>
<td></td>
<td>General Public Meetings to discuss pending bond issue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>206 HOURS</td>
<td></td>
<td></td>
<td>Registration for voting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervision (Construction)</td>
<td></td>
<td></td>
<td>District votes for Bond Issue on new High School and conversion of Katonah School K-12 to Elementary K-6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44½ HOURS</td>
<td></td>
<td></td>
<td>Working drawings and specifications started after Board of Education’s authorization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Drawings</td>
<td>2-28-56</td>
<td>10-11-54</td>
<td>Working drawings and specifications completed and presented to Board of Education for approval</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44½ HOURS</td>
<td></td>
<td></td>
<td>Approved working drawings and specifications distributed to contractors for bidding purposes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Award of Contracts</td>
<td>4-18-56</td>
<td></td>
<td>Sealed bids opened at Public Meetings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction of classroom facilities</td>
<td>4-25-56</td>
<td></td>
<td>Award of Contracts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5309½ HOURS*</td>
<td></td>
<td></td>
<td>Construction of classroom facilities in High School completed for occupancy. Katonah School conversion partially completed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Includes supervision of construction only through May, 1955; considerable additional supervisory time and some drafting on details, etc. will be added before completion.
PAINTS AND FINISHES—INTERIOR AND EXTERIOR: 1

Paint is a medium which imparts to a surface, in addition to decor, both durability and protection against deteriorating elements to a degree that depends upon the ingredients in the solution and the type of surface. In this summary the qualities of the general categories of paints and finishes are presented with an eye toward their most practical applications to particular types of surfaces: interior masonry, interior wood trim, exterior masonry, exterior wood, floors and metal surfaces. No attempt has been made to include special waterproofing coatings, as these are a study in themselves.

With the exception of the most recently developed acrylic finishes, practically all conventional paints and accessory materials required for architectural uses are adequately covered by Federal Specifications, which are available from the U. S. Government Printing Office. These specifications provide criteria for the selection of paints and can be employed as a basis of quality and performance.

Definitions

Vehicles are the liquid portions of pigmented paints. They serve as "carriers" for the pigments. The vehicle usually contains both volatile and non-volatile components. The volatile, or solvent, component, such as mineral spirits or water, serves two major purposes: (1) it facilitates application of the paint, and (2) by its evaporation it contributes to the drying of the paint film. The non-volatile component, referred to as the "binder," remains as an integral part of the paint film to bind the pigment particles together. Durability of the paint and adhesion of the film to the surface are largely functions of the binder. Typical binders or non-volatile vehicles include drying oils (linseed, tung), alkyd and phenolic resins and acrylic and vinyl resin emulsions (latexes).

Pigments include natural and synthetic, organic and inorganic types. For example, titanium dioxide is a synthetic inorganic pigment, while toluidine red and yellow are synthetic organic pigments. Pigments are employed to impart color and hiding power, as well as to protect the organic vehicle binder from the damaging rays of the sun. Hiding power, or the ability of the paint to obscure underlying color, varies with the different types of pigments. Dark pigments are more effective than light pigments. Of the commonly used white pigments, titanium dioxide is the most effective, while white lead is the least effective. Fading and color change result partly from instability of the pigmentation. Blue and green pigments generally are most susceptible to fading outdoors, with even some variation among these.

Clear coatings include varnishes, unpigmented lacquers, shellacs, clear sealers, wax polishes and water-repellent coatings. In general, they do not have the same protection against sunlight as pigmented coatings.

Varnish is a homogeneous solution of resin, drying oil, drier and solvent. Varnish dries by evaporation of the solvent followed by oxidation and polymerization of the drying oils and resins. It is commonly used as the vehicle in pigmented paints and enamels of the quick-drying, smooth-leveling types.

Lacquer is any type of organic coating that dries rapidly and solely by evaporation of the solvent. Typical solvents are acetates, alcohols and ketones. Although lacquers were generally based on nitrocellulose, manufacturers currently use vinyl resins, plasticizers and reacted drying oils to improve adhesion and elasticity.

Shellac is a solution of refined lac resin in denatured alcohol. It dries by evaporation of the alcohol. The resin is generally furnished in orange and bleached grades. Shellac comes in various "cuts," which indicate the amount of resin in pounds added to 1 gal of solvent: 4-, 4.5- and 5-lb cuts cover the range of light, medium and heavy grades used. Shellac can be used to seal knots in wood prior to painting.

Emulsion paints generally employ synthetic emulsion resins today and are water-thinned.

Interior: Masonry, Plaster, Wallboard

New interior surfaces of plaster, wallboard and masonry should be coated first with a primer-sealer and then with finish coats. Alkyd-type primer-sealers are used more extensively today than conventional oil types, especially under alkyd paints, although they can be used under finishes of any base. The new acrylic primer-sealers, which can be used under any type finish, are finding wider use because of their ease of application, resistance to alkalinity and rapid drying time. Common finishes are listed below:

<table>
<thead>
<tr>
<th>Acrylic resin emulsion paint</th>
<th>Excellent durability</th>
<th>Excellent washability immediately upon drying</th>
<th>Excellent resistance to moisture</th>
<th>Excellent hiding power in colors, fair in white</th>
<th>Good durability, except on hot surfaces</th>
<th>Excellent washability, contingent upon chemical curing, which varies from 30 to 90 days</th>
<th>Excellent hiding power in white, fair in colors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latex paint</td>
<td>Alkyd flat enamel</td>
<td>Oil flat paint</td>
<td>Casein and alkyd resin emulsion points</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Prepared with the assistance of Benjamin J. Harris, Maintenance Coatings Co., Inc. and John C. Moore, National Paint, Varnish and Lacquer Association, Inc.
The school building budget –
One way to help meet its limitations

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

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

<table>
<thead>
<tr>
<th>STEEL ENTRANCE</th>
<th>WOOD ENTRANCE</th>
<th>AMARLITE ENTRANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor</td>
<td>Material</td>
<td>Sub-Contractor</td>
</tr>
<tr>
<td>Doors (2)</td>
<td>Hollow Metal</td>
<td>$50.00</td>
</tr>
<tr>
<td>Doors</td>
<td>Frame, Transom and Trim</td>
<td>20.00</td>
</tr>
<tr>
<td>Butts—3 Pair</td>
<td>Overhead Closer (2)</td>
<td>5.00</td>
</tr>
<tr>
<td>Overhead</td>
<td>Threshold</td>
<td>10.00</td>
</tr>
<tr>
<td>Closers (2)</td>
<td>Surface Mounted Panic Hardware</td>
<td>2.00</td>
</tr>
<tr>
<td>Glass &amp; Glazing</td>
<td>Panic Hardware</td>
<td>10.00</td>
</tr>
<tr>
<td>Painting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$62.00</td>
<td>$711.00</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$854.00</td>
<td></td>
</tr>
</tbody>
</table>

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

Pigmented paints for exterior wood surfaces are generally of the ready-mixed, linseed-oil-vehicle type. The pigments, apart from extenders, usually consist of white lead, titanium dioxide and zinc oxide. When combined in the proper proportions, they provide the optimum in hiding power, durability and repainting characteristics. Especially recommended for areas where industrial fumes are present are the high-quality titanium dioxide paints without lead pigments. They are white initially and stay white even in heavy fume areas where other white paints containing lead turn to gray, yellow and brown. Although three-coat painting of exterior wood has been conventional, it is now possible to apply two coats if properly executed. Regardless of the number of coats, the total thickness should be about the same. For two coats the primer should be applied at about 450 sq ft per gal and the finish coats at about 550. For three coats the primer should be applied at 550 sq ft per gal and the succeeding finish coats at about 650.

Exterior oil paint

- Zinc oxide hardens film and prevents mildew growth
- Chalking-type titanium imparts self-cleaning and good repainting characteristics
- Very slow drying
- Retains gloss well
- Good resistance to fading
- Very slow drying
- Excellent for doors, handrails, thresholds, etc., where maximum outdoor durability is desired
- Good shingle stains, in various shades of red, brown and green, permit "breathing"

Oil trim enamel

- Good wear resistance
- Good moisture resistance
- Recommended for softwood porches, steps and floors, both inside and outside

Spar varnish

- Penetrating varnish is an effective sealer and leaves a thin but durable coating

Stain

- Seals wood and leaves a hard-gloss finish
- Protects a clear-finished surface and improves its appearance
- Practical for an inexpensive, no-buffing floor treatment

Exterior: Masonry

For concrete, plaster, stucco, asbestos-cement siding, concrete masonry, brick and cinder block the exterior finishes listed below are used. Washability is not important in exterior paints. Many are formulated to "chirk" gradually, thus becoming self-cleaning.

<table>
<thead>
<tr>
<th>Acrylic resin emulsion paint</th>
<th>Excellent durability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Excellent alkali resistance</td>
</tr>
<tr>
<td></td>
<td>Excellent color retention</td>
</tr>
<tr>
<td></td>
<td>Fast drying</td>
</tr>
<tr>
<td>Latex (styrene/butadiene) paint</td>
<td>Excellent alkali resistance</td>
</tr>
<tr>
<td></td>
<td>Good durability</td>
</tr>
<tr>
<td></td>
<td>Color retention not so good as the acrylics</td>
</tr>
<tr>
<td></td>
<td>Overnight drying</td>
</tr>
<tr>
<td>Polyvinyl acetate (p.v.a.) emulsion paint</td>
<td>Excellent alkali resistance</td>
</tr>
<tr>
<td></td>
<td>Good durability</td>
</tr>
<tr>
<td></td>
<td>Color retention not so good as the acrylics</td>
</tr>
<tr>
<td></td>
<td>Overnight drying</td>
</tr>
<tr>
<td>Cement base paint</td>
<td>Suitable for coarse, rough surfaces. Smooth or glazed surfaces must be specially treated for roughening</td>
</tr>
<tr>
<td></td>
<td>Excellent alkali resistance</td>
</tr>
<tr>
<td></td>
<td>Good durability against moisture</td>
</tr>
<tr>
<td></td>
<td>Overnight drying</td>
</tr>
<tr>
<td>Exterior oil paint</td>
<td>Good durability when applied to old masonry</td>
</tr>
<tr>
<td></td>
<td>Vulnerable to attack by alkali</td>
</tr>
</tbody>
</table>

Floors: Concrete

Coatings on concrete floors do not vary much in appearance, at least not to an important degree. Their most important effects are the qualities they impart to the floor. Vehicles are usually selected on the basis of hardness and toughness, but they should not be so hard that they will be brittle and chip off when bumped. In addition to pigmentation to produce color and hiding power, inert pigments are sometimes added to contribute to the over-all wear and foot traffic resistance of the finish.

<table>
<thead>
<tr>
<th>Epon resin base enamel</th>
<th>Excellent abrasion resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Excellent alkali resistance</td>
</tr>
<tr>
<td></td>
<td>Excellent adhesion</td>
</tr>
<tr>
<td></td>
<td>Excellent resistance to grease and oil</td>
</tr>
<tr>
<td>Chlorinated rubber paint</td>
<td>Excellent wear resistance</td>
</tr>
<tr>
<td></td>
<td>Excellent alkali resistance</td>
</tr>
<tr>
<td></td>
<td>Excellent for damp floors</td>
</tr>
<tr>
<td>Varnish-base paint</td>
<td>Good wear resistance</td>
</tr>
<tr>
<td></td>
<td>Good moisture resistance</td>
</tr>
<tr>
<td></td>
<td>Excellent for dry, aged floors</td>
</tr>
</tbody>
</table>
Curtis two-lamp Alzak aluminum troffers were chosen for a lifetime of economy and glare-free, Eye-Comfort lighting in this modern low-ceilinged Flint Lake, Indiana school. The average maintained intensity of 45 footcandles of quality low-brightness illumination with a Visual Comfort Index of 97, makes seeing tasks easier and more comfortable.

Curtis Eye-Comfort lighting is achieved by use of the exclusive Curtis Alzak processed parabolic reflectors, Alzak processed after forming in the new Curtis Alzak production facilities at Chicago.

Among other benefits of Curtis Alzak aluminum troffers enjoyed by this modern school is low maintenance of operation and the resultant high economy. Here there are no hangers, fixture tops or reflectors to be cleaned, and the hard-as-diamond Alzak reflector finish requires only occasional dusting to restore its original high reflectance.

This quality low-brightness lighting and high economy is a characteristic of all Curtis Alzak units. There is a design for every interior need—school, commercial or industrial. For information on any lighting problem, consult the Curtis lighting specialist near you, or write, Dept.G3-F5.

Flint Lake School, Valparaiso, Ind.
ARCHITECT: Boyd E. Phelps, Inc., Michigan City, Ind.
Lighting designed by—David Ross
ELECTRICAL CONTRACTOR: Van Ness Electric Co.

6135 WEST 65TH STREET
CHICAGO 38, ILLINOIS
PAINTS AND FINISHES—INTERIOR AND EXTERIOR: 3

Interior: Wood Trim

Interior wood trim can be painted with enamel or with a flat finish to be consistent with flat finishes on interior walls. Of course, semi-gloss and full-gloss finishes are still applied too. Pigmented paints for interior wood surfaces are generally formulated with quick-drying vehicles, such as varnish, alkyd resin or a mixture of varnish with linseed oil. New wood must have a prime coat before application of the finish coat. Three coats of pigmented paint are usually applied. However, two coats are often satisfactory. For estimating purposes, a coverage of approximately 400 to 500 sq ft per gal may be assumed. If treated with reasonable care, a good paint job on interior woodwork will last many years before repainting is required.

<table>
<thead>
<tr>
<th>Paint Type</th>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alkyd flat enamel</td>
<td>Excellent leveling properties, Excellent washability, Excellent mar resistance, Good durability, Overnight drying</td>
</tr>
<tr>
<td>Acrylic resin emulsion paint</td>
<td>Excellent washability within 1 hr after application, Very good durability, Very good mar resistance, Good leveling properties, Fast drying</td>
</tr>
<tr>
<td>Oil flat paint</td>
<td>Good leveling properties, Fair washability, Fair durability, Fair mar resistance, Slow drying</td>
</tr>
</tbody>
</table>

Metal Surfaces

Before being finished with the desired type of protective and/or decorative coating, a metal surface must be properly cleaned and primed with a rust-inhibiting primer. The surface should be free of rust, scale, grease, oil, wax or other contaminant that will impair the adhesion of the primer. The function of the primer is to seal the surface to which it is applied, to inhibit corrosion of the metal surface, and to ensure good adhesion of the finish coat. Most of the finish paints described before for masonry and wood surfaces provide satisfactory finishes. Of the emulsion paints, the acrylics are best for primed hot radiator surfaces. In addition, a whole series of new paints has been developed, incorporating the resins of vinyl, epon, neoprene, phenolic, furane, etc., which resist acids and alkalies. This quality makes them particularly valuable for chemical plants, breweries, dairies, etc. Primers useful for metal surfaces are listed below, classified by pigment and vehicle, both of which are important. Regardless of which primer is used, the primed surface should be finish-coated in a reasonable length of time after application, because the primers are not intended to be weather-resistant.

<table>
<thead>
<tr>
<th>Pigment/Vehicle</th>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red lead pigment</td>
<td>Excellent for ferrous metalwork, which cannot be cleaned of all rust, Best for exterior use, Most commonly used with oil vehicle, Excellent for ferrous metalwork, which is clean, bright, rust-free, Most commonly used with alkyd resin vehicle</td>
</tr>
<tr>
<td>Zinc chromate pigment</td>
<td>Good for all metal surfaces, Excellent rust-inhibitive action, Good for galvanized surfaces, Most commonly used to provide thick coating over thin zinc chromate coating, Sometimes combined with zinc chromate to provide color, Little rust-inhibitive action</td>
</tr>
<tr>
<td>Zinc dust pigment</td>
<td>Alkyd vehicle, Most commonly used with zinc pigments, but can be used with others, Quick drying, Oil-base vehicle, Quick drying, Phenolic vehicle, Slow drying, Vinyl vehicle, (wash coat), Quick drying</td>
</tr>
<tr>
<td>Iron oxide pigment</td>
<td>Alkyd semi-gloss paint, Very good washability, Alkyd or oil-base full-gloss paint, Good hiding power, Varnish, Good, clear finish for trim, Frequently used in clear finish systems to intensify or modify the original color of the wood</td>
</tr>
</tbody>
</table>
Miami Beach's new $15,000,000 Fontainebleau Hotel depends on Chase Copper Tube and Fittings for entire plumbing and air conditioning systems!

Luxury and practical utility are perfectly combined at the Fontainebleau! Everything is top quality—so Chase Copper Tube and Fittings were chosen for the plumbing and air conditioning systems!

Using Chase Copper Tube and Fittings pays off in top-performing, longer-lasting systems that add extra value to any home or building. Such systems, too, cost little or no more than ones of ordinary rustable materials! That's because Chase copper tube and fittings can be installed faster—substantially reducing installation costs! Specify Chase copper tube and fittings on your next job!

Here's how the mechanical contractors sum up their reasons for using Chase materials:

"We have been using Chase Brass and Copper for many years. Chase has always maintained the highest quality in their industry. Their quality along with their excellent service to customers is a combination that makes Chase superior."

—MARKOWITZ BROS., INC., MIAMI, FLA.
Name your heating job...

Chances are there's a smartly-styled Modine Cabinet Unit to do it better...at less cost

For new construction or remodeling, Modine Cabinet Units give you quick, positive and quiet distribution of heated air. With modest-priced accessories, they also provide introduction, filtering and distribution of outside air. Yes, here's the most practical way to heat or ventilate large public rooms or entryways. Some units heat with hot water, cool with chilled water. Others for steam or hot water heating only.

Choose from five models—120 to 640 Edr. Get all the facts and you'll never install unsightly radiators again. See the Modine representative listed in your classified phone book or write for Bulletin 552—Modine Mfg. Co., 1510 DeKoven Ave., Racine, Wisconsin.

ABOUT THE PHOTOS  1. Type BT unit with plenum base installed in school entryway. Duct work concealed in wall discharges heated air through wall grill.  2. Type BF unit with plenum base recessed in masonry wall of supermarket.  3. Type BT unit, ceiling-mounted in lumber company office and display room.  4. Type BF unit with plenum base installed in church.
white oak is applied as a finish to both the inside and the outside of the auditorium proper, the expensive effect of these vast areas of vertically hung boards is not in fact borne out by the cost, for realizing the potential expense, the architect specified ordinary 2½ in. by 3½ in. white oak floor boards which were tongued and grooved in the normal manner with the exception that the top edge was milled, giving a pronounced shadow between the boards. The boards are hung as they would be set on a floor in random sizes—so that the whole wall lining system was acquired for little more than the price of a normal floor.

Indeed the detailing of the entire structure is worthy of close study and it is the more interesting because it contrasts sharply with the prevailing poor standard of detailed design and workmanship in contemporary work in the U. S. A. The dome, for instance, is an independent form and has no contact with the structure of the auditorium.

The necessary light and sound tightness has been achieved by most ingenious detailing and the junction between the two forms effected by flexible rubber separators. Similarly the small auditorium, located directly beneath the main room, required special attention since it had to be acoustically independent of the large assembly. Its ceiling is hung from the floor above via rubber-in-shear mounts and further insulated by a completely independent plaster ceiling sandwiched in the 3-ft gap between the floor and ceiling of the two rooms. The fact that no facilities for drama were required by the programme did much to determine the shape of the main structure, for the necessity of a stage-house would naturally have wrecked the present conception, but the theatre below the assembly is well equipped to handle small productions, and ample stage and dressing-room facilities appear to have been provided.

Finally I wish to allude to the structural problems which have confronted the architect and engineers during construction, and on which the main burden of ill-informed criticism has rested. This article is not the place to discuss in detail the technical problems which arose as work proceeded, in spite of the most careful and expert analysis by Amman and Whitney, the engineers. I do however wish to place on record that not only has the structural analysis been thoroughly justified in practice but that I have found the architect very willing to discuss his problems in most frank terms. Amendments to the design have been of a very minor nature and were introduced as a result of contingencies which could not have been foreseen in the design stage of such a revolutionary structure, and they in no way detract from the appearance of the building.

M.I.T. is to be congratulated on its farsighted policy of erecting buildings upon the campus which reflect a relentless enquiring, progressive approach to knowledge. This is particularly refreshing, for it contrasts vividly with the sterile eclecticism censured by many of the foremost schools in their recent building programmes. The completed project, which will comprise the auditorium, a small chapel of equally controversial design (now in the first stage of construction), a large open-air skating rink and a vast landscaped area, will be a notable addition to this great school; one that will take its place fittingly with the recently completed Aalto dormitory and the Anderson and Beck with biology laboratories.
Cost Factor Is More Important To A Spec. Writer Than The Answer To This All Important Joist Question

Is It Nailable?

THE MACOMBER VS JOIST

Made in sizes for all loadings - 4 to 44 ft.

THIS STEEL JOIST has all the delays to building progress designed out and all the convenience and greater speed of nailability designed in. Think of the labor hours and accessory materials you save in every square foot when you specify Macomber Nailable Steel Joists. Our Steel Joist Catalog shows four types to meet specific needs. Send for it.

THEY COST NO MORE THEY SAVE SO MUCH

STANDARDIZED STEEL BUILDING PRODUCTS

MACOMBER INCORPORATED
CANTON 1, OHIO

ENGINEERING • FABRICATING AND ERECTING

NAILABLE STEEL JOISTS
LONGSPANS
BOWSTRING ROOF TRUSSES
METAL DECK
V-LOK STEEL FRAMING
STRUCTURALS

ARCHITECTURAL RECORD JULY 1955 291
THE RECORD REPORTS

BUILDINGS IN THE NEWS
(Continued from page 11)

1955 A.A.S.A. Winners:
Honorable Mentions
St. Louis

Equal awards; numbers identify only


See the functional beauty of an ACUSTI-
LUMINUS CEILING for yourself... send the coupon below for free
illustrated booklet and location of
an installation near you.

Luminous Ceilings, Inc.
Dept. B-3 2200 W. North Ave.
Chicago 47, III.

Please send me your free illustrated booklet and tell
me where I can see an ACUSTI-LUMINUS CEILING
installation!

Name ____________________________

Firm name ____________________________

Address ____________________________

City & State ____________________________

(Continued on page 296)
CONCEALED AUTOMATIC DOOR HOLDER

APPROVED BY VETERANS ADMINISTRATION
FF-H-111o-TYPE 1160

SARGENT & GREENLEAF INC.
ROCHESTER 21, NEW YORK
THE RECORD REPORTS
BUILDINGS IN THE NEWS
(Continued from page 292)

1955 A.A.S.A. Winners:
Honorable Mentions
Cleveland

Equal awards; numbers identify only

"If they'd specified Monoxivent we wouldn't be havin' this kinda trouble!"

IT PAYS TO Specify KENT-MOORE MONOXIVENT EXHAUST ELIMINATING FIXTURES

Nothing matches modern Monoxivent Fixtures for effectively ridding service departments and garages of carbon monoxide fumes! In fact, Monoxivents offer all the advantages "most wanted" in exhaust eliminating systems... installation economy, operating efficiency, long, trouble-free life... and no unsightly hoses hanging from overhead, either! Models available to meet your every requirement, too. Want the convenience of underfloor hose storage, for example? Two Monoxivent Sets offer this outstanding feature... J 2980-A and the new J 5862 "Twistallation" model that services both single and dual exhaust cars! Looking for economy? Then you can't beat the low-cost J 5066. Or, if trucks are to be serviced, there's the J 5793... a special new fixture designed to service all trucks! What's more, as the pioneer in the exhaust eliminating field, Kent-Moore offers you FREE technical engineering services to assure proper installation and efficient operation of every Monoxivent fixture. See your nearby Kent-Moore jobber, or write direct for complete information today!

KENT-MOORE ORGANIZATION, INC.
Engineers and Manufacturers of
Special Automotive Service Tools and Equipment
3-105 General Motors Bldg. • Detroit 2, Mich.

DENVER — (for the National Council on Schoolhouse Construction) Dr. Charles W. Bursch of the Department of Education, Sacramento, Cal.; Floyd G. Parker, director, School Building Service, Department of Public Instruction, Lincoln, Neb.; and Dr. Arnold C. Tjomsland, consultant in community planning, Department of Public Instruction, Olympia, Wash.; (for the American Institute of Architects) Richard L. Acke, Atlanta; Stayton Nunn, Houston; and Eberle M. Smith, Detroit.

(More awards on page 298)
When you select flooring materials for unusual or severe conditions, look into the unusual combinations of properties offered by the five types of resilient tiles made by Kentile, Inc. In practically every case, one of them will be just right for the job, whether conditions call for serviceability under heavy foot or industrial traffic, ease of maintenance, or resisting alcohol, acids, alkalis, oils and greases, chemicals and foodstuffs. All of them help to create an impressive decorative composition. Uniform thickness, accuracy of cutting, trueueness and clarity of color, surface smoothness and built-in durability—all of these qualities make this the world’s most popular line of resilient tile floorings.

KENTILE, INC.
America’s largest manufacturer of resilient floor tiles

KENTILE: Asphalt Tile • Carnival • Corktone • KENCORK: Cork Tile for Floors and Walls • KENRUBBER: Rubber Tile • KENFLEX: Vinyl Asbestos Tile • Carnival • ROYAL KENFLOR Vinyl Tile • CUSHION-BACK KENFLOR Vinyl Tile • also available by the yard • SPECIAL KENCOVE: Vinyl Wall Base • KENBASE: Wall Base
THE RECORD REPORTS

BUILDINGS IN THE NEWS

(Continued from page 296)

1955 A.A.S.A. Winners:
Honorable Mentions
Denver

Equal awards; numbers identify only

HALSTEAD & MITCHELL
COOLING TOWERS

PROTECTED STEEL

for extra-long life!

Steel in cooling towers undergoes constant corrosive attack by both water and water treatment chemicals. H&M combats this rusting . . . adds years to tower life . . . by Protected Steel, a new concept in steel protection.

H&M steel cabinets are hydraulically painted with Vinsynite, Vinyl Zinc, and chlorinated rubber. Hydraulic painting forces these protections into openings . . . builds a solid wall against moisture. H&M fans and shafts are Stainless Steel, rust-proof, of course. Bolts are Everdur, for ease of future disassembly.

The Protected Steel concept is the concept of complete protection. That’s what you get on every Halstead cooling tower.

and only H&M offers

20 Year Guarantee!

on the wetted deck surface against rotting or fungus attack.

Write for Catalog WT & CT 583

BESSEMER BUILDING • PITTSBURGH 22, PA.