

# ARCHITECTURAL RECORD



COMBINED WITH AMERICAN ARCHITECT AND ARCHITECTURE

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EDITOR-IN-CHIEF, Kenneth Kingsley Stowell, A.I.A.; Managing Editor, Emerson Noble; Associate Editor, Douglas Haskell; Associate in South America, Edmund J. Whiting, A.I.A.; Desk Editor, Florence A. van Wyck; Art Director, W. K. Allen.

CONSULTANTS: Industry Relations Consultant: Thomas S. Holden. Statistical Consultant: Clyde Shute. Building Economics Consultant: Norbert Brown. Field Research Consultant: Clifford Dunnells, Jr.

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# SUMMARY OF ARCHITECTS' VIEWS ON FLUSH VALVES FOR POSTWAR SCHOOLS

What are the trends in the selection of flush valve combinations for "V" day and postwar schools? To obtain a reliable answer to this question, Watrous recently prepared a special ballot sheet which was sent to a list of 309 architects having wide experience in school work.

The diagrams below summarize the results. Viewpoints of those replying are also analyzed briefly at right.

Should you have further thoughts on this subject, or should you desire more complete information on any phase of the results, we shall be pleased to hear from you.

THE IMPERIAL BRASS MFG. CO., 1240 W. Harrison St., Chicago 7, Ill.

**Flush Valve  
Application Data**

## SCHOOLS

Compiled by the manufac-  
turers of Watrous  
Flush Valves

### ★ NOTES ON RESULTS

**Concealed Flush Valves** for closet bowls were far and away the favorite where appropriations permit their use. Typical comments were: "When we have utility space back of the wall, we prefer concealed flush valves." "Where funds permit, the concealed valve is unquestionably the best type."

**Foot-Operated Flush Valves** showed remarkable gains. While individual combinations did not rank at the top of the list, the total for foot-operated types was a close second to the concealed total. Typical comment: "Foot-operated valves are more sanitary and are easier to operate."

**Top-Spud Flush Valves** stand high on the list due to their economy, wide adaptability and ease of servicing. Typical comment: "The selection of a flush valve depends largely on local conditions and above all on the amount of money available. Exposed valves can be adjusted and taken care of by the average janitor better than concealed."

**Seat-Action Flush Valves** finished in 4th place. Widely divergent views were expressed on this subject. Typical comments: "Seat-action closets in schools will keep closets clean." "About seat-action type causing forgetting at home, check-ups have shown this reason to be theoretical."

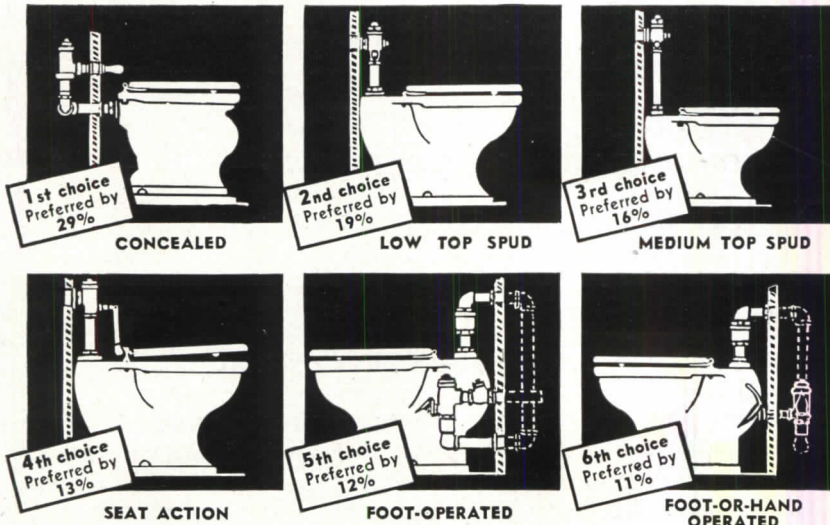
**Automatic Operation** was far out in front for urinals. Typical comment: "Automatic operation best when 4 or more urinals are in a battery."

**Silent-Action Flush Valves** were preferred for schools by a 3 to 2 margin.

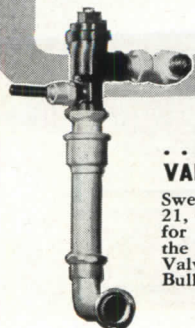
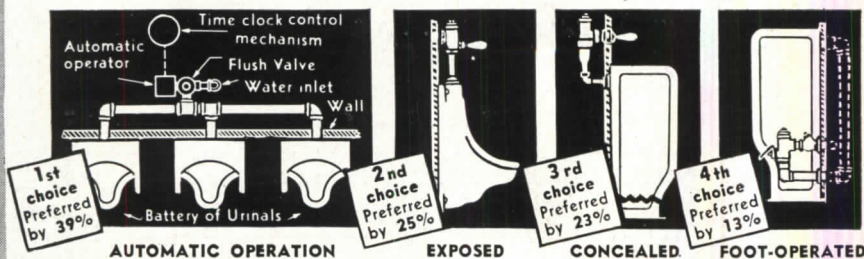
## RESULTS

### FLUSH VALVE COMBINATIONS FOR CLOSET BOWLS

Votes were cast on the question: "Which combinations do you believe offer the most advantages for use in postwar schools?"



### FLUSH VALVE COMBINATIONS FOR URINALS



#### ... V-MODEL WATROUS FLUSH VALVE FOR WARTIME PROJECTS

Sweet's Catalog File for 1944, Sec. 21, Catalog 9, covers this "V" model for wartime applications and also the complete line of Watrous Flush Valves for postwar use. Or write for Bulletin 858-W and Catalog 448.

# Watrous Flush Valves

# THE RECORD REPORTS

**Politics Touches Construction • Slum Clearance an Issue  
Lanham Committee Active • NHA in Picture • FHA Favored  
L-41 Under Study • Grants of Priority**

THE WINTER preceding a presidential campaign has this peculiarity distinguishing it from other seasons—as Congressmen and top administrative officials discuss those prosaic subjects which ordinarily call for simple expository language and even inflections, their voices experiment with notes of enthusiasm or indignation. Conversations about metal available for plumbing, or lumber prospects, are interrupted from time to time by timid approaches to oratory. The reason is readily at hand. The time is one of search for and grooming of political issues. Much that is being said in reports and in speeches may be repeated with some embellishment in the political platforms.

Since construction is one of the nation's greatest industries whose fluctuations, perhaps, dominate the economy, it is hardly likely that it will be overlooked as the two parties pile up indictments of each other. It may be, therefore, that the debates just opening are intended, at least secondarily, to feel out public opinion.

## Slum Clearance an Issue

It is for this reason that many Congressmen are keenly interested in a drive being launched against publicly-financed slum-clearance. The drive itself is directed by those sections of the construction industry which are convinced that they are injured by government-sponsored clearance projects—most prominent among them being the smaller builders. Interest in the campaign on Capitol Hill may go beyond that. The immediate fight is over a \$20,000,000 bill under which the most picturesquely unwholesome areas of the District of Columbia would be condemned and cleared and new homes built elsewhere for the tenants—all this, of course, to happen after WPB allowed use of materials. Meanwhile, private builders feel pretty sure that the National Housing Agency is working up a similar idea to be applied for the whole country. At hearings before the Senate District Committee, builders asserted that they could do the job as well or better than a government agency—if condemnation were handled first by the government and any subsidies allowed to agency building were given as well to private. Since such government con-

demnation would involve subsequent calls for bids on specific architectural plans—which is not a wide departure from housing authority methods—this idea is not likely to go very far. Comparative costs and how to measure them are the chief points at issue for Senator Burton of Ohio who is conducting the hearings and who is himself disinterested.

## Lanham Committee Active

While the fight over capital housing makes at least the Washington newspapers, the Lanham Committee of the House of Representatives, by steady accretion of statements given at hearings, is building up a lengthy but unread document in opposition to federal construction subsidies. The United States Chamber of Commerce appeared first opposing federal works expenditures, and subsequently circularized local chambers for resolutions. National Association of Home Builders and other groups have appeared in opposition to federal financing of local construction. The Committee members themselves generally take the same stand.

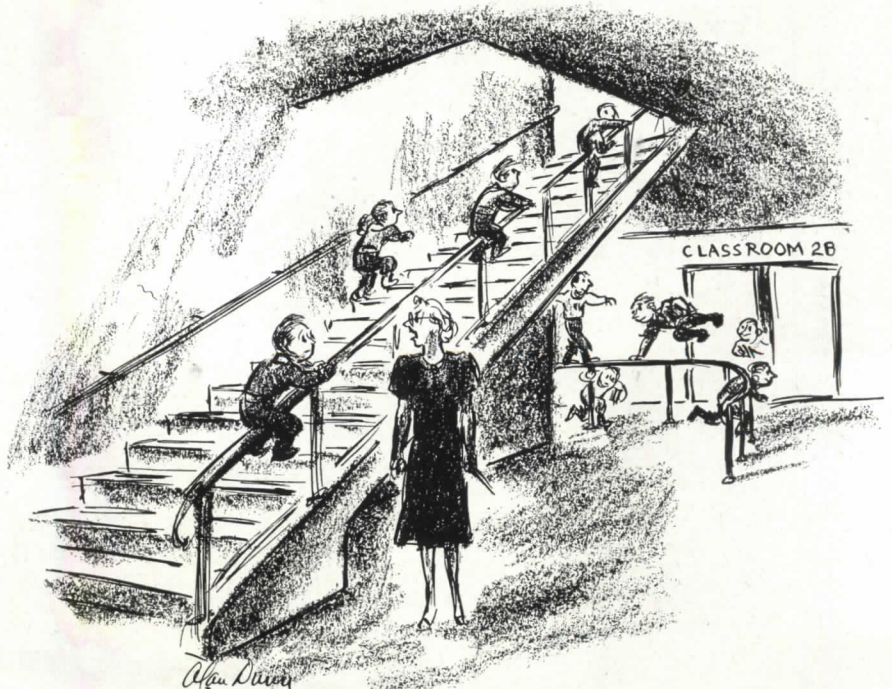
Division of interests appears to follow these lines: It is taken for granted

that there will be a postwar housing boom so that the question is who will ride it. The smaller builders feel that government slum clearance squeezes them out, first, because they do not get the contracting jobs and, second, because tax exemptions of government building tend to increase the tax costs of and to promote competition with their own projects. The Chamber of Commerce evidently goes along with them on the general principle of narrowing the government domain. The big contractors who customarily bid on government jobs, in turn, go along with the Chamber, presumably on the theory that with a building boom in the offing anyway, it is just as well that the government stay out and that business come mainly from the insurance companies.

## NHA in Picture

While these battles were going on, National Housing Administrator Blandford told the members of the House Appropriations Committee, of whom he was seeking another year's wherewithal, that the housing job should be done "with a minimum of federal participation, personnel and money." He said that his approach to postwar housing will be "to enlist private enterprise with every legitimate form of governmental help that we can muster to do as much of the job as can be done."

A kind of side show to the onslaught against NHA is provided by another attack, led by Senator Byrd and Representative Everett M. Dirksen, Illinois, (Continued on page 10)

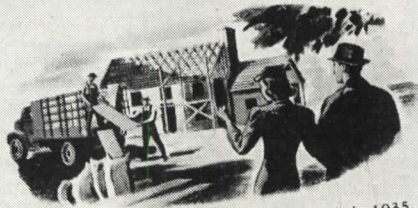


"Now see here, that's not what the architect meant by 'lines of flow'!"

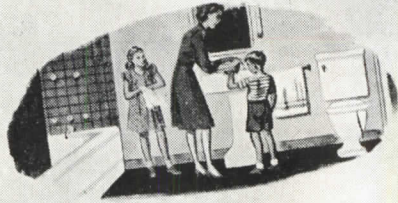
—Drawn for the RECORD by Alan Dunn

# A Message Today

"These times have certainly taught us the value of copper and brass"



"When John and I built our home back in 1935, thank goodness we didn't skimp on tried-and-true materials like brass pipe plumbing and copper gutters. Our home has been a joy, especially during this war period when it's been so hard to replace things."



"Just take plumbing—something a housewife lives with 24 hours a day. We've never had a worry with our brass pipes . . . no rust-clogging . . . no rusty-red water. I can't help but realize how fortunate we are when I compare our experience with the Ralston's next door who have had so much trouble with rust."

**LOOK HOW FAR A WAR BOND WILL GO IN MAKING YOUR HOME RUSTPROOF!**

In building an average 6 or 7 room house, a one-hundred dollar bond will more than cover the extra cost of:

- COPPER tubes for both hot and cold water pipes.
- COPPER gutters and leaders.
- COPPER flashing around chimney.
- BRONZE screens for all windows and doors.

What better investment for one of your bonds? Save today to make your postwar home rustproof.

"John says our copper gutters and leaders and chimney flashing are still as good as new. We haven't spent a nickel on upkeep, except for clearing out leaves. And I can vouch for the way bronze screens last—ours are still in excellent condition."



"And now, we are thinking of building a new home when the war's over—one with a little more ground. We're collecting ideas and laying aside war bonds. One thing sure—there's going to be plenty of copper and brass used. After all, the upkeep we've saved helped pay for plenty of our bonds."



**When the red metal gets the green light . . .**

Today war needs get first call on all production of copper and copper alloys. But with victory, Anaconda Copper, Brass and Bronze in many forms of usefulness and durability will be waiting for architects and builders. The same type of research that pioneered brass pipe plumbing, that paved the way for low-cost copper tubing, is carrying on now to serve postwar home owners.



**THE AMERICAN BRASS COMPANY**  
 General Offices: Waterbury 88, Connecticut  
 Subsidiary of Anaconda Copper Mining Company  
 In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.

**Anaconda Copper & Brass**

...for use Tomorrow

## Emphasizing the security of **COPPER** and **BRASS**

ADVERTISEMENTS such as this one, appearing in Better Homes and Gardens and in American Home, will be read and remembered by those people in your community who will be seeking the aid of architects . . . people who are eagerly planning, not just a house, but the perfect home.

When such people turn to an architect for guidance, they will expect a great deal from him. They will expect comfort, beauty, durability, freedom from excessive repairs and maintenance. Above all, they will appreciate the *security* that is typified by copper and brass.



4429

# Anaconda Copper & Brass

**THE AMERICAN BRASS COMPANY**

Subsidiary of Anaconda Copper Mining Company  
General Offices: Waterbury 88, Connecticut  
In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.

who recently announced his candidacy for the White House, on Home Owners Loan Corporation. This fight is a mere and typical inflation symptom. The building and loan associations, which have more money than they can invest, enviously eye the mortgage portfolio of HOLC and therefore have called for speedier liquidation. They want to buy HOLC's sound mortgages, which probably would sell for premiums in open market, at par. HOLC doesn't want to sell and Dirksen is trying to get Congress to force it to.

## FHA Favored

While builders attack NHA and mortgage institutions try to break up HOLC, FHA basks in general approval which even the coming campaign does not disturb. The agency officially is looking forward to little change for the next year in operations, but in fact is working up plans for larger postwar operations. Its important problem is one of amending qualifications of mortgagors to include veterans who may become home owners. The change which is most obvious and therefore most probable is to eliminate the requirement that the buyer's equity be exclusively his own and, instead, to permit his borrowing it. It is possible but not yet clear that there may be additional plans either for lending down payment funds or else for creating a moderate interest market in second mortgages.

## L-41 Under Study

All of this relates to postwar. More immediate planning goes on with respect to building after the Army has invaded Europe. There have been several conferences between WPB and an informal industry group on how to modify L-41. A general industry meeting had been planned for February 1 but was cancelled when the Army indicated opposition to anything that would stir more postwar talk. The meeting is tentatively scheduled for March, with preliminary caucuses likely by management and labor groups.

The general idea is to keep L-41 in force but to amend it and to relax enforcement, permitting more on appeal either than is permitted in the order itself or permitted now. The amount of housing to come forth, however, will depend primarily upon the amount of lumber that is available. Official word is that the invasion will ease other materials but not wood. WPB is under continued pressure to make its post-invasion amendments significant.

## Grants of Priority

After months of consultation, WPB and NHA worked out a method for speeding grants of priority to builders. Final decisions rest with FHA field offices which, according to Washington spokesmen will treat builders with greater kindness than does WPB. Various restrictions are removed such as allowing use of steel or zinc for weather stripping, eliminating detailed specifications in applications, etc. Since lumber cannot be purchased, the relaxations cannot increase volume but should promote the construction of better houses. This suggests an upward trend in costs and sales prices.

With the war housing program finishing its last lap, the question of disposal is coming up. A suggestion by Senator Tydings, Maryland, at a hearing on Washington slum clearance pointed to a possible opposition to getting rid of projects. After much testimony had been gathered on crowded conditions in the Capital, it was brought out that nearby war housing was largely unoccupied. Rooms were being reserved for the Navy and other branches of the Service whose workers had not yet appeared. Tydings asked why, in the meantime, the temporary houses could not be rented on two-month, one-month or one-week leases to tenants who failed to qualify as "war workers." Property owners fear that the same proposal will be made after the war.

## Industrial Plants First

It is common gossip that when the Army agrees to greater civilian use of materials and manpower, the first beneficiaries will be industrial plants which have accumulated their maintenance and depreciation in cash. The trend in that direction was evident several months ago; after the invasion it may become so marked as to create buyers markets in some equipment. Since WPB already is increasing amounts of materials for repair of public buildings, it is likely that building and home owners will benefit substantially.

Public Buildings Administration is \$350,000 deep in postwar planning. One study bears on postwar construction with much emphasis on providing worktime shelter for Treasury personnel helping people with income taxes. There will also be new permanent Army and Navy construction.

## Building Defects Scrutinized

PBA is also looking for architectural defects of existing buildings

which result in higher operating costs—such items as how fast dust collects, lighting, elevator and toilet layouts, ventilation, the theoretically correct size of lobbies in relation to internal footage. Results, which will be published, will be used later both for new construction and for revamping of present buildings.

There is also a marked determination to allow construction of utilities in war industry committees and WPB is expected to release materials more readily. The total program authorized by Congress is \$500,000,000 most of which has been appropriated. The program covers nurseries, stores, restaurants.



## ARCHITECTURE BY TELEVISION

Imagine architects explaining their designs before the eyes and ears of the world (within a 50-mile radius)! This actually took place last month when the General Electric Company, through its television station, WRGB Schenectady, put on the air the designs and designers of "The Television Broadcasting Studio of the Future," a project sponsored by the Beaux Arts Institute of Design. The designs and their explanations were presented by Helen Ross and Mary T. Wilcox, of the University of Pennsylvania, and Idelfonso Aroztegui (Rome prize winner from Uruguay), of the University of Illinois, pictured above with Kenneth K. Stowell, secretary of the B.A.I.D.

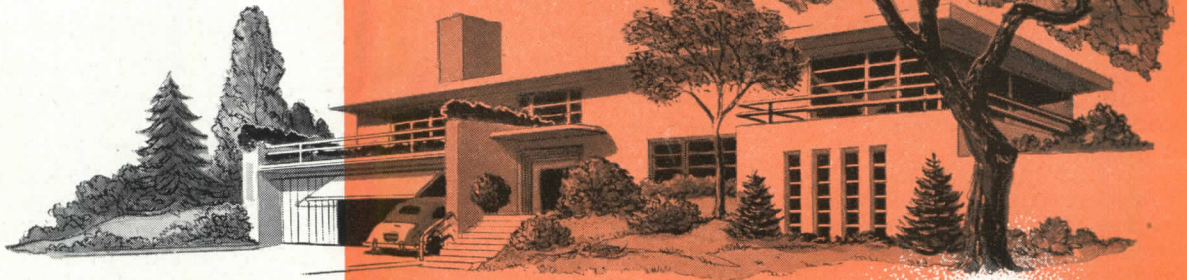
## WPB NOTES

### Simplified Materials Authorized

A simplified procedure for acquiring authorization, after February 15, for agricultural, commercial and industrial construction has been announced by the War Production Board. The procedure for obtaining materials for authorized construction projects also has been simplified.

The new procedure establishes a method of assigning a preference rating and allotment symbol F-6 to an approved construction project. Under the change, the symbol and rating may be used to purchase controlled materials and other construction materials without reference to calendar quarters,

(Continued on page 12)



**The Postwar House will have **ORANGEBURG PIPE** Sewer Connections**

In postwar construction the architect's up-to-date knowledge of the properties of new building materials available...his use of the best of the old familiar products along with the best of the new...will make the postwar "dream house" a reality. Among new materials you'll use after the war and may want to know about now is Orangeburg Fibre Pipe—for sewer and septic tank connections, filter beds, soil drainage, irrigation, and other non-pressure uses outside the house. Stronger than clay; outlasts iron. Tight joints prevent root growth and infiltration. Economical. Send now for descriptive booklet.

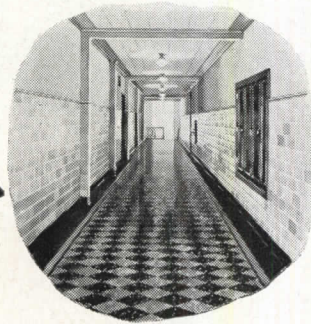
**THE FIBRE CONDUIT CO., ORANGEBURG, N. Y.**

(Continued from page 10)

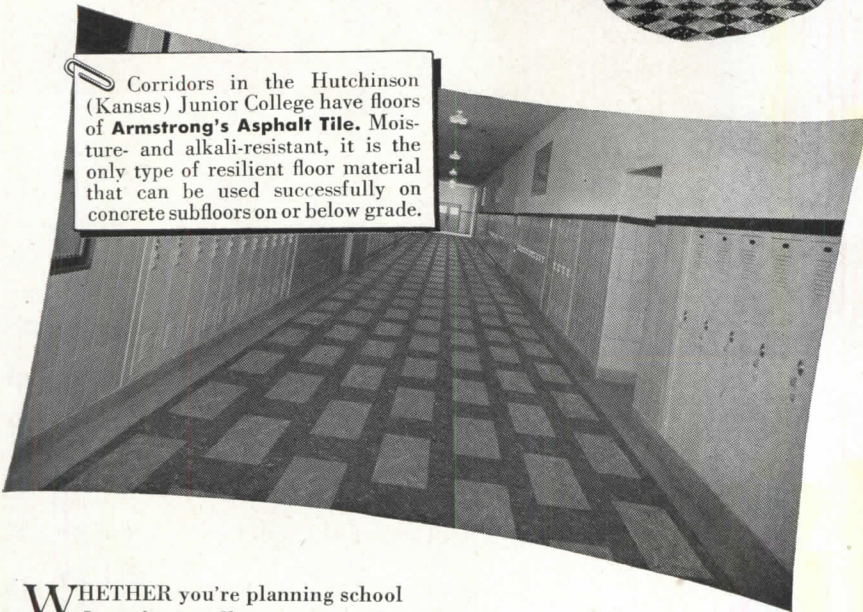
**"FLOOR PLANS"  
FOR SCHOOLS**



Architects Parker & Wolfe of Sandusky, Ohio, designed this classroom floor of **Armstrong's Linotile (Oil-Bonded)**. It was selected for its long-wearing qualities and high resistance to indentation. **Armstrong's Asphalt Tile** was installed in the corridor, shown at right, because it's easy to clean and withstands heavy traffic. These attractive, serviceable floors are in the Huron (Ohio) Elementary and High Schools.



Corridors in the Hutchinson (Kansas) Junior College have floors of **Armstrong's Asphalt Tile**. Moisture- and alkali-resistant, it is the only type of resilient floor material that can be used successfully on concrete subfloors on or below grade.



**WHETHER** you're planning school floors for installation now, or for after the war, you'll find a colorful Armstrong resilient tile floor for every area—classrooms, corridors, shops, auditoriums, gymnasiums, cafeterias,

and kitchens. For all the facts, consult Sweet's, Section 13, Catalog 23, or write to Armstrong Cork Company, Resilient Tile Floors Department, 2403 Duke Street, Lancaster, Pa.

**ARMSTRONG'S  
RESILIENT TILE FLOORS**

ASPHALT TILE—STANDARD, GREASEPROOF, INDUSTRIAL AND CONDUCTIVE · LINOTILE (OIL-BONDED)



in amounts required for completion. These objectives are obtained through the revision of WPB application form 617 and instructions, a new authorization form GA-1456 supplanting CMPL-224 and the coincidental issuance of Direction 1 to Controlled Materials Plant Regulation 6, which makes the changes possible.

In filing Form 617 as revised, the applicant will be required to describe the type of construction in sufficient detail to indicate the size and layout.

**Materials Procedure for Housing**

A simplified procedure (Order P-55-C) eliminating the filing of a detailed list of materials (WPB-2897) for privately-financed housing construction and permitting the use of additional materials to conserve lumber and fuel has been announced jointly by the WPB and NHA.

Under the procedure, holders of approved housing applications are given blanket authority to construct rather than specific authority under an individual order for each type of material. P-55-C, which becomes effective March 1, will govern all war and non-war housing.

Applications for authority to construct and for materials with which to carry on housing construction will continue to be filed on WPB Form 2896. Controlled materials will be obtainable through the use of allotment symbols H-1 and S-2, the former for war housing, the latter for non-war.

**PREFABRICATED HOUSE EXHIBITION**

An extensive exhibition of pre-fabricated houses scheduled to open March 8 at the Architectural League of New York, 115 East 40th Street, will continue through March 29.

Participating in the display are the following exhibitors: American Houses, Inc.; The Celotex Corp.; General Houses, Inc.; General Panel Corp.; Gunnison Housing Corp.; The E. F. Hauserman Co.; Homasote Co.; The Horsley Co., Inc.; Houston Ready Cut House Co.; Ivon R. Ford Lumber Co.; National Homes; John B. Pierce Foundation; U. S. Plywood Corp.; and Condensation Engineering Corp.

**NEW YORK STATE APPROVES PROJECTS**

Applications from 17 communities, involving 56 projects, were approved at a meeting of the State Postwar Public Works Planning Commission on January 12, and applications from 22

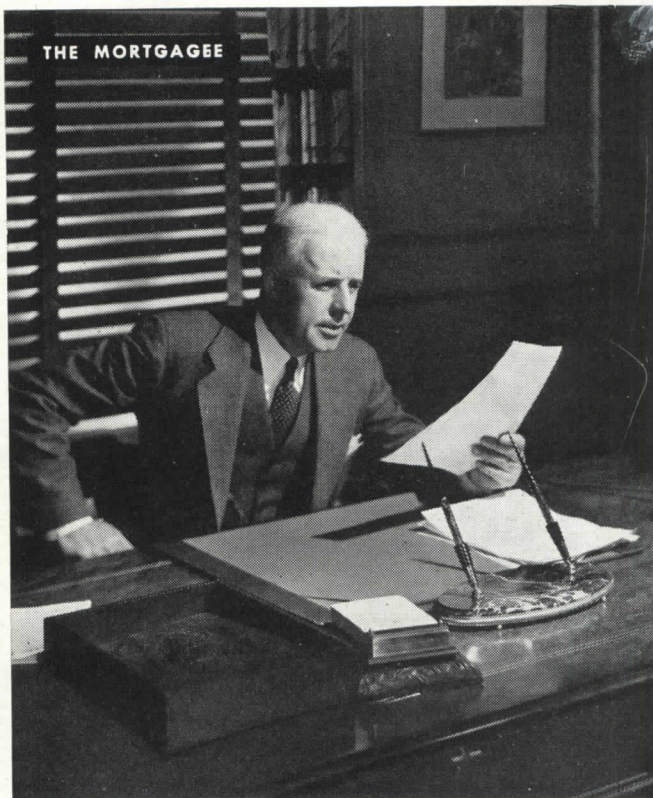
(Continued on page 122)



THE BUILDER



THE MORTGAGEE



# the House

Commerce that, if the war lasts through 1944, consumers will have received approximately 100 billions of dollars more than they have been able to spend since the start of the war.

And also at the same time, our friends Mr. & Mrs. J. Q. are being told of the wonders they can expect in new things after the war. Their appetites are being whetted for something different, something finer, than they knew before the war.

Witness, for example, the advertising General Electric is running right now in a number of leading national magazines.

## New days... new expectations... new habits

We think these factors can give an impetus to the building, financing, and selling of houses complete with electrical operating equipment.

We think they'll increase the public's desire toward buying that kind of house. People won't expect houses to be offered as they were before the war. They'll be ripe for changes and improvements. And they won't be clinging to old buying habits, old buying resistances.

All of which, we believe, is food for thought for architects . . . builders . . . financial people.

## Have you any questions?

We at General Electric have gone very deeply into the ways and means of building and financing the kind of home we're talking about.

We've had considerable experience. We've collected a lot of data, both engineering and financial.

Have you any questions? We'd like to have them, as well as your opinions. Won't you drop us a line?



Everything Electrical for After-Victory Homes

**GENERAL  ELECTRIC**

Home Bureau • Bridgeport, Conn.

Hear the General Electric radio programs: "The G-E All-Girl Orchestra" Sunday 10 P.M.—E.W.T. NBC. "The World Today" news every weekday 6:45 P.M.—E.W.T. CBS.

# Speakman SHOWERS AND FIXTURES for Post-War Projects

YOU can plan your post-war projects with the full assurance that Speakman Showers and Fixtures will be available. The "Anystream" Shower Head is a fine example of Speakman quality. It is made to give perfect performance for years. It provides any type shower desired, from flood to needle spray. It ends clogging and is completely self-cleaning.

The Speakman pre-war Catalog S illustrates our complete line of showers and fixtures that will be produced immediately there is a release of critical materials.

**S-1000 Speakman Built-In Mixometer Shower.** Size  $\frac{1}{2}$ ". Mixometer with monel metal renewable seats, metal lever handle and wall plate. Bent arm, metal wall flange, "Anystream" Self-Cleaning head, ball joint with concealed volume control.

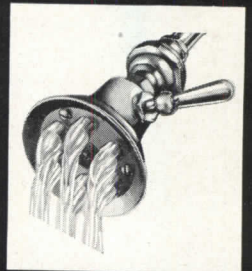
## HERE'S WHY IT'S CALLED ANYSTREAM



Normal or Medium Shower



Needle or Fine Shower

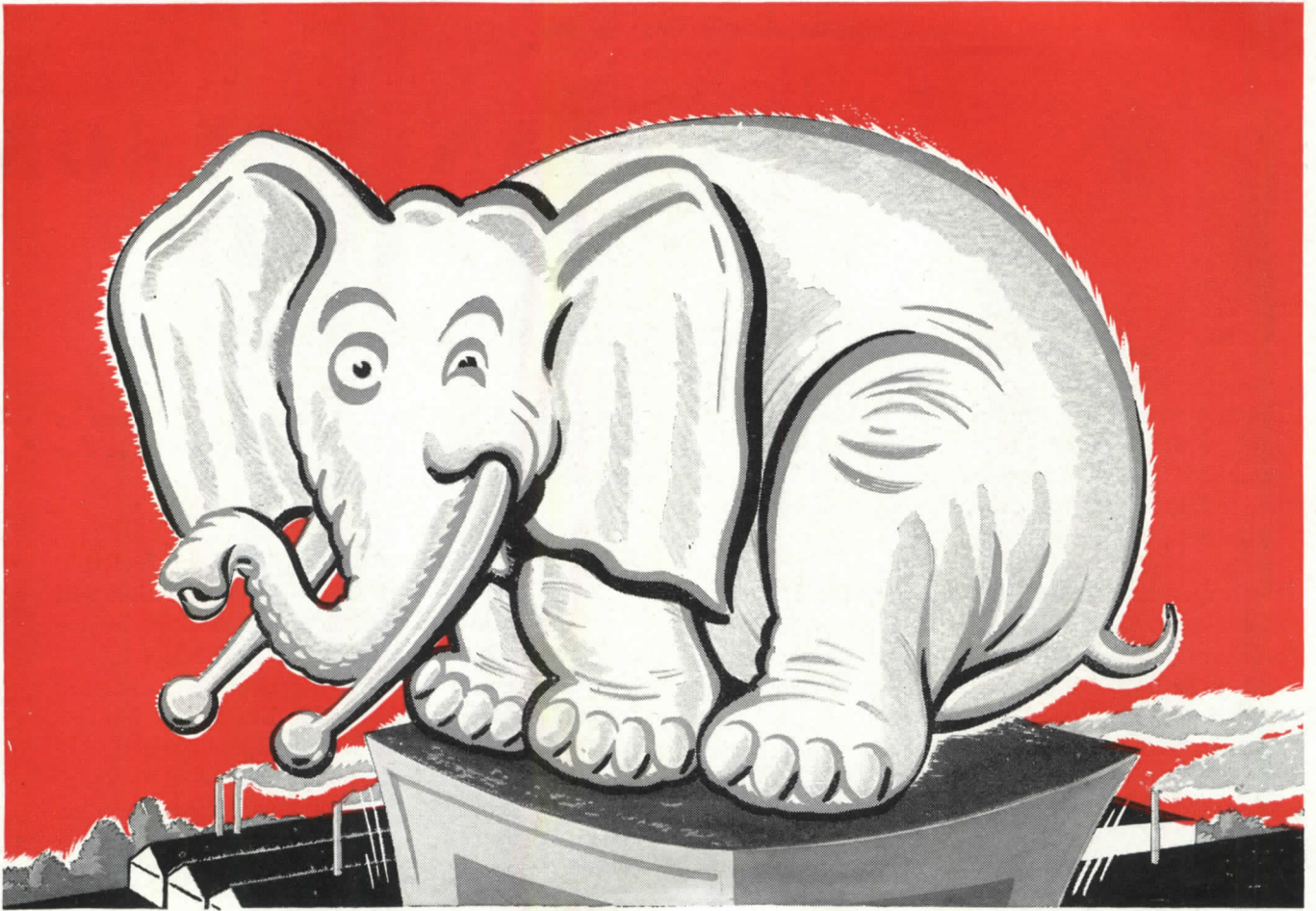


Flood or Self-Cleaning



# SPEAKMAN

## SHOWERS AND FIXTURES



## The problem of keeping White Elephants off the roof

*... when seeking High Temperature Relief ...  
Solved by Allen Engineers*

In high-temperature relief situations, where tremendous quantities of heat must be valved from a roof to prevent intolerable working conditions you can all too easily get a white elephant up there both in terms of inefficient ventilation and excessive costs. We believe you will find it wise to talk over your high-temperature problem with Allen engineers.

We say this without qualification because the Allen Laminar-Flow Ventilating Roof Valve can open up 91.5% of a roof\* for ventilation

purposes. No other unit can match this performance.

Competitive figures on a recent job showed that Allen was able to provide huge quantities of gravity ventilation with only 114 tons of steel. Standard designs using a bi-furcated air stream approximated 260 tons or 128% more steel to do the same job. Excess cost of the steel alone would be approximately \$11,000. Naturally, installation costs, fabrication costs and transportation costs are considerably lowered. *Allen is the only manufacturer in the United*

*States that can offer you a large area gravity type ventilating roof valve that has better than 80% free area within the limits of its case.*

If you have a high-temperature relief problem, tell us how many BTU you put in the building or figures from which we can calculate it—tell us what final temperatures you can permit under the roof and we will give you an advance calculation based on modern psychrometric practice that will give you an intelligent estimate of exactly what you can expect in your own plant. A cross-section and plan of the building together with the source of heat production will also assist considerably. *The Allen Corporation, 9751 Erwin Avenue, Detroit 13, Michigan.*

THE *Allen*

CORPORATION



ENGINEERED VENTILATION FOR INDUSTRY



# HERMAN NELSON PRODUCTS

## in post-war building

Since our country started preparations for this war, the building industry has made every sacrifice needed to achieve victory. Until the peace has been won, this industry will continue its efforts in that direction.

However, architects, engineers, contractors and manufacturers are looking forward to post-war achievements. All of them are thinking about city planning, slum clearance, more efficient manufacturing buildings, stores designed for better merchandising, and schools which serve the entire community. Many are actually doing something about it.

The Herman Nelson Corporation has also been

busy manufacturing war products. As long as the war lasts our facilities will be available for the needs of our armed forces.

However, we have not lost sight of the fact that we are fighting for peace — a peace which will permit the building of a better nation, larger airports, more comfortable homes, more attractive theatres, more inspiring churches. We are not only thinking about this building. We are continuing to improve our products, looking for new uses and applications for them and developing new products. We want to cooperate with the building industry in heating and ventilating their post-war projects.

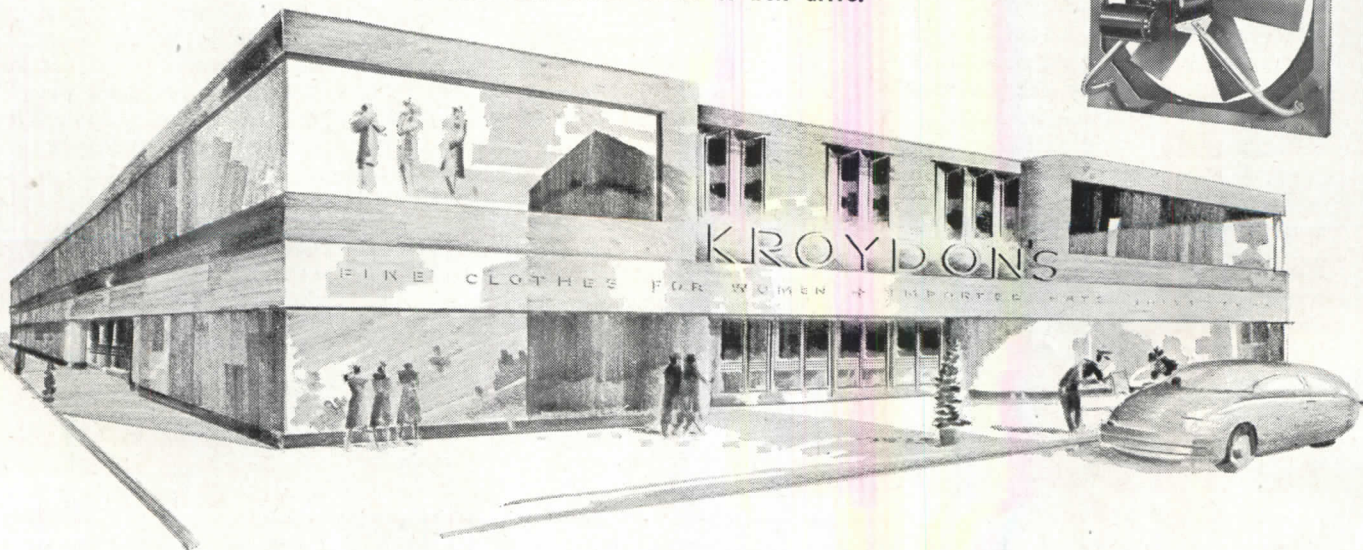
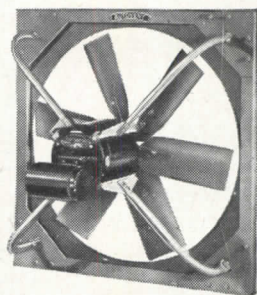


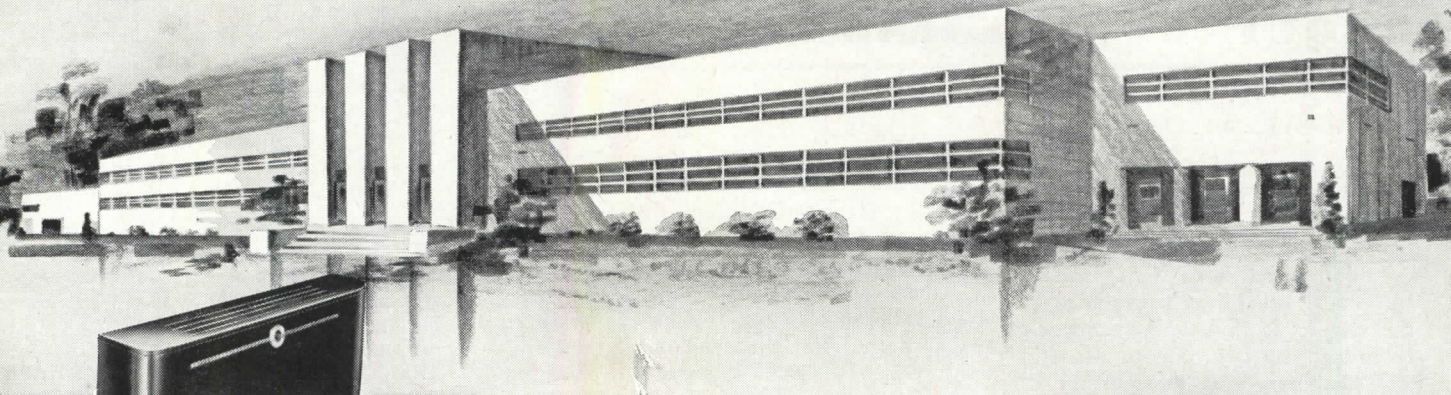
## THE HERMAN NELSON CORPORATION

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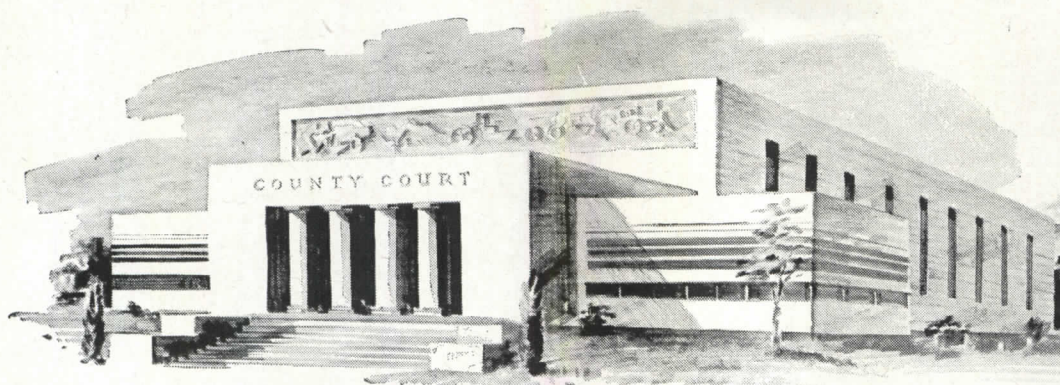
MOLINE, ILLINOIS

*Commercial buildings of all types present many ventilating problems which can be solved with Herman Nelson Propeller Fans. These fans are available in a wide range of sizes with either direct or belt drive.*

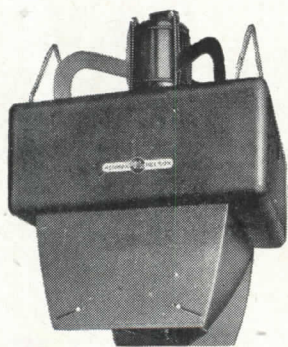




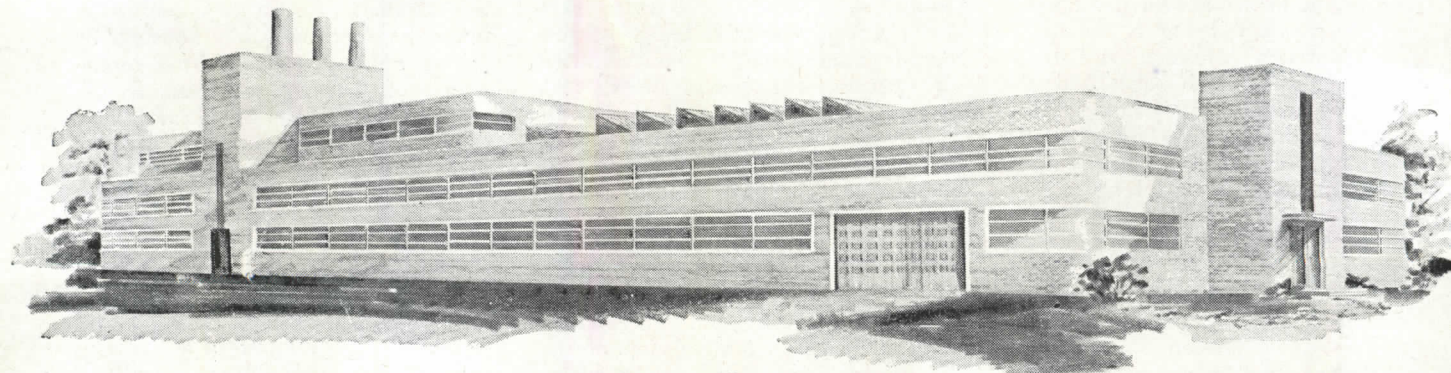
**Herman Nelson is the leading manufacturer of Unit Ventilators for schools. For over twenty-five years Herman Nelson Unit Ventilators have been maintaining proper air conditions for the protection of school children's health and comfort.**



**Heating, ventilating or air conditioning systems in public buildings require large blowers. Herman Nelson manufactures blowers with capacities ranging up to 300,000 CFM. They are available with either forwardly or backwardly curved blade wheels.**



**Unit Heaters are recognized as the most efficient and economical method of heating industrial buildings. Herman Nelson Propeller Fan Unit Heaters are manufactured in both the horizontal and vertical shaft type.**



# REQUIRED READING

## GOOD-BYE, MR. CHIPPENDALE

By T. H. Robsjohn-Gibblings. *With drawings by Mary Petty. New York 22 (501 Madison Ave.), Alfred A. Knopf, 1944. 5¾ by 8½ in. 105 pp. \$2.00.*

Architects busily designing the postwar house are serenely confident that the public is following along close behind them, according to Mr. Robsjohn-Gibblings, but "most of the contemporary thinking, as well as the contemporary architecture illustrated in the architectural magazines, could be going on in Mars as far as the average man or woman is concerned. They simply don't know about it, and they care even less." For the American public is still engrossed in the antique-furniture craze that has filled our homes with ornate reproductions that "would look grotesque against the clean simplicity of the new interiors."

With his tongue in his cheek and his pen razor-sharp, Mr. Robsjohn-Gibblings traces the history of this crazy craze. He's right on the beam, too, though it's going to hurt a lot of people to admit it. And he doesn't stop with furniture and interior decoration, either, but has his fling with the Beaux Arts architecture which gave us—in his opinion at least—the copycat country mansions and ornately palatial town houses of the turn of the century:

"Just what confections the John-Frederics of that day were dreaming up is beyond me, but no milliner in his wackiest concoctings could have sewn together anything to equal one of the 1900 architectural day-dreams—the New York Yacht Club. No girl, even to attend the opening night of the ballet today, ever cooked up anything quite like this architectural toque, with its carved stone aigrettes and mouseline de soie grotto work."

The interior decorating ideas of Elsie de Wolfe and "Mrs. Price Post, better known as 'Emily,'" come in for their (fair) share of fun-poking. A delightful chapter entitled "Madame, Your Antiques are Showing," digs into the antique-worshipping of the magazines—women's, fashion and home furnishing—"which have had the American house foremost on their sucker list for the last fifty years." Louis Sullivan and Frank Lloyd Wright, however, for their debunking of "antiques" and the general progressiveness of their thinking, are put firmly on the pedestals of progress and the democratic credos, but the "salmon-pink prognostications" of postwar day-dreaming are eloquently pooh-poohed. No "futuristic voodoo" and golden age of plastics for Mr. Robsjohn-Gibblings!

"The way the decorators, the magazines, and the furniture manufacturers feel about it right now, if you let them loose with prefabricated houses and plastics, the results would be magnesium Cape Cod cottages, Georgian villas, and French Provincial farmhouses rolling off the prefabricated assembly lines; while out of the plastic molds would come a stream of plastic cobblers' benches, Chippendale picrust tables, and corner cupboards in the colors of the rainbow. And the way the public is being brought up right now, this chemical chow mein would be just its dish."

Mr. Robsjohn-Gibblings evidently enjoyed writing this book and his enjoyment is contagious. Yet underneath all the irony and fun-poking is an almost impassioned plea for sanity and harmony inside and out in the house of the future.

Mary Petty has contributed eight full-page drawings, whimsical, satirical and thoroughly delightful, which in effect sum up not only the book itself, but the whole crazy period with which the book deals.

## MODERN AIRFIELD PLANNING AND CONCEALMENT

By Merrill E. De Longe. *New York (3 West 45th St.), Pitman Publishing Corp., 1943. 6 by 9¼ in. viii+167 pp. illus. \$4.00.*

Disheartening as it may be, there can be little doubt that some future generation will have another war on its hands, and it is with this in mind that Major De Longe of the Army Air Force has written this fine little volume on airfield planning and concealment. It is not meant, as he explains in the introduction, for the correction of errors in existing airfields, but rather as a guide toward the elimination of such errors in the planning of future airfields.

A pilot himself, and schooled in the drafting rooms of the Camouflage Branch of the Engineer Board at Fort Belvoir, Va., Major De Longe is thoroughly aware both of the difficulties of concealing the modern airfield with its mile-long runways, and of the features which make it difficult for the bombardier to find his target. His approach to the problem thus is first of all practical. With good common sense his main stress is on the consideration of site location and development of the airfield to obtain the maximum of inherent concealment. Three chapters are given to a discussion of the choice of location. Seven are devoted to the building in of maximum conceal-

ment at the outset: preservation of natural terrain features, dispersion of buildings, intelligent tree preservation, choosing proper color and texture, etc.

This is a book as interesting to the layman as it should be profitable to the expert. With all indications pointing to increased civilian air travel after the war and continued, if not increasing, military air emphasis, it is a book that deserves and undoubtedly will receive a wide audience.

## THE SEVEN MYTHS OF HOUSING

By Nathan Straus. *New York 22 (501 Madison Ave.), Alfred A. Knopf, 1944. 5⅞ by 8½ in. xiv+314 pp. illus. \$2.75.*

Mr. Straus, quite naturally, in view of his long association with it, believes in public housing, and in this book vigorously denies the common arguments against it.

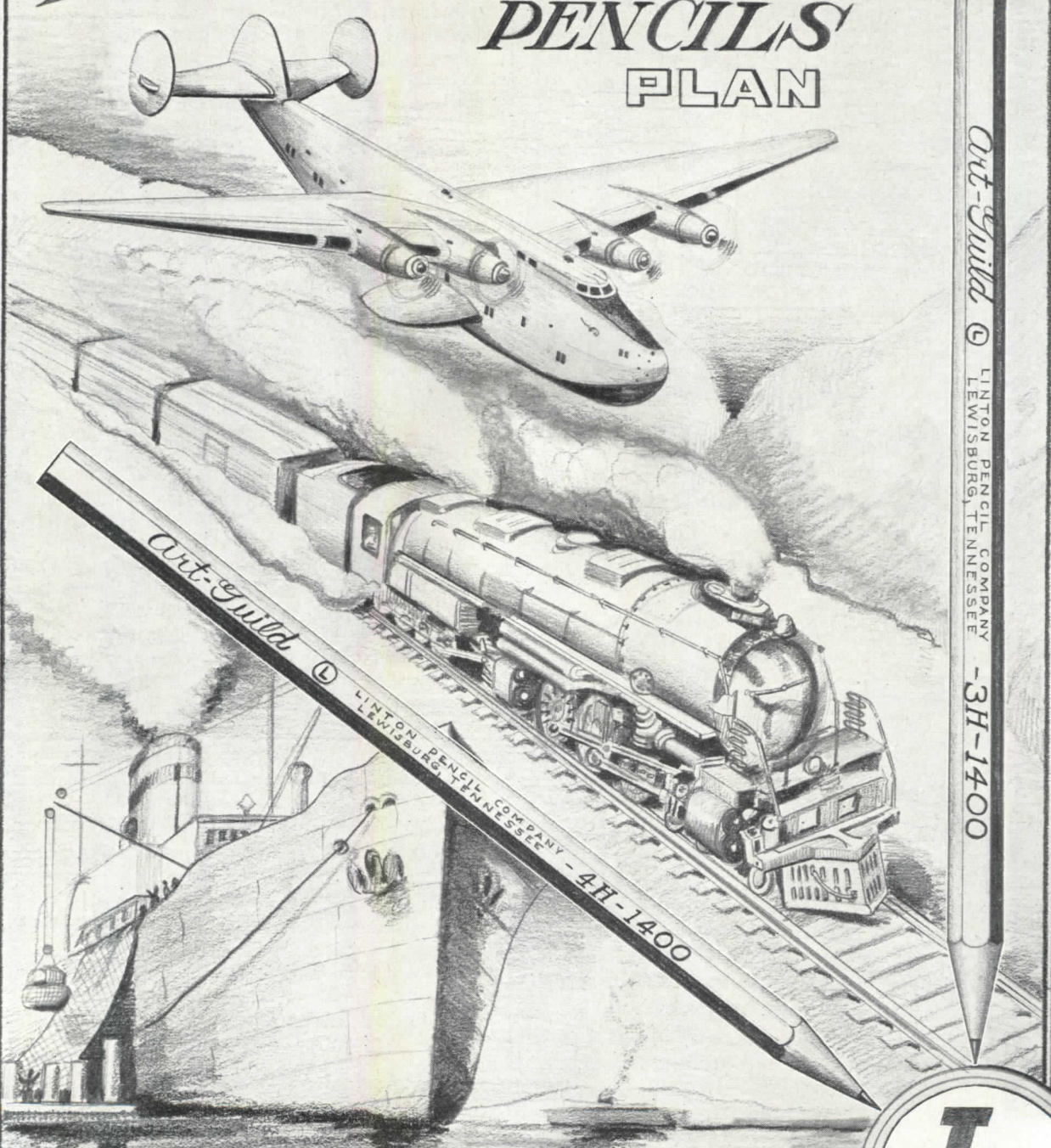
Following two excellent chapters on the background and early development of public housing, he takes up the seven "myths" which he claims are the most common misconceptions connected with such housing. These are: (1) "There are no slums in my town"; (2) "Public housing does not clear slums"; (3) "The government should buy up the slums"; (4) "Public housing is costly and extravagant"; (5) "Public housing does not rehouse families from the slums"; (6) "The slum dweller creates the slums"; (7) "Public housing injures private business and threatens to bankrupt the country."

Some of these criticisms are obviously fallacious; others are questionably so. Slums there certainly are in every community, large or small, if by slums is meant sub-standard housing and overcrowding. But can public housing—or public and private housing combined, for that matter—really "wipe out" slums as Mr. Straus says it should do? As property deteriorates will it not always create slum conditions, or can laws be made and enforced to assure the demolition of buildings before such conditions be created?

There is no doubt about the need of and general desire for slum clearance and adequate housing for all. Whether it can be done by public housing, by private housing, or even by a combination of the two, however, is still a moot question, and Mr. Straus's view of the situation doubtless will strike many readers as definitely Utopian. Yet the nine-point program presented in his final chapter is concrete enough. It includes (1) the amendment of the Lanham Act to turn over to local housing authorities war housing either for the postwar rehousing of slum families or for demolition if it is not suitable for such purpose; (2) legislation

(Continued on page 28)

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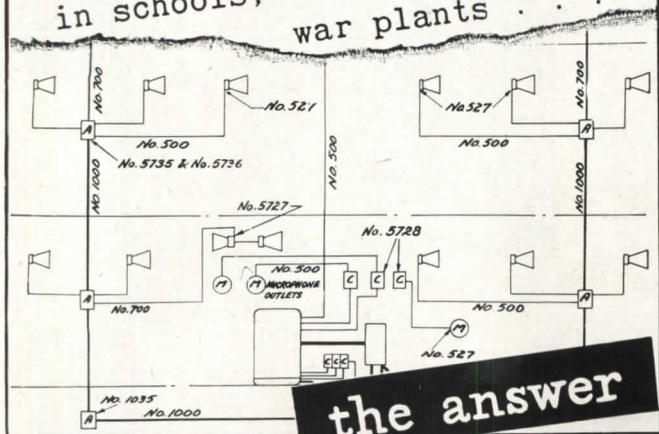
112 West Ninth Street  
Los Angeles, California

38 South Dearborn Street  
Chicago, Illinois

3525 Southwestern Boulevard  
Dallas, Texas

# the problem

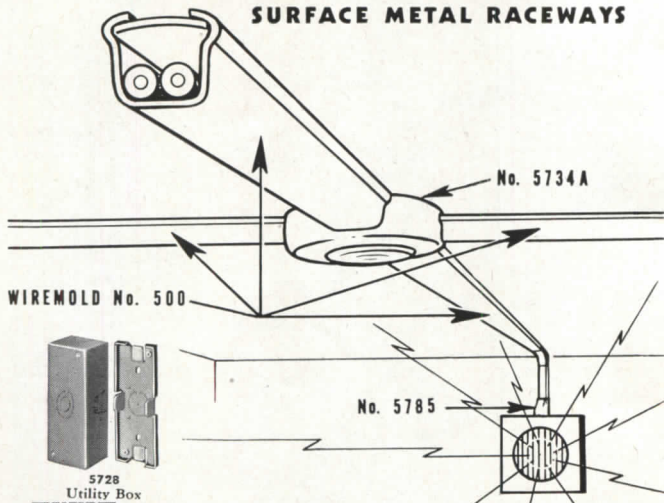
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## REQUIRED READING

(Continued from page 26)

declaring it to be the purpose of Congress to expand residential construction to assure a minimum of 5,000,000 new homes built in the years immediately after the war; (3) assurance that the federal government will provide the subsidies necessary to insure that public housing rents will be within the means of families now forced to live in the slums; (4) enactment of "necessary changes in health and building codes to outlaw the continued use for housing purposes of any building which does not conform to certain minimum standards of health and safety"; (5) the creation of a Department of Works and Planning, "charged with responsibility for planning and administering, through local agencies, community reconstruction throughout the country."

### MODERN DRAFTING

By William H. Johnson and Louis V. Newkirk. New York 11 (60 Fifth Ave.), The Macmillan Co., 1944. 8¼ by 11¼ in. vii+197 pp. illus. \$1.72.

Exceptionally clear and numerous illustrations (there are 297 of them) and diagrams, large type and a good index should make this basic textbook on drafting workable even for the student studying alone, although it is intended primarily for classroom use. The various drafting tools and their use are explained in detail, followed by chapters on lettering, reading and working drawings, geometric constructions, architectural drafting graphs and maps, blueprinting, etc. At the end of each unit a list of questions and topics for discussion serve as a summary of the contents of that chapter, and a selected bibliography suggests material for further reading. Also, in addition to numerous projects, there are 108 special problems to be worked by the student.

### PERIODICAL LITERATURE

#### THE POSTWAR HOUSE BEAUTIFUL

By Michael Goodman. Architect and Engineer, San Francisco (68 Post St.), Jan. 1944, pp. 22-23, 34, 36.

In an issue devoted very largely to his own architectural work, Michael Goodman adds his prophesy to the ever mounting literature on the probable postwar house.

Mr. Goodman is on the side of common sense: he thinks the postwar house will be recognizable as a house. He contends that "only those improvements in the house and related planning activities with their controls established during the war, will be carried over into the coming stages of peace." Furthermore, he believes that returning service men "may desire the sentimental house, the kind they saw overseas. French, English, Spanish, not to mention our own Cape Cod strain of cottages, will be revived." But all will be blessed with good kitchens, bathrooms and equipment.

What of the future of the architect? How will prefabrication affect the profession? How will it affect the building industry? Well—the architect can be city planner, engineer or industrial designer, but he will have to choose one of the three. "The profession must turn into an action group not unlike labor and industry and identify itself with a scheme of orientation, long-term by necessity."

We suspect that Mr. Goodman is a conservative—he thinks architects should design, builders build, and everyone plan. And he thinks that the "question of planning

(Continued on page 134)



## *The school of the future*

● One of the major tenets of the founders of this democracy was that effective government demanded an intelligent electorate. Therefore universal education became the rule. Every citizen, all children, were to receive the fundamentals of the three R's at the expense of the community or the state. A citizenship at least literate was considered basic—it still is. Institutions of higher education too were founded promptly by the colonists. The state provides the path to knowledge and judgment even if it cannot impart wisdom and understanding.

● The schoolhouse is, next to the home, the essential American building. It has come a long way from the little-red-school-house, just as the curriculum has advanced far beyond the three R's. Pedagogical psychology has replaced the birch. Progressive education has come into its own. "Fads and frills" have been debated by parents and professors and irate taxpayers. The school house has been elaborated with laboratories and libraries, gymnasiums and auditoriums, swimming pools and special rooms. Great monuments to our educational system are the pride and joy of the American town and city. Communities vie with one another in providing elaborate plants for teaching, if not always in providing compensation for the most competent teachers.

● Increasingly the school plant is used longer hours, night and day, and for both adult education and recreation. Increasingly it will become the center for much more of the community activity after working hours. It is with this thought in mind that we publish in this issue a study of the Community School.

● Postwar school planning must reflect both changes in the science and art of education and in the community activities. Further changes must be expected in both spheres and the school building must be flexible enough to care for the mutations of both. It must be planned for multi-and-vari use, must permit changes in the physical and mechanical plant with a minimum of both alteration and maintenance expense.

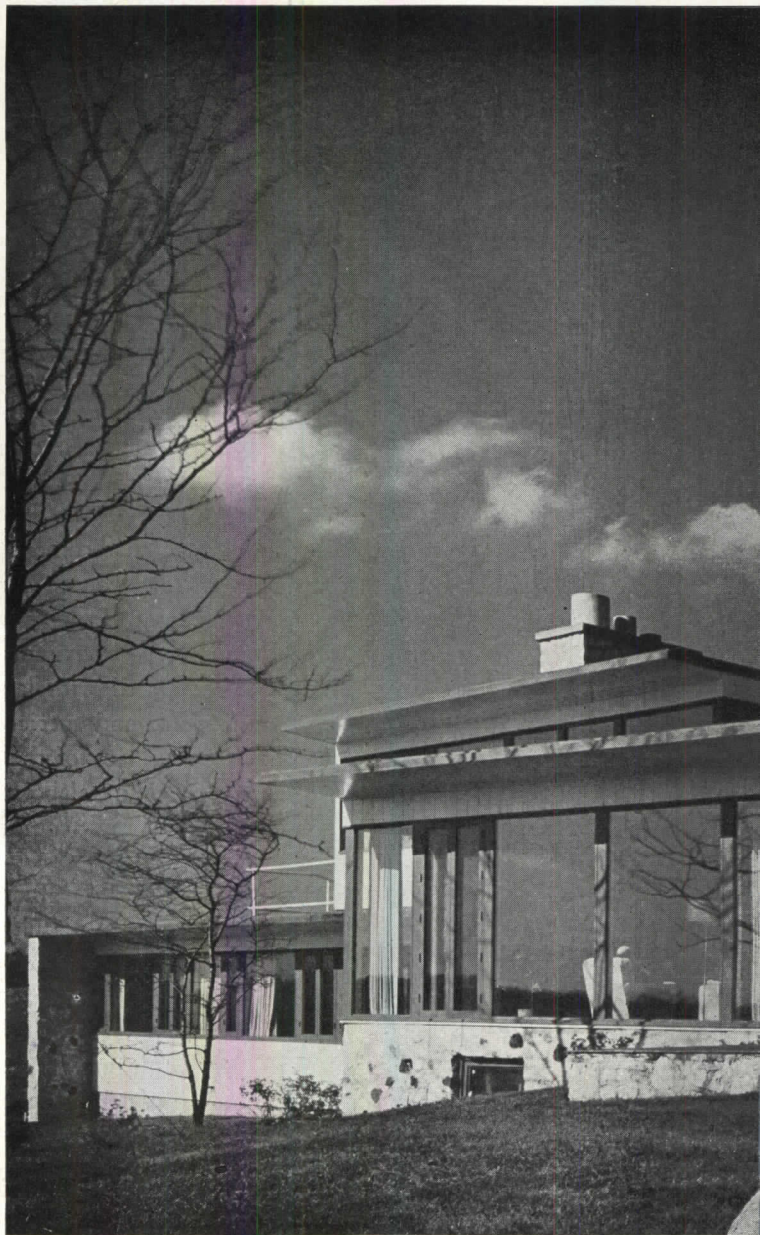
● To provide the space and the facilities needed by the times, and future times, requires the highest type of architectural skill, the greatest foresight and imagination. It requires a modern functional approach, unfettered by prescribed and proscribing style, by ornamental clothing (Classic, Colonial, University Gothic, Modernesque, or what-have-you). It does demand an organization of spaces and facilities best suited to the purposes and processes of education and community life. Such organization and orderliness will be evident in form, expressive of purpose—clean, logical, simple, straightforward—looking toward the future. The lore and the architecture of the past can better be studied in the library and the museum inside the school than in the form of a stone straightjacket of style-for-its-own-sake, which dictates sizes and shapes willy nilly. The vision of the school board and of the school architect should not be obscured by monuments to the obsolete.

*Kenneth R. Stowell*

*House for Mr. and Mrs. John L. Bennett*

*Cuba Road, Barrington, Illinois*

*George Fred Keck, Architect*



## **SOLAR HOUSE FOR A SUNNY HILLTOP**

**T**HE much-heralded solar principle worked out to especial advantage in this house. The property, in a fine suburban location north of Chicago, was on a terminal moraine, largely bare of trees but affording a splendid view of rolling countryside. Just the spot for a clean, straightforward house, made open and spacious with large glass areas to make it a veritable solar house. A spot where sunlight and views were just asking to be brought indoors. Accordingly the solar idea has been carried farther than in any other house Mr. Keck has done.

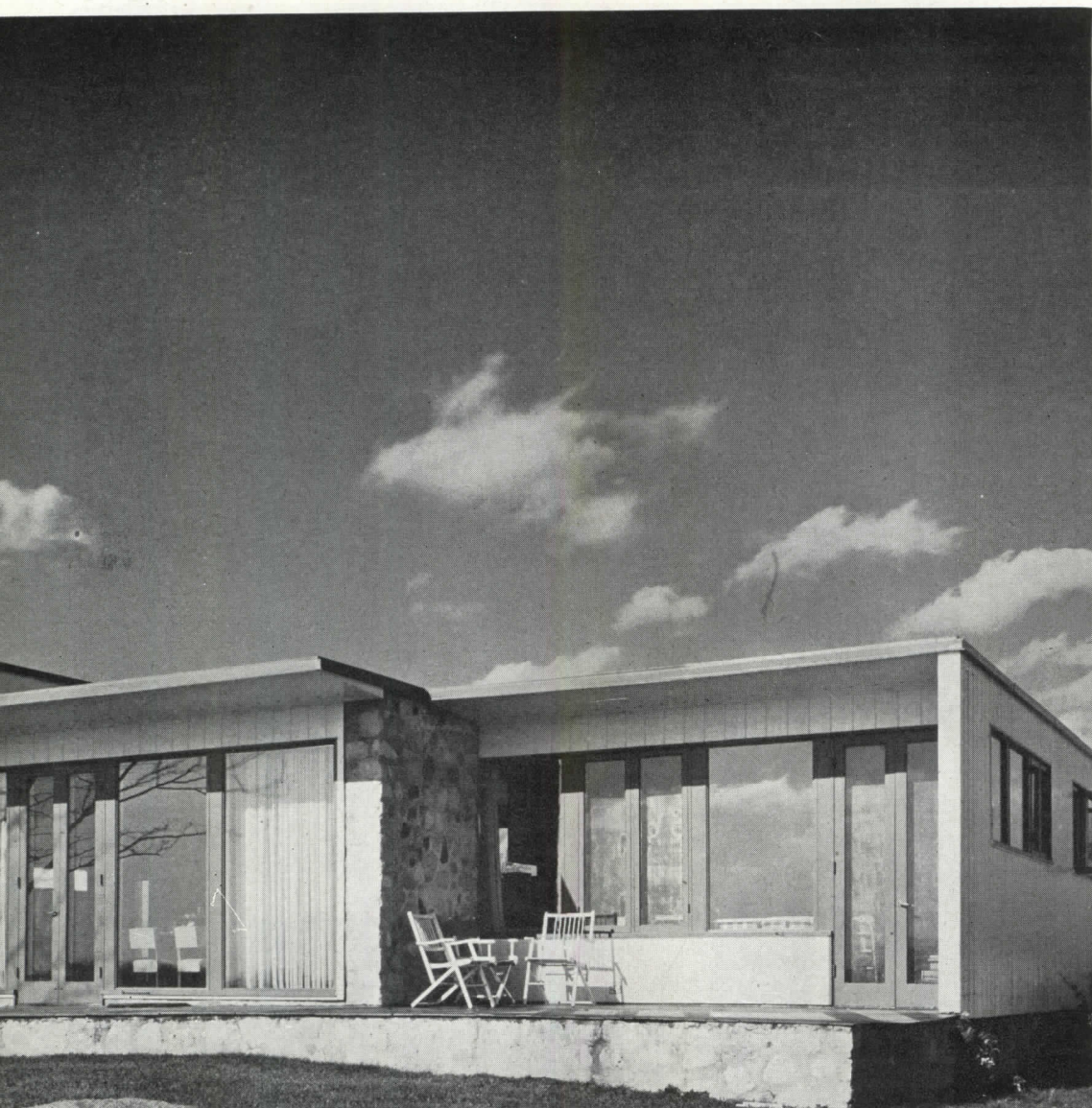
Taking advantage of changes in grade, the architect has lowered the bedroom wing a half dozen steps, and has put a guest room and terrace in a small second story over the family bedrooms. Then, by extending its roof on over the

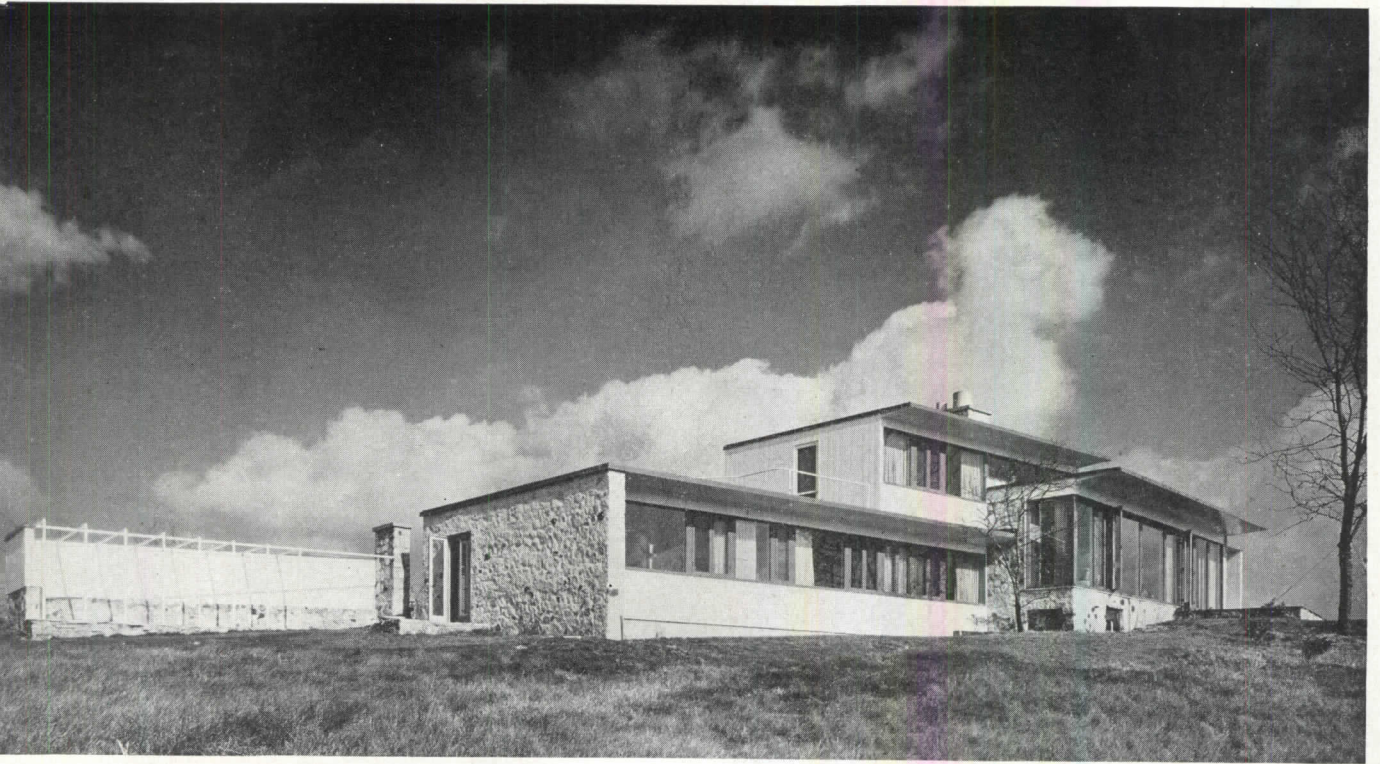
living room he has created a low monitor, to bring still more daylight deep into the interior.

The roof is flat and is designed to carry a sheet of water, for natural protection against the heat of the summer sun. The roof overhangs, of course, to keep the summer sun from heating the interiors. The little holes in the soffits of the overhang ventilate the space above the ceiling insulation.

Stone used for both exterior and interior walls is the colorful glacial deposit taken right from the site. The glass is the thermal double glazing, manufactured with sealed, dehydrated air space between.

The exceptional amount of natural light sets the decorating scheme for the interior. There is color in the





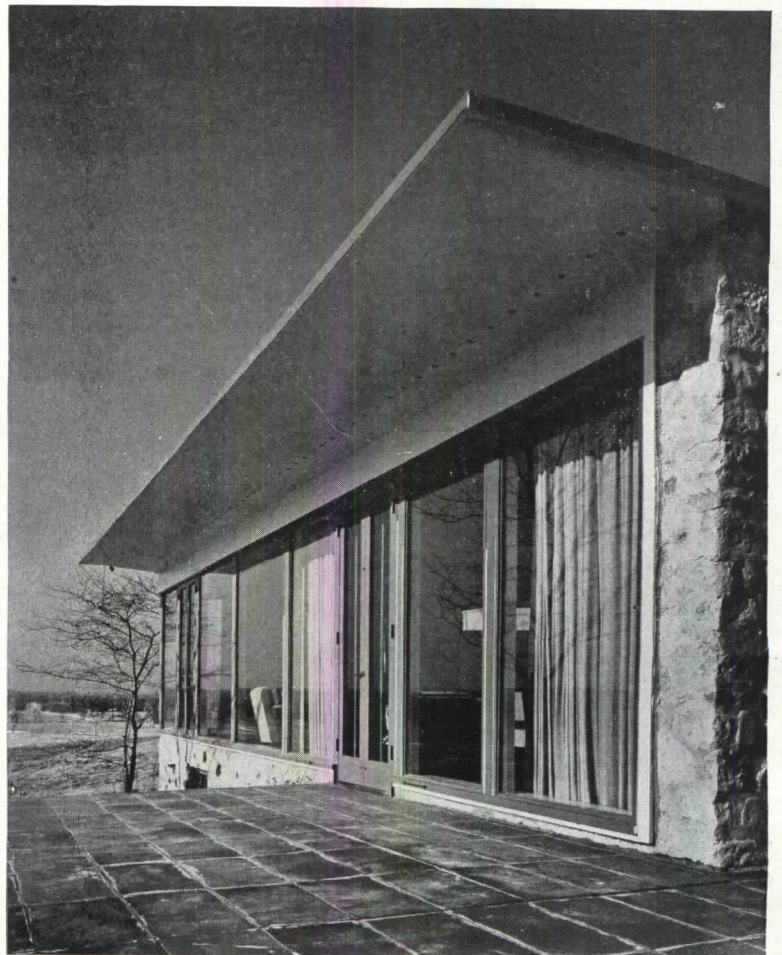
*With a sunny hilltop for a site, Mr. Keck has here carried the solar heating idea to the ultimate, the south walls being virtually all glass. Overhang keeps off summer sun*

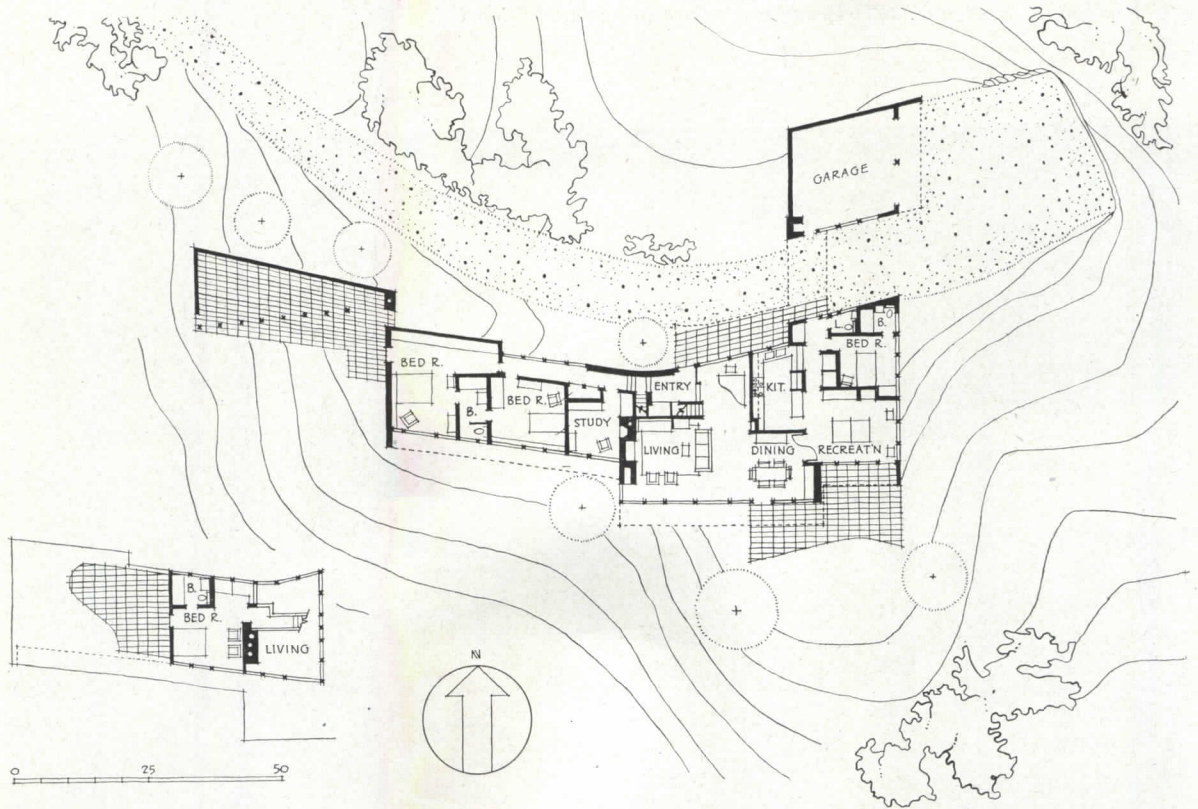
furniture only, and the colors are rather subdued. Painted surfaces are a deep off-white; the interior then becomes a background for landscape coloring that changes with the seasons. Delicate colors had to be avoided in fabrics, to avoid undue risk of fading. There is ample light control for exceptionally bright days, by means of drapery; with the drapery open the interior is well lighted on even the darkest days.

In the living-dining room the floor is natural black cleft slate, waxed; the ceiling is acoustical plaster. This room was designed, by the way, especially for music. The grand piano has its own wing toward the driveway entrance, and the whole area was acoustically studied for music by phonograph and radio.

The large chairs are reddish in color; the rug, off-white; the large davenport, designed by Marianne Willisch, a gray textured material. The dining room set and buffet are of natural finish cherry; drapery is café-au-lait. The lamps, also designed by the architect, are of brass.

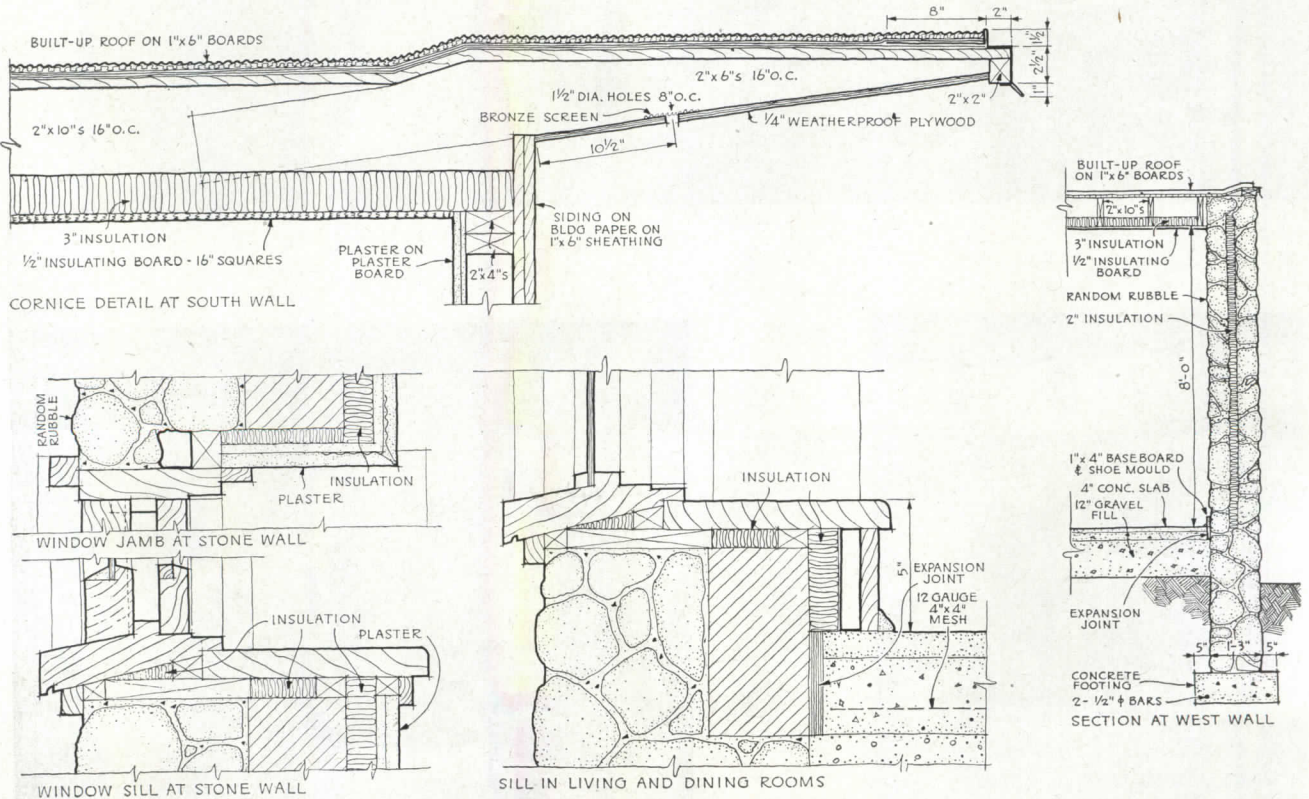
An unusual feature of the plan is the



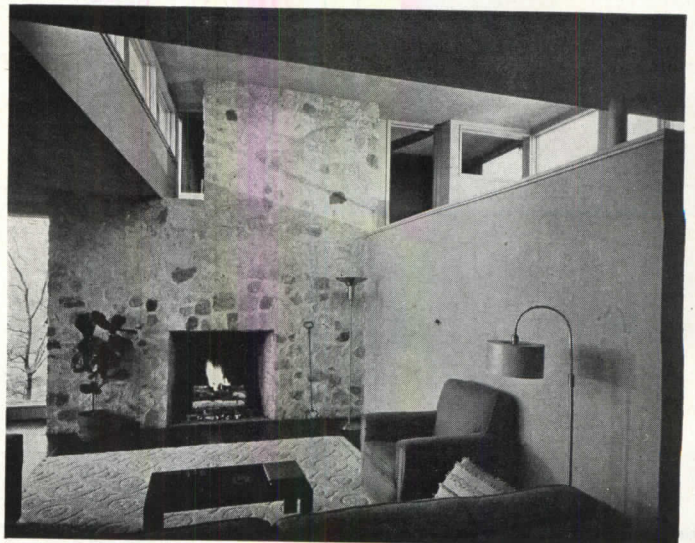
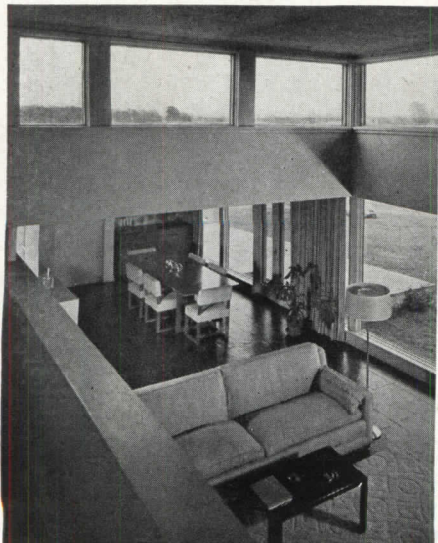


Three terrace areas, the largest one sheltered by a windbreak wall, for sunny outdoor living

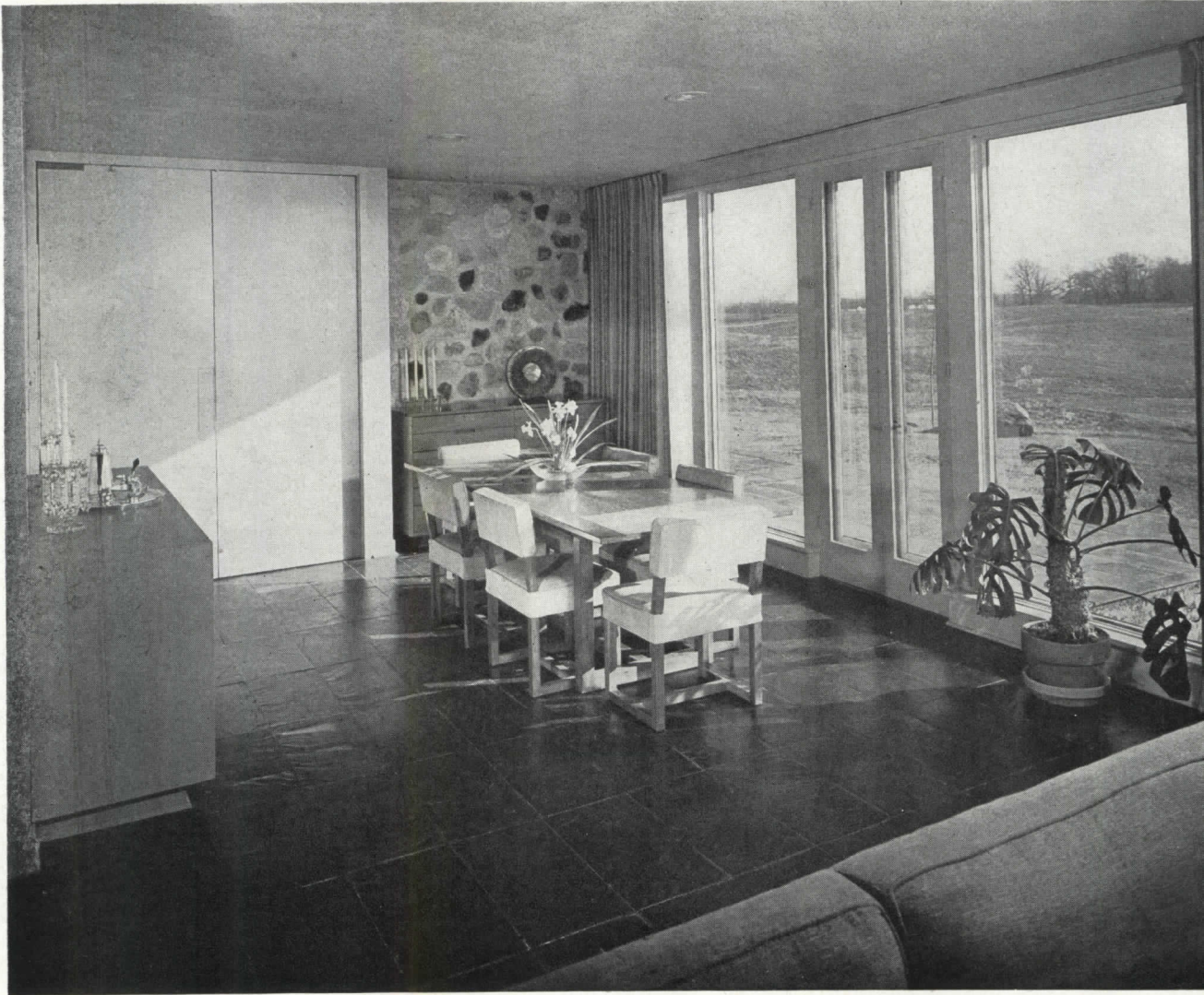
Roof is flat, and is designed to carry a sheet of water for further summer heat protection



*On winter days the sun reaches far into the interior. The low monitor, formed by an extension of the second floor roof from the bedroom wing, adds to the spacial feeling of the house, and clerestory windows bring in additional daylight*

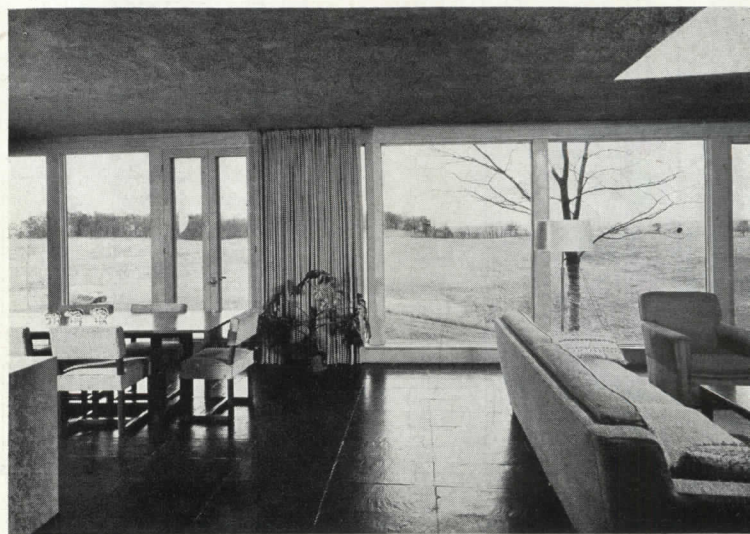


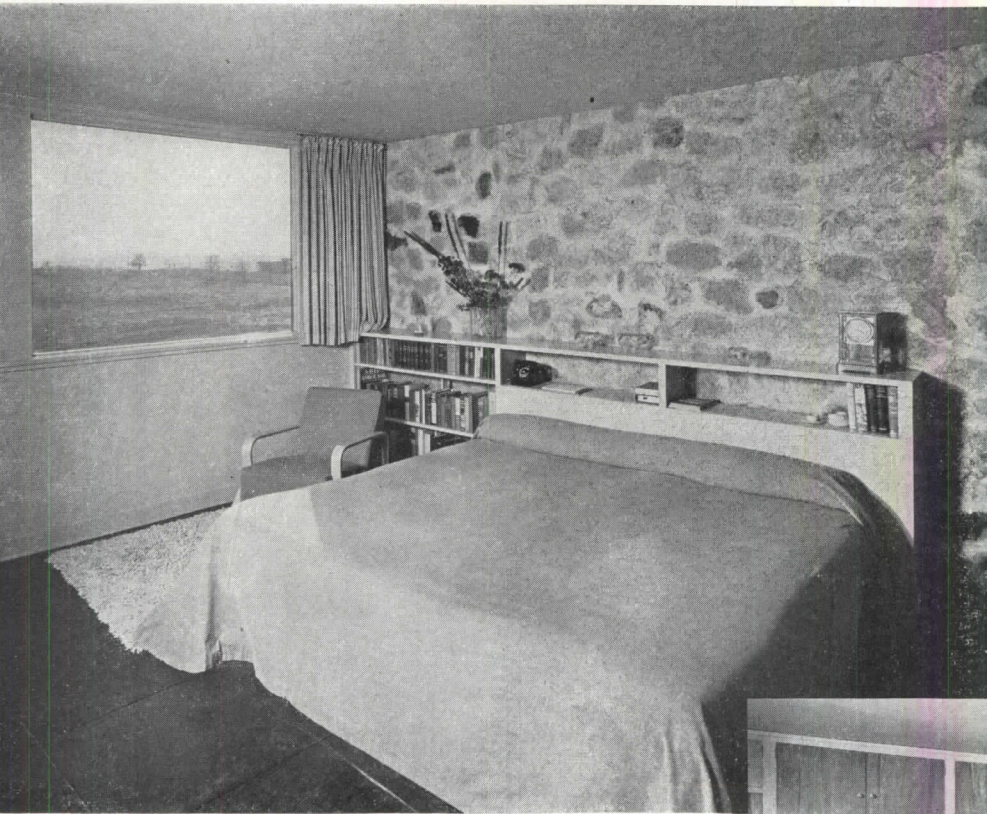
*Interior walls, like the exterior, are of colorful glacial deposit stone taken from the site. Floors in the living-dining area are of natural black cleft slate, waxed, laid over radiant heat piping. Ceilings throughout are of acoustical plaster*



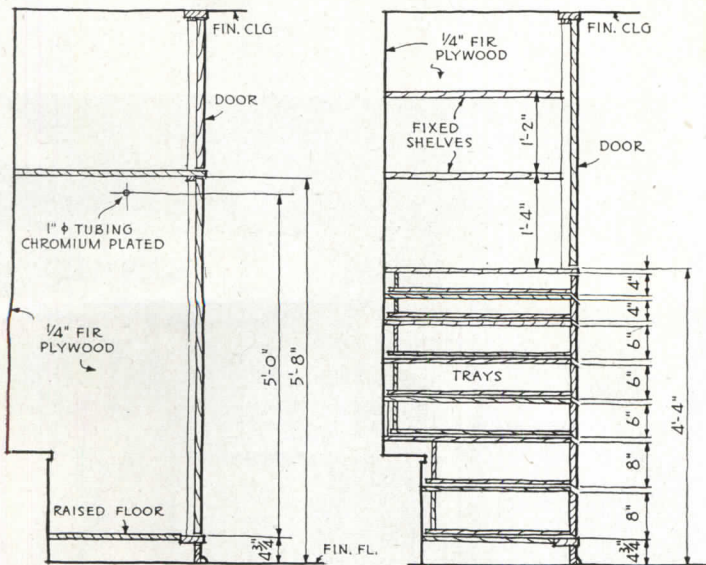
opening of the kitchen, over the counter tops, to the recreation room and to the service entrance corridor, an idea that adds much to the convenience in the service area and also makes for better ventilation in the kitchen.

Floor-type radiant heating was installed throughout the house. Hot water from an oil heater circulated by an automatically controlled force-flow system, through welded wrought iron piping in floors. The combination of solar radiation and radiant heat have reduced oil consumption well below normal, as the amount of heat gathered from the sun on the coldest winter days when the sun is shining in the living room is more than ample to heat the room, and often makes is necessary to open one of the windows.

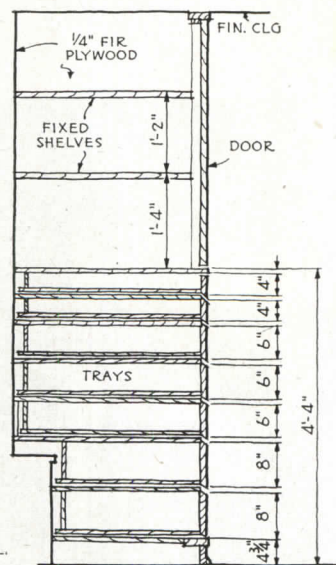




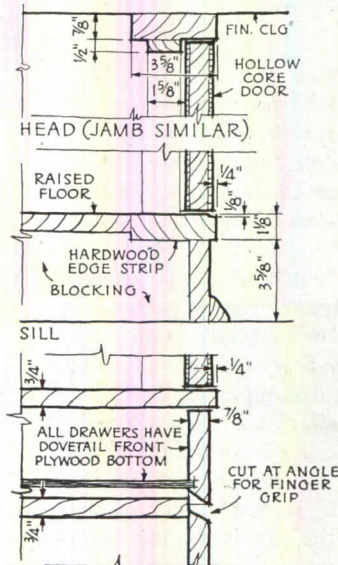
The master bedroom features built-ins—convenient bookshelves at the head of the bed, and a whole wall of wardrobe cabinets and drawers. Flush doors of cabinets are of natural finish gum, with painted trays and trim. Painted walls are oyster-white, window drapes the same color. Floor is concrete, marked in squares, stained black



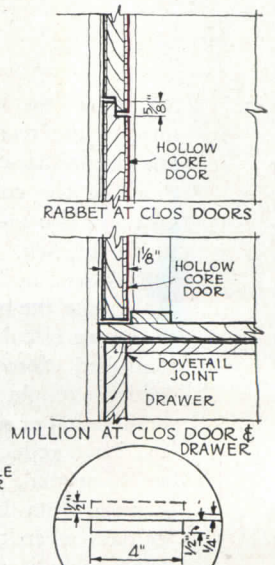
SECTION AT WARDROBE



SECTION AT DRAWERS

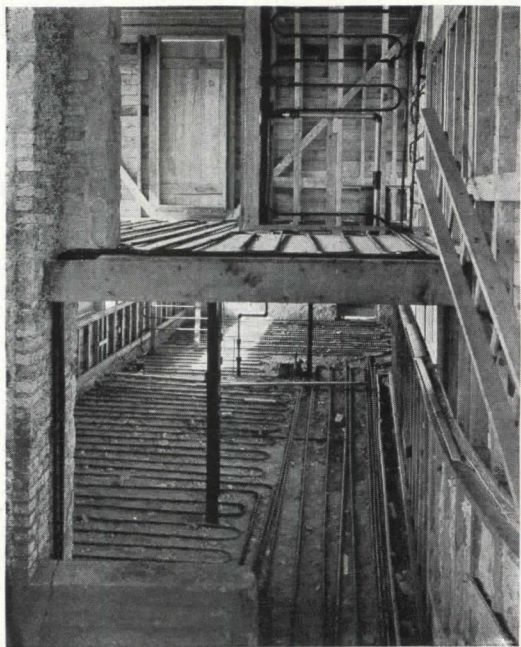


WARDROBE DETAILS



ELEV. DRAWER GRIP





*This interesting photograph shows three different methods of installing radiant heating used in the Bennett house. On the first floor sinuous coils of three-quarter-inch wrought iron pipe are laid on sand fill and topped with concrete, then slate. On the second floor they are laid on three-quarter-inch wood subfloor, with furring strips between pipes and finish wood floor above. Also heating coils are run in bathroom walls, to keep wall surfaces pleasantly warm*

*Kitchen has linoleum floor and counter tops, special wood cases, copper range hood. The foreground side is open to the recreation room and service corridor (see plan, page 61)*



# PIONEERING PROGRAM OF PREFABRICATION

*Four two-story demountable multi-family projects for  
National Capital Housing Authority, Washington, D. C.*

*American Houses, Inc., Prefabricators  
Holden, McLaughlin & Associates, Architects*



WHEN the war housing shortage overtook Washington, the National Capital Housing Authority "converted" by shifting from long-term slum clearance to temporary housing. Deliberately the emphasis was put on the temporary, for the NCHA (the erstwhile Alley Dwelling Authority) wanted no new slums left as an aftermath of war. So it embarked upon a pioneering program which produced some new types of dwelling units. Whatever their other characteristics, all had in common the quality of removability.

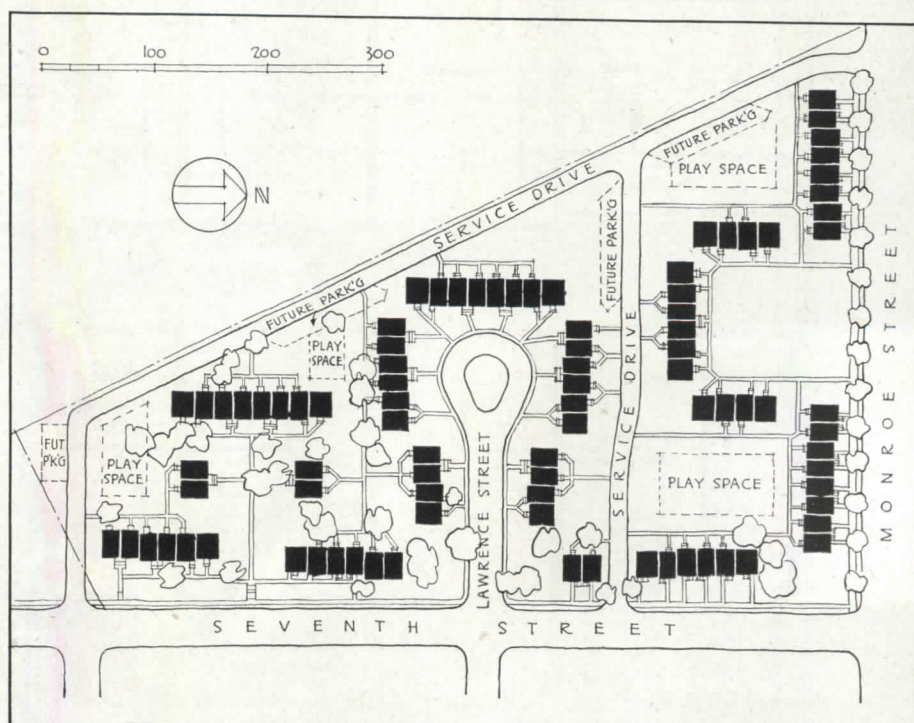
Starting with demountables, the program later shifted, under continuing pressures of costs and materials difficulties, to "demolishables." The demountables were not the now-familiar little prefabricated individual units, but two-story multi-family buildings. NCHA induced Ameri-





Rodney McCay Morgan photos

*Monroe Street Houses, second of two identical groups, represents the first attempt to build two-story, multi-family housing units both prefabricated and demountable, for removal after the war*



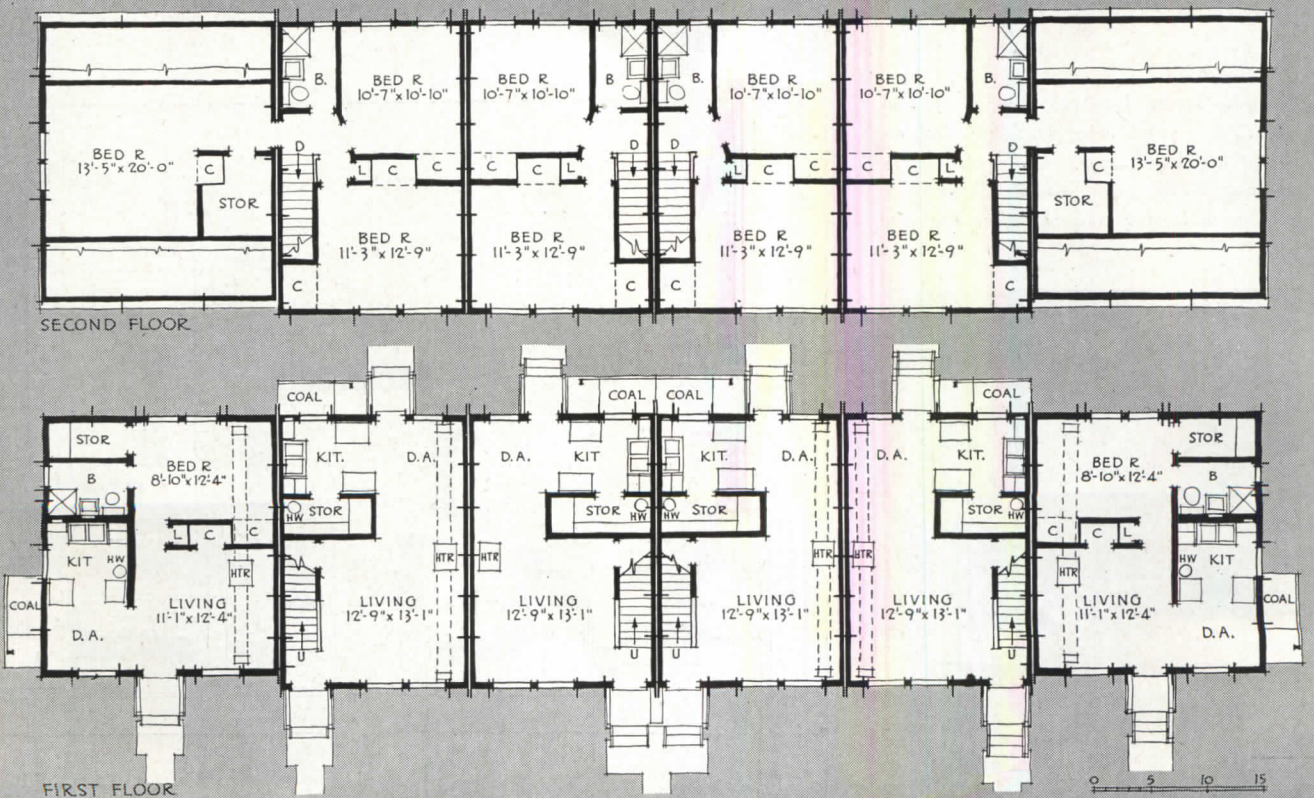


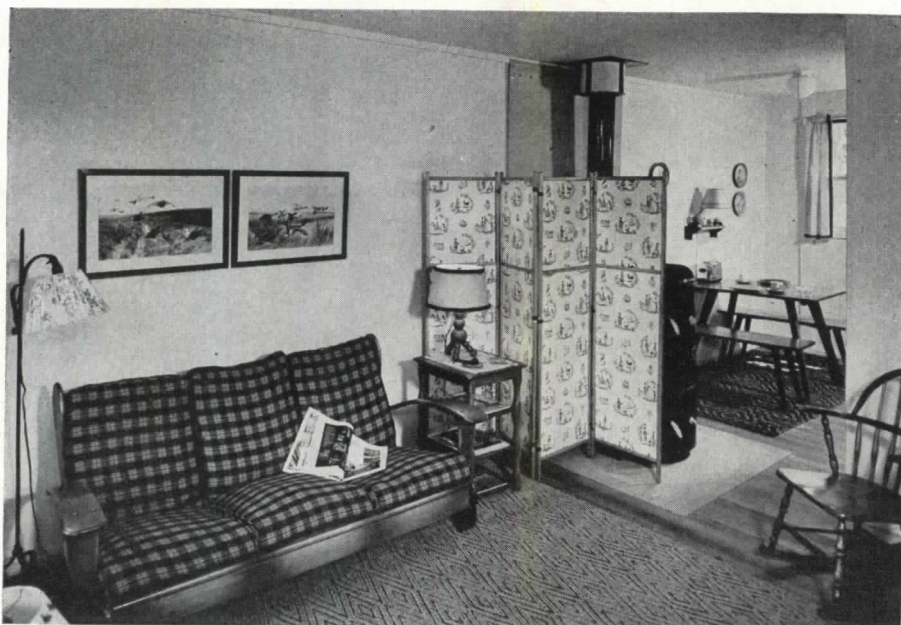
*Interior views of 35th Street Houses, the first of the prefabricated demountable war housing projects of the National Capital Housing Authority. The plans below were also used for Monroe Street*

can Houses to develop the buildings here shown, which are said to be the first of this type to be made demountable. Later other builders did some others for NCHA.

Further factors tended to complicate the assignment. Because site and development costs were to be kept at a minimum for temporary housing, and because the WPB held utility extensions to a minimum, the sites were chosen

in established neighborhoods. Although the NCHA was not required to conform to local regulations, nor to the wishes of various citizen's associations, it did make a serious attempt to follow building codes and zoning requirements, also to maintain standards of design. Thus its assignment to the architects was to provide "a good dwelling, with sufficient space, light and air and the neces-





*Being the first, 35th Street got the best equipment: electric range, electric refrigerator, electric water heater, and bathtubs. None of these were available later*

sary equipment for easy housekeeping, comfortable living whose solution will be attractive in appearance." It also requested the architects "to seriously study the problem of large-scale low-cost housing with a view toward making a contribution to housing that will fit in and advantageously affect the surrounding community and city plan in general." The average cost, everything included, was established at \$4,600 per dwelling unit.

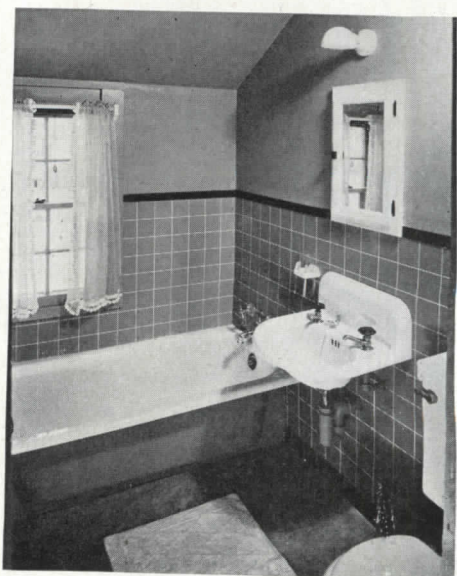
While NCHA reports its own and others' satisfaction with the designs of these four projects, perhaps its most significant comment is, "neighborhood opposition to the construction of a project . . . without exception, completely subsided after the project was erected," and, "the majority of tenants at these projects have complimented NCHA's housing managers on the livability and appearance of the houses."

**35th Street Project** (interior views, pages 68, 69) was the first of the four demountable prefabricated projects by American Houses. It has a 5-acre site close to downtown, with 75 dwelling units of one, two, and three bedrooms, and economic rents of \$42, \$44, and \$46 a month. The project is for white in-migrant war workers and is fully occupied.

Equipment here is the best of any of the group, with electric range, electric refrigerator and electric water heater, and coal-fired space heater; bathrooms have tubs; all of this equipment being available, and permitted, for this earlier group.

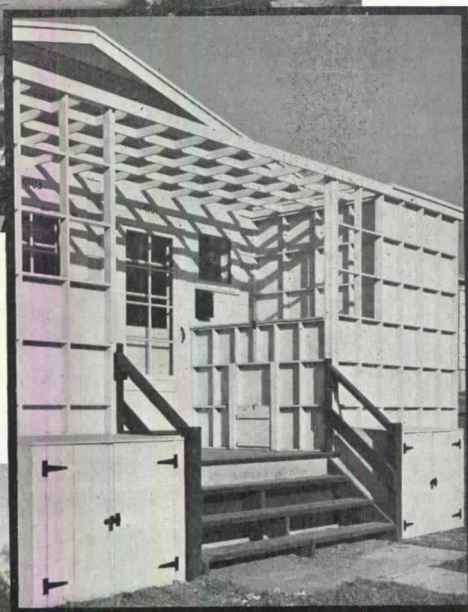
**Monroe Street Houses** (exterior views, pages 66, 67) has the same type of buildings as the first project, but by the time it was built materials restrictions had become somewhat more severe. Gas cooking ranges and water heaters replaced the electrical types. During construction NCHA decided to discontinue the use of prefabricated flues and changed specifications to brick chimneys, and included a concrete mat for the space heater to stand on.

Monroe Street Houses has 90 units: 18 one-bedroom, 54 two-bedroom, and 18 three-bedroom suites. The site (plot plan, page 67) contains five acres, located about three miles from the center of Washington.



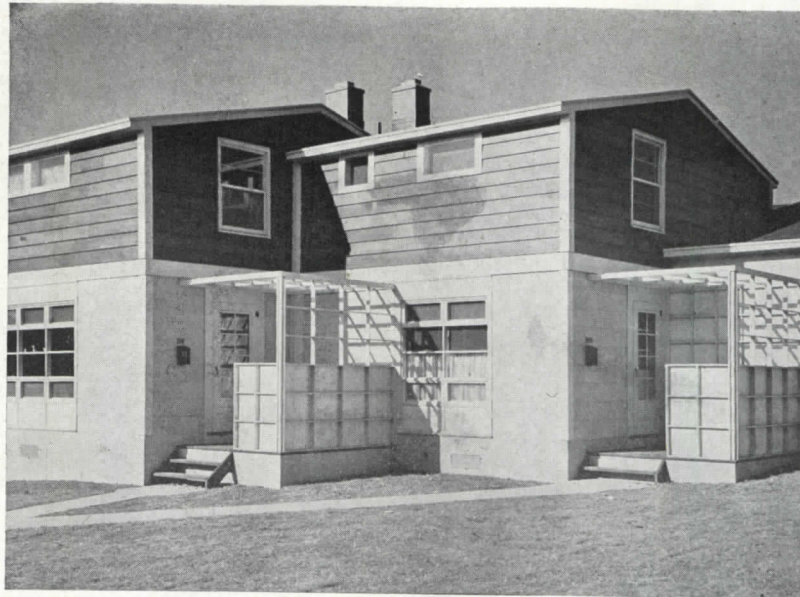


Tunlaw Road Houses, which NCHA likes the best of all its demountables  
Right: Double entrance, coal and refuse storage disguised in "egg-crate"  
Tunlaw Road has 92 units, with one and two bedrooms, on a 5½-acre site

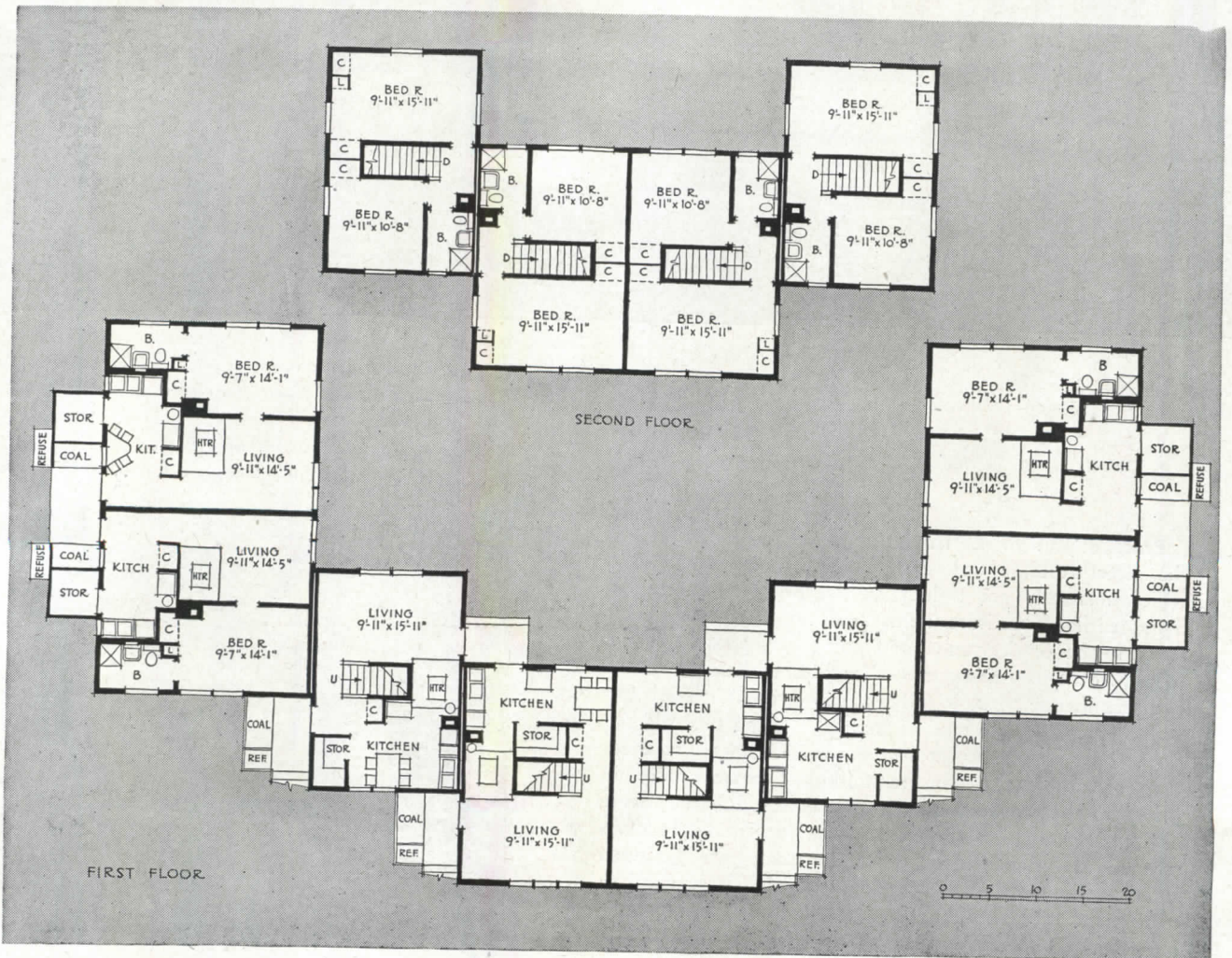


**Anthony Bowen Houses and Tunlaw Road Houses** (pages 70, 71, 72) are the two later projects, and represents some refinements in design. Change just for the sake of change was a primary objective, but NCHA feels that these later ones show progress in design and unit planning, in particular having a more open feeling, and better fenestration. Rooms under the roof were given maximum height, and an "especially pleasing effect" by applying ceiling panels directly to the sloping rafters. In some cases the windows also follow the roof line upward.

Both projects are alike, except that one has horizontal redwood siding, the other vertical, the former felt to be the better. Both are serviced from side streets, with refuse and coal storage provided for in the architects' "egg-crate," designed integrally with the front porch. These two projects are roughly the same size as the first two, and command about the same rentals. One is for white war workers, the other for negroes.



Staggering the two-story units and adding one-story wings help to avoid a barracks-like aspect, and give a sense of privacy not possible in long row-type buildings, also improve views and ventilation. The plan below was used for both Anthony Bowen and Tunlaw Road, and is being used for a fifth project, 25th Street Houses, which is now under construction

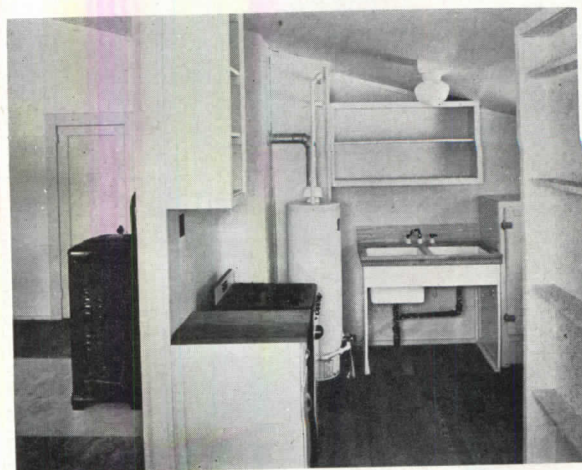




*Neighborhood property owners objected in advance, but changed their minds when the buildings were finished*

*Kitchen equipment in Anthony Bowen was not up to earlier standards, but fully adequate for wartime housing*

Practically all of the trouble reported by the NCHA is the direct result of material and equipment restrictions, which naturally got tighter as the program continued. Some earlier substitute items had not been sufficiently tested in the development stage, and caused trouble. Then, too, the tenants experienced difficulties with some of the equipment, due to their unfamiliarity with it. They forgot to drain the drip pans of ice boxes. And they did not know how to operate coal-fired space heaters, got them too hot, and did much fire-building. Tenants also objected to the shower baths installed after bathtubs were no longer available. In general, however, the NCHA has escaped the management difficulties that have hounded some of the war housing developments that have wartime equipment. The buildings are fully occupied and tenants' objections gradually subside as they get acclimated.

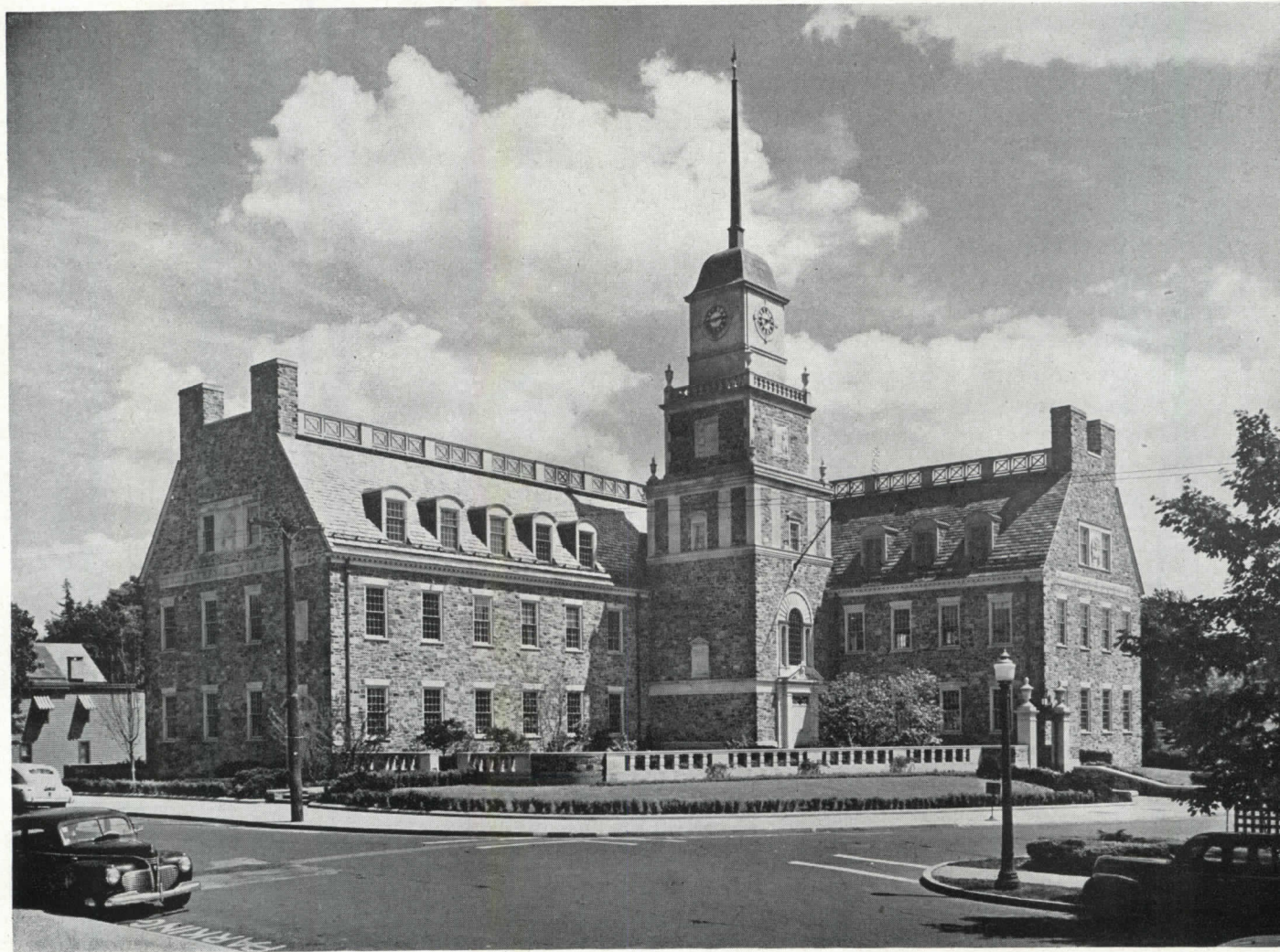




# MODERN NEWS PLANT, HISTORICAL STYLE

*Poughkeepsie Newspaper Building, Poughkeepsie, N. Y.*

*Benham and Richards, Architects; Charles J. Cooke, Associate*



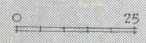
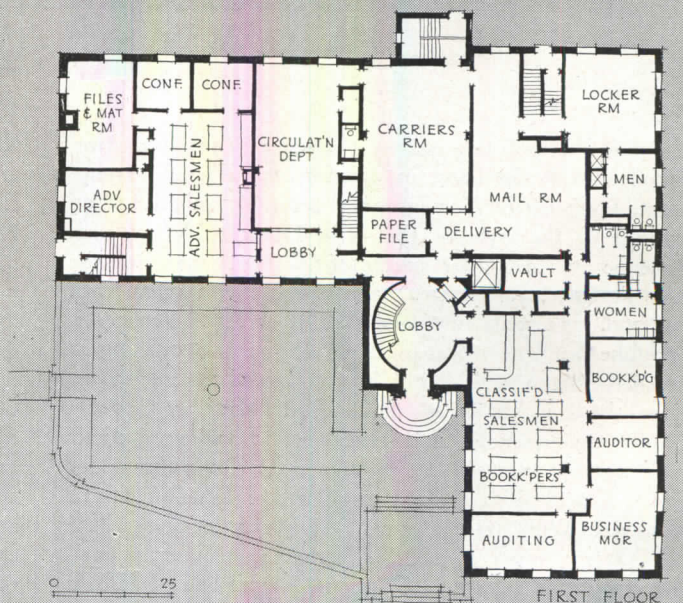
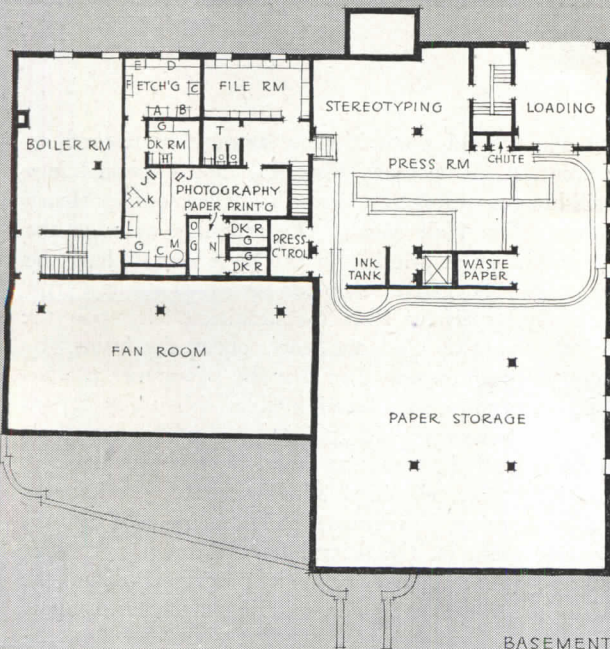
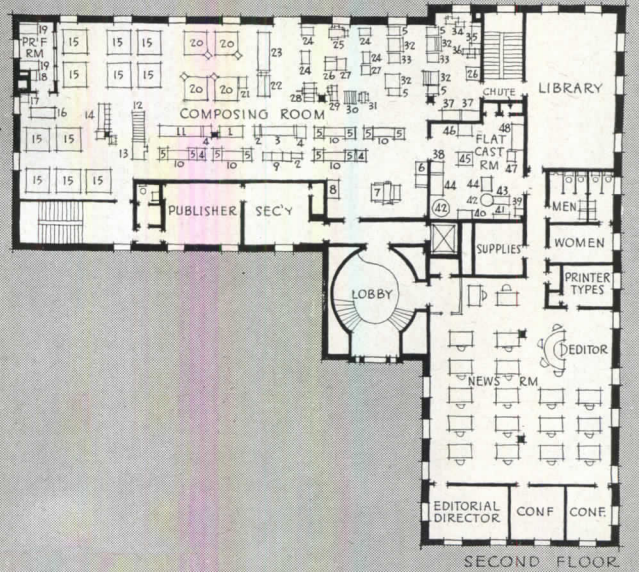
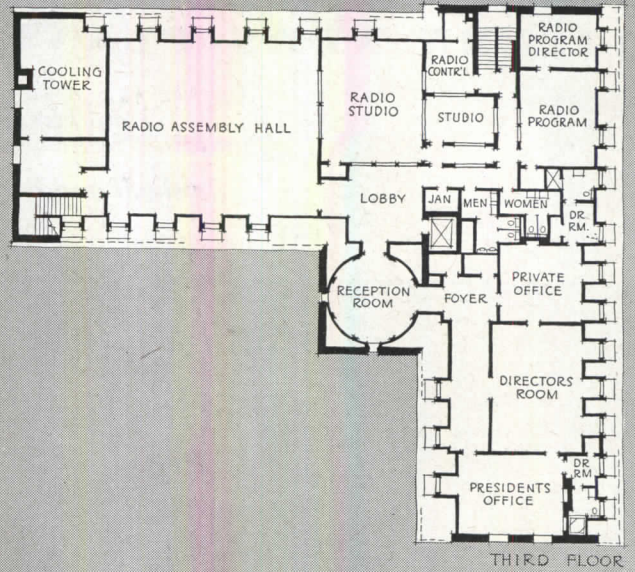
**T**HOUGH this building houses a modern newspaper plant, complete with the latest in printing and building equipment, the architects' assignment definitely called for an exterior in the style of the early Hudson Valley. This directive was a matter partly of location, partly of the clients' desire, partly of a newspaper's involvement with the traditions of its town. Diagonally across the corner is Poughkeepsie's new post office, an ornamental building in much the same style. With the erection of the newspaper plant, the area has been designated, by the City Council, as Memorial Square, and other public and semi-public buildings are planned to be built there "to preserve for posterity present-day examples of native Dutch Colonial architecture." It was in much this same spirit that the publishers wanted a building rather more monumental than might be expected of a plant designed to perform a near-manufacturing function speedily and efficiently. Actu-

ally it all involved a considerable amount of research to give accuracy to the many historical motifs worked into embellishments—Robert Fulton's "Clermont," Henry Hudson's "The Half Moon," the captain's walk on the roof, the history of printing in the huge mural along the lobby stairs. The native stone for the walls came a trifle more easily, especially after the architects hit upon the device of buying up old stone fences on nearby farms.

Floor plans are arranged so that the newspaper production processes move in a "straight line." Naturally departments having contact with public are on the first floor, grouped around the tower entrance. Such departments as advertising, news, classified ads, where copy originates, and the engraving department, feed their material into the composing room on the second floor through pneumatic tubes and dumbwaiters. Then it progresses down the makeup line to the mat roller, mitring machines, Ludlow

- |                          |                               |
|--------------------------|-------------------------------|
| 1 FOREMANS DESK          | 25 LUDLOW CASTER              |
| 2 PLATE BASE CAB'T       | 26 TYPE CAB'T                 |
| 3 8' MAKE UP TABLE       | 27 CUT CAB'T                  |
| 4 ELEVATING TRUCKS       | 28 AD PROOF PRESS             |
| 5 PAGE FORM TRUCKS       | 29 C. & G SAW                 |
| 6 MATRIX PACK'G TABLE    | 30 STRIP MATERIAL CAB'T       |
| 7 MATRIX ROLLER          | 31 ROUSE MITERER              |
| 8 ELEC PAGE STOR. CAB'T  | 32 AD ASSEMB'L'G CAB'T        |
| 9 FLAT CAST CUT CAB'T    | 33 BENCH SAWS                 |
| 10 MAKE UP TABLES        | 34 ELROD CASTERS              |
| 11 10' MAKE UP TABLE     | 35 STRIP MATERIAL STOR. CAB'T |
| 12 NEWS DUMP             | 36 GLIDER SAW                 |
| 13 NEWS PROOF PRESS      | 37 STEEL STOR CAB'TS          |
| 14 NEWS COPY DESK        | 38 FLAT SCORCHER              |
| 15 NEWS LINOTYPES        | 39 DROSS                      |
| 16 MACHINISTS WORK BENCH | 40 METAL BIN                  |
| 17 MACHINE PARTS CAB'T   | 41 KEMP BURNER                |
| 18 PROOF & COPY CAB'T    | 42 METAL POT                  |
| 19 PROOF READERS DESK    | 43 PIG MOULD                  |
| 20 AD LINOTYPES          | 44 FLAT CASTING               |
| 21 SPLIT MAGAZINE RACK   | 45 TABLE                      |
| 22 BAND SAW              | 46 RADIAL ROUTER              |
| 23 8' AD DUMP            | 47 SAW                        |
| 24 LUDLOW MAT CAB'T      | 48 PLANER                     |

- |               |                   |
|---------------|-------------------|
| A ETCHER      | H. CAMERA         |
| B. POWDERING  | J LIGHTS          |
| C. STOVE      | K. VACUUM PRINTER |
| D WORK TABLE  | L STRIPPING       |
| E METAL STOR. | M. WHIRLER        |
| F GUILLOTINE  | N. FILM DRYER     |
| G SINK        | O. ENLARGER       |





Gottschö-Schleisner photos

*Mural in lobby depicts the history of printing and freedom of the press. Andrew B. Karoly and Louis P. Szanto, artists*

caster, Elrod machine and proof presses. The composing room plan is detailed on page 74.

From the composing room the rolled mats are sent by chute to the stereotype room in the basement, where the metal plates are made for the presses. The press takes the logical basement location. It is a four-unit, 64-page, high-speed press, operated by two automatic control drives. The press is floated on a cork foundation and thus isolated from the rest of the building to reduce noise and vibration. A ventilating fan is hooked up to start with the press motor, to remove ink mist from the room. The press control panel and its resistors, which generate considerable heat, are located in a separate room, which is air conditioned the year 'round. Ink is fed to the press fonts by an underground automatic ink feed system.

The paper storage room adjoining the press room contains space for nine carloads of newsprint. A ramp at the rear of the building provides a convenient delivery method, the paper being rolled on dollies into the storage room, and from there to both ends of the press.

From the press room newspapers are taken to the mail room on the floor above by an automatic conveyor. The





*The president's office, with dressing room and bath, takes the entire end of third floor front wing*

conveyor discharges the papers onto a table, whence the "fly boy" distributes them to mailing tables and to the carrier boys' room. The small boy being a very destructive animal, the carrier boys' room is separated from the rest of the building by locked doors; it has its own entrance and a separate toilet room. Surfaces in the carriers' room are of brick, concrete or steel, affording small opportunity for the carving of initials; the ceiling is sound treated.

The building is of reinforced concrete frame with exterior walls of stone backed with solid brick, furred. Interior columns and slabs are concrete, using outside walls for load bearing. All floor slabs were figured to permit any desired partitioning. The roof is framed with steel, with gypsum slabs and wood sheathing on furring strips over the gypsum.

Except for a few areas the entire building is air condi-

*Editorial director's office, second floor*



*Business office, classified ad takers*





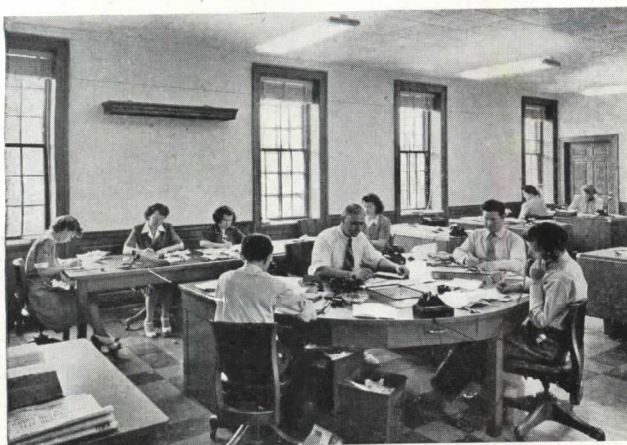
*The directors' room on third floor, far from the noise and clatter of the composing departments*

tioned for both summer and winter. Air conditioning machinery is located below the paved garden. Because of different occupancies of various spaces, the equipment is divided into four separate systems, each with its own fans and filters, hot and cold plenum chambers and spray type humidifiers. Each system is further divided into a number of zones, arranged with respect to exposure and sun loads. In two of the systems, including the one serving heavy

production areas, the quantity of fresh air is automatically increased in mild weather. These two systems take heavy loads, and it is believed that considerable operating economies are effected by using outside air as far as possible to maintain desired temperatures.

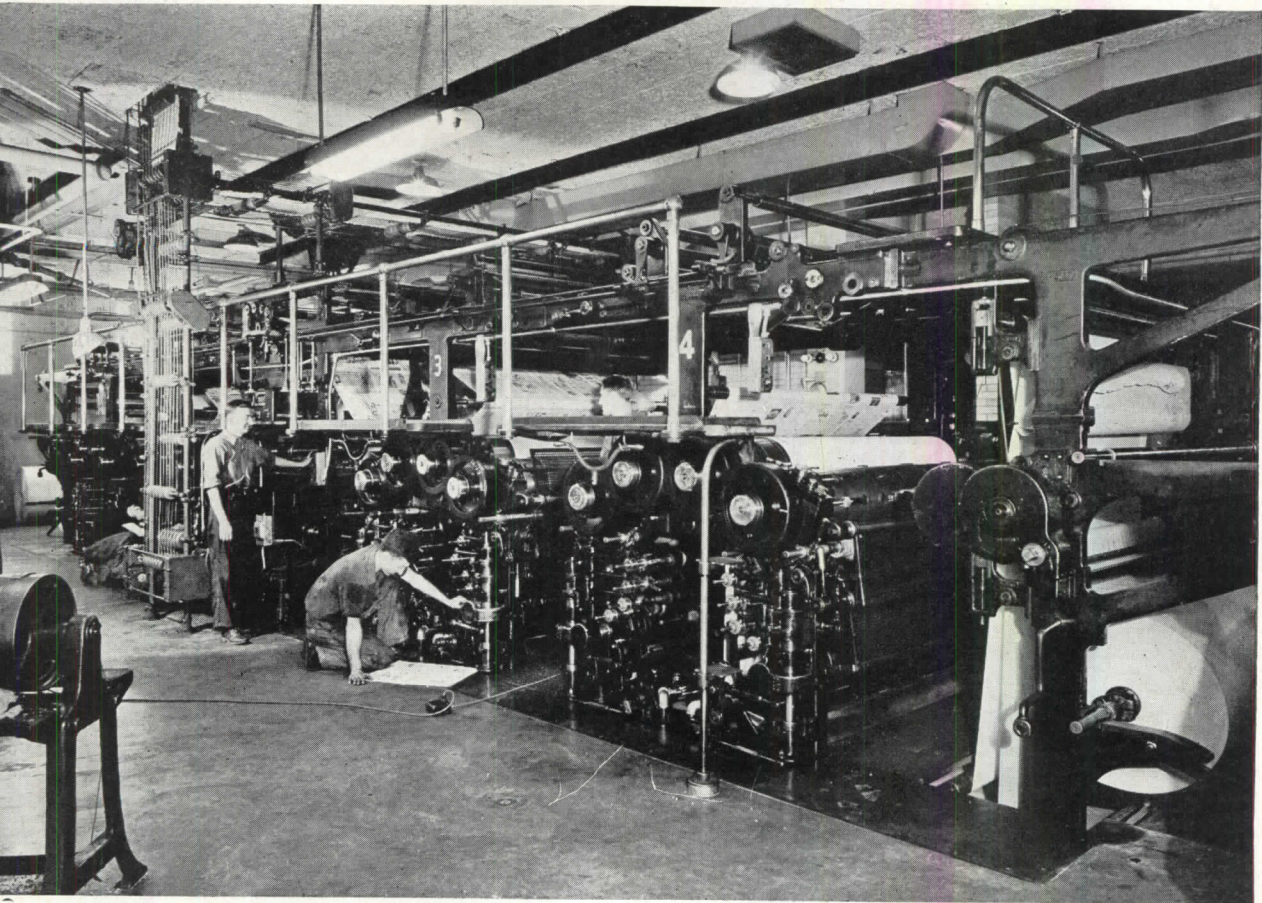
In production rooms, air is delivered through ceiling diffusers. In nearly all other areas distribution is through perforated acoustic ceilings. The ceiling, hung by straps

*Around the "man in the slot" the paper takes form*



*The auditorium, or radio assembly hall*





*The 64-page press is floated on a cork foundation to isolate sound and vibration. Acoustic ceiling also helps*

from the slab, is formed of perforated metal sheets so installed that the furred space becomes a plenum chamber for the air conditioning system. With a slight air pressure, air is forced past the sound-absorbing pad in flow channels having predetermined numbers of openings in the metal casing.

Since the action of mixing dampers is the same for both the heating and cooling cycle, reversing thermostats are not needed, and the system changes from heating to cool-

ing automatically. It is possible to provide cooling in one zone and heating in another zone of the same system simultaneously. This occurs quite frequently in mild weather, when an office area may demand a little heat while the press room may require a little cooling.

Among other specification items are the following: fluorescent lighting in work areas, intercommunicating telephone system, electric clock system, asphalt tile floors in office areas, wood block in heavy production rooms.

*The composing room, wood floors acoustic ceiling*



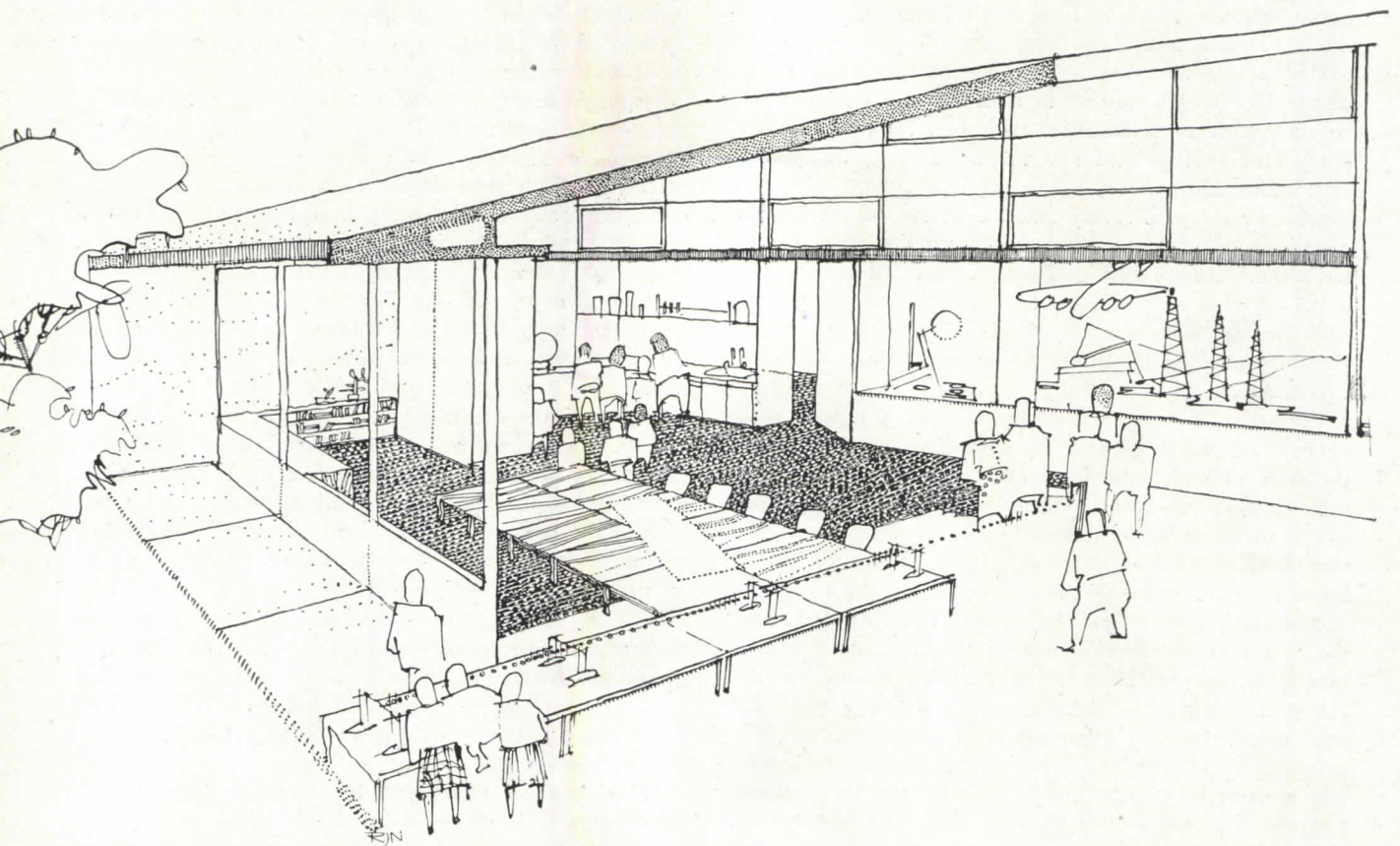
*The stereotyping room, just off the press room*



# COMMUNITY SCHOOLS

*Architectural Record's  
Building Types Study  
Number 87*

CONTINUING its series of double-purpose design studies, ARCHITECTURAL RECORD has prepared this one in collaboration with *The Nation's Schools*. The study appears simultaneously in both magazines. If, by virtue of the pooling of editorial resources, it makes a more positive contribution to the planning of better schools, its value is enhanced by presentation to school executives as well as to architects. Educators have contributed some new thoughts on objectives; architects have translated them into plans for buildings. It is hoped by this means to further the essential collaboration between those two major factors in school planning—architect and school executive



THE COMMUNITY SCHOOL .....	By Arthur B. Moehlman
COLLABORATION IN SCHOOL PLANNING .....	By Chester F. Miller
PLANNING FOR NEW TEACHING TECHNIQUES .....	By Paul J. Misner
DESIGNED FOR 24-HOUR CHILD CARE .....	Wolff & Phillips, Architects
MECHANICAL EQUIPMENT FOR THE SCHOOL .....	By Thomas J. Higgins
TWO SCHOOLS FOR COMMUNITY USE .....	O'Dell, Hewlett & Luckenbach, Architects
THE SCHOOL IN THE NEIGHBORHOOD CENTER .....	Richard J. Neutra, Architect
TAX BUDGETS AND THE COMMUNITY SCHOOL .....	By Richard J. Neutra, A.I.A.

# THE COMMUNITY SCHOOL

*By Arthur B. Moehlman, Professor of School Administration and Supervision, University of Michigan, and editor, The Nation's Schools*

FOR our purposes, the term community school may be considered as that form of organization where the major educational and communal activities are centered on both child and adult levels. It includes program, organization and activity.

In one sense the community school may be as old as New England's experience with public cooperative educational venture; but, more strictly speaking, the present concept of social or community education grew out of the depression years, stimulated by the progressive and adult education movements. It is still in an early stage.

The assumptions underlying the idea of the community school are sound. They are based on acceptance of the idea that education in a democratic culture must be considered as co-extensive with life, beginning in infancy and ending with senescence. During the period of infancy and youth, the educational process is concerned with the discovery and facilitation of the inborn capacities of children, and during the period of maturity, with the development, guidance, and retraining of the adult for individual and social efficiency and enjoyment. The fundamental idea of the community school recognizes the family and the community as the nucleus of the democratic system.

The American public school is normally a limited agency, an active partnership between the people and the state in which the teacher and administrator play a limited technical part. The community-centered school offers the best opportunity for the people to exercise their fundamental right to participate as partners at all levels in the educational process. The concept and practice of the public school as a limited agency puts to rest the fear that the development of the community school means unwise extension of institutional power. It actually means a more sensible and effective way of expressing community interest and participation.

In the small community the community school is usually a central building which includes the instructional program from the kindergarten through the twelfth grade. In the larger communities with more specialized buildings the term is more frequently applied to the secondary buildings while the elementary school is considered primarily as a parent-education neighborhood center.

The public school as a limited agency is responsible for the conduct of the total instructional program for children and adults. Formal and informal instruction for the children includes health, physical education and play; English and modern languages; mathematics and science; the social studies and the problems of family life; the fine arts and vocational education, expressed formally and informally. For the adults the instructional program may be broadly divided into the three areas of (1) individual improvement, (2) physical, mental and spiritual re-creation and (3) those many and varied socio-civic aspects which are concerned with the adult

as an active and intelligent member of a self-governing community of free men and women.

In addition, through cooperation with other community and possibly state agencies, the community school becomes a true center where the individual may seek information or pursue special programs with colleagues and associates. The community school might normally become the meeting place not only for parent associations of various types but for economic organization as well, including professional groups, rural associations, labor organizations, consumer groups, co-operatives and similar agencies whose interests may be immediately narrower than those of the total community.

Through cooperation with other general community agencies the public school might make the secondary site a general community center where public libraries, community medical, psychological and sociological clinics, social service and relief centers, branch governmental employment agencies, precinct registration and voting centers, may be conveniently centered. The location of a single general community center in small communities, and an area community center in every secondary attendance district of a large urban center, would represent an efficient massing of public and quasi-public agencies and would form a sensible rallying point in normal times as well as during emergencies. By a centering of all the major community activities at specially designated points within the urban nucleus, unnecessary crowding and traffic toward the center of large urban areas could be sensibly avoided. It is much more logical for people to gather in those places where they already have a natural concentration of interests, such as children in school and shopping for the necessities of life. The concentration of all community activities by areas is also in harmony with more advanced opinion in urban planning which favors strongly the growth of reasonably self-sufficient natural sub-areas.

Whether all of these activities should be located within a single building or designed as a series of buildings on a central site or campus will depend to some extent on the size of the community and the size of the problem. Up to cities of 50,000 population it might be desirable in the interests of economical use of plants to plan for an all-purpose multi-use unit. In larger urban centers the advisability of separate community libraries, health and social centers should be carefully considered. Whether all or few of the community activities are encompassed within a single building, the school plant itself would naturally provide for a community auditorium, physical exercise, play and recreational areas, lunchroom and cafeterias, and the rooms essential for small community gatherings under any plan.

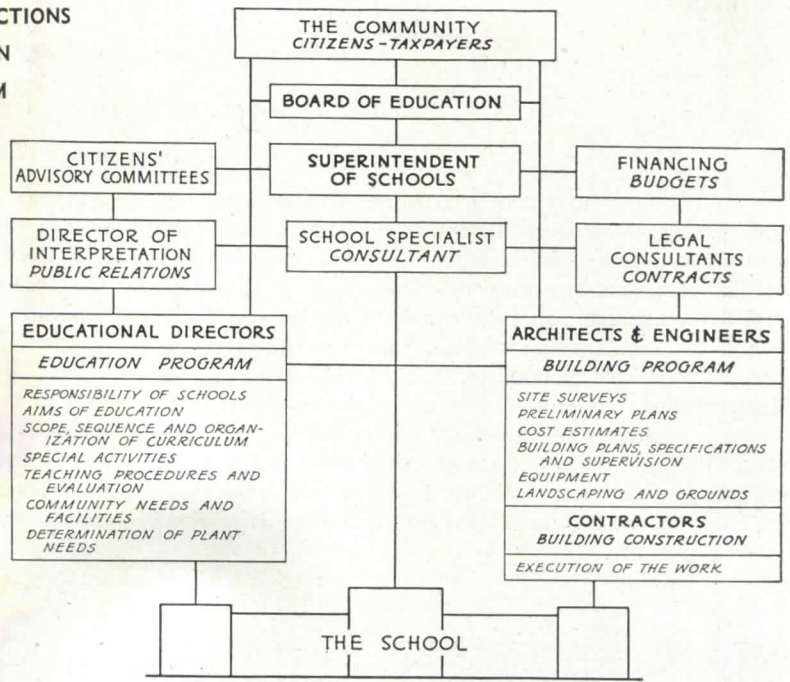
At present, growth of the idea of cooperation between different community agencies with the public school

*(Continued on page 136)*



**A CHART OF AGENCIES AND FUNCTIONS  
AND A LIST OF STEPS TO BE TAKEN  
IN A SCHOOL BUILDING PROGRAM**

1. Survey of Plant Needs
2. Curriculum Planning
3. Educational Programming
4. Educational Designing
5. Site Location Studies
6. Sub-Surface Engineering
7. Final Architectural Plan
8. Landscape Plan
9. Equipment Plan
10. Engineering Check-Up
11. Inspection
12. Interpretation



## COLLABORATION IN SCHOOL PLANNING

By Chester F. Miller, Superintendent of Schools, Saginaw, Michigan\*

**LEADERSHIP** rather than dictation characterizes democratic school administration. The superintendent is the person in the best position to draw together the educational, social, and technical forces involved.

In a collaborative enterprise of school programming and planning, the following procedure has been found satisfactory and efficient.

**Step 1. School plant needs survey.** This should be all-inclusive, taking advantage of existing surveys made by such bodies as city and state planning commissions, traffic departments, boards of commerce, telephone companies, and industrial organizations. The survey covers: (1) the social and economic nature of the city and district to be served; (2) industrial trends; (3) probable growth or loss of population and more particularly of school population; (4) probable gain or loss of pupils in the various divisions of the school system; (5) the scope of future educational responsibility of the city and vicinity; (6) the adopted educational policies of the board of education; (7) the degree of adequacy of the present plant for future needs; (8) the siting of schools in relation to physical factors such as the needs of specific attendance districts, traffic hazards, noise, zoning areas.

**2. Curriculum planning.** The content of the curriculum and the way it is taught are more important than physical plant. A curriculum laboratory could be estab-

lished with specialists in various fields as advisors. All teachers should participate. Reports from employers and colleges on graduates' performance are valuable.

**3, 4. Educational programming and designing.** Demands upon education such as are expressed in the work-study program, or adult education, or vocational training after the war, or new concepts of the best education for early childhood, should be discussed exhaustively with various community groups and organizations.

The information from all surveys, plant needs, curriculum planning, educational programming, is then correlated and translated into a preliminary diagram in terms of the required areas per pupil, the number of rooms, their location, functions, equipment, and interrelation. The preliminary diagram can then be studied by administrators and teachers and revised for a final draft. This preliminary diagramming is so exacting that there are specialists doing it as "educational designers."

**5-10. Preparation for building.** Site location studies are based on the preliminary surveys, and on real estate factors. Sub-surface engineering tests are highly advisable before excavation to prevent costly errors.

The final architectural plan grows out of the educational diagram. The wealth of new educational equipment is so great that equipment schedules and plans are often handled by separate architectural specialists. The community nature of the school grounds calls for professional planning

\* Member of Michigan State Planning Commission and of Michigan State Educational Planning Commission.

(Continued on page 136)

# PLANNING FOR NEW TEACHING TECHNIQUES

By Paul J. Misner

Superintendent of Schools, Glencoe, Illinois

CONSIDERABLE progress has already been made in achieving a flexible organization of the elementary school. Earlier attempts to classify pupils according to intellectual and academic abilities have been abandoned in favor of groupings that emphasize social and emotional adjustment. Rigid annual and semi-annual promotion policies have been modified to permit continuous reclassification of pupils. This trend toward greater flexibility of organization and control will undoubtedly continue, and it is easy to see how such a program would call for serious revision in the building plans of schools. An elementary classroom would no longer be a rectangular shaped box requiring only space

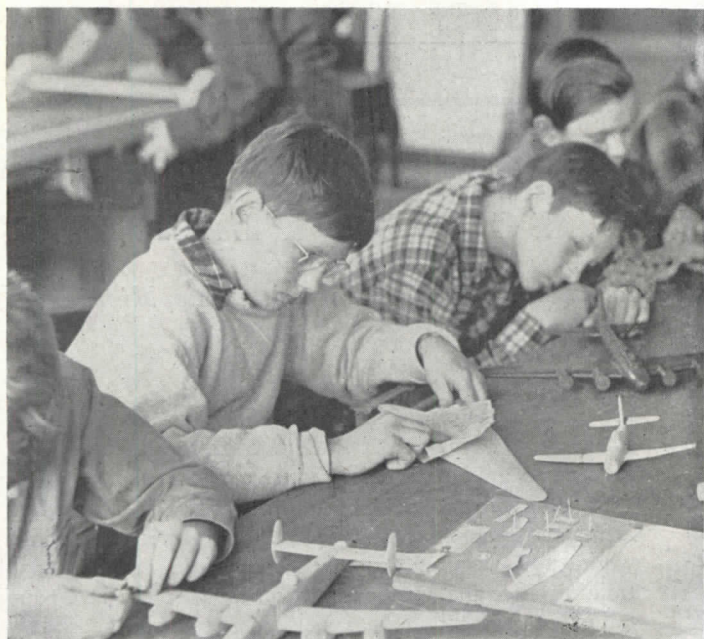
unit organization, *school buildings and equipment must be so designed that transfer of pupils within each unit is easily and readily accomplished.*

*The impact of changing curricula* upon building plans is also easily seen. Critical evaluations of the activity programs that have been developing experimentally in the elementary school suggest specialized rooms in the school of the future. Each of the organizational units, the pre-primary, primary, and post-primary, will have its own specialized rooms. This means that it will no longer be a choice between crowding work benches, clay tables, science units, and other kinds of space-consuming equipment into a classroom or having set periods once a week when children go to "the art room" or "the science room" whether art or science serve a particular need at that moment or not. Instead the primary unit will have separate rooms equipped with tools, play, paint, stores for functional arithmetic, and similar materials which are recognized as important in a good elementary education program. In such rooms pupils of similar needs, interests, and abilities can participate in socializing activities that stem from group purposing and planning. It will be possible for them to set up standards of good workmanship — standards which will not be constantly overshadowed with the threat of having to stop if the hammering disturbs the reading group. Much questionable noise and confusion will be eliminated from the regular classroom and more space will be made available in them for reading table, classroom libraries, maps, charts and globes.

One effect of the war has been to suggest to us specific equipment which would be provided in these specialized rooms. In spite of some curricular additions that have been made, instruction at the elementary school level has tended to be chiefly concerned with the "three R's."

Science is one field of education that has been seriously neglected. Limited provision has been made for nature study, but almost

no instruction and certainly no equipment or space to speak of has been allotted for experimental science. It is becoming increasingly clear that an understanding of the role that science has played and will continue to play in the lives of people is a major responsibility of education at all levels of development. And if elementary schools are to accept this responsibility there must be rooms with the kinds of *floors and furniture that will not be marred through children's experimentation.* Youthful gardeners must have space where they can try out the effects of different kinds of fertilizer on soil during the winter months so that their planting the next spring can be more successful. Youthful mechanics must have places where the lessons learned from taking machines apart and putting them back together are



"No longer an extra-curricular activity" but training

enough for thirty identical desks or tables and a space in front for "teacher's desk". In the same room there may well be children who can and children who can't read, *therefore* there will have to be equipment to use in instructing the children who are not yet ready for the abstract symbolism of books. There will be children who work at desks and children who prefer the floor so the furniture will more nearly resemble a home in that it will include different sized chairs and also rugs. It is conceivable that something like the following unit pattern of organization will develop: (a) pre-primary for children two to five years of age; (b) primary for children six to eight years of age; and, (c) post-primary for pupils nine to twelve years of age. To achieve the educational values inherent in such a plan of

evaluated in terms of what the experimenter learned and not "how much mess and oil he got on the floor".

Closely related to the realization of the increased importance of science education is a recognition of the more prominent role that instruction in the *arts and crafts* should play in the curriculum of the elementary school. The value of these activities has been amply demonstrated during the emergency. Apart from the readily admitted values in self-expression, there have been opportunities for children to make significant contributions to the war effort. The construction of model airplanes, the making of useful gifts for men in the service centers, the designing of posters to publicize home-front activities, have stimulated increased interest in the educative values of the arts and crafts. When the war is over, this interest will be sustained. Instruction in these fields will no longer be considered an extra-curricular activity. It will be recognized and developed as a means of deepening the understanding and appreciation of children and of providing them with opportunities to express and apply the manifold knowledge they have gained.

In a similar manner, *music and dramatics* are advancing from the extra-curricular to recognized parts of the curriculum. Rhythm instruments, bells, xylophones, tonettes, violin, and similar instruments can all be a regular part of primary instructional material when the necessary kinds of rooms and equipment are provided. But here again such construction details as sound-proofing, or planning for practice units, become important. And for dramatics, such building additions as portable stages, small assembly rooms, sets of large blocks to be used for stage sets, adequate and easily accessible costume rooms, take on new importance.

Also, the great importance of *health and physical education* has been inadequately recognized in the program of the elementary school. Physical facilities have too frequently been limited to a small playroom and a nurse's office, and "gym time" has been thought of as a luxury or playtime when bad weather prevented children from having the usual fifteen-minute outdoor recess. This condition will be corrected in the elementary school building of the future. Gymnasiums designed for both school and community use will be constructed, and facilities will be adequate so that gym can become a regular part of the daily instruction from kindergarten on. There will be rope climbing, tumbling, travelling on rings and other exercises that have a definite and recognized value in the education and development of a young child. In addition there will be facilities for sports of all kinds and social dancing. In addition to gymnasiums, provision will be made for clinics in which examinations and corrective treatment of physical defects can be effectively administered. Increased appreciation of the importance of rest and relaxation suggests that rest rooms should be included—and here again, not eight cots to be shared by an entire school, but enough cots located in such a place that they will be accessible to the teacher when she feels that her children need them.

During the war, the public school has played an important role in the war effort. People in education have

shown that they are not "immune from the world's trials and tribulations"—a sin of which they have often been accused.

Teachers and administrators have assumed responsibility for rationing registrations and for the training of civilian defense workers. Pupils have made significant contributions through their participation in salvage drives, in the sale and purchase of war stamps and bonds, and in a variety of useful community services. Forward-thinking educators and community leaders are not going to dissolve this relationship between school and community when the war is over. In fact, as school and community together discover that the education of a community's young people, if it is to be really effective, must be a cooperative enterprise the trend in this direction of the community school will be even greater. However, as schools reap the benefits from such a trend, they must also realize that a "community school" cannot be something worked out only on paper as a theory.

There must be facilities which the community recog-



"There will be rope-climbing, tumbling, travelling on rings"

nizes as its own to use and enjoy in abundant measure.

Local basketball teams will need *gym space*.

Boy and girl scout councils will require *meeting space*.

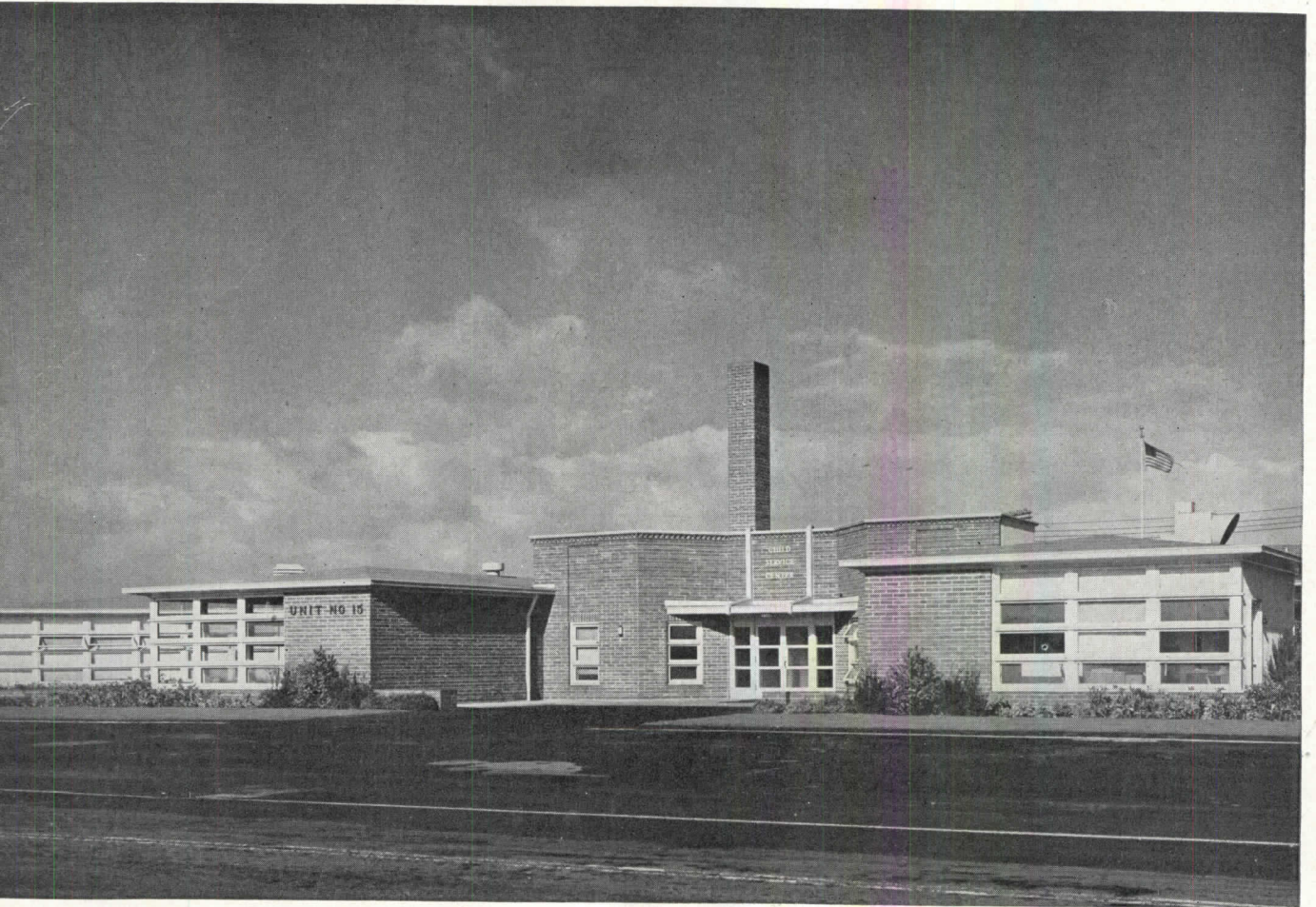
Amateur dramatic groups will need *auditorium space*, and civic groups will need *meeting facilities* large enough that important problems can be brought before large portions of the community.

No greater single responsibility faces the designer of school buildings than that of planning buildings that will serve community needs and interests. Democracy's challenge for the future knocks loudly on the doors of these designers and bids them plan buildings which will really permit schools to become community centers of democratic living.

# DESIGNED FOR 24-HOUR CHILD CARE

*Kaiser's Child Service Centers serving Portland Shipyards  
are a Community School facility of a new and important type*

*Wolff and Phillips, Architects*

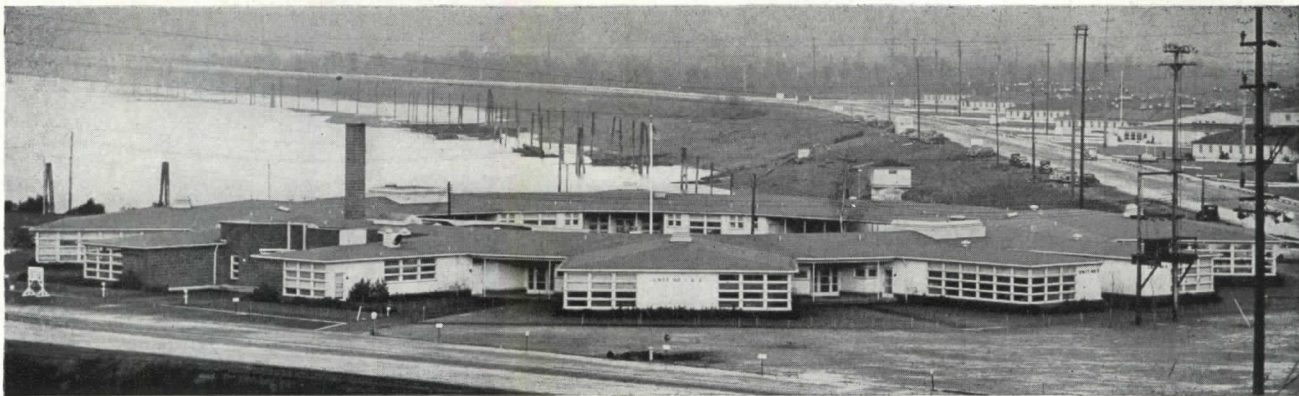


TWENTY-FOUR hours a day are "school time" at this project of the ever-fertile Henry J. Kaiser. Not all these hours are spent in actual education; indeed very few are. Service at the Centers goes all around the clock because production at the Swan Island and Oregon shipyards does. The Centers are an emergency service making war work possible for the entire adult family. Mothers, too, can be employed steadily at the Kaiser yards, only because young children, aged 18 months to 6 years, may be safely and happily left at the Center during work hours, not excluding the swing shift and the graveyard shift.

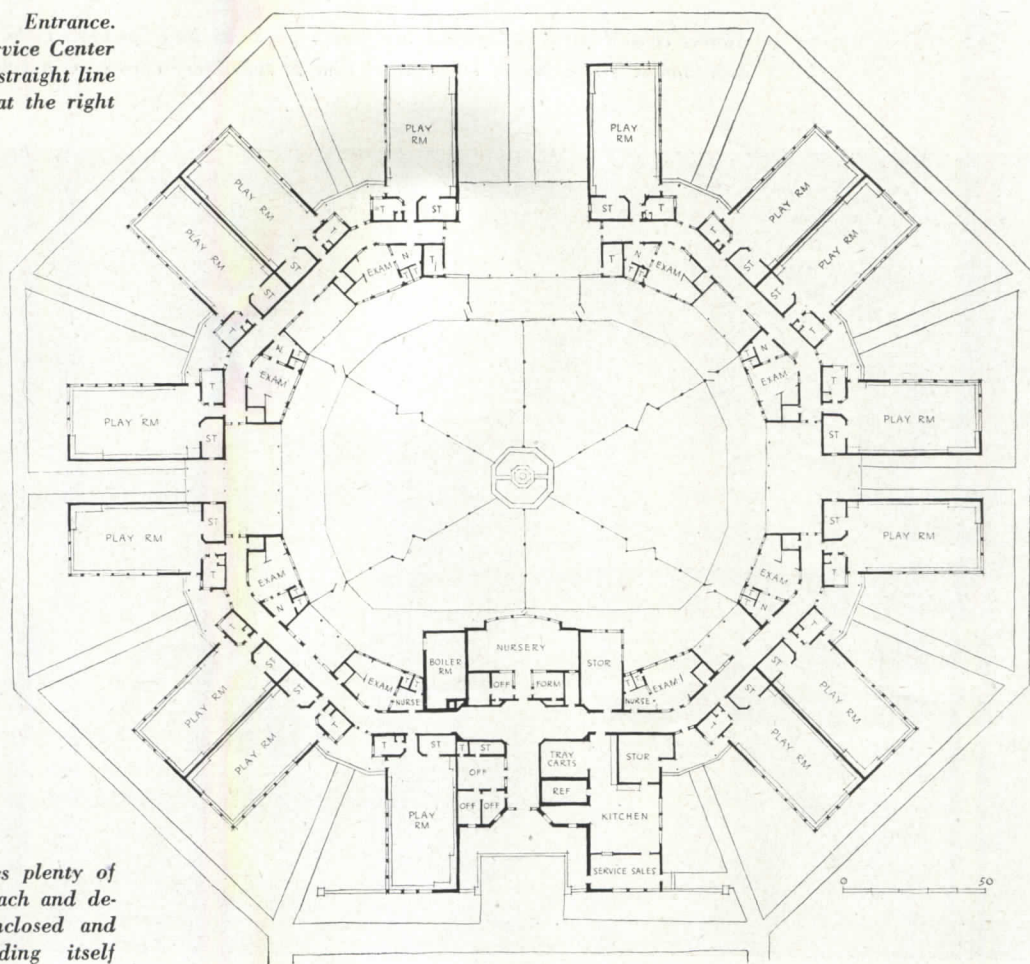
In peace-time the idea of surrendering much of the life of young children to an institution might be chal-

lenged; in war-time there can only be thankfulness to Kaiser for the boldness of the conception. The building ideas that have been produced by the architects will surely carry over into the less strenuous usage of postwar years.

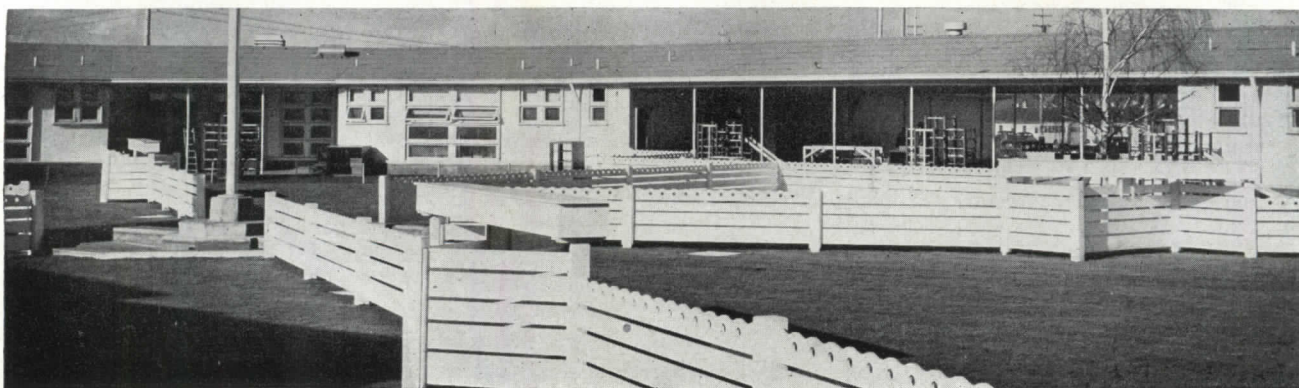
The architectural problem was as new as the concept. Unlike the customary child center, these are placed not as remotely as possible from industry, but as close to it as possible. As shown in the top illustration, they are at the very edge of the water, on the straightest possible line of travel to save time, gasoline, and expense to the working families. In such an industrial area the play yard, instead of being open and rangy, is surrounded and protected by the building. The radial wheel plan is basically related to

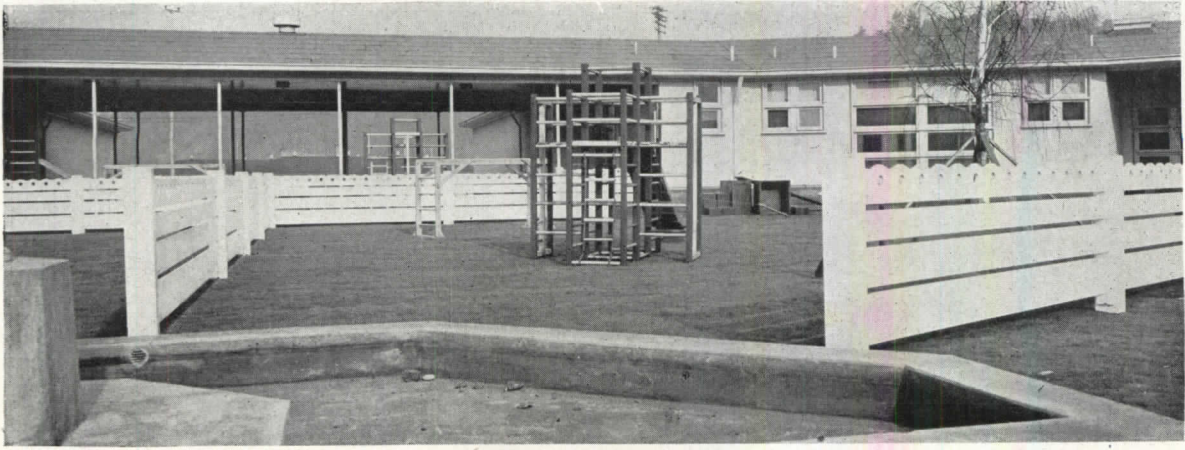


*Left, across-page, Main Entrance. Above, Portland Child Service Center is close to the yards, on a straight line from the housing shown at the right*

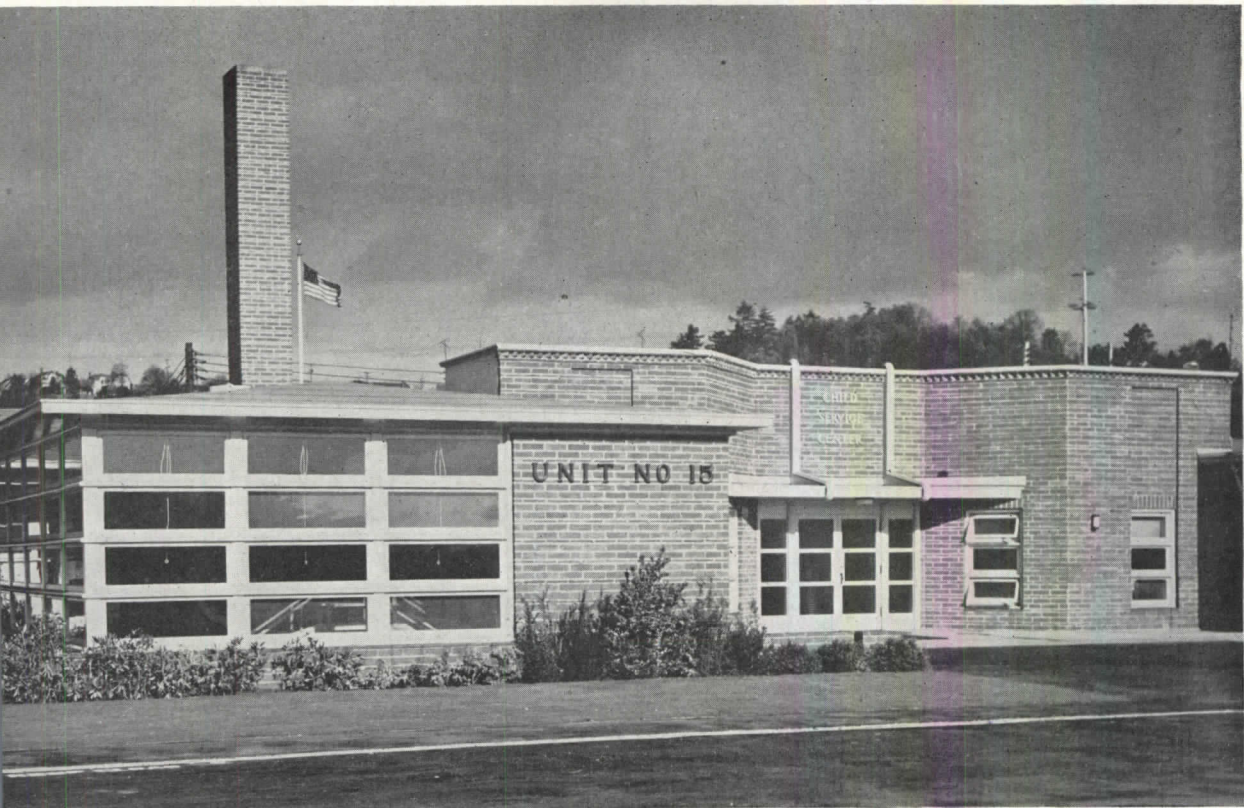


*Wheel-spoke plan provides plenty of entrances for rapid approach and departure. Play yard is enclosed and protected by the building itself*





*Above, central pool and fences dividing play areas into "paddocks" by ages for less disturbance. Below, main entrance, similar to subsidiary entrances in general character*

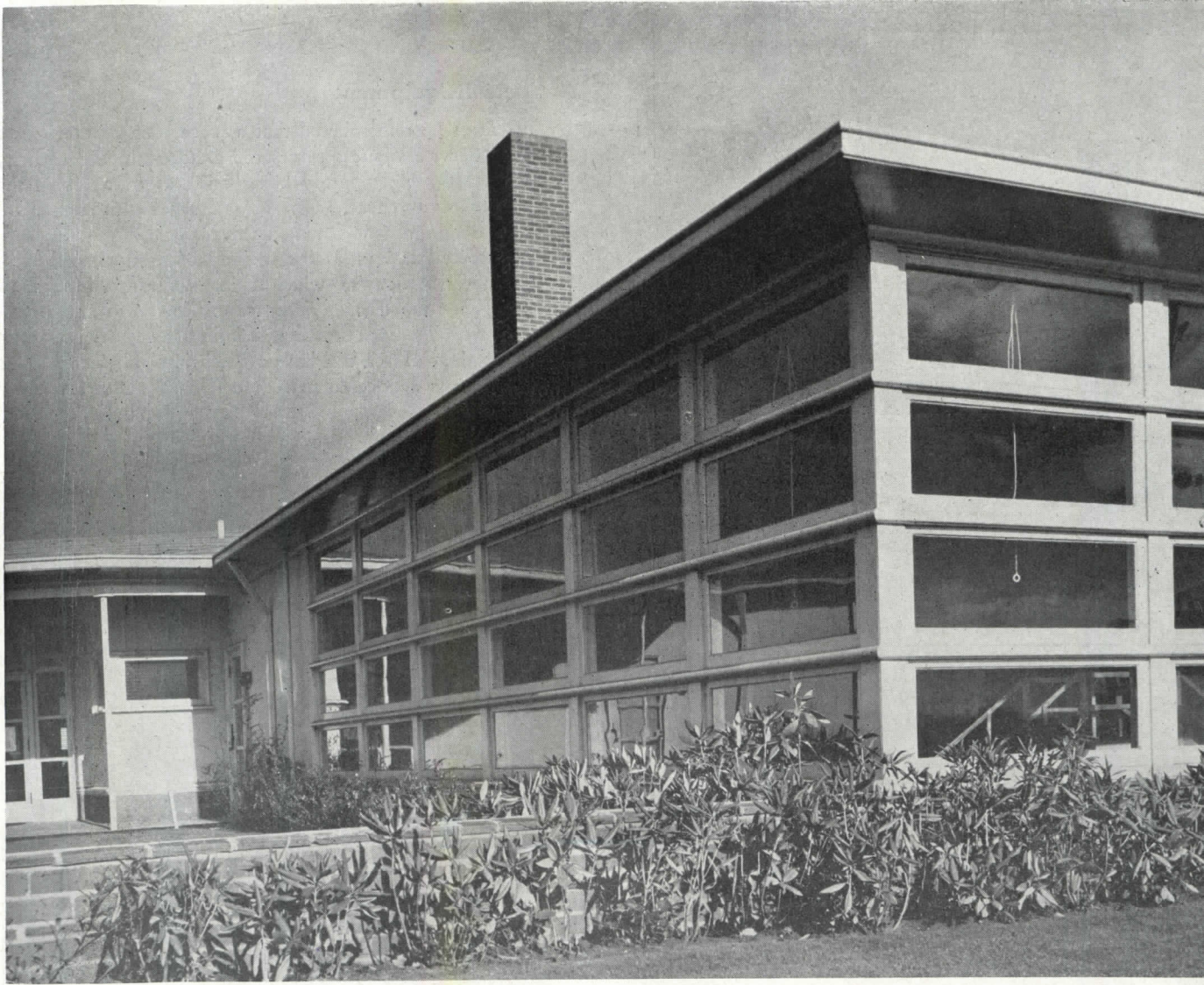


the famous but unbuilt 1928 "ring school" project of Richard J. Neutra, yet departures and innovation make the design a new creation. To architects' imagination the scheme will suggest many other variations.

Among plan features, there are a few changes to be noted, received too late for correction of the lettering on our drawing. Directly opposite the main entrance, the room marked "Nursery" is actually used as an Infirmary. Rooms around the inner periphery marked "Exam" are actually used as supplementary play rooms for painting, clay work, and other activities at more intimate scale. Contiguous to these, the rooms marked "N" for "Nurse" are used as teachers' and supervisors' offices.

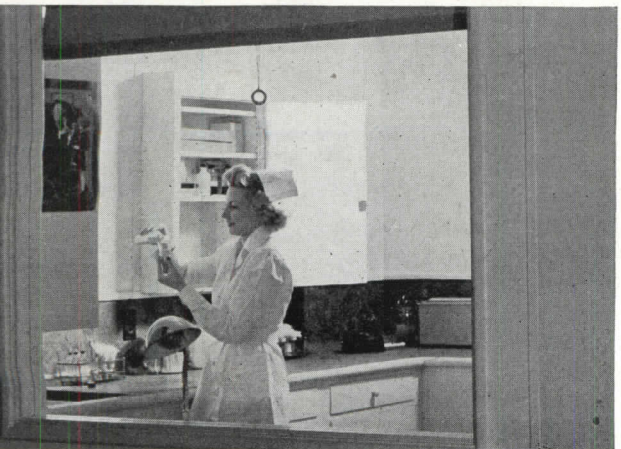
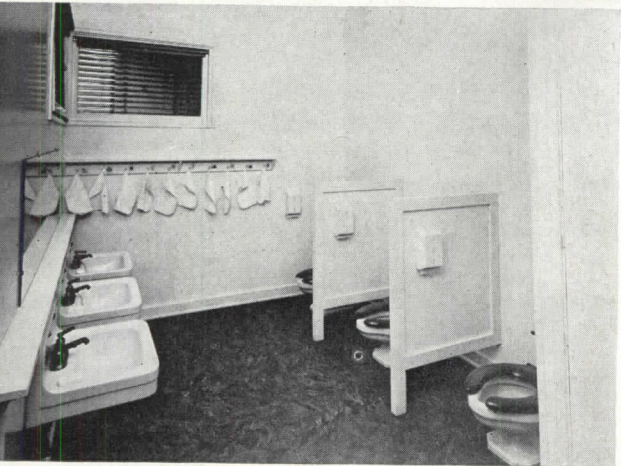
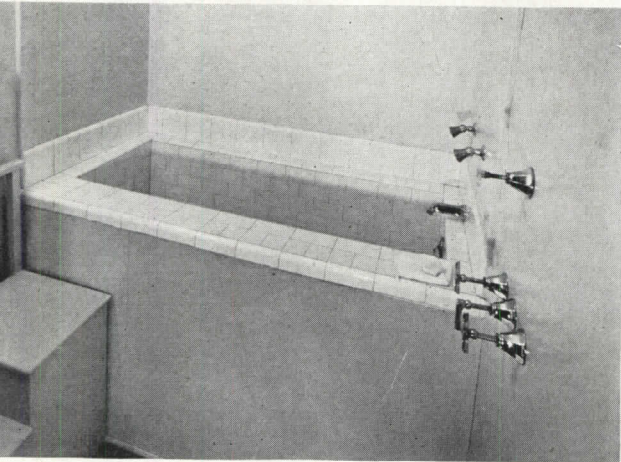
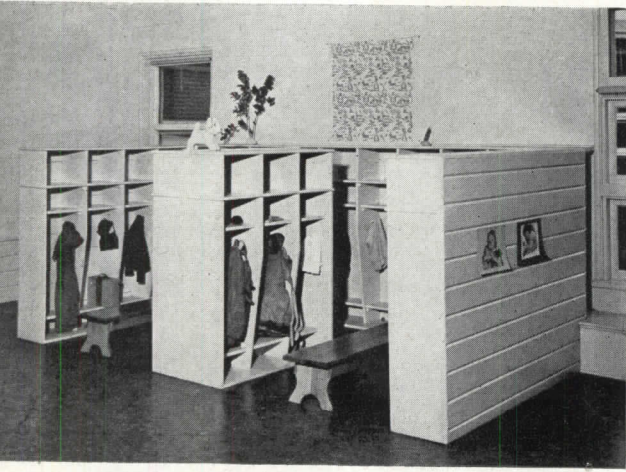
A feature of special interest is the kitchen off the main entrance and the adjoining room marked "Service Sales." Here a mother may obtain a ready-cooked meal to take home, probably assuring the family of a better dinner than she might be able to cook after a strenuous work day.

The charge to families is 75 cents a shift—50 cents apiece for additional children. James L. Hymes, the resident director, remarks: "In the past, good nursery schools have been a luxury for the wealthy. The Kaiser Child Service Centers are among the first places where working people, people of average means, have been able to afford good nursery education for their children." Herein lies the potentiality of the child center as a community school type.



*Above: Ample classroom windows are brought down to a small child's sight-lines: "There goes Mummy's ship!" Below: playrooms are finished in tones of blue, apricot, or lemon*





## Special Equipment

It must be remembered that a place such as the Kaiser Child Service Centers serves the children in the capacity of a substitute temporary home quite as much as in the capacity of a school. Certain sanitary requirements are therefore prominent among its needs.

Of special interest is the method of producing a bathtub (second picture) which is at the same time high enough for the teacher or nurse to be able to bathe children without back-breaking bending and deep enough so that the children can have a good time splashing. This tub suggests a possible new model for homes with many children.



*Vertical row of pictures, beginning at top: clothes compartments arranged for easy accessibility; a high build-up tub for easy reaching and plenty of splashing; 12-inch high toilet seats and low wash bowls under a continuous shelf; nurse's quarters with provision for milk and baby food. Above, classroom with linoleum wainscot, compact block storage, and plenty of tackable bulletin-board area for children's work*

The special toilet seats are cast to reach a finish height of 12 inches for small children, and wash bowls are similarly placed low.

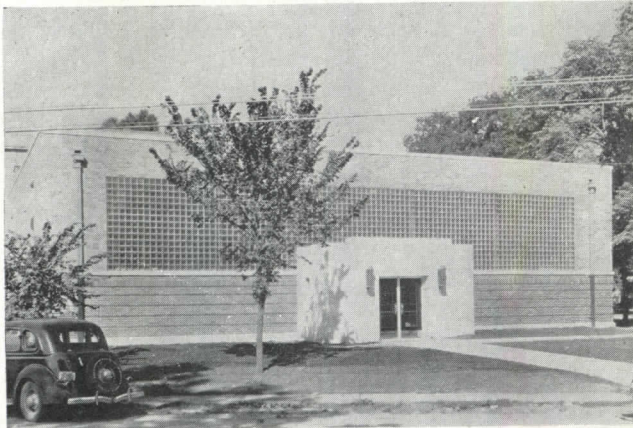
The children's clothes lockers embody several features worth mention. The open front permits easy inspection and better order; the detachable construction permits shifting not possible with built-in fixtures. Note the cut-back feature in the cheek-boards making it easier to reach shoes. Floors, as shown in the classroom picture, are linoleum, and wall linoleum is used for shelf-tops and wainscoting.



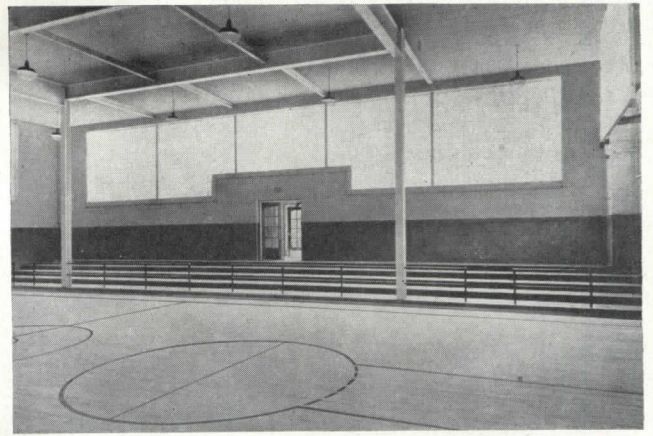
# MECHANICAL EQUIPMENT FOR THE SCHOOL

*New methods of heating, lighting, and equipping schools are gradually modifying the architectural problem.*

*By Thomas J. Higgins, President, 1943,  
National Council on Schoolhouse Construction*



*Photos courtesy Pittsburgh Plate Glass*



*Gymnasium at Arnolds Park, Iowa, by Oren Thomas, architect, shows use of up-to-date materials and structure*

THE PRESENT DAY school building contains a tremendous amount of mechanical equipment. The heating plant has facilities for fuel storage, and if coal burning, facilities for ash disposal, boiler firing devices, hot water heating systems, ducts and piping for the distribution of heat, fresh air intakes, air washers, filters, humidifiers, ventilating fans with plenum chambers and heating coils, thermostatically operated dampers for temperature control, unit heaters and exhaust ventilators. Even in a small building where some of these items can be eliminated, the hidden heating system is no insignificant part of the school plant.

Panel heating and radiant heating are only the beginning of new approaches to more heating efficiency. If simpler systems can be devised they will reflect not only a saving in original installation costs, but also in operation and maintenance costs and in operating personnel.

Fuel conservation during the past two years is certain to have an influence upon building design and construction. Buildings will be constructed with more thought to heat insulation. It is quite possible that a building material may be developed that will comprise the qualities of structural strength, weather resistance, and insulation all in one product.

Mechanical ventilation is a necessity in school buildings in most sections of the country. Health and sanitation will not permit the return to open window ventilation

dependent for operation upon the whim of one person, or of the outside wind-pressure. It is not beyond the realm of expectation that school buildings of the future will be supplied with properly tempered clean air in the warm months as well as in winter.

The expanded use of the school plant as the community center will accelerate the demand for comfortable schools during the entire year. Ultra violet ray lamps for the destruction of air-borne bacteria are now being manufactured. They are inexpensive and will be more used.

We are all becoming more aware of lighting and modern schools are being provided with more window area than in the past. The use of large amounts of glass, of course, emphasizes the need of proper heating systems. The heat loss through glass is two or three times as much as through masonry walls. Double glazing is being developed to offset this. So many developments have been made in light transmitting glass in the past few years that we can expect some unusual developments in this field. Heat absorbing glass is now being manufactured that retards 50 per cent of the heat from the sun's rays and transmits a white light, for use where heat is excessive. This percentage will undoubtedly be raised by future developments. The transmission of light across a room by the use of prisms and other forms moulded in the glass, is common practice in war plant construction today. The manufacture of moderately priced glass that will transmit ultra violet rays is sure to be per-

ected. The health value of such a glass is obvious.

It is important that a glass with shatterproof qualities may be made available for general use. Window breakage and the subsequent boarding up of the openings until replacements can be made is a nuisance, especially in the northern climate, when the breakage occurs in the winter.

Bi-lateral lighting for classrooms is being introduced again into schoolhouse planning by providing clerestory lighting on the opposite side of the room from the main fenestration. This movement will probably be opposed by many school planners, but the abandonment of fixed formal seating in classrooms may justify another approach to classroom lighting. Any change from uni-lateral lighting will have to be justified on the basis of better natural lighting.

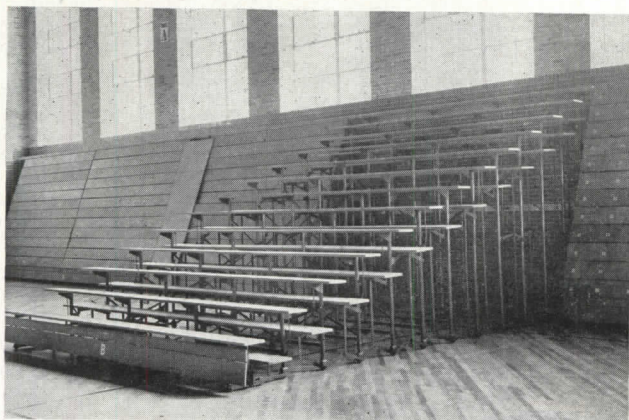
The artificial lighting of school rooms has been greatly accelerated during the past decade. How much light we need to produce the most efficient work is still controversial. Engineers and ophthalmologists have been diligently at work in research laboratories and in classrooms in an endeavor to determine the scholastic attainments at different light levels. No conclusions have yet been reached. It may be a long time before 50

referred to as the sanitary system, is most complete in all except the most rural schools today. In many buildings it is the only mechanical equipment that is found.

The study of the use of toilet facilities and washing facilities made by Colonel Francis R. Scherer of Rochester, N. Y., indicates that in many communities the number of fixtures is far in excess of actual needs. While this is not only an unnecessary extravagance, it may even add to a lack of sanitation. When only the proper number of fixtures is installed, all must be kept in order.

The location of the toilet rooms and the distribution of fixtures is often of more importance than the actual number of facilities provided. Unfortunately this item has not been given proper attention in schoolhouse planning; the toilet rooms have been relegated to some space unsuitable for instructional purposes. Many schools have had the foresight to install the toilets within the building so that they are available for after school use from the playground. In such an arrangement, some provision for supervision should be provided.

Full washing and drying equipment is usually found in school toilet rooms today. The proper use of these facilities is a matter of supervision. Bathrooms, not in connection with physical education activities, but



Courtesy Horn Mfg. Co.

#### *Gym bleachers that roll and fold to make a smooth surface*

or even 25 footcandle intensity is universally approved as a practical idea in each classroom. The elimination and replacement of one and two footcandle fixtures must come first. Adequate lighting should not in too great a degree depend on installation and maintenance costs. It's a must. It is my belief that the cost of current that is now being wasted by unnecessary burning of classroom lights would more than compensate for the maintenance of an adequate lighting system used as needed.\* The happy medium between those who think only of costs and those who think nothing of costs must be reached.

The plumbing and sewage system that is commonly



#### *Girls' gym lockers fitted into individual dressing rooms*

solely for the purpose of cleanliness of the children in communities where home bathing facilities are limited, are sometimes found in metropolitan elementary schools. The need of bathing facilities as a part of the health and physical education training is being definitely realized. Bath, shower and lockers are being installed in connection with the gymnasium and swimming pools of new high school buildings. In many cases provision only for the athletic teams has been made. A modern plant should include gym lockers or baskets for each pupil in the school taking physical education, and showers ample to accommodate a full gym class in a reasonable period of time.

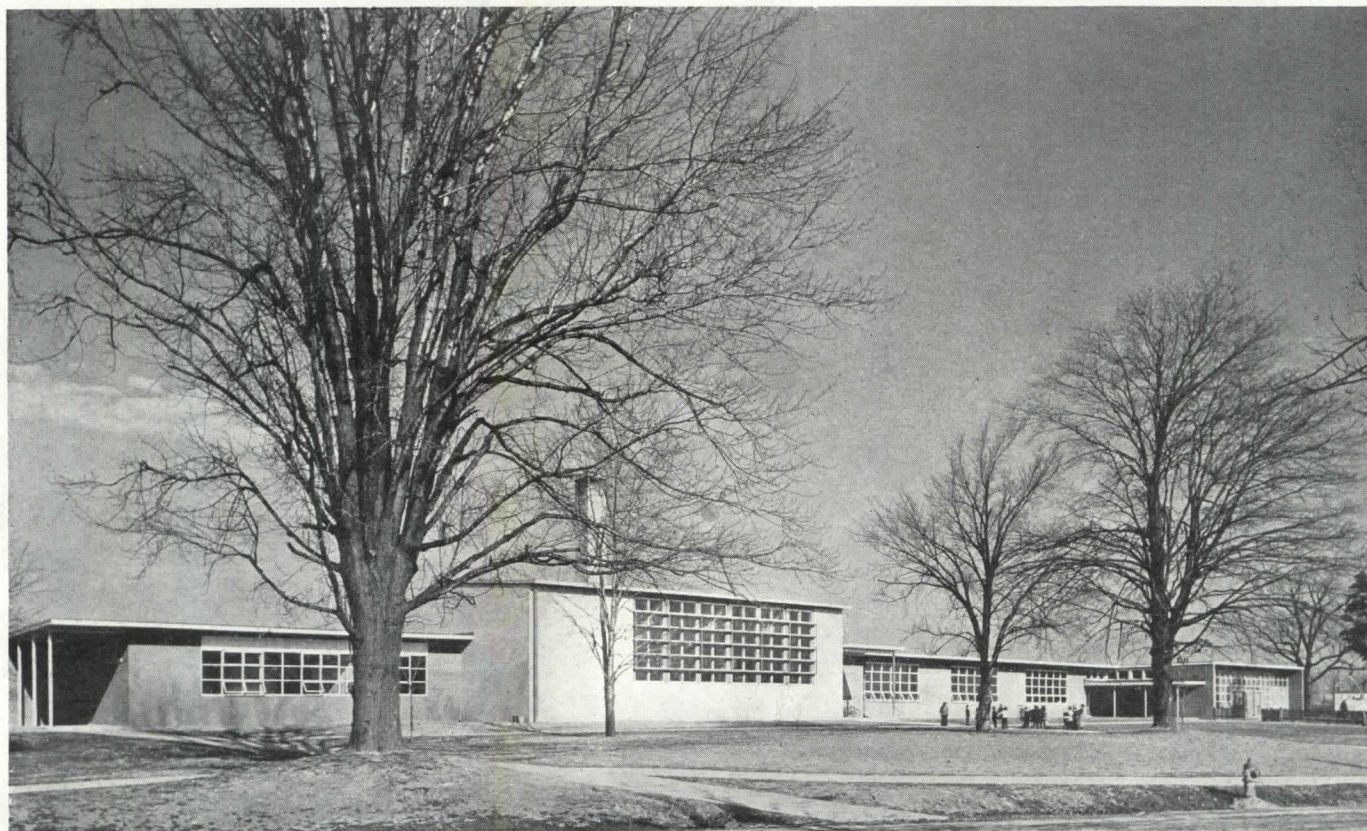
If swimming pools are to be included in the school plant, particular attention must be given to the size, equipment and location of the locker and shower room so that no duplication of equipment will be necessary.

The fundamental principles of good schoolhouse planning are not going to change with Victory. Today is the time to start intelligent postwar programs.

\* As a concrete example of advanced current practice, in a classroom 24 by 38 ft. the architects Kistner and Wright raised the ceiling height to 14 ft.; used six 500-watt silverbowll incandescent globes in concentric ring fixtures dropped 4 ft. below the ceiling "to reduce brightness on the ceiling when the lights are on." Photoelectric cell control turns on all six lights when daylight falls below an acceptable level. Rhees E. Burket, Washington architect, using a ceiling sloped from 12 ft. to approx 10 ft. in a classroom width of 22 ft., suggests two rows of three each fluorescent fixtures hung 9 ft. above the floor, the fixtures equipped with diffusing glass sides and bottom. Ed.

## TWO SCHOOLS DESIGNED FOR COMMUNITY USE

*Identical in plan, these two Wayne, Michigan, schools are carefully fitted to multiple neighborhood activities. Augustus O'Dell and Hewlett & Luckenbach, Architects*



*Photos by Elmer L. Astleford*

**T**HE two Norwayne schools are exemplary in their plan organization. Identical in all but the length of the classroom wing, each is flanked to the east by a day care center for small children and to the west by a multi-purpose wing including provisions for community use of the school.

Both buildings are excellently situated at the center of their respective neighborhoods. The larger school ("A" on the plot plan, next page) has the more commodious provision for adult recreation at a suitable distance from the classrooms, and woodland for picnicing nearby to the northeast. The smaller school ("B") has the more convenient pedestrian access for most of its children through a park strip extending east-west behind the building.

Elements intended for combined school and community use have been related with special care. Thus the kitchen and the demonstration room, separated by a folding partition, serve classes in home economics and nutrition, and also serve efficiently in preparing suppers for community functions in the multi-purpose room directly across the corridor. The craft room adjacent to the stage is convertible into a dormitory. Meeting rooms and a lounge are useful to the neighborhood.

Exemplary, also, is the planning of the day care center.

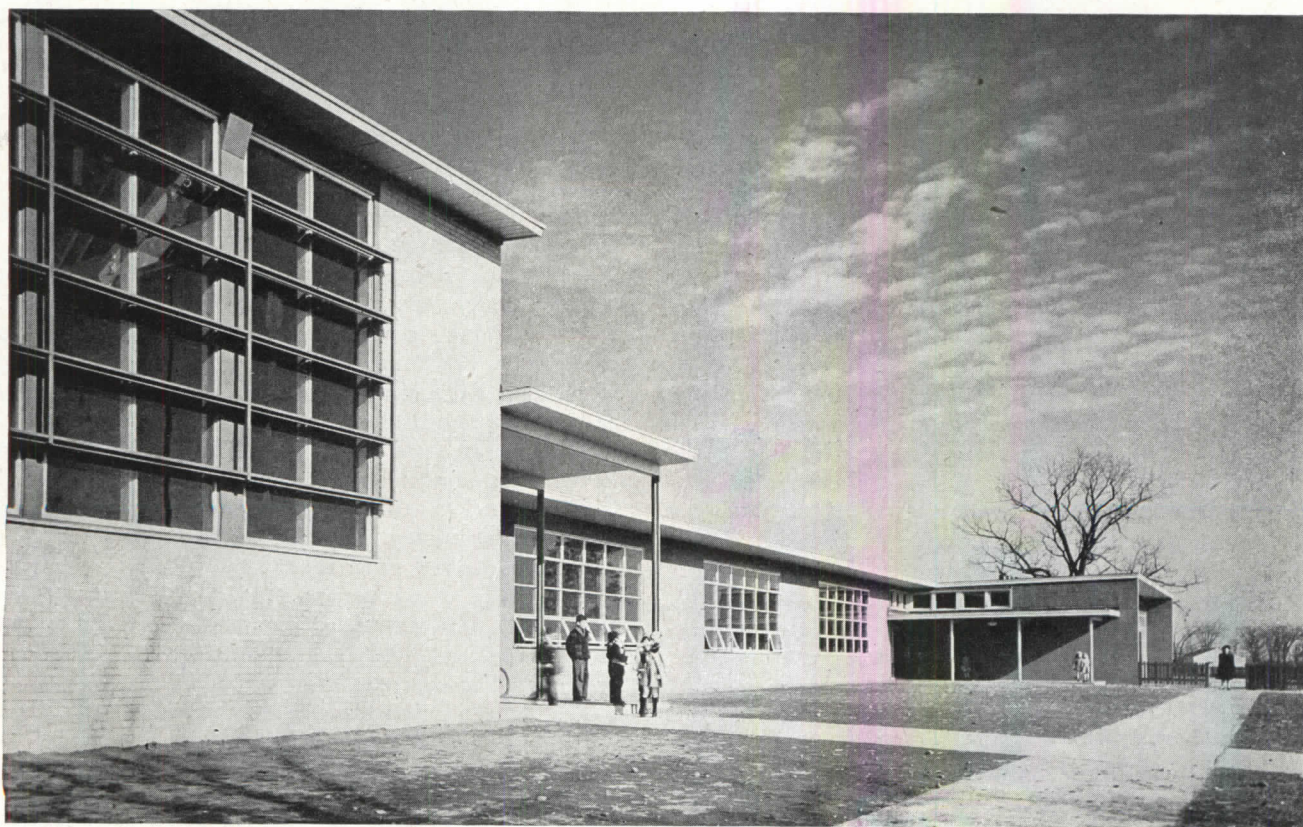
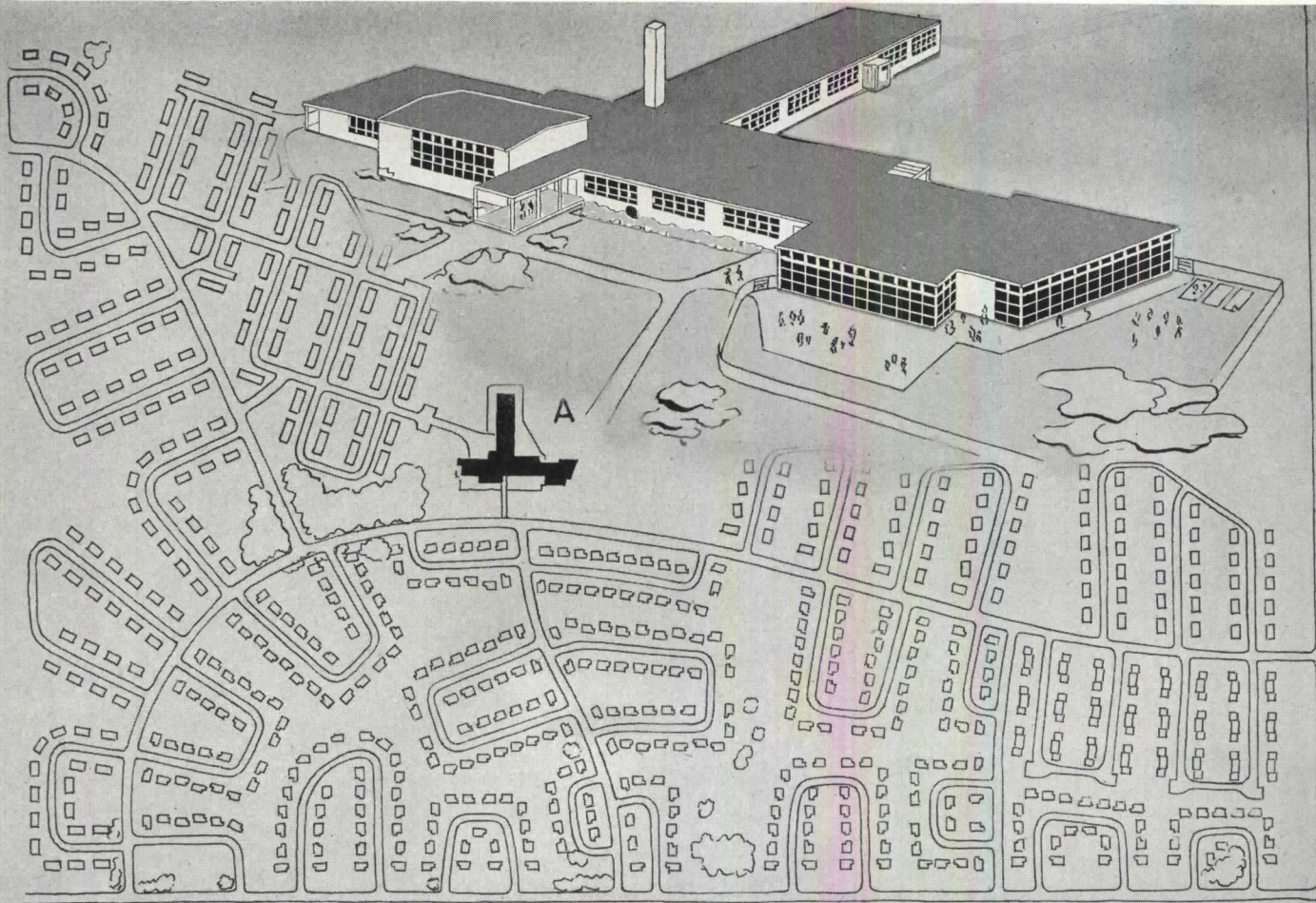
The dressing rooms and toilets for small children are excellently placed, with outside entrances. A kitchen supplies the necessary lunches.

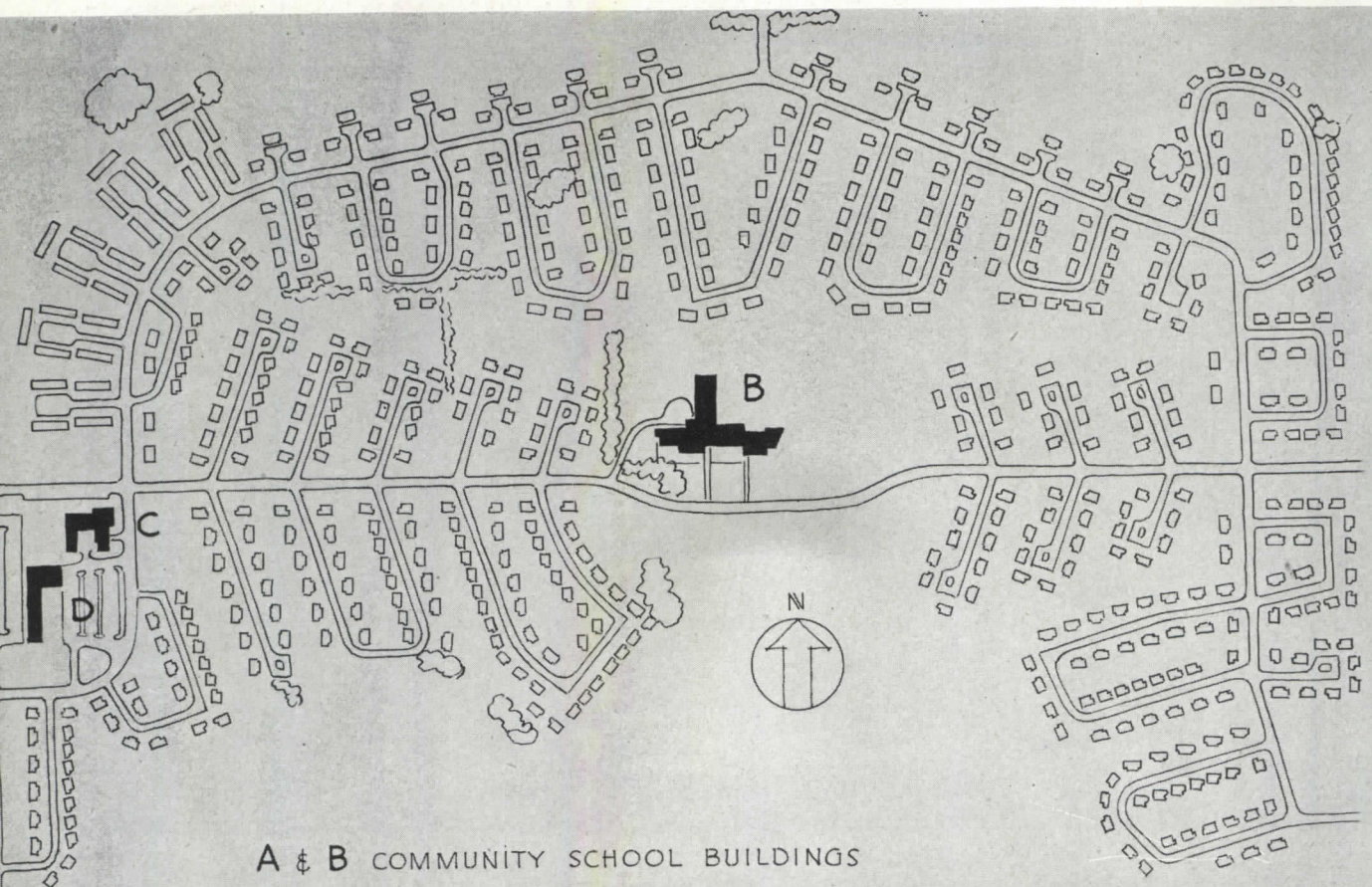
Both schools were simply planned and built with great economy under wartime restrictions. Though permanent, they meet WPA restrictions as to area per child and as to construction. Maximum glass is used under war heating regulations. FWA school standards and FPHA community and day care standards are also fully complied with.

Walls are of cinder block painted both sides, the exterior with waterproofing paint. The "multi-purpose room" is of face brick on the exterior, common brick on the interior, both unpainted. Floors are of concrete with split tile and moisture-proof paper sandwiched into a double slab. The "multi-purpose room" and day care wing have wood finish floors on sleepers; corridors and classrooms for the lower grades have finish floors of asphalt tile. Other floors are finished in concrete.

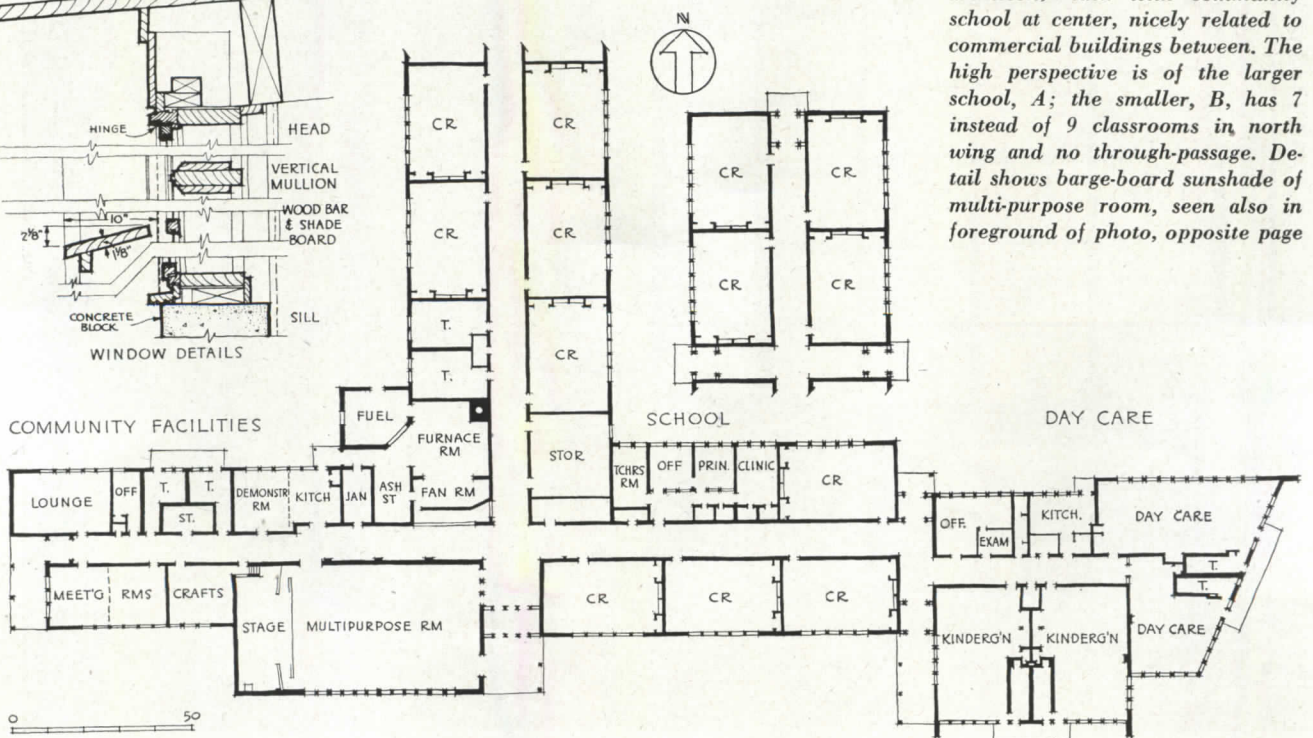
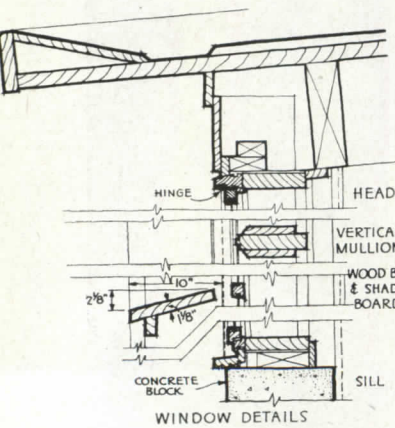
Heating and lighting, confessedly not ideal, reflect war restrictions. Three coal-fired, forced warm-air furnaces placed slightly below grade feed supply ducts in the furred corridor ceilings; the corridor acts as the return duct.

Striking color, inside and out, makes a gay ensemble

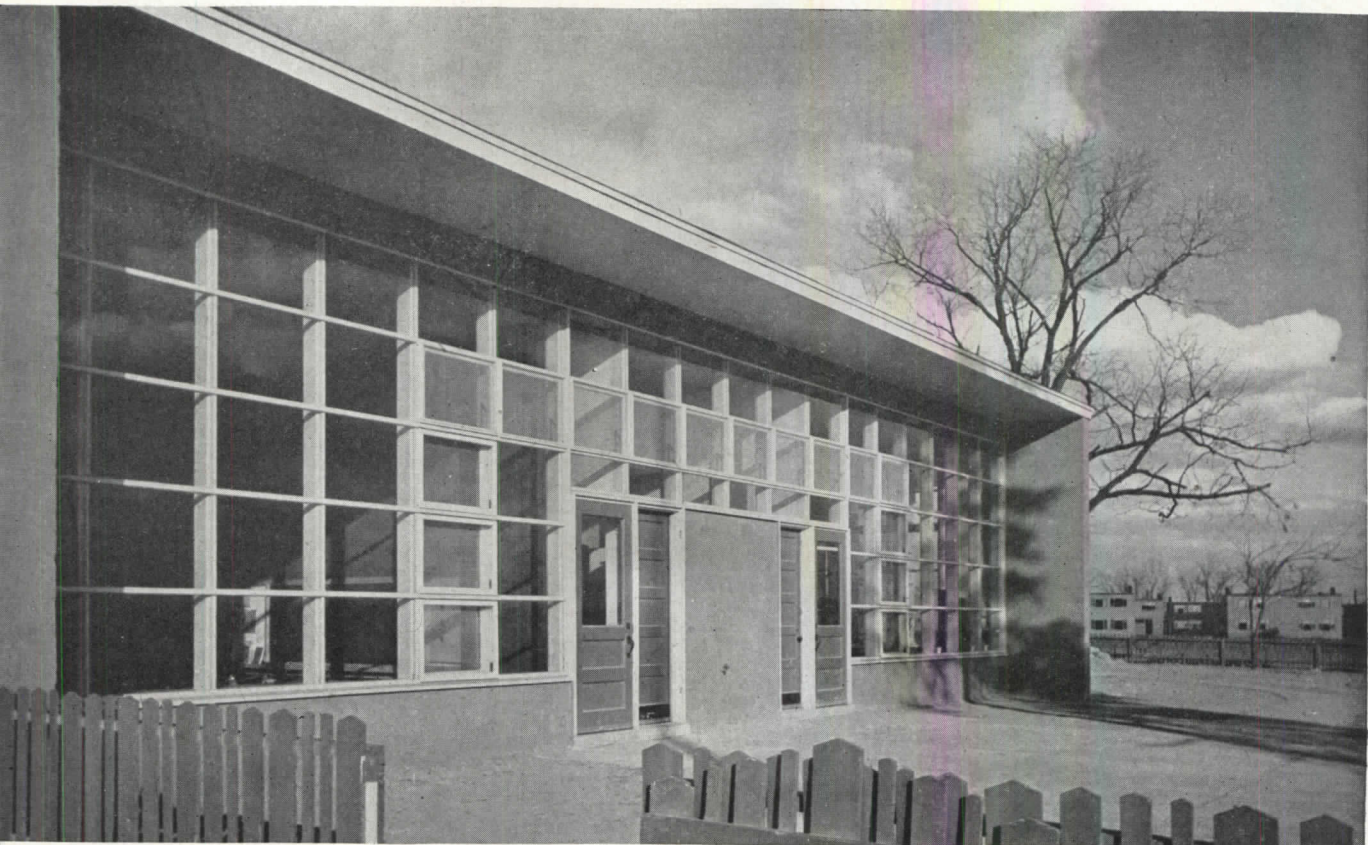




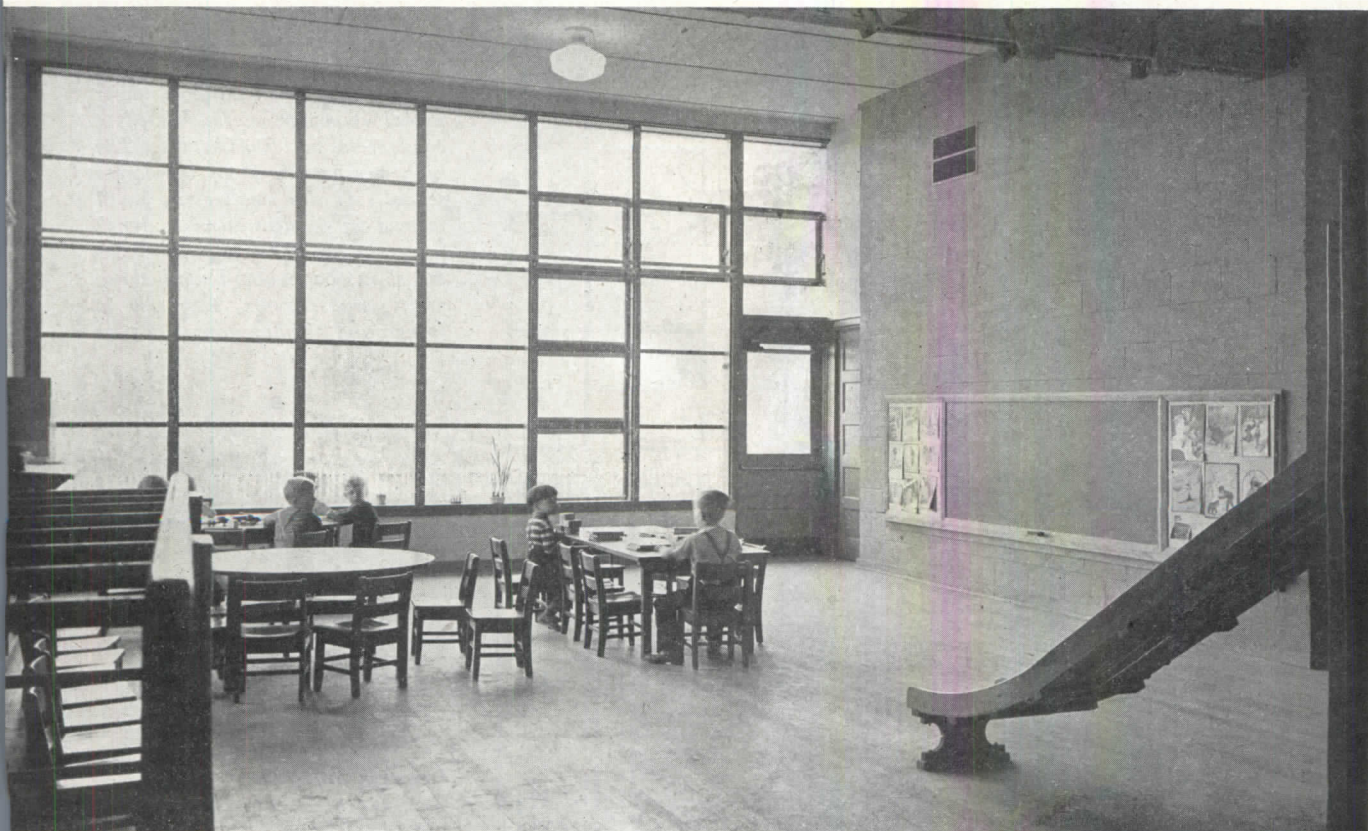
A & B COMMUNITY SCHOOL BUILDINGS  
 C MANAGEMENT AND MAINTENANCE BUILDING  
 D COMMERCIAL BUILDING

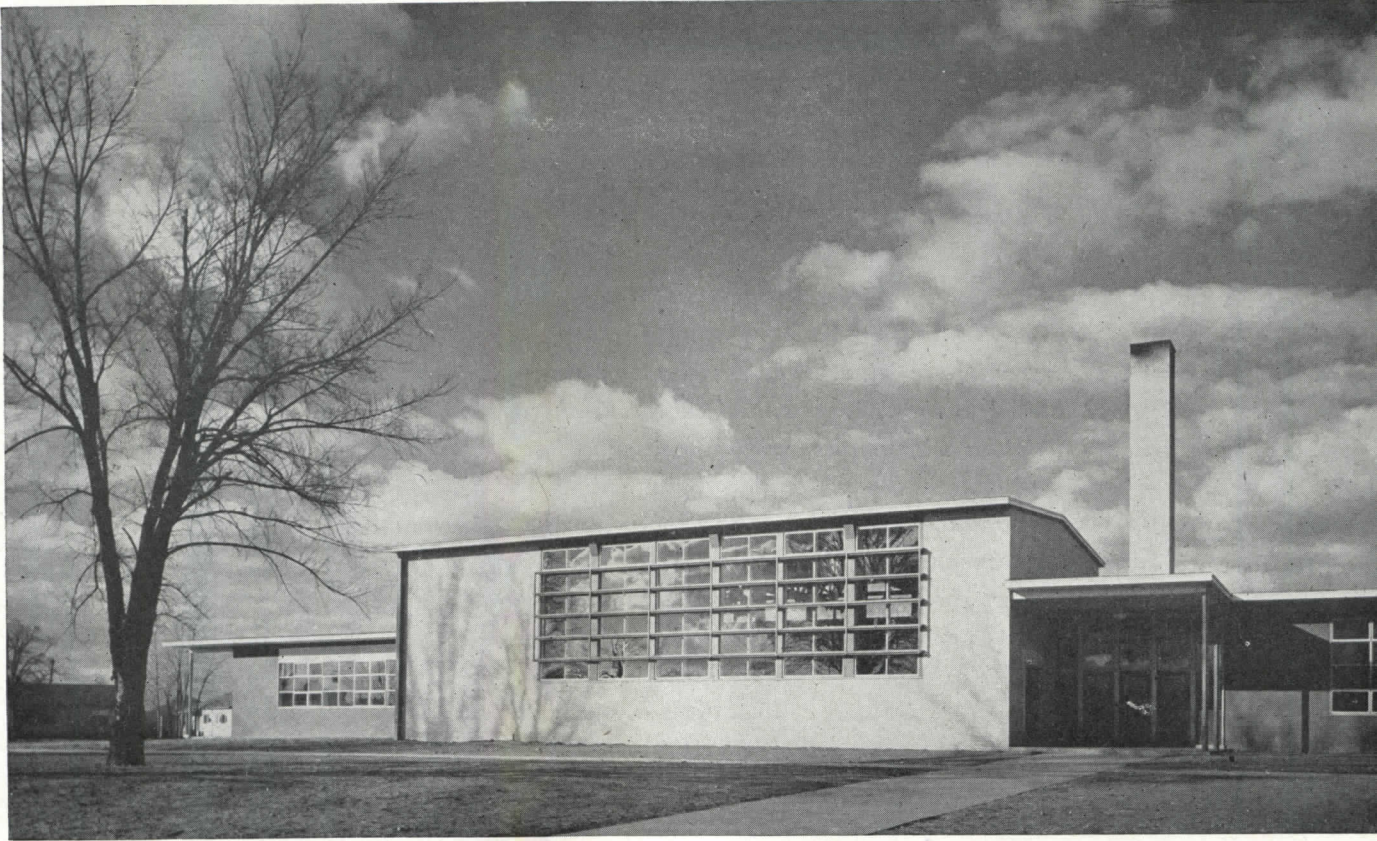


Above, both pages, the two adjoining Norwayne neighborhoods (Skidmore, Owings & Merrill, architects) each with community school at center, nicely related to commercial buildings between. The high perspective is of the larger school, A; the smaller, B, has 7 instead of 9 classrooms in north wing and no through-passage. Detail shows barge-board sunshade of multi-purpose room, seen also in foreground of photo, opposite page

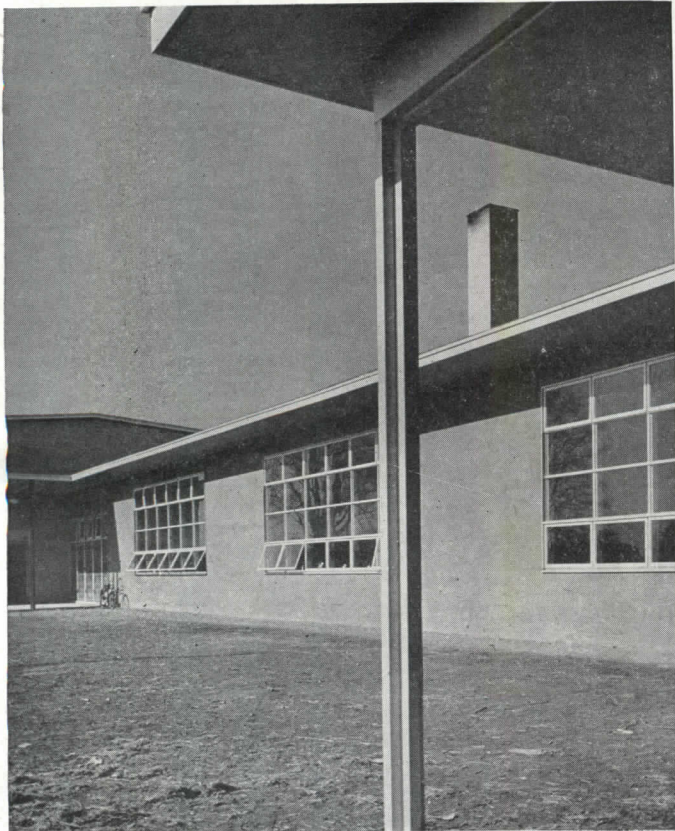


*Glass walls of the day care center are brought down low to meet sightlines of small children seated. A noteworthy feature (below) is the direct way in which the toilet and dressing rooms are related both to outside entrances and the room (see plan also). Day care rooms are best oriented to morning sun; afternoons are for sleep*





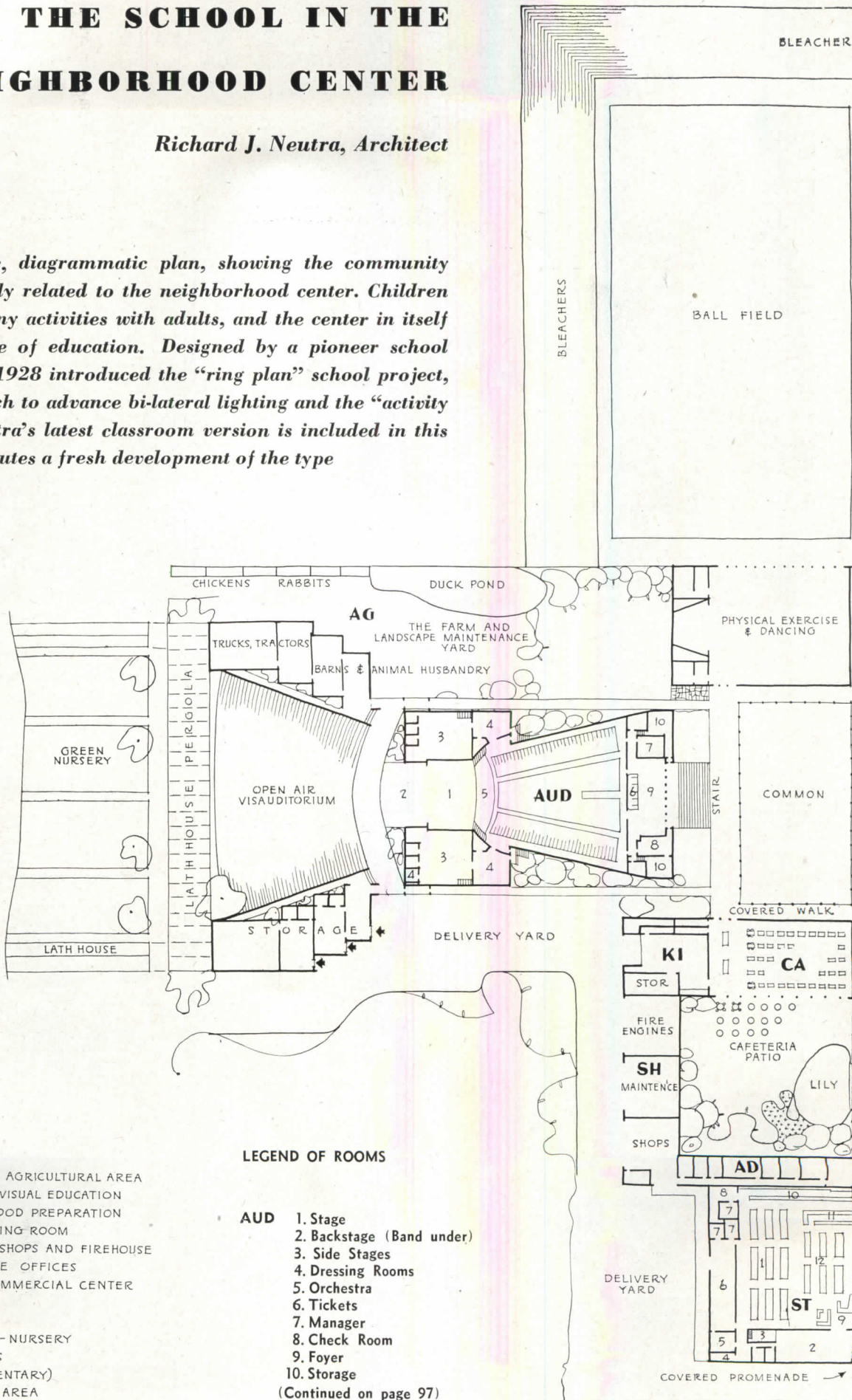
*Color schemes are bright and gay. Exterior cinder-block paint is either gray or chrome yellow; multi-purpose room face brick, warm light gray; trim colors include cocoa, light sand, gray-blue, with chinese red doors. Interiors are also brightly colorful. Proscenium arch (lower right) has splay formed by lapped redwood; stage front is air grill*



# THE SCHOOL IN THE NEIGHBORHOOD CENTER

Richard J. Neutra, Architect

*A comprehensive, diagrammatic plan, showing the community school functionally related to the neighborhood center. Children share a great many activities with adults, and the center in itself is a direct source of education. Designed by a pioneer school architect who in 1928 introduced the "ring plan" school project, and later did much to advance bi-lateral lighting and the "activity classroom." Neutra's latest classroom version is included in this story, and contributes a fresh development of the type*



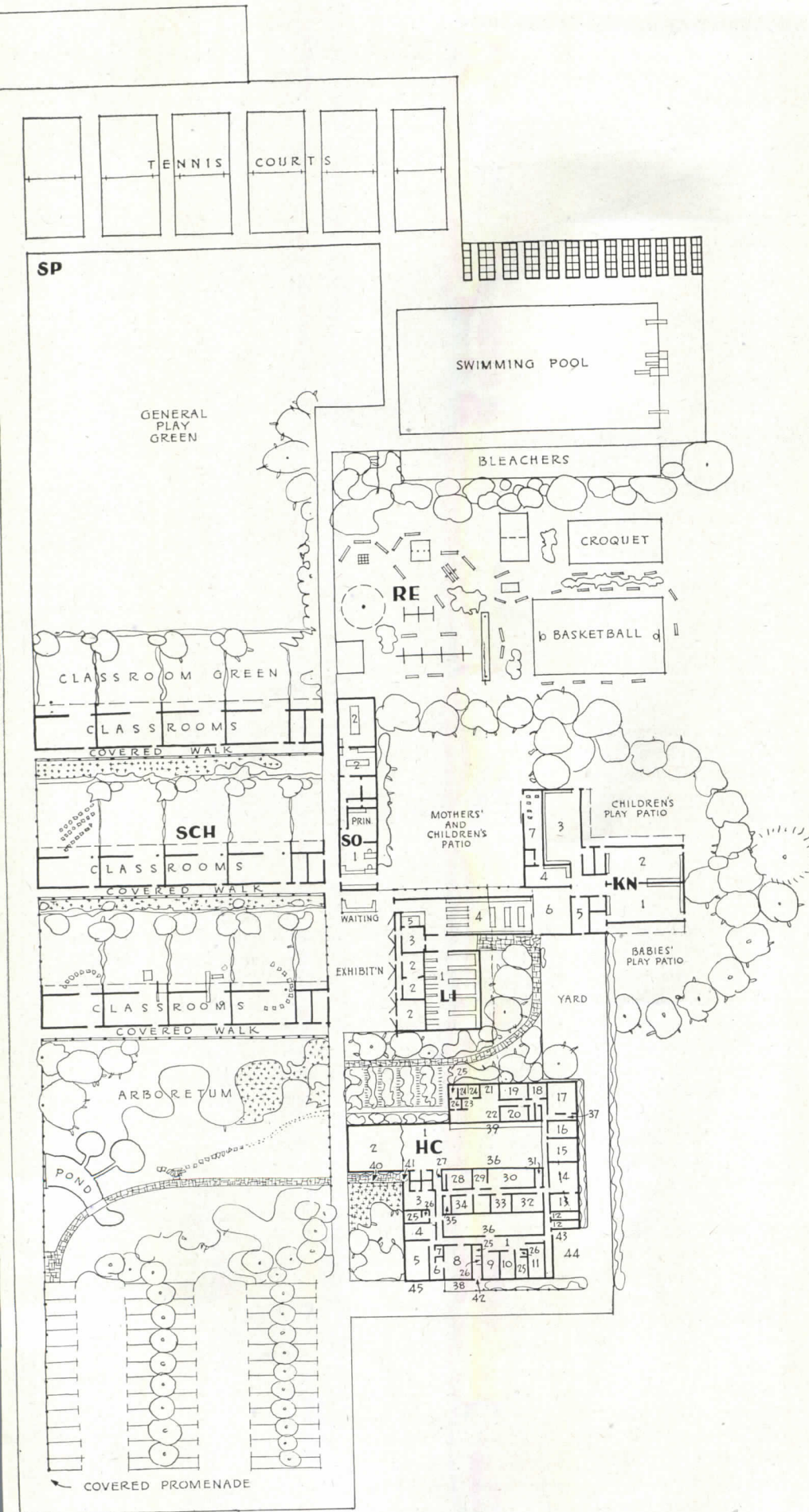
## LEGEND OF AREAS

- SP** SPORTS AREA
- AG** FARMYARD AND AGRICULTURAL AREA
- AUD** AUDITORY AND VISUAL EDUCATION
- KI** KITCHEN AND FOOD PREPARATION
- CA** CAFETERIA DINING ROOM
- SH** MAINTENANCE SHOPS AND FIREHOUSE
- AD** ADMINISTRATIVE OFFICES
- ST** STORES AND COMMERCIAL CENTER
- HC** HEALTH CLINIC
- LI** LIBRARY
- KN** KINDERGARTEN-NURSERY
- SO** SCHOOL OFFICES
- SCH** SCHOOL (ELEMENTARY)
- RE** RECREATIONAL AREA

## LEGEND OF ROOMS

- AUD** 1. Stage
  - 2. Backstage (Band under)
  - 3. Side Stages
  - 4. Dressing Rooms
  - 5. Orchestra
  - 6. Tickets
  - 7. Manager
  - 8. Check Room
  - 9. Foyer
  - 10. Storage
- (Continued on page 97)





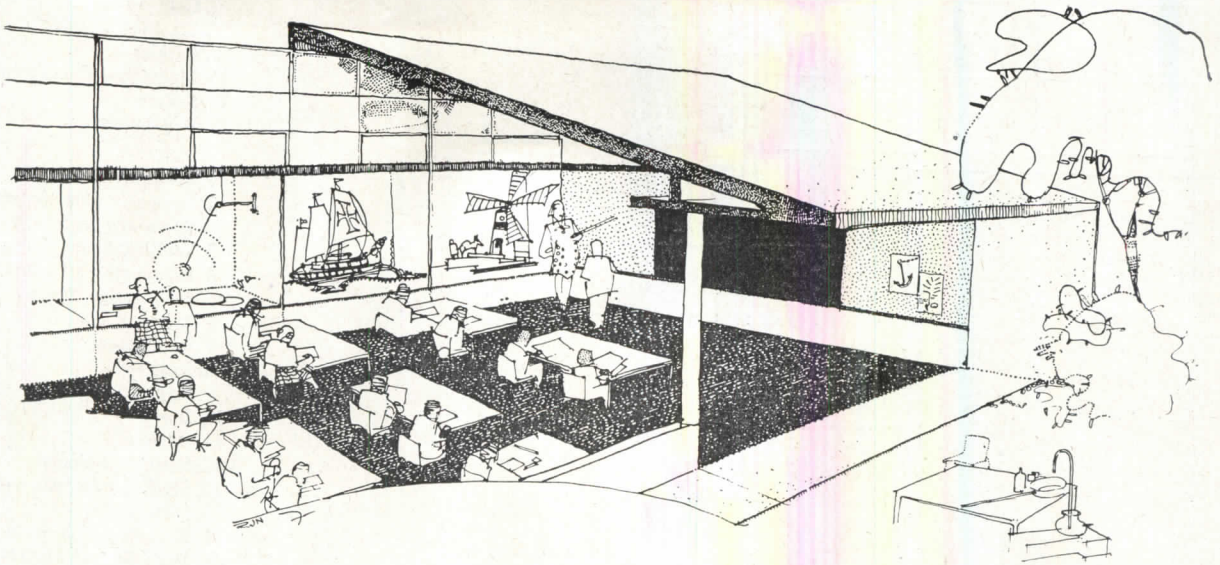
- ST**
1. Grocery
  2. Drug Store
  3. Elevated Manager's Office
  4. Locker Room
  5. Drug Store Stock Room
  6. Grocery Store Storage Room
  7. Cold Boxes
  8. Breaking Rooms
  9. Cashier
  10. Meats and Delicatessen
  11. Bakery
  12. Vegetables

- HC**
1. Waiting Room
  2. Extension of Main Waiting Room and Lecture Room
  3. Waiting Room, Contagious
  4. Examination: TB and GU
  5. Examination Room
  6. X-Ray Room
  7. Dark Room
  8. Surgery
  9. Technician
  10. Dentist
  11. Optician
  12. Staff Rest Room
  13. Staff Conference Room
  14. Staff Library
  15. Records and Storage
  16. Dead Record Storage
  17. Doctor's Study-Bedroom
  18. Emergency Patients' Room
  19. Resident Nurse's Room
  20. Kitchen
  21. Baby Bins
  22. Demonstrations to Mothers
  23. Maternity and Child Care weighing and measuring
  24. Examination Room; Maternity and children
  25. Doctor's Office
  26. Nurse's Office
  27. Information
  28. Records Office
  29. Nurse's Room
  30. Head Nurse's Room
  31. Janitor's Closet
  32. Heating Room
  33. Laboratory
  34. Consultation Room
  35. Pharmacy
  36. Children's Play Area
  37. Closet
  38. Covered Ambulance Porch
  39. Covered Walk
  40. Semi-Covered Terrace
  41. Patients' Entrance
  42. Emergency Patients' Entrance
  43. Staff Entrance
  44. Staff Parking
  45. Patients' Parking

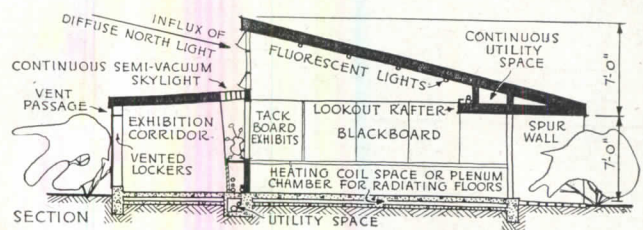
- LI**
1. Main Reading and Book Room
  2. Round Table Room
  3. Librarian
  4. Children's Library
  5. Librarian's Desk

- KN**
1. Babies
  2. Preschool Year
  3. Toddlers
  4. Teacher's Room
  5. Kitchen and Diet Demonstration
  6. Mothers' Club
  7. Sewing Circle

- SO**
1. Waiting Room
  2. Teacher's Room



Typical classroom (with collaboration of Maynard Lyndon, architect). Overhang gives shade against direct south sun. Note especially the "breather partition" to left of classroom, composed of exhibition cases with glass (clear or obscure) either side, and glass-block skylight. Besides admitting diffused light these cases aid greatly in visual education. In the vertical cross-section, note clerestory north light, vented lockers, convenient utility ducts



SCHOOL DESIGN has been cursed and hampered by minimum standards and by preventive legislation intended merely to prohibit the worst. Constructive advance comes from the exhortative, exhilarating effects of exemplary action rather than from sour-faced prohibitions. The ample programming of a school building as a social focus is the first step in securing a happy and adequate solution. Let us forget the bare minima when we plan for what is in fact the wholesome rearing place for tomorrow's citizenry, and that of the day after tomorrow as well. The programming is half the job. Selection of an ample site, right in the heart of a human-scale-neighborhood, is a good deal of the balance.

The neighborhood of the future may offer that fertile stimulation that was lost with the disappearance of the pioneering home in which the whole family functioned as a working and social unit. The school must now substitute for experiences once commonly available, but now so rare.

As in the days of the pioneers and the homesteaders, children may again share spaces and facilities with adults. On many enterprises they can act proudly side by side with the admired grownups. There will be shops for all, stables, sties, a farmyard for animal husbandry, a green nursery and gardens. Of course the small children will have their suitable play equipment and picture-book

library wing. But the playfields, the library, the hall for physical education and community dances, as well as the cafeteria and the health center, will make up a good manifold investment because of multiple usage. All age groups will avail themselves of these facilities, sometimes mixed, sometimes separately, according to a schedule of allocated use periods set by the educational directors.

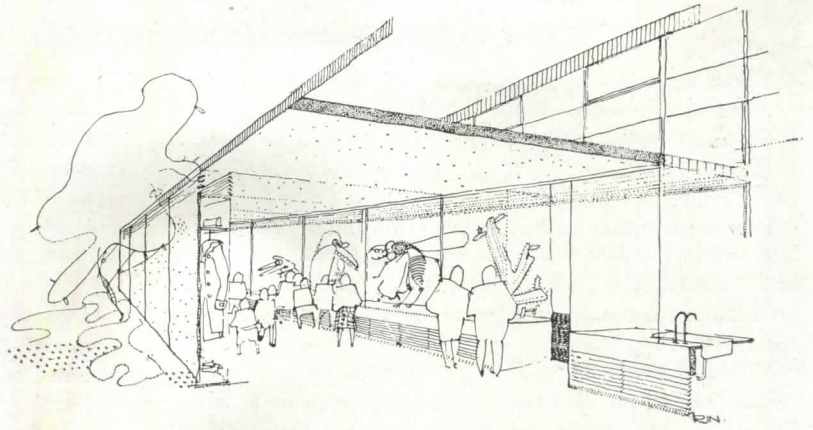
All communal and recreational facilities will therefore naturally exfoliate from the school center, the kindergarten, and the nursery. The nursery is of course the natural congregating place of younger mothers, who may gather nearby to attend demonstrations in the diet kitchen, or learn about wearing apparel in the sewing room.

The auditorium, the band rehearsal room, and the exhibition hall will be places where acoustical and visual treats for the community will be in frequent preparation—a process invaluable for children to watch. Discussion clubs and playrooms will revive the functions of the old-time town meeting, and may equally serve the weekend activities of many adolescents and adult clubs and associations.

The entire plant, used most of the hours of the day and all days of the year, may well be tested and proven in terms of square-foot-hours of full usage! This can serve as the "livability index" of the layout.

He who has at least to some degree trained himself

*View through corridor. The exhibition cases to the right give it first-rate educational interest. Note that sink space is same depth. Vented lockers are at left. The source of light, directly above the exhibits, dramatizes them as the focus of attention*



in articulate speech, in dance, crafts, arts, drama, and music, is vastly better qualified to enjoy performances in these fields. Even small but active groups will bring a neighborhood alive; and professional performers will find response and reward. The kind of homogeneous audience once so common and fertile will be reborn.

Multiform special gatherings are as important in cementing a neighborhood as an occasional total assemblage. The neighborhood community center clustered about the school is not a monumental institutional affair. It is not to be viewed in one overawed glance. It is wide-spreading, multiform, an elastic conjunction of facilities of many kinds. It is enjoyed, one part after another, with no competition for display or dominance among the parts. Neither the monumental composition fostered by royalty nor the imposing facade of authoritarianism seems fit for the child who will be the citizen of tomorrow.

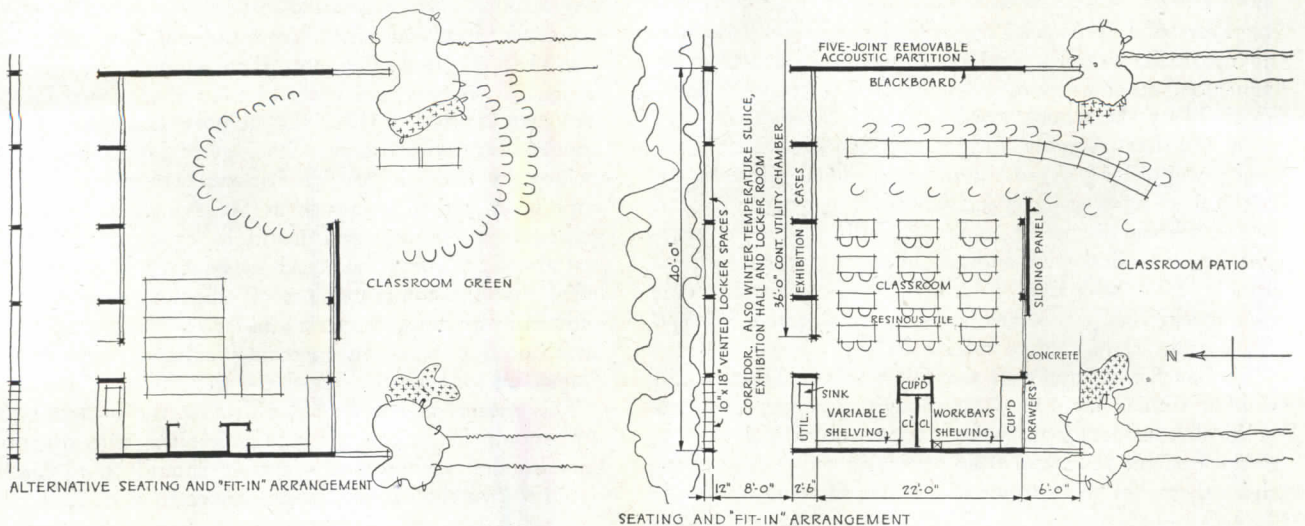
The community center needs plenty of human charm and scale. A one-story plan with various green courts, with landscaped, wind-sheltered patios, and connecting walks, may prove more economical to construct than a fireproof multi-story boxed-together plan, besides being

more easily expandable and more flexible to change.

As for the school itself in the community context? Let us not concern ourselves now with the immense flood of gadgets and novel materials that will flood the postwar market and the postwar consciousness. Some of these will prove immensely valuable. But we shall be wiser not to indulge yet in heralding novelties not yet sociologically appraised. There are certain broad principles that seem to underlie contemporary gratification, broad features that characterize the mores of this morning.

The physical structure of schools must further tend to emphasize and premiate cooperation rather than competition. Children who enter a classroom now will not sit silently in a sort of parallel isolation, or furtively whisper to a neighbor at the next screwed-down desk, while supposedly listening to a sermon resounding from the blackboard. They won't unflinchingly, at the signal, all switch their minds from arithmetic to spelling for the next measured period of 45 minutes. Their interest, their stimulation, and their success will be found in teamwork on common projects where each helps rather than outshines his fellow. A flexible and varied grouping of humans as well as furniture is needed to adjust to varied

*Alternate seating arrangements using outdoor classroom "green" or "patio." Note workbay furniture, "fitted in" but not built in, for flexibility*



and frequent concerted efforts. Incidentally, nothing is lost here for the educator who still believes in occasional "drill."

There must be:

More space, more diffused light, light where needed from more sides; fewer sleepy hot-air cushions around children or "trainees"; less pollution of the air for economy's sake.

Fewer enclosures and more extension out-of-doors.

Acoustical aids toward quietness by sound insulation, and reverberation well controlled to give the desired articulation to sound, whether of speech or of mechanical reproduction.

Visual aids not only to the presentation of a particular subject but to the children's mental development at large, by means of clarity and simplicity and sensitivity of design, applied to the building itself, its spaces, illumination details and color schemes, which go to make up the child's day-long environment.

Even that well known sour classroom smell must be

a consideration of the architect: stale exhalations must not become a perpetual drug. Surface materials that have a tendency to absorb, accumulate, and continue to give off these odors must be avoided.

Orderliness must be found in everything used, and cleanliness. Finishes must be of a kind that promise easy cleaning with conscious pleasure to the child in the result. The building must not pose nuisance problems and chores devoid of such a pleasure accent.

The scale of the whole and all its parts must not be cruel and foreign to the child at his particular age.

Once the ever-present influence of the physical environment itself is recognized as an educative factor of the first order, then the rooms for learning (both general and specialized), the open courts, the playgrounds and entrance areas, all take on a deep inspiring significance. They are ingredients of an education-bound composition, and by this very reason, continuity of design must be accomplished and within it abrupt gaps and cleavages must be avoided.

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## TAX BUDGETS AND THE COMMUNITY SCHOOL

*By Richard J. Neutra, AIA*

AN obstacle to the free development of the community school is the fact that provision for full-time utilization of the plant distorts the educational budget. As budgeting is customarily done today, the community school is charged with expenses that should be distributed among a large group of community services.

We may study this trend in Los Angeles, where Mr. A. S. Nibecker, chief architect and business manager of the Los Angeles Board of Education, has been kind enough to discuss the subject with me and supply a large part of the information which follows.

During the last decade, the enrollment of the Los Angeles school system dropped from 246,056 to 235,182. During the same decade the yearly per capita expenditure per pupil rose from \$115.59 to \$165.48. As in other cities, the taxpayers of Los Angeles are critical of this increase, and do not realize that a good portion of it is due to civic-center and community uses, for which the expense is being absorbed by the school board.

In the Los Angeles Elementary School District, the yearly wages for playground and educational directors, entirely apart from any physical education teacher employed in the schools themselves, amount of \$163,582. For services in connection with auditoriums and gymnasiums, assembly halls, and similar facilities, entirely outside curricular activities, custodians and engineers receive \$42,525. Matrons in child centers receive \$77,326.

Similar figures apply in the High School District and yield a similar picture. The thought emerges that tax-political considerations make various municipal departments hesitant to extend their particular activities, and inclines them, for the purpose of a better showing, to shoul-

der other agencies with their expenses. The Park Department, Department of Playgrounds, Library Board, and others, consequently dodge certain issues, not because anyone doubts their vital significance, but because the taxpayer is so incompletely informed regarding the kinds of expenditure involved.

In taking more than its share, the school board consequently distorts its budget. Apart from this tax difficulty, community utilization of the school represents a real economy. It seems to be agreed that in those cases in which Los Angeles public libraries were connected with schools, the school cafeterias were used outside of school hours, and auditorium and playgrounds were thrown open for evening attendance by the neighboring population. In this way a much more reasonable social return in terms of direct service has been derived from the school investment.

In the year 1933, not more than a dozen playgrounds of the Los Angeles schools had been made available for community use. In 1942 the number had reached two hundred, and the use of school gymnasiums and auditoriums by the citizenry has become very common. My impression is that men such as Mr. Nibecker, who have gathered penetrating and manifold experience in these matters as architects for boards of education, agree in the belief that the communal use of school facilities such as auditoriums, shops, cafeterias, libraries, playgrounds, and health centers represents an economical and reasonable arrangement for both the school and the civic neighborhood.

This means, of course, not only that the budget structure should be so revised as to reflect the true situation, but also that architectural planning should be so carried out as to ease the administration connected with dual use.

# NOISE REDUCTION

## ACOUSTICAL MATERIALS: *Their Selection and Use*

By *Harold R. Sleeper, A.I.A.*

ARCHITECTURAL RECORD  
TIME-SAVER  
STANDARDS  
MARCH 1944

This study is concerned with the reduction of noises within the space where they originate. It does not treat of sound transmission between spaces nor of acoustical correction of rooms used for vocal or musical performances.

**The Problem.** The acoustical correction of spaces which we are discussing differs from the problems met where sounds emanate from a stage, for the source of sound may be at any point or all points. We do not have to reinforce the sound to make it carry, rather some absorption of sound is needed so that reverberations will cease quickly, and rooms will be "quiet."

**How Acoustical Materials Function.** Most of the acoustical materials are porous to a greater or lesser degree; some with large inter-connected pores, others with pores not connected behind the surface. Sound waves entering the pores get lost and their energy is thought to be dissipated into heat. Sound may also be absorbed by vibrating a surface which acts as a diaphragm. This dampened vibration uses up the sound waves as mechanical energy instead of reflecting them. The third means of stopping sound waves is called inelastic yielding, which is similar to the diaphragm action but with the vibration of the material approaching zero. Curtains, hair felt, and other soft materials, function in this manner.

**Where to Use Acoustical Materials.** The comparative softness of most acoustical products (except those of stone-like appearance) makes it inadvisable to use them where their surfaces might be damaged by contact. Therefore, they are best used from wainscot height up—the softest, say from seven feet up. The ceiling is the practicable place for their use. Wall use follows, as later explained, when ceiling treatment fails to solve the problem.

**Material Characteristic.** There are many factors involved in the selection of a ceiling material, or upper wall material, for each space, and there are scores of products to analyze. The list of the major characteristics to be considered is:

1. Coefficient of noise reduction, i.e., what percentage of noise is absorbed.
2. Appearance—decorative possibility, sizes, edges, colors, textures.
3. Fire resistance.
4. Cost.
5. Methods of Attachment.
6. Light Reflection.

7. Moisture resistance.
8. Thermal insulation value.
9. Resistance to impact and to abrasion.
10. Permanence—wearing ability, (dry rot, fungus, vermin, dampness).
11. Access to furred space over ceiling.
12. Adaptability for use with flush ceiling lights.
13. Cleaning, maintenance.
14. Redecorating.
15. Weight.
16. Thickness.

For instance in the case of a swimming pool item # 7 "Moisture Resistance" would be the dominating consideration, while in a residential living room item # 2 "Appearance" might be the factor of major importance. If you wish a plain, unbroken ceiling without joints or beveled edges, you limit your search to materials plastically applied. In certain localities your building laws may require fireproof material; that sets up item # 3 "Fire Resistance" as vital; and if the job must be down to rock-bottom costs, factor # 4 "Cost" is your cue.

**Noise Reduction Coefficient.** First, as a matter of procedure, determine the proper noise coefficient to use. Table No. I may prove useful as a general guide for those without sufficient first-hand experience. This table was developed after consultations and correspondence with the manufacturers in this field. Their answers, often, did not agree, but the table represents a fair average of their collective judgment.

Quotations from the U. S. Department of Commerce, National Bureau of Standards pamphlet LC-714, January 23, 1943 may clarify the term "noise reduction coefficient" and explain its relation to "sound absorption coefficient."

**Definition.** "The sound absorption coefficient of a material is defined as the fractional part of the energy of a sound wave that is absorbed at each reflection. Experimental figures such as given here must be regarded as approximate only. This branch of applied science is new and in a state of development. The methods and formulae used in obtaining these figures are those which, while not entirely satisfactory, are open to the least objection. The uncertainty involved is such that all coefficients are probably somewhat too large."

"The noise coefficient given in the table is the average, to the nearest multiple of 0.05 of the co-

efficients for 256, 512, 1024, 2048 cycles."

**When to Use Noise Coefficient.** "It has been recommended by many consultants that such a coefficient be used when the problem is one of reducing the noise level, as in offices, restaurants, etc." (See Table No. 1)

(The Acoustical Materials Association, whose members represent a high percentage of the large manufacturers of acoustical materials, published a very useful and helpful "Official Bulletin" concerning the theory and use of Architectural Acoustical Materials.)

**Materials.** After the coefficient has been selected, a search for the materials meeting this factor may be made using Table No. 2 for "Prefabricated Acoustic Units" and Table No. 3 for "Plastic Application." In these tables materials are grouped in similar noise reduction coefficient classifications. These are similar to the "classes" as established by Federal Specifications SS-A-111 "Acoustical Materials for Plastic Application" and SS-A-118 "Acoustical Units Prefabricated" as follows:

"For Specifications SS-A-111 and SS-A-118, for general noise quieting specify noise reduction coefficient by Classes AA to OO as follows":

Noise		Noise	
Class	Coefficient	Class	Coefficient
AA	0.90 and over	II	0.50
BB	0.85	JJ	0.45
CC	0.80	KK	0.40
DD	0.75	LL	0.35
EE	0.70	MM	0.30
FF	0.65	NN	0.25
GG	0.60	OO	0.20
HH	0.55		

"Also, in comparing different materials it should be borne in mind that there is some variation in manufacture; hence, the sample which was measured may have more or less absorption than the material delivered on the job. Minor difference in coefficients, therefore, should be disregarded in choosing between materials." (Paragraph above quoted from U. S. Department of Commerce, N.B.S. LC14, January 23, 1943.)

**Mounting or Backing.** One should not pick a material with a certain mounting and then change the type of mounting without first considering the fact that the coefficient will undoubtedly change also.

"Many of the acoustic materials exhibit large variations in their sound absorption properties when the method of mounting is changed.

# NOISE REDUCTION ACOUSTICAL MATERIALS

**TABLE I. A RULE OF THUMB ANSWER TO:  
 WHAT NOISE COEFFICIENT TO USE?**

	Noise Reduction Coefficient
Assume that at least 90% of entire ceiling area is to be treated	
1. In Residential Buildings, such as Apartments, Residences, Clubs:	
Living Rooms, Dining Rooms, Library, Study, Lounge, Bed Rooms, etc., assuming normal ceiling heights .....	.40 to .50
Kitchens, Bathrooms, Recreation Rooms, assuming normal ceiling heights .....	.60 to .70
2. Corridors in Public Buildings such as:	
Apartments, Hospitals, Schools, Dormitories and similar buildings, assuming ceiling heights not over 9'0" .....	.60 to .70
3. (a) Business Offices—Desks sparsely spaced.	
No noisy machines. Ceiling height 10' to 14' .....	.60 to .70
(b) Business Offices—Desks densely spaced; no noisy machines Ceiling height 10' to 14' .....	.70 to .80
(c) Business Offices—Noisy machines such as tabulators, calculators, electric typewriters, etc. Ceiling height not over 12' .....	.75 to .85 (Often necessary to treat) (part of wall in addition.)
4. Diet Kitchens, Food Service Spaces .....	.75 to .85
5. Restaurants, Cafeterias, Bars .....	.65 to .75
6. Retail Stores and Shops—Ceiling heights not over 12'0" .....	.50 to .70
7. Beauty Parlors, Barber Shops—normal ceiling height .....	.60 to .85
8. Gymnasiums, Swimming Pools, Exercise Rooms .....	.60 to .80
9. Shooting Ranges (May be necessary to treat part of wall in addition. Consider as a special problem and secure expert advice.)	.75 to .85
10. Bowling Alley (At pin end .....	70. to 85
(Remainder of ceiling .....	.50 to .65

Note: In the best type of bowling alleys a drop hung partition is installed 10'6" from the back of alleys for entire width of room. This partition curtain should extend down to within 4'2" of floor and should be acoustically treated on both sides. If curtain is used entire ceiling treated at .50 to .60.

**NOTES:**

- (a) In general it is preferable to treat entire ceiling (less beams) with material of low noise reduction coefficient than to treat ceiling partially with material of higher coefficient. However tests on panel treatment using materials with high noise coefficient have proved very effective.
- (b) Where ceiling height exceeds the normal or the heights stated, then material of higher coefficient should be used, or additional treatment applied to upper side wall surfaces.
- (c) High narrow spaces require special consideration in view of the fact that the ceiling area is relatively small in relation to the wall area. The sound source is relatively remote from ceiling, and reverberations thrown from wall to wall, may build up before they are reflected to, and dissipated by, the ceiling. To provide more effective treatment, add partial wall treatment either by treating one long wall or parts of several walls.
- (d) Normal ceiling beams need not be treated, in view of the fact that they constitute a relatively small area, and their treatment, although costly, would result in an insignificant gain.
- (e) Assume 2 general office spaces 40' x 60' identical except that one has a 9' ceiling height and the other a 16' ceiling height, both with an average occupancy. Assume a material with .60 noise coefficient in the low space. To achieve the same correction in the high ceiling room a material with .66 noise coefficient will be required. That is a .06 increase for the 7'0" higher room. As coefficients are generally specified in .05 increment a N.R.C. of .65 would be used. This approximates .01 increase for each foot of increased ceiling height, which is close enough for a rule of thumb calculation.
- (f) For each type of room a low and a high noise reduction coefficient is given. Your judgment concerning characteristics affecting the acoustical properties, use, etc., of each space, plus the question of heights will determine what N.R.C. to use within this bracket.  
 Consider.
  - (1) Type of floor covering.
  - (2) Extent of hanging.
  - (3) Furniture, type & quantity.
  - (4) Intensity of noise and number of sources.
  - (5) Cost of work (higher N.R.C. materials cost more).
  - (6) Use.

For instance a restaurant plushly furnished, carpeted, with stately waiters and with relatively few diners, needs a lower N.R.C. than one with a hard floor, rough waiters, no table cloths and crowded diners. Table cloths, carpets, etc., tend to lessen noise sources in addition to serving as sound absorbents.

In many cases the most important feature is the amount of air space back of the material. The figures given in this letter circular apply only when the materials are mounted in the same manner as when tested. For this reason the exact method of mounting is given for each test." U. S. Department of Commerce, N.B.S. LC-714.

At this time a decision should be made as to whether you are using Units or Plastic material. The Federal Specifications divide materials for Plastic Application into Types I, II and III and Units into Types I to IX inclusive, as explained in Table No. 4.

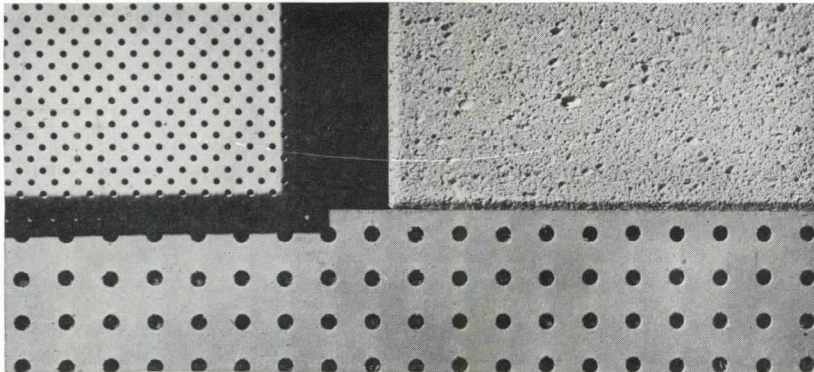
Materials for Plastic Application narrow down to two types—Acoustical Plaster, Type I and Sprayed-on material, Type II. The author has been unable to find any Type II products, "other than acoustic plaster but applied with trowel," on the market. Acoustical Plasters are limited in their use as their effectiveness as absorbents is limited to the lower coefficients. They require skill in application; the desired results can be obtained only with quality workmanship. Recent improvements in materials are making the installation more fool-proof, but inspection of workmanship is vital.

Referring to tests as shown on Table No. 3, the National Bureau of Standards LC-714 says: "Particular attention is called to the fact that a dry base coat is used for most applications. Also, the sound absorption coefficients are effected quite naturally by the time between the applications of the first and second coats of acoustic plaster, the amount of moisture in the surface of the plaster when it is finally floated or finished with a trowel or by other means; and other factors of this nature."

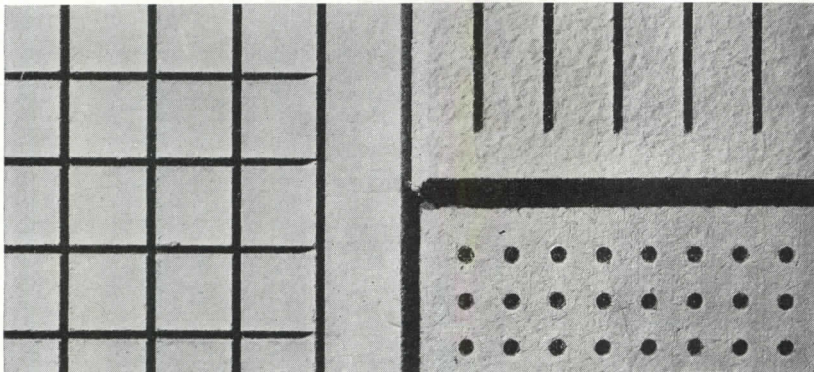
To install an acoustic plaster ceiling instead of a plain plaster omit finish plaster coat and instead apply two coats of acoustic plaster. The extra cost is the difference between the plaster finish coat and the acoustical plaster coats.

When an unlined or plain surfaced ceiling is desired the selection must be made from plastic applied products; all acoustical unit types by nature require joints. Acoustical Plasters are often integrally colored, because of the possibility of lowering their efficiency by surface painting.

Type III materials which are applied with a spray gun have high efficiency but are higher in cost. The soft nature of this material



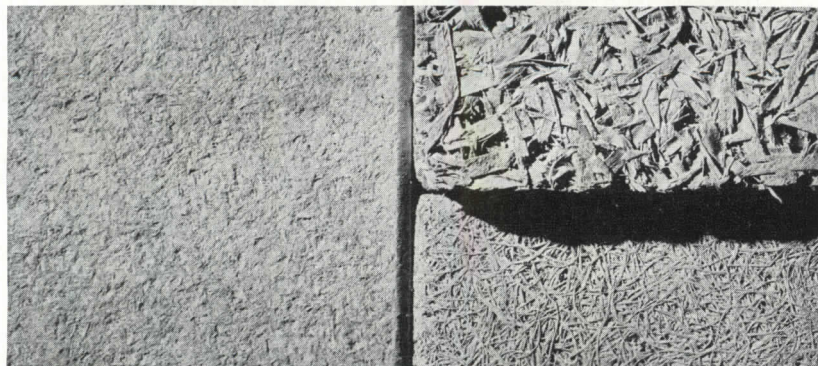
Upper left: Sanacoustic tile, federal specification number IV; upper right: Muffletone, II; bottom: Transite Acoustical Unit, III



Left: Fibretex, federal specification V, (classification doubtful); upper right: Auditone V (doubtful); lower right: Acousti-Celotex V



Left: Acoustone Type F, federal specification number VI; upper right: Muffletone, VI; lower right, Softone, VI



Left: Fibercoustic, federal specification number VIII; upper right: Absorb-A-Noise tile, VII; lower right: Absorb-A-Tone VII

must be considered when it might be subject to impact or abrasion. For instance in games rooms, where table tennis, badminton, handball, etc., are played, its use would be questionable. The effect of paint on a material like this, which depends on diaphragm action, is discussed later.

**Costs.** The study of comparable costs is frequently complicated by the factor of mounting and backing. A material cheapest for application to an existing ceiling might be expensive if the proper backing had to be provided. On existing plaster, cementing of units is generally the most economical method of installation. The materials possessing the highest coefficients are, in general, higher in cost than the ones with lower coefficients, but under certain conditions, this may be untrue.

**Appearance and Design** of acoustical products is hard to judge by samples. In place, the material which seems unsatisfactory in a sample may prove perfectly acceptable. Beveled edges, tile patterns, perforation patterns, etc., should be judged for appearance in place. Plastered or sprayed-on material produces an unbroken surface. These have recently achieved less rough surfaces and more even textures than formerly. Pre-tinted materials safeguard their acoustical coefficients and produce more uniform color. Shop etching of "stone-type" tiles for decorative effect has been developed. Stenciling, in place, has also been used decoratively.

**Fire Resistance.** The fastenings or mounting for the material should be as fire resistant as the acoustical material, or more so. When cemented directly to fire-proof surfaces the less fire resistant materials have less chance to burn. Building Codes should be consulted for local requirements as to fire resistance.

**Light Reflection.** In industrial plants, offices, stores, etc., the light reflection value of a ceiling is important, both from the standpoint of workers' efficiency and of lighting costs. This factor has not been stated by many producers.

**Heat Transmission Coefficients.** Acoustical materials can serve a dual purpose, acoustic correction and thermal insulation. The heat transmission coefficient is the heat loss in B.T.U. per hour per square foot, per degree difference in temperature between inside and outside. Data on this factor is limited, as few manufacturers seem as yet

# NOISE REDUCTION ACOUSTICAL MATERIALS

**TABLE II. NOISE REDUCTION COEFFICIENTS** *Fabricated Acoustic Units*  
(Fed. Spec. SS-A-118)

An alphabetical list of units by trade names arranged according to Noise Reduction Coefficient Classifications, as determined by tests: data from U. S. Department of Commerce, National Bureau of Standards Letter Circular LC-714 and LC-715. Notes following name of product indicate manner of mounting for tests which gave stated N.R.C. coefficients. Test materials had manufacturer's standard finish unless otherwise noted. Cementing to gypsum wallboard was considered equivalent to cementing to plaster. N.R.C. = Noise Reduction Coefficient.

Note: Asterisk indicates discontinued for the duration of the war.

**N.R.C. = .90 or over (Class AA)**  
**Akoustolith Tile, Grade C.** 5". Laid directly on laboratory floor. Or, on 2 x 8s, 12" O.C.  
**Acoustimetal B.\*** 3½". Laid directly on laboratory floor.

**N.R.C. = .85 (Class BB)**  
**Absorbstone.** 1". Laid on 2 x 8s, 12" O.C.  
**Acoustimetal.\*** 1½". Metal suspension system, 4" air space.  
**Akoustolith Tile, Grade C.** 5". Nailed on 2 x 4s, 12" O.C.  
**Fiberglas Board.\*** ¾". Nailed on 2 x 4s, 12" O.C.  
**Perfatone.\*** 1½". Metal suspension system, 4" air space.  
**Sanacoustic.\*** 1½". Metal suspension system, 4" air space.

**N.R.C. = .80 (Class CC)**  
**Absorbex Type A.\*** 1". Nailed to 13/16" x 2" furring 18" O.C. space filled with rockwool.  
**Acoustone Type F.** 15/16". Cemented to gypsum wall board.  
**Akoustolith Tile Grade B-1.** 1¼". On 2 x 4s, 12" O.C.  
**Grade C.** 4". Laid on 2 x 8s, 12" O.C. (Not nailed).  
**Grade D.** 4". Laid directly on laboratory floor.  
**Grade D.** 4". Laid on 2 x 8s, 12" O.C. (Not nailed). Or laid directly on laboratory floor.  
**Number 104.** 4". Laid directly on laboratory floor.  
**Sanacoustic.\*** 1½". Metal supports attached to 13/16" x 2" wood.

**N.R.C. = .75 (Class DD)**  
**Absorbex Type F.\*** 2". Back of sample covered with concrete.  
**Acoustilite.\*** ¾". Nailed on 13/16" x 2" furring, 12" O.C.  
**Acoustex Type 70R.\*** 1½". Nailed on 13/16" x 2" furring, 12" O.C.  
**Acousti-Celotex Type C4.** 1¼". Metal suspension system, 4" air space.  
**Type C5.** 13/16". Nailed on 13/16" x 2" furring, 12" O.C.  
**Type C6.** 1¼". Metal suspension system, 4" air space.  
**Acoustone Type F.** 15/16". Cemented to gyp. wall board.  
**Type F.** 13/16". Metal suspension system, 4" air space.  
**Akoustolith Tile Grade B-1.** 2". Nailed on 2 x 4s, 12" O.C.  
**Fibracoustic.** 1". Nailed on 13/16" x 2" furring, 12" O.C.  
**Muffletone, Standard Finish.** 1". Cemented to gyp. wall board.  
**Permacoustic.** 1". On 2 x 4s, 12" O.C. (not nailed). Or, cemented to gyp. wall board.  
**Basalt Rock Type A.** 5". Laid directly on laboratory floor.

**N.R.C. = .70 (Class EE)**  
**Absorbstone.** 1". Nailed on 13/16" x 2" furring, 12" O.C.  
**Acoustex Type 50R.** 7/8". Nailed on 13/16" x 2" furring, 12" O.C.  
**Type 60R.** 1". Nailed on 13/16" x 2" furring, 12" O.C.  
**Type 70R.** 1½". Cemented to gyp. wall board.

**Acousti-Celotex Type C3.\*** 13/16". Metal suspension system, 4" air space. Or, attached to metal suspension system, 4" air space.  
**Type C4.\*** 1¼". Cemented to gyp. wall board. Or, metal suspension system, 4" air space.  
**Type C5.\*** 13/16". Metal suspension system, 4" air space.  
**Type C6.** 1¼". Laid directly on laboratory floor.  
**Type C8.** 1". Nailed on 13/16" x 2" furring, 12" O.C.  
**Type C9.** ¾". Metal suspension system, 4" air space.  
**Type M2.** 1". Metal suspension system, 4" air space.

**Acoustone F.** 13/16". Cemented to gyp. wall board.  
**Akoustolith Tile, Grade B-2.** 2". Laid directly on laboratory floor.  
**Auditone B.** 1". Cemented to gyp. wall board. Or, nailed to 13/16" x 2" furring, 12" O.C.  
**Cushiontone A-2, A-3.** 5/8" or 7/8". Nailed on 1½" x 2" wood furring.  
**Econacoustic.** 1". Cemented to gyp. wall board.  
**Fibracoustic.** 1". Cemented to gyp. wall board.  
**Muffletone, Standard Finish.** Or, Fissured Finish. 1". Cemented to gyp. wall board.  
**Travacoustic.** 1". Cemented to gyp. wall board.

**N.R.C. = .65 (Class FF)**  
**Acoustex 30R.\*** 5/8". Nailed on 1½" x 2" furring, 12" O.C.  
**40R.\*** ¾". Nailed on 1½" x 2" furring, 12" O.C.  
**60R.\*** 1". Cemented to gyp. wall board.

**Acousti-Celotex, Type C2.** 5/8". Nailed on 1½" x 2" furring, 12" O.C.  
**Type C3.\*** 1½". Cemented to gyp. wall board.  
**Type C4.** 1¼". Cemented to gyp. wall board.  
**Type C9.** ¾". Nailed on 1½" x 2" furring, 12" O.C.  
**Type M1.** 1". Cemented to gyp. wall board.  
**Acoustilite.\*** ¾". Cemented to gyp. wall board.  
**Acoustone F.** 1½". Cemented to gyp. wall board.  
**Akoustolith Tile, Grade B-2.** 1½". Laid directly on laboratory floor.  
**Cushiontone A-3.** 7/8". Cemented to gyp. wall board.  
**Fiberlite.\*** ½". Nailed to 1½" x 2" furring, 12" O.C.  
**Muffletone, Fissured Finish.** 1". Cemented to gyp. wall board.  
**Permacoustic.** ¾". Cemented to gyp. wall board.  
**Quietone.\*** 1". Laid directly on laboratory floor.  
**Transite Acoustic Unit.** 1½". Laid directly on laboratory floor.

**N.R.C. = .60 (Class GG)**  
**Absorbex—A.\*** 1". Cemented to gyp. wall board.

**Acoustex—Type 60R.\*** 1". Cemented to gyp. wall board.  
**Acousti-Celotex, Type C2.** 5/8". Cemented to gyp. wall board.  
**Type C2.\*** 5/8". Nailed on 1½" x 2" furring, 12" O.C.  
**Type C3.** 1½". Cemented to gyp. wall board.  
**Type C9.** ¾". Cemented to gyp. wall board.  
**Acoustone, Type F.** 15/16". Cemented to gyp. wall board.  
**Cushiontone A-1.** 1½". Nailed on 1½" x 2" furring, 12" O.C.  
**Type A-2.** 5/8". Cemented to gyp. wall board.  
**Econacoustic.** 1/2". Nailed on 1½" x 2" furring, 12" O.C., or, cemented to gyp. wall board.  
**Muffletone, Standard Finish.** ¾". Cemented to gyp. wall board.  
**Softone.** 1". Cemented to gyp. wall board.

**N.R.C. = .55 (Class HH)**  
**Absorbex C (14 gauge)\*** 1". Nailed on 1½" x 2" furring, 12" O.C.  
**Acousti-Celotex, Type C5.** 1½". Cemented to gyp. wall board.  
**Akoustolith Tile, Grade B2.** 1". Laid directly on laboratory floor.  
**Grade C.** Or, Grade D. 2". Laid directly on laboratory floor.  
**Cushiontone A-1.** 1/2". Cemented to gyp. wall board.  
**Fiberlite.\*** 1/2". Cemented to gyp. wall board.  
**Quietone.\*** 1/2". Cemented to gyp. wall board.  
**Trutone Tile.** 7/8". Laid directly on laboratory floor.

**N.R.C. = .50 (Class II)**  
**Acoustex, Type 40R.** ¾". Cemented to gyp. wall board.  
**Akoustolith Tile, Grade C.** 1½". Laid directly on laboratory floor.

**N.R.C. = .45 (Class JJ)**  
**Absorbex—Type C.\*** 1". Laid directly on laboratory floor.  
**Type F (10 gauge)\*** 1". Nailed to 1½" x 2" furring, 20" O.C.  
**Acousti-Celotex, Type C1.** 1/2". Cemented to gyp. wall board.

**N.R.C. = .40 (Class KK)**  
**Acousti-Celotex, Type C1.** 1/2". Cemented to gyp. wall board.  
**Akoustolith Tile D.** 1". Laid directly on laboratory floor.  
**Acoustical Cork "B".** 1½".  
**Temlok De Luxe.** 7/8". Laid directly on laboratory floor.

**N.R.C. = .35 (Class LL)**  
**Nuwood Bevel Lap Tile.** 1". Cemented to floor of reverberation chamber.

**N.R.C. = .30 (Class MM)**  
**Nuwood Bevel Lap Tile.** 1/2". Cemented to floor reverberation chamber.  
**Temlok De Luxe.** 1/2". Laid directly on laboratory floor.



# NOISE REDUCTION ACOUSTICAL MATERIALS

**TABLE III. NOISE REDUCTION COEFFICIENTS** *Plastic Application*  
(Fed. Spec. SS-A-111)

ARCHITECTURAL RECORD  
**TIME-SAVER  
STANDARDS**  
MARCH, 1944

See notes Table II. Application, two 1/4" coats except as otherwise noted. Sprayed types applied with air gun; rolled.

<b>N.R.C. = .90</b> (Class AA)	wall board.
<b>Limpet*</b> (Sprayed Asbestos). 3/4". 5 7/8" air space; metal lath. Or 1 1/2", on gyp. wall board.	<b>Sabinite M.</b> 1/2". Metal lath; 3/4" gyp. plaster.
<b>Spray-Acoustic, Type X.</b> 5/8". 3 5/8" air space; metal lath.	<b>Stucastic.</b> 1/2". 3/4" gyp. plaster.
<b>N.R.C. = .85</b> (Class BB)	<b>N.R.C. = .55</b> (Class HH)
<b>Limpet.*</b> 3/8". Or, 1/2". 5 7/8" air space; metal lath.	<b>Hollywood Stucco Products.</b> 1/2". Metal lath, 3/4" gyp. plaster.
<b>Spray-Acoustic, Type X.</b> 1 1/8". On gyp. wall board.	<b>Kalite "H."</b> 3/4" gyp. 2 coat plaster (M)
<b>N.R.C. = .70</b> (Class EE)	<b>Macoustic.</b> 1/2" and 3/4". Metal lath, 3/4" gyp. plaster.
<b>Limpet.*</b> 3/4". On gyp. wall board.	<b>Old Newark.</b> 1/2". Metal lath, 3/4" gyp. plaster.
<b>N.R.C. = .60</b> (Class GG)	<b>Plastacoustic.</b> 1/2". 3/4" gyp. plaster.
<b>Kilnoise.</b> 1/2". Metal lath, gypsum scratch coat, 1 coat on dry scratch.	<b>Reverbolite (Regular).</b> 1/2". Metal lath, 3/4" gyp. plaster.
<b>Limpet.*</b> 5/8". 2 x 4s, 16" O.C., gyp.	<b>Sabinite F.</b> 1/2". Metal lath, 3/4" gyp. plaster.
	<b>Stucastic A.D.</b> 3/4". 3/4" gyp. plaster.

<b>N.R.C. = .50</b> (Class II)
<b>Calacoustic.</b> 1/2". Metal lath, 3/4" gyp. plaster.
<b>Hushkote.</b> 1/2". Metal lath, 3/4" gyp. plaster.
<b>Super-Acoustic.</b> 1/2". Metal lath, 3/4" gyp. plaster.
<b>N.R.C. = .45</b> (Class JJ)
<b>Hushkote.</b> 5/8" or 3/4". Metal lath, 3/4" gyp. plaster.
<b>Reverbolite.</b> 1/2". Metal lath, 3/4" gyp. plaster.
<b>N.R.C. = .40</b> (Class KK)
<b>Dodson Acoustic.</b> 3/4". Metal lath, 1/4" gyp. plaster. Superseded.
<b>Macoustic.</b> 1/2". Metal lath, 3/4" gyp. plaster.

to realize its value.

**Access to Furred Spaces** is important as the mechanical complication of ducts, pipes and wires of modern building tends to become more involved. Metal suspension systems now used for many types of acoustical tiles permit units to be removed. This factor alone might influence the installation of acoustical treatment where none had been considered.

**Lighting as Part of Ceiling System.** Trouffer lights are planned as integral parts of several suspension systems of metal units. Such systems make possible changes in the lighting layout, without damage to units, and at a low cost.

**Pre-cast Materials** have been used extensively in moving picture houses. Cast ornaments in acoustical ceilings are possible with materials under Federal Specifications SS-A-118, Type II, "Kalite Cast" or "Castacoustic," etc.). The size of the castings is only limited by the practical aspects of installation.

**Application.** Ceiling beams are seldom level or true. Furring or gypsum lath, to level off the ceiling is therefore advisable. Over strips apply building paper under the tiles to prevent discoloring air-flow or "breathing" between tiles. Joints between gypsum lath may be filled with sparkle for the same reason.

Spotting units with adhesive and cementing them to the surface is usually the most economical method of application. Nailing for many types, nailing (especially to furring or wood board) is economical, and often a combination of nails and cement is used. Each product has its own specification for application which should be followed.

Where cementing is used, generally, edges should be butt type,

not T & G or inter-locking. In T & G edges, nails may be blind nailed in joints; in some units nails may be set, below the surface, to hide them.

There are many types of suspension systems. Those for metal units are well standardized. The Jackson system is adaptable to practically any type unit. The hangers and runner channels of metal suspension systems are usually included as part of the metal lather's work. The acoustical work attaches to these channels. In case wood furring is used, such work would ordinarily be specified under carpentry. Gypsum lath is often used as a base either for nailing or cementing the units. Materials weighing over 1 3/4 pounds per square foot for 12" x 12" tiles, and over 2 pounds per square foot for 12" x 24" tiles, some authorities state, should not be used with adhesive cement. Adhesives still have their limits. This does not apply to tiles of the cast type set in cement mortar.

The erection of the perimeter tile is most expensive part of application and this may be compensated for, to an extent, by using plain instead of perforated tiles around the borders. Edge moulds can seldom be safely omitted except in the plastic applied work. Splines are generally used on the unsupported edges of units, when suspended, to prevent sagging.

Good workmanship is the most important factor in application. The work must be done by experienced applicators. Therefore contracts should be awarded to companies who employ such men.

**Effect of Paint.** Repainting is especially important when indirect or semi-indirect lighting is used. A pamphlet on this subject, "Research Paper RP1298," May 1940,

National Bureau of Standards, contains a thorough discussion of the subject. Its findings are that paint may be applied successfully if, first, the dirt clogging the pores is removed. The amount of paint which may be applied is, of course, variable to a great extent with the material.

Spray painting is preferable to brush painting. The report shows that Federal Specifications, "SS-A-118, Type V, Perforated Units," showed no change in noise coefficient when brush-painted with four coats. Unfortunately, no tests were made with Type IV, perforated covering over sound absorbing material. This latter type which included steel pans and asbestos board covering a blanket type material would probably give the same results if the perforations were the same size as tested with Type V. However, the steel pans as now marketed are made with much smaller perforations. Such holes may easily be covered in painting.

Samples of SS-A-118, Type VII (Fine Excelsior Type) with brush painting (5 coats) showed neither loss nor gain. Types VI (Travertine Type) showed no loss in one sample and considerable loss in another. The variation is probably due to the difference in intercommunications between the voids back of the surface. Federal Specification SS-A-111, Type III, applied by spray gun showed a large decrease in the noise coefficient when brush painted either four or six coats.

The test on Federal Specification SS-A-118, Type II cast units, small granules, with five additional coats of brush coat, showed a very great decrease in the noise coefficient. This material being similar to

# NOISE REDUCTION ACOUSTICAL MATERIALS

**TABLE IV. Acoustical Materials—listed alphabetically by trade names, characteristics other than acoustical data secured from manufacturers—generally**

Abbreviations: INC.—Incombustible, F.R.—Fire Resistant, W.R.—Water Resistant, S.B.—Slow Burning, COM.—Combustible

Trade Name & Mfr. Roman Numeral—Fed. Specification No. (Units, SS-A-118, Plasters, SS-A-111)	Fire Resistance, Etc.	Weight lbs. per sq. ft.	Light Reflection % (Thermal Coefficient Noted as T.C.)	Thickness and Sizes	Finishes, Colors and Edges	Methods of Attachment
ABSORB-A-NOISE Luce-Stevenson Co.	VII F.R. W.R.		T.C.—0.28 B.T.U. for 2"	2" & 3" Sheets 36" x 72" or multiples.	Textured. Light ivory factory finish, or factory painted.	Load bearing, may serve as concrete form. Nailed.
ABSORB-A-TONE Luce-Stevenson Co.	VII F.R. W.R.	2.5	Light ivory 0.60, 1 coat white lead & oil 0.76, 2 coats 0.78	1". Sheets 36" x 72". Sizes: 12" x 12", 12" x 24", 8" x 16", 16" x 16". Planks: 6" to 12" wide up to 6'0" long.	Light ivory factory finish or factory painted.	Nailed or cemented (12" x 12" or smaller) Metal suspension system (using splines).
ABSORBEX The Celotex Co.	VII F.R.	2.4—1" 4.7—2"		1" Type A. 1" & 2" Type F.		Nailed or cemented.
ACOUSTEEL-B The Celotex Co.	IV INC.	Pad .91	White 70.3 Ivory 60.3	12" x 24"	White or ivory baked enamel. Beveled.	Metal suspension system.
ACOUSTEX National Gypsum Co.	VII F.R. W.R.	1.34—5/8" 1.54—3/4" 2.31—1" 2.5—1 1/8"	White 73	Thickness, 5/8", 3/4", 7/8", 1", & 1 1/8" 12" x 12", 18", 24", x 24". Planks: 6", 12" & 24" up to 96" long	Natural, or factory painted.	Nailed or cemented.
ACOUSTICAL CORK United Cork Co.	VI S.B.	.94		1 1/2"		Nailed or cemented.
ACOUSTI-CELOTEX "C" Series (Cane tile) The Celotex Co.	COM. S.B. V	1/2"—.78 5/8"—.88 1 3/16"—.94 3/4"—1.00 1 1/4"—1.58 1"—1.44	.74 ivory T.C.—0.33 per inch thickness	12" x 12", 12" x 24" Standard. Also available 6" x 12", 6" x 18", 6" x 24", 6" x 36", 24" x 24"; thickness 1/2" to 1 1/4"	Factory paint, ivory. Also with sprayed-on washable oil base paint. Beveled edge.	Nailed, cemented, Types C-4, C-6, C-9 available for metal suspension system.
ACOUSTIC-CELOTEX Type M (Mineral Tile) The Celotex Co.	INC. V	1.54	Factory white .76 Standard white .84 T.C.—0.35 per inch of thickness	5/8" and 1" thick, 6" x 12" 12" x 24" (1" thick only).	Factory white paint or above plus standard paint finish, or above plus standard enamel finish.	Nailed or cemented. 1", metal suspension system 12" x 24".
ACOUSTILITE The Insulite Co.	VIII COM.	.59	White .80 Buff .77 T.C.—0.30	3/4" thick, 12" x 12", 12" x 24", 24" x 24", 16" x 16", 16" x 32".	Factory finish, white and buff. May have added spray coat.	Cemented or nailed.
ACOUSTIMETAL National Gypsum Co.	IV INC.			12" x 24" (indented to form 12" x 12")	Factory enamel, white or ivory beveled.	Metal suspension system.
ACOUSTONE F U. S. Gypsum Co.	VI INC.	9/16"—1.06 11/16"—1.15 13/16"—1.33 15/16"—1.46	White .84 Ivory .74	9/16" thick by 12" x 12", 11/16", 13/16", 15/16", thick by 6" x 6", 6" x 12", 12" x 12", 12" x 24". Bevel or sq.	Factory paint, white or ivory.	Nailed, cemented, or metal suspension system. Fiber splines used.
AKOUSTOLITH TILE (Sound Absorbing Stone) R. Guastavino Co.	INC. W.R. I	1"—4.6 1 1/2"—7.5 2"—8.5 4"—19.5		7/8" thick by 3" x 6", 4" x 8", 5" x 10", 6" x 12", 1" thick by 8" x 16", 12" x 12" 1 1/2" by 10" x 20". 3" by 18" x 40". Also special sizes and thicknesses up to 6".	Range of integral colors.	Applied to concrete or cement with cement mortar or hung with metal suspension system.
AUDITONE U. S. Gypsum Co.	V COM.	1.16	White .77	"B"—1" "C"—3/4" 12" x 12", 12" x 24"	Factory painted.	Nailed or cemented.
CEMESTO BOARD The Celotex Co.	IV INC. W.R.			1/2"	Gray or buff, color integral perforated panels.	Plastered.
CALACOUSTIC PLASTER Pacific Portland Cement Co.	I					
CORKCOUSTIC Armstrong Cork & Tile Co.	VI S.B. or F.R.	1"—0.27	White .79	1/4" to 1 3/4"	Factory painted as selected.	Nailed or cemented; (furring strip not recommended). Metal suspension system.
CUSHIONTONE Armstrong Cork & Tile Co.	V COM.	1/2"—0.79 5/8"—.91 7/8"—.95 {1.27		1/2"—A1; 5/8"—A2; 7/8"—A3; 12" x 12", 12" x 24".	Factory painted 2 coats waterbase paint. Beveled edge. Perforated.	Not cemented. Furring strip not recommended. A2 and A3, cemented nailed, or metal suspension system.
DODSON ACOUSTIC PLASTER The Dodson Mfg. Co.	I					Plastered.
ECONACOUSTIC National Gypsum Co.	VIII COM.	1/2"—0.48 1"—.71	White .84	1/2" & 1"; 12" x 12", 12" x 24", 16" x 16".	Natural, or factory painted white or cream.	Nailed or cemented.
FIBERLITE Insulite Div. of Minnesota & Ontario Paper Co.	VIII COM.	1"—0.30	White .80 Buff .77	1/2" by 12" x 12", 12" x 24", 16" x 16", 16" x 32".	White & Buff Beveled edge.	Nailed and cemented.
FIBRACOUSTIC Johns-Manville Sales Corp.	VIII COM.	1"—0.54	White .69	Sizes 1" by 6" x 12", 12" x 12", 8" x 16", 16" x 16", 12" x 24", Planks 6", 8", 12" by 48",	Factory painted white, light buff, medium buff, fawn, French gray, Apple green.	Nailed and cemented.
FIBRETEX (New) Johns-Manville Sales Corp.	V COM.		White .675	13/16" by 12" x 12"	Factory painted 2 coats white. Beveled, grooved into squares.	Nailed or cemented.
FIBRETON (New) Johns-Manville Sales Corp.	V COM.		White .77	13/16" by 12" x 12"	Factory painted 2 coats, white. Beveled, perforated.	Nailed or cemented.
HOLLYWOOD STUCCO Acoustic Plaster Products, Inc.	I			1/2"		Plastered.
HUSHKOTE The Cleveland Gypsum Co.	I			2 1/4" coats.		Plastered.

Trade Name & Mfg. Roman Numeral—Fed. Specification No. (Units, SS-A-118, Plasters, SS-A-111)	Fire Resistance, Etc.	Weight lbs. per sq. ft.	Light reflection % (Thermal Coefficient Noted as T.C.)	Thickness and Sizes	Finishes, Colors and Edges	Methods of Attachment
KALITE CAST Certain-teed Products, Corp.	II F.R. or INC.			As required.	5 colors, Grade A, coarse, Grade D, fine.	Cast before erection, on moulding plaster, reinforced with burlap, wire tie cast in place and channels attached thereto, before erection.
KALITE "H" Acoustical Plaster Certain-teed Products Corp.	I			1/2" or 3/4"	Colors.	Plastered.
KILNOISE Acoustic Plaster Kelley Island Lime & Transport Co.	I INC.		Natural color .72	1/2"		Plastered.
LIMPET (Sprayed Asbestos) Keasbey & Mattison Co.	III INC.			3/8" to 1 1/2"	Sprayed surface.	Air gun: rolled. On gypsum wall board, on lath, with or without air space.
MACOUSTIC Type V-55 National Gypsum Co.	I			2 1/4" coats.	4 colors.	Plastered.
MUFFLESTONE (Standard) The Celotex Co.	II				Factory painted in 5 colors.	Cemented to ceiling.
MUFFLESTONE (Fissured) The Celotex Co.	VI				Factory painted in 5 colors.	Cemented to ceiling.
NU-WOOD Wood Conversion Co.	VIII COM.		Sta. Lite .76 Kolor-Fast Tan .35. Kolor-Fast Variegated .34 T.C.—0.324 per 1".	1/2" & 1"; 8" x 8", 12" x 12", 12" x 24", 16" x 16", 16" x 32", Planks 8", 10", 12", 16" by 12'0" long.	Factory finished T & G V bevel.	Cemented, nailed or dipped.
OLD NEWARK Acoustic Plaster New Plaster Co.	I			2 1/4" coats.	4 colors.	Plastered
PERFATONE U. S. Gypsum Co.	IV INC.					Metal suspension system.
PERMACOUSTIC Johns-Manville Sales Corp.	VI INC.	3/4"—1.69	3/4" thick white .73 1" thick white .85	3/4" & 1" by 5" x 12", 12" x 12", 12" x 24". 2 1/4" coats.	Integrally colored white and buff. sq. or beveled edge.	(Not affected by moisture). Cemented or metal suspension system. Plastered.
PLASTACOUSTIC R. Guastavino	I INC.					
POREX Porete Mfg. Co.	S.B. or INC.		T.C.—1"—0.46 1 3/4"—.36	1", 1 3/4", 3", 20" x 80" also 3" thickness 20" x 96". 13/16"		Used as concrete form or as structural member.
PYROUSTIC Mitchell Smith	VI	1.1				
QUIETONE U. S. Gypsum Co.	VIII INC.					
REVERBOLITE Plaster The Celotex Corp.	I INC.		Oyster white "F"—.54 Oyster white "M"—.59 Special white "M"—.70 White .76	2 or 3 1/4" coats.	Coarse float "F" Smooth trowel "M"	Plastered.
SANACOUSTIC Johns-Manville Sales Corp.	IV INC.			12" x 12", 16" x 16", 12" x 24".	Factory painted, perforated.	Metal suspension system.
SOFTONE Acoustical Tile Industrials Inc. of Wisconsin	VI INC.		White .86 Ivory .82 T.C.—0.33	3/4", 1", 1 1/4" by 6" x 12", 12" x 12", 12" x 24".	White, ivory, buff and special colors.	Nailed, cemented or clipped.
SOFTONE Acoustical Plaster Industrials Inc. of Wisconsin	I					May be applied directly to metal lath.
SPHINXTONE The Sphinx Acoustical Co.	I INC.			2"		
SPRAY-ACOUSTIC Type X Spray-Flake Co.	III			Variable		Sprayed.
STUCOUSTIC California Stucco Products, of New England, Inc.	I INC.		White, natural .71	1/2"		Plastered.
SUPER-ACOUSTIC Plaster Gypsum Insulation & Mfg. Co.	I INC.					Plastered.
TEMLOK DELUXE Armstrong Cork Co.	VIII COM.			1/2" and 7/8"		
TRANSITE Acoustical Units	IV INC. W.R.		White .70	Transite facing 1/8" or 3/16" thick by 12" x 12", 12" x 24", 24" x 48" Sound absorbing blanket, 1", 2", 4". 1" by 12" x 12". 2 1/4" coats.	Natural gray or factory painted cream & white. Perforated.	Blanket nailed to furring between cross furring. Transite, secured over cross furring.
TRAVACOUSTIC National Gypsum Co.	VI INC.				Natural or pre-painted 2 textures. Light and deep.	Cemented.
ZONOLITE Acoustic Finish	I			2 1/4" coats.	Natural.	Plastered.

# NOISE REDUCTION ACOUSTICAL MATERIALS

acoustical plaster (Federal Specification SS-A-111) in finish texture may serve as a guide to what would result if it were painted in this manner. This Bulletin states that the same results were obtained whether the paint was cold-water paint or interior flat paint.

"Some of these materials can be painted with only one or two coats before there is a noticeable decrease in the sound absorption of the material, whereas other materials can be painted many times before the acoustic properties of the materials have been decreased. In practically all cases, however, considerable care must be taken as to how the paint is applied."

The trick in painting is to thin each coat so as to avoid spanning the pores; the larger holes or pores naturally span less easily. Spray applied paint may be applied in a more uniform coating and hence is usually preferable. Painting, washing or cleaning should be done as indicated by the manufacturer.

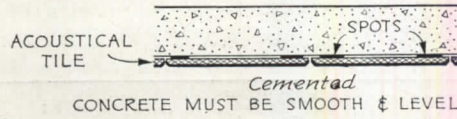
**Cleaning information**, as well as that in regard to repainting, should be sent in writing to the client when the material is installed.

Some of the more fragile products may only be dry-cleaned with a soft brush or with a vacuum cleaner. Other types may be washed. Great care in washing the perforated metal or perforated asbestos should be taken in order not to smear the surface from dirt within the acoustical filler.

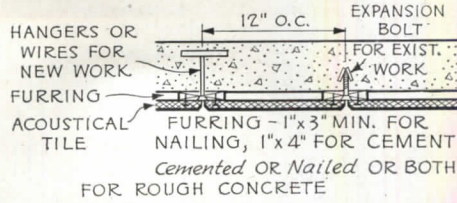
**Discoloration.** Materials which have air passages from face to back may be affected by "breathing." To prevent this, some manufacturers employ paper to seal the back. Building paper or felt behind tile on furring (for nailing) also prevents breathing.

**Source of Data Tables II and III.** Tables II and III have been compiled from the Bureau of Standards Circular letters LC-714 and LC-715, briefed and rearranged. Products whose manufacture has been discontinued permanently have been omitted. Those discontinued for the duration are marked with an asterisk.

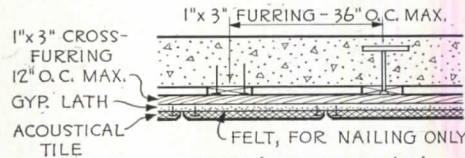
**New Materials.** It is to be expected that war-time research will produce postwar results. Improvement and invention is the order of the day so new and better materials may enter the market to compete with those we have known and used. Architects can, and should, contribute to the development of the acoustical materials which they must select, specify and supervise during installation.



DIRECTLY ON CONCRETE

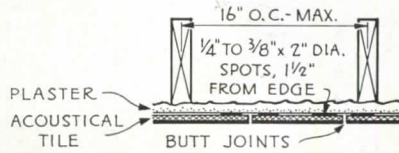


ON FURRING STRIPS

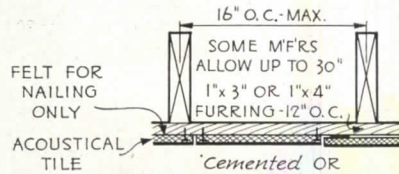


ON FURRING STRIPS, CROSS-FURRING STRIPS & GYPSUM LATH

NOTE - FELT USED BEHIND ACOUSTICAL TILES, WHEN NAILING ONLY, TO STOP BREATHING

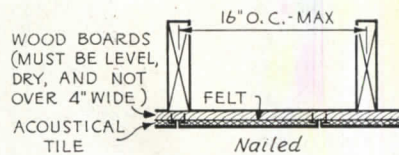


ON PLASTER

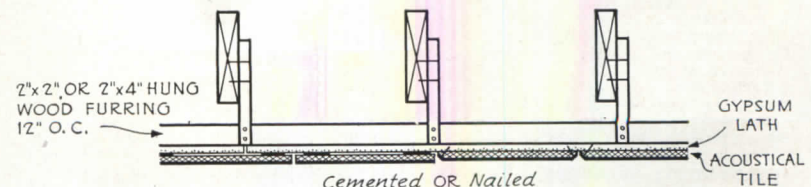


NOT RECOMMENDED BY ALL M'FRS.

ON WOOD FURRING STRIPS



ON WOOD BOARDS

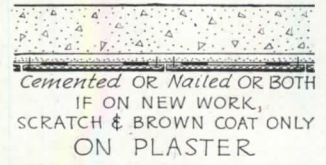


ON HUNG WOOD FURRING

## ACOUSTICAL UNITS - WOOD FRAMING

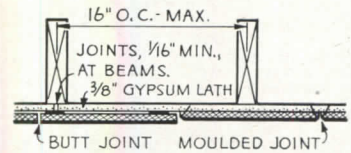
Nailed OR Cemented TYPES  
 SCALE 3/4" = 1'-0"

NOTE - FOR OTHER TYPES OF HUNG CEILINGS, SEE CONCRETE SLABS



## ACOUSTICAL UNITS - ON CONCRETE

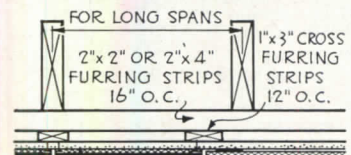
Nailed OR Cemented TYPES  
 SCALE 3/4" = 1'-0"



BOTTOMS OF JOISTS MUST BE LEVEL ON GYPSUM LATH



PREFERRED METHOD - NEW WORK. BOTTOMS OF JOISTS NEED NOT BE LEVEL ON WOOD FURRING STRIPS AND GYPSUM LATH



ON FURRING, CROSS-FURRING AND GYPSUM LATH

**TABLE V. Division 17-A Acoustical Materials for Plastic Application (Fed. Spec. SS-A-111)**

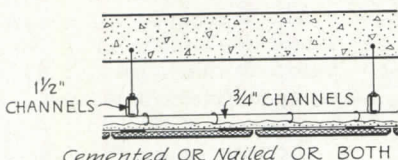
**SPECIFICATION NOTES**

A. Must be cleanable with soap and water, or brush, paintable without decreasing sound absorption at 512 cycles, more than 0.05 (3 coats).

B. Must be paintable without decreasing sound absorption at 512 cycles, more than 0.05 (5 coats).

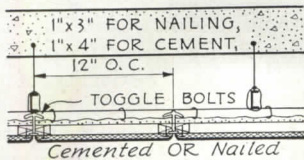
C. Must be able to take dye to decorate without decreasing sound absorption coefficient at 512 cycles, more than 0.05.

3 TYPES identified by composition and methods of application.



IF NEW PLASTER,  
SCRATCH & BROWN COATS ONLY

ON PLASTER



Cemented OR Nailed

USE FOR  
ROUGH OR POOR, OLD PLASTER

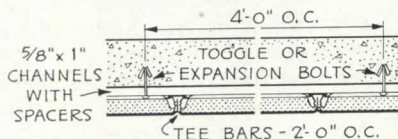
ON PLASTER

& FURRING STRIPS

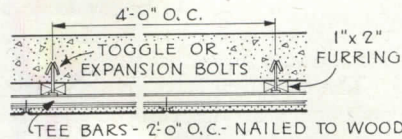
## ACOUSTICAL UNITS - ON HUNG PLASTER

Cemented OR Nailed TYPES

CEILING OF CONCRETE OR WOOD CONSTRUCTION  
SCALE - 3/4" = 1'-0"

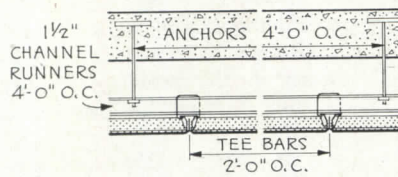


ON STEEL FURRING CHANNELS

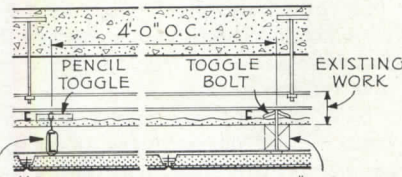


ON WOOD FURRING STRIPS

MOUNTED AGAINST SLAB



USUAL METHOD - NEW WORK



ALTER. METHOD - OLD WORK

HUNG

SCALE - 3/4" = 1'-0"

NOTE - UNITS 12" x 24", JOINTS SCORED TO RESEMBLE 12" x 12" UNITS



NOTE - WOOD MOULDS & WORK ABOVE TEE BAR NOT USUALLY INCLUDED IN ACOUSTICAL SPECIFICATIONS

WALL CLOSING METHODS

SCALE - 1/2" = 1'-0"

## ACOUSTICAL UNITS -

### METAL SUSPENSION SYSTEMS

Perforated Metal TYPE - Fed. Spec. SS-A-118

NOTE - METAL SUSPENSION SYSTEMS ARE AVAILABLE FOR MANY OTHER TYPES OF UNITS. SUCH UNITS ARE USUALLY SECURED BY TEES IN KERFED SIDES OF UNITS.

- TYPE I**  
Acoustic Plaster. Aggregate and gypsum, cement or lime binder.  
Super Acoustic Plaster—Cleveland Gypsum Co.  
Reverbolite Plaster—The Celotex Corp.  
Dodson Acoustic Plaster—The Dodson Mfg. Co.  
Plastacoustic—R. Guastavino Co.  
Reverbolite Plaster—The Celotex Co.  
Kalite "H" Plaster—Certain-teed Products Corp.  
Hushkote Acoustic Plaster—Cleveland Gypsum Co.  
Acoustic Plaster—Kelley Island Lime & Transport Co.  
Sabinite—U. S. Gypsum Co.  
Stuccoustic Plaster—California Stucco Products.  
Acoustic Plaster—Hollywood Stucco Products.  
Macoustic—National Gypsum Co.  
Old Newark Acoustic Plaster—Newark Plaster Co.

**TYPE II**  
Other than acoustic plaster but applied with trowel.

- TYPE III**  
Fibrous material and binder applied by spray gun or blower.  
Sprayed Limpet Asbestos—Keasbey & Mattison Co.  
Spray-Acoustic—Sprayo-Flake Co.

### Acoustical Units-Prefabricated Federal Specification SS-A-118

9 TYPES identified by texture, surface appearance and composition.

- TYPE I**  
Cast units, small granules, Portland Cement binder. (Reasonably smooth.)  
Akoustolith—Guastavino  
Basolt Rock  
Sphinxstone—The Sphinx Acoustical Co.

- TYPE II** (See specification note A above.)  
Cast units, small granules, gypsum binder. (Reasonably smooth.)  
Muffleton Standard—The Celotex Co.  
Travacoustic—National Gypsum Co.  
Kalite Cast—Certain-teed Products Co.

**TYPE III** (See specification note A above.)  
Cast units, rough granules, gypsum binder.

- TYPE IV** (See specification note B above.)  
Perforated covering over sound absorbing material.  
Acoustimetal—National Gypsum Co.  
Perfaton—U. S. Gypsum Co.  
Sanacoustic—Johns-Manville.  
Transite Acoustical Tile or Units—Johns-Manville.  
Cemesto Brand Perforated Asbestos Board—Celotex Co.  
Acousteel B—The Celotex Co.  
Perforated Panel Board—The Celotex Co.  
Perforated Linabestos—The Celotex Co.

- TYPE V** (See specification note B above.)  
Perforated units, perforations extending into sound absorbing material.  
Acousti-Celotex—The Celotex Co.  
Auditon B—U. S. Gypsum Co.  
Cushiontone—Armstrong  
Fibretex—Johns-Manville (doubtful classification)  
Fibretone—Johns-Manville  
Acousti-Celotex Mineral Tile—The Celotex Co.

- TYPE VI** (See specification note A above.)  
Fissured surface units.  
Acoustone F—U. S. Gypsum Co.  
Permacoustic—Johns-Manville  
Softone—Industrials, Inc. of Wisconsin  
Corkoustic—Armstrong.  
Acoustical Cork B—United Cork Co.  
Muffleton Fissured—The Celotex Co.

- TYPE VII** (See specification note A above.)  
Compressed units, long wood fibers, mineral binder. (If fine fibers are desired, they should be specified.)  
Absorbatone—Luce Stevenson Co.  
Absorbex—The Celotex Co.  
Acoustex—National Gypsum Co.  
Absorb-A-Noise—Luce-Stevenson Co.

- TYPE VIII** (See specification note C above.)  
Felted units unperforated fiber or pulp.  
Fiberglas—Owens-Corning Glass Co.  
Acustilite—The Insulite Co.  
Fibracoustic—Johns-Manville.  
Econacoustic—National Gypsum Co.  
Fiberlite—The Insulite Co.  
Quietone—U. S. Gypsum Co.  
Nuwood Interior Finish—Wood Conversion Co.

**TYPE IX**  
Thin diaphragmatic shell.

## NEW PATTERNS FOR BUILDING PROCEDURE?

By Morton C. Tuttle

President, Morton C. Tuttle Co., Boston

IT MAY BE interesting to sit on the fence and watch our familiar industry go by, to recall how it is organized, to find out what are the actual, not the alleged, objectives and motives actuating various of its parts, to understand why those engaged in it think and act as they do. It is interesting to compare the method of organization and the procedures of building with those of other industries and to note and appraise any changes in organization or procedure.

The effectiveness of any organization or industry depends, among other things, upon how work is divided among the people or agencies engaged, upon how well the efforts are combined and how strong a will-to-do is developed. If, instead of focusing on a common purpose, the various individuals of an organization or the components of an industry work at cross-purposes, then the potential effectiveness of that organization is dissipated.

### Manufacturing Organizations

Let's look into the matter of form of organization.

The general pattern of manufacturing organizations is practically uniform, as follows: Under direct control of a general manager are the various departments of design, operation, finance, etc. Under central management the interests of all are focused not on the affairs of a department but on the success of the organization, because individual welfare depends not alone on the performance of one's department but mainly upon the success of the organization as a whole.

### Building Operations

Anyone familiar with industrial management who first examines the organization of a conventional building operation is likely to be puzzled by inability to discover unity of interests or to trace effective lines of responsibility and of authority. The organization of a typical building operation bears little resemblance to that of a manufacturing establishment.

The elements responsible for design and construction of such a building operation may be stated as follows:

An architect is engaged to make plans and specifications for structure wanted and gives his estimate of the cost. He submits plans and specifications to general contractors who name their prices. The general contractors canvass the markets for bids from material dealers and from subcontractors

for the various subdivisions of the work.

To the architect by contract agreement is assigned the duty of inspection and the authority to reject any material or workmanship that does not comply with the requirements of the plans and specifications. The general contractor is responsible for the quality of all workmanship and material and for progress. He has no direct executive control of the acts of his subcontractors, who do most of the work for which he is responsible. The control of the departmental operations of a job depends not upon executive authority, but on the less flexible force of contract agreement.

To understand the financial pressure which influences the action and the thinking of most of the building industry, it is necessary briefly to review the business arrangements under which the industry operates.

The architect is commonly paid a percentage of the cost of the work. For this fee he acts in at least three capacities, viz., the creator of the ideas of which the structures are realizations, the operator of a drafting room, the inspector of the building operation. The cost of the plans, inspection, and of office overhead comes out of his fee which is a limited but not a predetermined fee.

Most building and engineering contracts are let on one form or another of competitive bids. Because competitive bidding is conventional, the severity of the competition and the resulting financial pressure upon the bidders is not commonly realized even by the bidders themselves. Construction operations run to relatively large figures. A building estimate must allow for, or ignore, unforeseeable contingencies such as change in labor rates, weather, strikes, delays in transportation, inaccuracy or incompleteness of the plans, the liberality or the closeness of the inspection.

Chance of loss is always present. It is fruitless to make a competitive bid unless there is a possibility of being low bidder, for the work will in all probability be bought on a price basis. Seldom does a low bidder feel confident that he can make a profit or even avoid loss by carrying out the work at the price he has named. The first thought of the so-called successful bidder is, "I wonder what I omitted in my estimate."

The general contractors have made their estimates by taking bids from subcontractors and material dealers.

Each sub-bidder may feel the same uncertainty regarding his profit—if any. An obvious source of increasing profit or safety for the general contractor lies in his ability to secure lower prices than those already offered him by the subcontractors and the material men. Bid trading is objectionable to architects and owners because it intensifies the wish of the subcontractors and material men to supply less quality of material and workmanship than they have agreed to furnish. For the general contractor this is his only wide opportunity to increase profit and is too great to ignore.

Everyone connected with the job—architect or engineer, general contractor and subcontractor—hopes that he has traded his suppliers to the lowest point possible. In this situation there is negligible change for developing a spirit of cooperation. The relationships are predatory rather than cooperative.

In making a bid one sells a future, and this is hazardous. In a falling market a bid for future delivery is a promising procedure. *Per contra* on a rising market. Now building volume lags behind a commercial rise. As volume increases, costs rise. Once general commercial activity slackens at the beginning of a decline, proposed construction projects disappear. Be it shoes or buildings, everyone hesitates to buy on a falling market. The stock speculator might learn from builders what they have never learned—that a boom in the building industry is a warning that the business rise is nearly over.

The construction industry plays against a rigged game. During a declining market the game is closed. It opens when prices have risen and are continuing to rise. It puts down its bets—that is, sells its futures when the wheel is loaded against it. Builders do not average high in caution or in timidity of imagination. They are hard buyers. They have to be.

### Building Cost Determination

The cost of a building, like the cost of a motor car, is largely determined on the drafting board. No design is economical that embodies needlessly expensive material or uselessly complicated structural detail.

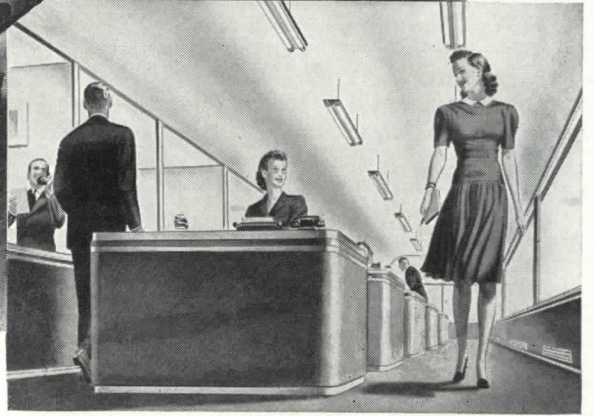
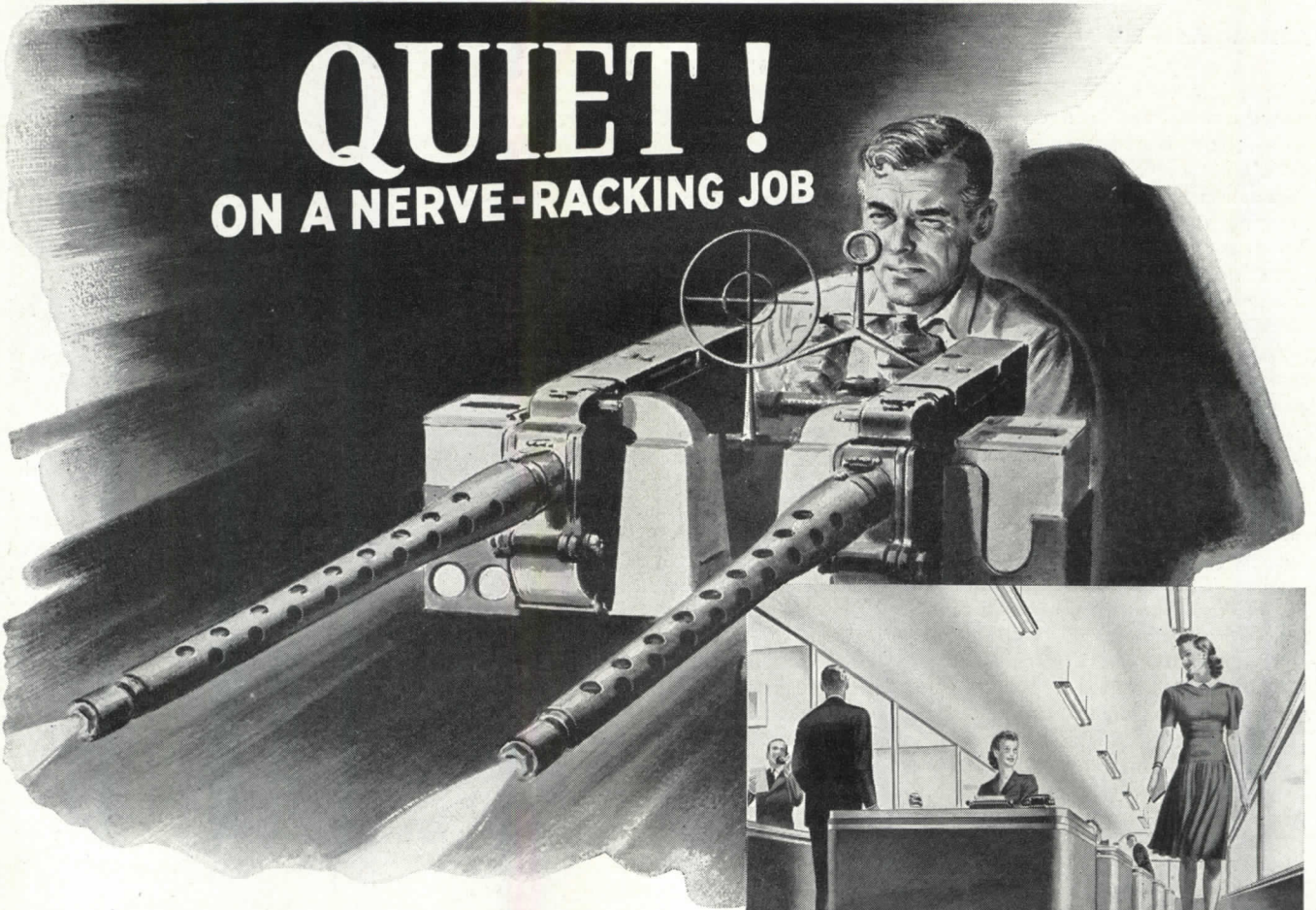
Unlike the building trade, manufacturers command facilities capable of hunting out needless expense.

As a matter of routine, new designs are submitted to the operating, cost, purchasing, and sales departments for study. Criticisms are considered by the general management and revisions made. The process is repeated. Only after such rigorous analysis is the item

(Continued on page 128)

Looking ahead with Asbestos

# QUIET! ON A NERVE-RACKING JOB



In this testing room each one of a battery of machine guns fires more than 1,000 rounds a minute. The racket should be terrific. But the nerve-jangling bark of those guns is hushed to a subdued chatter—because the walls of the testing room are treated with K&M Sprayed "Limpet" Asbestos.

Doesn't that performance of this highly efficient acoustical material give you an idea for a truly quiet office in the business world of tomorrow . . . an office free from the clatter of typewriters and other bothersome noises?

To the forward-thinking architect there are also many other advantages of Sprayed "Limpet." This remarkably effective noise-suppressing material can be sprayed on practically any type or shape of surface—following the most intricate contours, if need be. "Limpet" will take as many as ten coats of paint without noticeably affecting its acoustical efficiency.

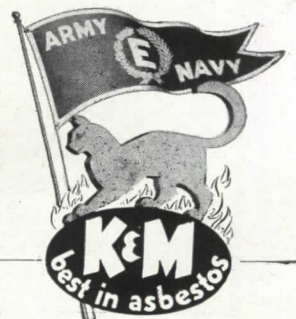
Right now, the many peacetime possibilities of K&M Sprayed "Limpet" Asbestos *must wait* because wartime needs are taking all of our output.

To manufacturers in many fields, total war has been a spur to greater and more efficient production. At K&M that applies to the making of more and better asbestos products through sustained research. And these new "wartime" methods will have a profound influence on policies and plans when peace returns.

\* \* \*

*Nature made asbestos;  
Keasbey & Mattison, America's asbestos pioneer,  
has made it serve mankind . . . since 1873*

**KEASBEY & MATTISON**  
COMPANY, AMBLER, PENNSYLVANIA



★ Our Ambler plants proudly fly the Army-Navy "E" flag—an honor awarded K&M employees "for outstanding production of war materials."

# FOR BETTER BUILDING

## AIR-BORNE ROOF EXPERIMENTS

Experiments with circular air-supported roofs have been carried on at the College of Engineering of New York University, sponsored by the War Production Board. The designs for a building of this type were first presented by Herbert H. Stevens, Jr., the inventor, in 1942 (*ARCHITECTURAL RECORD*, Dec. 1942, pp. 45-56). He proposes thin welded-steel roof-membrane, constructed on the ground and anchored to a circular concrete ring. An air pressure of only 1 oz. per sq. in. is required to maintain the roof in its flat dome form, giving a free, columnless, working area.

The recent experiments at N.Y.U., carried on under the direction of Mr. Stevens and Professor Joseph A. Wise, have contributed to the proof of the practicality of the idea, as wind tunnel tests were made to verify the mathematical and theoretical calculations. A 12-ft. model was used in the tests and measurements were taken of stresses developed in the membrane at various pressures. The effects of external wind pressures and velocities were also studied.

The smaller portable model, illustrated, has a roof of thin plastic, instead of steel, for the sake of clearer diagrammatic explanation of the system. Sub-assembly lines are shown leading to the main assembly line which runs to the large air-lock doors. The air-compression units are housed in the small rectangular blocks on the periphery of the anchor ring.

## "HOW TO PLAN"

Beseiged on all sides with "dream homes" and "miracle houses," prospective home builders have become confused. Architects can help separate the wheat from the chaff. But they have not made a concerted effort to sell their own services to the home-building prospect. It has remained for a manufacturer to come to the rescue of both architect and prospective home owner in a campaign that not only says, "Start Right—With an Architect," but which offers to send a guide to intelligent building entitled "How to Plan Your New Home," to anyone interested. This message reaches millions of readers through general magazines, and is repeated in the architectural press.

Edwards and Company, of Norwalk, Conn., have prepared this booklet in cooperation with the Committee on Public Information of the American Institute of Architects. The booklet is so clear, concise, straightforward, and makes its points so forcefully that it may well do more to explain the value of the architect's services to the general public than anything that has yet appeared. It tells exactly what the owner can expect from the architect and how they can best work together, from the choosing of the lot, through the planning and design, to the multitude of technical details. We quote just two paragraphs:

"It is easy to see that the architect can save the owner much more than his fee—in designing a beautiful house, in seeing that it is properly built, in protecting legal and financial interests,



in saving endless regrets.

"The architect does not bid on the job. He is paid a fee based on the cost of the house. If you have been thinking of building a moderate-priced home, you may have felt you couldn't afford an architect. It is nearer the truth to say that, unless you have money to waste, you can't afford to build without one. His service is a necessity, not a luxury."

In order that the architect may see that this message reaches his particular prospects, the Edwards Company is prepared to provide copies for the architect's own distribution.

## WARTIME INGENUITY

"Needs must when the devil drives," and wartime shortages continue to produce highly ingenious substitutions for the rubber and metals once thought indispensable to good construction. Among the latest:

### Rubberless Stair Treads

Made of an asphalt and felt composition, the rubberless Dura-Val and Dura-Val De Luxe Stair Treads are said to look, feel and wear like rubber, to be waterproof and washable. They are guaranteed long wearing.

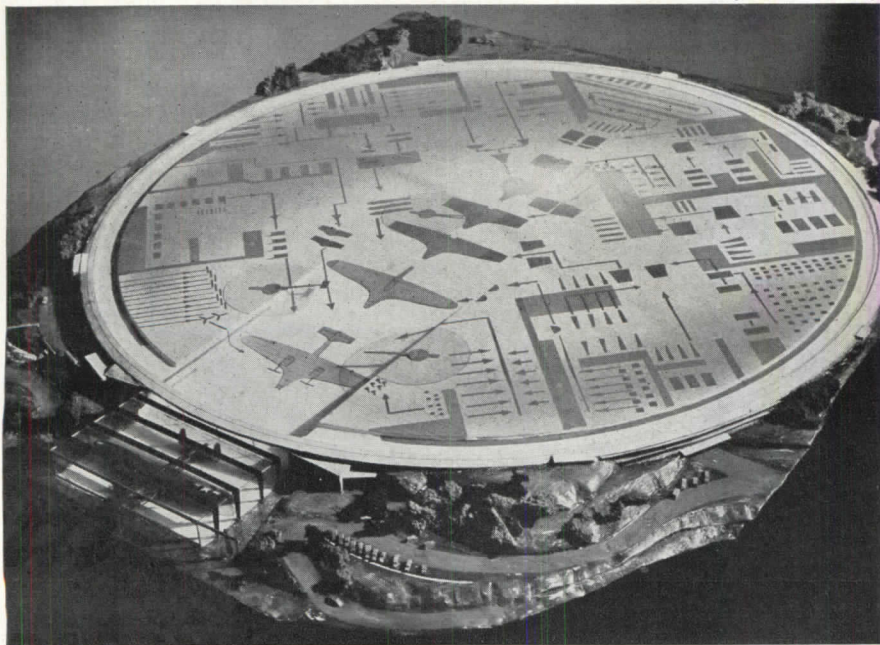
The treads are made with a corrugated, non-skid surface, in both flat and nosing types, in black. The standard flat tread is 9 by 18 in.; the standard nosing tread in two sizes, 9 by 18 in. and 9 by 24 in. Extra size treads can be furnished on special order. Available for immediate delivery. So-Lo Works, Inc., Loveland, Ohio.

### Soap Insulation

The emphasis on speed characteristic of all wartime construction has produced a novel use for soap: in making

(Continued on page 114)

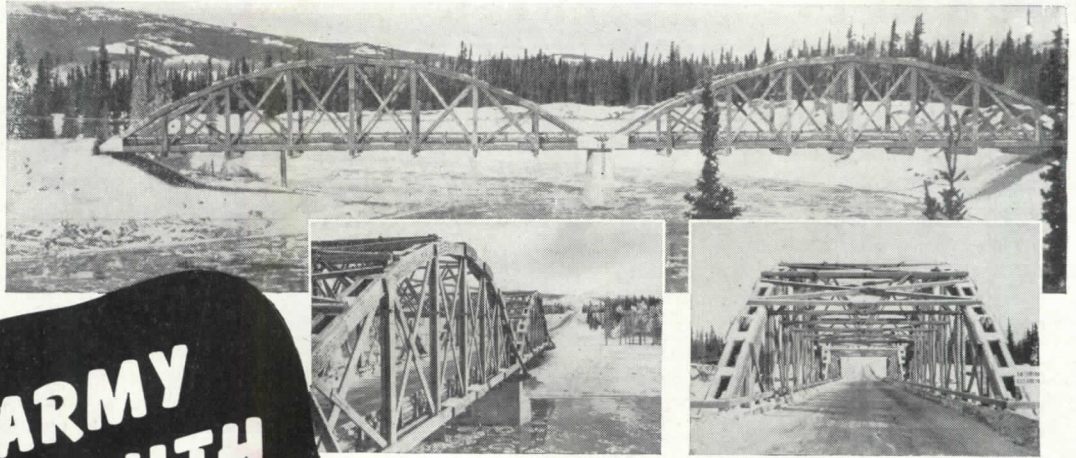
Photo by Arthur Murray



Left. Model of an airplane factory with Stevens' air-borne roof, described in text



TAKHINI RIVER BRIDGE on the Alaska Highway, built with the Teco Connector System of Construction.



# THE ARMY BUILDS WITH WOOD

Spanning rivers and gorges along the Inter-American and Alaska Highways are many modern bridges built of treated timber prefabricated and engineered under the Teco Connector System of Construction.

The Army Engineer Corps has demonstrated the advantages of timber construction for—Strength—Economy—Permanence—not only in bridge construction but in hangars, warehouses, towers and other industrial types of structures.

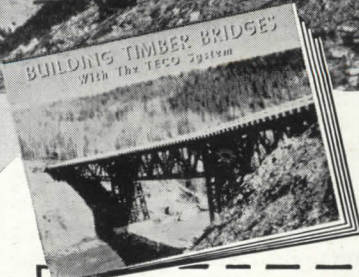
These advantages are yours for present and post war planning.

THE KISKATINAW RIVER BRIDGE, one of the major crossings on the Alaska Highway, designed by the U. S. Public Roads Administration. The timber superstructure was prefabricated and pressure-cresoted by the Canada Cresoting Co. The Timber Connector System was used.



*Specify*  
**TECO**  
**CONNECTORS AND TOOLS**  
Endorsed by Leading Lumber Manufacturers and Fabricators

TECO Grooving Tools are manufactured exclusively by Greenlee Brothers & Company—one of the world's largest manufacturers of wood-working tools.



**FREE PICTORIAL BOOK**  
Shows the Government's extensive use of timber in bridge construction in the United States and Canada.

**TIMBER ENGINEERING COMPANY**  
NATIONAL MANUFACTURERS OF TECO TIMBER CONNECTORS  
WASHINGTON CHICAGO MINNEAPOLIS NEW ORLEANS PORTLAND

**TIMBER ENGINEERING COMPANY**  
1319 18th St., N. W., Washington 6, D. C.

Please send me by return mail a free copy of "Building Timber Bridges With The Teco System."

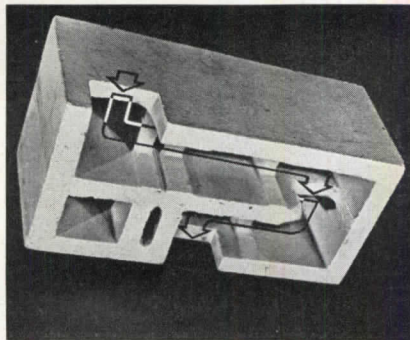
Name.....

Firm Name.....

City..... State.....

materials for sound insulating walls, ceilings and other surfaces. The soap, in powdered form, is mixed with mangled cellulose, fibered asbestos and other ingredients.

An interesting feature of this patented process, the invention of M. Valdastrì, is that the insulating material itself is available as a dry fibrous mass rather than as preformed boards. Combined with water, it produces a plaster which makes for easier and more rapid application to the surfaces.



**Tile Scuppers**

A foreman of the Eastman Kodak Company, Rochester, N. Y., has devised a non-metallic, light-locked scupper made from an ordinary building tile (illustration at left). Tile sections are cut with a carbide saw.

**POSTWAR PROMISES  
Copper Convector**

A line of copper convectors, to be manufactured after the war for use in buildings now in the designing stage, has been announced. Enclosure types include those which are recessed into the wall and those installed against the finished wall.

A special enclosure known as the Institutional Style incorporates features which are commonly specified for heavy duty application. Typical of these are the tamper-proof, lock-type front and damper, special air delivery grille, and heavier gauge enclosure front and back.

All enclosures are Parker Bonderized for paint retention and rust protection.

A choice of three types of copper heating units adapts this line of convectors to vapor and vacuum steam, one pipe steam, and forced or gravity-flow hot water systems. Modine Mfg. Co., Racine, Wis.

**Small Home Heaters**

The completion of arrangements for the manufacture of the Coraire Heater has been announced, and production will start shortly. The Coraire is a patented, gas fired, grille type unit, said to be well suited to the small field and commercial installations. It embodies complete winter air conditioning, yet the unit is not much larger than a good sized console radio. The Coraire Heating Corp., will act as the selling organization.

**Furniture Finish**

A better finish for home, school and office furniture, tougher than present varnishes or lacquers, is promised for after the war by the Finishes Division of E. I. du Pont de Nemours & Co.

Developed for use as a base or prime coat, the formulation is said to provide excellent adhesion for the top coat. The new so-called "penetrating primer," by affording improved "anchorage," permits the use of higher scratch-resistant finishing lacquers.

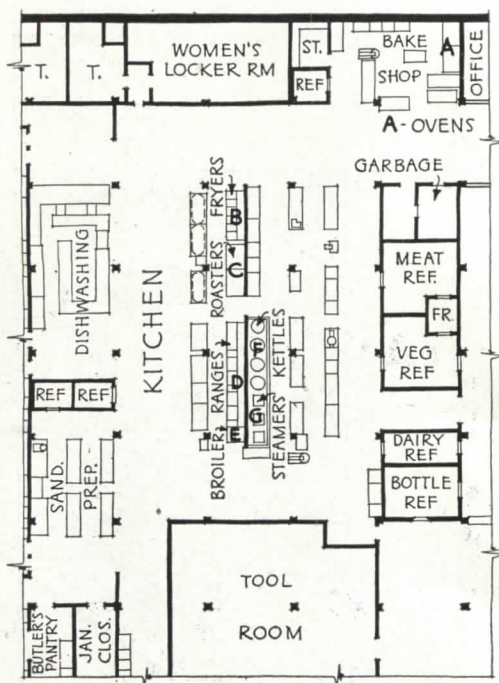
**PLASTICS AND PLYWOOD  
Plywood Hangar Doors**

The all-wood blimp hangar recently built for the Navy at Santa Ana, Calif., has doors of Douglas fir plywood. Each set of doors, built in six sections, closes

(Continued on page 116)

**KITCHEN PLAN NO. 9: Ninth of a series of successful mass-feeding kitchen plans.**

This mass food producing unit is installed in a unique "breathing-walls," and "controlled conditions," mid-west motor plant, to feed thousands daily.



**KEEP FOR  
HANDY  
REFERENCE!**

**COOKING  
EQUIPMENT  
USED:**

- (a) 2 No. 982 BLODGETT GAS-FIRED BAKE OVENS
- (b) 6 Fryers
- (c) 2 No. 952 BLODGETT GAS-FIRED ROASTING OVENS
- (d) 6 Ranges
- (e) 1 Broiler
- (f) 4 Stock Kettles
- (g) 3 Steamers

Designed by Albert Pick Co., Inc., for The Austin Company

THE TWO No. 952 BLODGETT OVENS here provide 37.2 sq. ft. of shelf area in four separate 12"-high compartments, and will load more than 600 lbs. THE TWO No. 982 BLODGETT BAKE OVENS have 16-pan, 96-pie capacity, in four 2-deck sections. Roasting ovens are used for meats, fish, vegetables, beans, puddings, etc. For details and specifications of Blodgett Ovens, consult your equipment house or write



**The G. S. BLODGETT CO., Inc.**

53 Maple Street

Burlington, Vermont

# References Required

● Wherever men fight for the cause of freedom, "Connecticut" communications and aircraft ignition products are helping them win. When the boys come home and peacetime competition returns, ask their opinion of the products we make. They are our references.



## IN WAR

Field Telephones  
Switchboards  
Radio Headsets  
Aircraft Ignition Components



## IN PEACE

Hospital Systems  
Intercommunication Systems  
Industrial Control Devices  
Precision Electrical Equipment



# Connecticut Telephone & Electric Division,

MERIDEN



CONNECTICUT

© 1944 Great American Industries, Inc., Meriden, Conn.

an opening about 120 ft. high and 220 ft. wide. The leaves, in effect, are box trusses on end with plywood covering  $\frac{7}{8}$ -in. thick on the outside bolted to steel framing members.

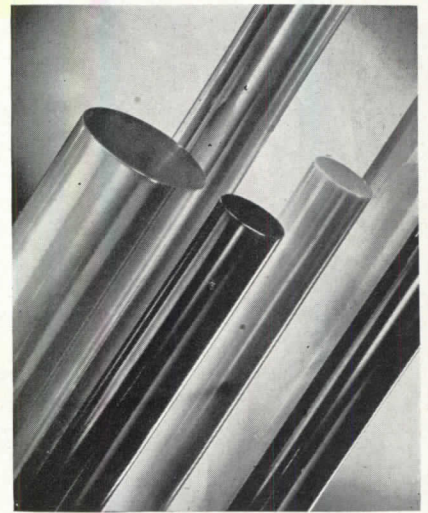
Exterior (waterproof) type fir plywood in sheets 12 by 4 ft. were assembled into sections 12 by 16 ft. Enroute from the plywood factory to the door builder, the panels were flame-proofed by the Minalith system.

The six door leaves are hung from

a great built-up timber girder so three leaves open toward each side of the hangar. The leaves, supported laterally by guide rails at the top and rolling on flanged-steel wheels over railroad type track, travel at different speeds so when opened they complete the slide simultaneously. It is possible to open or close the doors in less than two minutes.

Supports for the overhead girder are concrete pylons at either side of the

hangar and separate from the building. James I. Barnes of Santa Monica, California, was the general contractor.



### Tenite Rod Stock

Rod stock in sizes up to 2 in. is now continuously extruded of Tenite plastic. The rods are applicable to a variety of end uses—tool handles, gauge handles, the heads of hammers used on metals which would be dented or weakened under the blows of steel hammerheads. Small scale production of these parts is achieved through the use of Tenite rod stock.

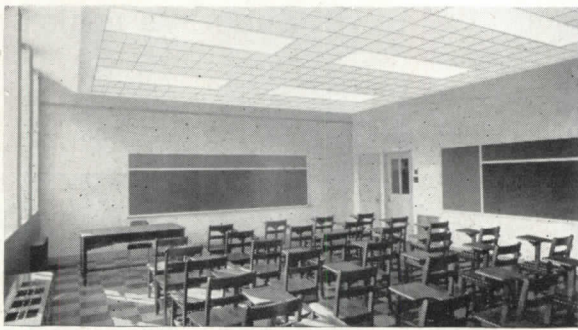
Extruded rod is also used by model makers to construct articles later to be molded of plastic. After the war Tenite rod stock is expected by its manufacturers (Tennessee Eastman Corp., Kingsport, Tenn.) to be used for display work, furniture, and in other fields in which beauty of color as well as durability is required. Rod stock is extruded by Detroit Macoid Corp., Detroit, Mich.

### MASONRY PROTECTION

A new restorative for masonry building exteriors called *Waterfoil* is manufactured of irreversible inorganic gels. These, when applied to concrete, brick or stucco surfaces, react chemically with the lime hydrate of the masonry to form a fine, hard, heavy coating which has "welded" itself to the structure. The bond is a two-fold bond, physical and chemical. The resulting coating has a spongelike character which permits the masonry to breathe. Water in vapor form can get out through the microscopic pores, but absorption of water in liquid form is actually impeded. Thus rusting of steel reinforcing bars or spalling is inhibited and the life expectancy of the structure is lengthened as well as the appearance restored. A. C. Horn Co., 43-36 10th St., Long Island City 1, N. Y.

*(Continued on page 118)*

## FOR SCHOOLS



Consider the use of prefabricated steel WALL LININGS, PARTITIONS, and CEILINGS as engineered, manufactured and installed by HAUSERMAN.

Hauserman movable steel partitions are sound-proof, insulated, incombustible, flush walls. Moving the partitions to make larger or smaller classrooms is easily and quickly done.

Hauserman steel wall linings are prefabricated, flush steel panels, similar to the partitions in appearance, giving durable, light, easily-maintained wall surfaces throughout the school. Lining panels are individually removable for servicing of concealed radiators and other equipment.

Hauserman steel pan acoustic ceilings have 85% sound absorption coefficient. Ceilings are perfectly flat; any pan may be separately removed. Pans are interchangeable with Hauserman fluorescent light troffers.

Catalog of our prefabricated building products—developed through our 31 years of experience—sent on request.

THE E. F. HAUSERMAN COMPANY ■ 6800 GRANT AVENUE ■ CLEVELAND 5, OHIO



# PLASTICS GOES TO SCHOOL

The General Electric Company offers to architects, designers and engineers the service of experienced technical advice and information on the use of plastic materials. In the following list are some of the places in the modern school building where G-E plastic materials can be used. Kindly write Section C-286 for information on your plastic problems.

## SIGNS

Signs, directional, etc.  
interior and exterior

## WALLS AND TRIM

Wall panels and surfaces  
Wainscots Panels  
Door Surfaces Mouldings  
Trim; window, door, black-  
board Chalk troughs  
Coves Corners  
Baseboards Kickplates  
Push plates

## HARDWARE

Medicine cabinets Handles  
Escutcheons Towel racks  
Soap dishes Toilet seats  
Glass holders Doorknobs

## ELECTRICAL

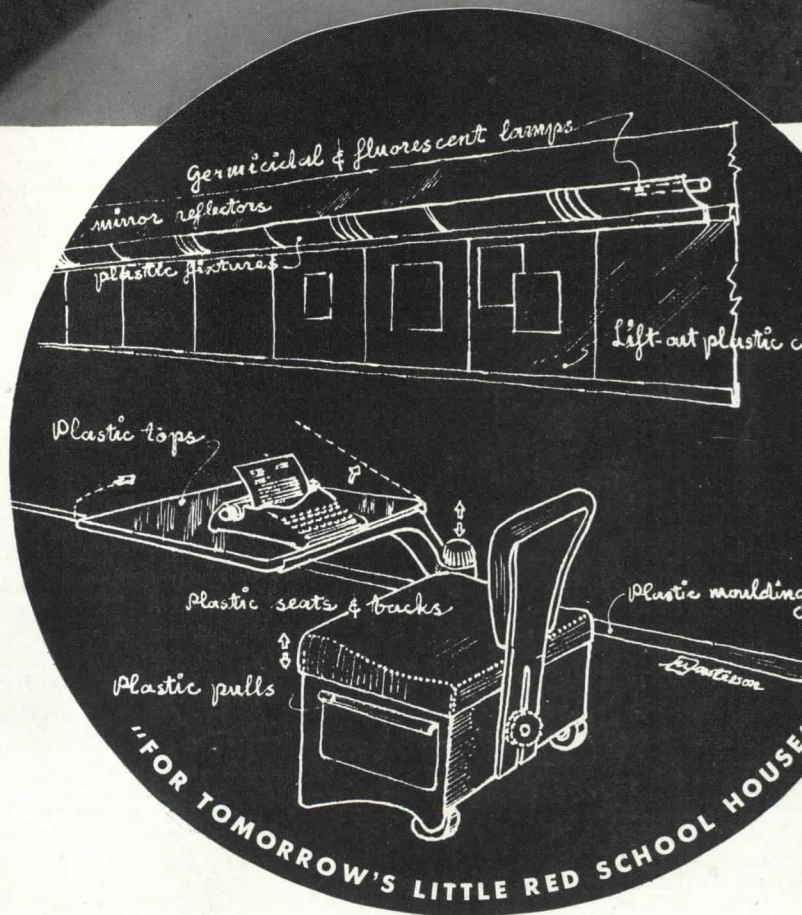
Light reflectors Light globes  
Switch plates Wire insulation  
Luminous or phosphorescent  
spots (drops, buttons, edges,  
etc.)

## FURNITURE

Surfaces for desks, seats, tables  
of all kinds  
Knobs, handles, pulls, molded  
seats, backs, etc.

## SERVICE

Trays of all kinds  
Working surfaces in labora-  
tories, cafeterias  
Dining service (dishes, cups,  
glasses)



Hear the General Electric radio programs: "The G-E All-girl Or-  
chestra" Sunday 10 P.M. EWT, NBC. "The World Today" news  
every weekday 6:45 P.M. EWT, CBS.

BUY WAR BONDS

GENERAL  ELECTRIC

FIFTY YEARS IN THE PLASTICS INDUSTRY

PD-286

**REFLECTANCE STANDARDS**

To meet the increasing demand for infra-red reflectance standards, a set of three metal standards, coated with baked enamel, correspond to the three levels of infra-red reflectance used in U. S. Army Specification No. 100-12. The standards are calibrated for the Wratten 89-A filter, and are accurate to  $\pm 0.5$  per cent. They can be used for direct photographic measurements,

and are washable and permanent. No priority is required. Stewart Research Laboratory, 1340 New York Ave., N. W., Washington 5, D. C.

**GLASS INK**

A new permanent ink recently developed is said really to stick to glass, china, porcelain and ceramics, and to be non-corrosive, non-poisonous and non-inflammable. No special appli-

cators are required: it may be applied with an ordinary pen or fine brush. The permanency of the ink can be increased by warming. Called *Glink*, the new ink can be used also with a rubber stamp if a small amount of glycerine is added. Stewart Research Laboratory, Franconia, Alexandria, Va.

**FIRE CLAY BRICKS**

Three new fire clay brick products—Hyex, Super-Hyex and Superam—have been added to the line of one company to supply the demand for fire clay bricks possessing greater spalling resistance, greater load bearing strength and greater volume of stability. All three are made from specially selected Missouri flint clays. Hyex is recommended for all general applications where resistance to spalling is the principle consideration; Super-Hyex for use where greater freedom from shrinkage and deformation and higher resistance to certain slags and fluxes are required; and Superam for large and intricate shapes that meet blueprint dimensions. McLeod & Henry Co., Inc., Troy, N. Y.

**WATER COOLER**

Designed especially for restaurants and cafeterias, a new electric water cooler is equipped with two push-down glass fillers to facilitate quick service. It is a self-contained unit with refrigerating mechanism in the base of the cabinet, and a capacity of up to 18 gal. per hour.

The cabinet has removable panels for easy access to the mechanism without interrupting operation. Top is white porcelain enameled; cabinet is finished in neutral gun metal furniture finish. Emphasis throughout is on sanitation and elimination of contamination of water supply. Cordley & Hayes, 443 Fourth Ave., New York.

**STANDARDS**

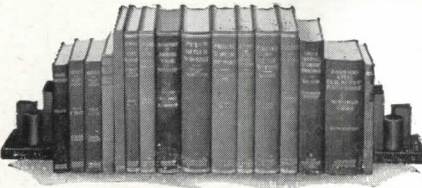
**A.S.A. Building Code Standards**

"Approval of the American Standard for Structural Steel (Riveted, Bolted or Welded Connections), A57.1-1943, as one of a related series of basic standards having to do with building code requirements, marks an important milestone towards the goal set by the American Standards Association to develop standards for all the subjects commonly included in municipal building regulations," T. R. Higgins, chief engineer, American Institute of Steel Construction, points out in the January *Industrial Standardization*, house organ of the A.S.A.

Fifteen A.S.A. committees under the supervision of the Building Code Correlating committee are working toward

(Continued on page 120)

**WILEY BOOKS in**  
**ARCHITECTURE**



Post-war plans in many fields are "on the boards" now. This, then, is the time, to acquire the newest, most authoritative books on important subjects such as those listed below. Be ready for new demands. Make your selection and order today from the coupon below.

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By Charles G. Ramsey and Harold R. Sleeper

344 Pages \$6.00  
A real time-saver for draftsmen, architects and engineers. Data, standards and information needed daily at work are found quickly and easily. Information is shown graphically so that pictures tell the story, without excess detail and ornamentation. Every architectural office should have this best-seller book for constant reference. Those who own it say that it is "indispensable."

**SIMPLIFIED DESIGN OF REINFORCED CONCRETE**

By Harry Parker  
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Contains simple, succinct explanations of all of the usual reinforced concrete members in buildings.

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By Harry Parker  
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A compact, thorough treatment of the essential principles and methods behind the design of the most common types of roof trusses.

**SIMPLIFIED ENGINEERING FOR ARCHITECTS AND BUILDERS**

By Harry Parker  
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A practical book containing the important basic principles employed in the design of structural members in buildings.

**MATERIALS AND METHODS OF ARCHITECTURAL CONSTRUCTION—**

**Second Edition**  
By Charles M. Gay and Harry Parker  
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Now revised, this book gives the latest uses of pressed woods, plastics, and structural glass, as well as the newest tables on the strength of materials and properties of structural steel.

**STANDARD PLUMBING DETAILS**

By Louis J. Day  
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No text—just illustrations and drawings assembled for quick, handy reference, showing at a glance details with which the architect must be familiar—material hitherto available only after time-consuming research.

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For everyday use—a book describing the most recent and approved methods of construction followed by leading engineers.

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These volumes comprise a complete working library on plumbing.

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822 Pages \$10.00  
Everything the architect wants to know about specifications, in one volume!

**ARCHITECTS' AND BUILDERS' HANDBOOK—Eighteenth Edition**

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2,315 Pages \$8.00  
The working "Bible" of the profession, designed to furnish all pertinent information in this field.

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Lower Merion Senior High School (Technical Division), Ardmore, Pa. Savery Scheetz & Gilmour, Architects; Joseph R. Farrell, Builder



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Extensive research and careful planning have led to increased daylight requirements for schools . . . and Lupton Windows are designed to meet these requirements in buildings of all types.

Lupton Metal Windows mean not only more light, but easily controlled ventilation, smooth operation, extreme weather-tightness and low first cost and maintenance.

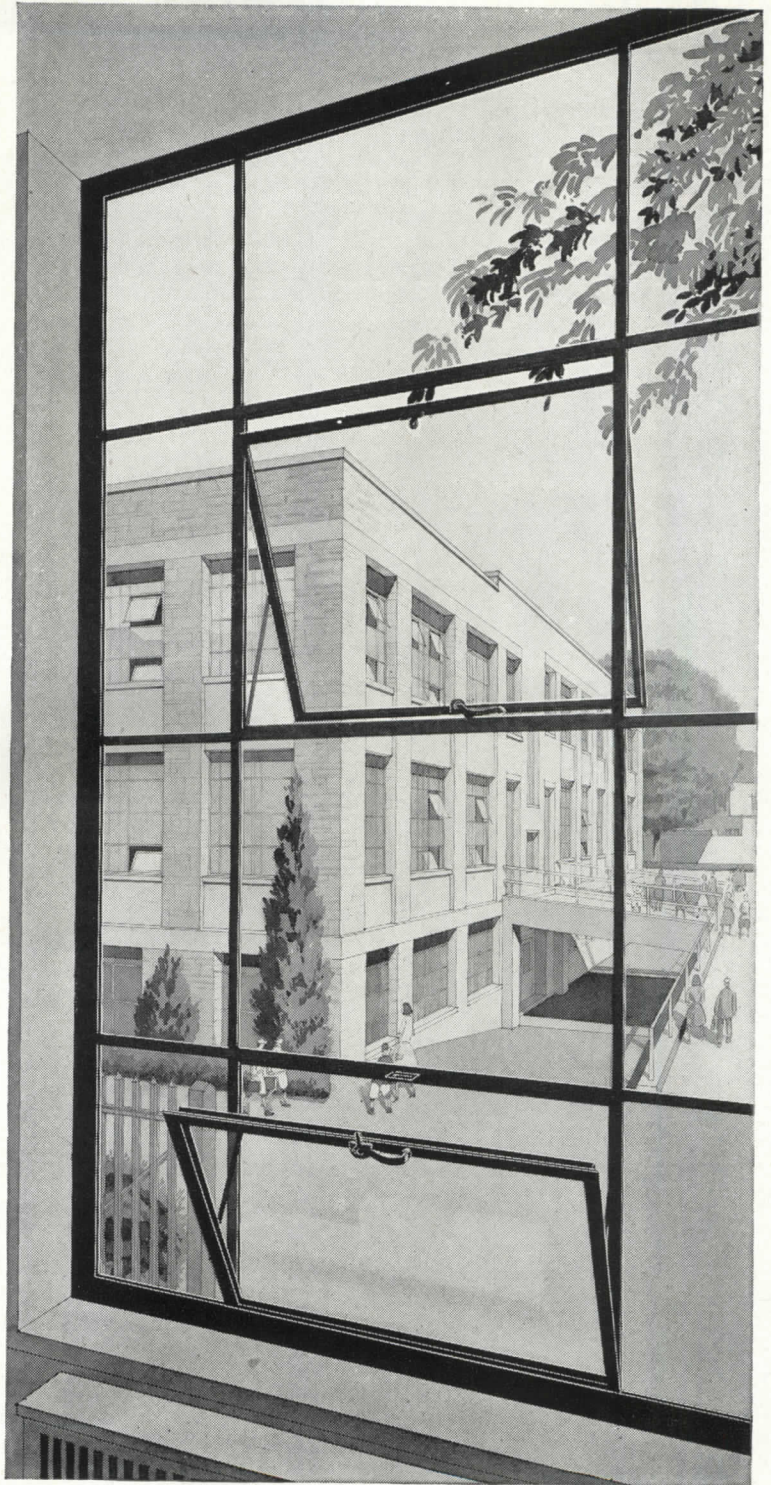
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Allegheny Ave. at Tulip St., Philadelphia 34, Pa.



# LUPTON METAL WINDOWS

a comprehensive group of standards covering subjects customarily treated in a building code. The A.S.A. expects that these standards will be used in developing a basic American Standard Building Code.

The present status of the program, as announced by the A.S.A., follows: *Building Code Standards Approved and in Print:*

Methods of Test of Door Assemblies (A2.2-1942)

Portable Steel and Wood Grandstands (Z20.1-1941)

Building Requirements for Reinforced Gypsum Concrete (A59.1-1941)

Fire tests of Building Construction and Materials (A2.1-1941)

Building Exits Code (A9.1-1942)

Building Code Requirements for Structural Steel (Riveted, Bolted, or Welded Construction) (A57.1-1943)

*New Standards Recently Approved:*

Building Code Requirements for

Masonry (A41.1-1944)

Administrative Requirements for Building Codes (A55.1-1944)

*Proposed Standards Approved by Sectional Committee Now Being Submitted to ASA:*

Building Code Requirements for Steel Joist Construction (A57)

*In Final Stage of Development in Sectional Committees:*

Building Code Requirements for Light and Ventilation (A53)

Building Code Requirements for Excavation and Foundations (A56)

Building Code Requirements for Signs and Outdoor Display Structures (A60)

Building Code Requirements for Minimum Design Loads in Buildings (A58)

*Active Work Under Way:*

Building Code Requirements for Fire Protection and Fire Resistance (A51)

Building Code Requirements for Chimneys and Heating Appliances (A58)

*Committee Work to Be Started:*

Light Gage Steel Construction (A57)

Reinforced Brick Masonry (A41)

Building Code Requirement for Cast Iron (A57)

**Bituminized-Fiber Drain and Sewer Pipe**

Bituminized-Fiber Drain and Sewer Pipe Commercial Standard CS116-44 has been announced as effective for new production from March 10, 1944.

The standard covers uses, general requirements, dimensions, physical and chemical properties, and methods of testing, of bituminized-fiber drain and sewer pipe (including 45° and 90° bends, straight couplings, and 5° angle couplings) in diameters ranging from 2 to 8 in. and in 5 and 8 ft. lengths. It also establishes a uniform method of guaranteeing compliance with the standard.

**COOKING STOVES**

Simplified models of gas cooking stoves now on the market will be the only ones available for some time, WPB has announced, and although the advisability of permitting the resumption of production of standard model gas ranges is under consideration, no action has been taken.

Even if restrictions on standard models are removed, the stoves would not be available to consumers for several months after the effective date of the order, WPB points out, because of the length of time manufacturers would need to obtain the necessary raw materials and component parts.



*Saving Man Power*

**WITH SPENCER VACUUM**

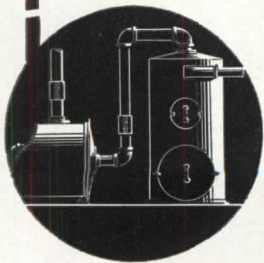
Thousands of schools are cleaned with Spencer Vacuum — many of them by women operators. Light weight swivel handle tools with high powered vacuum make cleaning easy, thorough, and fast.

Spencer not only gets under the desks easily — it cleans walls, chalk trays, projection equipment, air filters and even the boiler tubes.

**POST-WAR PLANNING** is including Spencer's also because most educators and architects say it is the best, the easiest, and the most economical in the long run.

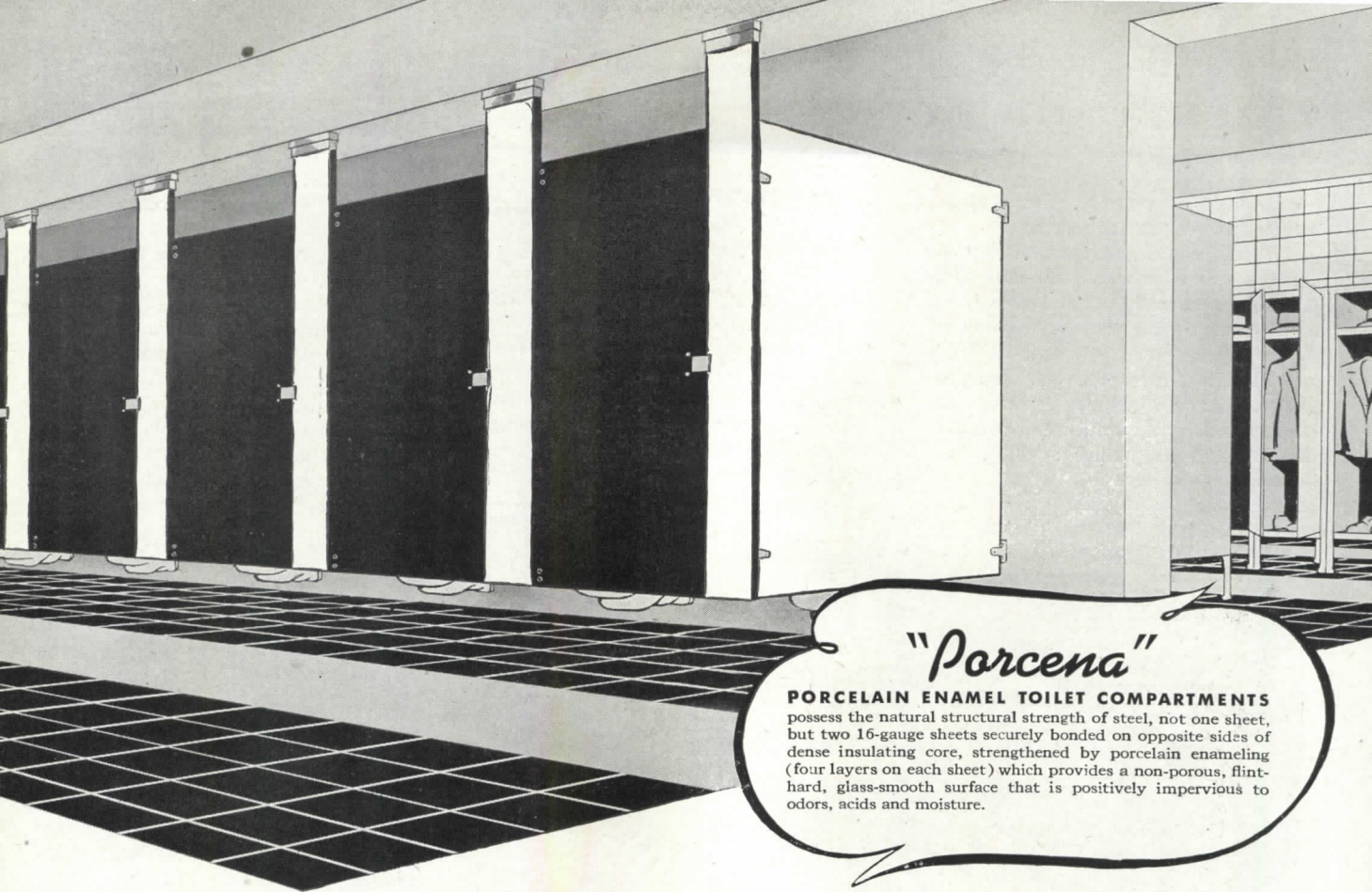
Ask for the Spencer School plans and list of 2500 schools now using Spencer.

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**SPENCER VACUUM**  
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**CLEANING**  
THE SPENCER TURBINE COMPANY, HARTFORD, CONN.





**"Porcena"**

**PORCELAIN ENAMEL TOILET COMPARTMENTS** possess the natural structural strength of steel, not one sheet, but two 16-gauge sheets securely bonded on opposite sides of dense insulating core, strengthened by porcelain enameling (four layers on each sheet) which provides a non-porous, flint-hard, glass-smooth surface that is positively impervious to odors, acids and moisture.

## CEILING HUNG TOILET COMPARTMENTS for Schools of the Future

**N**O OBSERVER or supervisor of the health of school children needs to be reminded that clean and orderly toilet compartments are more important than any other service element in a school building. The toilet room environment should have an uplifting psychological effect upon sensitive youth.

Toilet compartments usually dominate a toilet room, influencing the toilet room environment. Common treatments of toilet room interiors are certain to be unacceptable in school buildings of the future. Sanymetal's Ceiling Hung Toilet Compartments promote orderliness and cleanliness and introduce an element of refinement that has a good influence upon impressionable youth.

Sanymetal Porcena Toilet Compartments for school buildings of the future will be fabricated of the ageless and fadeless material — porcelain enamel. Porcelain enamel is a glass-hard, stainless material that always looks new, does not absorb odors, is moisture-proof and rust-proof, and resists the corroding nature of ordinary acids. The glistening porcelain enamel finish can be

wiped clean as easily as any glass-smooth surface, thereby insuring a high standard of sanitation.

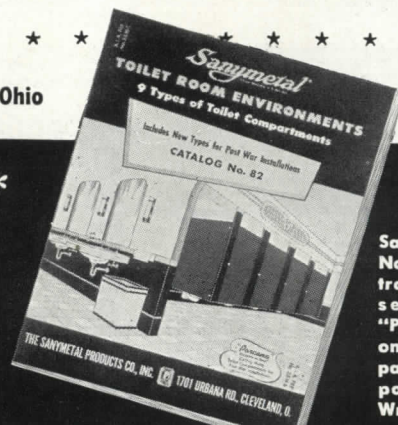
Sanymetal Century Type Toilet Compartments, illustrated, as well as each of the other five types of Sanymetal Toilet Compartments, embody the results of over 29 years of specialized skill and experience in making over 60,000 toilet compartment installations. Ask the Sanymetal Representative in your city for further information about planning suitable toilet room environments for any type of building.

\* \* \*

*Sanymetal offers six types of Toilet Compartments suitable for post-war building installations. The design and construction details for Ceiling Hung Toilet Compartments, as well as the usual standing types, may be obtained from the Sanymetal Representative in your city. Refer to phone book, "Partitions" for his name or write direct. Use Sanymetal "Porcena" (porcelain enamel) Toilet Compartments in post-war buildings to be sure of strictly modern toilet room environments and to insure against obsolescence.*

\* \* \* \* \*

THE SANYMETAL PRODUCTS CO., INC., 1689 Urbana Rd., Cleveland 12, Ohio



Sanymetal Catalogue No. 82 contains illustrations in color of several types of "Porcena" (porcelain on steel) Toilet Compartments suitable for post-war buildings. Write for your copy.

**Sanymetal\***  
\* Trade Mark Reg. U. S. Pat. Off.

**TOILET COMPARTMENTS  
and Office Partitions**

communities, involving 79 projects, were approved on January 31.

The estimated construction cost of these projects is \$4,472,500 and \$29,607,019 respectively. The state's share of the cost of the plans is one-half of the total planning cost, or \$73,253.25 and \$288,635.52 respectively. The projects approved include additions to schools and public buildings, construction of libraries, police stations, firehouses, schools, etc.

**URBAN REDEVELOPMENT URGED**

Possibility that cities might assemble land for rebuilding blighted areas through special financing authorized by the state, set off for long-term operation, and amortized from sales, leasing and tax returns of the property involved, was discussed at the annual business meeting of the Urban Land Institute held recently in Washington, D. C. The proposed device was sug-

gested as a means for getting action started now, in time to channel a part of the great rush of construction activity expected at the end of the war into rebuilding of existing city areas, rather than into ballooning present city circumference. No action was taken on the proposal.

Reports of the meeting, in which federal and municipal officials and representatives of financing groups and civic organizations took part, mention a unanimity of opinion as to the need of finding an effective formula through which cities, states and federal government may make possible land recovery and redevelopment under private enterprise.

Hugh Potter of Houston, Texas, was renamed president of the Institute, and Arthur W. Binns of Philadelphia was elected vice president.

**HOSPITAL PLANNING**

Hospital planning will be discussed in a series of fifteen lectures by Isadore Rosenfield, Chief Architect—Hospitals, Department of Public Works, New York. The lectures will be held each Friday from March 3 through June 9, at 5:45 p.m., at the Architectural League of New York, 115 East 40th St. Each will be of about an hour's duration, followed by a discussion period. It is expected that visits to institutions will be arranged in lieu of some discussion periods. Admission is 50 cents a lecture.

All inquiries should be addressed to A. G. Lorimer, Chief, Bureau of Architecture, Department of Public Works, Municipal Bldg., New York 7, N. Y.

**HOUSING AND THE POSTWAR ECONOMY**

The outlook for postwar building activity is not so simple as many members of the industry think, Mrs. Dorothy Rosenman, chairman of the National Committee on Housing, Inc., warned the Northeastern Retail Lumbermen's Association at their recent meeting in New York.

"Many members of the industry feel confident that their past experience, coupled with the opportunity visioned in the future will propel the industry forward," Mrs. Rosenman said. "Unfortunately the outlook is not that simple. The formula cannot be measured alone by supply and demand, and cannot be filled alone by grit and determination. We have stumbled into too many ambushes which must be cleared before we can proceed."

Among these "ambushes," according to Mrs. Rosenman, are the employment factor, the postwar use that will be made of the 18 billion dollars worth of new war plants, the possibility of re-

(Continued on page 124)



**A POWERFUL WEAPON OF DEFENSE ...**

**AGAINST THE RAVAGES OF WEATHER**

The specification writer who provides for the calking of window and door frames and the pointing up of masonry with Pecora Calking Compound, assures the owner these important benefits:

- 1—** A definite saving in fuel by preventing heat losses due to the lack of sealed-tight structural joints.
- 2—** The prevention of damage frequently caused by the seepage of moisture and the passage of dust through non-sealed joints.
- 3—** Decidedly more comfortable and healthful working or living conditions within the occupied premises through the elimination of drafts and fluctuating temperature.

Pecora Calking Compound enjoys the preference of architects who ever since 1908 have recognized its high quality and value. They have entrusted to Pecora the weather-sealing of their most important

buildings of every description. For this is certain—Pecora Calking Compound will not dry out, crack or chip when properly applied. The passage of years has proved the accuracy of this statement under all climatic conditions.

May we urge that you send for interesting folders giving factual data about this superior calking material?

**PECORA PAINT CO., Inc.**  
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Please send illustrated folders relating to Pecora Calking Compound.

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# Better School Heating

-Today and Tomorrow

Colleges, schools and other institutional buildings require an economical, controllable heating system that will guarantee prompt heating-up, balanced distribution of steam and even, comfortable temperatures in every room.

The Webster Moderator System of Steam Heating has proved its ability to supply this type of heat in a large number of the finest institutional buildings in America.

With the Webster Moderator System of Steam Heating, there is no waste of valuable fuel through overheating. An Outdoor Thermostat automatically changes the heating rate to agree with changes in outdoor temperatures. Continuous heat flow from every radiator helps maintain comfortable temperatures in every room.



The Webster Outdoor Thermostat automatically changes heating rate when outdoor temperature changes. This device is part of the Webster Moderator System, a central heat control that is saving fuel for hundreds of America's commercial and institutional buildings.

## More Heat with Less Fuel

Actual surveys made by Webster Engineers show that seven out of ten large buildings in America (many less than ten years old) can get up to 33 per cent more heat out of the fuel consumed with the Webster Heating Modernization Program.

School Executives who are planning building construction or modernization both now and after the war will be interested in "Performance Facts". This free booklet contains case studies of 268 modern steam heating installations and the savings possible in dollars and cents with the Webster Moderator System of Steam Heating.

Address Dept AR-3

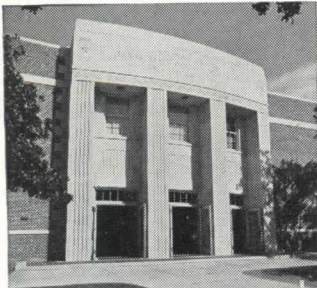
WARREN WEBSTER & CO., Camden, N. J.  
Pioneers of Vacuum Steam Heating : : Est. 1888  
Representatives In 60 Principal U. S. Cities



Making Boosters for  
U.S. Army Ordnance

**Webster**  
Steam Heating

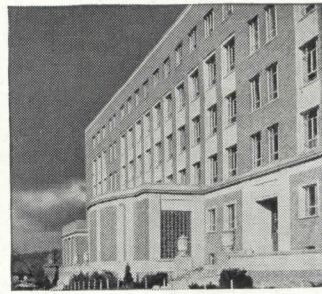
Typical Educational Buildings Equipped with Webster Moderator Systems



Student Union Bldg., of Texas State College for Women, Denton, Texas.



Cloonan Junior High School, Stamford, Conn.



Mineral Industries Bldg., of the West Virginia Univ., Morgantown, W. Va.

# THE RECORD REPORTS (Continued from page 122)

migration to 1939 homes and sources of employment, the paying ability of the population, and the trend toward decentralization.

## PLANNING NOW CALLED VITAL

"If construction is to play an important part in the immediate postwar period, the plans must be ready by the time the war ends," Major General Philip B. Fleming, Administrator, Fed-

eral Works Agency, said in an address before a joint meeting of the National Sand and Gravel Association and the Ready Mixed Concrete Association held in New York recently.

Major General Fleming said he was "wholly in agreement" with the emphasis being placed on the important contribution that construction can make toward taking up the unemployment slack during the transition period following the war. "But what is too

often ignored is the fact that construction must be planned in advance," he pointed out. "Sites have to be acquired, engineering surveys made, working drawings prepared, specifications written and contract documents drawn up. This preliminary work consumes a great deal of time . . .

"It is not my contention that a big public works program alone will solve all of our postwar problems. But because the construction industry employs more men, both on the site and, indirectly, off the site in the production, manufacture and transportation of materials, than almost any other activity known to man, we shall be guilty of criminal negligence if we fail to utilize it. Indeed, a large volume of construction, ready to start instantly, may be the very thing that can prevent initial postwar unemployment from spiralling downward into a major depression."

## DESIGNERS ELECT

At a meeting of the American Designers Institute at the Furniture Mart, Chicago, January 19th, the following officers were elected: president, Alfons Bach, New York; vice president representing the West Coast, Kem Webber, Los Angeles; vice president representing Chicago, Harper Richards, Chicago; secretary, George Kosmak, New York; treasurer, Marie Kirkpatrick, Chicago. Elected to the Board of Trustees: David Chapman, Chicago; Michael Hallward, Swampscott, Mass.; Ruth Gerth, New York; L. Moholy-Nagy, Chicago; Ernest Swarts, Rockport, Ill.

A new constitution and by-laws were adopted at the January meeting, giving greater independence to the chapters and making the national organization a coordinating body. Incorporation will be transferred to Washington, D. C., but correspondence should be addressed to 228 East 61st Street, New York 21, N. Y.

## SCHOLARSHIPS OFFERED

The College of Architecture and Design at the University of Michigan announced the establishment of a scholarship fund of \$25,000 from the Arthur C. Tagge bequest. For the present it is expected that two scholarships, of \$325 each, will be awarded annually.

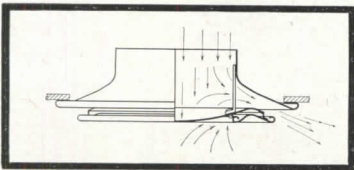
Candidates may be students in architecture, landscape architecture, painting, or design, and shall have been in residence in the college for at least one semester. Preference will ordinarily be given to advanced students.

The first scholarship will be awarded for the fall term of 1944-45. Application should be made before June 1, 1944, to the Office of the Dean, 207 Architecture Bldg., Ann Arbor, Mich.

*(Continued on page 126)*



# BARBER-COLMAN



CROSS-SECTION OF UNIT

VENTURI-FLO Ceiling Outlets make use of the Venturi principle to obtain a suction effect which mixes room air with supply air and provides a diffused discharge at a slightly downward angle. With these units, there is a *minimum pressure drop* and an *extremely low noise level*.

# venturi-flo

**CEILING OUTLETS  
FOR GUARANTEED RESULTS**

Data based on complete tests enable us to recommend exactly the right outlet for any condition and **GUARANTEE** results. You are assured of uniform, properly diffused air of the desired temperature at specified level, with required air movement and elimination of hot, cold, or drafty areas. Use **ENGINEERED AIR DISTRIBUTION** — see your Barber-Colman representative.



**BARBER-COLMAN COMPANY**  
1232 ROCK STREET • ROCKFORD, ILLINOIS

*I said, "What are  
your post-war aims?"*

Just so long as his rip cord works, we imagine this particular private is going to be pretty content with the world for all time. But if you can believe the majority of institutional ads appearing in the magazines today, most of our ten million men in uniform spend a large part of their waking hours talking in well-turned phrases of their personal post-war aims.

It's our guess, however, that the things they want after the war are things they are inarticulate about. Things like a chance to get back and make up for lost time...fast! To do a whale of a sight better than their parents did. To live better...and bring their children up to have an appreciation of good things.

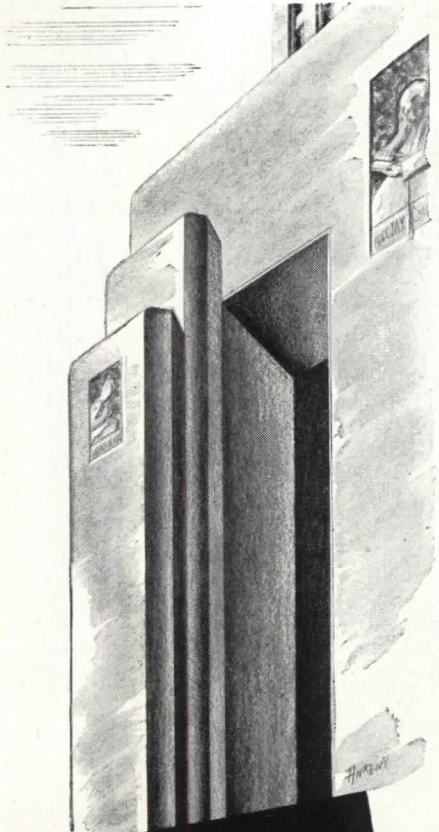
Helping America live better...in better surroundings at work or at home...has been a Sloane tradition. It's our job today, even in the midst of making glider wings and fitting out Liberty ships as fast as they're fed to us. It's our job for the future, when freedom from war work will let us turn our full energies towards the job.



CONTRACT DIVISION

**W & J SLOANE**

575 FIFTH AVENUE, NEW YORK



**Montgomery  
Elevators**  
IN FUTURE BUILDINGS

NEW BUILDINGS now being planned will utilize new materials and techniques. And where passenger and freight elevators are required, new problems will arise. For assistance in solving these problems you can depend on Montgomery. For nearly 50 years Montgomery Elevators have been giving dependable service in thousands of buildings throughout the country. Accurate records show that practically no major repairs have ever been required. Too, original cost of Montgomery Elevators is generally lower than that of other comparable makes. If you are planning a specific project, we invite your elevator problems.

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**THE RECORD REPORTS**

(Continued from page 124)

**DRAFTSMAN'S EMPLOYMENT**

A listing of all draftsmen who will be available to architects presently engaged or to be engaged in postwar work in the state of New Jersey will be provided by the Draftsman's Employment Committee appointed by the New Jersey Society and Chapter A.I.A. Men will also be needed in newly established City and Town Planning Commissions, the Committee reports, and many will be needed in the next two or six months, after municipalities have set up funds in their budgets for 1944.

The list will be made available to all architects who contact the Committee chairman. Interested draftsmen are asked to communicate with Charles F. Ackerman, Chairman, Draftsman's Employment Committee, 105 Halsey St., Newark 2, N. J.

**KERVICH GETS FPHA POST**

John A. Kervich has been appointed regional director of the Federal Public Housing Authority for New York, New Jersey and Pennsylvania, succeeding John Taylor Egan, who has been named assistant FPHA commissioner for project management. Mr. Kervich has been assistant regional director since September, 1942.

**HAUGAARD RESIGNS**

William E. Haugaard, Commissioner of Architecture for the State of New York for the past 16 years, has resigned from that position and is resuming private practice as an architect and a consultant, with offices in the Empire State Building, 350 Fifth Ave., New York City.

While State Architect, Mr. Haugaard was responsible for the design and construction of over \$250,000,000 worth of building construction of all types for the state of New York.

Cornelius J. White of Staten Island has been appointed to succeed Mr. Haugaard.

**CARL A. NAU**

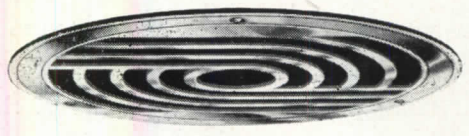
Carl A. Nau, widely known Cleveland architect, died on January 15 following a long illness.

A partner in the firm of Wilbur Watson & Associates, Cleveland, since 1925, Mr. Nau was the firm's chief architect, and had charge of the design and construction of many important buildings including the Ravenna ordnance plant, largest shell-loading unit in the world.

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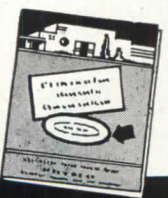


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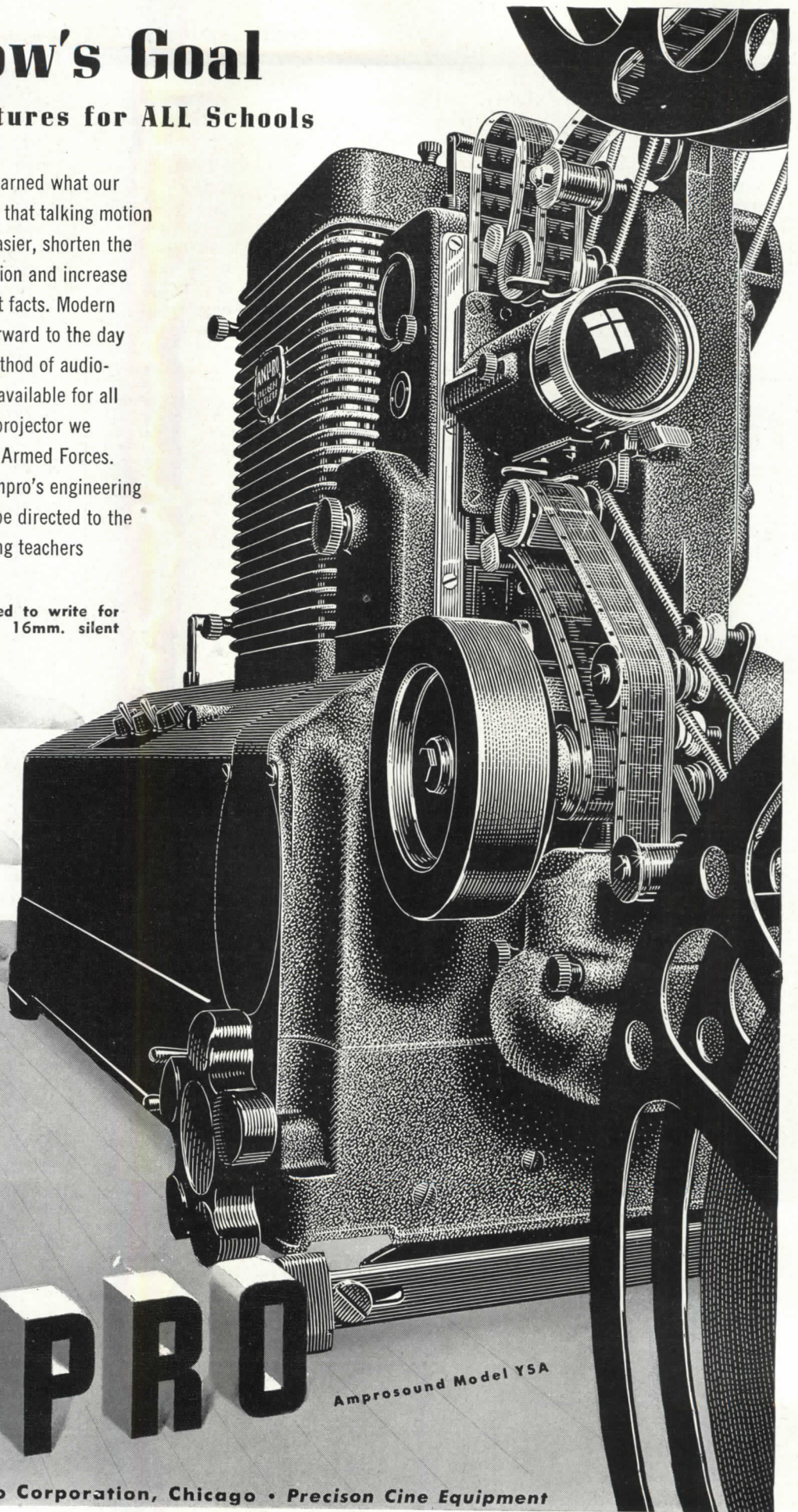
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School architects are urged to write for latest Ampro Catalog of 16mm. silent and sound projectors.



# AMPRO

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put into production in the factory. In the building business there is seldom any equivalent procedure. Without such analysis plans move from designing room into construction. The architect has little opportunity to concern himself with the prices of materials or with the detail of operating costs. Yet he must make definite selections of material and of structural detail for his designs. Detailed study of material cost and of simplifying of assembly in collaboration with con-

tractors is commonly lacking. Buildings are usually built without benefit of such a review. Opportunity for a rough appraisal of the savings available from such review occurs when bids are "high." Then general contractors are asked for suggestions for reducing the cost. The amount of the savings effected is often substantial. The relationship of the architect to the rest of the building industry is somewhat as follows. As a practical matter he is the source of their busi-

ness, buyer for the industry. Therefore they fear the displeasure and court the goodwill of these buyers. The buyer is treated with the utmost deference by the salesman. He will go far and bear much in order to secure the buyer's goodwill. All contractors hesitate to offer any criticism of the design or the specification of a prospective job, so it is sometimes difficult for an architect to obtain a genuine preliminary estimate from a general contractor. The fear is that an estimate higher than anticipated may give the architect the impression that the general contractor is not an economical builder.

**Bidding System**

Under the bidding system general contractors and subcontractors are concerned only with doing the work called for by the plans and specifications. It is no concern of theirs whether the structures are satisfactory or methods of installation are expensive. It is not their duty to judge the efficiency or the earning capacity of the work they build. Accordingly, the validity of the investment in buildings (which are permanent investments) commonly rests upon the combined judgment of the owner and the architect.

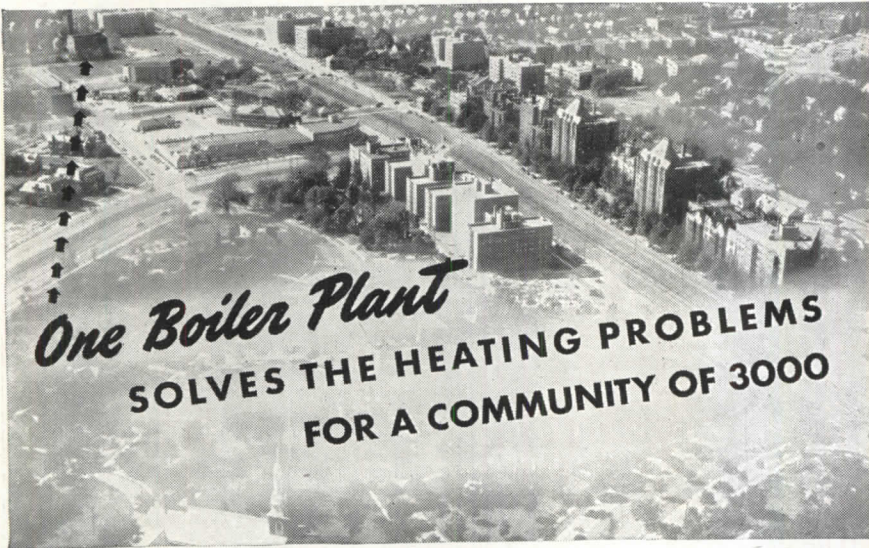
**"Will-to-Do"**

Often, under conventional procedures, the building buyer's only opportunity for economy is in securing a low bid for the structures planned. A building contract is not a bill of sale of a finished commodity. It is an agreement for services of various sorts. "Will-to-do" is a potent factor in securing good service. The underpaid servant—be the low pay his own proposal—tends to lack "will-to-do."

Each general contractor may know that the lowest bidder—say for plumbing—is the least competent on the list. Yet each must use this figure or risk making a higher bid than his competitors. Low price, not quality, is the objective of competitive bidding.

Not uncommonly the general contractor buys material and subcontracts equal to 85 per cent or so of the cost of a building operation. Hence opportunity for profit depends upon ability to buy close. He is tempted and, to use the graphic terminology of the building trade, commonly does "run his subcontractors and material dealers through the wringer," attempting to lower the prices they have bid. After this trading, the subcontractor "wills-to-do" but the minimum that will get by inspection, and the general contractor is in no position to demand extra service.

(Continued on page 130)



**BUILDINGS SERVED BY CENTRAL HEATING PLANT AT SHAKER SQUARE**

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- Branch bank.
- Theatre seating 1,500.
- Tavern, Restaurant and Inn.
- Buildings containing 45 stores and 30 office suites.
- Large restaurant.
- Automobile Service Stations.

The Heating Plant is modern and fully automatic—requiring a crew of only 5 men. During the last complete heating season it consumed 8,000 tons of coal and produced approximately 140,000,000 lbs. of steam.



Section of Ric-wil prefabricated insulated steam conduit being lowered into shallow trench for steam connection to a new apartment at Shaker Square.

**Central Heating at Shaker Square, Cleveland, owned and operated by the Shaker Co. suggests an ideal plan for post-war community development.**

Fifteen years ago the Shaker Square district was planned by the Van Sweringen interests along lines now being considered by many communities for post-war development. A heating plant large enough to serve the entire district was erected and Ric-wil underground steam conduit was installed for future connections . . . Time has proved the wisdom and foresight of the original planners. Today, this one boiler plant supplies heat and hot water through more than 10,000 feet of Ric-wil Conduit to 700 apartment and multiple family dwellings, 45 stores, 30 office suites, a large tavern, a restaurant, a bank, a large theatre and 2 service stations.

**Any Community Can Enjoy These Advantages:**

- Saves 15% or better in total fuel consumption.
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For information about Ric-wil Conduit for central heat distribution get in touch with your nearest Ric-wil agent or write to us direct.

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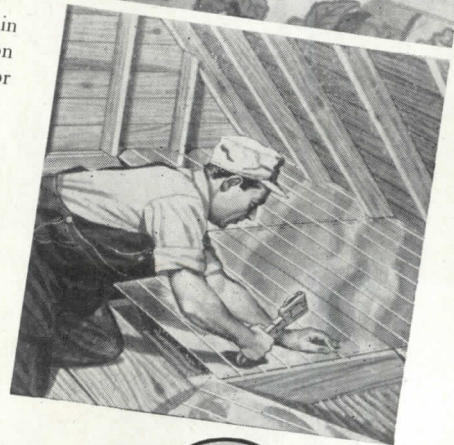
For your convenience, we have assembled complete information upon the U·S·S Steel Products most frequently used in home building. It will pay you to read carefully our illustrated brochure, "85 Ways to Make a Better Home." We shall be glad to forward your free copy—without obligation, of course—upon request.



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# UNITED STATES STEEL

**Financial Mortality**

Credits in the building industry are notably bad. The financial mortality of the building trade, 10 per cent failures each year, is among the highest of all industries. The total of the losses through bankruptcy are not chargeable to specific operations but do constitute an expense which must be absorbed by the community at large. These losses must be taken into account in appraising the performance

of our building industry.

Three criticisms of the building industry are so recurrent as to be familiar: 1. Plans embody needlessly expensive details; 2. Preliminary estimates are unreliable; 3. Workmanship is faulty.

**Subcontractors**

The master builders of early times not only designed their structures but scheduled material and directed work-

men. Quoting from a description of building operations of the late sixteen hundreds: "It is said his (Wren's) relationship with his numerous workmen and contractors employed on his several buildings appear to be complicated but satisfactory, judging from the quality of the workmanship he almost invariably obtained.

"The modern system of dealing with a 'builder' or general contractor which makes work so much simpler for the architect did not then obtain and at St. Paul's for example . . . we find that separate contracts were made with each craft or 'trade.'

"The Master of each trade signed a contract and found the necessary labor. Materials for St. Paul's were bought by the Commissioners. Contract work is described as Task Work. . . . There was also 'day work' in the modern sense.

"The work of an architect was therefore very responsible in those times for he had to 'assemble' all the different trades and then keep them in touch with each other."

The early American builders designed their structures. Eventually responsibility for designing and for inspection became divorced from the buying and operating functions. Designing became a profession. Eventually most of the builders dropped design. As the owner looked to the designer for guarantee of quality, the sole potent appeal left to the builders was offer of low price. With the designer responsible for quality, the master builder's pride in accomplishment was lessened. His interest became increasingly centered on making a profit.

Though today architects and engineers frequently select some of the subcontractors, the general contractors rather than the designers have become the brokers who deal with the subcontractors. The architects might have continued to deal as Wren did, directly with the subcontractors and material dealers. Had they done so, the general contractor would have disappeared. The general contractor has survived because he will make a price for delivering a complete building. Under conventional procedures his chief functions are those of (1) Guarantor of price; (2) Buyer; (3) Manager of subsidiary organizations.

**Organization Variable**

As to variables in organization procedure: In late years in the cities and notably among the insurance companies, the custom has developed of engaging an architect and a general contractor at the same time. Commonly the general contractor is hired on a fee basis. By this arrangement it is in-

(Continued on page 132)

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## Hotpoint-Edison Commercial Kitchen Plan Service

**Thirty-two years experience** go into this service—planning commercial kitchens that set new trends instead of following the old. Each problem receives careful individual attention.

**Food Service Engineering** is done scientifically for hotels, restaurants, cafeterias, hospitals, schools—for any building using institutional food service. It shows how the basic production problem can be simplified by a modern all-electric kitchen.

**Forget all old rules**—for instance regarding the location of the kitchen. Place it where it will be most convenient and economical, and where it will provide the best food arrangement. There is no longer any need to be limited to a certain location, due to problems such as ventilation, excess heat radiation, etc.

**Clients like the economy** of space in a modern Hotpoint-Edison All-Electric Kitchen. And the way it reduces labor—that which is directly connected with cooking as well as cleaning, renovating and maintenance. There's also economy as well as convenience in bringing in only one fuel for light, power and cooking.

**Priority regulations eased.** New government regulations now permit manufacture of a limited quantity of equipment for essential civilian use. Consult your local distributor or write to us.

**Prompt attention** will be given any kitchen planning problem you have. Give all the information you can, please. Address: Commercial Kitchen Plan Service, Edison General Electric Appliance Company, Inc., 5625 West Taylor Street, Chicago 44, Illinois.

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COMMERCIAL ELECTRIC COOKING EQUIPMENT

RANGES • BAKE OVENS • ROASTING OVENS  
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OLDEST AND LARGEST  
MANUFACTURERS OF  
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EQUIPMENT

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tended to add to the designer's facilities the buying, operating, and estimating experience of the builder.

Such organization operates like that described in the building of St. Paul's. Instead of the architect alone we find the combination of architect and general contractor dealing directly with the subcontractors and material dealers. The quality of work obtained under this arrangement depends mainly upon the quality of the subcontractors selected and upon how they

are paid and treated. This combination of designer and general contractor affords opportunity (perhaps not always grasped) for a mildly constructive criticism of the design.

Assuming technical competence and full cooperation (a large assumption) such combination of the designer and the general contractor should permit (1) Assurance of reliable preliminary estimates, (2) The partial elimination of needlessly expensive details; (3) Good workmanship through selection

of able, properly paid subcontractors.

As to the element of competition—85 per cent of the cost of an average good-sized building is bought, not built, by the general contractor. When designers and general contractors are hired on a fee basis, they are agents of the owners. As agents they may buy the materials and make the subcontracts either on a low cost basis or by balancing the reputation of the vendors against the price offered by each. Under this arrangement only 15 per cent of the cost is removed from price competition.

### Executive Control

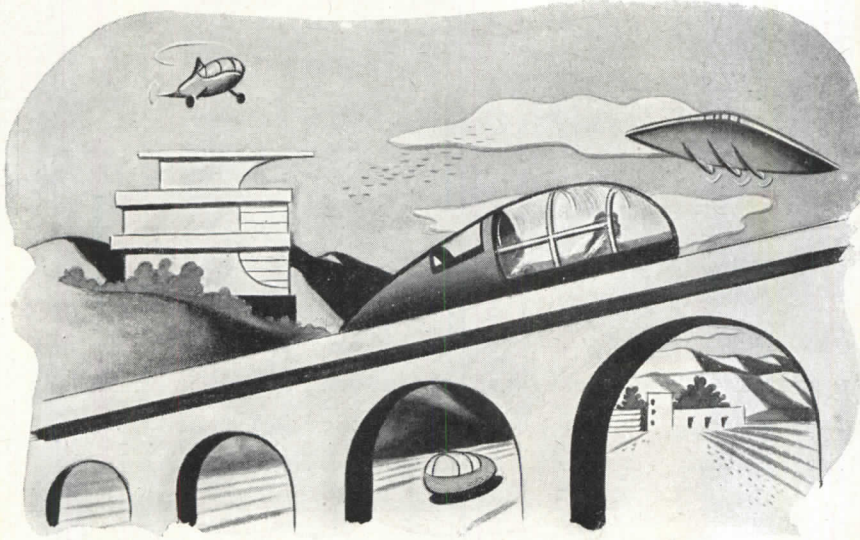
Judged on the theories of a manufacturing organization, in conventional building unless the owner is also experienced in building affairs, there is no executive control assuring cooperation between designer and general contractor. The engineering-construction companies depart from conventional building procedures, and treat a building operation as a manufacturing problem, adopting the manufacturer's form of organization. Under a general manager are departments of design, purchase, operation, cost accounting, etc. In place of the old master-craftsman we find an organization with its functional divisions each dealing with its part of the work.

Because the departments are under direct executive control they must cooperate and work to a common purpose. Usually these firms are hired on a fee basis often without guarantee as to the cost of the operation. With a conservative estimate, their buying can be for value rather than low price. Where a close estimate has been made their buying will be as hard as that of a competitive general contractor. Their form of organization provides facilities for effective review of plans.

### Salesmanship

Following professional custom, the architects up to now have been relatively unaggressive in salesmanship. The engineering-construction firms, on the contrary, have employed vigorous salesmen and display persuasive advertising matter. They have handled some architectural design and building. On the whole they have been financially successful.

It is interesting to speculate whether the competition of the engineering-construction firms will result in more frequent alliance of the independent designers with general contractors or whether the general contractors will add designing forces to their organization and become designer-builders, or whether we shall continue much as we are now doing. Custom is mighty slow to change.



### Curiouser and Curiouser

Tear-drop cars whizzing along elevated super-highways. Family helicopters landing lightly on apartment roofs. Daydreams of the world of tomorrow are becoming *curiouser and curiouser*.

Are we heading for a postwar paradise? Perhaps.

But, in the beginning at least, the advances of tomorrow will be reflected by yesterday's achievements and by today's accomplishments. And the solution to *immediate* postwar problems will be provided by a review of the past.

For example, consider Sedgwick elevators and dumb waiters. Before the war they moved men, materials and merchandise up and down. They'll do the same job when the war is won. But they'll do it better and faster.

Sedgwick lifting and hoisting equipment now serves as lowering lifts for tank barges, airplane elevators for

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That's why, if you're concerned with postwar plans for hospitals, hotels, schools, factories, airports, and the like—plan soundly, but plan now. And if you're confronted with seemingly insurmountable problems of proper vertical transportation, *let us know about them*.

Our engineers will be happy to help work out the solution and show you how Sedgwick specialized equipment provides safer, surer, more economical lifting and hoisting.

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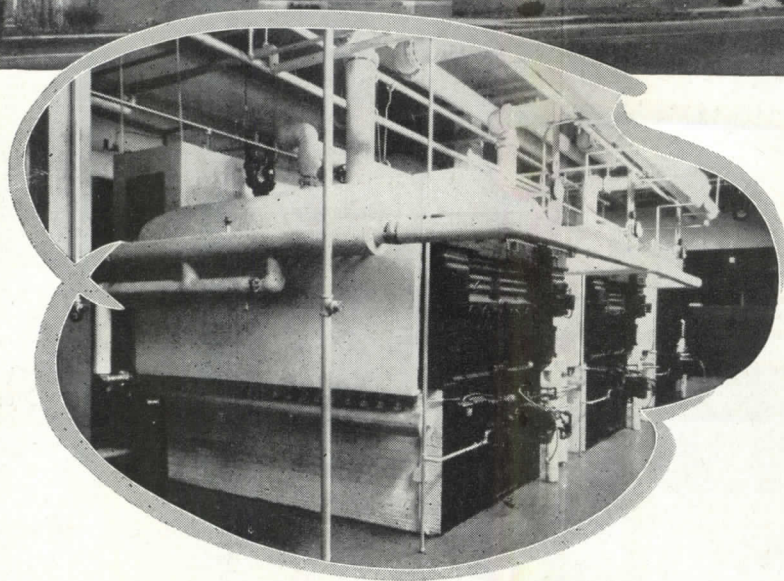
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Junior and Senior High School, Harrison, N. Y. Architect, Robert Vignola, Harrison, N. Y.; Consulting Engineers, Daniel & Wallen, New York City; Heating Contractor, John Winkel Co., Inc., Larchmont, N. Y. Boiler Plant consists of three 20-section #60 Smith Cast Iron Header Type Boilers.

# Boiler Plant...

## for the POST WAR SCHOOL

City school operating officials are obviously in a favorable position to compare fuel and maintenance costs of various types of heating systems. Basing their findings on long term studies of these operating expenses it is significant that more and more school departments regularly specify H. B. SMITH boilers as standard equipment for their buildings.

Architects and Engineers who are now confronted with the specification of heating systems for public schools to be built post war would do well to study installations in like projects erected immediately pre-war to find the answers to many of their questions.

It is our prediction that as far as actual heat generation is concerned, the boiler plant of the 1947 school will closely resemble the best installations of 1941. Recently built schools such as Westchester's Harrison High have set the standard for post war school heating.

H. B. SMITH cast-iron boilers installed in hundreds of recently built schools have not only been capable of that flexibility of performance needed by modern heating and air conditioning systems, but have proven themselves adaptable to the use of different fuels and methods of firing forced by the events of the last three years. Despite reductions in the amount of fuel available these SMITH boilers have operated with characteristic economy, reflecting credit on both their specifiers and installers.

It is this proven performance that makes an H. B. SMITH specification the best bet for today's planners of tomorrow's schools.

*Complete engineering data and specifications of H. B. SMITH Boilers are filed in the Domestic Engineering Directory and Sweet's "Engineering."*

H.B. *Smith*  
**CAST-IRON BOILERS**

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## REQUIRED READING

(Continued from page 28)

is the question of expert knowledge and understanding of problems involved and not tinkering. It is a matter of a long process of educational measures for the public."

### PLANNING

By the Architectural Research Group, Ottawa. *Journal of the Royal Architectural Institute of Canada, Toronto (57 Queens St. W.), Jan. 1944, pp. 10-14. illus.*

The Architectural Research Group of Ottawa has delved deeply into the problem of the postwar status of the

construction industry, and has come up with a fine analysis of it, complete with recommendations.

The construction industry at present, the ARGO finds, is divided into eight groups, each tending to be a separate entity. "The inevitable result is duplication of effort and this, together with the almost complete absence of standardization either of dimensions or of quality, leads inescapably to high building costs . . . The organization of labor into unions of individual crafts intensifies this condition."

ARGO recommendations: integration of the building industry; standardization of the product of the industry as to quality and dimension; encouragement of intensive building research; and licensing of all contractors to help eradicate the irresponsible element from the housing field.

### ADVANCES IN PLASTICS DURING 1943

By G. M. Kline. *Modern Plastics, New York 17 (122 E. 42nd St.), Jan. 1944, pp. 123-126, 178, 180, 182. illus.*

Dr. Kline has given us here an excellent summary of plastics development in the past year, ranging from new materials—Polectron, the Silicones, Penacoline, Paracon (a new rubber-like product)—to new methods of molding and fabricating, and new applications. A detailed bibliography is included, classified to make for reader reference.

### A PRE-WAR EXAMPLE FOR POSTWAR PLANNING

*Rehabilitation of Stony Brook, Long Island. By Ray Dovell. The American City, New York 16 (470 Fourth Ave.), Jan. 1944, pp. 45-47. illus.*

The rehabilitation miracle that was worked in the little town of Stony Brook, Long Island, just before the war—completed only last year, in fact—is pointed out here as an actual example of the postwar planning that is going on in almost every community in the country today. And it's a good example, too, as the illustrations show. The shabby, nondescript little Stony Brook of five years ago has had its face lifted: neat and trim again, rejuvenated, prosperous, it is fairly bursting with civic pride.

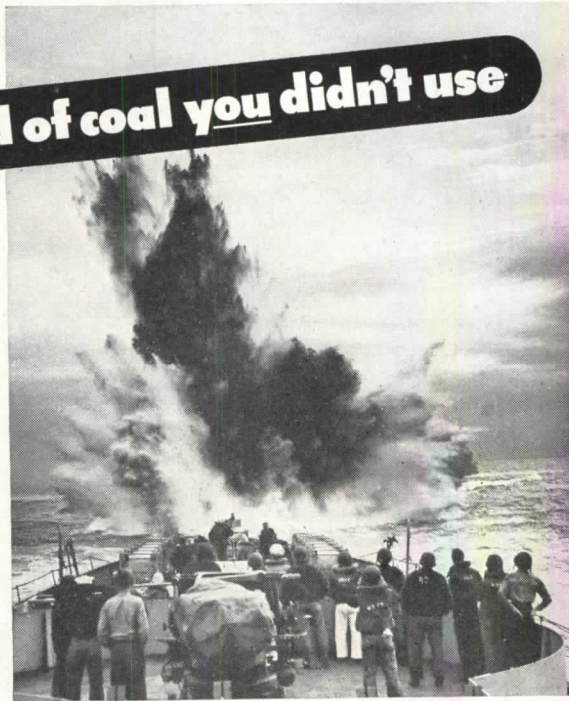
### BUILDING A HOSPITAL IN ECQUADOR

By Erik Per Sorenson. *Engineering News-Record, New York 18 (330 W. 42nd St.), Jan. 27, 1944, pp. 106-110. illus.*

To build an earthquake-proof hospital on a tidal mud flat was the problem facing the Institute of Inter-American Affairs when they undertook the construction of a 100-bed infectious disease hospital at Guayaquil, Ecuador.

First of all a fill of from 6 to 8 ft. was required to bring the level of the land above high tide and to coincide with the level of adjacent roads, Mr. Sorenson says in telling the story of how the problem was solved. Then a special foundation had to be devised that would not settle and would be resistant to the frequent earthquakes. Materials shortages made further difficulties, particularly in the necessary substitution of concrete block for the brick originally specified. But the hospital was built—and successfully.

This is a load of coal you didn't use



Action photo taken from deck of Coast Guard ship. Illustrates tremendous force of depth charge explosion.

There's no glamour for you in saving fuel, but there's danger if you don't. In the hands of these fighters on the sea—whose sacrifices far exceed yours—the coal you conserve saves lives and hastens victory.

Fuel helped make that depth-charge in some plant in America, and fuel brought the workmen and supplies together to work. Fuel moved that depth-charge to "embarkation." Fuel loaded it aboard ship and fought across thousands of miles of danger-ridden sea to place that fuel—*your* fuel, in the hands of our fighters.

Fuel feeds and clothes our fighters, moves them to battle, dresses their wounds, carries them toward Victory—and some day—with your whole help, soon—will carry them back to us to live with us in the fields of Peace.

Don't let apathy stop you—*do* something about fuel saving.



An explanation of the Control exercised by Dunham Differential Steam Heating is contained in our Bulletin 614A. May we send it? Address The C. A. Dunham Co., 450 E. Ohio Street, Chicago 11, Ill. Toronto, Can. London, Eng.



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... MUST CLOSE QUIETLY, EFFICIENTLY

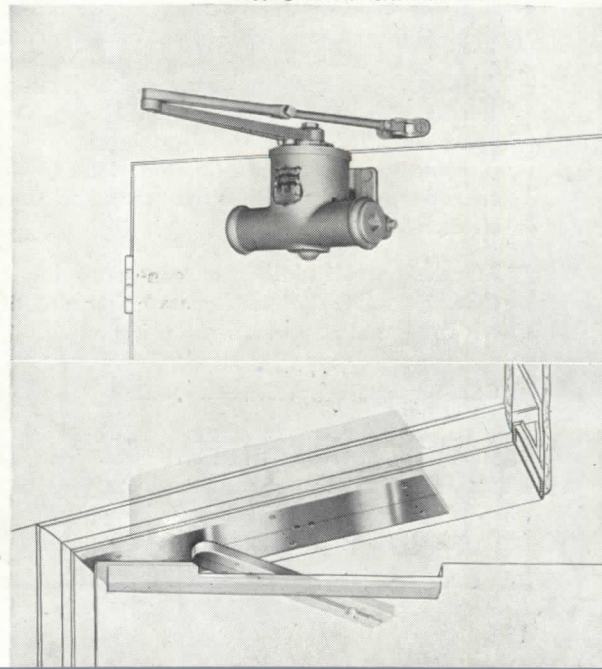
Design and mechanism of LCN Door Closers will set the standard for the future, as they have in the past.

DOOR CLOSERS



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# GRADUAL

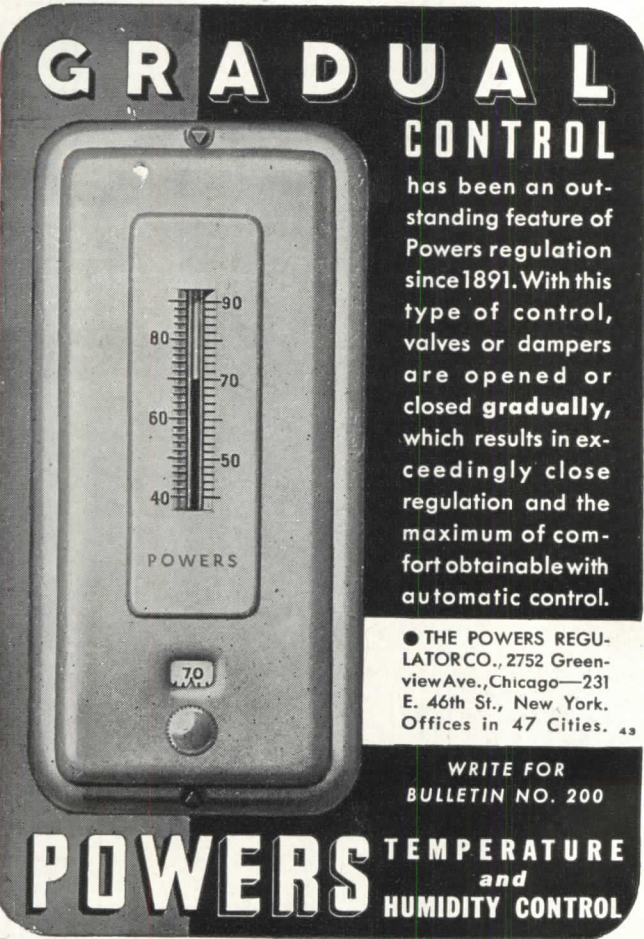
## CONTROL

has been an outstanding feature of Powers regulation since 1891. With this type of control, valves or dampers are opened or closed **gradually**, which results in exceedingly close regulation and the maximum of comfort obtainable with automatic control.

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WRITE FOR BULLETIN NO. 200

**POWERS** TEMPERATURE and HUMIDITY CONTROL



## THE COMMUNITY SCHOOL

(Continued from page 80)

as the pivotal center is much more important than the specific form a building or concentration of buildings should take. The first requisite in the development of the true community school is the acceptance of the idea by both board of education and professional educators of the total community educational program in which the school plays only a part. The second is the idea of cooperation with other community agencies and the progressive development of a long range plan for the execution of the idea. The third step is the selection of a site sufficiently large to provide not only for buildings, park areas, but also for large recreational areas and generous space for beautification. No site of less than 40 acres should be considered for a community secondary-school center. The fourth step is the execution of the plan through the coordinated use of educational specialists, architects, engineers and landscape architects. The community school should be financed by those agencies cooperating in the total project. The largest investment in site and plant will probably be borne by the public education authority. Even so, the additional return will be in excess of the additional expenditure because the existing expensive school facilities will be used at least twelve hours a day.

## COLLABORATIVE SCHOOL PLANNING

(Continued from page 81)

and landscaping of the whole area; financial savings will result if plans of the landscape specialists are included in the original bidding specifications.

**10, 11. Checkup and inspection.** Many boards of education have their architectural and landscape plans checked by independent consultants. Also, the board should have its own inspectors on hand during the course of construction.

**12. Interpretation.** Throughout the process of planning, the public should be informed through the press, by radio, in adult gatherings and forums, deliberately called conferences, and all other avenues to create public interest. The use of citizens' advisory committees at different steps in the planning is invaluable. Student committees also permit authorities to sense and promote public interest among their parents at home.

Architects can be very useful in this activity, preparing models and graphic presentations that will contribute more to the understanding of the project than a great many speeches can without pictures.

**Financing.** Committees of citizens to study the resources open to the Board of Education, the laws under which the funds can be raised, and a recommendation for procedure, are of value in starting the financial campaign.

**Collaboration starts early.** School architects can be of the greatest assistance not by attempting to formulate educational policy—the proper work of educators themselves—but by understanding the nature of all the progressive steps that have been outlined. By virtue of the rounded knowledge gained by participation with other collaborators, the architect can give valuable advice before the program is set and the site chosen.

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