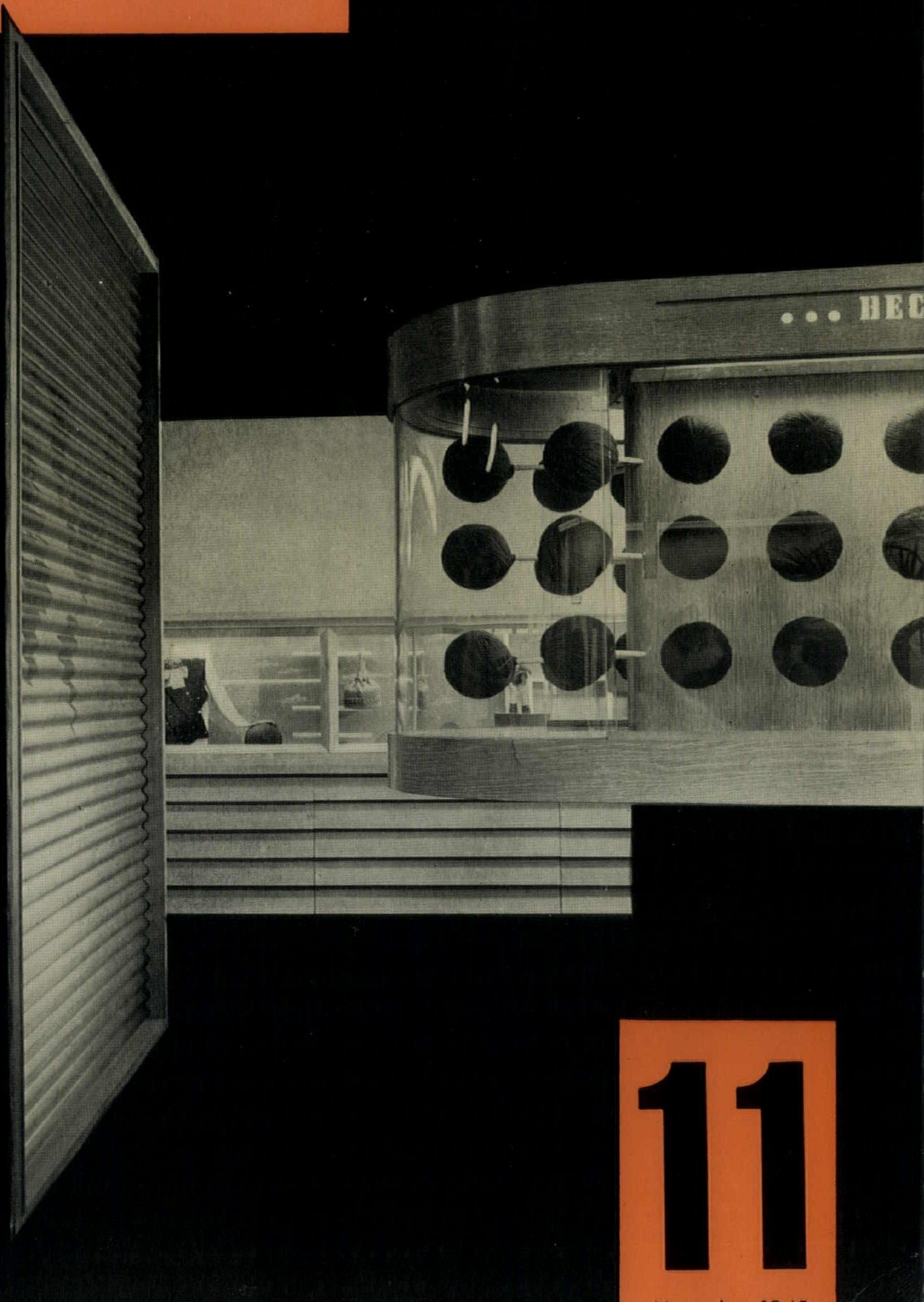
PROGRESSIVE ARCHITECTURE
PENCIL POINTS



11

November 1945

PROGRESSIVE ARCHITECTURE

PENCIL POINTS

Reconversion Or Rescrambling?

The atomic bomb, so spectacularly dropped on Hiroshima, has caught and held the attention of all mankind. A new source of universal anxiety was born when it burst. Every man will henceforth live with the knowledge that on any hour of any future day he and all his works may be blotted out without warning. What to do about it is the problem being pondered by statesmen and their kibitzers the world over. Chances are they will find the answer, because the weapon is unselective; it menaces the strong and rich equally with the weak and poor.

Much less general attention appears to be given to another devastating force—an economic bomb—loosed upon us all the day "peace" was declared. Like its destructive physical counterpart, this economic bomb operates by fission and disintegration—but instead of disrupting the organization of protons and neutrons, its points of application are men and groups of men. Victory having acted as a detonator, the social units of which the populations of the allied nations are made up have immediately begun to fly apart.

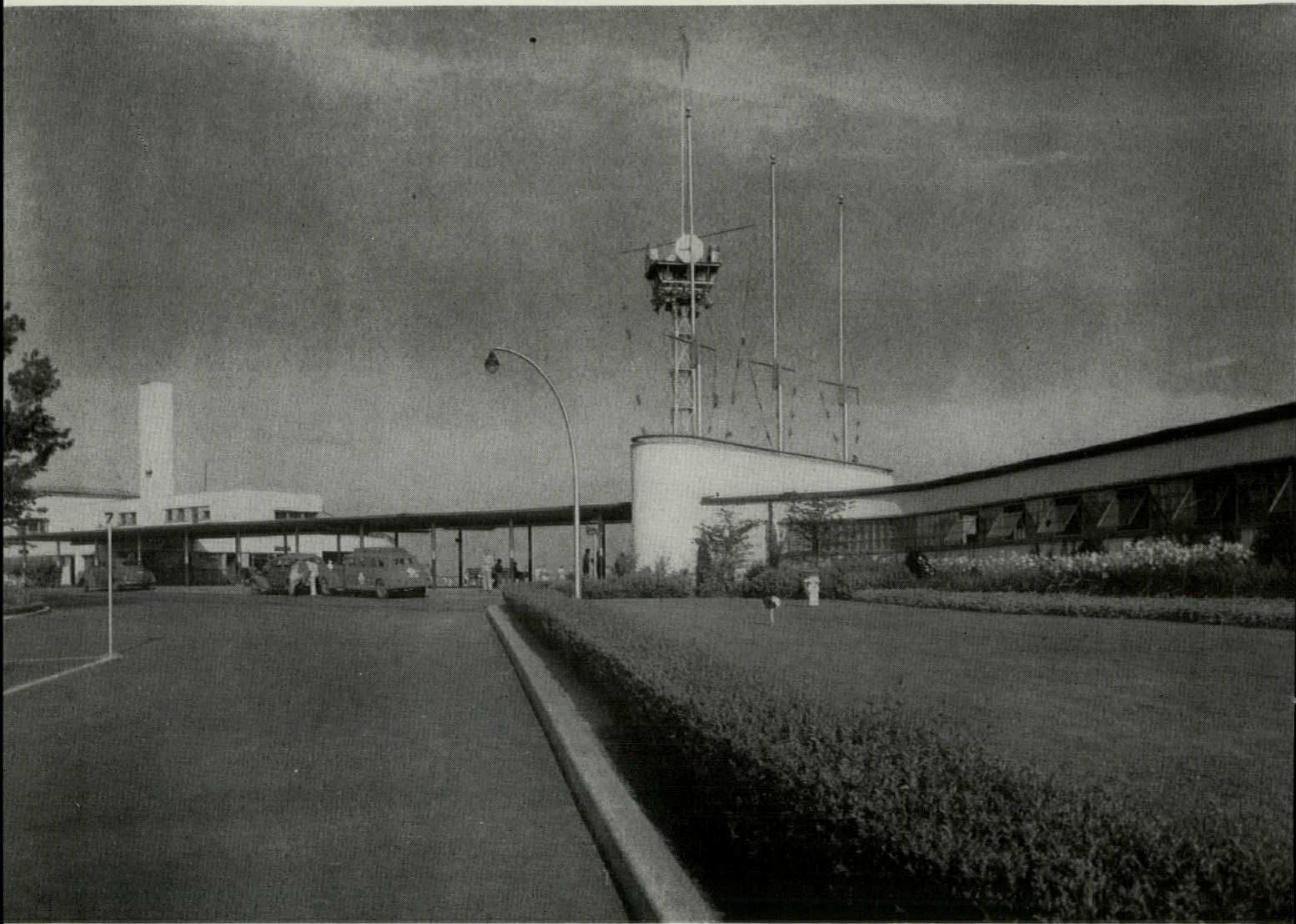
Unlike the atomic bomb, which spends its force in seconds, the economic bomb will explode over a substantial period of time—probably several years. The total of misery it will produce may eventually surpass what was inflicted on the late inhabitants of the two now defunct Japanese cities. Yet because its results are not equally felt by all, there is much less likelihood that an effective concerted effort will be made to ward them off.

Now that the shooting war is ended, there arise in our country the outcries of many separate interests calling for the removal of controls and the satisfaction of particular group desires. Soldiers and their families are demanding accelerated demobilization. Taxpayers are crying out for reductions. Wage earners are striking for higher pay rates. Businessmen want higher prices and landlords higher rents. Any over-all plans that may have been made for orderly reconversion are in danger of being swept aside in the great stampede. At the moment the prospect is far from encouraging. Everyone, it seems, is pushing for personal advantage, heedless that he is contributing to a general inflation that will cost him more than he can gain.

It is perhaps the American way to scramble back to comparative stability rather than to reach the goal in calm good order. Yet it is also the American way for every responsible citizen to act to keep the herd from tromping itself to death.

The architect's part is to help get quickly under way the program of construction which is depended upon to furnish a large volume of employment in the coming years. In spite of present material shortages, high prices, and the reluctance of contractors to bid, ways must be found to begin building again by next spring. There is a twofold need—to provide the long-awaited new houses, schools, business buildings, churches, etc., and to renew the life-giving flow of money through the economic system before it falls again into hopeless depression. Just as scientists are expected to harness atomic power beneficently, so plan-minded men can and must work together to guide the forces of productive economy into constructive channels.

Kenneth Reid

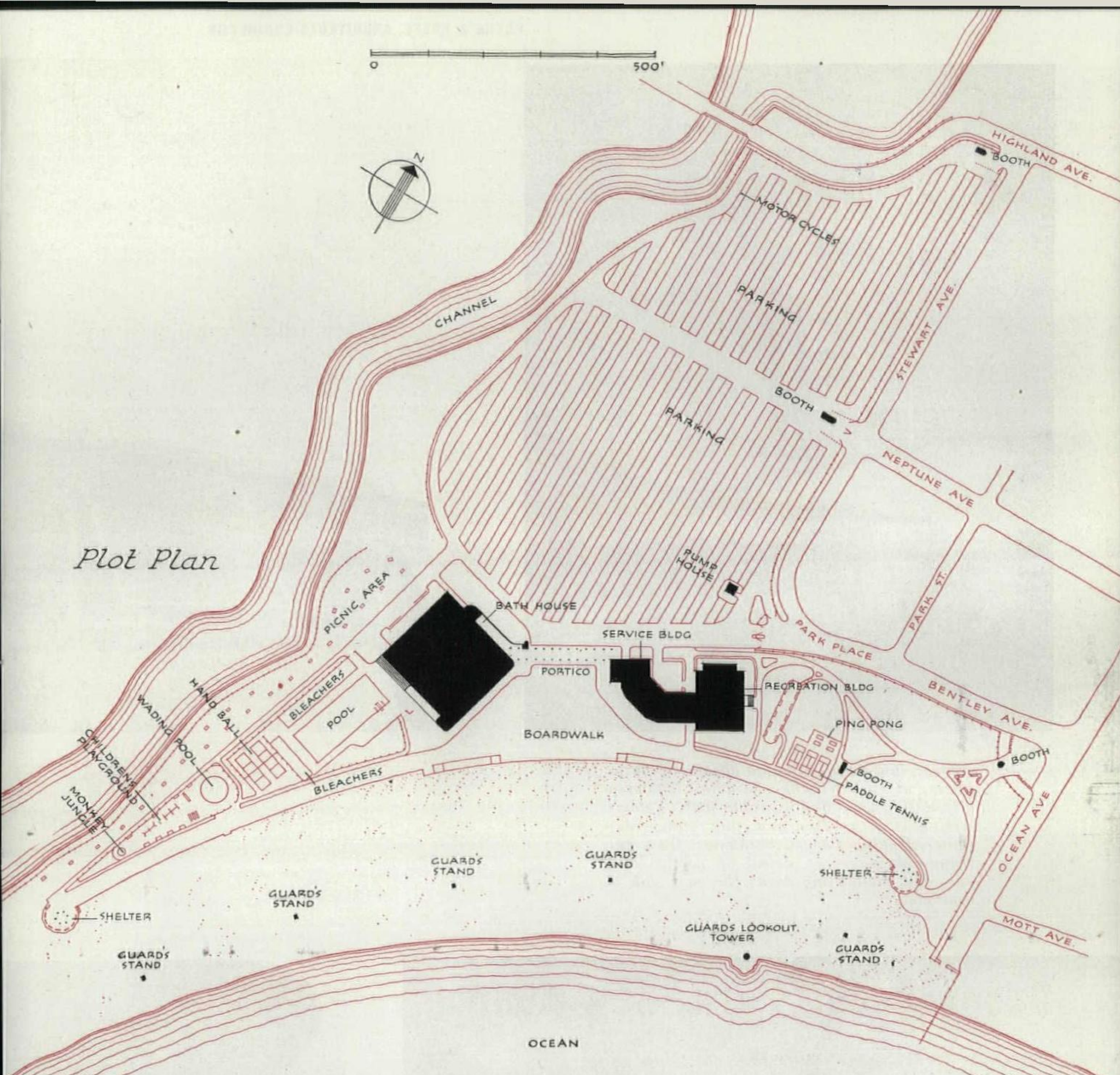


P. A. Dearborn

Ocean Beach Park, New London, Connecticut

PAYNE & KEEFE, ARCHITECTS-ENGINEERS
W. EARLE ANDREWS, CONSULTANT

Public parks and playgrounds form one of the chief categories suggested by those who favor "living war memorials." For progressive cities that find it desirable to honor their war dead by means of improved facilities for the living, the coordinated playground shown here should hold a special interest. Built before Pearl Harbor, the New London project is proof of the benefits that derive from integrated, over-all planning. While it may not offer a pattern for any other community to follow, it sets high standards to aim at or excel. All the more remarkable when it is realized that a city of 30,000 affords it.



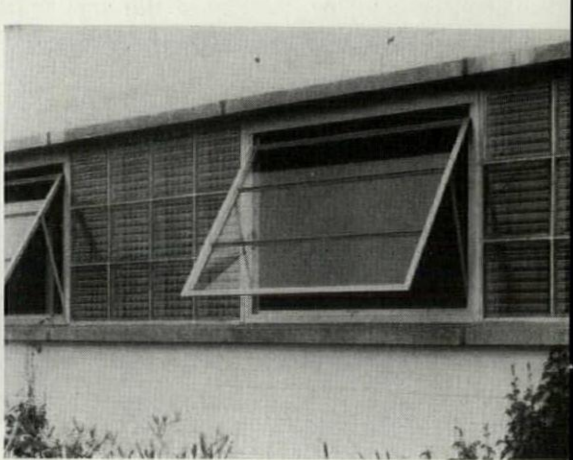
BACKGROUND

In 1938, the site consisted of a narrow strip of public beach and upland (3.9 acres) surrounded by an uncontrolled mélange of privately owned beach cottages, rooming houses, cheap concessions, and ballyhoo joints. In the Fall of that year, New England's worst hurricane ripped across the area and left little in its wake other than wrecked buildings, torn up walks, sandpiles, and debris.

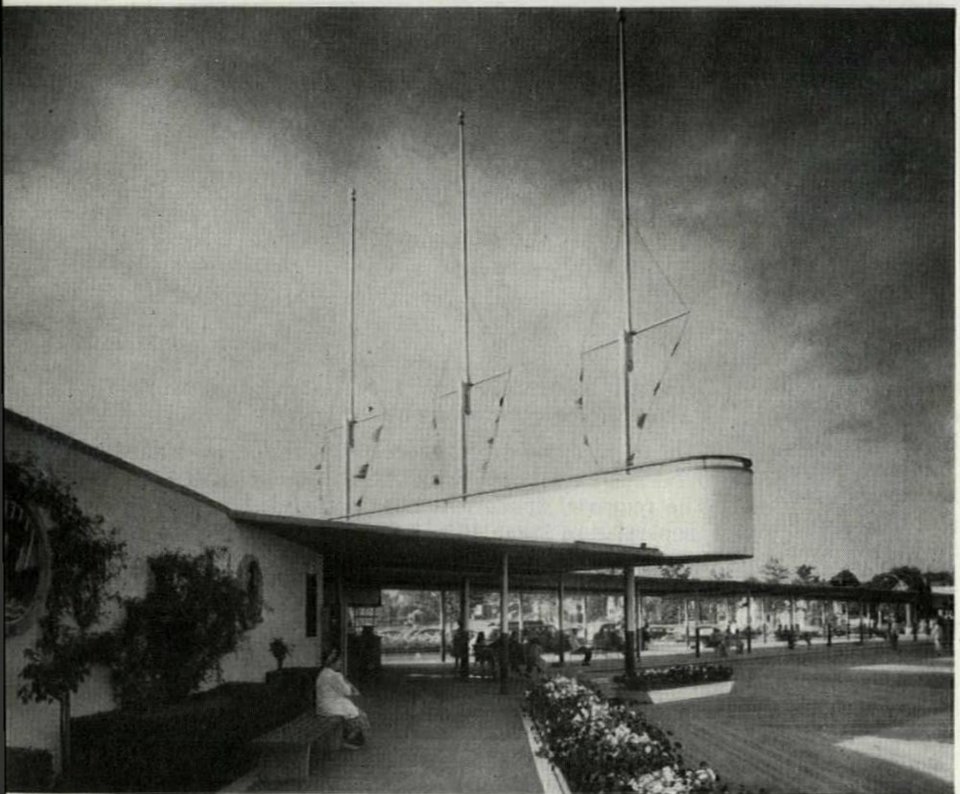
Through the good offices of the then Mayor, Alton T. Miner, planning and architecture were happily called to the rescue. W. Earle Andrews and Kenneth Morgan of New York City were commissioned to prepare an over-all plan for a modern seaside development to be operated on the highest standards for the enjoyment of all the people. This plan, encompassing 50 acres, was accepted as a directive for the detailed work that Payne & Keefe carried out.

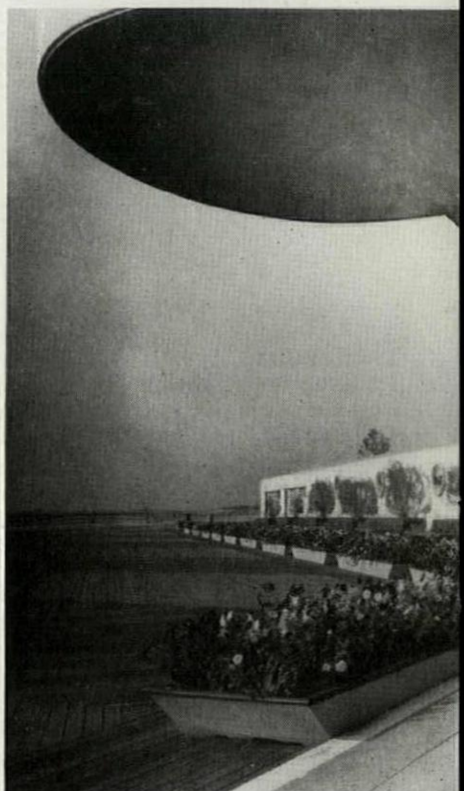
Financing came from proceeds of a special $2,500,000 bond issue authorized by the State General Assembly. The required space was obtained through purchase of properties of some 175 owners. Inasmuch as the bond issue exceeded the debt limit of the city, the project had to produce revenue. Original sources—general admissions, and fees for use of parking space, swimming pool and bathhouse—were later materially increased through a restaurant, food bars, other concessions, and the new Recreation Building.

Payne & Keefe were retained in September, 1939; the first contract was awarded the following month, and the park was formally opened in June, 1940!



Above: landscaping detail adjoining bathhouse; at right: bathhouse detail, showing alternating fixed and operable sash. Below: left, central portico and flag standards; center, looking toward bathhouse from entrance plaza; right, detail of portico and bus- and car-loading dock; the roof slab is concrete.





THE SOLUTION

A basic plan decision was to increase the depth of the beach from 75 to 300 feet, and the boardwalk and service buildings were located on this basis, following the curve of the coast line. The boardwalk, 20 feet wide and 2,000 feet long, is equipped with benches, drinking fountains, and shelters at either end. In the center is a sheltered portico, flanked on the one hand by the bathhouse, on the other, by the Service and Recreation Buildings.

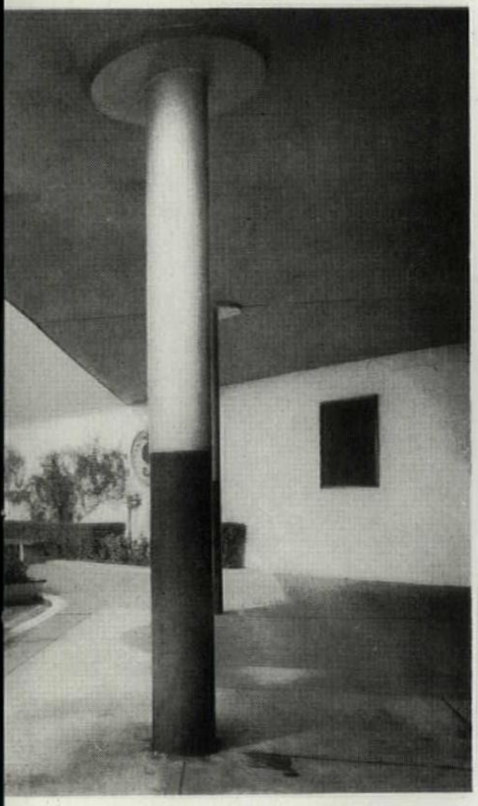
The structural system for the buildings was adopted with an eye to both permanence and ease of maintenance; floors and roof slabs are of reinforced concrete; exterior walls are of cinder block, painted; a minimum of wood is used, and glazed tile was specified on surfaces where sanitary requirements made it advisable.

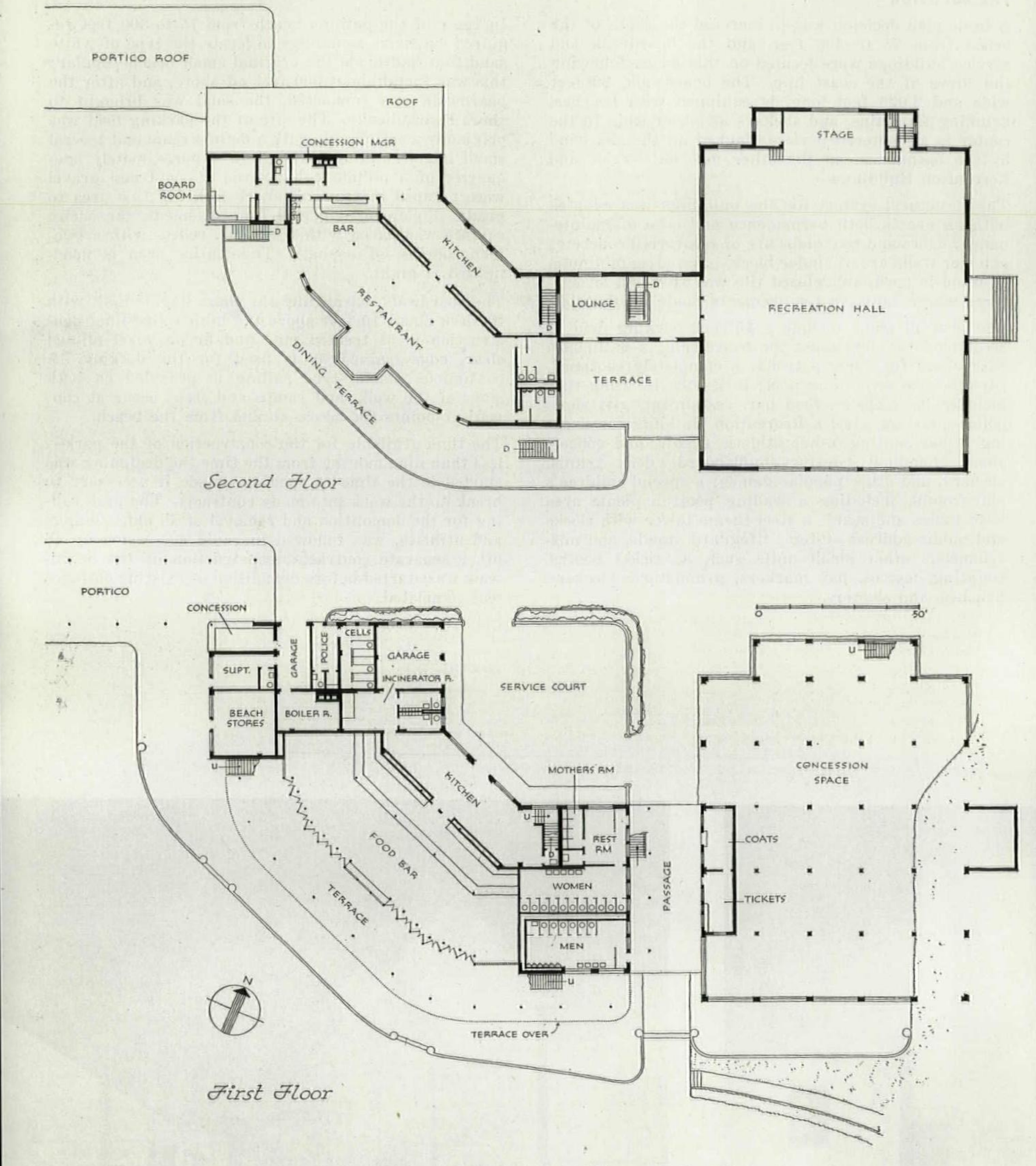
The over-all plans include a 15-acre parking field to accommodate 3,000 cars; the boardwalk; a bathhouse with space for 3,600 patrons; a completely equipped, Olympic-size swimming pool; a Service Building that includes park offices, food bar, restaurant, gift shop, police quarters, etc.; a Recreation Building for dancing, roller skating, other athletic events, and concessions; handball courts, shuffleboard, deck tennis, archery, and other popular games; a special children's playground, including a wading pool; a picnic area with tables and seats; a steel theme tower with clocks and public-address system; lifeguard stands, and miscellaneous other small units such as ticket booths, counting devices, bay markers, grandstands, lockers, benches, and shelters.

Increase of the bathing beach from 75 to 300 feet required extensive soundings to locate the type of white sand that had made the original small beach popular; this was found about 600 feet off shore, and after the boardwalk was completed, the sand was brought to shore hydraulically. The site of the parking field was originally a salt marsh, with a main stream and several small inlets running through it. Approximately one-quarter of a million cubic yards of sand and gravel were pumped in from off shore to bring this area to grade. Following a period for settlement, the entire surface was paved with bluestone, rolled, with a two-inch topping of asphalt. This entire area is floodlighted at night.

The boardwalk, paralleling the shore line, is built with its deck about 10 feet above the high water line; construction is of treated pine and fir on wood piling; clear, edge-grained fir is used for the decking. A continuous marine-type railing is provided on both sides of the walk, and ramps and steps occur at convenient points for access to and from the beach.

The time available for the construction of the park—less than nine months from the time the designing was started to the time of opening—made it necessary to break up the work into many contracts. The first, calling for the demolition and removal of all old buildings and utilities, was followed in rapid succession by 46 other separate contracts; construction of the boardwalk was started before demolition of existing cottages was completed.

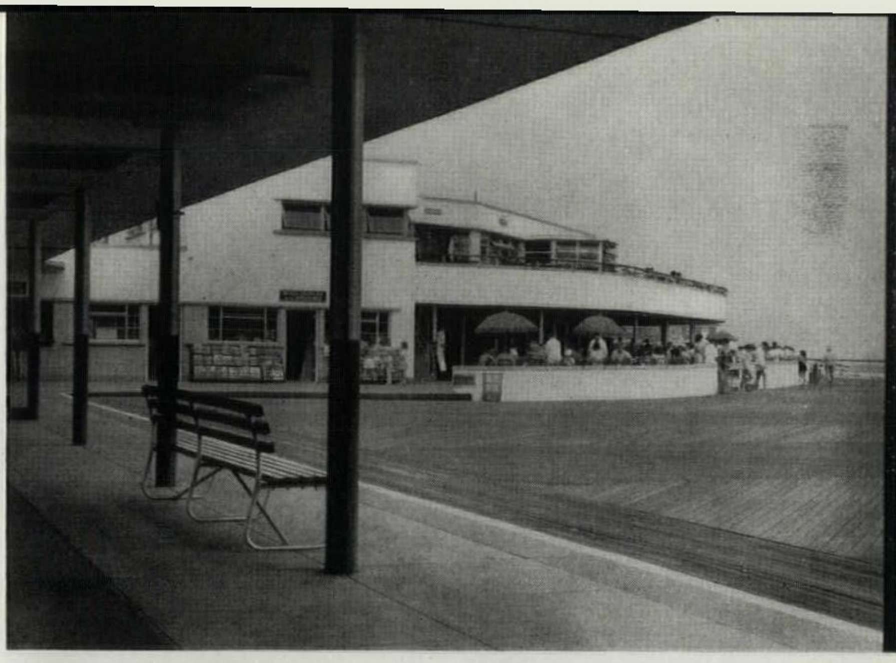




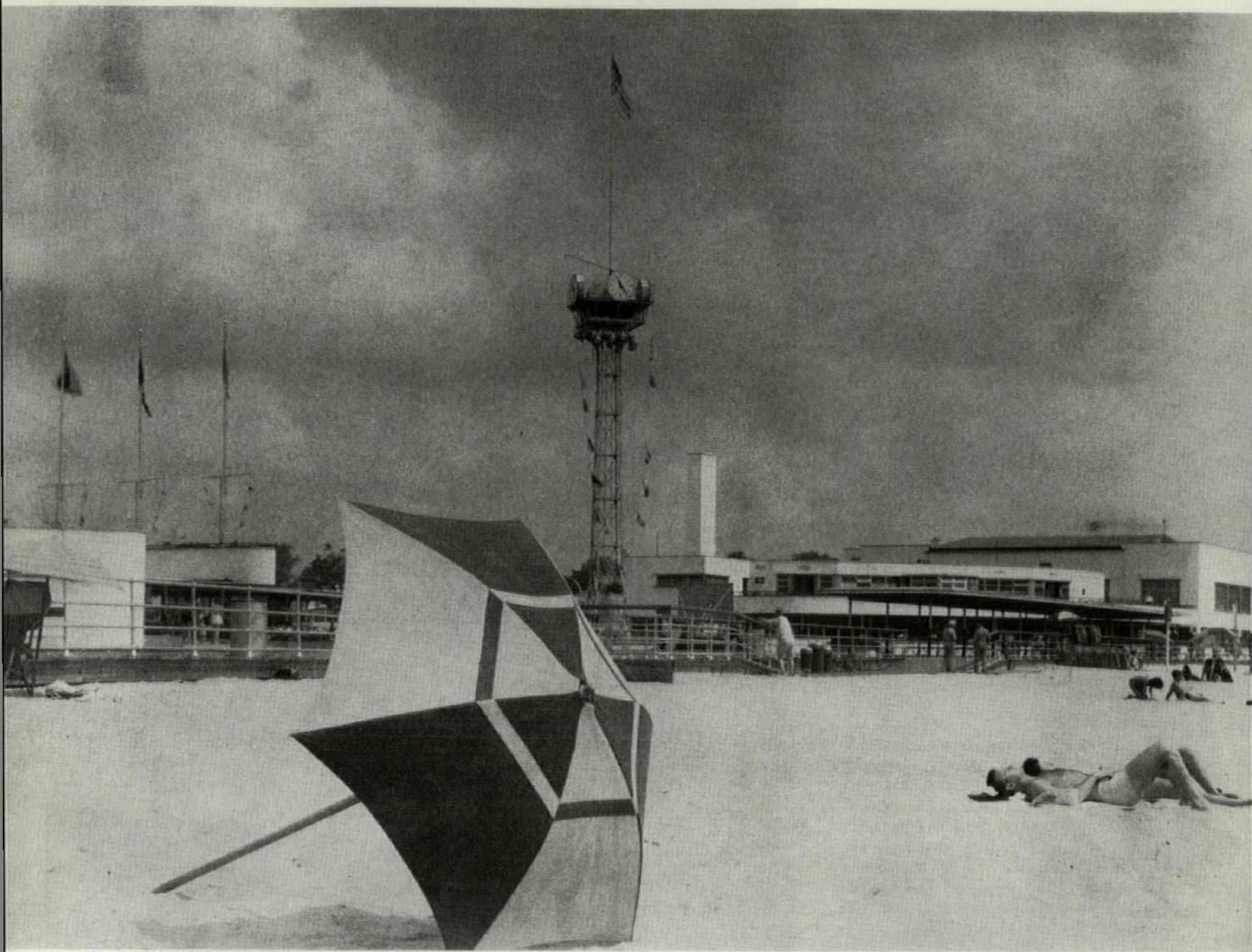
On the ground floor of the Service Building, a food and beer bar are organized for quick service from the kitchen.

Outside, bordering the boardwalk where it widens to form the central plaza, is a dining terrace; upstairs is a restaurant and cocktail bar, also with outdoor dining deck.

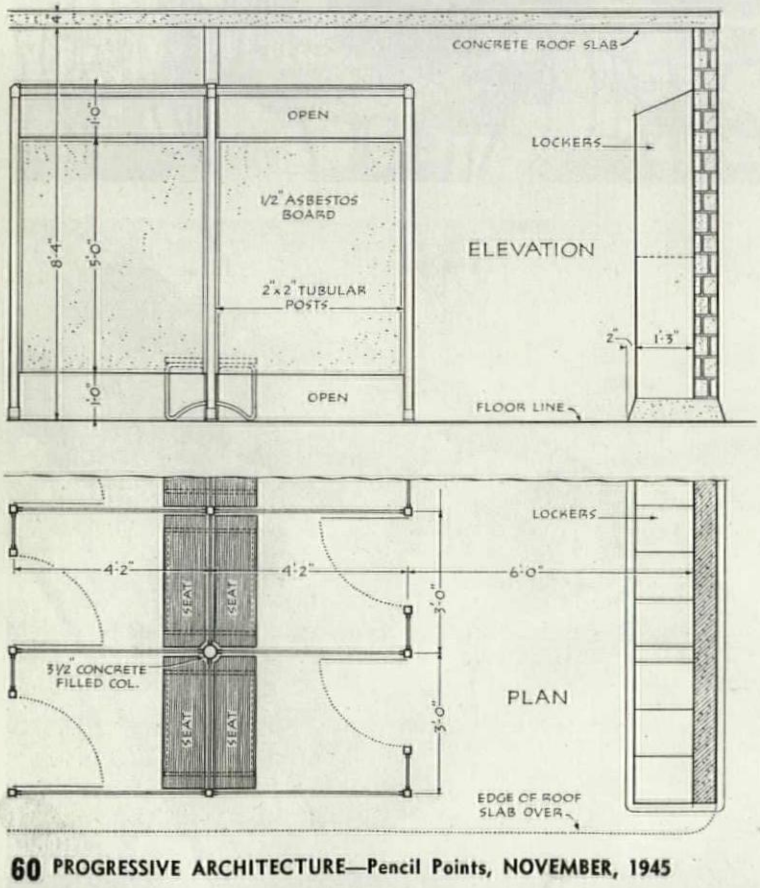
The Recreation Building is used chiefly for dancing, roller skating, and special events. In the basement, a concessionnaire operates games of skill and amusement. The most recent unit to be added to the Park development, it has proved to be one of the best revenue-producers.

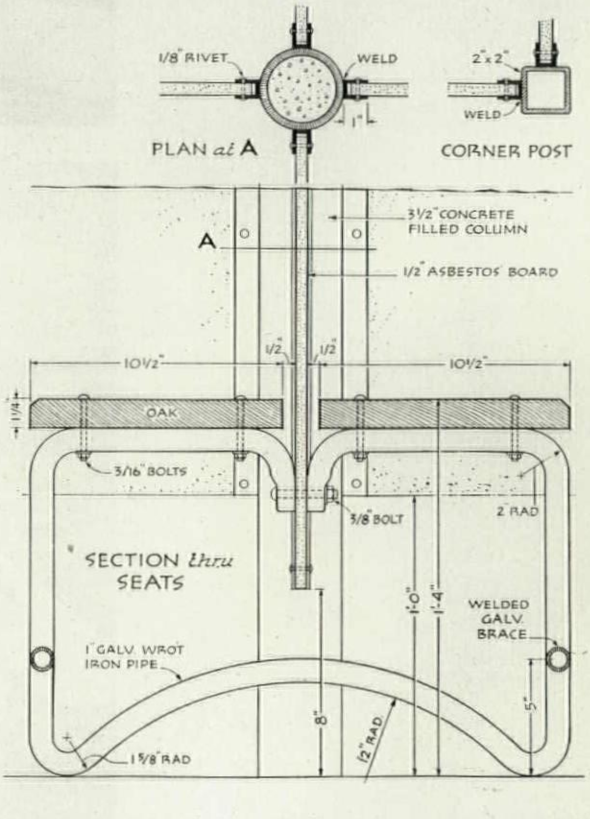


At top: looking from the entrance portico toward the Service Building. A beach shop and two levels of dining terraces border the boardwalk. Center view: from the ground-floor eating terrace, toward the entrance portico and bathhouse. At bottom: looking down on the boardwalk and lower terrace from the deck off the restaurant.

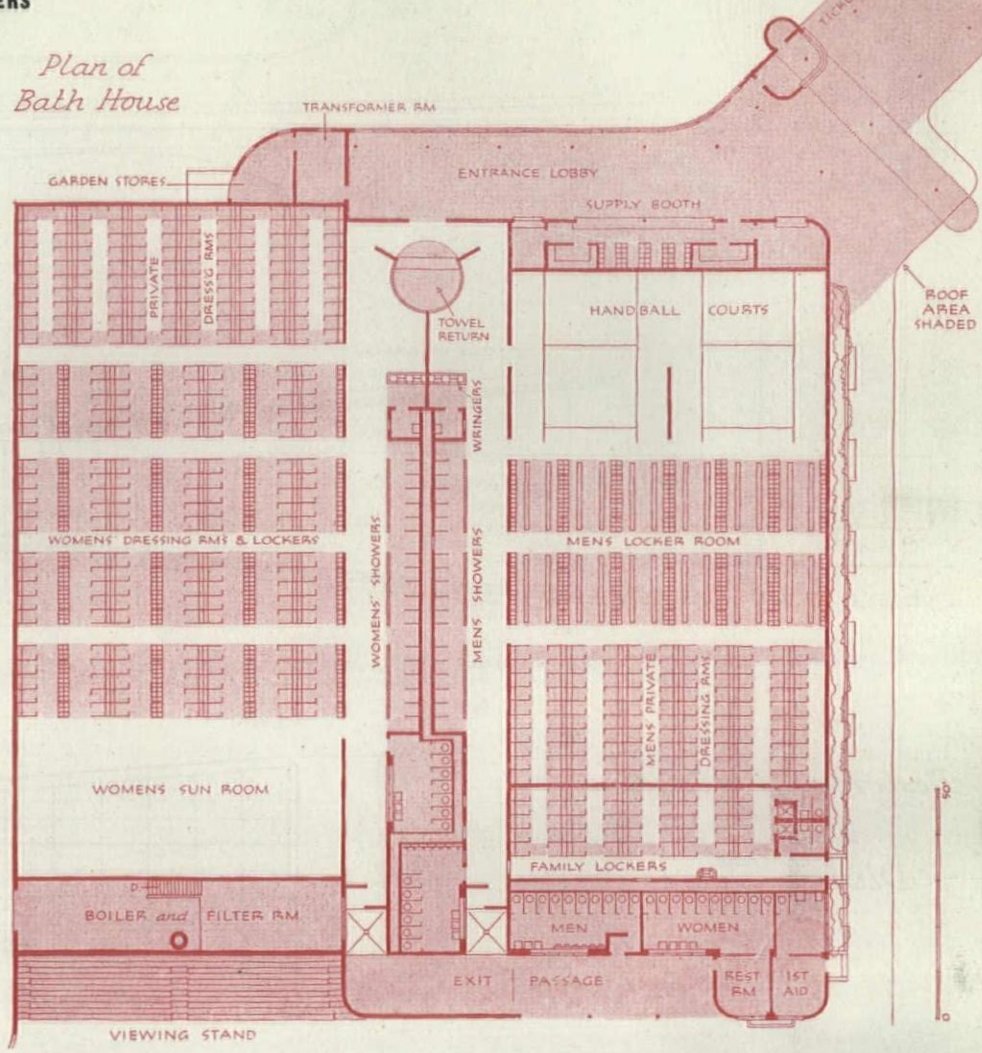


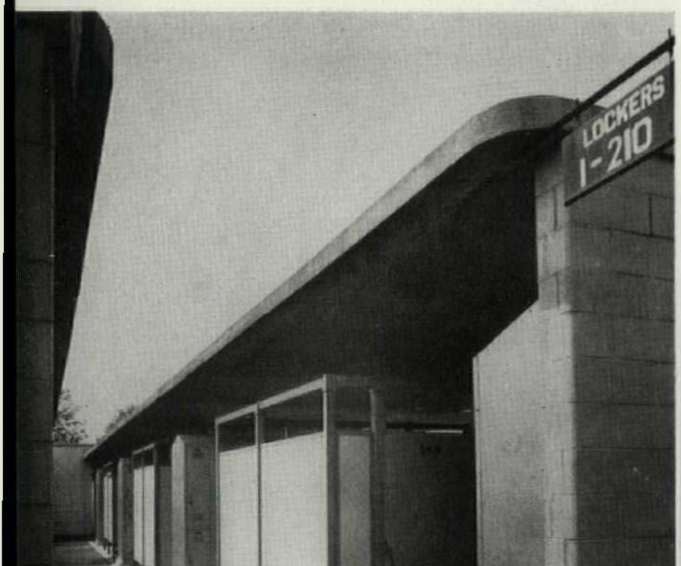
Typical Locker Room Details

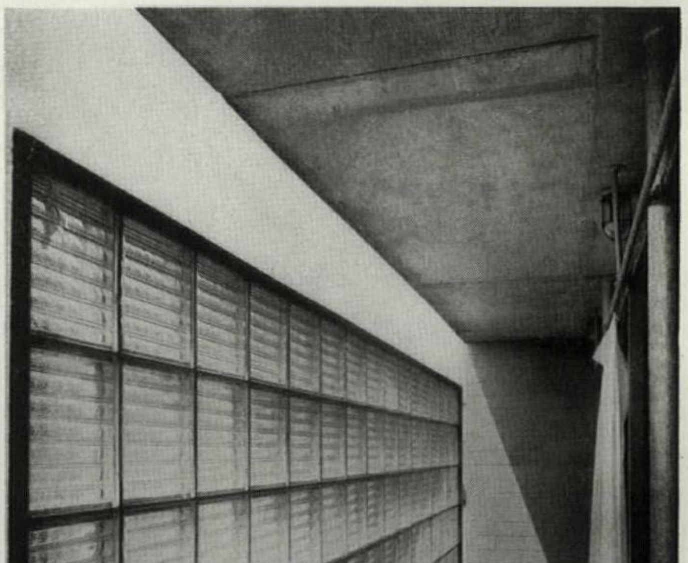


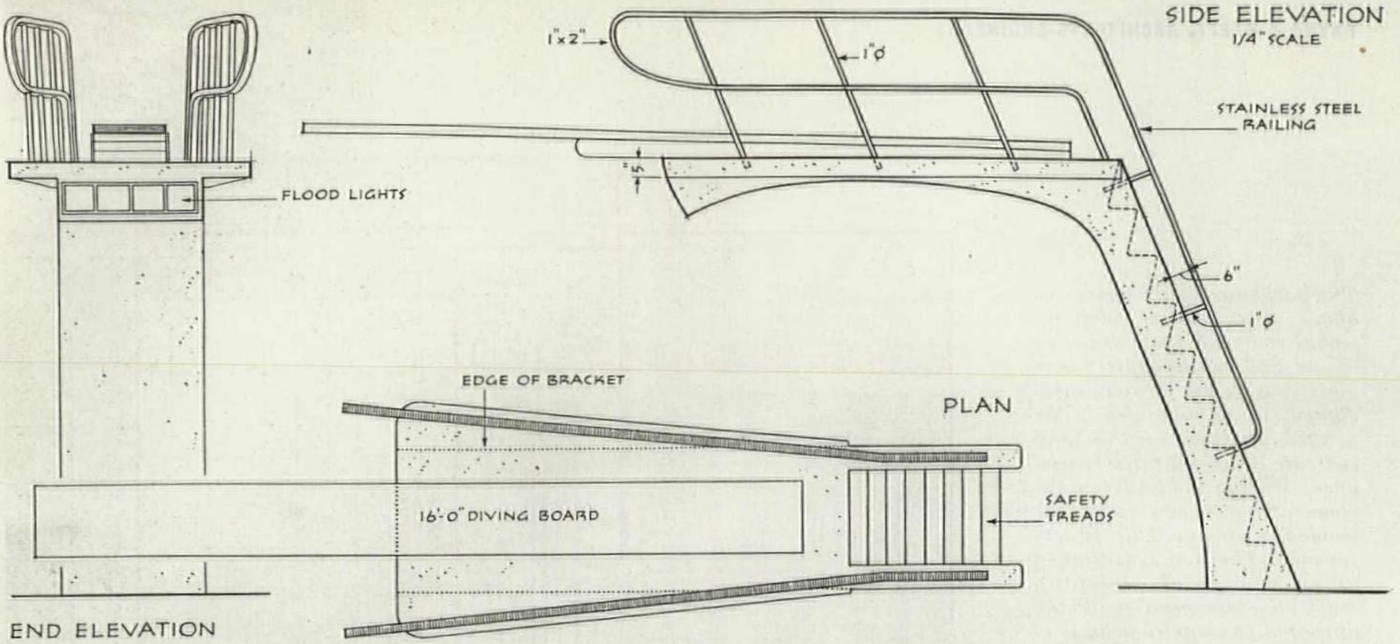


The bathhouse, with space for about 3,600 patrons, includes locker rooms, private dressing rooms, and—a thoughtful provision—a group of rooms assigned to family use. The grayed portions of the plan indicate areas that are roofed over. Within the building enclosure are a sun room for women and handball courts for men. The showers, aligned along a central plumbing stack, are screened from the unroofed passageways by partitions with glass-block insets. Details of locker benches are shown on the facing page. Other units in this building are the boiler and filter room for the pool, public toilets, and the beach first-aid room.

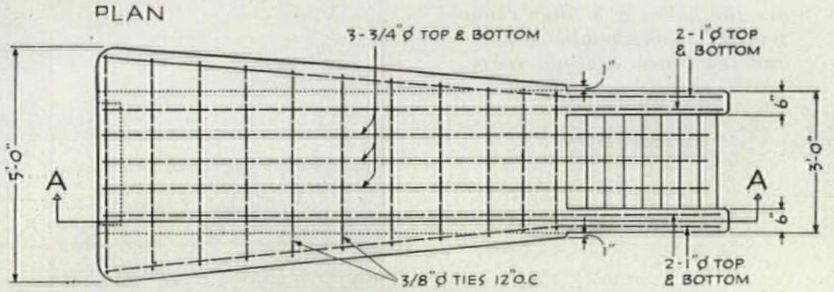


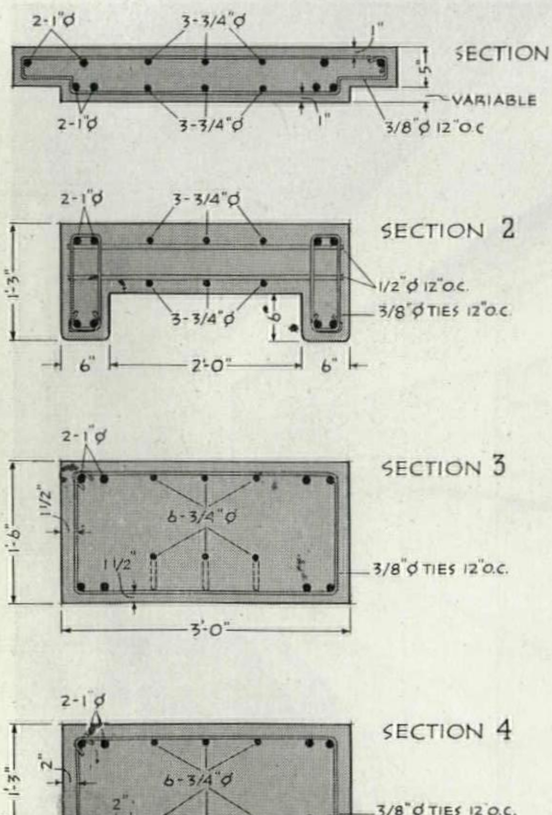


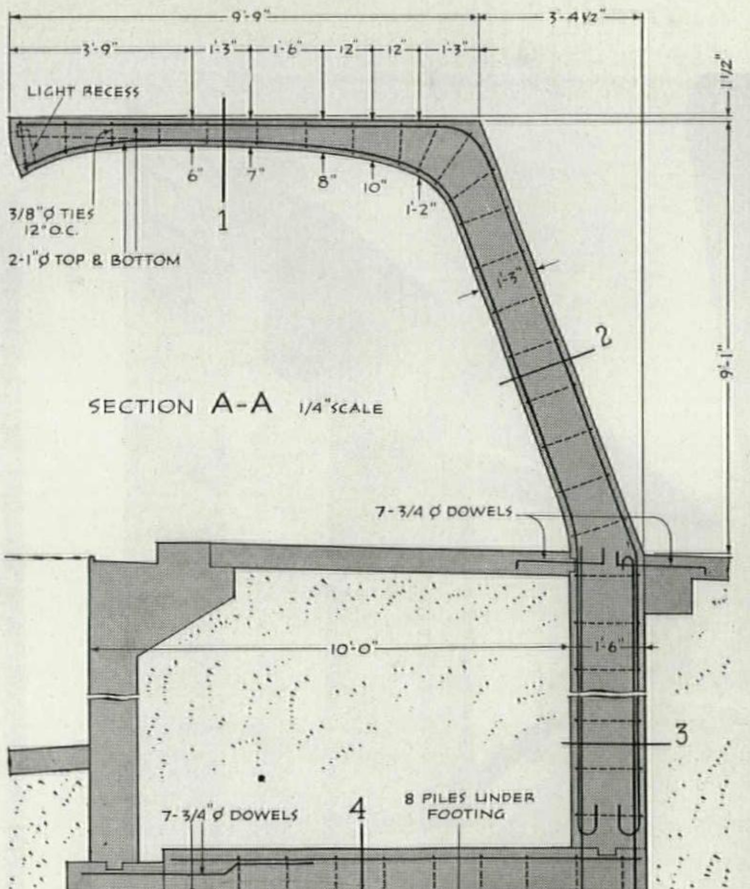




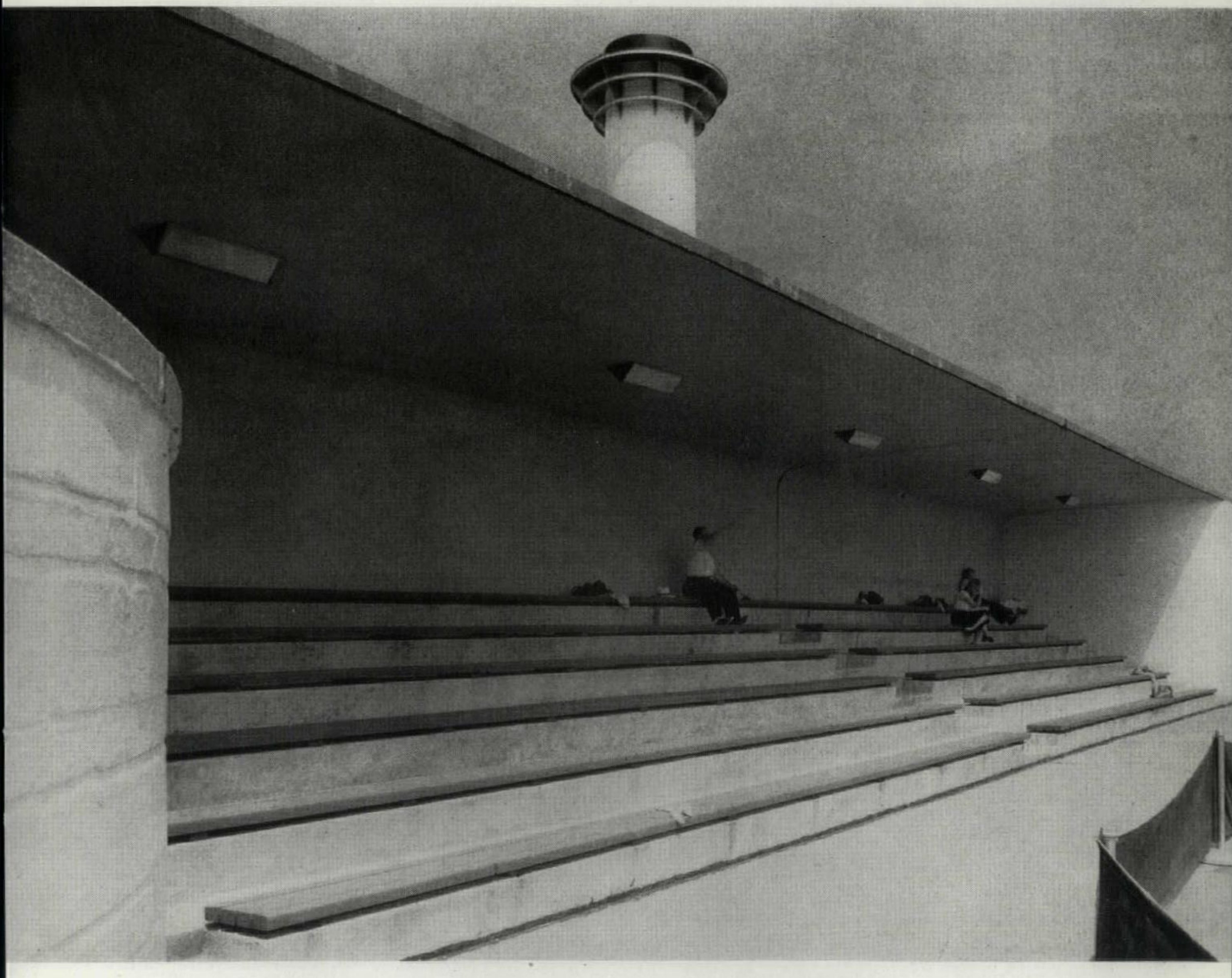
Design and Structural Details of Diving Tower

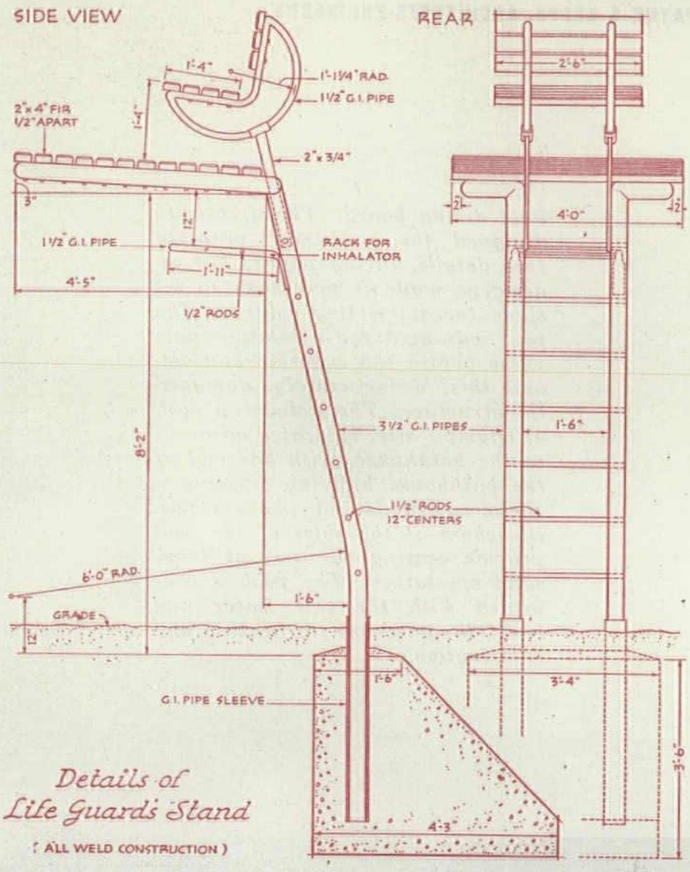






Pool diving board. The architects designed the cantilever properly (see details, facing page); but an accident made it necessary to include the supporting column. The pool was used for exhibition purposes before the concrete had set, and this, unfortunately, damaged the structure. The swimming pool, of Olympic size, is located adjacent to the bathhouse, with one end of the bathhouse building forming a sheltered grandstand (photo below). Bleachers at the sides of the pool provide seating for several thousand spectators. The pool is connected with the salt water and has full equipment for heating and chlorination.

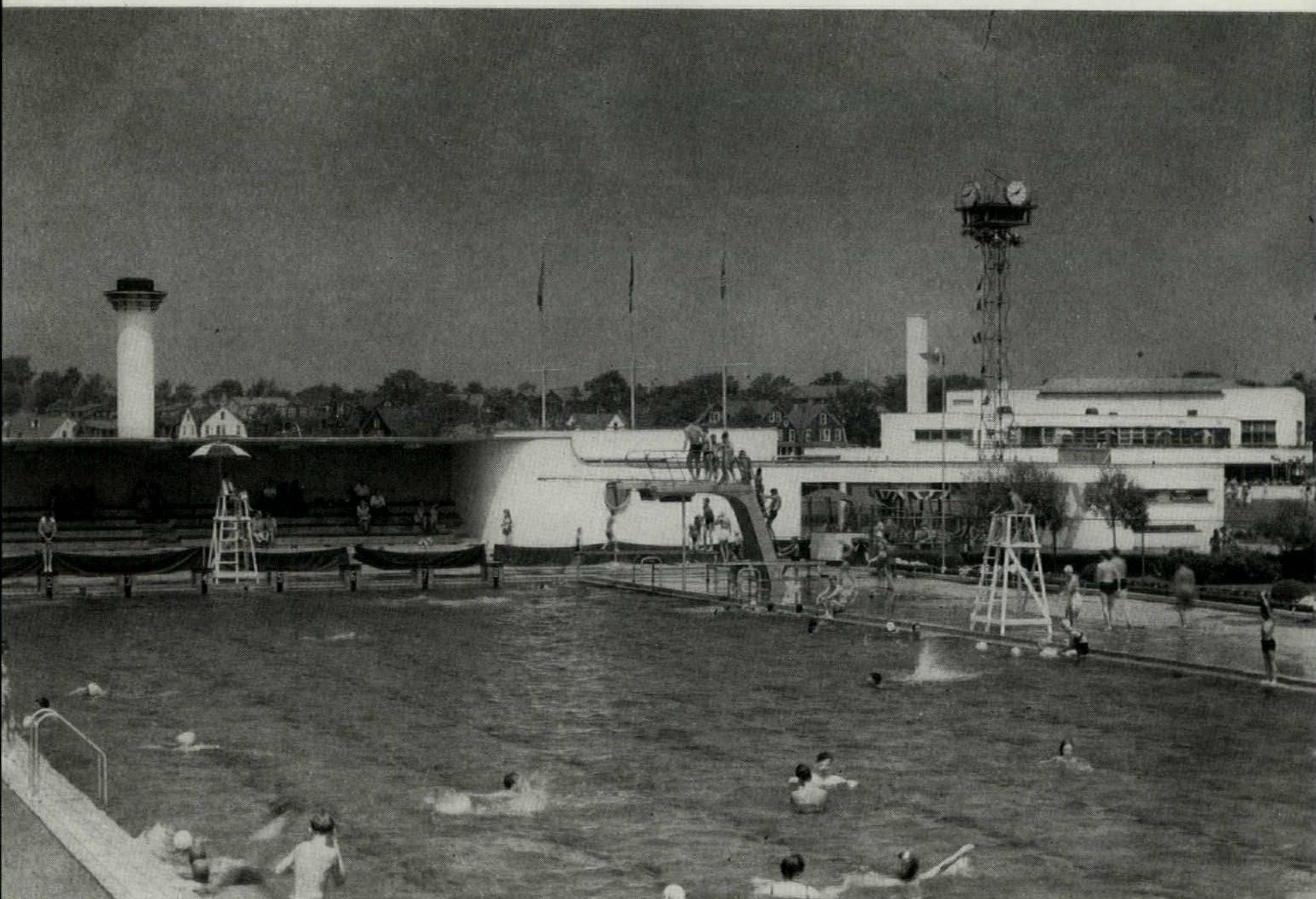




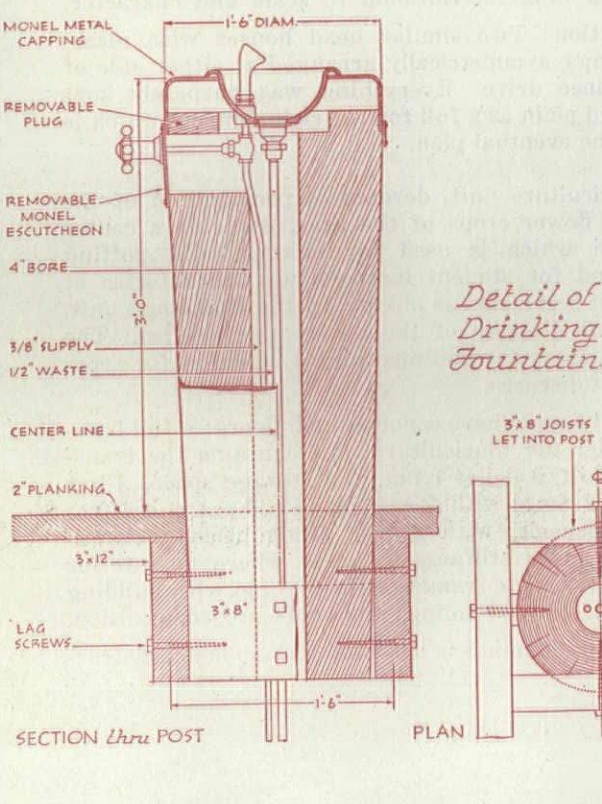
Details of Life Guard's Stand

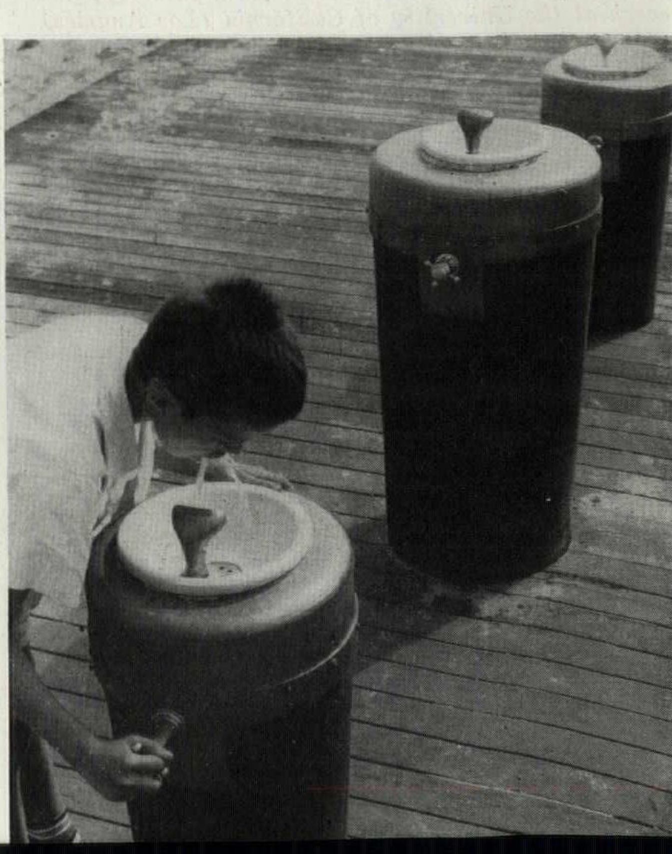
(ALL WELD CONSTRUCTION)

One of the lifeguard stands on the beach. Below: General view of the swimming pool, with grandstand at left, rear.



The coordinated over-all planning of Ocean Beach Park includes harmonious design of all elements—benches, drinking fountains, ticket booths, planting tubs, shelters, etc.



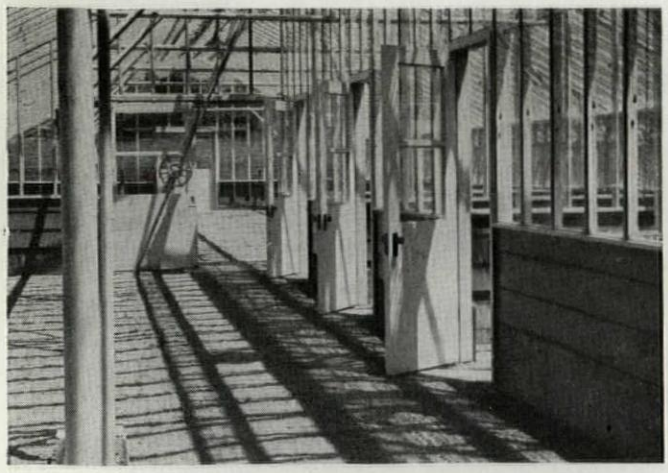


Frank H. Ubhaus

Horticulture Research Buildings, U.C.L.A., Los Angeles, Calif.

PAUL R. HUNTER AND WALTER REICHARDT, ASSOCIATED ARCHITECTS

Architecture is always the physical mold in which human activities are cast, and in an age of increasing specialization, new architectural forms naturally appear to house and expedite the new, intensive types of work. To the extent that the projects are skilfully designed for the purpose, the new ventures are likely to prosper. These extraordinarily forthright units for floriculture and plant-pathology research at the University of California (Los Angeles) indicate that the problem was clearly stated, that the architects found unaffected means for solving it, and that the future of horticulture—not to mention the progress of architecture—is thus much enhanced.



The Problem: To provide two units of a horticultural research group for the University of California (Los Angeles), ultimate plans for which envision another glass-house on each of these original units, several additional, similar head-house-glass-house structures, lath houses, and a classroom building. Since the site is just across an avenue from a development of small homes, a design factor was to make the group more residential than institutional in scale and character.

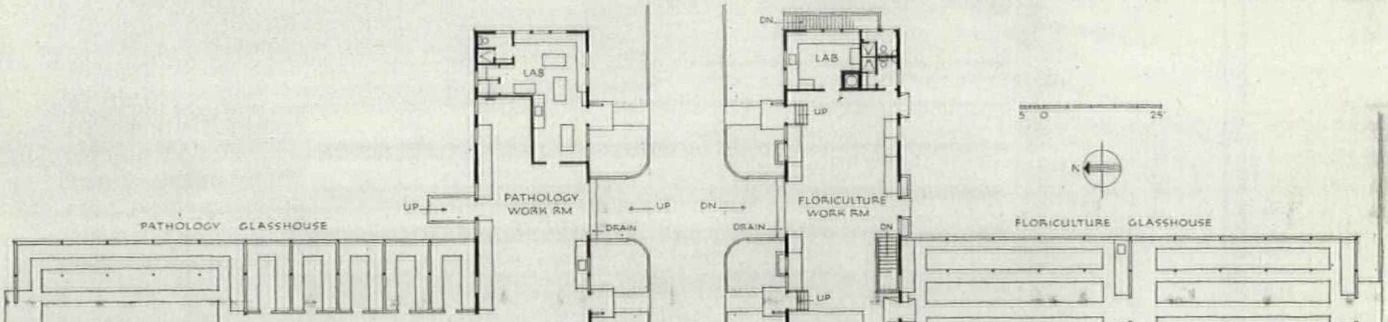
The Solution: Two similar head houses with glass-house wings, symmetrically arranged at either side of the entrance drive. Everything was purposely kept simple and plain as a foil for the rich planting which is part of the eventual plan.

The Floriculture unit, devoted to propagation of the principal flower crops of the area, contains a center workroom which is used for mixing soils, potting plants, and for student instruction. Laboratories at either end serve also as offices. In the Pathology unit, chief plant diseases of the region are studied. The small chambers furnish mechanical isolation for separating out diseases.

Both head houses have concrete slab floors; a full basement under the Floriculture unit contains the transformer vault, a boiler room, and storage space. First floors are framed with 4" x 4" posts laid out in a 4-foot modular scheme, with 2" x 4" studs placed between them for added stiffness in areas where no interior finish is used. The framework is covered with building paper and redwood siding; the roofs are composition.

Welded pipe framing is used for glass-house construction.


UNIVERSITY OF
CALIFORNIA
ORNAMENTAL
HORTICULTURE


LAB
PATHOLOGY
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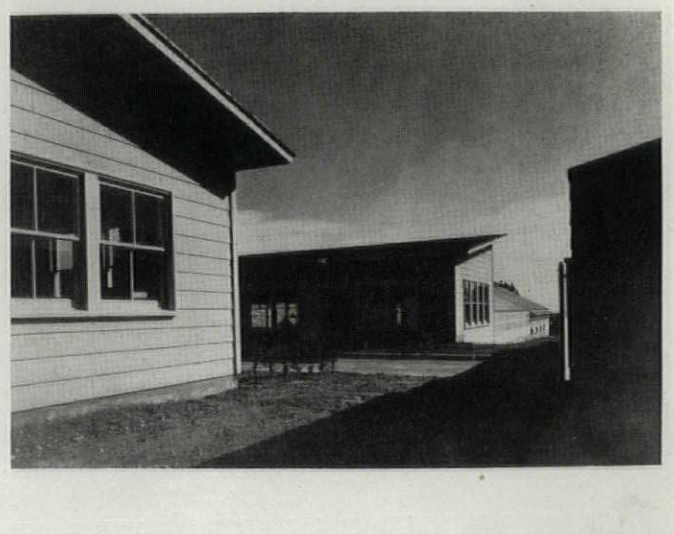
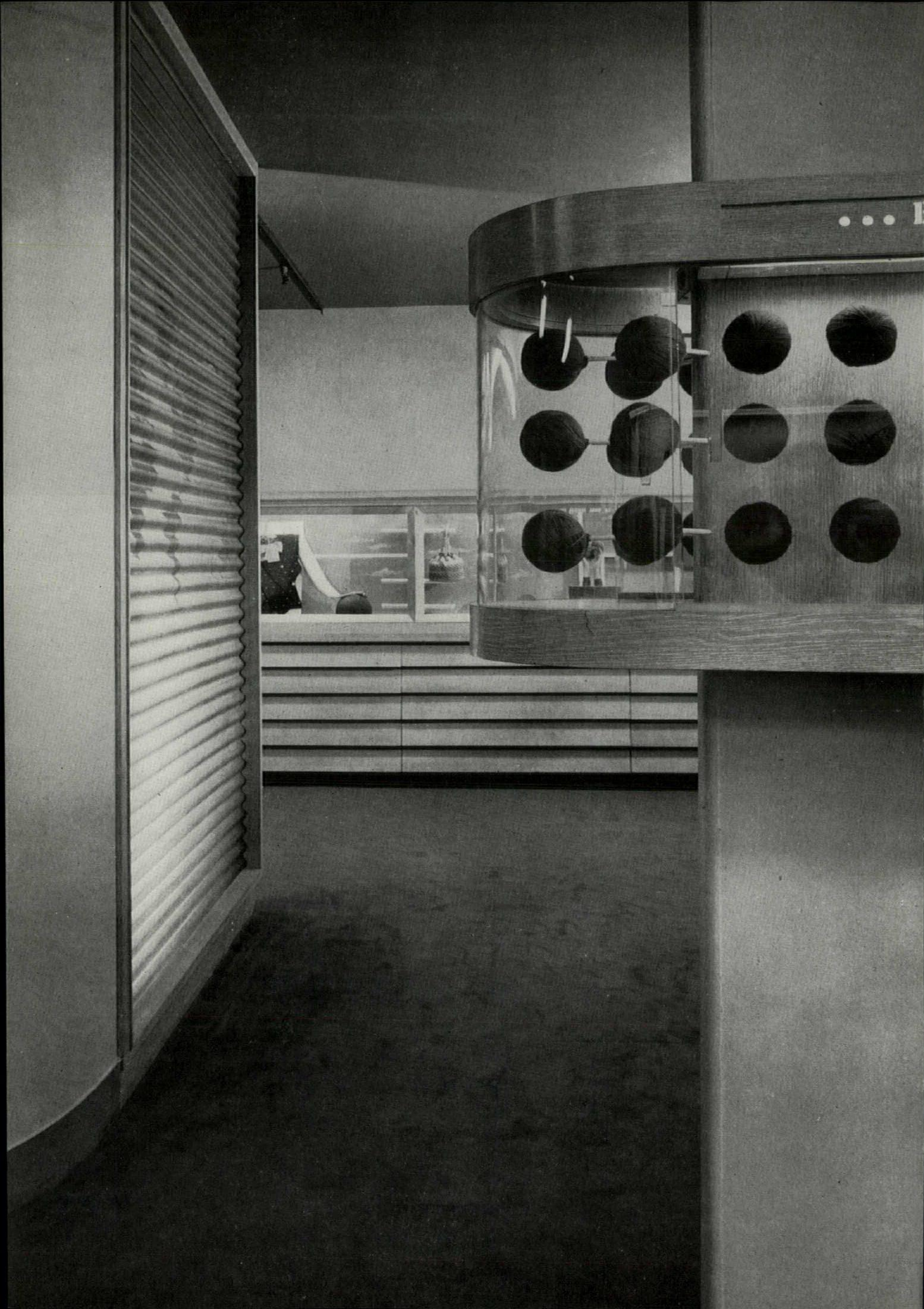




Facing page: Looking from larger room toward sales room; corrugated glass partition at left; cantilevered yarn-display case at right.

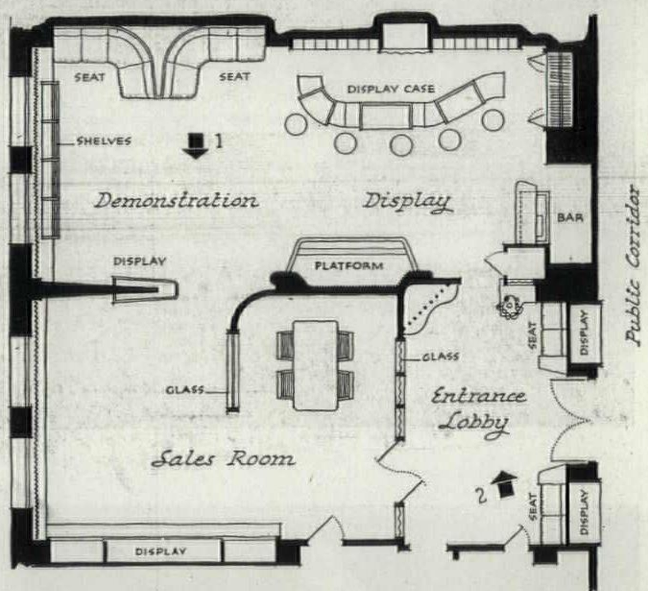
Right: Entrance hall, furnished with two built-in settees with end tables. The linoleum floor is navy blue; walls, French gray; ceiling, Delft blue.

2

P. A. Dearborn

Spinnerin Yarn Co. Show Rooms, New York City

V. PALADINI, DESIGNER



FLOOR PLAN

Environments created for product wholesaling must usually be judged quite apart from basic structural integration; for, as a rule, these are simply interiors developed within a standard and often unsympathetic existing building. Design skill is evidenced rather by plan ingenuity that makes good use of predetermined space and by display techniques schemed around a particular product—yarn, in this case.

Problem: In this addition to a yarn company's wholesale show rooms, the need was for a display space where yarn sales could be assisted by showing buyers effective new ways to display their merchandise and where they could get ideas for developing up-to-date knitting-instruction centers in their stores throughout the country.

Solution: The designer subdivided his space into functional areas, yet in appearance and treatment, these are but interrelated components of a visual whole. The only closing door in the plan occurs between the entrance hall and the sales room.

The sales room is partially subdivided by a pickled oak partition screen glazed with blue, frosted corrugated glass, over which is set a sheet of plate glass, air brushed with a decorative map of the world. In the alcove so formed are a table and chairs for business discussions.

The larger display and knitting-demonstration room is entered either from the entrance hall or from the sales room. In the space nearest the entrance hall is a counter sales and display unit, built with a backlighted, frosted, corrugated glass front. Behind this counter is a wall case made up of central, lighted display case flanked by decorative yarn cases made up of diagonal cells. Against the wall opposite this counter is a stage-lighted platform display of finished products made of Spinnerin yarn. The window end of the room, equipped with a pair of L-shaped settees is used for knitting demonstrations. On the end wall nearest the entrance hall is a cedar-lined storage closet and small refreshment bar.

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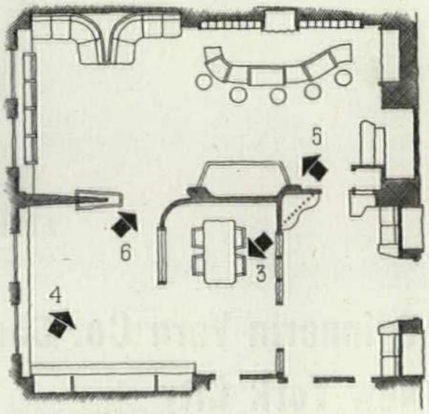

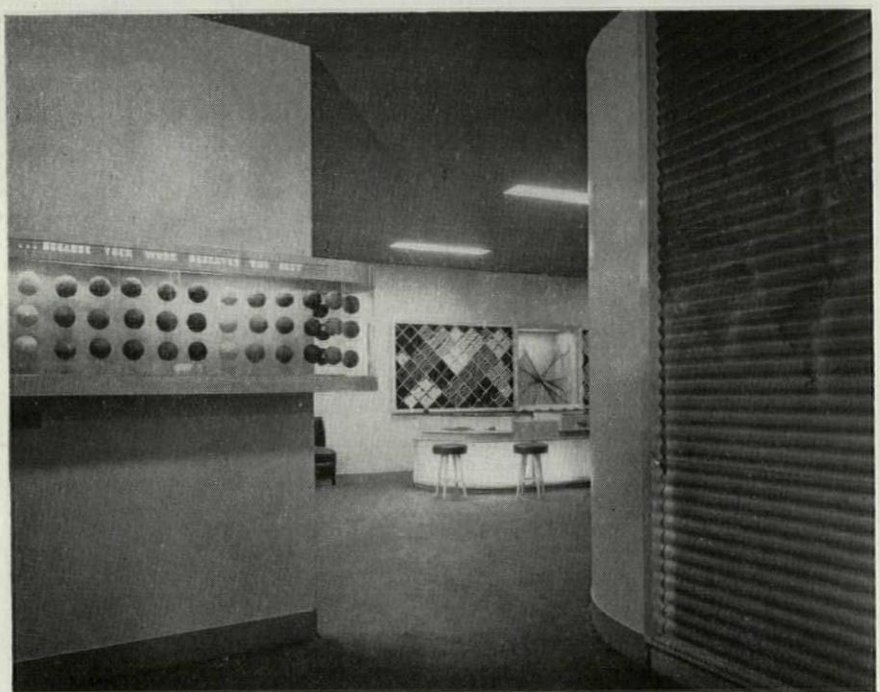

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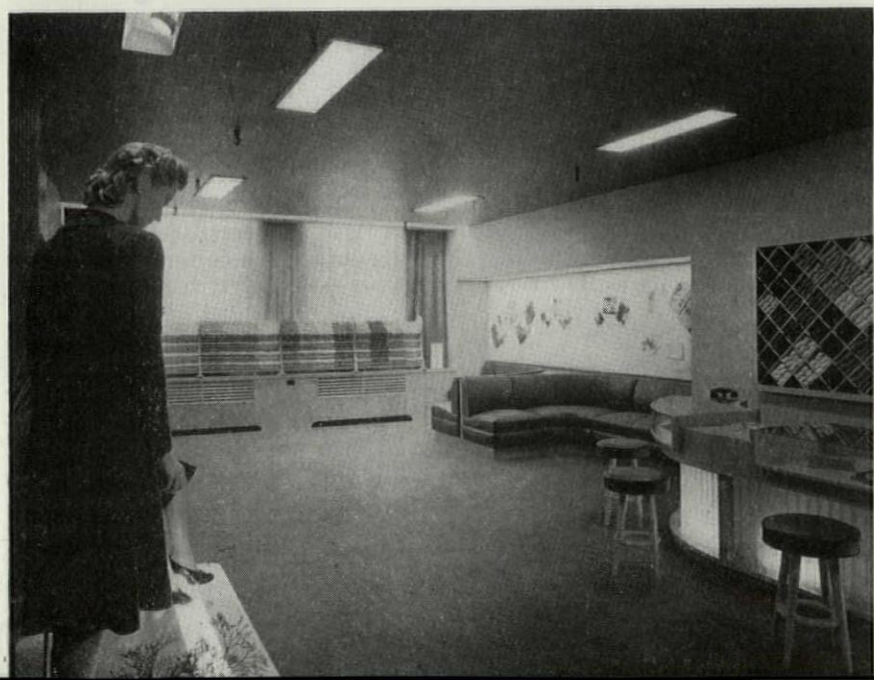

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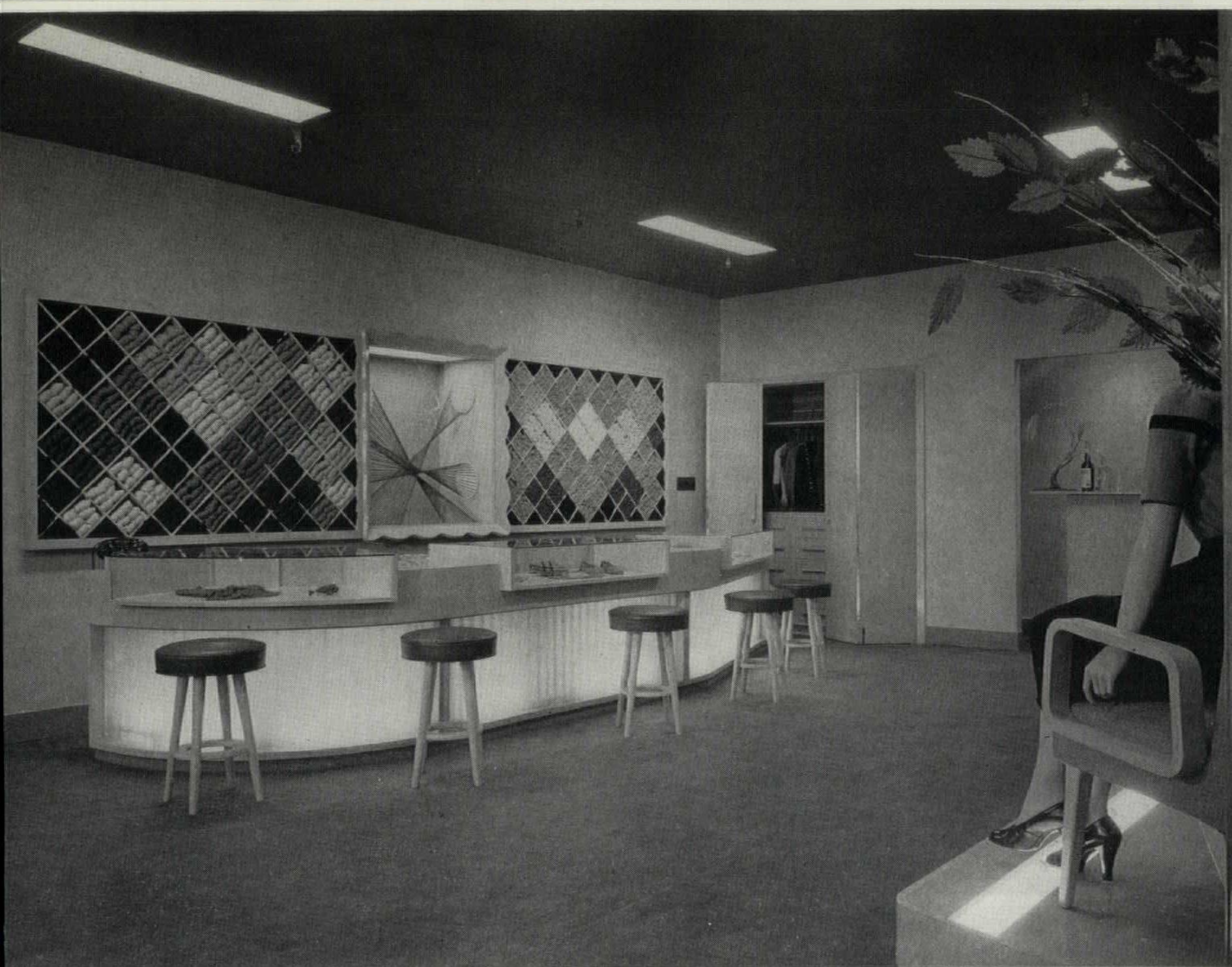
Top: Business table in foreground; lighted display case and louvered storage drawers in wall at rear.

Center: View of knitting counter from sales room.

Bottom: Display platform in left foreground; settees for instruction, at rear. All display rooms have cedar rose all-over carpeting, walls of dusty rose, and ceilings painted a color called "crushed berry."



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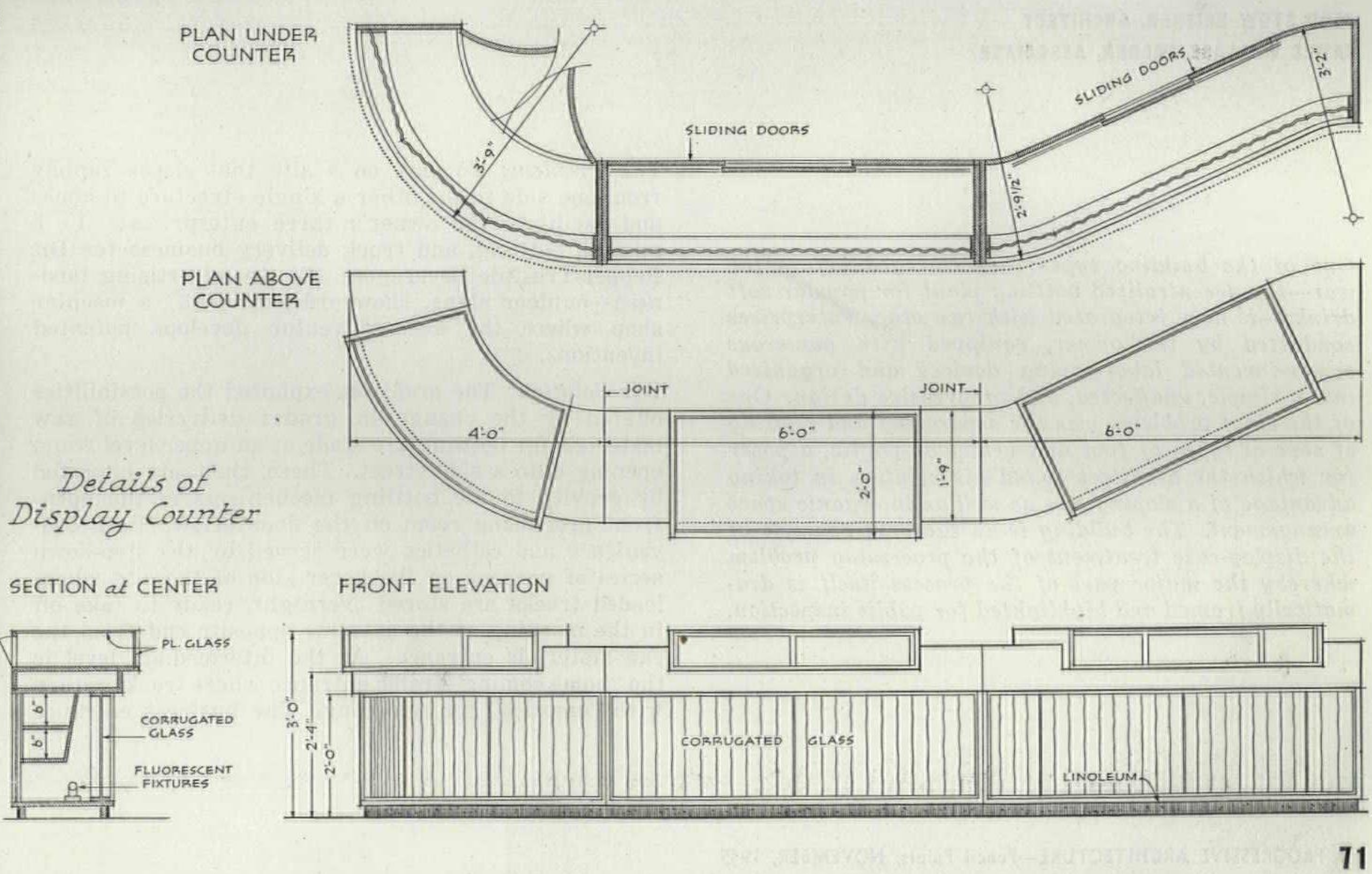
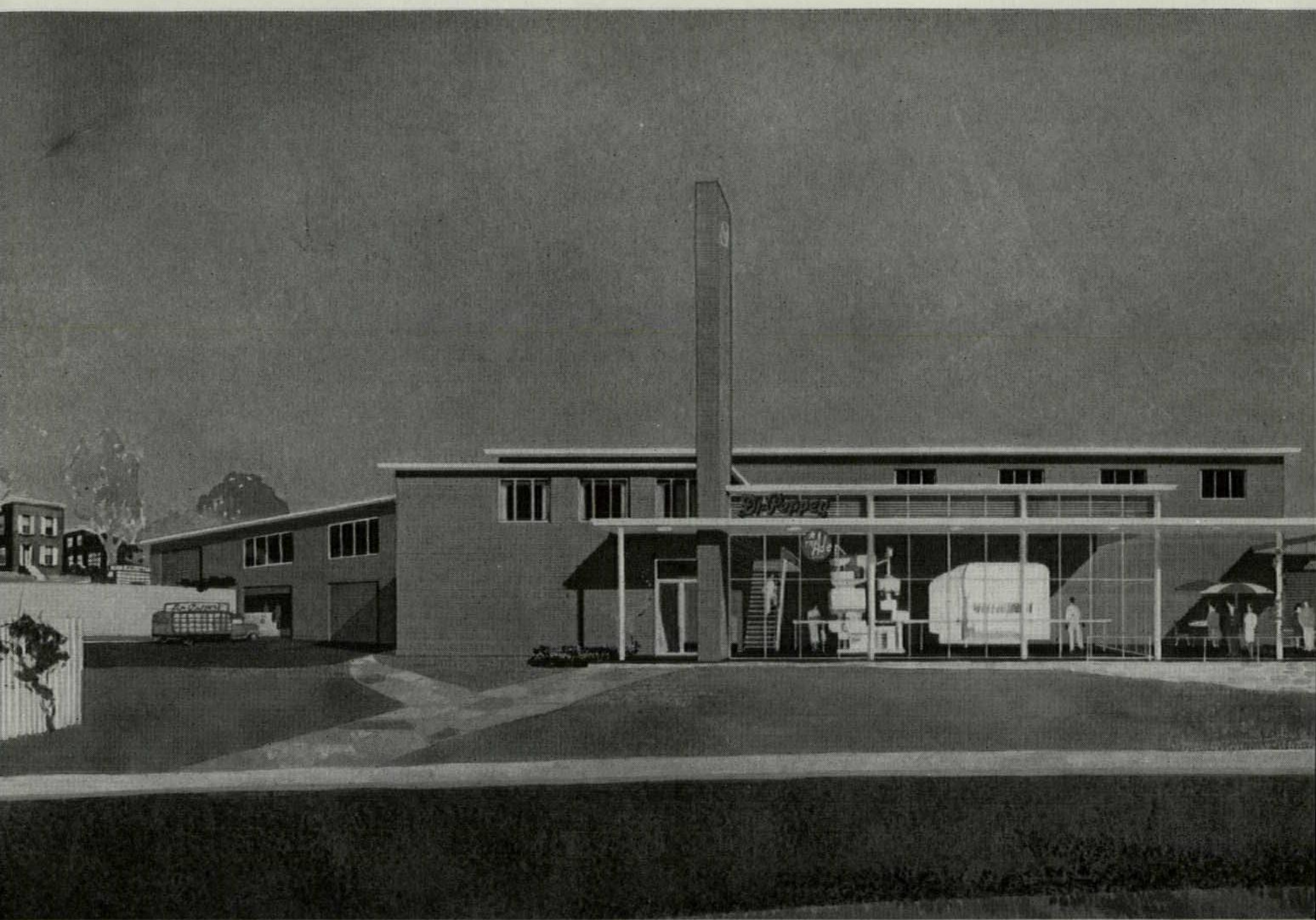


PLAN UNDER COUNTER
SLIDING DOORS
SLIDING DOORS
3'-9"
2'-9½"
3'-2"
PLAN ABOVE COUNTER
JOINT
JOINT
4'-0"
6'-0"
6'-0"
2'-0"
1'-9"
Details of Display Counter
SECTION at CENTER
FRONT ELEVATION
PL. GLASS
CORRUGATED GLASS
FLUORESCENT FIXTURES
3'-0"
2'-4"
2'-0"
CORRUGATED GLASS
LINOLEUM



Bottling Plant, Etc., Baltimore, Maryland

JEDD STOW REISNER, ARCHITECT
JAMES WALLACE FOLGER, ASSOCIATE

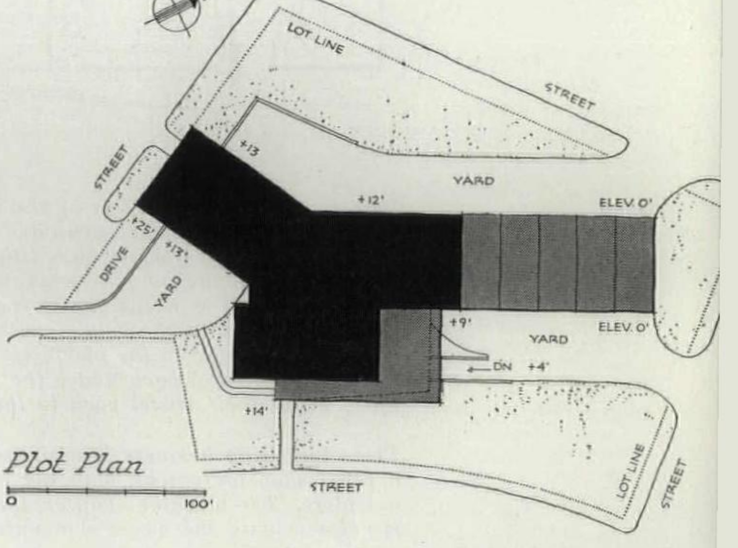
One of the building types that emerged before the war—the decentralized bottling plant for popular soft drinks—is here integrated with two other enterprises conducted by the owner, equipped with numerous owner-invented labor-saving devices and organized into a simple, unaffected, and progressive design. One of the chief problems was the separating and relating of several types of foot and vehicular traffic, a poser for which the architect found his solution in taking advantage of a sloping site as well as in organic space arrangement. The building is an excellent example of the display-case treatment of the processing problem whereby the major part of the process itself is dramatically framed and highlighted for public inspection.

The Problem: To plan on a site that slopes rapidly from one side to the other a single structure to house and facilitate the owner's three enterprises: (1) a mixing, bottling, and truck delivery business for Dr. Pepper-Tru-Ade beverages; (2) an advertising business—outdoor signs, showcards, etc.; (3) a machine shop where the owner-inventor develops patented inventions.

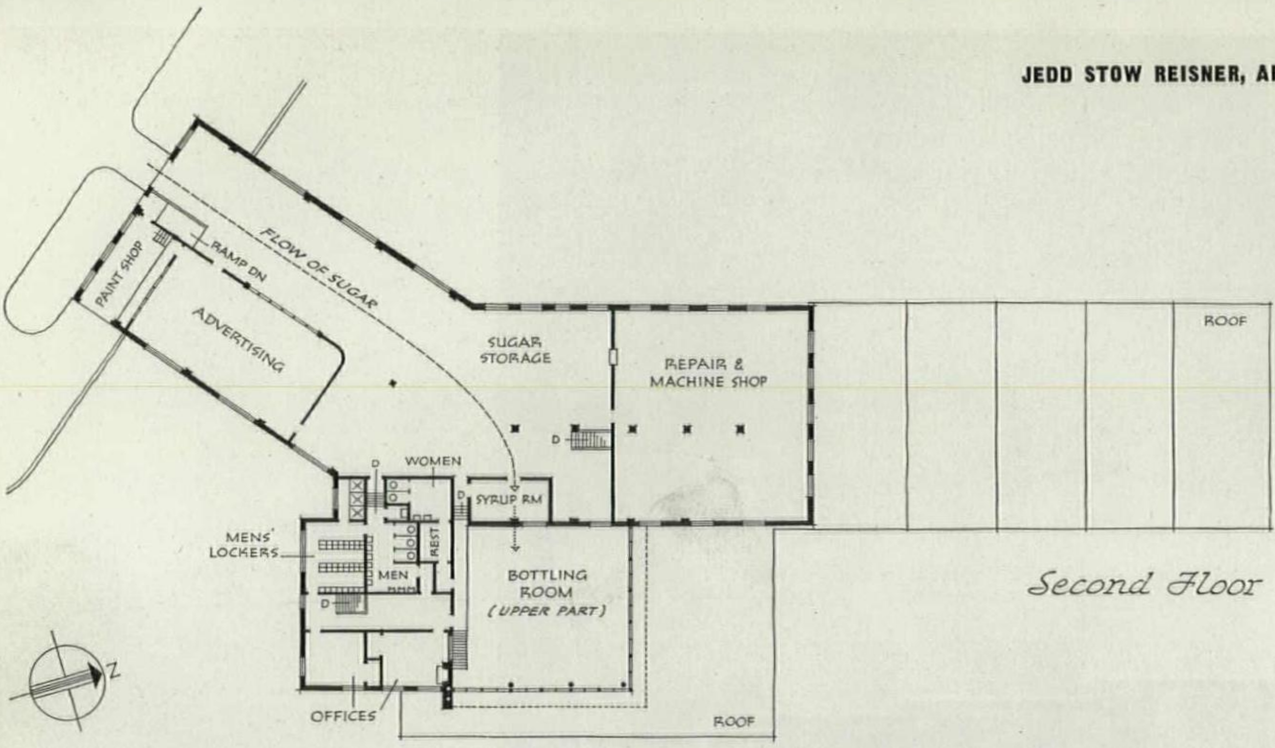
The Solution: The architect exploited the possibilities offered by the change in grade: deliveries of raw materials for bottling are made at an upper level wing, opening onto a side street. These, then, are later fed by gravity to the bottling mechanisms in the open-front processing room on the floor below. Both convenience and esthetics were served by the step-down series of garages on the lower side of the site where loaded trucks are stored overnight, ready to take off in the morning at the extreme opposite end from the raw-materials entrance. At the intermediate level is the "home coming" traffic entrance where trucks return with "empties" for reloading. The business entrance

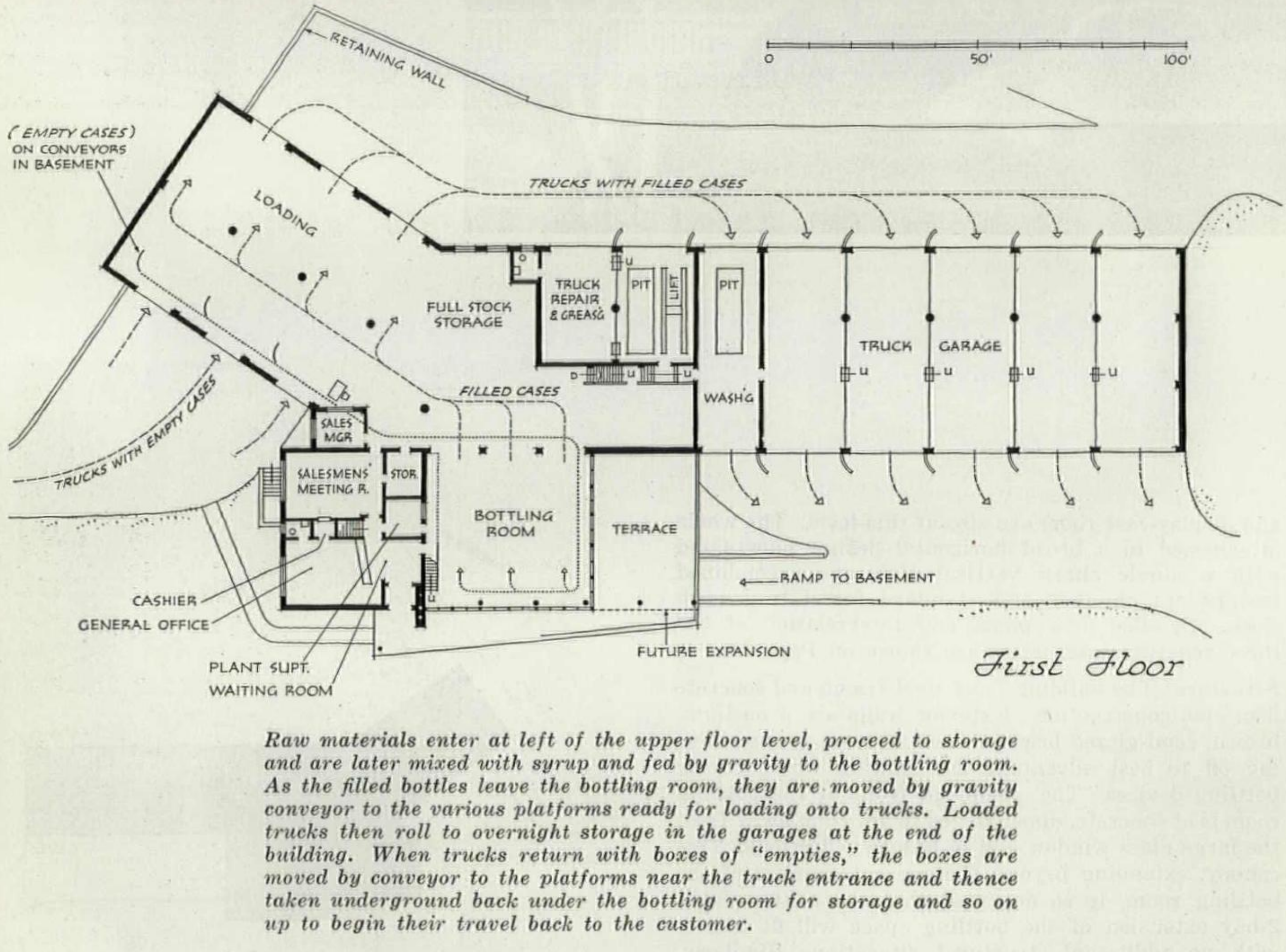
and display-case room are also at this level. The whole is schemed in a broad horizontal design punctuated with a single sharp vertical element—a combined power-plant chimney and standard for a trademark clock. Detailed floor plans and interrelation of the three separate enterprises are shown on Page 74.

Structure: The building is of steel frame and concrete floor-slab construction. Exterior walls are a medium-brown, semi-glazed brick, chosen with an eye to showing off to best advantage the shining white of the bottling devices. The canopy in front of the bottling room is of concrete, dimensioned to keep sun away from the large glass window and to reduce reflections. This canopy, extending beyond the present confines of the bottling room, is so designed that the contemplated 2-bay extension of the bottling space will fit into it with no additional structural alteration. Similarly, the red tile floor of the bottling room is carried out to the present terrace so that finished flooring will all be in place when the room is enlarged.



Plot Plan





Raw materials enter at left of the upper floor level, proceed to storage and are later mixed with syrup and fed by gravity to the bottling room. As the filled bottles leave the bottling room, they are moved by gravity conveyor to the various platforms ready for loading onto trucks. Loaded trucks then roll to overnight storage in the garages at the end of the building. When trucks return with boxes of "empties," the boxes are moved by conveyor to the platforms near the truck entrance and thence taken underground back under the bottling room for storage and so on up to begin their travel back to the customer.

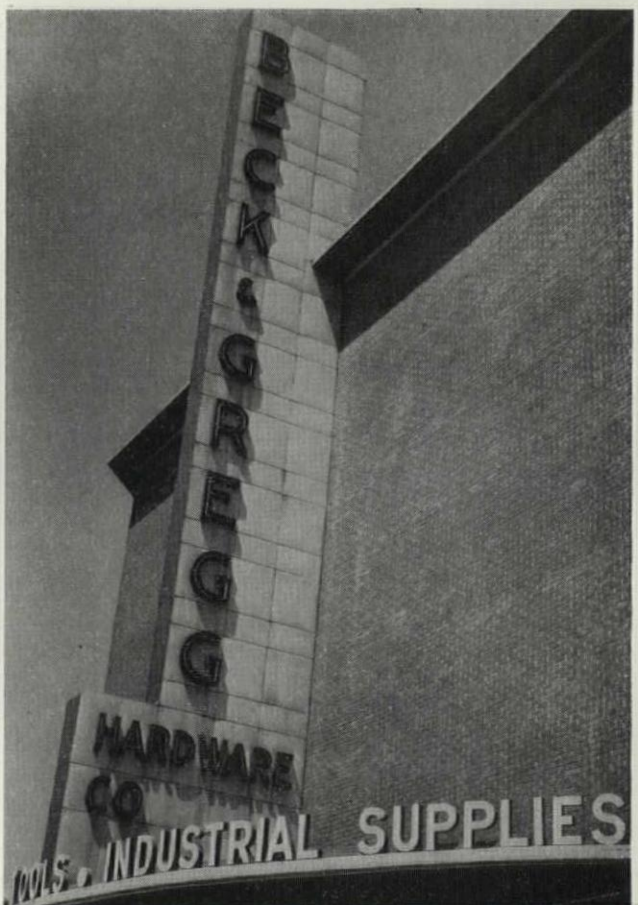
The advertising business is assigned a corner of its own. Adjoining is a paint shop for trucks, both the plant trucks and jobs brought in by outsiders. The machine shop on the second floor and the garage under it accommodate the owner's inventive activities, and the servicing and repair of trucks.

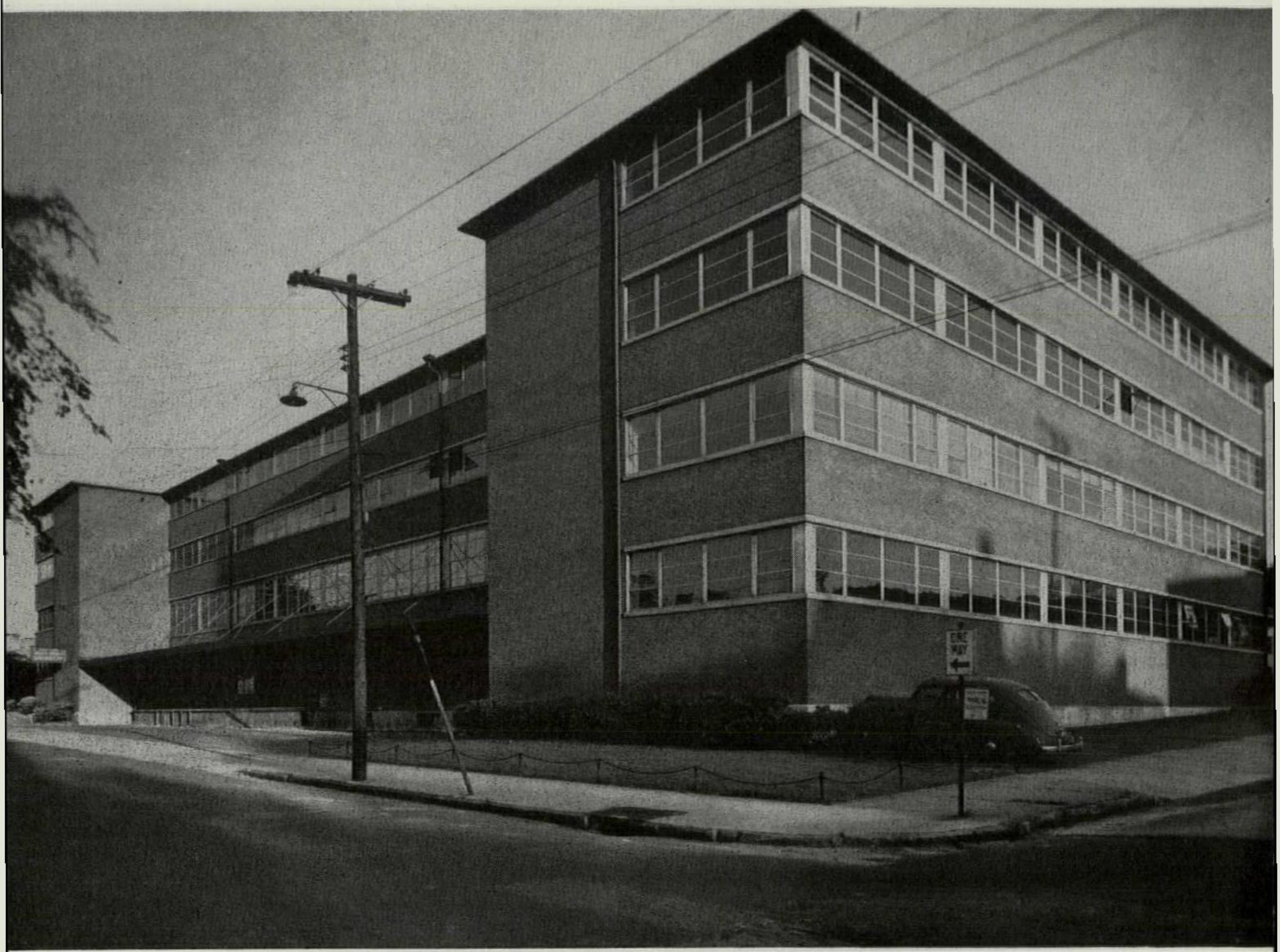
Rodney McLay Morgan

Hardware Warehouse and Retail Store, Atlanta, Georgia

BURGE & STEVENS, ARCHITECTS-ENGINEERS

Something has surely happened to architecture—we call it progress—when a warehouse can boast of being one of the best contemporary buildings in town. An ever-growing number of such instances is encouraging testimony that good architecture is finally—and, let us hope, permanently—becoming associated with projects that serve every phase of human activity, rather than merely those in which a measure of ostentation is involved—impressive civic monuments, pretentious rich men's homes, etc. In the rather odd building type presented here—a hardware wholesale warehouse, combined with a small retail outlet—there is a particularly happy synthesis of plan, structure, and finished design—a major criterion for judging progressive work.

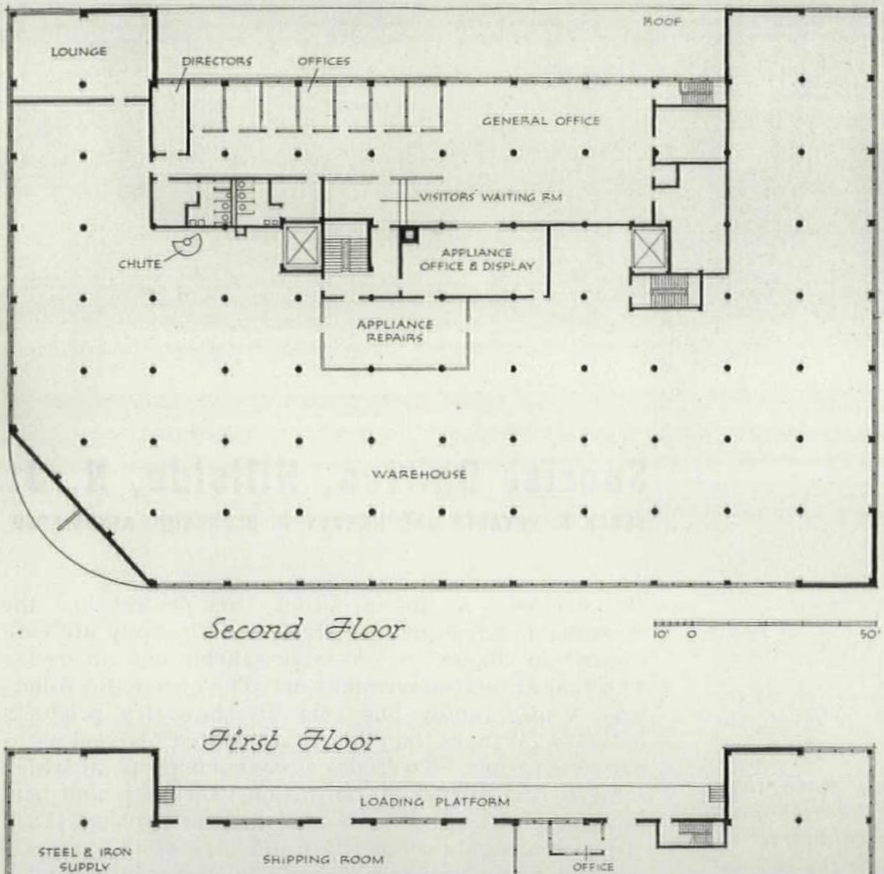




The Need: A building primarily to house a wholesale hardware business but also to include a retail store, which normally accounts for approximately 10 percent of total sales.

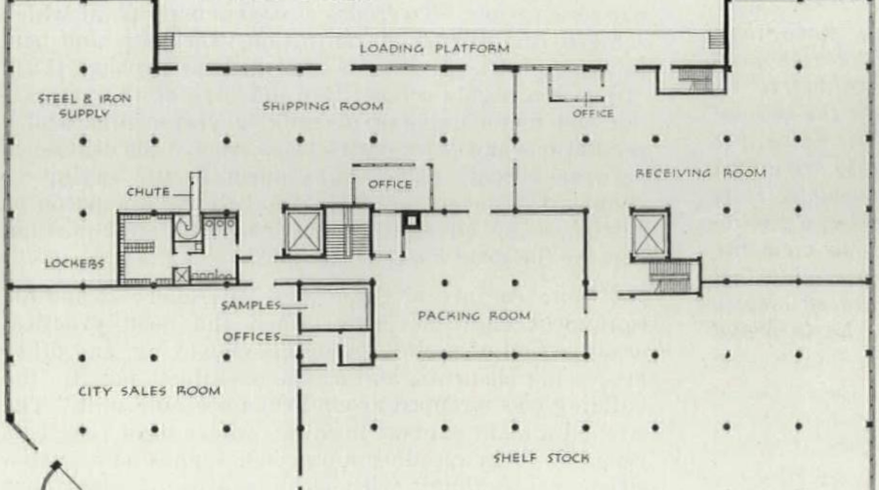
Solution: The near-downtown site chosen has three street frontages; the retail store is placed across the corner where the two most prominent streets meet. The third street front, at ground-floor level, is largely given over to a truck platform, protected by a deep canopy to allow loading or unloading in all kinds of weather. General offices occur on the second floor; the rest of the floor area consists of open warehousing space, connected by both elevator and spiral chute with the main floor and truck platform. On the plot, as the building is now built, there is a considerable area provided for customer and employee car parking. At a later date, some of this space may be used for expansion of the building.

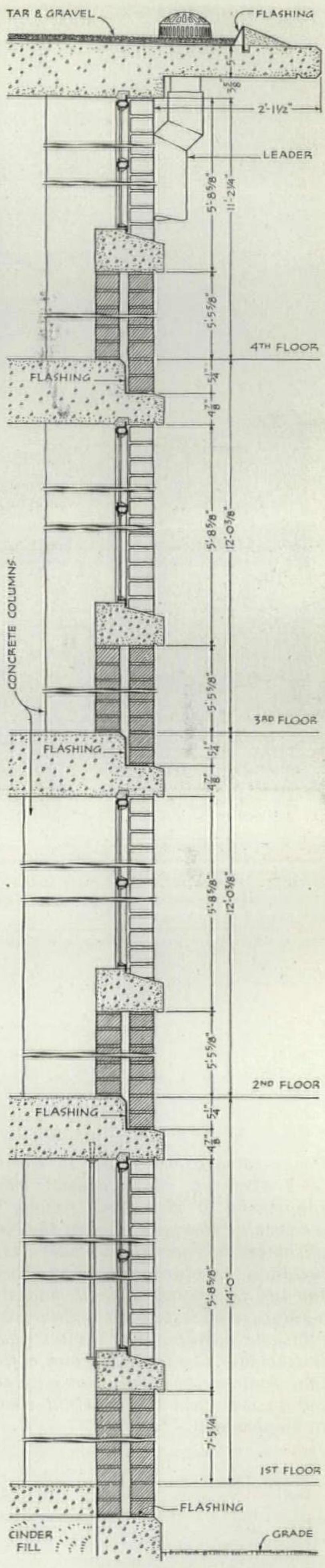
The framework of the building uses flat-slab construction, with the slabs continuing out beyond the wall line to form continuous lintels above the window bands (see section). Exterior cavity walls are brick, with one inch of air space between the layers. All interior walls in the warehousing portions are simply the exposed brick; painted plaster is used on walls of offices, show rooms, and toilets. Office ceilings are surfaced with acoustical tile. The show rooms and offices are lighted by fluorescent fixtures; elsewhere, incandescent lighting is used. An inter-office communication system connects all areas. The building is heated by unit heaters, supplied with steam from a central heating plant in the basement.



Second Floor

First Floor





Wall Section

P. A. Dearborn

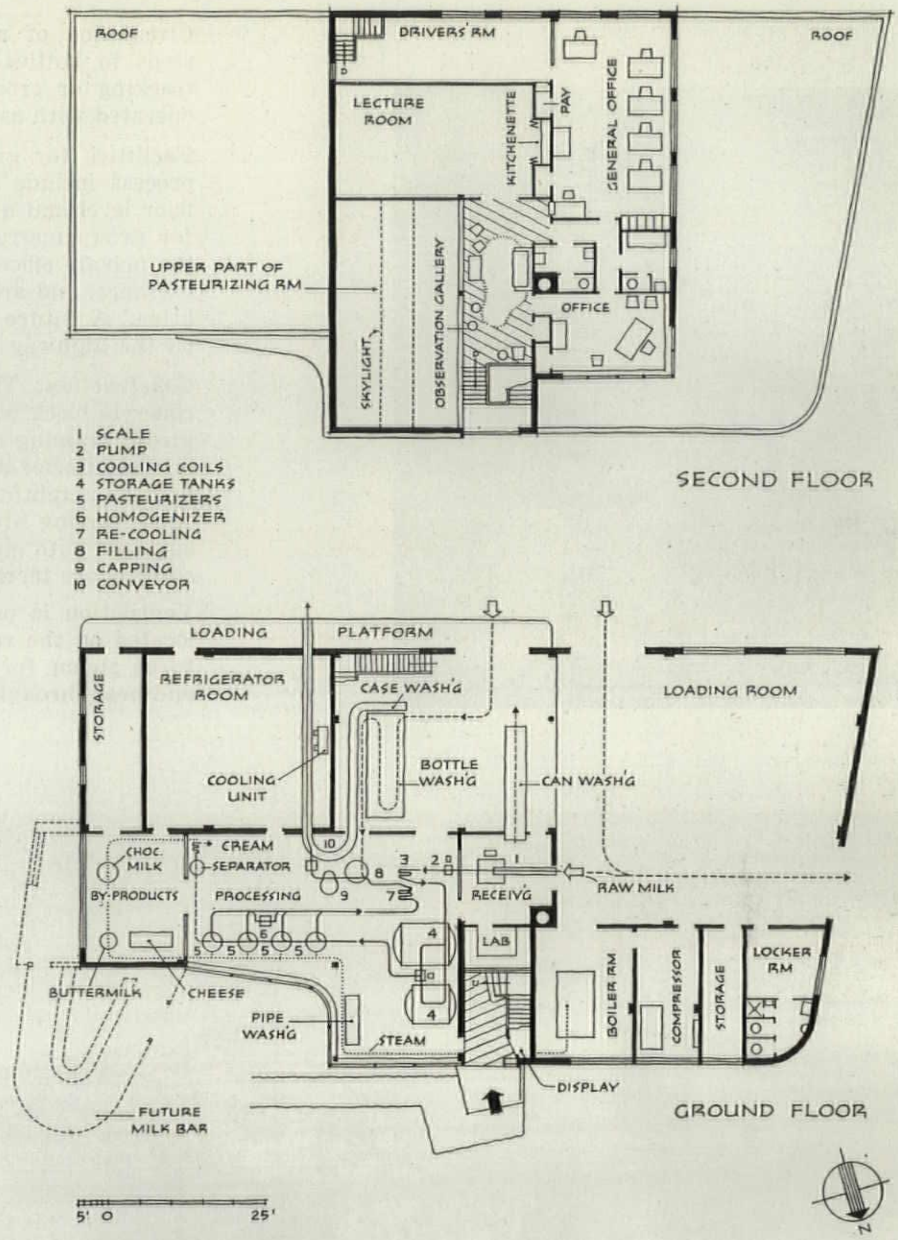
Sunrise Dairies, Hillside, N. J.

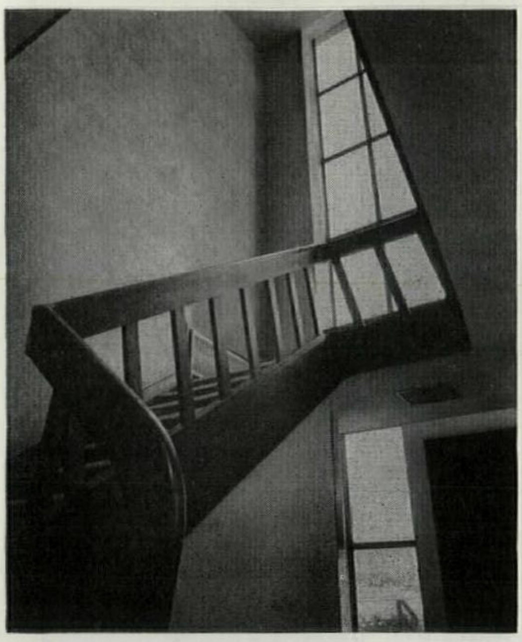
SERGE P. PETROFF AND HARVEY P. CLARKSON, ASSOCIATED

Progressive architecture is considerably more than good planning, sound construction, and pleasing arrangement of elements. Among other things, it is purposeful planning, design that assists in the accomplishment of specialized modern tasks. This dairy, for instance. In addition to being space suitably organized for the packaging of milk and its by-products, it is a billboard advertising the Sunrise enterprise, a public-relations medium that invites passers-by to view the immaculate environment, and a flexible precision tool that enables the owner not only to operate efficiently but to maintain the constant cleanliness he is proud to emphasize.

Background: At its inception, this project had the inestimable advantage of architects sincerely striving toward an efficient progressive scheme and an owner who shared their determination. The owner, Bo Adlerbert, whose family has been in the dairy products industry for more than 150 years, stated his goal without reservation: "To create a pasteurizing plant which achieves the utmost in sanitation, efficiency, and performance." The architects analyzed the problem thus: "In such a highly competitive industry as the processing and merchandising of milk, governmental health regulations and price restrictions resolve the difference between success and failure down to the saving of pennies by efficient operation and to the attraction of customers by advertising and service." No question here of the dead hand of stylism!

Solution: An intensive study by Mr. Adlerbert and his equipment engineers determined the most practical organization of piping, pumping, conveying, and other processing elements, and as the architects put it, "the building was wrapped around the operating unit." The site, on a main express highway where most reactions would be from speeding motorists, suggested an exposition-type building with a huge area of glass that would present a striking, immediately comprehensible, view of the gleaming, stainless steel machinery of the pasteurizing room.


ROOF
DRIVERS' RM
ROOF
LECTURE ROOM
KITCHENETTE
PAY
GENERAL OFFICE
UPPER PART OF PASTEURIZING RM
OBSERVATION GALLERY
OFFICE
SKYLIGHT
SECOND FLOOR
1 SCALE
2 PUMP
3 COOLING COILS
4 STORAGE TANKS
5 PASTEURIZERS
6 HOMOGENIZER
7 RE-COOLING
8 FILLING
9 CAPPING
10 CONVEYOR
LOADING PLATFORM
STORAGE
REFRIGERATOR ROOM
CASE WASH'G
LOADING ROOM
COOLING UNIT
BOTTLE WASH'G
CAN WASH'G
CHOC. MILK
CREAM SEPARATOR
BY-PRODUCTS
PROCESSING
RECEIV'G
RAW MILK
LAB
BOILER RM
COMPRESSOR
STORAGE
LOCKER RM
BUTTERMILK
CHEESE
PIPE WASH'G
STEAM
DISPLAY
FUTURE MILK BAR
GROUND FLOOR
5' 0 25'
N

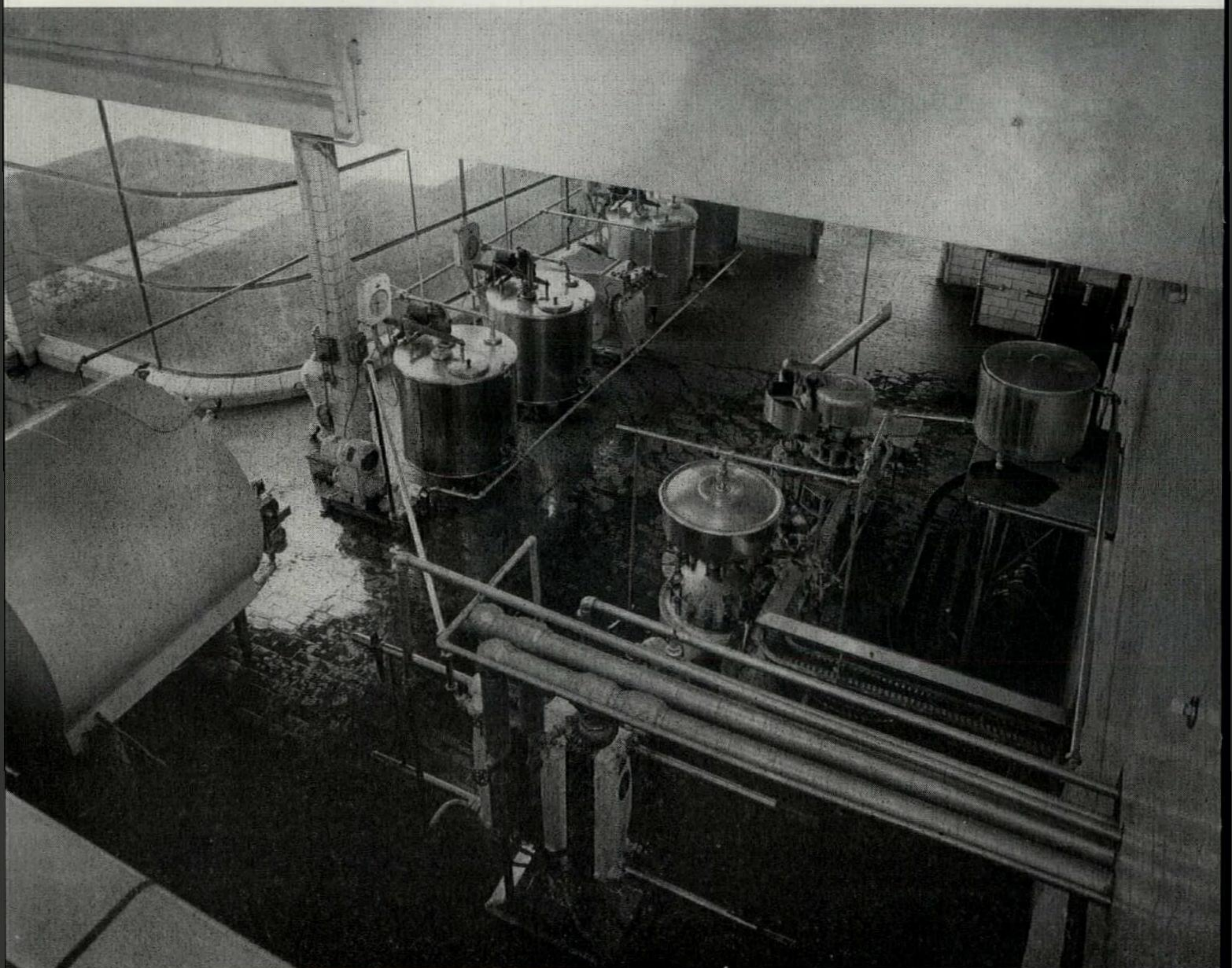


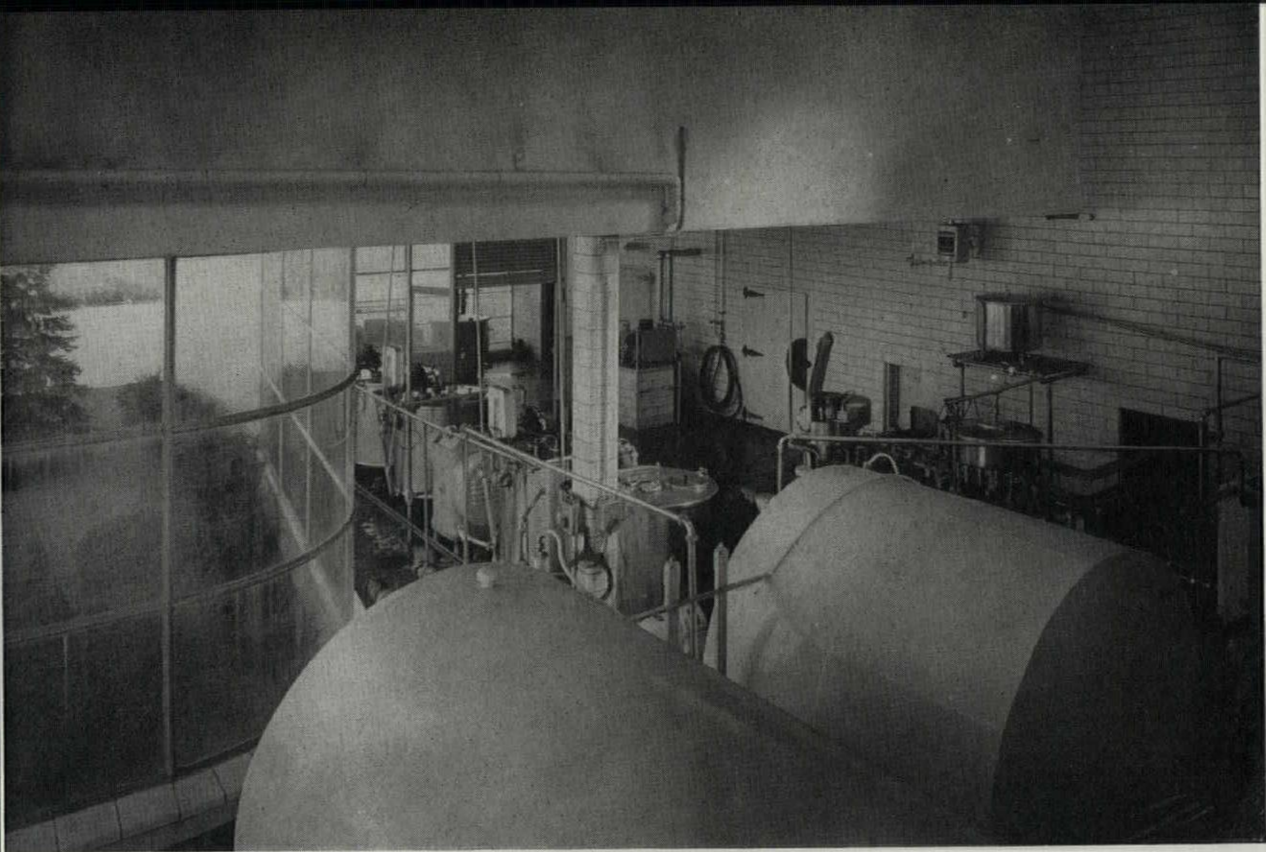
Circulation of milk from its raw state through all steps to bottles loaded on trucks involves no back-tracking or cross-overs. During the war, the plant operated with as few as three men to a shift.

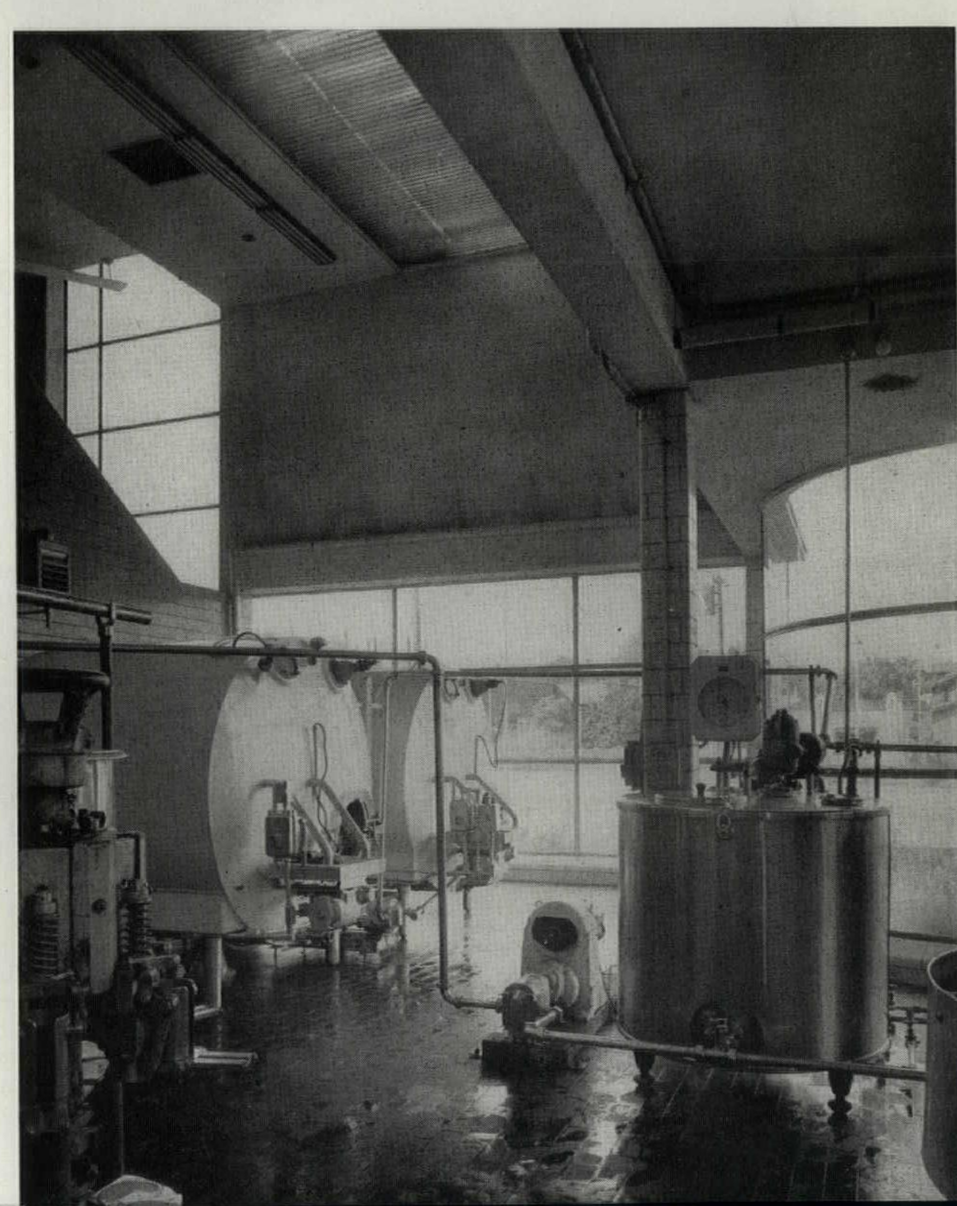
Facilities for giving the public a close view of the process include an observation gallery at the second floor level and a lecture room (now being completed) for group instruction. Both these public spaces and the private offices are reached directly from the main entrance, and are used without disturbing plant operation. A future income-producing unit is a Milk Bar on the highway front.

Construction: The masonry bearing walls are of cinder concrete block with brick facing on the exterior; steel girder framing bears on the walls or on pipe columns on the interior and at the plate glass front. The first floor is a reinforced concrete slab. Second floor and roof framing are of wood, with wood double flooring surfaced with either linoleum or asphalt tile. Exterior copings are terra cotta.

Ventilation is provided by wind-driven exhaust fans located on the roof. The steam boiler that manufactures steam for processing also provides hot water and heat through unit heaters and radiators.





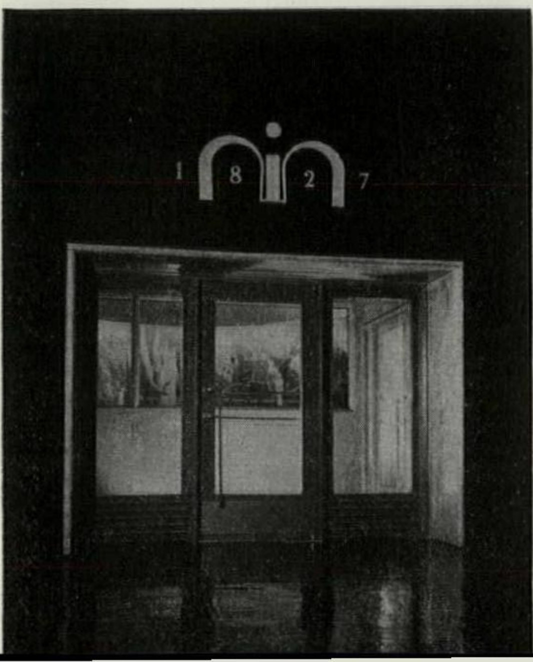


Particularly difficult problems encountered were: (1) coping with the perpetually moisture-laden air (caused by the live steam used in the pasteurization process) that required special light fixtures and careful consideration of interior surfacing materials, and (2) the fact that lactic acid in milk spilled on the floor, although the floor is frequently flushed, would cause ordinary concrete to disintegrate within a few months. The solutions were to use wall finishes of ceramic glazed tile (ivory on the rear wall and Della Robbia blue at the stairway end) and on the floor, a special acid-resisting brick laid in sulphur-bearing mortar.

Hedrich-Blessing Studio

Visitors Building, John Morrell & Co., Sioux Falls, S. Dak.

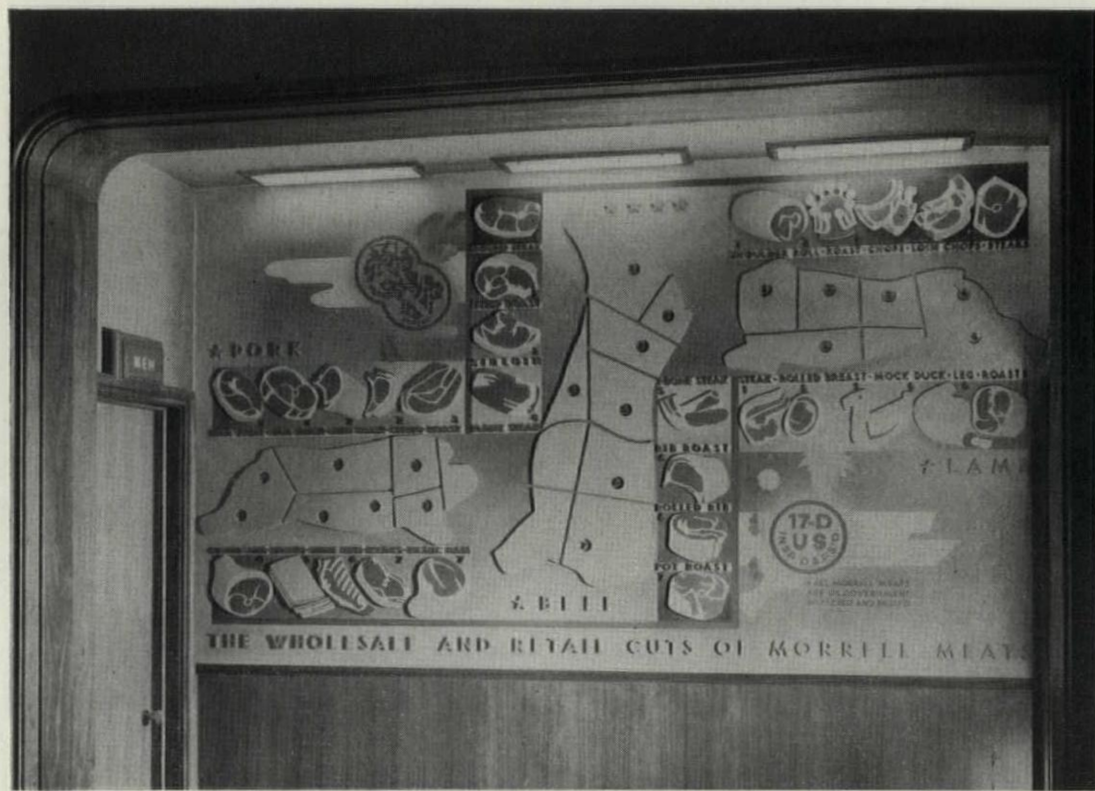
HAROLD SPITZNAGEL, ARCHITECT



On a visit to a meat-processing plant, it is doubtful if many would expect to receive such a gracious welcome as is offered by the small structure presented here. An architectural answer to the processor's wish to give the public a close-up view of the process, it is a direct lineal descendant of World's-Fair types of exhibit buildings—complete with photomurals and lantern-slide equipment.

Problem: To provide a waiting room for visitors to a meat-processing and packing plant where they would be welcomed and given a preview of the "coming attraction."

Solution: The plan is organized so that the visitor, after being greeted at the door by a receptionist, and registering, passes into the semi-circular-ended auditorium. Here he may either find a comfortable chair or study the integrated series of photomurals by Ken Hedrich that show successive steps in meat production. When enough guests have gathered, the receptionist operates the room lights, a screen is lowered from the

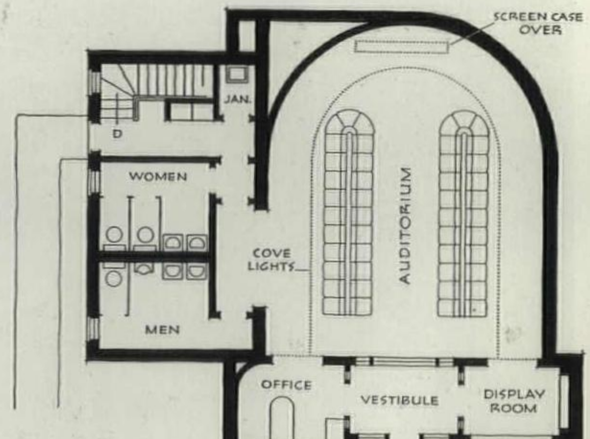


In the small recessed passage at the left of the auditorium, a colorful, three-dimensional plaque forms a graphic description of the various cuts of meat.

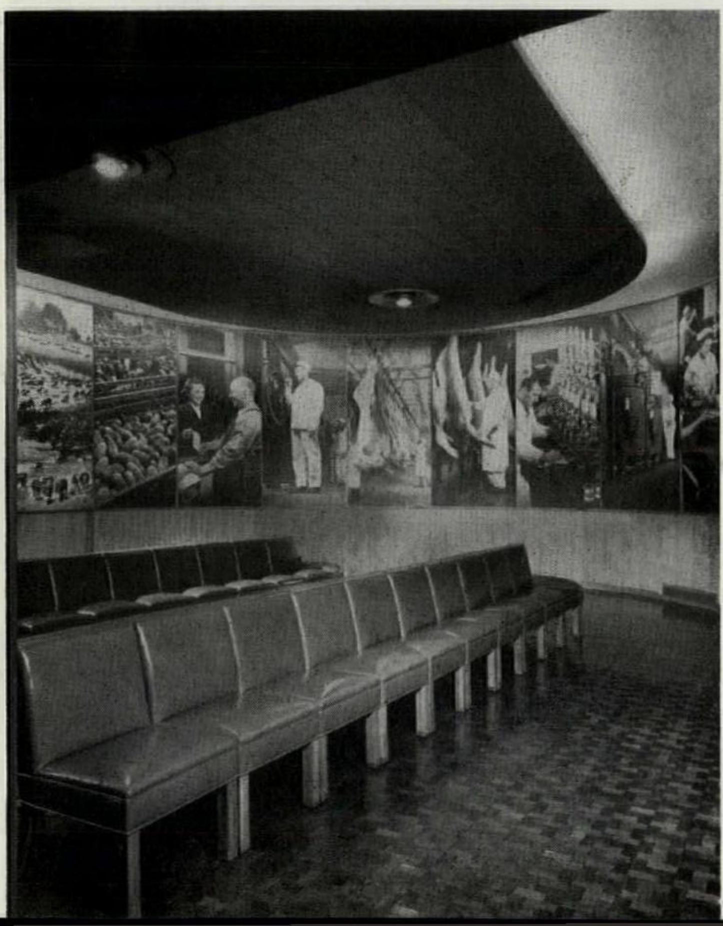
ceiling at the far end, and a series of slides showing the Morrell plant operation are explained by a guide. In the first year (before the war) more than 18,000 visitors attended; during the war, the building was temporarily closed. In the basement is a heater room and space for storing office records.

Structure: The basement is of poured concrete; first floor walls, of common brick and tile. These exterior walls are painted black (the building adjoins a railroad siding) which is in striking contrast to the white of the marble in the entrance recess and the cast iron trademark overhead. The pipe porch columns are warm gray and the doors themselves are terra cotta color. Black quarry tile is used on the porch floor, and the ceiling is painted gray-blue. Vestibule walls and flooring are of rubber.

The building is completely air conditioned with a brine coil from the central cooling system, using a gas-fired unit for the heating cycle. The waiting room is lighted by fluorescent lamps concealed in the recess of the acoustically treated ceiling baffle.



Floor Plan



Between the vestibule and the main room, the glazed partition has a sandblasted map showing the location of the company's plants and branches. In the waiting-lecture room, flooring, wainscoting, and trim are all walnut or walnut veneer; the photomurals are sepia. The reflective portion of the ceiling is painted dead white and the acoustical baffle and side walls are gray-green.

Progressive Architecture — Rich's, Inc.
Architectural Competition

PROGRAM

For the Design of

A Realistic House for a Family in Georgia

CLOSING DATE — JANUARY 21, 1946

This competition is open to all architects, architectural draftsmen, and architectural students. Under a ruling by the Committee on Competitions of the American Institute of Architects, Institute members are permitted to enter. Any contestant may submit more than one design. No employee of either Reinhold Publishing Corporation or the sponsors is eligible.

PRIZES

First Prize	$ 3,000.00
Second Prize	1,500.00
Third Prize	1,000.00
Fourth Prize.	500.00
25 Mentions at $100 each .	2,500.00
Special Georgia Prize . . .	1,500.00
TOTAL . .	$10,000.00

JUDGES

Thomas Harlan Ellett, F.A.I.A., New York
Ernest A. Grunsfeld, Jr., F.A.I.A., Chicago
Richard Koch, F.A.I.A., New Orleans
Ernest J. Kump, A.I.A., San Francisco
Roy F. Larson, F.A.I.A., Philadelphia
Roland A. Wank, A.I.A., Detroit
Robert Law Weed, A.I.A., Miami

All parties to this competition agree that the Jury of Award has authority to make the awards and that its decisions shall be final.

Authorized by Reinhold Publishing Corporation
Sponsored by Rich's, Inc., Atlanta, Georgia
Conducted by Henry J. Toombs, A.I.A., Professional Adviser
and Kenneth Reid, A.I.A., Associate Professional Adviser

PROGRAM

Despite all the efforts made by architects and others to help solve the problem of the Small House, there seems to be some inherent difficulty that makes these attempts fall short of complete success. Like the pot of gold at the end of the rainbow the perfect small dwelling is yet to be discovered. The result is that, looking about the country, one finds that the vast majority of small houses are badly designed or badly constructed or both and that the best of them still have some faults, either in the eyes of their occupants or in those of their neighbors.

It is true that over the years there has been some improvement, which may be traced to the thinking that has been done in each decade by the best architectural designers. Wide publication of comparatively few examples of good houses actually built and of designs prepared for periodic competitions have helped in the gradual spread of improved planning ideas which are then adopted and imitated in houses built during the ensuing period.

Competitions, however, often result in winning designs which, though brilliant and helpfully prophetic, involve expensive construction beyond the pocketbook of the average family. Such designs also sometimes rely on the introduction of some special materials or equipment known to be in the research stage but unlikely to be economically available within the near future.

It is the wish of both **Progressive Architecture (Pencil Points)** and the sponsor, **Rich's, Inc.,** of Atlanta, Georgia, that this competition shall be a realistic one, seriously aimed to encourage design of small houses that will not only be "better" but within the reach of the $3,000-a-year white-collar family that wants to build a home right after the war.

Rich's, Inc., naturally vitally interested in the well-being of the state it serves, is thinking particularly of houses "good to live in in Georgia." Since the difference in climate between Georgia and all but the northern group of states is in degree only, however, it is probable that the resulting designs will have a broad application so that designers need not feel that the problem is of limited scope.

PROBLEM

To design a house that could really be economically built in the State of Georgia in the immediate post-war period out of building products known to have been on the market before the war or known to be actually ready for production when plants are reconverted. Beyond this limitation, plus consideration of a reasonable cost for the family of clients described, the designer is free to choose the materials and equipment he considers most appropriate.

The house is for an American family of four—father, mother, and two small children—a boy of five and a girl of two. Their income is $3,000 a year. For reasons of convenience to work, school, shopping, etc., their building site must be in an established residential section of a still growing city. Although they would like to have a larger piece of land, they can afford only an inside lot 60 feet wide and 150 feet deep. They have a choice of four approximately level lots of four different orientations—on the north or south side of a paved street running east and west, or on the east or west side of a street running north and south. You as their architect will guide their choice and will design their house and some appropriate type of garage to fit the site chosen.

After the lot is paid for, the family budget will allow the building of a house containing a maximum of 1,350 square feet of floor area for the house exclusive of a garage and a heater room which may be either above or below grade. Basements and usable attic floors must be included in this total area.

Local restrictions permit no part of the house to be nearer than 20 feet to the street or nearer than 10 feet to the side and rear lot lines. (Fences, however, and walls not exceeding 6 feet high may be built on the restricted part of the property.)

The clients for whom you are to design the house are average people who have been looking forward for a long time to having their own home. They have been studying the pages of current magazines and are sympathetically aware of the contemporary trend in design, especially in regard to its greater promise of comfort, convenience, and freedom from a good deal of household drudgery. They definitely do not wish conformity with any traditional "style." At the same time they are desirous that the house they build shall take its place gracefully among its older neighbors. They have an idea that a good architect can give them something that is thoroughly modern and thoroughly appropriate to the region, not at all stodgy and imitative, yet so well proportioned and pleasant of aspect that it will excite general admiration rather than amazement.

The designer will keep in mind not only the present needs of the family but its future needs as the children grow up. He should also have an answer to the problem of caring for an occasional guest or a visiting parent. Realizing that a house never has too much storage space, he will contrive in an attic or cellar or otherwise to provide at least 900 cubic feet of easily accessible and well-disposed storage space for the miscellaneous needs that occur in every ordinary household over and above the usual closets and kitchen cabinets.

The designer will keep in mind the Georgia climate which has a fairly wide range. It is generally accepted that an up-to-date house in Georgia is not comfortable in the winter without a heating system. (Gas is available in this area and is relatively cheap.) It can be very cold in winter and very hot in summer. March ordinarily sees the last of winter and the numerous flowering plants begin to bloom in the latter part of March. April brings full spring. May is warm and inclined to be hot towards its end. June, July, August, and most of September are definitely hot. One seeks the shade, particularly in the middle of the day. Spring and summer rains may be frequent and are apt to be sudden and heavy. Breezes in summer are most generally from the southwest, usually arise in the evening, and help to relieve the heat of the day. In October and November the leaves turn and the evenings are cool. December, January, February, and the early part of March are commonly cold and raw with occasional warm sunny days. The prevailing winter winds come from the northwest. There are freezes, sometimes of several weeks' duration, but there is litttle snow. Elevation above sea level ranges from 500 to 1,000 feet. Average temperatures, rainfall, and sunny days for the vicinity of Atlanta are as follows:

	WINTER	SPRING	SUMMER	FALL
AVERAGE OF MAXIMA	52°	70°	80°	70°
ABSOLUTE MAXIMA	78°	97°	103°	102°
AVERAGE OF MINIMA	36°	52°	69°	54°
ABSOLUTE MINIMA	8°	8°	39°	14°
TOTAL PRECIPITATION FOR DRYEST YEAR	9.4"	6"	12"	5.7"
TOTAL PRECIPITATION FOR WETTEST YEAR	26.7"	16"	14"	11.1"
AVERAGE HOURS SUNSHINE	463	700	814	696

The comfort of a house in Georgia would be increased by

(a) Cross ventilation. While exhaust fans are widely used to pull in cool evening air in summer they do not materially help daytime comfort. (It is assumed that summer air conditioning is not financially possible at this time to the family described.)

(b) Porches can be thought of as summer living rooms but to be useful they must be screened for insects (as all other openings must be). It should be noted that porches are not pleasant when flooded with summer sun.

(c) Terraces, shaded from the sun in summer and yet open to it in winter are most pleasant contributions to the enjoyment of out-of-doors.

(d) Trees and shrubbery, thoughtfully located, can materially contribute to the comfort, privacy, and pleasure of a Georgia home.

Considerations of the Jury of Award

(1) The architectural merit of the design, including its regional suitability and the skill with which the plans are worked out to fit the needs of the hypothetical client.

(2) Practicability and economy of construction, wherewith the client's budget may be met.

(3) The special prize will be awarded for the best house submitted by an architect or designer who lives and works in Georgia.

(4) The judges will not be influenced by quality of delineation.

COMPUTATION OF FLOOR AREA (Mandatory)

Measurement of enclosed spaces shall be taken from the inside of exterior walls with no deductions for partitions. Horizontal area occupied by stairs shall be counted as a part of the floor from which they rise. Open porches or screened porches shall be counted at half their full area. Entirely glassed-in porches shall be counted at their full area. Designs that exceed 1,350 square feet total floor area (exclusive of garage and heater room) will not be considered.

DRAWINGS (Mandatory)

All required drawings for each design shall be composed on a single sheet of opaque white paper, trimmed to exactly 25" x 36". The sheet is to be read with its long dimension vertical and shall contain the following items in **opaque black ink.** (No diluted ink, color, wash, airbrush, or applied transparent shading tissue.) All lettering shall be at least ⅛" high.

(1) Plans at ¼" equals a foot. The use and dimensions of each room or space shall be indicated so that they will be clearly legible when reproduced at one-quarter size. Suggested furniture arrangement shall be shown.

(2) Perspective of the house as seen from the street, rendered in ink with pen or brush and so laid out that true heights may be measured at a scale of ¼" = a foot on the corner nearest the observer.

(3) Elevations, at ⅛" equals a foot, of the two sides of the house not shown in perspective.

(4) Plot plan at any convenient legible scale showing location of house and garage and arrangement of the property.

(5) Separate single line diagram of floor plans at small scale indicating method of computing total inside floor areas.

(6) Drawings shall bear the title A REALISTIC HOUSE FOR GEORGIA with the subtitle PROGRESSIVE ARCHITECTURE—RICH'S, INC. COMPETITION and shall be signed with a device or *nom-de-guerre*.

(7) A single sheet of 8½" x 11" paper, to be enclosed with the drawing, shall contain a typewritten outline specification listing principal materials and items of equipment for the house.

(8) Optional. It would be interesting to include on the drawing, at small scale, a diagram showing how the same house might be placed on each of the three lots of different orientation which were rejected by the client upon your advice.

ANONYMITY (Mandatory)

Drawings shall contain no identifying mark other than a device or *nom-de-guerre*. Each drawing shall be accompanied by a plain opaque sealed envelope bearing the same device or *nom-de-guerre* as the drawing and containing a slip of paper on which the true name and complete address of the competitor are stated. In the case of drawings submitted by architects or designers now living and working in Georgia or by residents of Georgia now temporarily absent from the State because of war service, the accompanying envelope shall bear, in addition to the *nom-de-guerre*, a capital "G," lettered ½" high, on its upper right-hand corner. This is for the purpose of identifying to the Professional Adviser but not to the Jury the drawings eligible for the Special Georgia Prize. The envelopes will be opened by the Professional Adviser in the presence of the Jury, only after the awards have been made.

DELIVERY OF DRAWINGS (Mandatory)

The drawings shall be securely wrapped, either flat or in a strong tube not less than 2½" in diameter and addressed to Kenneth Reid, **Progressive Architecture—Rich's, Inc. Competition,** 330 West 42nd Street, New York 18, N. Y. In the case of drawings sent registered, competitors must not demand a return receipt. Drawings shall be delivered to the office of **Progressive Architecture** or placed in the hands of the post office or express companies not later than 6 P.M., standard time, Monday, January 21, 1946. Drawings will be accepted at any time before the close of the competition. They will be fully insured from the hour of their receipt.

Drawings are submitted at the competitor's risk but reasonable care will be exercised in their handling, safekeeping, and packaging for return.

EXAMINATION OF DESIGNS

The Professional Advisers will see that the drawings are expertly checked to insure that they comply with the mandatory requirements. No award will be made to any design that fails to comply. No drawing, whenever received, will be shown or made public until after the awards by the Jury.

JUDGMENT

The Jury of Award will meet at the Bon Air Hotel, Augusta, Georgia, on February 13, 14, and 15, 1946.

ANNOUNCEMENT OF AWARDS

The Professional Advisers will send by mail, to each competitor, the names of the winners of the Prizes and Mentions as soon as possible after the judgment. This information will be published in the March, 1946, issue of **Progressive Architecture.**

REPORT OF THE JURY

The winning designs and a full critical report by the judges will be published in **Progressive Architecture** for April, 1946. Each competitor will receive a copy of this report.

THE PRIZE WINNING DESIGNS

The designs awarded Prizes and Mentions are to become the property of the sponsors, who agree that whenever and wherever any of the drawings are published or exhibited, the names and addresses of the designers will be clearly displayed and all resulting inquiries will be forwarded to them. The sponsors further agree that any models that may be built from any of the designs for exhibition purposes will be faithfully executed in exact conformity with the original design.

The sponsor reserves the right to build, for demonstration purposes, one house from each of one or more of the premiated designs. In this event, the sponsor will pay to the architectural author of each design so used, a professional fee of six percent of the contract cost. This fee will be in addition to the Prize or Mention award. For this fee the recipient agrees to furnish a full set of contract working drawings, necessary details, and specifications, which must be adequate in the judgment of the Professional Adviser.

RETURN OF DRAWINGS

Non-premiated drawings which are not reserved for exhibition or publication will be returned in a reasonable time, postage and $50.00 insurance prepaid.

NOTICE TO COMPETITORS

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MODERN GLUES AND BUILDING CONSTRUCTION

by **Eugene R. O'Hare**

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The war is over; architecture and building construction are changing; each new building material is sure, according to its proponents, to revolutionize building construction. A lesser claim than that would hardly attract notice nowadays, and the claim is made for even the most insignificant materials.

It has even been seriously suggested that glue, the stuff which sticks pieces of wood together, is going to revolutionize building construction. This extreme prognostication is certainly hard for any but a glue man to take seriously, and the author appreciates the opportunity here to vary the reader's diet of postwar wonder stories, and to gain a certain distinction, by making somewhat more modest claims for glue.

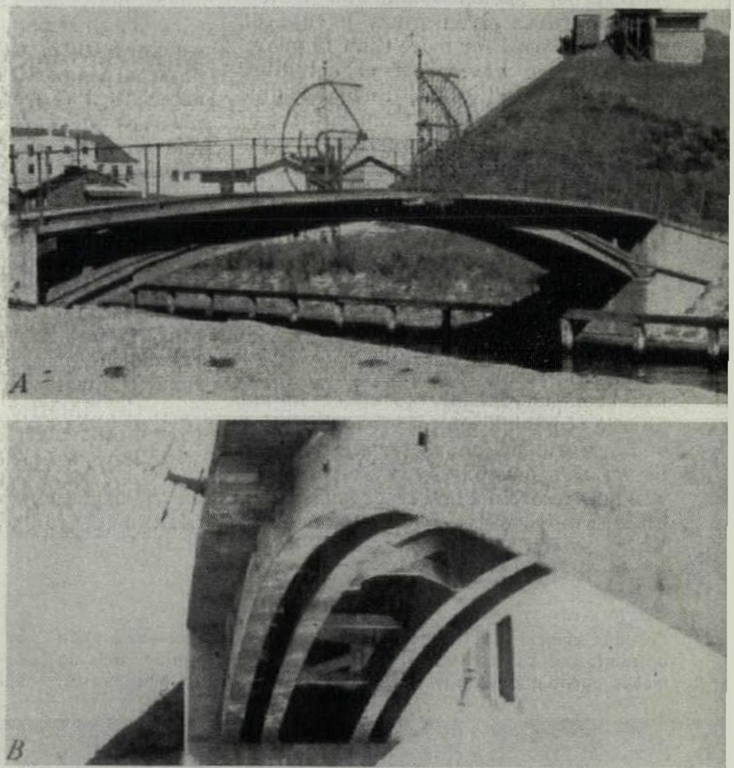
CONSTRUCTION WILL CHANGE

However, this I cannot do, because glue *is* going to revolutionize a substantial proportion of building construction. "Revolutionize" is still a strong word for all its glib use of late, yet there come to mind only four examples of technical developments which have had as significant effects on building design, engineering, and construction. These are 1, use of portland cement as a mortar (or "glue," if you please) following its invention in 1812, which pushed the monolithic masonry building to height limits set only by loss of floor space due to wall thickness; 2, substitution of riveted steel frames for masonry-and-cast-iron-column bearing walls, which gave us the skyscraper; 3, use of poured portland cement with steel reinforcing; and 4, fabrication of steel by welding, which (like cement mortar bonding of masonry units) is in the nature of a "gluing" process. (Unlike the first three examples, welding has not yet flowered fully, but indications of its ultimate applications are already apparent.) It is probable that the use of glue will develop with considerably more rapidity than has welding.

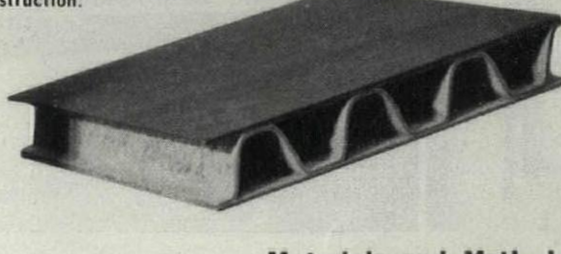
What is this new glue, and how will it change building construction? How radically does it differ from the glues we have known and used in the past: phenol resin glue for exterior plywood panels

1 PROGRESS: Once glue could only be used outdoors for such purposes as porch columns, where the characteristic swelling of wood was as important a design factor as the qualities of the glue. . . .

2 Casein glue made possible such structures as this bridge (views from side and beneath) in Denmark, built in 1929 of laminated wood arches, spanning 52 ft. Non-waterproof glue joints are paint-protected, flashed, isolated from soil moisture, were in good condition in 1939. . . .



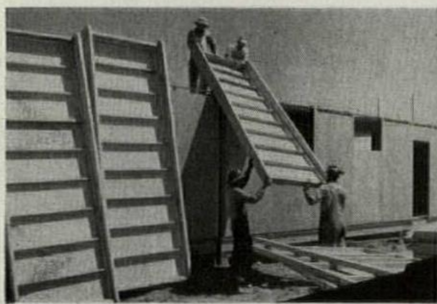
3 Waterproof resin glues make possible new building materials and techniques; for example, this sandwich of flat and corrugated plywood, lightweight, strong, developed for bomber construction.



MATERIALS and METHODS

GLUE developments, like earlier innovations, can transform building techniques . . . . .

USES ALREADY COMMON:
Plywood in flat sheets . . . .



and curved shapes . . . .

casein glue for porch column stave joining, and the like?

THE NEW GLUES

These new glues (there are two of them) are: room-temperature-setting resorcinol, and intermediate-(warm)-temperature-setting resorcinol-phenol synthetic plastic resin waterproof glues.

Room-temperature resin glues and waterproof resin glues are not quite new. *Waterproof* phenol resin and *water-resistant* urea resin glues have been known and used for more than 10 years. However, the waterproof phenol glues are "hot press" glues, and the glue joints must be cured at temperatures of about 300°F while the work is clamped up. This operating characteristic limits their application to thin sheets of plywood (largely douglas fir) made in hot platen presses. The urea glues on the other hand, while they are room-temperature-setting, and thus much more widely usable, are *not* waterproof.

What has been accomplished then in processing resins to make the new glues has been successfully to effect in *one* glue a combination of the operating and performance characteristics already possessed separately by two older glues. The new resorcinol and resorcinol-phenol glues are room-temperature or intermediate-(warm)-temperature-setting *and* waterproof when set.

COMPARE WITH PREVIOUS INNOVATIONS

Similarly, burning lime to make portland cement was but a step in processing the same basic material, lime, which had been used for centuries; and converting cast iron into structural steel was but a step in processing iron ore, neither constituting the invention of a "new" material. Yet architecture, structural engineering, and construction as we know them today rest on the new physical properties (performance characteristics) of *waterproofness* and *compressive strength* of portland cement and on the *shear* and *tensile strength* of structural steel.

These two decisive improvements in lime and iron ore were preceded by numberless fruitless experiments. Egg albumen and honey, for instance, were used as additives in exterior stucco plaster for American Colonial stone houses to impart moisture resistance to lime; the walls themselves were laid up and the interior walls scratch- and brown-coat plastered in ordinary clay, with lime white-coat finish inside.

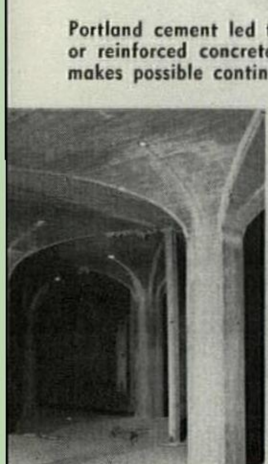
In the same way previous attempts had been made to "waterproof" the older gelatin animal, vegetable starch, protein casein, and urea resin glues. But none of these attempts produced a glue which was absolutely waterproof, or unquestionably as durable as the wood it bonded under all conditions of use such as exposure to moist and dry heat and fungus, or usable at low setting temperatures such as must be relied on in gluing heavy work too thick for the penetration of the heat necessary to cure the glue at the innermost glue line.

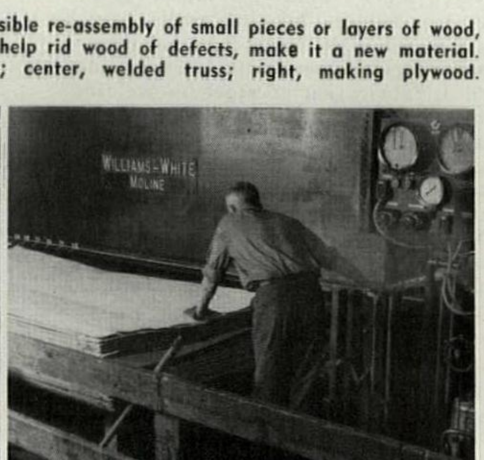
Without such a glue, wood, a basic structural material, has always been limited in its use in buildings to *sizes* available from the tree, to *positions* where solid natural timbers singly or assembled only with "spot" fastenings (nails, bolts, dowels, pins, etc.) could carry the stresses imposed, and to *shapes* which could be hewn or bent from the tree or sawn and scarfed together.

NEW POTENTIALS WITH NEW GLUES

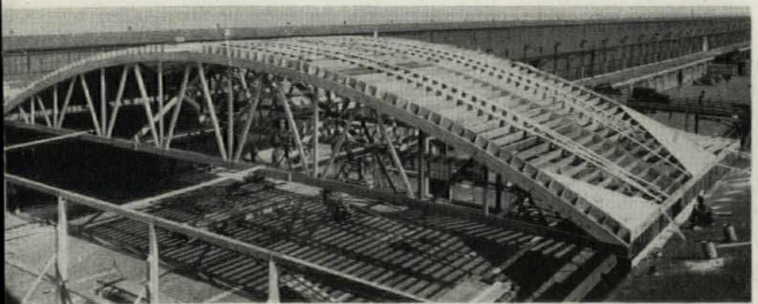
This lack of a perfect method of bonding wood fibers has not only held wood to subsidiary use in structural applications, but has severely limited its use even as trim and decoration. Now the low-temperature, strong, durable, waterproof, fungus-proof, heat-proof resorcinol-phenol resin glues have re-

Portland cement led to stronger mortar—an adhesive—and plain or reinforced concrete; steel led to skyscraper framing, welding makes possible continuity in framing; waterproof resin adhesives, by making possible re-assembly of small pieces or layers of wood, sawdust, etc., help rid wood of defects, make it a new material. Left, concrete; center, welded truss; right, making plywood.





and glued laminated arches and trusses.



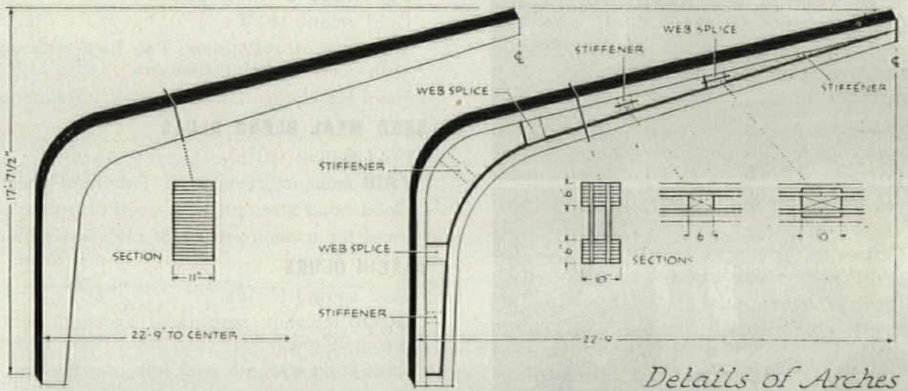
moved this disabling limitation from wood; the only remaining limit is the ingenuity of the architectural and engineering professions.

These new resorcinol and resorcinol-phenol glues were invented during the war, their application has been strictly limited to war material, and knowledge of the very simple handling techniques required for their use has until now been confined to secret and restricted Government specifications. But their performance in war work is of undisputed record, and they are now freely available for civilian work along with completely developed and tested recommendations for their use in every conceivable wood-gluing application.

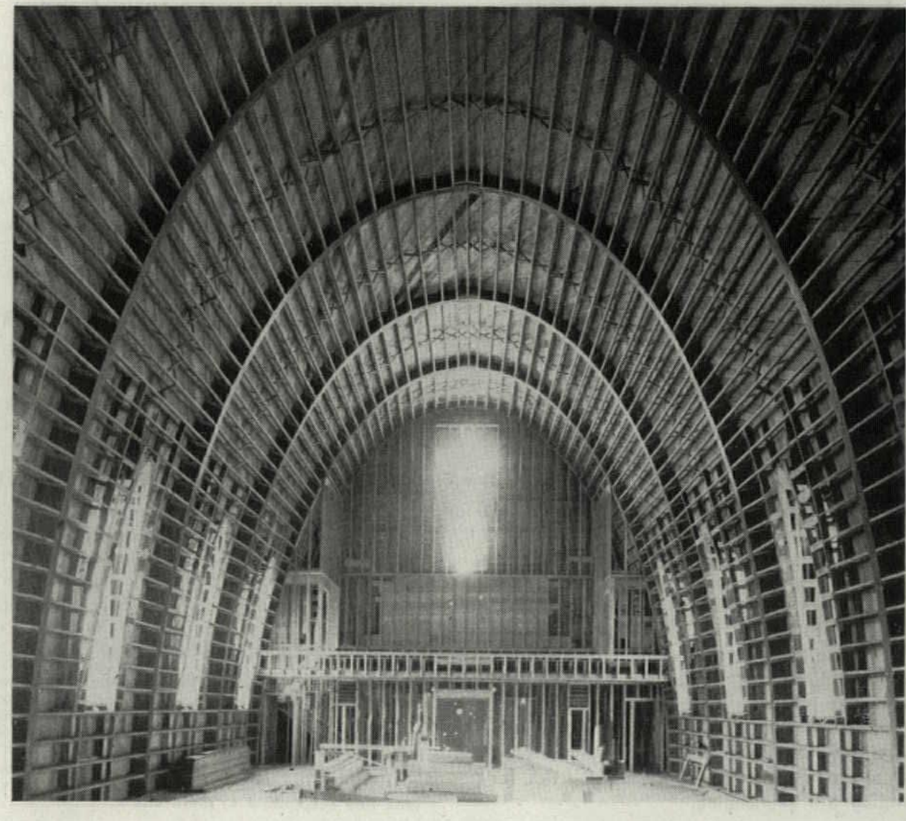
We now not only have glue as durable and long-lived as the most durable wood species, and as strong as the strongest, but preservative treatments have been perfected to make any structural wood durable; and these new glues will glue preservatively treated wood, or wood glued with these glues can subsequently be impregnated with preservative or fire-resistant treatment.

Additionally, the bad behavior of wood, which checks, splits, and cracks when it is used in large natural sizes, is automatically overcome by gluing, because when the tree is sliced into thin

One achievement during this war was field testing of laminated wood construction—an achievement due in great measure to glue and other means of connecting timbers. Its value should not be lessened because a hurricane destroyed some hastily built laminated arch hangars; admittedly much wartime work was poorly executed with unsuitable lumber; that is not a design fault. Given better materials and workmanship, the hangars would probably not have suffered so severely. Glued lamination was no spontaneous development here. Otto Hetzer, a German designer, originated glued laminated construction before World War I. By 1939, as a result of certain peculiar combinations of circumstances, Hetzer's system was losing favor, in Europe, to mechanical jointing devices. In this country other conditions obtain; glued construction seems on the upgrade. We even have examples of plywood field-glued to wood framing.

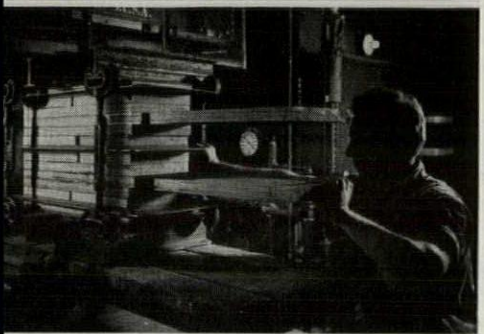


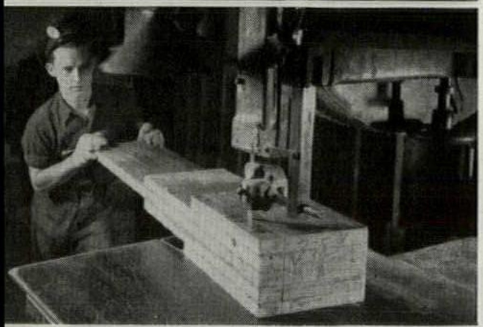
Details of Arches

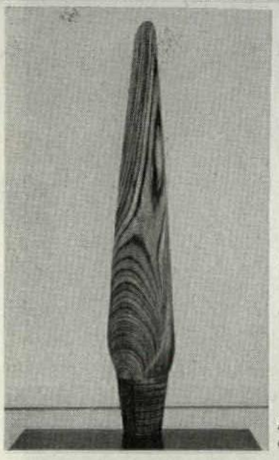


St. Austin's Catholic Church, Minneapolis
Bard and Vanderbilt, Architects

The wood church in Minneapolis, built nearly a decade ago, was apparently done in imitation of reinforced-concrete-parabolic-arch construction after a European example; wood arches were cheaper than concrete; the stucco exterior seems not entirely satisfactory. Yet the construction photograph is inspiring; the moral is obvious. Above it are typical solid and double-I section, casein-glued, laminated arches designed, built, and tested in the U. S. Forest Products Laboratory before waterproof resin glues were available; similar arches, made with better glue, have since been used in many types of buildings.







Photos this page courtesy Bakelite Corp.

IMPREG and COMPREG: steps in manufacture. Top to bottom: thin, small wood sheets, already impregnated with resin, are laminated together; laminated blocks are built up into assemblies, hot-pressed together; single assembly is rough-shaped; after final shaping and machining, the finished propeller—made of a virtually new material, whose possibilities for building are challenging.

boards and seasoned to exactly the desired moisture content, the stresses which cause splits, checks, and cracks are avoided.

Another important advantage of gluing is the fact that natural timber of large cross section containing defects (such as knots) so affecting its strength as to unsuit it for structural use (and hence less costly and more readily available than sound structural timber) can be sawn into thin boards, seasoned, and the boards reassembled with glue in a new arrangement without defects.

Architects and designers will find the exploration of glued wood design a rewarding field, and one in which accomplishment will be greatly facilitated by the large amount of groundwork which has already been done with the new glues during the war by Government design, procurement, and laboratory agencies, by contractors who fabricated war equipment using the glues, and by glue manufacturers. Information on all this groundwork is readily available.

GLUE TYPES AND CHARACTERISTICS

ANIMAL GLUE

Room-temperature setting (70°F).

NO moisture resistance. Poor heat resistance. Attacked by mold.

Quick setting.

High bond strength with poor joint fits and poor clamping pressure.

Used for non-waterproof furniture joint assembly gluing.

VEGETABLE STARCH GLUES

Cold setting (40°F).

NO moisture resistance. Fair heat resistance. Attacked by mold. Fair bond strength with good clamping pressure.

Used for cheap non-waterproof furniture plywood and box shook manufacture.

SEED MEAL BLEND GLUES

Cold setting (40°F).

FAIR moisture resistance. Fair heat resistance. Attacked by mold.

Good bond strength with good clamping pressure.

Used for moisture-resistant plywood manufacture.

CASEIN GLUES

Cold setting (40°F).

GOOD moisture resistance. Excellent heat resistance. Preservatively treated grades are mold-resistant.

High bond strength with fair joint fits and clamping pressure.

Used for moisture-resistant plywood manufacture and assembly joint gluing.

[1] THERMO-SETTING RESIN GLUES

[2] UREA-FORMALDEHYDE RESIN GLUES

Room-temperature setting (70°F).

HIGH moisture resistance. Poor heat resistance. Moldproof.

Good bond strength with good joint fits and good clamping pressure. Used for highly moisture-resistant plywood manufacture and assembly joint gluing.

PHENOL-FORMALDEHYDE RESIN GLUES

High-temperature setting (250°F).

WATERPROOF. Heatproof. Moldproof. Extremely durable.

High bond strength with good clamping pressure and proper curing (setting) temperature.

Used for "hot pressed" exterior, marine, aircraft, and furniture plywood manufacture.

RESORCINOL-PHENOL-FORMALDEHYDE RESIN GLUES

Intermediate (warm)-temperature setting (150°F).

WATERPROOF. Heatproof. Moldproof. Extremely durable.

High bond strength with good clamping pressure and proper curing temperature.

Used for laminating heavy straight and curved waterproof marine and construction timbers, molded plywood, etc., warm-cured in heated chambers.

RESORCINOL-FORMALDEHYDE RESIN GLUES

Room-temperature setting.

Excellent bond strength, **complete water resistance** with poor joint fits and poor clamping pressure on soft woods cured at room temperature. [Complete water resistance on hard woods cured at intermediate temperature (150°F).]

Used for waterproof assembly joint gluing on furniture, station wagon and truck bodies, aircraft, etc., "cold pressed" specialty curved and molded plywood, laminated timbers and shapes cured at room or intermediate temperatures.

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[1] Resin glues are classified (room-, intermediate-, or high-temperature setting) on the basis of the lowest temperature range in which they will cure to produce durable bonds. Being thermo-setting, the rate of cure is accelerated by the application of heat to the work while under clamping pressure, and room-temperature glues can be cured at intermediate temperatures and intermediate temperatures glued at (the lower range of) high temperatures.

[2] For lower glue cost, urea resin glues are sometimes "extended" by the user mixing wheat flour or other starchy "extender" with the glue. This detracts from water resistance and makes the glue line susceptible to mold attack.

ELECTRONIC HEATING

For over a century the principles of electronic heating have been known. The method has been used for heat treating industrial products for more than a quarter of a century; yet it has gained wide acceptance as an industrial tool only within very recent years. But so valuable has it proved in accelerating various manufacturing processes that it is today indispensable to industry.

This type of use is not very architectural. What are the potentialities of electronic heating as far as architecture is concerned?

HEAT IN BUILDINGS?

Heat is required in buildings for three principal purposes: for space heating or cooling, air conditioning, etc.; for cooking food; and for heating water. For none of these is electronic heating suitable, at least in its present stage of development. At times the necessity of providing space and facilities for electronic heating equipment in manufacturing plants may become an architectural engineering concern.

It is true that at World's Fairs and occasional lectures we have seen eggs electronically fried. Cooking with electronic heat is a physical possibility, but it is neither economical nor productive of the golden brown roast, the delicately crusty biscuit, which means good cooking to the average human being. Dielectric heat, used for cooking, might be described as working from the inside out, just as corn is popped; which would be likely to produce roast beef brown on the inside and rare without, or muffins with crunchy centers and anemic outsides. As far as health, food values, etc., are concerned, the dielectrically cooked product might be entirely satisfactory, but it would hardly satisfy those of us who are accustomed to having our cooked food well done only on the surface.

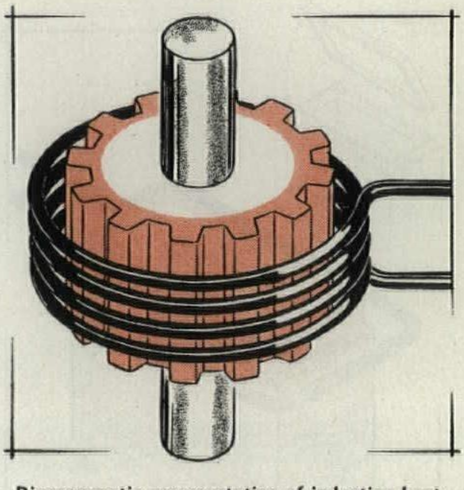
Another drawback: the high frequency current required would entail the installation of an oscillator or generator of some sort, which might cost (at present prices) from $1,500 to $2,000. The frequency would have to be extremely high for reasonable cooking operations; and both the capacity of such a generator and its size would be hard to accommodate in residential, if not in commercial or institutional, kitchens.

HOW ELECTRONIC HEATING WORKS

To comprehend the reasons for such statements, some understanding of the nature of electronic heating is necessary. Briefly, electronically induced heat is the result of energy induced in a substance by the action of high frequency electric current. The heated substance may be a conductor of electricity, such as a ferrous or non-ferrous metal, or a non-conductor, such as a plastic, glass, wood, etc. If the heated substance (called, in industry, the **workpiece**) is a conductor, electronic heating may be termed **induction** heating. If it is not, it may be called **dielectric** heating. The word "electronic" is actually a misnomer, because it is identifiable primarily with the most common contemporary means of generating high frequency current, the electronic vacuum power tube, not with the heating process.

INDUCTION HEATING

Induction heating usually requires that the workpiece be surrounded by one or more turns of an electrical conductor through which the high frequency current flows. Copper tubing, rather than wire, is often employed for this purpose because current travels on the surface of the conductor, and tubing has two exposed surfaces, wire only one. Heat is induced in the workpiece by electromagnetic



Diagrammatic representation of induction heating, as used to surface-harden a gear.

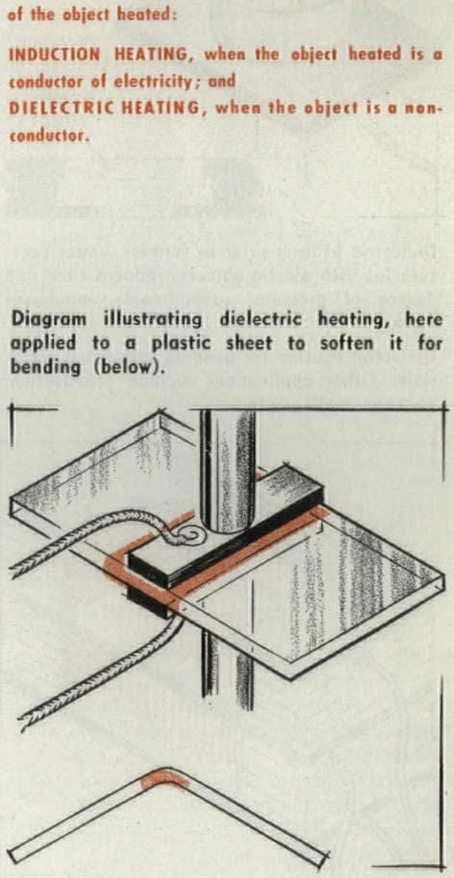
Electronic Heat is produced by high frequency current.

High frequency current is alternating current ranging from 60 to 300,000,000 cycles per second.

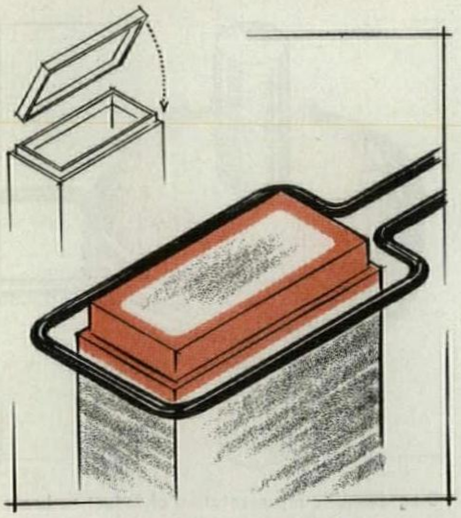
There are two types of electronic heating, the distinction depending on the electrical characteristics of the object heated:

INDUCTION HEATING, when the object heated is a conductor of electricity; and
DIELECTRIC HEATING, when the object is a non-conductor.

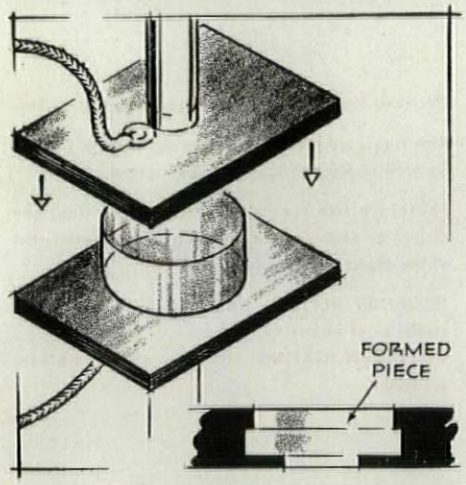
Diagram illustrating dielectric heating, here applied to a plastic sheet to soften it for bending (below).



ELECTRONIC HEATING

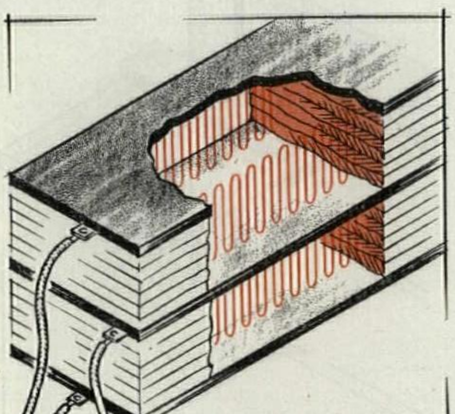


Induction heating for joining small parts, as sealing a box cover. Other uses: heating crucibles for melting metals, chemical or metallurgical analysis, etc.



Dielectric heating prior to forming under pressure (as with plastic objects) reduces time and degree of pressure, saves molds, minimizes waste.

Dielectric heating for bonding laminated materials. Other applications include dehydration, package sealing, etc.



action, and like electric current is concentrated in the outer surfaces, particularly those close to the coils; a phenomenon called **skin-effect.** The higher the frequency used, the more pronounced and instantaneous becomes the reaction; degree and depth of heating can thus be finely controlled. These characteristics make induction heating particularly suitable for such processes as surface-hardening of metal shapes.

DIELECTRIC HEATING

In dielectric heating, the workpiece is heated electrostatically (rather than electromagnetically) by means of two or three plates which act much as do radio condensers. Molecular friction—and hence, heat—results from the application of high frequency current. Every molecule of the heated substance is equally affected, regardless of its location or distance from the plates. Consequently uniform heating is possible throughout the entire material regardless of its size or shape.

USES, APPLICATIONS

The following list of uses, which is by no means complete, is constantly being augmented as new applications are devised to solve new production problems.

INDUCTION HEATING

Ferrous Metals: Hardening, annealing and heat treating, flowing tin on tinplate, baking finishes, pre-heating for welding, forging, spinning, extruding or upsetting and stress relief of welds or brazed joints, melting.

Non-Ferrous Metals: Brazing and soldering, annealing, melting and alloying, heat treating, degassing of tube electrodes, glass-to-metal seals, melting, welding.

Processing: Detonating explosive rivets; bombarding radio tubes.

DIELECTRIC HEATING

Abrasive Materials: Baking after pressing; baking under pressure, as applied to resin-bonded materials.

Food Processing (industrial): Sterilization, pasteurization, dehydration, deactivation of enzymes, cooking and heating, baking, curing, destroying infestations; packaging and sealing.

Impregnated Sheet Materials: Laminating of flat sheets, preheating of stacks of flat sheets, curing of molded shapes.

Plastic Molded Materials: Preheating of forms for compression and transfer molding; heating in molds.

Rubber: Curing of rubber, curing of foam rubber, drying, preheating molding compounds containing rubber.

Sheet Plastics: Cooking during manufacture, annealing and heat treating, heating for shaping, laminating of sheets, seam and edge joining.

Textiles and Papers: Drying rayon, heating nylon thread, drying cloth and paper, heating rayon to balance cord.

Thin Materials: Sealing containers, "sewing" thermoplastic sheets and fabrics impregnated or coated with thermoplastic materials.

Wood: Gluing, bonding, drying, seasoning.

ADVANTAGES

For these purposes, electronic heating has certain definite advantages: Strikingly reduced processing time, which permits increased production at lower cost; simplicity of operation, which permits use of non-technical labor and results in greater uniformity of product and fewer rejections; fine control of extent, time, and degree of heating, which may be utilized to eliminate post-heating corrective measures; and, as applied to industrial uses, lower costs (initial and operating) than are obtainable with other production methods, and cleaner, less space-consuming work stations with reduced fire hazard. In fact, without electronic heating many modern products could not be manufactured at a low enough cost to make mass production feasible.

For building equipment, however, electronic heating is still unsuitable. The fact remains that a bulky, expensive generator is required at present, and for operations on such a small scale as the ordinary domestic kitchen the cost and space are not justifiable. Perhaps future developments will include generators small and cheap enough to make possible a convenient, cheap, electronic kitchen range. Possibly some genius will find out how to build electronic plates into a wall, in order to convert the structural wall into a simple radiant heating panel. Neither suggestion can be called impossible or even improbable in the light of technological progress during the war.

But much more likely, although it has yet to be projected by those capable of producing and utilizing new techniques, would be the application of electronic heating to construction methods. In construction, there are countless joints to be made. Common methods of making joints include the mechanical means (bolts, rivets, screw joints, friction joints of all types); adhesives (mastics, putty, plastic glues, etc.); and physical or chemical union of the materials as in welding or soldering. To substitute electronic methods (of applying heat for making or reinforcing joints) for the handicraft methods now in vogue sounds revolutionary; but it is much more reasonable than to propose an electronic stove. The plumber, the welder, the plastics or plywood installer could distribute the cost of the equipment involved over many jobs; he could tac-weld his material in place and then proceed to making the finished joint; he could heat materials for bending to suit job conditions. Many other applications can be envisioned.

Yet, architecturally speaking, electronic heating is now a process for producing and preforming building materials—plywood, plastics, metalwork, built-up members, and the like. The development of smaller (though still large), efficient (though still costly), standardized generators presages the advent of portable equipment for field as well as factory use. When such a development occurs, construction will find a way to use it to advantage.

BUILDING CODE PROGRESS

For years there has been agitation to modernize building regulations, and to achieve uniformity of regulation, at least within a geographic or political region. Antiquated codes have caused much waste of construction material and time; many of them have been regulations to evade (legally) rather than to live up to, because their provisions have been unreasonable in view of modern knowledge, materials, and techniques. Some may still contain provisions which, intentionally or unintentionally, favor some special interest; but much more serious is the variation in requirements from one locality to the next, so that in some cases a designer or builder has to change his practice completely upon entering a new community. Thus goes the argument for uniformity and modernization of building codes. During the war many localities adopted temporary regulations much less exacting than codes for normal times, and we learned a lot.

Also, both prior to and during the war several construction innovations were evolved; their use could not be covered by existing building regulations no matter how they were stretched. Two examples are glued construction and lightweight steel construction; there are several others. Several associations, societies, and industry groups are active in suggesting code provisions to remedy this situation.

The accepted purpose of a building code is the protection of people as a whole against a possible irresponsible individual designer, builder, or owner. Thus safety becomes the prime factor, safety against fire, panic, and structural hazard. To ensure safety minimum standards are set up by the code; the evil in this, of course, is that in practice the minimum becomes the maximum.

The following summary of regional codes may not include all states which have uniform building regulation, but it does reveal that the concept of uniformity has achieved surprisingly wide acceptance.

WISCONSIN: State code established 1911, administered by State Industrial Commission; changes made in consultation with Advisory Board; provisions have statutory force but are promulgated by Commission without legislative action. Code applies to new buildings, remodeling, additions, except 1 and 2-family dwellings and their outbuildings, outlying agricultural buildings, temporary construction. **Note:** Wisconsin has only 1 large city, Milwaukee, with a building dept. capable of passing on projects; otherwise projects are submitted to State Commission in Madison. Yet there is no interference in local matters; any political subdivision may enact more stringent regulations; State authorities deal primarily with safety standards.

INDIANA: Enabling act passed February 1945, establishing Administrative Building Council composed of state officials, architects, engineers, building contractors, building mechanics; director appointed by Governor, must be registered architect or engineer. Administrative Committee administers laws, promulgates and administers regulations. Its regulations have statutory force. Codes supersede all previous regulations, are based on Pacific Coast Uniform Building Code, are simplified by providing legal means of referring to recognized standards of quality; as far as possible it is on a **performance** rather than a **specification** basis; prepared by competent technicians, it is easy to revise, quite flexible. Application of code similar to that of Wisconsin.

IOWA: Business and professional societies related to building have prepared an enabling act to provide for a state regulatory body and code; act passed state senate last spring, did not come to vote in house; is being reintroduced this session.

OHIO: Has fairly complete state code.

PENNSYLVANIA: Fairly complete requirements for small cities; also detailed fire and panic regulations, promulgated by Dept. of Labor and Industry under legal authority.

MASSACHUSETTS: Has state requirements applicable in absence of local code; also state code for public assembly occupancies.

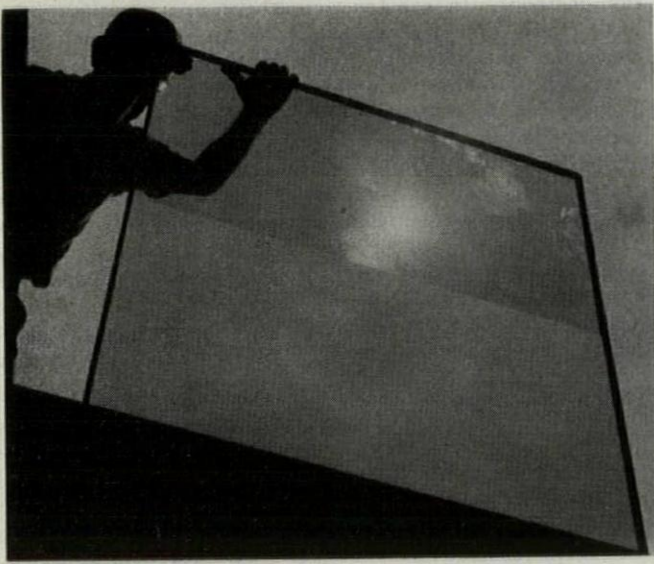
N. CAROLINA, SO. CAROLINA, LOUISIANA: Requirements somewhat limited.

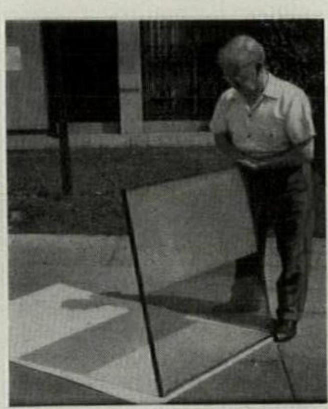
NEW JERSEY: Has state School Building Code.

CONNECTICUT, MISSOURI: State codes being actively promoted.

ILLINOIS, NEW YORK, VIRGINIA, NEW HAMPSHIRE: Preparation of state codes has been proposed.

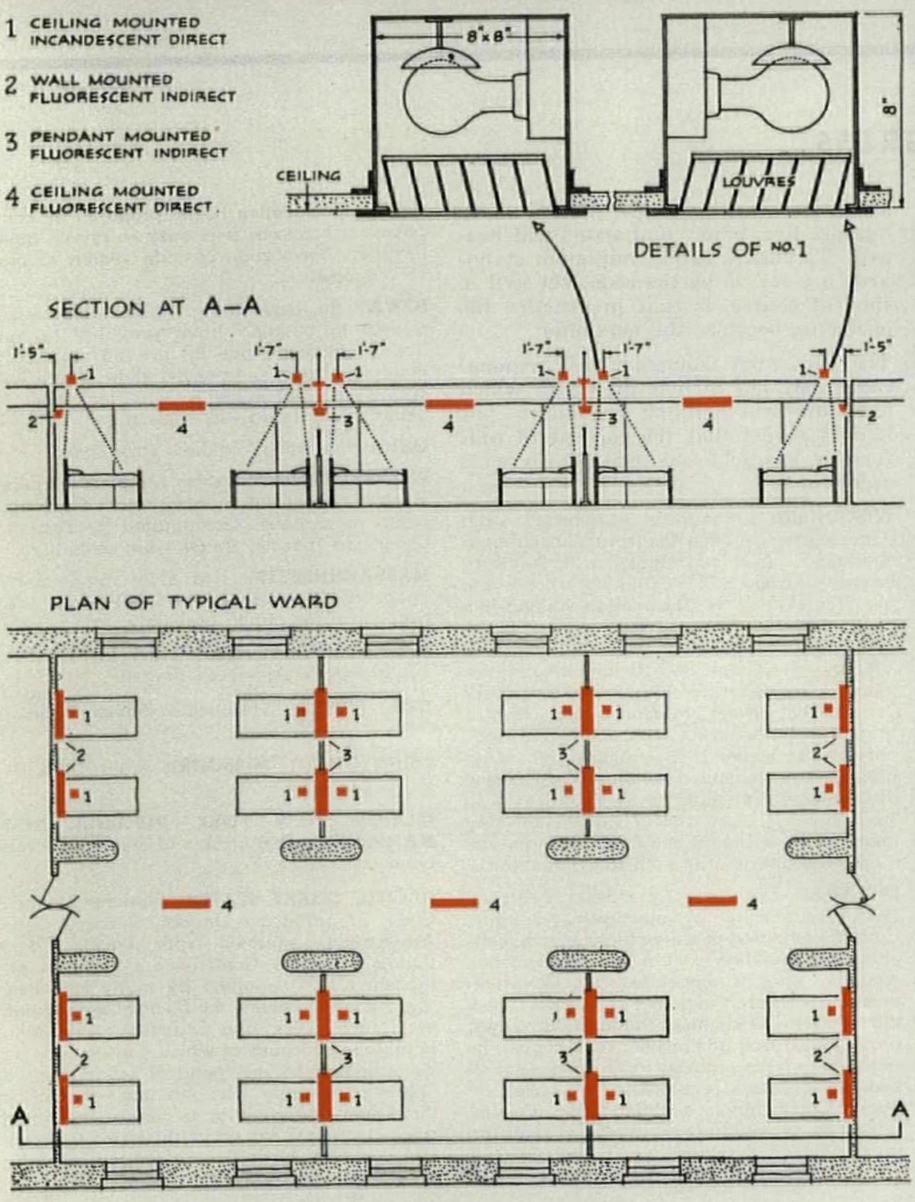
PACIFIC COAST STATES: Uniform Building Code, prepared by Uniform Building Code Association, affiliated with Pacific Coast Building Officials' Conference (Conference established 1922) adopted by many localities, also by many outside the Pacific Coast region (total: 375 cities and counties). Objective: to provide a document which can be adopted by ordinance by any political subdivision, to obtain uniformity in building regulation throughout the country, to reduce insurance costs, increase safety, without raising construction cost. Code can be revised annually to change outmoded requirements.





HEAT-ABSORBING DOUBLE GLAZING PROPOSED FOR SCHENLEY BUILDING

Designer Woodie Garber's projected Schenley Building in Cincinnati, featured last month, was designed for heat-absorbing double glazing. These photos, showing effects of clear and sandblasted glass, arrived too late for inclusion with our presentation. At left, photo taken looking directly into July sun; right, shadows on a completely white piece of paper. Transparent glass throws a slightly darkened, glare-free shadow; sandblasted portion, a shadow as dark as that thrown by the man.



FURTHER RESEARCH IN HOSPITAL BED-LIGHTING

McDougall and Friedman, consulting engineers of Montreal, Canada, have been engaged in research on hospital lighting paralleling that reported by Isadore Rosenfield in our July issue.* We present here, digested from considerable correspondence between Mr. Rosenfield and Mr. D. W. Heywood of the Canadian firm, their experience.

Their first attempt was a wall-mounted fluorescent box fixture, located over the bed, with one lamp and reflector throwing light up and forward, another down and forward. The fixture had a ribbed glass front; each lamp was separately controlled. Results were only moderately satisfactory; fixtures collected dust; not enough light was thrown up; glass might break or lamps drop. Adding louvers, glass top cover, and another lamp for up-light helped; but still a patient sitting up in bed threw shadow where he needed light. The final design was the incandescent recessed ceiling light shown at the top of the drawing at left, which has since become available commercially.

Design of the ceiling fixture concentrates light in an area approximately 5 ft. in diameter, centered on the bed. The fixture does more than double the connected lighting load, but provides about 20 foot-candles at bed level; if need be, it can be surface mounted. Mr. Rosenfield finds the fixture particularly suitable for mental hospitals, although he does suggest that it is difficult to service because a stepladder is needed. The remainder of the drawing shows McDougall and Friedman's solutions of lighting problems for a recent job involving 24-bed wards.

* "Advances in Hospital Lighting Design," July 1945, page 84.