

BUILDING NEWS

Science, forever foreshadowing new standards in technology, brings new methods, new materials, new systems to the building designer.

When contemporary problems in the theater knock at the door, some classic concepts back out the window: London reexamines lighting, New York mobility, San Antonio the seating problem.

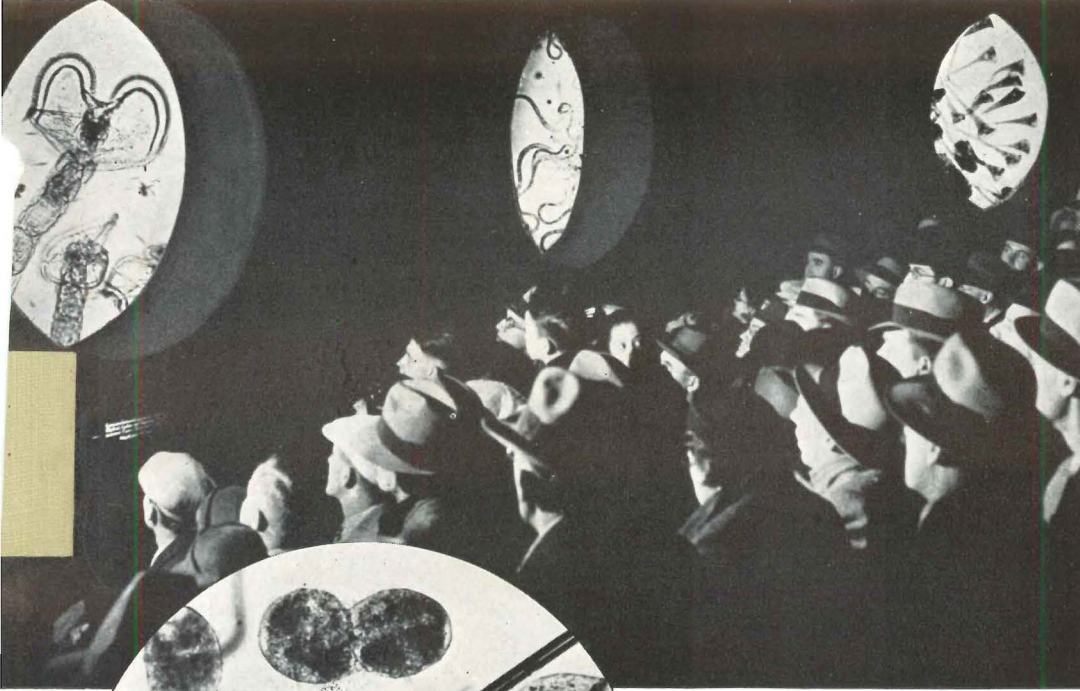
Tents being no longer adequate for the Argentine army, six South Americans design a new sort of army camp, borrowing liberally from civilian technique.

Until the sands of the desert grow cold of their own accord, designers must find other ways of cooling them; the new "magic carpet" on the Baghdad route points the way.

Renaissance architects were not the first to be obsessed with symmetry. Tepe Gawrans also were good formalists — and 5,000 years before.

ARCHITECTURAL

Record



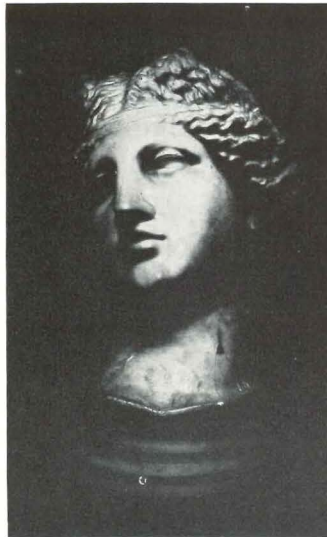
FEEDING TIME AT THE "ZOO": the hapless paramecia are devoured by the merciless nose animals.

PRESENTING THE FEROCIOUS WORLD OF OUR TINIEST ANIMALS. Not only has Dr. George Roemmert, Austrian scientist, opened the world of microscopic life to the general public, he has also designed a new building type in which to display it—the microvivarium. First of its kind in the world, the microvivarium is actually a "zoo" in which the living habits of our smallest animals may be seen in their natural habitat—a drop of water. Although the problem of magnifying and photographing the microbe has long ago been solved, it took Dr. Roemmert fifteen years to devise a method for projecting a moving picture in natural colors of such life onto a screen. Solution, however, is simple. A slide of the specimens to be shown is mounted horizontally in the microscope, from where, by means of mirrors, the image is projected onto a vertical screen. Main problem, that of cooling the beam of light so that water would not dry up and cultures die, was solved by cooling beam in a series of transparent condensers. So perfected is Dr. Roemmert's apparatus that one "operator" was able to run a dozen "features" simultaneously in his first microvivarium at Century of Progress (left, above). Plan of the microvivarium is oval, with circular screens at intervals around wall, projection room in center.

Photos courtesy The Technology Review



1.



2.



3.



4.

THROWING A NEW LIGHT ON VENUS: RECENT experiments by two M. I. T. scientists, L. R. Steinhardt and Prof. P. H. Moon, have resulted in a new method of illumination which should materially aid the building designer in museum lighting. Briefly the method is this: a statue is photographed under a variety of ideal lighting effects—effects which could not be duplicated in the usual museum display. Once these effects are recorded on photo-

graphic plates, the set-up can be dismantled, positive prints of the effects made into lantern slides. These slides are then, by means of a spotlight in any convenient location, projected back onto the statue in its permanent position. Presto! the selected effect is perfectly reproduced! By using negatives instead of positives, extraordinary effects can be obtained. (Compare Fig. 2 with its reverse Fig. 4.) The statue looks as though it were illuminated from within.

SCIENCE AIDS THE BUILDING DESIGNER

Scientists Study

Atmospheric Control

IT IS no accident that air conditioning occupies more and more of the building designer's attention; for with the increasing pollution of the atmosphere in most American cities, his problem becomes twofold—internal and external. Put it this way: in any structure he designs today, the architect must provide not only for *maximum control of atmosphere within* but also for *minimum pollution without*. In its broadest aspects, this problem becomes a social

Recognition of this fact lies behind recent figures from "Air Conditioning Trends" which lists 70 organizations as active in atmospheric research:

Universities	30
Government Bureaus	4
Technical Societies	7
Trade Associations	22

one—especially the aspect of atmospheric pollution—which no individual designer can solve alone.

New insulation values in air space

OF IMMEDIATE concern today is the internal control of atmosphere which, according to the American Chemical Society, breaks down into "control of velocities, temperature, humidity, dust and odors." Research in all these phases goes on apace, with some lines more advanced than others. But it remained for the recent meeting of American Society of Heating and Ventilating Engineers to indicate the increasing precision which science brings to such matters. In a paper entitled "*Radiation and Convection Across Air Spaces in Frame Construction*," MIT's Gordon B. Wilkes and Carl Peterson advance the theory that "air space between studs in ordinary frame construction has definite insulating value . . . not appreciated until comparatively recent years." Outlining their experiments, they explain that "air space thickness has no appreciable effect upon amount of radiation transfer" nor does "vertical or horizontal position of air space affect radiation, although the reverse is true of convection." And the paper of F. B. Rowley, "*Calculated Over-all Coefficients for Walls with Air Space Insulation*," indicated that the "Coefficient of conductivity can be calculated readily if thermal properties of wall materials are known and uniformly placed."

Getting rid of ragweed

AIR-BORNE contaminants, natural and industrial, are numerous and complex (see April 1937 RECORD, page 93). Not least among them are various pollens. Especially in hospitals, but lately among other structures, the problem of their

elimination is of growing importance. University of Illinois' hay-fever expert, Dr. William R. Welker, has recently concluded elaborate experiments in this field. By means of a coarse cellulose filter, inexpensive and easy to renew, Dr. Welker succeeded in reducing the pollen count between 98 and 99%; 30 minutes in this filtered air found hay-

Goldenrod is not the chief villain, popular superstition notwithstanding—its pollen is too sticky. Eighty-five per cent of the hay fever east of the Rockies is caused by ragweed.

fever sufferers completely relieved. Similar results were obtained in recent experiments by Prof. F. H. Hodgson, Roosevelt Hospital (N. Y.) botanist, using a stock Carrier portable room cooler. In 10½ hours Prof. Hodgson reduced the pollen count from 1,050 to 2 per sq. cm.

Suitable smoke-catcher found

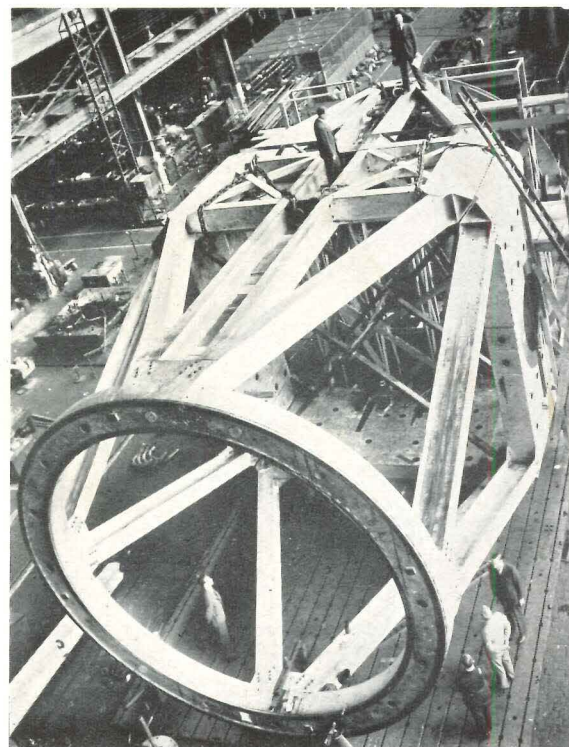
MEANWHILE, G. W. Penney, Westinghouse Research Engineer, recently explained to New York's Smoke Prevention Association another phase of atmospheric control—smoke removal. "Elec-

Smoke is hard to catch and most air conditioning doesn't catch it. Actually a form of dust composed of very fine particles, various smokes have various "sizes," smallest of which is tobacco with an average diameter per particle of .0000039".

trostatic precipitation," said Engineer Penney, "has long been recognized as the outstanding method of removing fine smoke particles"; but due to its expense and the fact that air so filtered is unfit for breathing, the apparatus has had only special application. Now, however, Westinghouse has perfected a small, low-voltage and practically automatic smoke-catcher suitable for almost all air conditioning applications.

Tobacco smoke found long-lived

OF DIRECT application to building design was the joint paper of C. P. Yeglon and W. N. Witheridge, of the Harvard School of Public Health, before ASHVE's summer session. Analyzing the "*Spontaneous Disappearance of Odors in an Unventilated Room*," they report that "body odors are unstable and tend to disappear rapidly in a closed room within a few moments after the occupants leave. Unlike body odor, the odor of tobacco smoke not only remains longer but its intensity increases during the first three hours after smoking." Thus they recommend large rooms where people gather, small ones where they smoke, since large rooms act like reservoirs in which body odors can disappear with minimum effort on the part of the ventilating system while smoking room air must be rapidly changed.



Courtesy Westinghouse Electric & Manufacturing Co.

SCIENTIFIC ANALYSIS OF METAL reached a new high in fabrication of the Mt. Palomar telescope where each welded shop connection was x-rayed and annealed to guarantee perfect performance.

New alloy from old process

A NEW tungsten alloy has recently been perfected by G-E engineers in England; containing 5% each of copper and nickel, the new alloy will be of great value in electric lamp manufacture. Because of the high melting point, tungsten has hitherto been difficult to use. Now, by combining it in

No new trick, this. When the Incas could not build fires hot enough to melt platinum, they added copper and hammered and worked it until platinum grains coalesced into an alloy which closely resembled the pure platinum.

an easily-produced powder form with powdered copper and nickel, it can be fluxed into a solid.

99.99% pure

WHAT used to be known as zinc is zinc no longer, according to recent developments, but "an alloy with properties differing radically from the pure element." New methods of "refining" it

By adaptation of principles formerly confined to the petroleum industry, the zinc is vaporized and passed through two rectifying columns, one of which eliminates high-boiling impurities, other, low-boiling ones.

produce a high-purity zinc with many new properties which make it suitable for die-casting, zinc foil and—important—metallic paints, one of which is said to achieve in one coat what formerly required one coat of red lead and one of aluminum.

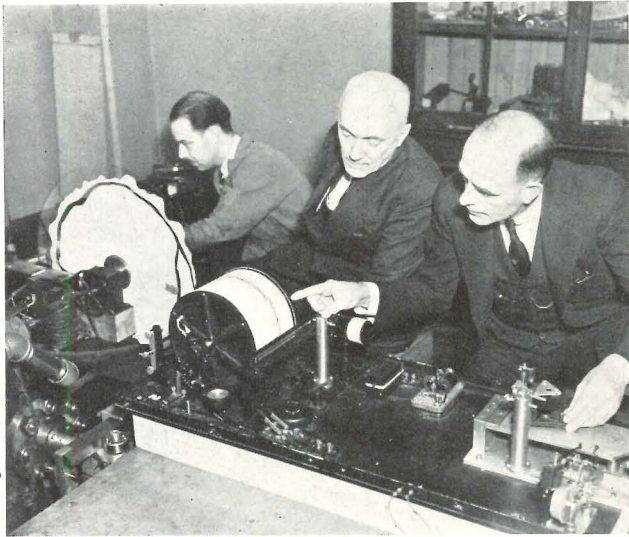


TABLE-TOP TREMORS FOR TESTING CONSTRUCTION SYSTEMS ARE created by MIT's Arthur C. Ruge (extreme left) from the records of actual quakes. This record—a ragged cardboard disc—is a "translation" of the wavy line which the seismograph traces on its revolving drum. The record, slowly revolving before a photo-electric cell, cuts current off and on as beam is interrupted and transmits to specially-designed table an exact reproduction of the quake. Thus models can be subjected to any desired tremor test, accurately analyzed. (See RECORD, March 1936, pp. 240-241.)

Concrete no Static Matter, Scientists Report

TO those building designers who think of poured concrete as being an inert mass of static volume, the recent paper of California's R. E. Davis, H. E. Davis and E. H. Brown on "Plastic Flow and Volume Changes in Concrete" comes as a distinct surprise. Describing the "private life" of concrete to the American Society for Testing Materials, Messrs. Davis, Davis and Brown pointed out that recent research into the *plastic flow of concrete* (volume changes under action of sustained loads) is radically changing former conceptions as to the behavior of concrete structures.

Air- and water-storing compared

Their observations of plain concrete cylinders which have been kept under various intensities of sustained compressive strength for 10 years indicate that *the plastic flow is still increasing at a measurable rate*. It was also found that the total flow in air-stored specimens was as much as twice that of water-stored specimens, but in the later ages the rate of flow of water-stored becomes greater than that of air-stored specimens. In a series of tests on reinforced concrete columns which have been under load for 5½ years, it was found that *the stress in the steel is still increasing, that of the concrete still decreasing*. In such columns, when air-stored, it was found that the concrete is actually in tension, while the steel carries all the load. At the end of 5½

years, the stress in the steel of such air-stored columns is from three to four times that of similar columns stored under water.

Cool cements for mass structures

These two groups of tests, according to the Californians, "demonstrate the very marked effect of the humidity of the surrounding air upon both the plastic flow and the modulus of rupture of concrete subjected to sustained bending moment. Obviously, whether the structural elements be plain or reinforced, it is desirable that the concrete be one in which the effects of plastic flow and shrinkage, one tending to offset the other, would combine to produce the most favorable distribution of stresses."

In certain building types, consideration of the above factors may not be essential but in mass structures—dams, heavy

Some cements are hot, some cool; the larger the individual cement particle, the lower its temperature in curing. European experience points to the desirability of relatively coarse low-heat cement in mass structures; and two dams which employed it—50-year-old Crystal Springs in California, recent Norris in Tennessee—have developed almost no cracks or surface checks.

foundations, thick walls, etc.—stresses due to thermal changes may produce a stress system far different from that calculated by the designer using ordinary methods.

Clay and Glass Brick Analyzed

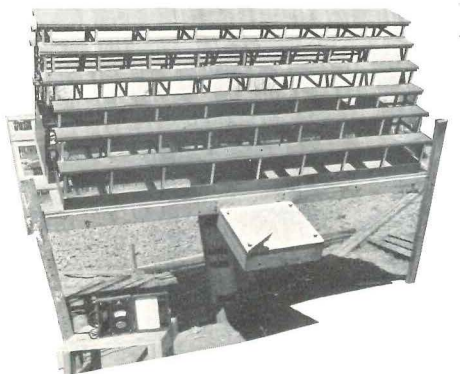
RECENT tests by the Bureau of Standards indicate that tendency of building

bricks to effloresce can be predetermined by placing sample brick on end in ½" of distilled water for five days, then drying in an oven at 110° C. When checked against sample walls of the same brick which had been exposed to the weather, closely similar results were obtained.

Glass brick were last month fire- and water-tested at the Underwriters Laboratories in Chicago and found "up to expectations." A sample wall was subjected to 1,640° F. until the glass was red hot and semi-molten; a stream of water then subjected it to 50 lb. pressure. While the glass melted or ran to some extent, it did not collapse; and the water punctured the inner surface in only a few places.

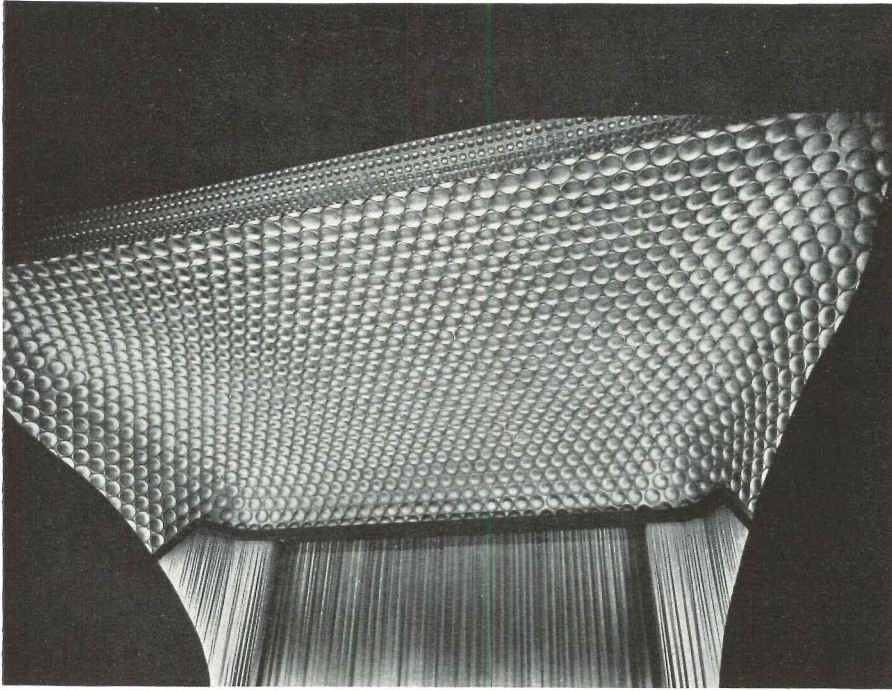
More on Back-Siphonage

NO rats from China brought the amoebic dysentery which broke out in Chicago in the summer of 1933; rather the epidemic was traced to back-siphonage from faulty water closets. (See RECORD, January 1937, p. 43, for earlier reports on subject.) One of the results of that discovery was University of Iowa's plumbing research division; and issued last month was its progress report on back-siphonage. Aside from many detailed recommendations to fixture manufacturers were two noteworthy conclusions. (1) "Polluted water from a few submerged inlet fixtures can pollute entire plumbing system in a building and pollution may also get back to street water mains." (2) "Correct and only really possible solution to back-siphonage problem is elimination of individual unsafe fixture. It is the fundamental evil in the plumbing system that makes back-siphonage possible and should therefore be the point of attack."



BEFORE HIS "JEWEL BOX" CONSERVATORY in St. Louis (RECORD, June 1937, page 31) was built, designer W. C. E. Becker subjected models to a series of sunlight tests. Shown above is Model #1 tilted to reproduce sun angle for a certain time of year and hour of day; sundial in center, light meter in lower left.

THEATERS: NEW STANDARDS ARE IMPLIED



LIGHT AND SHAPE ARE CONSIDERED AS ONE IN THE NEW ODEON, at Yeovil, England, where the entire proscenium end is treated as a vast parabolic reflector. Above, left, is a view of the cinema looking toward the proscenium. A system of specially installed colored floodlights in different parts of the auditorium, controlled by auto-selective dimmer control, converts the stage portion into a glimmering mass of light. Floods are placed in the trough at the meeting line of proscenium arch and side wall (above, right).

English Designers Evolve New Lighting Technique

ARCHITECTURAL form, no longer static, changes its appearance according to the way in which it is lit. In designing the interior of the Odeon Cinema, the firm of Mollo and Egan, Ltd., London architectural decorators, combined the two factors of light and form on the basis "that only in such a combination does the form begin to reveal itself and to function." Close collaboration between the architect, Harry Weedon, the decorators and lighting engineers resulted in this functional form.

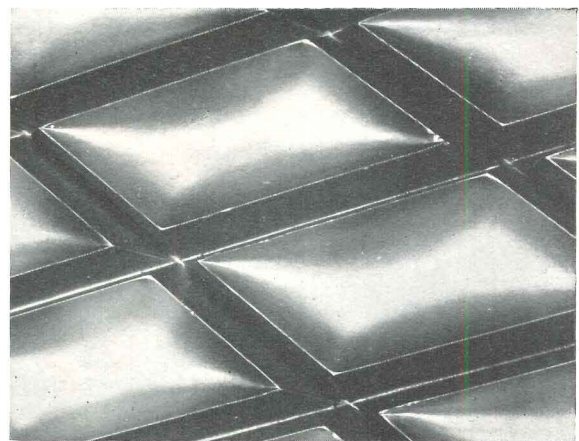
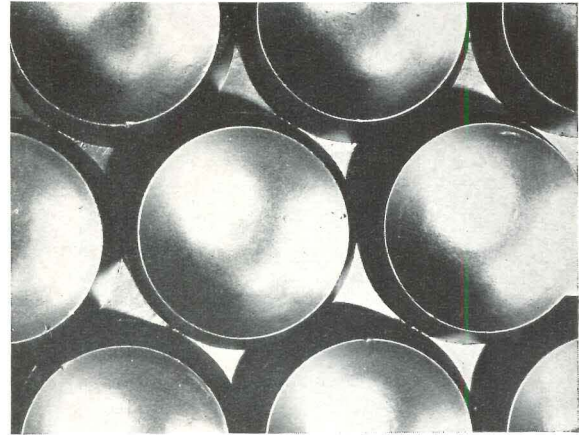
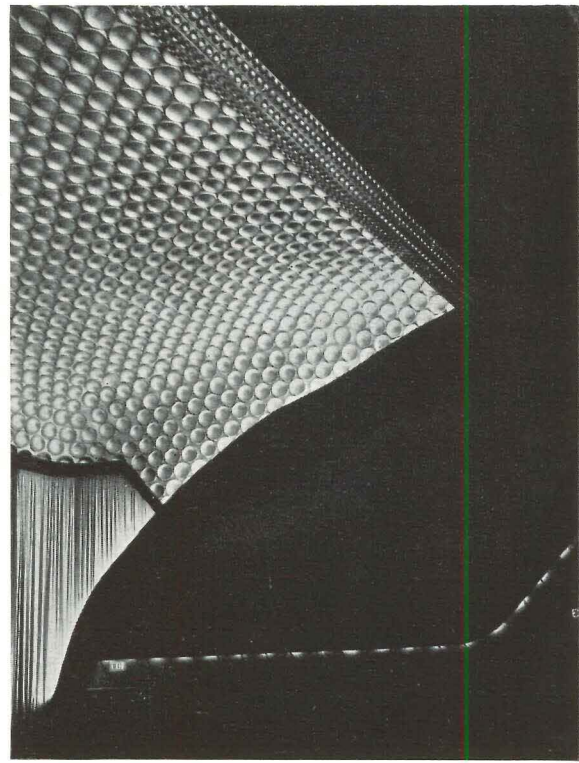
Says Eugene Mollo: "How often a good facade is spoiled by a tangled mass of Neon lighting which has been applied by the client without even consulting the architect. The night appearance of a building of public entertainment is just as important as its day appearance, in fact more important, as it is at night that it functions to its full capacity.

"The cinema is essentially not a horizontal-and-vertical building. It is enough to remember what comical situations were involved, when, in the early days of cinema construction, vertical and horizontal motifs were incorporated into the schemes of interior decoration."

So in the Odeon the decorators have

subdivided the whole of the auditorium into two distinct worlds—light and shade. The dividing line between the two is in itself the chief decorative motif. Starting at the balcony raker, the line drops continuously until it reaches the proscenium on a level with the orchestra barrier. Balcony area and stalls are left in relative darkness, with dark carpets, upholstery and nonreflective walls. The greater portion of the main ceiling and proscenium surrounds is lit by concealed floods which reflect on the concave domes.

"The colors of this light," says Mr. Mollo, "may be continuously changed, starting from deepest purple, and passing through the whole spectral chart. The emotional value of the entertainment may be followed, and the whole color scheme of the cinema can be changed by the mere touch of the control board. There is hardly any doubt that color films will soon replace black and white. The interior treatment of the Odeon has been evolved taking into account this inevitability. Colorless in the sense of absence of applied colors, at the same time it allows the introduction of any desirable color scheme by colored lighting. When a color film is shown, it may be followed by a faint introduction of colored lighting continuously following the main color key of the film."

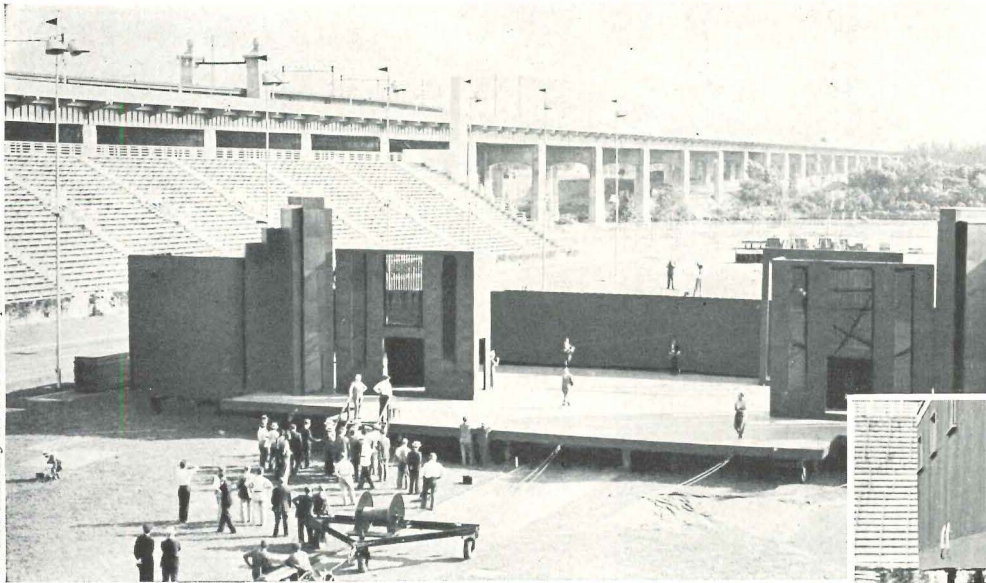


DESIGNED IN TWO FORMS FOR flat or curved surfaces, these domes are constructed of fibrous plaster on a light steel frame. The reflecting surface is finished with sprayed cellulose silver. Absorption and increased area through the use of these domes make for good acoustics.

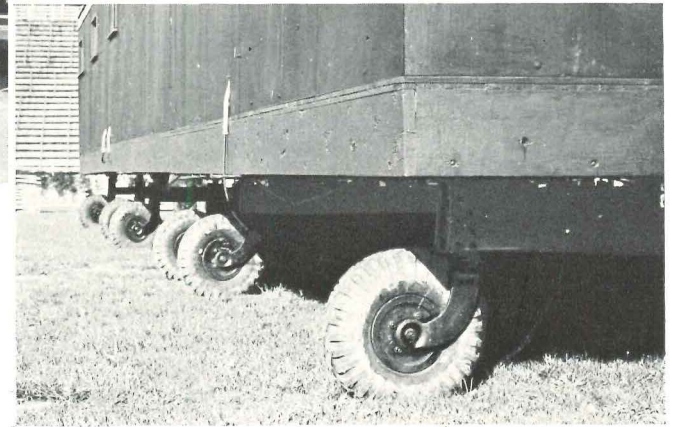
**New York
Builds Mobile Stage**

NEW YORK already boasts more theaters than any other city in the country, but most of them are commercial and many of them are closed. So, to meet the rising public demand for theatricals at popular prices, New York's Parks Department and WPA Federal Theater have been at work on a program of

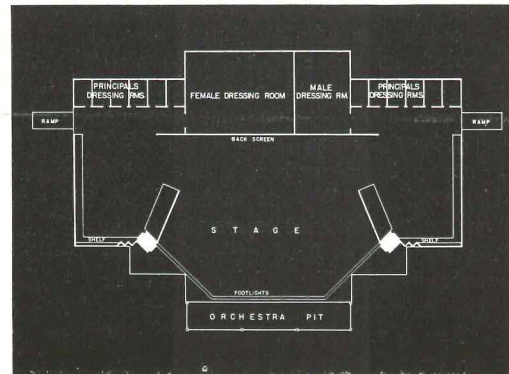
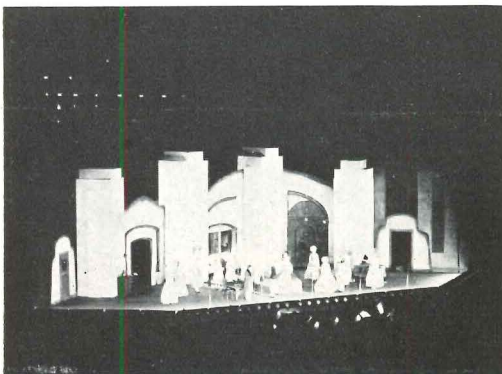
Photos courtesy N. Y. Park Department



MOUNTED ON 224 WHEELS, THE STAGE CAN BE moved from one end of the stadium to the other. When in use, it is located near the closed bowl end of the stadium; at other times it can either be moved to the open end by a rig of pulleys under the power of a tractor, or dismantled and stored away. Built in sections for easy removal, the stage is largely of plywood on steel frame. Wheels are rubber-tired, attached to the steel chassis and mounted on threaded bolts which can be adjusted to desired height.



SILHOUETTED AGAINST RAYS FROM POWERFUL SPOTLIGHTS ON the stadium's rim are the towers of the Triborough Bridge. While the fountain plays, colored lights are projected on the water, from the projection booth, and from blinders on apron edge. Orchestra pit is between fountain and stage.



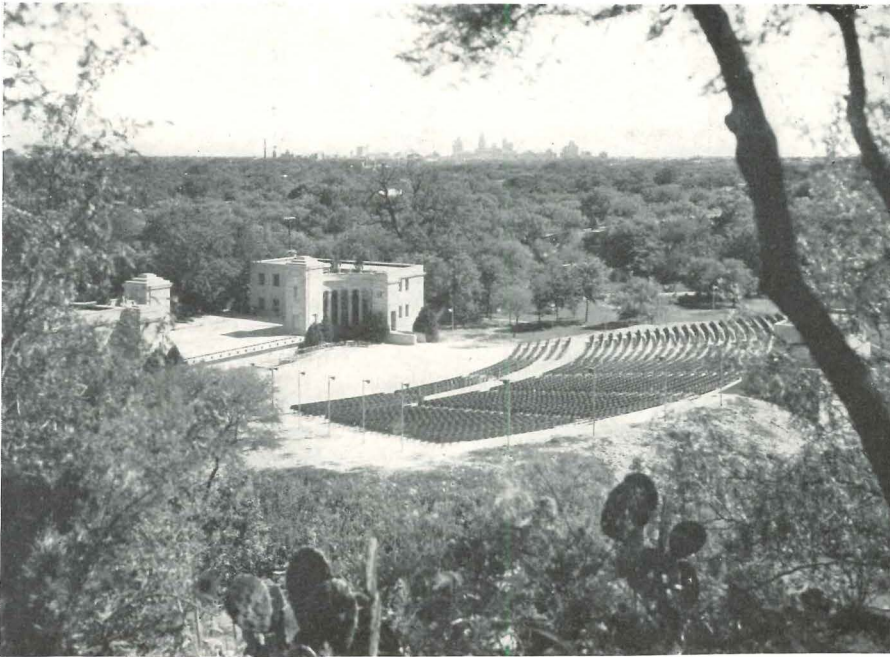
WITH THE SKY FOR A CEILING, PLAYERS PRESENT OPERETTAS. THE END towers are part of the structure of the stage, and scenery is installed between them. With fewest possible elements, all necessary stage effects are obtained.

popular entertainment of a steadily increasing scope. Most recent addition is the new mobile stage at Randall's Island which makes possible the use of the new Island stadium for musicals, operettas.

Said to be the largest outdoor one, this stage is 140 feet wide, and 80 feet deep. It includes, at the rear, dressing rooms for men and women members of the chorus, private dressing rooms for stars, and an acoustical equipment room. Scenery is simple and waterproof. Operettas and ballets are presented during summer months, and as the activity of the dancers is apt to cause some movement of the wheels on which the stage is mounted, temporary props are placed at intervals underneath the floor. These also relieve the pneumatic tires of the weight of the structure.

The stage on wheels has all the accoutrements of a Broadway theater, with an electrical acoustical system, spot and floodlights, and many other innovations. Instead of the usual "asbestos" curtain, this theater has a seven-foot curtain of water which plays in a semi-circular fountain while scenes are shifted. A row of glaring blinders on the apron edge helps to make this an effective screen between audience and stage.

So far, all sound broadcasting equipment is on the stage, with loud speakers in the splayed sides of the apron. Microphones at the front of the stage pick up sound from both orchestra and performers and transmit it to a mixing panel backstage. But eager to serve all patrons equally, technicians are experimenting with additional loudspeakers,



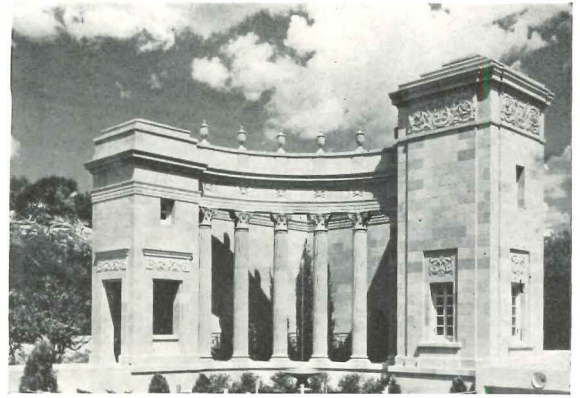
Photos by Harvey Paterson

San Antonio Opens Elaborate Garden Theater

SAN ANTONIO, too, felt the urge for open-air theaters and built this permanent Sunken Garden Theater in a park outside the city. Joint work of architects Harvey P. Smith, George Willis and Charles Boelhouwe, the theater embodies many advanced features, Roman Corinthian detail notwithstanding. Backstage planning is unusually complete. The stage is 60 feet wide at proscenium, 125 feet wide between dressing rooms on one side and scenery building

on the other, and 50 feet deep from footlights to landscaped hillside at the back. A tunnel under the front edge of the stage connects with circular stairs in each of the pylons, so that actors and directors may pass from one side to the other without being seen. Complete dressing rooms for men and women, and chorus rooms with all necessary conveniences, are located in one wing, while in the other is a two-story room for scenery storage, and property and costume rooms.

The curtain for this stage "falls" when the play begins, and rises at the



NOTEWORTHY ARE THE SEATS IN this outdoor theater, for they are similar in design to regular theater seats. Specially constructed and installed to withstand any weather conditions, they are arranged on a concrete slab which is laid out with a parabolic curve so that each seat has perfect sight lines. Above, detail of one wing of proscenium; left, general view of amphitheater.

last line, for it is on a roller underneath the stage at the front, and comes up out of a slot like an inverted window shade. When raised to its limit, the curtain is 14 feet high, and the full width of the stage, but it can be stopped at any point midway.

At the back of the "auditorium" is a projection booth for movies, which also contains a full complement of spot and floodlights. In the lower floor of this building are rest rooms for men and women. While not at present sound-equipped, the design of the theater will make it a simple matter.

New York has Theater for Transients

ORIGINATORS of the idea for Grand Central Theater, Sloan and Robertson, New York architects, are also part owners of the enterprise. The theater is located on the upper level of Grand Central Station and contains, in addition to the auditorium, a lobby, decorated with murals by Tony Sarg, which is designed to serve as an appointment lounge. Auditorium walls are finished in simple knotty pine, backed by acoustical plaster. Every third board is splayed out for better acoustical effect. The air conditioning equipment is fitted into the space between the auditorium floor and the station's lower level. For so small a theater the cost may seem high—\$125,000—but standards specified by the Railroad for any construction in the terminal were so strict that such an expenditure was necessary.

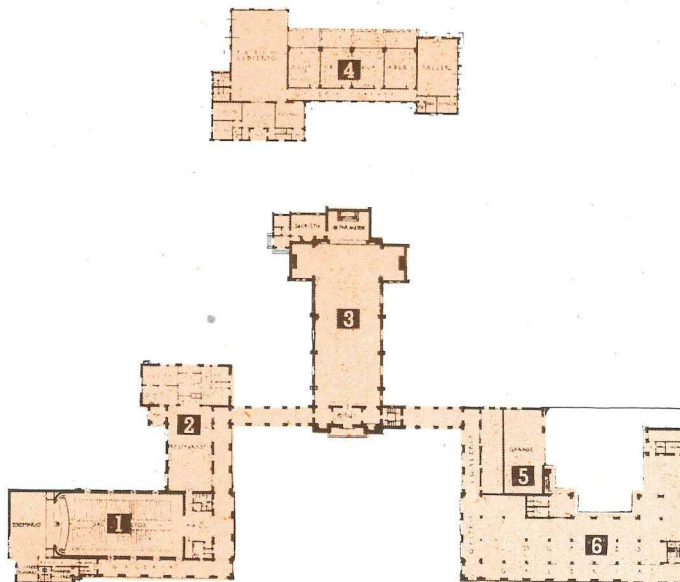
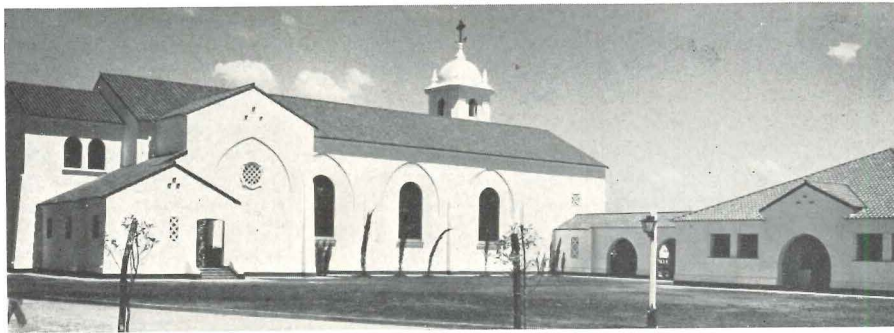


Cosmo-Sileo Co.

IN A CORNER OF ONE OF THE WORLD'S BUSIEST STATIONS, NEW York's Grand Central Terminal, is tucked away "America's most intimate theater." Here between-train idlers while away the time seeing latest news reels. There are 240 seats, spaced 38" back to back—32" is usual—because of the character of the programs shown, and resulting traffic increase. The "bowled" floor, designed on the same plan as stadiums, allows an uninterrupted view of the screen.



WHERE ONCE THE TALL GRASS GREW NOW STANDS THIS MODERN town. Over the symmetrical pattern of the community center-entrance axis is superimposed that of the cul-de-sacs, uncompromisingly laid north and south for orientation. In the center foreground stands the bronze figure of Sergeant Cabral, military hero of the Argentine, while in the background are the water tower, incinerator and sewage plant.



UNUSUALLY COMPLETE FACILITIES ARE INCLUDED IN THE COMMUNITY center. (1) Theater and ballroom, (2) restaurant, (3) church, (4) school with director's apartment above (5) post office and garage (6) shops with administrative offices above.

THE TRUISM that modern states give their best (if not their all) to their armies gets new support in the form of "Barrio Sargento Cabral," latest addition to Argentina's main army seat, Campo de Mayo. Actually no "camp"

May is a big month for Argentinos, marking as it does the anniversary of the first popular assembly which, armed to the teeth, met on May 25, 1810 in Buenos Aires and established the first provisional government.

at all, but a permanent, modern community, "Sargento Cabral" is designed to house the petty officers of the lusty Argentine war machine. Located in the pampas country, some 22 miles outside Buenos Aires, "Sargento Cabral" was begun by the War Department in 1934.

Recalls "Radburn" principle

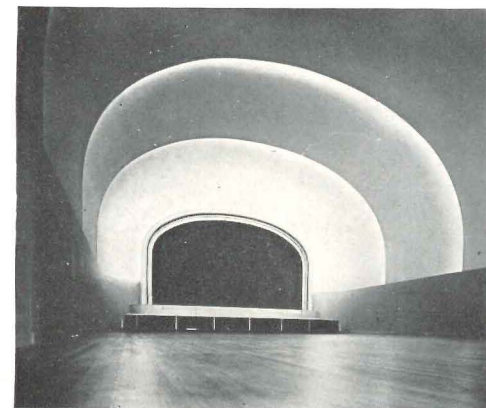
Site of the Barrio was a flat, treeless plain; on this the program called for construction of a modern community affording all amenities for 250 families. The assignment has been admirably carried out by the staff. The town-

Project was designed by a group of architects and engineers including Alberto Prebisch, Fermin H. Beretervide, Ernesto Vautier, Jeronimo Rocca and Pascual Palazzo, under the supervision of the War Department's General D. J. Pistavini.

planning is strongly reminiscent of English and American technique, the housing being grouped around cul-de-sacs running north and south from a community center. Surrounding and interlacing the project is a series of parks and playgrounds in the Radburn fashion. Utilities include a modern sewage system with disposal plant and garbage incinerator, underground water and electric system, concrete streets, brick-paved sidewalks.

Designers blend old and new

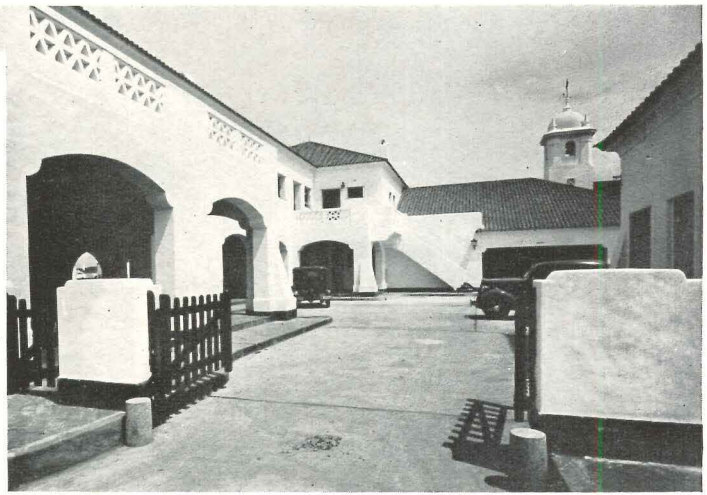
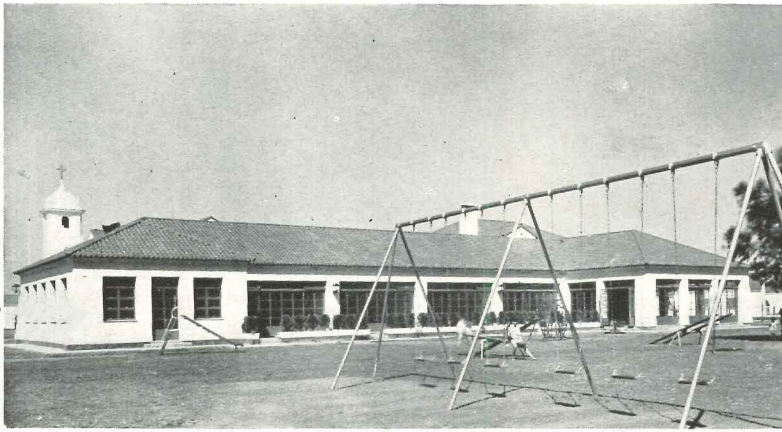
Construction of "Sargento Cabral" employs traditional building materials—brick, plaster, tile—but with interesting



IN STRANGE CONTRADICTION TO one another are these two auditoriums, both the products of the same staff of designers. The theater, designed to serve also as ballroom, actually consists of a shell (designed to

ARGENTINA HOUSES ITS OFFICERS

Photos courtesy "Revista de Arquitectura"



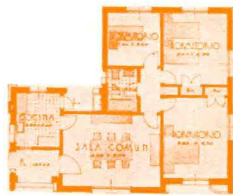
exceptions, notably in the theater and the school, where recent developments in lighting and acoustics are employed. This combination of traditional building methods and materials with essentially North American planning techniques has produced better results than might be expected.

Chickens in wrong location

The housing sets relatively high standards both in design and construction, though—paradoxically—it does not reflect the basic concept of cul-de-sac planning. Most European and North American planning, where the cul-de-sac is employed, reorients the internal plan of the house to correspond to the street plan. That is, the service areas—kitchen, bath, pantry—are placed on the street side while the living areas face the interior of the block. For reasons which they probably consider sufficient,

Cul-de-sac planning is even further violated by their placing of chicken houses (however neat) along the boundary between individual yard and interior park. Sargent Cabral's designers did not do this. Kitchen and bath remain in the rear while living areas crowd the front property line.

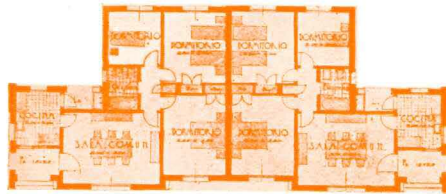
EACH CLASSROOM ALONG THE EAST FACE OF THE SCHOOL (LEFT) has its own outdoor study area, while the gymnasium has three sides open to the playfield. The garage court (right), with its almost operatic appearance, has an outside stair leading to the administrative offices.



One Story Detached
5 rooms and bath



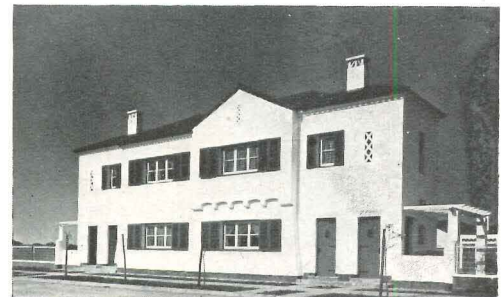
Two Story Detached
7 rooms and bath



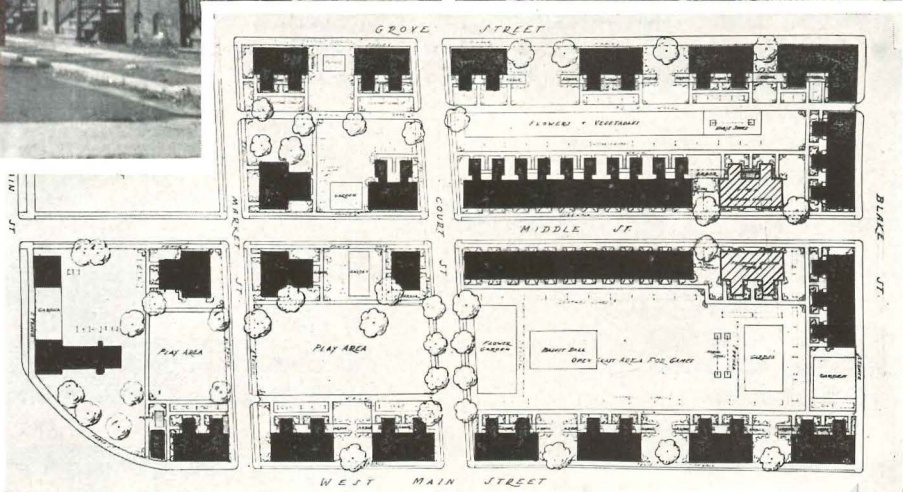
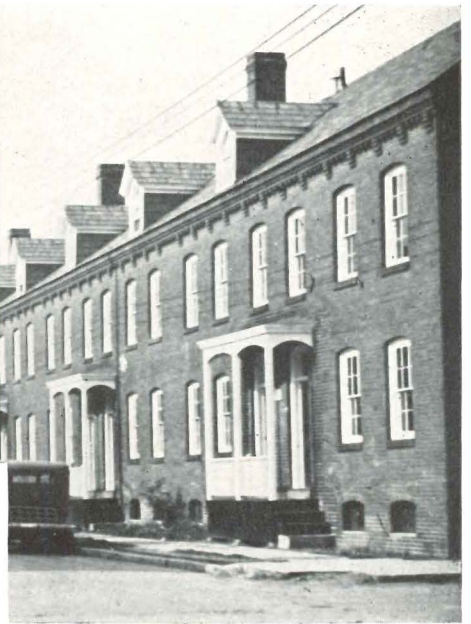
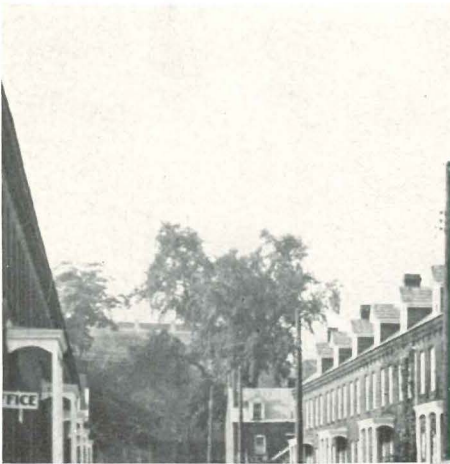
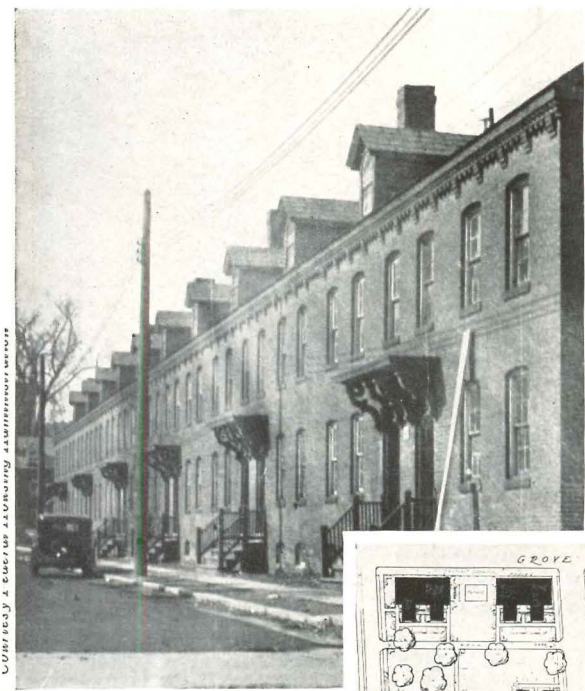
One Story Double
5 rooms and bath



Two Story Double
3 rooms and bath



rigid lighting and acoustical specifications) inside the structure proper. The church, on the other hand, relies upon traditional plan and ornament for its effect, neglects "the facts of life" of auditorium design.



THERE IS MORE TO THIS PLAN THAN MEETS THE EYE, FOR, MODERN though it seems, it is actually the work of an anonymous Massachusetts planner of nearly a century ago. Recently remodeled by the Massachusetts State Planning Board, the only external results were new millwork, patched masonry and replanned block interiors. Middle Street (left above) before MSPB took hold and (right) after it finished.

**Canny Down Easterners
Salvage Old Project**

"THE VILLAGE," Chicopee Falls' only and one of America's first housing projects, has recently been reopened to the public. Because both the original construction and the general planning were so superior, renovation of the project mostly involved replanning of the individual units, most of which were large and innocent of modern plumbing, heating, etc. This replanning resulted in 186 units (as against the original 150) which rent at an average of \$4 p.r.p.m. First choice was given to employees of Chicopee Manufacturing Corporation which has owned the project since its inception.

**Japan Builds
A "Packaged" House**

THIS cottage, designed by an architect on the staff of Tokyo's Takashimayo Department Store, takes all records for compactness. Claimed suitable "for living by four or more persons," the cottage has a floor space of five "tsubos" (one "tsubo" is six feet square). It has a porch, living room (which can be used as bedroom) and kitchen, "equipped with a folding bed for the use of a maid-servant." The house, which weighs about 1½ tons, is fabricated of wood and is delivered in a package consisting of about 40 standardized units which can be assembled in three hours' time. The price is 600 yen or \$170, which includes almost all necessary furniture, kitchen tools and transportation costs to any part of the country.

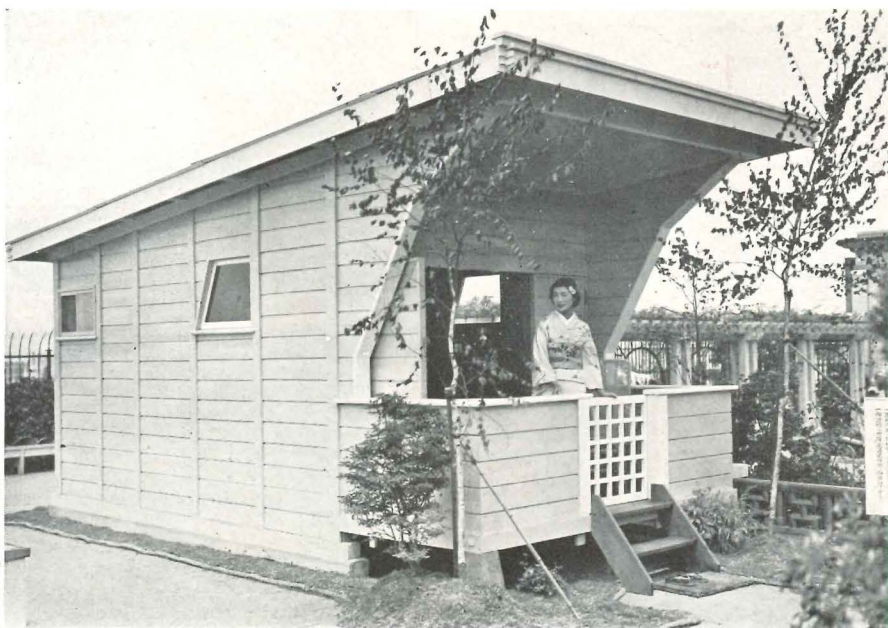


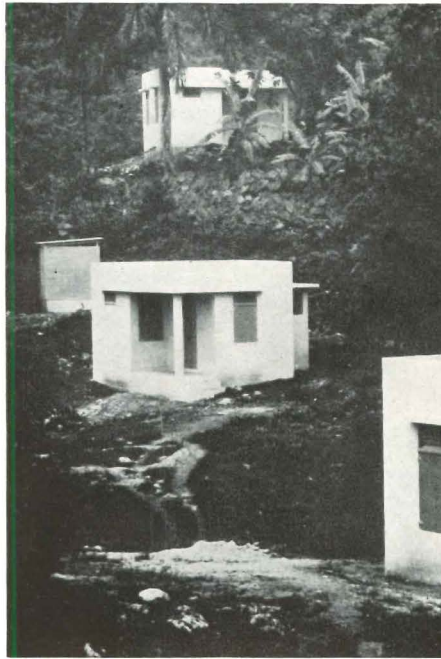
Photo by S. Kinuchi

Trouble In the Tropics

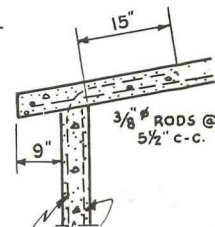
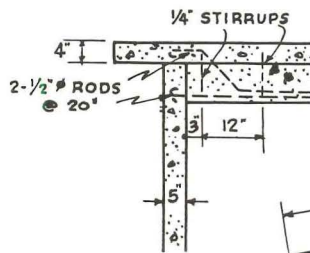
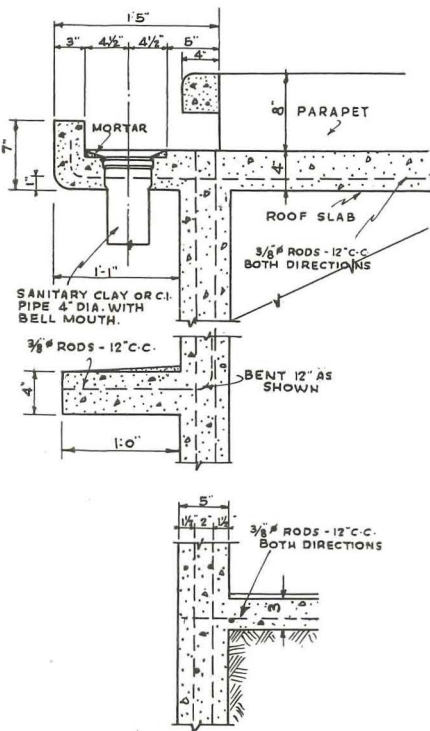
WHEN the New Deal's Puerto Rican Reconstruction Administration moved into the Island in 1935, it found a land not only devastated by the hurricanes of 1928 and 1932, but also prostrate beneath the depression. In typical New Deal fashion, an Island-wide program of public works was evolved, including slum clearance, rural resettlement, public health and power projects. Likewise New Dealian was the dispatch with which this program was put into operation.

As this program approached the architectural stage, PRRA's planning staff faced several increasingly important problems. Aside from the fact that all structures must recognize such basic factors as climate, custom, etc., it was likewise apparent that they must be (1) economical and (2) hurricane-proof. This was no simple problem, especially where rural housing was concerned. Economy meant that local materials and local labor must be employed as far as possible; but local labor and materials had never previously succeeded in evolving a hurricane-proof type of construction. Thus it was necessary to combine the best of local methods with modern engineering practice.

In two years' time, some 700 of these rural homes have been erected at an average cost far higher than the original estimate of \$500 per unit. But PRRA now feels that such houses can be erected for around \$800 per unit.



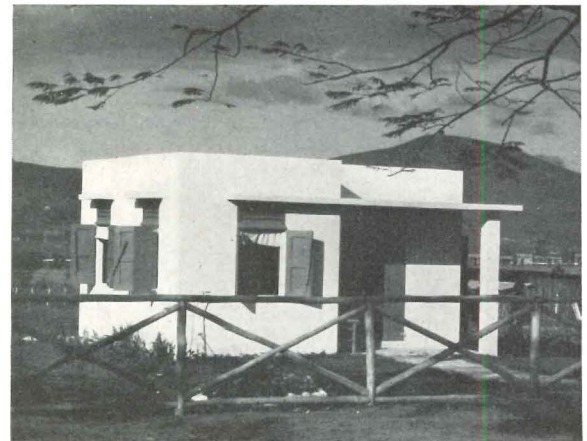
SOME OF PUERTO RICO'S MANY STRAW HUTS HAVE BEEN REPLACED by these modern hurricane-proof houses. Monolithic in construction, designed to resist horizontal wind velocities up to 150 m.p.h., they have flat or nearly flat concrete roofs not subject to wind pressure.



3/8" RODS SPACED 12" C-C BOTH WAY STAGGERED

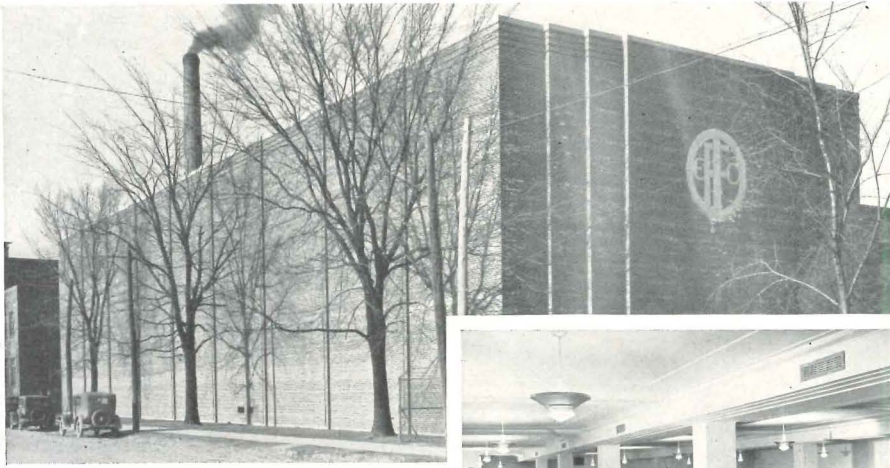
CONSTRUCTION DETAILS OF TWO concrete types—pitched roof (above) and parapet (left)—show way in which all elements were studied. Parapet, downspout and window hoods are monolithic, as well as walls, roofs and floors.

SEVERAL VARIATIONS OF TWO construction systems—concrete and reinforced brick—were evolved. Although every effort was made to eliminate elements which might blow away in a hurricane, designers of brick house (above) could not resist a few lethal tiles on front facade.



WHOLESALE SALESROOMS PROVIDE NEW COMFORTS

Photos courtesy The Carrier Corporation



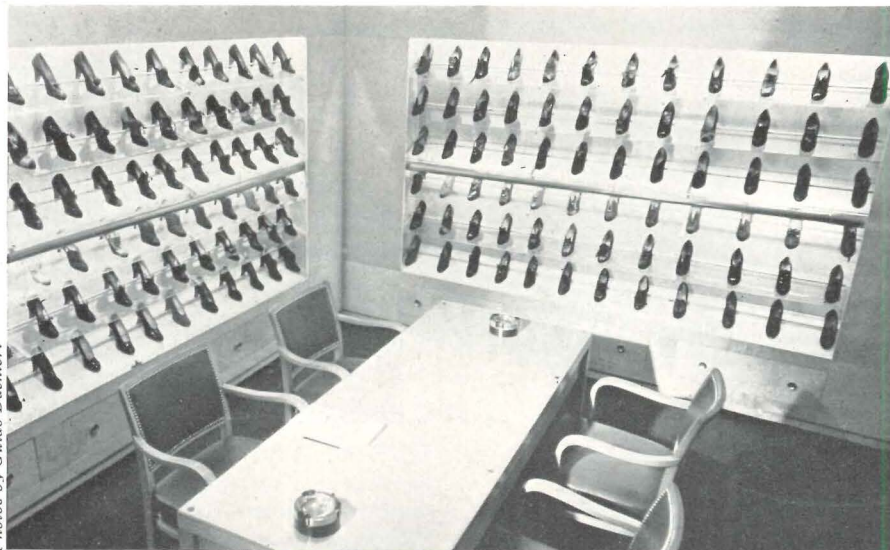
NO WINDOWS MAR THE FACADE of this furniture store, nor sunbeams fade its fabrics: Imperial's new mid-west display rooms.



Grand Rapids Gets Windowless Furniture Display

LONG the wholesale furniture center of the country, Grand Rapids nowadays faces increasing competition from other cities. This, coupled with the fact that the buying season in the furniture trade comes in the dog days, forces higher standards in furniture display, as may be seen in the new building of the Rapids' Imperial Furniture Company. A three-story structure of reinforced concrete and brick, Imperial's new display building is completely air conditioned and artificially illuminated. Aside from making the client comfortable, furniture is better displayed under controlled lighting conditions.

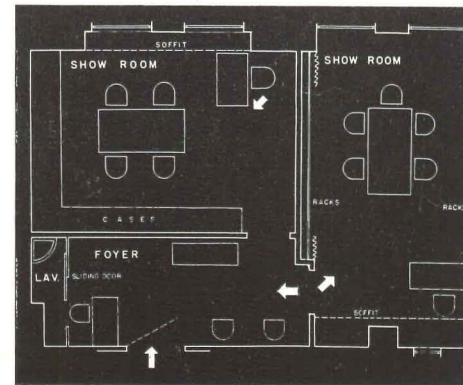
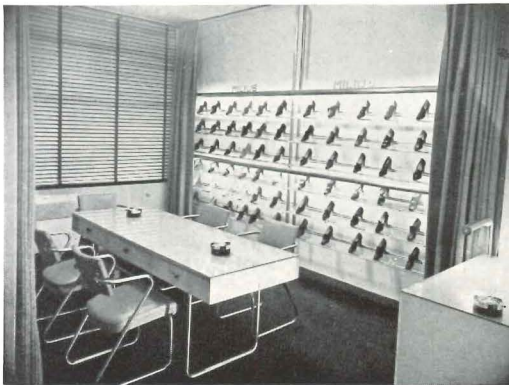
Photos by Guido Bachtleri



SHOES IN THE LIGHTED CASES OF THESE SALESROOMS (ABOVE AND lower left) are displayed to best advantage. The foyer (lower center) has a "professional" air not usually associated with wholesale merchandising, while the plan (lower right) shows a sensible use of office-building space.

New Shoe Display In New York

NEW MERCHANDISING techniques are apparent in this wholesale shoe display recently completed by Russel Wright and Associates, New York, for the Milius Shoe Company. The foyer (lower center) has white plaster walls and ceiling. The lavatory wall at the end is blond finish maple, as is the desk. Chairs are upholstered in tan leather or brown and white stripe; all metal is satin-finish chromium. The floor covering is brown twist frieze. In the salesrooms (lower left) walls and ceiling are white plaster, with maple woodwork. Display racks can be curtained off in one office, and in the other covered with brown holland shades which pull down and hook at the bottom of the case. All lighting for the offices, as well as for the racks, is indirect. Venetian blinds are of maple with brown tapes.

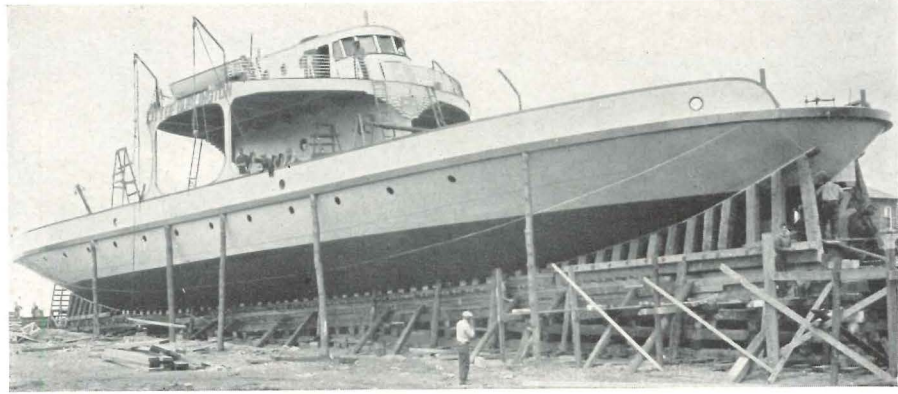


TRANSPORTATION

McAlister Photo. Courtesy Inland Steel Company

Is Worth Keeping An Eye On

AS ITS cruising range increases, transport is more and more faced with problems which have long plagued the building designer: for beyond its basic requirements of speed, safety and economy, transport must supply adequate facilities (for eating, sleeping, recreation, elimination, etc.) and control of light, air and sound. In meeting these requirements the designer of transport at once borrows from and adds to the technique of the architect; and, because he is closer to industrial production, his work is well worth watching. Here-with are three recent examples.



ALL STEEL AND FIREPROOF, THIS NEW MOTOR FERRY IS OF MAIERFORM hull design, and all-welded construction. First ferry of this type, the "City of Burlington," operates on a "short haul" and consequently required a minimum of passenger accommodations, maximum deck space for car storage. A similar ferry for the same company is now under construction.

COMBINATION AUTO AND TRAILER with room for eight people, an ice box, a table and a studio couch, the "Aircar" is built on a framework of lightweight structural steel, weighs 2,400 pounds. The motor is at the rear, separated from the passenger compartment. Streamlined exterior gives low horsepower consumption.



Saginaw Stamping & Tool Co.

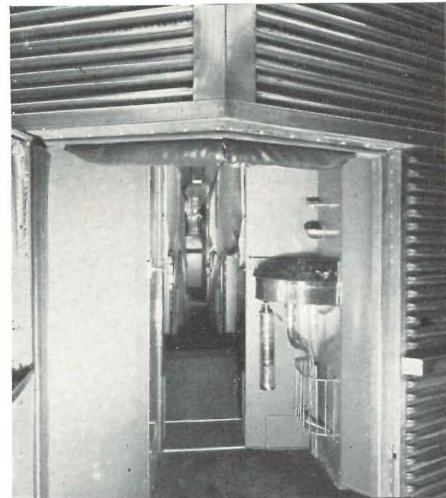
Persian Bus Meets Difficult Requirements

WHERE CAMELS used to plough through desert sands, this new sleeper bus with a capacity of 14 passengers now makes the trip from Baghdad to Damascus in record time—15 hours at 65 m.p.h. Of lightweight stainless steel, the bus was specially designed to operate under the extreme temperatures and road conditions encountered in the 600-mile desert run, where the route follows only 200 miles of established road.

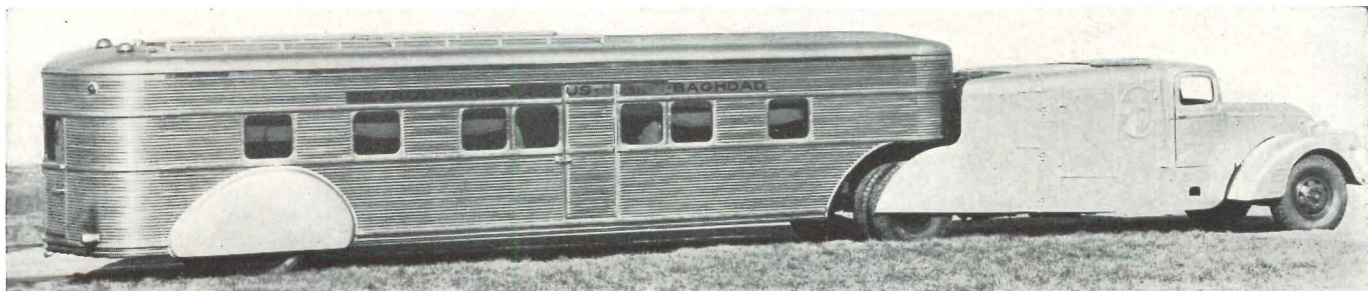
Extreme temperatures—0° to 140° F.—presented problems of insulation and air conditioning which the building designer has often faced but which have not so far entered the field of mobile design. Also, whether mobile or stationary, any structure in a land where dust storms are usual must be absolutely weathertight. Refrigerating equipment for the Nairn bus is located in the rear of the tractor, while air conditioning apparatus is in the trailer, with flexible connections for conducting

the cooling medium. Caloritic heaters keep the interior warm during the extreme cold of the Syrian plateaus. Unusually heavy 3" kapok insulation between side lining and outer sheathing reduces inside temperatures, and the stainless steel roof and sides form a reflecting surface of low heat absorption. Inside walls are of 1/4" birch plywood, screwed and cemented to battens. The linoleum-covered wood floor is cemented to the subfloor and a 20-gauge galvanized-iron sound-deadened coverpan is bolted over the entire bottom surface of the body. All joints are soldered, cemented, or painted, and thoroughly water tested.

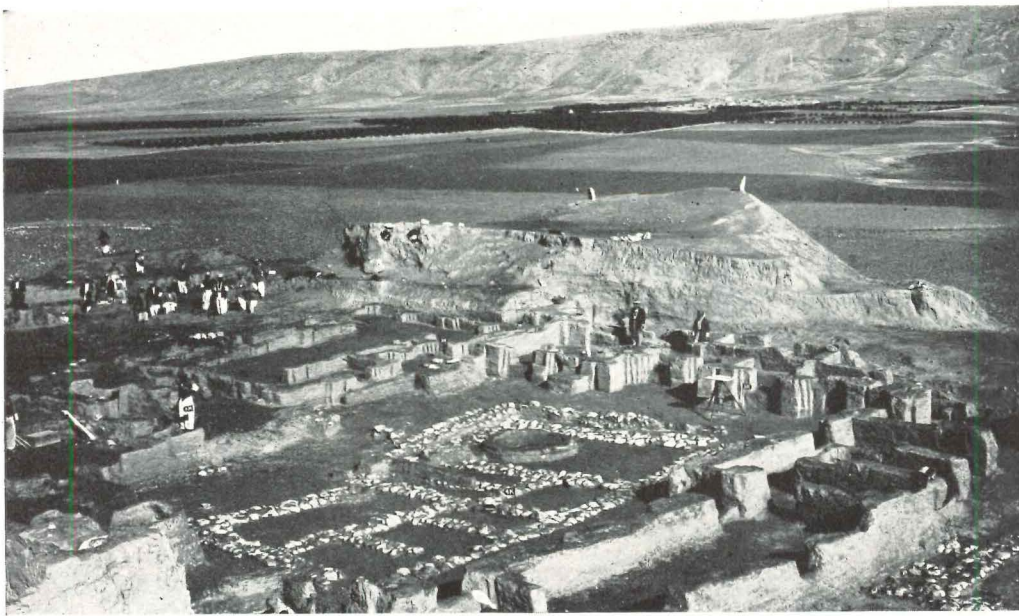
The bus has upper and lower berth sleeping accommodations for 14 persons and a seating capacity of 24. Windows are so located that each sleeper compartment has two openings. One door is on the right side, the other at the rear of the bus.



ACTUALLY A SMALL HOTEL, THIS bus has, in addition to lavatories in the rear, forward compartments for staff, luggage, and supplies—the latter with 22 lunch boxes and thermos bottles, linen, pillows and blankets.

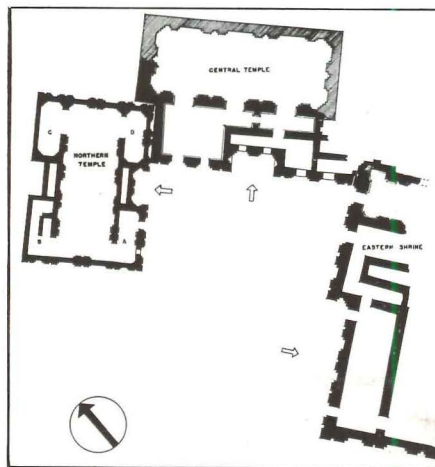


Courtesy Edward G. Budd Manufacturing Company



GENERAL VIEW OF ACROPOLIS of Tepe Gawra shows the court from which all three temples had their principal—perhaps their only—entrance. The hatched portion on the plan of the Central Temple is a conjectural drawing of that part of the building which extended out on a terrace from the body of the mound, and which has since slid off.

BEST PRESERVED IS THE NORTHERN Temple (below) with its curious, narrow, doorless corridor just behind the central niche of the main facade. A modern resident of the ancient land squats beside one of the fluted pilasters of the Central Temple.



Photos courtesy U. of P. Expedition

ASIAN "DIGS" REVEAL OLDEST CITY

OLDER than any other city yet excavated is Tepe Gawra XIII, discovered in Northern Iraq, sixteen miles from the Tigris River, by the joint expedition of University of Pennsylvania and the American Schools of Oriental Research. The level of the most ancient occupation has not been reached, but Gawra XIII represents a civilization which flourished around the turn of the sixth millennium B. C. Because of the great age of this stratum, no such architectural remains as the Temple Group or such evidence of culture were expected. Up to 1927 an artificial hill which rose 80 feet above the level of the surrounding plain marked the site of Tepe Gawra. (See RECORD, Nov. 1932.) Since that time excavations have revealed successive strata presenting a panorama of towns through the

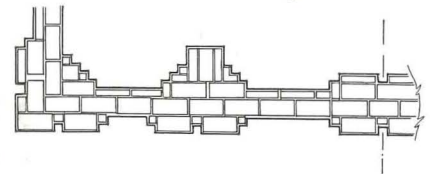
Archaeologically, a stratum is a cultural stage; geologically, it is a body of sedimentary rock or earth of one kind formed by natural causes and consisting of a series of layers lying between beds of other kinds. ages from 1500 B.C. (most recent occupation of site) to 5,000 B.C.

Had their own module

Structural material used in all strata was sun dried brick or libn, which to this day are firm and hard. Whether consciously or not, these ancient builders used a module, the brick, which was of different sizes for the various structures. Consciously, however, the Gawrans, with a highly developed decorative sense, used pilasters on the facades of the temples. Had these pilasters been structural, they would have been used on rear walls also. Ahead of Renaissance architects by some 6,000 years, the Gawrans adjusted their plans to suit the facades as is seen from the "false front" erected in front of the Central Temple to give symmetry to the scheme.

Disagree on age

Oldest and more fragmentary is the Eastern Shrine. The age of the other two is much in dispute, as Dr. A. E. Speiser, expedition director, says that the Northern Temple was built last. E. Bartow Müller, expedition architect, judges it to have been built previous to the Central Temple.



EXCELLENT MASONS, THE EARLY Gawrans used bricks of a surprising uniformity of size, and a mortar of clay and ashes.

AIA Urged to Study Employee Status

"THREAT" of the closed shop in architecture is seen by William Stanley Parker, Boston architect, in a recent move of AF of L to organize the architectural draftsmen of Seattle, Wash. To AIA's Board of Directors, Mr. Parker reports that the Association of Technical Engineers and Architects is seeking to negotiate with Seattle architects. ATEA believes that "Seattle's Building Trades Council will shortly refuse to have its craft members work on structures whose blue-prints are not union-made."

"Draftsmen," says Mr. Parker, "may appropriately ask whether they should be denied the protection of such organized bargaining, if the professional relationship fails to secure for them what they consider to be fair conditions of employment. . . . The answer may lie in a new relationship between draftsmen and the Institute," according to Mr. Parker. He suggests that AIA undertake a fresh analysis of its relations with

Under present AIA qualifications, draftsmen may become "associates" and pay dues; but they cannot vote on AIA affairs nor hold any chapter office. Only licensed practitioners are eligible for full AIA membership.

employees for, "if this problem cannot be successfully solved, we may, with some reason, look forward to union in the larger cities." It is not likely, Mr. Parker feels, that they will be found in smaller cities with no large offices.

FAECT Urges Cooperation with Professional Societies

COINCIDENT with the AIA report came that of the Architects' Section of FAECT. Analyzing conditions in the architectural field, the Section finds that "there are at least four distinct types of architectural offices." All of these will be found in metropolitan areas, while "elsewhere one or more of these types may not exist." Pointing out that different employer-employee relationships are implied in each, FAECT analyzes them thus:

1. *Adjunct to a commercial firm:* large chain stores, mail order houses—even department stores—are establishing their own architectural offices to meet their highly specialized needs. Indeed, according to the report, this type, if not "the ultimate goal in the trend toward rationalization of the architectural profession" is at least "growing more and more in importance."

2. *Industrial specialty office:* included in this category are the drafting rooms

of the iron, stone and wood working industries, where "craftsmen receive about twice the salary of designers and draftsmen and enjoy much better conditions."

3. *Private specialty offices:* here jobs are small, consisting largely of alterations and small apartment house work, etc.; competition is keen, "with fees chiseled down to nearest dime. Inevitably the draftsman suffers most under this arrangement."

4. *Professional office:* here FAECT finds that often a "personal relationship still exists between employer and employee; wages and working conditions, if not necessarily good, are at any rate condoned. . . . The draftsman feels that his employer would gladly pay him more if business would permit." For this type of office, a joint agreement between local professional societies and FAECT is proposed, fixing salaries and working conditions for architectural draftsmen. By this means "a powerful force for stabilization of the entire profession would be set up," FAECT believes, since competition forces wage-levels down, distasteful as it may be to the individual architect.

New York City gets Progressive Building Code

NEW YORK CITY'S twenty-one year old building code was last month made obsolete by passage of a new code to be effective January 1, 1938. The new building laws, which have been incubating for eight years, were drafted in three years, but due to various interests were delayed three years in committee. Stormy discussion companioned the bill from the days of its inception. Charges of secrecy in the drafting and of political interference were brought up to the very moment of its adoption. According to Edward J. Sullivan, chairman of the Building Code Committee of the Board of Aldermen, the code is the work of the Merchants Association, other organizations and technical advisers, and it is a "good, clean document."

Hailed as "the best New York has ever had," the new code provides for the use of such new materials and methods of construction as have developed since the last code was adopted. Hotly and lengthily debated, but finally accepted, was the section on the use of fusion welding in steel framework of high buildings. Also provided for is a new type of housing which is expected to stimulate construction of low-cost housing. This type will permit the building of amply fire-protected apartment houses of from seven to nine

stories in height by elimination of the most expensive features of fully fire-proofed houses.

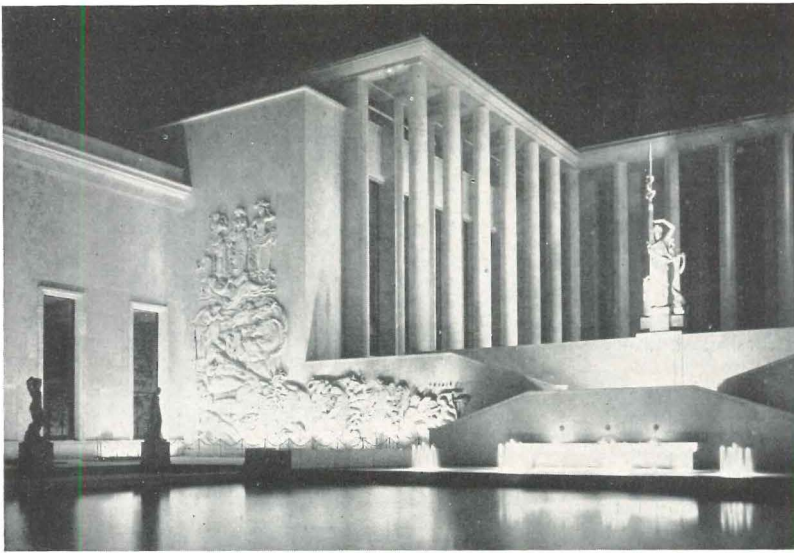
More important provisions in the new code are:

- (a) Construction: Broader provision for concrete filled steel piles. Provision for economies in masonry, by basing the requirements upon fire protection and thus reducing the amount of steel required to support it. Extension of the use of modern reinforced concrete construction. New requirements for wood frame construction to check "jerry building" and provide for sounder and safer construction.
- (b) Materials, Loads and Stresses: A revision of live load requirements in accordance with advanced technical knowledge. Modernization of requirements related to wind pressure. An increase in unit stresses taking cognizance of increased loads permitted by modern steel and reinforced concrete construction (adopted in 1930), permitting the use of improved methods of reinforced concrete construction under proper supervision.
- (c) Theaters: Modernization of obsolete requirements for theater construction permitting the construction of theaters in buildings used for other purposes when they are separated by unpierced fire walls. Provisions for the arrangement of exit facilities to increase the flexibility of theater design and to eliminate ambiguous sections of present code.

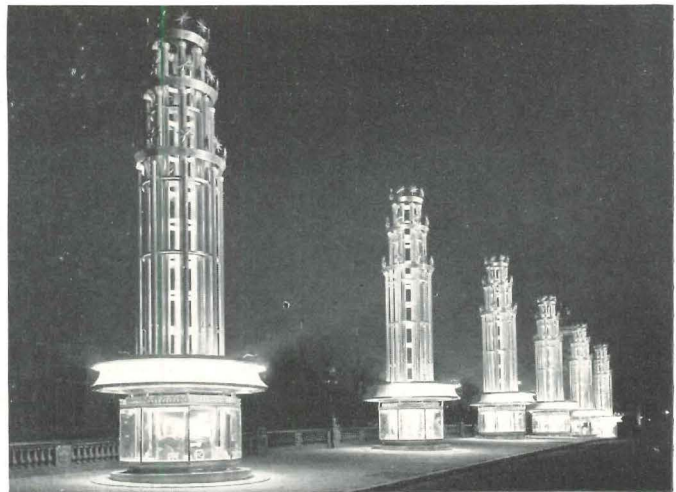
U. S. Studies Technology

NO OTHER country in the world has seen so many drastic changes take place within so comparatively short a time as has the United States, according to the report of National Resources Committee, *Technological Trends and National Policy*, recently issued in Washington. Covering every phase of production—agriculture, mining, manufacturing, transportation, communications, etc.—the Report points out that these changes in national life are by no means over; on the contrary, increasingly rapid tempo seems the prospect for the future.

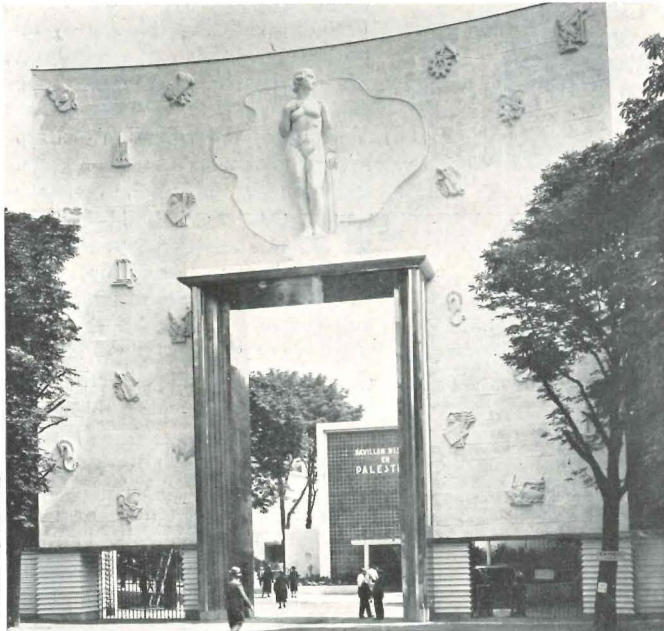
Of especial interest to building designers are those phases of the report which deal with population movement in relation to transportation and communications—since such changes seem likely to affect profoundly the pattern, size and distribution of American cities—and with metallurgy, synthetics and plastics—since developments in these fields will change the materials with which they work.



ONE OF THE MOST STRIKING AS WELL AS ONE OF the few permanent buildings at the Paris Exposition is that of the Museum of Modern Arts. Replacing the old Trocadero, the new Museum with its approaches faces the Eiffel Tower and forms a final for the Exposition's main axis.

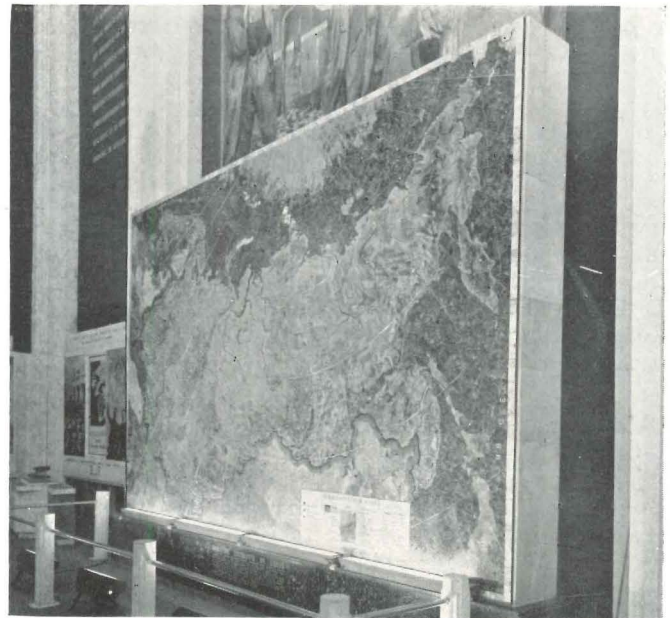


THE BRIDGE OF LIGHT: ONE OF PARIS' GREAT bridges—the Alexander III—transformed by a series of six great aluminum columns on either side of the bridge. Elaborately illuminated at night, the bases of the columns are showcases for commercial displays.

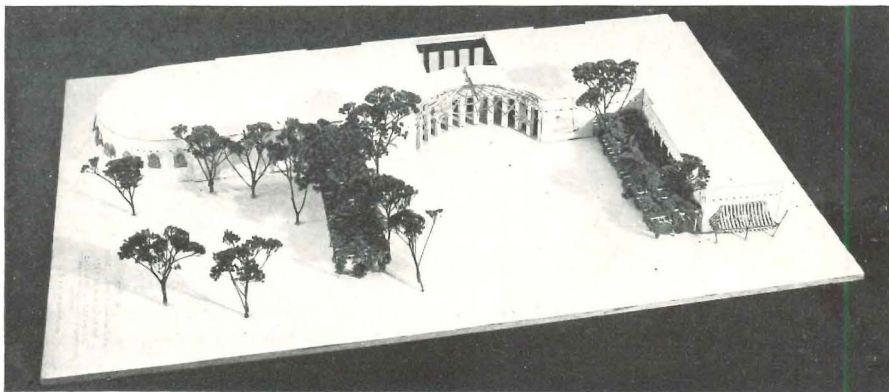


Photos by Bonney

THE DELESSERT GATEWAY AT PARIS EXPOSITION—opening into the Foreign Section—is in white fibro-cement with arts and technics motifs in beige plaster. Nude in white plaster is silhouetted against outlines of Paris.



TALE OF RUSSIAN INDUSTRIES TOLD IN PRECIOUS and semi-precious stones: Great Map of the Soviet Union in Russian building at Paris Exposition, one of the most remarkable exhibits in the building.



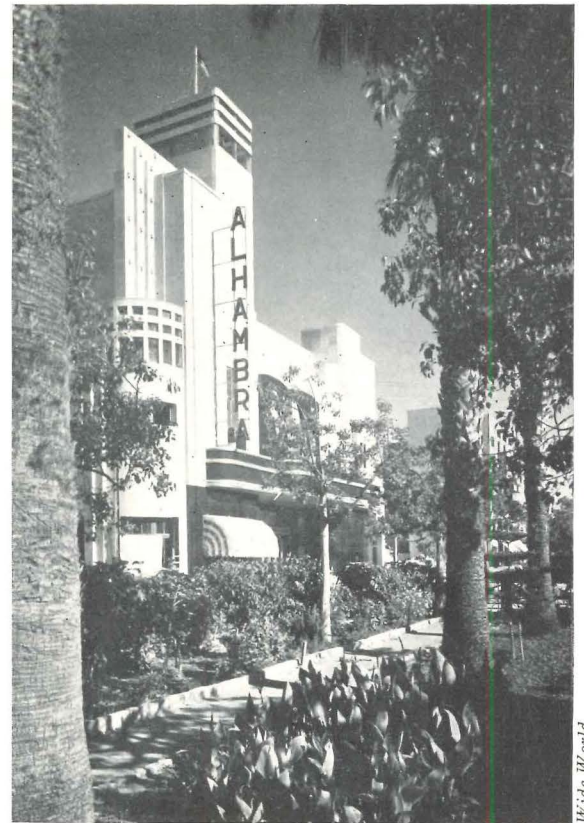
MODEL OF THE BUILDING designed by Eric Gugler and Slee and Bryson, which New York World's Fair will erect to house exhibits of banks, credit institutions, insurance companies and office equipment and supply firms. The structure will cover an acre and a quarter of ground on the Central Mall just north of the Theme Center.

NEW BUILDINGS ABROAD



Sovfoto

BAKU: NOTORIOUS IN THE PAST FOR ITS DUST AND LACK OF VEGETATION, this capital of U. S. S. R's. Azerbaijan is being rapidly converted into a modern European city. Shown above is Petrov Square, man-made park in the center of a recent housing development for oil field workers. Topsoil for all planting is imported.



Wide World

JAFFA: THE BITTER RIVALRY IN British-mandated Jerusalem finds architectural expression in this new cinema on Jaffa's main thoroughfare, built to show all-Arab programs in contrast to nearby Tel-Aviv's all-Jewish ones.



Press Topics

VIENNA: THIS NEW STORE AND apartment building carries on with that tradition to which Austrian designers contributed so much in the post-war decade.

MADRID: FINISHED JUST IN TIME for bombardment, this modern ferro-concrete apartment house in Calle de Vivato proved no match for Fascist bombers. Although vulnerable to direct hits from the air, Madrid's ferro-concrete has withstood heavy punishment from Fascist artillery.



Triangle



Press Topics

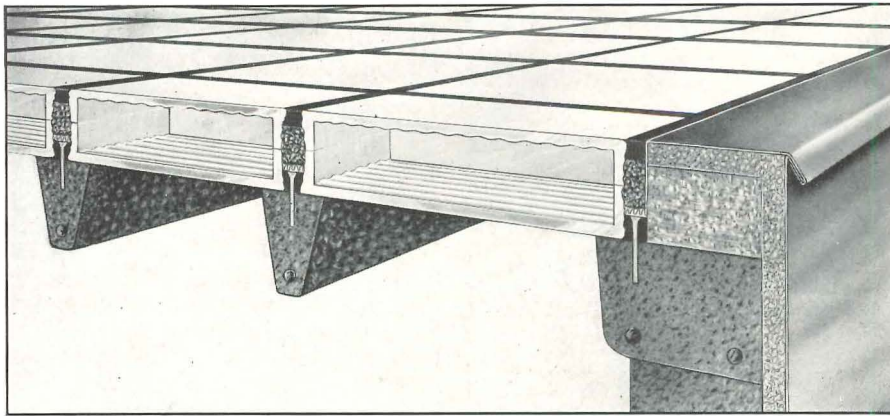
POLAND: TWO VARIATIONS OF THE MODERN STYLE—a new convalescent home on the outskirts of Warsaw (left) and the new Government Building in Toruń (right)—indicate the diverse tendencies in European building design.



Press Topics

sign. Alongside the earlier functionalism is developing a sophisticated stylism with little or no relation to the structural systems employed.

NEW PRODUCT NEWS: Manufacturers get ready for winter



SEMI-VACUUM GLASS UNITS, SUPPORTED BY A CONCRETE carrying grid, and surrounded by a zone of low thermal conductivity, are used in Thermag Skylights. Concrete has a much lower thermal conductivity than steel, and is used for this reason, and to give rigidity and strength for spans. The glass units, manufactured by Owens-Illinois Glass Company, incorporate the Magnalite Light Diffusing Design in their inner surfaces, and come in water-white crystal glass with white coated sides, and wire inserted in the top plate. Size of units is $9\frac{1}{8}$ " square, with an average 50% vacuum. Insulating value is estimated by the manufacturer to be comparable to an 8" brick wall with $\frac{1}{2}$ " of plaster, or a 6" concrete roof deck with metal lath and plaster. Thermag Skylights provide an increase in thermal as well as lighting comfort and a reduction in heating cost, it is claimed.

J. Merrill Richards, 119 W. First Street, Boston, Mass.

Effective temperature mensuration . . .

FOR THE measurement of Effective Temperature, the Therhumiter has been developed. The instrument has no moving parts, and is said to be permanently accurate. It is adjusted for air motion up to 150 feet per minute, the maximum for indoors. A dry bulb thermometer is included on the same mounting. Engraved on the scale is an arithmetical formula for calculating relative humidity. Price \$15.

John R. Parsons, 151 E. 19 Street, New York City.

Single unit control

FAN and limit controls for automatically-fired warm air furnaces are combined in Mercoïd's new single unit control. The dial is calibrated in Fahrenheit degrees with a scale for each side of the dial. Pointers for both high and low adjustment levers show operating settings of the fan and limit control. Adjustments are made by pressing on respective levers, moving them to desired setting, which is then automatically locked in a tooth wheel.

The Mercoïd Corporation, 4201 Belmont Avenue, Chicago, Ill.

Fan mounted above heating sections

AN AIR conditioner designed by American Gas Products as a completely mechanical furnace has the fan motor unit mounted above the heating sections. Air is blown down over heating surfaces in counter flow to upward passage of com-

bustion products on opposite side. Known as Type 2-FE AGP Air Conditioner, the new model is said to produce the same efficiency as down draft combustion or down draft flue connection.

American Gas Products Corporation, division of American Radiator and Sanitary Corporation, 40 W. 40 Street, New York City.

Radial air compressor

THE RADIAL principle of design, familiar to aeronautical engineers, is used for the first time for air conditioning high-speed compressors in Chrysler Corporation's Airtemp. Available in capacities of 10 to 75 hp., with an operating speed of 1,750 r.p.m., these radial compressors are lightweight, compact in size, and are said to be vibrationless. By reason of balanced dynamic design and lightness of weight, no special foundations are required for installing these compressors. Use of large valve areas with small lift and auxiliary intake ports at the bottom of each cylinder produce quiet operation and increased efficiency, the manufacturer claims.

Airtemp, Incorporated, Air Conditioning Subsidiary of Chrysler Corporation, Dayton, Ohio.

Clean-fire range extended

AN EXCLUSIVELY patented bias baffle, featured on newest models of Duotherm's Dual-Chamber burner, extends clean-fire range from top heat down to

pilot size flame, according to the manufacturer. More uniform heat acceleration results from tapered side construction. Stabilization of starting flame is effected by a special pocket at the oil inlet.

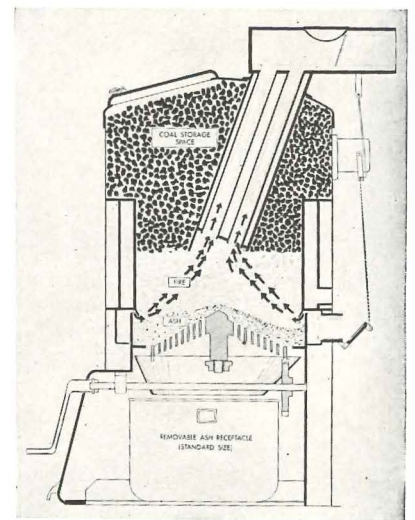
Motor Wheel Corporation, Duotherm Division, Lansing, Mich.

Oil burner and boiler

A GUN-TYPE oil burner, known as Crano Burner, has a "floating flame" which it is claimed keeps the fire in complete suspension and enables the boiler surface to absorb all possible heat. The position of electrodes, away from direct path of oil mist flow, is said to prevent them from becoming loaded with carbon or foul. The special design of this section is said to prevent cracked jackets. One model of Crano Burner is for general conversion installation; the other, with flange mounting, is for combination with "Sustained Heat" boiler.

An oil-burning boiler which combines a newly designed fin-type, rapid-heating surface with Crane's heat-absorbing flues and baffle-controlled water travel, is said to minimize the amount of heat lost through chimneys, and give more efficient B.t.u. extraction from fuel.

The Crane Company, 836 So. Michigan Ave., Chicago, Ill.



Magazine feed boiler

DEVELOPED by Anthracite Industries, Inc., and licensed to two firms for manufacture, Anthra-heat Magazine Feed Steel Boiler is designed for semi-automatic hot water or steam heating of small houses. It may also be used for domestic hot water supply in residences, apartments and commercial buildings. Water is heated by indirect radiation at the sides of the boiler. Combustion space and fire door have been eliminated. A flat spiral rotary grate,

which acts as a fuel bed, throws off ash into a removable ash container. A thin layer of fuel is maintained at the incandescent point of 2,000°, and burns horizontally rather than vertically. Sufficient fuel can be stored in the hopper for one to four days' use, depending on weather. Natural shrinkage of fuel while burning allows fresh fuel to fall to the lower part of the boiler where combustion takes place at the base of the smoke pipe. For steam radiation, capacity is 190 sq. ft.; for hot water, 300 sq. ft.

Manufactured and sold by Burnham Boiler Corporation, Irvington, N. Y., and Fitzgibbons Boiler Company, 101 Park Avenue, New York City.



Preformed expansion joint filler

STRIPS are designed with flexible lips on the two sides which project upward against the concrete surface of the joint opening. Strips are made with a tubular opening in the center so that they may be easily compressed. The top surface is slightly indented or grooved to provide for downward thrust of surface upon compression. Due to this latter feature, it is claimed that material will not extrude above wearing surface of the pavement. Strips are designed to be placed under partial compression and are made 25 per cent wider than the opening in which they are to be used, so that the rubber follows the concrete as it contracts and yet compresses readily on expansion of concrete.

B. F. Goodrich Company, Akron, Ohio.

New caulking compound

A CAULKING compound manufactured by Truscon, dries on the surface only, remains plastic underneath and, it is claimed, will not shrink from walls or openings, or crack. The compound is furnished in knife and in gun consistencies, and does not bleed when painted. Natural color is standard, but special shades are matched to order.

The Truscon Laboratories, Detroit, Mich.

Protective paints

FOR PLANTS where corrosive fumes, product spillage, and moisture or heat conditions break down regular millwhite paints, Sherwin-Williams Company has developed two new paints, Save-Lite Kem Fume-Resisting Paint and Save-Lite Super Fume-Resisting Paint. These new products are designed to increase light diffusion and protect surfaces.

Sherwin-Williams Company, Cleveland, Ohio.

Storage battery for farms

DESIGNED especially for wind-driven farm-light plants, the Jumbo power storage battery, said to be much larger than any heretofore used, makes use of a soft plate to reproduce a larger per cent of current. More electrolyte acid space is effected by use of a round stone jar, which also produces a more even temperature. Plate assembly is square, with automatic bracing of plates at each corner. Each battery furnishes two volts, has a capacity up to 881 ampere hours storage. In actual test in thirteen months the battery showed a loss in original operating rating of three-fourths of 1%, which, claims the manufacturer, indicates an estimated service of twenty years.

Jumbo Battery Manufacturers, Ellsworth, Iowa.

Blueprint paper

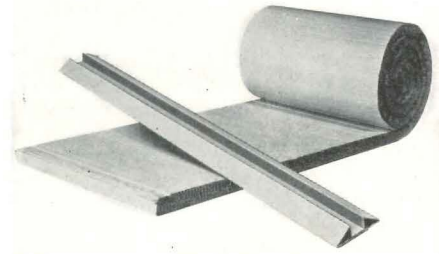
IMPROVEMENTS in Blacline paper include drawing paper surface, increased strength, and a printing range which will reproduce weak pencil subjects. In this paper, the exposed chemical on the paper is burned out to leave black lines on a white background, whereas the exposed chemical on blueprint paper is printed. Blacline paper can be printed on the same equipment as that used in blueprinting, and can be developed by use of a special chemical which comes in dry form for mixing with water. A developing machine made by the same company is recommended; it delivers prints in a semi-damp condition ready for immediate use.

Frederick Post Co., P. O. Box 801-5, Chicago, Ill.

Adjustable fan

SAFE and silent is the Safe-flex All-Purpose electric fan. A steel clamp allows it to be pinned up in any position, and a ball and socket joint permits adjustment. Blades are constructed of flexible molded rubber. It is said to displace the same amount of air as an eight-inch desk fan.

Samson United Corporation, Probert Street, Rochester, N. Y.



All-kraft paper insulation

PURELY mechanical in structure is Ideal Building Insulation, manufactured by The Hinde & Dauch Paper Co. A chemically pure all-kraft paper of great density and extreme thinness is used to make an air-cell type material rugged enough in structure so that it may be worked as other conventional building materials. It contains only 5 per cent solids by volume and 95 per cent confined, noncirculating air. When installed on joists or studs midway between inner and outer walls, Ideal Building Insulation absorbs moisture from the overlaid, moist air on the one side, and passes it through its structure to the colder, drier air on the opposite side, from which point it is passed out of the building proper.

The Hinde and Dauch Paper Company, Sandusky, Ohio.

New wallboard construction system

TWO new products, announced by United States Gypsum Company, when used together, provide a method of wallboard construction which the manufacturer claims is of exceptional strength. Depressions on long edges of the face side of Recessed-Edge sheetrock form a shallow channel at joints and a special cement is applied. A fibrous tape, Perf-A-Tape, is embedded in the cement, which is then leveled off and slightly sanded when dry. Finished joints are flat, smooth, flush with face of the board. This patented system may be applied vertically as well as horizontally.

United States Gypsum Company, 300 W. Adams Street, Chicago, Ill.

Decorative plastic finish

A PLASTER wall finish, Polytect, comes in fine white powder form, and is applied like paint. Dry colors can be added either before or after mixing with water. The product binds firmly to any solid surface, the manufacturer claims, and dries uniformly and quickly. Polytect may be metallized by rubbing with round metal rods, or brushing with a metal brush. Metallizations of any type and shade can be reproduced, and burnished to high finishes.

American Polytect Corporation, 84 University Place, New York City.

MARKETING NEWS



EASILY TRANSPORTED on the Mobilcart is Westinghouse's Mobilaire conditioning unit. The cart has a delicately geared mechanism which raises the unit to window sill height, and swings it into place. After placing in the baffle and plugging in the circuit, Mobilaire is ready for operation.

NEW LITERATURE

REFERENCE MATERIAL AND HANDBOOKS

Asphalt—Pocket Reference for Highway Engineers. By Prevost Hubbard and Bernard E. Gray. The Asphalt Institute, 801 Second Avenue, New York City, 1937.

Bibliography of Reports by State and Regional Planning Organizations. No. 2, May-June 1937, National Resources Committee, Washington, D. C.

Housing and Town Planning in the Soviet Union. By Isadore Rosenfield, Alan Mather and Morris Zeitlin, in "Research Bulletin on the Soviet Union," May 31, 1937. The American Russian Institute, 56 W. 45 Street, New York City.

Housing Index—Digest, No. 16. Reference Guide to American and foreign housing literature. Library Section, Central Housing Committee, subcommittee on Research and Statistics, Washington, D. C., June 1, 1937.

Large Scale Housing as a Business. By Gustave Ring, in "Insured Mortgage Portfolio," June 1937. Federal Housing Administration, Washington, D. C.

New York State Board of Housing Report to N. Y. Secretary of State, legislative document No. 41, Albany, N. Y., 1937.

Technological Trends and National Policy, including The Social Implications of New Inventions. Report of Subcommittee on Technology of the National Resources Committee, United States Government Printing Office, Washington, D. C., June 1937. Price \$1. Copies may be obtained from Superintendent of Documents, Washington, D. C.

AIR CONDITIONING AND HEATING

All-Year-Air. Air Conditioning Division, Auburn Automobile Company, Connersville, Ind.

Cameron Condensate Return Motorpump. Ingersoll-Rand Company, Phillipsburg, N. J.

Econ-o-col Showdown. Econocol Stoker Division, Cotta Transmission Corporation, Rockford, Ill.

Heating Cost Calculator. Iron Fireman Manufacturing Company, Cleveland, O. and Portland, Ore.

Young Cooling Coils for use with Water or Brine. Young Radiator Company, Racine, Wis.

ELECTRIC POWER AND LIGHTING

Anaconda Duraseal Cable, Nonmetallic Sheathed. Anaconda Wire and Cable Company, 25 Broadway, New York City.

Bulldog BU Distribution System of Electrical Distribution. Bulldog Electric Products Company, 7610 Jos. Campau Avenue, Detroit, Mich.

Horizontal Cooper Hewitt Lamps. General Electric Vapor Lamp Company, Hoboken, N. J.

FENCING

Extend Your Home to All You Own. California Redwood Association, 405 Montgomery Street, San Francisco, Calif.

MATERIAL PROOFING

Better Maintenance of Metal, Concrete, Wood, Glass and Composition Surfaces. The Skybryte Co., Cleveland, O.

STRUCTURAL MATERIALS AND PARTS

Chemical and Physical Properties of Revere Alloys. Revere Copper and Brass, Inc., 230 Park Avenue, New York City.

Characteristics of Modern Woods. Roddis Lumber and Veneer Company, Marshfield, Wis.

Comparison Chart of Valves. Arranged by Ohio Injector Company, Wadsworth, O.

Concrete Information, Nos. AC19 and AC20. Structural and Technical Bureau, Portland Cement Association, 33 West Grand Avenue, Chicago, Ill.

Concrete Forms of Douglas Fir Plywood. Douglas Fir Plywood Association, Tacoma, Wash.

Standards for Lead Pipes, Traps, Bends. Lead Industries Association, 420 Lexington Avenue, New York City.

The Architectural and Domestic Uses of Stainless Steel. Electro Metallurgical Company, 30 E. 42 Street, New York City.

Truscon Hollow Partition Studs. Truscon Steel Company, Youngstown, O.

WALLING AND ROOFING

J-M Corrugated Transite. Johns-Manville, 22 E. 40 Street, New York, N. Y.

Walnut in the Art of Living. American Walnut Manufacturers Association, 616 So. Michigan Avenue, Chicago, Ill.

Wood Walls. National Lumber Manufacturers Association, 1337 Connecticut Avenue, Washington, D. C.

CHANGES OF ADDRESS

The RECORD publishes changes of address only on request, making no attempt to keep a day-to-day account. Only organization in the country with facilities for this is Sweet's Catalog Service, whose painstakingly maintained list undergoes an average of 23 changes per day for every working day in the year.

Frank Peden, Inc., architects and engineers, have removed their offices to 271 Melville Avenue, Westmount, Canada.

Moreland Smith and Francis M. Daves announce their association under the firm name of Smith and Daves, architects, for the practice of architecture, office 801, 101 Marietta Street, Atlanta, Ga.

L. A. DesJardins, architect, has resumed practice at 101 Colorado Avenue, Trinidad, Colorado.

Corrections • July Issue

Design of City Park Stadium (page 33) should have been credited to Weiss, Dreyfous and Seiferth and Richard Koch, associate architects.

Incorrectly described as "non-screw type" were the glass holding members of Non-Pressure Glazing Company (page 39). These members, writes the manufacturer, could not be fabricated without screws, "but the glass set therein cannot be subjected to screw-clamping stresses when the screws are tightened."

CALENDAR OF EVENTS

• **September 13**—Registration, School of Architecture, University of Cincinnati, Cincinnati, Ohio.

• **September 20**—Closing date, Structural Clay Products Institute Competition, 1427 Eye Street, Washington, D. C.

• **September 20**—Registration, Courses in Architecture, Engineering and Chemistry, FAECT School, New York City.

• **September 20**—Registration, School of Architecture, Columbia University, New York City.

• **September 27**—Registration, School of Architecture, Harvard University, Cambridge, Massachusetts.

• **September 27**—Registration, School of Architecture, University of Pennsylvania, Philadelphia, Pennsylvania.

• **September 27**—Registration, Design Laboratory, FAECT School, New York City.

• **October 4-9**—Chicago Exposition of Power and Mechanical Engineering, Chicago, Illinois.

• **October 8-10**—First Technological Conference and third annual Convention, Federation of Architects, Engineers, Chemists and Technicians, Book-Cadillac Hotel, Detroit, Michigan.

*A handsome
Bus Terminal
with*

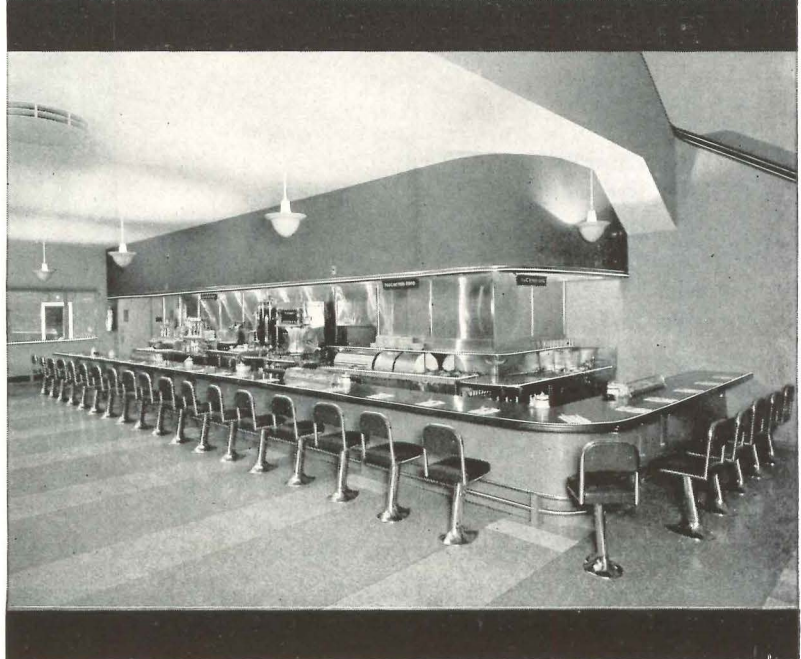
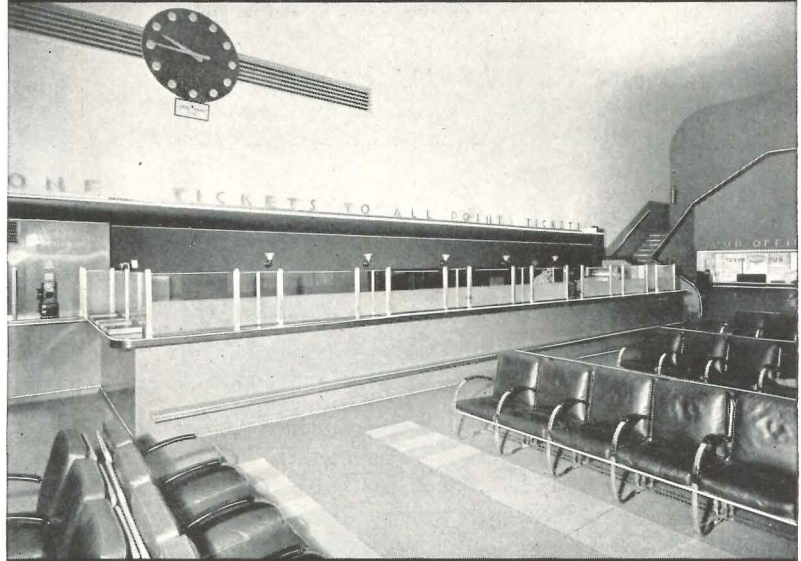
FORMICA

THE new bus terminal of the National Trailways System in Chicago is one of the handsomest in the country and a liberal use of Formica for a number of purposes had a great deal to do with making it so. The counters have Formica panels in attractive colors and Formica tops. Formica doors and Formica paneling in some locations were also included in the attractive design of Graham, Anderson, Probst & White.

Formica combines beautiful colors and surfaces in a material that is supremely durable and immune to injury and staining by washing solutions. It looks good and keeps its good looks.

Ask for our plates of color suggestions on Counters, Wainscoting and Store Fronts.

THE FORMICA INSULATION CO.
4620 Spring Grove Ave., Cincinnati, O.



FOR BUILDING PURPOSES

The *New* **IDEAL FAST-VENTING** **HERE**

The Automatic burner does not deliver heat continuously. It operates on a pronounced ON and OFF cycle. On one pipe steam jobs, all venting and all heating must be accomplished during the limited ON period — the venting first. Thus, the time factor in venting is of utmost importance.

If the venting of such a job under thermostatic control is not balanced, parts of it may never get a chance to function properly due to this comparatively short firing cycle.

Thus the conditions under which automatic heating systems operate determine very definitely the way in which they must be vented. Three fundamental requirements stand out boldly:

1. Venting must proceed rapidly and be accomplished as early in the ON period of the burner as possible.
2. All radiators must start venting simultaneously.
3. Steam flow to each radiator must be regulated in accordance with its location and capacity.

In order to accomplish the above, the bulk of the venting must be done before boiler pressure has increased beyond a few ounces. For this reason it is essential to use large port, large capacity valves — considerably larger than anything previously available.

A NEW ACCOMPLISHMENT—NOT A NEW IDEA

Why, then, has it taken the heating industry 15 years to find this out? It hasn't. There have been any number of attempts to build large port valves, but the obstacles heretofore have been insurmountable.

A large port of conventional design necessitates a larger float, and consequently a larger valve body to house it. Such a valve would have to be large and relatively expensive.

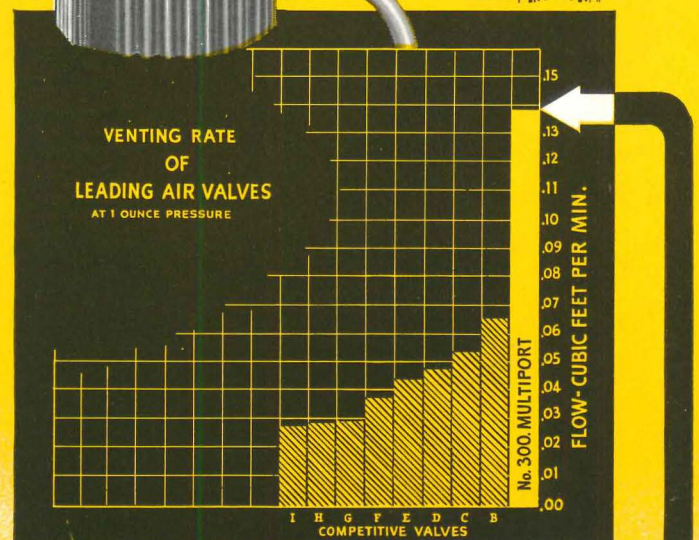
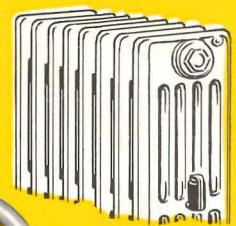
Large port venting at low pressures is ideal, but venting a cold radiator through a large port at normal steam pressure would result invariably in excessive condensation, water hammer, spitting, short circuiting of the steam and an appreciable delay in completing the venting process.

AUTOMATIC MODULATOR—THE KEY TO THE PROBLEM

The one thing that has made the large port valve possible today is the AUTOMATIC MODULATOR (patented) which permits large port action up to 2



No. 300 ARCO-DETROIT MULTI-PORT *for Radiators*



The venting rate of the No. 300 Multiport is more than 3 times as great as that of the average competitive air valve.

SYSTEM IT IS

ounces pressure and then automatically reduces port area to that of the ordinary valve. It assures practically all venting immediately after the burner comes on and before normal pressure has had a chance to build up — this without jeopardizing any necessary subsequent venting at normal pressure. It eliminates the need for a large float or for any increase whatever in valve size. The No. 300 Multiport for radiators has for the first time met the new venting requirements imposed by automatic heat.

The quick venting of the mains is the function of the No. 861 Arco-Detroit Hurivent. Its 1/2-inch port gives it an outstanding advantage over other vent valves.

UNEQUALLED FOR BALANCING

The No. 300 Multiport, the port area of which is adjustable, presents an unequalled opportunity for balancing the venting of a system. With a much larger maximum port opening to begin with, it obviously has a much greater range of adjustment than other valves.

The adjusting mechanism is so arranged that the change in port area size is directly proportional to the distance through which the adjusting indicator is moved. A quarter swing of the indicator reduces port area just 25% — and so on through the entire swing of the indicator.

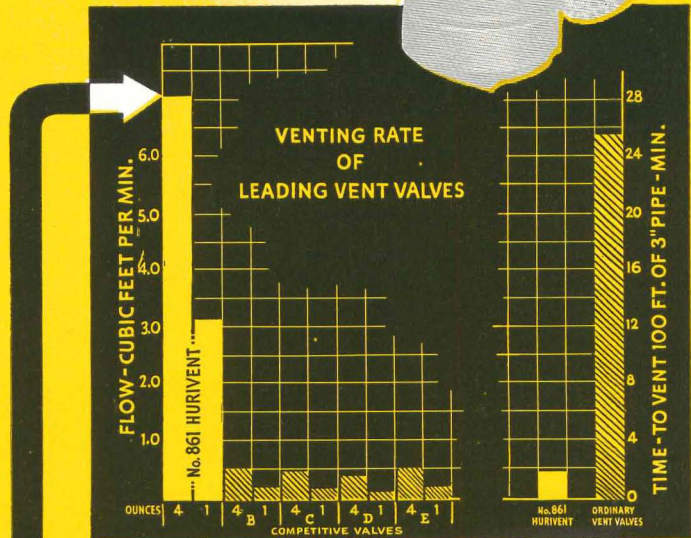
A BOLD STEP IN MODERN DESIGN

The design of this unit prevents any hiss, sizzling, or spitting, and all danger of a clogged orifice from paint, plaster or tampering.

For the first time in 40 years a positive step has been taken to improve the appearance of the air valve. The styling of the No. 300 Multiport is new, modern, and very attractive in itself. It offers a striking contrast and welcome relief to the purely utilitarian lines of other valves. Its lustrous black moulded jacket accentuated by brilliant chromium striping harmonizes with any well-appointed interior.

While stress has been laid particularly on automatic heat, the Ideal Fast-Venting System brings many of its outstanding advantages, also, to the hand fired coal job. It should be used on all one pipe steam jobs, both

No. 861 ARCO-DETROIT HURIVENT *for Mains*



The venting rate of the No. 861 Hurivent at 4 oz. is more than 22 times as great as that of the average competitive vent valve.

new and old. Ask your jobber to show you these valves.

The Ideal Fast-Venting System embodies the combined experience and facilities of the engineering and manufacturing staffs of American Radiator Company and Detroit Lubricator Company — Developers of the famous Airid, Vac-Airid and Variport lines, the former as National Distributors and the latter as makers. For sale by all leading Wholesalers.

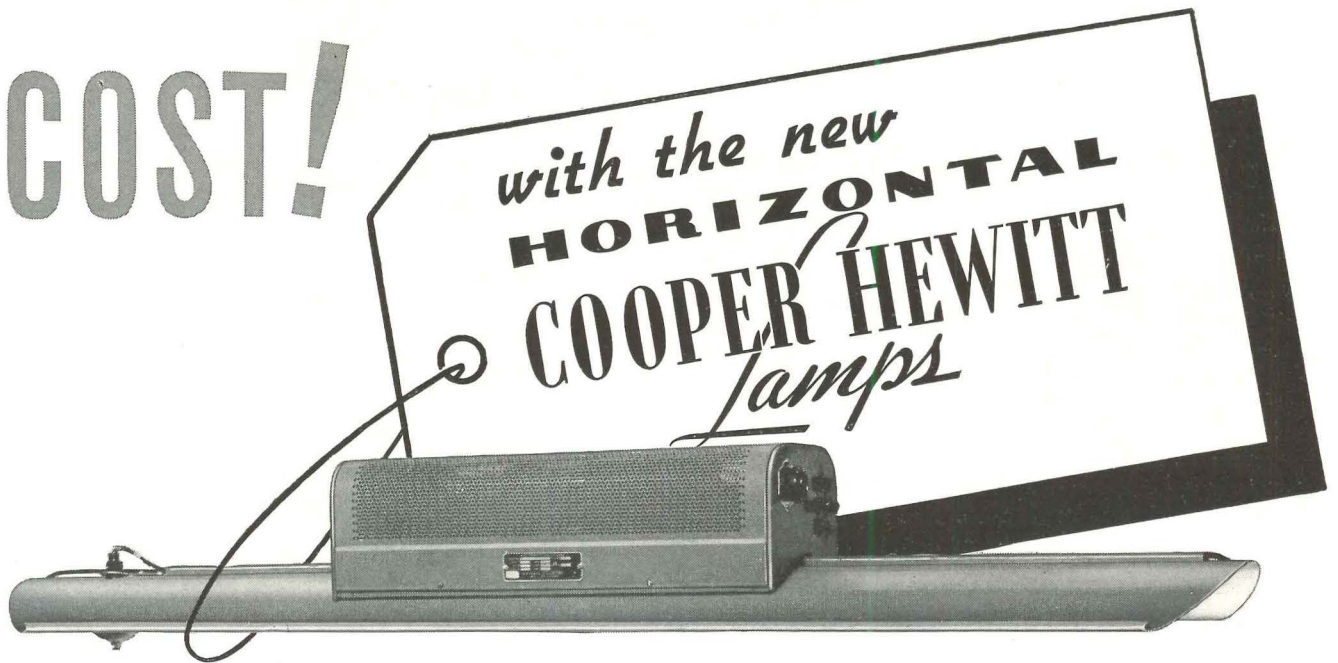
DETROIT LUBRICATOR COMPANY

5900 TRUMBULL AVE. • DETROIT, MICH., U. S. A.

DIVISION OF AMERICAN RADIATOR & STANDARD SANITARY CORPORATION



INCREASED SEEING EFFICIENCY AT LESS COST!



Shadows are greatly reduced and all details clearly revealed under Cooper Hewitt mercury vapor light. This modern light means better sight and better production — a boon to management and workers alike.

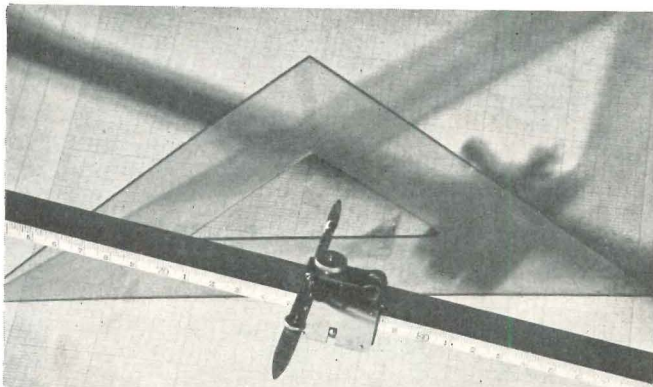
By adding incandescent lamps to the mercury within the fixture, lighting is obtained that closely resembles daylight values for operations that require perception of color.

The detail-revealing light of mercury vapor is now produced at 22% less cost. And, the new unit hangs horizontally to give the best distribution of the soft, non-fatiguing light which its long lamp provides. Starting is instantaneous. Power factor is high.

Get full details about these improved units. They are made in two sizes: 50 inches long operating at 350-watts; 33 inches long using 275-watts. Bulletin 827 DM illustrates their many advantages for you. Write for a copy. General Electric Vapor Lamp Company, 807 Adams Street, Hoboken, New Jersey.

**GENERAL  ELECTRIC
VAPOR LAMP COMPANY**

828C



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AMERICAN SCHOOL OF DESIGN
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SCHUNDLER MICA PELLETS

PERFECT INSULATION

Specify Schundler Mica Pellet Insulation everywhere with absolute confidence! It's the perfect insulation against heat and cold for the life of the building.

TIME TESTED

The test of time has built a splendid reputation for Schundler Mica Pellet Insulation! It is now providing summer and winter comfort — as well as holding fuel costs to a new low — in thousands of homes throughout the United States!

NATURAL MINERAL

The Schundler Process explodes natural, non-metallic vermiculite into expanded accordion-like Mica Pellets. Poured into attics of new or old homes — without mechanical equipment — these Pellets maintain constant density, are indestructible, fire-retarding, moisture-repellent and termite-proof. Sound is stilled and acoustics improved.

CHECK YOUR COSTS

Take two minutes today to write for descriptive literature and free samples. Make certain your clients get the highest in value and the lowest in cost—Schundler Mica Pellet Insulation!

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—New York Times Book Review

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—San Francisco Chronicle

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—New York Tribune Book Review

"The new style (of Mexican architecture) has many merits which are obvious. It uses simple materials, builds with economy, gets the greatest amount of light and air into the buildings, and is definitely 'honest!'"
—Harry Hansen in The New York World-Telegram

**The New Architecture
In Mexico**

● Text, photographs, colored diagrams, and supplementary text on mural painting, sculpture and pottery, have been collected and arranged by Esther Born in the 160 pages of this book, which features the new and progressive architecture below the Rio Grande.

● You can now obtain outstanding examples of practically every class of new construction in Mexico—Office Buildings, Store groups, Factories, Hospitals, Schools, Apartments, Workers' Houses, and Town and Country Houses—in this handsome volume.

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Please send me a copy of "The New Architecture in Mexico," for which I enclose \$3.50, with the understanding that if on receipt of the book I am not entirely satisfied, the money will be refunded.

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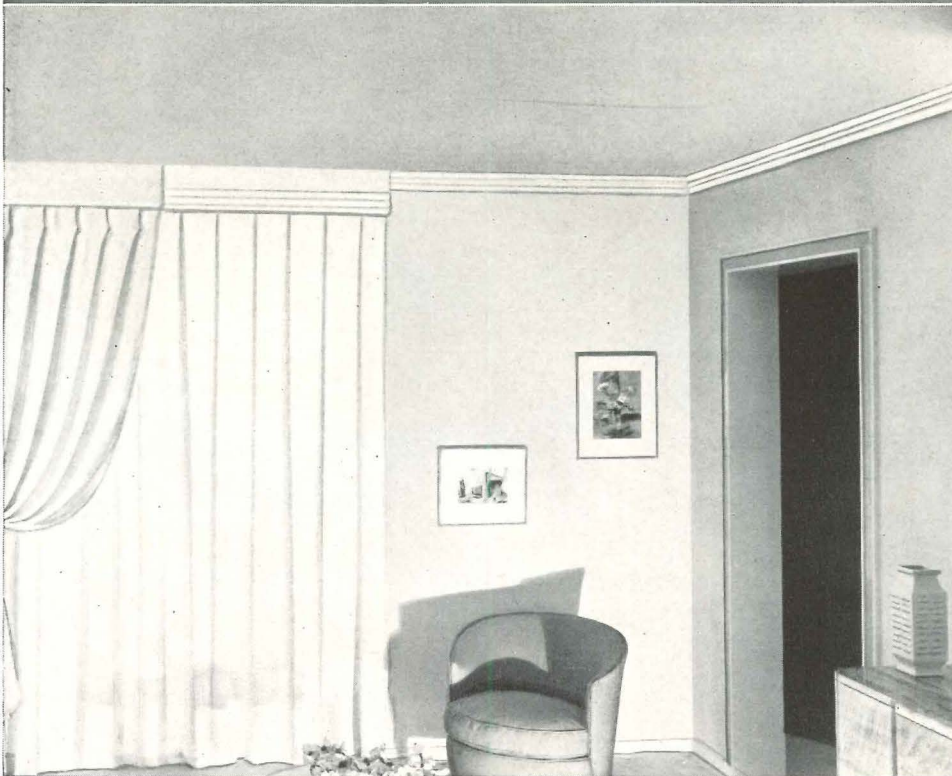
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Provide Smooth Walls and Ceilings . . . with

RECESSED-EDGE SHEETROCK

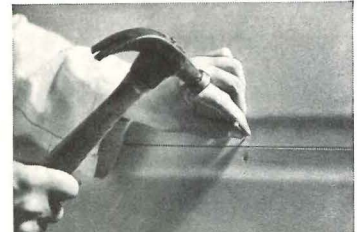
THE FIREPROOF WALLBOARD
AND PERF-A-TAPE

The New Perfected System of Wallboard Joint Concealment

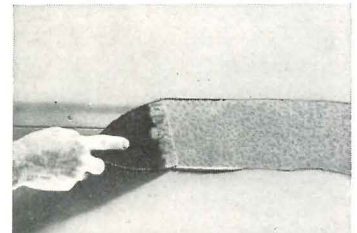


Basement or attic space is easily converted into attractive rooms this perfected low-cost way.

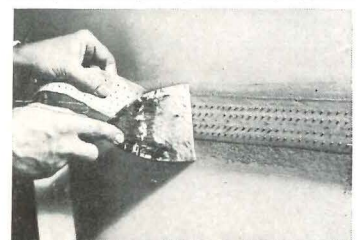
SEE HOW IT WORKS



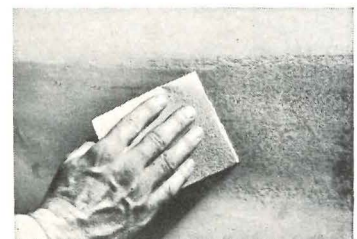
When sheets are nailed in place, the recessed edges form a channel at each joint.



This channel is filled with a special cement, which is quickly and easily applied.



Perfo-A-Tape, a patented strong perforated fibre tape with chamfered edges, is embedded in the cement.



Cement is applied over Perfo-A-Tape and sandpapered evenly, assuring a smooth surface for any decoration.

A Quick, Easy Way to Modernize, Remodel and Repair at Low Cost

Now you can quickly replace old walls and ceilings — provide attractive new rooms at low cost — confident that the job will give *lasting* satisfaction. Simply specify *patented* Perfo-A-Tape and Recessed-Edge Sheetrock* system. This new improved method of wallboard construction gives you every assurance that joints will be strongly reinforced and entirely concealed by *any* decoration your clients may desire.

As the $\frac{3}{8}$ - or $\frac{1}{2}$ -inch thick boards go up on the studding or over old plaster — horizontally, for greater rigidity, or vertically, if desired — the recessed edges of the board form a shallow channel at the joint. This channel is filled with a special cement, in which is embedded Perfo-A-Tape, a patented strong perforated fibre tape with chamfered edges. The cement is then sandpapered evenly, leaving a smooth, unbroken wall surface, ready for the final joint-concealing

step of any type of decoration you may prefer.

This *perfected* system of joint concealment and reinforcement, using Perfo-A-Tape and Recessed-Edge Sheetrock, is not expensive. It is suitable for any interior. Providing smooth, unbroken walls and ceilings, it offers an excellent surface for textured finishes made with USG Textone* and for painted walls done in USG Textolite*. Sheetrock is also available in wood-grained finishes requiring no joint treatment or further decoration — faithful reproductions of walnut, matched walnut, knotty pine and douglas fir.

Lumber dealers everywhere carry these famous USG products.

*Registered Trade-Marks

FOR YOUR PROTECTION, USG PRODUCTS
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USE PERF-A-TAPE AND RECESSED-EDGE SHEETROCK CONSTRUCTION

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Dept. F-9, 300 W. Adams St.
Chicago, Ill.

Please send me a copy of
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information on Recessed-
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Name.....

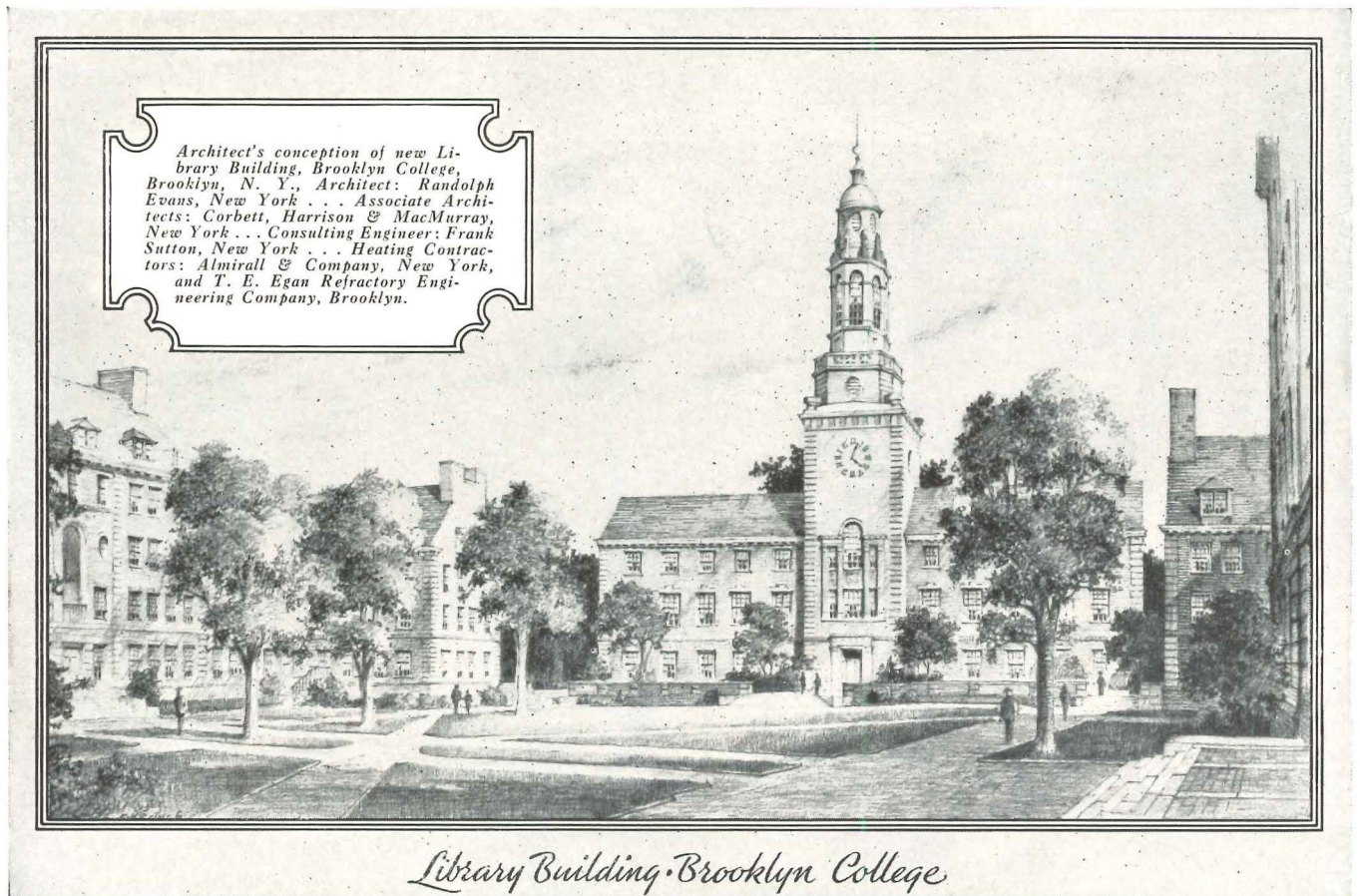
Address.....

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



Brooklyn College joins the parade

. . . to **NATIONAL PIPE**



THREE impressive buildings—library, science hall, and gymnasium—are now nearing completion on the campus of Brooklyn's municipally controlled college of arts and sciences. As integral parts of a long-range building program, these important structures will provide modern educational facilities for many generations of students.

Architects and engineers responsible for the selection of materials for this project determined to safeguard their investment by every feasible means. This meant careful balancing costs against quality of materials.

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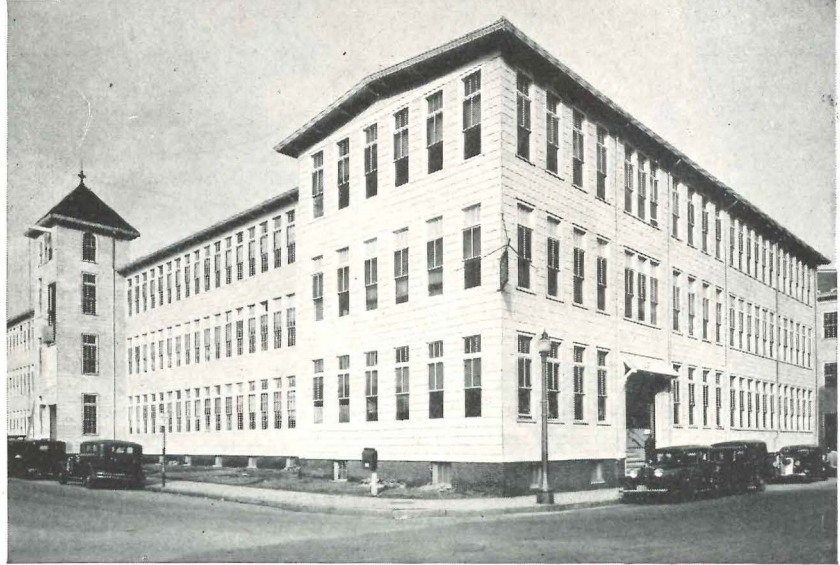
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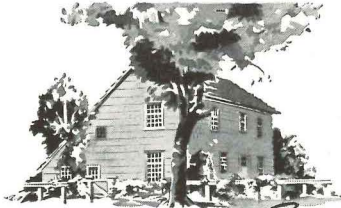
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A restoration of John Howard Payne's "Home, Sweet Home" on Long Island.

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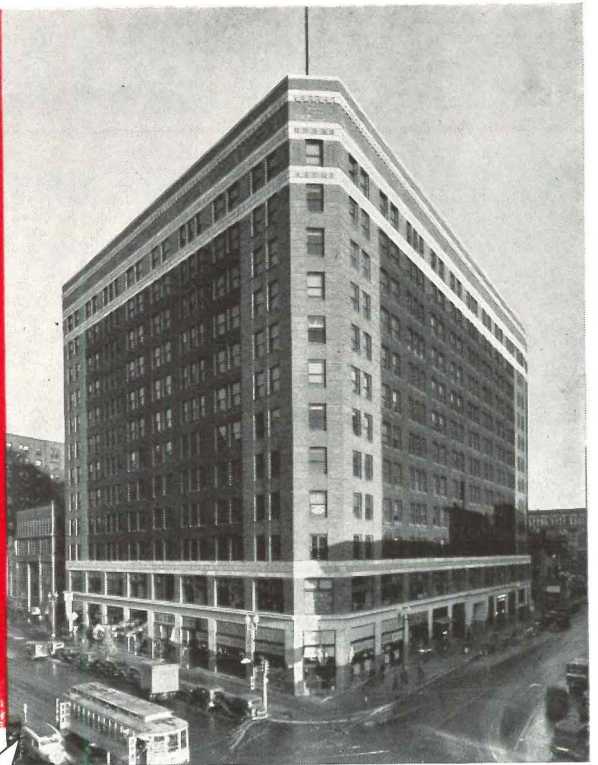
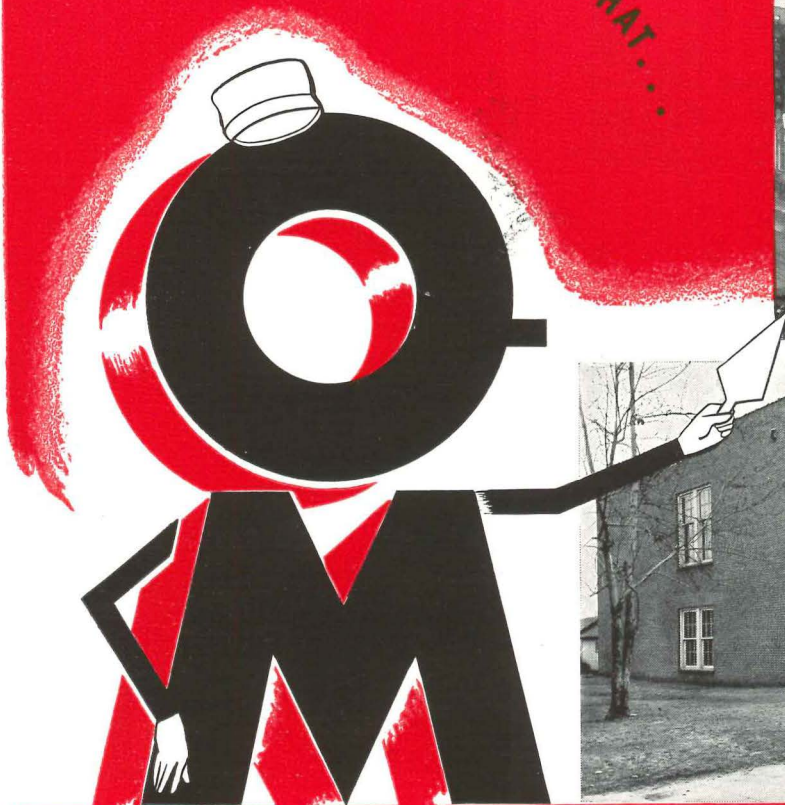
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Top Photo: Plymouth Building, Minneapolis. Larson & McLaren, Architects. C. F. Haglin & Sons, Inc., General Contractors.

Bottom Photo: St. Albert's Parochial School, Minneapolis. Larson & McLaren, Architects. Charles F. Leighton, Associate. Ernest F. Ganley Co., General Contractor.

MASTER BUILDERS

DESIGN TRENDS

Should architecture be taught from the past onward or from the present backward? Is architecture today 80% business and 20% art? These, and other provocative questions, were tackled at Princeton's architectural round table.

In the first year of the Federal Art Project, 434 murals were completed. Most of these were done by young artists and they reveal that American artists have a mural sense, says Holger Cahill, director.

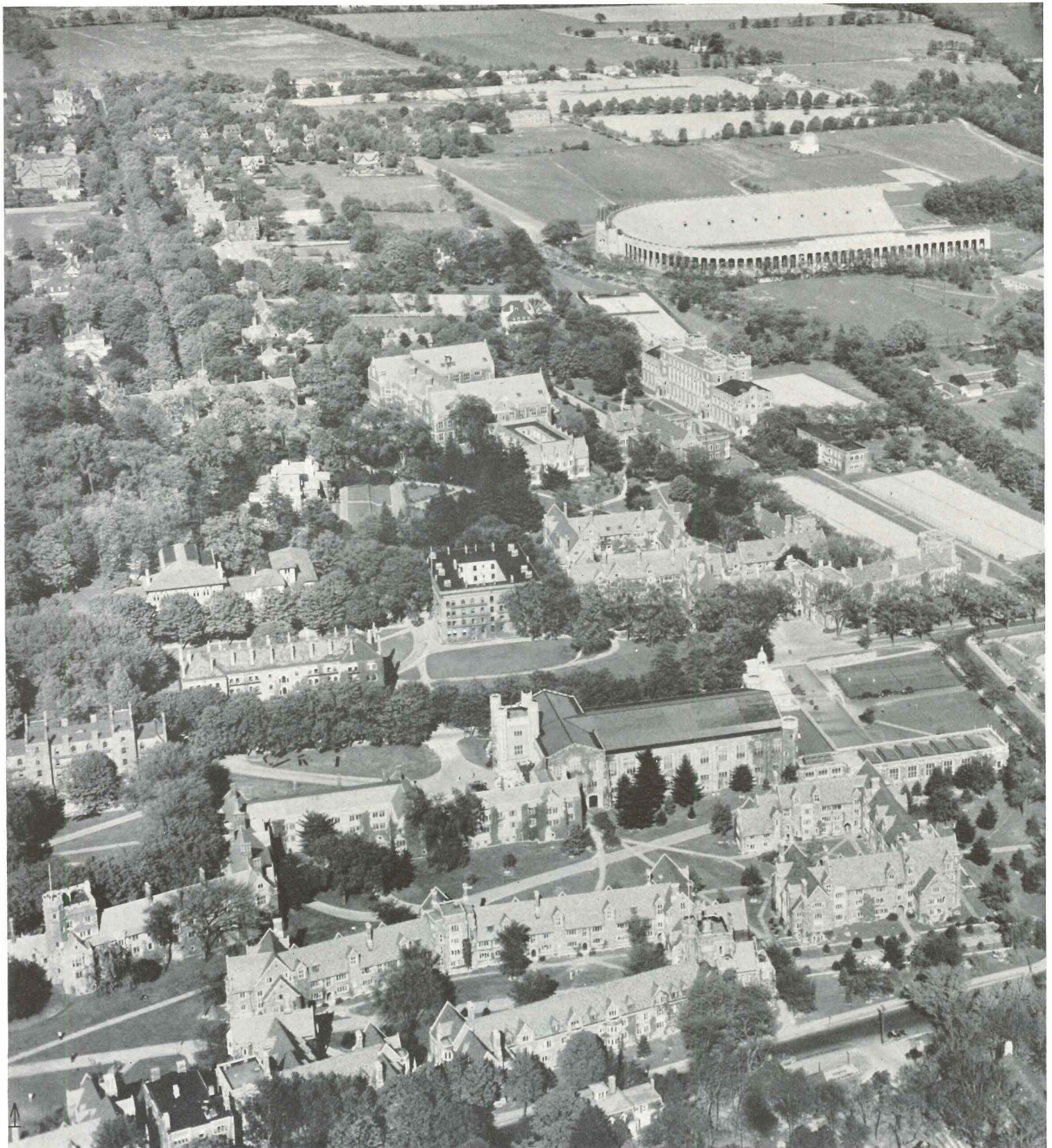
The Texas Company retained Walter Dorwin Teague to produce a standardized design for Texaco stations which would meet all geographic, economic, and operating requirements. Mr. Teague's solutions are presented.

Pictorial Record: architectural offices of Victorine and Samuel Homsey, Lyndon and Smith, Mitchell Wooten, and Oscar G. Stonorov; two store buildings; a sport shop; a medical building.

New residential space to date this year exceeds 1930 total.

ARCHITECTURAL

Record



Fairchild Aerial Surveys

If the Princeton of today were destroyed overnight, who would like to see it rebuilt by a certain internationally-known modernist?

Premises and Conclusions at the Princeton Architectural Round Table

In June, Princeton's School of Architecture held an Architectural Round Table—the first of what is hoped will be annual end-of-the-year affairs. Purpose of the Round Table is an informal extension of curriculum, embracing discussions on education, new problems, programs, materials and forms. In keeping with the mood of informality, the RECORD asked W. Pope Barney, chairman of Princeton's Architectural Advisory Board, to report in his own fashion the highlights of the meeting.

FOLLOWING its announcement, the Princeton Architectural Round Table did "provide in an ideal atmosphere an opportunity for both young and old to discuss informally problems and opportunities in the teaching and practice of architecture."

For three days the graduate students of the School of Architecture, the architects of the Princeton Advisory Board, and outstanding practitioners from the east and as far west as Detroit, gathered in informal groups and freely discussed the subjects nearest their hearts. Coherency was given to the scheduled meetings by having the subject of the day's discussion presented by one who had given sufficient thought to it in advance to speak provocatively and thus set the ball rolling. From then on the discussions took the form of spontaneous expressions of thought. They proved to be of a nature to justify the sponsors of the conference in feeling that great good might come from men saying what they really thought rather than what they thought they ought to think.

Historical Backgrounds in Education

Starting off the evening devoted to education, Dean Emerson of M. I. T. gave an analysis of architectural education, its problems and its challenge, which showed that this Dean of deans was thoroughly aware of the changes that are going on in the practice of contemporary architecture. Whereas he felt that the objective of

the schools is to teach men to work hard, to use common sense, to think clearly, to feel sensitively and to judge analytically, he pointed out that there are many roads by which these objectives could be reached. He thought that it was a great mistake to consider four or five years spent at college as adequate; that it was unfair to judge a school by its graduating classes; rather should it be judged by the success or failure of its students fifteen or twenty years after graduation.

His remarks on history and its great potentiality for members of the younger generation, if they could but be brought to realize that they are denying themselves their own birthright by starting architecture yesterday instead of when it actually began, found a ready challenge. George Howe objected to the teaching of architectural history from the past onward, advocating that it be taught from the present backwards in order that we might be sure to bring contemporary life and its problems adequately to the attention of the students. His own experience had been that starting out with Rameses one rarely got as far as Rockefeller with any great degree of enthusiasm left to solve the problems which the days of Rockefeller brought forth.

Mr. Howe's rather pointed criticism of the established procedure in educational institutions brought forth a rejoinder from Dean Koyl of the University of Pennsylvania, who took Mr. Howe to task, pointing out that it was much

more logical to start with the classics and come down to modern times and thus see evolution in progress and not in reverse.

Two Kinds of Architectural Schools

Professor Johnstone, head of the Department of Architecture at Pennsylvania State College, presented the problem of those colleges the majority of whose students will ultimately practice in small communities. He brought out clearly that necessary functions of such colleges should bring about a different curriculum than that commonly accepted in the metropolitan universities, which draw their main student body from the large cities. These students ultimately practice in a highly organized field, with consulting engineers and various experts at their disposal, where the problems confronting them are of a broader scope than those facing the practitioner in the smaller communities.

What is an Architect?

At this point the discussion escaped from the hands of the educators; and, with Arthur Holden, Charles Klauder, Carol Aronovici, Russell Van Est Black, Stephen Voorhees and Clarence Stein speaking from full hearts and the enthusiasm of the moment, it was very apparent that Dean Emerson had been right when he felt that there were many roads leading to the objectives sought in the training of an architect. For a time it seemed that not only were there different methods of training, but even different conceptions of what an architect is. But if one were to try to voice the thread of logic and aspiration which ran through all, it would take the form of a plea on the part of the profession for an ever-renewing recognition on the part of the educators that the practice of architecture is changing. It calls today, as it has in the past and will in the future, for men of the broadest appreciation of the culture of the past as exemplified by its great works of architecture. It calls for a sensitiveness to the full sociological significance of the changing life about us; and a firm conviction that the architect is the one person ideally trained and experienced to bring forth architectural solutions of potency from aesthetic and functional standpoints and also in their effect upon the lives of millions who are but faintly conscious of the existence of aesthetic considerations of any kind.

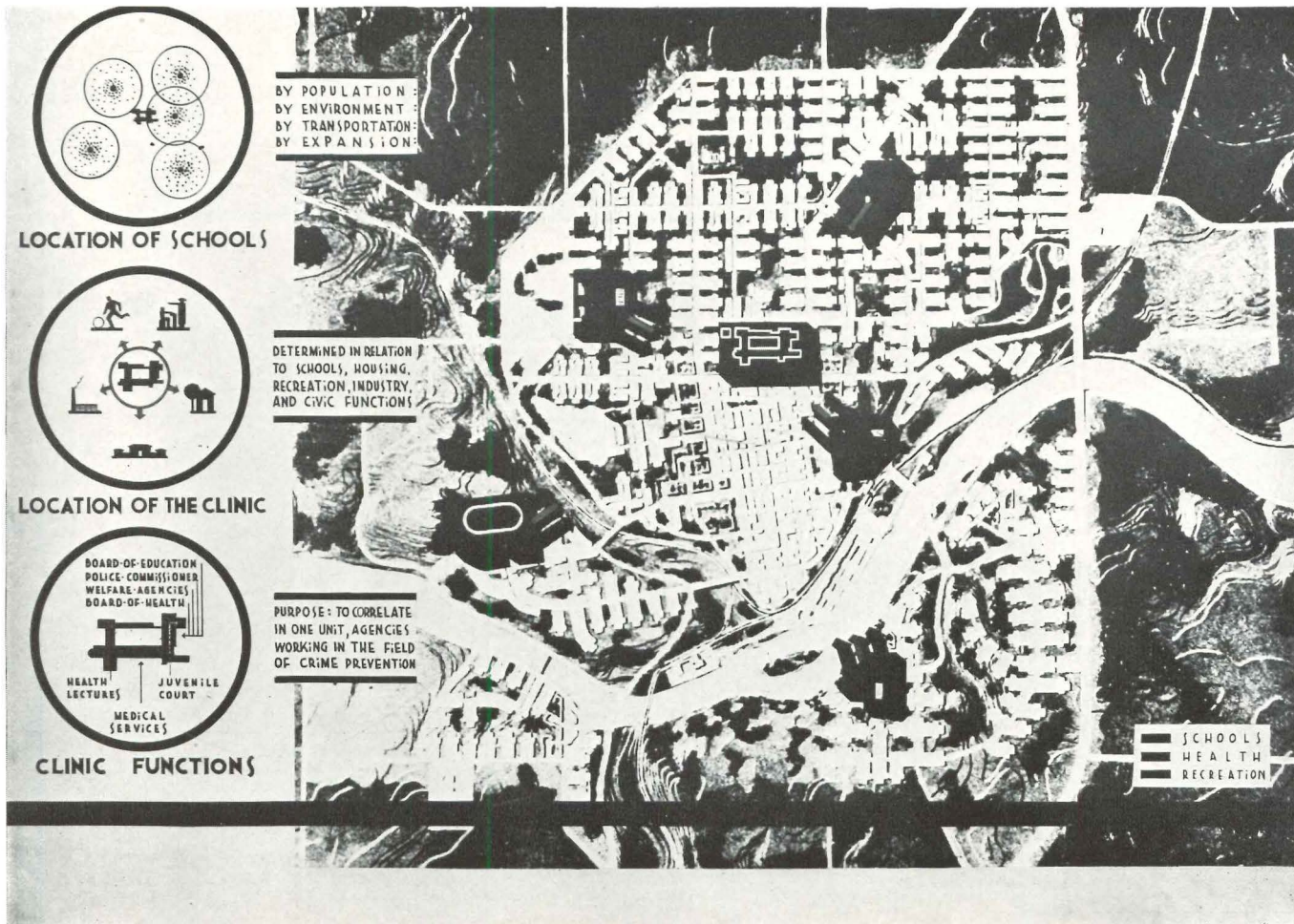
To realize how true it is that the times have

changed, one had only to hear such phrases as architecture being fundamentally the "humanistic science of construction," W. Pope Barney; and having to do "primarily with shelter," Stephen Voorhees; that architecture should "start with the social life in which we live," Clarence Stein; that a "school ought to teach a student to adapt himself to his own conditions," Grinnell Locke; a "building is merely an expression of a great many forces going on about man and to which he must give thought," Carol Aronovici; "if we could look behind and see why it was necessary for men long ago to build cathedrals, we would see the significance of life today and how many things we've got to study in order to live up to our opportunities," Arthur Holden. But despite recognition of change and of the need for new ways, means, and solutions, there was decided agreement with Charles Klauder's contention that "while revolution may be in the air, and is certainly occurring in this land of ours today, I believe the future of education is a matter of evolution rather than revolution."

What is Modernism?

On Saturday morning, when discussing new programs and problems with which the architect is faced today, Ely Kahn drew down the ire of George Howe by not speaking with sufficient disrespect of work that was historically stylistic. Mr. Kahn contended that work might fairly be called modern if it really worked and had charm and showed a mastery of the use of the materials with which it was built; and that this definition of modernism would ring just as true if it be applied to the work of the Chinese four or five centuries ago. Said he, "Why go into all this frenzy of cantilevered buildings and insist upon doing something stunty? That isn't modern architecture. Why can't we take it for granted that we are different people, liking different things? Why can't we get the real quality of materials and try to solve our problem, looking toward something fresh, without necessarily jumping overboard?"

The sentiment of the Princeton graduate students who were present and took part in the conference was particularly felt at such times as the moment when Mr. Kahn asked whether, if the Princeton of today were destroyed overnight, they would like to see it rebuilt by a certain internationally-known modernist. The yeas so drowned the nays that for a moment even Ely

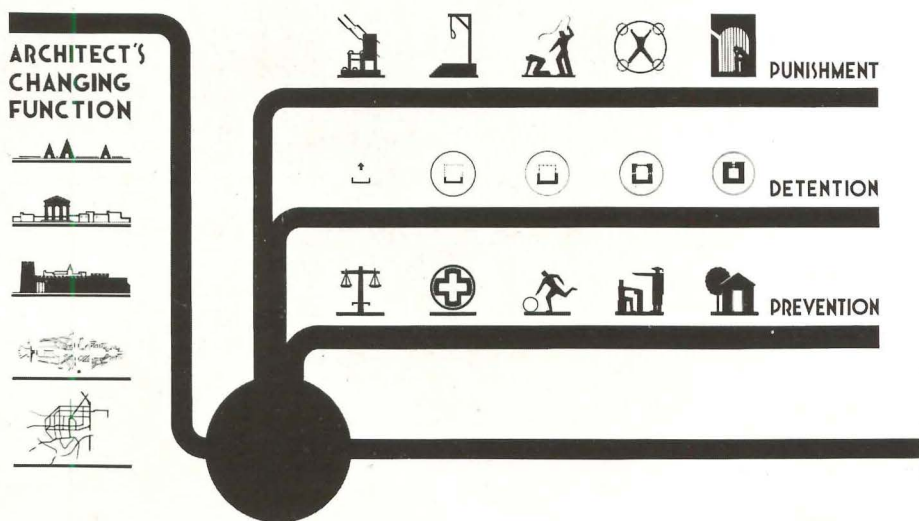


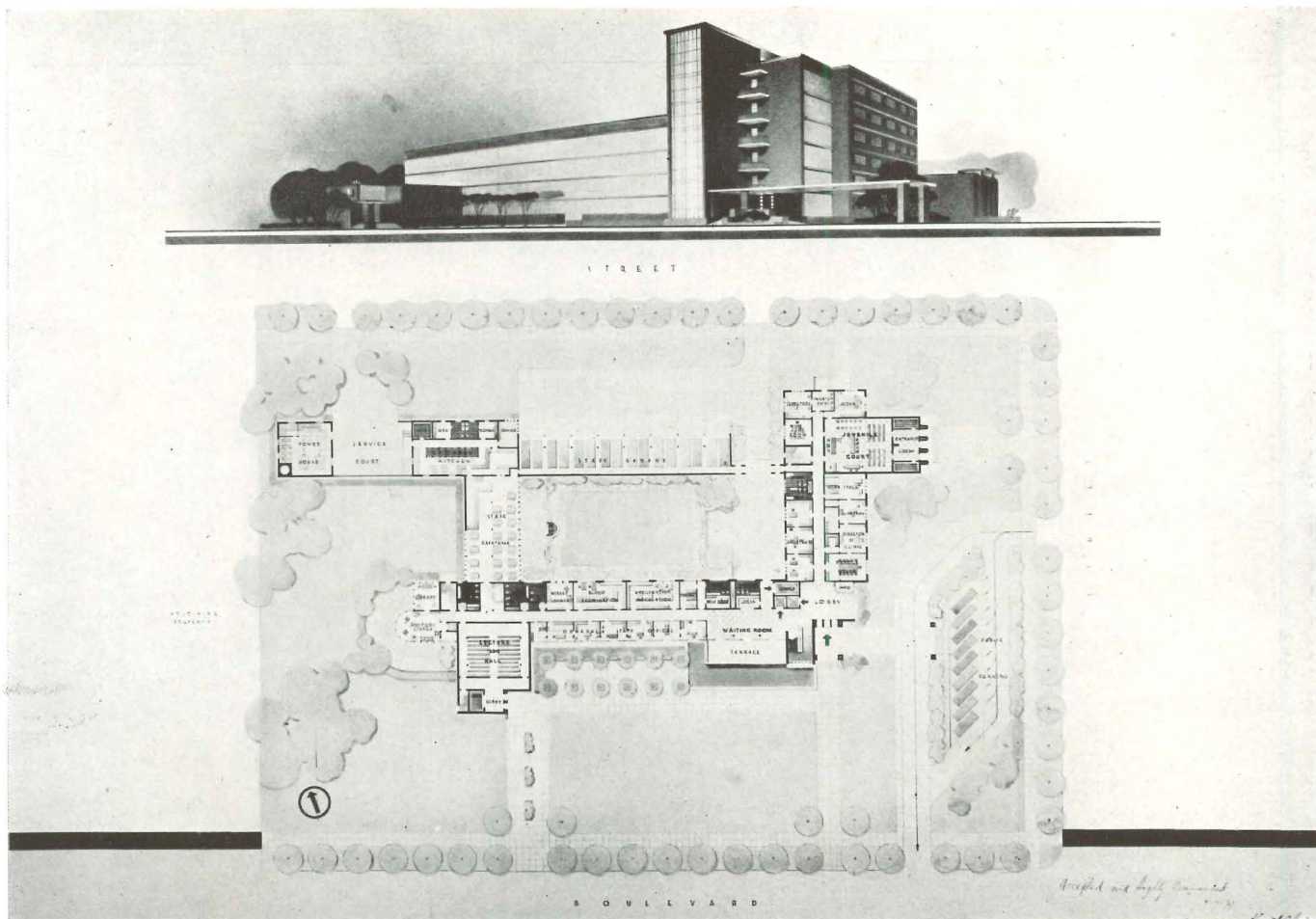
CRIME CONTROL

"A COORDINATING GUIDANCE CLINIC"—Thesis of K. J. Heidrick (shown on this and following pages). A center, in the prevention of crime, where could function the juvenile court, school administration, board of health, welfare council, police commissioner, and medical clinical services.

ABOVE: A typical city plan showing the relation of the C. G. C. to the community, particularly the schools.

RIGHT: Parallel analysis of crime from punishment to prevention, and of the architect's changing function, showing the necessity of a Coordinating Guidance Clinic.





Kahn was nonplused. It was clearly evident throughout the conference that the sympathy of the student is all with the modern movement.

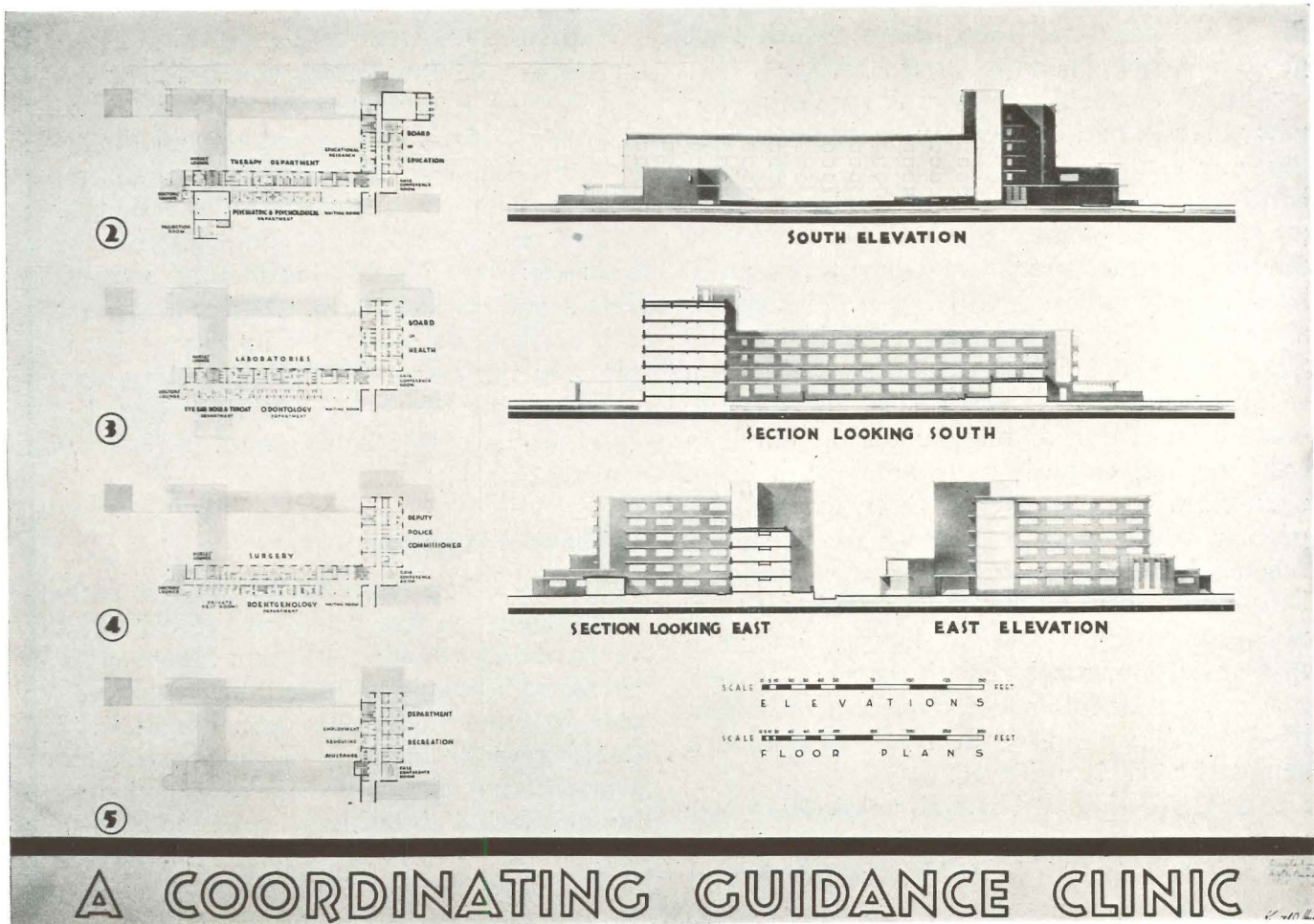
When Mr. Kahn brought out that the feeding of Beethoven to students two hours a day might have a very beneficial effect upon their sense of design, he struck a responsive chord in Edmund Gilchrist. Said Mr. Gilchrist, among many things, "Bach is perhaps one of the greatest musicians because he had a tremendous conviction concerning what he was composing; he felt so deeply that he couldn't help stressing the great and simple things in a great and simple way. Mustn't the architect, like the musician, have conviction for the characteristics of the age that he feels worthy of stressing? Mustn't he believe with a passion akin to religious conviction that these characteristics are worthy of his supreme effort at expression?"

Today's Needs

This mention of passionate convictions touched off Lawrence Kocher, who said, "Today we

are confronted with the need to do things for the good of the person who lives in the building. We are aware of the need in the community. If we can get a solution that has character, that has done something for a definite purpose, then we attain architecture. The sooner we forget the need to produce beautiful architecture, the sooner we will produce just that." He later waxed understandingly enthusiastic over the beauty of the axe helve and sickle, by reason of their perfect adaptability to their primary function. He didn't hear, however, the remark of one seated beside the chairman who was facetious enough to suggest that Kocher be asked "How about the lawn mower?"

Max Abramowitz, responding to the serious tone of Mr. Kocher's remarks, spoke eloquently in defense of a more thorough grasp of the whys and wherefores of the problems upon which we architects expend our thought; he felt that too frequently our interest is in the details which are only a means to an end and that we do not question or philosophize sufficiently concerning

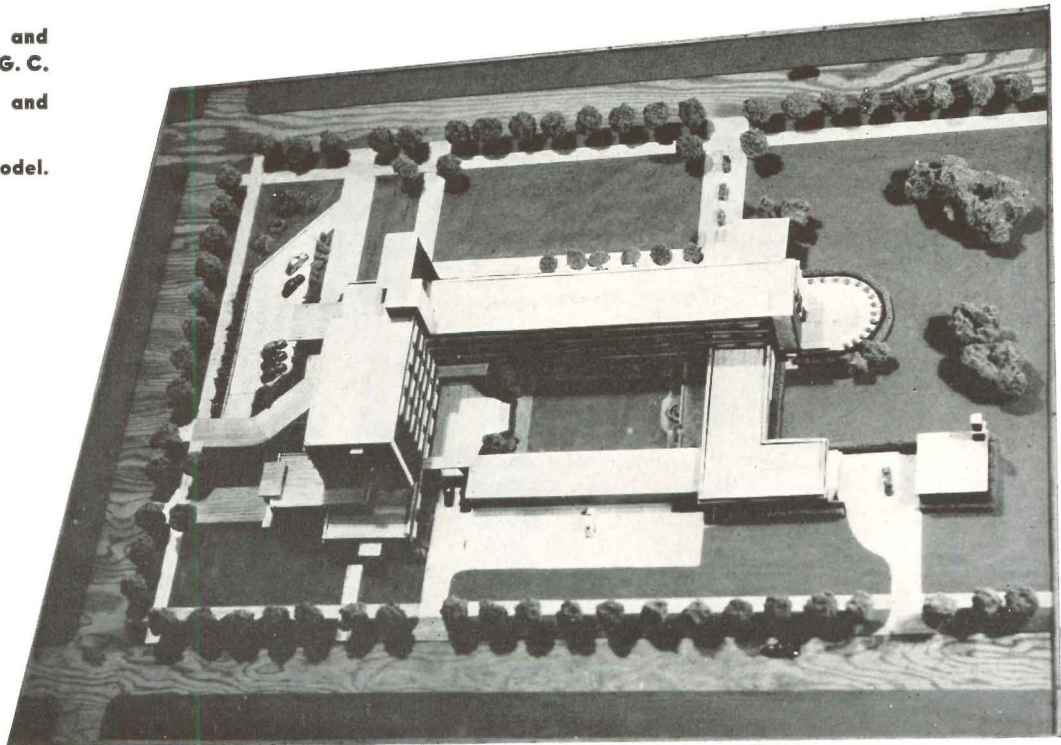


"A COORDINATING GUIDANCE CLINIC"—Thesis of K. J. Heidrick.

OPPOSITE: Main floor plan and perspective of proposed C. G. C.

ABOVE: Exteriors, sections and floor plans.

RIGHT: Bird's-eye view of model.



the broad import of those things which have given immediate impulse to our activity.

This was right down Carol Aronovici's alley, who never lost an opportunity to stress the idea that any planning should be part of a comprehensive whole. In criticizing a student's recent project he had pointed out that the scheme of the premiated drawings had solved traffic problems by underpasses and overpasses which for a small area would cost something over \$250,000,000 to build, thus reducing the solution to an economic absurdity. This led him to observe that in all of the planning of our low-cost housing, enthusiasm is not always based upon the wisest economy; he threw out the suggestion, which while horrifying the prevailing school of thought in such matters nevertheless is food for sober thought, that instead of setting up a standard for low-cost housing and then finding out how much rent the people could *not* pay, it might be better to find out how much rent they *could* pay and then see how decent a standard could be achieved.

About this time Mr. Klauder and Mr. Howe exchanged some personal convictions anent the use of traditionalism in architectural design, at the end of which passage of arms, Albert Kahn said, "There always will be some modern work whether we like it or not," and went on to point out that in his estimation modern architecture must be sincere, have directness, simplicity, and straightforwardness, and that while aesthetics are important and no architect should ignore them, he should bear in mind that he is spending some one else's money and should seek to get results in the most economical manner that will do the job. To Mr. Kahn's thinking, architecture today is about 80 per cent business and 20 per cent art, and that it is possible to do good work and still satisfy the client.

New Materials

Robert McLaughlin, evidently cogitating Kocher's plea for the following of sincere convictions, said that it seemed to him convictions were about the hardest things he had ever tried to acquire, and that if we are to have convictions about architecture, somehow we've got to go more deeply into the problems of building; that we must know more thoroughly materials and their possibilities and that only upon the foundation of such thorough knowledge did he feel safe convictions could be based.

Nothing could have been a finer introduction for DeWitt Clinton Pond, who had been asked to round up information on the latest of new materials. Mr. Pond spread out on the table materials that were of magical properties, some of them not yet in commercial production. He pointed out that there are four classes of new materials: the plastics, insulating materials, glasses, and metallic alloys. And as he presented each of these materials, the burden of his talk was ever the same: the new material presents new problems which are not fully sensed and therefore not fully solved until it is an old material.

Environment Influences

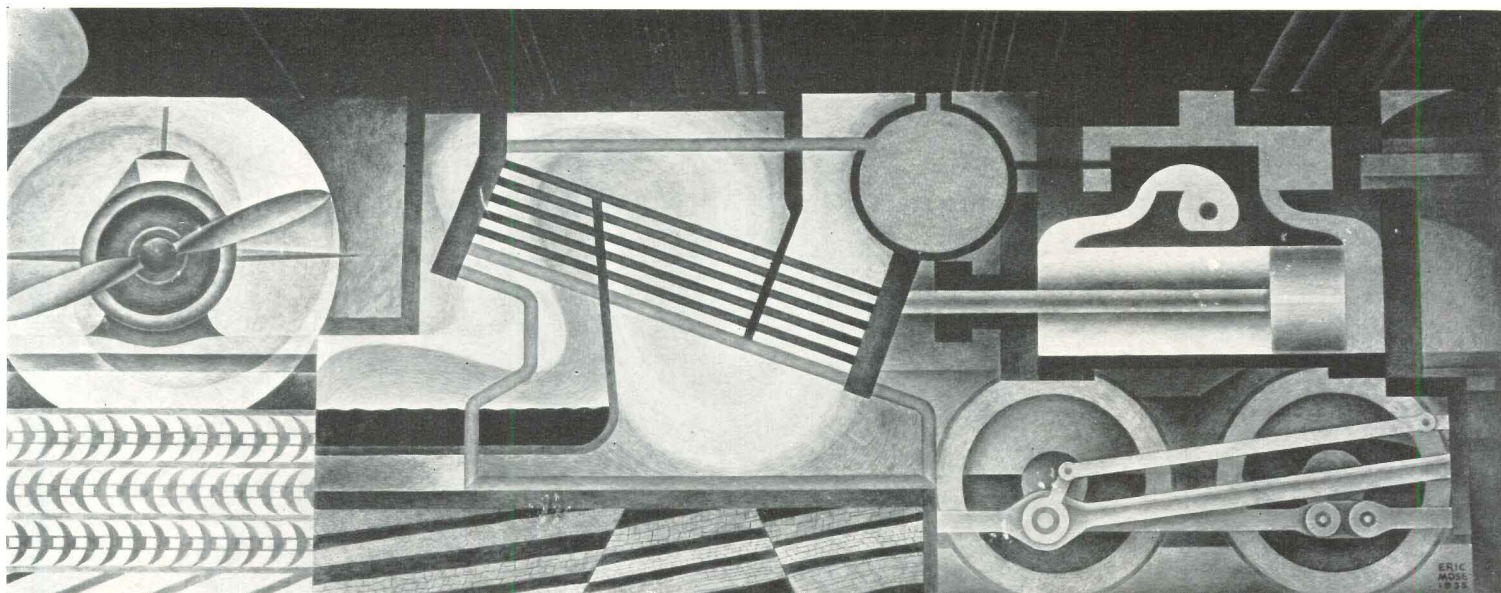
Out of these new materials the modern enthusiasts present felt that new forms would logically and reasonably evolve, until John Moore spoke in defense of forms in architecture springing from more important influences than materials. To his thinking the influence of climate, of site, of approach, and specific use or full function were the paramount influences which govern our selection of forms. Mr. Moore's analysis was interestingly illustrated by slides showing the effect of these various influences.

His ardent advocacy of fundamentals touched responsive chords. Lawrence Kocher made an eloquent plea for functionalism, which raised the ire of a more conservative brother architect who pointed out that good form had more than functional significance, in architecture as in table manners; and that there is a neighborly consideration that should be shown in buildings, one for the other. This drew forth, as one might expect, rebuttal from those who felt that such neighborly consideration might easily lead to stylistic consistency which would bring us right back to architecture as a stylism rather than as planning and construction.

The ball was tossed back and forth with such rapidity by the opposing schools of thought that Sherley Morgan suggested the next Princeton Round Table might well confine itself to the one subject of "What Is An Architect, Anyway?"

At which point Otto Teegen brought the conference to a close by pointing out that if any Princeton student present wanted to know what an architect really was he had only to look about him to realize that a definition if true would perforce involve many contradictions.

—W. POPE BARNEY



POWER. Fresco mural by ERIC MOSE. Installed in Samuel Gompers High School, New York City.

Mural America

By **HOLGER CAHILL**, Director, Federal Art Project

IT IS KNOWN that wall painting in one form or another has been practiced in this country since the eighteenth century, at least. Most of this work, especially in the early period, was of the provincial-popular type. It was done probably by the itinerant limners who were a feature of American village life up to the middle of the nineteenth century and many of whom may still be found today, especially in the South. Up to the third quarter of the nineteenth century, most of our better-known murals, like the paintings in the dome of the National Capitol, were the work of European artists.

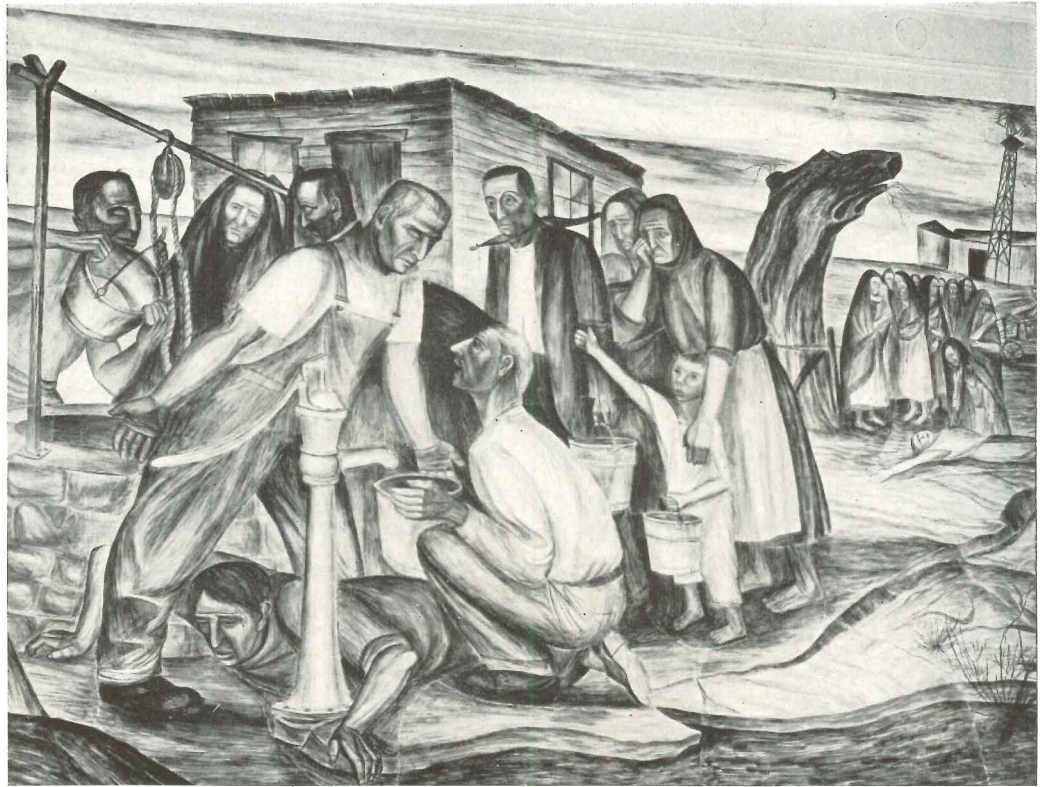
From 1876, when John La Farge began to decorate the interior of Trinity Church in Boston, there has been a recurrent interest in the mural among American artists with 1893, the year of the World's Columbian Exposition, standing out as a sort of minor peak of popularity. The best of this nineteenth century work is unquestionably that of John La Farge. Since his time there has been a good deal of mural painting in this country, but not until the past decade has there been anything resembling a general movement.

In recent years a revival of public interest in mural painting has been stimulated by the work of Thomas Benton and Boardman Robinson, by the veritable renaissance of the mural art begun under the Mexican Government Projects in the 1920's and by work done in this

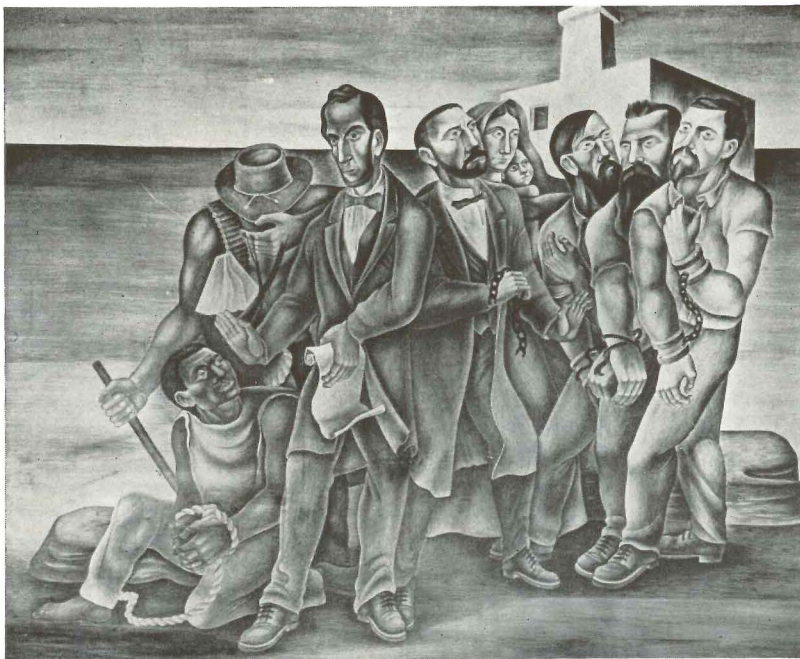
country by the most prominent exemplars of this movement, Diego Rivera and José Clementé Orozco. Since the beginning of the 1930's, American interest in mural painting has increased to a remarkable extent. The exhibition of designs by thirty-five painters and fourteen photographers at the Museum of Modern Art in May 1932, focused for artists and public alike the problems and the possibilities of the mural art.

In the following year Harry L. Hopkins set up the first large government art project under the Civil Works Administration and gave American artists an opportunity to practice the mural art on a scale commensurate with their abilities and aspirations. Since that time the development has been continuous and dramatic. Private patrons, convinced by the results achieved under the government program, are turning to the mural with increasing interest since they have before their eyes the proof that American artists are using the medium with understanding and authority.

It is significant of contemporary trends in American art that so many of the artists working on the Project have submitted themselves to the discipline of a severe medium. Mural painting, and especially painting in true fresco, does not permit the individual variations possible in oil or water color. The problems of fresco painting are extremely complex. The painter must know exactly



DROUGHT. Completed section of fresco mural. For the Bureau of Water, City of Chicago. By EDWARD MILLMAN.



LINCOLN AND ALTGELD. Egg tempera mural study. By MITCHELL SIPORIN.



DROUGHT (Detail). Fresco mural. By EDWARD MILLMAN.

what he wants to do with the space, and have a great deal of knowledge of the chemical relationships of various materials, especially of the relationship of mortar mixtures to colors. No matter what the medium, whether fresco, secco, tempera, or oil, the mural technique has certain possibilities and limitations which the painter must respect. The mural must have definite relation to its surroundings and be an integral part of an architectural scheme. The color, the scale, and the character of the painting must harmonize with the color, scale and character of the surrounding architecture. The composition as a whole must have clarity, largeness, carrying power, and a rhythmic order that leads the eye easily through the whole space. Mural art is suited to large, simple forms, and its color schemes are much more severely limited than those of the easel painter.

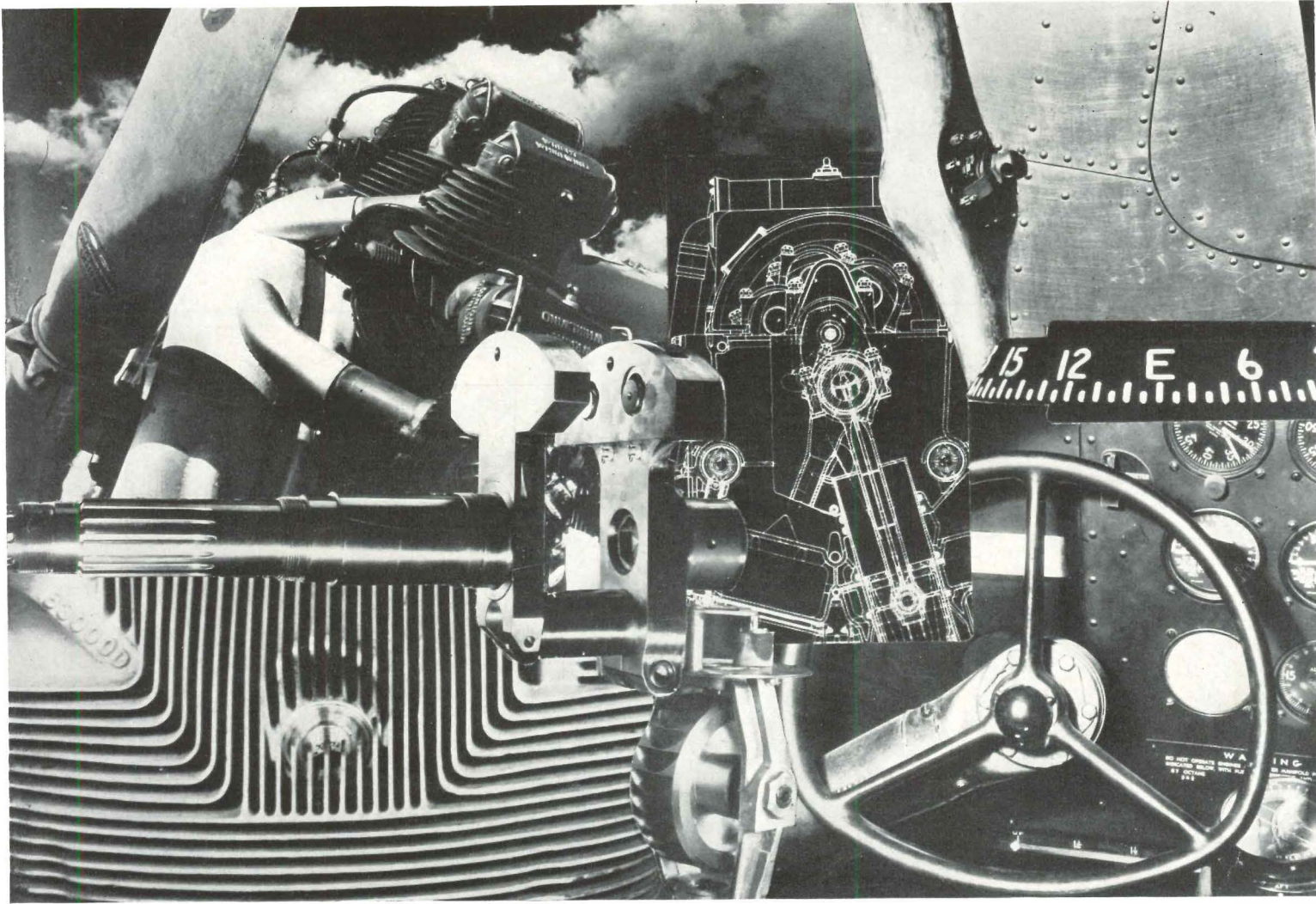
Many sketches, a great deal of research, and the hardest kind of purely physical labor must precede the actual

painting on the wall. During the painting the artists usually work in public places where people congregate. Mural painting is not a studio art; by its very nature it is social. In its great periods it has always been associated with the expression of social meanings, the experience, history, ideas, and beliefs of a community. There is no question that the work here presented clearly indicates an orientation in this direction.

Since it would be impossible to include murals which have been painted in fresco directly on the wall, and since even the transportable murals lose much of their significance apart from their setting, it is difficult to give a complete picture of this phase of the Federal Art Project work. However, even the necessarily limited selection of designs, sketches, details, models, and photographs in this exhibition offers a fairly comprehensive picture of accomplishment and promise.

It is significant that a large proportion of the murals

Mural America



AVIATION. Photo mural. Installed at the Newark Airport, Newark, New Jersey. By WATT DAVIS.

produced under the Federal Art Project during this first year are by young artists. These artists came to maturity at a time when mural painting, because of government support, was no longer a dream. The country was asking for murals. The many problems involved, problems of large space, architectural limitations, technical complexities, the handling of subject matter, were a challenge which the artists accepted. Courage to meet these problems was born of opportunity.

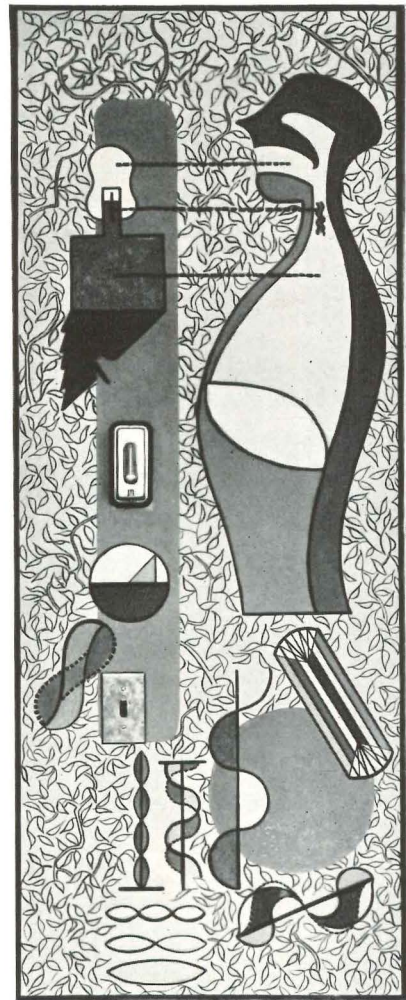
The work here exhibited gives positive indication that American artists have a mural sense and that they have gone about their work in this field with enthusiasm, independence, and directness. A variety of styles has developed, but the murals have in common a feeling for monumental construction, for design control, for rhythmic balance and interrelation of parts. The treatment

shows that many of the artists have achieved a real mastery in this art which is relatively new to them. The handling of subject matter is usually both imaginative and appropriate; the medium selected, the most sympathetic to the space and the subject. Throughout the country one sees a spontaneous interest in local source material. This is true of the eastern group, and it is particularly true of the western and middle western mural painters, many of whom are unknown in New York. These artists may be called regionalists in that they turn naturally to themes linked with the life, landscape, and history of their regions. There is, however, nothing here of a false localism or of a romanticizing of the past.

During the first year of the Project 434 murals have been completed, 55 are in progress, and sketches are be-



PUPPETS. Mural, oil on canvas. In Astoria Branch Library, Long Island City, New York. By MAX SPIVAK.



MUSIC. Mural, oil on canvas. In Falmouth High School, Falmouth, Massachusetts. By KARL KNATHS.

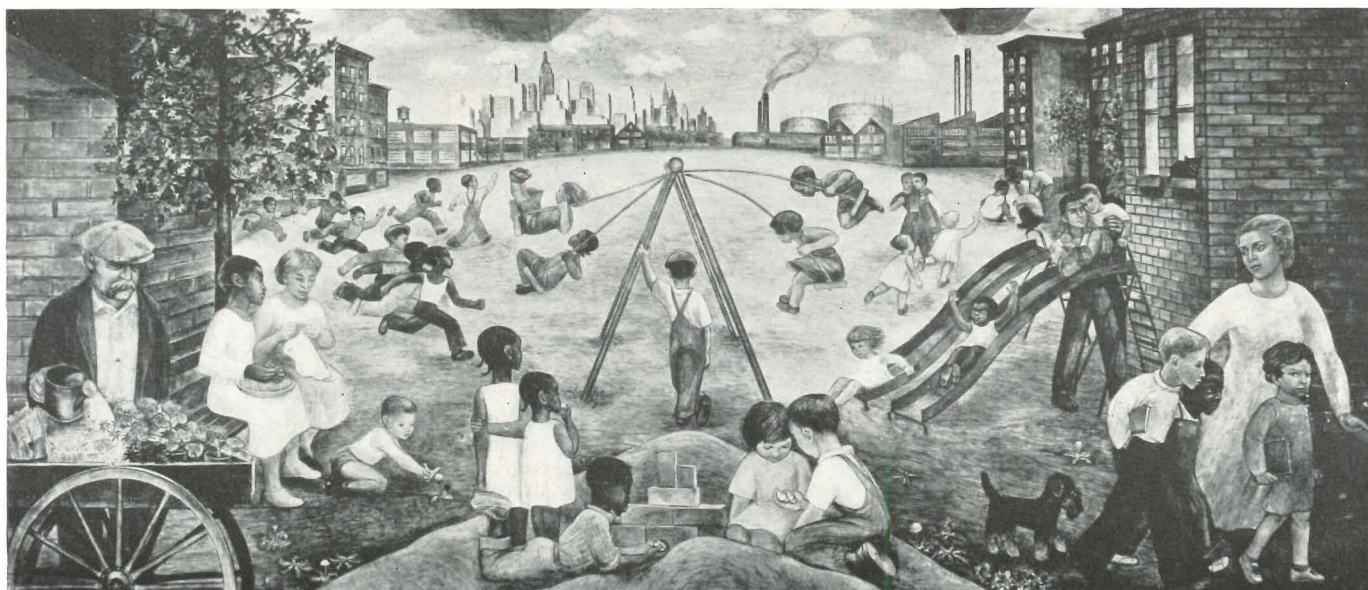
ing prepared for a great many others. These murals are requested by public institutions which defray material costs. It is a most encouraging sign that, in addition to the murals already mentioned, there are hundreds of requests for others. In every section of the country there are waiting lists for Federal Art Project murals. It is not too much to say that this work, as it develops, gives promise of a truly monumental art which will express with honesty, clarity, and power the experience and ideas of American communities.

The murals illustrated are the property of the United States Government. Their publication is by courtesy of the Federal Art Project of the Works Progress Administration. The text by Holger Cahill and the illustrations on pp. 67, 68 are by courtesy of the Museum of Modern Art, New York City.



APPLE HARVEST AND FARM ANIMALS. Mural in water colors. In University of Illinois Medical Unit, Chicago. By RAINEY BENNETT.

THE CYCLE OF A WOMAN'S LIFE. Fresco mural. Installed in the House of Detention for Women, New York City. By LUCIENNE BLOCH.



Standardized Service Stations

Designed by WALTER DORWIN TEAGUE



A STANDARD DESIGN has been developed which HAS TRADE MARK VALUE and is efficient in oil and gas sales, service and merchandising.

STANDARDIZATION in service stations has in most cases been largely a matter of superficial trade mark and color uniformity.

The Texas Company, convinced of the value of a more fundamental solution, retained Walter Dorwin Teague, industrial designer, to study the problem and produce a standardized design for Texaco stations which would meet all geographic, economic and operating requirements.

An extensive preliminary survey covering about twenty stations and aimed at dealer and consumer reactions provided the material which, carefully analyzed by Mr. Teague and company experts and officials, furnished the determinants of the design.

Certain primary functional requirements were obvious, such as trade mark and color standardization, efficient layout for sales and servicing, adequate office and rest room space. Other important factors grouped themselves under two heads, physical and psychological, as the design factors were given more serious study.

The following conclusions were reached from the organization of this material:

Physical

A standardized design must be physically adaptable to

- (a) different types of country and site;
- (b) different types of material (stucco, wood, steel, brick, etc.) desirable because of locality or building conditions.

Psychological

A standardized design must be determined by considerations of consumer reaction, dealing with COMFORT and MERCHANDISING, especially

- (a) COMFORT. The design must provide for adequate and comfortable rest rooms and toilets; for elimination of all servicing operations, such as battery charging, from waiting rooms; attractive cleanliness through thoughtful selection of materials; protection by means of canopy, etc.

- (b) MERCHANDISING. The design must provide for a concentration of sales appeal at the pump (through larger display areas, advantageously placed); ease of servicing (through lifts and pits); speedy service through increased visibility from manager's office; promotion of night business through LIGHTING which has both trade mark value and attracting qualities.

A standardized design meeting these requirements was presented to the company, after months of study and work, in five major forms:

Type "A"

Best suited to a CORNER LOT (could also be used on an inside lot). . . large octagonal office and commodious rest rooms. Cost, about \$15,000.

Type "B"

CORNER LOT ONLY (where space is limited) . . . triangular in plan. Comparable office and rest rooms. Cost, \$10,000-\$15,000 according to size.

Type "C"

RECTANGULAR IN PLAN . . . large office increasing length beyond lubrication bays. Cost, \$10,000-\$13,000.

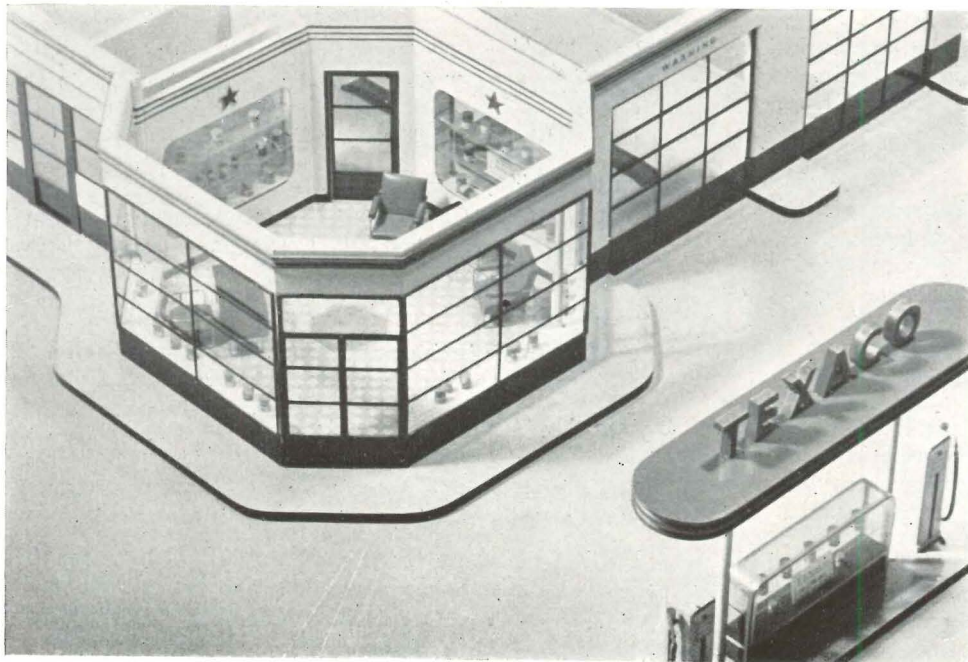
Type "D"

Similar to "C" with one lubrication bay, smaller office and storage space. Cost, \$8,000-\$10,000.

Type "E"

HIGHWAY TYPE . . . small station (office, rest room and storage space only). Frame or masonry construction. Cost, about \$5,000 to \$6,500.

Each of the above types has been designed so that the canopy is optional. The design has also proved itself most adaptable to remodeling some of the existing types, as is apparent in the photographs.



Above: TYPE "A" service station showing office and lubrication bay. Left: model of TYPE "A" Station, with canopy removed, showing office.



TYPE "C" STATION, canopy addition.
Miami, Florida.



TYPE "D" STATION. Similar to "C" with one lubrication bay, similar office and storage space. Canopy omitted.
Norfolk, Virginia.



TYPE "B" STATION (for corner lot only). Two bays and office with stucco facing. New Haven, Connecticut.



REMODELED "T" TYPE STATION at Wenatchee, Washington. Sheet metal facing throughout.



The station at Wenatchee, Washington, before remodeling.

VIEW OF OFFICE
from reception room.

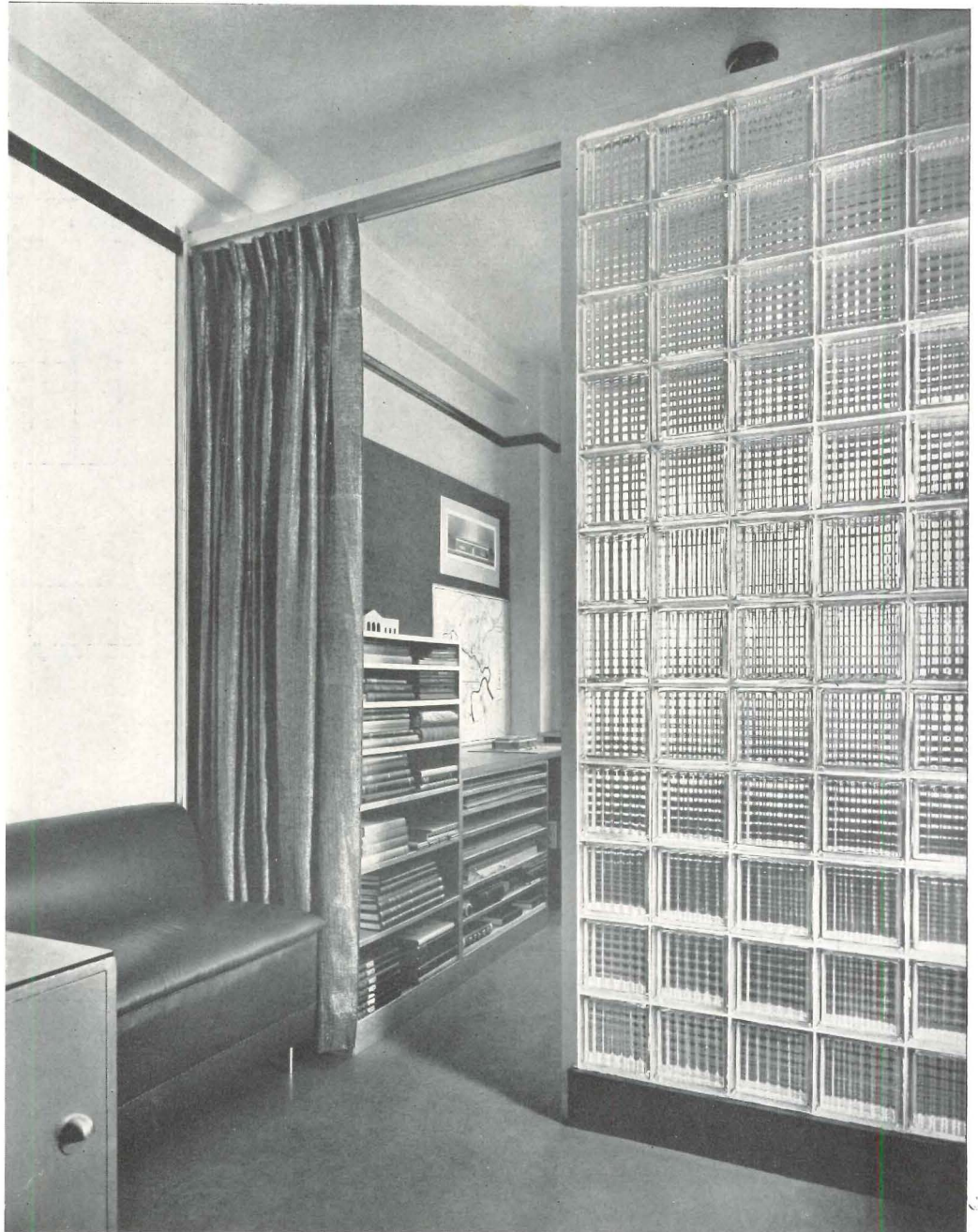


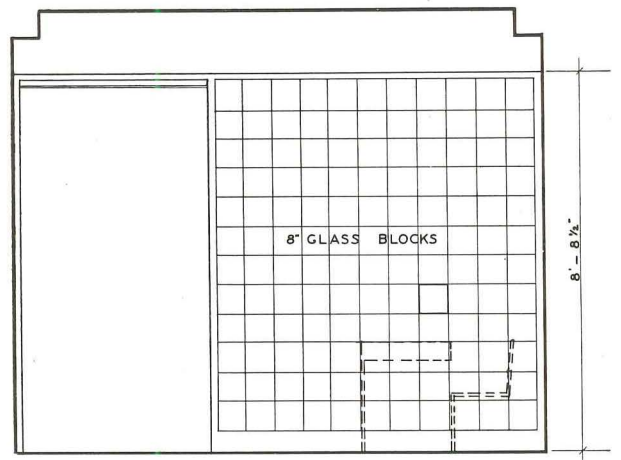
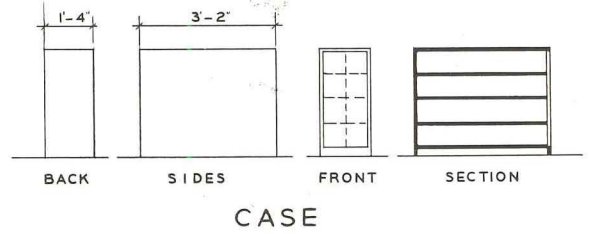
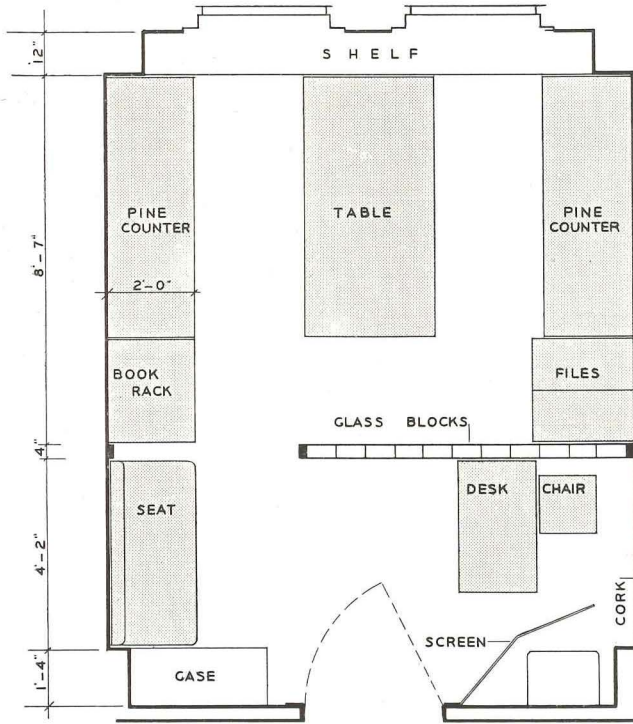
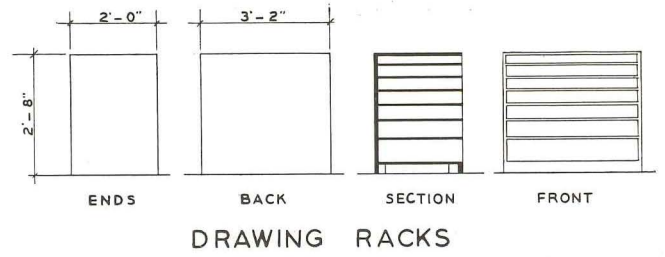
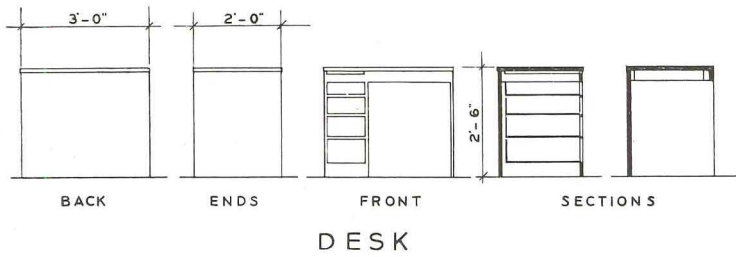
Photo by F. S. Lincoln

OFFICE OF
VICTORINE AND SAMUEL HOMSEY, ARCHITECTS
WILMINGTON, DELAWARE

THE available office space in Wilmington is so limited that the necessity for north light high above the fly and dust line gave no choice but small office area with use of every inch of space. The reception room with secretary's desk had to have borrowed light. This was obtained by installation of a glass block partition laid up with a sawdust and plaster of paris mortar. This mortar was used so that the blocks can be easily taken down and used again. There is always the hope that the architect's business will expand. The opening to the drafting room

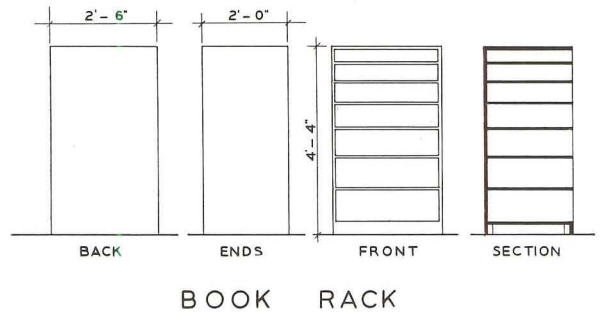
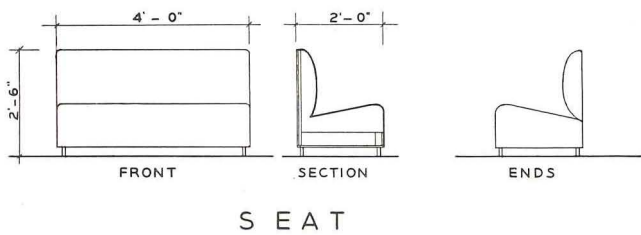
beyond had to be wide enough to allow large drawings, models and other equipment to be conveniently moved. At the same time there was no space for a large door to swing. The curtain, of blue and silver DuPont cellophane cloth, provides adequate privacy and is attractive. The color scheme is oyster white painted walls; blue Bakelite cloth upholstery on the reception settee; blue mirror on the counter in the reception room and drafting room; cases, counter, tables and shelves of plywood are painted aluminum finish; floor is of plain linoleum.

1 OFFICES OF ARCHITECTS



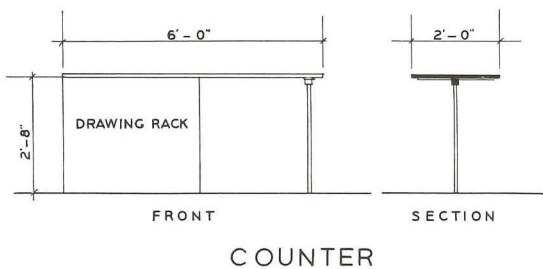
P L A N

ELEVATION OF PARTITION



S E A T

B O O K R A C K



C O U N T E R

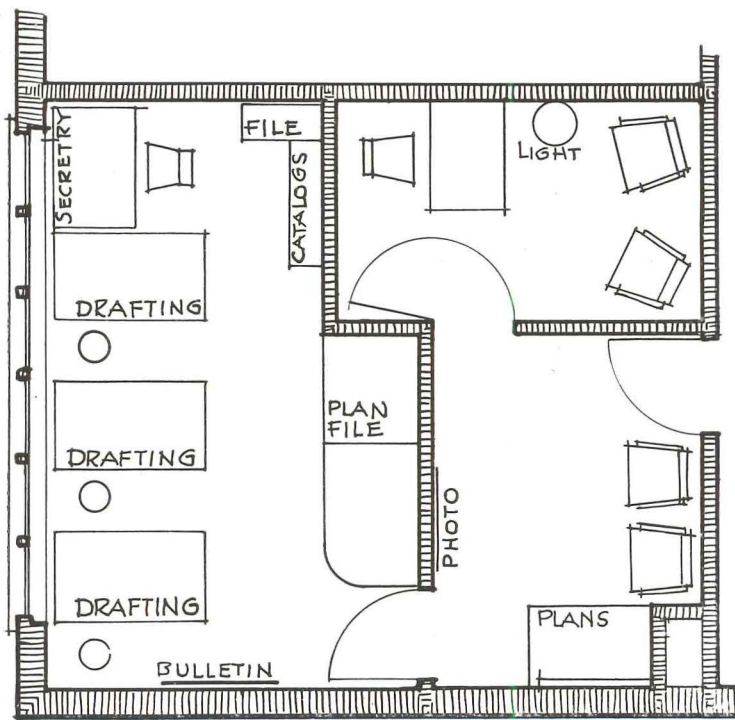
PLANS, ELEVATIONS, AND FURNITURE FOR OFFICE OF VICTORINE AND SAMUEL HOMSEY, ARCHITECTS, WILMINGTON, DELAWARE



RECEPTION ROOM looking toward private office. Color scheme: walls, white; door to private office, red; desk in private office, brown with ivory drawer pulls and ivory top to form suitable background for tracing paper sketches, etc.

OFFICE OF LYNDON AND SMITH, ARCHITECTS

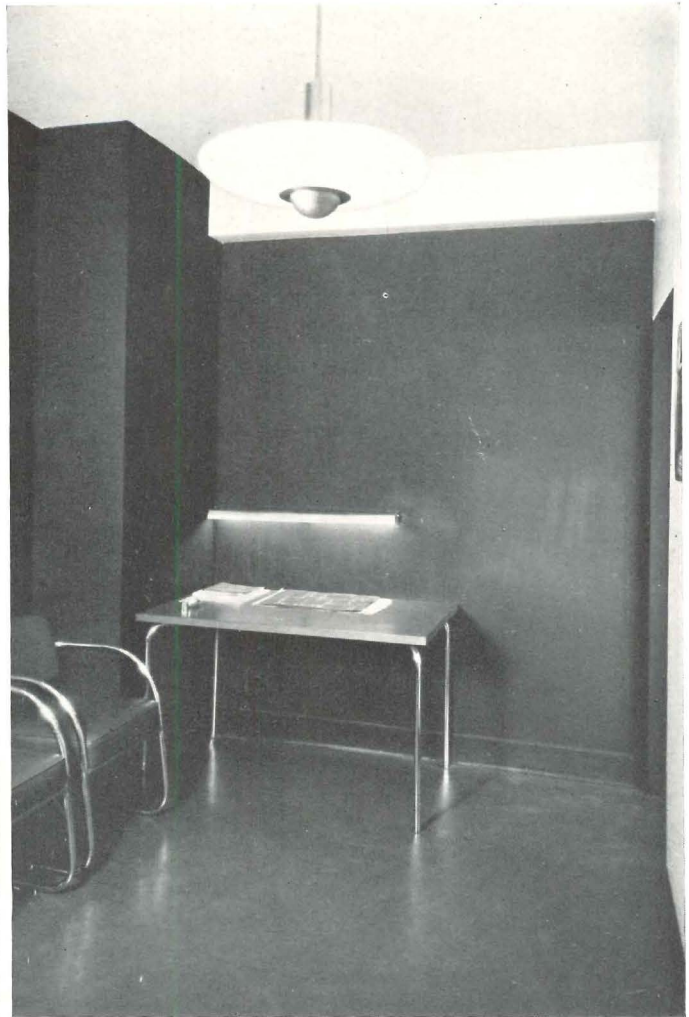
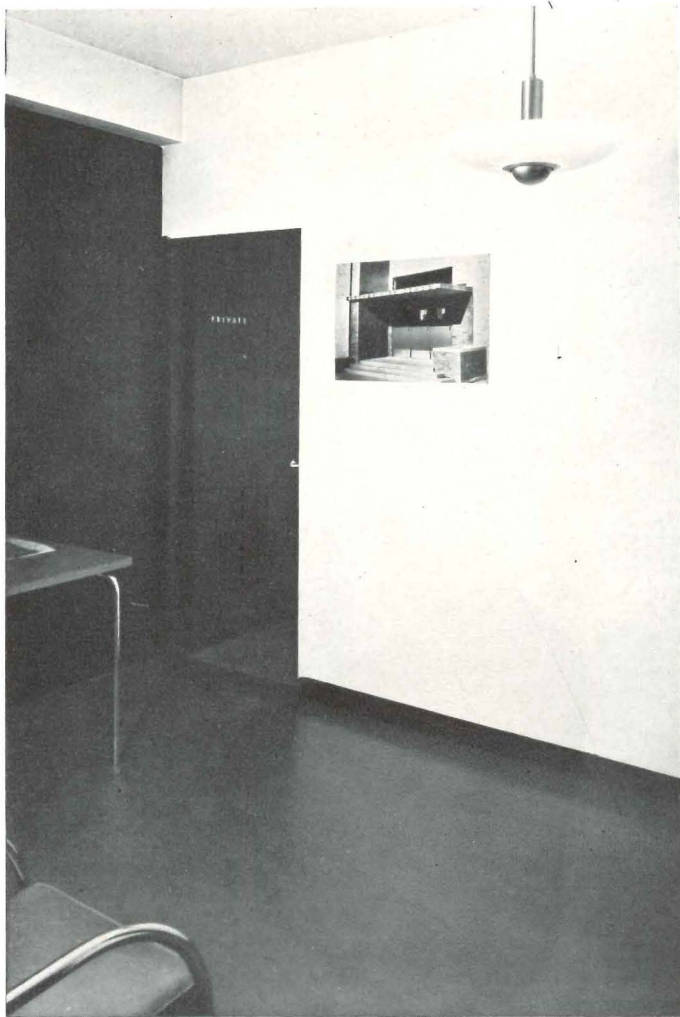
DETROIT, MICHIGAN



FLOOR PLAN

THE ARCHITECT'S office, familiar enough as a planning problem, is usually an adaptation to existing space. It is rarely built for its special purpose. The requirements include reception room, private office, a drafting room with preferably northern exposure, space for files, building materials samples. Other desirables include a library, conference room, space or room for specification writer.

2 OFFICES OF ARCHITECTS

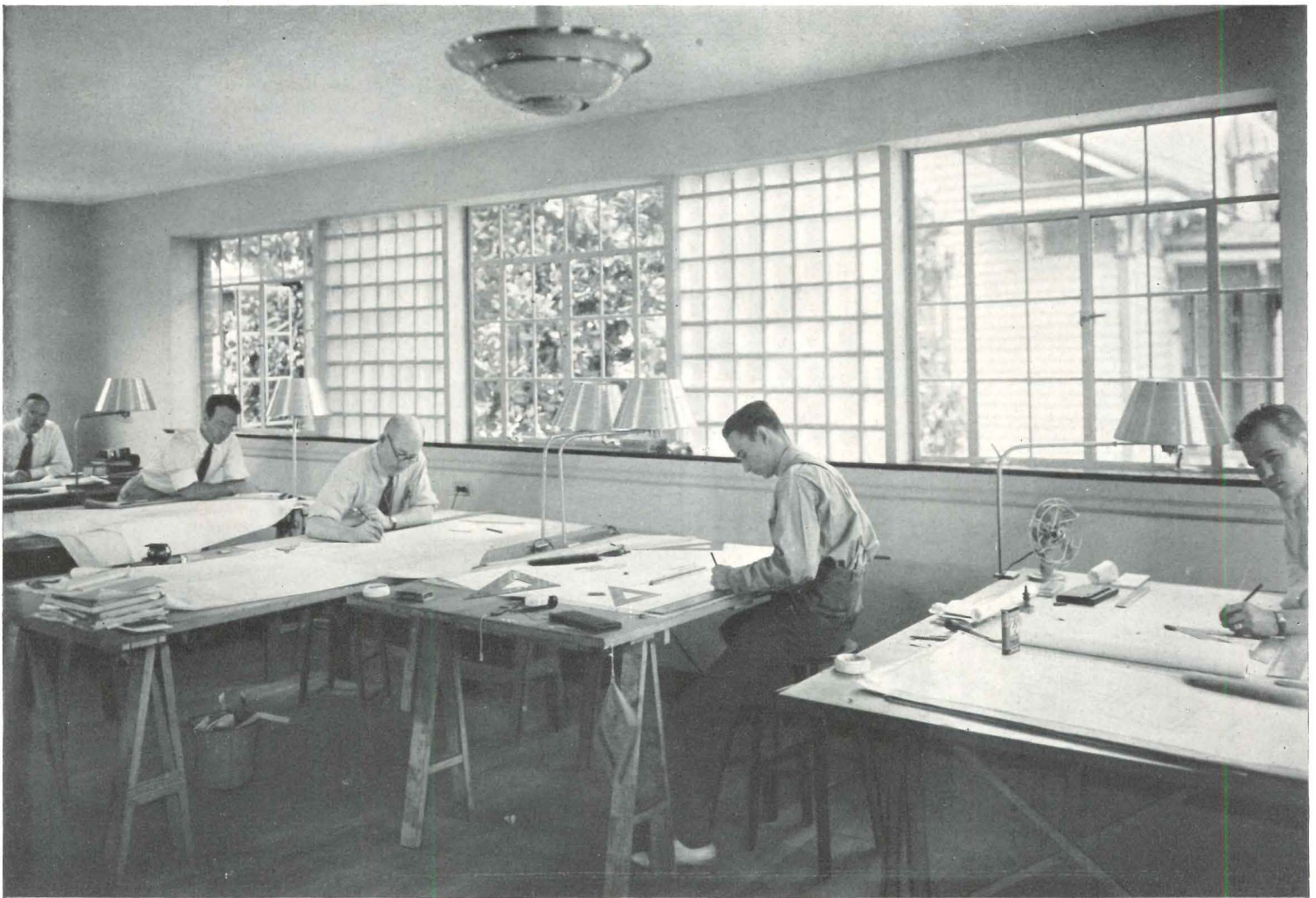


OFFICE OF
LYNDON AND SMITH,
ARCHITECTS
DETROIT, MICHIGAN

Above: RECEPTION ROOM: ceiling, south and west walls, white; east and north walls, flat black; table, red Formica; upholstery and linoleum, red.

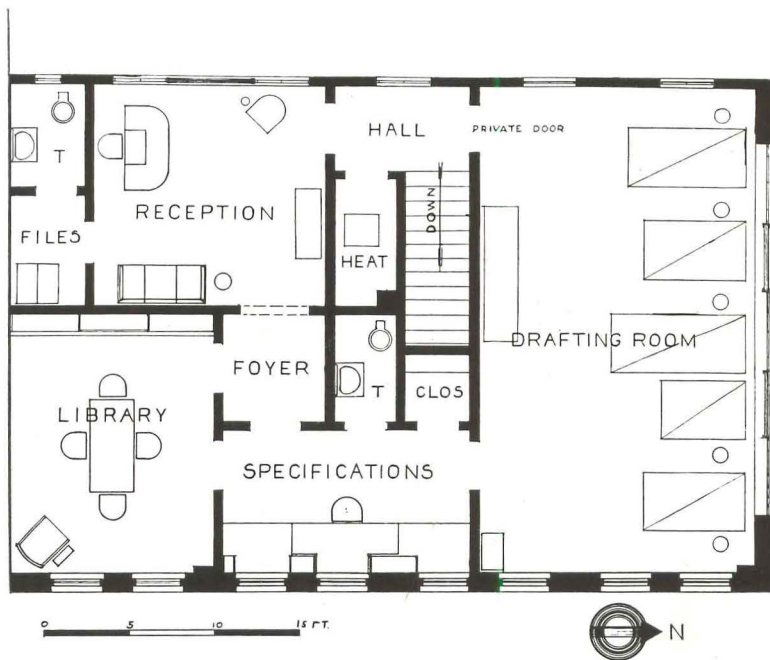
Right: DRAFTING ROOM: ceiling, white; walls, ivory; files, tables and wainscot, blue-green.





Photos by The Baker Studio

OFFICE OF A. MITCHELL WOOTEN, ARCHITECT KINSTON, NORTH CAROLINA



FLOOR PLAN

Above: DRAFTING ROOM: walls, light blue trimmed in black; ceiling, white; indirect lighting for general illumination, table lights are adjustable; ventilation by operating windows.

3 OFFICES OF ARCHITECTS

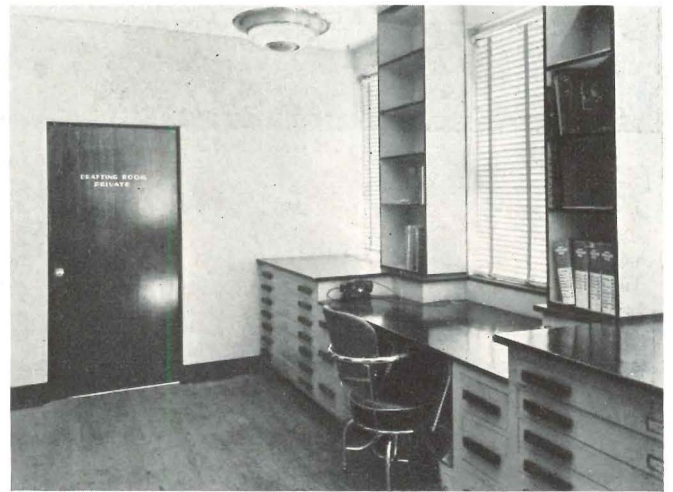


Photos by The Baker Studio

RECEPTION ROOM: walls, beige; ceiling, blind tapes and rug, mulberry; furniture, chromium with beige leather upholstery; desk, black and white; floor, cork tile.

OFFICE OF A. MITCHELL WOOTEN, ARCHITECT KINSTON, NORTH CAROLINA

Right: SPECIFICATION ROOM: walls, light blue; ceiling, white; cabinets, mist gray trimmed in black.

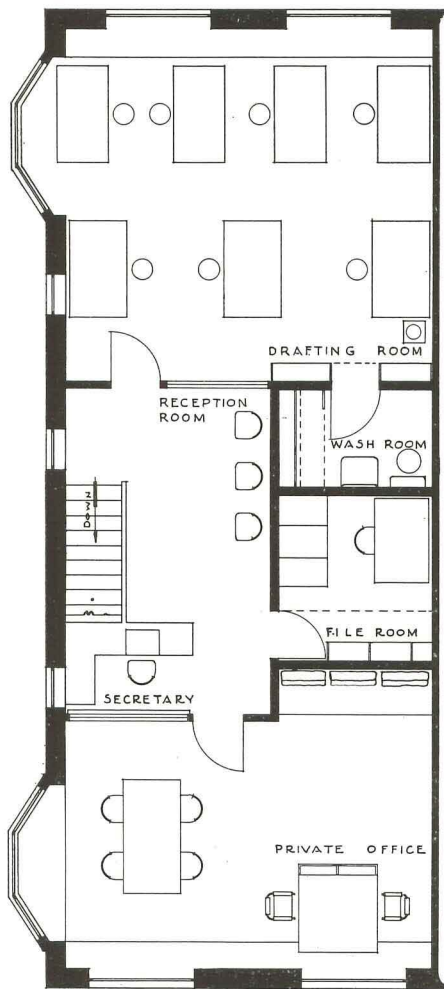


Right: LIBRARY: walls, mist gray trimmed in black; ceiling, mulberry; furniture, chromium with gray leather upholstery; floor, cork tile covered with a light gray rug. The blue-lined map is mounted on a Prussian blue panel.





Photo by Philip B. Wallace



FLOOR PLAN

OFFICE OF OSCAR G. STONOROV,
ARCHITECT
PHILADELPHIA, PENNSYLVANIA

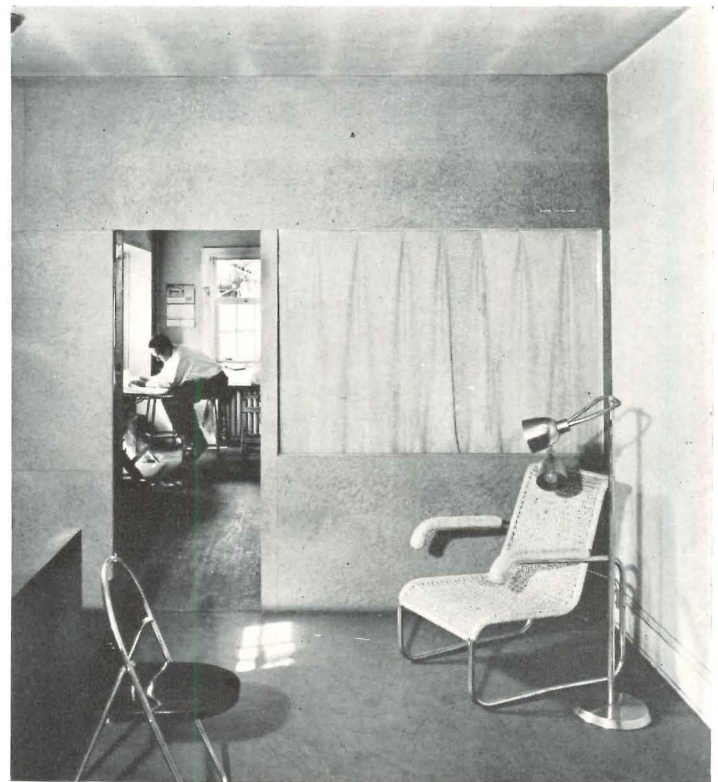
Above: PRIVATE OFFICE: Masonite and glass desk; walls, blue and white; rug, rust brown; all furniture, stainless steel; partition walls, brown and black Bakelite.

4 OFFICES OF ARCHITECTS



Photo by Philip B. Wallace

OFFICE OF OSCAR G. STONOROV,
ARCHITECT
PHILADELPHIA, PENNSYLVANIA

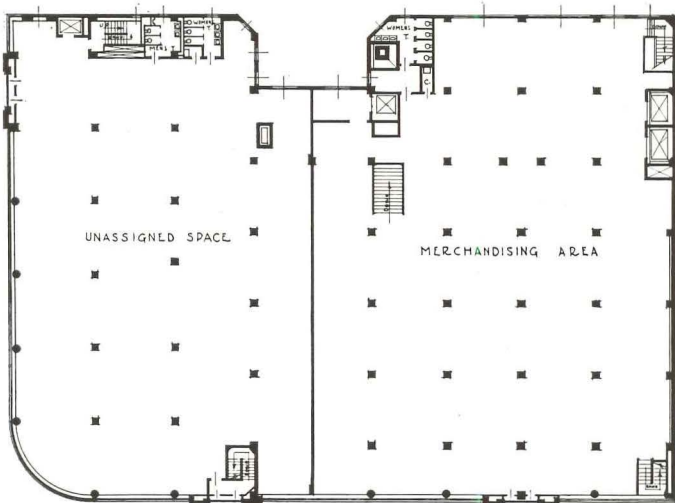


Above and right: RECEPTION ROOM: Masonite, natural color; floor, gray linoleum; walls, white plaster.



Acme Photo Co.

SECOND FLOOR

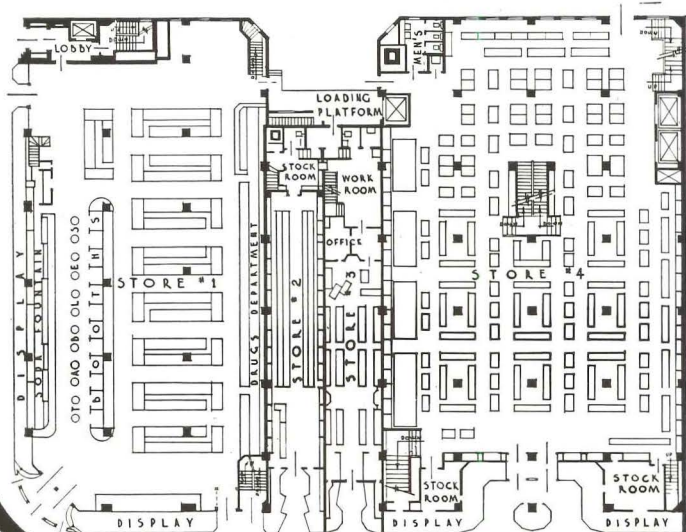


**STORE BUILDING
FOR AN
INVESTMENT COMPANY
SALISBURY BUILDING
SALT LAKE CITY, UTAH**

GORDON B. KAUFMANN,
ARCHITECT

THE BUILDING has a ground area of approximately 165'-0" x 125'-0", and consists of two stories and basement. Construction is of reinforced concrete. Exterior is veneered architectural terra cotta in large units, manufactured by Gladding, McBean and Company. Solid panels at pylons are of Insulux glass brick. Metal trim at window heads is of sixteen-gauge sheet aluminum. Finished floors in the drug store, jewelry shop and shoe shop are of terrazzo; in the Penney portion the floor covering is asphalt tile. Interior trim and finish of Penney's Store is plain white oak with natural finish; balance of trim throughout, painted pine.

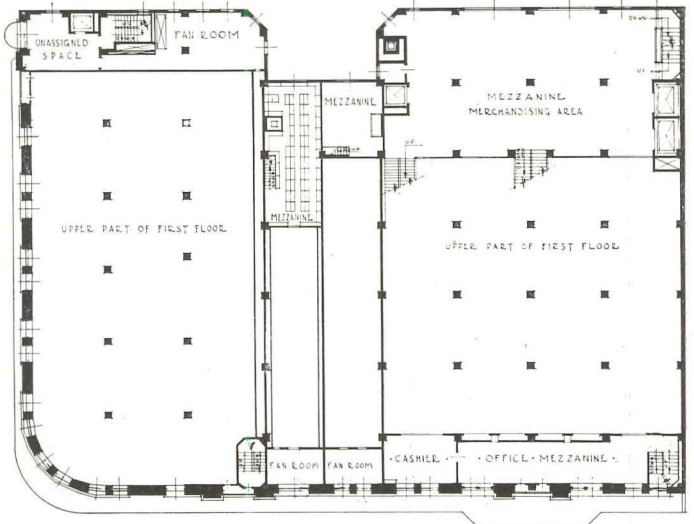
GROUND FLOOR



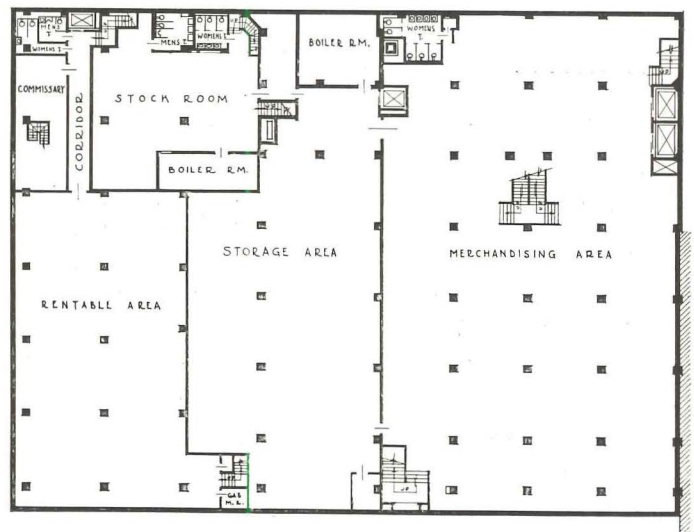
STORE BUILDING FOR AN INVESTMENT COMPANY

SALISBURY BUILDING
SALT LAKE CITY, UTAH

GORDON B. KAUFMANN, ARCHITECT



MEZZANINE FLOOR



BASEMENT

Heating is by means of unit heaters, using steam from gas-fired boilers. All of the stores are provided with adequate ventilation and in the drug store provision is made for the addition of a complete system of air conditioning.

The building is equipped with one freight and two passenger elevators in the Penney store, and an automatic push button control passenger elevator in the drug store.

Lighting fixtures are generally direct, indirect units.

Acme Photo Co.



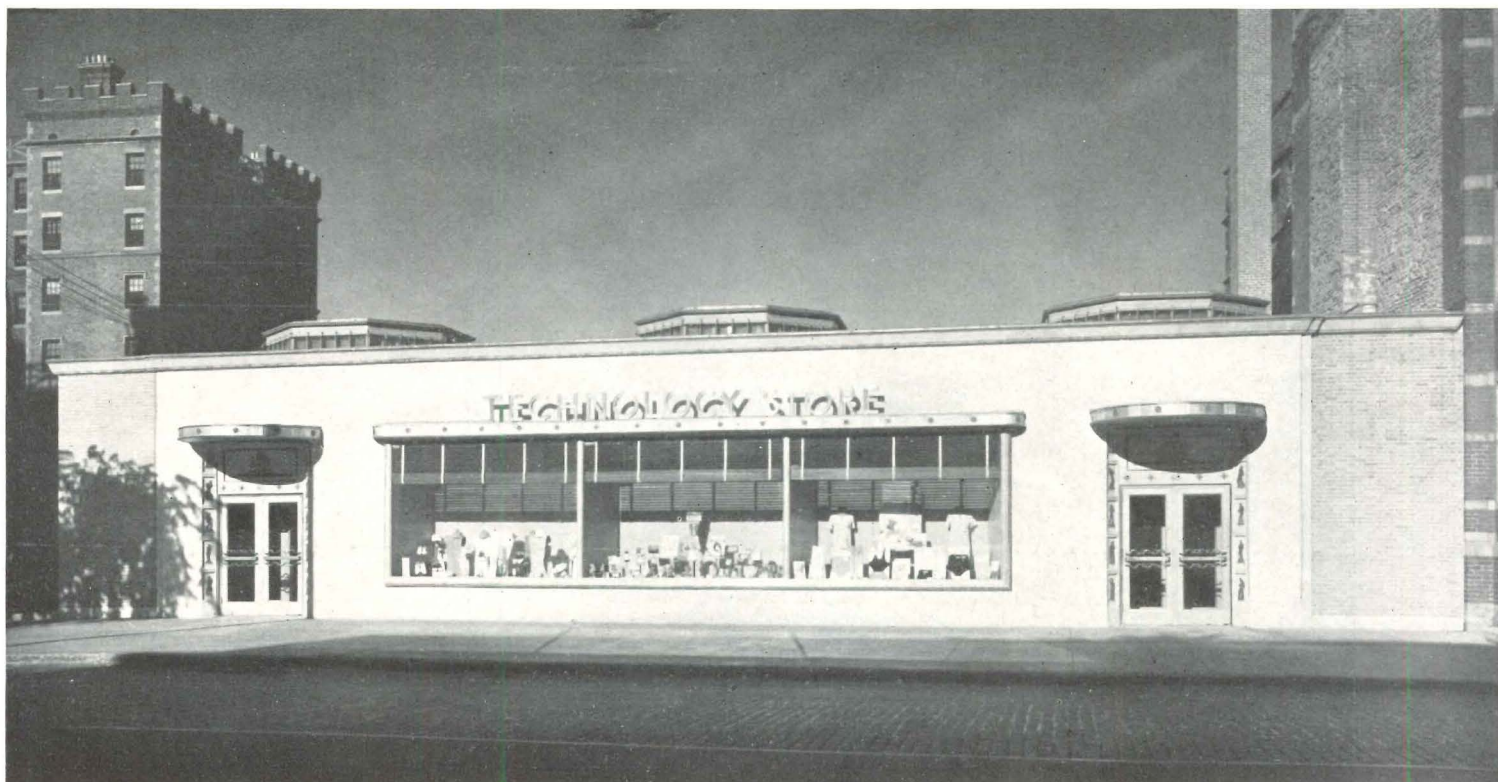


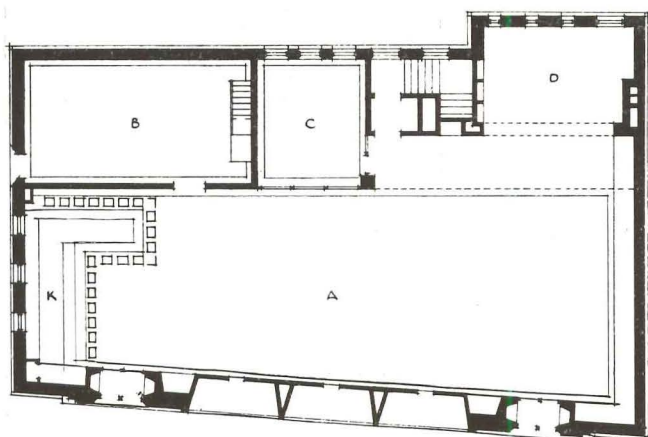
Photo by Paul J. Weber

COOPERATIVE STORE FOR THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY CAMBRIDGE, MASSACHUSETTS

PERRY, SHAW AND HEPBURN, ARCHITECTS

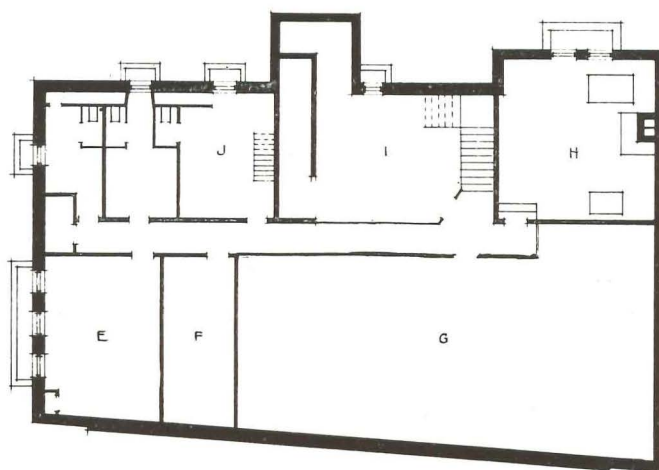
THIS new store for The Massachusetts Institute of Technology was built by the Harvard Cooperative Society. It is in a sense a department store with specialized service to students of "Tech." The building is of second class construction with brick bearing

walls faced with Dolomite Stone. The show windows and door trim are finished in Aluminoid with bronze ornaments. There are three octagonal monitors in the roof to light the store. The walls of these monitors are of glass brick.



FIRST FLOOR

- A. Store
- B. Barber Shop
- C. Office
- D. Bookstack Alcove
- E. Soda Fountain Kitchen
- F. Special Storeroom



BASEMENT

- G. Main Storeroom
- H. Boiler Room
- I. Receiving Room
- J. Barbers' Locker Room
- K. Lunch Counter

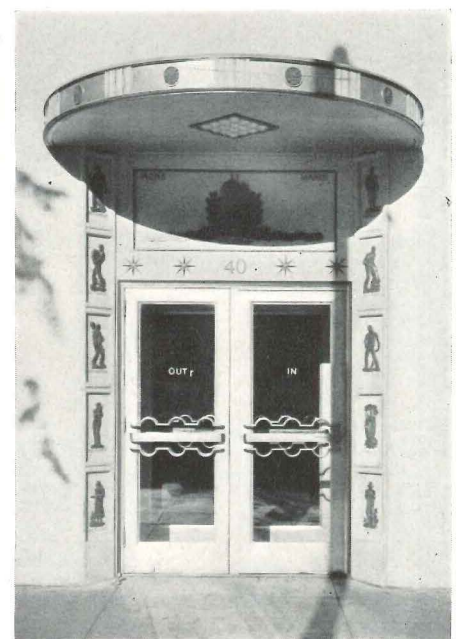


THIS STORE, patronized by students of Technology, contains a barber shop and lunch counter in addition to the main store.



Upper left: INTERIOR: with overhead lighting by monitors, the walls of which are of glass brick. Lower left: LUNCH COUNTER.

Below: DETAIL OF ENTRANCE; the door trim and frame are of Aluminoid with bronze ornaments.



Photos by Paul J. Weber

NEW STORE FOR THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASSACHUSETTS

PERRY, SHAW AND HEPBURN, ARCHITECTS

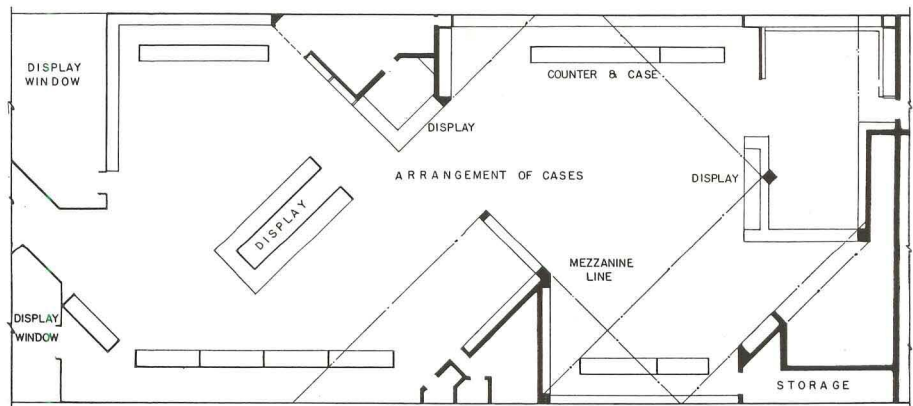
A SHOP FOR THE OUTDOOR SPORTSMAN BEVERLY HILLS, CALIFORNIA

BY KEM WEBER



Photos by Will Connell

THIS SPORTS SHOP, catering to the outdoor sportsman, is of form-poured concrete with horizontal bands molded at time of construction. Lettering, cornice above windows of copper; window background, knotty pine; interior faced with knotty pine; ceiling plastered; floors, asphalt tile in green, gray-green and gray.



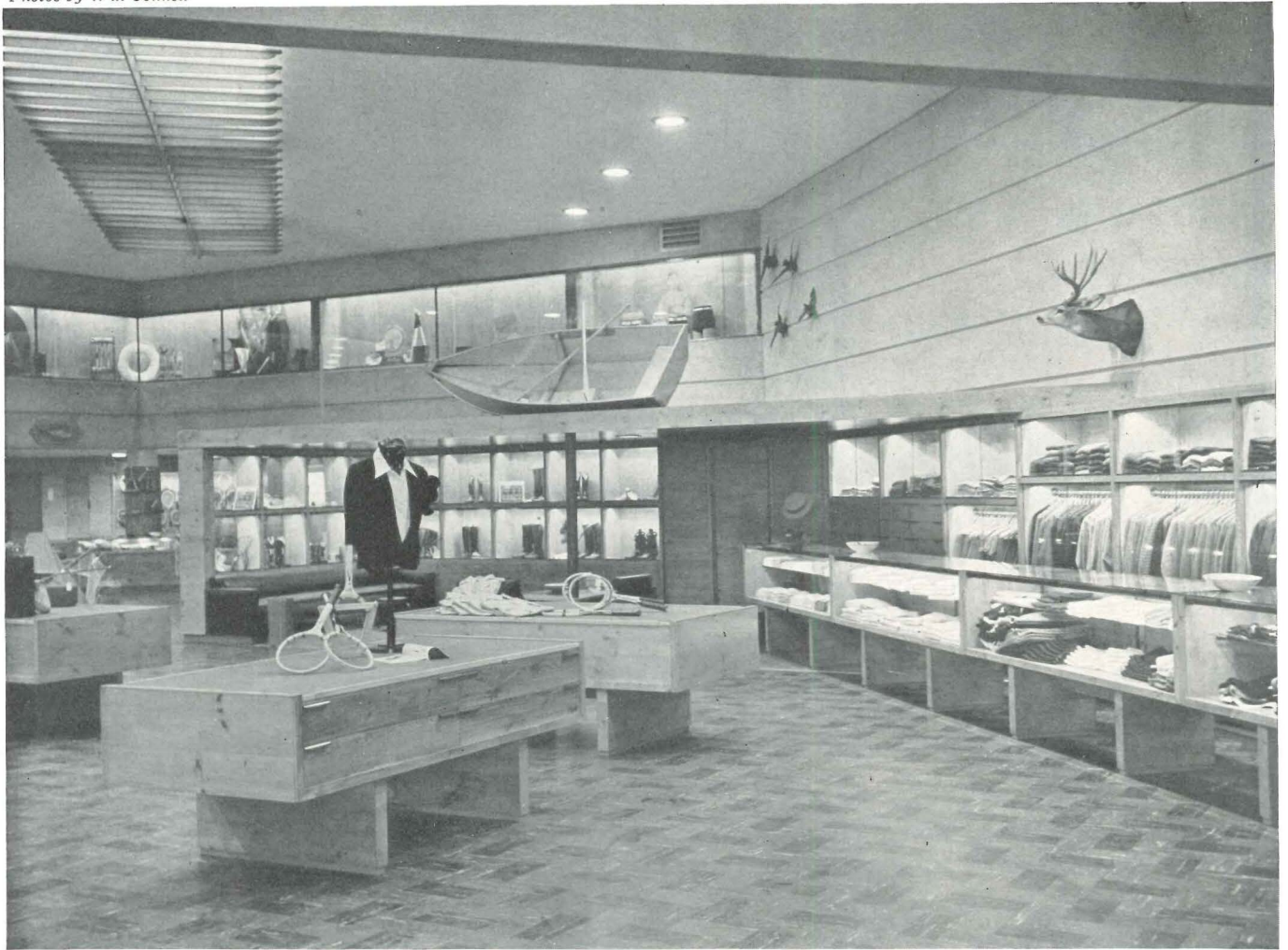
FLOOR PLAN

VIEW from rear mezzanine showcase



SHOE and general sport department

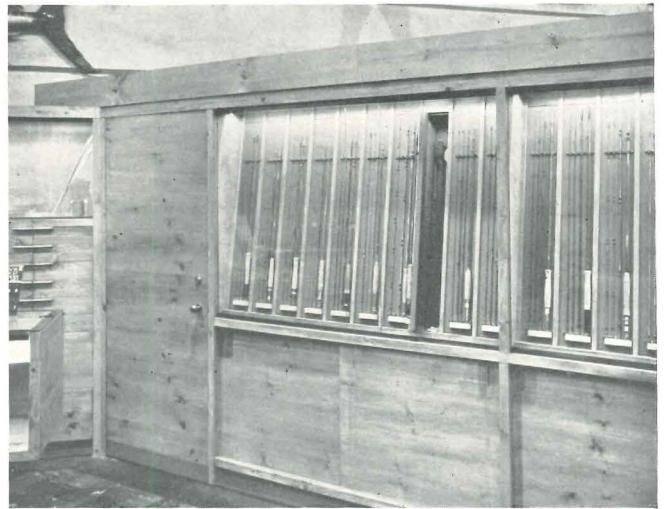




VIEW from front door towards sport clothes and shoe department



DETAIL of gun department



DETAIL of trout rod display and stock

A SHOP FOR THE OUTDOOR SPORTSMAN

BEVERLY HILLS, CALIFORNIA

BY KEM WEBER

OFFICE BUILDING FOR MEDICAL AND DENTAL PRACTICE

SUNSET MEDICAL BUILDING HOLLYWOOD, CALIFORNIA

R. M. SCHINDLER, ARCHITECT



Photo by Julius Shulman

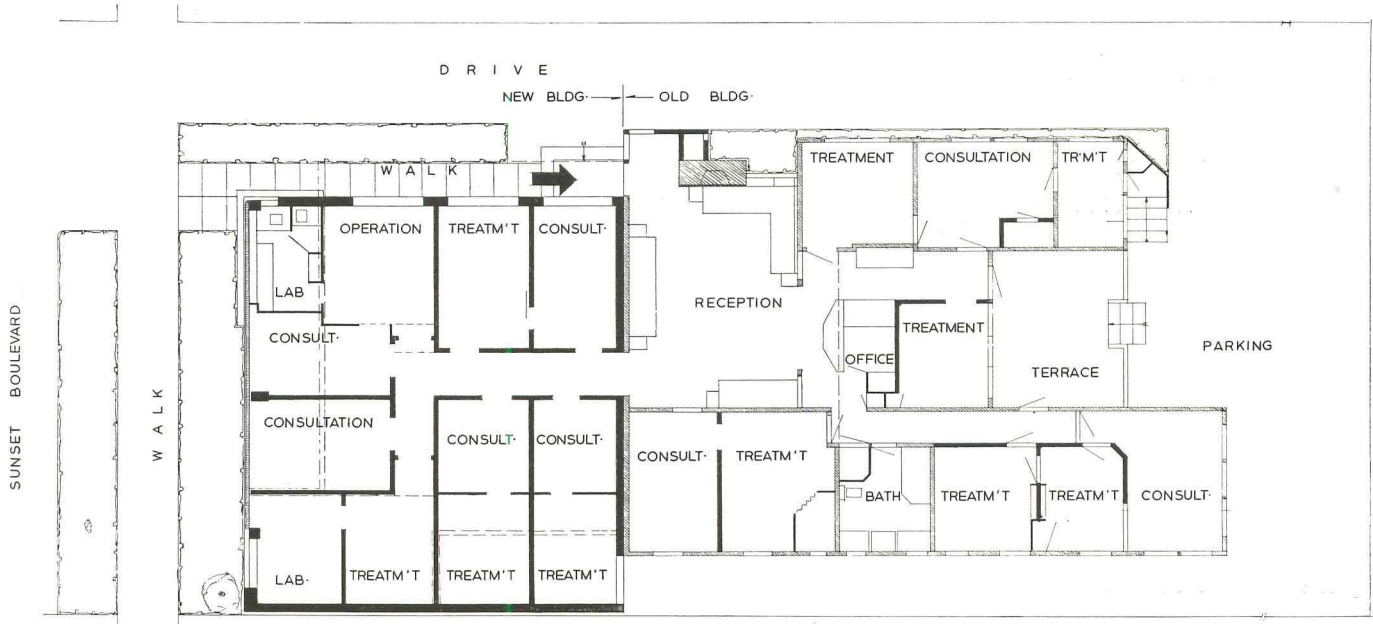
PROGRAM: The property was to be utilized for the office of Dr. Garland, the owner, and as many additional medical offices as could be economically provided.

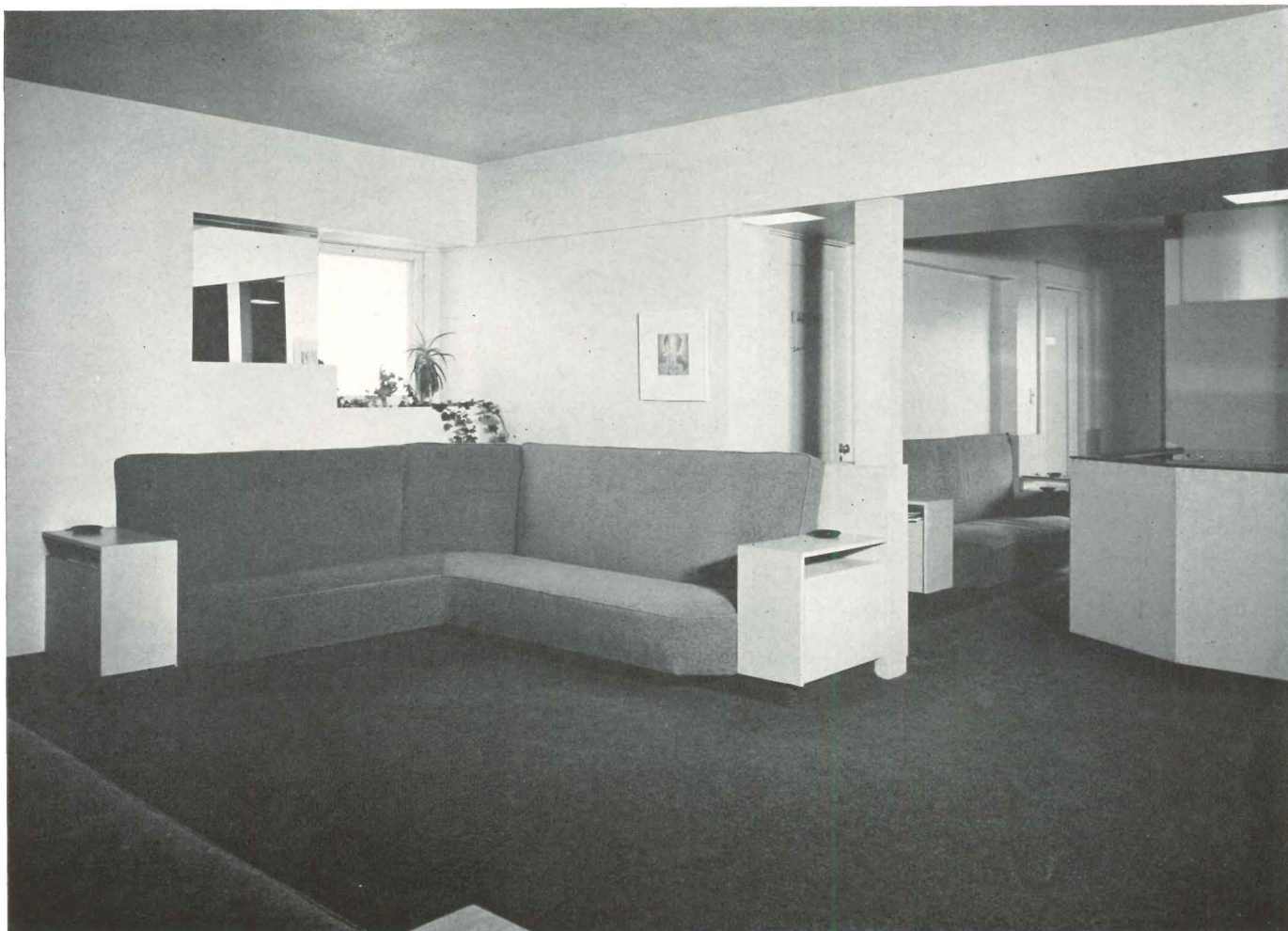
LAYOUT: The alteration of the old building converted the former living room into a reception room with the remaining space occupied by four doctors. A new brick building providing twelve rooms was added on the front. This building is equipped with clerestory windows so as to make subdivision for the tenants possible and to provide ample daylight for all rooms.

ARCHITECTURAL SCHEME: The main feature of the front is a wall of glass bricks, which are more dust-proof and soundproof than windows and therefore offer special advantages for the doctors' offices. The architectural treatment emphasizes the bricks as a wall material in contrast to the character of a glass sheet set into a wall opening. A more transparent brick is used on top, a more diffusing one below, to insure privacy. By the use of clerestory windows it was possible to avoid placing any disturbing window areas next to the glass brick.

CONSTRUCTION: Reinforced brick walls with wood frame floor and ceiling; metal sash; linoleum floor finish. Colors: Blue green and white.

LOCATION: Lot on the south side of a main thoroughfare in Hollywood. An old dwelling was located on the lot about 30 feet from the street line.





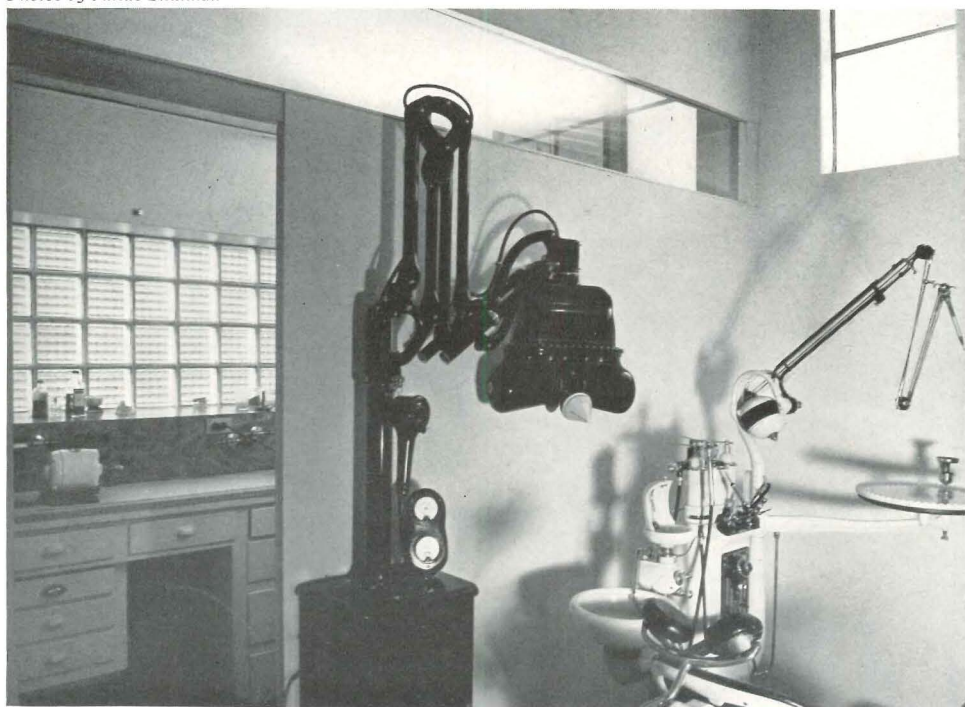
OFFICE BUILDING FOR MEDICAL AND DENTAL PRACTICE

SUNSET MEDICAL
BUILDING

HOLLYWOOD,
CALIFORNIA

R. M. SCHINDLER,
ARCHITECT

Photos by Julius Shulman



Above: RECEPTION ROOM
Right: DENTIST'S OFFICE

New Residential Space Exceeds 1930 Total

By L. SETH SCHNITMAN, Chief Statistician, F. W. Dodge Corporation

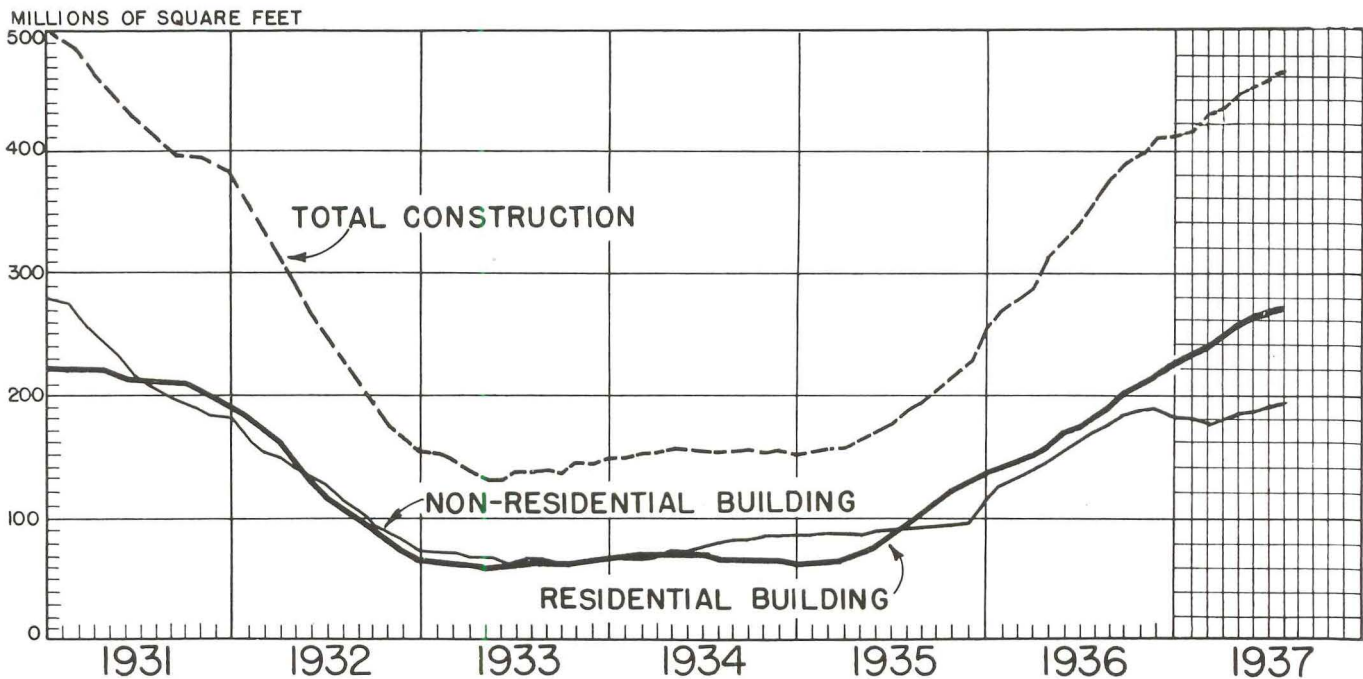
ON THE BASIS of new floor space, building volume for the twelve months ended July 31, 1937 reached a total within striking distance of the annual volume for the year 1930. Then the industry was already on the decline; now building is on the upgrade. In the case of residential building the total for the twelve months ended July 31, on a floor space basis, has run materially ahead of the 1930 figure. For nonresidential building, however, the current annual volume, though rising, is still well below the 1930 rate.

It is of interest to note, too, that residential building currently is accounting for about 58 per cent of the total building activity in the 37 eastern states as a whole. In New England the ratio is close to 65 for residential building, in metropolitan New York it is roughly 75 per cent, while in Upstate New York it is less than 40 per cent. For the Pittsburgh area residential building currently accounts for about 50 per cent of all new building floor space while the Middle Atlantic States show a percentage of about 63 in favor of residential building. In the Chicago area a ratio of about 40 is current while

Southern Michigan, the St. Louis and Kansas City and New Orleans areas each report a ratio a little better than 50. In Texas residential building currently represents 60 per cent of the total new floor space.

The dollar figures for residential building on an annual basis are still a little distance away from the 1930 rate, though the total for 1937 as a whole will closely approximate the 1930 volume. In virtually every section of the country residential building expenditures, though generally lower than in 1930, are continuing to expand. Support for still further increases comes from an expanding national income which this year promises to reach a total not seen since 1930.

An expanding national income, too, makes possible further increases in private nonresidential building types, chief among which are commercial structures and factories. For the twelve months ended July 31, 1937, these specific classes of nonresidential building have involved greater expenditures than in any comparable 12-month period in about seven years, with the probabilities favoring still further increases.



BUILDING AWARDS IN THE 37 EASTERN STATES

Chart represents 12-month moving totals plotted on the end month; latest figures charted cover the twelve months ended July 31, 1937.



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ANTHRACITE INDUSTRIES, Inc.
Chrysler Building New York, N. Y.
(SEE ADVERTISEMENT ON OPPOSITE PAGE)

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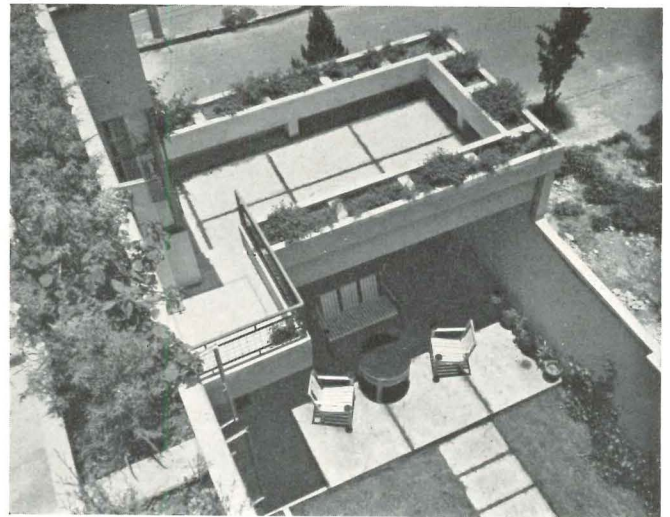
THE SOLID FUEL FOR SOLID COMFORT

Reviews of New Books

NEW ARCHITECTURE IN MEXICO. By Esther Born, with supplementary text on contemporary painting and sculpture by Justino Fernandez. Published by Architectural Record, New York, 1937. \$3.50.

A casual visitor to Mexico City gathers only a faint idea of changes occurring in the outward character of Mexican architecture. A sudden or revolutionary change in thinking by a young group of Mexican architects and engineers preceded the manner of planning and design that is creeping into Mexico Capitol and environs. Painting had already made vigorous progress in decoration of walls of schools, places of public assembly and churches.

In glancing through this book one is impressed by the serious purpose of the Mexican architect. The profession of architecture is considered as an appointment for public service. We read with surprise the arch-



TERRACE—JOSE VILLAGRAN GARCIA, ARCHITECT

itectural doctrine of José Villagrán García that architects should "take an active and directing part in the evolution of our people." From Enrique de la Mora y Palomar we have the following Declaration of Principles:

1. *We understand* by architecture all that which is based on Mexican programs and conceived with existing technique and materials.

2. *We believe* that the aesthetic is an inherent part of architecture, but we consider it as something that will arise from the resolution of the existing economic problem.

3. *We champion* this architecture because we believe that it is the only one which corresponds to the social development of Mexico.

4. *We regret* all false decorative architecture regardless of whether it employs pre-Cortésian, Colonial or modernistic forms.

(Continued on page 93)

PLANNING - BUDGETING - FINANCING -

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Architects and builders prefer to plan around automatic Anthracite heating and air conditioning because it marks a great advance in home designing and comfort. It permits wide flexibility of automatic heat installation . . . from a simple heater with thermostatic control . . . to an automatic Anthracite burner for all-season firing and ash disposal. The variety of equipment permits you to meet any budget requirement.

Banks prefer to lend on homes with Anthracite heating. The equipment is more permanent and has a lower maintenance cost. These are important features in long-term mortgaging.

Home buyers prefer Anthracite heating. It permits unusual economies of operation. What's more, Anthracite prices have gone down, while other fuels were going up. Anthracite heat is clean, odorless and safe.

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Avail yourself of the information and help of Anthracite Industries' headquarters staff, or the field force of trained heating men. They are ready to help on any Anthracite problem. Write to ANTHRACITE INDUSTRIES, Inc., Chrysler Building, New York.



Automatic Anthracite heating permits wide latitude in decorating and utilizing the basement as a game room, den, workshop, or place to entertain.

(SEE ADVERTISEMENT ON OPPOSITE PAGE)

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This seal appears on Anthracite Equipment only after it has passed the most rigid tests in the heating field.



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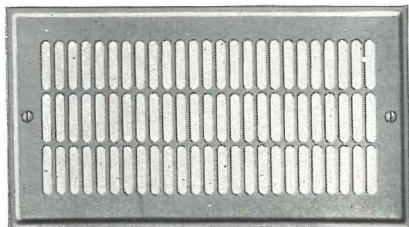


She Wants to Know—

The average woman whose husband has money enough to build a good house today is a keen-minded shopper. She wants to *know* what kind of registers she's getting—from the standpoint of both appearance and dependability. She's particular about the heating or air conditioning system.

Show her the AUER "Classic"—or the other popular AUER faces. They are styled for fine modern interiors and built for lasting satisfaction. AUER makes a complete line of registers, intakes, and grilles for both warm air and air conditioning. Ask for latest catalog.

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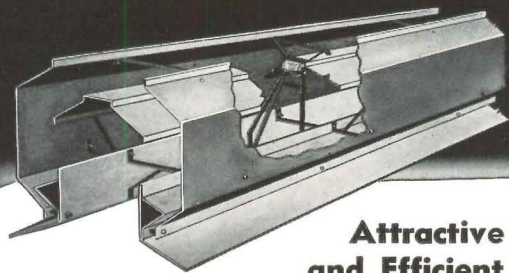
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**Attractive
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Now residences, with Monovent applied unobtrusively to the roof ridge, can have effective, low-cost, non-mechanical attic ventilation. Monovent harmonizes with the architecture of the house; often, in fact, enhances its appearance. Has high ventilating capacity. Not expensive. Easily applied to any type of roof. Made in all materials. Write for literature and data sheets.

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Roof Ventilators • Oil Filters • Exhaust Heads

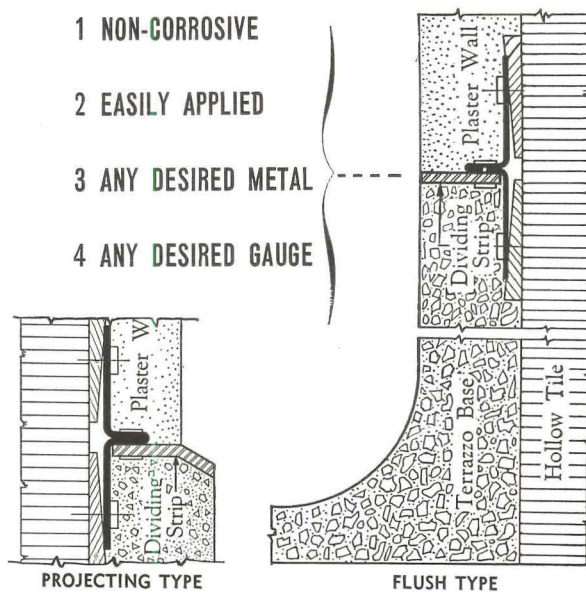
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—MANHATTAN TYPE "G"—

BASE BEADS 9 8

(SWEET'S CATALOG)

- 1 NON-CORROSIVE
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1915 PARK AVE., NEW YORK CITY

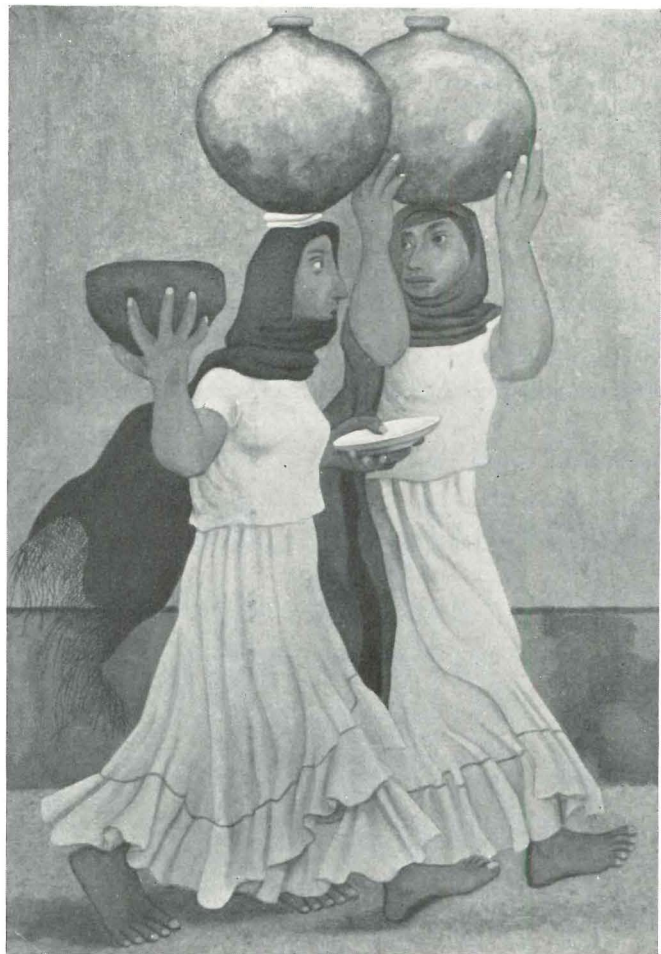
Reviews of New Books

(Continued from page 90)

5. *We demand* our place in the economic and social development of the present without restrictions or hindrances.

With these convictions it is not surprising that housing, schools and hospitals are built for the masses. The volume also includes markets, bridges, day nurseries for the care of children of workers during working hours, shops, factories and airports.

What is happening in an architectural way in Mexico is made vivid by the excellence of photography by Esther Born, herself an architect and wife of the architect, Ernest Born. All the buildings shown have plans and complete text describing the problem and important points in the solution adopted.



"WOMEN" BY ALFREDO ZALCE

Art activity in Mexico is treated by Justino Fernandez, professor in the Institute of Aesthetic Research of the National University of Mexico. Under the heading of "Other Arts Than Architecture," Professor Fernandez considers and illustrates painting, sculpture and pottery.

The book contains over two hundred illustrations, many of them full page. There are important chapters such as the one on "Plan Development of Mexico City," by Carlos Contreras, and "Social Progress and The New Architecture," by Beach Riley.

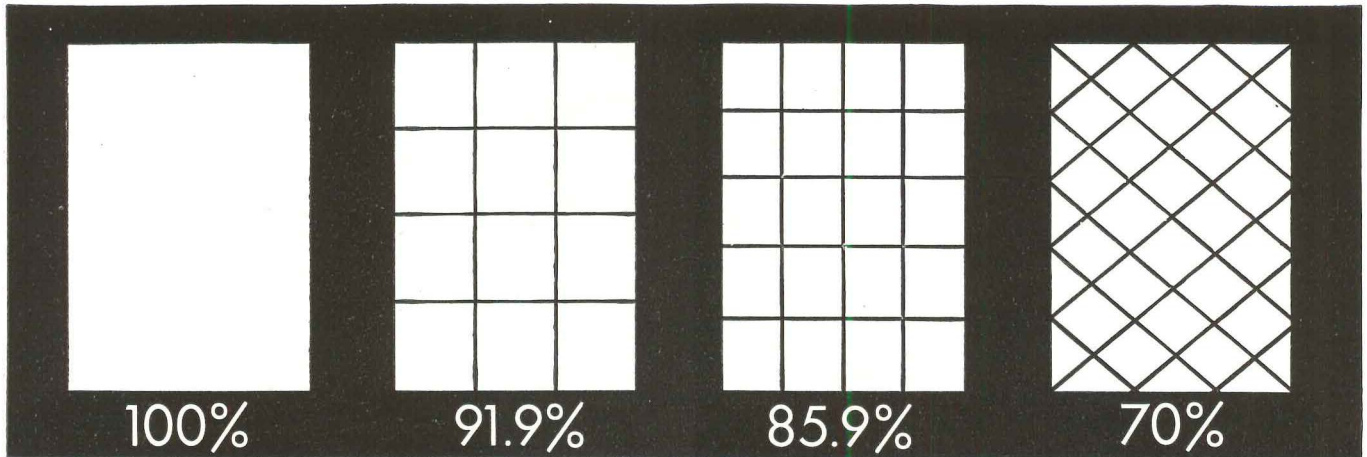


THE MODERN WINDOW *Fenestra*

Fenestra Steel Casements with wood surrounds—painted white—seem quite in keeping with the Early American characteristics of this home in Washington, D. C., designed by Architect A. L. Aubinoe But modern to the minute are the many Fenestra Casement conveniences not obtainable in ordinary windows: more daylight; better control of ventilation; finger-touch operation; inside, bronze mesh screens; easy washing from the inside; inside, insulating windows for winter . . . For details, write to Detroit Steel Products Company, 2250 E. Grand Boulevard, Detroit, Mich., or

See Catalog in SWEET'S

8.1% TO 30% MORE LIGHT TRANSMITTED THROUGH SINGLE PANE WINDOWS



LIGHT—The trend in the ultra-modern building is for the use of more glass to give more light. The above illustrations represent the approximate percentages of light transmitted by four types of windows. Single panes transmit more light and more health rays . . . consider the use of larger panes.

VISION—There is no question but that the undivided window permits better vision. It gives a clear unobstructed view and glazed with CLEARLITE "A" Quality Glass . . . is easy on the eyes. Specify CLEARLITE and larger lights of this fine glass. Send for folder "SINGLE PANE WINDOWS Versus Windows Divided into small panes."

FOURCO GLASS CO., General Offices, CLARKSBURGH, W. VA.
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MORE GLASS—MORE LIGHT AND BETTER VISION

THIS FIVE-YEAR-OLD INSTALLATION HAS



S. H. Kress Co., East Orange, N. J. . . . E. F. Sibbert, Architect
Virginia Black Serpentine used for bulkheads.

influenced decisions on at least five other jobs!

More than five years ago, Virginia Black Serpentine was used for the bulkheads in the Kress Store, in East Orange, shown above. The attractiveness of this natural quarried material, the way it has retained its polish, and its all-round satisfactory performance through several severe Winters and equally trying Summers, influenced neighboring owners to use it to re-model and decorate their stores.

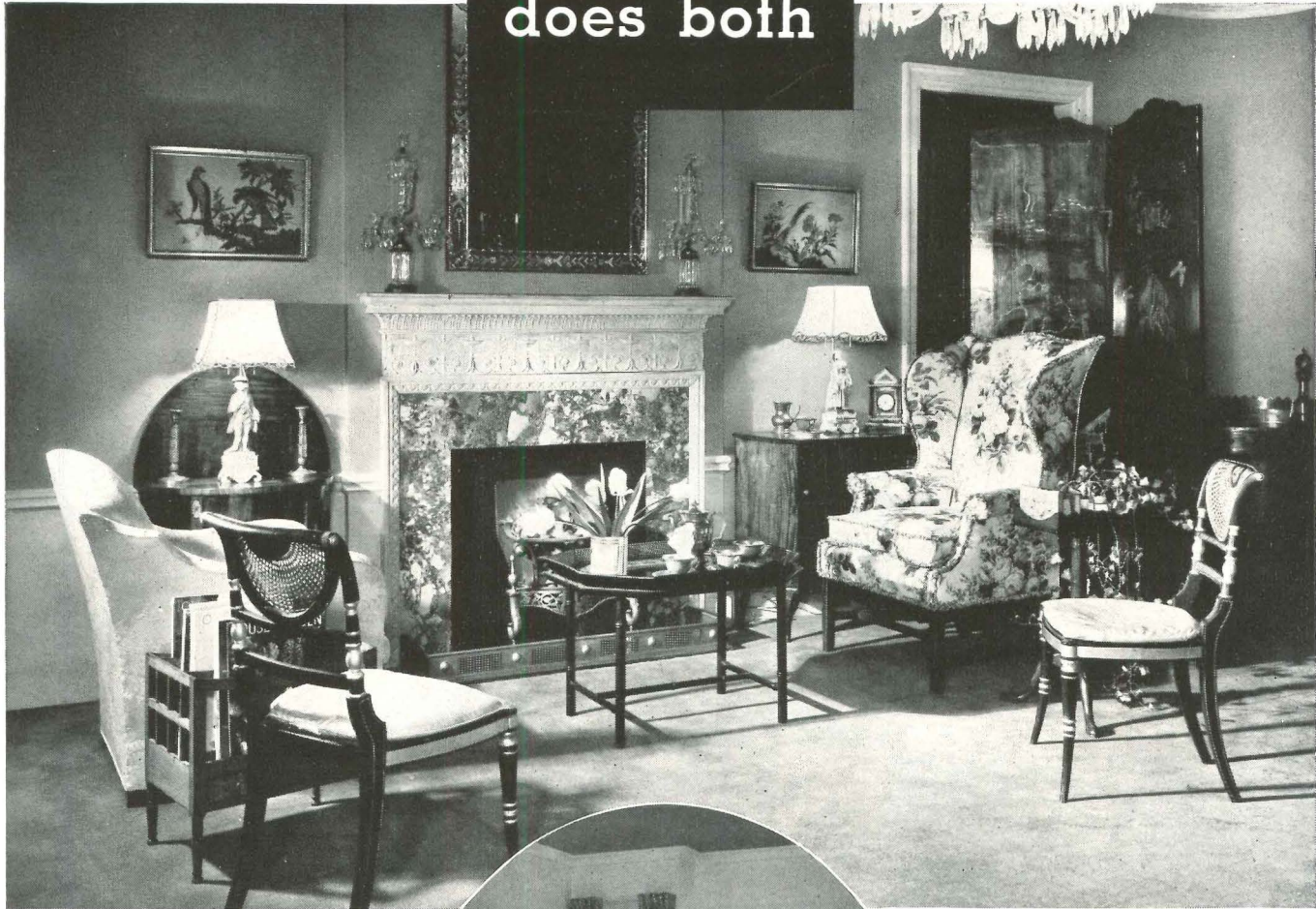
Slaters', Black, Starr & Frost—Gorham, Ethel Klein, Sportswear, and the Peck & Peck Shop in East Orange are typical of the smart stores in many other cities for which Virginia Black Serpentine has been used for purposes of economy, as well as color value. It is being used quite widely on interiors also, for base, door trim, pilasters, mantel-facings, etc.

We will be glad to answer inquiries promptly, and to send you a set of samples, conveniently boxed, showing the range of stone from the Alberene Quarries, including mottled dark blues and greens.

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S E R P E N T I N E

ALBERENE STONE CORPORATION OF VIRGINIA
419 FOURTH AVENUE, NEW YORK, N. Y. Quarries and Mills at Schuyler, Va.

Sloane does both



LIVING ROOM with collectors' pieces. (Above) Sloane decorators are now ready to help the bride with new Fall decorating ideas . . . and in the Four Centuries Shop there are many new "finds" to add to her collection. Among them are the antiques illustrated. Pair of decorated side chairs, \$145 each. Canterbury, \$95. Sheraton card table, \$150. Lacquer tray on modern base, \$140. Wing chair in chintz, \$350. Venetian mirror, \$550. Crystal lustres, pair, \$375. *Third Floor*



BUDGET ROOM with reproductions. The bride will find a new series of charming "small-cost" rooms in the BudgetShop. Sloane made the furniture and planned the decoration for brides who want quality and good taste in full measure. Mahogany pieces illustrated: Side chair, \$37.50. Sofa table, \$87.50. Easy chair, in muslin, \$69.50. Secretary, \$165. Plant stands each, \$22.50. Hepplewhite shield-back chairs, in muslin, \$39.50 each. Coffee table, \$32.50. *Second Floor*

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Architectural and Industrial Uses for REVECON STRUCTURAL SECTIONS*

Revecon Structural Sections provide a simple, efficient medium of holding flat sheet materials applied to any type of superstructure with no exposed attaching devices visible. Any flat decorative metal sheet—window and structural glass, Lumar marble, resins, plastics, synthetic boards, or any other material—that is sufficiently rigid to support itself on edge may be structurally applied either alone or in combination with other materials, providing they do not exceed 1/2" in thickness.

Showing flexibility of Revecon in producing striking decorative effects, interior or exterior.

J. S. BACHE & COMPANY, leading stock brokers. The last word in brokers' offices is this new 5th Avenue (New York) branch of this famous New York Stock Exchange house. Here Revere Revecon is used with Revere Sheet Copper to obtain this strikingly effective ceiling decoration, shown below.

E. H. Faile, Engineer



Showing versatility of Revecon in applicability to cars, busses, trailers, airplanes.

NEW YORK CENTRAL SYSTEM. Giant American railroad. The interior of a new New York Central modern Diner-Lounge car with its dividing partition, using decorative glass and metal panels, built with Revere Revecon Structural Sections. Stationary or mobile, Revere Revecon contributes to beauty, strength and economy. See illustration below.

Miss E. D. Allen, Designer

Designed and Built by Owner

Showing one of many applications of Revecon in store buildings, displays, fixtures and window designs.

R. H. MACY & Co., INC. World's largest store in floor space and dollar volume is that of R. H. Macy & Co., New York. An interesting feature is this demonstration booth of Macy's "Bureau of Standards," using glass and decorated sheet material panels erected with Revere Revecon Structural Sections.



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Copper and Brass**
INCORPORATED



EXECUTIVE OFFICES: 230 PARK AVENUE, NEW YORK CITY

Revecon Handbook: Write on your own letterhead for the Revere Revecon Technical Handbook. Contains full-size illustrations and descriptive text showing how Revecon Structural Sections are used to apply rigid sheet materials of any thickness up to 1/2-inch to exterior or interior surfaces over any type of superstructure. Address your inquiries to our Executive Offices, 230 Park Avenue, New York City.

*U. S. Patents No. 1,973,795; 2,005,994; 2,012,070; 2,073,277; 2,073,278.
Canadian Patents No. 360,122; 366,274.

MODERN MOVABLE PARTITION REVOLUTIONIZES OFFICE PLANNING AND DECORATION

ALREADY utilized in the offices of America's leading industrial companies, Transite Walls are fast changing the accepted conception of what a modern movable partition can offer in the way of adaptability to varied conditions.

For here is a partition in which movability is simply one feature. This asbestos-cement product . . . with its strength . . . durability . . . permanent immunity to rot and deterioration . . . fire and sound resistance . . . has all the safety, privacy and solidity of fixed walls.

And the same ingenious construction method that provides quick, completely dry erection or relocation (with 100% salvage) gives Transite Walls a framework as enduring as Transite itself.

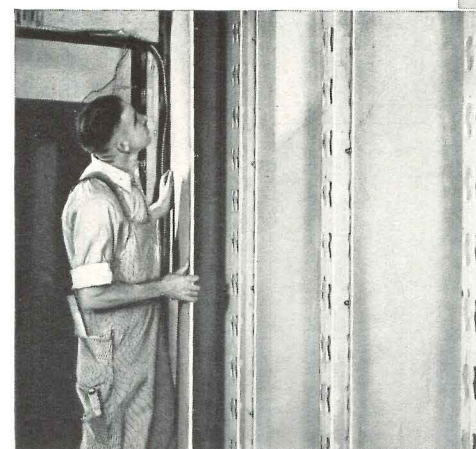
Readily adaptable to any type of office construction or any change in construction, Johns-Manville Transite Walls enable you to plan your clients' future needs today. To solve the problems of relocation and expansion with an economy and speed heretofore unknown.

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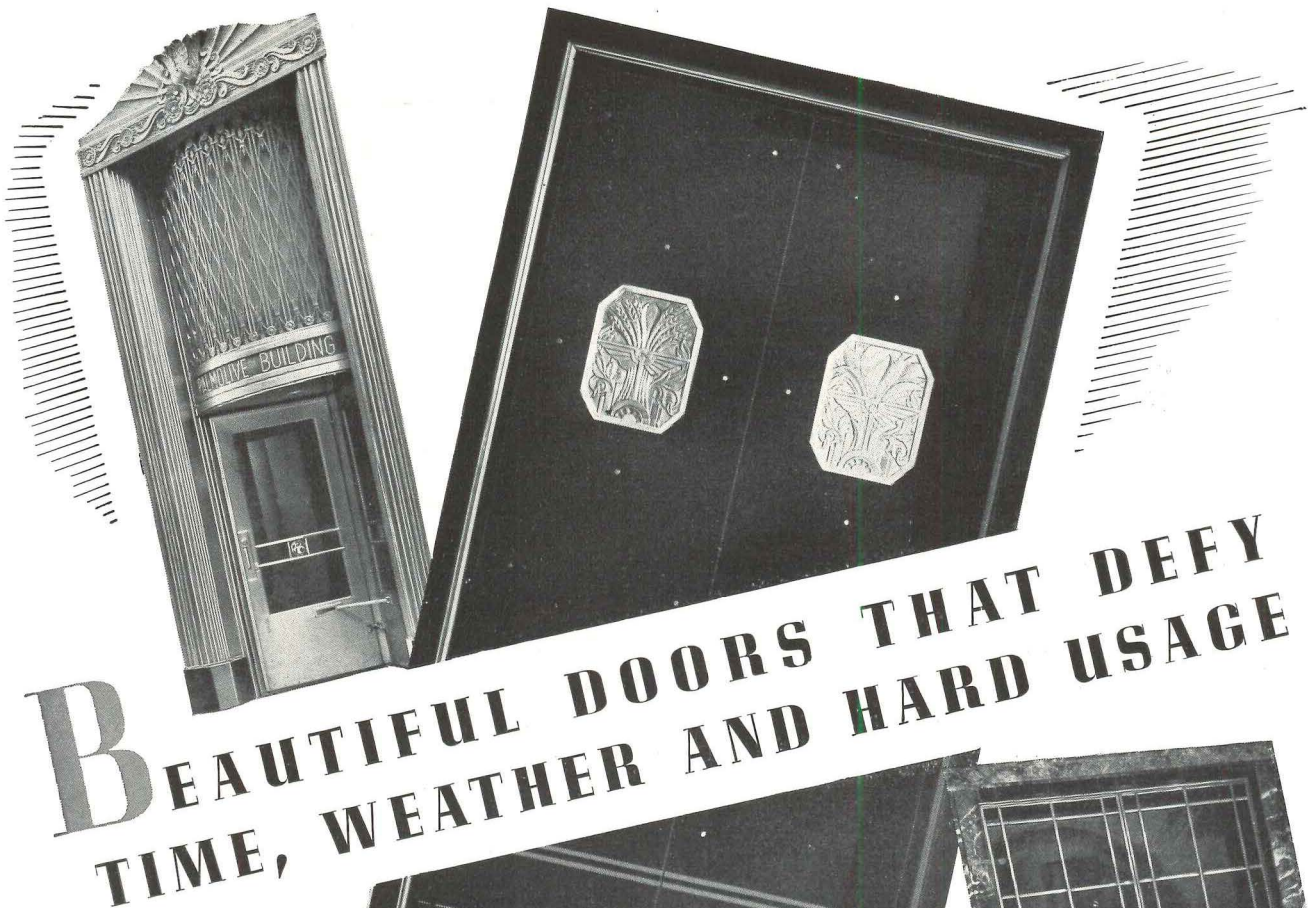
If the story as given here in brief interests you, then the full details will certainly prove invaluable. An illustrated brochure containing complete information on Transite Walls will be sent on request. Simply address Johns-Manville, 22 E. 40th St., N.Y.C., for your copy.

● Typical of the decorative possibilities of Transite Walls is the modern decorative treatment used in this private office. For practicality in general service areas, Transite Walls may be left in their own neutral color or painted, if desired.



● Concealed steel holding devices and studs form the framework for Transite Walls . . . most modern of movable wall partitions. And this exclusive construction method gives these walls a solidity in keeping with their own inherent durability.





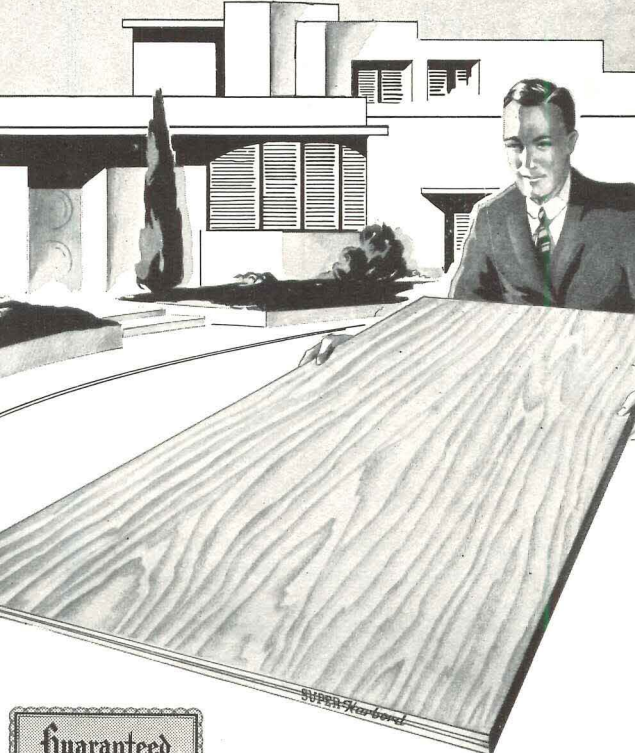
There is scarcely any architectural feature of a building more important than its doors. • They are the focal point of interest and the focal point of traffic. Hence they should combine beauty of design and materials with unusual durability. • The gallery of Solid Nickel Silver doors pictured here gives you a good idea of the beauty of this lustrous white bronze which architects are widely favoring for this purpose. • Rich in color, brilliant or subdued according to your needs, the Solid Nickel Silvers also offer time- and weather-defying properties that result in lasting service. • The Solid Nickel Silvers are also highly practical from the standpoint of cost. They may be obtained in a wide range of wrought shapes or in a broad variety of cast compositions to meet specifications in design. They respond readily to ordinary fabricating processes and harmonize well with all the commonly used building materials. • Architects or fabricators will gladly advise you on the architectural uses of Solid Nickel Silver.



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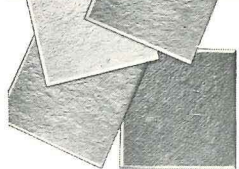
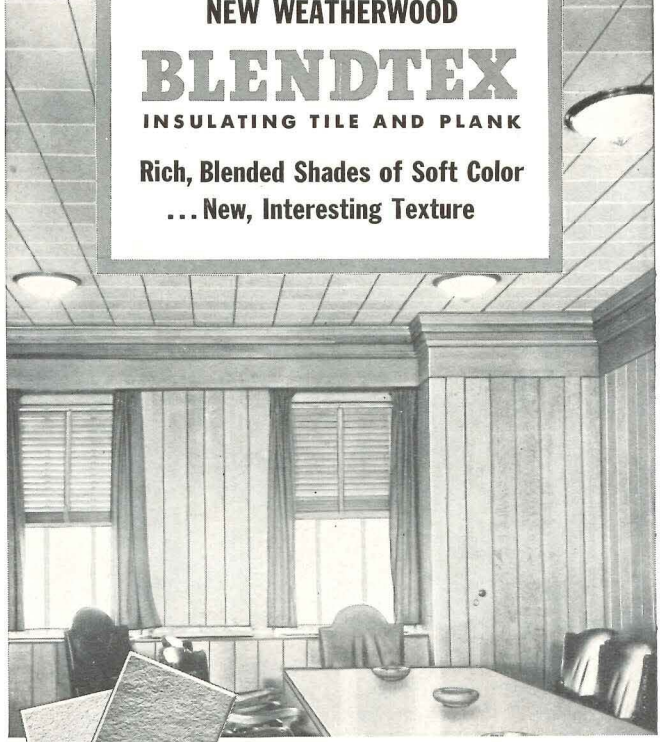
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With This Material That
Decorates, Insulates and Quiets Sound

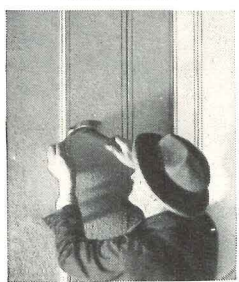
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BLENDTEX Plank is quickly, easily applied to both new and old walls.

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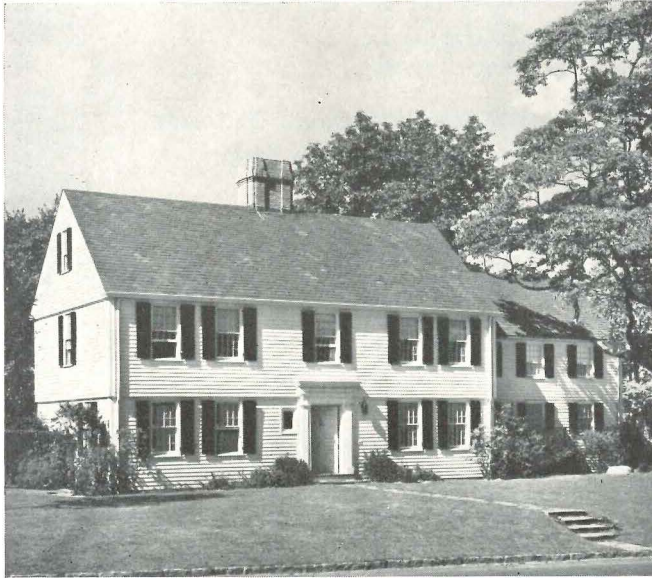
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Write today for your copy of the latest edition of *The White Book*. It shows many photographs of prize-winning DOUBLE-WHITE houses and contains full information. Samuel Cabot, Inc., 1283 Oliver Bldg., Boston, Mass.

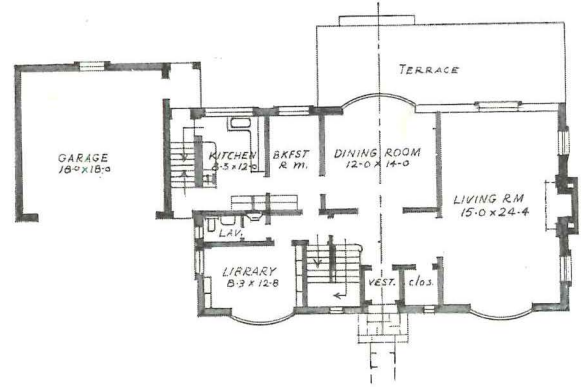
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Sharp Clear Blueprints



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The time and expense of making ink tracings are not in keeping with the present day demand for speed.

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The problem of correct size and shape of the graphite particles for this particular purpose was solved in a practical way by L. & C. Hardtmuth. Koh-I-Noor Drawing Pencils, for years the choice of discriminating draftsmen, contain no dye, and produce perfect pencil tracings which may be "fixed" to prevent rubbing without reducing the reproduction value. Choose a suitable degree for the paper you are using and note the improved result of your blueprints.

Leaflet P. 155 gives interesting data on this process together with hints on the choice of degrees. We shall be glad to mail you a copy together with our latest illustrated catalog.

Koh-I-Noor Pencil Company Inc.
 373 Fourth Avenue, New York

How to Write History... *in Fine* Terrazzo



Atlas White portland cement was used in the beautiful terrazzo floors of the Texas State Capitol. Views here are of the central passage and "seal of the nations." C. H. Page of Austin was architect. Bubi Jessen, Austin, prepared sketches and designs. Art Mosaic & Tile Co., Toledo, and J. B. Martina Mosaic Company, Denver, were the terrazzo contractors jointly.

HERE'S history—in fine terrazzo. Here's all the beauty and versatility characteristic of this superb modern material.

These fine terrazzo floors are in the Texas State Capitol at Austin. The pride of Texans in their state, the romance of its history, are expressed in imperishable form under the great dome.

Note in the interiors above the complete freedom of design that fine terrazzo gives. It conveys simple impressiveness (in the memorial corridors), intense action (the Mexican seal), vivid richness (the United States seal),

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White portland cement is essential to fine terrazzo work. Only white makes each pattern clear and clean-cut. Only white gives true value to the colors of the marble chips. Atlas White portland cement brings out the full rich beauty of fine terrazzo. Universal Atlas Cement Co. (United States Steel Corporation Subsidiary), 208 South LaSalle Street, Chicago.

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DELCO'S NEW **Rotopower Unit** with the Thin-Mix Fuel Control!

This latest development of Delco-Frigidaire cuts oil heating costs three ways...Saves fuel...Saves power...Saves upkeep

Delco-Frigidaire, the air conditioning Division of General Motors, now offers a remarkable new development in oil heating. All the "works" of the Delco Burner are contained in the compact Rotopower Unit.

This utterly new unit gives more dependable and longer service, because there are fewer working parts—no gears or couplings, no unnecessary wear and tear.

And the exclusive Delco Rotopower Unit with Thin-Mix Fuel Control contributes greatly to fuel economy by providing the most economical fuel mixture possible—a mixture containing nineteen times as much air as oil.

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The Rotopower Unit is available on all types of Delco Oil Heating products. It makes the modern new Delco Conditionair still more economical. Now this great winter air conditioner that automatically heats, humidifies, circulates, and filters the air, costs less to own than



Here's DELCO'S Difference

All the many working parts of an oil burner have been combined into the simple integrated Rotopower Unit that eliminates couplings, gears, pulleys and belts. It's completely designed and built by one organization.

ever before. Furthermore, by correctly installing proper sized ducts at time of installation, summer air conditioning can be added at lower cost than with any other method.

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The Delco Conditionair and Delco Automatic Furnace are also available for economical gas heat, using the faster, more radiant Delco Luminous Gas Flame.

Write, wire, or mail coupon for information about these great products of General Motors.

Rotopower Unit available in Delco Oil Burner Models DR, DRI—Delco Automatic Furnace Model DH3
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*Delco-Frigidaire Conditioning Division
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Please send me complete information about Delco Oil Burner Delco Oil-fired Conditionair Delco Gas Conditionair Delco Oil Furnace for Radiator Systems Delco Gas Furnace Frigidaire Air Conditioning.

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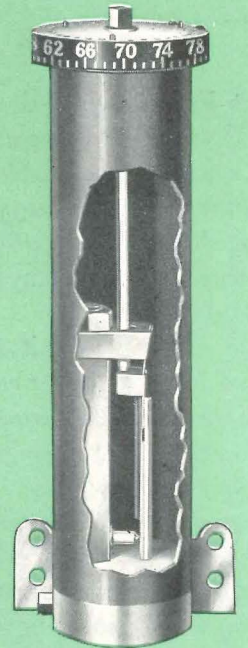
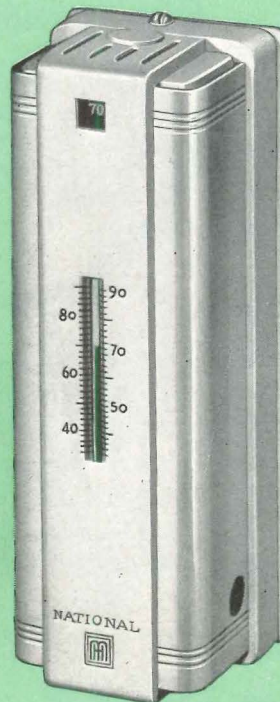
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The National thermostatic element, a cylindrical tube of Ebonite, actually seals the working parts and offers positive protection against any tampering.

**MODERN APPEARANCE
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The National Pneumatic Thermostat is as modern in its appearance as it is in its performance. It is simple and durable, and its Ebonite element, which has proved itself for more than 35 years, makes it extremely accurate.

NATIONAL PNEUMATIC *Control Systems*
A Product of
MINNEAPOLIS-HONEYWELL REGULATOR CO.

BUILDING TYPES

HOUSES (\$10,000-\$20,000)

Talbot Faulkner Hamlin broaches the subject of present-day home interiors with a thought-provoking and, we believe, constructive pen.

Build today's home to accommodate tomorrow's air conditioning requirements, advises Brewster S. Beach, in his discussion of the four principal systems, initial costs, upkeep costs, and whence lower costs.

"Without benefit of landscaping" is a phrase which applies to too many new residences. But the architect can do something about it.

Footnotes on Natural Lighting, on Safety, and on Recreation Rooms.

Illustrated Case Studies: Houses in California, Connecticut, Florida, Georgia, Louisiana, New Jersey, New York, North Carolina, Tennessee and Wisconsin.

ARCHITECTURAL

Record

Higher Grade Houses Rising at Good Rate

By **L. SETH SCHNITMAN**, Chief Statistician, F. W. Dodge Corporation

MORE HOUSES costing from \$10,000 to \$20,000 are going up today than at any time since 1931. Then building recession was rapidly deepening; now recovery is well on its way. For 1934—the year of lowest ebb—less than 2,800 houses, involving construction costs within these defined limits, were constructed in all of the 37 eastern states at a total cost of approximately \$33,000,000. By the end of 1936 this classification of dwellings had recovered to a point where somewhat more than 10,000 were started in that year at a combined construction cost exceeding \$121,000,000. And the gains continue into 1937.

Whereas only about 4,500 such houses were being constructed in the first half of 1936, the comparable six-months' figure for 1937 exceeded 6,300, with a reasonable likelihood that the full year's total may at least equal the 1931 total of about 11,200. What is more, the combined construction value of the 1937 volume for the first six months exceeded

\$77,000,000 as against only \$55,000,000 for the like 1936 period. Currently 73 per cent of the total number of houses in this cost class erected for owner occupancy is planned by architects.

This specific cost classification has shown material increases over totals for recent years in every major geographic section in the area east of the Rocky Mountains. Southern Michigan, on a relative basis, outperformed every other principal section. It so happened that 1933 was the low year for this district when less than 50 houses costing between \$10,000 and \$20,000 were constructed. For 1936 the total exceeded 800. Other sections to show large relative gains from their lows, 1933 or 1934, included the Upstate New York, Pittsburgh, Chicago, Kansas City and New Orleans territories; but as has already been noted, no area failed to participate in the general improvement.

For the initial half of 1937, greatest percentage gains over the totals

for the corresponding period of 1936 were reported in the following territories: Upstate New York; the Southeast (the Carolinas, Georgia, Florida, Alabama and Eastern Tennessee); the Chicago district (No. Illinois, Indiana, Iowa and Southeast Wisconsin); the New Orleans territory (Louisiana and Mississippi); and Texas. In each of these areas the number of houses with construction values ranging between \$10,000 and \$20,000 undertaken during the first half of 1937 was more than 50 per cent larger than was reported for the respective districts in the first six months of 1936. Increases over 1936 of at least 30 per cent were shown for New England; Metropolitan New York; the Middle Atlantic States; the Pittsburgh area (Western Pennsylvania, Ohio, Kentucky and West Virginia); the Central Northwest (Northwest Wisconsin, Minnesota, Northern Michigan and the Dakotas); and the Kansas City area (Western Missouri, Kansas, Oklahoma and Nebraska).

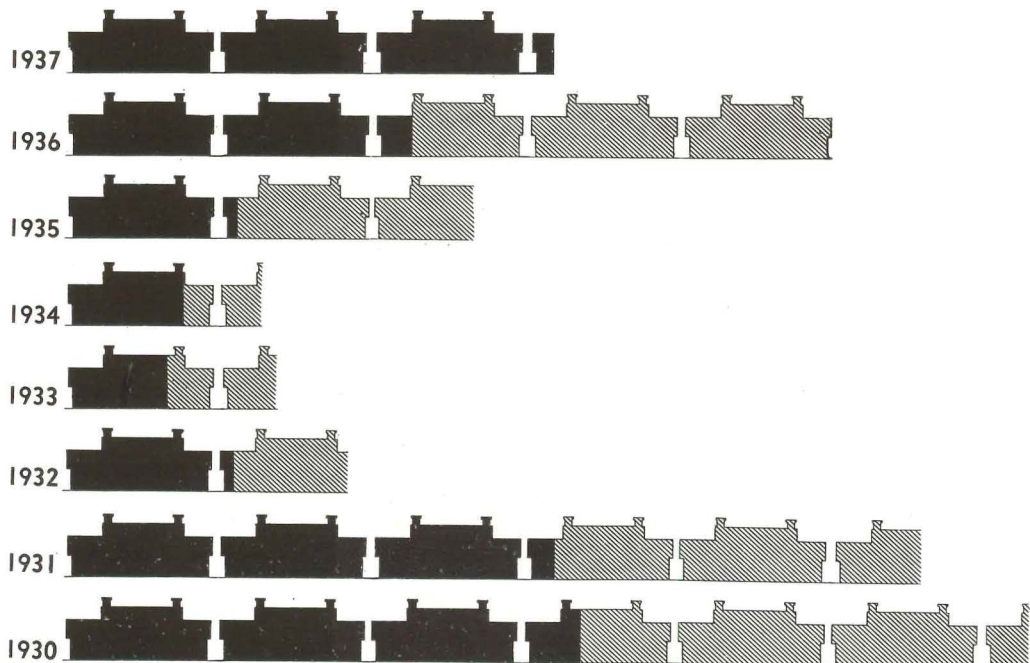


Chart covers conditions in the 37 eastern states only.

NOTE: Each unit represents 2,000 homes—costing from \$10,000-\$20,000. Black units—first six months. Black and shaded units—full year.

Are Contemporary Interiors Only a Style?

By TALBOT FAULKNER HAMLIN

Professor Hamlin, Design Critic, Librarian at Avery Architectural Library and Lecturer on History of Architecture at Columbia University, is a well-known contributor to Architectural RECORD. Herein he discusses interiors and does it in such a manner that designers of homes should find it of practical and inspirational value, and worth filing for future reference.

THE HOUSEWIFE tells her neighbor, "Well, when we move I'm going to have one room *Modernistic*," in the same voice and with the same mood as if she were saying, "I'm going to have one room *Colonial*, or *English*," or what you will. The big store advertises: Bargains in Modern Furniture, in the same type and on the same page with its announcement—Colonial Reproductions Greatly Reduced. To both buyer and seller the terms "Modern," "Modernistic," or even "Moderne" are rapidly becoming indistinguishable cant style descriptions; in the one case a convenience in purchasing things to help in the eternal struggle of Keeping up with the Joneses; in the other taking advantage of a gay new fashion that helps to market goods and make profits.

So it has been. So, alas, it is likely to be for a long time to come. Black walnut yielded to golden oak, golden oak to mission, mission to colonial in a manner not substantially different. New fashions in interiors rose, flourished, and passed. All these furniture fashions demanded style-names, for fashion by its very nature demands fixed types and categories; and the lumbering machinery of industrialism whirs and squeaks and grinds out the desired commodities. Styles became the be-all and end-all of production, and it is no accident that present-day industrial designers are frequently called "stylists," and the process of design "styling."

Expression

Theoretically, a house interior is, or should be, the most intimately personal expression of its occupant. There, if nowhere else, he can satisfy his caprices and put what he wants

where he wants it. There he is supposed to create an environment as much and as individually *his*, as the snail shell is its owner's and maker's. The forms and colors should grow as inevitably from his needs and his creative sense as the shape and color of the shell result from the needs and the anatomy of the snail. And, conversely, as the possession of a shell limits and conditions the snail's life, so the interior each man creates for himself limits and conditions him, consciously or unconsciously.

Yet of how few interiors is this identity between form and occupant true! If it is sometimes a depressing thought to imagine the thousands of families living in almost identical apartments in any large city, it is even more depressing to go into their homes and see the basic sameness within. In many cases the same day-enport, the same over-stuffed chair, the same bridge lamps or reflector lamps, the same magazines on the table, the same engravings or colored-prints on the walls. Slight variations in the general monotony of course occur, so that one who knows the fashions of the last twenty years can usually approximate the date when any particular room took form. In all, there is harmony of sorts—a "style" harmony; in most there is a surprising "good taste" apparent; till even that kind of good taste, based on imposed styles, becomes itself part of the terrifying monotony.

From this monotony with what enormous relief one enters an interior which does express its owner. It is not a room, usually, in which some fashionable decorator has dumped the contents of his shop. It is hardly ever a perfect "period" room. It need not be *chic*. It may have furni-

ture from many different epochs, but these pieces exist in it not as "antiques," but because they enshrine something of the owner's personality here and now. Such a room may be entirely of today, but not because it is fashionable. These rooms are alive, lovable, personal; they are enhanced by the presence of their owners, and they enhance the rooms. Such an interior is an authentic expression; it has achieved style because it has forgotten the "styles"—even the "modern," which has rapidly become a style like the others, equally impotent and dead. But such expressive interiors are still the exception.

Is there, then, no possibility of any interior beauty in buildings save that of changing taste and fashionable chic? Is the extraordinary revolution in the fine arts—especially in architecture—since 1910 to have no more vital and beneficial effect on room design, than did our parents' change from mission to colonial, from oak to mahogany? Is the sense of beauty itself nothing but an emotion to make tolerable for us the surroundings which fate and industrialism decree? Are the contemporary forms of today *only* a style? Or are they something more and deeper? . . .

The latter seems the correct answer, for there is one common element in all the recent art movements which is the very opposite of stylisms—freedom. It will be useful to examine, therefore, the liberties possible in the modern interior, and see how they oppose the psychology of "styles"; how they may make our rooms human and livable.

Space

First of all, and permeating all the

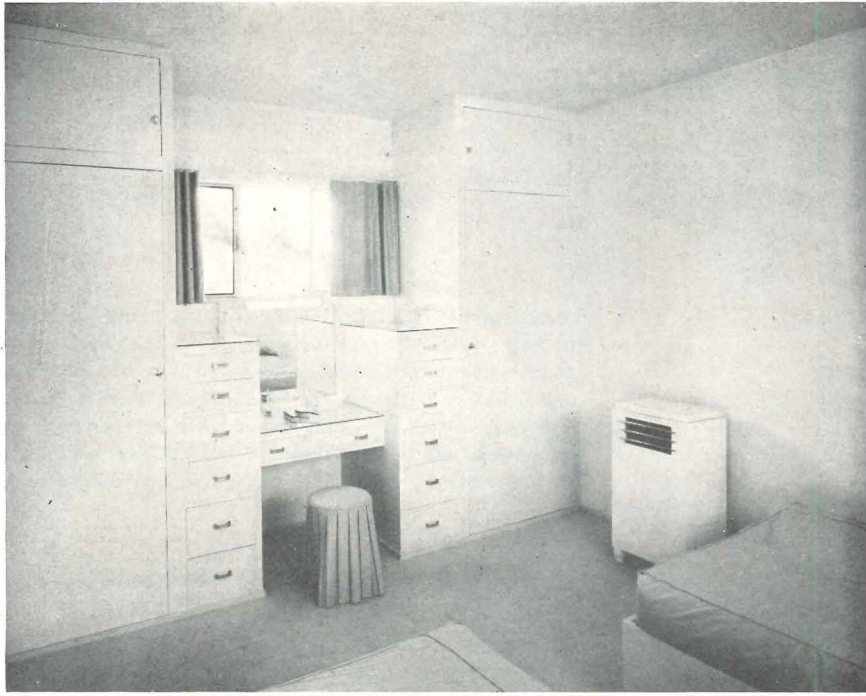


Photo courtesy of Stephen H. Willard

Interior designed by Van Pelt & Lind, Architects. All furniture is built in. Walls and ceiling are light blue stucco. Woodwork of cases, etc., eggshell white. Curtains and bedspreads are blue chintz. Flooring white broadfelt.

most creative recent architecture, is freedom of space. No longer, as Frank Lloyd Wright pointed out years ago, need a room be a rectangular box, and a home a collection of boxes. Spaces around us at last can become—have become—plastic, designed to fit our needs, even our whims. Here, space may flow into space, to give airiness and ever-changing perspectives. There, we can inclose it as definitely as we please, to give intimate privacy. We can have open spaces joined into one carefully-designed changing experience, sometimes narrow, sometimes wide, sometimes low, and sometimes high. We can have areas close and warm, with all the world shut out, and spaces which welcome in all outdoors through great areas of glass. In the ideal house there should be spaces to fit all our needs and all our moods.

Materials

Second, there is freedom of materials, and what a freedom this is! No longer need a room have four plaster walls, a plaster ceiling, and a wooden floor. Rotary cut veneers allow us to make one wall, or some section of a wall where interest is desired, to become a singing surface, mottled with lovely color. The browns of walnut, the bandings of snake wood, the lavishness of amboyna, the milky tans

and tawny yellows of maple, the delicate warm colors of mahogany, the feminine loveliness of birch are all at our command. We can pick up the same colors and textures in the smooth surfaces of the furniture, or we can contrast the roughness of textiles with the smoothness of the wooden wall. We can have cabinets or closets of the same lovely woods, with smooth sliding or swinging doors, to inclose spaces and take the place of partitions. No wonder that with such natural richness of grained woods, with this freedom of color and pattern and finish, the interior designers of today prefer smooth surfaces, unbroken by moldings or carving.

Our rooms thus become problems in free design; to the freedom of spaces opening out of each other is added a new freedom of wall treatment, which allows us to accent the portions we wish accented, and to bring all together into a harmonious whole. No problem as complex as this can ever be reduced to a formula, to a mere style category, if designers and owners alike realize its enormous opportunities for beauty.

Then we have the large family of plastics. Never before has the interior architect had such means of obtaining large surfaces of pure, unbroken, and permanent color. Table tops, bookcase or dresser tops, areas of wall

surface—these we can make almost any color we wish, knowing that the color will last, will not easily scratch, and can be almost instantaneously cleaned. We have as yet hardly begun to use these rich and glowing materials as we might.

Metals, too, we have at our command in ways that are new. Slim glittering bands, flat or molded, can cover the joints between sheets of veneer or plastic. Edges of shelves can shine with metal bands. Door hardware, the metal of electric fixtures, even door and window trims, even window sashes complete, we can have in aluminum, chrome-steel alloys, or brass and bronze. Modern alloys, platings, and lacquers make these rich and brilliant effects lasting, where before they could only be obtained by the drudgery of endless polishing.

And lastly, and perhaps most important of all, there is glass. Transparent or translucent, plain or colored, it is almost light itself made tangible. Perhaps more than any other material it makes the modern interior possible. With it we can welcome the garden and the landscape into the house; with glass brick we can take outside light, break it up and diffuse it, and make a whole wall a glowing faceted jewel. With glass brick partitions light can be made to penetrate deeply into the center of a building.

There is an architect's reception room—an interior room, usually so likely to be dark, inclosed, closet-like—which glass partitions make clear, open-feeling, and filled with light. Tubes are set in the cement at every intersection of vertical and horizontal joints; in them simple metal shelf supports can be inserted, so that glass shelves may be placed as they are needed anywhere in the room. On some shelves there is the warmth of books; on others stand lovely glass objects, so that this little interior room becomes a poem of books and glass and light.

In the same building there is a living room, which opens on a balcony, or recessed loggia, on the front. The whole wall between balcony and room is of glass brick, except the door, which is of plate glass to prevent any sensation of claustrophobia. Over the inside of this wall ivy is trained, not too thickly. No view is lost, for across the street are only higher, uninteresting buildings. By day the room is warm and light; by night, when the room is softly lighted, let some one in the apartments across the way

switch on but a single light and the whole glass wall leaps into life.

Glass table tops and shelves, and sliding glass doors for cabinets or cases, and all the varied glass forms of electric light fixtures bring the same notes of transparency and reflecting power into furniture and fittings. Mirrors, too, make glass a material for magic. Here it also seems we have as yet been too cautious, too bound by tradition and prejudice. Wall sections of mirror, perhaps decorated with outline drawings or paintings in monochrome can produce extraordinary effects of size and mystery. Mirrors on doors are an old story; mirrors on walls can be at times equally useful, as well as dramatically decorative.

Form

The third great freedom in today's design is freedom of form. Therein lies perhaps the greatest opportunity for personal expression, for avoiding the stigma of stylism, for present-day methods of furniture construction are enormously fluid. To be sure, they give rise naturally to flat, simple surfaces, but in basic generating shapes they allow complete freedom. Sharp and angular geometric regularity or suave curves and unexpected romantic changes in shape or materials are equally possible. Many people today still object to metal furniture of the type they call the "Plumbing School," possibly because they do not know the beauty and delicacy of the best work of Mies Van der Rohe and Marcel Breuer. Such people need not use metal furniture; there is no compulsion in true contemporary design save that of sincerity, for it is not—it should not be—a fixed category or "style." They can get the same delicate and springy strength in wood, as in the brilliantly conceived furniture of Alvar Aalto, who has used laminated wood in chairs and tables and cabinets in delightful new ways. The furniture designers have produced a surprisingly wide gamut of possible effects, all equally of today, from the rich and almost oriental luxury of many French interiors, through simpler and less expensive forms—furniture in birch and maple—to the spare and almost perversely austere work of the followers of the functionalists.

Integration

Related to freedom of form is a similar, larger freedom of form-choice. Just as Le Corbusier, in a famous



Designed by Professor Wolfgang von Wersin, Architect. "Light made tangible." The use of glass gives this room an appearance of spaciousness.

Parisian roof garden, frankly places a delicate Louis fifteenth marble mantel in the middle of one of the enclosing walls, so the designer can use in any interior, however modern, that American Empire Secretary, or that Sheraton table, that block-front desk, or the old sofa for which one has formed an attachment.

If the love of old pieces is sincere, if they are part of one's actual living tradition, they belong in this new environment being built. A creative artist sufficiently sincere can combine almost any materials into a coherent and significant pattern, as the best surrealist painters have abundantly shown. No one, without danger of self-mutilation, can cut himself off entirely from his past any more than from the present, and a modern room with one or two old pieces, however "stylistically" incoherent, may yet be an exquisite whole. At least it will be honest and alive; it will have the consistency and pattern of one's own personality.

Of course all this space and form freedom requires the most careful arrangement to preserve aesthetic coherence. This is one reason why all kinds of built-in furniture are so favored by modern designers. If spaces have been designed for specific uses, building-in at least some of the furniture appropriate to each use gives firmness and permanence to the conception. Artistically, too, built-in furniture creates definite frames, as

it were, within which the movable elements may be more readily and successfully placed. Well designed, such built-in furniture adds to the sense of restfulness, and it should not necessarily destroy flexibility. It helps also in producing unity, by mediating between the space elements of the interior and the minor furnishings; it breaks down the artificial barrier between architect and decorator, so that the whole house, planning and furnishing, outside and inside, may become one whole.

Color

A final freedom we enjoy is freedom of color. Time was when every well-behaved room was cream or ivory or buff or white. So enamored of this paleness were we that we imagined colonial eighteenth century interiors as usually white, when actually that woodwork was most often gaily colored. Little by little we are awakening to a similar delight in color, and more and more bright colors are creeping into our homes.

And, just as Cezanne discovered (or rediscovered) the spatial values of color, so we are discovering that wall colors can profoundly affect the spatial impression of an interior. No longer need all the walls of a room be one color. In a rectangular room, painting the end walls a different and darker color than the sides works magical changes in its apparent shape. Breaking the color at the corners de-



Interior by W. & J. Sloane. Walls are painted blue-violet and the ceiling gray. The floor is completely covered with French gray Sussex broadloom. Bed and cabinets are finished in gray birch and the bedspread is of several shades of gray-blue and violet. Chairs are covered with gray and wine-colored Chevron matelassé. Draperies are gray satin.

Photo courtesy of F. M. Demarest

stroys the sense of inclosure, and so increases the sense of size; certain blues and blue greens seem to recede to infinite distances; yellows and reds advance, and give clear definition.

As yet we are still too cautious in this fascinating field. Canary yellow and different kinds of grays in the same room scheme have come to be accepted as correctly "modern"; so have various purplish browns. I do not know who first developed these subtle and muted color schemes; they may have a relation to the brown grays of Picasso's "violin period." Yet frequently the acceptance of these schemes, good as they are, has often stood in the way of the choice of other, more brilliant—and perhaps more fitting—color harmonies. Why not use blue and green and red, pure and sharp? With the free open spaces of a contemporary house, these colors, discreetly used, may be cheerful and stimulating and lovely. Even in single rooms this may be so; there is a long narrow hotel room in New York which has all the four walls different colors. One narrow wall—the win-

dow wall—is deep, rich red; the other end wall is a dark greenish blue. One long side is ivory; the other is peach-colored. The red and blue colors of the end walls are, as it were, pulled around the corners by similar touches in furniture, hangings, and rugs. Yet the effect is anything but garish; it is simply warm, welcoming, and personal; and person after person, though he may comment on the fact that the room looks larger than other similar rooms in the same building, remains completely unaware of the difference in the wall colors until it is pointed out to him.

Nor is this color freedom limited to wall colors. Wood veneers, plastics, textiles, all necessarily join the chorus; lovely weaves and prints are at our command for curtains, furniture covers, and rugs. Well chosen, in a room they often set the dominant tone, just as, ill-chosen, they may result in the most painful visual indigestion.

These freedoms—of space, material, of form, and of color—contain in

them the seeds of the salvation of the modern interior, but also the seeds of chaos, for complete freedom may be the disintegration of artistic form. What, then, shall school and discipline these freedoms and give meaning to choice and significance to the result? Two things there are, sufficiently powerful to do this: one is honesty and sincerity of personal feeling, and the other is appropriateness to use—that is, functionalism.

The first implies a certain conscious integrity. Do what you will . . . but be sure, first, you know what you wish. Refuse to be stampeded by fashion from the outside, or by meretricious sentimentality from within. Learn to discriminate between tradition, which is that vital part of one that comes from the past, and a clinging to outworn and meaningless things. Similarly, learn to discriminate between a healthy, normal love of novelty and a hectic attempt to follow changing fashions. Then choices will represent personalities, without which they are meaningless, and the interiors created, whether good or bad

according to the critics, will be significant and fitting and alive.

Utility

The other companion guide through the maze of possible choices is the doctrine of usefulness in one's belongings. We live, at best, crowded and cluttered lives. Today's civilization allows us, usually, fewer square feet per person than our ancestors enjoyed. Most of us have little storage space for extra things. The result is that we are forced, willy-nilly, to be more selective in our furnishings and house-decorations than our parents. Every object in our interiors must be weighed, tested, judged, according to its practical or aesthetic usefulness.

After the clutter of our working

days, our houses should be clear, simple, quiet, uncrowded. Everything should be significant, should be what it is, and where it is, for some definite reason. Everything should be easy to dust. Books should be easy to get at, well arranged. Tables and chairs should be placed so that a minimum of shifting is necessary to produce flexible arrangements for different uses. Bedrooms should be provided with unobtrusive built-in drawers and cabinets. Baths and kitchens today owe a great deal of their attractiveness to the importance of the use element in their design.

Thus, with integrity of personal taste, and a deep sense of the usefulness of one's possessions as guides, interiors will necessarily take on dis-

ciplined form, and chaos will yield to beauty and livableness. There will still be endless variation, for people vary, so that there will be little chance for the deadening hand of merely fashionable stylism. Little by little, under these two principles, we will learn to make use of all the magnificent freedoms we enjoy—freedom of form, freedom of color, freedom of space. We will learn that machinery and machine-made products are superbly plastic under our control, that any fear of them is absurd. We will learn to be true to ourselves and to our age. Then the interior of today and, increasingly, of tomorrow, will become the free, lovely, vital thing it might be, and the standardization of fashion will disappear.

Daylighting Contributes Health and Comfort

By JAMES E. IVES, Ph.D., Senior Physicist, United States Public Health Service (Retired)

FIVE REASONS may be given why plenty of natural illumination is desirable in a dwelling:

- (1) for the protection of eyesight;
- (2) for promotion of cleanliness;
- (3) for prevention of accidents;
- (4) for possible direct effect upon health;
- (5) for its psychological effect.

To provide sufficient natural lighting, the area of the windows should be at least 17 per cent of the floor area, allowing for the framework holding the glass. This glass area must be properly placed and it must be remembered that, for windows of equal area, a high window gives greater illumination than a broad one. It has been shown, for instance, by the U. S. Public Health Service, that doubling the height of a window trebles the illumination at the middle or rear of a room, whereas doubling the width of a window does not even double the illumination.

The natural illumination in a room will, of course, vary with the time of



day and the time of year, and also with the condition of the sky, whether clear or cloudy. The orientation of the window with respect to the point of the compass will also make a difference. Windows facing north will not usually receive any direct sunlight; those facing east, west, or south will receive direct sunlight during some part of the day. In general, the entrance of direct sunlight into a room is desirable in winter but not in summer. This is particularly true for the southern states. Even in winter time, sunlight is not desirable if it falls upon the working plane. In this case window shades or awnings should always be provided to reduce or divert some of the sunlight. The most desirable form of window shade is probably the venetian blind, since it can be used not only to reduce the

illumination from direct sunlight but also to increase the illumination in the rear of the room by reflection from the slats. There is at the present time a great need for a cheap form of venetian blind. When such a shade is developed there doubtless will be a great demand for it.

The direction in which the windows of a house face will depend upon the orientation of the house. Henry Nicholls Wright, who has recently studied the effect of orientation upon heating (for the John B. Pierce Foundation Housing Research), claims that by making the windows of the living room face 25 degrees west of south, the living room can be kept warmer in winter and cooler in summer—cutting the cost of heating and making the room more comfortable. The problem of daylighting is therefore bound up with the problem of heating and it is certainly desirable to orientate the house so as to obtain the best results for both.

Residential Air Conditioning Systems

By BREWSTER S. BEACH

BREWSTER S. BEACH is editor of "Air Conditioning Trends." He is also Director of Information Service, Committee on Research, American Society of Heating and Ventilating Engineers, and speaks with authority on trends and possibilities in air conditioning for the home.

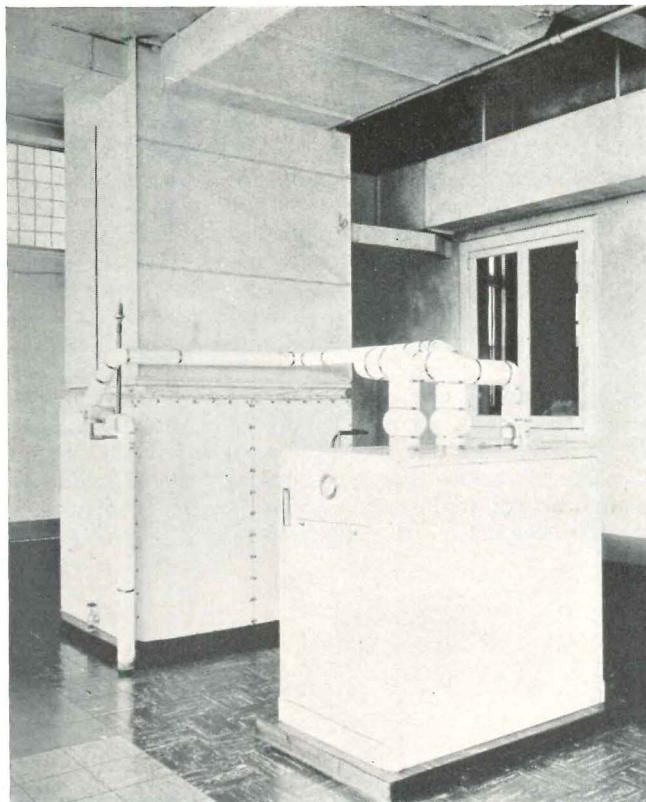


Photo courtesy Electrol, Inc.

ONE OF THE chief factors responsible for the interest in home air conditioning is the continued expectancy that home cooling in summer is "just around the corner." This impression, firmly implanted in the home owner's mind during the earlier stages of air conditioning, has tended to obscure the more important benefits of air conditioning as a wintertime service. No survey of residential air conditioning can therefore be attempted without recognizing the powerful influence that the idea of summer cooling has exerted on the home owner's mind during the past seven or eight years. While the hopes of those who foresaw summer cooling as an immediate second step in the evolution of complete year-round home conditioning have been deferred from year to year in the face of the technical difficulties involved in the production of low-cost cooling systems, air conditioning remains the magic word to a growing number of home owners.

If anticipation of relief from summer discomfort was the spark which first touched off the trend to air conditioning and remains the fuel upon which it feeds, its rapid growth has been caused by other and more substantial factors.

In the beginning, only expensive houses for the higher-income groups were able to afford air conditioning; because systems were costly, com-

paratively few manufacturers were in the field, and each installation was a custom-built job.

The bugaboo of high cost, however, was gradually removed by the entrance into the field of manufacturers equipped for mass production with trained sales organizations able to match mass production with mass sales. Having once mastered the simple principles of winter air conditioning and removed much of the mystery of engineering with which it had been surrounded, cheaper equipment was made and sales began to rise accordingly.

With increasing sales of lower-priced basement-type units came a gradual reduction in cost of control equipment, through simplification of apparatus and competition between control manufacturers. The net result was a distinct lowering of the over-all cost of home air conditioning, which today is probably less than half of what it would have been five or six years ago for a given installation.

Another factor which contributed to the increase of sales was the removal of fear on the part of the builder that air conditioning would necessitate drastic changes in residential construction methods to accommodate ducts. Its introduction into homes wherein radiator heating had heretofore been considered modern

alarmed many builders unaccustomed to the new technique required for air conditioning. This fear found its outward expression in resistance to the air conditioning idea on grounds that it was too experimental, but experience soon showed that their fears were unfounded.

These are among the factors which have contributed to lower costs and the consequent increase in the use of air conditioning in the home, but there are also others. The hallmark of modernity which became associated with early installations gradually broke down the opposition of building and loan organizations and others concerned with the financing of the home. Large mortgage holders, such as life insurance companies and savings banks, which at first were inclined to damn air conditioning with faint praise, or disapprove of it on the ground that it was merely "new-fangled hot air heat," became convinced of its safety and desirability.

While current opinion among authorities responsible for home loans does not disclose evidence that air conditioning *per se* is considered sufficient to warrant terms more liberal than are accorded any other modern structure, there is much evidence that the air conditioned home occupies a strategic position in the market place. "Is it air conditioned?" is a question

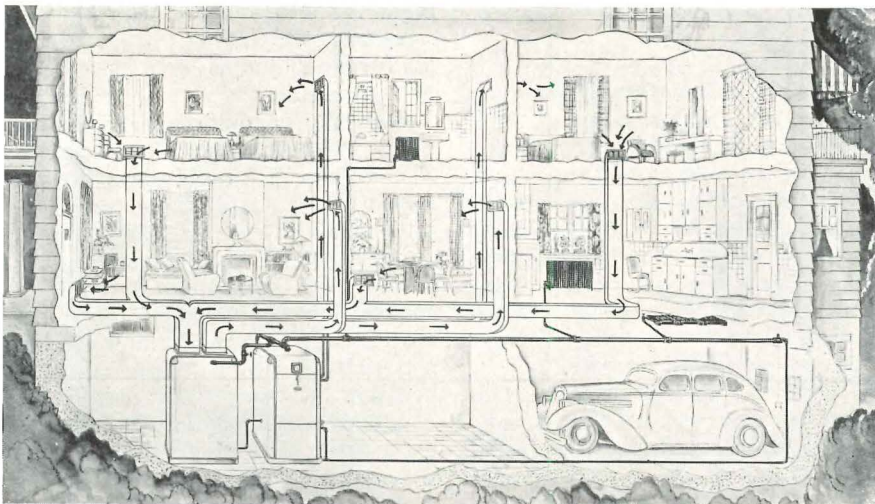


Photo courtesy Fitzgibbons Boiler Co.

ABOVE: Diagram showing layout of a "split system" of air conditioning. In this case boiler and air conditioning unit in the basement are housed in separate assemblies.

OPPOSITE: Example of the "split system" of air conditioning with boiler (right) furnishing heat to air conditioning unit and available for direct heating through radiators. Such systems are equally adaptable to homes already equipped with heating boiler.

which the home buyer asks today with almost the same frequency as he was wont to inquire about the number of bathrooms or the subject of automatic heat, modern plumbing, lighting fixtures, etc.

Then came the great government-sponsored drives to increase employment through home modernization, and air conditioning became a natural and logical part of that program.

Speculation now centers around two questions:

"How fast and far will the air conditioning of homes go in the next few years?"

"How soon will air conditioning become as well established as a fundamental expectancy to the buying public as the electric refrigerator?"

To find the answer, one must thoroughly understand the reasons which have been responsible for its present growth. Accepted originally in anticipation of future benefits, air conditioning revealed a new degree of home comfort to which the buying public was unaccustomed. Behind its phenomenal development lies an immense amount of educational work which has brought the public, the architect, the builder, the contractor, the real estate dealer and the finance company into harmonious agreement that air conditioning is desirable.

beneficial, economical, practical and financially sound.

The foundation for an even greater growth of air conditioning now appears to rest upon the success of the movement to popularize the so-called standardized and mechanized home. Air conditioning is being adopted as a matter of course by those who are pushing the development of such homes and it is being incorporated as "package" equipment along with all-electric or gas kitchens, electric laundries, electric and gas refrigeration and the organized use of labor-saving conveniences of all kinds.

Principal Systems

Considering trends and developments in equipment, one finds the field covered by four principal systems of air conditioning:

1. Individual room units for summer and winter use. These are principally adaptable to homes having steam or hot-water heating and perform the heating function by means of a coil connected to the basement boiler. For summer cooling they use either a self-contained or remote refrigerating unit connected to a separate cooling coil within the unit. Each is supplied with circulating fan, filter and humidifier. In this category are the portable type "plug-in" units

used for summer cooling, as well as cabinet units for winter service exclusively.

2. Direct-fired, all-air, basement-type units with forced air circulation, comprising the least expensive method of securing complete winter air conditioning service and readily adapted to the addition of cooling equipment for summer use. These are the modern version of the warm-air furnace, streamlined, automatically heated by gas, oil or coal and containing devices for cleaning and humidifying the air as well as distributing it under pressure to all parts of the home.

3. The indirect-fired combination boiler and air conditioning unit. In this type it is possible to use all-air or part-air and part radiators. The higher cost of such installations, generally from 30% to 35% greater than the direct-fired system, is compensated for by the ability to use the "split system" of radiators and air ducts and to deliver heat to far removed portions of the house and to other rooms where air conditioning may not be desirable. There is an additional advantage in that most "split systems" provide coils in the boiler which take care of domestic hot water and do away with the necessity for a separate domestic hot-water heating system. This type of air conditioning system consists of a regulation steam or hot-water boiler equipped for automatic firing and an air conditioning unit either separately connected or housed in the same assembly with the boiler. The function of the boiler is to supply heat to the coils in the air conditioning unit and to generate sufficient extra capacity to take care of such radiators as may be connected to it independent of the air conditioner. The air conditioner contains equipment for humidifying, cleaning and distributing the air through ducts.

One important manufacturer makes a point of supplementing his radiator heating system with strategically located air conditioning, designed to discharge humidified air into the first floor of the home. Such units are connected to the boiler as a source of heat to receive rapid humidification, but their main purpose is to supply moistened and filtered air, radiators being depended upon for general heating.

4. The gravity circulation warm-air furnace improved with the addition of humidifying apparatus and cleaning devices. This is generally of the direct-fired type using coal hand-fired, but it may be equipped with auto-



Photo courtesy Carrier Corp.

All-year unit air conditioner for individual rooms. Cabinet contains heating coil connected to central heating system for winter service, and cooling coil for use with separately connected refrigeration compressor. Fan, filter and humidifier are included in cabinet. A duct may be provided to bring in outside air for ventilating purposes.

matic firing devices such as stokers, gas burners or oil burners. In their simplest form such systems furnish less complete air conditioning service and vary in price, depending upon the amount of equipment added to make them automatic or to provide for humidifying, air cleaning and forced circulation. Practically all warm-air furnaces of this type, except those in the very lowest price brackets, have been modernized in some degree to incorporate the generally accepted functions of winter air conditioning.

To list the principal manufacturers of each of the four types of air conditioning systems named would be to work an injustice on the many concerns engaged in this work. Numerous companies manufacture all types. The total number is so large that a complete index would fill many pages. It can be said, however, that there are approximately 50 manufacturers making room units of various kinds, 90 devoted to the manufacture of direct-fired all-air systems, another group of 50 manufacturers supplying combination boiler and air conditioning units, and as many as 300 who make warm-air furnaces of the gravity type.

Costs of Equipment

The cost of equipment within each class will vary over a range of 20% depending upon manufacturing economies and the volume of sales which each enjoys, although sizes, capacities, ratings, etc., have become fairly well standardized. The ultimate cost depends upon the size of the apparatus required, the complexity of installation, home construction, weather conditions, and other factors.

While it is exceedingly difficult to estimate the cost of each type of system, it may be said that individual room units for all year use range from \$400 to \$600 installed. Portable units, for cooling only, may be purchased at from \$350 to \$375 each, while cabinet units performing winter air conditioning functions sell for only about \$150. Central plant systems of the direct-fired all-air type begin at about \$650, depending upon the size of the space served. Combination boiler and air conditioning units start at \$800 and warm-air furnace installations of the simplest gravity circulation type may be had for as low as \$250.

To illustrate how the cost of air conditioning has been lowered in the last six or seven years, one of the leading manufacturers considers that a 10-room house in the \$12,000 to \$15,000 price range may now be air conditioned for winter at an approximate cost of \$1,500 (for "split system"), whereas the cost of doing the same job in the same house eight years ago, with equipment then available, would have been about \$2,500. For a house of seven rooms, winter air conditioning may now be installed for about \$900 (for direct-fired system) as against twice that amount in the earlier days of residential air conditioning.

As to summer cooling, existing installation and operating costs are probably as low as may be expected within a reasonable period; but the public, impatient of the time when summer cooling is available on a mass production basis, has been quite willing to adopt compromise methods for getting desired results. This has stimulated the use of attic fans to draw the cooler night air into the home after sundown, resulting in the ability to lower indoor temperatures overnight as much as 10 to 12 degrees. Installations of this type can be made for approximately \$250 to \$350.

It is also possible to introduce cooler

night air into a home via the basement air conditioning plant or warm air furnace, by operating its fan system in summer.

Logically enough, this method, which is being adopted quite rapidly, especially in the South, opens the way to the use of supplementary mechanical cooling systems requiring a smaller amount of mechanical refrigeration than is necessary for complete cooling, and the net result is to provide an atmospheric condition which is satisfactory to a large number of persons. Although the installations of mechanical refrigeration to supplement night air cooling have not been very large to date, a principle has been established which appears to hold interesting possibilities for future development.

Extensive studies of night air cooling plus a small amount of mechanical refrigeration have been carried on by the Engineering Experiment Station of the University of Illinois, in cooperation with the American Society of Heating and Ventilating Engineers and the National Warm Air Heating and Air Conditioning Association.

Data developed by this research indicate that a seven-room house of the kind used for testing purposes, under weather conditions at Urbana, with electricity at \$0.031 per kw.-hr., and condensing water at \$0.33 per 1,000 gal., can be kept comfortably cool for a four-month's season at the following costs:

Mechanical Unit (without supplementary night air cooling) \$78.65

Mechanical Unit (with supplementary night air cooling) 60.37

Hourly operating cost under continuous load.....00.1293

Length of operation during season if supplemented with night air cooling.....15 days

If not supplemented with night air cooling.....22 days

To apply such figures to other types of houses is not an easy matter because of the variable factors entering into each installation. The University of Illinois found that 2½ tons of mechanical refrigeration were sufficient to cool its research residence when the system was supplemented with night air cooling.

Costs of Operation

If 100% mechanical cooling is required, assuming a hypothetical home costing from \$15,000 to \$20,000, it is estimated that operating cost will be in the neighborhood of \$250. This is based on the use of six tons of mechanical refrigeration at a cost of four cents per ton per hour with electricity selling at three cents per kw.-hr. For winter air conditioning only, the operating cost for such a house would be about \$325.

The operating cost estimates quoted above are for installations in the vicinity of New York City. Wide variations will occur for other parts of the country, depending on prevailing outdoor weather conditions, fuel costs, etc. A not uncommon "rule of thumb" method used in estimating the approximate operating costs of air conditioning: Summer cooling, one kilowatt per ton of refrigeration per hour; winter air conditioning (assuming oil at seven cents per gal. and electricity at three cents per kw.-hr.), 16 cents per B. t. u.

It will be seen that the cost of mechanical cooling is in the same order as the cost of winter air conditioning. The cost of heating a house by other standard methods, such as radiators, differs but slightly from the air conditioning costs. What an air conditioning system may save in fuel is offset by the cost of electricity for fans.

The question is often asked: "To what extent and how may the operating costs of air conditioning be substantially lowered in the near future?" From the standpoint of equipment there seems slight prospect of this at present. Basically the operating cost of air conditioning is related directly to fuel costs. Fuel costs have remained relatively stationary and there appears to be no present evidence to indicate that fuel will be drastically reduced in price.

On the other hand, improvements in insulation methods and a greater public appreciation of the value of insulation are unquestionably having their effect. Many, indeed, believe that insulation is the ultimate answer to reduced air conditioning costs and the foundation for its more universal application. It is significant that much of the research conducted by the American Society of Heating and Ventilating Engineers is being directed at problems in the field of home insulation. This is a by-product of air conditioning, important alike to the architectural profession

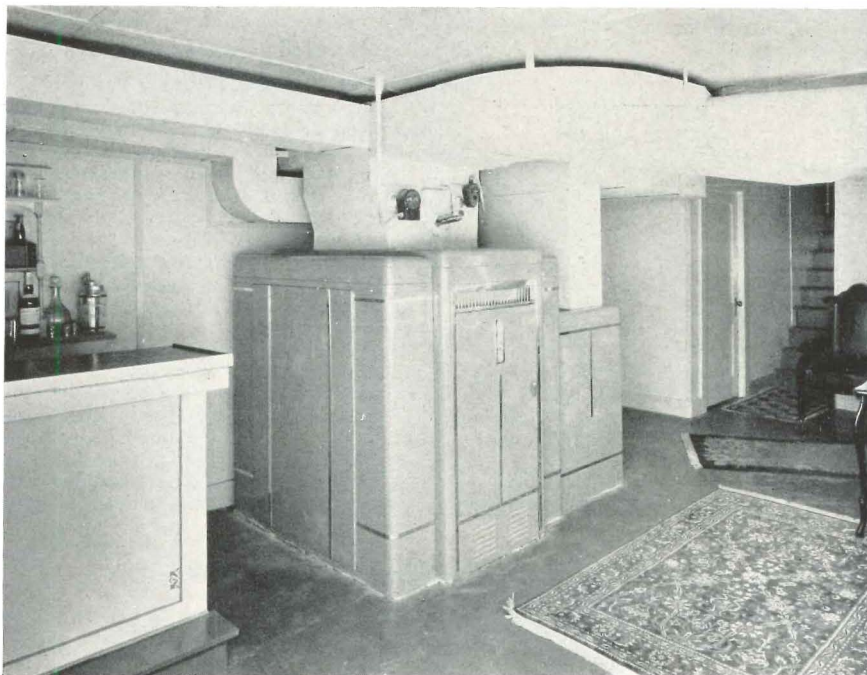


Photo courtesy Fox Furnace Co.

Illustration of the direct-fired all-air basement-type air conditioning system. The metal jacket incloses an oil-fired cast-iron furnace, humidifying apparatus filters and circulating fan. Ducts for distribution of conditioned air take off from the top of the furnace and return air is brought back through section shown at right which contains circulating fan and filters.

and the building industry, for it is emphasizing the advantages of better building materials.

There can be very little question, however, that home cooling, after nearly seven years of experimentation and developments, is ready for the public, if the public wants it. To what extent it will be adopted depends on economic conditions affecting the buying power of the home owner. Rising building costs doubtless will act as a deterrent, but on the whole, according to the best estimates in the field, we are due to see an accelerating trend to home cooling in one form or another.

This suggests the advisability of building today's home to accommodate tomorrow's cooling. New homes which are to be air conditioned will, in any event, require the installation of a system of air ducts and connections for radiators if a "split system" is used. Additional ducts may be placed in the walls to accommodate cooling at a later date, thereby effecting economies in construction costs and avoiding disorder and inconvenience.

One of the practices quite common today is to provide a double register opening near the ceiling. Both register faces are connected to the same

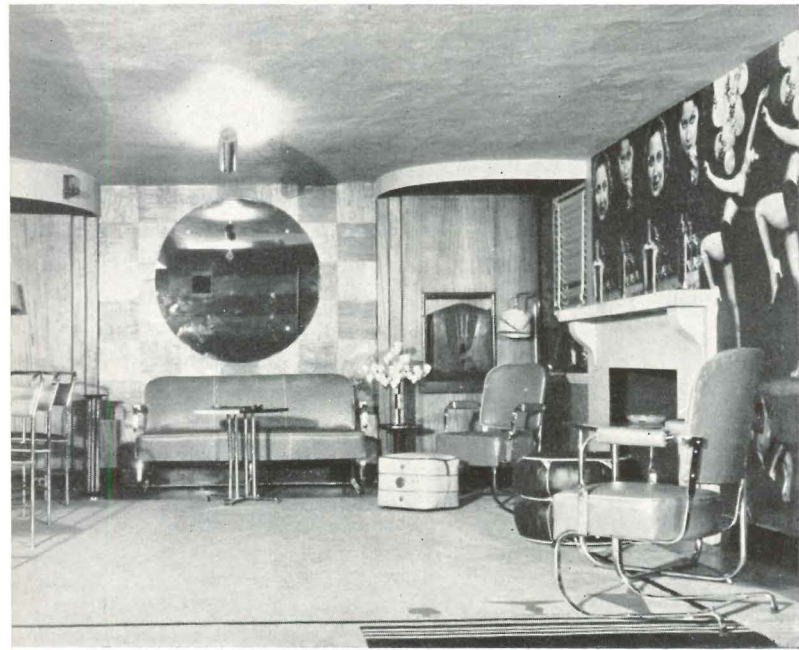
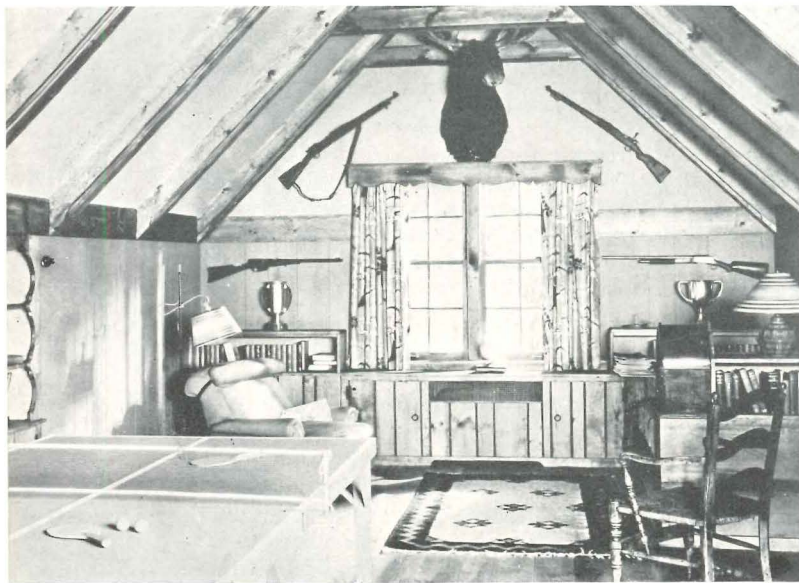
duct, the one for heating being directed downward, the cooling register facing outward. Another method is to provide the heating outlet in the baseboard and to carry an additional length of duct up the wall to an opening near ceiling level as an outlet for cooling. Opinions as to the relative merits of these methods are divided between various manufacturers. Some, indeed, believe that effective cooling can be secured by introducing the cool air from the same floor register which carries the heated air in winter.

In the scant decade since automatic air conditioning was introduced to the American home, it is noteworthy that the system of radiator heat which it was expected to supplant remains very much in the picture, as evidenced by the fact that manufacturers in increasing numbers are building air conditioning systems around the principle of the "split system." This arises out of difficulties in delivering air through ducts to distant parts of a house and the flexibility and economies which may be obtained by the use of radiators where the advantages of conditioned air are not required. This is especially true in the case of homes valued from \$10,000 to \$20,000.

General Considerations

THE CHARACTER of a "rumpus" room depends largely on that of the inhabitants of a house. Such a room may be devoted to entertainment which requires exertion of some sort (i.e., billiards, ping pong, fencing, etc.) or to more sedentary indoor sports (bridge, games, drinking, etc.). So the client himself must set up his own individual standards for his particular rumpus room. He must, however, follow the standard requirements for space, light and ventilation. Each form of amusement requires a certain play area determined by the size and type of equipment. The amount of light necessary for the various forms of entertainment has been ascertained by experience, and involves no special problem. There should, of course, be good central lighting for any type of room, and a number of outlets for attachments (lamps, electric trains for children's rooms, and so on).

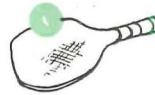
The ventilation problem is more complex. Most playrooms are installed in what space is available after the house has been built—usually long after its completion. Existing means of ventilation are incorporated in the design of the room and rarely is provision made for other openings than these. Attics and basements are the most frequent locations of rumpus rooms, and these two parts of the house almost invariably have the smallest windows. The designer of playrooms should be cognizant of the fact that such rooms are meant for the use of not one, but a number of persons, and the amount of air should be cal-



SPECIAL REQUIREMENTS

Bars

Height: 3'-8", plus 1" for arm or "grab" rail.
 Depth: 5'-6" to 6'-0" depending on equipment.
 Top: 16"; 4" mixing gutter.
 Overhang: 5".
 Service Shelf: height, 30" from floor; width, 19"-23"; set-up rack, 25" long; sink (single), 14" x 14" or 16" x 16"; cracked ice deposit, 18" or 24".



Ping Pong

Table Size: 4'-6" x 9'-0".
 Playing Area: 13'-6" x 18'-0".
 Lighting: 2 hanging lamps, shaded, 4'-2" apart; 5'-2" from floor.



Gymnasium Equipment:

Punching Bag

● Size: platform and bag, 20" in diameter.
 Installation: 20" from wall.

Rowing Machine

● Size: 6' x 5'.

Fencing

● Area: minimum strip, 8'-0" x 3'-0".
 Ceiling Height: 6'-5".

Photos courtesy of Brunswick-Balke-Collender, The Masonite Corporation, The Celotex Corporation, and U. S. Plywood Company, Inc.

Room of its Own

culated on a basis of maximum inhabitants, as well as on the basis of room use. A room designed for physical exercise will require more air than one designed for less activity.

Increasingly evident in rumpus rooms are bars. These also have standard requirements as to height, although there is no limit to the actual size of the bar. The smallest bar installed by one manufacturer takes up four feet of space, and the largest is 140 feet long. In fact, an ordinary-sized closet can be converted into a satisfactory bar. The installation of a bar, however small, involves plumbing, so where there is a bar there must be water and waste pipes. This is handled in the usual manner and requires no special design.

Convenient access to recreation rooms is a frequently overlooked factor. Stairs to basements and attics are notorious danger spots. In the case of the addition of a playroom to an existing house, such changes as are necessary for safety should be specified. It is a moot point as to which of these locations is best. In planning a new house, the location of the playroom should be considered just as much as the convenient location of a bathroom. Because this special-purpose room has always been placed above or below the usual living quarters does not imply that there are not other possibilities of location.

Sound and weather insulation is a not to be neglected feature of this kind of room. Installation is relatively simple, and need be neither costly nor unsightly.



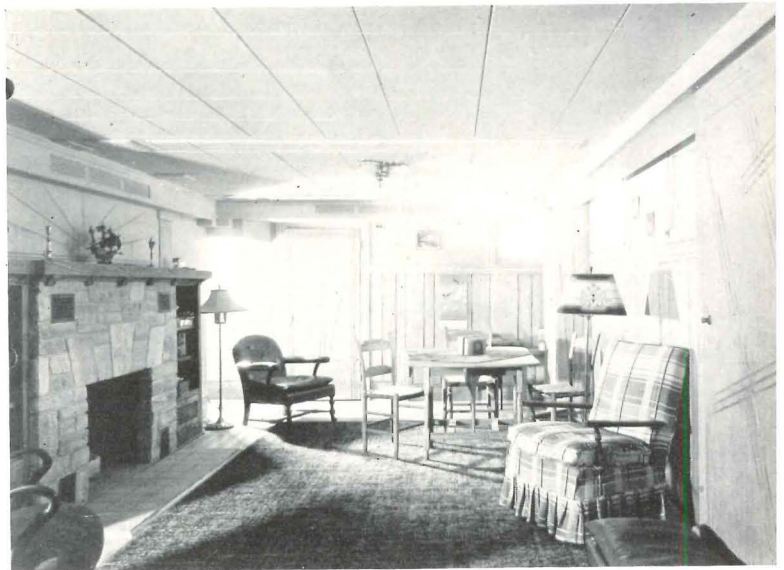
Children's Playrooms

Lighting: central; convenient outlets for plugging in various play equipment.

Area: adequate floor space for games.

Windows: large enough for proper light and air, height from floor, 3 feet or more.

Built-in Equipment: closets; low shelves and cupboards for storage of playthings.



Games

Lighting: lamps connected to wall or floor plugs.

Area: adequate for tables for games (bridge, roulette, etc.).

Built-in Equipment: closets for storage of tables, chairs, and games.

Billiards

Table Size: 5'-0" x 10'0".

Playing Area: 15'-6" x 20'-0".

Lighting: 3 hanging lamps, shaded, 2'-9" apart; 5'-2" from floor.

Cue Racks: width, 29'-6"; height, 6'-2"; installed in 3" recess.

Score Marker: length, 7'-0" or 8'-0"; height, 7'-0"; can be installed over table, along one wall, or divided and placed on two walls.



Billiards (pool and pocket billiards)

Table Sizes: 4'-0" x 8'-0" and 4'-6" x 9'-0".

Playing Area: 18'-6" x 14'-8"; 15'-6" x 19'-0".

Lighting: 2 hanging lamps, shaded, 3'-10" apart; 5'-2" from floor.



Kaufmann and Fabry Photo

"Safe at Home"??

LAST YEAR 38,500 people were killed, 170,000 permanently disabled, and 5,620,000 injured as a result of accidents in and about the home.

IN RECENT TIMES the hazards within the home have increased. The more extensive employment of electricity and of complex mechanical and operational equipment appears to be partly responsible for this trend. The use of electrical and mechanical energy involves some risk. But if equipment and installation are well planned, accidents in the modern home can certainly be reduced.

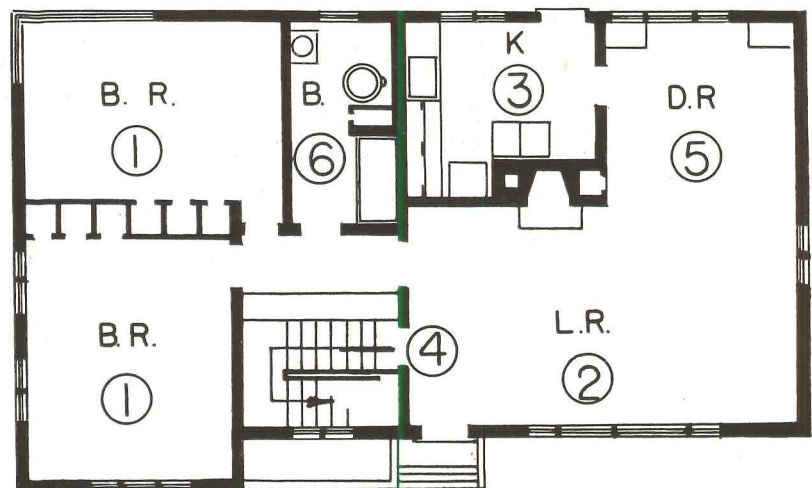
Though many of the accidents occurring in the home in 1936 were unpreventable, and though many causes, which are rather far-fetched, are charged to the home—such as ice on steps or excessive heat, etc.—the fact remains that all who have a hand in the building of today's highly mechanized house must recog-

nize its hazards or "safe at home" will become just another American illusion.

In the hope that a review of the more important causes will be a step in the right direction, the following statistics were obtained by RECORD editors from the National Safety Council, Inc.

Accidental deaths from falls and burns represent about two-thirds of the home death total. (Poisoning, excessively hot weather, etc., account for the other third.) In identifying the location in the home of these fatalities, available information does not distinguish between falls and burns but groups these two primary causes together, and proportions them as follows:

1. **BEDROOM, 27%**
2. **LIVING ROOM, 14%**
3. **KITCHEN, 13%**
4. **STAIRS, 9%**
5. **DINING ROOM, 7%**
6. **BATHROOM, 4%**
7. **OTHERS (Inside), 3%**
8. **OTHERS (Outside), 23%**



THE CAUSES of these accidents are of special interest to the designer. Falls, for instance, account for more than half the total. Disorder, inadequate lighting, badly-designed stairs, storage areas and shelves not easily reached—these were responsible for the greater part of them.

Thus, there were falls because of the absence of a baluster or handrail on the stairway, the presence of sharp turns or narrow treads; or from scanty illumination because the lighting unit was not controlled from an easily accessible point and the householder had to fumble in the dark for the switch. Unquestionably, intelligent planning can diminish such hazards as these.

Many falls which occurred outside the house

might have been prevented by better planning. The danger of icy walks, for instance, could be minimized by providing gutters, avoidance of projecting obstructions, and guarding of areas.

Defective chimneys, wiring, flues, fireplaces, stoves and furnaces were largely responsible for the fires which killed 5,800 in the home last year. This figure could probably be reduced substantially, if planners would follow the standards recommended by the National Board of Fire Underwriters.

Incidentally, it is interesting that only 4% of home deaths occurred in the bathroom. General opinion usually places these accidents much higher.

Let's Have More than a Speaking Acquaintance with Subsoils and Topsoils

by R. STANLEY SWEELEY

CONSIDERING the suitability of the house as a place for living, the designer cannot create the scene upon, and for which, the stage is set unless he succeeds in developing roundly both the walls which inclose it and the ground from which it springs. Nor can he interpret the individuality of the owner unless he can conceive of the life which the home is to shelter as being a life extending around and about the house as well as under its roof. More than heretofore, homes, both urban and suburban, are being developed with a high degree of openness, opening to nature and to the surrounding air and sunlight. It is no new postulation that the living accommodation of the structural element should so flow into the surrounding natural element as to achieve a mutual support and enhancement of each. This relationship of house to site must be just as thoroughly analyzed as the relation of furniture and decoration to the interior. The designer must further bear in mind the seasonal changes and the changes of growth, for the medium of landscaping is not a static one. Color and motion are more important considerations outside than inside. Color, as expressed in bark, leaf and blossom—and the sequence of its presence—is considered far more important in the selection of a given planting than relative heights and mass development.

It is true that landscape architecture does not properly come within the scope of the architect, yet the landscape architect's services are not justified by the magnitude of a considerable amount of residential work. In order to overcome this condition, since both owner and designer visualize the necessity for planting provision, the usual result is a clause in the specification stating that the sum of so much (isn't it usually fifty or a hundred dollars?) shall be included. One more step: the site shall be sodded and rolled evenly. There the matter rests—temporarily—and having gotten over this not very familiar ground the designer breathes a sigh of relief. The other generalities—"all to be selected and directed." etc.—will be worked out by the owner, sooner or later. In most cases it turns out to be much later and of course much more expensive than it might have, had a little more thought and planning been brought to bear in the beginning.

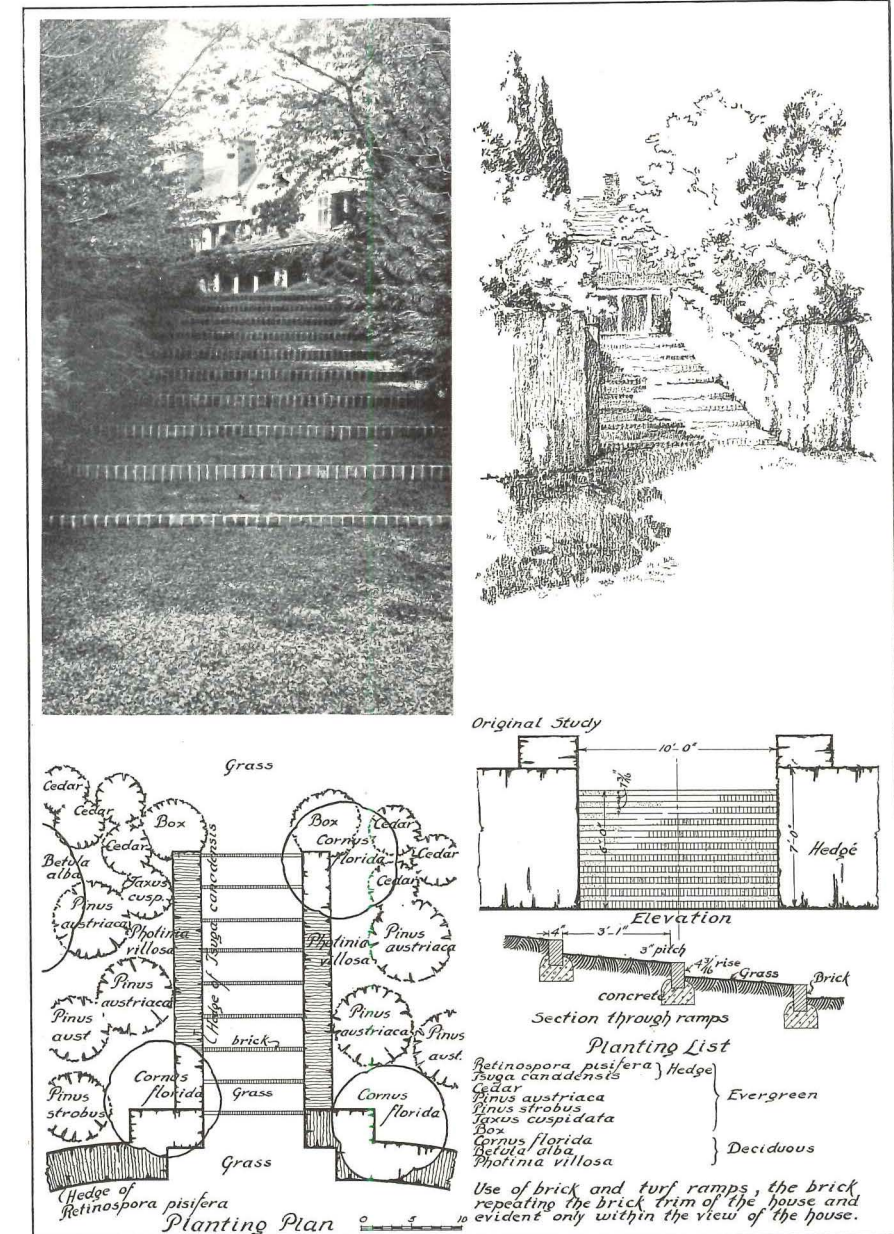
This extremely important matter should no more be handled in a lump sum provision or in vague and uncertain specification than any of the materials or construction involved in the structure. In fact, there is more reason for close and careful definition in the landscaping, if any consideration is given to owners' ultimate satisfaction. What owner can reconcile the hopelessly stunted plant development—the barren or patched lawn—with the rendered drawings or with any one's normal expectations of unity between land and house?

(Continued on next page)

The first step should be an investigation of the nature of the available soil. There are two general divisions of soil, namely, mineral and peat. The first, represented by clay or stony materials, connotes a large percentage of mineral matter; the second consists of soil with preponderance of vegetable matter such as decomposed wood, leaves and plant life. There are, naturally, a great many compounds of these two general classifications. Chemically, they may represent one of these types: lime (sweet), acid (sour), or loam (a mixture of the two with decayed vegetable matter predominating). A strip of blue litmus paper, obtainable at any drug store, when brought in contact with a damp sample will turn red when the soil is acid. Soil may also be further classified according to its density, ranging from sand to clay. The nature of the soil structure can be determined by allowing a sample to settle in a bottle of water. The sand will settle in the bottom layer, the clay above, and the percentage of both can be seen.

A bit of practice in this analysis will allow any one to determine the nature of the soil. Having made a determination, one is then able to correct or improve the soil so that it will support and sustain the growth which is expected. The various states and counties maintain farm bureaus to which samples may be sent for more detailed analysis and for a report of plant life which can be supported by the soil in its present condition.

Topsoil, the most important element, should be not less than six inches in depth. It is readily distinguishable from the subsoil, being darker, looser, and richer than the latter which will be seen to be more closely packed and lighter in color. The ideal topsoil which affords the best development of lawns and nearly all planting is a sandy loam which consists of mineral and decayed vegetable matter (including manure) in about equal parts. It also possesses high water absorption and retention values. Where this type of topsoil exists, it should be removed and stored in one or more piles before any construction is started. Unless this is done it will become so damaged by the admixture of debris, building materials, etc., as to materially affect its value. Where unsuitable topsoil is found, provision must be made for its replacement or improvement by the addition of ele-



Typical Landscape Detail—Prepared by FERRUCCIO VITALE and ALFRED GEIFFERT, JR., Landscape Architects

ments lacking or counteraction of undesirable qualities. However, it is folly to undertake any of these measures—including the redistribution of stored topsoil—until the substantial completion of the building operations.

Coincident with the protection of existing assets in topsoil, the designer should examine and determine the appropriate protection of all existing trees and plants. A tree should be removed only after the greatest deliberation—never merely to make working arrangements of the contractor more favorable. Small shrubs or bushes should be surrounded by substantial slat construction to prevent

damage by falling material; trees likewise should be protected by a guard boxing. Where branches must be removed, the cutting should be done in the proper manner so as to prevent splitting or breaking off the bark. The cut should be made in the winter while the tree is dormant or, in the case of evergreens, in the early spring. Scars should be thoroughly sealed with mastic paint. Generally it is desirable to require the contractor to engage reputable tree surgeons or nurserymen for all transplanting or cutting of existing trees; left to his own devices, he will delegate such work to men as a rule ut-

terly unqualified for the work. The damage, once done, is often irrevocable.

Lawns. When the major portion of the construction is complete, the subsoil should be brought to the previously determined contours of the plot, allowing for a precise and even distribution. Care should be taken that no excess of valuable and expensive topsoiling will be required to bring up hollows in the final grading. Prior to the placement of topsoil it is desirable to specify that lime (25 pounds per 1,000 sq. ft.) and well-rotted horse or cow manure (1 cu. yd. per 500 sq. ft.) be spaded into the surface of the subsoil. This is particularly desirable where the topsoil is either poor in quality or less than six inches in depth. After distributing the topsoil it should be well harrowed and fine raked so that a well aerated and finely divided soil structure is obtained. This is rolled and tamped until firm.

There are now two means of forming the lawn areas. First, by obtaining and laying sod. While this is the most direct method and results in an immediate solution, it is seldom the best choice. In the first place, good sod is very difficult to procure at any time in any place. It is, when procurable, quite expensive. If upon inspection sod can be procured which is free from objectionable growth (crab-grass, weeds, etc.), evenly and closely developed, the manner of removal and resetting is as follows:

1. It should be sharply cut in strips about two inches thick, 12 inches wide and 3 to 4 ft. long, using a spade or edger for cutting.

2. The strips are then rolled up with the grass side to the inside.

3. Upon delivery to the new loca-

tion, with as much dispatch as possible, the strips are rolled out, matched together closely to insure perfect union, and tamped firmly in place with the back of the spade. After being laid the sod must be cared for; sufficient water provided—open or heaved joints corrected; and occasionally rolled.

Although sodding is instantaneous in its result, seeding will accomplish as much or more within a year and at far less expense. Seeding, unlike the laying of sod which can be done whenever the turf is not frozen, can only be done at certain times of the year if best results are to be expected. Except for the southernmost states, April and May, or September and October, are the best months of the year for seeding, the fall months being preferable. For the Southern states June or July are considered good months, being just before the rainy season.

A satisfactory seed mixture, except for the Southern states, consists of sixteen parts Kentucky blue grass, four parts re-cleaned red top and one part white clover (by weight), and is obtainable from reliable seed distributors. It makes a hardy, dense turf. Creeping bent is another much used seed, which should preferably be sown without being combined with other types. The seed should be sown on a cool day, when the ground is moistened and there is little or no wind. The seed, allowing twenty pounds to the quarter acre, should be scattered by hand going over the ground twice, the second time at right angles to the first. After sowing, the ground must be fine raked, rolled, and frequently watered thereafter. It is well to remember that the lawns which show an immediate development, some-

times by a large percentage of clover being added, are not usually permanently good. It is much more economical and desirable to allow for the longer time required by seeding with permanent types.

The making of a lawn presents a very different problem in the far south. In the first place the more or less permanent grasses known in the north are difficult to develop or impossible to maintain. Where special treatment and care are available, certain northern grasses are planted, but in general native types such as Bermuda or St. Augustine grasses are better suited to the soil structure and climatic conditions. Bermuda grass cannot be grown from seed successfully. The usual procedure is to plant small clumps of the grass spaced 6 to 12 inches apart. The turf will naturally be denser as the planting intervals are reduced. It will require roughly three cubic yards of roots to plant one acre. It is extremely important that the roots be transplanted with as little delay as possible since they will die quickly from exposure to heat. Where large areas are to be planted, hand setting of the root clumps may be replaced with spreading the roots over the ground and then discing them into the soil. This method requires considerably more roots than hand setting and is not always certain of success.

The development of tree transplanting which now makes possible the immediate acquisition of a large specimen at reasonable cost has greatly enlarged the possibilities of landscaping. Countless new methods, new plants, new fertilizers are available for the more imaginative planning, and planting is more readily brought to desirable growth.

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(Continued on page 146)



W . F . R U C K

ARCHITECT

Photos by the Mott Studios

RESIDENCE OF MR. AND MRS. NED MARR LOS ANGELES, CALIFORNIA

AN UNUSUAL SOLUTION based on family characteristics and the topography of a splendidly situated lot of irregular shape. Mediterranean influence, suitable for Southern California climate, is evident. Free from rigid adherence to tradition, the architect has made full use of modern materials and equipment. A splendid ocean view to the southwest and the view of the mountains to the north are obtained by placement of the house and use of terraces, balconies and porch. Rooms are exceptionally large. Space arrangement is highly efficient and the entire area is fully utilized. There is a spacious three-car garage with ample court under the building. Another part of the basement contains storage and mechanical equipment rooms. Walls are double, hollow construction, designed to resist earthquake stresses.

SCHEDULE OF EQUIPMENT AND MATERIALS

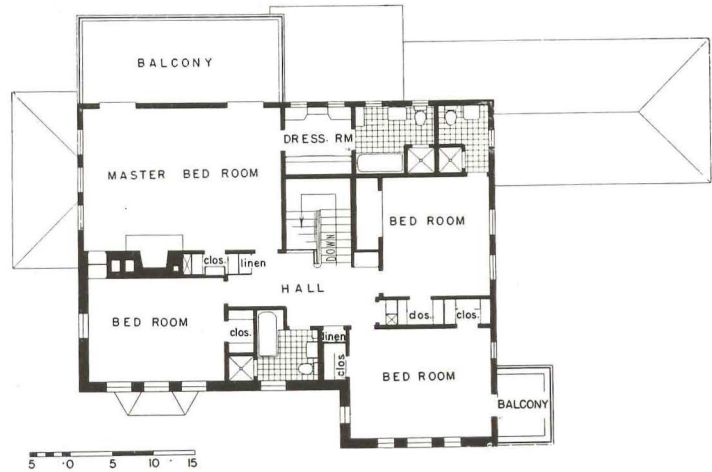
FOUNDATION	Footings, walls, slab on ground—waterproof concrete, reinforced throughout	WOODWORK AND CABINETS	Trim—mahogany, redwood, and white pine Doors—mahogany
STRUCTURE	Wood frame, double-wall, hollow Part brick veneer, first story part redwood siding Interior: metal lath, plaster lath, and stucco walls, part wood-paneled ceilings Study has redwood walls and ceiling	HARDWARE	Cast brass of selected finishes, special design—hexagonal knobs, Schlage locks, olive knuckle hinges, drawer slides for all drawers
ROOF	Fireproof clay shingle Sheet Metalwork: Copper throughout	PLUMBING	Copper pipe. Fixtures from Standard Sanitary Mfg. Co.
WINDOWS	Truscon Steel casements and screens—double strength, A-quality glass	HEATING AND VENTILATING	Summer air conditioning system—Payne Furnace and Supply Co. Heavy-duty, industrial type furnace
FLOORS	Mahogany plank except redwood block flooring in study; tile in bathrooms; linoleum in kitchen and laundry	BATHROOMS—WAINSCOTS	Carrara glass and tile
		INSULATION	Mineral wool insulation blanket over entire house

14 ROOMS—6 BATHS—TOTAL COST \$19,000

1



DINING ROOM

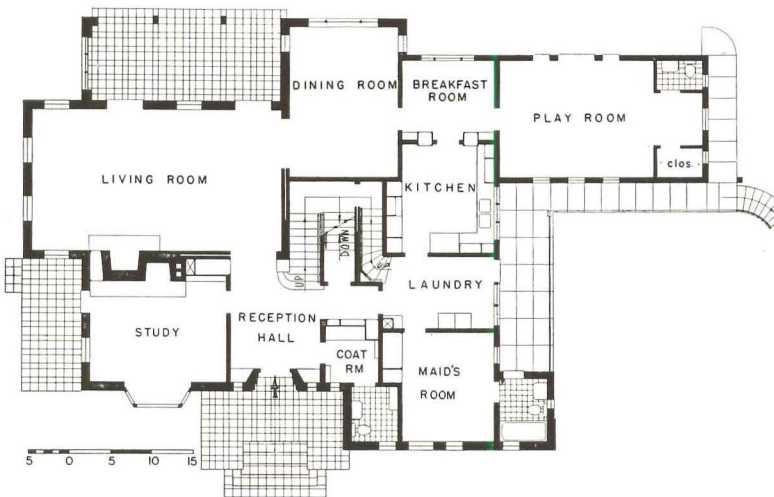
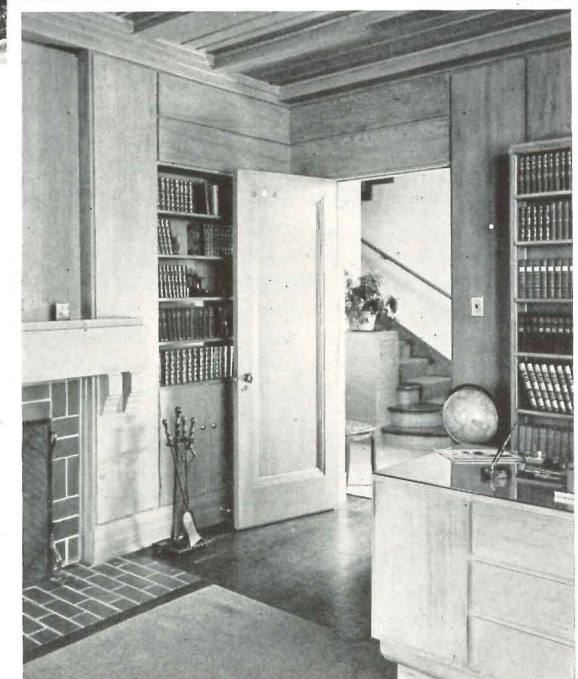


SECOND FLOOR PLAN

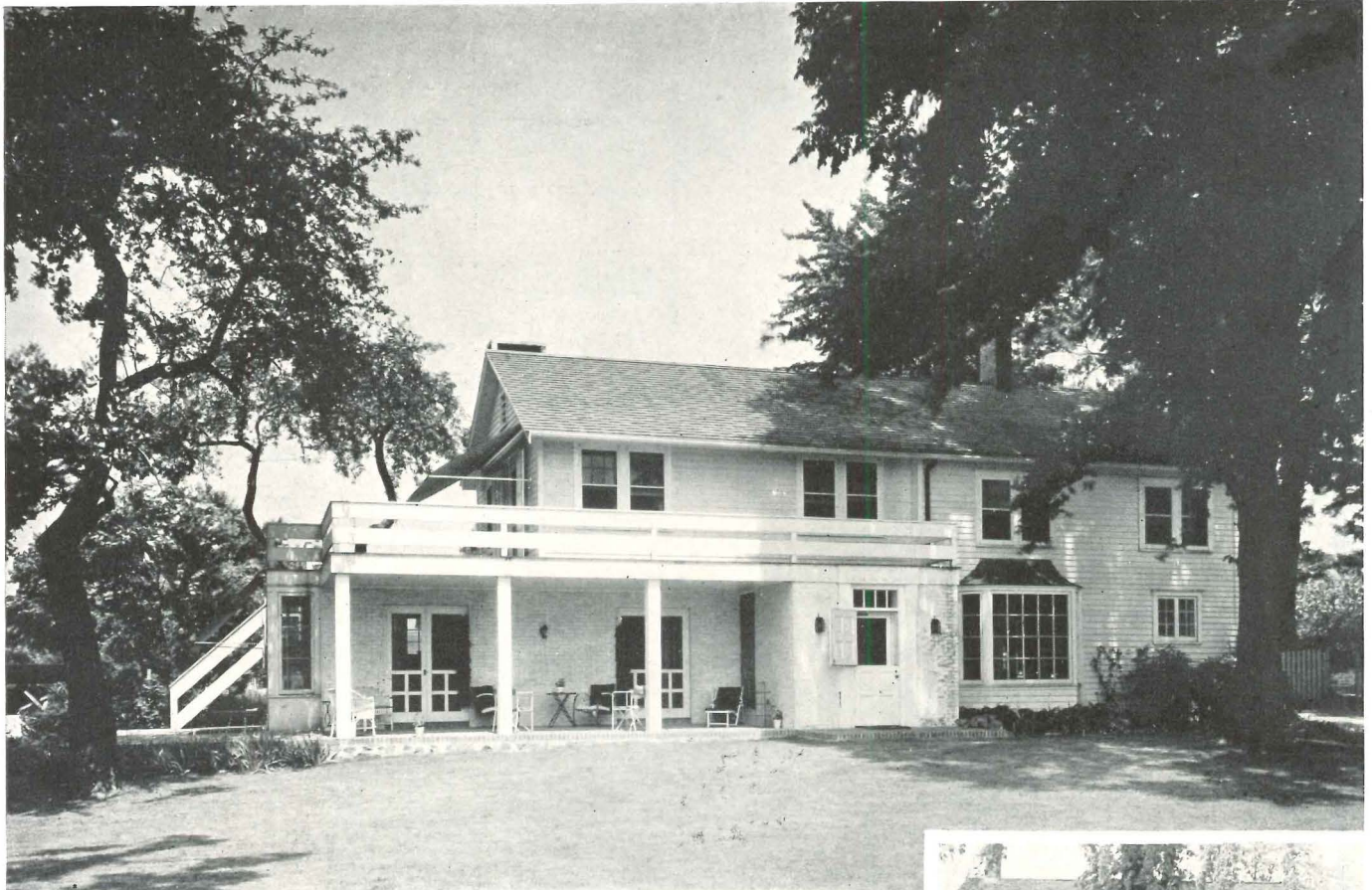


GARAGE COURT

STUDY



FIRST FLOOR PLAN



MORRIS B. SANDERS'

ARCHITECT

THE RESIDENCE OF BARBARA C. SANDERS
DARIEN, CONN.



before

NEW AND OLD elements are harmoniously combined in this Connecticut house remodeled by Architect Morris B. Sanders, whose town house in New York City won the Architectural League prize in 1936 and first prize in the recent Pittsburgh Glass Institute's competition (see RECORD, p. 174, March 1936).

Despite the retention of the existing exterior, the interior plan was very considerably changed. The kitchen was placed in the space of the former parlor, that being the portion of the house nearest the road and offering the least interesting view of the nearby Long Island Sound. To add to the enjoyment of the vista, both living room and dining room include large picture windows which look upon the water. Throughout, the alterations have been of greatest simplicity and directness, dictated not only in the interest of economy (with the attendant utilization of existing construction), but also to allow early use of the property. The glass brick panel in the hall was used

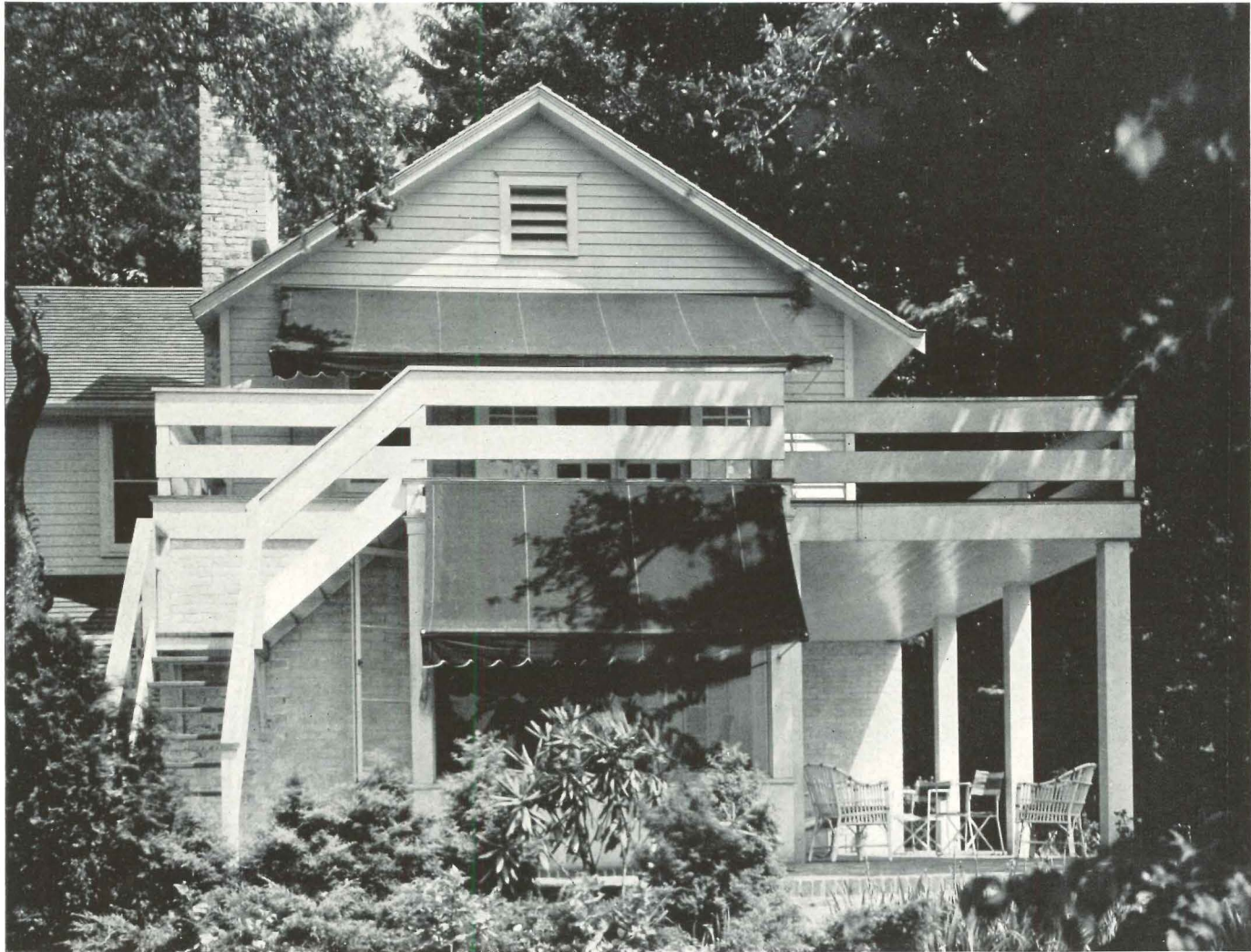
solely as the most direct means of lighting that area.

On the second floor, it will be noted, one of the servant bedrooms is so placed as to make possible its ready use as a study adjacent to the master bedroom. Isolation is accomplished by closing the door leading to the service hall.

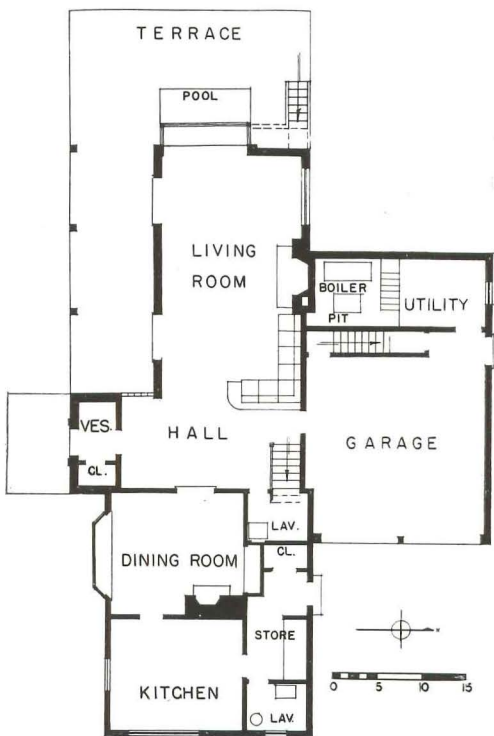
CONSTRUCTION

The structure is predominantly of wood frame with white pine siding—where otherwise, of common brick—and the entire exterior is painted white with Dutch Boy White Lead. "Silvercote" and Rockwool (Johns-Manville Corp.) have been used to insulate; a "Gilbarco" boiler supplies the two-pipe steam heating.

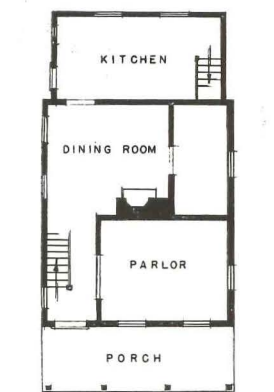
The dining room, containing a large general storage closet (door hardware, Yale and Towne's "Colonial Black"), is wall-papered with Chinese Tea Paper. In the living room Japanese Grass Cloth adds to the charm of the built-in divans and the simplicity of the fireplace paneling.



Photos by Richard Garrison



GROUND FLOOR

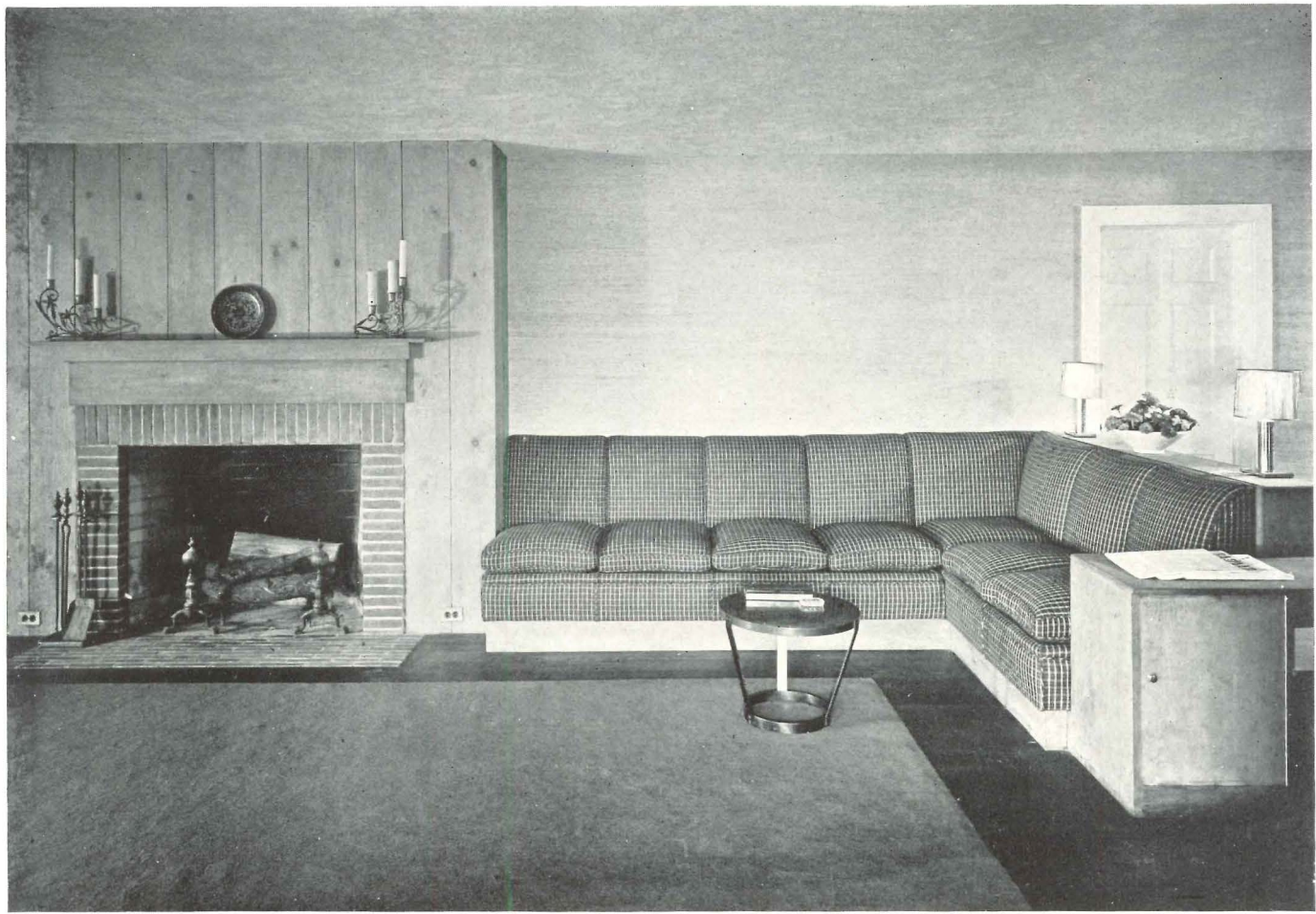


ORIGINAL FIRST FLOOR

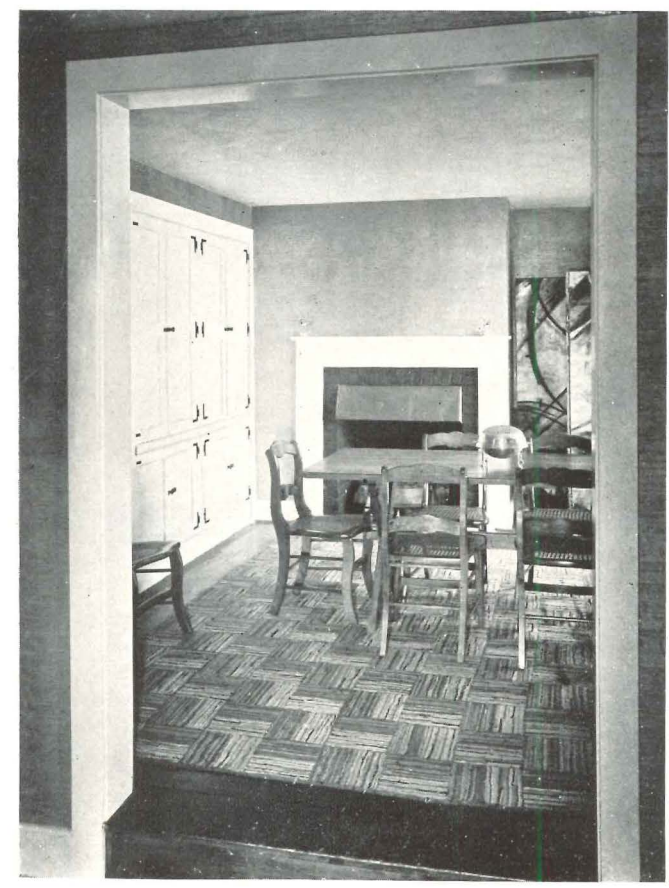


SECOND FLOOR





LIVING ROOM



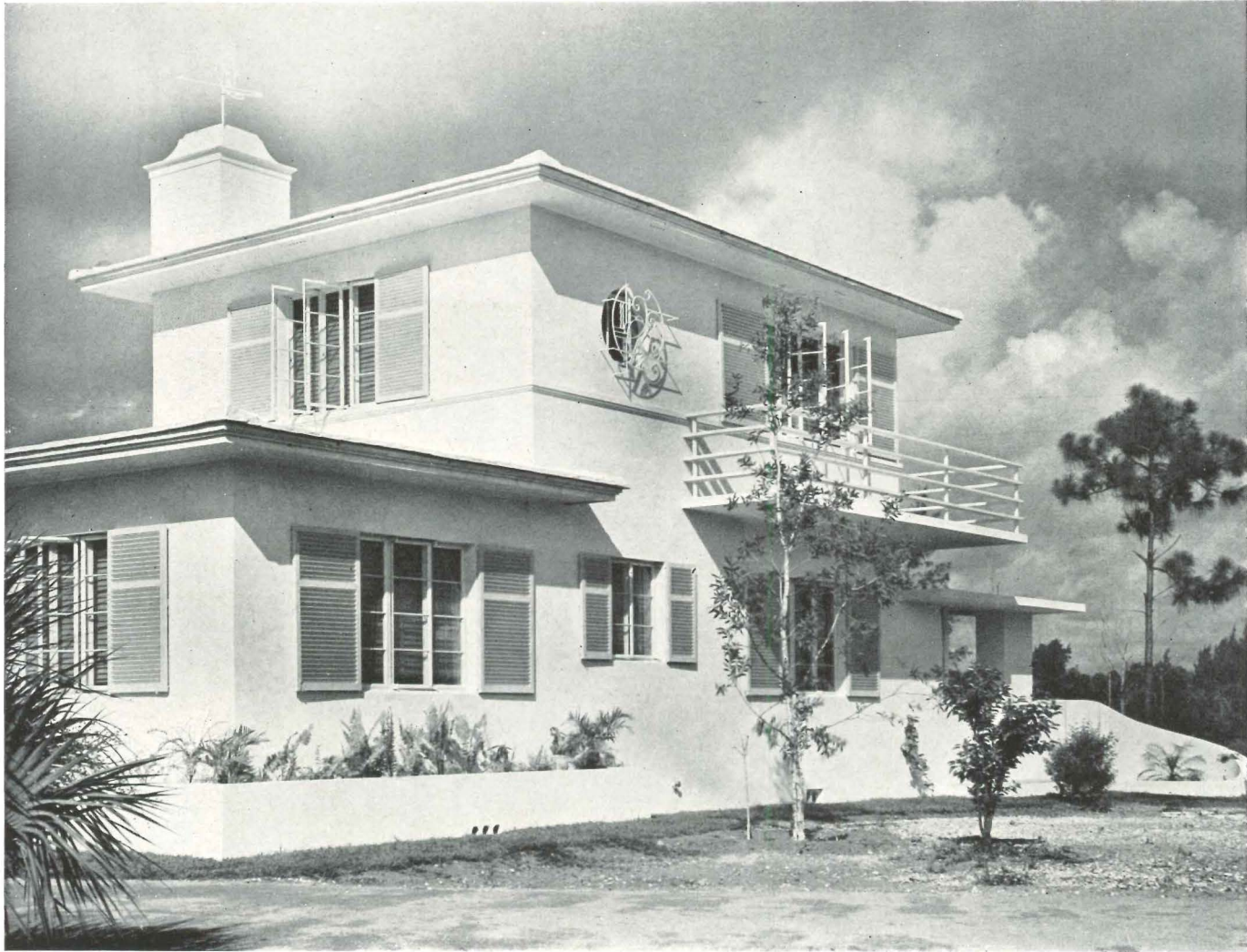
DINING ROOM

Photos by Richard Garrison

DINING ROOM WINDOW

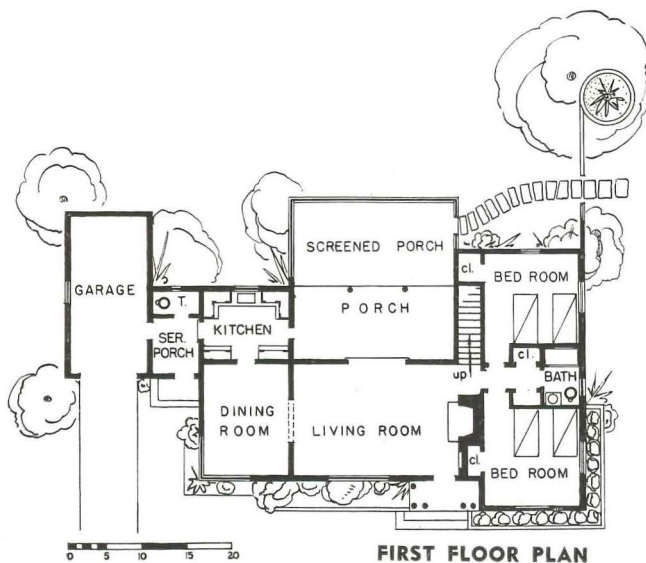


3 A FLORIDA RESIDENCE

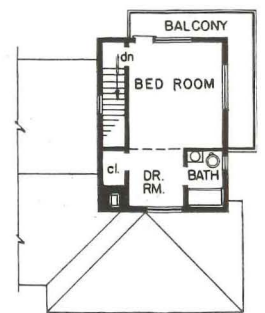


ROBERT FITCH SMITH,
ARCHITECT

RESIDENCE FOR DR. ORTON LOWE
MIAMI, FLORIDA



FIRST FLOOR PLAN



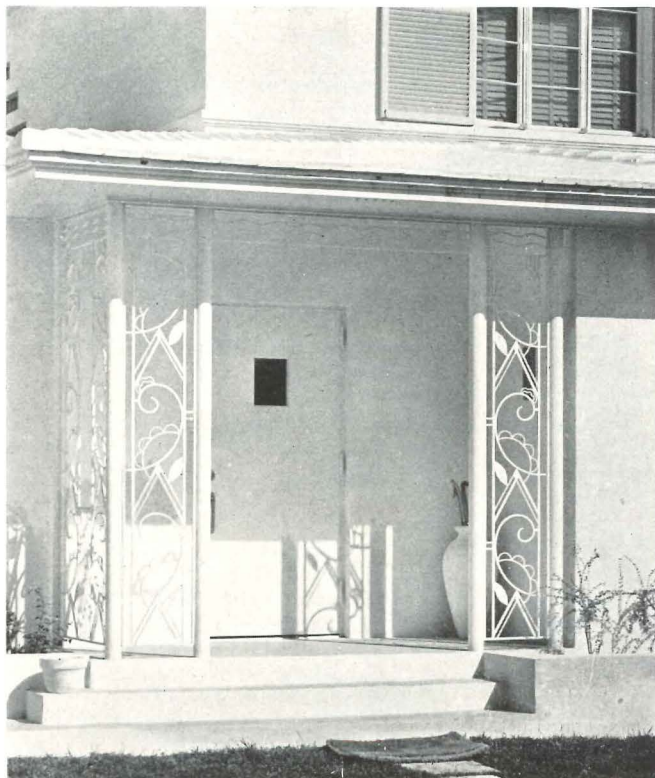
SECOND FLOOR PLAN



VIEW SHOWING PATIO SCREEN

SCHEDULE OF EQUIPMENT AND MATERIALS

FOUNDATION STRUCTURE	Reinforced concrete Concrete block with reinforced concrete—exterior walls (beams and columns), termite-proofed floor joists
ROOF	Shingle type clay tile
INTERIOR FLOORS	Select grade red oak except: linoleum in kitchen and service porch; tile in baths, sod in screened patio
WALLS	Gypsum texture cote plaster
SASH	Steel with metal screens
DOORS	Rezo and overhead garage door
PLUMBING FIXTURES	Standard Sanitary Co.
COLOR OF EXTERIOR	Roof, white; ornamental iron, white; stucco walls, off white to cream; shutters, light coral pink
COLOR OF INTERIOR	Living room, dining room, porch, hallway, cream; second floor bedroom and dressing room, tropical blue; first floor bedrooms, front, peach and rear, cream



DETAIL AT ENTRANCE



MOISE H. GOLDSTEIN

ARCHITECT

Photos by Joseph Schmetz

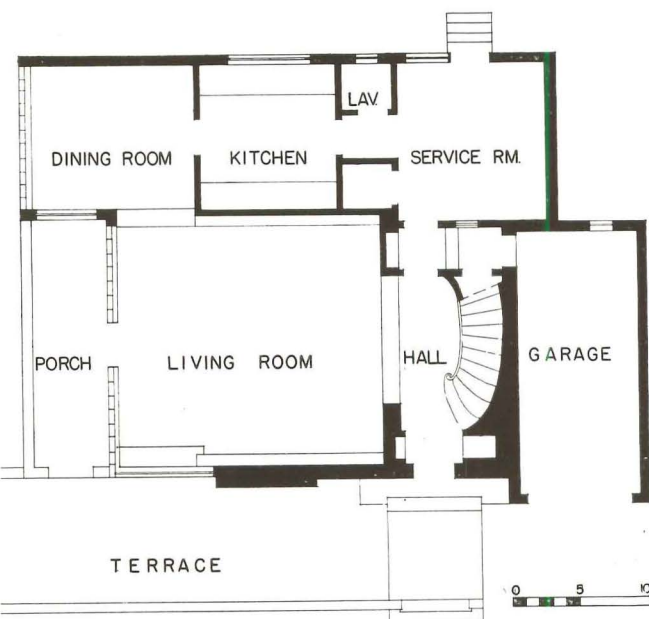
"TIMES PICAYUNE MODERN AMERICAN HOME"
NEW ORLEANS, LA.

SCHEDULE OF EQUIPMENT AND MATERIALS

FOUNDATION	Reinforced concrete footing first floor slab	Floors	Oak, except: asphalt tile in kitchen; ceramic tile in bathroom; cement in equipment room
FRAME	Interlocking terra cotta tile	Hardware	Sargent Co.
EXTERIOR	Face brick veneer	Glazing	Double-strength "A" quality American Sheet Glass
Walls	Portland cement stucco, Owens-Illinois structural glass block, cast stone—Architectural Stone Co.	Millwork	Quarter sawed red gum
Trim	Aluminum	Electrical System	G. E. Radial wire system
Sash	Truscon steel sash	Conduit	B. X. cable
Metalwork	Copper and aluminum Asbestile flashing	Switches	G. E. tumbler type beveled mirror plate
Roof	Built-up tar and gravel—Barrett Co.	Fixtures	Lumiline strip lighting
Doors	Quarter sawed red gum Built-up flush panel Barcol roll top garage door	Plumbing and Pipe	Chase brass water pipe. Soil, waste and vent pipe—heavy cast iron
Insulation	Johns-Manville Rockwool	Fixtures	Standard Sanitary Mfg. Co.
INTERIOR		Laundry and Kitchen Equip.	G. E. Co.
Partitions	Wood studs, wire lath and plaster and wood veneer	Heating	G. E. Reverse cycle heating and cooling machine



PARTICULARLY INTERESTING is the planning of this residence, determined to some extent by the magnificent spread of the live oak tree.



FIRST FLOOR PLAN



SECOND FLOOR PLAN



DOUGLASS V. FRERET

Photos by Joseph Schnetzer

ARCHITECT

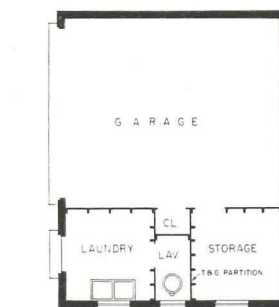
RESIDENCE OF JOHN D. KLORER
NEW ORLEANS, LA.

SCHEDULE OF EQUIPMENT AND MATERIALS

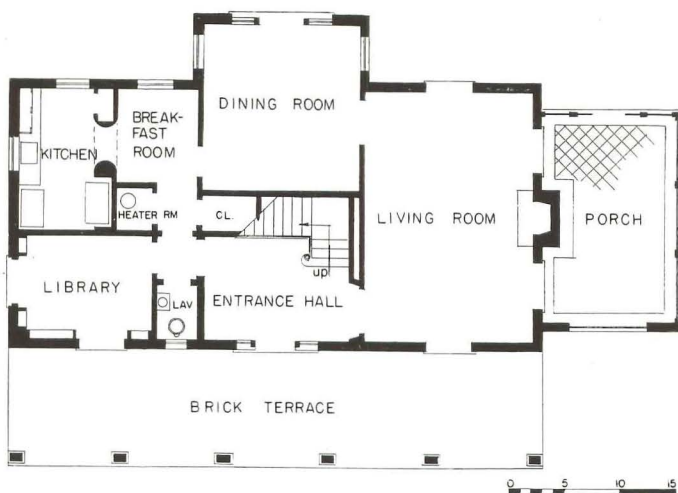
FOUNDATION	Continuous concrete footings Brick chain walls with copper termite shields	WALL COVERINGS	All rooms are wall papered
STRUCTURE	Exterior walls—4" common brick veneer, 1" air space, No. 30 felt, 7/8" wood sheathing, 2" x 4" studs, 16" o.c.; inside, wood lath and plaster Interior partitions—wood lath and plaster on wood studs Floor construction—first floor, concrete slab on earth fill; second floor, subfloor and felt on 2" x 12" wood joist, 16" o.c.	STAIRS WOODWORK	Main stair—mahogany treads and handrail Trim—cypress Shelving and cabinets—cypress Doors—entrance door, mahogany Interior—cypress, six panel
ROOF	Construction—2" x 6" rafters, 16" o.c., 1" x 6" sheathing, No. 30 felt Finish—8" x 15" Red Range Slidell Shingle Tile	HARDWARE PAINTING	Brass, Yale & Towne Mfg. Company Interior—trim and sash, two coats lead and oil, one coat enamel Floors—sanded, filled, varnished, waxed Exterior—all woodwork, three coats lead and oil
CHIMNEY	Common brick, terra cotta flue lining	ELECTRICAL INSTALLATION	Wiring system—flexible cable complete with meter loop, meter, fuse box, radio plugs and iron outlets Switches—flush, toggle, beveled glass plates
SHEET METALWORK	Flashing, gutters and leaders—26-ga. galvanized "Armco Ingot Iron"	KITCHEN EQUIPMENT	Stove—Chambers gas range Refrigerator—Frigidaire Sink—Standard Sanitary Mfg. Co. with tile splash and drainboard Cabinets—wood, special design
WINDOWS	Sash—double-hung, cypress Glass—quality "A" double strength Weatherstripped with Monarch Interlocking Metal Weatherstrips Screens—No. 18 mesh, bronze wire, cypress frames Blinds—cypress Antique cast-iron lintels over second floor windows	BATHROOM EQUIPMENT LAUNDRY EQUIPMENT PLUMBING	All fixtures by Standard Sanitary Manufacturing Company Two-part cement laundry trays Soil and vent pipes—cast iron; supply pipes—galvanized iron
FLOORS	Entrance hall, kitchen and breakfast room— asphalt tile, laid in mastic; balance of first floor—hardwood block units, laid in mastic; second floor—white oak except bathrooms, which are tiled; porch—cement	HEATING VENTILATION	Pacific Winter Air Conditioning Unit—gas-fired, forced hot-air system Kitchen ventilated by ductwork and exhaust fan Attic—Two Hoals leak-proof vents in rear roof



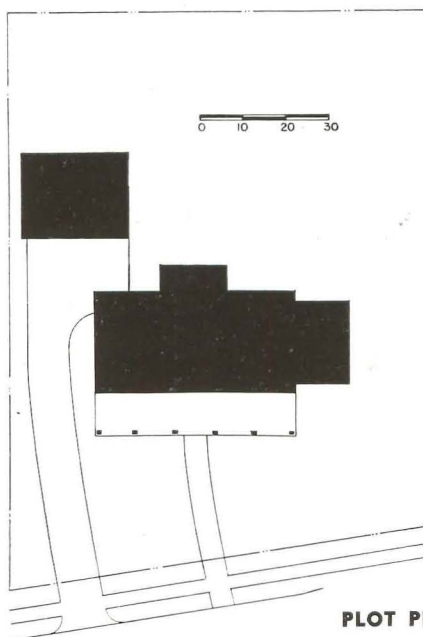
SECOND FLOOR PLAN



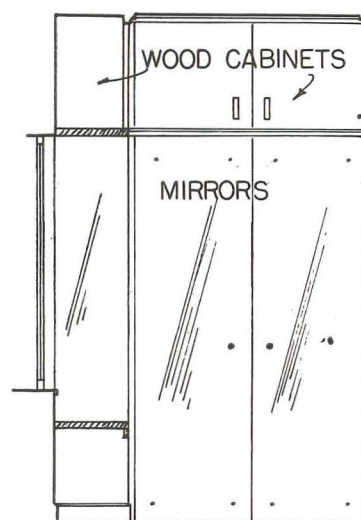
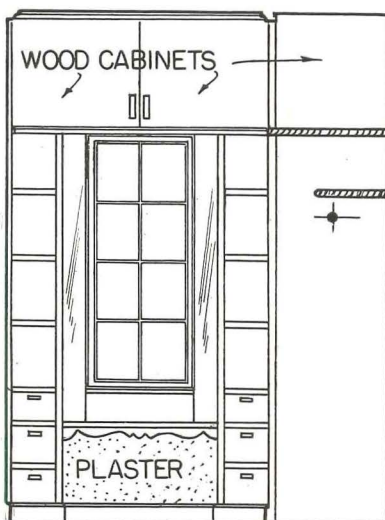
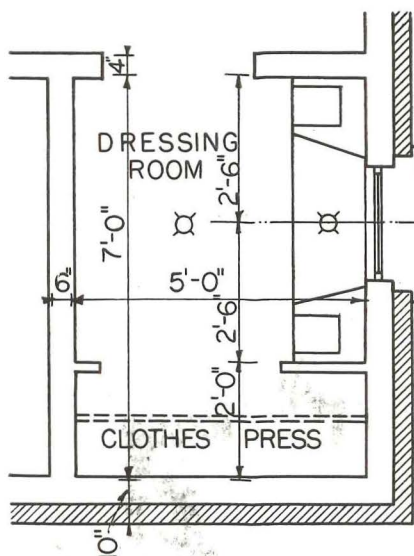
GARAGE AND LAUNDRY BUILDING



FIRST FLOOR PLAN



PLOT PLAN



DETAIL OF DRESSING ROOM

6 A NEW JERSEY RESIDENCE





J. NORMAN HUNTER
ARCHITECT

Photos by Adolph Study

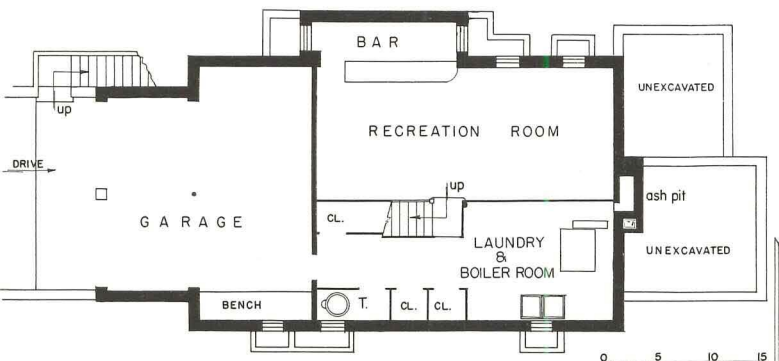
RESIDENCE OF MR. AND MRS. A. B. BURROUGHS
TEANECK, N. J.

SCHEDULE OF EQUIPMENT AND MATERIALS

FOUNDATION 12" concrete
STRUCTURE Wood frame, brick veneer (Paterson Brick Co selected common)
WALK AND TERRACE Flagstone
ROOF 3/8" hard vein Pennsylvania slate
 Flat decks: 5-ply built-up roofing—slate finish
INTERIOR FLOORS Clear oak except: tile in baths; asphalt tile in recreation room
WALLS Plaster except: tile in baths; white pine wainscot in living room, dining room and library; knotty pine in recreation room

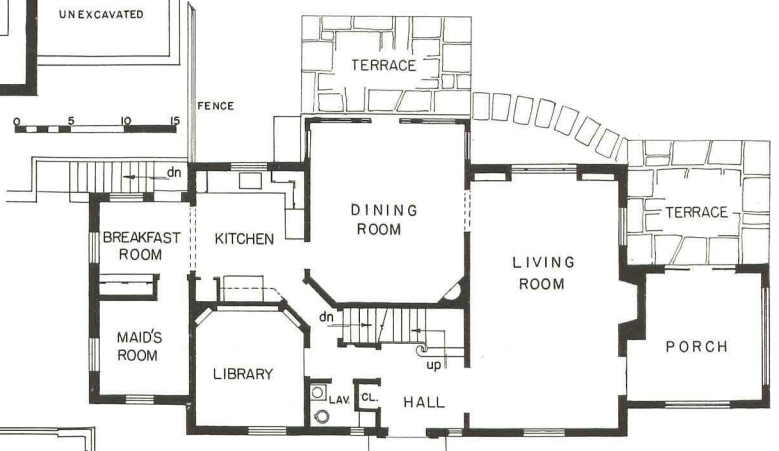
SASH Anderson, narrow-line double-hung sash; weatherstripped, screens
DOORS Six-panel colonial type white pine
PLUMBING Standard Sanitary Mfg. Co.'s colored fixtures
HEATING Gas-fired
 Bryant air conditioning
KITCHEN CABINETS Monel metal sink—Whitehead Metal Products Co.
HARDWARE Pewter finish
PAINTING Brick, 3 coats Cabot's paint—white shutters; hardware and chimney top—painted black
INSULATION 4" Rockwool exterior walls and roof area

General Contractor: Lethbridge Construction Co.



BASEMENT PLAN

DESIGNED to afford abundant daylighting of interior and full development of outdoor living in the secluded garden on the south (rear) elevation.



FIRST FLOOR PLAN



SECOND FLOOR PLAN



A. MITCHELL WOOTEN AND ASSOCIATES

ARCHITECTS

Photos by the Baker Studio

RESIDENCE OF MR. AND MRS. HENRY WALKER
KINSTON, NORTH CAROLINA

SCHEDULE OF EQUIPMENT AND MATERIALS

FOUNDATION	Poured concrete footings; brick foundation walls
STRUCTURE	Brick veneer over wood frame, common brick, painted with Cementico
INTERIOR WALLS	Plaster on Rock Lath; baths, tile wainscot
ROOF	Black Buckingham slate
FLOORS	Cement in basement and garage; flagstone on porches and stoops; linoleum in kitchen and breakfast room; tile baths; oak elsewhere
HEATING	Two-pipe vapor with copper fin concealed radiators; Fairbanks-Morse Stoker
INSULATION	4" of Rockwool second floor ceiling and north elevation

9 ROOMS—4 BATHS—TOTAL COST \$14,000

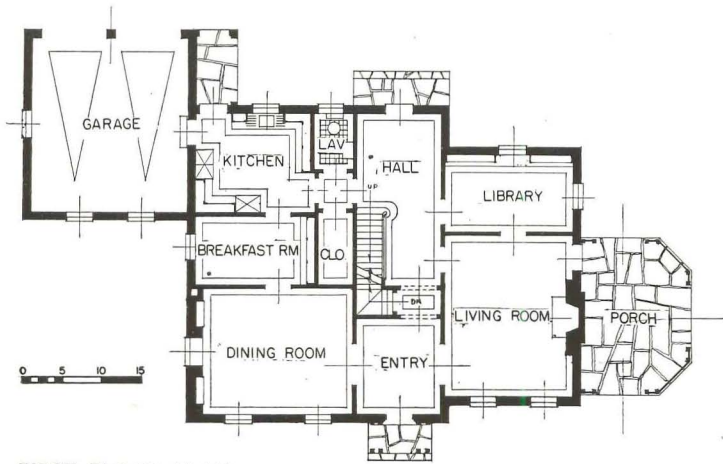
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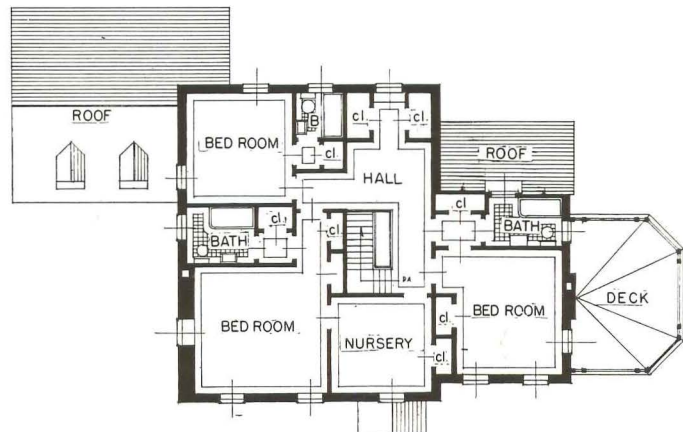
LIVING ROOM



REAR ELEVATION



FIRST FLOOR PLAN



SECOND FLOOR PLAN



PERRY M. DUNCAN

Photo John Gass

ARCHITECT

RESIDENCE OF WILLIAM W. BURCH
BRONXVILLE, N. Y.

SCHEDULE OF EQUIPMENT AND MATERIALS

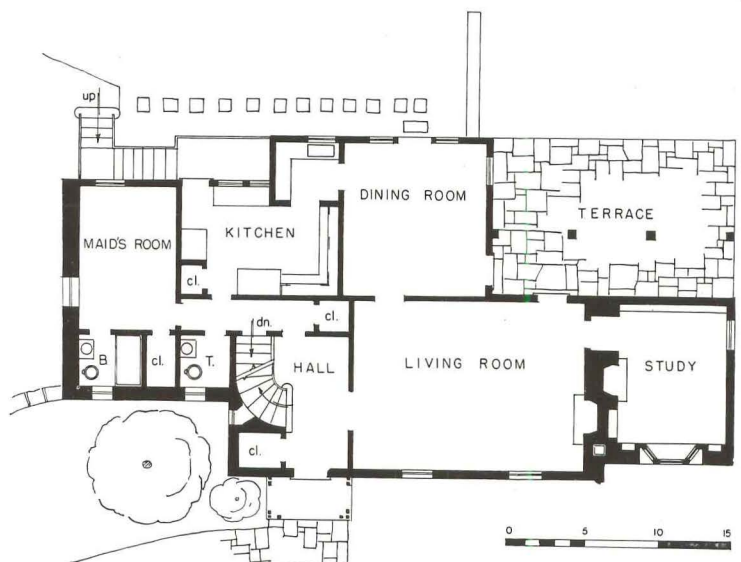
STRUCTURE	Frame; McNair hand-split shingles, stone, painted white	PLUMBING	Brass pipe; Standard Sanitary Mfg. Co. fixtures
ROOF	Red cedar shingles, oil-dipped at job	HEATING	Bryant gas-fired air conditioning equipment
INTERIOR DOORS	Curtis stock doors Sash—double-hung	INSULATION	Eagle Picher mineral wool



LIVING ROOM



VIEW OF TERRACE



FIRST FLOOR PLAN

CONFORMING to the steeply sloping plot, the entrance to the basement game room is located in the rear at grade. The higher grade of the same elevation was utilized for the terrace off the dining room.



SECOND FLOOR PLAN



JULIUS GREGORY

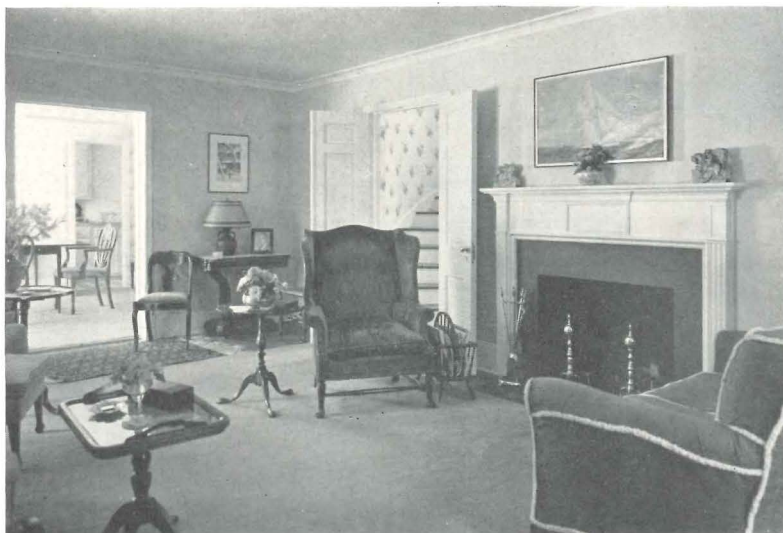
ARCHITECT

Photos by Adolph Studly

RESIDENCE OF JUDSON H. R. MORRIS
IRVINGTON-ON-HUDSON, NEW YORK

SCHEDULE OF EQUIPMENT AND MATERIALS

FOUNDATION		INTERIOR WALLS	Plaster on Ecod metal lath—tile in toilets
WALLS	Cement block	FLOORS	Toilets, tile; kitchen, pantry and laundry, linoleum; garage, cement; elsewhere, white oak
WATER-PROOFING	Membrane waterproofing below grade	SASH	Double-hung wood sash
STRUCTURE	Wood frame, common brick veneer—flagstone terrace and steps	DOORS	White pine by Curtis Co.
ROOF	Hard vein Vermont slate on Barrett Co.'s "Tilelite"	SCREENS	Wood frame—copper mesh
METALWORK	Sixteen-oz. copper	INSULATION	Rockwool walls and roof areas
		PLUMBING	Standard Sanitary Mfg. Co.
		HEATING	2-pipe vacuum system



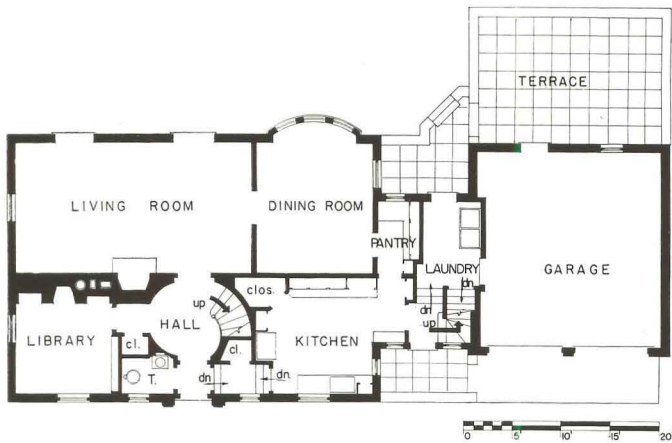
LIVING ROOM

12 ROOMS—4 BATHS—TOTAL COST \$18,000

9



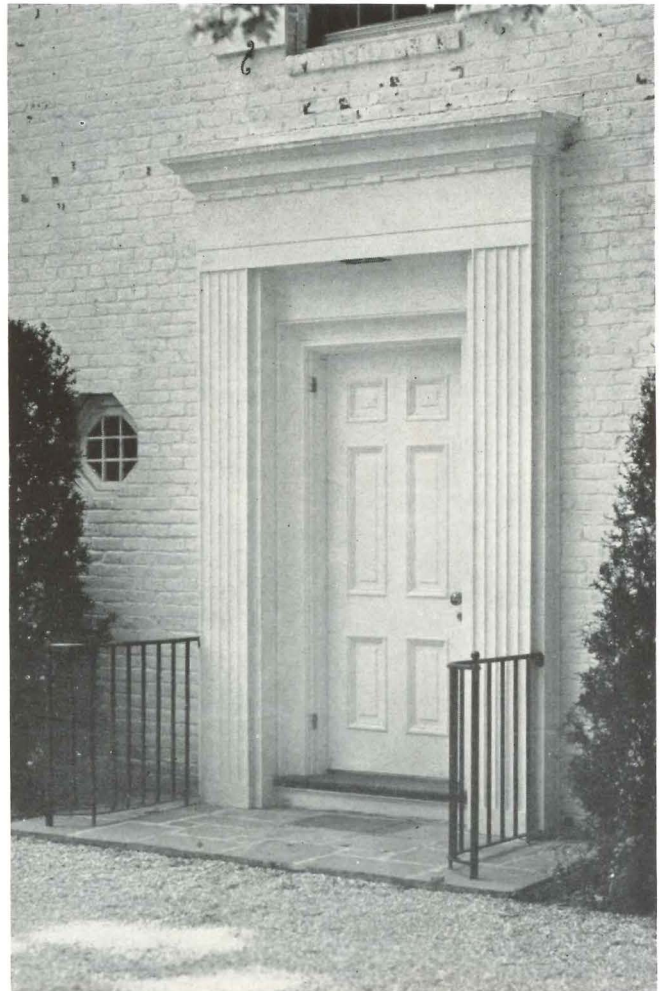
GARDEN ELEVATION AND TERRACE



FIRST FLOOR PLAN



SECOND FLOOR PLAN



ENTRANCE DETAIL



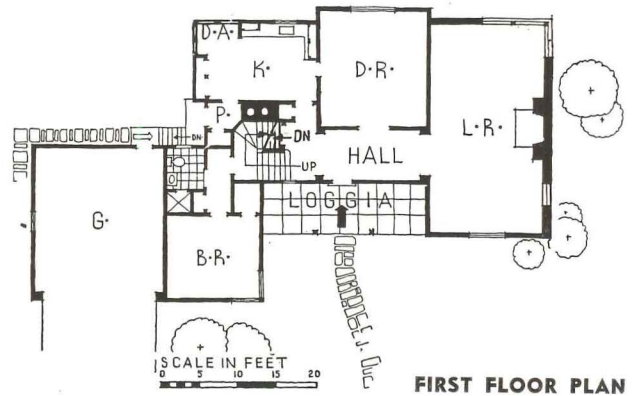
MILLER AND WARNECKE
ARCHITECTS

Photo by Robert Tebbs

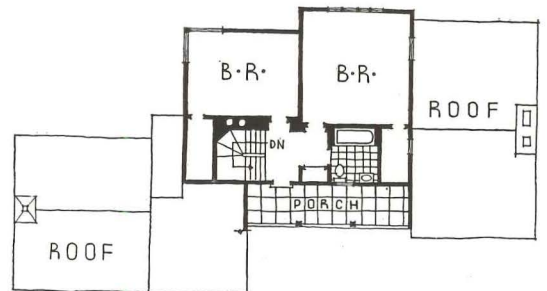
RESIDENCE OF MR. AND MRS. HENRY WAGSTAFF
ATLANTA, GEORGIA

UNIQUE FEATURE of this brick veneer structure is the four-level development designed to take fullest advantage of the site which slopes off to the rear. Below the first floor is the recreation room. As shown in the plan, the guest apartment is placed between the first and second floor levels. The cost includes land value.

BASEMENT RECREATION ROOM



FIRST FLOOR PLAN



SECOND FLOOR PLAN



BARBER AND McMURRY
ARCHITECTS

RESIDENCE OF R. V. EMERY.
KNOXVILLE, TENNESSEE



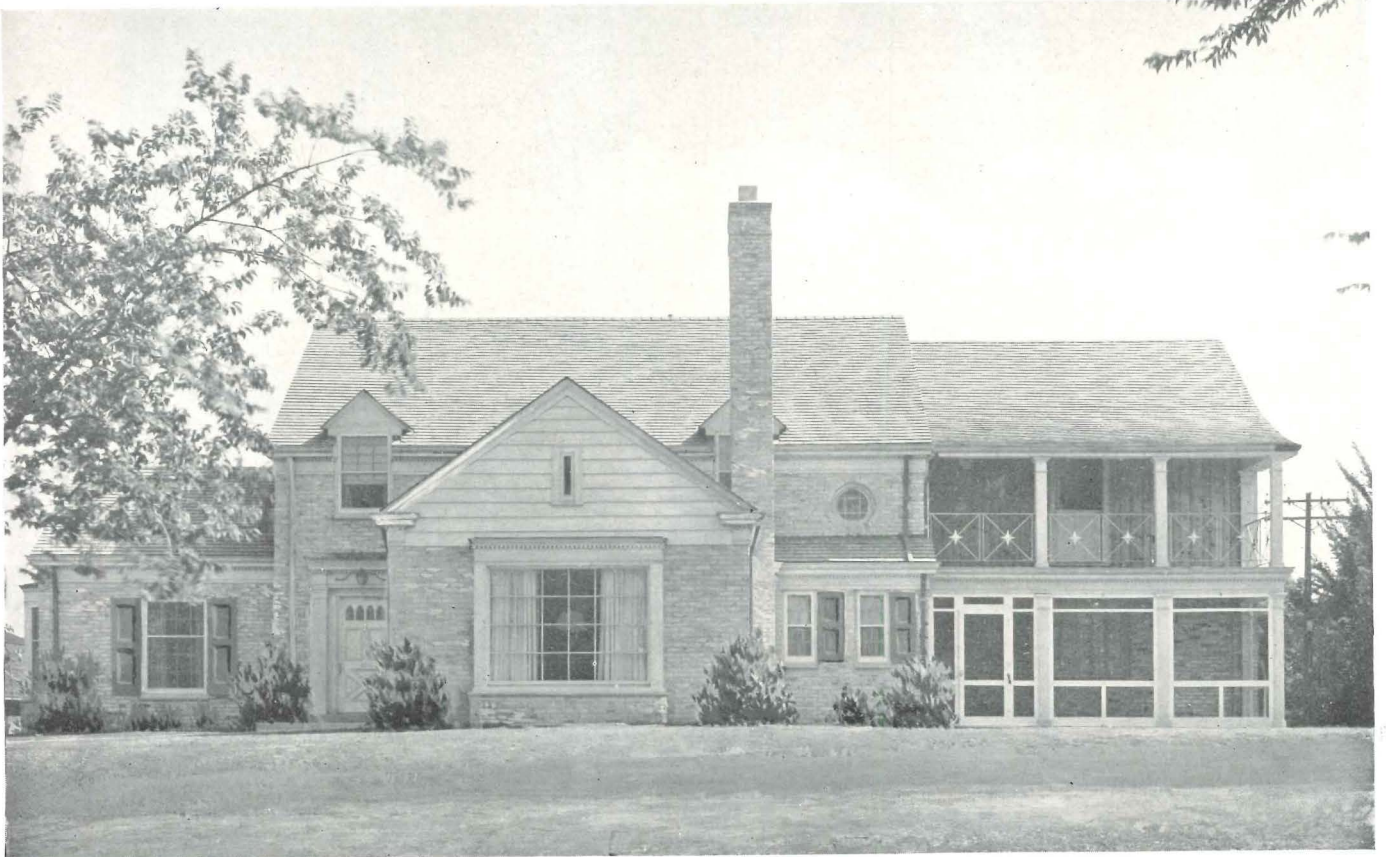
FIRST FLOOR PLAN

**SCHEDULE OF EQUIPMENT
AND MATERIALS**

FOUNDATION	Concrete
STRUCTURE	Wood frame, brick veneer
ROOF	Vermont slate, weathering greens and grays
METALWORK	Copper
INSULATION	Rockwool in walls and roof area
HEATING	Holland furnace with "Stokol" stoker
PLUMBING	
FIXTURES	Crane Co.



SECOND FLOOR PLAN



R . W . D W Y E R

ARCHITECT

RESIDENCE OF F. A. LANG, JR.
WAUWATOSA, WISCONSIN

SCHEDULE OF EQUIPMENT AND MATERIALS

FOUNDATION	Concrete block—waterproofed
STRUCTURE	Wood frame—reclaimed brick veneer
ROOF	Wood shingle
INTERIOR	
Floors	White oak, except tile in toilets
Walls	Tile wainscot in bathrooms, wall paper above and elsewhere
Doors	1 3/4" birch with raised moldings; overhead in garage, Heil Co.
Sash	Double-hung wood sash—weatherstripped; storm sash and copper screens
CABINET	
COUNTERS	Rubber tops and backs
HARDWARE	Yale and Towne
AIR CONDITI- ONING	Fully automatic with oil burner
PLUMB'NG	All colored fixtures, Kohler Co.
INSULATION	Rockwool in walls and roof area, U. S. Gyp- sum Co.





STUDY



DINING ROOM



LIVING ROOM

North America by F. A. Waugh.

LANDSCAPE GARDEN SERIES by Ralph Rodney Root. The Garden Press, Davenport, Ia. 1921, 10 vols., illus. Contents I. Introduction, history, and design; II. Planning the home grounds; III. Planting the home grounds; IV. Plants for the home grounds; V. Planting and maintenance; VI. Construction, architectural features; VII. Garden design; VIII. Beauty in the vegetable garden; IX. Country estates; X. The home and the city.

"LES JARDINS" (Les éléments et la théorie de l'architecture). Jay J. Gaudet, Paris. 1909, vol. 4, pp. 149-196, illus.

NEW GARDENS FOR OLD by Henry Stuart Ortloff and H. B. Raymore. Doubleday, Doran & Co., Inc., N. Y. 1934, 196 pp. How to remodel the home grounds.

OFFICIAL CATALOG OF PLANT NAMES by American Joint Committee on Horticulture Nomenclature. Salem, Massachusetts. 1923. Standardized plant names, a catalog of approved scientific and common names of plants in American commerce.

PRACTICAL LANDSCAPE GARDENING by Robert B. Cridland. A. T. De La Mare Printing & Publishing Co., N. Y. 1916, 266 pp. The importance of careful planning, locating the house, arrangement of walks and drives, lawns and terraces, how to plant a property; laying out a flower garden, architectural features of the garden, rose gardens and hardy borders, wild gardens and rock gardens, planting plans and planting lists.

THE ART OF LANDSCAPE by Myrl E. Bottomley. A. T. De La Mare, N. Y. 1935, 239 pp.

THE COMPLETE HOME LANDSCAPE by Arthur J. Jennings and L. H. Johnson. A. T. De La Mare Co., N. Y. 1923, 178 pp., illus.

THE COMPLETE GARDEN by Albert D. Taylor. Garden City Publishing Co., N. Y. 1921, 376 pp., illus.

THE DESIGN OF SMALL PROPERTIES by Myrl E. Bottomley. The Macmillan Co. 1926, 233 pp., illus.

THE PRACTICAL BOOK OF GARDEN ARCHITECTURE by Phoebe W. Humphrey.

TREES—SHRUBS

ARISTOCRAT OF THE GARDEN by E. H. Wilson. Doubleday, Page & Co. N. Y. 1917, 312 pp.

EVERGREENS FOR THE SMALL PLACE by F. F. Rockwell. The Macmillan Co., N. Y. 1928, 84 pp., illus.

GARDEN TREES & SHRUBS by Walter P. Wright. G. Allen & Unwin, London. 1928, 355 pp.

HANDY BOOK OF ORNAMENTAL CONIFERS AND RHODODENDRONS by H. Fraser.

HARDY EVERGREENS by Frank A. Schrepfer. Orange Judd Pub. Co., N. Y. 1928, 127 pp., illus. A practical handbook on the planting, growth, and management of all hardy evergreens exclusive of broad-leaved species.

HARDY SHRUBS by Frank A. Waugh. Orange Judd Publishing Co. 1928, 128 pp., illus. A simple handbook of practical information.

HEDGES & EVERGREENS by J. A. Warder. N. Y. 1858, illus. A manual for the cultivation of all plants suitable for American hedging, especially maclura, or Osage orange; added treatise on evergreens.

MANUAL OF CULTIVATED TREES AND SHRUBS HARDY IN NORTH AMERICA EXCLUSIVE OF SUBTROPICAL AND WARMER TEMPERATE REGIONS by Alfred Rehder. The Macmillan Co., N. Y. 1927, 930 pp.

MANUAL OF THE TREES OF NORTH AMERICA (EXCLUSIVE OF MEXICO) by Charles Sprague Sargent. Houghton, Mifflin Co., Boston. 1933, 910 pp., illus.

ORNAMENTAL SHRUBS OF THE U. S. by A. C. Apgar.

SHADE TREES IN TOWNS AND CITIES by William Solataroff. J. Wiley & Sons, N. Y. 1911, 287 pp.

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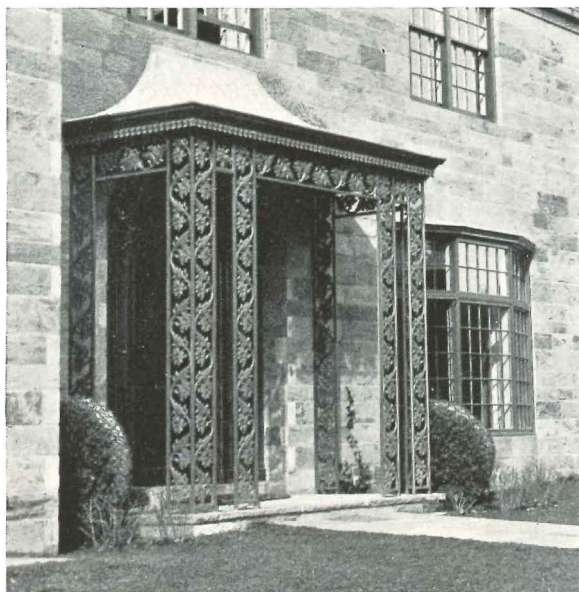
THE BOOK OF TOPIARY by C. H. Curtis and W. Gibson.

THE BOOK OF SHRUBS by Alfred Carl Hottes. A. T. De La Mare Co., N. Y. 1931, 437 pp.

THE BOOK OF TREES by Alfred Carl Hottes. A. T. De La Mare Co. 1932, 440 pp., illus.

THE CULTIVATED CONIFERS IN NORTH AMERICA by Liberty Hyde Bailey. The Macmillan Co., N. Y. 1933, 404 pp., illus. A handbook of the coniferous and most important broad-leaved evergreens planted for ornament in the U. S. and Canada.

THE GARDEN BLUEBOOK by Leicester Bodine Holland. Doubleday, Page & Co., N. Y. 1915, 425 pp., illus. A manual of the perennial garden.



Veranda Design No. 72 as used on residence of J. Stanley Reeve, Esq., Haverford, Pa. Shepard and Stearns, Architects.

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IN MODERN HOMES
requires
Tight Windows

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THE LIVABLE HOUSE: ITS GARDEN by Ruth Dean. Moffatt Yard & Co., N. Y. 1917, 174 pp., illus.

THE NATURAL STYLE IN LANDSCAPE GARDENING by Frank A. Waugh. R. G. Badger, Boston. 1917, 151 pp., illus.

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LAWNS—PLANTS—ORNAMENT

ANNUAL FLOWERING PLANTS by L. C. Corbett. Washington. Government Printing Office. 1904, 48 pp., illus. (Farmers' Bulletin No. 195.)

A CONCISE HANDBOOK OF CLIMBERS, TWINERS AND WALL SHRUBS by H. P. Fitzgerald.

ANOTHER HARDY GARDEN BOOK by Helena Rutherford Ely. The Macmillan Co. 1917, 243 pp., illus.

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HEDGES, SHELTERS, WINDBREAKS AND STONE FENCES by E. P. Powell. Orange Judd Co., N. Y. 1914, 139 pp., illus. A treatise on the planting, growth, and management of hedge plants for country and suburban homes.

LAWN MAKING by Leonard Barron. Doubleday, Doran & Co. 1929, 176 pp., illus.

MAKING A LAWN by Luke J. Doogue. McBride, Nast & Co., N. Y. 1913, 51 pp. The small lawn, old and new. The treatment of large areas. Grass seed. Sowing the seed. Sodding. Lawn mower, roller and hose.

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MANUAL OF CULTIVATED PLANTS by Liberty Hyde Bailey. The Macmillan Co., N. Y. 1924, 851 pp., illus. A flora for the identification of the most common or significant species of plants grown in the continental U. S. and Canada for food, ornament, utility and general interest—both in open and under glass.

THE BOOK OF ANNUALS by Alfred C. Hottes. A. T. De La Mare Co., N. Y. 1922, 116 pp.

THE BOOK OF GARDEN FURNITURE by Charles Thonger.

THE BOOK OF PERENNIALS by Alfred C. Hottes. A. T. De La Mare Co., N. Y. 1930, 200 pp.

THE BOOK OF WATER GARDENING by Peter Bisset. A. T. De La Mare Co. 1907, 199 pp., illus. Giving practical information necessary to the selection, grouping and successful cultivation of aquatic and other plants required in the making of a water garden and its surroundings.

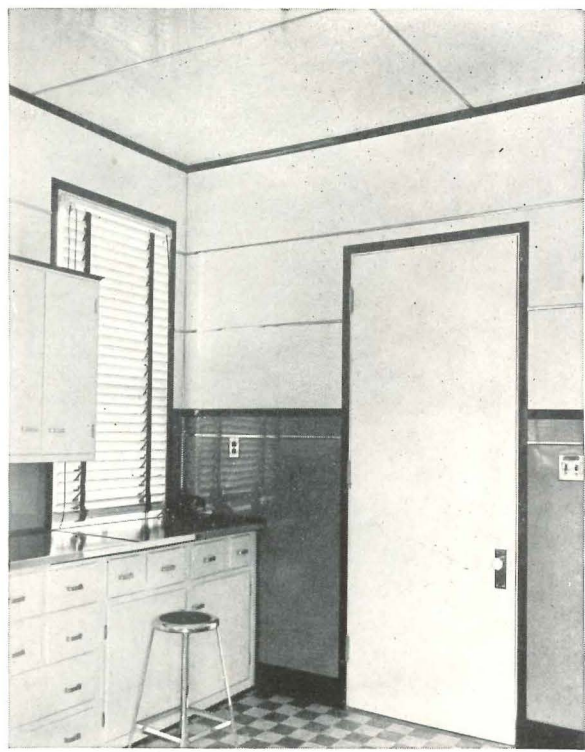
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WALL AND WATER GARDENS by Gertrude Jekyll. The "Country Life" Library.

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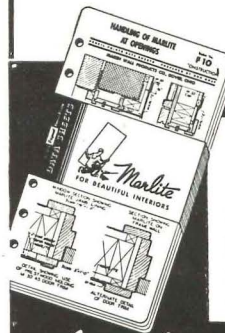
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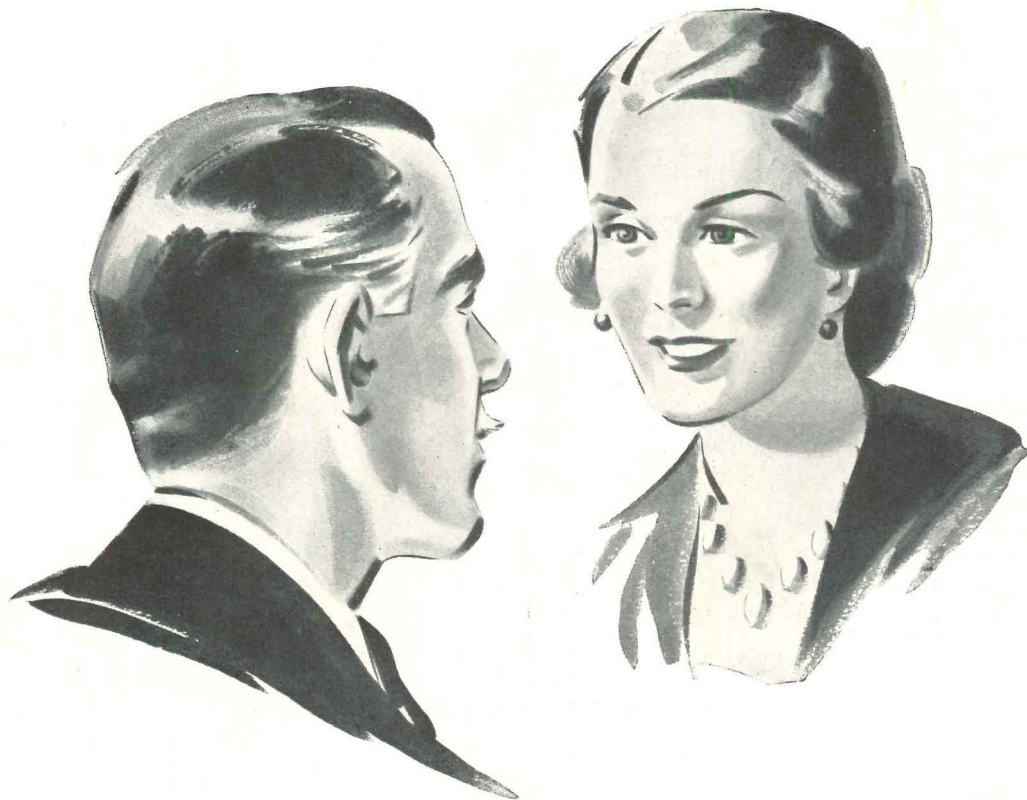
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