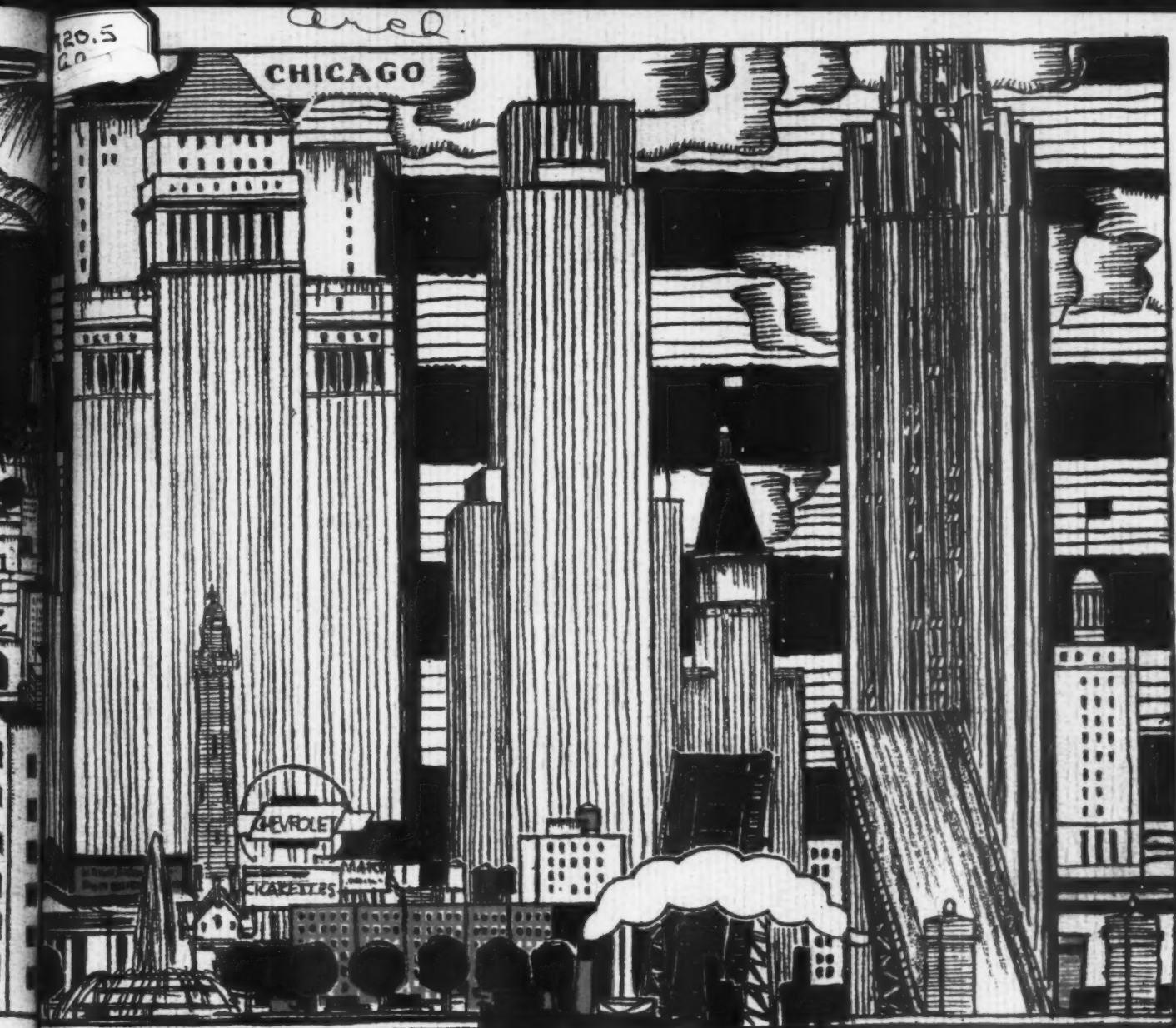




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AMERICAN ARCHITECT

A NEW EPOCH IS IN THE MAKING

Let those who think American progress has stopped hark back to the trend of earlier days. During the years between 1874 and 1878 there existed a depression in many ways as intense as that from which we are now rapidly emerging. Like this one it climaxed the frenzied finance of a post-war period. Newspapers of the day carried the same alarming kind of news that ours have recently. Business failures were countless. Prices were sky-high. Everyone was profoundly disturbed about practically everything—everything, that is, except those things that were important to solid, sober progress. Just at that time Edison began his marvelous experiments at Menlo Park—experiments that were literally to accomplish a revolution in the American way of living. At that time, too, Alexander Graham Bell was exhibiting the first telephone. Under the surface of business failures America was entering the electrical age. In 1876—in the very middle of the depression—*American Architect* was issued for the first time; and in the fifty-eight years that have passed, its pages have recorded the major developments of architecture and building that have helped to give America the highest of all living standards. Today, under the surface of a present economic uncertainty, a new epoch of building and architecture is in the making. As it emerges *American Architect* will report it; and with whatever changes the new day may demand will adjust its services to maintaining the best fundamental traditions of the architectural and building professions. » » » » » »

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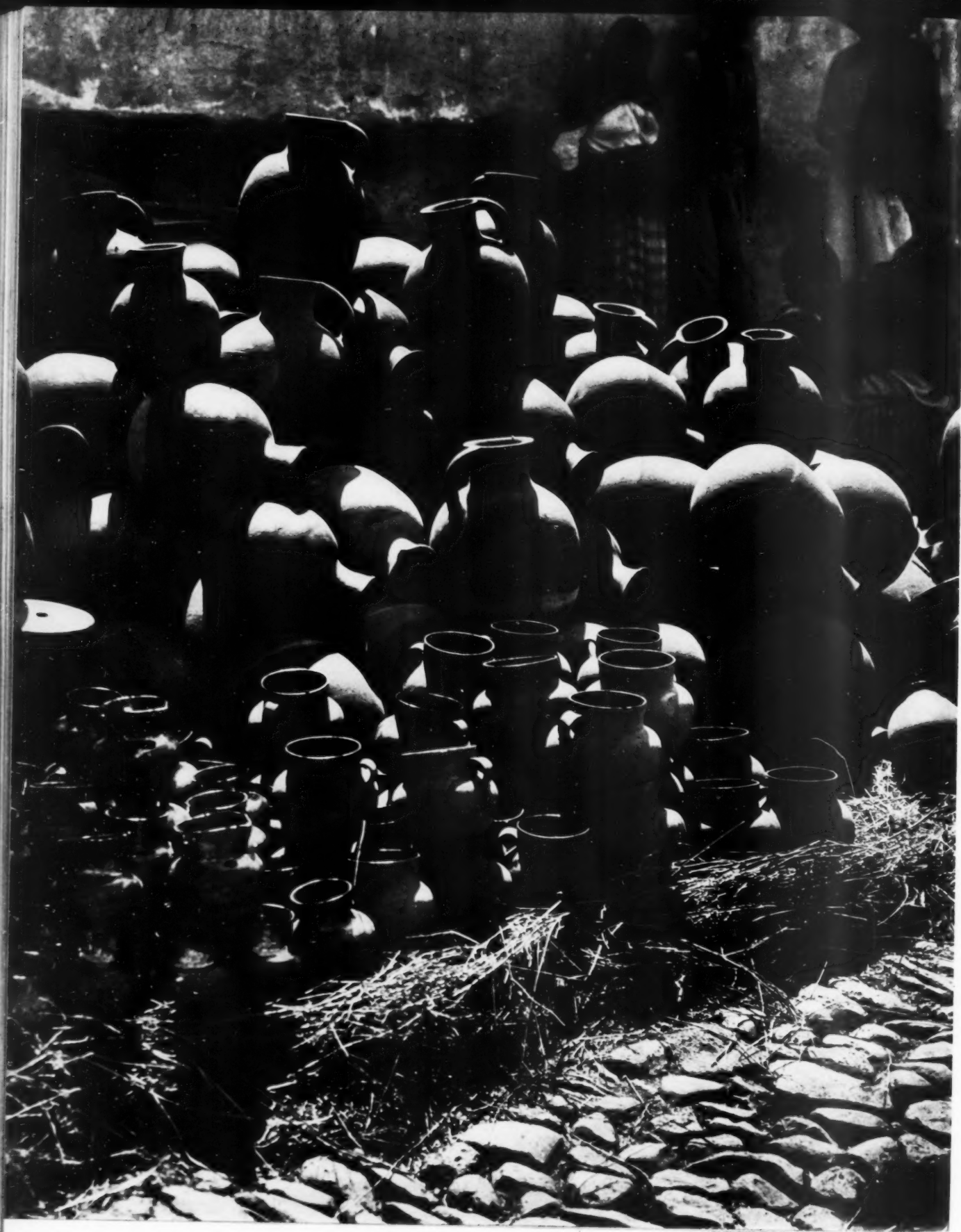
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A Better Deal for Architects

BY BENJAMIN F. BETTS, A.I.A.

ADMINISTRATION of Title II of the National Housing Act provides for the approval of the design and construction of houses by District Architectural Supervisors prior to the approval of loans. Thus, architects will be instrumental in establishing the value of properties eligible for loans under the Act. This is important to every architect.

It is also of vast significance to the profession that the Federal Housing Administration has recognized architects as the logical individuals to maintain high technical standards as a basis for and protection of sound mortgage financing.

Insistence upon adequate standards will tend to eliminate differences in cost due to variations in quality, between houses designed by architects and those erected by speculative builders. Consequently, building construction generally will approach more nearly the high standards of excellence that the profession has always struggled to maintain.

The emphasis which will be placed upon good design in its broadest sense, as a factor in mortgage risks, justifies the contention long held by architects that good design has an economic as well as aesthetic value. To meet FHA standards owners will be obliged to engage designing talent more nearly equal to that of the architect.

General acceptance of the fact that the architect's fee is properly a legitimate part of the cost of construction of any building should go far to extend the employment of architectural service. Provision for including the architect's fee is made on the estimating forms of the Federal Housing Administration.

From official recognition of the architect, as a factor essential to the protection of mortgage investments as well as the raising of housing and community standards, to widespread appreciation by a practical-minded public is but a step. Today architects can approach their clients secure in the knowledge that their technical ability and experience have been stamped as essential to the safety, comfort and economic value of American homes.

Title II of the National Housing Act

BY MILES L. COLEAN

Technical Director, Federal Housing Administration

"NEW construction must be revived to keep pace with other forms of economic activity. Titles II and III—the long term program—are designed to bring about this revival in the residential field. There is, however, inherent in this program no artificial stimulation for new construction activity. It is the purpose of the National Housing Act to reach deeper into the problem and to seek a solution in the fundamentals of home financing. There must be a sounder mortgage debt structure than exists today. The security and stability of real estate values and mortgage investments must be reestablished. Titles II and III are designed to do this in the field of residential properties, by providing a system of long term financing of residential mortgages to (1) make possible the reconstruction of a large volume of the existing mortgage indebtedness, and (2) arrest the flight of old capital from, and attract new capital to, that field of investment.

"When these results are attained, new residential construction will start, reach its normal volume, and thereafter sustain its proper relative position in the economic system, by (1) the flow to it of a more constant supply of funds, (2) a more evenly distributed employment of labor and consumption of materials, (3) leveling the peaks and valleys of housing production and (4) greatly reducing, if not in fact, preventing, the residential building booms and consequent collapse of past experiences."

With these words, Mr. James A. Moffett announced the objectives which would determine the policy of the FHA in executing the provisions of the National Housing Act covering the establishment of a system of mutual mortgage insurance and the creation of national mortgage associations. The regulations which have followed this announcement consistently develop the intent of the Act as thus interpreted. In every instance effort is being made to eliminate speculation, to assure soundness in both the financial and the physical structures underlying mortgages and to reduce the cost and increase the security of home ownership.

Accordingly, the business of mortgage lending under this plan is restricted to substantial, supervised institutions seeking sources of investment for their own funds. By so doing, the excuse for broker-

age commissions can be practically eliminated and all financing costs be maintained at a minimum. Moreover, a maximum interest rate of five per cent for the country as a whole has been established. The savings involved by these two regulations plus the savings effected by the general elimination of the need for second mortgage financing and for mortgage renewals mean that the ultimate cost to the owner of acquiring his home is reduced by an average of probably at least 20 per cent. This elimination of excess financing expense is a very real reduction in housing costs, and establishment of the system should bring this type of expense even lower.

In all this there is a stimulant to new construction which should become rapidly evident. As Mr. Moffett stated, however, there will be no intention on the part of the Federal Housing Administration to underwrite a real estate and building boom. A boom causes speculative increases in land, material and labor costs to the extent either of choking building enterprise or of producing houses at a price in excess of any normal trend in value. Such conditions would almost certainly defeat every objective for which the Housing Act was written and the Housing Administration set up.

RISK RATING. What is desired is that houses be produced in a quantity and at a price in relation to an actual demand and not to a boom psychology. The risk rating procedure which is to be followed in underwriting mortgages is designed to safeguard the system and, insofar as the willingness or unwillingness to insure mortgages may be an effective device, to prevent or control booms.

The principle of risk rating is not new. Any purchaser or appraiser, or developer who invests in property makes a judgment as to the probable risk involved in the deal. What the Housing Administration proposed to do is to introduce elements of organization and uniformity into the exercise of judgment and to guide and support it by facts gathered through intensive research into the physical and economic aspects of urban conditions.

The risk categories under which each application is considered includes the following: (1) The property (that is, the dwelling and accessory buildings, the lot and the relation of the buildings to the lot);

H.R. 9602—

"AN ACT TO ENCOURAGE IMPROVEMENT IN HOUSING STANDARDS AND CONDITIONS . . ."—has five titles. TITLE I, now in effect as a temporary expedient, authorized insurance of financial agencies against possible losses of renovation and modernization loans. TITLE II concerns mutual mortgage insurance, a device new to building finance and one designed to revive building and help stabilize real estate values by promoting improvement of residential financing. It is a permanent measure as is TITLE III, which authorizes establishment of national mortgage associations. Each concerns the architect, for upon cheaper and more plentiful financing depends realization of his immediate business opportunities. TITLES IV and V deal generally with methods of safeguarding funds in financial institutions.

What Title II DOES . . .

1. Sets up a revolving fund of \$10,000,000 as a Mutual Mortgage Insurance Fund.
2. Authorizes insurance of approved first mortgages on existing and new residential construction. Principal obligations are limited to a billion dollars for each type except as the President may approve a greater amount.
3. Limits eligibility for insurance. Mortgages must be held by an approved financial agency, must not exceed \$16,000 nor 80 per cent of the appraised value of property. Monthly amortization within the borrower's ability to pay must retire loan and all charges, including a normal interest of 5 per cent, within a maximum of 20 years.
4. Fixes a charge of one-half to one per cent of the face value for insurance premiums.
5. In event of default and foreclosure, authorizes transfer of property title to FHA and issuance to mortgagee of 3 per cent debenture bonds, payable 3 years after mortgage maturity.
6. Contemplates development by FHA of technical standards as a basis of mortgage risk rating, thus establishing, in effect, a technical measuring stick for valuations.

What Title II DOES NOT DO . . .

1. Not all mortgages will be insured. Provisions apply only to new residential mortgages or existing ones that can conform to eligibility rules which refer only to projects "economically sound."
2. Distress property will not be refinanced under FHA mortgage insurance rules. These apply only to mortgages in good standing.
3. Mutual mortgage insurance will not prevent default on the part of the borrower nor foreclosure on the part of the lender, though better security for each will tend to prevent both possibilities.
4. No mortgage money will be lent by FHA. Allocated funds are for insurance purposes only.
5. No dictation of design or construction is involved in risk rating standards which require only adherence to present-day good practices.

(2) The neighborhood (that is, all the environmental factors influencing the future utility and value of the property, including the community as a whole as well as the more immediate neighborhood); (3) The relation of the property to the neighborhood (that is, the degree of appropriateness of the property to its particular surroundings); (4) The borrower (the bearing of credit and character upon the safety of the loan); (5) The pattern of the loan itself (the duration, percentage of loan to value and other such factors in relation to the risk involved).

In explanation of this system the following may be quoted from the initial instructions issued to underwriting staff members: "Risk rating involves forecasting and prediction. The hazards exist throughout the entire life of the loan until paid although the degree of risk may change during the life of the loan. Therefore, the rating of loans in accordance with mortgage hazard involves the determination of the chances of default by attempting to foresee the probable and possible ways in which failures may occur.

"The rating of hazard in a mortgage loan is a complex process. Therefore, the many risk features have been grouped into several risk categories, each of which is given a separate rating. The combination of these separate ratings gives the final grading and thus determines the risk group into which the mortgage shall be classified. Since the various factors leading toward default contribute to the hazard in various degrees, they are given varying weights when being grouped into their respective risk categories, and the several risk categories will be given varying weights, if necessary, when combined into the final rating of risk.

"The various risk categories may vary in relative importance. Furthermore, they may vary in relative importance from case to case. . . . In general, a single low rating in any one risk category will be sufficient to make a loan ineligible for insurance. Likewise, a combination of fairly low ratings in several risk categories will have the same effect. . . . Part of this process, as has been mentioned, is the rejection of substandard mortgages."

HOUSING STANDARDS. At the foundation of the risk rating system is the establishment of minimum requirements. These cover the elements in neighborhood, in neighborhood relationships, land utilization and the design and construction of buildings which must be considered absolutely essential alike to sound investment and to an acceptable housing standard.

This matter of standards is one which must be approached realistically. In the first place, the facilities of the National Housing Act must be made available to as wide a proportion of the population as possible. We must remember that the average income of the majority of our people is much lower than we like to think. In 1929 the median income for the country as a whole was \$1,200. This figure

applies to the earning portion of the population alone and does not take into consideration those who had no incomes at all. If the figure were taken for the present year, it would be much lower. We must realize that the standard of the average house is correspondingly low and that looked at from one point of view, every improvement in standards—which usually means an increase in cost—will limit the extent to which our system be extended.

The Real Property Inventory revealed some interesting facts about our existing standards in urban dwellings. From it we learn that only half our houses have heating plants, that over a third have no system for providing hot water, that twenty-nine per cent have no bathing facilities and that over seventeen per cent have no private indoor toilet facilities. It is thus obvious that before we can think of such new and desirable improvements as air conditioning as of vital importance, we have got to see that a few of the more elemental plumbing fixtures are in more general use.

In the matter of standards the start must be conservative. We must think in terms of the house for the average man, or of the lower than average man. We must think of the things which are minimum requirements to his welfare and to his satisfaction with the house he occupies. We must realize that whatever we do to make his house expensive decreases his opportunity of having a house.

Starting from this point of view, the first emphasis in property standards will be placed upon a good neighborhood, the first essential to good housing. By a good neighborhood is meant one which is secure in its residential character, and where the buildings and the uses to which the buildings are put are compatible with that character. In other words, a good neighborhood is one which offers reasonable protection against the intrusion of inharmonious land uses and which is favorably located in respect to transportation, schools, parks, etc.

The next point of emphasis will be upon the manner in which a dwelling is related to its lot. The Housing Administration will favor a relatively low percentage of lot coverage and it will insist that every window required for the lighting and ventilation of a room have an angle of light from the top of the nearest existing or allowable obstruction of at least thirty-five degrees with the vertical. It is the conviction of the Administration that, with reasonable neighborhood protection and with reasonable provision for the prevention of overcrowded land and for adequate light and air around houses, the likelihood of the growth of new slums may be forestalled and the necessity for abandoning or reconstructing whole neighborhoods greatly reduced.

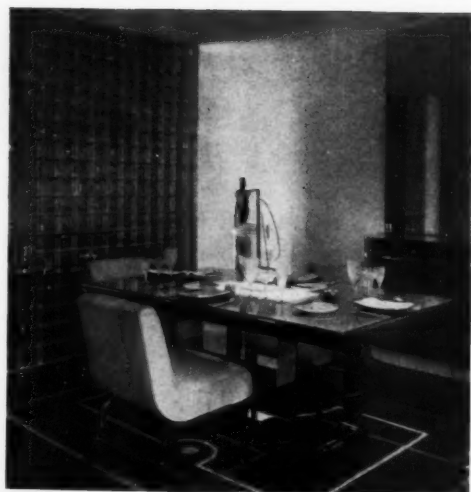
If this can be done and if the hazards can be kept down as closely as possible to the house itself, the most unwieldy part of the problem will be solved. That is the reason why neighborhood is put first and why it is considered that provision for ample light

(Continued on page 74)



Settings for Contemporary Industrial Art

At the Metropolitan Museum of Art in New York, twenty leading architects and designers collaborated in creating settings for the Museum's thirteenth exhibition of modern industrial art. A significant difference exists between the current exhibition and the last one, held in 1929. Five years ago the emphasis was on design without respect to cost. Today economy is stressed no less than aesthetics. All objects in the exhibition are the products of quantity manufacture, or are adaptable to such production. In many cases, rooms were designed complete with furnishings by one individual. Above: a living room by John Wellborn Root, architect. Woodwork, oak; plywood paneling; rug, grey. (Photographs, courtesy Metropolitan Museum of Art)

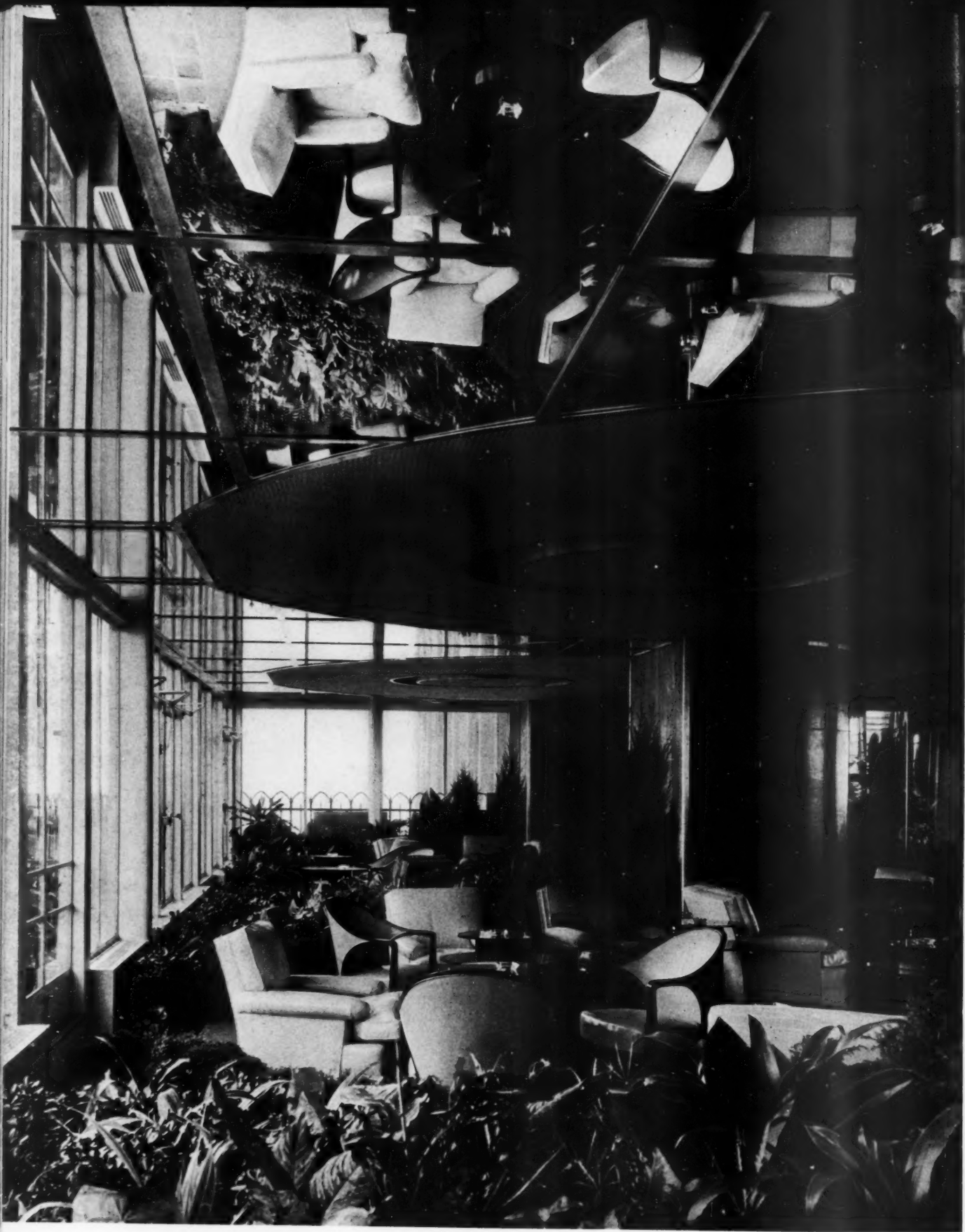


Top of page: living room by William Lescaze, architect. Walls, cream and tan; sofa, dark brown velour; chairs, tan leather and chromium. Above: dining room by Donald Deskey, designer. Flooring, rubber; wall, structural glass; furniture, wood and metal. Right: living porch by Archibald Manning Brown, architect. Floor, dark brown; walls, golden tan; furniture and ceiling, off white; aluminum Venetian blinds



Left: woman's dressing room by Irvin L. Scott, architect. Walls, white leather with chromium trim; chairs, white and blue leather and chromium. Below: room for a lady by Eliel Saarinen, architect. Carpet, cream and black velour; seats covered in reddish rep





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ROCKEFELLER CENTER CLUB, NEW YORK

The entire sixty-fifth floor of the RCA Building is occupied by a dining and dancing establishment that includes several private dining rooms for tenant organizations. Kitchens and serving pantries are on the sixty-fourth floor. Below, The Rainbow Room. Decorations: ceiling, white; walls and draperies, aubergine; green carpet, green leather chairs; trim and railings, bronze; concealed lights illuminate crystal fixtures. A "color organ" automatically converts music into harmonious illumination in the central dome. On facing page, the Cocktail Lounge. Decorations: ceiling, mirror glass and gray sound absorbent material; walls, blue leather and white enamel; trim, bronze and brass



Building Diagnosis . . . A Service

BY GERALD LYNTON KAUFMAN, A.I.A.

Is an architect entitled to a fee merely for giving advice? Can he charge for the diagnosis of a building's economic ills? Can he—and dare he—send an owner a bill after dissuading him from going ahead with a building or rehabilitation project? To every one of these questions the answer is, emphatically, "Yes!"

We all know that past experiences have made the opposite answer seem true. We know—or think we know—client psychology. And many have believed that those quite willing to pay for plans and specifications would object strenuously if charged for sound economic counsel that might save them thousands of dollars through abandonment of a wasteful building operation. This is particularly evident in the modernization field which, in respect to its present size and technique, is comparatively new to the building world. Today a new type of architect must deal with this new condition and often with a new type of owner. This means a new type of architectural service and, as a corollary, a new and wider range of fees.

Why is it that the present situation has not been more generally realized by architects? Why have they under-rated their ability and their unique qualifications as economic building counsellors? Perhaps the fault lies with architects themselves. They have shown to clients two professional attitudes toward buildings—particularly sick ones which form the greatest volume of today's reconstruction activity. In one the architect has been merely a licensed technical agent to carry out the customer's orders. With a druggist-like psychology he has been content to sell patented plan-pills instead of true service.

From a better point of view an architect combines the functions of a physician as they apply to building. He looks at an ailing structure as his patient, diagnoses its condition and, like the medical specialist feels free to write whatever prescription seems best, even though it may not result in any sort of operation.

Hitherto an architect has known no way to charge for this service. Hence he has felt forced to put through a job-sale, thinking that without it there would be no fee and feeling that if jobs were small



WALLACE PHOTOS

ones, fees would be likewise. Justifiably, from this attitude, perhaps, he has sold his remodeling plan-pills without making sufficient effort to probe beneath the surface for a possible economic disorder.

As a remedy for this situation, let us suppose the architect in the role of a Building Diagnostician. Let us see how he might function therein and then propose a method by which he may assume the role in practice, thereby accomplishing his own metamorphosis to his advantage.

In approaching a definite problem the diagnostician, after an examination of the building, will give consideration among other things to the following:

1. The locality and character of the building itself, and its functional fitness after the proposed alteration, to supply a real demand and bring in an adequate return.
2. Whether the structure is worth altering at all. That is, whether in the opinion of the diagnostician, it is merely sick or is economically dead and ready for demolition.
3. The Law of Diminishing Returns in rehabilitation.

The first two are so obviously fundamental that any architect worthy of the name would normally satisfy himself and his client regarding them before proceeding further. The third, however, involves something that is perhaps two frequently overlooked.

e to Meet New Conditions



SPENCER ROBERTS, ARCHITECT

Remodeling on today's scale presents new problems to architects and clients alike. As a Building Diagnostician, the architect can expand his practice and through local organizations charge a service fee even for negative advice

It involves determination of whatever particular operation gives most promise of success, and how far it should go. Let us take a hypothetical case:

A certain building, either entirely untenanted or whose rent return falls short of covering taxes, is deemed after a preliminary survey to be worth remodeling or modernizing. It is estimated that a \$10,000 investment will bring a rental increase of \$1,600 per year—a 16 per cent gross return. Leaving aside all questions of financing,—(and imagining the owner to be that *rara avis* with 100 per cent equity and plenty of ready cash), it might be thought that an architect's sole duty would be to get him to sign on the dotted line, once these facts were convincingly established. Surely 16 per cent,—albeit gross and not net,—is too good to pass up.

But there are other factors to consider. First of all, is this \$10,000 the ideal sum to be spent on this particular operation? Might not an investment of \$8,000 bring in an increased rental income of \$1,400;—that is, a 17½ per cent gross return? If so, what might a still lower investment bring in, with a less drastic operation?

On the other hand, what would be the probable return on a larger investment than \$10,000? Would a radical alteration costing around \$20,000 result in a total additional rent return of \$3,200,—still at the rate of 16 per cent gross,—or would it be more like-

ly to increase the rent roll by only \$2,400, or even less? Obviously, there is a point—somewhere short of gold-plated faucets in loft-building lavatories—at which any further expenditure for remodeling would be economically ridiculous. If the law of diminishing returns will be operative above \$10,000, then that is the maximum to be spent.

In fixing the amount of total expenditure, some rather definite plans, specifications and preliminary estimates are, of course, necessary. But too frequently overlooked is the fact that a thoroughly sound economic analysis of any alteration project involves not only *plan* studies, but also *scheme* studies in which all the facts of the building's economic situation are set forth and individually weighed as to actual or potential value. It is in preparing these latter that the architect assumes the professional attributes of a physician instead of the commercial attitude of the druggist. He has functioned as a Building Diagnostician and hence is rightfully entitled to a commission over and above the fee paid him as an architect.

This becomes increasingly apparent in cases where, as a result of scheme studies, the owner's original figure is proved to be too high to be economically sound. This situation may appear to be so rare as to be negligible. Yet its phenomenal rarity is somewhat due to the old-fashioned way in which



WALLACE PHOTOS



Will it pay to remodel old houses like those at the left? Answers to such questions can best be made by a building diagnosis that includes economic as well as architectural studies. Right: in Philadelphia Howe and Lescaze, architects, produced this new town house from one of old dwellings at the left

architects have been working;—subject to the drug-gist's urge to sell more plan-pills rather than the doctor's function to give—and charge for—advice, even if it be negative. Let it become definitely established that an architect is the only disinterested authority who is technically competent to counsel *against* remodeling as well as for it. Immediately a new branch of the profession will develop, with a new dignity,—and new fees,—of its own.

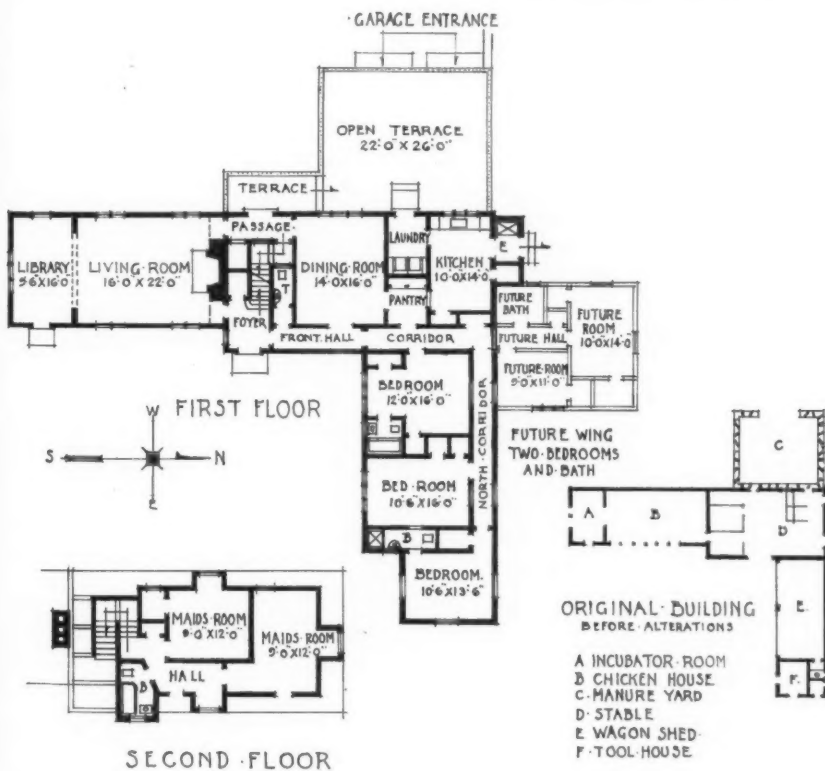
Some rules of this eventuality can be stated now. Architects must make it known from the very first conference that they are not merely glorified draftsmen hired to do manual technicalities at the client's bidding. They are professionals who have for sale, primarily, a service of advice. Let them quote a definite fee for it—even though the advice itself be negative. Let them feel free—and let the client know they feel free—to advise that the appropriation be reduced or even that the project be given up entirely. Sometimes, according to the law of diminishing returns, every \$10,000 that is *not* spent is to the client's advantage. If the architect, by reason of his experience, research and diagnosis, finds that this applies to the *first* \$10,000, he merits a fee for his discovery and should be assured of receiving it.

To all of which most architects may subconsciously make the cynical remark, "All very good. But try

and get it!" And as an echoing rejoinder we say, "Just try—and *get it!*"

The difficulty of actually doing so is linked with the fact that the professional tenets of architects prevent them from employing any form of individual advertising. Thus they are unable to reach a wide public and cannot effectively make known their readiness and competency to enter the field of economic building analysis which heretofore has belonged entirely to realtors and the staffs of banks and loan associations. Architects apparently have not considered the fact that they have power to perform a service greater than any of these—not in competition, but in cooperation with them. Most architects have done nothing toward this end. But a few have realized that times have changed and that professional practice must be adapted to the new conditions.

To these men efforts of the government to prime the building industry's pump suggested the need for sane technical guidance—*outside* the plethoras of Washingtonian alphabets. They recognized the opportunity of giving reliable and disinterested advice to building owners as to how, when and where to modernize or the equally important counsel of when and why *not to*. They recognized further that Modernization must be done in moderation, that



A graphic example of building diagnosis in the field of remodeling. The old barn was part of a small farm bought for investment purposes in the suburban territory of New York. The house at the top of the page was the result of both plan studies and scheme studies. The first plans proposed construction of a much larger structure like that of the small perspective. Analysis of costs, investment returns and probable sales possibilities modified the entire building project. Result: an economic operation well within safe financial limits and adequate architecturally for its purpose and location. Gerald Lynton Kaufman, architect

MODERNIZATION QUESTIONNAIRE

PART ONE

PRESENT CONDITION OF PROPERTY

1. Location of building.....Block and Lot numbers.....
2. Size of Plot.....Dimensions of building.....
3. Number of apartments, rooms, or stores (character and function of building, etc.).....
4. Name and address of Owner.....
5. Name, title, and address of Owner's representative.....
6. Has property been acquired by purchase or foreclosure?.....
7. Valuation of property at last appraisal.....Date.....
8. Original amount of 1st Mortgage.....Present amount.....
9. Original amount of 2nd Mortgage.....Present amount.....
10. Any interest or amortization delinquencies on either of above?.....
11. Any tax or assessment delinquencies?.....

Gross annual rents:—	Operating Expenses—
1929.....	1929.....
1930.....	1930.....
1931.....	1931.....
1932.....	1932.....
1933.....	1933.....
1934.....	1934.....
13. Amount of annual interest on mortgages.....
14. Amount of annual taxes.....Assessments.....
15. State briefly, present conditions of building.....
16. Can you furnish photographs of the building?.....
17. Do you desire to sell the property?.....

PART TWO

PROPOSED IMPROVEMENTS

1. Has any rehabilitation scheme been prepared to date?.....
2. Will the owner pay for a technical diagnosis of his problem, realizing that the resultant recommendations may be negative—that is, advising him against proceeding further?.....

IF A SCHEME OF REHABILITATION HAS BEEN PREPARED, ANSWER BELOW:

3. Character of proposed improvement.....
4. Name and address of architect, if any.....
5. Estimated cost of improvements.....
6. Have plans been approved by Building Department?.....
7. Have plans been approved by Owner?.....
8. Is a loan desired?.....Or is owner providing financing?.....
9. State briefly proposed methods of subordination of interests of 1st and 2nd Mortgagees to a loan, if this has been worked out:—.....
10. Estimated gross annual rents after rehabilitation.....
11. Estimated operating expenses after rehabilitation.....
12. Estimated interest, taxes, etc., after rehabilitation.....
13. Is loan to cover any fees outside of actual contract, such as those of Architects, Engineer, legal services, etc.
14. Will the owner engage the services of a committee of experts to advise him as to the merits of this project, with a written report, for a fee not to exceed (1/2 of 1% of estimated contract cost..... or a minimum charge of \$25.00).....

rehabilitation might well be over-emphasized to the detriment of client and community. Laws of diminishing returns apply to locality—improvement, regional-improvement and community-improvement as well as to individual buildings.

All these factors suggest the possibility that architects in each community might organize bodies of clear-and-far-sighted business men to examine the economic side of local rehabilitation problems. In an organization of this kind an architect would be instrumental in furnishing a consultation and advisory service to banks, loan associations and property owners before it is too late to be effective in any particular.

Such bodies actually have come into being in various localities. They illustrate a type of organization that enables the architect to command a professional fee even for negative advice, that efficiently publicizes his hitherto unrecognized ability to do so, that links him with the leaders of his community and, in cooperation with them, permits him to drive home the local application of the laws of diminish-

ing returns and economic stability in all types of building operations.

Typical of such bodies is the Rehabilitation and Modernization Association, Inc., which has been recently formed in New York. It is a non-profit membership corporation whose Board of Directors includes prominent architects, engineers, bankers, realtors, city-planners, contractors, material-dealers, and officers of loan associations, trade associations and street-associations. It aims to benefit all building, construction and allied industries through the proper kind of rehabilitation and modernization of ailing structures, where the projects are deemed economically sound, and not elsewhere.

It functions by inviting property-owners throughout the metropolitan area to submit, for consideration by the Association, their plans for remodeling projects. It analyzes and appraises each scheme that is properly presented, and advises upon procedure necessary to place the property on a profitable operating basis. It rejects unsound projects.

An organization such as this can assist property



HEDRICH-BLESSING

A case in which the economics of the situation made a drastic remodeling operation a vital necessity. The Austin Theater, Chicago, Ill., Sobel & Drielsma, architects



owners by advising them as to the correct method of procedure for securing plans, estimates, economic diagnoses and preferential treatment in connection with sound projects, by lending institutions. It can assist the financial institutions themselves by eliminating unsound projects from their consideration, and thus, through its own trained staff and committees of experts, save them a considerable portion of the time spent in fruitless effort.

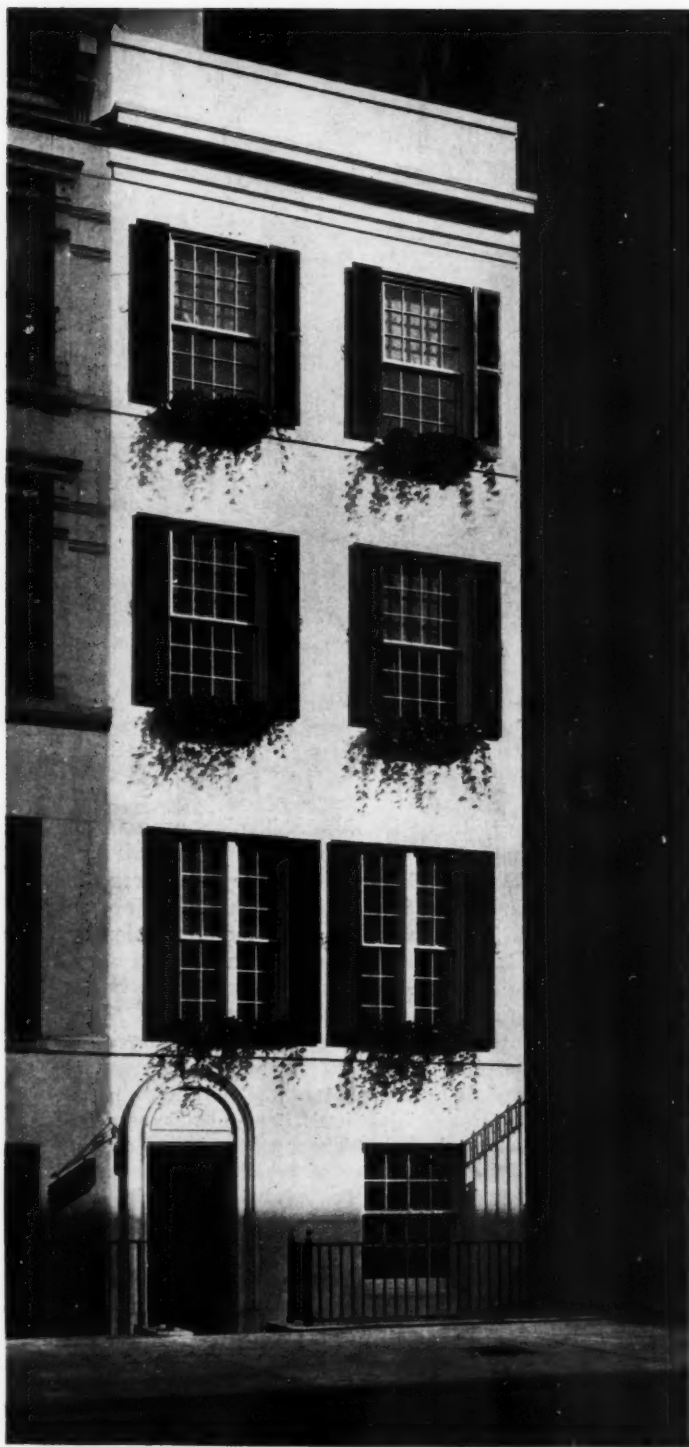
The New York organization is supported principally through individual memberships and by voluntary contributions of local industries. But similar associations in other communities might well charge a service fee for the examination and economic analysis of projects. And there is no reason why an architect, as the most logically competent person to pass upon such projects, should not develop this field into something as lucrative as it is urgent. It is as important in the life of a property as a medical diagnosis is in the life of the individual.

The general lines along which to proceed are indicated in two questionnaires on page 18. These illustrate the nature of service to be rendered in the

economic diagnosis of rehabilitation projects and are similar to the one approved by the New York organization. They will produce the information necessary for an intelligent economic analysis of any remodeling project. Following the preparation of a locally applicable questionnaire an architect should be able to interest a group in forming a service-organization similar to the one mentioned.

To architects with the druggist-psychology it may here be pointed out that even if such an organization produced no direct fees, the contact with property-owners would in itself be a valuable source of prospective clientele. The opportunity to examine and advise upon scores of rehabilitation projects is hardly something to be lightly cast aside,—even where it means cooperation with fellow-architects where these have already been retained by the owners. But the far greater opportunity to make architectural service into something more than salesmanship is what should really appeal, even if the cash return may not be immediately apparent.

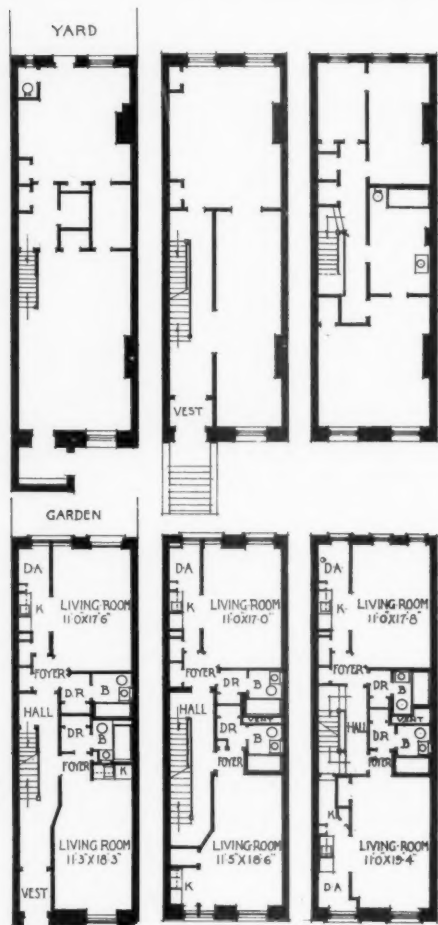
Hence to those whose reaction to the idea of a fee for architectural diagnosis is expressed by the words "try and get it," the answer might be given:—"try first, to feel that you're worth it." Let the architect recognize his own value in this important field, convincing himself of the unique service for which he alone can well qualify. Then he should easily make others realize that he as a Diagnostician has something of value to give.



GOTTSCHE

Left, building after alteration. Top plans are before changes were made

Work included general demolition, resurfacing with imitation limestone, new interior partitioning, electrical and plumbing systems and renovation of existing heating plant. Finish throughout is equal to the best practice for buildings of this type. Alteration cost, including architect's fee, approximately \$19,000. Before, the building was an almost total liability. At present most apartments are rented



FIRST FLOOR SECOND FLOOR FOURTH FLOOR

ALTERATION AT SIXTY-FIVE EAST NINETY-SECOND STREET, NEW YORK, CHARLES H. LENCH, ARCHITECT

WILLIAM GEHRON, ARCHITECT

ALTERATIONS TO HOUSE OF C. PAUL JENNEWEIN, LARCHMONT, NEW YORK

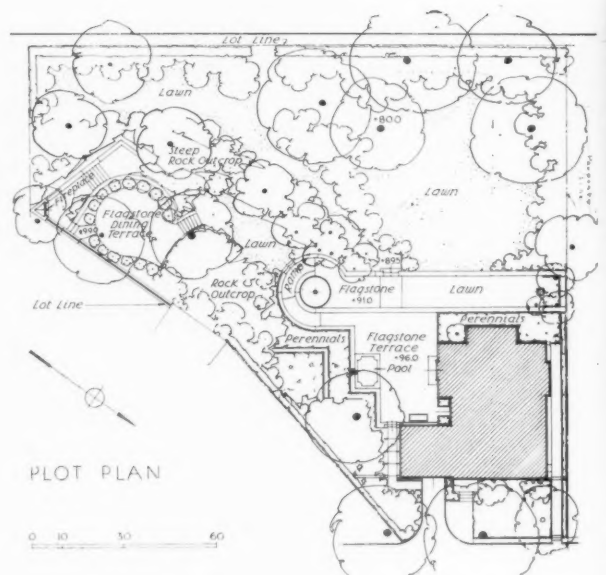
MICHAEL RAPUANO, LANDSCAPE ARCHITECT

Photographs by Samuel H. Gottscho

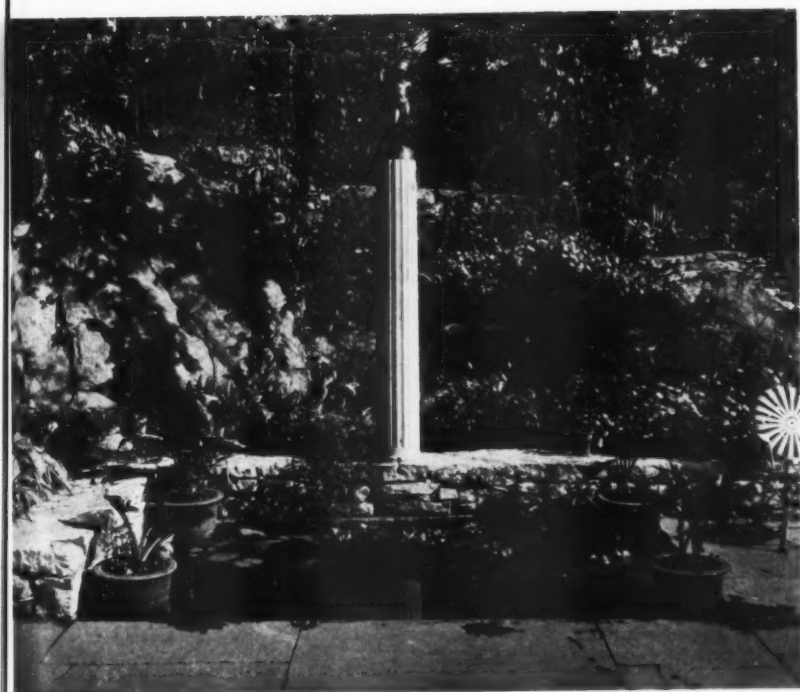




NORTH ELEVATION



HOUSE OF C. PAUL JENNEWAIN, LARCHMONT, NEW YORK, WILLIAM GEHRON, ARCHITECT

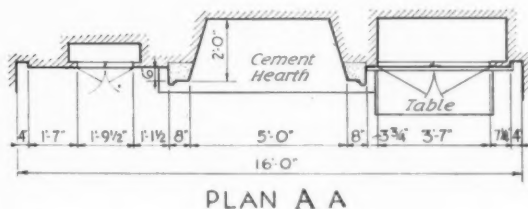
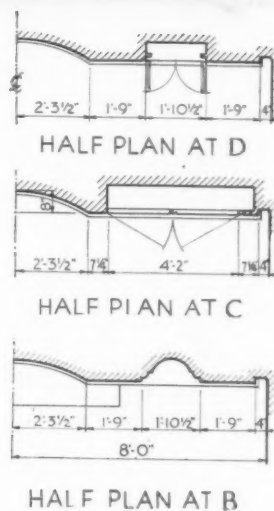
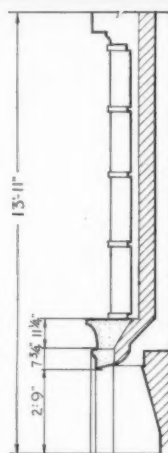
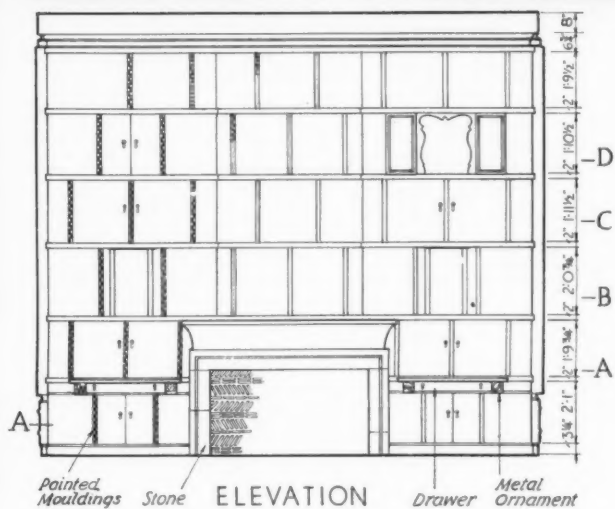


On this page: above, terrace and entrance to living room. Left, detail of pool. On facing page: above, rear of house before alteration; below, the old house from the street. Original clapboards were covered with wire lath and stucco. Additions are brick veneer over frame construction. Brick walls are coated with cement paint. Solid portions of plans indicate old house; hatched portions show changes and additions

HOUSE OF C. PAUL JENNEWEIN
LARCHMONT, NEW YORK

WILLIAM GEHRON, ARCHITECT





Above: living room fireplace and details of end wall. On facing page: bay window in living room

HOUSE OF C. PAUL JENNEWEIN
LARCHMONT, NEW YORK
WILLIAM GEHRON, ARCHITECT





On this page: left, end wall of hall and entrance to living room. Below, dining room. Woodwork and panelling in both rooms, knotty pine. Ceilings, plaster with slightly modelled surface. On facing page: Detail of mantel and panelling in living room

HOUSE OF C. PAUL JENNEWEIN
LARCHMONT, NEW YORK

WILLIAM GEHRON, ARCHITECT





Detail of steps and retaining walls near flagstone dining terraces. Michael Repuano, Landscape Architect

HOUSE OF C. PAUL JENNEWAIN, LARCHMONT, NEW YORK, WILLIAM GEHRON, ARCHITECT



O L D M E X I C O . . .

Much more exists south of the Rio Grande than peons and padres. Old Mexico is intimately linked with much of our own national background; and in her cities are ancient buildings that are souvenirs of a romantic and vivid history. In the southernmost part of the country were the centers of Mayan culture which produced an architecture equal in monumental splendor to that of Egypt. All of it is now a ruin. The Spanish conquest leveled native structures as it obliterated native civilization; and the Spanish tradition seems almost modern compared with the remoteness of its antecedents. Thus, through the wall of a Spanish church at Cholula, Puebla, the volcano Ixtaccihuatl appears above as a majestic symbol of lost glory. On the two following pages: a side altar in the church of San Francisco Acatepec, Cholula; and a side door of the parochial church at Taxco, Guerrero. Photographs are by Alexander Paiget









Above: This 18th Century aqueduct, reminiscent of Roman works in Spain, still carries water to the city of Querétaro. On facing page, church at Santa Rosa, State of Querétaro





Long before the coming of the Spaniard the serpent-god of the Mayans was worshipped in this "Teocalli," or pyramid, of the "Ciudadela" at San Juan Teotihuacan, near Mexico City, D. F. On the two preceding pages: a detail, forever "modern" in its simplicity, at the base of a wayside shrine at Acolman, State of Mexico; and a corner ornament, or "Hornacina" on the parochial church at Taxco, Guerrero





"Technics and Architecture"

Lewis Mumford's book furnishes the text for a pointed commentary on the present status and future trends of the architectural profession

BY WILLIAM L. STEELE, F.A.I.A.

AT present the architectural profession is in a feeble and anomalous position: we architects are "all dressed up but have no place to go." We have spent the better part of a lifetime preparing for a fruitful maturity, and are confronted with unmistakable evidence that the more mature we are the less demand there is for what we have to offer. What has happened—

It is easy to answer in terms of "the depression," but the root of the trouble lies deeper. Perhaps the answer is that the architect has, more or less blindly, permitted himself to be maneuvered into the position of a super-numerary. He might almost be termed a parasite, for all the organic necessity for his existence that is in evidence. He is not essential to the development of a mechanized, industrialized, regimented system of living. His time-honored position has been neatly and effectively bypassed.

As might have been expected from the author of "Sticks and Stones" and "The Golden Day," Lewis Mumford's latest book, "Technics and Civilization," contains much for the architect. So much, in fact, that one wonders what is left to be said in the book which he promises, and which is to deal directly with the effects of "Technics" upon architecture. Mumford, like Louis Sullivan, takes the organic view of civilization. He sees it living and whole, as did Louis. However, the contemporary scene has been shifted so completely since Louis wrote that his optimistic and exuberant expression of future hope has turned out to be tragically baseless. At that time the practice of architecture was rampant and unterrified. Louis flayed it for its sins. It did not seem likely then that the punishment for those misdeeds would be so condign and so sweeping.

It did not escape Sullivan that the practice of architecture was even then essentially servile. It grieved him, even unto righteous wrath, that the

young men were being taught to imitate rather than to emulate. But he looked to Democracy, (beautiful dream) to be the liberating force which would free architecture from its servitude, and cause it to blossom and bear fruit in a sane and well-formed expression of the New Day.

Thirty years have swept by, and Mumford shows how inexorably and, in the main, how steadily the development of modern "technics" has overshadowed everything else. Moreover he directs our attention to the historic fact that this tendency has been in motion for at least a thousand years. He says: "Mechanization and regimentation are not new phenomena in history: what is new is the fact that these functions have been projected and embodied in organized forms which dominate every aspect of our existence." And again:—"It remained for the peoples of Western Europe to carry the physical sciences and the exact arts to a point no other culture had reached, and to adapt the whole mode of life to the pace and the capacities of the machine."

The "exact arts," says Mumford—and accurately. There is scant place for the "fine arts" in modern technics. It is true that the eternal quest of beauty, though side-tracked every few hundred years, still persists; and we have even laughed the "tin Lizzie" out of its place at the head of the motor car industry. We have begun to design good-looking automobiles, better appearing machines of all kinds. This is what Mumford calls the "neo-technic" phase, which is to continue until it permeates and transforms all the ramifications of machine-industry. But this does not mean that we have any reason to expect a renaissance of the fine arts.

The Building Industry, as we know it, is still largely in its "eotechnic phase." It is mainly a matter of handicrafts, which have been protected against the encroachments of the machines chiefly by the labor unions. The mediaeval guilds were for

years bulwarks of the craftsmen against the first labor-saving machines. It is improbable that the modern labor unions will succeed any better once the eagerly awaited "upturn" gets under way. Already we have seen the tremendous increase in the use of machinery in building. Not only do we use machine-made materials, but the steam shovel, the concrete mixer, the pneumatic drill, the power-driven hoist, crane and derrick have vastly changed the *modus operandi* of construction especially on the larger structures.

MACHINES to lay brick have been thought of; and it is probable that such inventions only await the day when the captains of industry will order them to the front. A fierce battle with the unions will doubtless take place; and if it should result in a "draw," there will be no more brick walls. Monolithic concrete is ready to be used for everything that any other form of masonry has ever supplied. Already the metal-glass building, perennially predicted since the time Frank Wright conducted a competition for the old Luxfer Prism Company, is being seriously considered and is at present the subject of costly experimentation.

Doubtless, there will always be some sort of building. If we could free ourselves from our financial nightmares, and get rid of speculators, politicians and other artificial "restraints of trade," it is probable that the building industry in some form would be fairly constant in its operation. But whether or not the architect, as we know him, will long continue to have any place in the program is quite doubtful. It is probable that we may see him making terms with his adversaries, "cutting prices," and doing other undignified things to get a job. In this way he will attempt to swim with the current. And he may succeed. Or he may appear in larger numbers under some strange title, such as "architect-contractor." Far better for such as he to hold sway over building operations than the promoters and brokers who have been posing as builders. We architects have helped to develop this latter type. At least, we have done little or nothing to oppose it.

The architect has seemed to shrink from actual contact with construction work in the field. He has done so by selling "partial service," by employing superintendents to take his rightful place, and has, by so doing, assisted the contractor to a better contact with the Owner than he himself ever enjoyed. Hence it is that, to the average Owner, the contractor has been the "practical" man who has made real the architect's difficult abstractions. We have, furthermore, taught the engineers how to design buildings. These young men are usually not hampered by any allegiance to a professional tradition. They have "hired out" to anybody, were he speculator, promoter, contractor, realtor or what-not. They had already filled the place of many an architect long before the rush of building stopped.

When it begins to "boom" again, they will be ready to start right in where they left off and they will be older, and hungrier.

There seems to be a wide-spread tendency to take advantage of the architect's hard case, to undermine him, to reduce him to the ranks, to cut down or take away his professional fee. A noted architect dies in New York while engaged upon a large Government project. Immediately, as we read, the Comptroller of the Treasury seeks to whittle down the fee to be paid the architect's successors for carrying on the dead man's work. At the Convention of the American Institute of Architects last May some fine-sounding assurances were made by a representative of high authority. The delegates were told that the Treasury intended to make use of the architectural profession for all but the less important Federal buildings. In spite of that, it seems now that the only way an "outside architect" may hope to be employed by the Government is as a wage-earner in Washington.

We have heard the preliminary speeches that heralded the HABS and HOLC as avenues for architectural employment. We have observed, however, that the comparatively few architects who have been given work to do under these projects have had to accept a merely nominal wage. We have observed also the almost complete fiasco of the fine and constructive program of Federal Housing. The Virgin Islands have been rehabilitated, we hear, and a lot of money has been spent in certain places here and there. On the other hand, the Secretary of the Interior has utterly failed to appreciate one of the finest and ablest men in the profession and has publicly rebuked the "too-articulate" architects who have presumed to speak frankly in Washington. Both sides, apparently, have forgotten the famous dictum of Teddy Roosevelt to "speak softly, but carry a big stick."

Such is the current scene in brief; and such the current trend. Can anything be done about it?

OBVIOUSLY the architects of this country should be better organized. As obviously, the natural thing to do would be to fill the ranks of the American Institute of Architects to "war strength." We are accused of maintaining an active and very annoying lobby in Washington. We ought to be maintaining one equally active and just as annoying in every State Capitol, and in the Council Chamber of every city of the Nation.

Philosophically as well as historically—as Mumford's book shows—it is futile to attempt to turn back the main current of events. But the "innocent bystander" is always hurt. The architects of this country have too much at stake to stand by passively and see the traditions of a century uprooted. To accomplish anything one must attempt still more; and perhaps in fighting for our rightful place in the building industry we shall at least gain our needed readjustment to the fast-changing conditions.



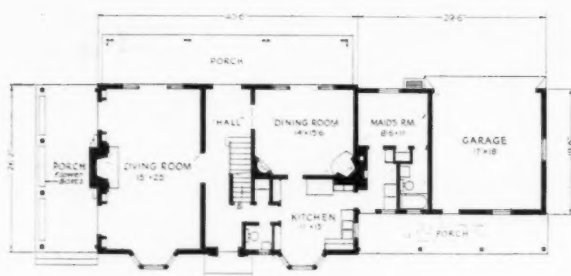
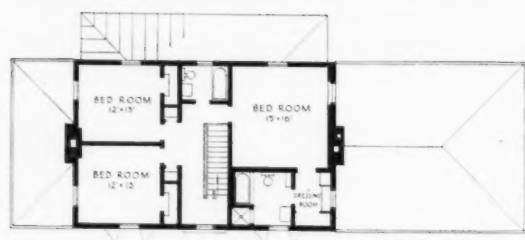
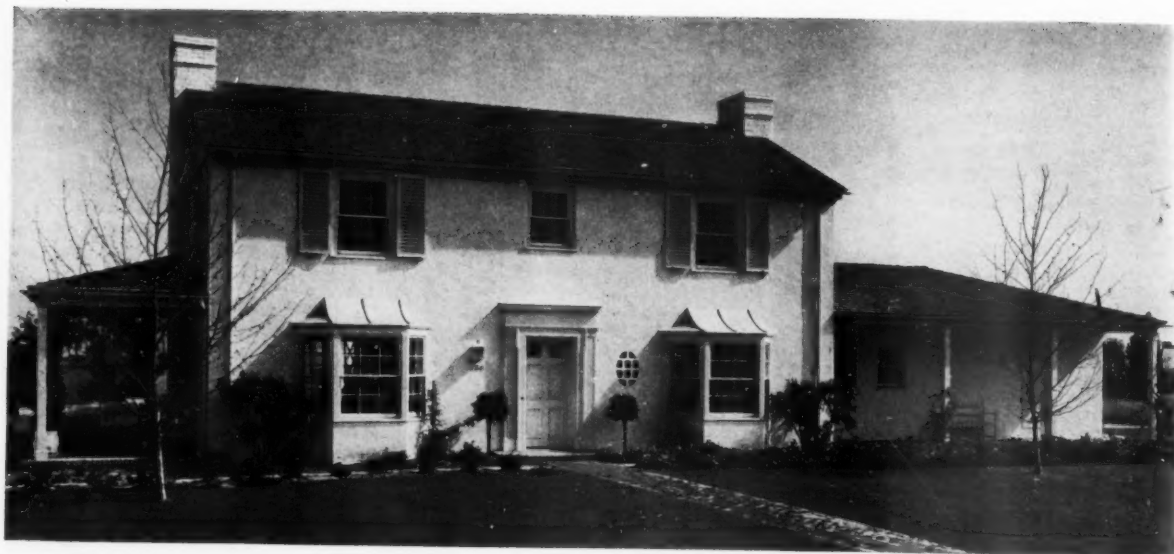
H. ROY KELLY, ARCHITECT

HOUSE OF MAJOR HARRY LLOYD TOPLITT, BRENTWOOD HIGHLANDS, CALIFORNIA

Photographs by George D. Haight



Construction: wood frame, cement stucco finish. Roof: red cedar shingles, stained and overglazed to give weathered character. Copper porch roof, acid treated. Walls, pale yellow; exterior woodwork, white; steps and porch floors, red brick



NORTH ELEVATION



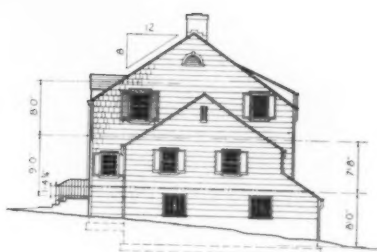
EAST ELEVATION

HOUSE OF MAJOR HARRY LLOYD TOPLITT, BRENTWOOD HIGHLANDS, CAL., H. ROY KELLEY, ARCHITECT

C. C. MERRITT AND
URBAIN G. TURCOT, ARCHITECTS

HOUSE OF MRS. W. F. WEBSTER, LARCHMONT, N. Y.

Photographs by Harold Haliday Costain





Cubic contents: 36,500 cu. ft. Cost per cu. ft.
at current prices of material and labor, 36 cents

HOUSE OF MRS. W. F. WEBSTER
LARCHMONT, NEW YORK

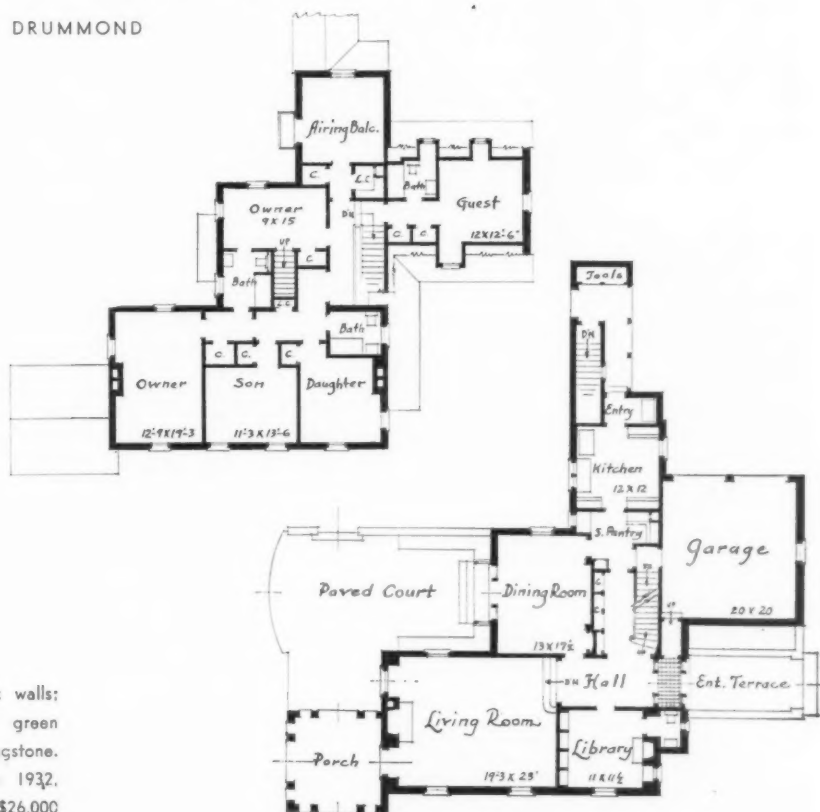
C. C. MERRITT AND URBAIN G. TURCOT
ARCHITECTS



CARL CORNWELL TALLMAN, ARCHITECT

HOUSE OF RICHARD C. S. DRUMMOND
AUBURN, NEW YORK

Photographs by H. E. Yury



Construction: Whitewashed common brick walls; weathered shingle roof. White trim, green blinds. Porch, terrace and court paving, flagstone. House contains 56,550 cu. ft. Cost, in 1932, exclusive of court and driveway paving, \$26,000





Above: Entrance side. Below: Kitchen wing

HOUSE OF RICHARD C. S. DRUMMOND, AUBURN, N. Y., CARL CORNWELL TALLMAN, ARCHITECT



CONSTRUCTION: Foundation, hollow tile; walls, frame with rustic stone veneer and clapboards painted white. Roof, gray wood shingles. House contains insulation of blanket type. Interior floors, oak; trim, white pine. Cubic contents, 48,100 cu. ft. Cost, in 1930, \$19,500

DUNN & COPPER, ARCHITECTS

HOUSE OF MR. AND MRS. LAWRENCE McDONOUGH
SHAKER HEIGHTS, OHIO

Photographs by Ernest Graham

A s I t L o o k s t

100 BUILDINGS PER MONTH

PLANs and specifications at the rate of about one hundred buildings per month are at present being turned out by the Treasury Department, Procurement Division, Supervising Architect's office. It is estimated that this office has grown from a personnel of some seven hundred to about sixteen hundred during the past year. In addition to many formerly practicing architects now employed in that office as draftsmen, there are more than twenty architects in the office on the basis of "consultants." Had this work been distributed among architects in their own offices throughout the United States accompanied by efficient cooperation from the Supervising Architect's office, it would have done much toward relieving local unemployment. As it is these men are forced to accept a nominal salary and live in Washington, temporarily, where wartime prices again prevail and living accommodations are at a premium.

AWAY WITH PUSSY-FOOTING!

ELSEWHERE in this issue William R. Steele has something to say about architects and their position in today's and tomorrow's affairs. In the November issue of *Pencil Points* H. Van Buren Magonigle quits maneuvering from the "high ground," plunges into the lowlands and charges the architects individually and collectively with both guns blazing. It is significant that the objective of both men is the same, though the individual method of stating it differs. They say, in effect, that **SOMETHING MUST BE DONE**; and they say it with all the emphasis which the capitals imply here.

That means, of course, that they think something is wrong to begin with. Everyone of us probably has his own idea regarding the problems of the architect. Not all have yet become vocal about them. What are these problems? How did they come into existence? How best can they be solved? Such questions are important. The editors would like to know what you think about them—and, that means, to quote Mr. Magonigle, "Not So-and-So or So-and-So, but **YOU!**"

WHY NOT A BARGAIN YEAR?

WITH an existing large potential demand for new building one stimulus to an increased volume of construction would be a reduction in cost of labor and material. In the face of a reduction in building volume, construction costs have continued to rise from an index figure of 158 in 1932 to more

than 200 in 1934. In one year the cost index figure rose more than 12 per cent. While even in the face of Mr. Ickes' pronouncement relative to a lowering of building costs, it is too much to expect that such will occur though its desirability must be admitted. Labor would not lose, for instead of part time employment it would go back on full time. Weekly, monthly or yearly income is the important thing. The rate per hour may mean nothing. Many people always look for bargains. Why not a year's bargain in building costs? It might be the incentive which would start the wheels of all industry turning with increasing rapidity.

PROGRESS IN PREFABRICATION

PREFABRICATED houses that can be erected in a few days from mass-produced steel panels and standardized equipment are no longer merely the dream of young moderns. They are products of a going industrial concern, and are already available through a growing chain of dealers. Proof of all this is offered in the first catalog of General Houses, Inc., a Chicago organization headed by Howard T. Fisher. It presents a background of the subject showing what has been done abroad along prefabrication lines, and outlines what Mr. Fisher's company has done, can do and will do toward providing "adequate, economical conditions for living in terms of immediate and progressive practicality." To any architect the catalog is worth the price asked, first because it describes what is undoubtedly an ingenious solution of a complete technical problem, but more pointedly because it sets forth progress of a building idea that without question will bulk large in the future of housing and industrial activity.

ENCOURAGING RESULTS

FROM the observation of Harry Payne, Houston, Texas, he believes that a great many people now beginning to employ an architect are of a class that formerly would not have done so. He attributes this change to the promotional work various building material producers have voluntarily rendered the profession; the elevation of public taste through such magazines as *Good Housekeeping* and *House Beautiful*; and to dignified advertising of the profession such as that of *AMERICAN ARCHITECT* now being published in *House Beautiful* and *Town & Country*. It is encouraging to know that at least one architect sees results from these sources. If others believe as Mr. Payne does, the editors would appreciate knowing about it.

t o t h e E d i t o r

EDUCATIONAL PROGRESS AT CORNELL

ANY move to educate the layman to a better understanding of the economic and social importance of large-scale city planning is a constructive step toward a better world in which to live. Public apathy more than antagonism has spelled failure to past efforts in this direction. Ultimate successes in this field must be based upon educational work that will finally break down resistance due to the public's ignorance of what city planning is and how best it can be applied to solve some of the problems of existing conditions.

At Cornell University such an educational attempt will be made. A special group of courses in Regional Planning under supervision of Gilmore D. Clarke, landscape architect and city planning consultant, has been made possible by a three-year grant from the Carnegie Corporation. The courses are open to all students. They are non-technical and are offered in the interests of stimulating "cooperation of many diversely trained individuals united through an informed interest." Such far-sighted action merits imitation. If the idea embodied in Cornell's example were adopted, the way would soon be cleared for basic and stimulating progress in this important planning field.

CREDIT WHERE DUE

AN editorial on this page in the November issue appeared to credit Mr. Harry Lucht as the originator of the idea of commemorating American Architecture on our postage stamps. As a matter of fact the idea was—to our best knowledge—first presented in an article published in *AMERICAN ARCHITECT* in 1933. The author of the article brought the idea to the attention of the President and the Post Office Department following publication of the article. Subsequent postage stamp issues imply that the idea "took." To correct any erroneous impression which may exist as to the author of the idea, the editors again call attention to the July, 1933 issue of *AMERICAN ARCHITECT* containing the article "Architectural Philately" by Eric Fleming of New Brunswick, N. J.

BUY CHRISTMAS SEALS

ARCHITECTS everywhere will wish to pause in their march toward recovery to consider the plight of others similarly engaged—but under a far greater handicap. This month the National Tuberculosis Association is conducting its annual sale of Christmas seals. The sale commemorates the 50th

anniversary of the beginning of modern sanatorium treatment in the United States by Dr. Edward Livingston Trudeau. His one-room cottage at Saranac Lake, N. Y., was the nucleus from which the work of the Association grew. Today there are 659 sanatoria, largely supported by proceeds from the sale of Christmas Seals. The program of the Association needs all possible support for its continuance. By buying Christmas Seals you can help in a vital humanitarian work.

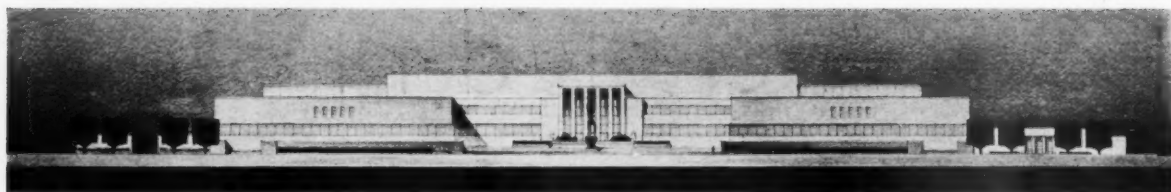
A BIG OPPORTUNITY AND RESPONSIBILITY

FIFTY-EIGHT architects and about two hundred real estate appraisers have just finished a school conducted by the FHA. The courses were designed to prepare these men for posts as regional administrators of Title II of the National Housing Act. These architects will be largely responsible for maintaining standards of design, construction and equipment as bases for mortgage insurance risk ratings. In the selection of these District Architectural Supervisors, the Technical Division of FHA sought men of high professional caliber. Each will occupy a position to which the public, for the first time, can look for official leadership in standards of residential construction. They have a weighty responsibility to bear, for in their work as FHA administrators they represent to a cautious public the architectural profession. It will require all the courage, tact and backbone these men possess to grasp this rare opportunity to establish the profession on a sound basis in the eyes of the public.

THE KING SPEAKS

THE Royal Institute of British Architects now has a building of its own in London. At the opening ceremony on November 8th the Institute was addressed by H. M. the King who said in part, "In an age when millions of men and women spend their lives in a world of streets, the shaping of these calls for thought, skill and imagination. Every building, whether it be a cathedral or a factory, a shop or a city hall, forms part of a prospect on which many eyes will rest; and the designer of the humblest dwelling has a duty, not only to those who live in it, but to those who pass by."

Every architect must appreciate the truth of that statement. It implies a duty which the profession should not forget. Would that more owners of buildings in every city could be made to see this point of view and made to understand its value to them even though it be a selfish one.



EAST ELEVATION
COMPETITION OF THE ART INSTITUTE OF CHICAGO

COURTESY THE ART INSTITUTE OF CHICAGO



KAUFMANN-FABRY

Above: the traditional English inn is scarcely recognizable in this Yorkshire hotel, the walls of which are constructed entirely of glass. The scheme is carried out in three colors. Right: spectacular achievements of the steel industry furnish the theme for photo-murals in this club room of the Union League Club in Chicago, designated as the Steel Room and dedicated to members in the industry. Top of page: winning design in the Chicago Art Institute competition. Holabird and Root, architects

Trends and Topics

- Building has apparently turned the corner, according to a report of *Dun and Bradstreet*. Normally there exists a seasonal decrease of 2.5 per cent in the number of building permits taken out during October. In contrast, statistics reveal an increase of 40.9 per cent over the preceding month as an average of 215 cities throughout the country. The increase over last year averaged almost 43 per cent, New York figures showing a gain of 81.9 per cent. Total value of construction also increased 15 per cent over the corresponding period of last year. This marks the first upward turn in building operations since the boom year of 1925.

- Each home-builder in German Housing Settlements is required by the government to employ an architect, even if his house costs as little as \$1,250, according to Louis Kamper, Detroit architect, who recently returned from Germany. The architect, on the other hand, must not let the final cost run beyond

the sum originally agreed upon, unless some unforeseen condition develops. His fee is from four to ten per cent, depending on the size of the job. A small additional fee is allowed for supervision and a final certificate of inspection. The government holds the architect personally responsible and will prosecute him for fraud should he fail to have the contract carried out as stipulated.

- Depression has touched Canada with a light hand if a recent report from the Department of Trade and Commerce is any indication. With few exceptions—notably in bank loans and stock trading—Canadian business has increased enormously during 1934. As compared with last year, steel production showed a 119.3 per cent gain, logging a gain of 115.7 per cent and even the building industry figures rose sharply. Building permits increased 16.5 per cent and the number of contracts awarded was greater by 54.7 per cent.



L'ARCHITECTE



UNDERWOOD AND UNDERWOOD

Above: an island natatorium group near Madrid, Spain, designed by Louis Gutierrez Soto, architect, and constructed of reinforced concrete throughout. It contains a popular priced outdoor pool and two de luxe pools. Other features are a gymnasium, a restaurant, and bath-houses with showers. A ventilating system is designed to prevent condensation. Left: approved design of new \$10,000,000 building for the Department of the Interior, Washington, Waddy B. Wood, architect. It will cover two city blocks and will contain about 2,200 air-conditioned rooms

of the Times . . .

- The most recent application of safety glass is found in buildings which border golf courses, where windows are frequently shattered by hard-driven balls. It is also being specified for use in windows and doors of psychopathic wards; for shop windows liable to breakage by thieves; and for display cases exhibiting valuable merchandise. In appearance, the safety glass is said to be as clear and brilliant as the finest plate.

- Results of the Better Housing Campaign during the few months of its existence have been all that its sponsors hoped for, according to the encouraging tones of FHA news releases. Over twenty millions have been lent under the Modernization Credit Plan. More than eleven thousand lending agencies had made a total number of 11,157 loans up to November 23rd. The impetus given to modernization activity by the FHA campaign has undoubtedly had a good effect throughout the country. In New

York State, for example, twenty-five millions were spent in one week for repair and modernization. New Orleans expenditures will be more than six millions. Kansas City's pledges total almost five millions. These figures are impressive. They cannot help but produce some improvement in business.

- Formation of a "Technical Bureau" to furnish professional advice and services in connection with the program of NHA is proposed by the Allied Architects and Engineers of Detroit. Advice would be given free, wherever possible, and professional services of all kinds provided at a low fee. It is proposed to include appraisals, surveys, inspection and supervision among the Bureau's services, as well as the receiving of bids, awarding of contracts, and payments to contractors following the precedent of HOLC. The Bureau's effectiveness in promoting new construction is expected to be especially active under Title II of the NHA. (Continued on page 82)



Etching made with pencil on paper over copper plate. At left, pencil sketch made on the paper surface; right, print made after lines were etched into plate with acid

Easy Ways to Make an Etching

BY JOHN PETRINA

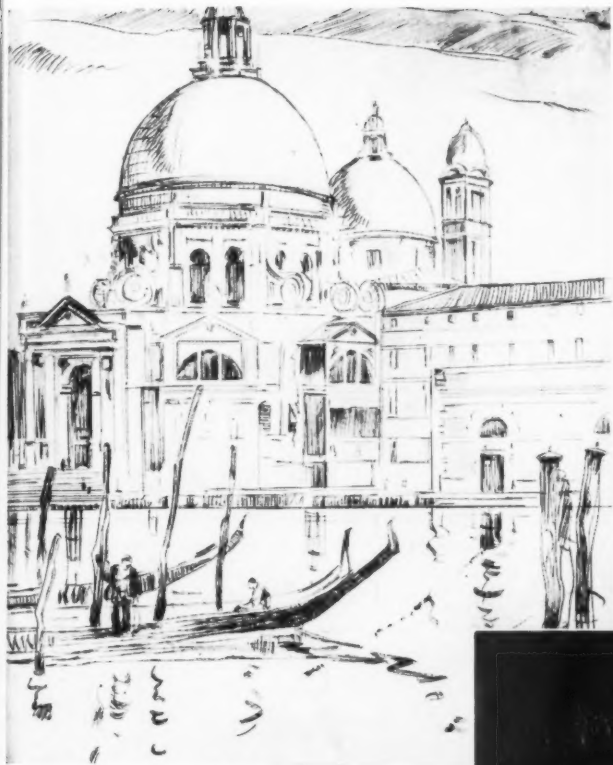
Drawings by the author

MANY architects who sketch with ease and ability refrain from attempts at etching because of the apparent difficulties involved. However, there are easy ways of producing an etching which make their fears groundless. Etchings, and even dry-points, can be made using the materials employed by the architect in his daily work. The actual drawing of the etchings illustrated on these pages was done on paper—in one case with a pencil, in the other with pen and ink.

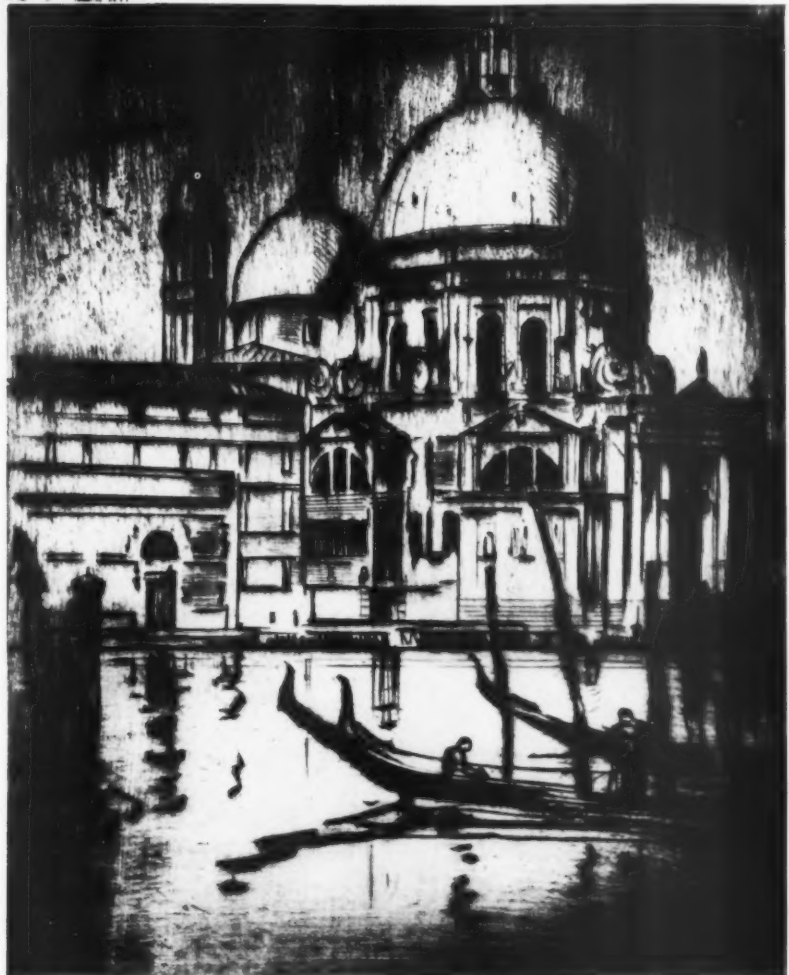
Reproduced above is an example of the "soft ground" etching. The process followed offers the unique advantage of enabling the etcher to use the familiar drawing pencil, rather than an etching needle, and to work on paper instead of directly on the plate. In preparation, an etching plate is cov-

ered with a ground, or wax protecting surface, which has been made softer than customary by the addition of varying proportions of tallow. More tallow is used in cold weather than in warm.

Over this prepared surface is placed a sheet of paper slightly larger than the plate. The projecting edges of the paper are bent around the plate and glued to its back, thus securing the paper in place. The drawing is then made, using a pencil of sufficient hardness to indent the paper and pick up the ground under it. When the drawing is completed the paper is removed and the acid or mordant applied to the plate as in regular etching. This can be done by varnishing or shellacking the back of the plate, immersing it in an acid bath—usually consisting of diluted nitric acid or diluted perchloride of iron—



Dry-point on celluloid: Grand Canal, Venice. Left, the celluloid plate. Below right, the print. The tone on sky and water was obtained by leaving ink on the surface of the plate before printing. Below left, John Petrina, the artist, is shown pulling a proof from his etching



and then etching the exposed lines to the required depth. Another way is to apply the mordant on the plate where the etching is to take place.

The ground and varnish are now removed with either turpentine or gasoline, the clean plate is slightly warmed, and etching ink applied to it with a roller or dabber. Surplus ink can best be removed from the unetched surface with a hard cloth, such as felt or mosquito netting. The plate is then placed on the bed of the press. Paper which has been softened by dampening is placed over it, felt etching blankets cover the paper and the whole is run through the press, resulting in a soft ground etching.

The celluloid dry-point process dispenses with the copper plate entirely and is perhaps the simplest way of making an etching. In this case, the drawing is made in ink on transparent paper. The paper is then turned over so that the drawing shows in reverse. Over this "reflected" drawing a sheet of celluloid is placed and thumb-tacked securely to a drawing-board. The celluloid is then scratched with a well-sharpened phonograph needle, firmly gripped in a lead pencil holder. From time to time ink can be

rubbed into the lines to show more clearly the progress. When the drawing has been completely worked over and the scratched celluloid seems satisfactory, the celluloid is removed and inked as in the soft ground process.

This time, since the plate is not metal, it must not be warmed; but otherwise the printing is identical. The dry-point of the Grand Canal, reproduced on the preceding page, shows the effect obtainable by leaving ink on the surface of the plate where tones are desired.

By these two simple methods, therefore, the pen or pencil sketcher can explore the possibilities of etching. Obviously, there is still another advantage to this system, in that by overcoming his original apprehension and by accustoming himself to some of the tools and technic of etching, it will be a comparatively short step to the more conventional methods. There will always be "purists" who will not stop until they are engraving or etching directly on the copper plate. Perhaps these suggestions will be instrumental in persuading them painlessly to such a course; in any case it is an absorbing hobby.



Charcoal drawing of Chateau Frontenac, Quebec. By John Petrina



F. S. LINCOLN

Modern Interior Lighting

PART TWO

AMERICAN ARCHITECT REFERENCE DATA

No. 15, December 1934



PEYSER & PATZIG

An indirectly lighted artificial window and indirect vertical corner coves illuminate the oval private office of Nathan Ohrbach, New York. The room occupies interior space and is completely air conditioned. Designed by Kenneth C. Welch, architect.

Right: A modern chandelier of glass and metal retaining the traditional branching form and decorative character, in which most of the body of the lamps is shielded from direct vision and light is cast largely toward the ceiling and side walls. Apertures in the metal cups and hub allow a small amount of light to "spill" through the glass bracket arms, enhancing their decorative value without glare. Title page: Chandelier and wall brackets need not use the candle type of light to harmonize effectively with rooms of well defined traditional or period character.



F. S. LINCOLN

Modern Interior Lighting

PART TWO

AMERICAN ARCHITECT REFERENCE DATA

No. 15, December, 1934

MANY ELEMENTS employed in modern lighting involve no special dimensional or planning considerations other than proper spacing and capacity of outlets that serve them. In this category fall luminaires, drop lights, portable floor and table lamps, and decorative ceiling fixtures and wall brackets. In this group also belong many new "fixtures," developed within the last year or two by progressive manufacturers, in which the traditional character and eye appeal of the ornamental chandelier and wall bracket have been blended successfully with reflectors and refractors that conform to modern concepts of good lighting.

Such units deserve special consideration in any study of interior illumination because they satisfy the normal desire to see the source of light; they retain the values inherent in the tradition of the flame as a light source; they have unlimited decorative possibilities; and they can provide almost any desired illumination level without glare and under complete control. They represent also, a logical and economical way of modernizing the lighting of interiors by merely taking the place of inadequate and glare-producing fixtures without expensive reconstruction for new outlets or built-in sources.

Light sources that are built into the structure affect preliminary planning and usually require special detailing on architect's drawings. Performance characteristics, design limitations and space requirements of these less familiar light sources follow:

Cove lighting requires a fairly high ceiling free of beams and other obstructions. The side wall or ceiling close to the light source should be vertical or nearly so; the maximum rise should be at the center of the ceiling, but an arc of a circle is not desirable as the lamps produce a spotty effect at the cove. The narrower the room, the easier it is to secure uniform lighting.

Coves should be above eye height and must be accessible for relamping and cleaning. They should be sufficiently below the ceiling to give the light a chance to "spread" and thus avoid spottiness. See Fig. 3 for recommended design practice. Unless the cove is covered with dust-tight glass, plaster should not be used to form the reflecting trough behind the lamps as it quickly collects dirt or dust and

must be frequently painted to maintain its efficiency.

Reflectors or prismatic glass covers should be used where wide distribution is necessary, as in the case of a wide room or coves close to the ceiling. Concentrating specular reflectors of high efficiency placed close enough together to prevent spottiness are recommended for best results in relatively wide rooms. Prismatic lens plates and Fresnel lens sections may be used with reflectors to form a sheet of light projecting at a narrow angle across the ceiling.

Cove dimensions depend upon the type of reflector and the wattage of lamps. A three-inch trough using tubular or lumiline lamps represents the smallest practical cove with limited light output. Allow from 5x5 inches for 40 watt lamps to 10x10 inches for 200 watt equipment. See Fig. 3 for dimensions of representative units.

Ceilings lighted by coves high up on the wall are likely to reveal any surface imperfections or irregularities, especially if painted with gloss paints. Where the coves cannot be dropped well below the ceiling line it is usually better to use a textured treatment, such as sand finish or palm finish, and to let the light bring out the texture, than to attempt to produce a mechanically true ceiling.

Efficiency of cove lighting varies widely. Under very favorable conditions a plaster cove may have a coefficient of utilization of 18% to 20%. With specular reflectors of high efficiency the coefficient would rise to 25% or more. If the reflection factor of the ceiling is less than 70% these values must be reduced proportionately. See section on Lighting Calculations for the application of these data.

Indirect ceiling illumination of any other type, such as from reflectors mounted in pylons, floor stands, side-wall brackets or suspended indirect luminaires and light troughs, should follow the principles indicated for cove lighting. The light source should be above eye level, the light should have a chance to spread before reaching the ceiling, and distribution of these sources should be such as to avoid spottiness or unequal lighting of ceiling areas. When such sources project their light vertically or nearly so, the character of the plasterwork is of little importance and even beams and other obstructions often may be tolerated.

Panel lighting for ceilings, side walls, columns, pilasters or soffits requires space behind the glass panel face to contain the lamps and some form of diffuse reflecting surface. Important requirements are: (1) A simple means of access for relamping or maintenance; and (2) the glass face should be uniformly lighted or the lighting uniformly graded as desired, without revealing the position of the lamps or showing spottiness. This requires the right combination of background reflectors, lamp spacing and choice of diffusing glass. Obviously, the mechanical construction of built-in lighting units must be of sound design, holding the glass securely but with proper provision for expansion, and having means of access to the lamps and interior surfaces.

The reflecting niche may be rectangular or curved provided a good diffusing surface is employed, such as flat white paint or matt enamel. Shapes commonly used and their performance characteristics are shown in the diagrams accompanying Table 8. Lamp spacings for visual uniformity depend on the cover glass used, as follows:

	Distance from Glass "D"	Spacing between Lamps "S"
Flashed opal glass.....	4"	6"
Flashed opal glass.....	6"	9"
Flashed opal glass.....	8"	14"
Sand blasted or acid etched crystal glass ...	12"	4"

The wattage of the lamps makes practically no difference in the uniformity of brightness. With a high reflection background or where a grille overlay is used, the spacing of lamps may be somewhat wider than above for the same distance from the glass. All measurements are to the centers of the lamp bulbs. For data on the transmission, reflection and absorption factors of various translucent materials see Table 3.

If the glass of the panel is not one piece, the dividing strips or frames should come in the darker spaces between lamps.

Sockets should be of porcelain, and wire used in light boxes should be asbestos covered or at least have slow-burning insulation to withstand the heat generated in the enclosed space. Each box should have some means of ventilation or should have ample radiation surface to dissipate this heat.

Frosted, carved, etched and ground glasses are such poor diffusion mediums that they should be backed by a plate of flashed opal glass or else the lights should be placed at one or both sides of the light box, as for an indirectly lighted niche, and the background relied upon for uniform effect.

Luminous Boxes, beam strips and coves are governed by the same considerations as the design of lighted panels. Performance characteristics are given in Table 8.

Lighted Niches may be designed in several ways as illustrated in Fig. 2 (Part I) and Table 8. In one, lamps are concealed at one or both sides of the

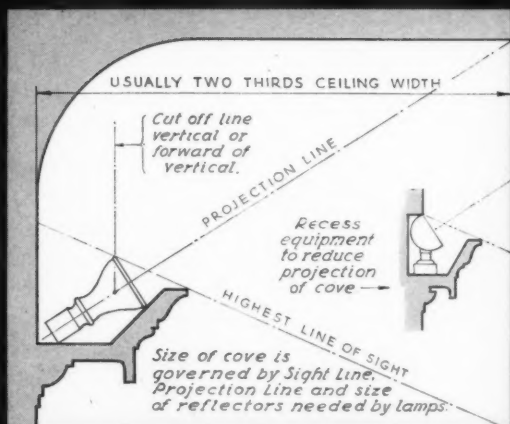
TABLE 3. TRANSMISSION, REFLECTION AND ABSORPTION FACTORS FOR TYPICAL TRANSLUCENT MATERIALS USED IN LIGHTING

Type	Thick- ness	Trans- mis- sion	Re- flec- tion	Ab- sorp- tion
	Inches	%	%	%
Clear Glass		80-92	8-10	2-10
Clear Glass (Silvered) ..			82-93	7-18
Configured, Obscure Clear Glass	.12-.23	57-90	7-24	3-21
Clear Glass:				
Satin Finish:				
—toward source...	.075	89	8	3
—away from source	.075	85-88	6-8	4-9
Acid Etched:				
—toward source...	.08	82-88	7-9	5-10
—away from source	.08	63-78	12-20	10-17
Sandblasted:				
—toward source...	.08-.12	77-81	11-16	7-11
—away from source	.08-.12	70-77	13-18	10-16
Alabaster Glass	.125-.19	60-70	20-30	10
Other Opalescent Glasses	.09	58-84	13-28	2-14
Marble (CaCO ₃):				
—one side polished	.29-.39	3-8	30-71	24-65
—impregnated ...	.12-.20	12-40	27-54	11-49
Alabaster (CaSO ₄):				
—veined	.44-.53	17-30	49-67	14-21
—colored	.25	34-50	27-29	21-39
White Ceramic Coated Clear Glass (varying diffusion)	.125	40-64	24-50	10-13
Flashed Opal Glass:				
Group 1	.08-.11	47-66	31-45	3-10
Group 2	.11-.13	27-35	54-67	8-11
Composition:				
White diffusing	.010-.025	0-41	32-75	7-27
Clear matte (typical sample)	.010	68	15	17
Solid Opal Glass:				
Group 1	.07-.14	12-38	40-66	20-31
Group 2	.07-.10	37-51	43-54	6-11
Group 3	.06-.14	13-35	65-78	4-10

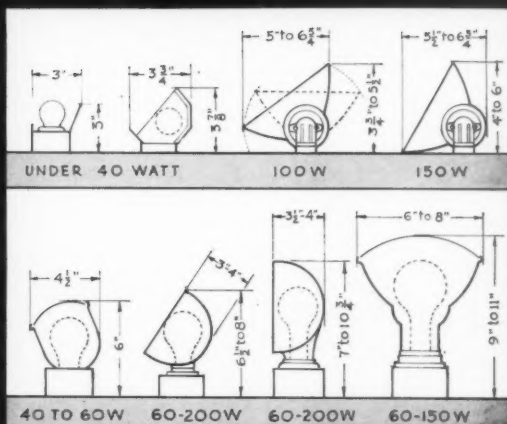
niche behind opaque members. If on both sides the considerations affecting the shape of cove lighted ceilings govern the form of the niche. If on one side only, the niche must be formed to distribute the reflection of the light rays within the niche so as to produce a uniform or graded effect as desired. A niche may also be lighted from below as shown in Fig. 2, or from a suitable soffit light at the head.

Another method places the light source outside of the niche behind an opaque reflector or trough after the manner shown in Fig. 2 for side-wall lighting of fluted surfaces and in Table 8, unit number 2. Backgrounds of niches, which are usually employed for their architectural or decorative value, may be of either diffuse or specularly reflecting material according to the effect desired.

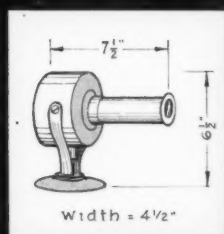
Ceiling Coffers may be lighted as niches or as panels as diagrammatically illustrated in Fig. 2, Part I.



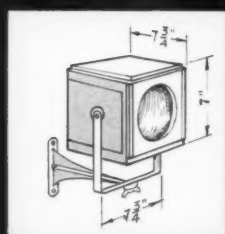
DESIGN OF COVE LIGHTING



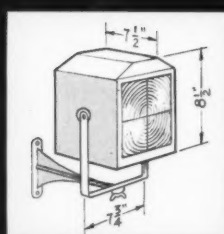
TYPICAL COVE LIGHTING UNITS



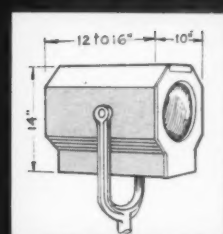
75 and 100 Watts



250 and 1400 Watts

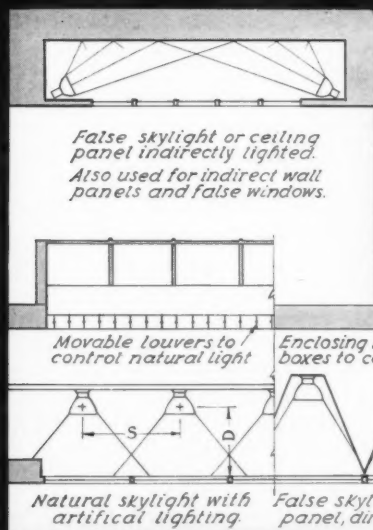


500 Watts



1000 and 2000 Watts

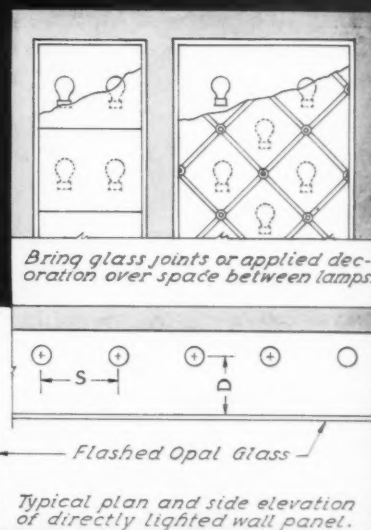
TYPICAL SPOTLIGHTS



SKYLIGHTS AND CEILING PANELS

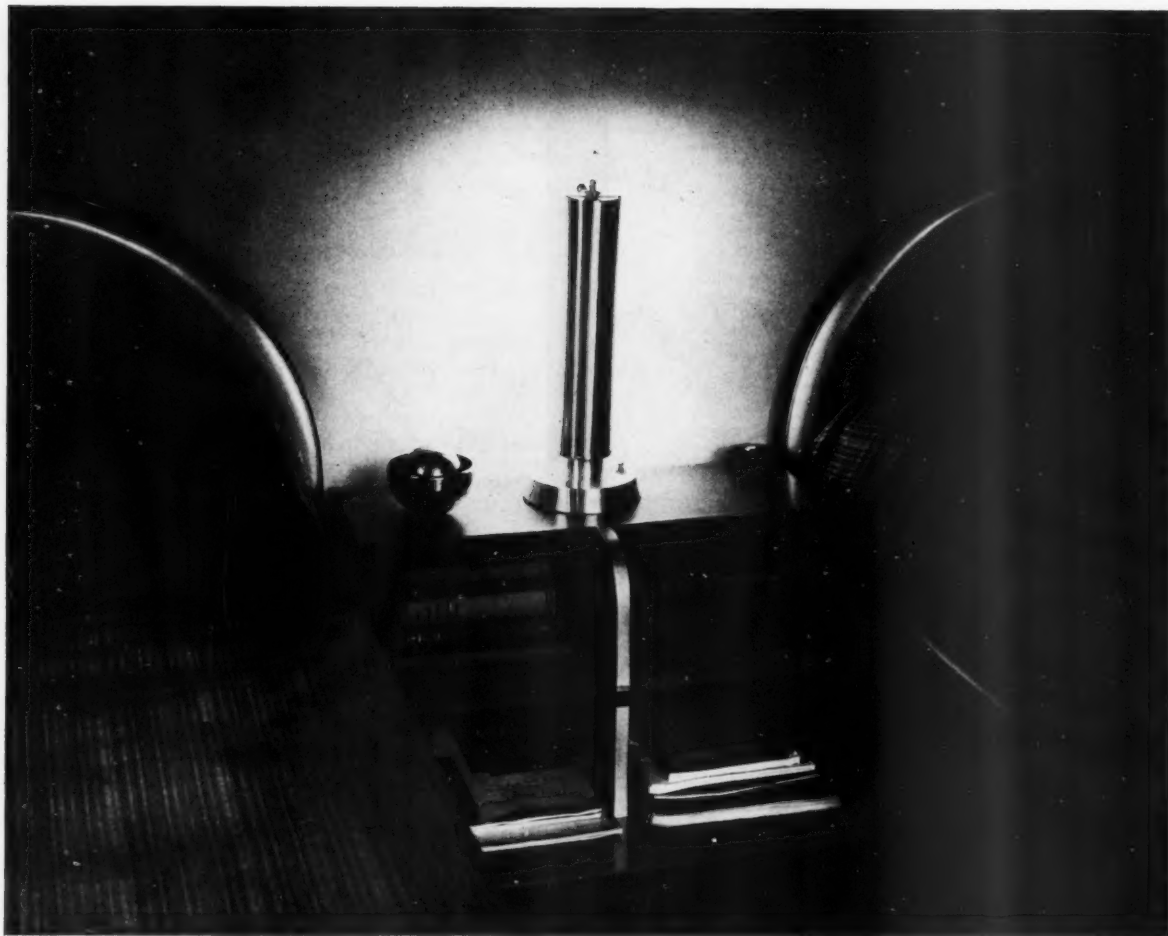


DOWN-LIGHT



DIRECTLY LIGHTED WALL PANELS

Fig. 3. Design details and approximate dimensions of typical built-in light source



VAN ANDA

Indirect bed lamp serving twin beds. As a general illuminant it reflects against the wall but may be turned either way for higher intensity lighting toward either side. Wolfgang & Pola Hoffman, interior decorators

Spotlights consist of projectors having lenses and light housings similar to those used in stage work. Since only the lens or an aperture is usually permitted to show on the surface, space adequate to conceal the housings must be provided in the ceilings, walls, false beams or other places of concealment, and provision must be made for access to them for relamping and cleaning. Dimensions depend upon the capacity of the projector and the spread of light desired. In Fig. 3 are shown several representative units and methods of mounting them, with a range of dimensions indicated.

Shielded Ceiling Lights, consisting of direct lighting units projecting their light downward through shields or fixed louvers which prevent the lamp and reflector from being visible at ordinary angles of view, are usually recessed in the ceiling as relatively small circular or polygonal panels. The shields should be so designed as to intercept the minimum

amount of light flux. They are generally finished in black to prevent reflection from the sides. Louvers can be arranged if desired in interesting symmetrical geometric forms so that they literally become a part of the decorative scheme. Similar units may be suspended after the manner of direct luminaires and reflectors. Commercially available units range from 6 inches to 18 inches in diameter; those set flush in ceilings usually need a space from 8 inches to 24 inches in depth, the lower wattage lamps, of course, taking the smaller reflectors.

Prismatic-lensed Soffit Lights are commercially available in units of one, two or more light boxes with control lenses $6\frac{1}{2}$, $8\frac{1}{2}$ or 12 inches square. The depth of boxes varies from $4\frac{1}{2}$ to 13 inches depending on the wattage. They are usually recessed in the ceiling or some beam or other horizontal projection. Their lamps are usually adjustable for control of distribution as shown in Fig. 2 (Part I).

LIGHTING CALCULATIONS

A GENERAL knowledge of how lighting loads are calculated to find the wattage necessary to provide a desired level of illumination is extremely helpful in selecting light sources for a specific project. It is equally valuable in choosing luminaires, fixtures and brackets and as a guide to preliminary design involving built-in units.

The following data are based on procedure used by illuminating engineers, but they are only sufficient for estimating and rough design purposes. The art of lighting involves imponderables that cannot be reduced to rules and formulas. Experience and judgment, often trial and error, have much to do with obtaining a wholly satisfactory result. Advice of a consultant or designing engineer should be secured for final determination and practical design.

The value of these calculations, therefore, lies largely in guiding the architect in making sufficient space provision for built-in units; in determining the number and placing of outlets serving surface or suspended luminaires and fixtures; and in making comparative studies of the electrical load required by different lighting methods to produce equivalent effective lumens.

The method of determining lighting output required to produce a desired illumination level is based on the following facts: (1) The full efficiency of a bare lamp can seldom be utilized because of its glare; the almost spherical distribution would waste light where it is not useful and some reflector or diffuser is generally necessary. (2) Each time a beam of light is reflected from a surface (such as a directional reflector, or the walls or ceiling of a room) part of the light is lost by absorption. (3) Each time a beam passes through glass or any other transmitting or diffusing medium (such as a lens or an enclosing globe) more light is absorbed or lost by reflection. (4) All lighting sources gradually depreciate in transmitting or reflecting capacity unless constantly cleaned or renewed, and there is a gradual loss of output from lamps due to ageing.

Therefore, to get a given quantity of light at any point it is necessary to add to the theoretical light output, allowances for (a) loss in the luminaire, panel or fixture, (b) loss due to absorption of light by room surfaces and furnishings, and (c) depreciation. The sum of these allowances added to the flux required on the work gives the actual output needed from the lamps.

Another factor influencing design is the relative efficiency of lamps of different types and sizes. In general, a single lamp of relatively high wattage produces more light than two or more lamps of the same total wattage. That is: a 500-watt lamp will give more light than five 100-watt lamps. Thus

when large luminaires are used, permitting the employment of single lamps in each source, somewhat higher output per watt can be anticipated in comparison with cove lighting or panel lighting, where space restrictions or the need for uniformity usually require the use of small lamps in greater number.

Procedure in estimating lighting loads can follow either of two methods. The first, employed by illuminating engineers on important projects, or for checking preliminary estimates, requires the calculation of each source of loss separately from test data and a complete knowledge of room conditions. The second, presented here, is a short cut *estimating* method (also used by illuminating engineers for preliminary design purposes) which uses experience tables that combine all the factors involved and vastly simplify the work. After approximate loads are found by this short cut method the designer is in a position to study the individual light sources he will employ and to modify his rough estimates according to his final selections.

RULE 1 . . . To find the illumination level required in any room: Select from Table 4 a general lighting level in foot-candles appropriate to the purpose or occupancy of the room. These are recommended levels for average visual conditions but may be increased wherever superior results are desired. If two or more levels are desired to vary general lighting according to mood or changes in occupancy, each of the following steps should be repeated for each lighting intensity and the light sources so divided among separately controlled circuits and so distributed throughout the room as to give the desired effect when any single level is in use. General lighting of a room is computed independently of local high intensity lighting of special areas, and usually without regard for the output of purely decorative sources.

Where desks, work benches, machines, speaking rostrums or other specific areas require relatively high level local lighting, select higher illumination levels from Table 4 which are nearest in character to the local lighting problems at hand. In the case of residence interiors this table shows local lighting levels as well as some general lighting levels. Use these data for determining the required output of local sources, either independently of general lighting or supplementary to it, according to the needs of the project.

It is difficult to specify lighting levels in a residence with the same degree of accuracy as in offices and commercial establishments because of the varying personal tastes and a general lack of experience on the part of home owners with the

TABLE 4 . . . RECOMMENDED ILLUMINATION LEVELS

Type of Space	Foot-candles Recommended	Type of Space	Foot-candles Recommended	Type of Space	Foot-candles Recommended
ARMORIES		LIBRARIES		SKATING RINK (Indoor)	5-10
Drill Sheds	5-10	Reading Rooms (on Tables)	10-20	SQUASH	20-30
Exhibition Halls	10-20	Stack Room	5-10	STORES	
ART GALLERIES		LODGE ROOMS	5-10	Large Specialty and Department	
General	2-5	LUNCH ROOM	5-10	Stores—	
On Paintings	25-100	MARKET	10-20	Main Floors	10-20
AUDITORIUMS	2-5	MOTION PICTURE THEATERS		Other Floors	10-15
AUTOMOBILE SHOW ROOMS	10-20	During Intermission	2-5	Basement Store	10-20
BANK		During Pictures	0.1-0.2	Small Stores	
Lobby	5-10	MUSEUM		Furniture	5-10
Cages and Offices	10-20	General	5-10	Furrier	20-30
BARBER SHOP	10-20	Special Exhibits	25-100	Piano	5-10
BASKET BALL	10-20	OFFICE BUILDINGS		All Others	10-20
BOWLING		Private and General Offices		TELEPHONE EXCHANGE	
On Alley, Runway, and Seats	5-10	Close Work	20-30	Operating Rooms	5-10
On Pins	30-50	No Close Work	10-20	Terminal Rooms	10-20
BILLIARDS		File Room	5-10	Cable Vaults	5-10
General	5-10	Reception Room	5-10	TENNIS (Indoor)	30-50
On Tables	30-50	Corridors and Stairways	2-5	THEATRES	
CHURCHES		Vault	5-10	Auditorium	2-5
Auditorium	2-5	POST OFFICE		Foyer	5-10
Sunday School Room	5-10	Lobby	5-10	Lobby	10-20
Pulpit & Rostrum	10-20	Work Room		TOILET AND WASHROOMS	5-10
CLUB ROOMS		Sorting, Mailing, etc.	10-20		
Lounge	2-5	Storage	5-10	RESIDENCE INTERIORS	
Reading Room	10-20	Private and General Offices	10-20	GENERAL AND LOCAL LIGHTING	
COURT ROOMS	5-10	File Room and Vault	5-10	READING	
DANCE HALLS	2-5	TRANSPORTATION		Ordinary type	10-20
DENTAL OFFICES		Depot—Waiting Room	5-10	Prolonged periods with fine type	20-50
Waiting Room	5-10	Ticket Offices	10-20	SEWING	
Operating Office	10-20	Rest Room—Smoking Room	5-10	Ordinary sewing on light goods	10-20
Dental Chair	30-50	Baggage Room—		Prolonged sewing on light goods	20-50
DRAFTING ROOM	30-50	Checking Office	10-20	Prolonged average sewing	50-100
ELEVATOR—Freight and Passenger	2-5	Storage	5-10	Fine needlework, sewing on dark goods	100 or more
FIRE ENGINE HOUSE		Concourse	2-5	DINING ROOM	
When Alarm is Turned in	5-10	Train Platform	1-2	When used for reading or writing	10-20
At Other Times	1-2	RESTAURANTS	5-10	KITCHEN	
GARAGE—Automobiles		RACQUET	20-30	General	5-10
Storage—Dead	1-2	SCHOOLS		Work Counters, Sink	10-20
Storage—Live	5-10	Auditorium	5-10	BEDROOM	
Repair Dept. and Washing	10-20	Class Rooms, Library and Office	10-20	General	2-5
GYMNASIUMS		Corridors and Stairways	2-5	Bed Light	10-20
Main Exercising Floor	10-20	Drawing	20-50	Dresser, Vanity and Dressing	
Swimming Pool	5-10	Laboratories	10-20	Table Mirrors	10-30
Shower Room	5-10	Manual Training	10-20	Sewing Machine	20-50
Locker Room	2-5	Sewing Room	20-50	BATHROOM	
Fencing, Boxing, Wrestling	10-20	Study Rooms		At mirror	10-30
HALLS, PASSAGEWAYS	2-5	Desks	10-20	RECREATION ROOM	
HANDBALL	20-30	Blackboards	10-20	General	5-10
HOSPITALS		SHOWCASES	(Two to four times that of the store proper)	Local	10-20
Lobby and Reception Room	2-5	SHOW WINDOWS		Work Bench	10-30
Corridors	1-2	Large Cities—		LAUNDRY	
Wards (with Local Illumination)	2-5	Brightly Lighted Districts	100-200	Tubs, Ironing Machine, Ironing Board	10-20
Private Rooms	5-10	Secondary Business Locations	50-100	STAIRWAYS	2-5
Night Illumination	0.1-0.2	Neighborhood Stores	30-50	MISCELLANEOUS	
Operating Table	200-500	Medium Cities		Card Playing	5-10
Operating Room	10-20	Brightly Lighted Districts	50-100	Writing	10-20
Laboratories	10-20	Neighborhood Stores	30-50	Children's Study Table	20-50
HOTELS		Small Cities and Towns	30-50		
Lobby	5-10	Lighting to Reduce Daylight			
Dining Room	2-5	Reflections	200-1000		
Kitchen	10-20				
Bedrooms	5-10				
Corridors	1-2				
Writing Room (on Desks)	10-20				

TABLE 5—ROOM AND MAINTENANCE CONDITIONS

PROPORTIONS OF ROOM	COLOR OF CEILING AND UPPER SIDE WALLS	CONDITIONS FACTORS			
		Direct Lighting Luminaires, downward reflectors, panels, recesses, luminous project- ing elements		Indirect and Semi-Indirect Lighting Luminaires, pendent and free standing reflectors, coves	
		MAINTENANCE OF EQUIPMENT			
		Very Good	Fair	Very Good	Fair
Width Approximately Four or More Times Ceiling Height	Light Medium Dark	Favorable Favorable Favorable	Favorable Favorable Average	Favorable Favorable Unfavorable	Favorable Average Unfavorable
Width Approximately Twice Ceiling Height	Light Medium Dark	Favorable Favorable Average	Average Average Unfavorable	Favorable Average Unfavorable	Average Unfavorable Impracticable
Width Approximately Equal to Ceiling Height	Light Medium Dark	Average Unfavorable Unfavorable	Unfavorable Unfavorable Unfavorable	Average Unfavorable Unfavorable	Unfavorable Impracticable Impracticable

benefits of modern lighting. Data are available, however, regarding the lighting requirements for most of the processes or work carried on in the home. The data contained in Table 4 on residence lighting are approved by the Residential Lighting Committee of the Illuminating Engineering Society. Most of these higher levels of illumination are obtained through the use of local light sources of one sort or another. Architects can do much to facilitate the adoption of better lighting in residences by encouraging the installation of modern types of fixtures or built-in light sources (or both), under the architect's supervision, which meet the standards of good lighting established herein.

In any event, it is the architect's responsibility to provide outlets for general illumination of both ceiling and wall type (even though capped for the present until the owner learns the value of general lighting from such sources); to provide a liberal supply of convenience outlets for portable lamps; and to provide suitable switching control and adequate wiring throughout the dwelling.

In any type of building where special lighting of areas such as murals, statuary, paintings or other architectural features are desired for design emphasis primarily, it is permissible to adopt a local lighting level from two to ten times the general lighting level.

ROOM CONDITIONS

As noted previously, the shape, proportions and color treatment of a room affect its lighting "qualities" and those qualities in turn vary according to the type of light source employed. Maintenance conditions, involving presence or absence of

TABLE 6—APPROXIMATE FOOT-CANDLES DELIVERED
By the Use of 1 Watt per Square Foot of Floor Area

TYPE OF LIGHT SOURCE	ROOM CONDITIONS		
	Favorable	Average	Unfavorable
Direct Lighting			
Mirrored reflector or R. L. M. dome	6.0 - 7.5	5.0 - 6.0	4.0 - 5.0
Enclosing globes	4.5 - 6.0	3.0 - 4.0	2.2 - 2.5
Panels, recesses and luminous project- ing elements	3.5 - 5.0	2.5 - 4.0	2.0 - 3.0
Semi-Indirect Lighting	3.5 - 5.0	2.5 - 3.5	1.7 - 2.5
Indirect Lighting			
Pendent or free- standing reflectors	2.5 - 4.0	1.5 - 2.5	1.2 - 1.5
Coves	2.2 - 3.5	1.2 - 2.2	1.0 - 1.2

dust and soot in the atmosphere, and the frequency of cleaning lamps and fixtures further affect lighting qualities. These influences collectively represent the room conditions under which the light source will operate. Their combined effect is expressed as the "conditions factor" of the room, not in numerical terms but relatively as "favorable," "average" and "unfavorable."



BROWNING STUDIOS [1]

Above: Three types of lighting are used in this display room of Stroheim & Romann, New York, designed by Eugene Schoen, architect. Note in upper left a wall box illuminating the ceiling, at rear of corridor prismatic lens boxes concentrating illumination on focal feature, display racks at either side strongly lighted by downward reflectors with spill shields.

At right: In the Robert Beauty Salon, Scott & Teegen, architects, have used luminous ceiling fixtures in the corridor, downward direct lighting of recessed reflectors over each hairdressing booth, and a brightly illuminated mirror in recess at left.



F. S. LINCOLN

RULE 2 . . . To find the conditions factor of a given room: Refer to Table 5, "Room and Maintenance Conditions" and select the appropriate conditions factor. The proportions of the room are self-explanatory. The color of ceilings and upper side walls may be judged from Reflection Factors given in Table 2 (Part I) as follows: "Light" normally would represent a ceiling reflectivity of 70% or better combined with side walls reflecting from 10% to 50% or both ceiling and side walls reflecting 50%. "Medium" connotes a ceiling factor averaging 50% with side walls from 10% to 50%. "Dark" connotes a ceiling reflecting about 30% and side walls reflecting from 10% to 30%. Maintenance of equipment may be classed as very good if the air is comparatively free of dust or soot and the light sources are cleaned at frequent and regular intervals. Fair maintenance implies less frequent cleaning and perhaps less freedom from dust and soot in the air.

RULE 3 . . . To estimate the wattage required to produce a selected illumination level for general lighting: Table 6 shows the approximate foot-candles de-

livered by principal types of light sources by the use of one watt per square foot of floor area. Find in this table the foot-candles data appropriate to the room conditions and to the type of light source employed. Divide the desired level of illumination in foot-candles by the foot-candles produced by one watt per square foot. This will give the equivalent watts per square foot needed to provide the required amount of light. Multiply by the area of the room in square feet to obtain an approximate indication of the total wattage needed in the room, using the selected type of lighting.

Example 1. Consider a reception room 15' x 30' in plan with a 10' ceiling of white plaster and cream tinted walls, that is to be lighted to five foot-candles by cove lighting under fair maintenance conditions. The room conditions factor found in Table 5 is "average." From Table 6 it will be found that one watt per square foot will deliver 1.2 to 2.2 foot-candles. The room has an area of 450 sq. ft.; hence the calculation is $5 \div 1.2 = 4.166$ watts $\times$ 450 sq. ft. = 1875 watts. A similar calculation, using the higher value (2.2) from Table 6, indicates a load of 1025 watts. This lower value would be



Left: Show and display room of Socony Vacuum Corp., New York, employs an indirect ceiling trough, a cornice band of structural glass blocks illuminated from behind, and showcase lighting including high voltage gaseous filled tubes for luminous signs. Irving Schwarcz, Inc., New York, Decorators.

Above: Board of directors room, General Electric Company, New York, is lighted by a luminous trough suspended from the ceiling, containing lumiline lamps for semi-indirect lighting and corner brackets of similar character to balance light distribution. Shreve, Lamb & Harmon, architects.

required if large lamps and high efficiency reflectors could be employed; the higher load would be needed if the lamps to be used were small and the cove reflecting surface of relatively low efficiency.

Example 2. An entrance lobby in an office building measures 30' x 50' and has a 30' ceiling of light color. Its lower walls are wainscoted with gray marble to 10 ft. above the floor and the upper walls are painted light gray. It is proposed to use some form of downwardly directed lights in the ceiling and to install a cove at the wainscot level to illuminate the upper side walls and ceiling enough to cross-light these areas. A general lighting level of eight foot-candles is required. The room conditions factor from Table 5 is "unfavorable" for both direct and indirect methods, assuming very good maintenance.

Table 6 shows that one watt per square foot will provide 4.0 to 5.0 foot-candles from direct downward reflectors and 1.0 to 1.2 foot-candles from coves. It may be tentatively assumed that six of the eight foot-candles required may come from ceiling lights and the remaining two from the coves. The area being 1500 sq. ft. the calculations for di-

rect lighting are: $6 \div 4 \times 1500 = 2250$ watts, or $6 \div 5 \times 1500 = 1800$ watts. The calculations for the indirect lighting are $2 \div 1 \times 1500 = 3000$ watts or $2 \div 1.2 \times 1500 = 2500$ watts required in the coves.

The wide spread between minimum and maximum wattages shown in both examples must be reconciled by exercise of judgment and knowledge of the relative efficiencies of the light sources from which a selection is made. High efficiency units with large lamps require the lower wattage; low efficiency units and use of multiple lamps of small size require maximum wattage. This wide spread also indicates the limitations of this estimating method.

Obviously, these calculations also show there is distinct economy in the use of the very best equipment available. Initial savings possible through the purchase of cheaply made reflectors, luminaires or luminous panels or boxes are soon offset by the higher current consumption they require. Since light sources are installed but once, yet operate many hours a year for many years and require maintenance and cleaning at frequent intervals, the selection of equipment warrants great care.



PEYSER & PATZIG

Above: New Weber & Heilbroner store, 550 Fifth Avenue, New York, employs cove reflectors over the side-wall showcases brightly illuminating the side walls and providing general illumination of the ceiling. Solid letter signs are silhouetted against the lighted walls. Downward reflectors in ceiling with black painted spill shields give high intensity illumination on the showcases which will require no other case lighting. Column and ceiling dome at rear lighted from reflectors concealed in case surrounding the column. Designed by Grand Rapids Store Equipment Company.

At right: Living room in residence of G. N. Stieff, Baltimore, has general lighting from cove troughs of special design containing four circuits, two white, one amber and one rose. These are controlled by motor operated dimmers with remote momentary contact push buttons in living room which permit automatic control of lighting level and color. Recessed prismatic light box in ceiling provides special lighting for portrait. James S. Nussear, Jr., architect.



DISTRIBUTION OF LIGHT SOURCES

HAVING thus determined the total wattage required by a room, it remains to divide the wattage between the various light sources to be employed, in such a way as to give satisfactory distribution.

Data on the spacing and suspension height of direct, semi-indirect and indirect luminaires should be obtained from the manufacturers of such units or from standard handbooks. Given the total wattage required, the ceiling height or suspension height available, the number of outlets that can be employed and the distribution curves of various luminaires, it is possible to select units of suitable size and type to meet all requirements of good lighting and good appearance.

Selection of "fixtures" meeting modern lighting standards may proceed on the same basis, by classifying the type of unit as either direct, semi-direct or indirect and by obtaining from the manufacturer approximate data on the light output and distribution characteristics of the fixture. If the latter are not obtainable, reduce the lamp output in lumens by the estimated loss in the fixture, using Tables II and III.

The problem of distributing light by the use of panels, coffers, niches, luminous beams and cornices, and similar built-in areas presenting fairly extensive lighted surfaces to the vision, is somewhat more complex. The brightness of the source must be considered in relation to its position, the purpose of the room and the general lighting level.

BRIGHTNESS OF LUMINOUS SOURCES

THE position of the luminous source governs the permissible brightness approximately as given below. These values are based on somewhat limited experience and are for well lighted rooms.

Projecting ceiling elements, 20 feet or more above the floor.....	500 foot-lamberts
Projecting elements on low ceilings, particularly in large rooms.....	250 foot-lamberts
Same, for mezzanines.....	175 to 225 foot-lamberts
Wall panels or recesses in passageways	200 foot-lamberts
Wall panels and niches in places of business where they are not directly in the usual line of sight.....	125 foot-lamberts
Decorative panels constantly in field of view	75 foot-lamberts

As the area of luminous surfaces is increased, the maximum desirable brightness is lowered, for glare depends in part upon the total amount of light directed toward the eye. The length of time the condition is encountered is another factor; greater brightness being permissible in lobbies, corridors and passageways than where people remain in one place for long periods.

The angle of view is important, as a luminous surface fore-shortened by its relation to the eye appears less bright than one normal to the line of vision. Hence a flush ceiling panel or a soffit light appears less bright than a luminous beam or cornice, or a wall panel having the same actual brightness.

Background contrast affects eye comfort and apparent brightness. A luminous source appears brighter on a dark background than on a light surface, and the effect of glare becomes troublesome if the contrast is severe. The eye can tolerate sources of greater brightness in light surroundings

than when the source is seen against dark hangings, walls, or ceiling. Glare from a unit of constant brightness is lessened as the general illumination level is increased; but multiplying the amount of light in a room by 10 only makes it permissible to double the brightness of the luminous units. In decorative units the brightness may range to very low values.

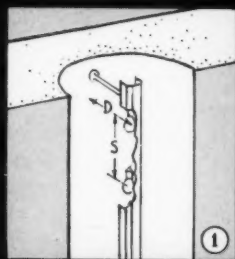
Brightness Calculations are based on the definition of the foot-lambert, which is a "unit of brightness of a perfectly diffusing surface emitting or reflecting light at the rate of one lumen per square foot." Where the brightness of a luminous unit cannot be obtained from the manufacturer (as in the case of a specially designed panel) the following rule may be used to compute the approximate brightness.

RULE 4 . . . To find the brightness of a luminous element in foot-lamberts:

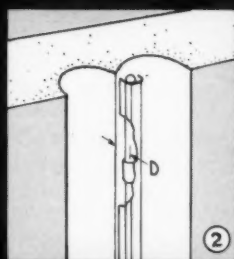
(1)—Compute the area in square feet of the luminous element (such as a panel, niche, project-

TABLE 7 . . . LUMINOUS FLUX
EMITTED BY STANDARD MAZDA LAMPS

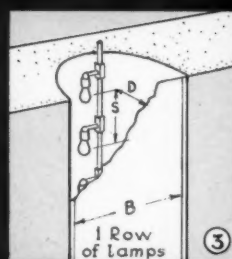
Watts	Lumens	Watts	Lumens
15.....	140	150.....	2,400
25.....	250	200.....	3,400
40.....	430	300.....	5,490
50.....	580	500.....	9,800
60.....	750	750.....	14,550
75.....	1,030	1,000.....	20,700
100.....	1,510	1,500.....	33,000



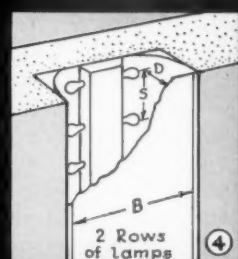
Half Cylinder Recess



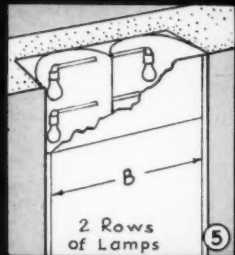
Double Recess



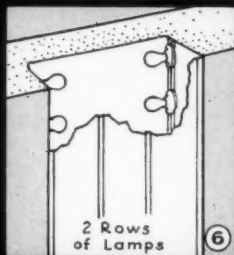
Flush Panel



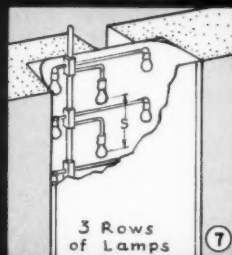
Flush Panel



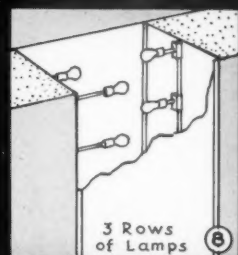
Flush Panel



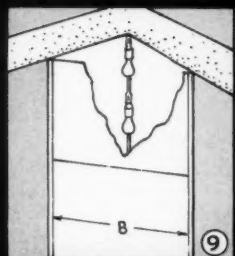
Flush Panel



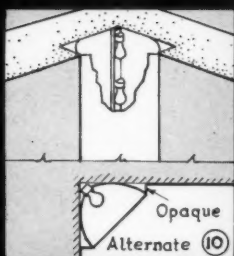
Flush Panel



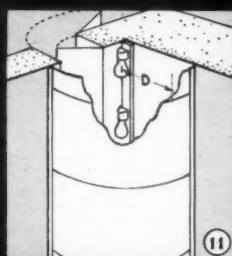
Double Window



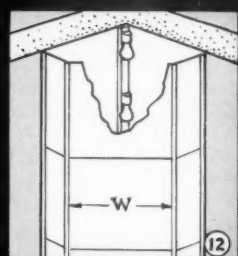
Corner Panel



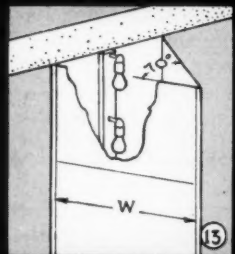
Corner Panel With Reflector



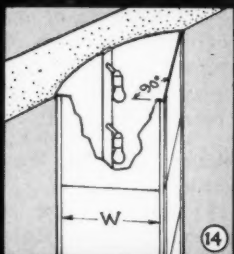
Quarter Cylinder



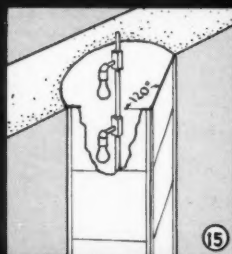
Projecting Element



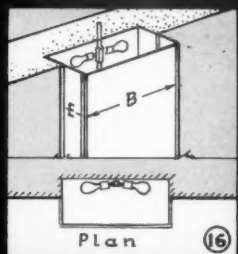
Projecting Element
70°



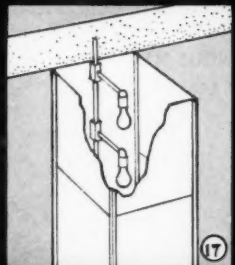
Projecting Element
90°



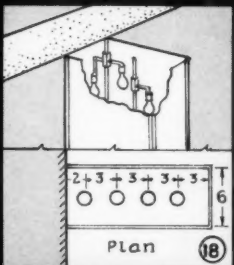
Projecting Element
120°



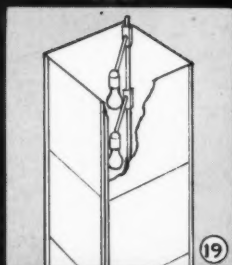
Shallow Projecting
Element



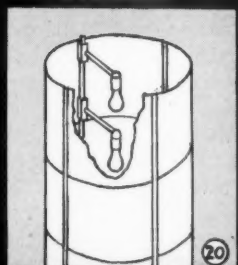
Square Projection



Deep Projection



Square Column



Cylinder

LUMINOUS ARCHITECTURAL ELEMENTS (SEE TABLE 8)

TABLE 8. EFFICIENCY OF LUMINOUS ARCHITECTURAL ELEMENTS
(Per Cent of Total Lumens Emitted by Test Units Shown in Diagram at Left)

Unit No.	Width Tested (inches) (B)	Spacing of Lamps (S)	Distance Lamps to Glass (D)	Efficiency (% of lamp lumens)					Notes
				Open	Flashed Opal	Solid Opal No. 1	Composition	Solid Opal No. 2	
1	25	1.9D	.....	43	..	..	..	..	For surface of 0.75 Reflection Factor; for other surfaces = 0.52 x Reflection Factor
2	25	1 3/4 in.	.....	39	..	..	..	..	For surface of 0.75 Reflection Factor; for other surfaces = 0.57 x Reflection Factor
3	12	1.5D	0.67B	..	49	34	27	18	For rectangular back, use 0.95 of Efficiency values given
4	24	1.5D	0.33B	..	51	37	29	22	Row spacing is 1/2 of panel width
5	24	1.2D	0.27B	..	49	34	27	20	This form of reflector, with lamp rows spaced 2/3 of panel width, produces desired transverse uniformity with shallow cavity
6	24	1.2D	0.27B	..	49 (including ground glass panel)				Lamps centered on flashed opal panels. Some spottiness when viewed at angle
7	24	1.25D	0.27B	..	49	34	27	20	.....
8	24	D	0.33B	..	65	48	38	29	Efficiency of two faces
9	20	1.5D	0.4B	..	54	38	30	23	Spacing ratio applies for longitudinal uniformity. Brightness fades off from center to sides
10	10 1/2	1.5D	0.67B	..	41	29	23	17	Transverse uniformity is attained in the narrow panel
11		1.5D	9 in.	..	57	41	31	25	For half cylinder, see data of Fig. 13
12	W=16	1.5D	0.67W	..	54	38	30	23	.....
13	W=13	1.5D	.....	..	76	57	43	39	For half cylinder, use 1.05 times above Efficiency
14	W=14	1.5D	0.5W	..	65	46	36	32	The lamps should be equidistant from and centered behind the sides
15	W=11 1/2	1.5D	0.67W	..	57	41	31	28	The lamps should be equidistant from and centered behind the sides
16	24	1.4D	0.37B	..	63	46	36	27	Projection E = 0.25B. Lamps located behind plane of wall about 1/2 E
17	12	1.5D	.....	..	74	56	44	40	.....
18	12	1.1D (3 rows)	..	..	65	48	38	29	.....
19	12	1.4D	.....	..	83	67	53	45	Framing to conceal wiring
20	Dia=12	1.4D	.....	..	87	71	58	50	Conduit riser located on least conspicuous side

Construction of Test Units: Reflector or cavity surfaces of 75% reflection factor, matte white; wiring devices painted same as background. Framing 1/2 inch wide. Lamp axes parallel to plane of glass. Transmission factors of glasses used: Flashed opal glass, 50%; Solid opal glass, No. 1, 32%; Composition (0.01 inch thick), 23%; Solid opal glass, No. 2, 18%.

ing light box or cornice, etc.) and determine the number and size of lamps to be used therein.

(2)—From Table 7 find the luminous flux emitted by the lamps to be used, in lumens. Compute the total lumens emitted within the unit.

In Table 8 and its accompanying diagrams find the type of luminous element corresponding most nearly to the unit under consideration and take the efficiency in per cent for the appropriate translucent material. Multiply the total lumens emitted within the unit by the efficiency percentage to get the approximate light output of the unit in lumens.

(3)—Divide this net output in lumens by the square feet of luminous surface (1) to arrive at the average brightness in foot-lamberts.

If the brightness exceeds that permissible for the location of the luminous element, its size may be increased without increasing the total wattage utilized.

The importance of these brightness calculations to the architect will be obvious when skylights, panels or other luminous areas are used as direct light sources. Rule 3 and Table 6 may be used to estimate the wattage needed with such light sources. But how large they must be and how they should be distributed in the room can only be determined by establishing the permissible brightness as here described.

In general, when these luminous sources are used to produce uniform distribution of light throughout a room they should be ceiling units; as side wall

panels, unless high on the walls, give fairly high level lighting on adjacent horizontal surfaces, but the more remote areas are less effectively lighted. Vertical surfaces, however, are well lighted by wall

panels. Furthermore, such luminous sources should be distributed throughout the room in proportion to the light desired in each part, as it is undesirable to have some elements brighter than others.

WIRING AND CONTROL EQUIPMENT

IN all lighting calculations, it is assumed that the lamps used are to be operated at their rated voltage. In actual practice this only occurs when the wiring to these outlets has been designed to minimize voltage drop by sizing the wires employed in proper relationship to the length of the circuits. The importance of this feature cannot be over-emphasized; the calculations are based on the assumption that the voltage at the socket is that marked on the lamps. If a 120-volt lamp receives only 115 volts it will deliver but 86% of its rated light output. This subject is discussed in detail in AMERICAN ARCHITECT "Reference Data No. 8—Electrical Wiring Materials"—November, 1933, to which the reader is referred for data based upon "Minimum Specifications for Adequate Wiring of Lighting Circuits" in various types of buildings. An indication of the wire sizes required to serve lighting circuits is given in Table 9, which is based on a 2% maximum voltage drop on 110-volt, two-wire circuits. The new minimum standards recommend 1½% voltage drop as maximum and the use of no wire smaller than No. 12, but the data in Table 9 are commonly used in wiring calculations.

Control of Lighting Circuits is an important part of the architect's problem, for the modern use of light demands convenience of use as well as adequate levels of illumination. Individual light sources or logical groups of luminaires requiring not over one circuit are usually controlled from wall switches placed at a convenient control point. Where several circuits are subject to control from the same point, these switches are either assembled in gangs or mounted in enclosing panel boxes. Three-level lighting using two-filament lamps may be controlled by combination switches consisting of two tumbler switches assembled in the same box. One tumbler controls the smaller filament, the other the high wattage filament, and both are operated together for maximum lighting. Three-circuit electrolier switches may also be adapted to this purpose.

Where large groups of lights involving several circuits are controlled at the same time, it may be most economical to employ a remote control switch placed wherever wiring economy dictates, which is operated in turn by a momentary contact button at the point of most convenient access. The use of remote control switches makes it unnecessary to carry large wire sizes to wall switches, thereby often

TABLE 9 . . . BRANCH CIRCUIT AND FEEDER
WIRE SIZES FOR VARIOUS LENGTHS OF RUN

Wattage Load 115 Volt Circuit Load	Amp. Load	LENGTH OF RUN IN FEET															
		30	40	50	60	70	80	90	100	120	140	160	180	200			
575	5	14	14	14	14	14	14	12	12	12	10	10	10	10			
690	6	14	14	14	14	14	12	12	12	10	10	10	8	8			
805	7	14	14	14	14	12	12	12	10	10	10	8	8	8			
920	8	14	14	14	12	12	12	10	10	10	8	8	8	8			
1,035	9	14	14	12	12	12	10	10	10	8	8	8	8	6			
1,150	10	14	14	12	12	10	10	10	10	8	8	8	8	6			
1,380	12	14	12	12	10	10	10	8	8	8	8	6	6	6			
1,610	14	14	12	10	10	10	8	8	8	6	6	6	6	4			
1,840	16	12	12	10	10	8	8	8	8	6	6	6	4	4			
2,070	18	12	10	10	8	8	8	8	6	6	6	4	4	4			
2,300	20	12	10	10	8	8	8	6	6	6	4	4	4	4			
2,875	25	10	10	8	8	6	6	6	6	4	4	4	2	2			
3,450	30	8	8	8	6	6	6	6	4	4	4	2	2	2			

NOTE: This table is based on 2% loss in voltage on 110-volt, 2-wire circuits, or 1% loss on 220-volt 2-wire and 110/220-volt, 3-wire circuits. For good voltage regulation design feeders for a maximum of one per cent voltage drop, branch circuits for a maximum of two per cent (preferably 1½%) voltage drop.

Where wire larger than No. 10 is required to eliminate excessive voltage drop on branch circuits, split the circuits, or move the panel board closer to the load center.

Length of Run is the one-way distance from source of supply to panel or from panel to outlet. The length of wire required between these points is double this distance for 2-wire circuits and three times the distance for 3-wire circuits.

saving more than the cost of the remote control apparatus in materials and line losses.

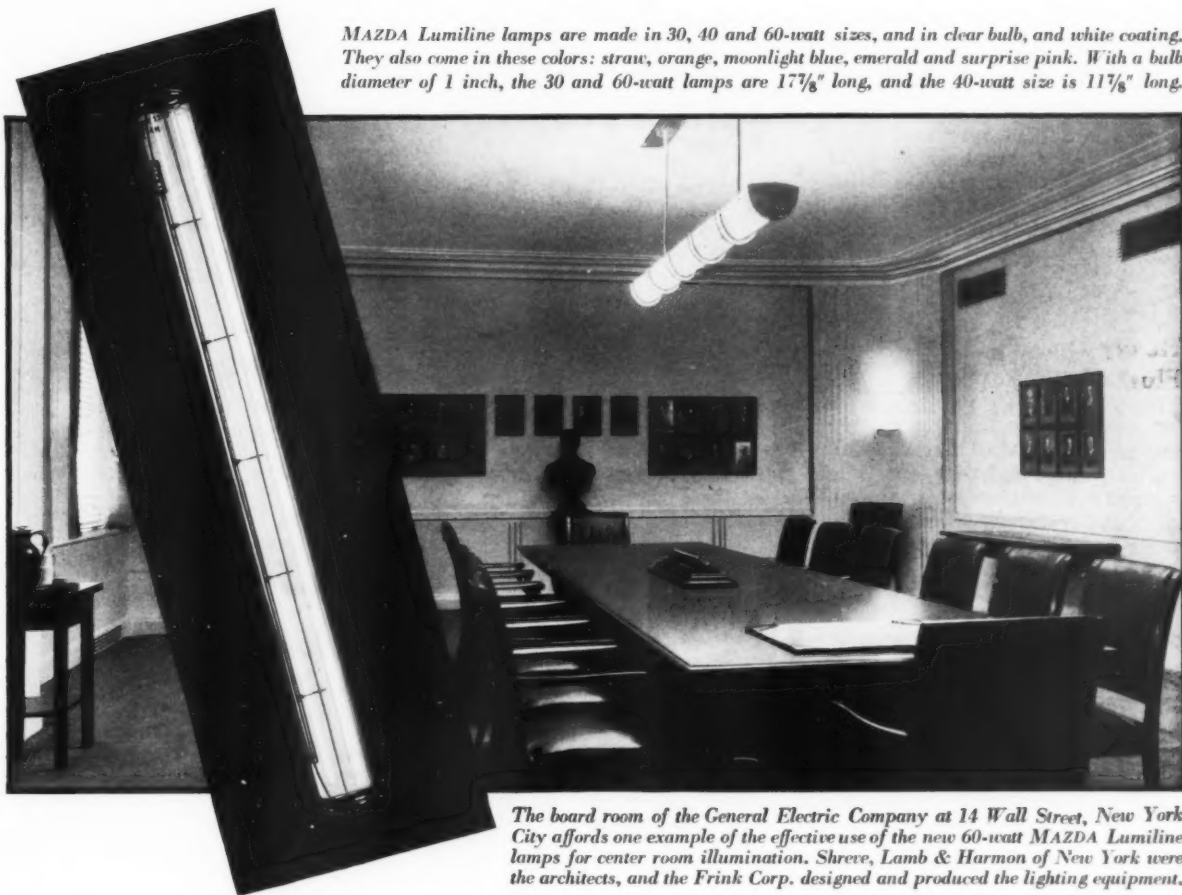
Automatic control of light has been made possible by the development of photo-electric cell relay equipment which responds to prevailing illumination in any given space. This light sensitive element will turn on artificial lights wherever natural lighting diminishes below the desired minimum level of illumination. The lights remain on until turned off manually or by a time switch, or until natural light increases the level of illumination sufficiently to dispense with the artificial sources.

Where graduated illumination is required as in auditoriums, dance halls, theatres, etc., it is preferable to use alternating current and reactance dimming because it is much more efficient than old style resistance dimming. The new thyatron control combined with reactors permits the most delicate effects and the finest graduations.

These two articles were prepared under the guidance of Alvin L. Powell, president of the Illuminating Engineering Society, as consultant, by The Technical Editor of AMERICAN ARCHITECT. Data have been drawn from many sources, particularly the manuals and handbooks of leading manufacturers of Mazda lamps and modern lighting equipment

Meeting the DEMANDS of BETTER LIGHT FOR BETTER SIGHT

MAZDA Lumiline lamps are made in 30, 40 and 60-watt sizes, and in clear bulb, and white coating. They also come in these colors: straw, orange, moonlight blue, emerald and surprise pink. With a bulb diameter of 1 inch, the 30 and 60-watt lamps are 17 $\frac{7}{8}$ " long, and the 40-watt size is 11 $\frac{7}{8}$ " long.



The board room of the General Electric Company at 14 Wall Street, New York City affords one example of the effective use of the new 60-watt MAZDA Lumiline lamps for center room illumination. Shreve, Lamb & Harmon of New York were the architects, and the Frink Corp. designed and produced the lighting equipment.

IN the development of the new MAZDA Lumiline lamp, the General Electric Company has given the architectural profession an instrument for creating effects and environments of greater interest and appropriateness. In new construction and in modernization, light is being applied in a multitude of architecturally co-ordinated forms. The Nela Park Engineering Department of the

General Electric Company is headquarters for the fundamental design information needed by the architect to plan these installations so that the resulting illumination will also meet the demands of the Better Light-Better Sight movement now sweeping the country. For specific information and data, write to Dept. 165, General Electric Company, Nela Park, Cleveland, O.

GENERAL  ELECTRIC

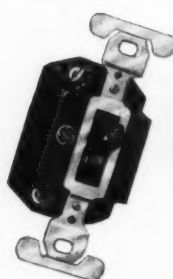
G-E Time Saver Reference Data on General



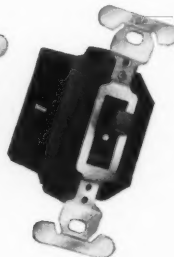
Switches and Plates

Enclosed Flush Tumbler Switches

for ordinary circuits. Mechanisms are completely enclosed in a moulded compound or Textolite box. The mechanism is fully protected against mechanical damage while being installed. Ample wiring room is provided.



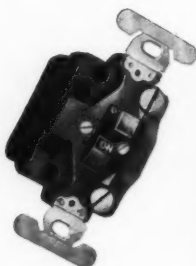
GE2842



GE2756

Heavy-Duty Flush Tumbler Switches

for heavy lighting loads in chandeliers, store lighting, etc. Made with totally enclosed mechanisms for mounting in standard deep-type outlet boxes. They are used for controlling circuits up to and including 30 amperes.



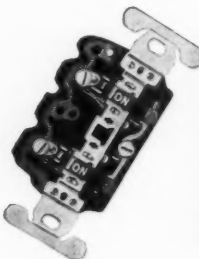
GE2923



GE2851

Combination Flush Tumbler Switches

for space-saving control and 2-filament lamps. They consist of from one to three tumbler switches mounted in the same Textolite container under a single gang plate. These switches provide concentrated control of several circuits.



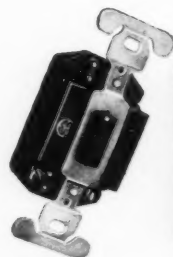
GE2907



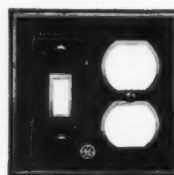
GE2316

Flush Locking Tumbler Switches

for public places are operated by a key instead of a tumbler handle. They are used for control of lights in rooms open to the public or wherever it is desired to limit control to authorized persons. They are made in all standard types.



GE2976



GE2599

Mercury Tube Flush Tumbler Switches

for silent operation. Control circuits by means of a mercury tube. Since there is no snap mechanism, operation is silent. Recommended for hospitals, nurseries, bedrooms.

Combination Switch and Pilot Light

Switch may control outdoor light or any remote light such as cellar or attic. Pilot light attracts attention to switch when "on". Bulb is easy to replace, necessitating only removal of protection dome from the plate.

Textolite Plates for Switches and Outlets

have become the accepted standard because of their durability, freedom from tarnish or discoloration and fine appearance. They are made in black and brown Textolite, brown being standard. They are available in various styles and combinations.

Combination Plates for Switches and Outlets

can be furnished in all standard thicknesses of brass and in many finishes for all combinations of switches, convenience outlets, and pilot lights. Also, Textolite Plates, brown or black, to meet most combinations.

GENERAL ELECTRIC

Electric Materials for Lighting Service



Outlets, Receptacles, Plugs

General Electric Convenience Outlets For Portable Light Sources

Convenience Outlets

are made in both the single and double type, for side or top wiring. Twin outlets are also made with separate feed and ground. This permits switch control of one of the outlets while the other outlet is permanently alive.



GE2534

GE2991

Polarity Plugs and Heavy Duty Receptacles

are provided for circuits carrying more than 5 amperes at 125 volts. These can be used on spots and other heavy-duty applications where a local disconnect is desirable. Specially designed plugs and receptacles assure maintenance of polarity.



GE996

59197

GE2959

Porcelain Lampholders

are available for built-in lighting fixtures. Porcelain is used for heat resistance and light reflecting ability. Available in four sizes: candelabra, intermediate, medium and mogul. Also in mogul size for two filament lamps.

Outdoor Flush Receptacles

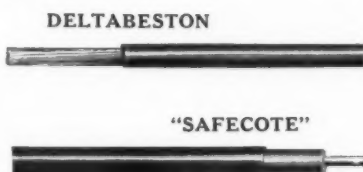
consist of a single convenience outlet, mounted in a heavy cadmium-plated flush plate, rubber seal gasket, and weatherproof cap. Their use, together with weatherproof cap for the appliance lead, provides an outdoor outlet on porches, etc.



Conduit — Wire

Deltabeston Wire

is ideally suited for the permanent wiring of built-in lighting fixtures. The durable all-asbestos insulation renders it resistant to heat, moisture, gas, acids.

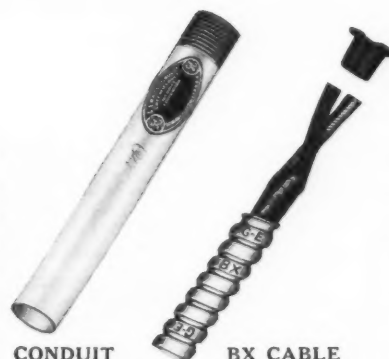


DELTABESTON

"SAFECOTE"

Rigid Metal Conduit

is the standard type of raceway for buildings of fire-proof construction. It prevents those disturbances of conductors which give rise to open or short circuits. In dwellings of wooden stud-type construction, BX Cable and Fittings are usually recommended.



CONDUIT

BX CABLE

G-E "Safecote" Building Wires

are made of high-grade materials to assure safe, long-life service. There are 3 standard grades available; Code, Intermediate and 30% Performance. And each comes in 6 or more different colored braids.

All these Wiring Materials may be used individually or as part of complete General Electric Graded Wiring Systems. They are engineered as a complete unit. Every item is designed to be used with another. However, any of these Wiring Materials may be used separately to supplement an existing wiring system. Send for the Manual "G-E Graded Wiring Systems—Reference Data For Architects and Engineers." Write Section K-1112, Merchandise Department, General Electric Co., Bridgeport, Conn.

WIRING MATERIALS

Specialists in LIGHTING

MANY MODERN IDEAS for interior lighting can be attributed to the advanced art of stage lighting with its inspiring colors and unusual lighting effects. Countless present-day developments were originated by Kliegl Bros.—an organization of expert craftsmen with an understanding of the peculiar requisites of effective lighting. Our experience of many years in the design and manufacture of special illuminants for theatrical, decorative, and spectacular purposes, is now applied to all phases of in-

terior lighting. We can provide units for either traditional or unusual needs. The versatility and comprehensiveness of the Kliegl line of lighting specialties makes it adaptable to all lighting demands, and when standard devices can not be used, we build special equipment to answer your purpose. The accompanying illustrations indicate the wide scope of our services. Architects are invited to confer with us when planning installations, to insure the most effective results.

Specially-built and standard equipment to meet your specific lighting requirements

DOWN LIGHTING



A new development for general lighting of auditoriums, department stores, ballrooms, dining rooms, and the like—from an invisible source. The light is projected downward through a small hole in the ceiling, providing pleasing and uniform illumination without the apparent use of fixtures. Now installed in the Center Theatre, Radio City; Rainbow Restaurant, Rockefeller Center; and in the dining room of Mr. Rockefeller's residence.

COVE LIGHTING

Light strip here pictured is a new conception with each unit universally mounted, permitting independent adjustment to suit conditions, and furnished with first-surface rhodium-metal mirror reflectors and glass color-roundels—affording a highly efficient flexible light source for concealed lighting. This type is installed in Radio City Music Hall, New York; and Colonial Inn, Singing, New Jersey. A number of other types are also available.

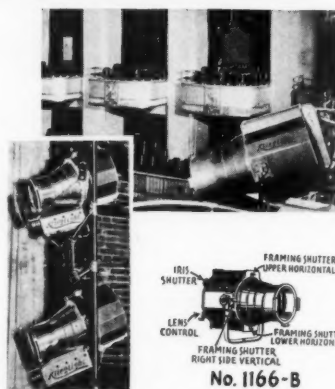


MURAL LIGHTING



Mural paintings, pictures, tapestries, sculptured panels, statuary, and other decorative articles appear to better advantage when independently illuminated or highlighted, as evidenced by the Kliegl installation in the Waldorf-Astoria Sert Room; Park Lane Tapestry Room; and Milton H. Kress residence. One of our units designed for this purpose, here shown, is fitted with adjustable framing shutters so as to confine the light exactly to the area to be illuminated.

SPOT and FLOOD LIGHTING

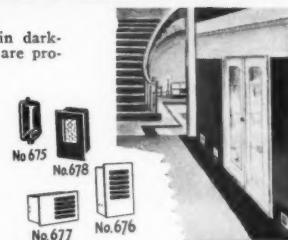


Innumerable lighting effects, including color lighting, can be obtained with Kliegl spotlights and floodlights—which are available in every conceivable form and size, from 75- to 2000-watt units. The new Klieglight (No. 1166B) with its high intensity lighting and beam controls—which allow shaping the beam to any desired pattern—is particularly well suited to architectural requirements. Spotlight 72B having remote-control color-changing features is also especially noteworthy. Klieglights in use at the Waldorf-Astoria Ballroom and Stanley Theatre, Philadelphia, are here pictured. Other installations include the Hollywood Theatre, New York, and the Million Dollar Pier, Atlantic City.



CORRIDOR and STEP LIGHTING

To avoid the dangers of walking in darkened passageways, the units shown are provided to cast downward a subdued light on the floor of theatre aisles and stairways, elevator landings, hospital and household corridors, and similar applications. They are available in several forms for mounting in the step riser, flush wall mounting, or end seat mounting, as may be required.



CONTROL LIGHTING



Designed for use with a photo-electric cell or "electric eye"—these units provide a concentrated beam of light of sufficient intensity to actuate a photo cell from a considerable distance—as instanced by the Kliegl installation for traffic count at the Hudson Vehicle Tunnel. They are applicable for all control purposes, such as protective devices, counting systems, door operations, and other purposes in which photo cells are employed.



KLIEGL BROS • NEW YORK

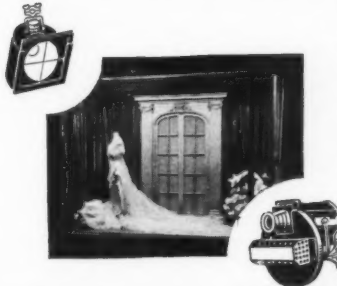
that differs from the conventional

DIRECTIONAL LIGHTING



For calling private vehicles to entrances without confusion or shouting. Saks Fifth Avenue Department Store, Metropolitan Opera House, Museum of Natural History, and other public buildings have Kliegl cab calls installed. They require no perforated key cards or other troublesome contrivances. Similar units are used as numeral flashers to announce price quotations, score figures, etc. Flashing taxi calls are also available—as well as a complete line of exit signs and other directional lighting units.

DISPLAY and EFFECT LIGHTING



For show-windows, display rooms, exhibits, and wherever you desire to attract public attention and present merchandise to the best advantage—using adaptations of color-, spot-, or flood-lighting, or novel and realistic animated reproductions of natural phenomena (moving clouds, panoramas, changing rainbow color effects, etc.)—our specialties offer innumerable possibilities. Wanamakers Department Stores, New York and Philadelphia; and the Aeolian Company's 5th Avenue showroom are instances in point.

STAGE LIGHTING

The most modern and foremost theatres of the world are equipped with Kliegl footlights, borderlights, proscenium lights, balcony spots, and other stage lighting units. We offer the most comprehensive line anywhere to be found—recognized as the highest standards of perfection—units for the small playhouse or school stage to the largest theatre. Comparatively recent installations include: Radio City Music Hall (here pictured); Center Theatre, Rockefeller Center; Metropolitan Opera House; Hershey Community Theatre; Rochester State Hospital; Lodi High School; and many others.



Disappearing Type Kliegl Footlight, which may be closed down flush with stage floor when not in use.

PROGRAM LIGHTING

Provides local illumination, by pressing a button, enabling theatre patrons to read their programs when the house is darkened, or to locate articles dropped on the floor. They are recessed in the back of the seat, and energized by individual battery service or low voltage circuits—giving just sufficient amount of downcast light for the purpose intended, without causing annoyance to nearby patrons. They are in use at the Earl Carroll and Radio City Theatres.



CHURCH LIGHTING

To accentuate decorative features or provide general illumination, Kliegl spot-, flood-, and strip-lights, and other units can be applied with admirable results. The windows of St. Anthony's Church, Elizabeth, N. J., here shown, are lighted so as to appear continually bathed with sunlight—and other entrancing effects were produced by Kliegl adaptations in Pas-saic and Newark Presbyterian Churches; Lafayette Reform Church; St. Frances Catholic Church in Brooklyn; Holy Trinity Catholic Church in New York; and a number of other religious edifices.



DECORATIVE LIGHTING



Unique and interesting lighting effects, with varying color features—for restaurants, taverns, ballrooms, private homes, etc.—are readily accomplished with Kliegl lighting devices. The fountain and illuminated cascade above is but one illustration—other instances of decorative lighting by Kliegl are the Arcadia Ballroom; Ritz-Carlton Roof; George Backer residence; New Yorker Hotel Ballroom; and the Colonial Inn, Singie, N. J.

ILLUSTRATED CATALOG—giving complete information on all Kliegl Lighting Specialties—supplied on request

INSTALLATIONS of Prominence

Music Hall, Radio City
Paradise Restaurant
Girls College, Aurora, N. Y.
Geo. Backer, Res., Dining Room
American Museum, Exhibit
Rooms
S. S. Mariposa, Ballroom

KLIEGL BROS

UNIVERSAL ELECTRIC STAGE LIGHTING CO., INC.

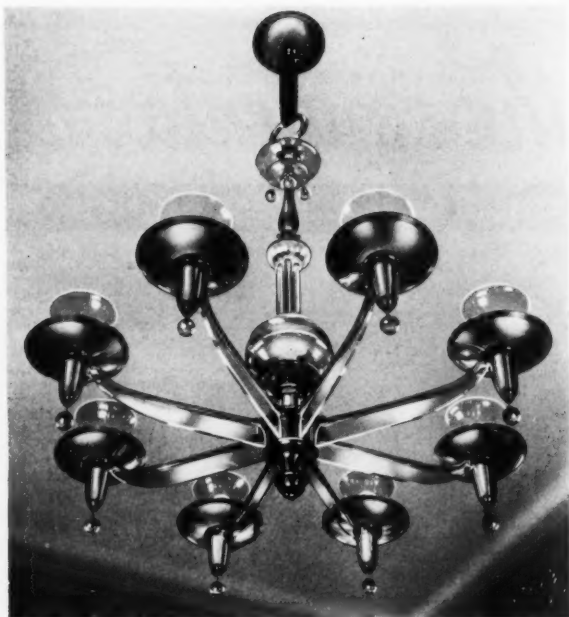
Theatrical • Decorative • Spectacular • Lighting

321 West 50th Street • New York, N. Y.

INSTALLATIONS of Prominence

Ritz-Carlton Restaurant
Waldorf-Astoria Sert Room
and Ballroom
Earl Carroll Theatre
Hershey Auditorium
M. K. Kress, Res., Pict. Gall.
Center Theatre, Rockefeller
Center

PICTURE LIGHTS • DIRECTIONAL SIGNS • CAB CALLS • CONNECTORS • FLOOR AND WALL POCKETS • COLOR WHEELS • STUDIO LIGHTS, ETC.



BALANCED LIGHTING

Those who have a full understanding of the functions of lighting equipment—who know that it must furnish correct light for seeing and yet be equally efficient in the contribution its form and design make to the decorative scheme—will find the suggestions of our engineers and designers particularly interesting.

LIGHTOLIER

11 EAST 36TH STREET

NEW YORK



Title II of the National Housing Act

(Continued from page 8)

and air for all the rooms of a house is more important than a bathtub or a heating plant. If the former exists, the latter may be added. But no amount of modern equipment can make a good house out of one which lacks the first essentials of healthful living. I feel very deeply that we must not be content with our requirements as they stand. Already England and Austria are far ahead of us in this respect. We must continue, as rapidly as public acceptance will permit, to improve the standard of our standards.

At this time local building codes, enforced by the judgment of the Administration's representatives, must be relied upon to produce a reasonable standard of safe and durable dwelling construction. The standards which will be issued in this respect will be of the most general nature. It is neither practicable nor desirable to legislate from Washington for the whole country, with its variety of customs and climate. An amplification of standards will come only as it is possible to do so in specific reference to local conditions.

At the outset, a general approval may be given only to those materials and those methods of using materials now in customary acceptance in the various parts of the country. Where new methods and materials are proposed, approval must be obtained from the Washington office of the Administration (where a special staff will be maintained for the purpose) before they may be considered satisfactory for use in properties whose mortgages are to be insured. It is necessary to adopt a conservative attitude in this respect, because it is necessary to know that all materials and methods used in dwellings mortgaged under the insured mortgage system will be suitable for a long term investment. It will be necessary for the sponsors of new materials and methods to prove their use.

I am confident, however, that this attitude will hasten rather than hold back desirable technological improvement in dwelling construction. The Federal Housing Administration is deeply and fundamentally interested in encouraging the improvement of housing standards and conditions. It is interested in all developments which will make good housing available to an increasingly broad proportion of the population. I do not believe, therefore, that it is likely to fall into the error of the typical building code in restraining the construction industry to methods which in the light of technical science may be increasingly cumbersome and expensive.

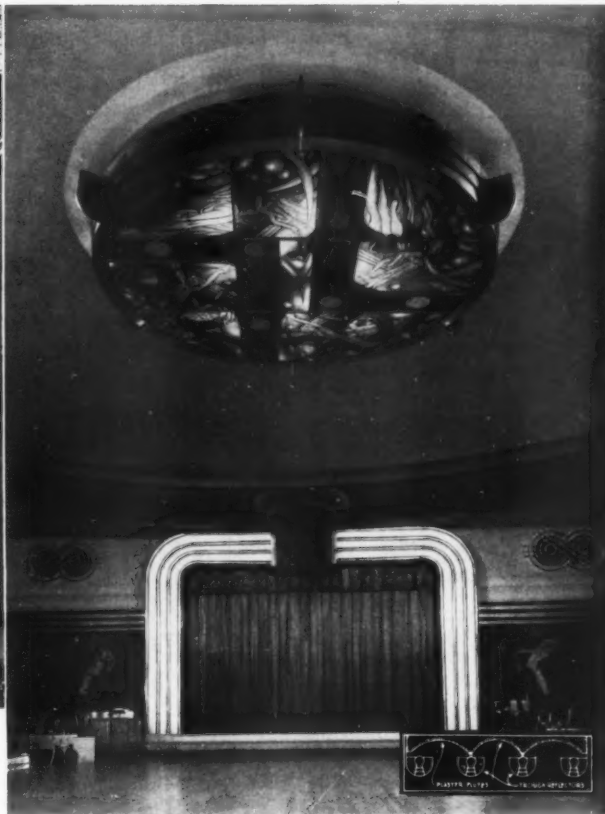
ADMINISTRATION. The organization of the Administration will be, so far as possible, localized; and as time passes, it is expected that increasing responsibility will be placed upon the local authorities. From the start, the entire process of insuring mortgages upon individual properties (one to four-family residential properties, as permitted by the Act) will be handled in the underwriting offices

ARCHITECTURAL ILLUMINATION

"To add to the architect's design the finest of craftsmanship in metal and glass forms, plus the correct application of reflecting principles."



St. Paul Post Office, St. Paul, Minn.
Hubert Bassindale and Holabird & Root, Architects

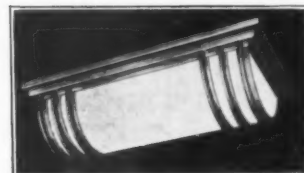


Above—
Indirect troughs in auditorium, University
of Maryland Hospital, Baltimore, Md.
Smith and May, Architects

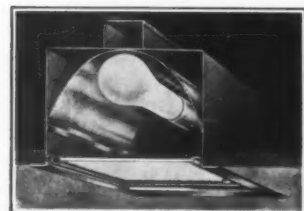
At left—
French Casino, Chicago, Ill.
Eastman Decorators, Designers

A gigantic ceiling fixture, 14 ft. in diameter, of cast aluminum and processed glass, houses a battery of color spot lights. Trough reflectors (see inserted section), with lamps on three circuits, outline the stage in changing colors.

SOME STOCK UNITS



No. 6668. The Aristocrat.



No. 6210. Flush-recessed boxes.



No. 6695—For indirect lighting.

PARTIAL LIST OF GARC Y INSTALLATIONS IN 1934

French Casino, Chicago, Ill.
Alabama Polytechnic Institute, Auburn, Ala.
University of Md. Hospital, Baltimore, Md.
Mercy Academy, Pittsburgh, Pa.
Mason Store, Indianapolis, Ind.
Arm Brothers, New York, N. Y.
Hers, Roebuck & Co., Chicago, Ill.
Ed Denkla Residence, Philadelphia, Pa.
M & C Restaurant, Chicago, Ill.
American Bank, Racine, Wis.
Guthoff Brewery, Ft. Wayne, Ind.
W. Edwards Store, Buffalo, N. Y.
Sam Walker Exhibit, World's Fair.
Shoe Exhibit, World's Fair.
S. Post Office, St. Paul, Minn.
S. Post Office, Minneapolis, Minn.
S. Post Office, Norfolk, Va.
S. Post Office, Chattanooga, Tenn.
Hanson, Pirie, Scott Co., Chicago, Ill.
General Electric Theatre, New York, N. Y.
Building-Gorham Jewelry, Chicago, Ill.
Merchants & Farmers Bank, Portsmouth, Va.
Radline's, Ltd., Palm Beach, Fla.
Salle Cafeteria, Chicago, Ill.
V. A. Administration Bldg., Tenn.
e Fair, Chicago, Ill.
Friedrich & Nelson Co., Seattle, Wash.
Rock & Kuhl Co., Peoria & Decatur, Ill.
Rad's Drug Store, Baltimore, Md.
avis Store, Chicago, Ill.
and Clothing, Albany, N. Y.
Higgs & Buhl, Pittsburgh, Pa.
Hien Bros., Jacksonville, Fla.
erland Shoe Co., Chicago, Ill.
ed Sanders, Inc., Detroit, Mich.
y Jewelry Stores, Boston, Mass.
Re-Kumler Co., Dayton, O.
Wacht Store, Washington, D. C.
Huschchild's Store, Oklahoma City, Okla.
Brecht Residence, Kansas City, Mo.
shman's Bakeries, Chicago, Ill.
eston Store, Milwaukee, Wis.
urnview Stores, Cleveland, O.
th Century Theater, Chicago, Ill.
& H Miller Stores, Norfolk, Va.
Jeff Store, Washington, D. C.
M. Gousha Offices, Chicago, Ill.
itz Jewelry Store, Baltimore, Md.
Smelnoch Bros. Store, Detroit, Mich.
Gleemann Brewery, La Crosse, Wis.

Description of any of above and other installations available. Write for information, specifying type of lighting, such as trough, cone, show window, display, luminous panel, indirect, glass fixture, etc.

ARE THESE CATALOGS IN YOUR FILE?

SPECIALIZED LIGHTING EQUIPMENT. A loose-leaf compilation of all GARC Y lighting catalogs.

MODERN ARCHITECTURAL LIGHTING—Bulletin 33-100. A profusely illustrated booklet of modern lighting designs for public buildings, stores and homes. A. I. A. file, 31-f2.

FLUSH-RECESSED LIGHT BOXES—Bulletin 34-101. Flush panel lighting units in convenient sizes for every use. A. I. A. file 31-1.

CATALOG 31. Miscellaneous reflectors and trough lighting equipment for show cases, windows, store and building interiors, etc. A. I. A. file 31-f1-2.

DATA SHEETS. Individual sheets with pertinent data on latest installations and new products. Issued regularly. Present series, 1 to 13. **CRAFTSMANSHIP IN METAL WORK**—Bulletin 34-70. Metal letter signs for interiors or exteriors and their illumination. Metal show window valances, architectural metal. A. I. A. file 15.



ESTABLISHED
1898



REPRESENTATIVES
IN PRINCIPAL
CITIES

1430 So. Talman Ave., Chicago, Ill.

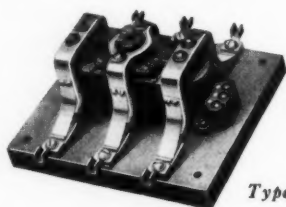
133 Wooster St., New York, N. Y.

Remote Control for Modern Lighting

by

DIAMOND H SWITCHES

For over twenty years "Diamond H" Remote Control Switches have been selected by leading architects for use in all types of buildings where groups of lights require easy and dependable control from convenient points. For instance in schools, hospitals, theatres, office and public buildings, hotels, stadiums and airports, for signs, floods, etc.



Type "F" Switch

**BULLETIN NO. 10-A EXPLAINS EACH TYPE OF
REMOTE CONTROL SWITCH.**

Architects Attention—

In order that you may know How, When and Where to use Remote Control effectively we have prepared a useful set of data sheets (by Don Graf) and a set will be sent for your files if you will return the coupon below.

Just sign and return this coupon. These data sheets will be invaluable for your drafting and specification departments.



THE HART MANUFACTURING CO., Hartford, Conn. AA
Please send the set of Data Sheets on Remote Control.
Send copy of Bulletin 10-A also.

Name
Title
Firm
Address..... State.....

which are being established in sixty-one cities. The only exception to this will be low-cost housing projects, applications for which are to be submitted directly to Washington, and applications for insured loans to undeveloped neighborhoods, which will generally be reviewed in Washington.

The advantages of localization are plain. The setting-up of a large centralized machinery which is apt to prove cumbersome, to delay action, and to impose an undesirable uniformity, is avoided. In their judgments of local conditions efficient local authorities are more able to act expeditiously and to give a project proper consideration. The central organization remains to set policies, to coordinate activities, to supply the broader background of research and interpretation of research, which is beyond the scope of the local organization.

A noteworthy feature of the local organization is the part that architects will play in them. An Architectural Supervisor with a staff of inspectors and estimators, varying with the size of the area and the volume of business to be dealt with, will be placed in every underwriting office. Architects will be employed on a fee basis in communities too small to have a separate office and too distant to be readily accessible to the nearest office. The architects will report to the Architectural Supervisor for the district.

The full responsibility for the checking of costs and for the rating of risks involved in the property itself (appearance, plan, construction, relationship to lot, etc.) will be that of the Architectural Supervisor. He will be consulted on ratings for neighborhood and neighborhood relationships. He should play an important part in the matter of judgment on land planning in connection with new subdivisions. He will be responsible for the development of standards applicable to his locality and work closely with the Washington Office in this respect.

This is, I believe, the first time that the ability and experience of the architects has been fully recognized in the development of an appraisal system for residential property. Its result will become apparent not only in the high quality of risk which will be acceptable, but in the influence which these Supervisors will be able to exercise in raising standards in their communities. The response of the profession in this regard has been most gratifying. As evidenced by the group which attended the first school of instruction recently conducted in Washington, it may be confidently stated that the Federal Housing Administration has secured the services of men whose high professional standing will be a credit to it in every community to which they are assigned.

• The Northern California Chapter of the A. I. A. is sponsoring an Index of Construction Materials which is distributed free to all architects, engineers, important contractors and purchasing agents in their district. The publication provides a means of locating technical data and affords a medium whereby the manufacturers and dealers may present pertinent information on their products.

NEW CATALOGS

Readers of *AMERICAN ARCHITECT* may secure without cost any or all of the manufacturers' catalogs described on this and the following page by mailing the prepaid post card printed below after writing the numbers of the catalogs wanted. Distribution of catalogs to draftsmen and students is optional with the manufacturers

IVANHOE LIGHTING EQUIPMENT

503. . . . The Ivanhoe Division of The Miller Company, Meriden, Conn. has issued a comprehensive catalog (No. 902) illustrating and describing in detail its line of lighting equipment, including metal reflectors and fittings for industrial lighting, window lighting and floodlighting, fixtures and glassware for commercial lighting, and lamps, shades and ultraviolet fixtures. Dimensions, prices and recommended lamp wattages, for each type of unit are included. Filing size; 104 pages; indexed; A. I. A. File 31-F.

DUNHAM DIFFERENTIAL VACUUM HEATING SYSTEM

504. . . . Reference information on the design and installation of the Dunham Differential Vacuum Heating System is presented in a new 44-page manual (Bulletin 125) issued by C. A. Dunham Company, Chicago. Section I relates to elements of design and operation; Section II, engineering information on design and layout; and Section III, to physical data, including pipe sizing, dimensions of elements, capacities and installation details. A schematic diagram of a typical installation and a general specification are included.

STUDIO LIGHTING EQUIPMENT

505. . . . A sixteen-page illustrated booklet, Bulletin 106, featuring Klieglights and other studio lighting equipment and accessories for motion picture sound and commercial photography, has been issued by Kliegl Bros., New York. It describes the various units, their light control features, applications, prices and other details. A group of various optional wiring devices and accessories used in conjunction with these lighting units are shown.

DATA ON FORMICA

Three catalogs are offered by The Formica Insulation Co., Cincinnati:

506. . . . Wainscot of Formica—Contains four color plates illustrating fourteen wainscot designs. Gives details of erection methods and instructions for installing Formica.

507. . . . Bar and Tavern Decoration with Formica—Nine bar front designs are illustrated in four color plates. Typical details of Formica Bar construction are shown.

FOR DECEMBER 1934

508. . . . Eight-page catalog illustrating and describing the many uses of Formica. Detail drawings given for counter and table top, drainboard, store front and wainscot construction. Range of colors available illustrated in natural colors.

INDUSTRIAL CABLE

509. . . . General Electric Company, Schenectady, New York, has issued a new 128-page publication (GEA-1838) which describes and lists all standard types of insulated wire and cable used by industrials for transmission, distribution and control, and used on or with electric equipment such as mining machinery, locomotives, arc welders, neon signs, etc.

SEALEX FLOORS AND WALLS

510. . . . While designed primarily for the consumer, the new "Book of Beautiful Rooms" issued by Congoleum-Nairn, Inc., Kearny, N. J. has much of interest for the architect. It contains four-color reproductions of rooms featuring Sealex Floors and Walls and many helpful hints for designing in linoleum.

AUTOMATIC OIL HEAT EQUIPMENT

511. . . . The general types of oil heat units and air conditioning equipment manufactured by Gar Wood Industries, Inc. Detroit, are presented in a preprint from 1935 edition of Sweet's Catalog. These include boiler-burner units, Tempered-Aire furnace, indirect air conditioning cabinet, conversion oil burners, and oil-fired water heater. Characteris-

tics, ratings and dimensions are given for each unit.

RED TOP WEATHERWOOD INSULATING BOARD

512. . . . The United States Gypsum Company, Chicago, has issued a 36-page lithographed booklet which suggests—largely by illustration—the many uses of Weatherwood Insulating Board and Tile as an interior finish in modernization and new construction. Three interiors are shown in full color.

DELCO-HEAT PRODUCTS

513. . . . Delco Appliance Corporation, Rochester, N. Y., has prepared a loose-leaf portfolio containing a 32-page data book illustrating and describing its line of oil burners, boilers and conditioners, followed by individual specification sheets for each item of equipment. Cutaway drawings and detail diagrams show two typical oil burner installations. Cross-sectional views of Delco-Heat boilers and conditioners are illustrated in color. Ratings, dimensional data and detailed specifications for each unit are included. Filing size; A. I. A. File 30-G-1.

GAS FIRED HEATING

514. . . . An architects' and engineers' handbook illustrating and describing the Basmor Gas-Fired Boiler manufactured by Bastian-Morley Company, La Porte, Indiana, and distributed by Crane Company, Chicago, has just been published. It is replete with useful information on

NO POSTAGE REQUIRED ON THIS CARD

AMERICAN ARCHITECT
New York City

December 1934

Please have the following catalogs reviewed in this issue sent to me.
Numbers

• I also desire further information about the new products described in this month's "New Materials and Equipment." . . . (See pages immediately following this insert.)
Numbers

• I would like to have catalogs and information concerning the following products advertised in this issue. (See advertisers' list on following page)

Name
Firm name
Address
City
Occupation

These NEW Catalogs may be obtained through AMERICAN ARCHITECT

gas fired heating, including tables giving ratings, dimensions and general data; method of calculating heat loss and radiation; description of various types of gas; a suggested specification form; and a discussion of the Basmor System of Gas Boiler Controls. Filing size; 20 pages; A. I. A. File 29-F-4.

ATCHISON REVOLVING DOORS

515. . . Detailed information about Atchison Revolving Doors is contained in a 20-page illustrated catalog issued by The Atchison Revolving Door Company, Independence, Kan. The booklet describes the characteristics and construction of each type, and gives sizes, capacities, a standard design schedule with layouts applicable to various designs, classes and types of door wings, and recommended details. Typical installations are illustrated. Filing size; A. I. A. File 17-A-1.

FACE BRICK PORTFOLIO

516. . . A portfolio of color plates showing the various textures, blends and colors obtainable in Metropolitan architectural face brick, is offered by Metropolitan Paving Brick Company, Canton, Ohio.

THRUSH FLOW CONTROL HEATING SYSTEM

517. . . The principles and operating features of Thrush Flow Control Hot Water Heating System are discussed in a 12-page folder issued by H. A. Thrush & Company, Peru, Indiana. The adaptation of this system to various types of heating plants in both old and new buildings is described and diagrammatically illustrated. Typical piping plans for residence and apartment buildings, and brief engineering data are included.

HEAVY DUTY FLOORS

518. . . How to build and repair heavy-duty industrial floors with Inco Cement is explained in a 12-page booklet prepared by International Cement Corporation, New York. Methods of preparing the

base, designing the mix, placing, finishing and curing are fully described. Filing size; illustrated.

COLONIAL PINE TREATMENT

519. . . A four-page folder issued by Colonial Stain Company, Boston, gives directions for staining pine paneling with Colonial pine treatment. This one-coat chemical treatment reproduces on new pine the color, texture and finish of genuine old pine.

DECORATIVE CHROMIUM METAL

520. . . The American Nickeloid Company, Peru, Illinois, offers a new 20-page booklet which pictorially suggests the many uses of chromium and other highly finished metals for decorative, display and sign work.

REPUBLIC STEEL AT A CENTURY OF PROGRESS

521. . . A rotogravure tabloid (Bulletin 135) issued by Republic Steel Corporation, Youngstown, Ohio, contains 12 pages of illustrations of exhibits at the 1934 A Century of Progress Exposition in which Republic products were used or displayed.

MAJESTIC BUILDING PRODUCTS

522. . . The complete line of residential building products of The Majestic Company, Huntington, Indiana, are presented in a 24-page catalog. This line includes furnaces, air conditioning systems, radiator cabinets and covers, garage doors, incinerators, ash dumps and other household accessories. Each item of equipment is briefly described and illustrated.

MAY-DAY HUMIDIFIER

523. . . Minneapolis Air Conditioner Company, Minneapolis, has issued a four-page folder illustrating and describing its May-Day humidifier and heat saver for residences.

WINDOW CLEANERS' ANCHOR

524. . . A 4-page folder issued by Harrison-Weise Company, Chicago, presents

the advantages and features of H-W 4-Bolt Window Cleaners' Anchor for any type of window construction. Suggested specifications for wood, steel and hollow metal windows are given.

BRIXMENT CEMENT MASONRY

525. . . Louisville Cement Company, Inc., Louisville, Ky., has published a 20-page illustrated catalog which describes the characteristics and inherent qualities of Brixment cement masonry. Filing size, A. I. A. File 3-A-9.

ACOUSTICAL MATERIALS

526. . . A revised edition of the Official Bulletin of the Acoustical Materials Association, Chicago, has just been issued. This Bulletin No. 2 contains test data on the absorption coefficients and specifications of several new acoustical materials and omits others that are now obsolete. Filing size, A. I. A. File 39-B.

GARAGE DOOR EQUIPMENT

527. . . "Over-the-top" door equipment for residence garages, public garages, factories and warehouses, is illustrated and described in a 16-page filing-sized booklet issued by Frantz Manufacturing Company, Sterling, Ill. Installation details and clearance specifications are given.

COMMERCIAL LIGHTING

GLASSWARE

528. . . The Phoenix Glass Company, Monaca, Pa., announces Catalog 46 which presents its line of commercial lighting glassware. Dimensions, proper lamp size for each type of unit, and test data are included.

"H & H" WIRING DEVICES

529. . . Hart & Hegeman Division of The Arrow-Hart & Hegeman Electric Company, Hartford, Conn. has issued Catalog "V," a 58-page presentation of the complete "H & H" line of wiring devices. List prices and index are contained in a 16-page supplement.

GLASS ENCLOSURES

530. . . The use of glass enclosures for sunshine rooms, garden rooms, children's play places, bird and fish rooms, conservatories, and glass gardens, is discussed in a 28-page booklet issued by Lord & Burnham Company, Irvington, New York. Illustrations show a wide range of typical installations.

AIR CONDITIONING PRODUCTS

531. . . Julien P. Friez & Sons, Inc., Baltimore, has issued Bulletin K, a condensed four-page catalog of Friez air conditioning products, including humidistats, thermostats, summer-winter switches, humidity and temperature indicators, and Friez recorders for quickly checking air conditioning requirements.

AMERICAN ARCHITECT

BUSINESS REPLY CARD

NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

2c. POSTAGE WILL BE PAID BY

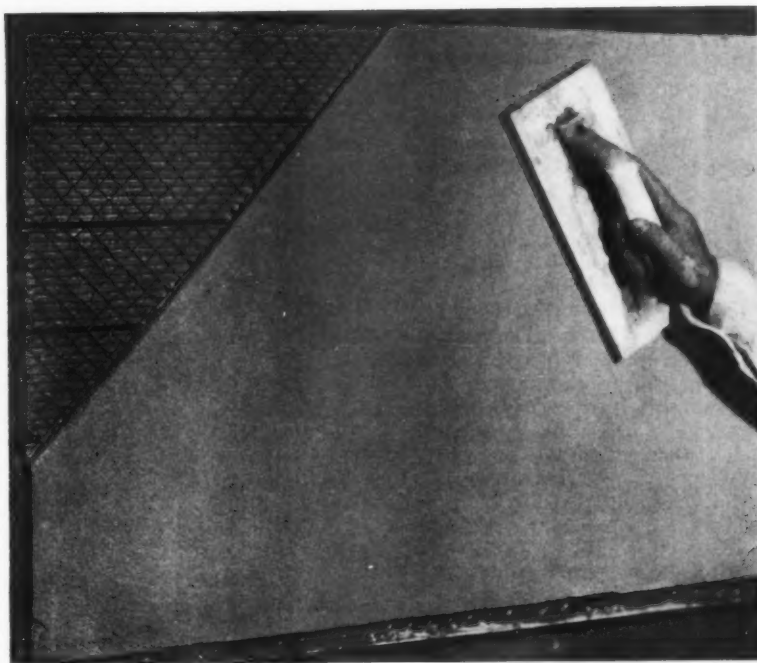
AMERICAN ARCHITECT

572 Madison Avenue

New York, N. Y.

**FIRST CLASS
PERMIT NO. 5
(Sec. 510 PL & R)
NEW YORK, N. Y.**

New Materials and Equipment



New Plaster Base and Plaster

373M American Building Products Corporation, New York, announces a new plaster base and plaster. *Corogrid*, the plaster base, consists of a sheet of $\frac{3}{4}$ " mesh flat-welded steel wire attached to a heavy corrugated backing by staples which also anchor into position, at 4" intervals, steel reinforcing "V" bars. These bars run the full width of the sheet, which is 49" wide and 26 $\frac{1}{2}$ " high for application over 3 studs on 16" centers. *Granitex*, made in four forms, is a base coat and finishing plaster which is composed of a dry mixture of several finely ground natural deposit materials with a base of gypsum, reduced minerals and alternative compounds. The material is mixed with water, sets in from 1 $\frac{1}{2}$ to 2 $\frac{1}{2}$ hours, and can be applied to complete the finished wall or ceiling in one operation.

Electric Water Heater

374M An automatic electric water heater of thirty-gallon capacity for domestic use is announced by Westinghouse Electric & Mfg. Company, Mansfield, Ohio. The heater has a new type thermostat for ad-

justable automatic temperature control, a hermetically sealed Corox looped hairpin heating element, and a Morocco Krinkle finish, and is insulated with a new material.

Stonhard Resurfacer

375M A new material for repairing or resurfacing concrete, wood, brick, asphalt or composition floors has been announced by Stonhard Company, Philadelphia. Known as Stonhard Resurfacer, this material is applied with a trowel and provides a tough, resilient surface said to be waterproof, dustless and non-skid.

Curtis Three-Light Lamp

376M Three intensities of light may now be secured from one lamp in all indirect lighting fixtures manufactured by Curtis Lighting, Inc., Chicago. This lamp, made in 300 and 500 watt size, has two filaments which may be lighted singly or in combination. Where only a single circuit wall switch is used a pull switch may be installed at the fixture to obtain two intensities of light. Two small pull switches installed in the fixture provide the three intensities.

Fan Base

377M The Buffalo Forge Company, Buffalo, has developed a new "Drip-Pan" mounting for its Type HVA fans. This drip-pan base is sheet metal, heavy enough to be rigid, welded at all seams and leak-proof. Pan is large enough to catch dripping condensation, and a drain connection is provided.

Warner Elevator Fan-Light

378M The Warner Elevator Mfg. Company, Cincinnati, has developed a ceiling-mounted combination fan and light unit for passenger elevators, which provides even lighting and complete air circulation without draft. The fan contains a patented "Breeze-spreader" which revolves slowly with the fast-moving fan blades, diffusing the air as it leaves the fan. The lights are placed on an ornamental circular base, with the fan unit mounted within. The motor and mounting brackets extend above the ceiling and are enclosed in a metal guard.



G-E Electric Water Heater

379M The Specialty Appliance Sales Department of General Electric Company, Cleveland, has introduced an automatic electric water

heater styled to harmonize with the G-E Companion range and Liftop refrigerator. The unit is 21" wide, 22½" deep and 36" high, and has a capacity of 30 gals. It has a Cop-r-loy all-electric welded galvanized tank, a Calrod self-cleaning immersion unit, adjustable thermostat, rock wool insulation, ¾" plumbing connections and a device to minimize the mixture of cold water with stored hot water.

Low Voltage "De-ion" Breaker

380M Westinghouse Electric & Mfg. Company, East Pittsburgh, announces a low voltage "De-ion" circuit breaker, similar to its standard 600 ampere, 600 volt AB breaker, but with an interrupting capacity of 20,000 amperes. The new AB-20 is totally enclosed, being mounted in the standard 600 ampere molded case. It is available in all ratings from 50 to 600 amperes, with standard tripping accessories and motor mechanism.

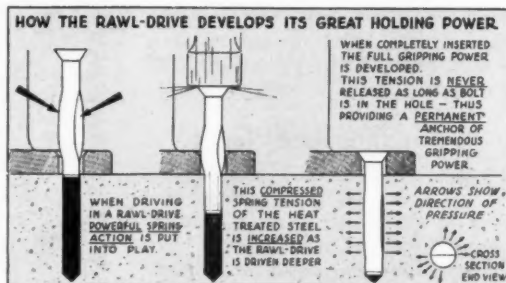


G-E Trigger Guard

381M An easily attached guard, to protect the triggers and mechanisms of exposed flush tumbler switches against damage, has been introduced by General Electric Company, Bridgeport, Conn. The device is made of heavy brass, with side rails which shield the trigger, and is mounted on the flush plate. It is finished in brush brass.

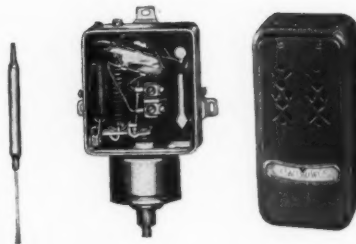
New Anchoring Device

382M A new holding or anchoring device, called the Rawl-Drive, which looks like a bolt and drives in like a nail, is announced by The Rawlplug Company, Inc., New York. The body of the bolt is sheared longitudinally through the center. At the same time each side of the shear is deformed in opposite directions, forming a bow or belly outwards on both sides of the bolt, which produces a spring tension with high gripping power. Since the diameter



of the drilled hole and of the bolt stock is the same, the bow sides are compressed back to their original position when the Rawl-Drive is driven in and the tension thus secured grips the sides of the hole like a vise.

Several types of heads are available.



Compensated or Differential Humidity Control

383M Minneapolis-Honeywell Regulator Company, Minneapolis, announces a compensated humidity control system which will accurately govern relative humidity at any desired differential between inside relative humidity and outside temperature. This result is accomplished by a modulating type humidity controller operating in conjunction with an outside temperature controller of remote bulb type. The normal functions of the humidity controller are performed until the outside temperature drops, when the temperature controller affects its operation, causing it to call for less moisture, and thereby preventing a condition of over-humidity with resultant condensation or frost on windows and outside walls.

40-Watt Mazda Lumiline Lamps

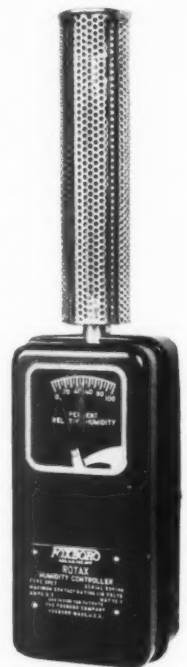
384M General Electric Company, Nela Park, Cleveland, has added a 40-watt size to its line of Mazda Lumiline lamps, heretofore made in 30- and 60-watt sizes only. This lamp has an over-all length of 11¾ in., a bulb diameter of 1 in., and is made in voltages of 110, 115 and 120. All three sizes are available in clear bulb as well as with diffusing coating, and in the following colors: Straw, Orange, Moonlight Blue, Emerald, and Surprise Pink.

G-E Box Hangers

385M Two new box hangers, designed especially for alteration work, have been developed by General Electric Company, Bridgeport. The SP-6609 hanger for switch boxes is installed by cutting a hole the exact size of the switch box, pushing the assembled switch box and hanger into the hole until the sides of the hanger spring free, and then tightening a bolt on the inside of the box. The SP-6608 hanger for G-E 3¼" octagon boxes is installed by cutting a hole sufficient for the box alone, inserting hanger straps which are held in place by offsets, and mounting the hanger plate.

Relative Humidity Controller

386M A new indicating relative humidity controller, which combines the membrane type humidity recorder with Rotax type contacts to form an electrically-operated unit, has been developed by The Foxboro Company, Foxboro, Mass. This controller maintains humidity by operating solenoid valves and motor valves on water, air or steam lines. This is accomplished by a relay set located inside the case. The unit can be used to operate unit heaters, control dampers, air washers and other air conditioning equipment in industrial or commercial buildings.



"Ribbon" Ice Equipment

387M The York Ice Machinery Corporation, York, Pa., is now manufacturing mechanical equipment for production of ice in ribbon form. The ice is produced by a patented process of mechanical freezing, being formed on the outer surface of a slowly revolving metal cylinder and peeled off in ribbons. Refrigerating action is said to be quicker than that of ice in any other form. Units are available in a wide range of capacities from fractional ton machines for hotels and restaurants to large commercial units for ice manufacturing plants.

AMERICAN ARCHITECT

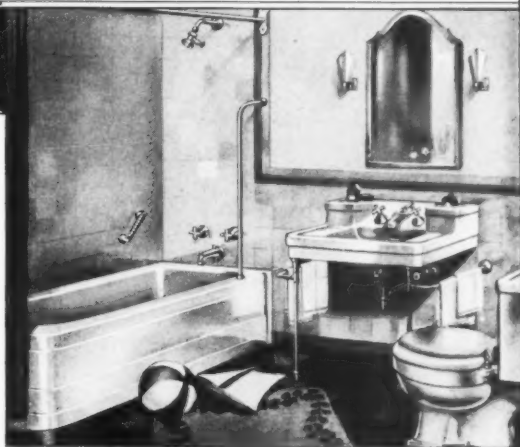
ANNOUNCEMENTS

- The American Academy in Rome announces its annual competitions for fellowships in architecture, painting, landscape architecture, sculpture and musical compositions. Competitions are open to unmarried men not over 30 years of age who are citizens of the United States. The fellowship provides \$1,250 a year for two years, transportation to and from Rome, and free residence and studio at the Academy. Entries will be received until February 1st. For information address Roscoe Guernsey, 101 Park Avenue, New York.
- New York University has been awarded the annual medal of the Societe des Architectes Diplomes for work done during the past academic year. The medal has been awarded since 1920 to the architectural school having the best record of accomplishment in the teaching of architecture along the lines followed by the Ecole des Beaux Arts in Paris.
- An exhibition, Contemporary American Industrial Art: 1934, is being held at The Metropolitan Museum of Art, New York, from November 6 to January 6.
- New York University's School of Architecture has organized a housing institute, to be devoted to the training of architects and others in the problem of low cost housing. Dr. Carol Aronovici will be assisted by leading authorities in the housing field. The course, which opened November 26, will last four months.
- The Annual Princeton-Yale Architectural Competition was won this year by Yale, according to a statement issued from New Haven. The leading award went to Wendell S. Clough of Barre, Vt. Bernard Beck and Henry C. Flagg won first mentions for Yale, while R. W. Olsen, E. B. Willauer, and R. L. Worcester won first mentions for Princeton. The subject of the competition was "A Wayside Inn." The jury was composed of three architects and a member of each faculty.

[illegible]

- Linoleum gauges have been standardized by the Linoleum and Felt Base Manufacturers' Association with the result that only five thicknesses will hereafter be manufactured. In AMERICAN ARCHITECT Reference Data No. 4, published in March, 1933, a table was presented showing the range of linoleum thicknesses made by one manufacturer. Its purpose was to call attention to the inconsistencies in gauge designations. The accompanying chart may be used to revise the data published in that reference article.

AT HOME TO
ANY ARCHITECT'S IDEAS!



ONE pleasing feature of Crane-designed fixtures is their immediate *adaptability* to almost any arrangement an architect desires! Even a moderate cost project will find that Crane fixtures fit in *beautifully* and insure lasting satisfaction for all concerned.

You may specify any style, any Crane color in any fixture and your specifications will be followed to the minutest detail.

In the moderate cost group above you may find what you need . . . if you will stop in at any Crane Exhibit Room you will be impressed by the variety of Crane equipment for the home.

CRANE

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVENUE, CHICAGO
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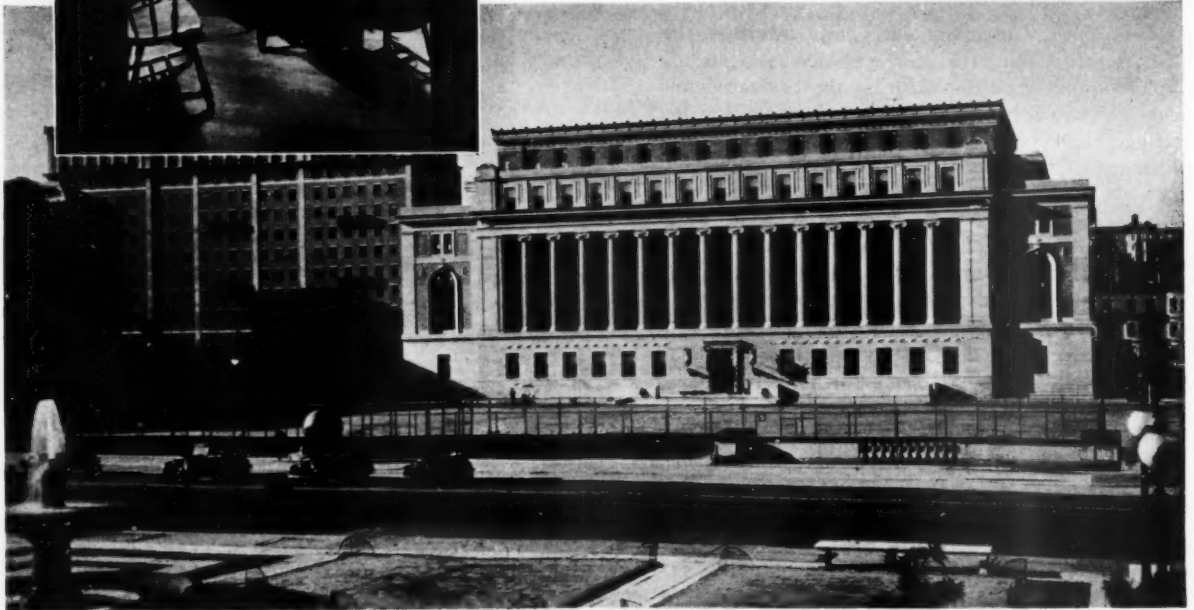




TWO NEW UNIVERSITY LIBRARIES

Immediately below: South Hall, the new library of Columbia University, N. Y., \$4,000,000 gift of Edward S. Harkness. Designed by James Gamble Rogers, architect, it faces the statue of Alma Mater. Left: a "browsing room" where men students may smoke as they study. All rooms are air-conditioned. At bottom of page: main entrance and 160 foot tower of new library of Cambridge University, England. The building encloses a quadrangle and is designed to provide access to all book-racks. Sir Giles Gilbert Scott, architect

WURTS BROS.



WURTS BROS.

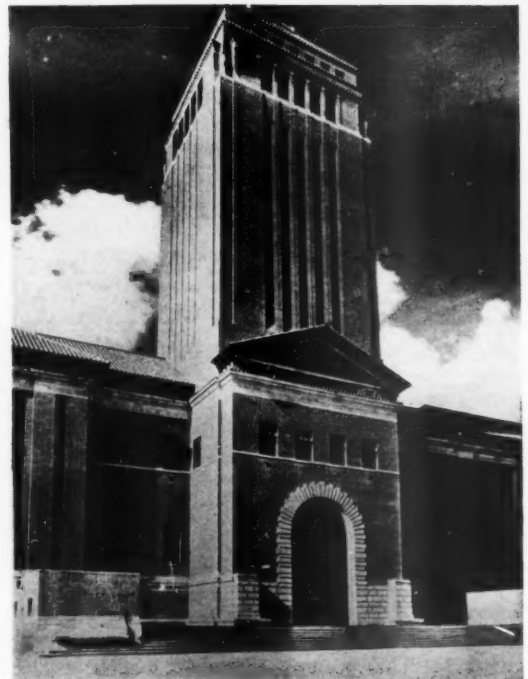
Trends and Topics . . .

(Continued from page 49)

• Mr. Addison E. Sheldon, of the Nebraska State Historical Society, has called to our attention two errors in the October issue of *AMERICAN ARCHITECT*. On Page 13, credit for the photographs illustrating Mr. Edwards' article, "Highlights on the Capitol's History," should have been given to the Nebraska Historical Society. On Page 93, the caption beneath the cut states erroneously that the seal is that of the State of Nebraska. It was designed as such twenty years ago and was placed prominently in the new Capitol, but was finally rejected. The true Seal is shown here.



• The Palace of Fine Arts in Mexico City, originally the National Theatre of Mexico, has recently been completed after thirty years of remodeling and enlarging. The building includes a number of museum rooms and a theatre, which has a rigid mosaic curtain mounted on an iron structure in a bronze frame, raised and lowered by electricity.



"ACME"

Statement of the Ownership, Management, Circulation, etc.,
required by the Act of March 3, 1933.

Of AMERICAN ARCHITECT, published bi-monthly at New York, N. Y.,
for October 1, 1934.

State of New York }
County of New York } ss.:

Before me, a Notary Public, in and for the state and county aforesaid,
personally appeared R. F. Gardner, who, having been duly sworn accord-
ing to law, deposes and says that he is the Business Manager of the
American Architect and that the following is, to the best of his knowledge
and belief, a true statement of the ownership, management, etc., of the
aforesaid publication for the date shown in the above caption, required
by the Act of March 3, 1933, embodied in section 537, Postal Laws and
Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing
editor, and business managers are: Publisher, International Publications,
Inc., 959 8th Ave., New York City; Editor, Benjamin Franklin Betts,
959 8th Ave., New York City; Managing Editor, Roger W. Sherman,
959 8th Ave., New York City; Business Manager, R. F. Gardner, 959 8th
Ave., New York City.

2. That the owner is: International Publications, Inc., 959 8th Ave.,
Sole Stockholder, American Newspapers, Inc., 100 West 10th St.,
Wilmington, Del., Sole Common Stockholder, W. R. Hearst, 137 Riverside
Drive, New York City.

3. That the known bondholders, mortgagees, and other security holders
owning or holding 1 per cent or more of total amount of bonds, mort-
gages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the
owners, stockholders, and security holders, if any, contain not only the
list of stockholders and security holders as they appear upon the books
of the company but also, in cases where the stockholder or security
holder appears upon the books of the company as trustee or in any other
fiduciary relation, the name of the person or corporation for whom such
trustee is acting, is given; also that the said two paragraphs contain
statements embracing affiant's full knowledge and belief as to the circum-
stances and conditions under which stockholders and security holders who
do not appear upon the books of the company as trustees, hold stock and
securities in a capacity other than that of a bona fide owner; and this
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corporation has any interest direct or indirect in the said stock, bonds,
or other securities than as so stated by him.

R. F. GARDNER,
Business Manager.

Sworn to and subscribed before me this 28th day of September, 1934.

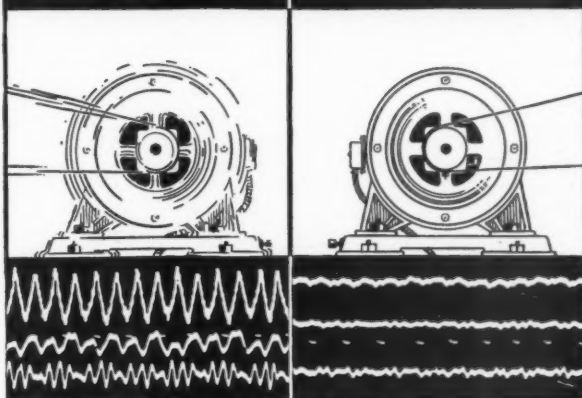
WILLIAM J. SPERL.

Notary Public, Queens Co. No. 1726, Reg. No. 6607. Cert. filed in N. Y.
Co. No. 1111, Reg. No. 55643.

(My commission expires March 30, 1935.)

CORK

CHANGES THIS . . . TO THIS!

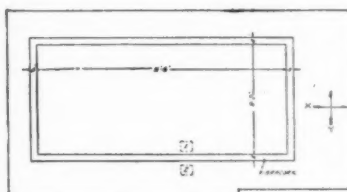


**Vibracork quiets jarring vibration
of all types of machinery**

TAKE a dynamometer, for example. When it
operates, there's usually plenty of vibration. But
the vibrograph records above show what happens when
a dynamometer is isolated with Armstrong's Vibracork.

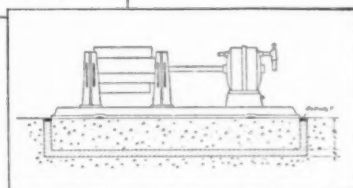
This resilient cork cushion absorbs shocks and jars of
all types of machinery, large or small, heavy or light.
Their vibration is permanently muffled. For, Vibracork
does not take a "set" even under sustained compression,
nor does it deteriorate in service.

Next time you have a specific vibration problem, let
an Armstrong engineer submit recommendations for
its solution. Samples of Vibracork and further infor-
mation will be sent gladly upon request. Just
address Armstrong Cork & Insulation Company,
936 Concord Street, Lancaster, Pennsylvania.



PLAN of the foundation where
the above film records were
made. Point 1 shows where
vibrometer was located for
making left vibrograph. Point
2, the location on the floor slab.

SECTION of the pit type
foundation, showing installa-
tion of Vibracork. Total load
was 22,160 pounds, and the
load per sq. ft. was 378 pounds.



Armstrong's VIBRACORK

The Cork Cushion That Smothers Vibration

COLD STORAGE DOORS ... As York Builds Them

...patented "corkboard dip seal"...extra
heavy steel-angle corner reinforcement
...superior diagonal bracing...carefully
selected, well seasoned wood...rugged
hardware with easily operated straight-
pull latch. Send for descriptive booklet.

York Ice Machinery Corporation, York, Pennsylvania
Send booklet describing York Cold Storage Doors

Name _____
Street _____
City _____ State _____



One of the many prize-winning small houses which are included as plate illustrations in "American Country Houses of Today—1935." Right: a striking illustration of St. Bartholomew's Church and its New York skyscraper background from "Building to the Skies"



OUTLINES OF THE HISTORY OF ARCHITECTURE

By Rexford Newcomb, M.A., M.Arch., A.I.A.
Published by John Wiley and Sons, Inc.,
New York. Illustrated; 193 pages; size
8 1/4 x 10 1/2; price \$3.00

THIS volume is Part III of a series
four, and is devoted to Renaissance
Architecture. It was originally designed
for class-room use and is composed of
digests of the author's lectures at the
University of Illinois.

AMERICAN COUNTRY HOUSES OF TODAY — 1935

Edited by Lewis A. Coffin, A.I.A. Pub-
lished by Architectural Book Publishing Co.,
Inc., New York, N. Y. Illustrated; indexed;
160 pages; size 8 1/2 x 11; price \$8.00

THE recent work of seventy architects
throughout the country is represented
in the 112 small houses illustrated in
this volume. Devoted almost exclusive-
ly to photographs, it includes 350 illus-
trations of exteriors, interiors and de-
tails. A floor plan is shown with each
house. A special 35-page section covers
the winning houses of the last two years
of the Better Homes in America Com-
petition, with a preface by James Ford.
It is obvious that the book is intended
principally for the layman, for most of
the illustrations have appeared previous-
ly in architectural publications. How-
ever, architects may find it an interest-
ing and convenient record of contem-
porary country house design in the
United States.

STRUCTURAL FRAMEWORKS

By Thomas F. Hickerson. Published by
The University of North Carolina Press,
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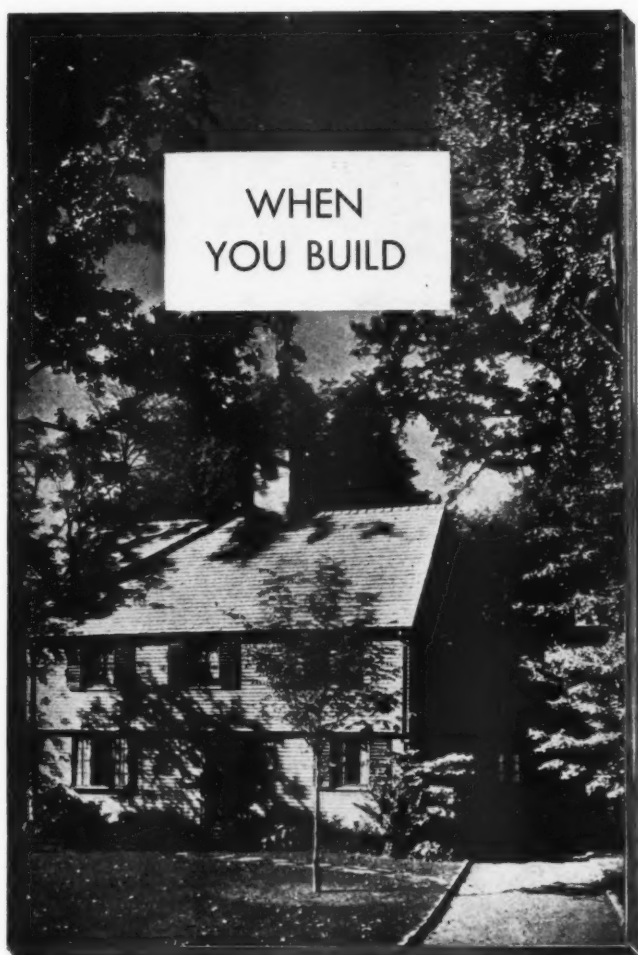
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