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XVI CENTURY SPANISH HELMET

THE AMERICAN ARCHITECT

VOL. CXVI

WEDNESDAY, OCTOBER 22, 1919

NUMBER 2287



METHODIST EPISCOPAL CHURCH, BELLE PLAIN, IOWA
LOWE & BOLLENBACHER, ARCHITECTS

Planning Church Buildings To Meet New Needs

By FRANK G. DILLARD, *Architect*

PART I

ACHIEVEMENTS in the business world are today almost always measurable by the amount of thought and attention applied to details of organization, equipment and housing. Business considers its buildings instruments of operation and consequently spends what is necessary to plan and finish them in exactly the manner best suited to their effective use. While the church is primarily an institution interested in spiritual things, there is no reason why, in matters having to do with its material advancement, it should not look to the business world for methods of pro-

cedure; for the church is really the greatest business institution in the civilized world. It is, with its many interests, a ponderous and complicated business that must of necessity be regulated and maintained according to the highest standards of business efficiency if it is to be made a paying proposition—and the church has goods to market and profits to make, incorruptible profits, as surely as any selling agency on earth.

That the church senses this is evidenced by the increasing desire for improved equipment, adequate housing and trained teaching force. It is a sign of progress that such needs have been discovered, and a sign of still further progress that steps are being taken toward supplying the deficiencies.

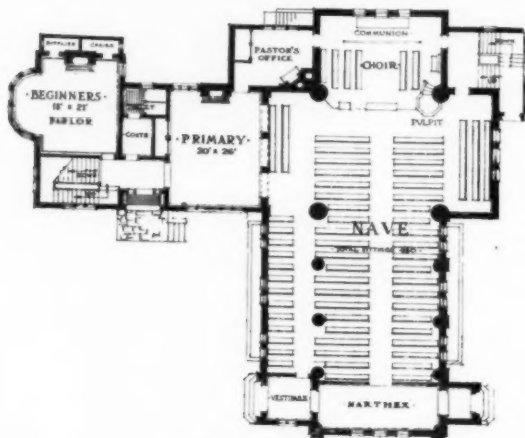
*Architect in charge Chicago office, Bureau of Architecture of the Methodist Episcopal Church.

THE AMERICAN ARCHITECT

Housing the church is a problem that is much more complicated than appears at first glance; this, perhaps is due largely to the fact that a great deal of such work follows blindly schemes of arrangement that have become familiar through wide publicity, producing the popular impression that structures, regardless of size, location and local needs, following such formulæ, are good church buildings. Such procedure has resulted in a great loss of church money spent on construction; the products being often inadequate, inconsequential and even flimsy.

In the Methodist Episcopal Church the Board of Home Missions and Church Extension and the

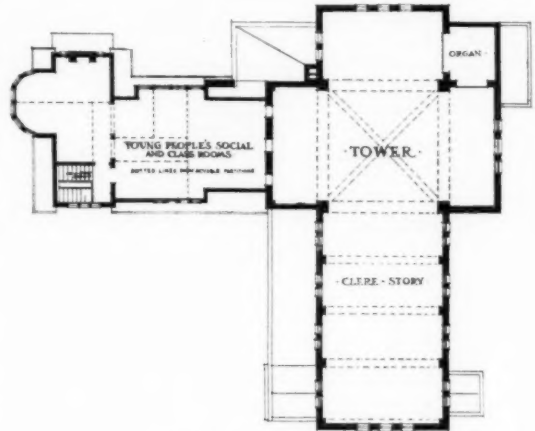
The Methodist Episcopal Church has recently pledged its membership to the raising of a fund sufficient to put its many phases of work on a much more business-like basis. A great deal of this



FIRST FLOOR PLAN

SMALL TOWN CHURCH AND SUNDAY SCHOOL

Board of Sunday Schools jointly decided about two years ago that such economic waste should be reduced. A "Bureau of Architecture of the Methodist Episcopal Church" was established to operate, under the general control of the two Boards, as adviser to the church on all matters pertaining to building. This Bureau is in no wise intended to supplant the architect, but rather to assist him toward an intelligent consideration of the church's problems. It aims, also, to assist the building committee toward a careful analysis of local needs and a judicious selection of the architect to serve it in carrying out its recommendations. Thus the Bureau of Architecture becomes a technical member of any building committee wishing to avail itself of this free service.



SECOND FLOOR PLAN

SMALL TOWN CHURCH AND SUNDAY SCHOOL

money will go toward encouraging churches to provide themselves with proper buildings; so it is eminently fitting that there be a source of advice and information on standards of plan, arrangement and general design.

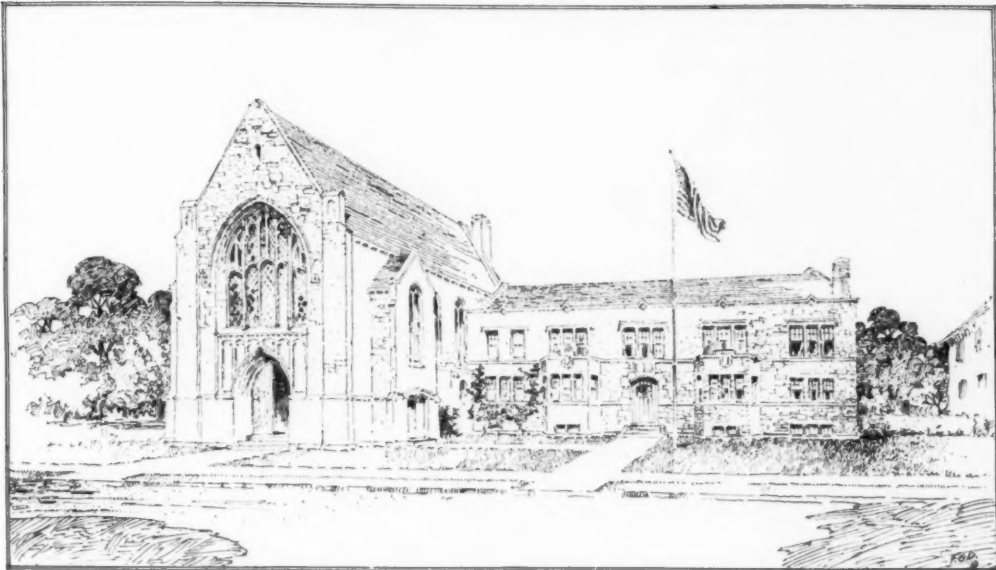
That the church at large is looking on its work as worthy of most thorough study and efficient de-



BASEMENT PLAN

SMALL TOWN CHURCH AND SUNDAY SCHOOL

THE AMERICAN ARCHITECT



A SUBURBAN CHURCH
FRANK G. DILLARD, ARCHITECT



A SMALL TOWN CHURCH
FRANK G. DILLARD, ARCHITECT

THE AMERICAN ARCHITECT

velopment is evidenced by the great strides that have been made in the past decade. Within that period there has developed an intense interest in the advancement of the many activities which have to do with the educational, cultural and social side of church work. Experts in all these phases of its efforts have appeared—students of the special problems confronting the church—who are devoting their whole thought and energy to their chosen tasks.

Of all these enterprises perhaps the most important is the Sunday School, for teaching the

study courses and methods, it is foolish to assume that the building of ten years ago (no matter how successful then), can be used as a guide in planning for modern conditions.

There is an earnest effort being put forth to place Sunday School work on the same basis of efficiency as the public school; the thorough development of the latter has, at least, set a standard that the former, within its sphere, cannot safely ignore. These influences have, as will be detailed later, made necessary marked changes in the housing of the school.



ST. PAUL'S METHODIST EPISCOPAL CHURCH, NIAGARA FALLS, N. Y.

LOWE & BOLLENBACHER, ARCHITECTS

Scriptures has always been, as in the days of Christ, of vital importance in leading humanity to better living. The modern Sunday School dates back to the humble beginning made by Robert Raikes in 1780. His enterprise was strongly opposed by the leaders of the church as destructive of family worship and as "subversive of peace and order in church and state." From that time down to recent years the "Sunday" or "Church" School has passed through a period in which the feeling of the church toward it ranged from hostility to indifference. In 1908 the school was made a business-like and pedagogic institution by the introduction of an International Graded Lesson system. Since then the efforts of Sunday School experts have been largely devoted to the development of teaching and administrative organizations, such as to assure the students full benefits from the improved curriculum.

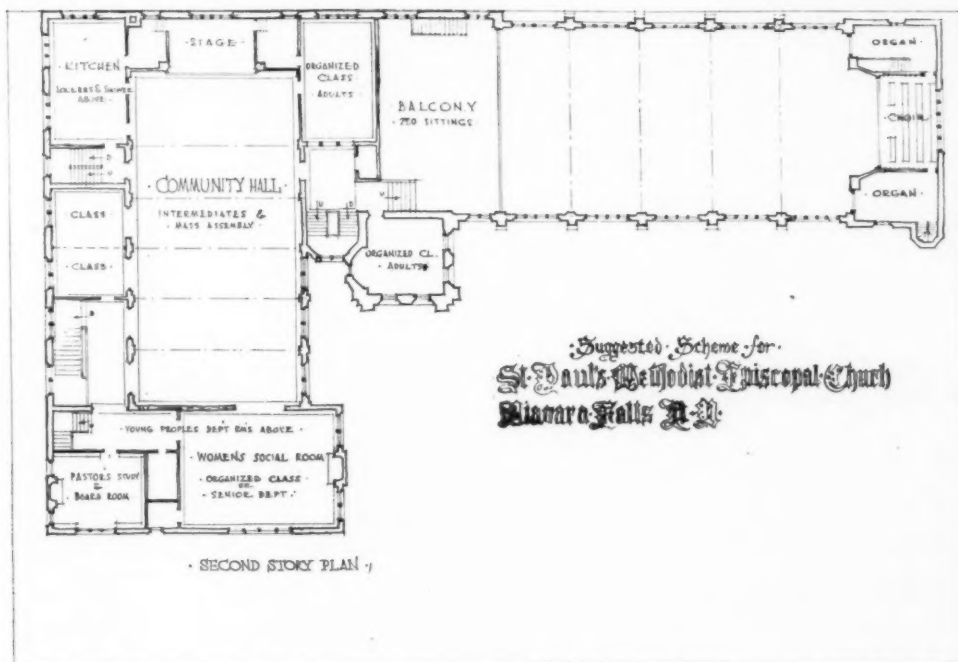
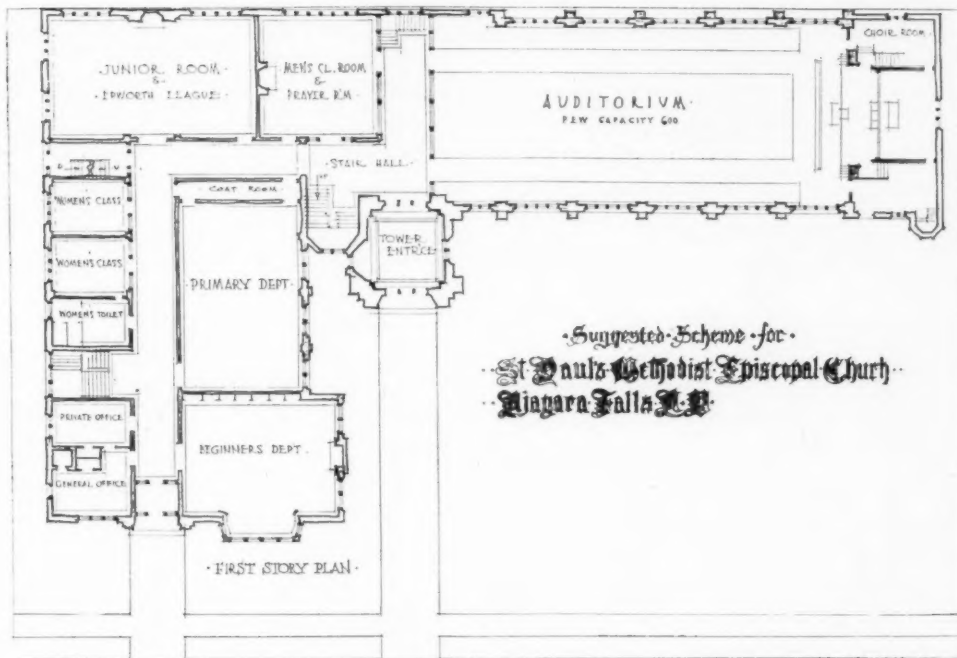
With a knowledge of these decided changes in

Social problems and community welfare are now important governing interests in church work to the extent that much thought is being devoted to "the city problem," "the rural problem," "the industrial problem," etc., etc.

The successful pastor is no longer devoting his time solely to visitation among his parishioners, but is rightly taking a lively interest in the religious and cultural development of the community at large. His work is less bound by arbitrary regulations and far more by the natural human need for spiritual leadership. The serious study of the many fields for the church's service is bringing to mind many special needs in its buildings that have hitherto been thought little of—features that must be provided if these many responsibilities are to be assumed in a worthwhile manner.

There is a growing conviction that the church must make itself a real force in its community, and

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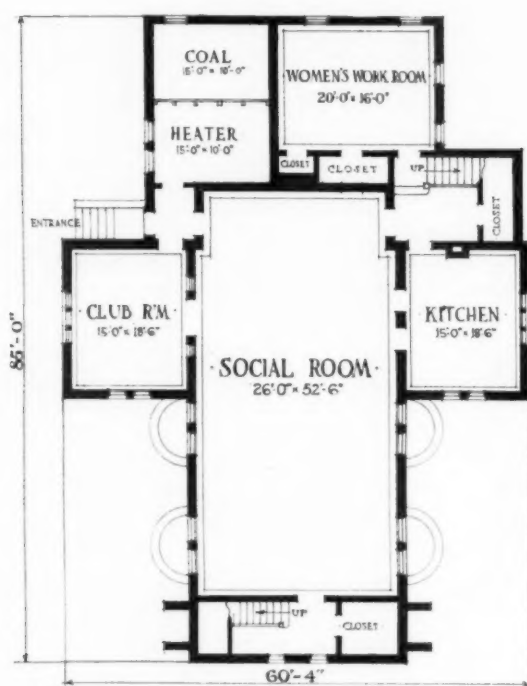
FLOOR PLANS, ST. PAUL'S METHODIST EPISCOPAL CHURCH, NIAGARA FALLS, N. Y.
 LOWE & BOLLENBACHER, ARCHITECTS

THE AMERICAN ARCHITECT

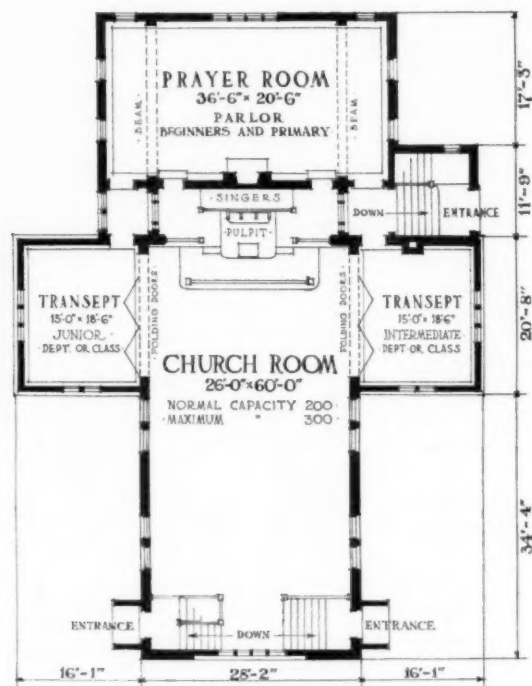
a thorough realism that to accomplish this it must, aside from purely religious functions, be related to community life in its various expressions. To gain this end there must first be a careful analysis of the needs and a wisely arranged program of activities that will best satisfy these needs. In some sections the best service the church can render its community is of a purely eleemosynary nature, such as the maintenance of free dispensary, day nursery, clothing supply, employment agency, etc.; in others social and cultural clubs, educational

the architect should encourage the church to make the investigations necessary to the formulation of such a program.

So the work of the church, "modern" or "up-to-date" as some are pleased to call it, can be classified as *worship, education, service and play*. These four divisions are not mutually exclusive; the work of carrying them on must be properly co-related, looking ever to the business world for example, to learn from its experiments in efficiency, the principles which will make for efficiency in the church. The



· BASEMENT PLAN ·
THE SMALL TOWN CHURCH



· FIRST FLOOR PLAN ·
THE SMALL TOWN CHURCH

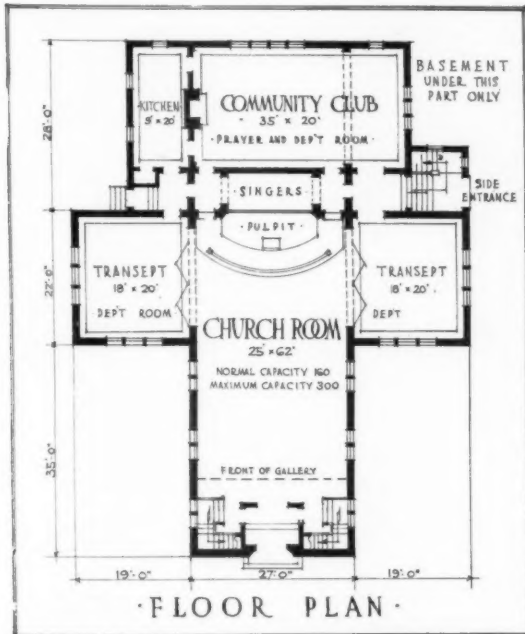
classes, choral and orchestral societies and even dormitories, are means best suited; while in still others the greatest opportunity for contact is the library and reading room, game rooms, recreational features and the like. There is no intention to imply that these features always fall into the classifications given above; indeed it is difficult to say, without a most careful diagnosis of local conditions, just what should be provided for in the building. The minister who is abreast of the times will see to it that the architect is furnished with a program of the activities the church intends to institute, with an approximation of capacities required in the various units. Lacking such data

architect must have a thorough understanding of the functions of the church and be spiritually sympathetic, to co-operate successfully with the pastor and building committee; and, thus fitted, he should be leader rather than follower in all matters pertaining to the plan and design of the building. He should inform himself, through such agencies of the church as the *Bureau of Architecture*, or Board of Church Extension, on any details with which he is not entirely familiar.

The fundamental requirement of that portion of the building devoted to worship is that it be conducive to worship both in aspect and atmosphere; indeed, the whole building must in its external

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appearance express, decidedly, its religious character; it must say, in no unmistakable terms, "I am a religious institution." The head of a successful advertising company, who is, by the way, a prominent Christian business man, recently pointed this out as the church's best means of advertising, and expressed his astonishment that, seemingly, some churches failed to realize this fact.

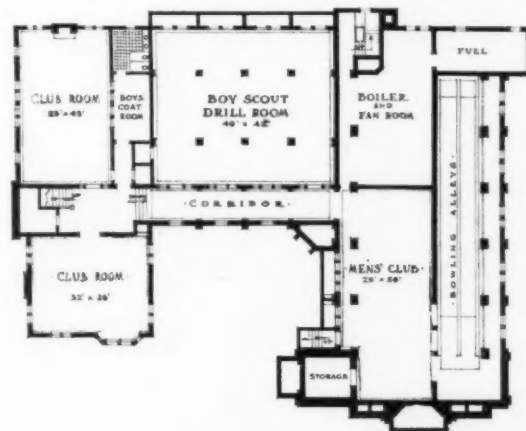


FLOOR PLAN FOR A VILLAGE CHURCH

Of all the systems of architecture that have been drawn on, or developed, for church building, there is one so thoroughly ecclesiastical in character that it is seldom, if ever, used for any other kind of structure. According to the opinion just stated there seems sufficient reason for the use of such architecture in designing our churches. From the time of its transitional development from the Norman through to the Tudor period, the abbey and parish church architecture of England furnishes examples that are worthy and safe guides for the American church; indeed, modern adaptations, most inspiring in every respect, are being produced in England and by some of our own eminent church architects. The system is purely functional and should be carefully kept so in every detail. Much of the unfortunate prejudice against English Gothic is due to ornamentation senselessly applied and

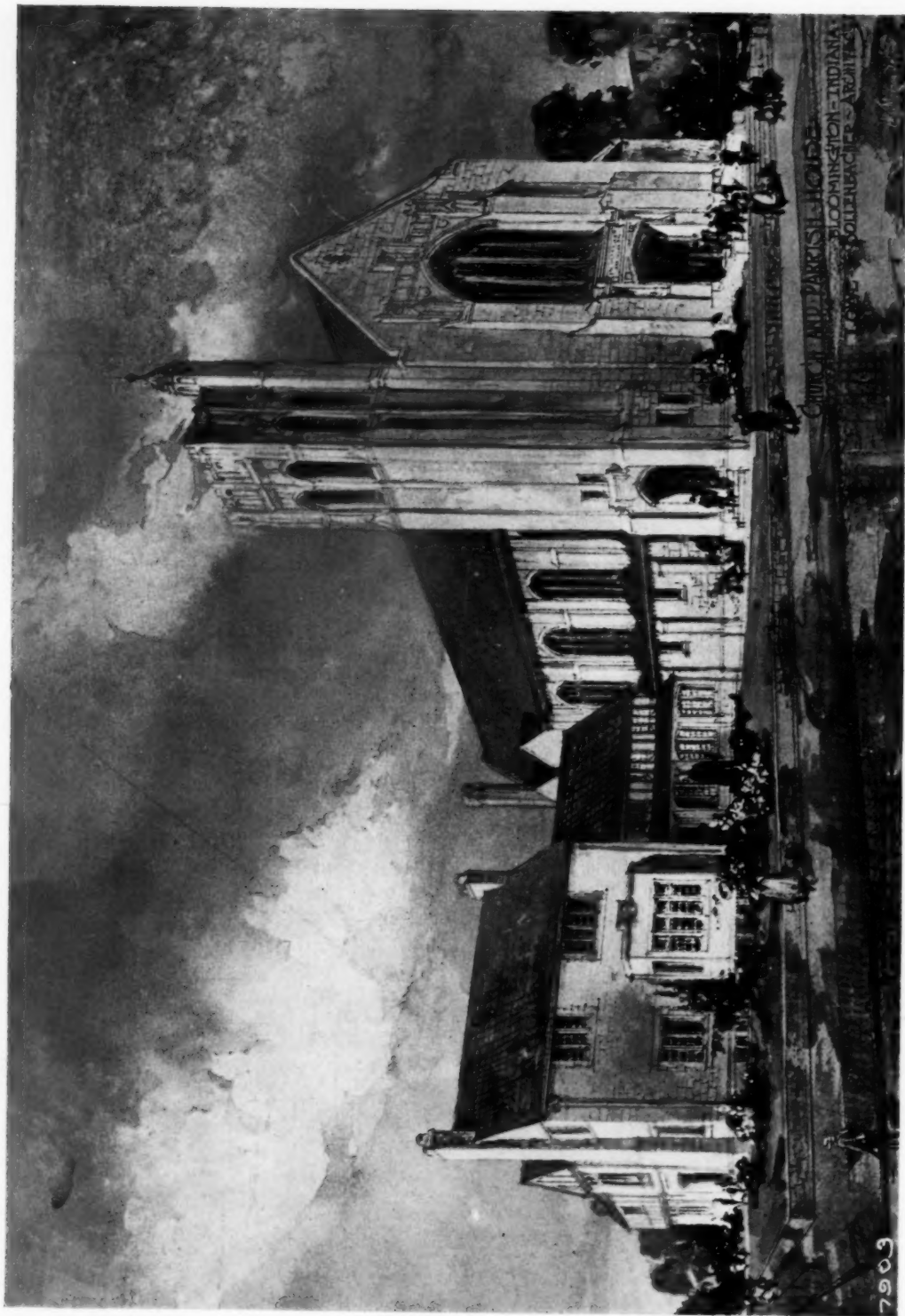
produced, common results of unfamiliarity with the style and lack of restraint on the part of the designer. Such deplorable practices are largely responsible for the term "ginger-bread," which to the layman has become a perfectly good architectural term. There is much of encouragement in the present-day aversion to the aforesaid "ginger-bread" (even though the aversion be based, principally, on financial consideration), for it denotes a desire to get back to simple, stately, structural beauty of mass and proportion, independent of applied ornament and decoration.

Provision for worship has to do principally with that portion of the building devoted to the regular church service. Such part or parts should be set aside sacredly for this use alone. On account of their reaction against formalism in worship, some non-liturgical communions do not have the same degree of reverence for the place set aside as God's house and dedicated to His worship and praise as ritualistic communions do. This reaction has had so decided an effect on design and arrangement that often such rooms are, architecturally and in general atmosphere, not much more than social lecture halls. It is to be devoutly hoped that the apex of this reaction is past and that there is growing a more fitting attitude toward planning and designing for a proper atmosphere of worship. To those familiar with perspective it is unnecessary to point out the value of an oblong room, such as the Gothic nave, for fore-shortening the sides and establishing a system of lines that resistlessly leads the eyes to a point on which they must be focused. The place



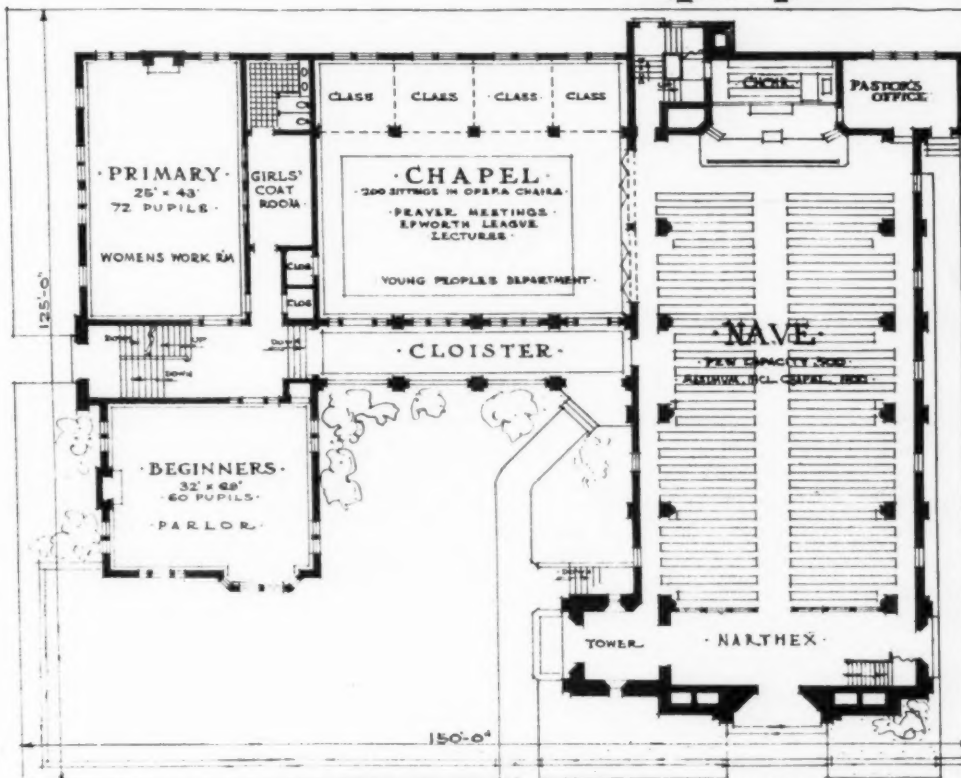
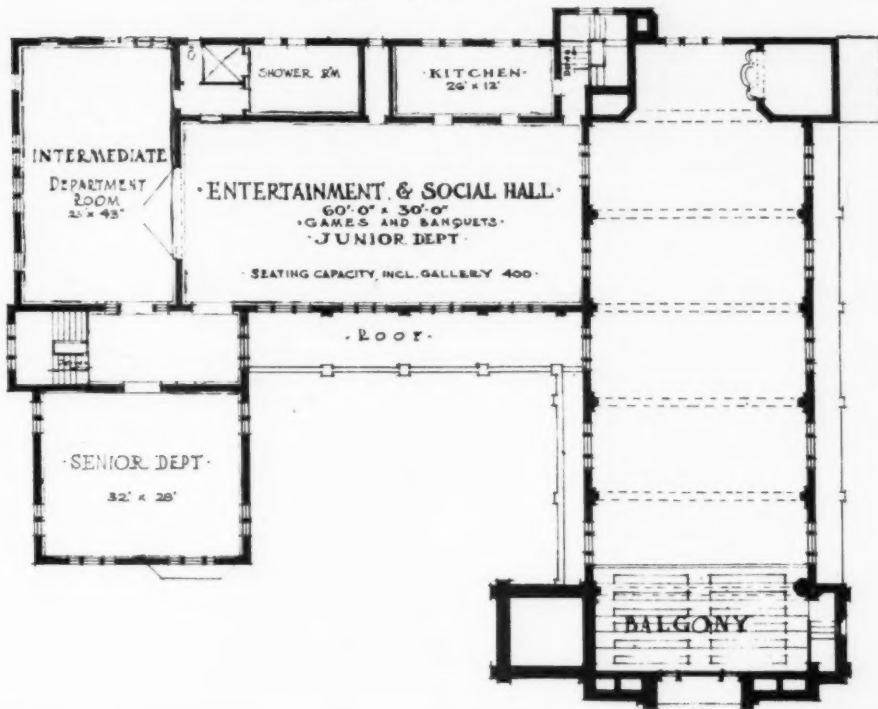
BASEMENT PLAN

CHURCH AND PARISH HOUSE, BLOOMINGTON, IND.



CHURCH AND PARISH HOUSE, BLOOMINGTON, INDIANA
LOWE & BOLLENBACHER, ARCHITECTS

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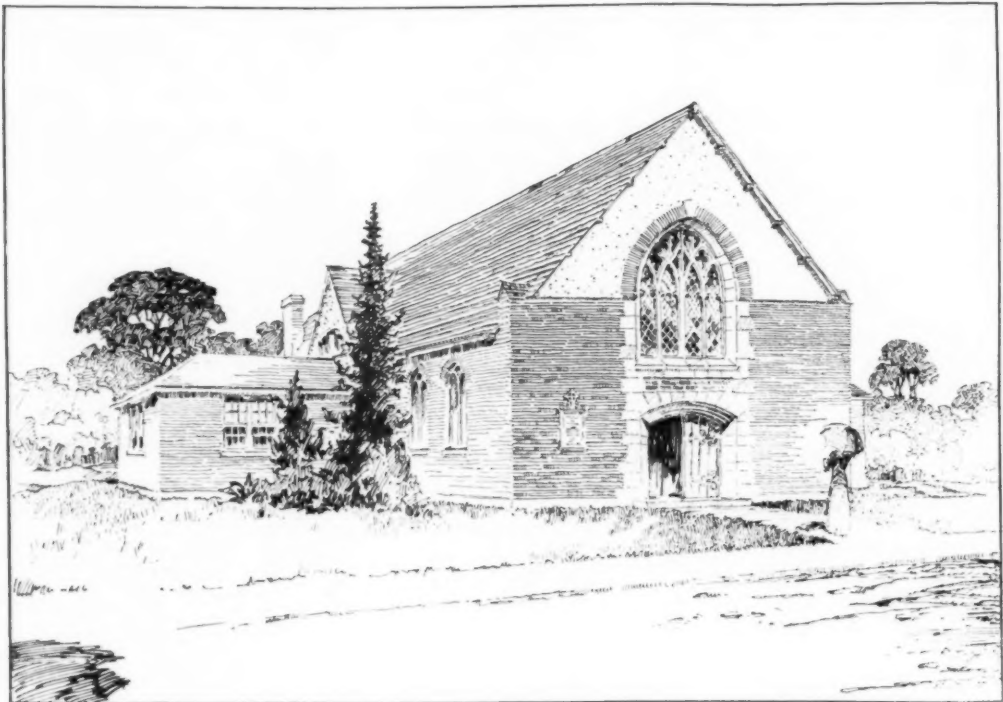


FLOOR PLANS OF CHURCH AND PARISH HOUSE, BLOOMINGTON, INDIANA
LOWE & BOLLENBACHER, ARCHITECTS

THE AMERICAN ARCHITECT

from which the service is conducted and the sermon delivered should be made as much the center of interest as is the high altar in churches where the service is entirely ritualistic. The difficulties of effecting this desired orderly arrangement in the church room planned on a diagonal axis are well nigh unsurmountable, yet the number so laid out has set a most deplorable precedent. All the skill and sympathetic understanding of the architect are required to make everything in the church room assist worship rather than detract from it; sim-

raised from the status of the "blab-school." Graded instruction was, in many individual schools, accepted as logical, long before the graded system was formally introduced; but it has proved far more difficult for officers and teachers to perceive that the graded curriculum is only a halfway point. All the work of the school must be suited to the mental capacities of the various ages represented in the school. It is self-evident that prayers, songs and scriptural readings and expositions, suitable for the reverent worship of adults, make no marked im-



THE SMALL TOWN CHURCH

plicity, restraint and honesty are qualities that should characterize his every effort.

Modern Sunday School work is more scientific than any other work of the church; therefore, the principles governing its housing provisions are as much utilitarian as aesthetic. Up to the time of introducing graded instruction, all efforts in Sunday School work had for their prime objective the inspirational reactions from mass meetings. The well-known Akron plan and others of similar arrangement resulted from this conception; even after it was recognized that the school should be

pression on the child mind and vice versa; therefore, to attain the maximum of spiritual development in each group it is necessary to conduct the devotional exercises, as well as the study period, separately. Realization of this truth has led Sunday School experts to the substitution of the term *Graded Religious Education for Graded Religious Instruction* and to the advocacy of the *department room* as the housing unit instead of the class room. Such rooms, for satisfactory results, must be as entirely isolated one from another as are grade rooms in the public school; for if sounds of the singing and other exercises penetrate from one

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room to another, the whole object of the separation is frustrated.

Standards of grading in the Methodist Episcopal Church are as follows:

Beginners' Department.....	4-5 years
Primary Department.....	6-7-8 years
Junior Department.....	9-10-11 years
Intermediate Department.....	12-13-14 years
Senior Department.....	15-16-17 years
Young People's Department.....	18-24 years
Adult Department.....	25-up

ments of the various departments bear a more or less fixed relation. Investigation of a number of representative schools in the Methodist Episcopal Church has led to the establishment of the following proportions as normal:

Beginners' Department—	10 per cent total enrollment of school.
Primary Department—	12 per cent total enrollment of school.
Junior Department—	14 per cent total enrollment of school.



A SMALL COUNTRY CHAPEL BUILDING
STONE BASE, WITH STUCCO OR WOOD CONSTRUCTION ABOVE

This classification holds generally for all Protestant churches; the Young People's Department being the latest established, does not appear in many otherwise well-organized schools, and the Intermediates and Seniors are sometimes combined as a "Teen Age" group. Lesson materials are standardized for all departments up to and through the Senior years; above that the study courses are elective.

Under favorable conditions a Sunday School's enrollment will run about 10 per cent greater than the active church members; to which the enroll-

Intermediate Department—12 per cent total enrollment of school.

Senior Department—10 per cent total enrollment of school.

Young People's Department—12 per cent total enrollment of school.

Adult Department—30 per cent total enrollment of school.

It is well to plan for such departmental enrollments even though actual conditions seem to dictate otherwise, for with perfection of organization and equipment the tendency in normal cases will

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eventually be to approximate closely the above proportions.

Department rooms should be designed and decorated in a manner to make them especially attractive to the pupils who will occupy them; thus the Beginners must have a room that corresponds to the best kindergartens in its appeal to the budding appreciation of the beautiful, while in rooms for Intermediates and Seniors the workmanlike atmosphere of the high school and college room should prevail. Circle work should be provided for in the Beginners' Department, and table work for Primary, Juniors and Intermediates with classes of not over six each in the first two and not over twelve in the latter. For classes above the Intermediate grade tablet armchairs are much better for taking the place of tables. Many Sunday School experts logically hold that individual class rooms are undesirable below the Intermediate grade; it is certainly undeniable that their elimination makes the department rooms more usable for other functions; however, it is well to provide means for class separation in departments of the "teen ages" and over; local conditions and funds available are important factors in determining to just what extent such features can be developed.

The working basis used in the Bureau of Architecture for establishing room sizes is a minimum allowance of fifteen square feet per pupil where circle or table work is done and twelve square feet per pupil for tablet armchairs. Ample storage spaces for chairs and tables should be provided, because department rooms must, in the interest of economy and efficiency, be used through the week for other purposes that would need entirely different arrangements of furnishings. Much can be said concerning these other uses of the church's building; matters that will be dealt with more in detail in a subsequent article.

The thought that should guide the architect in planning for the Sunday School is based on the fact that the school is the place of preparation and inspiration for all the future work of the church, and in simple terms is this—"I must get a thorough understanding of the work that is to be done here, its most approved methods and modern equipment, and with that knowledge must plan for a business-like and scholarly execution of that work."

(Note—This is the first of a series of articles by Mr. Dillard. The second article will deal more especially with planning for the social work of the church.)
PLATE 142



Editorial Comment

III Advised Publicity Methods by Architects

THE AMERICAN ARCHITECT has at one time and another critically referred to the practice unfortunately indulged in by architects and some architectural organizations of soliciting advertising to accompany volumes illustrating completed work. Commenting on a specific instance, it was stated:

A more reprehensible proceeding it would be difficult to imagine. A method that would tend more to lessen the dignity of architects could not be devised. If these schemes are carried forward, the harm is serious. It would seem as if here was a matter that the Post-War Committee might with propriety early consider, and that the Institute at its convention in April could investigate with a view to such action as would make clear its attitude toward a practice that if persisted in not only discredits its authors, but casts a cloud on the good name of the profession as a body.

It is particularly to this editorial that an important manufacturing firm refers in a communication just received. This letter states:

In a recent issue of THE AMERICAN ARCHITECT there appeared some remarks about illegitimate publicity methods. If particularization be permitted, I am assuming that references to architectural catalogues depending upon the public purse for publication are included.

We are unceasingly harassed for advertising in this class of transient publication. The latest solicitation, in keeping with the times, being an advance over previous rates. The solicitors introduce themselves with a letter multi-graphed on a letterhead bearing the architect's imprint.

Repeated presentations have the earmarks that the entire proposition is engineered by a catalogue promoter, architect's letterhead included, and as soon as one catalogue is off the press, another architect "needs the money" (?) for his catalogue, and we are again importuned.

The bludgeon is hidden behind an assurance that the architect will be disposed to look favorably upon the products of those contributing to the expense of publishing his catalogue.

Do prominent "Avenue" architects, whom I could mention, really desire that we retain their good will in this way? Isn't it far more to their advantage that we confine our money to THE AMERICAN ARCHITECT and other weeklies and monthlies possible.

Is the architectural catalogue depending on advertisers' contributions for its issue legitimate? Architects please write.

The reference to the "bludgeon," by which it is hoped to club the prospective advertiser into a complaisant frame of mind is well expressed and the query, "Is the architectural catalogue depending on advertisers' contributions for its issue legitimate?" might well suggest a more thoughtful consideration on the part of architects who have in the past or who contemplate in the future recourse to a practice that may be truly called unethical.

During the course of an admirable address by

Irving K. Pond, on the Status of the Architect, delivered before the recent convention at Nashville, Mr. Pond said:

In the art, the profession, the business of architecture, it is the duty of the Institute to set the standard high, to draw all adherents of that high standard to itself, to educate the public and the profession at large to an appreciation of that standard, and to shut the door upon all who drag it down.

This so clearly outlines the duty of organized architects in such matters as our correspondent refers to, as to need no further comment and to require no suggestion as to the proper action.

The Tiffany Gift to American Art

Mr. Louis Comfort Tiffany who has recently given his home on Long Island, together with his very valuable art collection, to found an institution for art teaching has done a very generous service to art and has laid the foundation for a school of the most far-reaching good influences.

Mr. Tiffany is an artist of the highest rank, a man of considerable wealth and of so pleasing a personality as to commend the intimate acquaintance of men high in his profession. With these qualifications it is not to be wondered that in his deed of gift, he so arranged the outline for the future work of this school as to commend the approval of artists everywhere.

During his life work Mr. Tiffany has not merely produced beautiful things, but he has been able to command that rare combination among artists, a most practical mind in the production of a most fertile man. He at all times spread the gospel of beauty, and made it clear that art was not a plaything of the rich, but an essential thing to be shared and possessed by everyone.

He revived the artistic truth as perhaps few men engaged in the most artistic phases of craftsmanship have been able to do, the fact so splendidly emphasized during the renaissance, that because a thing is beautiful it need not necessarily be impracticable. He has always been a chief exponent of the democratization of beauty, and in accomplishing all of these things, he has been able to secure practical results and the adequate returns to an extent that enables him to endow this school of art to an extent estimated to be in excess of a million dollars.

There exists in Mr. Tiffany's mind as to just what he seeks to accomplish by this foundation,

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none of the hazy ideas of art's needs as so often shown by other donors, whose willingness to aid is in excess of a practical idea of our artistic needs.

In his deed of gift Mr. Tiffany's catholicity of mind is shown in the stipulation that there shall be none of the stereotyped methods of teaching, and in his selection of a board of directors and a teaching staff, he has covered all the different phases of sane art as represented in this country.

A school so liberally endowed and its future guarded by stipulations and good sense will have the most far-reaching and beneficial influence on art education in the United States. It is an unusual pleasure to find opportunity to make acknowledgment of a benefaction founded on every good principle. This foundation marks an epoch in art education in the United States.

The Scarcity of Labor

THE growing scarcity of labor is a factor in our present industrial situation that should receive serious consideration. There is a genuine shortage of labor throughout the United States and one that shows no prospect of diminution. The exodus of foreigners, notably Italians and Greeks, who perform unskilled building labor goes steadily on and there appears to be no increase of similar immigration to take their place.

The departure of these men from our shores

is not alone a menace as creating a severe labor shortage. These workers are taking with them hundreds of millions of dollars which they have hoarded with the one idea of spending their remaining days in ease in their native lands. Ships to Europe since early in the spring have averaged nearly 1,000 laborers per day. There departed in one day from the port of New York 3,500 aliens.

It is estimated by Government officials that each alien represents an average of \$2,500 saved while working in this country. The great majority will never return to the United States. Ten years ago an average savings of \$2,500 would have been sufficient to maintain a peasant family in Europe for the remainder of their lives. As the increased cost of living abroad makes this impossible today, it is possible that some will return within a few years. Many, undoubtedly, will purchase property in their home lands and settle there.

Practically none of the returning foreigners saw service in the army or navy, and with the exception of a comparatively few they made their money in American shipyards and munition plants. The high wages of the war years have made the desired fortunes quick of attainment and these men are returning years before they would had times been normal.

Is it to be wondered that unskilled labor is today able to demand and receive a daily wage of from \$5 to \$7?



PLATE 142

GODFREY BUILDING, SEVENTH AVENUE AND 49TH STREET, NEW YORK
ARTHUR LOOMIS HARMON, ARCHITECT

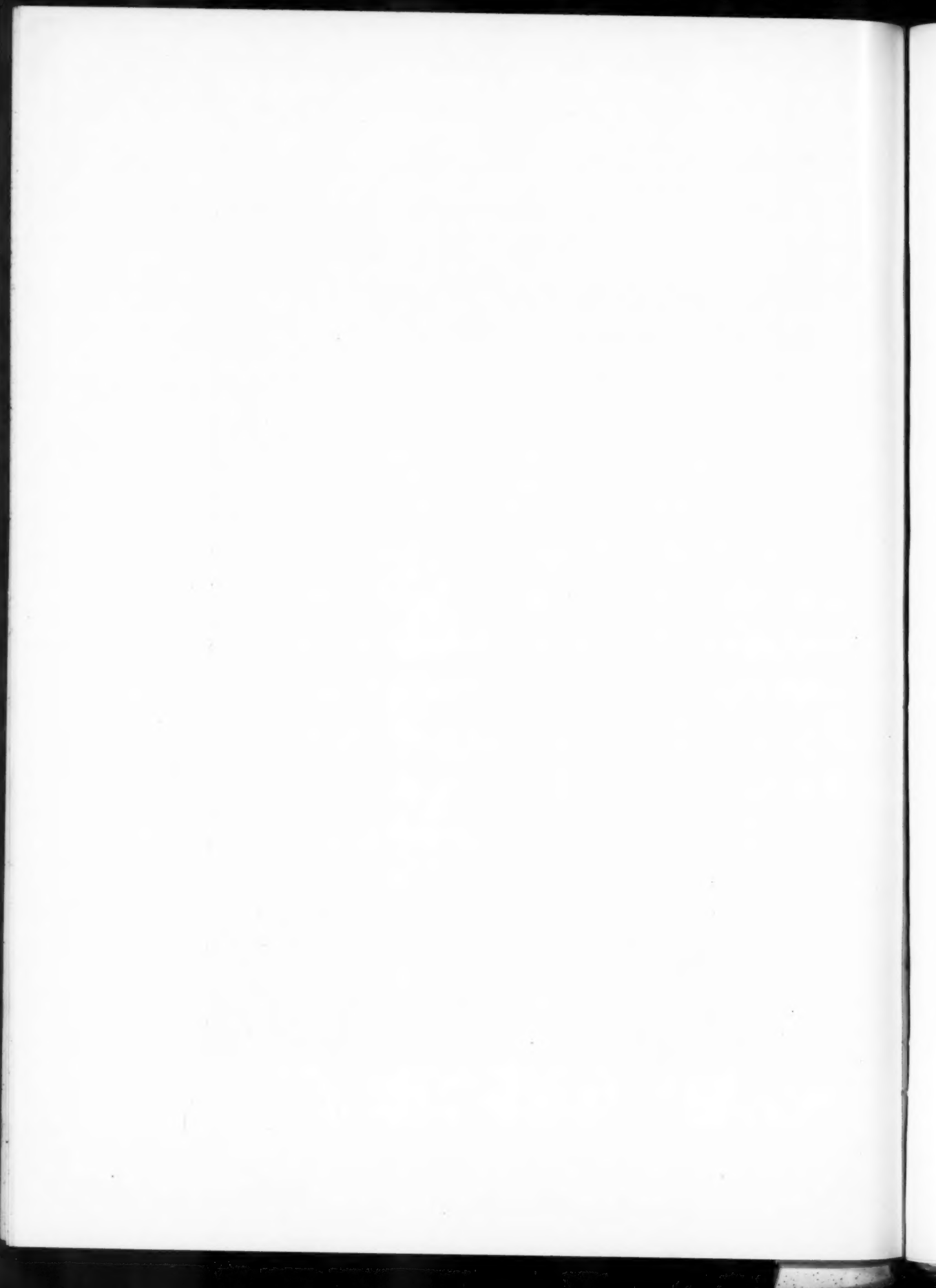
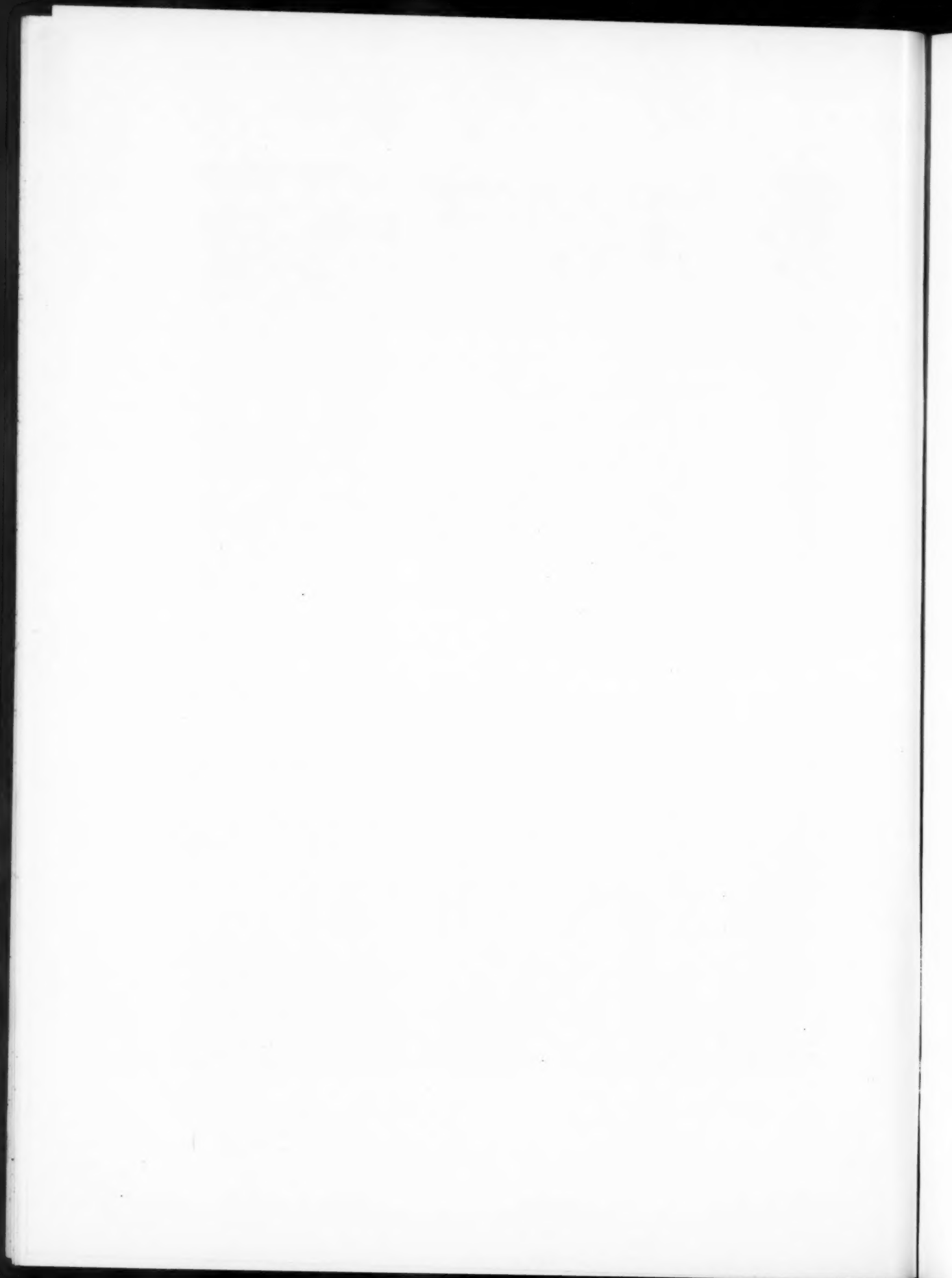




PLATE 143

DETAIL OF LOWER STORIES
GODFREY BUILDING, SEVENTH AVENUE AND 49TH STREET, NEW YORK
ARTHUR LOOMIS HARMON, ARCHITECT



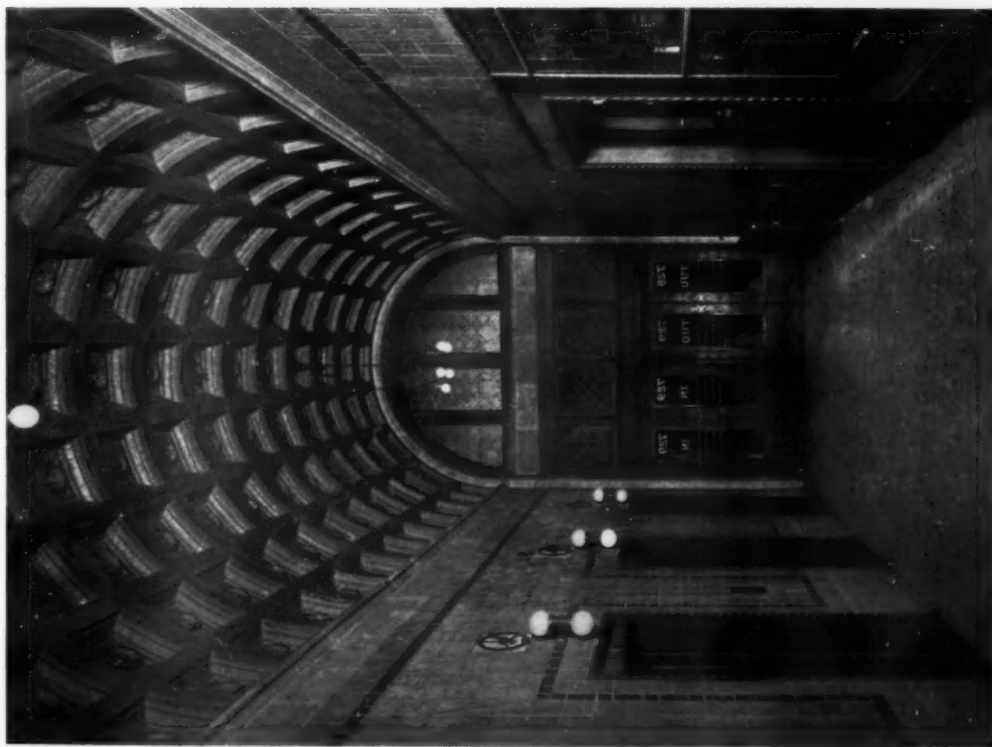


PLATE 144

ELEVATOR ENTRANCE LOBBY
GODFREY BUILDING, SEVENTH AVENUE AND 49TH STREET, NEW YORK

ARTHUR LOOMIS HARMON, ARCHITECT



CORRIDOR ON 14TH FLOOR

NEW YORK



OFFICE ON 14TH FLOOR



PLATE 145

ENTRANCE TO OFFICES ON 14TH FLOOR
GODFREY BUILDING, SEVENTH AVENUE AND 49TH STREET, NEW YORK
ARTHUR LOOMIS HARMON, ARCHITECT



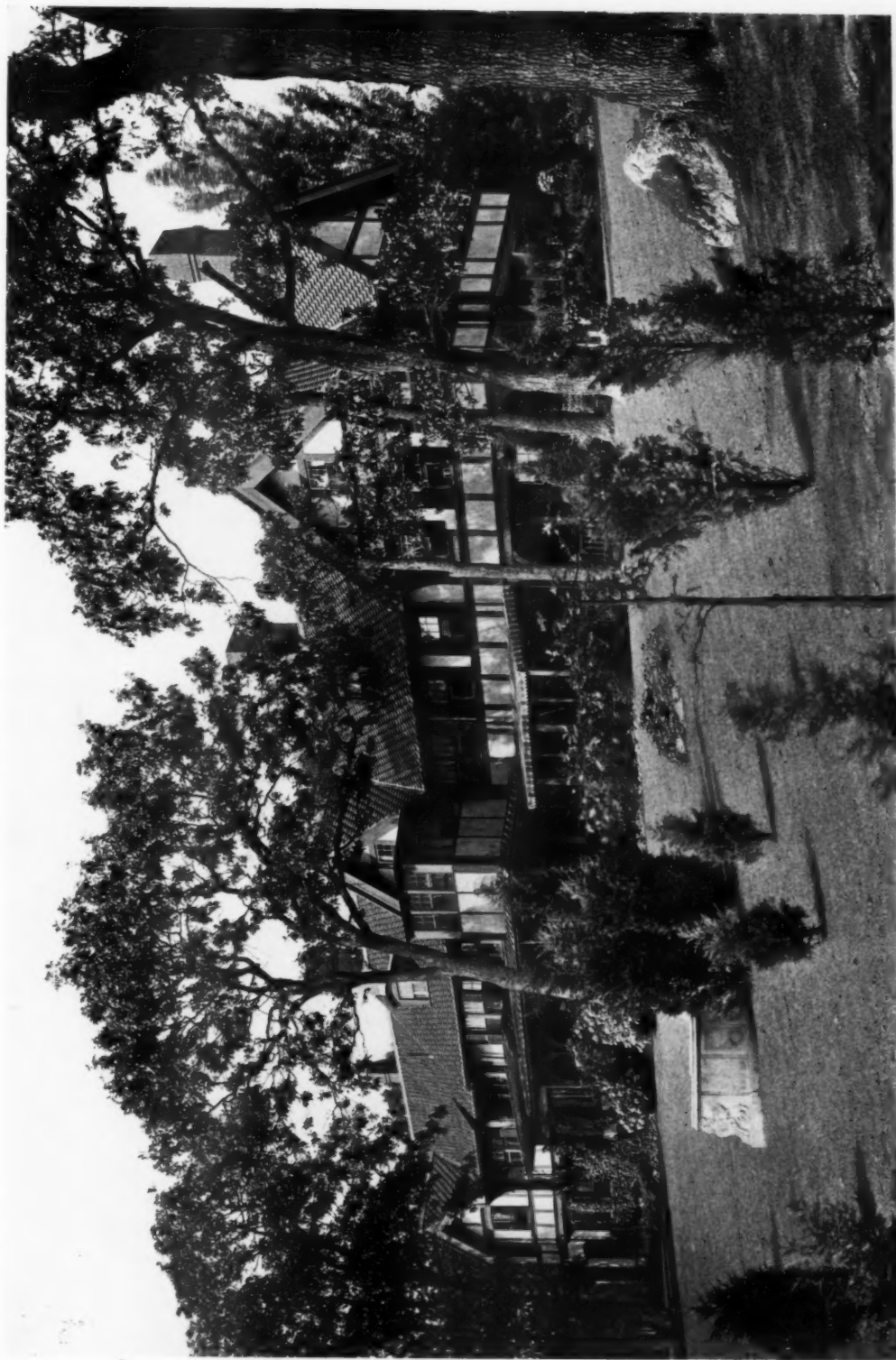


PLATE 146

HOUSE OF EDWARD A. CLARK, MARION, MASS.
COOLIDGE & CARLSON, ARCHITECTS

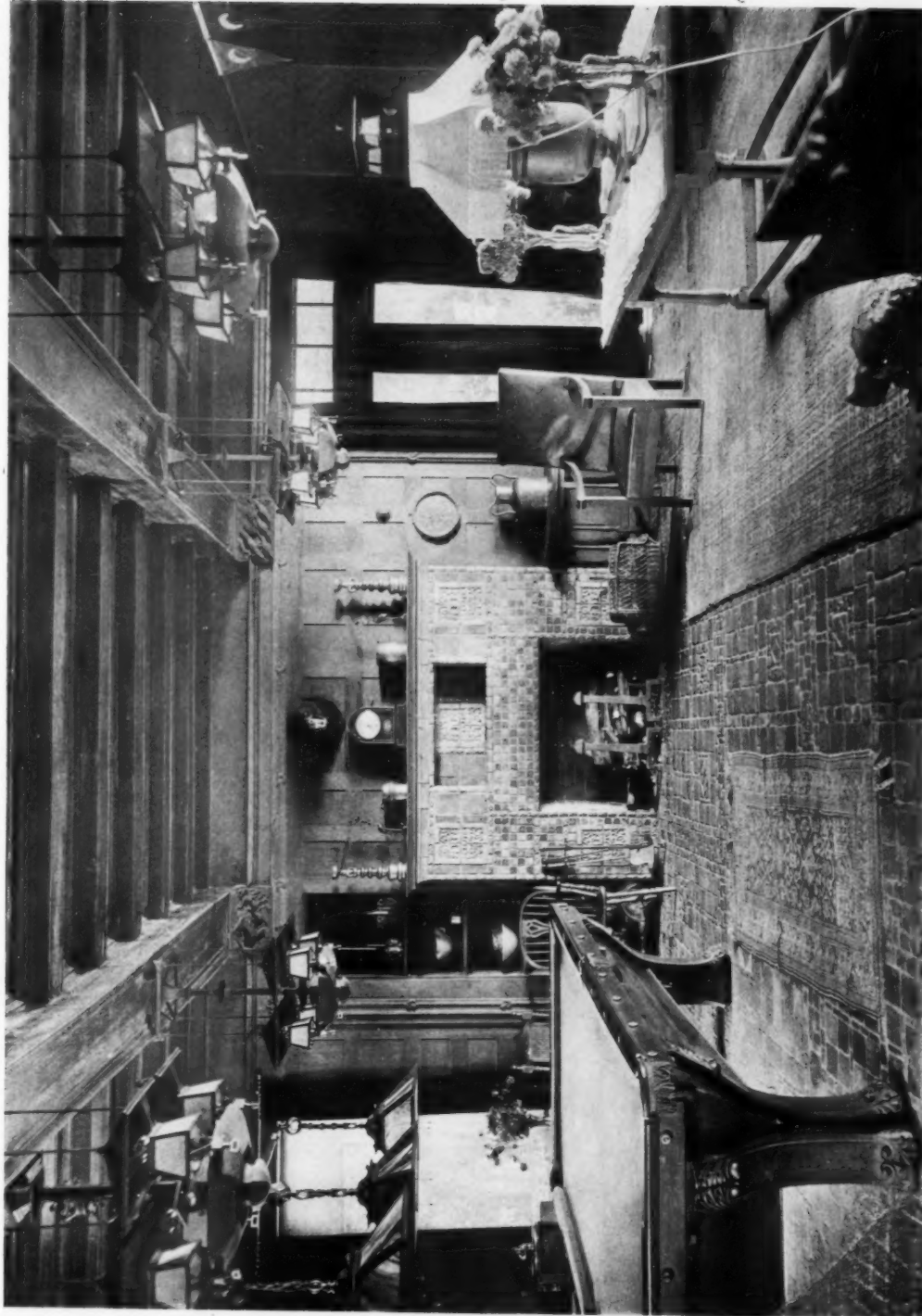


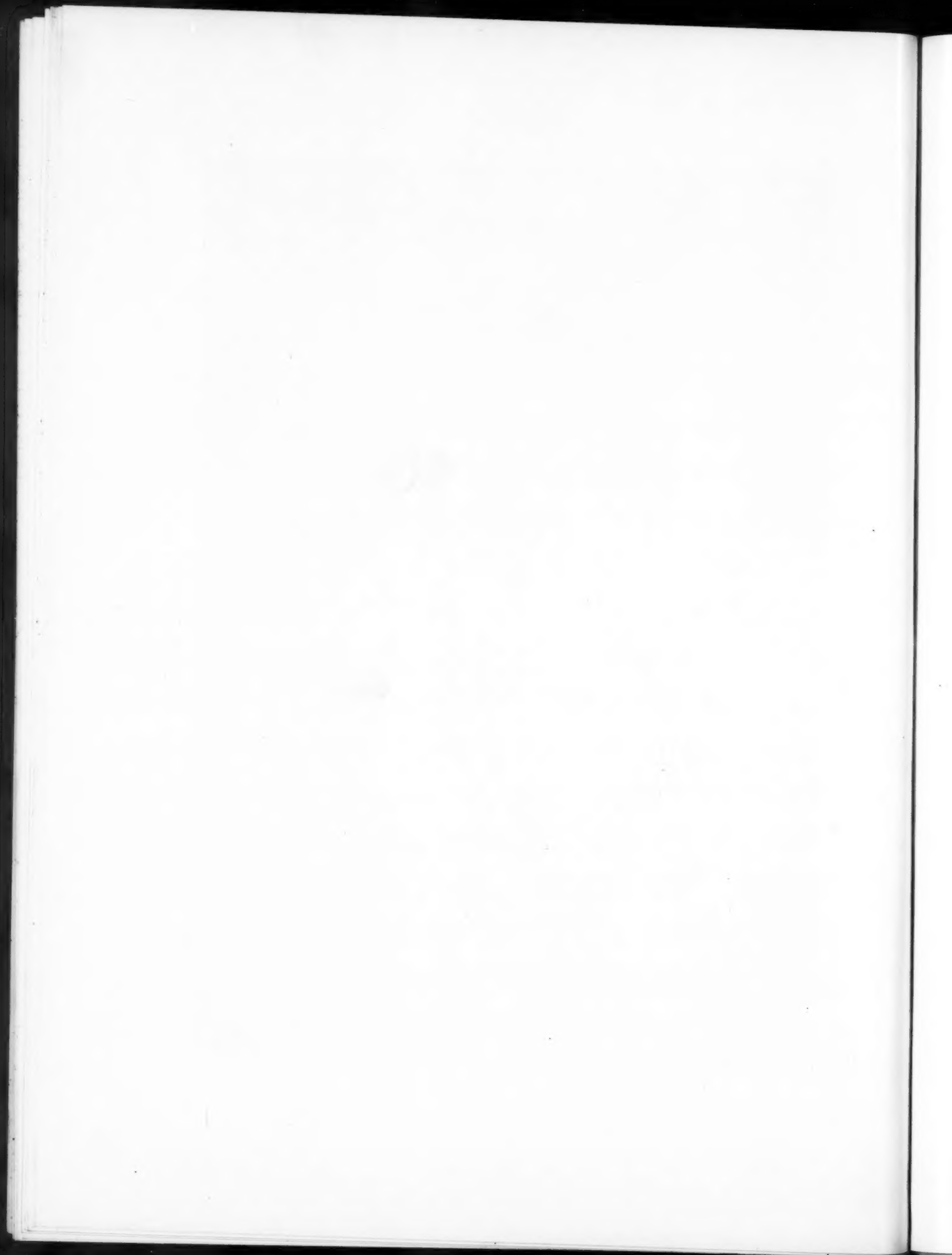
PLATE 147

BILLIARD ROOM
HOUSE OF EDWARD A. CLARK, MARION, MASS.
COOLIDGE & CARLSON, ARCHITECTS





LIVING ROOM
HOUSE OF EDWARD A. CLARK, MARION, MASS.
COOLIDGE & CARLSON, ARCHITECTS



Current News

Late Happenings and Comment in the Fields of Architecture and the Allied Arts

Charles L. Freer, Art Collector, Dies

Charles Lang Freer, connoisseur of art, who gave an almost priceless collection to the Smithsonian Institution and then gave \$1,000,000 for the erection of a separate building to house it, died recently in New York.

The Freer art collection is one of the most valuable assemblages of Japanese and Chinese art in the world. Although the Chinese and Japanese items in the collection represent both the ancient and modern artists of the Orient, the collection's greatest value to America lies in its collection of Whistlers. There are some 600 paintings and etchings and other works, including the famous "Peacock Room" painted for the home of John Leyland in London. The room is in blue and gold and the motive is furnished by the eye and tail of a peacock. The decorations of the room were bought by Mr. Freer and transferred to this country. Mr. Freer was an executor of the Whistler estate.

Secure Data on Furnishing the Small House at Minimum Costs

A unique feature of the housing development of the Economical Homes Association at Elizabeth, New Jersey, has been developed which will be of especial interest to those who are interested in the educational value of improved housing, states *Housing Betterment*.

Upon completion of the houses, Richard Henry Dana, Jr., of the firm of Murphy and Dana, who were architects for the development, obtained permission from the owners to furnish one of the houses at his own expense. To save time he secured the assistance of Mrs. Albert R. Green, an interior decorator, for several years connected with the *Ladies' Home Journal*.

They decided that the tenant of a four-room house renting for \$21 a month could not well afford to pay more for furnishings than \$50 a room, so they limited themselves to that amount, making a total of \$200 for the four rooms. They had to figure very closely under these self-imposed conditions but came out with a total cost of \$196 for the house.

They further made the problem difficult for themselves by insisting upon getting all the furniture, furnishings, etc., in the local stores in Elizabeth, which were found to be higher in price than some of the larger stores in New York City. As the round trip from Elizabeth to New York cost \$1.94, they felt that many of the tenants could not afford to do their shopping in the city. They refused, also, to take any discounts offered by the stores, as they wished to let the tenants know the full retail prices.

On the door of each room they pinned a typewritten list of the items in the room, with the exact price of each and where it could be obtained.

Following are the principles upon which Mr. Dana and Mrs. Green proceeded in analyzing interior decoration in small houses.

Too few things in a room are better than too many.

Many things make a room look crowded and stuffy, and are a burden to really keep clean.

Few things give a sense of space and each thing counts for its full value, because not half hidden by other things.

All the furniture is kept small to go with the small rooms, except the double beds, which have to be large for comfort.

Large furniture takes up too much space and makes the room seem unpleasantly small by comparison.

The figures in the curtains should also be small to go with the small size of the rooms.

Plain wall papers look better in a small room than paper with figures on it. Plain papers are also more restful and a better background for pictures and furniture.

As the ceilings are not high, friezes of fancy paper are not appropriate unless they are very small in scale.

The picture mouldings should be close to the ceiling to make the walls seem as high as possible.

Bright, light colors are more cheerful than dark, full colors.

As the kitchen is the warmest room in the house the walls are light blue—a cool and clean color.

Insects Ruin Furniture Exported to South America

One of the big factors that is being taken into consideration in importing American furniture into the tropical countries of South America is the destruction by termites, or wood-eating insects, which attack sills, beams, flooring of buildings, as well as furniture, and in a short time hollow out the wood so that only a thin shell is left. Sometimes the wood is left so thin that a person may push a finger through the back of a chair, top of a desk, or a beautiful panel without resistance or injury to the finger.

The U. S. Trade Commissioner at Colombia says that furniture cannot be protected from the insects by a mere outer coating of varnish or an enamel finish, as the termites work on the interior part, but the lumber of which the furniture is made must be thoroughly impregnated with some poisonous, or at least distasteful, chemical. "If the lumber is saturated with such a chemical that would remain effective even after the wood has passed through the dry kiln, the furniture would resist termites." Softwoods and hardwoods alike are destroyed by these pests, and the only ones that escape destruction are those, like Spanish cedar or resinous Georgia pine, which are disagreeable to the taste of the termites. All other woods must be chemically treated to withstand these ravages.

In general, the chief requirements are that furniture be substantially built, suited to the climate, and well finished to be acceptable to South American purchasers, who usually buy a high-grade, genuine article, and will not consider cheap or veneered imitations.

Oppose Bungalow Building

Fearing that the section may become one containing many bungalows, residents of Belle Harbor have started a campaign to check any effort to erect that class of buildings. It is contended that the bungalow has decreased realty values in other sections, particularly at Edgemere, where more than 1,000 bungalows have been built in the past few years. It is said that once the bungalow building is started it will grow, and with it will come a steady decrease in values to other improved property.

Wanted Vacation to Build House

The manager of one of Schenectady's important businesses said he had been trying for two weeks to find a man who could act as substitute janitor for his offices, states the *World's Work* for October. The firm's janitor wanted to take two months' vacation in order to build himself a bungalow on a suburban lot he had just paid for out of his savings.

The firm was willing to let him take the time if they could get someone to do the work while he was away, but so far had been unable to get anyone to try it for \$3.50 a day!

To Probe Building Material Costs

As an integral part of its campaign against high prices generally, the Department of Justice in Washington intends to make a drive against the high cost of building materials.

The recent anti-trust suit against the so-called "Cement Trust" may be regarded as the first of a series which will include all building material interests in which there is evidence of a combination, says the *Yonkers (N. Y.) Statesman*.

Special agents of the Department of Justice are engaged in investigating the "Lumber Trust," among other things, although there are several lumber cases now pending in the lower courts in Western districts. It is intended soon to make this the basis for sweeping action.

Similarly, the agents are looking into the business of manufacturers of other materials. Reports of combinations in almost all lines have reached the department recently, and it is the belief some relief will be forthcoming soon.

New Illinois Law Permits Partnerships Between Architects and Engineers

Registration and licensing of architects in Illinois are provided by a new state law amending previous laws and specifically permitting licensed architects to enter into partnership with licensed structural engineers. A company engaged in architectural work may not be licensed, but must have a registered architect at its head.

This law does not affect draftsmen and superintendents acting under the supervision of registered architects, but persons registered under this law are exempt from the provisions of laws regulating the practice of structural engineering. It does not apply to residential or farm structures outside of corporate limits or to structures costing not over \$7,500 within such limits.

Examinations for license will cover design and construction, sanitation and ventilation, strength of building materials, and the ability of the applicant. The law describes a "building" as follows: "A building is any structure

consisting of foundations, floors, walls, columns, girders, beams and roof, or a combination of any number of these parts, with or without other parts."

Washington Arts Club to Erect Peace Memorial in Belgium

The Arts Club of Washington, one of the principal and most distinguished organizations of the kind in this country, has undertaken the important duty of erecting a bell tower and carillon as a peace memorial to Belgium. H. K. Bush-Brown, the president, states that there have been two suggestions that seem worthy of consideration. First, that the tower should be a complete unit in itself and not be associated with any other structure. The other is that it should have associated with it an important building such as a conservatory of music or other art center.

At the present moment the club is creating a complete organization of the whole country, so that the building, whatever it is, will be paid for by all the people who desire to assist in such an enterprise.

"As carillons," Mr. Bush-Brown writes, "are a musical expression, we naturally think of the musical clubs and societies and that they might be pleased to be associated with us in this work."

The plan of the Arts Club is to have a branch committee in each State, to assist the Executive Committee. First, in raising a fund to buy the bells; one for each State and two for the District of Columbia, which will make the carillon complete. Second, to provide for the building of the tower, each State to provide in proportion to its wealth.

Claims Profit-Sharing Will Not Settle Wage Payment Difficulties

That profit-sharing does not offer a solution for proper wage payment is proved by its operation in practice. Arising out of a delusion as to what profits are, it falls down when the workers discover that the great sums they thought they would get do not amount to much after all, when divided up, writes Samuel Crother in the *World's Work* for October.

If the most profitable corporations agreed to share the entirety of their profits—not a portion, but all—and the share were added to wages, the increase of the wage would seldom amount to 5 per cent, and a wage increase of 5 per cent is scorned.

You cannot have a meal of bear meat unless first you have a bear. You cannot well share profits or make the purchase of corporate stock desirable unless you have profits. Accept all the theories of profit-sharing at face value and without investigation, say that it is a success whenever tried—what are you going to do about the workers for the companies which do not earn profits? One out of every five enterprises started in the United States fails; of those that continue in business, only about 20 per cent show profits. The man working for the skillfully managed company that earns a lot of money is commonly no less efficient than the man working for the poorly managed company that fails. Why, if their respective working talents are about equal should the first worker get more than the second?

An enormous confusion exists about profits and what they are. Mere bulk seems to be a crime. For instance, the man who starts in business with a capital of \$1,000 and cannot net more than \$100 profit, that is, 10 per cent a year, finds himself unable to exist, but the corporation with a capital of \$10,000,000 which could consistently earn 10 per cent would be classed as a particularly shameful example of what combinations of capital can do to the plain people.

How Troy Electricians Forced a Wage Increase

Those people who rage inwardly at every new threat to coerce the public should read about the prize example which Frank Parker Stockbridge discovered in Troy, N. Y. In the October *World's Work* he says: Not long ago the electricians asked for 85 cents an hour. Some contractors refused to pay it and the electricians struck.

They are too busy on work for other contractors who had acceded to the new scale to spare any members of their union for picketing, so they employed a number of non-electricians as pickets at 50 cents an hour. When these pickets discovered the objects of the electricians' strike they decided that they, too, were underpaid, organized and struck for more pay. They got it; and the electricians eventually won their strike.

Agricultural College to Make a Model City in Utah

Salt Lake City, Utah, Oct. 18.—Delta, a city in Millard County, Utah, is to be made a model city through the work of the Utah Agricultural College, Emil Hansen, landscape gardener at the college, having been intrusted with the undertaking.

Each street will be planted to a single variety of trees. In all, about ten varieties, all well adapted to Utah's climate, will be planted. In addition, the college proposes to lay out a city park of thirty acres, and about 10,000 trees will be planted. It is planned to extend the beautification to Ogden, Brigham City and other cities, the college authorities announce.

Says England Needs Production of Pre-War Days

Chicago, Ill., Oct. 20.—Watkin K. Kneath, Vice-President of the National Bank of the Republic, has just returned from a six weeks' study of conditions in England. It is his observation that thoughtful Englishmen expect only temporary financial assistance from the United States. He says that what is needed above all other things in the British Isles today is the thrift and production of pre-war days.

"Broadly speaking, the present labor situation in Great Britain is paralleled by that in America," says Mr. Kneath. "Whatever the increase in wages and the cost of living that obtain in Great Britain, will be found likewise here. In the end, in the competition for trade, the relative costs will be the same as in pre-war days."

North Dakota Has Extensive Plan to Aid Home Builders

North Dakota enjoys the distinction of being the first State of the United States to embark upon an extensive

program of State aid to home-builders. By one bill enacted by the 1919 legislature, as a part of a progressive reconstruction program to stimulate industries of all kinds, the State will establish and operate the North Dakota Home Builders' Association, to which has been appropriated \$100,000 for the purpose of enabling inhabitants of the State to acquire their own homes. A second bill provides for the issue of bonds to an amount not to exceed \$10,000,000 to cover first mortgages on real estate which shall have been issued by the Bank of North Dakota.

Report on Proper Housing for Girls Creates Wide Interest

Communities or organizations interested in the problem of housing for business girls and women will find much of interest and value in the 1918-19 Annual Report of the Association to Promote Proper Housing for Girls, 11 W. 37th St., New York City. The report reviews the work of the various committees through which the organization carries on its work, the general activities of the Association—such as its establishment of the Girls' Community Club, its part in the National Conference of Room Registries held in New York in October, 1918, its furtherance of Landladies' Conferences, and the work of its Bureau of Boarding Houses.

Explains Growing Needs for Improved Farm Buildings

The Engineering Bureau of the National Lumber Manufacturers' Association has issued a practical booklet called "Housing Farm Help," the purpose of which is to outline for the farmer the necessity for more and better housing for his help and to furnish him with an assortment of plans from which he may select such as may suit his individual needs or which he may adapt to suit them.

The text, which was written by R. S. Whiting, architectural engineer, explains the growing importance of adequate and comfortable housing as a means of obtaining and holding dependable farm labor, and sets down as minimum standards the Government Standards for Permanent Housing. The bulletin is illustrated with a number of cuts of attractive farm cottages which have been built by progressive farmers, and reproductions of approved plans.

Discuss Housing of Colored People

Proper housing of the colored people of Chicago was discussed at a meeting of the Cook County Real Estate Board, Chicago, Ill., and it was the sense of the meeting that the Own Your Own Home Committee of the Board get together with similar committees of the Chicago Real Estate Board, the Chicago Association of Commerce, and other civic organizations to co-operate with the leaders of the colored people in working out a suitable method of housing the colored race.

Financial and Commercial Digest

As Affecting the Practice of Architecture

Trend of Industry Demands More Production and Stoppage of Waste

THAT if industry and business are to thrive steps must be taken before the danger point is passed or labor, flushed with concessions already won, will press for demands which cannot be granted, was the opinion generally expressed this week by architects and builders. This further emphasizes the fundamental fact that the job can stand just so much before labor costs become too heavy and the conditions demanded too burdensome to allow the continuation of enterprise. Labor can easily kill the job by which it can live, as was conclusively shown by the Boston police strike, when turbulence and dissipation of resources, caused a practical suspension of business.

There is but one way out of a situation that has today placed organized labor on trial before the bar of public opinion. More work, increased and systematic production and a stoppage of waste, are necessary. This is no time to strike. The harm of striking far overbalances any possible good. The strikers themselves should they win their demands, can gain no lasting benefit, for they are certain to share in the widespread damage they cause. The present course is one of recklessness. Whether the grievances are real or fictitious, there can be no reason to warrant these proceedings now that we are in the midst of a world crisis.

Labor must, through wider co-operation with capital, learn that there is a limit to the demands it can make. This is certainly true under existing conditions of markets here and abroad, if the business in which it is interested is to live. Furthermore, it is true that the large portion of labor is absolutely uninformed as to the manner in which business is being conducted, and of which it is a part. Many employees see stacks of money on the cashier's desk on pay day and absorb the mistaken idea that every employer makes money. Unfortunately there are also many employers of labor who have been exploiting the theory that with labor costs kept down the larger would be the profits for themselves. They fail to realize that with a satisfactory wage scale their own market has been vastly improved as to character, quantity and quality, a condition which would have been impossible if the working men had been forced to

live under circumstances that would impair their efficiency.

A victory over labor's course of desperation, restlessness and a spirit of class dictation, must be scored. The greater need of this country is productivity. It is the interest of all to hold out against all inciters to selfishness and violence, the prime factors to the retardance of production all over the world. We must emerge from the present period of unrest with a clearer vision and a deeper and a greater purpose. Industrial democracy must replace conditions that are proven to be inadequate to present needs. It means everything, not only to ourselves but to the whole world.

If labor continues its present course thousands whose sympathies would ordinarily be on the side of labor will break what seems to be an undemocratic blockade which one element is attempting for its own purposes against the welfare of the community at large. Labor has gradually forced the course of public opinion against it and made everyone sick of the word "strike."

A factor that is also making itself evident, particularly in the steel situation, is shown in the drawing of a closer line between Americans and aliens by the employers. The unions are more and more realizing the disastrous results of cleavage and are doing their utmost to keep what Americans they have and gain more. Americanism seems to be the chief issue. Union leaders, it is said, are much perturbed by the great number of unruly foreigners lately taken into their organizations.

In fact, the question of the Americanization of the alien is today assuming in the minds of thoughtful men a position of such importance that there is a tendency to attribute much of the labor unrest to the lack of sympathy between alien and American labor.

Housing Crisis Acute in Brussels

In Brussels, as in other large cities all over the world, there exists an acute shortage of dwelling houses and apartments. The population of greater Brussels, which at the end of 1913 was about 800,000 now is estimated at more than 830,000. Needless to say, there has been no new construction during the period of German occupation. It is estimated that there is now immediate need for the construction of 7,000 houses and apartments in the city.

Department of Architectural Engineering

The Essential Features of Sanitary Plumbing Fixtures

THE importance of good sanitation is generally recognized today in all civilized countries, and under the police power of the state practically every community of any size in this country has on the statute books laws and ordinances governing the installation of the mechanical equipment of buildings in so far as such equipment has a bearing on the health and well-being of the inhabitants. Good plumbing is essential to proper sanitation and good health. Plumbing naturally divides itself into two phases, one embracing the proper design and construction of the drainage system, and the other the proper design and installation of the plumbing fixtures. The entire duty of the former is to efficiently serve the latter. Some fixtures as, for instance, the foot bath, while not entirely necessary to the maintenance of good health, add much to the comfort and convenience of the occupants of the building. On the other hand, however, proper sanitation is absolutely impossible without the installation of certain plumbing fixtures, and therefore their proper selection becomes a matter of great importance.

William Beall Gray in his book on "Plumbing Design and Installation," says:

The water-closet is not only as great a convenience as any but is the *most important* of plumbing fixtures. Without it plumbing would be without the need of knowledge contributing most toward lending the dignity of a profession to the foremost of mechanical trades, for no appointment, not even the soil pipe, essential to safe dealing with soil, would be necessary.

It is to this important subject that we shall devote the following pages:

Not very long ago, certainly within the memory of many of us, the water closet fixture, as we have it today, was unknown. The outhouse, yard privy and public scavenger with all their attendant ills, filth, foul odors, unsanitation and inconveniences have but lately vanished from view. May they never return.

However, desirable as was the change, early attempts to place the water closet within the building were far from satisfactory. The early designs of these fixtures took the form of the hopper, pan and plunger types, none of which proved satisfactory nor were they sanitary. The hopper closet has not

been entirely discarded and is still used to fill the need of something suitable for exposed locations, where the fixture itself must be proof against the action of frost. The pan and plunger forms, while no longer used because of their filthiness, left a permanent benefit, for during their use flush and supply valves were brought to a high state of proficiency. Following these came the washout type, but lately superseded by the modern and more desirable types now on the market, and here described.

There has, perhaps, been a greater improvement and a more rapid development in sanitary fixtures during the past two decades than in almost any other line of building work. This has been due quite largely to the continual demands made of manufacturers by architects for something "better." That demand is still being made, and time only will reveal to what state of perfection these fixtures may be brought. Let us view them as they are today, with their good and bad features, and choose the most desirable, remembering that where health is involved a slight difference in cost between a good and bad type should weigh not at all in making the selection.

Six points should be considered in selecting such fixtures:

First. The closet should be constructed of a hard, smooth, non-absorbent material, capable of withstanding fairly rough usage, possessing considerable strength and of reasonable cost. No material has yet been found superior to earthenware (baked clay), which possesses these characteristics to such a large extent. Unglazed vitreous ware (non-absorbent all the way through) is considered best. In all fairness it must be said, however, that enameled iron closets also possess certain good features. It is true that they are not subjected to the extremely high temperatures during manufacture that earthenware is, and therefore the surface is not as good, but for mill and factory use, where the service is especially severe, they possess certain advantages over the earthenware, and in addition stand frost action better.

Second. The closet bowl should have a minimum fouling surface. This is extremely important;

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and the lack of such a desirable quality constituted the principal reason for discarding the earlier types. Due to physical limitations it is not possible to wholly eliminate the surface which might, under unfavorable conditions, be soiled, but a proper design will make the possibility very remote. A large water surface, properly located with respect to the seat post hole is the best insurance against fouling the fixture.

Third. A properly designed seat constructed of non-absorptive material, with post hole well located with respect to the bowl it serves, is absolutely essential to a sanitary fixture. Recent developments along this line are encouraging. The water closet seat in public toilets is the greatest agent for spreading venereal diseases known. While this item may not appear so important in the private residence, it is of the *utmost importance* in public comfort stations, office buildings, industrial buildings, and all other buildings having accommodations used by a large number of persons. Information in the possession of physicians retained by large industrial corporations bearing on this subject would open the eyes of architects as to the imperative need for the abandonment of the common type of oval post hole varnished wooden closet seat, and the substitution therefor of the open front seat, constructed of a non-absorbent material or wood given proper surface treatment.

Fourth. The form of the fixture is important, in so far as it influences use and action. A pleasing appearance, while not essential to good sanitation, is also desirable, from an artistic standpoint. The closet should be of such design as to prevent the possibility of any contact of the human parts to the closet bowl proper under any conditions. Probably the open front seat combined with the projecting lip bowl fulfills these requirements more nearly than any other. The interior design must provide a good water seal in the fixture itself; usually a depth of seal of three inches is sufficient. If back venting is eliminated, the seal should be at least $3\frac{1}{2}$ inches. In addition the water course through the fixtures should be of sufficient size to pass a $2\frac{5}{8}$ -inch ball, and the passage should not be too tortuous, as a contracted winding outlet leg only adds to the danger of stoppage, always attended with such disagreeable features.

Fifth. Thorough flushing is essential and this should be accomplished in as noiseless a manner as possible. All ports and orifices discharging water into the bowl should be so arranged as to cause a thorough scouring of the exposed surface of the bowl at each flushing operation. In addition, this must be accomplished with the minimum expendi-

ture of water. Closets are on the market today that are poorly flushed with eight gallons of water, as well as those well flushed with three or four gallons. In a large industrial plant employing, say 2,000 persons, and having all water metered, this may often roll up a large financial balance against the poorer (and generally cheaper) fixture before a year's operation is completed.

In certain classes of buildings, and this is especially true of those used for residential purposes, such as dwellings, apartments, hotels, etc., the noisy flushing of the fixture is a most objectionable feature and also one of the hardest to overcome. With the usual overhead tank the opening of the valve causes the water in the tank to drop noisily several feet through the flush pipe, and as soon as the ball float in the flush tank is lowered the refilling of the tank commences, water from the supply cock splashing into the tank. This latter may be obviated by placing the filling cock at the bottom of the flush tank or providing a muffle pipe, extending downward from the cock when the same is located at the top. Low-down tanks are preferable (from this standpoint) to high ones. Flushometer valves are also often quite noisy in operation and unless of good design and construction, frequently get out of order, failing to close and shut off the supply, thereby producing a continuous disagreeable noise and wasting a large amount of water, until put in working condition again. Flushing valves, if of the best makes, are not objectionable, but care must be exercised in their selection.

Sixth. A permanently gas-tight connection between the fixture and the drainage system must be made. Any water closet of a design not permitting the use of the most improved methods in this connection should be rejected. A flaw here will permit the foul gases in the drainage system to enter the toilet compartment. Rubber washers or similar gaskets to obtain a tight joint should not be countenanced. An excellent method of making this connection is described and illustrated later in this article.

Having discussed the desirable features, let us now turn our attention to the various types of fixtures at present on the market, and see to what extent they embody the essential features mentioned.

In Fig. 1 is illustrated the most common and also the cheapest type of closet bowl, known as the "Syphon Action Washdown," sometimes called the "Syphon Action Hopper and Trap" closet. The water surface is of small area and poorly located, thus leaving a large fouling surface, and the seal is comparatively shallow. This fixture is usually furnished without open front seat, requires a fairly

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large quantity of water for proper flushing, and with high tank its operation is usually noisy. While an improvement on its predecessor, the washout closet, the use of such a fixture should be restricted as much as possible.

Fig. 2 shows a fixture known by several names, perhaps the most descriptive being the "Reverse Trap Syphon Action," due to the location of the trap outlet leg, which runs toward the rear of the fixture, whereas in Fig. 1 the trap outlet leg runs toward the front. The name commonly applied is simply the "wash down closet." The fixture here illustrated (not the type to which it belongs) is still more objectionable than that shown in Fig. 1, due to an excessively large fouling surface, small

proper flushing is not excessively great, this fixture having been extensively used, and for a time considered the best on the market, although recent developments have produced fixtures of superior design.

Probably the highest type of water closet on the market today is the syphon jet, the ordinary form

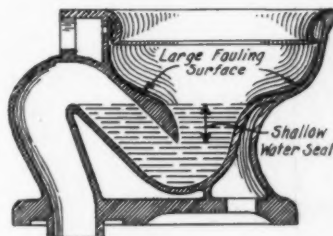


FIG. 2
An Undesirable Fixture

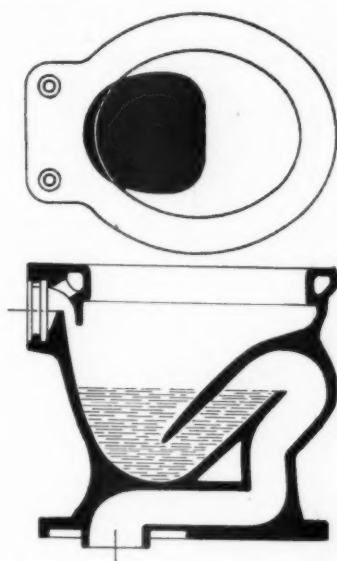


FIG. 1
Plan and Half Section Through
Syphon-Action Washdown Closet.
Note the location and small area
of water surface; also shallow
water seal.

area of water surface, and a still shallower water seal. It is practically impossible to thoroughly scour such a fixture at each flushing and in time it is bound to become most unsanitary. Its use should not be recommended.

By carefully examining Fig. 3 we see that while the general interior arrangement is the same as in Fig. 2, and the fixture shown belongs to the same type, yet the bowl is so shaped that the fouling surface is considerably reduced while the area of water surface is increased, both being desirable improvements. The quantity of water required for

being illustrated in Fig. 4. The desirable features of this closet are a deep water seal, large area of water surface, accompanied by a small fouling surface and quick flushing action. Unlike its predecessors, the flushing action of which is caused entirely by the water from the flushing rim overcoming the natural inertia of the water in the trap through sheer force and sending it into the outlet leg, thus starting syphonic action, the action here is augmented by a jet directed up the trap (note small orifice near bottom of bowl) which, with the aid of the flush from the rim, starts the syphonic action almost immediately, thereby inducing a quicker and more thorough action. The location of the orifice is of prime importance, since due to the process of

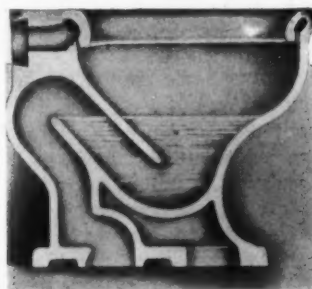


FIG. 3
Half Section Through Reverse
Trap Syphon Action Closet

manufacture (except in the case of enameled iron ware) the bowl at this point may become slightly warped in the kiln, changing the direction of the jet so as to throw it toward one wall of the trap when operating, in which case the action will be

poor. In some fixtures this orifice is visible and in others placed further back so as to be out of sight, which is considered more desirable. Such water closets are frequently furnished with an open front

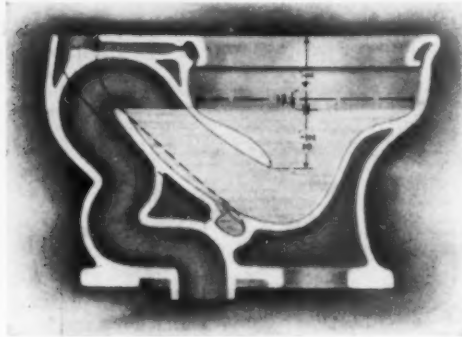


FIG. 4

Half Section Through Syphon Jet Closet. Note the large water surface and deep seal

seat. The zig-zag course in the down or outlet leg on the sewer side of the trap, with a "choke" about midway, is for the purpose of buffeting the water during eduction, thus breaking it up into foam and spray, and aiding in carrying off the entrapped air. The objectionable features are that a large quantity of water is required for flushing (six to seven gallons) and stoppage sometimes occurs at the choke, this being especially true in industrial plants and public comfort stations, thus adding to the cost of maintenance.

A syphon-jet closet of practically noiseless operation is shown in Fig. 5, in the construction of which a well-known hydraulic principle is employed, namely, that of supporting a water column by atmospheric pressure acting only at its lower end. The principle is explained by the simple laboratory experiment of the inverted bottle in the basin of water. If an ordinary bottle be filled with water and inverted in such a manner that its mouth shall be immersed below the surface of water in a basin underneath, the water in the bottle will be supported by atmospheric pressure acting on the surface of the water in the basin. Should this surface be lowered by any cause it will be instantly restored by water from the bottle as soon as it sinks below its mouth.

This principle is applied to the water-closet construction in the manner illustrated, in which the water-closet represents the basin and its supply-pipe the inverted bottle, which is closed at the top by the cistern valve. If water is exhausted from the closet bowl by evaporation, syphonage, or any other cause, a fresh supply descends automatically from the pipe as soon as the surface sinks below

its mouth. Inasmuch as in the construction of the closet this mouth is placed above the bottom of the water-seal, it is evident that water will instantly descend from the pipe before the seal can be broken. This seal is exceptionally deep, *i. e.*, four inches, and the mouth of the flush pipe is midway between the top and bottom of the seal, or, in other words two inches below the normal level of the standing water in the bowl.

The action of the apparatus during a flushing operation is as follows:

The cistern valve being raised, the balance of atmospheric pressure is restored, the water column in the pipe instantly begins to move, and, since it connects with the water in the closet below the water level, it acts noiselessly and effects a thorough flushing. The maximum of rapidity of flushing is attained by having the supply pipe always full of water, so that the action at the lower end takes place simultaneously with the lifting of the valve, and all delay and loss of power occasioned by the water falling down the cistern through the pipe and against the resistance of the enclosed air

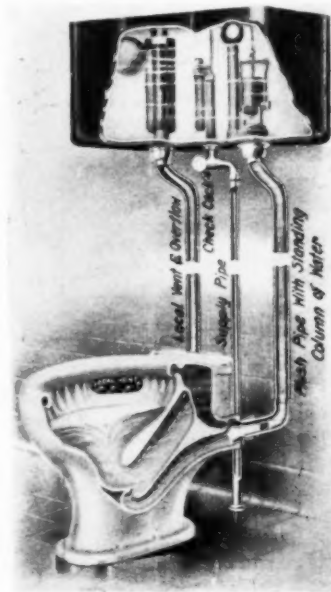


FIG. 5

Syphon Jet Closet of Practically Noiseless Action

is avoided. The combined action of the two lower jets of water is, moreover, such as to accomplish the removal of the waste matters with the utmost speed, in virtue of their co-operation.

There is a great similarity in the outward appearance of the fixtures illustrated in Figs. 3 and 4, and

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the distinctive differences are here pointed out. Both may be manufactured with flush-pipe connection at the top, but the washdown is usually made with back supply and the syphon jet with its supply at the top. The jet closet is several inches longer from back to front than the washdown, and has a larger water surface. In most cases the jet orifice is visible and is a positive identification. These points of difference should be sufficient to enable one to readily recognize either type.

A most desirable feature for closets installed for public comfort stations and in industrial plants is

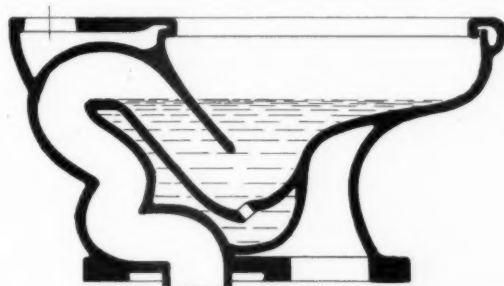


FIG. 6

Half Section Through Extended Lip Syphon Jet Closet. The extremely large water surface is evident

shown in Fig. 6. Such fixtures are similar to that illustrated in Fig. 4, but have projecting or extended lips at the front and are furnished with an open front seat. They possess all the desirable characteristics of the former, and in addition typify the most sanitary fixture so far designed.

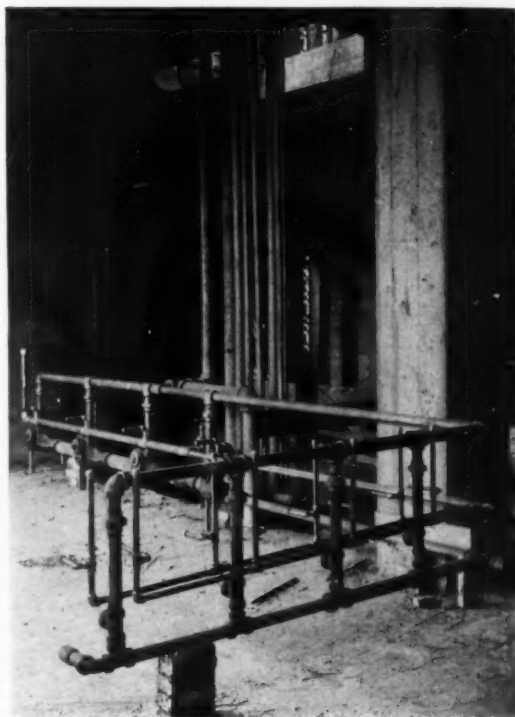
Finally, in Figs. 7 and 8 is shown a wall-hanging closet which should commend itself to all who have to do with plumbing and are seeking after good sanitation. This illustration shows the latest type of water closet for office buildings, industrial plants and public comfort stations. It has the following advantages which put it in the class of up-to-date equipment.

It projects into the room several inches less than the preceding types and requires only about three gallons for flushing, or one-half the quantity of water ordinarily consumed. Any stoppage must take place on the house side of the trap and within easy reach, thus permitting cleaning without taking the closet down. The construction of the trap is on the well-known principle of the "running" trap, which is as near to a straight way as it is possible to make a closet having a suitable water seal. The waterway is of uniform size and is larger from the point at the jet outward, which effectually prevents any clogging or stoppages not within easy reach. When installed the closet is approximately

three inches above the floor, leaving ample room beneath for cleaning purposes. The supply to the closet is preferably through the flushing valve rather than from the small tank. With this valve it is possible to get the free force of the water pressure at the street or from the roof tank, thereby utilizing this extra pressure to thoroughly scour and cleanse the soil pipe trunk lines. There is practically no diminishing of the starting force of the jet within the closet because of the freedom of the waterway. A water pressure of at least 10 lbs. is necessary for the proper flushing of this type of fixture.

The ingenious means of fastening this closet into position is on the cantilever principle, thereby insuring to a certainty a water tight joint where the soil pipe connects with the crockery ware. The supporting thrust bolts prevent the closet from rocking or in any way disturbing the water-tight joint between the soil pipe and the crockery and at the same time effectually prevents the back of the closet from in any way touching the wall. These thrust bolts applied to the integral four-inch fitting relieve the strain on the soil pipe.

The simplicity of the piping system required is



Installation of Piping System for Wall Closet, Illustrated in Figs. 7 and 8

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shown in the illustration, and it is interesting to compare this with the wilderness of pipes and fittings sometimes necessitated when installing batteries of back vented floor closets. The installing of the wall closet means a saving of any raised floor, and also eliminates openings through the floor, which is a decidedly obvious advantage when used in the modern skeleton steel or reinforced concrete structure and in addition a saving of one-half the quantity of water at each flush is effected. Several good makes of wall closets are now on the market, each differing slightly from that illustrated, the use of which should be advocated for the types of buildings specified. Wall closets may be had with projecting lip bowls and open front seats, an admirable combination.

Desirable as are the wall fixtures, however, they are new and still in the minority, so let us further consider the floor closet and investigate the connection of such fixture to the drainage system.

With relation to this we again quote from Mr. Gray's book, as follows:

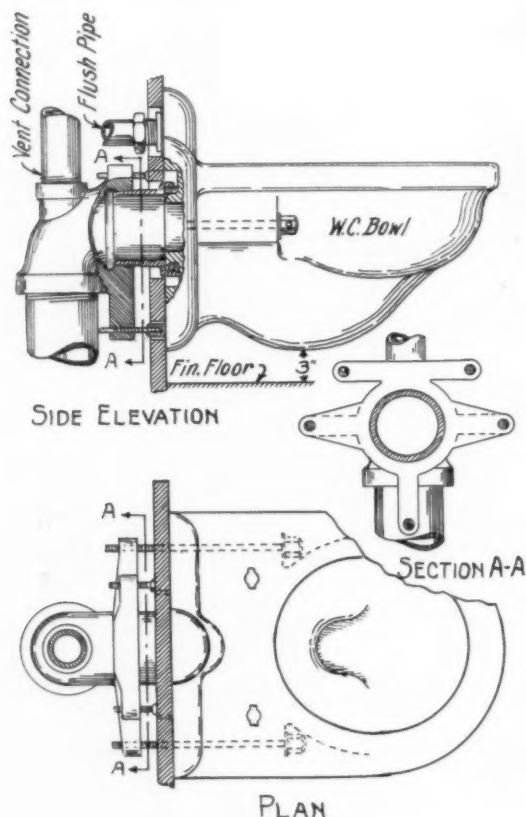


FIG. 7

Wall Hanging Siphon Jet Closet

The most ordinary method, a *poor one not likely to remain long efficient*, is to flange the pipe over the wood, put common putty about wherever the base flange will bear, and then clamp the bowl down with wood screws, screwing directly into the floor through the holes in closet flange (see Fig. 9). Another way amply safe and

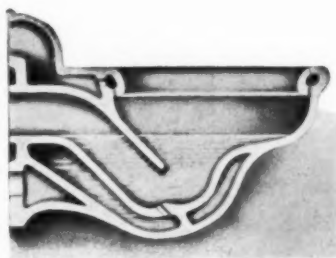


FIG. 8

Half Section Through Wall Hanging Closet

lasting for general use is to first solder to the pipe and then screw to the floor a brass floor-flange having "T" or beveled slots to receive the heads of closet bolts. The slots are enlarged at one end so the bolt heads can be inserted, after the flange is fastened down, and slipped along to the exact position required. The closet is set on the flange as usual and screwed down with blind head nuts run down on washers.

The first method described was adopted years ago and has continued to be the one still commonly used, and while great advancement has been made in the construction of earthenware plumbing fixtures to bring them to a point near perfection from a sanitary standpoint, as already described, little, if any, demand has been made by health authorities for improving the method of connecting these fixtures to a system of plumbing which must, even in the smallest town, conform to the most advanced thought in design and construction.

There is, therefore, at the present time a comparatively perfect article in earthenware as a result of study by sanitary engineers, and a drainage system which is nearly all that can be desired from the standpoint of safety. Obviously then, the bringing to perfection of earthenware plumbing fixtures and the enforcement of good plumbing regulations will not entirely safeguard health when the vital point, the connection between the two, is allowed to be made with such an unreliable mixture as whiting and oil. Knowing the nature of putty and how soon the oil is evaporated, leaving only an unbound mass which becomes brittle and easily allows sewer air to pass from the drainage system into the building, it seems necessary to adopt improvements to the present unsatisfactory method.

Inquiry as to why the present condition is allowed to remain usually elicits the reply that the putty connection has become a fixed method in the absence of any other means to more securely connect

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earthenware and iron, and having once adopted a plumbing code with such provisions, those who have had "building code" experience will realize the difficulty in amending it, for while officials having to do with the enforcement of sanitary laws are usually eager to adopt improved methods of construction when reasonable in cost, yet unfortunately the revision of plumbing codes is largely the work of city or town councils too often composed of men whose knowledge of sanitary affairs is limited and who refuse to entertain any changes when believing such might incur greater expense to building, without, as they should, giving first consideration to the health of the community they represent.

It would seem timely, therefore, to direct attention to such methods which, if adopted universally and made compulsory by law, would cause the drainage system to be more nearly perfect and justify the large expenditure of money now made to

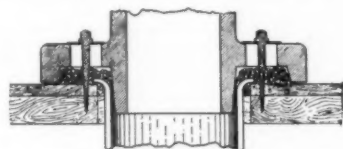


FIG. 9
Common method of connecting
earthenware floor fixtures to drain-
age system

rigidly test the plumbing system and invested in deep seal water closets of sanitary design.

This improved condition may be realized by the use of the water-sealed self-testing flanges now on the market (see Fig. 10), so constructed that the flow of water through the fixture is received in a small recess so arranged that if the connection between the earthenware and the soil pipe allows air to pass it will also permit water to seep through, which, being easily detected, compels immediate attention, whereas if the putty joint ceased to be gas tight there would be no indication of this other than foul odors, often attributed to other causes.

One of the best possible floor connections is probably that shown in Fig. 11, it being a brass ground joint of the ball form, screwed to the closet, bolted to the floor and soldered to the pipe. This joint is not only permanent and firm but allows the bowl to meet the pipe at a slight angle if necessary, and does not require the use of a gasket.

Many architects who have become cognizant of this improved method are insisting on its use, specifying the particular make that most strongly appeals to them. The Public Buildings Department, Providence, R. I., and the Boston Schoolhouse Commission, we are informed, incorporate this requirement in their specifications, while the uniform

plumbing specifications used by the Treasury, War and Navy Departments contain a similar requirement. The Industrial Board of the State of New York has already approved a flange of this type. It is also interesting to note that several municipalities now require this form of connection, including the City of Newton, Mass., which with its many beautiful suburbs constitutes a strictly residential community, and the City of Everett, Mass.,

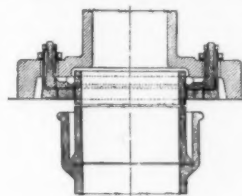


FIG. 10
Self testing flange connection

while a number of other municipalities are considering its adoption.

The putty joint is the weak link of an expensive but otherwise strong chain of sanitary equipment, and as the means for providing a remedy is at last at hand, the argument that there is nothing on the market to replace putty would appear to have no standing, except among manufacturers of earthenware who prefer to use their existing molds and receive profits at the expense of the public health rather than revise them and adopt what is now known to be a sanitary and good mechanical method of connecting earthenware to lead or iron pipe. As most of the manufacturers are progressive, we believe this consideration will not for long delay a desirable change for a better connection. Materials of an entirely different nature which can

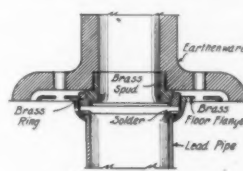


FIG. 11
Improved connection of
earthenware floor fixture
to drainage system.

neither be soldered nor cemented together in a satisfactory manner require some improved method to overcome the hitherto mechanical difficulties of procuring a perfect connection between the earthenware and the drainage system.

It is hoped that architects will lend their aid to securing more sanitary fixtures and improved connections now that they are available.

General Staff, U. S. Army Not Opposed to a National Department of Public Work

THE most important development with respect to the creation of a National Department of Public Works is a statement by Mr. Roger Black, ex-Colonel, Corps of Engineers, U. S. Army, and a son of the Chief of Engineers, made at a discussion of the project for a National Department of Public Works before the American Society of Civil Engineers in New York City on September 17th. He stated that the General Staff of the Army now holds the view that the Corps of Engineers would be benefited by relieving it of river and harbor improvements, thereby enabling the members of the Corps to devote their entire time to military problems. Colonel Black found himself totally opposed to these views and gave it as the cause of his resignation from the Army.

The General Staff's opposition to the continuance of the Corps of Engineers in river and harbor work will certainly modify the effectiveness of the opposition which that Corps has been making to the proposal to include river and harbor work in the Department of Public Works. It will be remembered that the opposition of this Corps has been considered one of the greatest difficulties to be overcome in the creation of the Public Works Department. It is particularly fortunate from the viewpoint of the Engineers, Architects and Constructors' Conference that the General Staff should come to this decision at this time as it thereby confirms the views which large numbers of architects, engineers and contractors have long held.

While the Jones-Reavis bill takes away river and harbor improvements from the Corps of Engineers it provides that engineer officers may be detailed to duty under the Department of Public Works. This provision will permit the Corps of Engineers receiving a much more diversified and useful civil experience than is now available to them.

In time of war the first duties of the Corps of Engineers are on the lines of communication and involve road construction, repair and maintenance, bridge building and the construction of earth works. Under the Department of Public Works all of this experience may be had. River and harbor work provides it to a much less extent. It is believed, therefore, that the Corps of Engineers will find on further consideration that the Jones-Reavis bill instead of being antagonistic to their interests really increases their field of usefulness and should receive their support rather than their hostility.

Report of United States Fuel Administration Soon to Be Issued

Advice has been received from Washington that the report covering the activities of the United States Fuel Administration, in connection with its efforts to improve operating conditions in power plants, is in type and soon will be ready for distribution. The conservation work accomplished by the fuel administration is well known and its activities in eliminating waste was the means of saving thousands of tons of coal yearly.

Due to the failure of Congress to make any provision for continuing this work, the conservation program of the fuel administration will have to be abandoned, but the report of what was accomplished will offer many suggestions to both designers and users of heating and power apparatus.

Need for Incorporating Fire Resistive Features in Frame Construction

Were it not for the fact that the fire loss in this country averages nearly a million dollars a day in real property, to say nothing of loss of life, there would be no necessity for propaganda advocating the erection of buildings constructed in a manner more able to resist the action of fire. In many cities, frame buildings are prohibited in the closely settled sections, these being commonly termed "fire limits." It is also encouraging to note that even on the suburban sections, some cities are now requiring construction that has greater fire resistive qualities. The National Board of Fire Underwriters has published a list of 91 cities in which the use of wood shingles as a roofing material is prohibited. While brick or concrete walls and fire resisting roof coverings are ideal for small dwellings from the "fire hazard" standpoint, the cost is sometimes high. The use of stucco on wire lath, where frame construction is used marks a step in advance over the all-wood type of frame building. Only recently the Society for Fire Resistive Frame Construction has been organized in Chicago and is advocating the use of metal lath for the interior plastering as well as for the exterior stucco. While this will increase the cost slightly, it will also reduce the possibility of utter destruction from a fire originating within the building. Such construction would eliminate the use of pieces of wood having a cross sectional area of less than eight square inches. But in connection with this work it must be constantly kept in mind that the roof covering is often the vital point of attack by fire brands from a nearby conflagration, and therefore, the roof covering should always be constructed of materials which will not support combustion.