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# The Architecture of Banks

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THE fundamental principle of architecture throughout its history has been the expression of the purpose for which a building is used. What are the essentials to be sought for in planning a bank?

Primarily a bank is a building in which the currency and valuables of the public are guarded and stored. It affords quarters for an organization by means of which the financial interests of the community are safeguarded, and in fulfilling this function it performs a vital part in the business and industrial development of the country, since this activity cannot develop without the co-operation of the financial organization which forms its support.

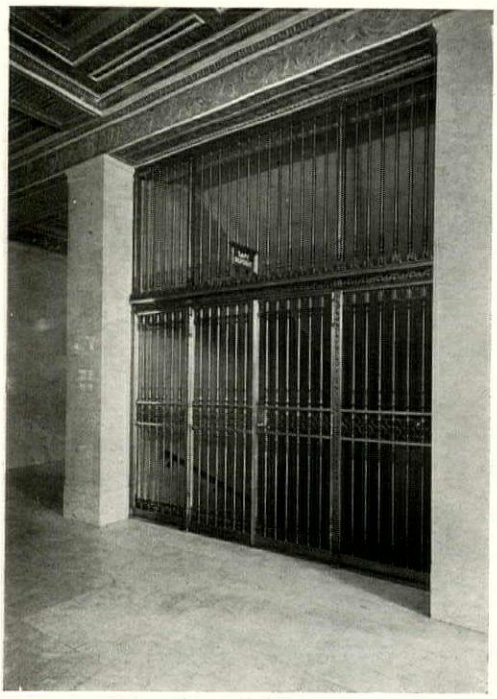
There are many types of bank buildings: the individual bank; the bank and office building; the savings bank; the trust company; the private bank; the title and mortgage company, and so forth. These may take various forms, such as are expressed in metropolitan banks on the one hand, and banks in the smaller cities, country towns and villages, on the other. It is not the purpose of this article to suggest in any way the types of architecture that shall be used, but rather to bring out the difficulties and show possible solutions in buildings of this nature.

The individual bank presents in itself the possibility of a great number of solutions, dependent upon its site. The site may be an interior lot giving only one main facade to the building, or it may be that the site is located on the corner of two streets, giving two facades, or the site may be such that the building located on it is free on all sides, or it may be lots of irregular shapes.

In the designing of banks which are purely banking buildings, the first consideration that should govern the designer is the surroundings and character of the buildings which form the entourage of his structure. The second consideration is the question of cost; this is all-important and must be kept in mind while the building is being designed, or else the architect may have the doubtful pleasure of redesigning the entire building in order that it may come within the limits of a specified appropriation. After these limiting conditions have been carefully considered, the architect may properly commence his sketches preparatory to his study of the architectural expression of his problem. In presenting a solution to a board of bank directors, it is advisable generally to make several small sketch perspectives or elevations showing the various types of buildings which might conceivably meet the requirements established, since on such a board or committee there are always certain members who will have more or less strong personal opinions concerning the use of architectural motifs such as columns, rustication, iron grilles and a hundred other details. The question of the general design

Detail of First Floor Windows
Hartford-Connecticut Trust Co., Hartford
Benjamin Wistar Morris, Architect

should be subject primarily to the decision of the architect, but his decision must be in keeping with the desires of his clients. Bankers, if one may make a generalization, constitute a class of business men whose confidence, once it has been won by the architect, will gladly leave to his discretion and decision not only the architectural expression of the building, but the disposition of many of the practical elements which enter into the working scheme of the bank. In the large cities in this country many excellent banks have been erected in recent years, and the knowledge of good bank designing is undoubtedly spreading.



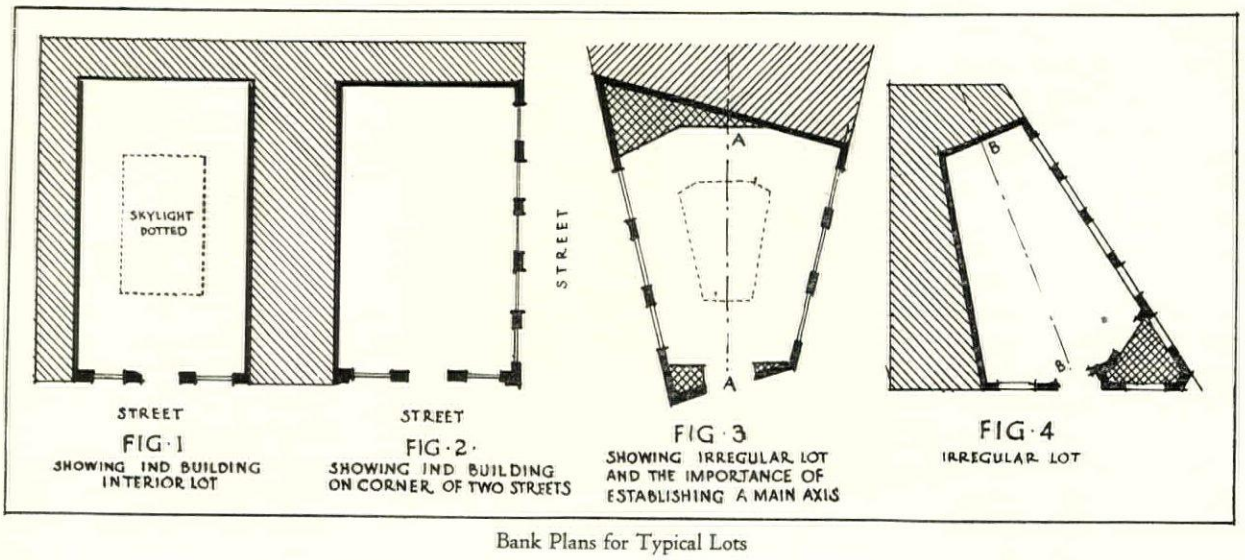
Grille at Stairs to Safe Deposit Vault
First National Bank, Detroit
Albert Kahn, Architect

An individual bank in any one of the larger cities is a "*probleme de luxe*," since the architect is given opportunities full of possibilities for monumental expression of architectural design. However, with banks of this type, the ground area is naturally limited in extent, and the architect has before him the problem of arranging his plan in such a way as to gain the maximum floor area consistent with a good architectural expression. If the architect achieves this result (and the achievement is difficult), he may justly expect, after the building has been occupied and inspected by its customers, to hear that his clients are saying, "We think we have the best modern bank in the country," and they will go out of their way to recommend him to their fellow bankers. The praise is gratifying, but it is a reward not easily won. There is no doubt that today the American banking system is the most complete in existence. In order to maintain this efficiency the American banker must have a building that will fulfill his exacting working requirements in every way.

Let us consider the architecture of various types of banks and bank buildings. The individual bank, located in a large city, is one which gives the architect his greatest opportunity. It is usually desired in this type of building to have a banking room which is most impressive and monumental in scale, and in designing the building the architect should constantly bear this in mind. In this particular case the determining element in the arrangement of the plan is given by the shape and disposition of the site involved.

The lot decided upon for the site of the bank should, if possible, be selected with a view to the purposes of the building which is to be erected upon it. A site which would be satisfactory for certain classes of buildings might be far less satisfactory for a bank. The types of lots which the architect in the course of his practice has to struggle with are various indeed. Each will call for a particular solution in the design of his bank building, but the sketches shown (Figs. 1, 2, 3 and 4) illustrate in a general way the various problems that have commonly to be met and solved. The best way to approach the problem is to decide tentatively upon the possible expression for the interior of the bank, and then to consider what expression the facades may take. Naturally, these two conceptions have an interacting relation; one should be checked or regulated by the other.

In Fig. 1 we have an interior lot, fronting on the




Bank Plans for Typical Lots

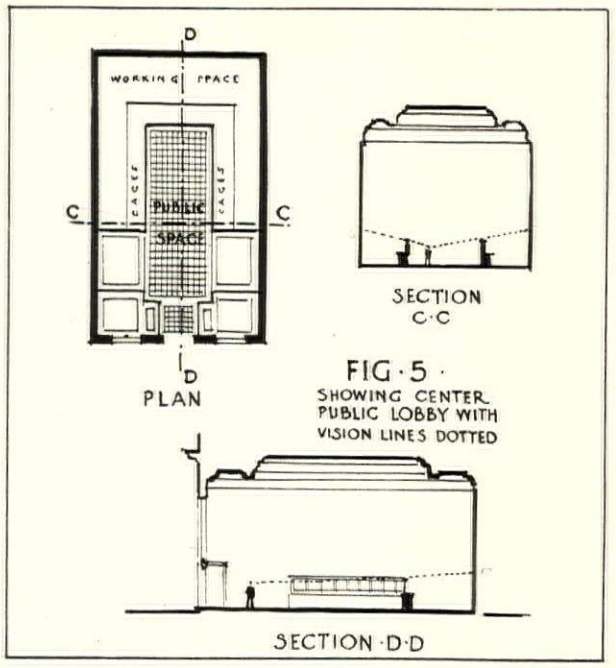



Fig. 5

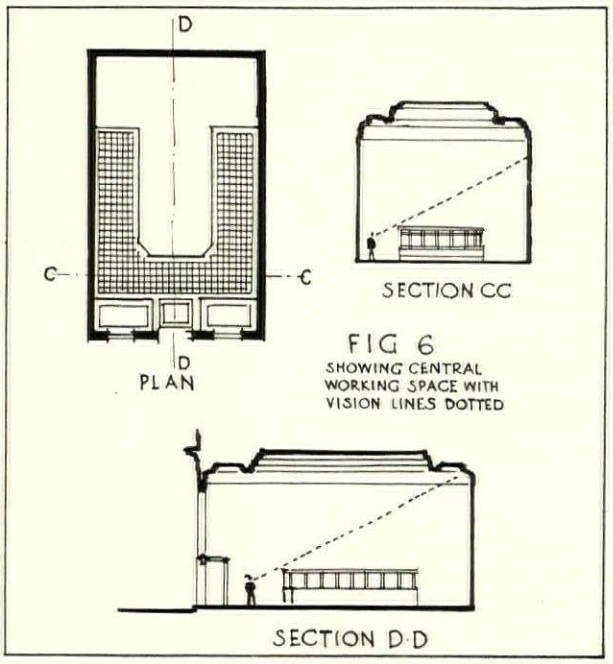
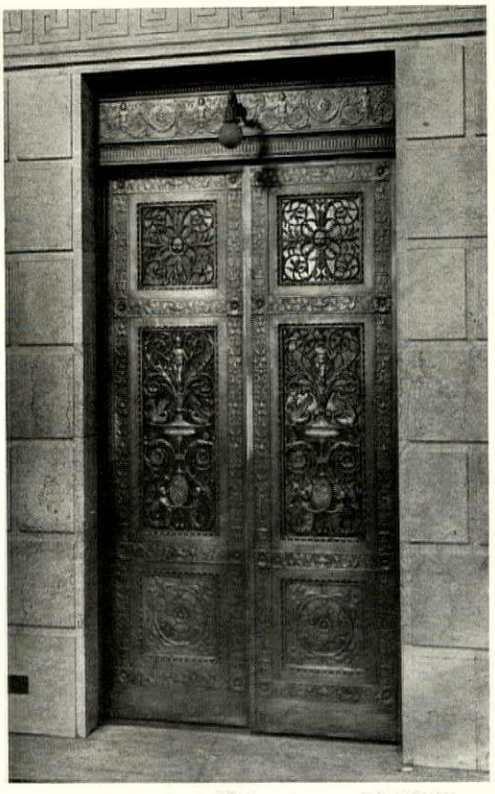



Fig. 6

street. The banking space for this type of plan must be lighted by ceiling lights. In Fig. 2, with streets on the front and side, it is possible to light the room from two sides, provided that the width of the room is not too great. Figs. 3 and 4 are irregular; it is preferable to light the banking room in these cases from the side walls, since the finding of a solution for an attractive ceiling lighting is extremely difficult. In arranging the elements of the plan of the banking room in an irregularly shaped building, the first thing to be attempted is the establishment of a main axis line which will serve as the backbone for a balancing of the elements. These observations apply to the exigencies of a lot of irregular shape.

Having determined upon the scheme of lighting and on the general form the banking room will have, the architectural design for the building may now be studied. The most important consideration in planning and designing the banking room is the arrangement of the working space in its relation to the public space. The disposition of the public space and the working space should be decided upon before the architecture of the room is designed, because the banking screen and working partitions may be located in such a way as to prevent one's obtaining an impression of the ampleness of the banking room. These elements should be arranged in such a way that they do not detract from the impressiveness of the room. Fig. 5 shows an arrangement in which the public space is located in the center of the banking room. This arrangement makes possible an excellent view of the room as a whole. Fig. 6, in which the central part of the banking room is occupied by working space, shows how the bank screen cuts off the view of the room. It may readily be seen that in whatever style of architecture or with whatever motifs the wall is treated, the room must be designed so that it will look well studied from all points of view. In rooms of large dimensions, like some in the great city banks, these considerations, namely, the disposition of the public and working spaces, are less vital because of the enormous sizes of the banking rooms relatively to the banking screens.



Bronze Elevator Door
Rhode Island Hospital Trust Co.
York & Sawyer, Architects

The psychological value of an imposing banking room upon the depositor and upon the public which has to do with the bank is fully understood by the more progressive type of banker, and he will sometimes request that his building be arranged, if possible, in such a way that

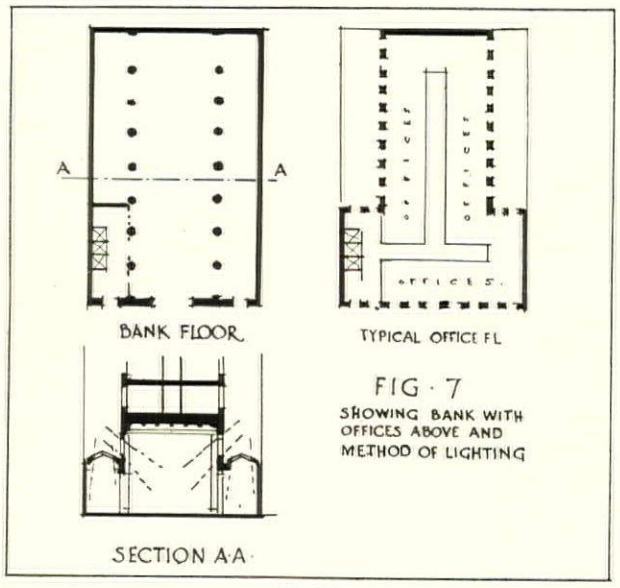



FIG. 7
SHOWING BANK WITH OFFICES ABOVE AND METHOD OF LIGHTING

Fig. 7

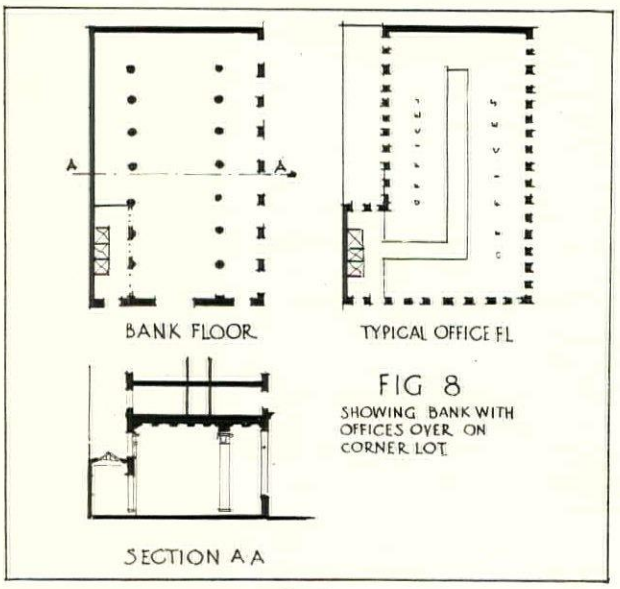



FIG 8
SHOWING BANK WITH OFFICES OVER ON CORNER LOT

Fig. 8

the public in passing the building can see into the bank and be impressed by the dignity and size of the banking room. In order to make this possible, it is well to treat the facade of the building in accordance with what is called the "open" scheme. By this means arched openings, columns, etc., may be used in the facade, which will permit a view of the banking room from the street.

Having considered the individual bank located in a large city, we may turn our attention to consideration of banks having stories above the banking room, and banks combined with office buildings. These types of banks present much the same problem as does the typical office building, having, however, the added difficulty of providing for the weight of the superstructure over the banking room. Provision may be made in two obvious ways: one, by carrying the superstructure on girders; the other, by bringing the columns which carry the upper part of the building down into the banking room. The Rhode Island Hospital Trust Building, in Providence, offers a splendid example of an imposing room in which the columns have been brought down through the banking room. In this case the architectural solution is extremely good, because the columns are correctly spaced in order to meet the requirements of good architectural design. In many cases, however, the columns are brought down as structural members only and are not disposed so as to permit of a pleasing architectural expression. Such an arrangement is not only wrong æsthetically, but it is an evidence of stupidity, frequently on the part of the designer and the engineer, showing that they have not collaborated properly.

In banks which are housed in the lower parts of office buildings, the solution of the bank entrance is always involved by the necessity of providing also for an entrance to the office building. Of course each office building will offer peculiar conditions which will determine the solution, but one may say that for the usual type and shape of lots which the architect has to consider, the generalization expressed by Figs. 7, 8 and 9 will hold to be true. Fig. 7 shows the plan of an office building with the banking room on the ground floor, on a lot approximately 80 feet wide. In this plan the columns which carry the exterior court walls of the building come down through the bank and permit of good lighting for the banking room. Fig. 8 shows a corner lot approximately 60 feet wide. The arrangement of the upper stories of the office building will have a determining effect upon the arrangement of the banking room, such as is shown in the Section AA. If all columns are left out of the room, the entrance to the bank is not on the center line of the facade. The bank entrance, so de-cen-

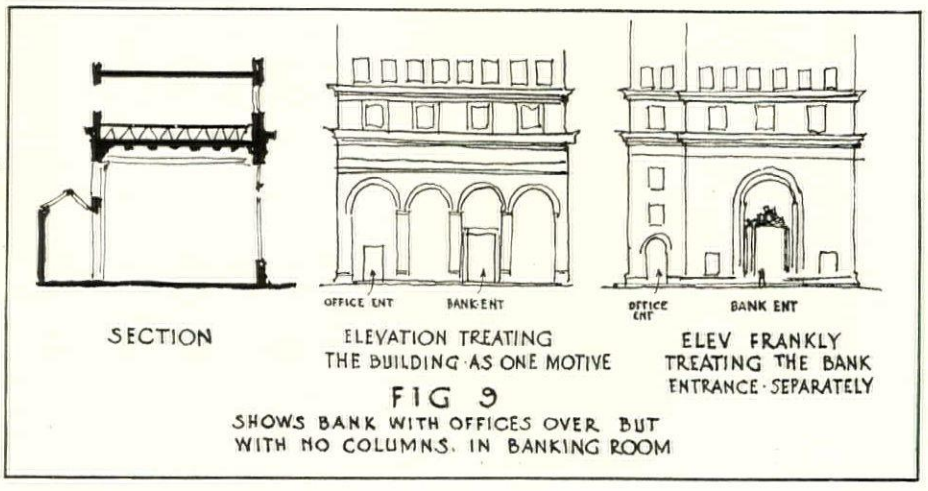


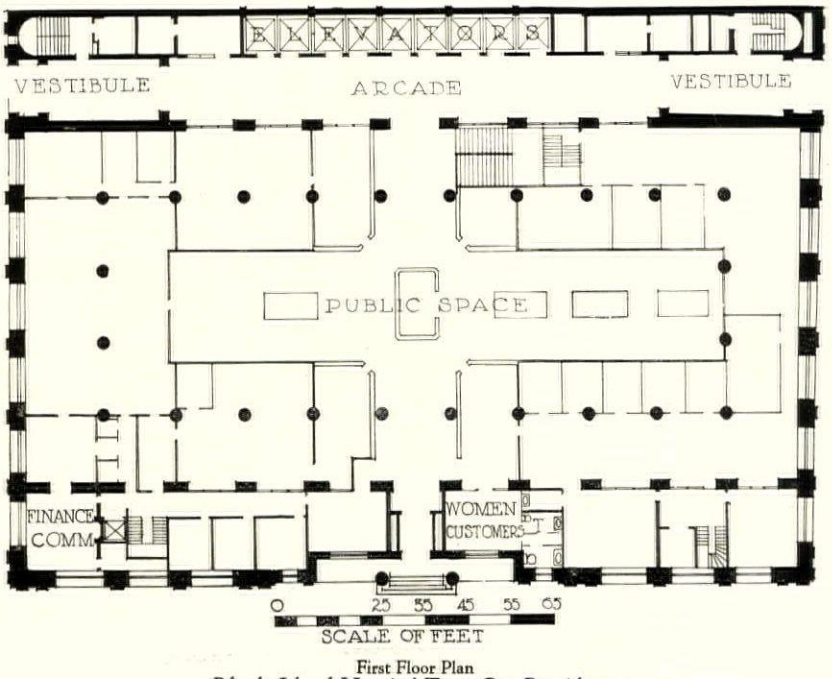

FIG 9
SHOWS BANK WITH OFFICES OVER BUT WITH NO COLUMNS IN BANKING ROOM

tered, may be treated frankly as is shown in Fig. 9. The entrance to the Bowery Savings Bank on 42nd street, New York (York & Sawyer, architects), is treated in this manner. In that particular building, result of the study is seen in the fine example of this solution of a bank located on an interior lot.

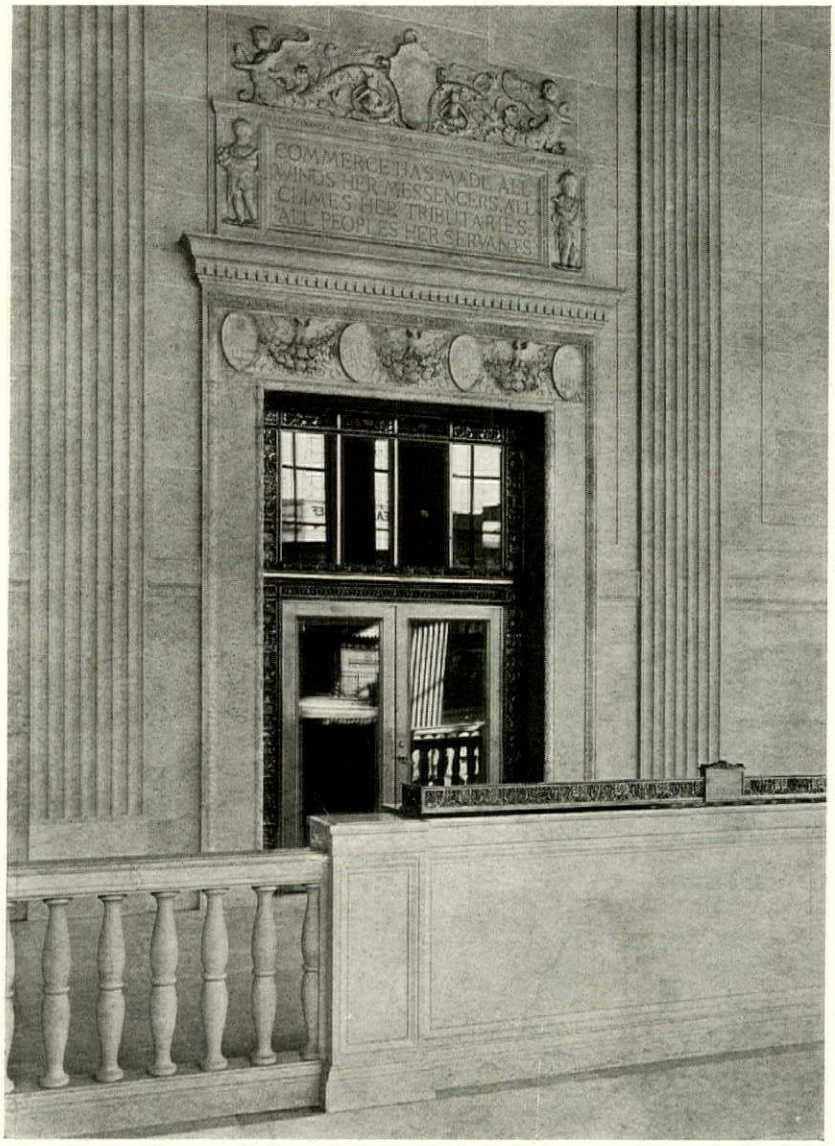
The foregoing outline covers, in a general manner, the problems confronting the architect in the design of the modern city bank. The style of architecture and the character of ornament and detail are matters of personal taste which might be discussed *ad infinitum*, but if we did we would very likely at the end of the discussion find that we had reached the place we started from.

The banks in cities of lesser importance are quite similar to the metropolitan banks in their requirements, save that, of course, all the elements entering into their composition are on a smaller scale. The building committees of such banks will nearly always say to the architect, "We want a fine room, but nothing elaborate." The same principles for the obtaining of this fine room apply to the small bank as well as to the large. Perhaps the most important consideration in the design of the banking room is the entrance or approach. It must be in keeping with the character and importance of the bank. Frequently, large bank buildings housing imposing banking rooms are provided with entrances which are cramped and insignificant, giving no idea that one is about to enter a room of monumental proportions. One of the difficulties which the architect has to meet is the desire of the building committee to locate the directors' and committee rooms in the front part of the building on

Interior of Banking Room




First Floor Plan
Rhode Island Hospital Trust Co., Providence
York & Sawyer, Architects




Detail of Doorway to Office Elevator Lobby
First National Bank, Detroit
Albert Kahn, Architect

the mezzanine floor. This arrangement of necessity cramps the entrance of the bank. If the necessary rooms for the directors and committee cannot be placed on the ground floor, the architect should seek to place them on a mezzanine gallery or on a floor at the rear of the banking room, even if the room is somewhat shortened in consequence.

In the small bank, as with the large, the question of architectural style is one which must be worked out by the architect himself. Often it is a good plan for him to prepare several small sketches in order to obtain an expression from the building committee as to the preference in the matter of architectural interpretation. The locality of the building and its surroundings should properly have much to do with the style in which the building is designed. It would not seem logical to design a bank in the Spanish mission style if it is to be erected in some staid New England town. The building would look decidedly out of place. Similarly, a design inspired by the work of Bulfinch or Thornton would not seem to be "in the picture" if carried out in San Diego.

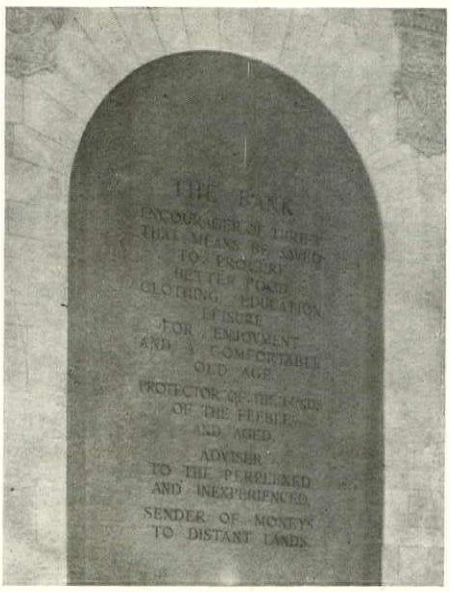


Fig. 11. Wall Inscription
Union Market National Bank, Watertown, Mass.
Dennison & Hirons, Architects

The consideration of materials is very important, and it must have the attention of the architect from the earliest stages of the work of designing the building. A design in brick would differ naturally in character from one executed in granite, limestone or marble. The architectural ornament contributes much to the building, if it is well done, and detracts even more if it is badly done. Having studied the general design with a view to executing it for certain specified materials, it is wise for the architect to keep in mind that the modeling shall be such that the ornament may be fittingly expressed in the material chosen, whether that material be of limestone or marble, iron or bronze, or whatnot. All these materials have their peculiar limitations and qualities. The skillful architect understands how to employ them to their best advantage. It seems advisable to execute the interior of the banking room in materials which are light in tone and color, on the general principle that a room finished in light, neutral colors presents an ample effect. The various stones, such as travertine and Caen, have excellent qualities for the finishing of rooms of this nature. These stones have an added advantage in that they are easily worked. Frequently, the cost of using these stones is prohibitive; in that case they can be imitated in

plaster with excellent results.

The color of the banking screen is also to be carefully considered, because if the screen is made of marbles or woods which are dark the impression is created that the public space is smaller than it really is. The color of the screen should bear a definite relation to the color of the room and should harmonize with it. If decorations, painted or otherwise, are used in the treatment of the walls and ceiling, great care should be taken in the colors employed. Mural decoration in banks has, with the exception of certain large city banks, been decidedly neglected. As an example of a bank which has taken advantage of the possibilities of such decoration we may cite a certain bank occupying a prominent location on the main square in Watertown, Massachusetts. The president realized that his bank is located in the center of a historic community. He felt that the bank had taken a vital part in the development of that community, and decided that this fact should serve as an inspiration for the mural decorations of the walls of their new banking building. Watertown was the original mother town of Cambridge, Arlington, Belmont, Brighton, and several other towns. The architect of the bank, acting with the approval of the bank officials, made provision for the installation of the panel shown in Fig. 10. This panel was placed in the center of the ceiling. It shows the map of the district served by the bank, and also the various towns that originally formed a part of Watertown. Below this map are seen three figures representing Finance assisting Industry and Agriculture. This is appropriate symbolism, since Watertown is a weaving and agricultural center.

Main Banking Room
First National Bank, Detroit
Albert Kahn, Architect

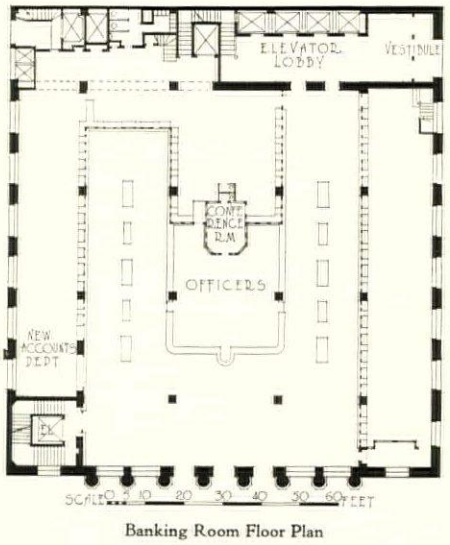

Fig. 10. Ceiling Panel
Union Market National Bank, Watertown, Mass.
Dennison & Hirons, Architects

This painting was executed by A. T. Schwartz, and its colors harmonize beautifully with the color scheme of the room. The use of inscriptions, such as those which are shown in Fig. 11, also taken from this Watertown bank, make effective and distinguished wall decorations.

The same principles and limitations apply to sculptural ornament. In employing sculptured ornament, the architect must make careful preparatory studies of the model, bearing always in mind the nature of the materials, the direction from which the light comes, and the height of the ornament above the eye, and he should select a sculptor who is thoroughly familiar with work of

this nature. Architects, as a general rule, make good quarter-scale drawings, three-quarter scale details, and full size profiles. From these drawings the models are worked up, usually at some convenient scale such as will permit the architect to judge the composition as a whole. The sculptor then builds up in clay the model of the ornament at full size. This in turn is criticized by the architect. It is extremely difficult for even an experienced architect to size the true scale and proportion of ornament in detail without the use of scale models. As a practical suggestion, the architect may judge better of the character of scale of the ornament if a small portion of the architectural members surrounding the ornament are always included in the small scale model of the ornament to show the relation of parts.

Perspective View of Exterior




Banking Room Floor Plan

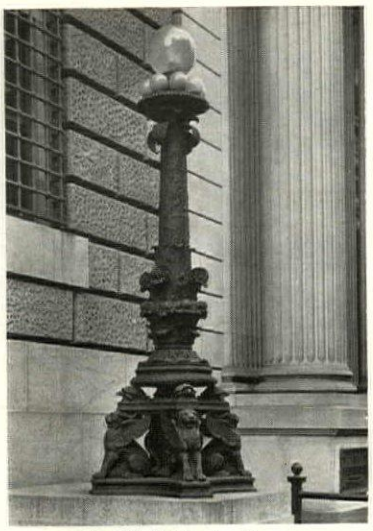
*Exterior materials; Terra cotta and brick. The ceiling of the main banking lobby is executed in colors; floor and screens are of marble. Walls and columns are of imitation stone, toned with gold leaf and decorative coloring. From the third to the twelfth floors the building is divided into offices with 30 rooms on a floor. Each floor is so planned that all or any part may readily be given over to the use of one organization.*

BANK OF ITALY, LOS ANGELES
MORGAN, WALLS & MORGAN, ARCHITECTS

The photograph of the model (Fig. 12) shows the advantage of study by these means. The belt course at X was too heavy; it was reduced to the proportion shown at Y. The cartouche over the main entrance as first designed was considered too large; the model showed that it could be reduced in size. The panels between the windows over the main entrance show various degrees of depth of relief; this permitted the architect to judge which was preferable. The upper side windows in the rusticated portion in the quarter-scale drawing looked like those shown at R. It was considered that they gave a sense of too great a repetition of the windows above. They were changed as shown at S, and in the executed work they were made somewhat larger. Several studies of the iron facias can be seen between the pilasters. The lettering in the frieze was changed since the letters shown at ANK were thought to be too high and too crowded. The spacing and height were changed as shown.

By this system of study many of the pitfalls of the architect may be avoided, and the finished result should be a good example of architecture, this quality of course being dependent upon the architect's ability and training. Contrary to a somewhat common opinion, it is not necessarily expensive for the architect to study his building in this manner, because much time may be saved by making accurate judgments from a three-dimension model study as against much more inaccurate judgment from two-dimension drawings.

The foregoing may serve to give an idea of the problems facing the architect in the designing of bank buildings, and



Detail of Exterior Lamp
York & Sawyer, Architects

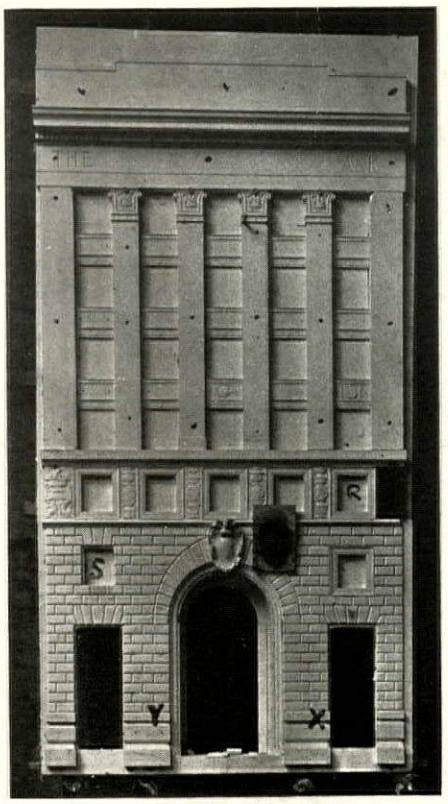
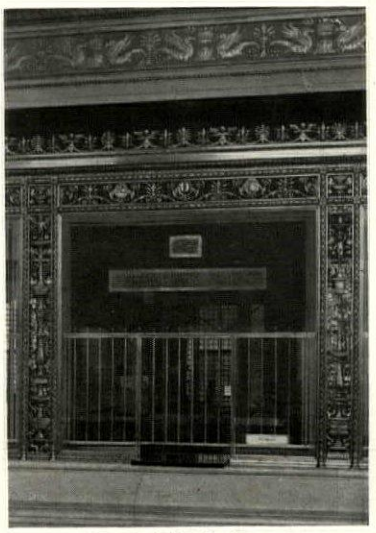



Fig. 12. Model of Bank for Study
See References in Text

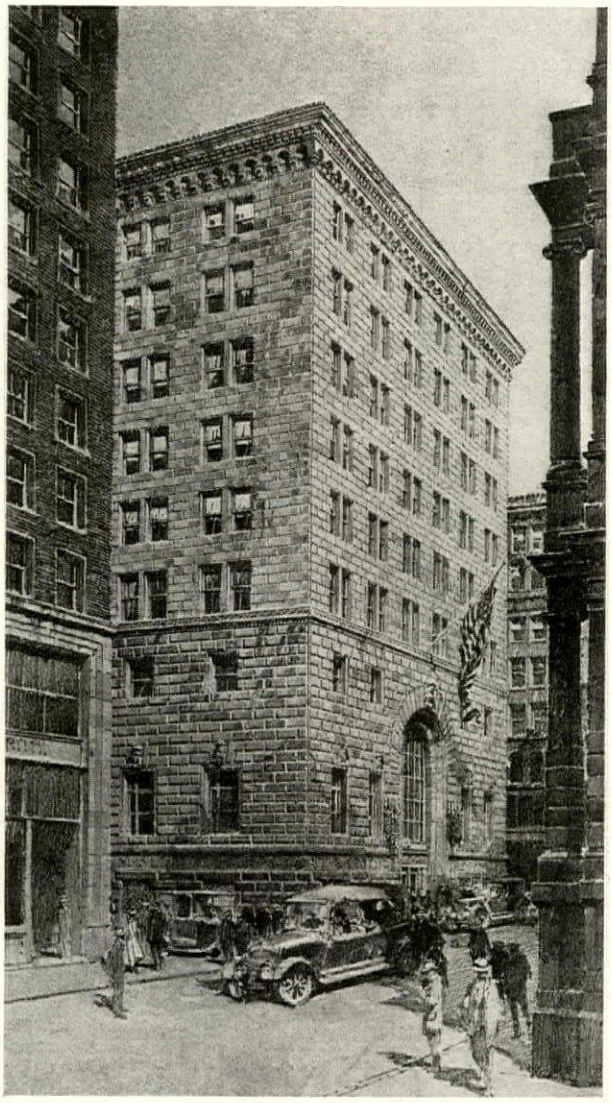


Detail of Bank Screen
Albert Kahn, Architect

it may also suggest useful methods of study. Perhaps it is digressing somewhat, but it may be fitting to mention in this connection a reason many of the banks throughout the country are not better planned and better designed. The fault lies largely in the fact that the banking communities are not educated to understand the function and necessity of employing the thoroughly trained type of architect if it lies within their power to engage such a one. In many cases throughout the country the banks have employed firms which operate under the title of "contracting designers." The employment of such firms means that the bank officers are relieved of all worry from the time the first line is drawn on tracing paper until the building is completed, even to putting the ink in the inkwells. This is an unfortunate condition of affairs because it spells a lack of intelligent co-operation between the banker and the architect. If one is to gauge the progress of our architecture as seen in our public buildings, it must be evident that a greater and greater understanding of the function, necessity and responsibility of the trained architect must be gained by the public in order to insure further advancement.

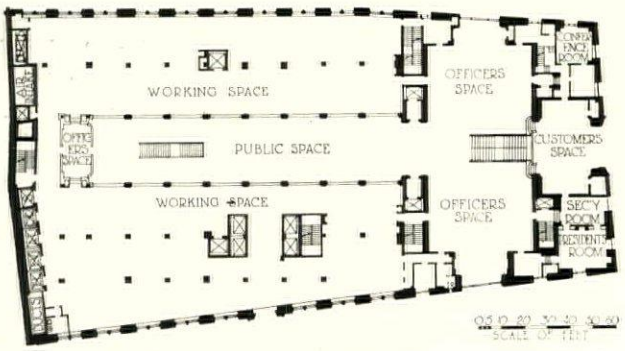
There is, unfortunately, a habit prevalent in many architects' offices today of executing work with too great a speed. Entirely insufficient time is frequently allowed for the study of the architectural problems.


Dennison & Hirons, Architects

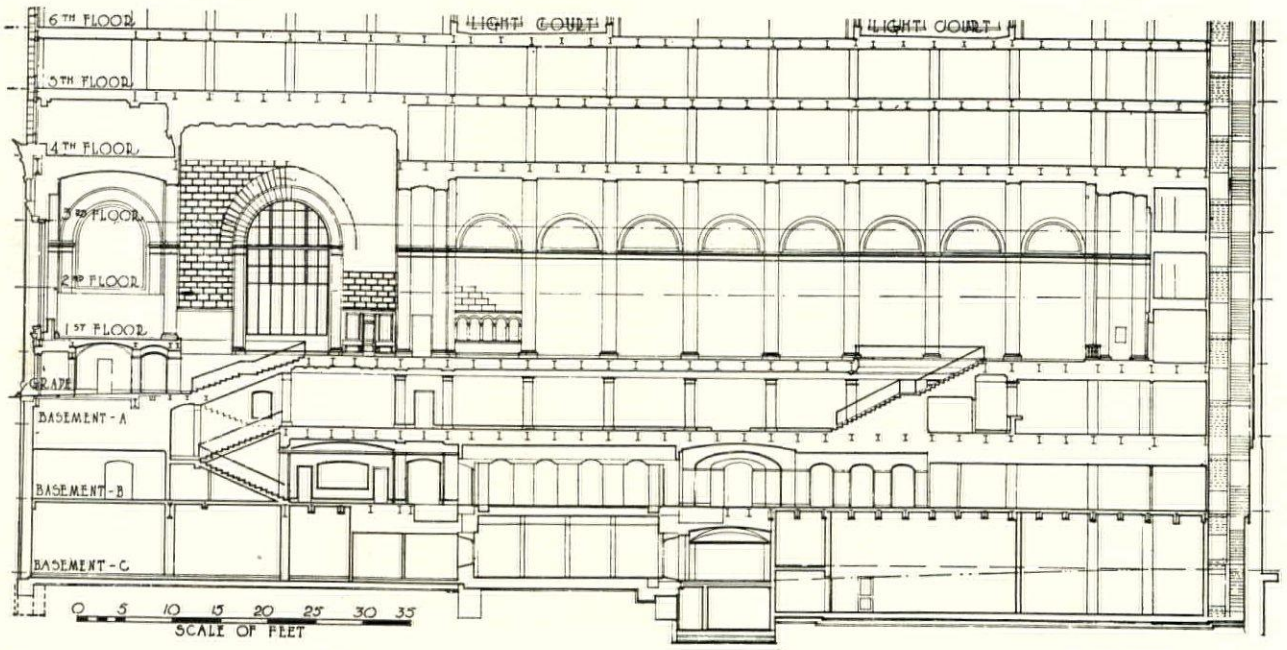


Perspective View of Exterior

THE building for the First National Bank, Boston, now in course of erection, illustrates a new tendency in bank planning by which economy of valuable space is effected without loss of the architectural dignity which should characterize the quarters of an important financial institution. The main entrance gives immediate access to the officers' room, 50 feet deep, 100 feet in width and four stories in height, while just beyond a vaulted space, 28 feet wide and three stories in height, extends back into the building, the side walls containing the wickets of the tellers. Upon mezzanine floors back of these walls and within easy communication with the tellers are the clerical and working forces of the bank. These mezzanine floors are so planned that portions of them may be leased to tenants until increasing business requires their use by the bank. Apart from economy of space this plan effects economy of decoration owing to the greatly reduced area of walls and ceilings in the main banking room. The main entrance is at grade level, halfway between the levels of the first and basement floors, this making the secondary banking quarters on the basement floor level fully as accessible to the public as the main floor.




First Floor Plan




Longitudinal Section
First National Bank, Boston
York & Sawyer, Architects

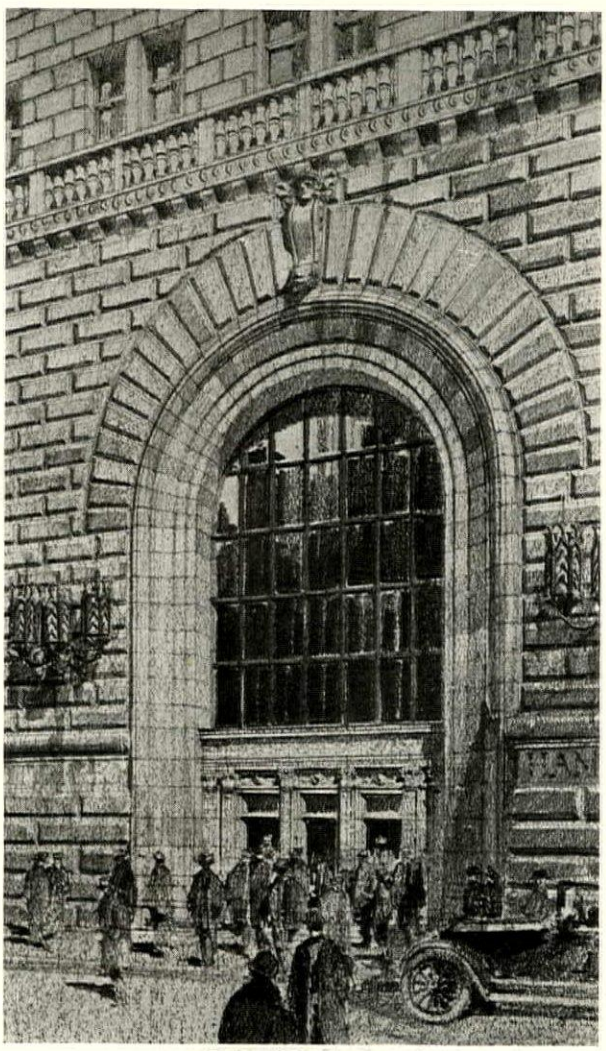
# The Planning of Banks

By PHILIP SAWYER
*Of York & Sawyer, Architects, New York*

WHEN the development of steel construction and the perfection of the elevator enabled us to go into the air with our buildings, it was some time before we readjusted our minds to the new conditions and appreciated that in designing a building 20 stories high, neither repetitions of two- or three-story buildings nor any other pile of sectional bookcases would prove as satisfactory as a clean shaft with as much of a base as our street conditions and the provision of shops and entrances would allow, and with some termination other than the heavily projecting cornice which can no longer have any adequate relation to the height of the wall. The St. Paul Building and the "Tel. & Tel." illustrate the old conception to New Yorkers, while the Bush Terminal and the 40th Street Building show a modern tendency which has so far reached its apotheosis in the Woolworth. More than 20 years of study and experiment have gone to attaining this result.

In bank planning also, the problem itself has changed from year to year. As the banks have grown and their organizations have developed, new solutions have been arrived at quite different from the old, although not so conspicuous as the newer skyscrapers. The fundamental change however, is in the attitude of the banker himself and of his architect toward the problem. Many institutions have grown so fast during the last few years; their needs have become so complicated, and the alterations caused by their growth so frequent that in many banks nowadays there is at least one official who has had an intimate and thorough experience in building and who perhaps, retaining a boyish enthusiasm for mud forts and dams in brooks, really loves it. Such a man is in a very different position from the banker of not so many years ago who called in an architect, gave him a survey and told him to plan a building into which, upon its completion, the bank would proceed to move and arrange itself as best it might. The architect, too, is less contented nowadays to accept as definitive information a mere memorandum of areas required, based on the bank's existing arrangement, and he has come to understand that if the organization is not a success in its new quarters, the fact that he gave them exactly what they asked for does not help him much in developing his practice.

President Lowell, in speaking at the Harvard Club years ago, said that in the solution of any problem the work is half done when a clear and logical statement of the problem itself has been achieved, and while this has been said many times before in different forms, it cannot be repeated too often that the most important work in bank planning is that which is done before the bank is planned, without reference to the actual size of the lot or the number of stories which it is proposed to build, or the style of architecture or the cost. If the banker or the architect or the equipment specialist, or—best of all—all three can arrive at a working organization of the bank, define it on paper in such a way that the functions, the public contacts (taken over a considerable period by actual counts) and the inter-relations of every department are shown and their possible development or growth adequately provided for, diagrams can then be prepared, defining accurately these relations, vertically and horizontally, and once the problem is so stated it is hard to go wrong, for, even if these requirements do not admit of perfect fulfillment within the area of the lot, within the limits of the possible floor areas, the height or the cost, the actual plans, modified as they must



Detail of Main Entrance
First National Bank, Boston
York & Sawyer, Architects

be to comply with these limitations, will still tend to be better than they would have been had the building been planned first and the organization packed in it afterward, simply because the diagrams show the best solutions that can be evolved, and every move is toward that rather than being a mere attempt to install as nearly as possible a development of the existing arrangement. Not only can a better result be obtained in this way, but it is far cheaper, since the progressive changes are more easily and quickly made in tables or diagrams than in modifications of architectural drawings, and 25 years of bank planning bring us to the conclusion that the more work that can be done before the planning of the bank itself is undertaken, the quicker, the more efficient and the more economical will be the building, the better it will fit the requirements, and the more efficiently and economically the organization will work in it.

When a bank has determined upon a new building, it has a wonderful chance—which it often foregoes because it is so busy with its routine work and because there is perhaps no one officer detailed to take it up, to look into the general conditions which confront it, to determine which of its departments it is most desirable to develop, and to perfect its own organization. To this end it is becoming more and more customary for the officer or the building committee in charge of construction to go about the country, visiting and studying other institutions and endeavoring to obtain, so far as possible, complete information upon everything that may bear on the development of the bank's own organization and work as well as its physical arrangement, equipment and construction. In making such a trip the committee often visits also the offices of those architects whom it is considering for the appointment; or, an architect being selected, he travels with the committee, making his own notes on everything that seems to him to be relevant. All this tends to detach the committee from the idea that the new bank will be most successful if it is merely an enlarged copy of the old, or that it is safe to go ahead on their own way of doing things without finding what others may have developed. If the architect accompanies the committee on such a trip, he has not only the opportunity of refreshing his knowledge of what is being done, but to arrive, after a few days of constant contact, at a more sympathetic understanding of the point of view of the committee than he might get from some months of ordinary working relations.

If the study thus far has been thoroughly done, it will present some results which may be considered surprising. It will be found, perhaps, in the case of a savings bank, that it is not necessary to put all the officers on the main floor of the bank in the traditional position behind the working space, and perhaps the higher officers will be better situated on a mezzanine or gallery, if the room is of considerable height, overlooking the whole first floor, enabling them to see at a glance when any congestion occurs or there is an unusual delay in the service of the public. In the case of a commercial bank or trust company, it may appear that the intimate relations necessary in a small bank between the executive officers, the loan clerk and the tellers are no longer a controlling factor, and that since these higher officers do not function in direct connection with the working force, there is no longer any object in preserving such contact and they are better placed on an upper floor, where their work is less subject to interruption. This development, often forced upon a bank by space limitations, is now recognized in a few cases as desirable, and where in the beginning these officers were placed on the second floor, with a special elevator, one sees now that if the public takes the elevator at all, it is as easy to ride 40 seconds as 15, and the higher officers may be placed on the top floor as well as on the second. In the larger cities such a situation, in light quarters, high above the dirt and noise of the street, far cooler during the summer months, is certainly a desirable development.

It will usually be found in preparing the first tables or charts that a proper arrangement of the ground floor, with provision for the growth of the departments placed on it, will tend to exclude everything which can be placed elsewhere. Electrical devices for the duplication of written orders have made it possible, and it is often desirable, to put the bookkeepers upstairs in lighter and quieter quarters than can be provided for them on the street level. The trust department is frequently placed on an upper floor and given something of the intimate or homelike character which it has in some European banks and made to look less formal than the main banking room below. Departments handling such work as certifications, where the contact is largely with runners from other banks, may also be placed in an accessible basement, and this element is thus separated from the clients of the bank.

*Safe Deposit Department.* Since, as has been said, it is desirable to keep away from the first floor everything which can be placed elsewhere, and since a modern safe deposit department requires a large area, it is now almost universally placed in the basement. In general, the public space in such a safe deposit section should be reached by as liberal a stairway as the plan will allow and also by at least one elevator from the banking room floor. This elevator, serving the vault, may also go higher than the banking room floor, serving mezzanines or upper floors of the bank to which it is necessary to give the public access; or, in the case of an office building, several of the main elevators of the building may be carried down to the vault floor, although this is undesirable in a high building, since it tends to interfere with a smoothly running schedule of the cars. In the case of a small vault, provided with a single door and ventilated through an emergency opening, the public is shown into the vault and led out through the same door to the space within the protective grille from which the coupon booths open. In the case of a

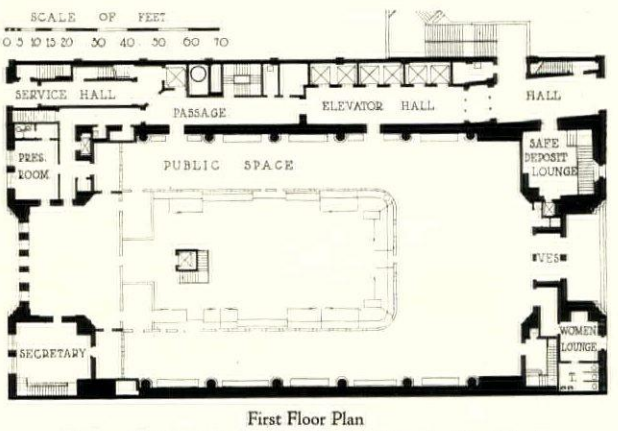
larger vault, a second door opposite the first is often provided, and the boxholder is locked out through this into corridors leading to the coupon booths which can be reached only after passing through the vault. The vault thus forms a sort of double-locked vestibule to the coupon booths.

For a man in a hurry, it is well to provide as near as possible to the vault door some shelf or desk upon which he may place his box if he merely wishes to open it for an instant, since it is not considered good practice in this country, although almost universal in Canada, to allow him to open it in the vault itself. Next in proximity to the vault door should be the smaller coupon booths for individuals, since they are most frequently used. Other rooms should be large enough for two or more people, and a few larger rooms which will accommodate a business or trustees' meeting should be provided. In one New York bank, such a room is constantly used as an office for the transaction of business by a depositor who prefers this location to any other. As this entire vault area gets no natural light or ventilation, this item must be carefully planned for, and it should be borne in mind that the vault must be ventilated separately with cooler air to compensate for the heat generated by its lights and by the people in it, and that this air must be more frequently changed than in the case of the larger areas outside of it.

Like everything else in connection with the bank, the vault must provide for growth, and as nothing is more unsightly than a large vault partially filled with irregular stacks of safe deposit boxes, the best provision is to have these tiers project from the walls uniformly on either side in the beginning, and later to add to them symmetrically, completing the side aisles gradually from the back so that the vault will always have a uniform appearance. In the case of the Columbia Trust Company vault the floor of black mosaic is divided by strips of brass inlay and the ceiling is paneled in steel with brass borders, so that whenever the safe deposit boxes are extended it is necessary only to set the black marble base out to the line already fixed by the floor border, and to fit the steel cove which connects the new tier of boxes with the ceiling to the existing ceiling panel, in order to have the addition present exactly the same finished appearance as the original tier of receptacles.

The front of this same vault shows a treatment of the vault door and its surrounding steelwork which is more satisfactory than the usual installation of a narrow steel architrave around the door, and the larger steel surface thus exposed gives the vault an unusually impressive appearance of solidity. In this case, the black floors of mosaic inside the vault and of terrazzo in the public corridors outside are in the reflected light of the lamps almost exactly the steel color of the vault itself, and this creates an unusually harmonious impression. In the Columbia vault, the base of black marble with a slight cove which is edged by the brass floor border, the brass hinges on the steel boxes, and the brass panel lines on the ends

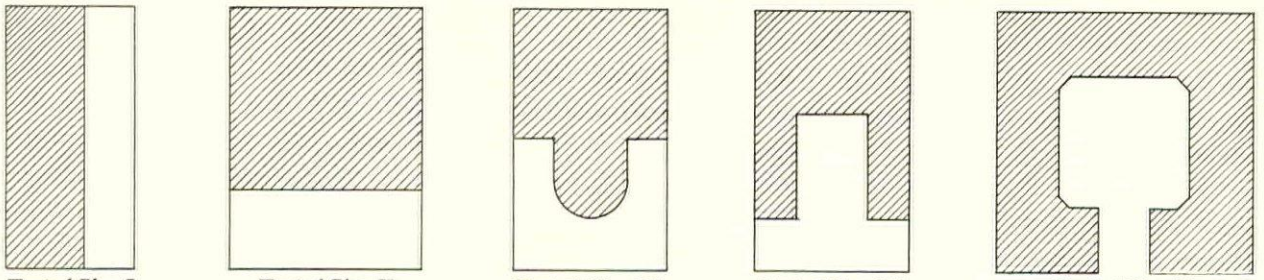
Perspective View of Exterior




First Floor Plan

Bowery Savings Bank, 42nd Street Branch, New York

York & Sawyer, Architects



Typical Plan I | Typical Plan II | Typical Plan III | Typical Plan IV | Typical Plan V

TYPICAL PLAN I
Riggs National Bank, 14th and Park Road Office, Washington 75
Citizens National Bank, Covington, Va. 86
TYPICAL PLAN II
State Sav. Bk., Hartford 65
TYPICAL PLAN III
Excelsior Savings Bank, New York 78
Hartford-Connecticut Trust Co., Hartford 67
Bowery Sav. Bk., N. Y. 265
First Nat. Bk., Boston 264
Eliot Savings Bank, Roxbury, Mass. 295
TYPICAL PLAN IV
First National Bank, Wallingford, Conn. 81
Seacoast Trust Company, Asbury Park, N. J. 82
Security National Bank, Sheboygan, Wis. 73
Elyria Savings & Trust Company, Elyria, O. 71
Suffern National Bank, Suffern, N. Y. 79
United Sav. Bk., Detroit 88
Chestnut Hill Trust Co., Chestnut Hill, Pa. 292
Washington Trust Co., Westerly, R. I. 266
Ticonic National Bank, Waterville, Me. 296
TYPICAL PLAN V
First National Bank, Wichita, Kas. 76
Farmers & Mechanics Nat. Bk., Georgetown, D. C. 83
National Exchange Bk., Augusta, Ga. 87
National State Bank, Elizabeth, N. J. 69

**Classification of Banks in This Issue under Typical Plans**
Light Type Indicates Pages, Heavy Type, Plates

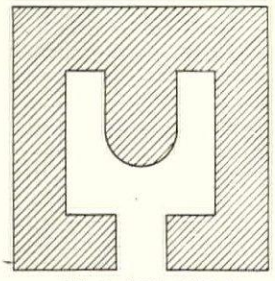
of the box tiers at the ceiling make the whole thing harmonious, and the black is used again in the handles of the larger boxes and in the dials on the combinations.

As it is desirable that the character of the safe deposit department should be as solid and substantial as possible, it is well to "vault" these corridors serving the safe deposit booths with arched ceilings, and if these are carried down on top of the face of the coupon rooms so that these passages look like masonry tunnels in which the booth room doors occur, an impression of solidity is given which is attractive. The booths, themselves, should be individually ventilated and so constructed that at a glance the attendant who inspects each booth after it has been used can see that nothing has been left in it and no paper overlooked. To this end a glass shelf is sometimes provided instead of one of wood or cork. Since most coupon booths are small and it is necessary to move the chair in getting in or out, the chair should be as light as is consistent with durability and it should, of course, have rubber buttons to make it noiseless on a hard floor. In the larger vaults, a women's room is often provided, and toilets for men and for women.

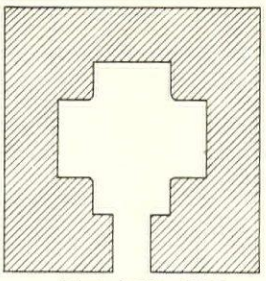
From a protective point of view, mirrors are often placed in the vault at the ends of the alleys between the tiers of boxes and sometimes in the booth room corridors, and sometimes the whole vault is surrounded by a narrow observation gallery from which one may look down through a series of narrow glass panels close against the exterior wall of the vault, and by means of mirrors set diagonally see horizontally under the vault between the beams which support it the electric lights at the farther ends of these spaces. In some cases, where the floor above the vault is not controlled by the bank, its construction is kept away from this floor and this space also is readily inspected from the observation gallery by means of mirrors set overhead. If this observation gallery is continuous around the vault, and if its corners are provided with vertical, diagonal mirrors, a watchman standing at the door, when the doors are closed, can look across the face of the vault in either direction and see all four sides of the vault.

Modern vaults almost invariably have electrical protection on their bolt contacts which, once thrown in, upon the closing of the doors, will give an alarm in the bank, in the central station of the electrical protective company, and perhaps also in the nearest police station if these bolts are thrown out. Often the whole outside surface of the vault is also covered with a mesh of low tension wires so that no inch of its surface can be tampered with without sending in an alarm. Watch stations are established which assure that the watchman of the bank, and in some cases the outside patrol, must turn in signals at stated intervals, and in one case in New York the outside watchman, unlocking a bronze plate in the basement wall of the building, can look from the street diagonally down through a dozen feet of masonry and see that the vault door is closed, lighted and undisturbed.

*Typical Plans.* It is interesting to consider how few fundamental plans there are when one comes to the division of a banking room between the public and the working spaces. In 1905 the writer published the six typical plans shown on pages 266 and 267 which still seem to cover the subject. It is obvious that Plan I is applicable to a deep or square lot —not to a wide, shallow lot, because in the latter case the counter screen is too short. Plan II, on the contrary, does not work on a deep, narrow lot, as it gives an insufficient counter. Plan III is identical with Plan II except that a projecting tongue in the public space gives more counter length wherever the lot is wide enough to admit of this working space, with the public area flanking it on either side. Plan IV is in the same way a modification of Plan II, and, like Plan III, requires a sufficiently wide lot to admit of the public space being extended in between two working areas. Plan V is a modification of Plan IV and is applicable wherever the area is large enough to admit carrying the working space completely around the public space so that the only



Typical Plan VI A



Typical Plan VI B



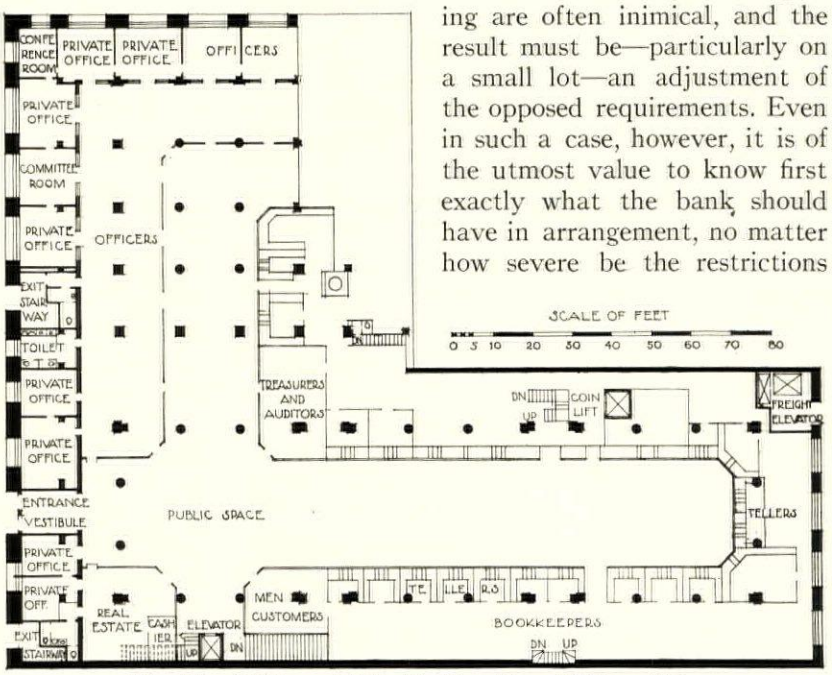
break in it is made by the entrance. The two plans numbered VI show combinations of the others. These, of course, occur only on rather large lots.

In considering Plan I it is obvious that if it is lighted overhead, it makes no difference which side is occupied by the working space and which by the public. If, however, this plan is also lighted from one side, it is a grave consideration as to whether the comparatively narrow public space should be placed on the light side or along the dead wall away from the light. In the first instance, the patrons have the best of it, and the tellers face the light. If the building is on an open space and this lighting is horizontal, it may be objectionable to have it come in the faces of the tellers, while the customers, standing against a bright light, are perhaps almost unrecognizable in the shadow. If, however, the light comes from a narrow city street and is so poor that the tellers will work under the artificial light of reflectors set in the head of the counter screen, their position is not so important, while the public check desks placed, perhaps, one in each window, receive sufficient natural light. Between the two arrangements it seems preferable to favor the working force, steadily engaged during the whole day, rather than the customer who is in the bank for a time comparatively short. If there is an office building above, the question usually settles itself, for the elevators are generally placed at about the middle of the dark side, so that if the bank and office building have separate entrances, the bank's will be near the corner and the public space be on the light side; while if they have a single entrance vestibule in common, the public space will be on the inside.

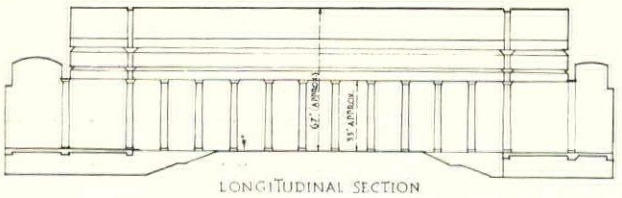
There is wide diversity of opinion among bankers as to the height of banking rooms. On pages 268 and 269 are given diagrams showing the relative areas and heights of a number of recent banking rooms that are of interest for comparison.

*Where the Bank Is Part of a High Building.* Where the building is to be entirely occupied by the bank and the only access to the upper stories is secondary or only through the bank itself, the plan and design of the banking room, of course, control, and the elevators and stairs may be so placed as to give proper circulation with the least interference with the working plan and the architectural character of the room. Where, however, the bank is merely an incident in a high building, and the importance of the rentable areas above it outweighs the desirability of the best possible banking room, it is often necessary to place the entrance, elevator lobbies and stairs in such a way as to make the planning of the banking room considerably more difficult and even unsatisfactory. The requirements of the bank as to the first floor or as to the lower stories and the requirements of properly planned upper floors with best access and lighting are often inimical, and the result must be—particularly on a small lot—an adjustment of the opposed requirements. Even in such a case, however, it is of the utmost value to know first exactly what the bank should have in arrangement, no matter how severe be the restrictions

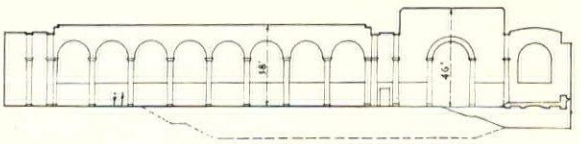
Banking Room in Louisville Bank




Floor Plan, Fidelity and Columbia Trust Co. and Citizens Union National Bank, Louisville
D. X. Murphy & Bro., Architects; York & Sawyer, Associated




LONGITUDINAL SECTION

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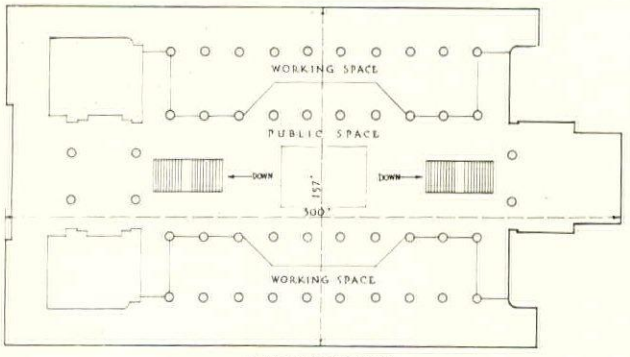
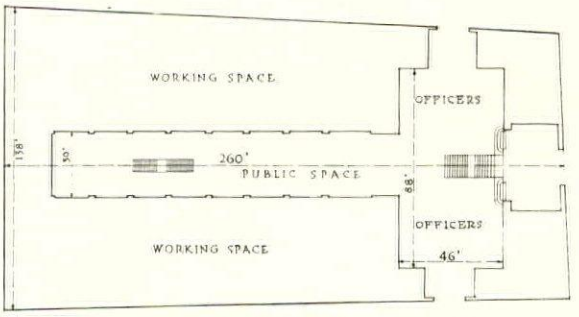


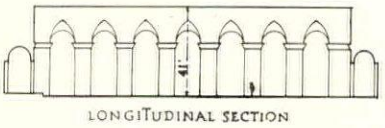

MAIN FLOOR PLAN

CONTINENTAL & COMMERCIAL BANK OF CHICAGO
ARCHTS D.H.B. & CO. - G.B. & CO.




MAIN FLOOR PLAN

THE FIRST NATIONAL BANK OF BOSTON
ARCHTS Y. & S.

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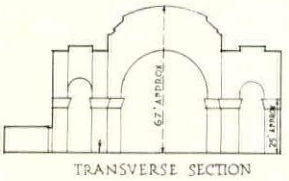
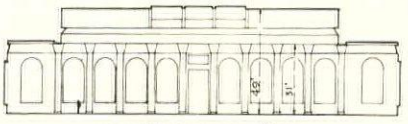
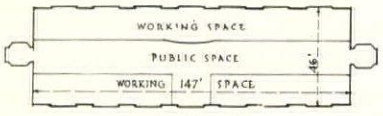



TRANSVERSE SECTION

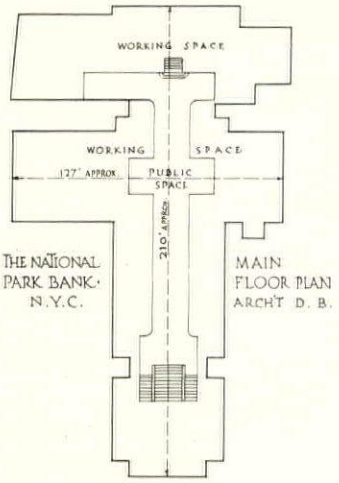



LONGITUDINAL SECTION

BROOKLYN TRUST CO.
ARCHTS Y. & S.

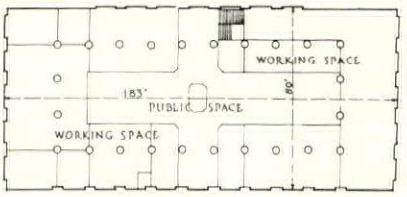



MAIN FLOOR PLAN



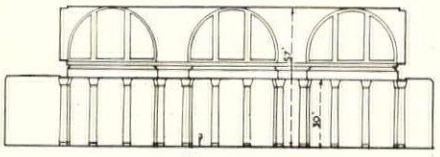

THE NATIONAL PARK BANK - N.Y.C.

MAIN FLOOR PLAN
ARCH'T D. B.




MAIN FLOOR PLAN

RHODE ISLAND HOSPITAL TRUST COMPANY
PROVIDENCE
ARCHTS Y. & S.



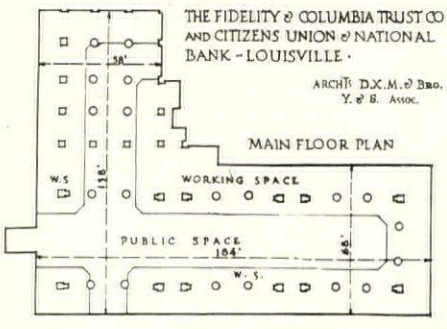

LONGITUDINAL SECTION

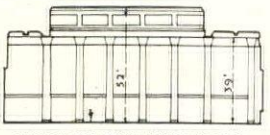

LONGITUDINAL SECTION

THE FIRST NATIONAL BANK OF BOSTON
BUENOS AIRES BRANCH

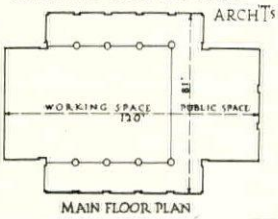
THE FIDELITY & COLUMBIA TRUST CO AND CITIZENS UNION & NATIONAL BANK - LOUISVILLE.

ARCHTS D.X.M. & BRO. Y. & S. ASSOC.

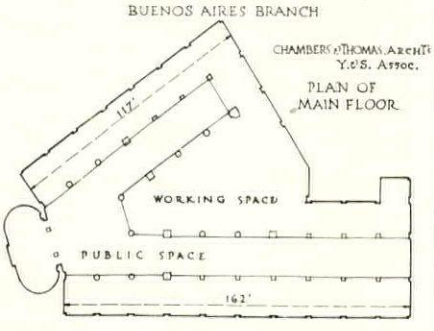



GUARANTY TRUST CO. - N.Y.C.
ARCHTS Y. & S.

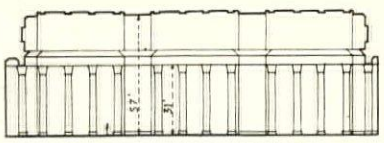



MAIN FLOOR PLAN

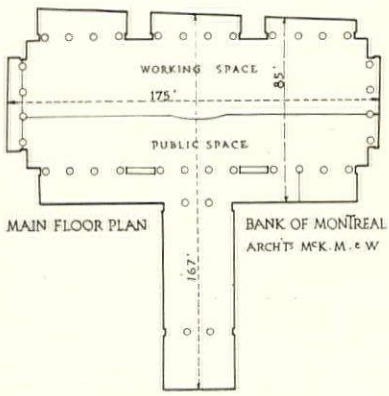



## SCALE DIAGRAM SHOWING COMPARATIVE SIZE OF BANKING ROOMS

*Plans and sections of banking rooms on these pages are reproduced at the same scale for comparison. It is obvious that a room free from columns or intermediate supports will appear higher than one which is broken up*

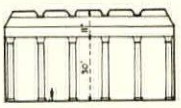



LONGITUDINAL SECTION

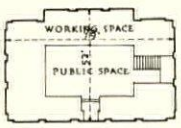



MAIN FLOOR PLAN

BANK OF MONTREAL
ARCH'TS McK. M. & W.

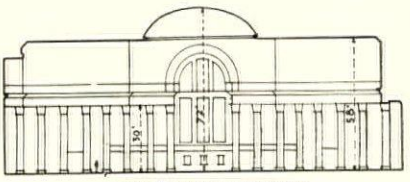



LONG. SECTION



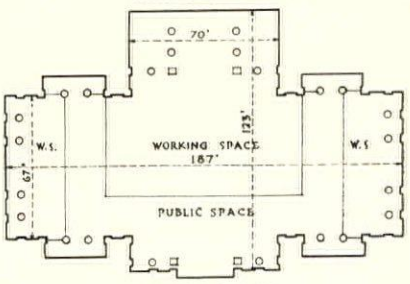

MAIN FLOOR PLAN

ROCHESTER TRUST & SAFE DEPOSIT CO.
ARCH'TS Y. & S.

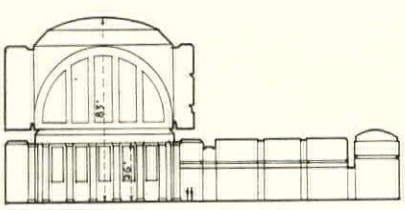



LONGITUDINAL SECTION

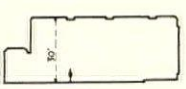
NATIONAL CITY BANK, N.Y.C.
ARCH'TS McK. M. & W.



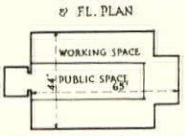

MAIN FLOOR PLAN



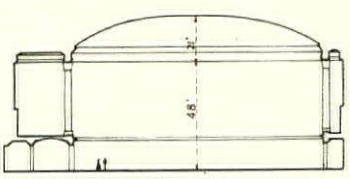

LONGITUDINAL SECTION



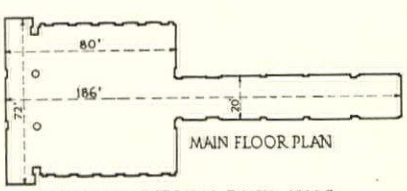

L. SECTION & FL. PLAN




WASHINGTON TRUST CO.
WESTERLY, R.I. ARCH'TS Y. & S.

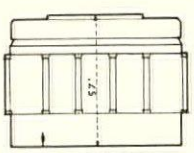



LONGITUDINAL SECTION



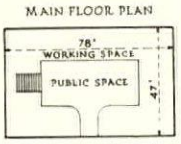

MAIN FLOOR PLAN

CHEMICAL NATIONAL BANK, N.Y.C.
ARCH'TS T. & L.

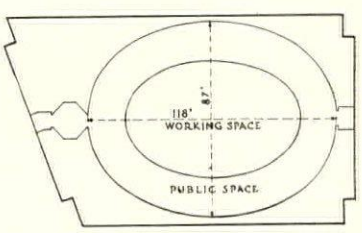



LONG' SECTION

MAIN FLOOR PLAN

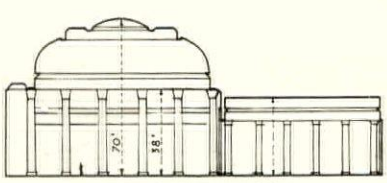



AMERICAN SECURITY & TRUST CO.
WASHINGTON, D.C. ARCH'TS Y. & S.

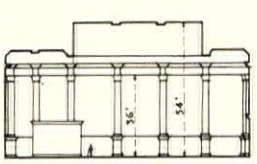



MAIN FLOOR PLAN

GREENWICH SAVINGS BANK · N.Y.C.
ARCH'TS Y. & S.



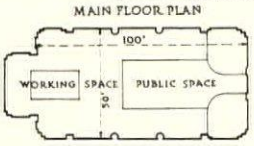

LONGITUDINAL SECTION

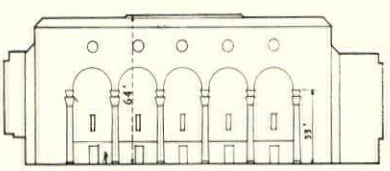



LONG' SECTION

RIGGS NATIONAL BANK OF WASHINGTON
ARCH'TS Y. & S.

MAIN FLOOR PLAN

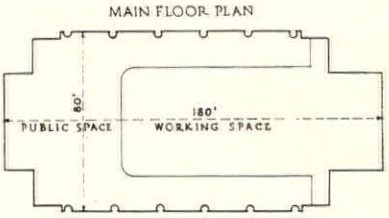


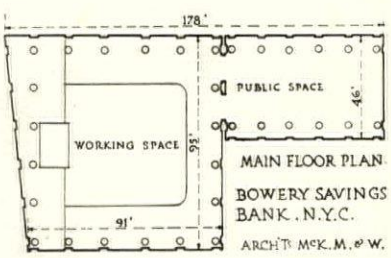




LONGITUDINAL SECTION

THE BOWERY SAVINGS BANK · N.Y.C.
· 42ND STREET BRANCH · ARCH'TS Y. & S.

MAIN FLOOR PLAN




MAIN FLOOR PLAN

BOWERY SAVINGS BANK, N.Y.C.
ARCH'TS McK. M. & W.

## SCALE DIAGRAM SHOWING COMPARATIVE SIZE OF BANKING ROOMS

*The importance of the third dimension, height, always so valuable to the architect, is now being recognized by the banker and the public. As these diagrams show, the newer rooms are frequently impressive in their height and airiness*

Entrance to Safe Deposit Vault

Interior of Safe Deposit Vault

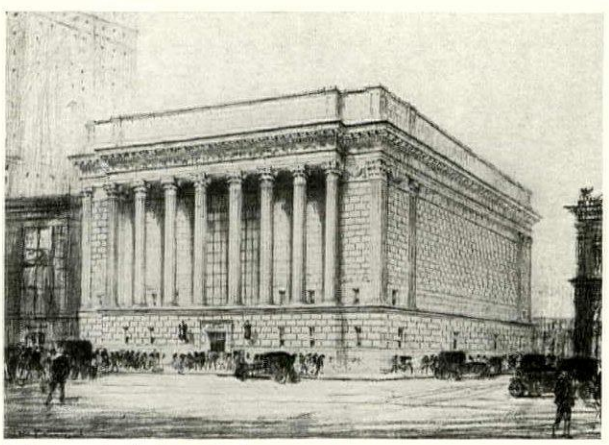
Columbia Trust Co., New York, York & Sawyer, Architects

imposed upon the bank by the office floors above.

*Recreation; Medical Examination.* In the larger banks, as in other institutions employing a sufficient number to justify it, considerable provision is made for the comfort and health of employes. They are given somewhere in the structure itself, or in an adjacent building, adequate quarters,—a development of the old "rest rooms" for men and for women, and in connection with these handball courts, bowling alleys or perhaps a caged room space in which to play handball at noon. In the interests of efficiency, cafeterias are frequently provided, serving at cost the employes of the bank. As it has been found more economical to conduct medical examinations, not only of new employes but as a matter of routine of all those employed in the bank, the older provision of an emergency room with a nurse has developed into a medical unit where periodical examinations are made, records kept, and from which nurses go out to visit employes who may be ill or absent. It is now deemed economical to keep the personnel in health rather than to wait until illness requires attention involving interruptions and loss of time.

*Women's Departments.* In the last few years, provision for women depositors has become increasingly important. More and more families are run on what has been called "the Irish principle." The German, we are told, asks his wife what she needs for housekeeping allowance, gives her half that and keeps the rest. His is obviously the more important account. The Irishman hands over his pay envelope intact, allows his wife to break the seal, give him the price of a drink, and keep the rest. Nowadays she has a banking account. A trust officer said recently that he would a good deal rather have new women's accounts than men's; that a man is more easily detached by any other bank that offers him some slight advantage, and that he rarely expresses any interest in where his friends bank, while a woman is unhappy unless her friends use the same depository; that once her account is established she is intensely loyal and, finally, that she usually lives the longer, and when she dies there is a trust fund to handle.

As she often comes to the bank in one of the 12 million cars that we are now supporting, it is desirable to provide a separate entrance (on a street where parking is allowed) which leads directly to her department, and, if possible, also to the safe deposit section. Her room or division of the bank is often designed particularly to please her and is furnished with attractive writing desks rather than



Preliminary Studies for Greenwich Savings Bank, New York

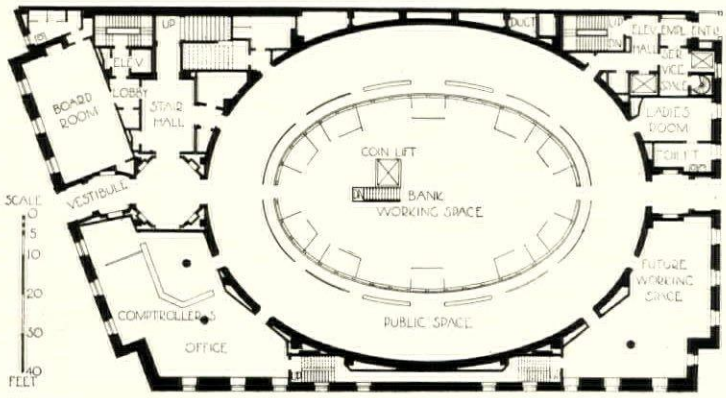
York & Sawyer, Architects

with standing check desks. It is frequently served by separate tellers who may themselves be women. It is often connected with a room where she can rest or read or meet her friends for luncheon. The reported conversation: "Where let's meet and lunch? Let's meet at the Ritz and lunch at Childs'," may now be: "Let's meet at the bank and lunch at the Ritz." Commodious toilets, in connection with this space, and a maid make the thing complete and add much to a bank's popularity.

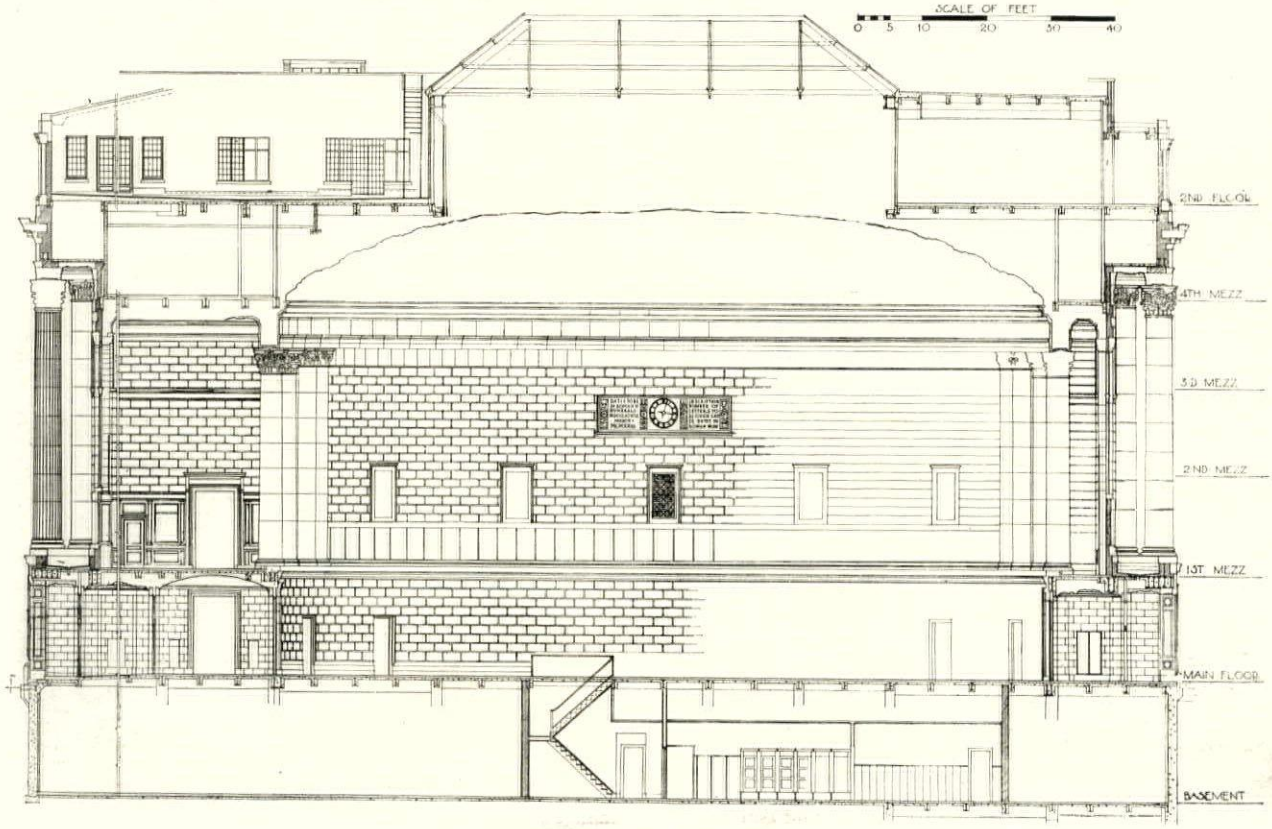
*Lighting.* Where the surrounding streets are wide, the floor area not too extended, and a proper design combines the necessary dignity and solidity with a proportion of window space almost factory-like, no skylight is necessary. Where, however, streets are narrow, or the plan deeper than the side light will reach, a skylight is a valuable adjunct, and usually the lighting of the upper floors will lead one to provide a recessed court, which will admit of a skylight centering on the banking room below and serving its central part, remote from the windows. Such overhead light is generally most effective if concentrated in a single area, and the skylight itself should be single even if the ceiling light beneath it is subdivided by beams or, indeed, broken into a series of detached panels, since far more light is thus obtained.

Any such skylight should be placed high

Perspective of Final Exterior Scheme




Main Banking Room Floor Plan




Longitudinal Section
**Greenwich Savings Bank, New York**
York & Sawyer, Architects

enough above the ceiling light to provide headroom if possible, and one or more movable platforms should be installed to run across just above the ceiling light in order that it may be conveniently cleaned. It is hardly necessary to emphasize the importance of keeping the top of the construction of the ceiling light, its beams, ribs and muntins flush with the glass so as to present a plane to the cleaners without corners or sinkages, or of using a glass which, whatever its texture on the lower side, is absolutely smooth on top. Convenient to this cleaning space over a large ceiling light a slop closet should be provided, and there should be a number of vacuum cleaner outlets, electric or air, according to the apparatus used in the building. The skylight may be either of the usual hip or gable type, wire glazed, or consisting merely of a panel of vault lights in the roof.

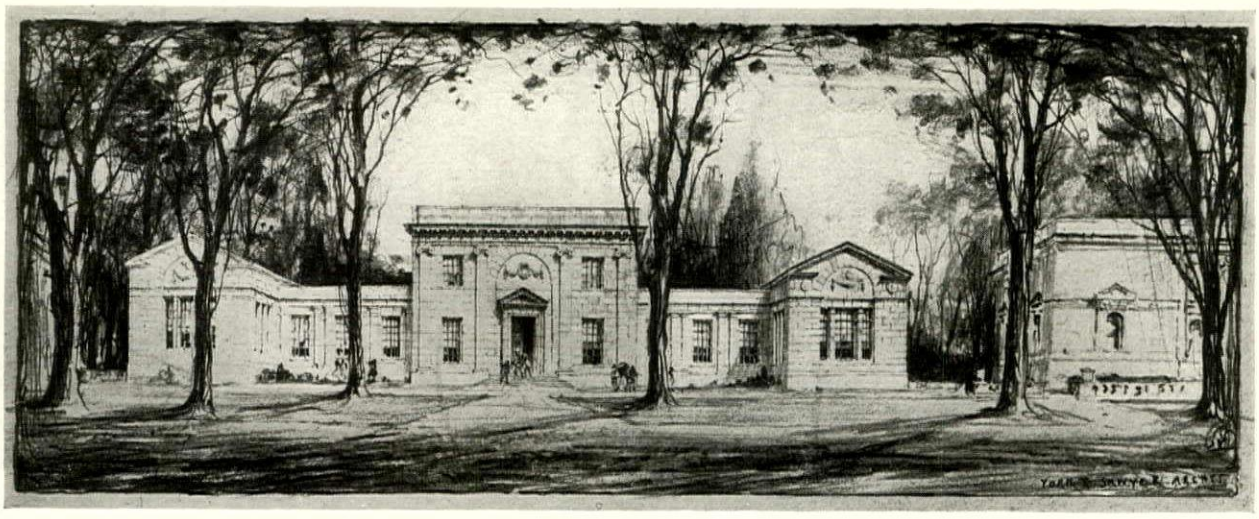
The ceiling light, sometimes domical in form, is usually flat, and the simpler its design the better. In color, too, a uniform tone seems to give better results than the use of colors. If a warm, amber glass is used, it gives the room a glow, pulls together the tones of its various materials, and tends to give a harmonious appearance which it is impossible to secure if white glass is used. In the case of large windows, this amber glass is equally effective not only in warming the gray light of winter to a sunny hue, but in shutting out incongruous and disturbing surroundings and in tending to enclose the room and complete it as small, leaded panes do in a domestic interior.

*Simplicity.* In bank design one looks for simplicity, dignity and durability more perhaps than in any other class of buildings. Just as the banker himself is an important and stabilizing factor in our society, so his building should lead and rightly influence the architecture of his community. The home of a well founded and enduring institution, it is as permanent as anything that we construct. If it houses merely the bank, it must be designed in such a scale as to hold its own among the buildings, much higher,

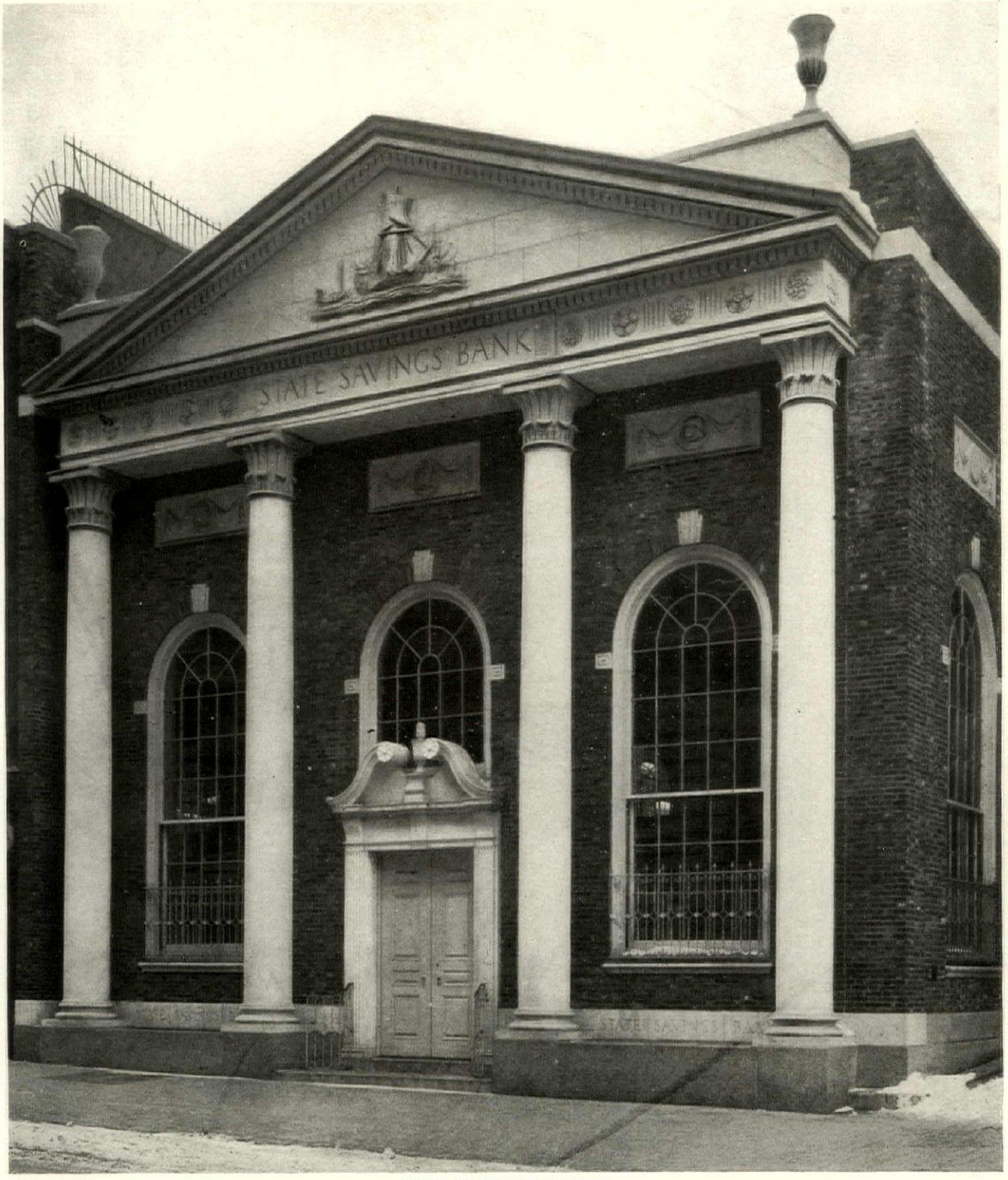
**Entrance to Buenos Aires Branch, First National Bank of Boston**
Chambers & Thomas, Architects; York & Sawyer, Associated

which surround it. If it be a high building, its simplicity and dignity must command among its thronging competitors. Its style and character should be permanently acceptable, not merely reflecting the fad of the moment, since it is built not for this year or decade, but for a long period of time.

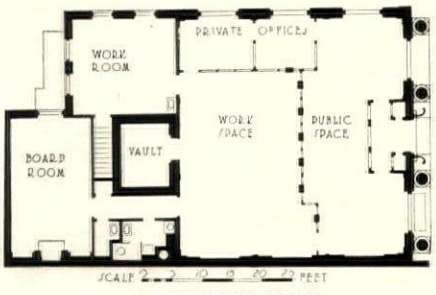
And so the banking official who determines the bank's site and its character and who selects its architect and builder, and those who carry out the bank's behests accept a heavy responsibility to their community, to our country and to those who follow us, who will try, in their turn, to do better work than has yet been done.



Preliminary Study for Banking and Insurance Building, Watertown, N. Y.
York & Sawyer, Architects




VIEW OF FRONT FACADE

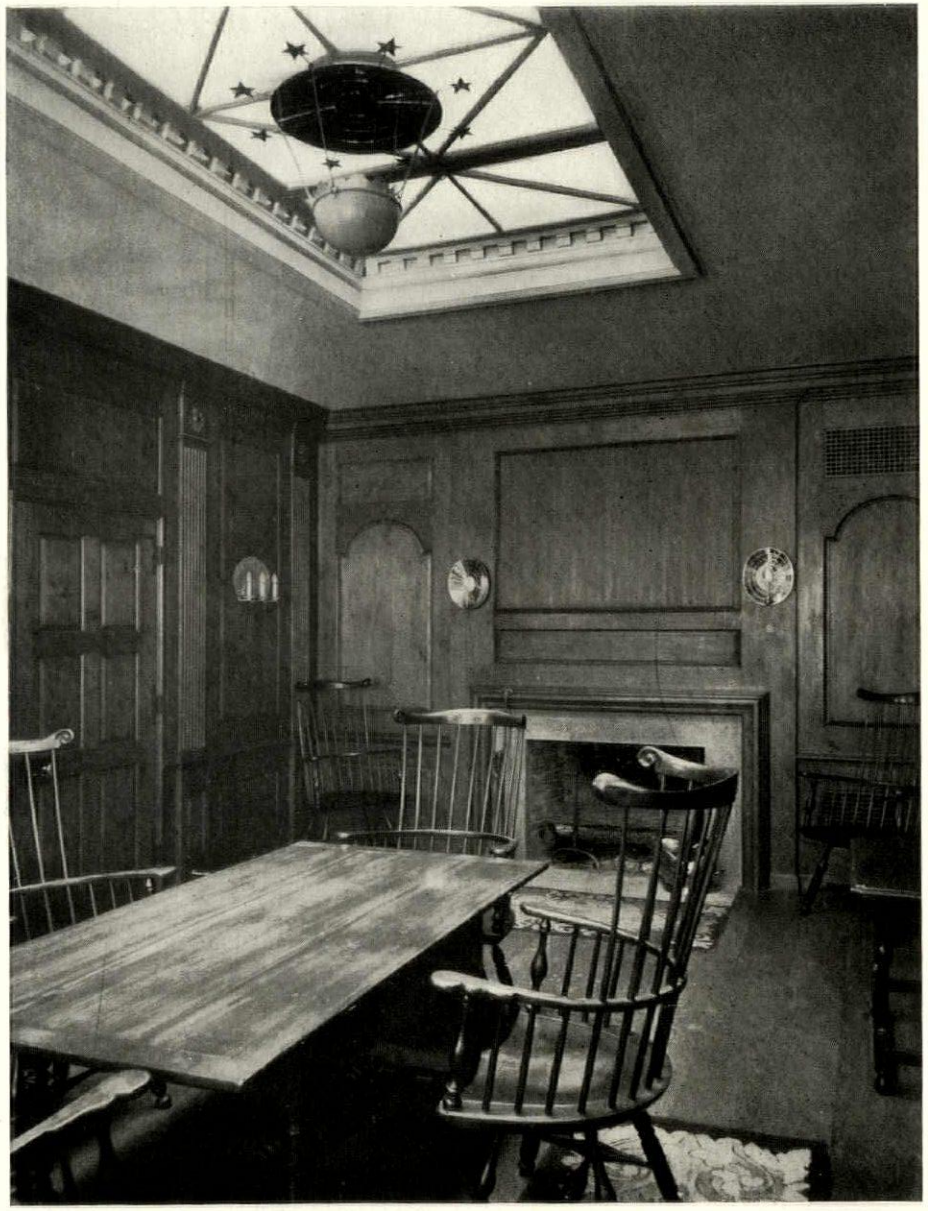



FIRST FLOOR PLAN

Type of construction, Fireproof; Exterior materials, Brick and marble; Interior materials, Plaster and marble, pine wainscot in board room; Windows, Wood; Counter screens, Marble and wrought iron; Vault and safe deposit provision, Vault for securities; Type of lighting, Direct; Heating, Vacuum steam; Mural painting and sculpture, In pediment is a carved adaptation from an old print of the early Dutch sloops of New Amsterdam, such as used by Adrian Blok, who first explored the Connecticut River in 1614

## STATE SAVINGS BANK, HARTFORD

BENJAMIN WISTAR MORRIS, ARCHITECT



BOARD ROOM

PUBLIC SPACE, LOOKING TOWARD ENTRANCE

STATE SAVINGS BANK, HARTFORD

BENJAMIN WISTAR MORRIS, ARCHITECT

GENERAL EXTERIOR VIEW

VIEW OF UPPER STORIES

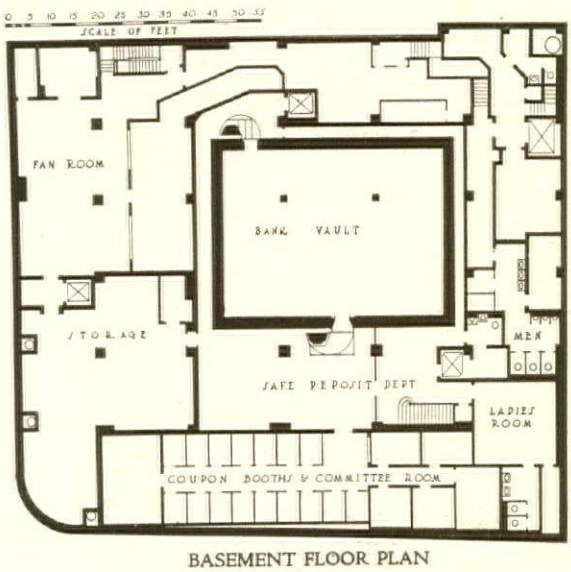
HARTFORD-CONNECTICUT TRUST COMPANY, HARTFORD

BENJAMIN WISTAR MORRIS, ARCHITECT

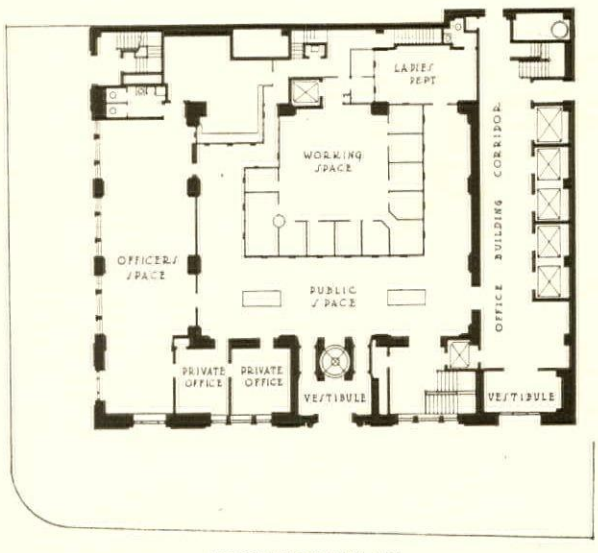
## HARTFORD–CONNECTICUT TRUST COMPANY HARTFORD

Illustrations on Plates 67 and 68

Type of construction. Fireproof
Exterior materials. Limestone and brick
Interior materials. Walnut; travertine
Windows. Steel sash
Counter screens. Wrought iron; walnut
Type of lighting. Direct
Heating. Steam
Date of general contract. November, 1920
Total building cost. $1,833,133.89
Cubic foot cost. 81 cts.




BASEMENT FLOOR PLAN



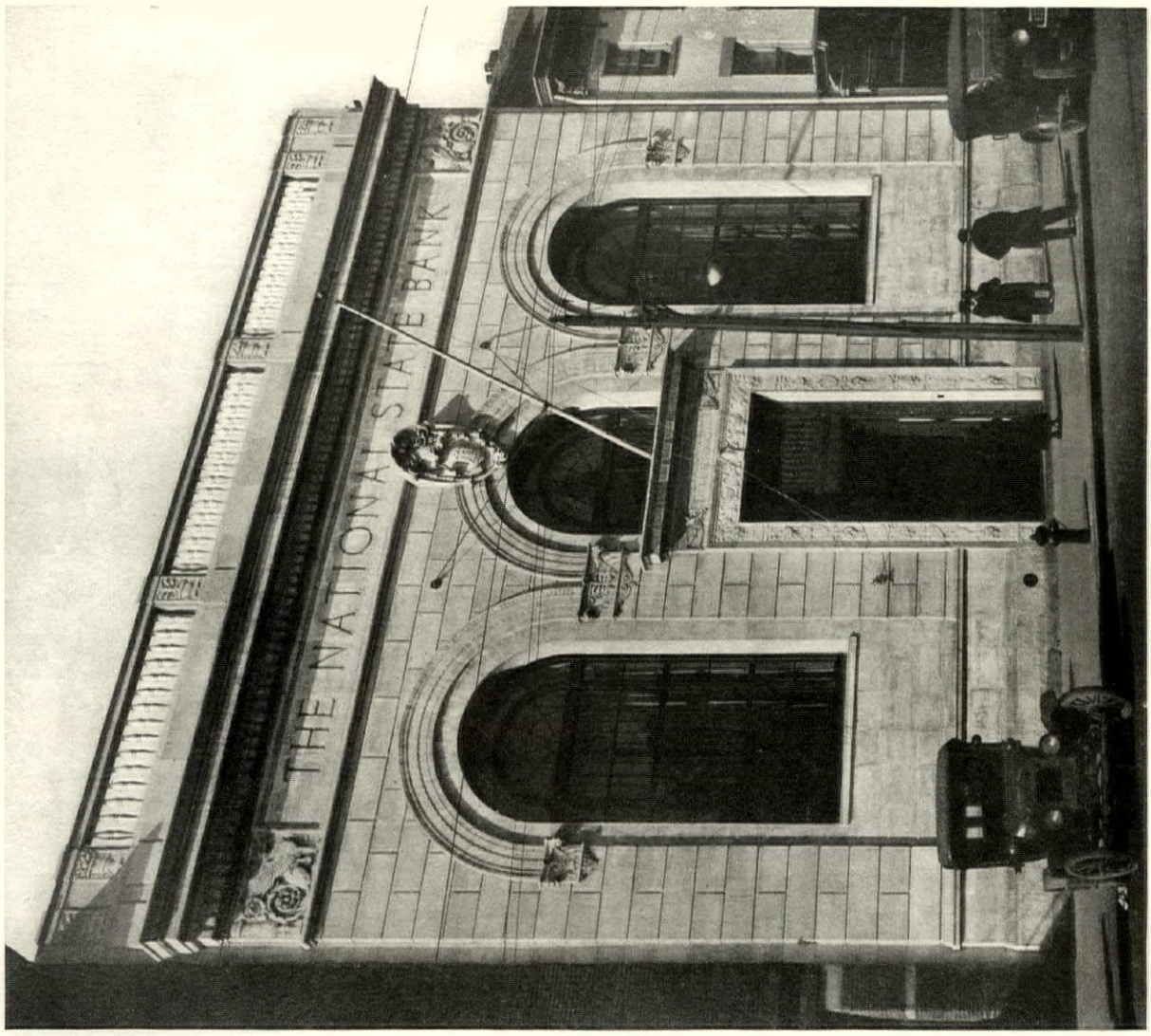

FIRST FLOOR PLAN

PUBLIC SPACE

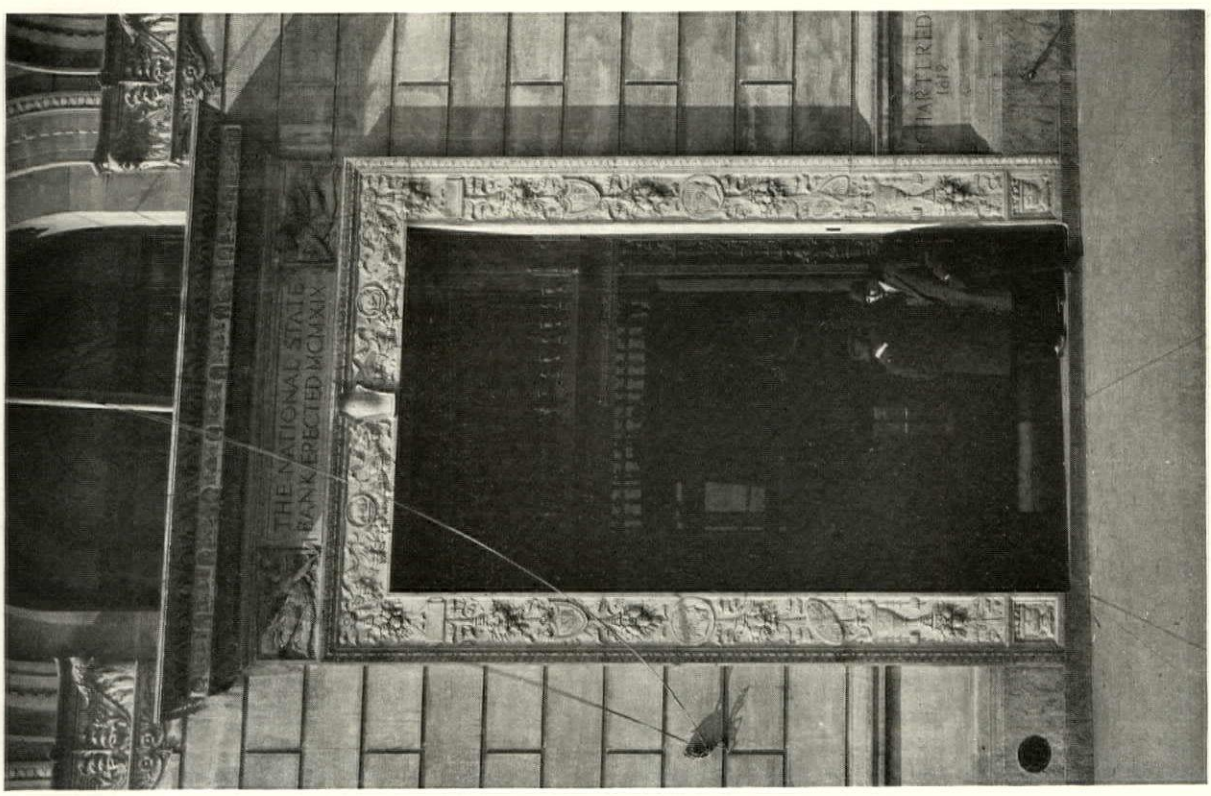

DETAIL OF ENTRANCE FRONT

HARTFORD-CONNECTICUT TRUST COMPANY, HARTFORD

BENJAMIN WISTAR MORRIS, ARCHITECT




VIEW OF FRONT FACADE

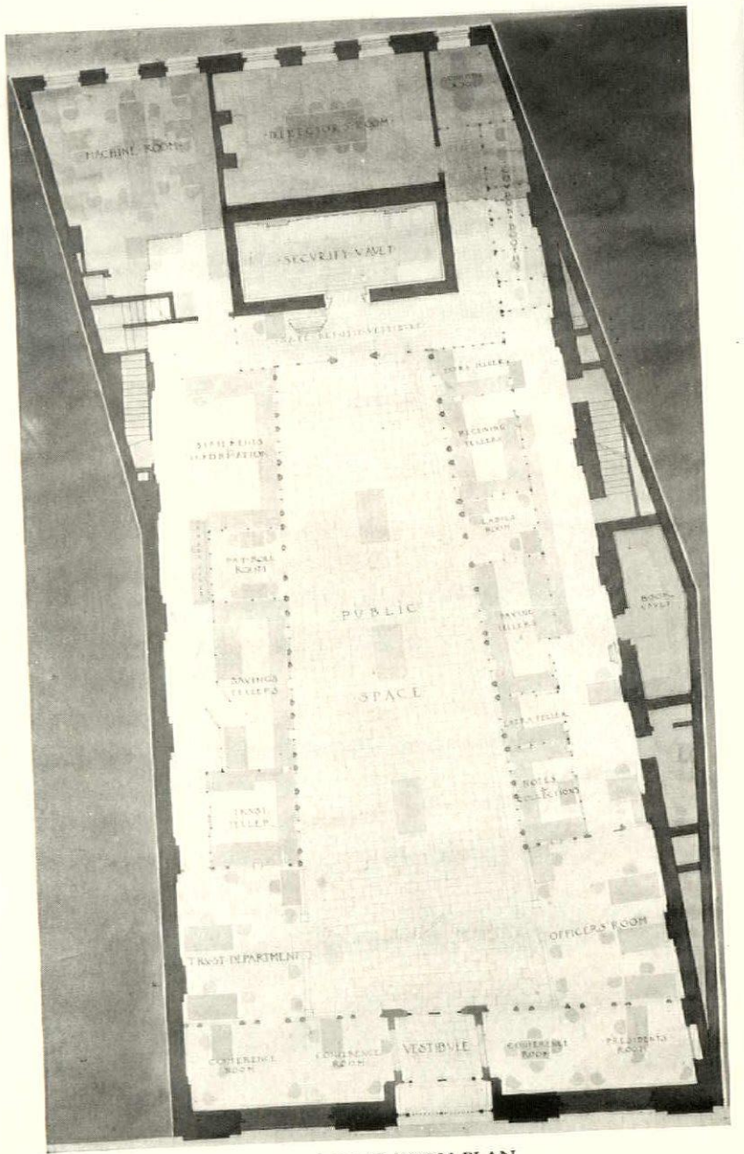



DETAIL OF ENTRANCE

## NATIONAL STATE BANK, ELIZABETH, N. J.

DENNISON & HIRONS, ARCHITECTS

*Photo by Underwood & Underwood, Inc.*




BANKING ROOM PLAN

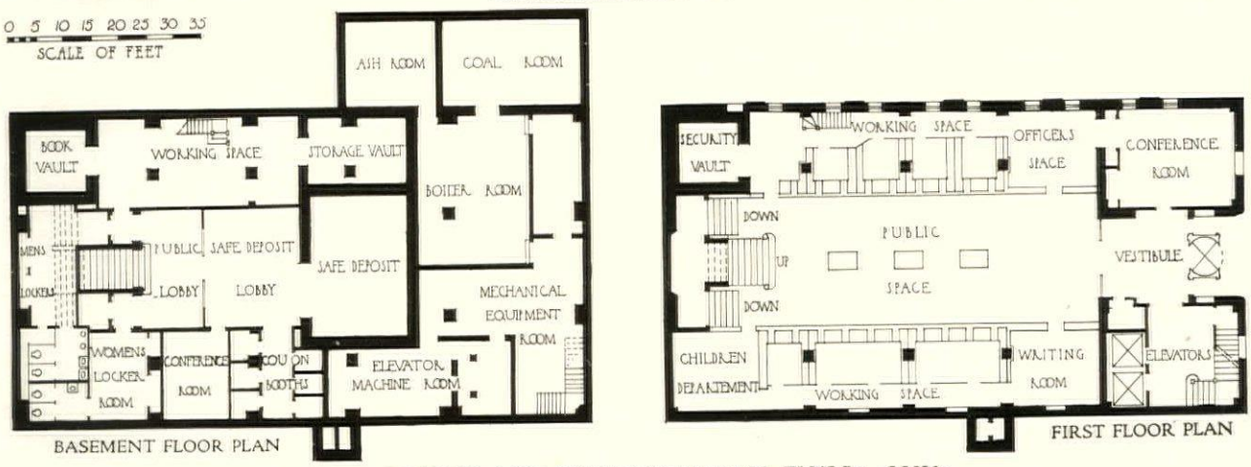
VIEW OF BANKING ROOM

Fireproof construction; Exterior material, Gray marble; Interior material, Imitation travertine; Windows, Steel casements; Counter screens, Marble; Vault and safe deposit provision, Steel-lined safe deposit and security vaults, electric protection; Separate book and trunk vaults; Type of lighting, Indirect; Heating and ventilating, Steam, gravity fresh air ducts; Date of general contract, 1919; Total building cost, Approximately $320,000; Cubic foot cost, 75 cts.

## NATIONAL STATE BANK, ELIZABETH, N. J.

DENNISON & HIRONS, ARCHITECTS


GENERAL EXTERIOR VIEW



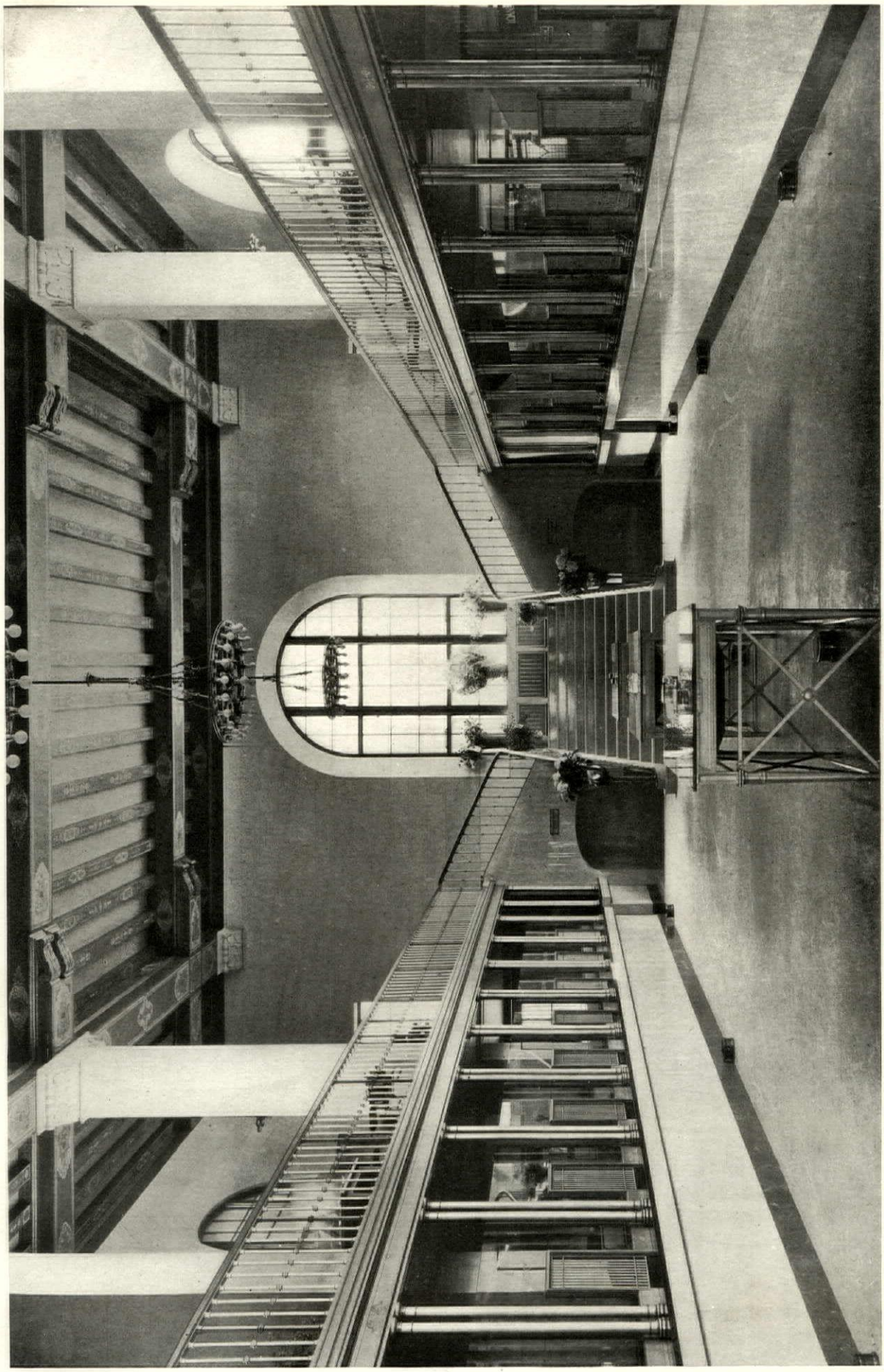

BASEMENT FLOOR PLAN

FIRST FLOOR PLAN

## ELYRIA SAVINGS AND TRUST COMPANY, ELYRIA, OHIO

WALKER & WEEKS, ARCHITECTS

Fireproof construction; Exterior, Limestone, granite; Interior materials, Marble and plaster; Windows, Wood and metal sash; Counter screens, Marble and ornamental iron; Safety deposit provision, 20-inch rectangular door to cash vault; Heating, Gravity; Lighting, Direct



BANKING ROOM

ELYRIA SAVINGS AND TRUST COMPANY, ELYRIA, OHIO

WALKER & WEEKS, ARCHITECTS

# The Layout and Equipment of Banks

## SPACE SUBDIVISION AND GENERAL EQUIPMENT FOR BANK ADMINISTRATION

*By* E. F. ABELL

*Abell, Smalley & Myers, Equipment Engineers, New York*

IT was the request in preparing this article that it be specific as to standards applicable to the various functions of a bank. It would simplify the operation itself as well as this article were this possible. It is not possible, because each proposition is essentially different as to the kind of business handled, the type of accounts carried, and most of all, the human equation that obtains throughout the particular organization considered. Consequently, this article cannot be another of the well known "How To" series.

There are certain types of buildings which may be considered primarily as machines designed to function for specific purposes. All commercial and investment buildings come generally within the terms of this description, and the space provided in these buildings may be divided into two general classifications which are (1) rentable space, in the equipment of which the owner of the building has perhaps no direct interest, and (2) space provided specifically for the housing of an individual commercial enterprise. Of these enterprises, banks, insurance companies, general offices of manufacturing and public utility corporations are typical.

In the planning of buildings or sections of buildings for such occupancy, the problems are not alone architectural but include the logical arrangement of space for departments and the complete equipment of these departments. Both the space and the equipment must be made ready for the transaction of business in a manner which will provide for the maximum efficiency and the most workable co-ordination of the activities of departments and of individual workers. It is most satisfactory if the equipment engineer can, in co-operation with the architect, make a survey of the administrative requirements for the occupant of the contemplated structure prior to any definite decision as to the building itself. This results in a more economical spacing of columns, stairways, elevators and other means of vertical and horizontal communication. This preliminary planning and approximate allocation of departments is done graphically without going into the details of each piece of furniture equipment. At this time, any arrangement that involves structural conditions can be carried out as the building progresses at the minimum of cost as compared to expensive changes in steel or other construction work. For instance, certain items of furniture equipment may be of such weight that heavier steel in floors is required over what would ordinarily be used for the rest of the areas.

In rented areas contemplated by a bank or corporation it is almost a necessity to make a survey of the organization to fit it to the proposed space and to make this study before negotiations are closed on leases. The preliminary study will show whether the proposed space will properly house the business.

It will be the purpose of this article to consider only the commercial bank in general in order to present information which applies to any problem of bank planning.

In order to determine the amount of space which shall be allotted to each department of the bank, together with the equipment which should be provided for this space, the first step is to provide a basis of study by making a physical and functional survey of the old quarters and present organization of the bank under consideration. This survey will serve to establish, in the form of statistics and sketches, the present administration methods and scope of the bank's business. It will show approximately the relative number of square feet devoted to various departments; it will also show the number of employes within these departments, and establishes at once a basis upon which to plan the new quarters to the greatest advantage.

The next step is to perfect in theory the present situation, correcting all obvious defects as based on information from various department heads and employes. After this is done provision is made for the addition of space and equipment to meet future needs and to provide for the growth which naturally results. At this time a point has been reached where the amount of space needed in each department, the number and type of its personnel, and any special requirements of improved business methods and of departmental co-ordination have been determined. With this information the possibilities of the new building as indicated by the number of square feet and general dimensions of its available space can be considered. It may be that the new banking quarters are to consist of a basement, first floor, and second or mezzanine floor. Possibly the building is a combination bank and investment structure, with rentable space and certain space reserved on upper floors for the bookkeeping department. It is obvious, therefore, that this analysis, which determines the layout of banking quarters, should be made in the early stages of planning so that close co-operation with the architect may result in a layout representing the maximum of administration facilities without interfering with the architectural character of the interiors.

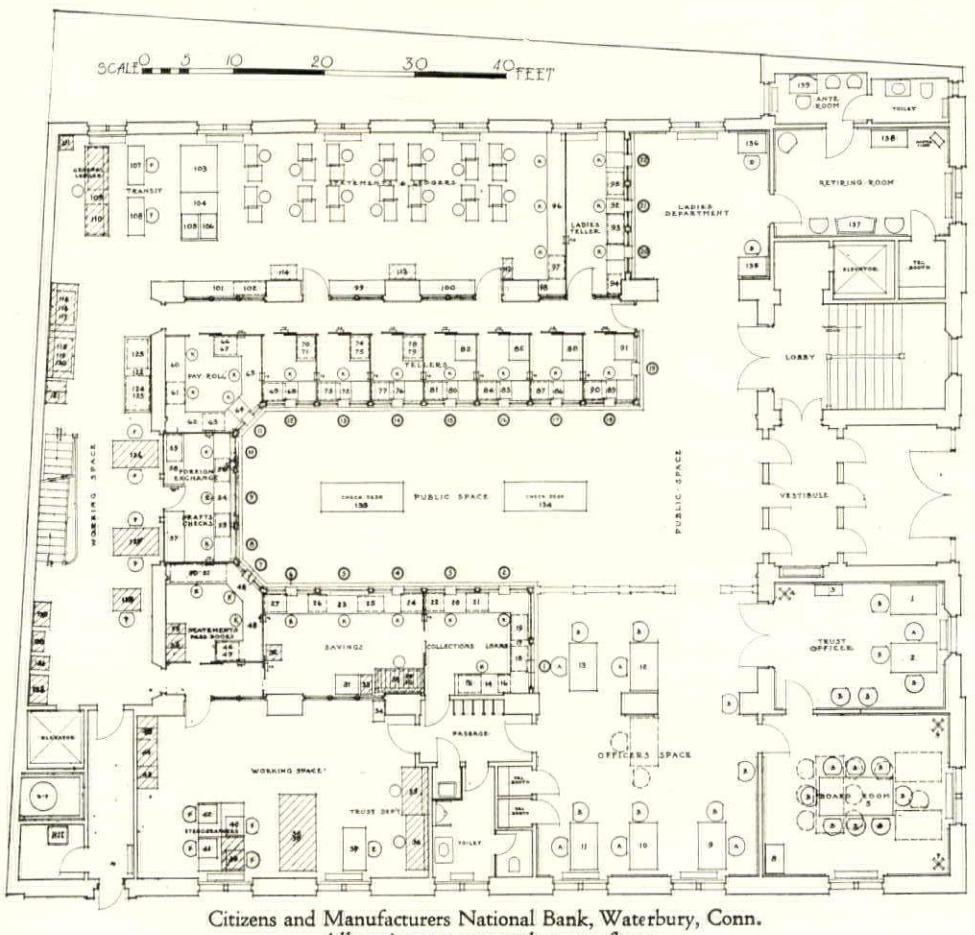
Based upon the statistics and data provided by the original survey it will be possible to locate the various departments and sections of the bank which divide themselves into two main classes, *i.e.*, those having contact with the public and those which are strictly working departments, such as accounting

and clerical, and which the public rarely sees. It is not possible to set up any standards as to the amount of public space that should be allowed as compared to the amount of working space. Here again the nature of the bank's business is the guiding factor. In considering comparative areas in present and contemplated buildings it is a proved fact that 1,000 square feet of a certain shape will plan out better than 1,200 square feet of another shape, but it is usually difficult to convince the average client of that fact. In determining the relative locations of departments having public access the prior consideration is the comparison of public contact, locating the heaviest traffic as near the street level as possible to facilitate handling the business itself and because of its bearing on elevator traffic. There are no definite standards of sizes for departments, because of the variation of the business done by different banks. Some banks have a large number of small accounts and do a considerable business in small collections, involving more bookkeeping and more teller space than are required in a bank which has a relatively small number of large accounts which may or may not be active. There are, however, certain basic considerations which should be borne in mind when the layout of the bank is planned. For the executives, most bankers still favor a location where all but possibly the highest officers may be within sight of the public, but this is in a sense comparatively recent in practice. Once the officials of a bank secluded themselves in the most inaccessible places, but practically coincident with the idea of publicity and because of natural competition they reversed this procedure for the convenience of the public. In larger banks the routine detailed work is in charge of so-called junior officers, who are delegated to the immediate contact necessary with the respective departments and the public. This leaves the senior officers more freedom to handle the larger problems, and for that reason they can be located in more quiet surroundings. Consequently, in metropolitan areas, especially, the farther they are removed from the street the better for light, air and quiet. More and more is this being recognized.

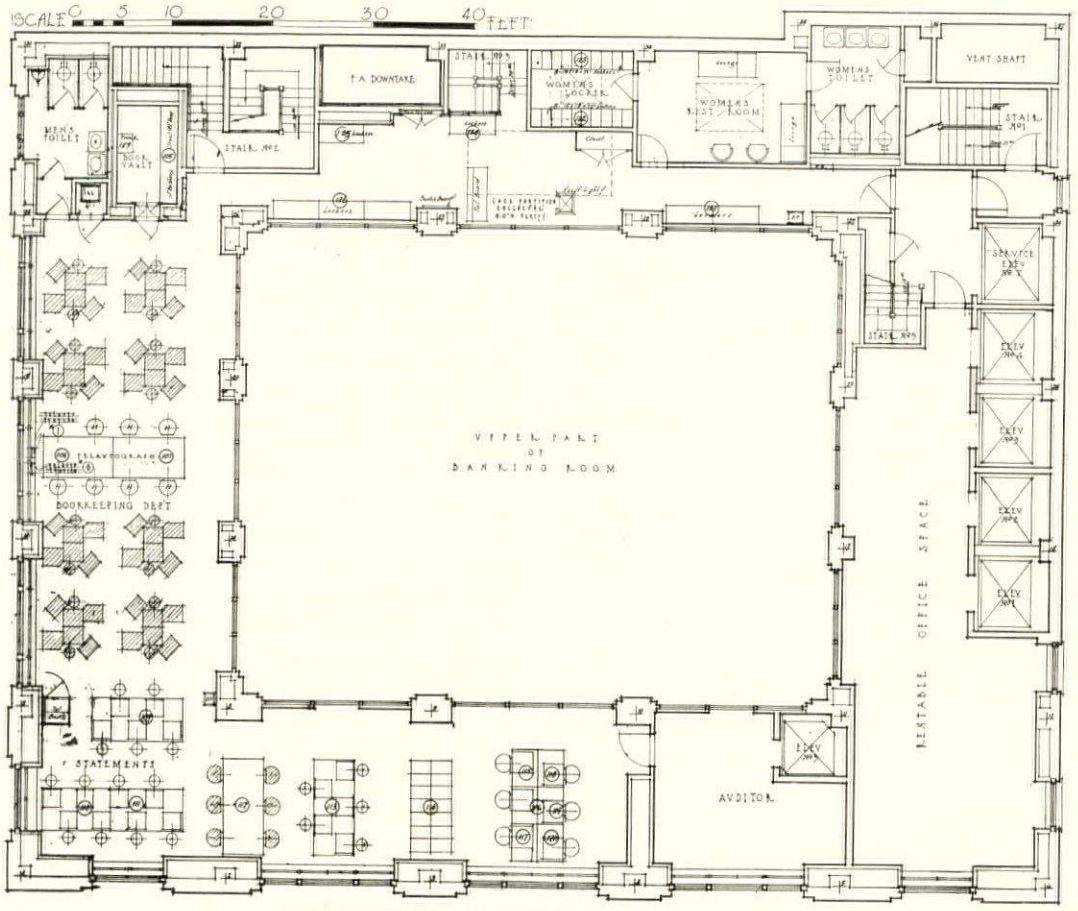
The loan and discount department, because of the nature of business transacted, should be located near an executive, or in direct contact. Even in the largest banks it is usually necessary for loans and discounts to receive the individual consideration of a higher bank official. For this reason easy contact between the two points is highly desirable. The space allotted to the loan and discount department, in common with all other departments, will be determined primarily on a basis of personnel and equipment.

The tellers' division represents a distinct department with practically no inter-relationship during the day except communication with the bookkeeping department, which for the most part is through the medium of telephone or recording devices such as the telautograph or teletype. This communication, which relates to the cash balances of clients and similar information, is of such importance that inter-communication by telephone is not desirable. The telephone permits the distortion of names, initials and figures, and leaves no record at the end of the day if it becomes necessary to trace information and its source. The recording means of communication provide definite records and tend to eliminate errors.

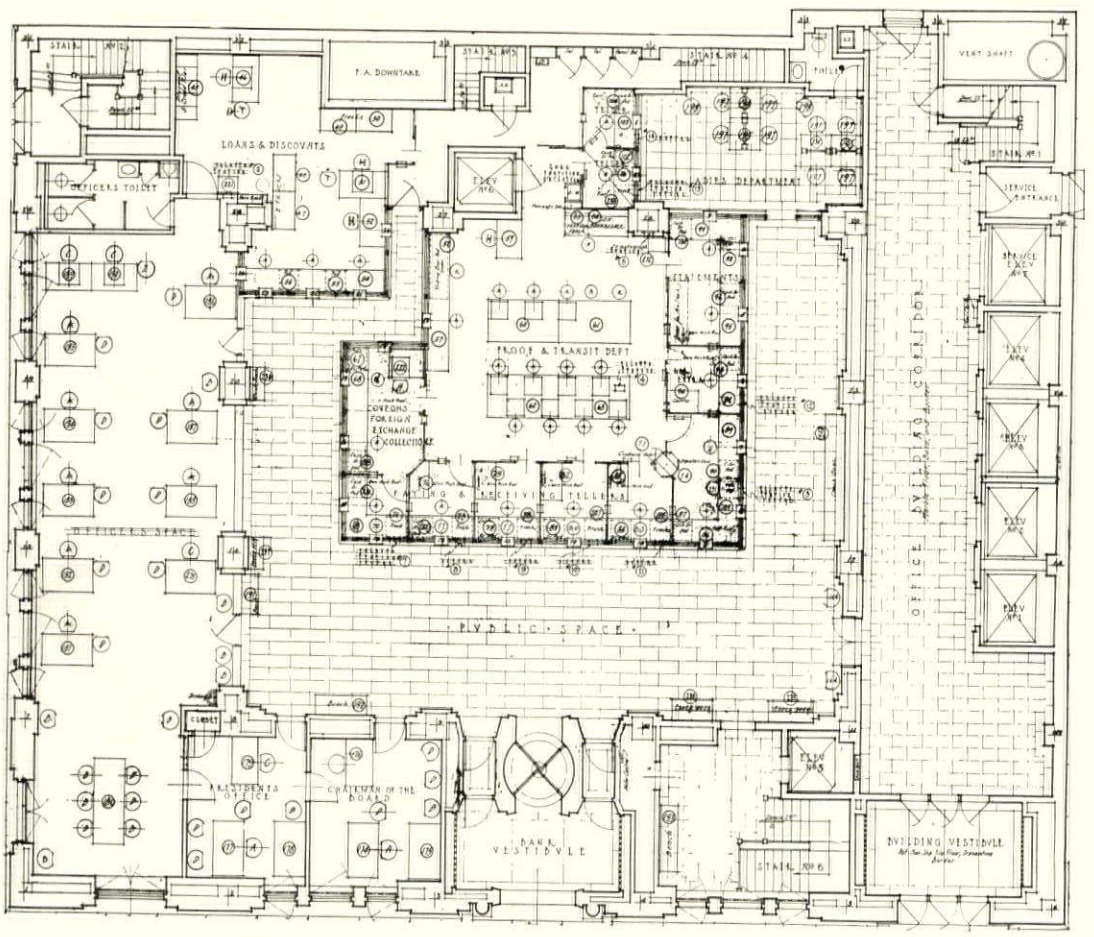
It is of course desirable that the bookkeeping department be located directly behind the tellers' space, but this is not of paramount importance and often is impossible because of space limitations on the first floor. When it is not




Citizens and Manufacturers National Bank, Waterbury, Conn.
All equipment arranged on one floor
Henry Bacon, Architect. Abell, Smalley & Myers, Equipment Engineers




BOOKKEEPING DEPARTMENT ON SECOND FLOOR




HARTFORD-CONNECTICUT TRUST CO., HARTFORD

Complete equipment on two floors

BENJAMIN WISTAR MORRIS, ARCHITECT. ABELL, SMALLEY & MYERS, EQUIPMENT ENGINEERS

possible to place these departments together it makes little difference how far apart they are located. They might be, and sometimes are, in separate buildings. The tellers' space, as a matter of fairness to the individual tellers and protection for the bank, should invariably be divided into individual cages. The practice of placing several tellers within the same cage makes it impossible to fix the individual responsibility in the handling of money and harder to trace errors or differences. The space allotted for the individual teller should be never less than 5 feet square and preferably not much more than 6 feet square. This allows sufficient room for his work, but places every part of the cage within arm's reach so that unnecessary steps and waste of time are eliminated. If a space of less than 5 feet is used it is not possible to provide sufficient drawer space and still keep the free area in front of the wicket, which is desirable.

A question of interest from the public viewpoint is developed in considering the merits of the combined tellers' window (receiving and paying) as opposed to the separate tellers' departments for this purpose. From the viewpoint of the public it is quite obvious that the combination of receiving and paying through the same window is much more satisfactory. In some large banks combination paying and receiving departments include an alphabetical separation of tellers' windows. This means that the client who goes into the bank for a transaction which includes the deposit and withdrawing of money must wait in line if he is unfortunate in finding his lettered window busy, as he cannot take advantage of another which might be entirely free. Yet an analysis of the time consumed for a transaction on a busy day shows that the separated system of tellers will consume from one-half to two-thirds more time on the part of the client than under the combination system where he transacts all his business at one time and with one teller. In addition to this there is the fact that the teller operating under the combination system has a better knowledge of the client and his account, with a fair impression of the size of the balance carried, and in this way it is possible many times to save communication with the bookkeeping department as to the validity of checks.

The bookkeeping department, where the clerical and auditing forces are maintained, is a section which is not open to the public view. It is advisable that this department should be laid out as one large workshop, without subdivisions in the way of partitions except occasionally where it is desirable to segregate the corporate books of the bank. In laying out this department there should be no physical barriers against expansion of its various divisions. There are no particular standards of equipment for the various divisions of the bookkeeping space. Wherever possible stock size files and other equipment are purchased to allow an easy and harmonious development as expansion takes place.

Where it is necessary to subdivide the banking space by the use of partitions the primary requirement is that these shall be thoroughly soundproof. Recent developments in the acoustical treatment of walls and ceilings have been most successful in their application and should receive serious consideration for certain areas, such as stenographic, addressograph and similar spaces where machines are installed. Floor coverings require careful thought and must be resilient and easy to clean.

The size and arrangement of vault and storage space in a bank cannot well be standardized, because here again this depends upon the relative volume of specie, currency, securities and other valuables to be stored and handled through the vault; also upon the relative amount of space to be given over to safe deposit boxes. In order to determine the approximate size of a safe deposit vault, a basis may be arrived at by these figures: 250 safe deposit boxes of the usual varying sizes will require 4 feet in width, 2 feet, 2 inches in depth, and 8 feet in height. Given the required number of boxes it is intended to install, or better, the ultimate capacity of the safe deposit vault, it is a simple matter to determine what the approximate dimensions will be.

To this must be added the necessary capacity for the bank cash and securities, either accessible from the same entrance doors and behind a grille partition or, as in some instances where required by banking regulations, by an additional door. From the economical point of view there is no reason why the same exterior wall should not enclose both safe deposit and bank sections. Endeavor should always be made to locate the bank vault in the basement. The old insistence upon an impressive looking vault door in sight of depositors has been given up. The opinion is that a vault located on the first or banking floor sooner or later becomes a serious obstruction to the expansion of activities, and it is expensive to move.

Illustrations are shown with this article indicating the finished layout and equipment plan for two types of banks, one in which the entire banking quarters are laid out on one floor, and the other where the bookkeeping department is segregated on the second floor. These plans indicate the allocation of departments and their logical contact with the public and each other.

There are, of course, many other details which enter into the consideration of the various problems of layout and equipment. The most interesting, perhaps, is the unconscious absorption of the administration of the particular business being studied. A knowledge of this has an all-important bearing on the completed work as a whole, and it is given to no other branch of engineering to establish the same intimate contact with all the various details of routine and administration.

The beginning and the end of this phase of the work is applied common sense, taking into consideration all possible details of the past experience of the individual bank itself, as well as applying the experience gained with banks of a similar character.

# The Architect and the Banker

By ALEXANDER B. TROWBRIDGE
*Consulting Architect to the Federal Reserve Board*

IT would be illuminating to canvass the leaders of the architectural profession in an effort to find out why some operations are more successful in every way than others out of the same office. The drafting force is the same, the office methods do not change materially, except over long periods, and the specifications follow one another in conformity to well tried out paragraphs and lists. There must be something else to explain why one operation will be fairly free from extras and others pretty well loaded down with additional items which, from the clients' standpoint, ought to have been thought of in the beginning. Why is it that one piece of work will show painstaking care in little things, the craftsman's touch perhaps, throughout the finish, while in another example everything looks as if it had been pushed through a quantity production mill? It is not sufficient to credit the good work to good contractors and the poor work to poor builders. They all have access to the same subcontractors, and we all know that modern building is largely a matter of assembling the subs and planning for their co-ordination.

If the leaders of the profession were asked to answer this question they would undoubtedly say that the excellence of the results is usually to be attributed to the co-operation they have received from their clients. Sometimes they have no co-operation, and not infrequently they have active opposition and adverse criticism. Under such a handicap it is almost impossible to produce good work. Many an owner, and this applies especially to bankers, is too busy to devote adequate time to a consideration of details in plans and specifications prior to the making of working drawings and details. He engages good architects and is disposed to hold them responsible. He believes quite sincerely that he has no fixed ideas, and that whatever his architects recommend will doubtless be satisfactory. It often happens, however, that he wakes up to the realization that he has ideas, but only after the architects have spent many days and many dollars designing and detailing. To require the architects to scrap what they have done and redesign the work to conform to these latent "ideas" of the owner may, at times, be technically proper. There may be no real or intentional violation of the contract between owner and architect, but it is undoubtedly unwise—it may be even called bad business—to so deal with the architect as to make him feel that he has not had fair treatment.

An architect is a peculiar mixture of artist and business man. Sometimes the artist in him is so strong that he cannot do his best work unless he is keyed up by the kindly and sympathetic interest of his client. The architect's drafting room is occupied by other men who are peculiar mixtures. In some cases they are 90 per cent artists and 10 per cent business men. To get good work out of them the members of the firm must exercise tact, must show cordial appreciation of their efforts, and must in every possible way keep alive the enthusiasm of the employe for his work. Perhaps it seldom or never occurs to an owner that intelligent co-operation pays in dollars and cents. Of course it is difficult for the owner who is entering upon a building project for the first time to furnish the kind of co-operation which he might like to offer. In such an instance it is clearly the duty of the architect to point out to the client the way in which he can help, and I'll admit that this isn't as easy as it sounds. Perhaps this little article can be put to a practical use if it helps an architect to present his case to a new, untried client.

## Architects' Methods of Payment

In the first place, the prevailing methods of payments to architects are far from satisfactory. This is not in the least degree the fault of clients. The architects are responsible for devising an unwieldy plan which, if applied to all problems alike, results in overcharging, in many cases, for preliminary sketches. Here is the usual schedule of payments: "Upon completion of the preliminary studies, one-fifth of the entire fee; upon completion of specifications and general working drawings (exclusive of details), two-fifths additional; the remainder being due from time to time, in proportion to the amount of service rendered." The lapse between the payment for preliminary studies and that for specifications and working drawings may become painful if the owner is the kind who takes plenty of time in making up his mind. There is no provision for paying for scale and full size details if they should happen to be completed before the building contractor has progressed very far with construction. Why? Because architects have established, as a precedent, the custom of billing their clients in proportion to money paid to the contractor on presentation of the architect's certificate. It would be better from every point of view if the architect could be encouraged to produce details long before the contractor may need them. Thus one element of delay, which occurs in building projects, would be eliminated.

In a recent operation of considerable importance, the fee applying to preliminary studies was paid in monthly installments. When working drawings were started, a plan was adopted of paying the architect what was due him as fast as he completed any particular portion of his work. The general building contract was on the cost-plus-fixed-fee plan, which permitted the architect to keep on with his working plans after the foundations were under way. One-

fifth of the estimated full fee was paid in monthly installments during the preparation of preliminary studies. Foundation plans were prepared in the office of a consulting engineer, who was through with his work and ready to take proposals for foundations before the architect had advanced 25 per cent with his general working drawings. At this stage of the performance, the architect was allowed a payment equal to two-fifths of his full percentage fee as applied to foundations, the cost being taken from an itemized budget prepared by the general contractor at the beginning of operations. The steel framing drawings were ready long before the general working plans were completed. The architect was allowed two-fifths of his full percentage fee as applied to structural steel, without waiting for bids. In both cases the architect owed money to engineering specialists which, through this plan, he could pay promptly. It turned out that as the original budget for foundations was short of the final figure of cost, the architect was somewhat underpaid. On the other hand, the budget for structural steel was higher than the final contract price, so in this case the architect was overpaid. Later, when he presented bills for payments due on other important sections of the work, the fees for foundations and steel work were properly adjusted.

The basic reason for the adoption of this plan arose from the knowledge that the old fashioned method of waiting until working plans were finished before reimbursement was due would not be a fair and equitable method, particularly when construction was to be started while working drawings were under way. Some plan providing for payments from time to time had to be devised, and that described seems to have been a step in the right direction. In the plan under discussion, the system was carried far enough to include payments as scale and full size details and specifications were completed for separate sections of the work. One-fifth of the full rate was made applicable to this part of the work. There was thus left only one more fifth to be paid. This, applying more directly to supervision, was therefore logically related to money actually spent on the construction as evidenced by certificates issued to the general contractor. Payment of this remaining one-fifth was the only part of the plan which followed the stereotyped procedure of the profession, which is still in use by many architects. The new system takes care of the architect in case building strikes put a stop to actual construction at a time when, for one reason or another, the owner is anxious to have the architect carry to completion his scale and full size details. This whole plan is particularly advantageous during a period of high prices when work is delayed until a falling market is reached. While this may sound at first reading like a plan designed to safeguard the architect and his organization, it has a subtle value to the owner which may not be at once recognized by the average reader. When an architect of high professional ideals, like the man connected with the operation just described, is in this manner kept supplied with the funds required to run his organization, he responds by supplying the best and most complete detailed drawings which can be made. These drawings are a very real element in the securing of low bids. It is clear that a thoughtful arrangement of progress payments will bring returns in the form of improved service, and that this improved service will result in close estimating on the part of bidders.

## Justification for Higher Charges

Sometimes owners are confused and troubled by learning that the American Institute of Architects has issued a schedule of charges to its members with the statement that these charges are fair and proper for certain classes of work, and that the best interests of the profession are conserved if the members do not charge less than these rates. Many otherwise intelligent business men have made the mistake of referring to the Institute as a kind of union because of this schedule. They utterly fail to understand the professional viewpoint. May I attempt, in a few words, to set them right? Experience has shown that good work cannot be done today for the rates which were commonly charged 30 or 40 years ago. As the art of architecture has grown in this country, the drawings required for construction have trebled or quadrupled in number and quality. What was satisfactory as a set of working plans and details prior to 1890 would not today be acceptable in any first class office. Good draftsmen are very much more numerous, and their salaries have greatly increased. At various gatherings of the Institute the members have compared notes, discussing with frankness their costs and their profits, and it was decreed some time ago that the old rate of 5 per cent was too low for decent work and that the members of the Institute should stand together in a plan to secure a better fee in order that the better grade of work, to which the public had become accustomed, could be continued. In no sense is this mandatory. Public opinion in the Institute is strongly against any price competition among architects. If price competition among architects is permitted to gain a foothold, the high artistic standards of the profession are bound to disappear. Competition on quality of work and on service is welcomed by the Institute. The rates established by the Institute are therefore advisory minimum rates, and any man whose work to the public is worth more than the minimum rate is encouraged by the profession to seek higher fees. This is a very different thing from price competition. It is quality competition carried so far as to ask the public to pay an extra price for superior quality. An owner would never make the mistake of saying that one lawyer is about as good as another, or that all doctors ought to charge the same fees. Yet these same owners are frequently disposed to regard architectural service as a commodity, and to bargain for it. The answer to all this is that a man will generally get his money's worth, and if he wishes to engage a cheap architect he will get a cheap result. If he

wishes to utilize the skill and experience of a distinguished architect, he ought not to express any surprise at learning that he will have to pay more for that skill and experience.

### Contract to Define Specialists' Fields

One very important item which owners and architects alike need to keep in mind is the necessity of a clear understanding as to the terms of the contract. The percentage system of determining fees is still very generally in use, although here and there are found architects who prefer the cost-plus-flat-fee system. If a contract stipulates that the architect shall be paid a percentage of the cost of the finished building, including all built-in material, but excluding all movable furniture and equipment, it may sound clear and simple, but it will still be a subject for further interpretation, and it will probably cause trouble. The best way in the case of a bank problem is to decide what sections of the work would come under the care of an equipment specialist and then to list these items in the contract between architect and owner. This can be done long before the necessity arises of deciding whether an equipment specialist is to be engaged. If he is employed, then the contract clearly defines his duties and all negotiations are simplified. If he is not to be engaged and the owner intends to do a part of this work with no expert help, giving the architect the remainder of the work to do, the list in the contract makes this arrangement simple to carry out. I believe an equipment specialist is a necessity in work of any size or importance. For the sake of harmony, it is best to require that he shall work under the direction of the architect. A great deal of consultation is required between the specialist and the architect, and one of the rather important considerations is to see that the specialist receives his customary fee (usually 10 per cent of the cost of the items installed) and that the architect is reimbursed for his trouble in consultation. Possibly the most satisfactory way is to agree to pay the architect for the actual cost of such conferences, as shown on payroll time cards, plus a proper amount to cover overhead costs. The idea would be to avoid giving profit to both architect and equipment specialist, but to see that the architect is at least reimbursed for his actual costs.

This list has been compiled as a result of experience, and is offered here as a workable basis for determining the scope of the activities of the equipment specialist. His work shall include:

1. All miscellaneous furniture, such as desks, tables, chairs, portable bookcases, files, lockers, etc.
2. Silver, china and all cafeteria equipment, exclusive of what architects call "kitchen equipment."
3. Counter work back of bank screens and in all cages.
4. All cage work (excepting principal counter screen or bank screen).
5. All floor coverings in "working spaces." This refers to spaces occupied by operating clerks, stenographers, bookkeepers, auditors, etc. Public spaces and rooms requiring special design are not included.
6. Lighting fixtures on desks, counters, screens and in cages.
7. Vault equipment.

### Architect and Consulting Engineer

The relation between architect and consulting engineer is a subject deserving a chapter all to itself. Some engineers will agree to do their work for a percentage of the cost. Probably all engineers would much prefer a cost-plus-fee method, simply because the percentage plan works greatly to their disadvantage whenever contracts are let during a falling market. If rental of office space and draftsmen's salaries were reduced in proportion to the reduction in contracts brought about by a falling market or by active competition among contractors, the engineer might come out of the experience with a fair profit. But they are not, and there's the rub. I believe emphatically that the percentage system is illogical and ought to be abolished. Why should an engineer or an architect be penalized for devoting himself enthusiastically (?) to the task of reducing his client's costs? Under the percentage system the architect of high ideals, who takes seriously the professional viewpoint that the client's interests shall be the architect's first thought, is punished for maintaining such an attitude. The less scrupulous architect says, "My client has plenty of money—I should worry."

The architect is the logical directing head of any building operation, but the consulting engineer is becoming more and more a necessity in any project of importance. There are many loose ends in the business agreements which are arranged between owner, architect and engineer, and much good could be accomplished if a simple, workable plan could be devised to fit all cases. Because owners do not think alike it appears to be well nigh impossible to devise one form of fee agreement to fit all cases. The difficulty seems to be due to the reluctance on the part of some owners to accept a cost-plus-fee system or a multiple of the drafting cost—say three times the drafting, one-third of the total to represent overhead and one-third profit. The cautious business man sees, or thinks he sees, a chance for the engineer to engage the highest priced draftsmen and to be indifferent if the drafting costs pile up. What was said previously in advocacy of the cost-plus-fee system for architects is particularly applicable here to engineers. If a bank committee could make prompt decisions it could save money in drafting. The trouble is caused by changes with no satisfactory plan for reimbursing the engineer for extra drafting which is brought about through no fault of his. It seems to me that the cost-plus-fee system for engineers is the only workable scheme worth considering. If an owner is afraid the engineer will take advantage of him, then the entire operation is going to suffer, for the owner will suspect his architect, his

contractor, his equipment specialist, and finally his associates. Let us consider, however, the case where the owner refuses all methods of reimbursement except the percentage method. The engineer, not wishing to lose the work, finally agrees to accept it for, let us say, 5 per cent of the cost of all items coming under his jurisdiction. He figures he can come out with a fair profit if the prevailing high prices do not drop. If a falling market occurs, he is gone. That's a very brief story, but no more need be said to point out the illogical feature of the system. Any method which makes an engineer or an architect regard, with poorly disguised satisfaction, a set of high figures and to look with dismay upon a set of low estimates is ridiculous and ought not be tolerated by business men.

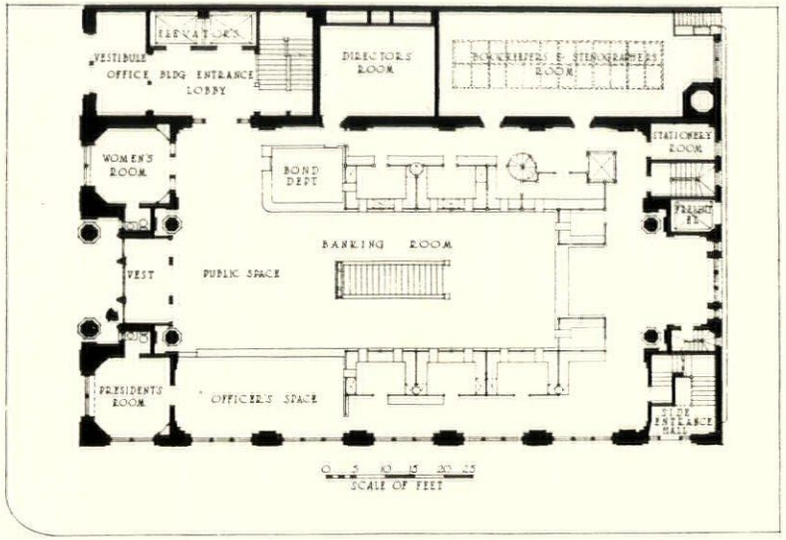
Reference was just made to the advantage to the owner, from every point of view, of prompt decisions and a sportsmanlike determination to stand by them. Backing and filling only make trouble and increase the cost to someone. The important thing to stress is that the owner has a perfect right to take time for his decisions and to change his mind frequently, but he ought to pay for that privilege. The cost-plus-fee system enables him to change his mind and to ask for new drawings and revised specifications without anyone but himself being made to suffer. On the other hand, if he happens to agree with me on the subject of prompt decisions, he will save money, because the work will be prosecuted with the minimum amount of drafting.

## Architect and Economic Phase of Building

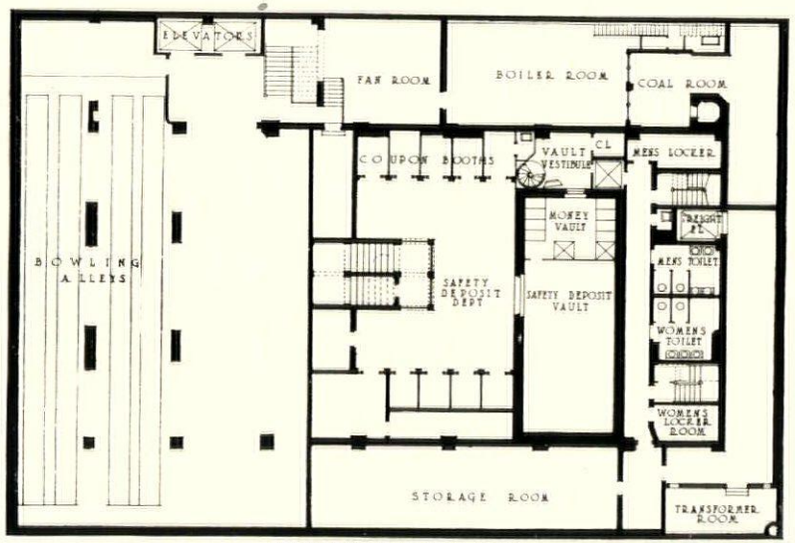
Another weak point in the relations between architect and client lies in the assumption, frequently taken by a client, that the architect need not enter into the economic aspects of a project. It seems to me that this is a fundamentally wrong notion. An architect ought to be engaged before the land is purchased. He should be invited to interest himself in the real estate question as if he were the owner's partner. Furthermore, he should be asked to demonstrate with sketch plans the comparative merits of several available plots. What is the usual procedure? It is to take the advice of a real estate broker, a man whose interest in the subject is primarily to make a sale. He is not equipped to prepare sketches for the purpose of analyzing plots. His knowledge of values, of contracts, of leases and of trade or business migrations is of great importance, but a purchase should not be consummated until the services of an architect have proved whether or not a plot will lay out satisfactorily. Very frequently a venture is unsuccessful because the shape and dimensions of the lot are not suited to an economical distribution of space. Perhaps the proportion of public space, service space, etc., to rentable space is much too large for a good return on the investment. It all too frequently happens that an owner will buy his land first and find out afterward whether he has acted wisely or not. The architect should be instructed in all the economic details of the project. He must know the class of tenants expected for the building, the average rentals paid in the immediate neighborhood, the quality of service supplied for this average rental price, the plan of financing, the plan of amortizing the original expenditure at the end of a term of years, the tax rates on land and building, the probable insurance cost, the estimates for costs of operating, maintenance, repairs, carrying charges, etc., and of course the probable cost of the building. A great deal of this information can be secured without going beyond preliminary sketches. In fact, it would be unwise to proceed with working plans until a statement of net return had been calculated. Whether all this work can be done before purchasing the land, is a question. Whenever such preliminary investigation is possible, it is quite obvious that it would be wise to proceed in that way. If a quick decision on purchase is forced on the owner, then this special study would be valuable after purchase, in order to determine the type and size of building which would make the wisest investment.

In the case of a banking institution which has plenty of money set aside as surplus, upon which to draw for building construction, some of this intensive preliminary study might not be necessary, particularly if the bank prefers to erect a building for its own occupancy with no plan for renting space to the public and no problem of net return on the investment. It very frequently happens, however, that plans are rushed out in a hurry without a careful consideration of the growth of the bank's business and the probable future increase in the size of the banking organization. Ask any architect who has had experience in designing banks, and he will tell you that adequate provision for the future is rarely made, and that vaults are almost always too small.

Lack of space prevents a satisfactory reference to the subject of vault construction. In this period of building costs which are almost prohibitory, it is encouraging to know that a new light has been shed on this subject which heretofore has been looked upon as a mystery. It is now possible to construct the walls, roof and floor of a vault at a very substantial reduction from former prices, with first class protection. In this new system of construction the protection per dollar of cost is much greater than with any type of construction of which I know. It is hoped and expected that similar improvements in door construction may be brought about in the near future. This substantial saving in the cost of vault construction will enable many banks to build larger vaults, thereby making satisfactory provision for future growth in that particular department.




FIRST FLOOR PLAN




BASEMENT FLOOR PLAN

GENERAL EXTERIOR VIEW

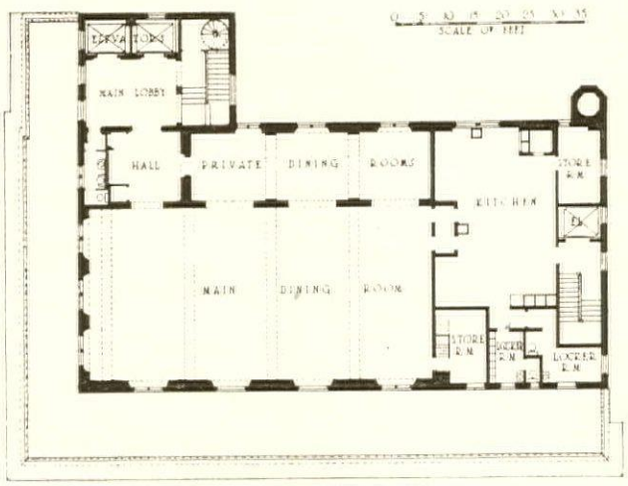
## SECURITY NATIONAL BANK, SHEBOYGAN, WIS.

BRUST & PHILIPP, ARCHITECTS

SECURITY NATIONAL BANK
SHEBOYGAN, WIS.

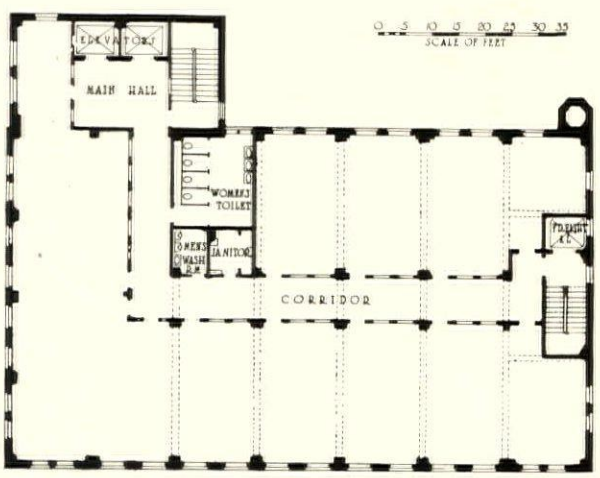
Illustrations on Plates 73 and 74

Type of construction. Fireproof
Exterior materials. Stone and brick
Interior materials. Stone, marble and tile
Windows. Metal sash on two sides; wood frames on street fronts
Counter screens. Bronze and bullet-proof glass
Vault and safe deposit provision. In basement; elevator to cash vault
Special departments provided for bonds, steamship tickets and savings
Type of lighting. Direct
Heating and ventilating. Low pressure steam; washed air fan ventilation
Date of general contract. July, 1921
Total building cost. $682,000
Cubic foot cost. 65⅞ cts.

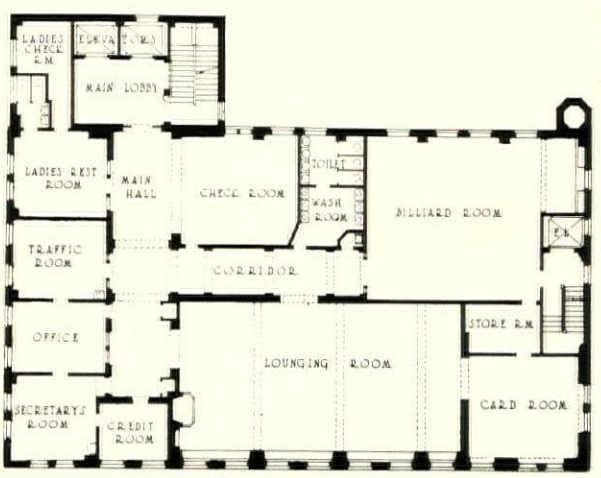



SEVENTH FLOOR PLAN

BANKING ROOM, VIEW TOWARD ENTRANCE




THIRD FLOOR PLAN




SIXTH FLOOR PLAN

SECURITY NATIONAL BANK, SHEBOYGAN, WIS.

BRUST & PHILIPP, ARCHITECTS

BANKING ROOM


VIEW OF ENTRANCE

14TH & PARK ROAD OFFICE

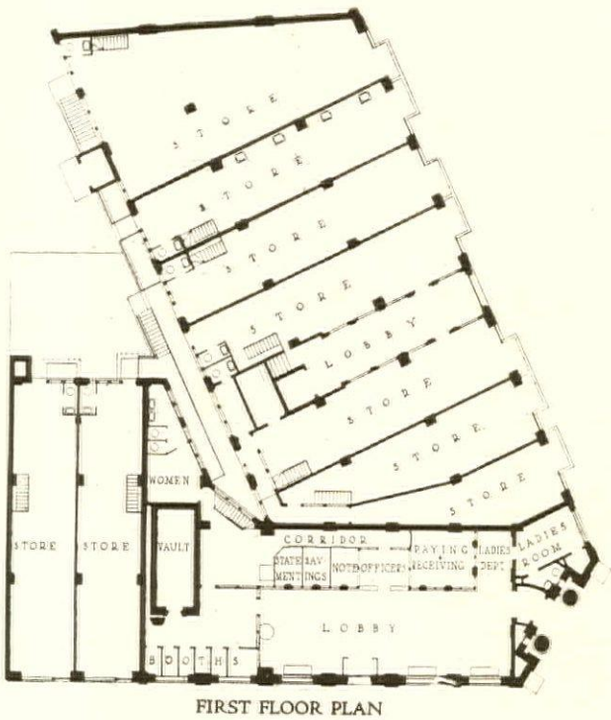
RIGGS NATIONAL BANK, WASHINGTON

GEORGE N. RAY, ARCHITECT

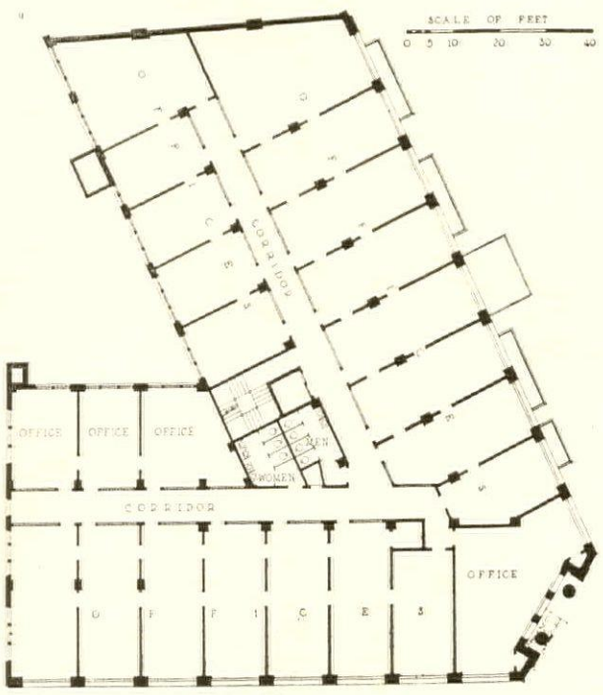
THE RIGGS NATIONAL BANK
14th & PARK ROAD OFFICE
WASHINGTON

Illustration on Plate 75

Type of construction. Fireproof
Exterior materials. Limestone and granite
Interior materials. Marble, bronze and scagliola
Windows. Steel casements
Counter screens. Marble and bronze
Vault and safe deposit provision. Cash and safe deposit vaults
Type of lighting. Direct
Heating. Vapor heat




FIRST FLOOR PLAN




SECOND FLOOR PLAN

GENERAL EXTERIOR VIEW


ENTRANCE DETAIL

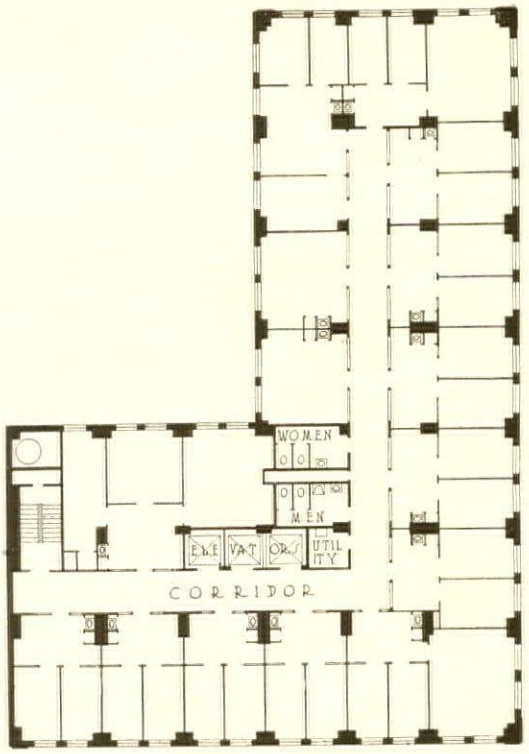
FIRST NATIONAL BANK, WICHITA, KAS.

RICHARDS, McCARTHY & BULFORD, ARCHITECTS

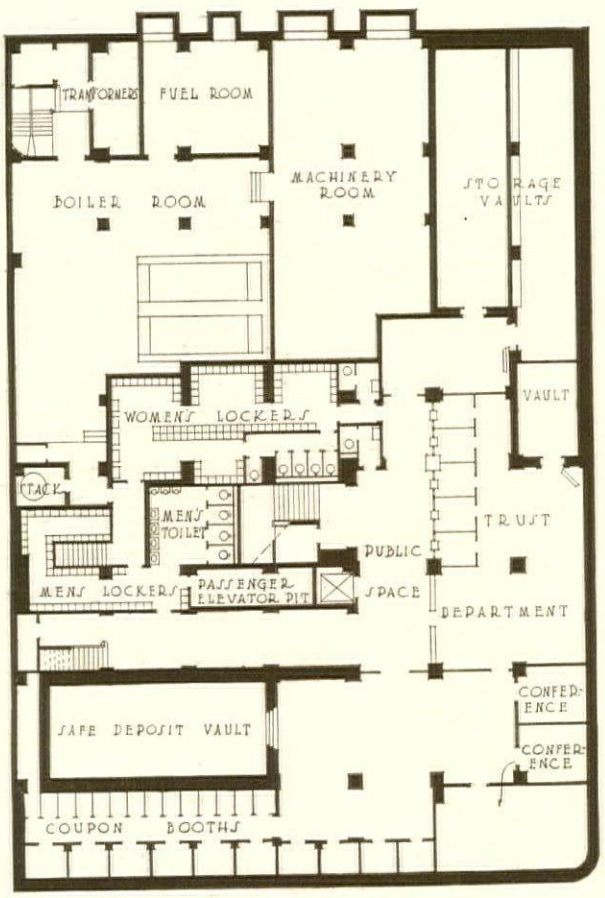
FIRST NATIONAL BANK
WICHITA, KAS.

Illustrations on Plates 76 and 77

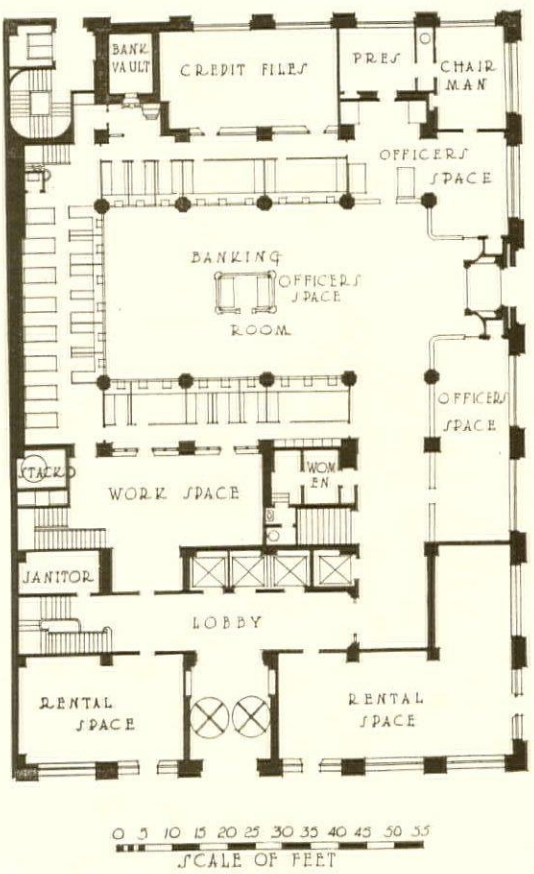
Type of construction. Fireproof
Exterior materials. Granite, limestone, brick and terra cotta
Interior materials. Marble
Windows. Cast iron, bronze finish; wood sash for upper floors
Counter screens. Bronze
Vault and safe deposit provision. Money vault on main floor; safe deposit and storage vaults in basement
Type of lighting. Semi-indirect
Heating and ventilating. Vapor steam; oil fuel; forced ventilation
Date of general contract. May, 1921
Total building cost. $1,482,368
Cubic foot cost. 96 cts.



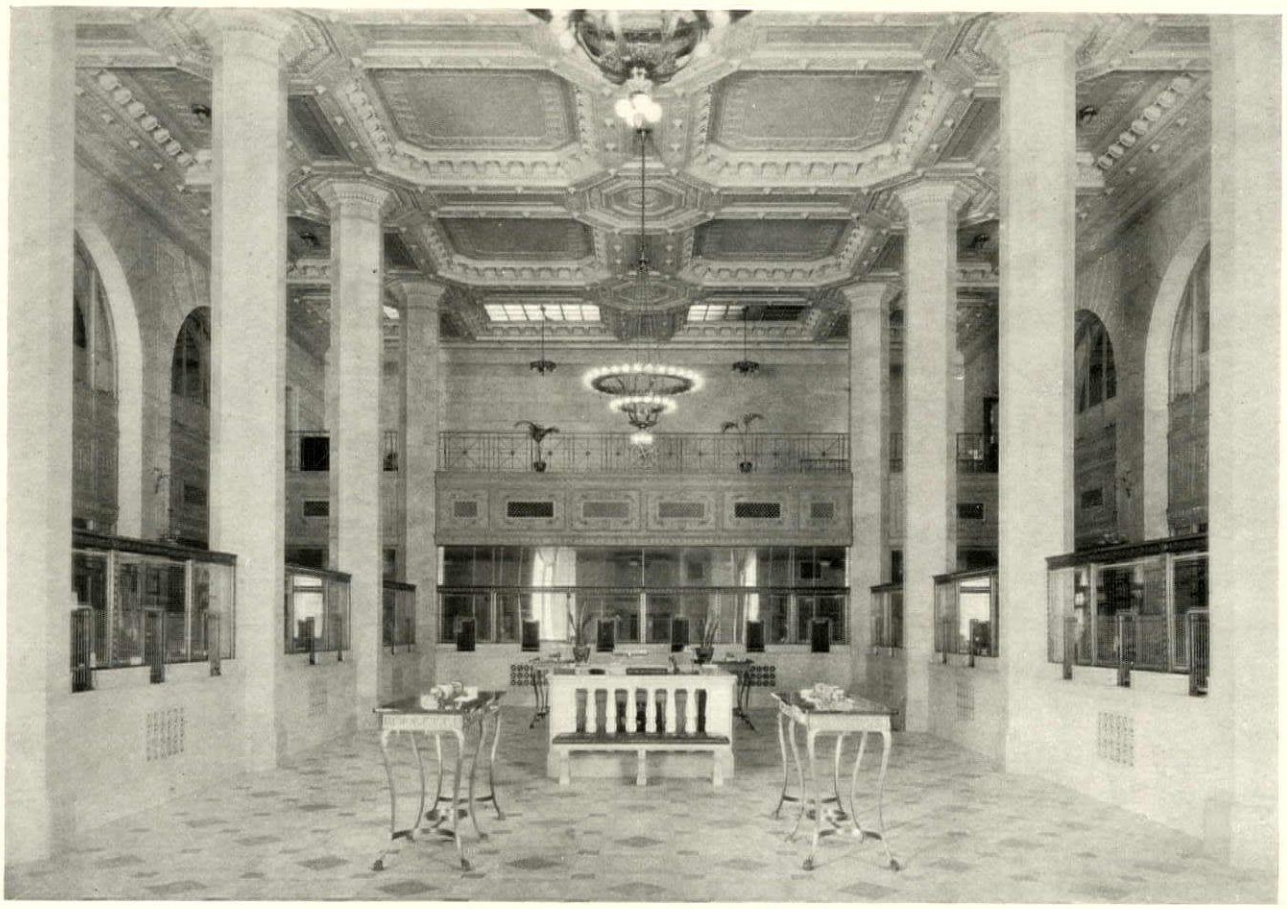

SECOND FLOOR PLAN




BASEMENT FLOOR PLAN




FIRST FLOOR PLAN

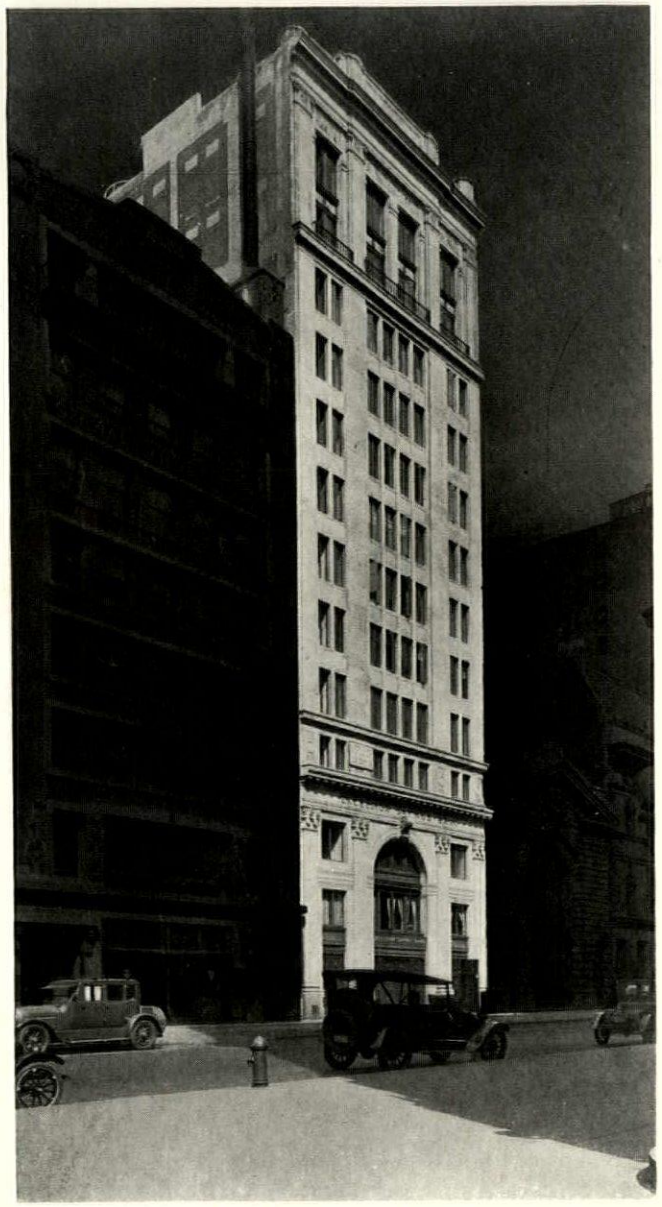


GENERAL VIEW OF BANKING ROOM

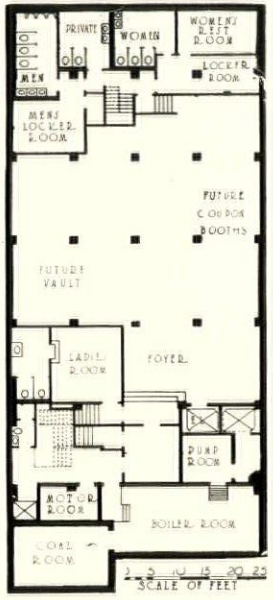
PUBLIC SPACE, LOOKING TOWARD ENTRANCE

FIRST NATIONAL BANK, WICHITA, KAS.

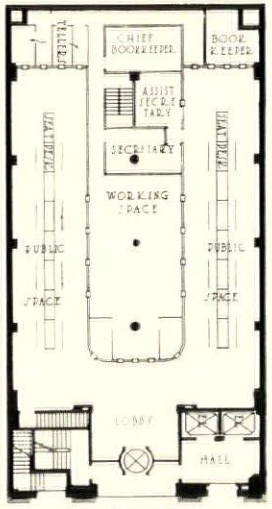
RICHARDS, McCARTHY & BULFORD, ARCHITECTS



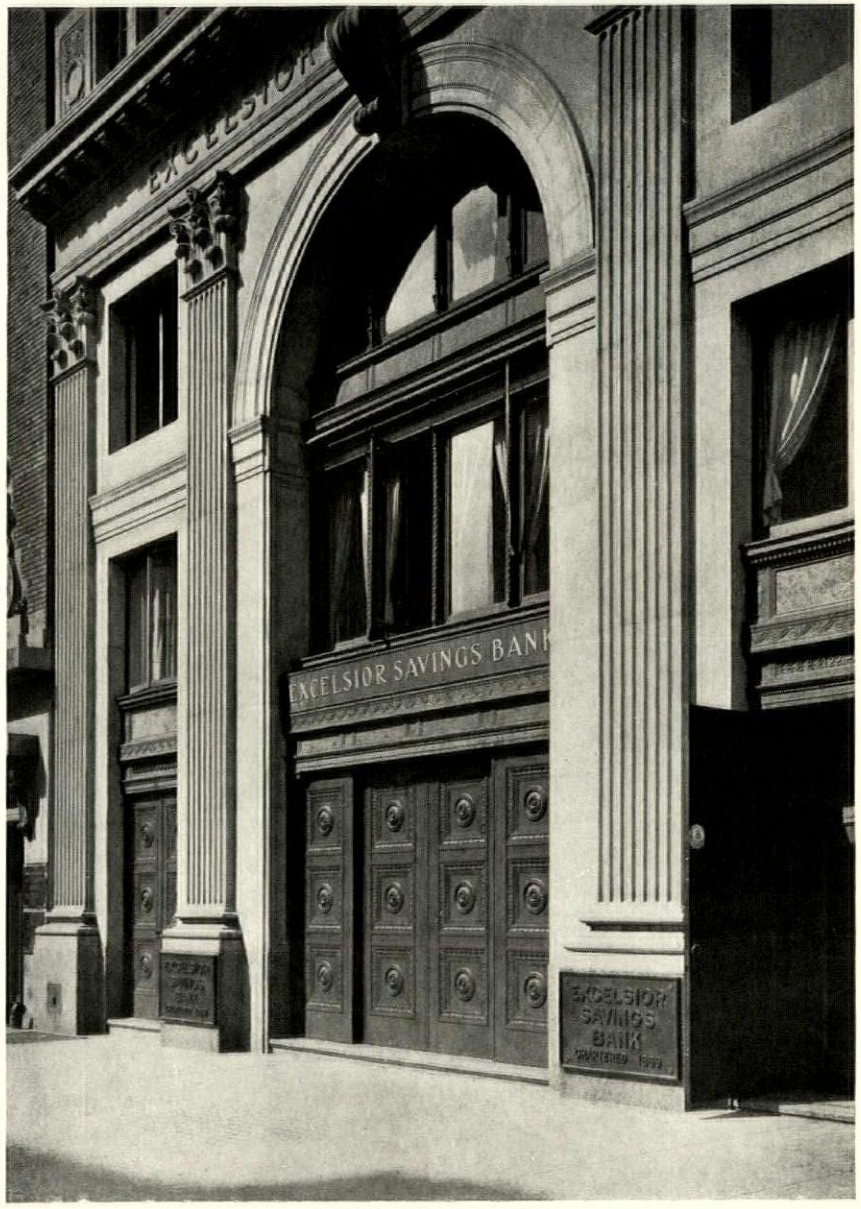
GENERAL EXTERIOR VIEW




BASEMENT




FIRST FLOOR




DETAIL OF ENTRANCE

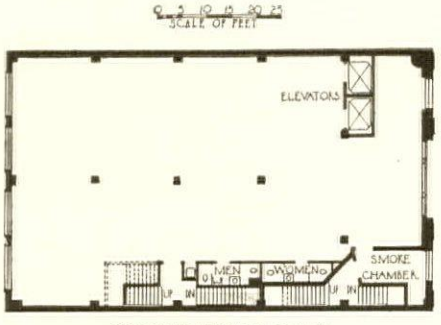
EXCELSIOR SAVINGS BANK, NEW YORK

RANDOLPH H. ALMIROTY, ARCHITECT

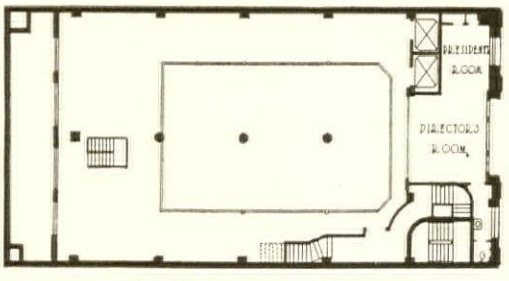
EXCELSIOR SAVINGS BANK
221 WEST 57th STREET, NEW YORK

Illustration on Plate 78

Type of construction. Fireproof
Exterior materials. Limestone with granite base
Interior materials. Imitation stone and marble
Windows. Steel
Counter screens. Bronze, marble and glass
Type of lighting. Direct and indirect
Heating and ventilating. Vacuum system, indirect, for the bank with forced draft suction and exhaust fan
Date of general contract. October, 1921
Total building cost. Approximately $400,000
Cubic foot cost. 55 cts.




SECOND FLOOR PLAN




MEZZANINE FLOOR PLAN

# Economic Considerations in Bank Planning

*By* C. STANLEY TAYLOR

IT is an interesting fact, proved by many instances, that the vision of the skilled bank architect in creating a building to house the business of a bank is more accurate and comprehensive than that of the bank officials and directors. This condition applies not alone to the development of structural efficiency of purpose but to the anticipation of growth or decrease of the bank's business. Significant — almost startling — is the fact that fully 70 per cent of the bank buildings constructed in the United States since 1912 have proved definitely inadequate and inefficient of purpose. This condition may be partially due to the unexpected increase in the volume of banking business in this country, but primarily it is due to past shortsightedness on the part of bank officials who sometimes fail to develop, in relation to their own business, that quality which is recognized and financed in others — business imagination.

Two decades ago American banks were functioning in a limited manner compared with their part in the intricate financial structure which today constitutes the nerve system and center of the business world. At that time new bank buildings involved comparatively simple problems of design and construction. Unfortunately, the vast ramifications and growth of the banking business have not been met by bankers with a concurrent realization of the increased complexity of the modern bank's housing problem. Where this has been done the credit is primarily due to the vision of an architect. Where there has been failure it is usually chargeable to the myopic perspective of the banker,—often against the architect's advice.

## Bank or Office Building?

The location of a new bank building is determined primarily by the requirements of its clientele, present and prospective, rather than influenced by investment factors such as land values. The bank must be located in a given business center, which by its very nature usually involves high land valuations. In many instances, therefore, the first problem which must be met is a decision as to whether the building shall be wholly devoted to purposes of the bank's business or planned to carry a varying proportion of rentable space. Is it to be primarily a bank structure or a bank and office building combined? In this decision these different factors are involved:

(a) Land cost and potential increment, which determine value of realty investment.

(b) Practicability of design as influenced by dimensions of the building site.

(c) Market value and demand for rentable space in the selected locality.

(d) Possibility of grouping in the bank building tenants who will constitute or attract desirable clients and depositors for the bank.

(e) Provision of elasticity of space to care for expansion or contraction of the bank's business.

(f) Impression to be made upon the general public by size and character of the building.

It may be expected, as a general rule, that where land values are low —probably under $200 per front foot—the obvious procedure is to construct a building for banking purposes alone. In the congested business areas of larger cities, however, where land values are high, there is involved the economic problem of the relationship of land value and building cost. Here we might arrive at the obvious conclusion that if the land value is high it is necessary to construct a building having sufficient rentable space to assist materially in carrying overhead cost and ultimately amortizing the added investment necessary to meet this economic demand of high land costs. A more careful consideration of this question demonstrates the peculiar individuality of each bank building project and the importance of other factors indicated herewith.

As this article is being written two large bank structures are being erected in the central business district of New York where land values are unusually high. One of these buildings contains approximately ten stories of rentable commercial space, while the other is being erected without any rentable space. The reason for this difference involves primarily the practicability of lot sizes. One of the buildings is being constructed on a lot of ample size and dimensions to allow the proper type of banking rooms, together with the necessary public approach and elevators for the office building section of this structure. In considering the plans for the other building, it was found that the lot was of such dimensions that the necessary allowance of from 16 to 20 feet in width for the public entrance hall and public elevators would so limit the size of the main banking rooms as to detract from their purpose and efficiency. It was decided, therefore, that in spite of high land cost, it was necessary to adhere strictly to the original purpose of the building as a bank, particularly when it was found on careful investigation that the value of rentable space which might be provided was not great enough to justify interference with the requirements of the bank. This brings out the important fact that the original purpose of the building as a permanent home for a bank should never be forgotten, and that its requirements should come before all others.

It is fairly obvious (but not always practiced) that before making the final decision to invest in a large building containing rentable space a careful appraisal should be made by experts as to the existing rental value and the demand for the space which

is to be offered in a particular locality. A study should also be made by these experts in building management covering maintenance costs and other factors entering into an investment of this nature. It is highly desirable, but again not always done, that such an investment be placed on a paying basis. Some bankers have found it wise to require only that this added space shall pay a fair proportion of the overhead charge. In cases of this type it is assumed that the prestige benefit of a larger building and the collective tenancy advantages will offset or pay interest on the investment.

### Providing for a Bank's Enlargement

A valuable consideration is that the provision of rentable floors above the banking room allows one to provide for the future expansion requirements of the bank's own business. This is one practical solution of the problem of elasticity (which is discussed in detail in later paragraphs) and provides a means by which additional space for future requirements will carry its own overhead cost until such time as the growth of the bank's business may warrant the taking over of additional space.

In the planning of a building of this type it is highly important that careful consideration be given to the arrangement of elevators and service features so that additional portions of the building may be taken over for use by the bank without alterations or inconvenience in interior arrangement. Here we may define a basic rule which should apply to every new bank building, and incidentally call attention to the fact that this rule is transgressed more often in the development of new banking quarters than any other principle of bank planning. The history of bank buildings has proved that under the changed economic conditions of the last few years bankers have been too conservative in estimating or admitting the possibility of growth in their own business. We realize that the next few years may not show the amazing growth and expansion of the banking business which characterized the war and post-war periods. In fact, some of the larger banks are finding it possible to reduce space requirements by increased efficiency. The normal growth of the banking business in America averages 6 per cent annually. Aggressive institutions, operating on well defined policies of expansion, will enjoy a larger proportion of this average increase. The advice here given on elasticity of plan principally anticipates growth, but it must be remembered that the elastic plan will make it easy to turn waste area into paying space if the bank's space requirements decrease. It is advisable, therefore, that in planning the new bank all floors and communications should be laid out so that departments may be extended, shifted or curtailed. Elevators should be arranged so that they may ultimately serve either the public or the bank's private uses.

The natural attitude of the average banker is that with the knowledge he has of his own business he is quite capable of indicating the interior layout and the inter-relationship of all departments. A seemingly paradoxical statement, but one which is borne out by examination, is that the skilled bank architect knows more about laying out the bank than does the banker himself. The reason for this is simple and logical. The banker is too close to his own business to have profited by the mistakes of others or to have examined extensively the successful factors which have contributed to sound planning of other institutions. Planning is the architect's business, just as financing is the banker's business. Industry and commerce seek the banker's advice and follow his counsel in the solution of financial problems. Similarly, the wise banker will seek and follow the advice of experienced bank architects in the development of buildings.

Bankers generally have realized the value of a bank building so designed that it will impress upon the public mind a sense of stability and safe guardianship of the money and business interests of clients and depositors. This point needs little stressing as it has been the experience of practically every bank that, following the construction of impressive banking quarters, a definite growth in business has resulted. There are one or two points which may be made in this connection, however. In the small town or city it is quite possible to lay too much emphasis on impression value and to build a type of building which is entirely out of scale with the town. It is an excellent idea to anticipate the growth of any community by setting the pace with the proper type of bank building, in fact in some instances a definite portion of industrial and community growth may be traced to the farsightedness of bankers not only in their attitude toward the financing of new local ventures but in the demonstration of faith in the future of a community as expressed through the design of banking quarters. One point in regard to impression value may be noted in connection with buildings which are to contain large areas of rentable space as well as banking quarters. It is important that in the design of this building the importance of the banking quarters be strongly emphasized, so that the bank will not have merely the appearance of a tenant in a rented portion of the building. This cannot be gained through the name of the building alone but must be definitely expressed in its design.

In closing, we wish again to stress the important factor of elasticity. Hundreds of banks within the last few years have found it necessary to purchase additional land, at three or four times the cost of a few years previous, or to extend through alterations into adjoining buildings to meet an overcrowded and inefficient condition in their business quarters because of a lack of foresight at the time of building new quarters only a few years before. Many instances of inconvenience, expense and business curtailment might be cited because of disregard of some of the points brought out here. It is to be hoped that bankers will learn within the near future to approach the problem of erecting new buildings from an open minded and comprehensive viewpoint.

# The Design of Bank Screens and Furniture

By CHARLES A. HOLMES, *of Holmes & Winslow, Architects, New York*

BANKING screens of the present day are almost always of much simpler design than of a few years ago. Ten or 15 years earlier even the best architects seemed to think that more bronze in a screen increased its beauty. Perhaps one reason for designing the cumbersome looking screens of that period was to carry the idea of substantial protection for the bank's cash behind the screen. At that time also it was the custom, in almost general use, to have the entire space between the counter and the cornice filled with a bronze grille. Screens of that period more resembled those of a jail than those in an inviting place for the public. Then, too, it seemed the vogue to place lights along the tops of the screens which perhaps did add something to the general lighting of the rooms, but these lights did not add particularly to the light thrown upon the face of the man in the public space so as to be readily seen by the teller, which is more the aim of the present-day lighting schemes.

The designer is restricted somewhat by the fact that the spacing of the pilasters in every case is somewhat a settled question, owing to the length of the practical cage. The height of a banking screen should be, in the writer's judgment, not under 7 feet, 3 inches nor over 7 feet, 6 inches—not under 7 feet, 3 inches because of the fact that almost every screen has one or more doors, and it will be found that with a well proportioned cornice it will just about allow for a proper door height; and not over 7 feet, 6 inches for the reason that this height answers every utilitarian purpose and still is the proper proportionate height for any banking room.

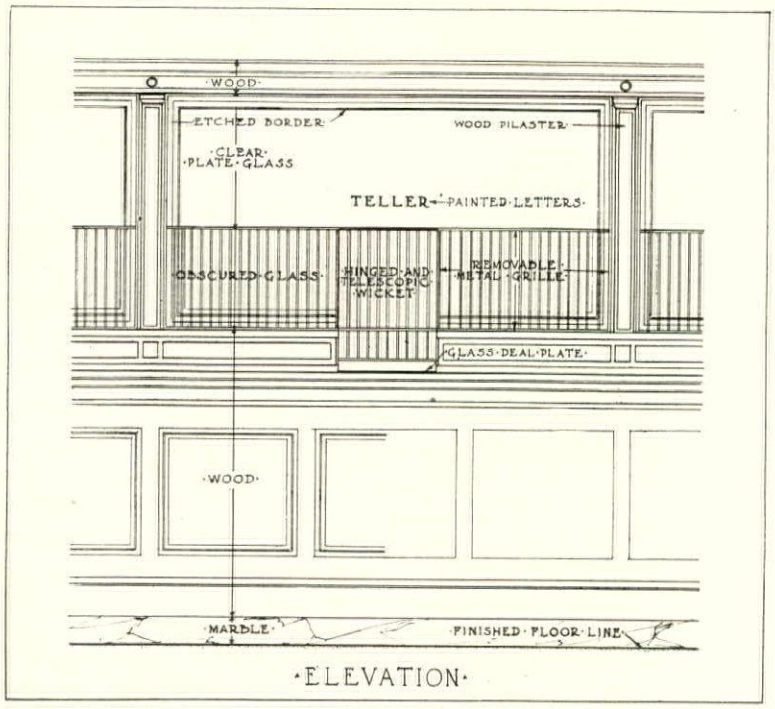
There are illustrated here several general types of banking screens, and all of them are of types either susceptible of simplification or further enrichment. They are all practical, and are screens that have been built and are giving service in present-day banks. The reader will note that every screen has a ledge on the public space side. This is very essential and has another reason for existence than use as an elbow resting place, namely a space to write upon while standing in line to be waited upon by the teller. In most instances it is made 5 or 6 inches wide, but in some savings institutions it is made 8 or 9 inches in width, although 7 or 8 inches is amply sufficient. A wood screen needs no masonry backing. Masonry, which may be of brick or preferably hollow tile 3 or 4 inches in thickness, is required, however, for marble or marble and bronze screens, and extends only to the ledge height.

A wood screen (unless it be of the very cheapest variety) should have ½- to ¾-inch iron rods securely fastened to the floor and extending through the pilasters (one to each pilaster) up to the cornice and there be arranged with nuts which when tightened up give strength and rigidity to the screen. A similar rod is also practical for a marble and bronze screen, but is not applicable to the all-marble screen. This demands something stronger, and a light 2- or 3-inch steel channel frame is necessary. This would have a channel member in the cornice and be connected with the channel in each pilaster. The marble cornice is then connected to and stiffened by this upper channel. In the case of the all-marble screen or the marble and bronze screen the iron rods or channel frames should be encased by the masonry backing.

The lower member of the base of a wood screen should be of marble or similar material so as not to show evidence of mopping. Wicket openings are made either "high" or "low." When "high" they are simply made hinged and arranged with a proper locking device. Some banks prefer the wickets "high," or 5 or 6 inches above the counter, while just as many other banks have a preference for the "low" wickets, that is where the glass deal plates are sunk into the counter, in which event they should continue from within a half-inch or so of the front edge of the ledge and extend back to the rear edge of the working counter. Half-inch plate glass with green or black felt underneath it is a practical arrangement, although some bankers prefer a black hone finish glass which affords relief for the teller's eyes. When "low" wickets are used they may be made telescopic and hinged or simply hinged. They should be arranged, however, so that a good-sized bag of coins could be taken through readily.

The practical width of a wicket we have found to be about 14 inches, excepting the wicket for new accounts in a savings bank, which must necessarily be much wider, varying in width anywhere from 2 feet to 4 or 5 feet, depending upon the size and character of the bank. The top of no wicket should be so low as to require the customer to stoop perceptibly to talk to the teller, and it is just as important that there be no unnecessary obstructions which would prevent the teller's having a good view of the depositor's face.

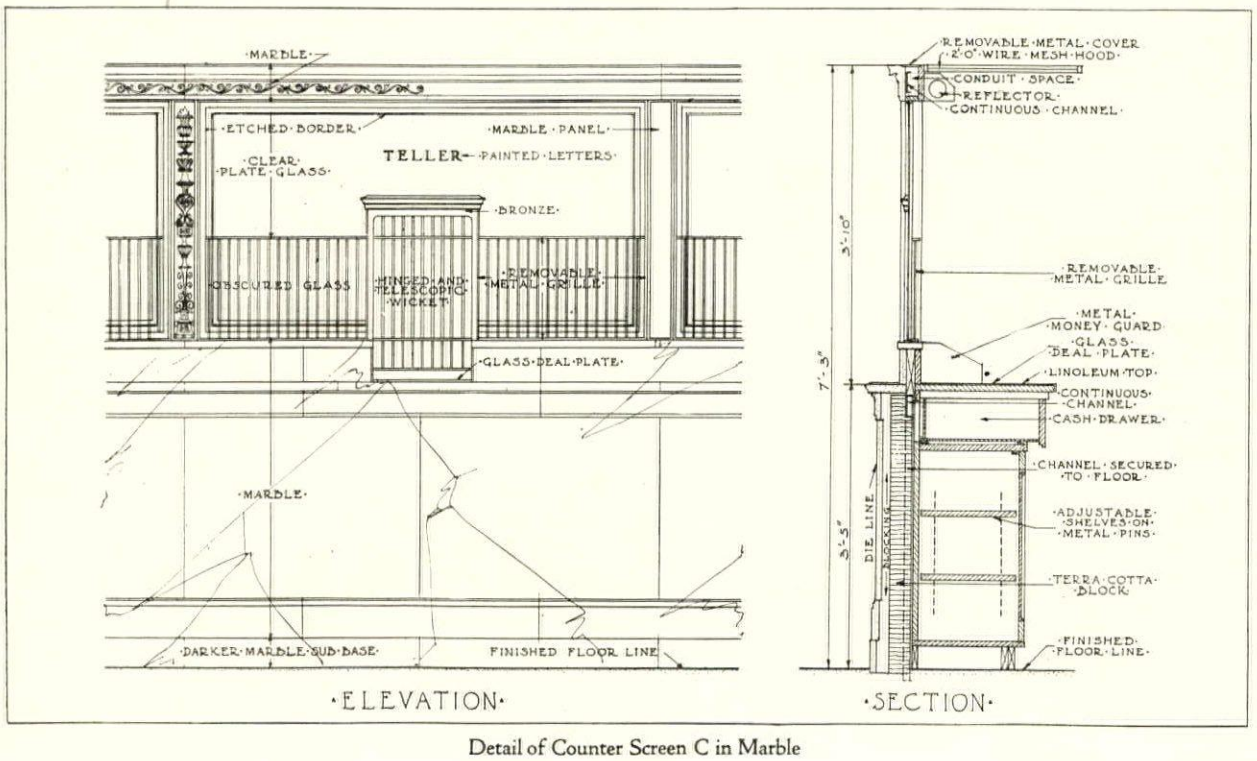
The grille back of the glass is for protection only, and would prevent anyone from readily clearing the counter of cash should the glass be broken. This grille should be made pivoted so that the glass may be easily cleaned. It used to be more the custom to have the glass in the screen obscure all over, which gave the screen too much of a "blank wall" appearance. At the present time some banks wish to have the glass clear all over, with only an etched border, but this in turn gives the working force no privacy. The happy medium is to have the glass obscure up to the top of the protecting grille, and the balance clear. The etched border adds a trifle to the design.




Detail of Counter Screen A in Wood

As the wicket openings in the glass (or "cut outs" as the glass men designate them) tend to weaken the sheets, it is permissible to have them made in three pieces, either with ground edges at the junctions, or small bronze members may be introduced without detracting from the design of the screen. This perceptibly lowers the cost of the glass, and should one of the pieces break later on a large saving is effected through not requiring the larger sheet extending from pilaster to pilaster across the screen.

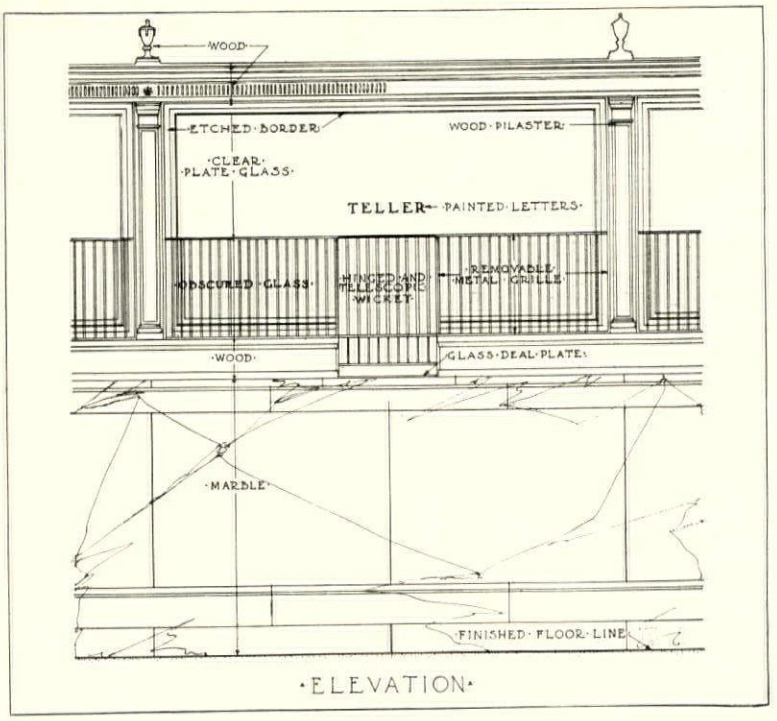
The designation of the wicket is an important item, and there are various ways of arranging it, the simplest being in gold lettering with black edging just a few inches over the top of the wicket opening; or it may be in bronze, placed in the frame of the wicket, as shown on screen "D." There is one objection to this in that it does not stand out clearly. The designation of a wicket should be easily discernible, and yet not so large as to disrupt the balance of design of the screen. Again, it may be in bronze and placed in the cornice immediately over the wicket, as in most of the earlier banks, yet this seems to be objectionable, owing to the fact that it is too much above the eye line. Or it may be an illuminated sign (which naturally means a sign of glass with architectural letters having hidden lights behind it) placed either in the cornice of the wicket frame or in the main cornice of the screen and immediately over the wicket. And again, there is an illuminated wicket sign that is attached to the cornice of the screen and projects out at right angles to the screen, but this latter arrangement seems to be efficient only in a long, not too well lighted banking room. Where the banking room is very well lighted by daylight, from either side windows or skylights, as it ordinarily should be, the illuminated signs may be regarded as unnecessary. Where there is a lack of good daylight, however, their use should be recommended as adding much to the bank's convenience.




Detail of Counter Screen C in Marble

The backing of the screen, and by this is meant the cupboards below the counters, should be kept as simple as possible. Each teller of course has a cash drawer, which varies in depth with the requirements and amount of business of the bank, but the usual depth is about 6 inches, and it should be arranged with a removable cash tray, the tray having approximately 10 spaces for different denominations of bills. The cash drawer may also be arranged at either the left or right of the teller, at the teller's preference. It must be hung on extension (and preferably ball-bearing) hangers.

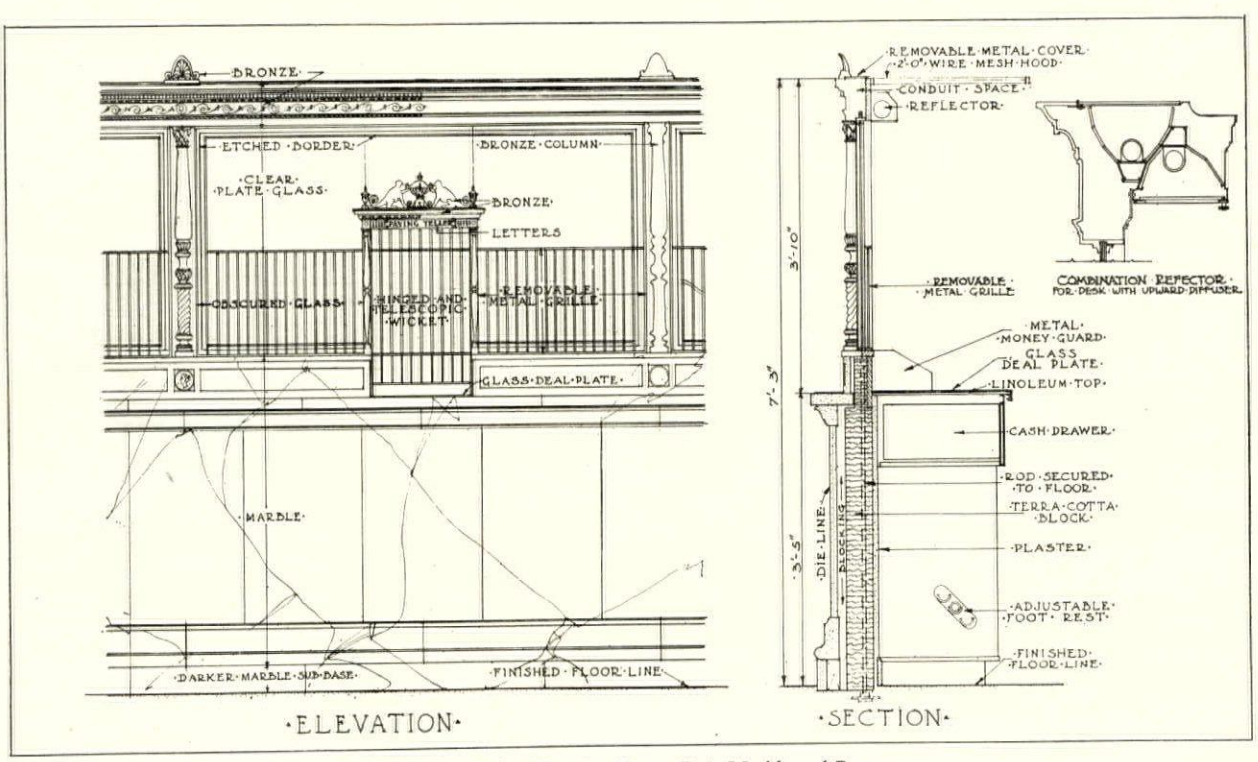
Very often there is a clear space under the counter which is left in that manner to accommodate either safe cabinets for books or portable omnibuses which would contain files, etc. In some cases the omnibuses have cash drawers incorporated in their construction, the idea being that at the close of the day's work the omnibuses with files, etc., may be wheeled into the vault for the night, thus saving considerable work.



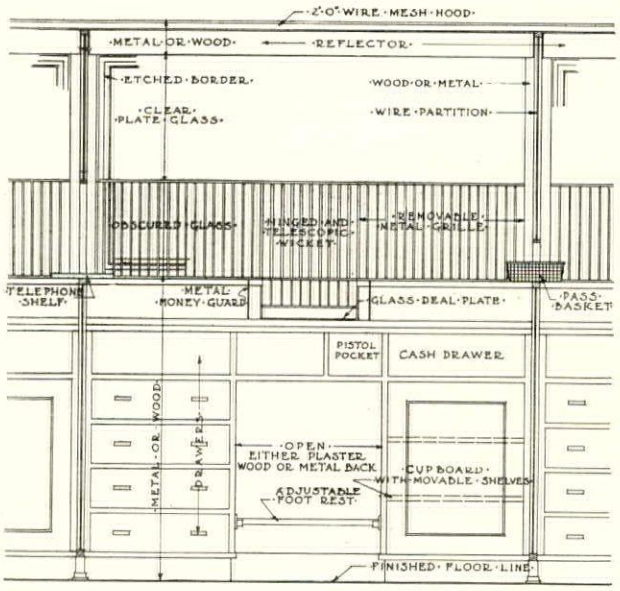

Detail of Counter Screen B in Marble and Wood

The practical height from the floor to the top of the finished counter should be approximately 41 inches, and the width 22 inches. Conduits for fan, telephone and electric alarm systems, etc., should be run around the back of the screen or buried in the floor and arranged to have their outlets at the open spaces underneath the wicket openings.

Cages are made of either $\frac{1}{8}$-inch or $\frac{3}{16}$-inch woven wire, and may be either bronze, steel plated bronze, or steel painted or steel baked enamel finish, according to the quality desired. The gates to the cages should be hung on ball-bearing hangers and arranged to close by either gravity or door check. Some bankers desire the paying and receiving cages roofed over with similar cage work, but we believe the 2-foot hood sufficient and satisfactory in most cases. The lighting of the counter is best attained by the use of reflectors extending the full length of the screen, the reflectors having ground glass at the




Detail of Counter Screen D in Marble and Bronze




Detail of Rear of a Counter Screen

bottom to soften and diffuse the light. The control of this lighting may be either by cords or chains directly back of the pilasters (in the corners of the cages) and arranged so that each cage will light up separately.

In illustration "D" is shown one practical method of combination lighting, whereby the banking room may be lighted indirectly from the top of the screen; also adjacent thereto is the downward reflector for the counter. It is not always practical to light every banking room by means of this reflector in the top of the cornice, unless one is satisfied with shadows, although in a great many instances it is successfully used.

In the illustration here are shown two practical though inexpensive check desks, one being for a center public space and one for a check desk against the wall. Both should be arranged with glass tops, slip compartments (usually 5 or 6 to a desk), combination calendar cases, pen racks and ink-well holders, also with waste paper receptacles. Reflector lighting for both types of desks should also be arranged for.

As to materials for these fittings, it is almost wholly a matter of taste, particularly as regards the marble, since there are so many varieties to choose from. Personally, the writer prefers a marble quiet in tone, but with just enough veining to give it character. Of course the general color scheme of the banking room should be taken into consideration. In selecting the marble for the screen, one should be selected that does not have to have too much wax inserted in the veining, as time not only dulls where the waxing exists, but very often the waxing falls out.

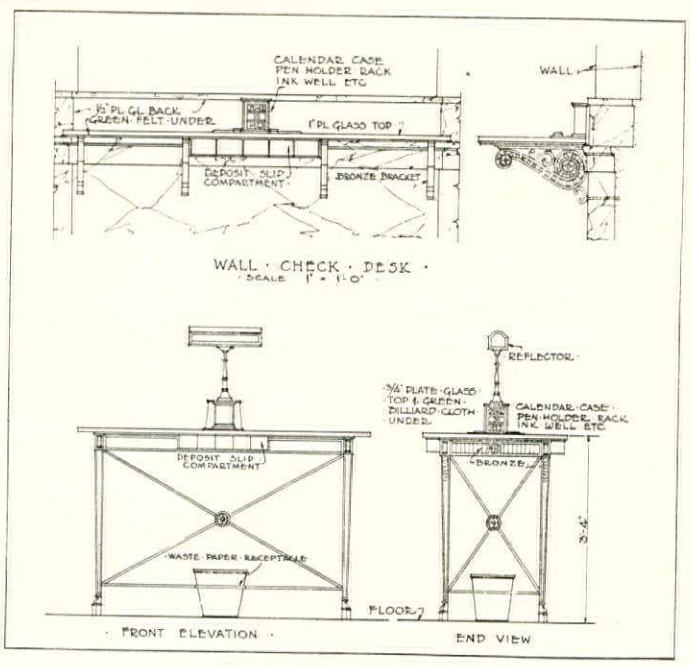
Mahogany or birch (and even quartered oak) may be used for the entire wood screen, or for that portion of screen which is wood above the ledge. The most satisfactory material for the upper portion of the screen is bronze, although white metal and even iron are sometimes used. If use is made of iron, it is well to pick out the relief in a modest color; if bronze, the ornamental portions should be cast, while the plain portions could be of heavy gauge drawn bronze which is just as satisfactory and fully as lasting.

Now as regards costs, these prices are naturally approximate, but yet near enough to give the designer or architect good working figures. The cost is arranged per lineal foot and includes backing, marble, bronze or wood, glass, grilles, reflectors, wire hoods, counters, necessary models, etc.

Scheme A $75 per lineal foot
" B 85 " " "
" C 126 " " "
" D 145 " " "

If the backing of the screen, such as counters, cupboards, etc., is desired in metal, add $4 per lineal foot, as the basis of these estimates is for counters of birch.

For banking furniture there has been reserved the smallest part of this article, yet it is indeed important. It has been found, however, that for banks costing up to $100,000, and even including those up to approximately $175,000, it is quite a hard matter to keep the client from buying stock furniture almost throughout. Yet there are purchasable so-called "stock" desks, directors' rooms table and chairs, that while "stock" yet are of an extremely high grade character both as to design and construction. Naturally, it makes the bank more distinctive if it is possible to keep the furniture in complete harmony with the balance of the building, that is from the personal design of the architect or through his selection of furniture designed and constructed by specialists in that class of work. The cost of the furniture is generally at the most but a small item in comparison with the building's total cost.




Details of Two Check Desks

# Materials for Bank Interiors

By F. A. FAIRBROTHER
*of the office of Albert Kahn, Architect, Detroit*

IT will be the endeavor in these paragraphs to discuss the different kinds of materials most commonly used in the interiors of modern banks and banking rooms, and to consider them both from the standpoint of their fitness for use as materials of beauty, and thus having distinct parts as elements of the design, and from that of their suitability as aids to comfort and convenience.

We find that modern banks are very seldom housed in cheap looking buildings, or perhaps it should be said that enough money is usually spent on a bank's quarters to make it possible to secure results that are not commonplace. Addison in one of his numbers of the "Spectator" has a pleasing allegory in which he tells of visiting in a dream the great hall of state of the fair queen known as "Publick Credit," seated on a throne of gold and attended by a retinue of secretaries and others. Heaped about were great piles of gold and silver. This queen was most susceptible to sudden changes of popular favor, and changed color and countenance with each wave of unrest in the money marts; the piles of gold and silver turned to paper, and her retinue and surroundings became dismal indeed at periods of depression. Such a fate might be prophesied for the bank which occupies shabby or old fashioned premises.

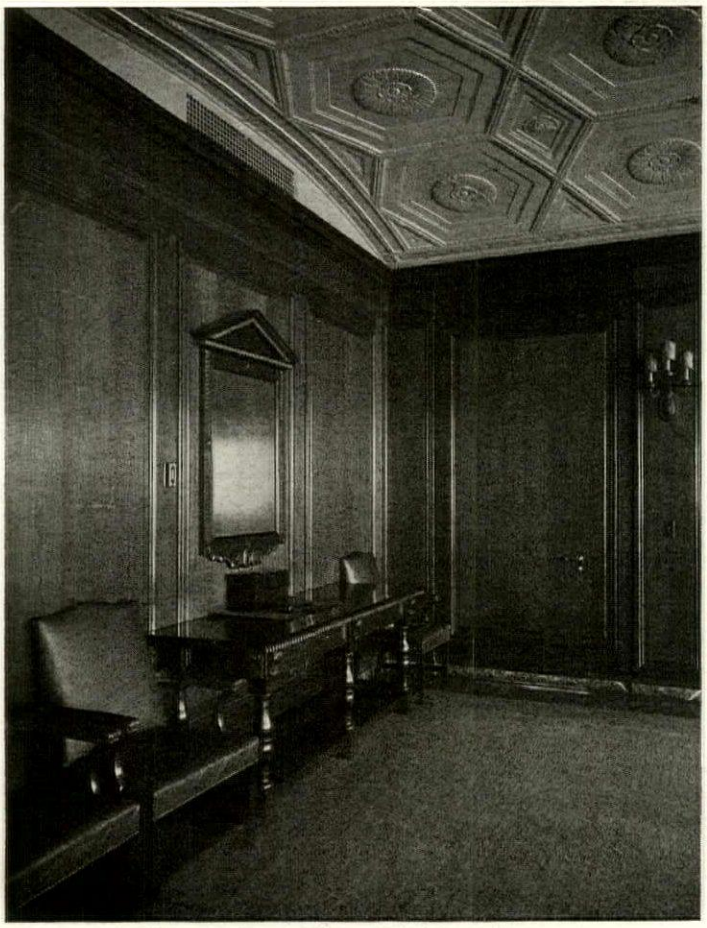
Banking Room, New York Trust Co., New York
Walker & Gillette, Architects
Richly colored marbles and painted ceiling contrasted with light marble walls

For the walls of a banking room of any pretensions, which implies a reasonable floor area and height, it is natural to consider first marble or stone because of their appearance of strength and the pleasing textures which may be obtained by their use. If care is exercised in the selection of the marble, and if too much elaborate veining is not allowed to confuse the surface and destroy its dignity, it seems that no better material can be found. It is durable without a doubt, its color can be so selected that the surfaces are not tiresome to look at, and it can be kept clean without great difficulty. A fine hone finish will lessen the shine and glints of light which are present where the surface is polished and will give a soft, even wall surface which is pleasing to the eye.

Where marbles of rich veining and pronounced color are used they should be placed with care and their use made to count strongly in the design. In the banking room of the New York Trust Company on Broadway the richly veined columns of reddish purple with bronze capitals contrast strongly with the simpler colored marble used on the walls. A highly veined and colored marble on the walls would have impaired the appearance of the room.

Stone as distinguished from marble is more seldom used, but where it is found it would suggest itself as suitable for pilasters, columns and such structural elements, rather than solely for wainscots. Stone where used on interior walls does not have the advantage of weathering as on the exterior, and it would therefore seem desirable to select some variety which has a pleasing texture to begin with. This would limit the choice somewhat, and would point to such types as travertine which has a very pleasing texture in itself, and while well suited for interiors is not so suitable for exterior use in climates as severe or smoke-laden as ours. If large surfaces of ashlar are used, limestone is quite suitable, it being possible if desired to procure some qualities which have an interesting texture produced by faults in the structure of the stone. Combinations of marble or stone with plaster will be necessary where the cost of covering the entire walls with marble or stone would be prohibitive.

The use of wood for banking room walls suggests smaller and lower rooms, excepting where it might be used as a wainscot, in the more private parts of the bank, such as the walls of the working spaces back of counter screens and cages, in the directors' room, women's room, or such accessory portions. Plaster walls when lined off with artificial joints, to represent stone, give an impression of strength, and while it is quite certain that they



Directors' Room, First National Bank, Detroit
Albert Kahn, Architect
American walnut panels and modeled plaster ceiling

deceive no one, they offer an inexpensive means of obtaining a desirable effect. To preserve the illusion at all it will be necessary to have occasional "blocks" of the material painted with slightly different shades.

Interesting results can be obtained by the use of tiles. Their use implies some degree of color in the design, but if due restraint is observed in the treatment of the walls the necessary effect of dignity may be preserved. The use of tile suggests somewhat rough and picturesque surfaces, and for this reason it would seem to lack in large measure the proper qualifications for giving the dignified effect which banking rooms must have.

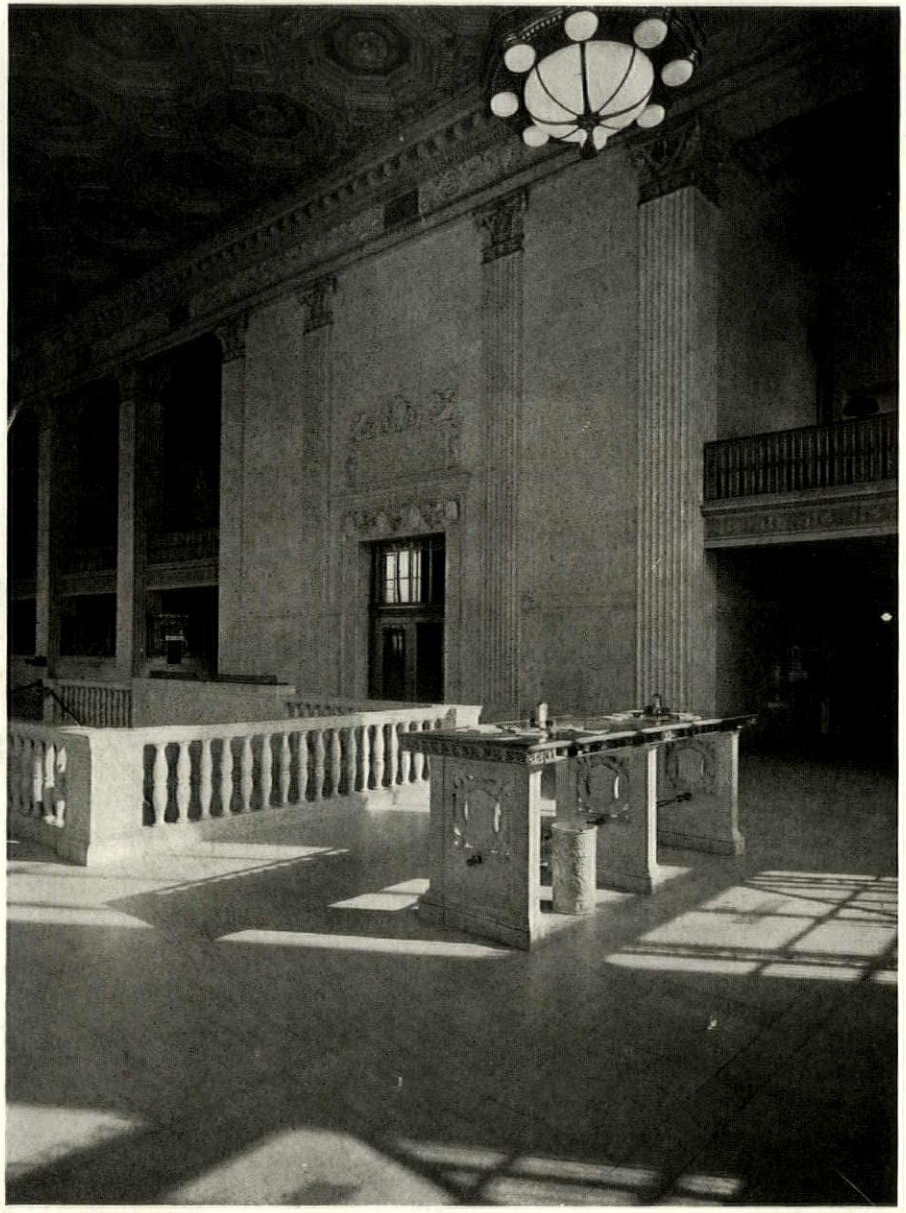
The ceiling is such an important part of the design of the banking room that it usually receives as much care in its treatment as the side walls or counter screens. The choice of materials for the ceiling is so limited that we seldom think of anything but plaster, and often the degree of opulence to be exhibited in the design of the banking room may be measured by the amount of ornament which is used. The plaster ceiling can be made very rich in color and elaborate in ornament, as in the First National Bank in Detroit or the New York Trust Company already mentioned, and still be in harmony with rather severe wall treatment. The ceiling of the New York Trust Company is of plaster painted a light wood color with high coloring in the panels and rosettes.

Should glass, however, be used in the ceiling, the amount of ornament and color in the surface around the glass would probably be lessened. If the plan is such that the banking room is lighted from overhead, as would almost always be necessary for an individual bank on an inside lot, a rather extensive area of glass would be required in the ceiling. This glass may be made a very decorative adjunct to the ceiling design, and examples can be found varying from rectangular panes of ground glass to the most elaborate designs in figured and leaded glass. If an elaborate arrangement of ornamental glass is deemed necessary to the design, and leaded lights are used, it will probably be found necessary to use bars of some sort carried straight through the design at suitable intervals for the support of the glass. Members of this sort are small in size, and it requires care to arrange their support from points above the glass in such a manner that unpleasant shadows will not be thrown on the surface.

Then, too, it will require care to arrange the skylight in the roof so as to avoid shadows over the surface of the ceiling light, and some means of cleaning the glass from above must be provided.

Acoustical felts, applied on the walls and ceilings, will absorb most of the noises from the streets as well as deaden the sound from batteries of adding machines and typewriters, making for comfort and efficiency in a great degree. Provision for using such sound-absorbent materials should by all means be made where any considerable amount of work is done with machinery or any device producing much noise. The secret of success in the use of acoustical felts is in having the sound-absorbing material of a quality and thickness which will make it impossible for sound waves to be reflected from the protected surfaces. Also, for the sake of appearance, to use some such an arrangement as muslin panels which can be drawn so tight on the wooden frames which support the felts that they will not sag or bulge and which will offer a satisfactory surface for painting and decorating. The use of these materials for reducing the amount of noise may be rather a liability in the eyes of the designer, but it will have a decided effect on the comfort and efficiency of the working force.

Windows in the banking room are usually of good size, and in some instances very large indeed. Wood could hardly be made to satisfy the design of a large sized banking room window because of the bulk which would be required in the frames, mullions and transoms, let alone the sash, so we find metal frames with steel casement sash most often used. To give an appearance of strength and a sense of protection to the banking room, the windows are



DETAILS OF MAIN BANKING ROOM

FIRST NATIONAL BANK, DETROIT, MICH.

ALBERT KAHN, ARCHITECT

commonly provided with grilles, at least across the lower portions, and these features of the design give an excellent opportunity for study in the ornamental effect of iron or bronze work. Metal panels used in connection with the grilles afford a satisfactory means of concealing the edges of mezzanine floors or balconies and still retaining the appearance of a single window in a large opening.

The counter screen is the portion of the banking establishment with which the public comes in closest contact, and is probably examined with a more critical eye than any other portion. Because its position is near the eye, and also because of the time one is often compelled to spend in line at a teller's wicket, the screen attracts close attention. For this reason it should be of material and workmanship which will bear close inspection. Examples of all possible arrangements of counter screens may be seen in the banks of almost any city. If we examine them all we shall doubtless find that bronze is generally used for the upper parts of the screens, with marble in the lower parts. Next in number we shall probably find counter screens with marble below the counter line and marble pilasters and cornices above, with small metal frames or mouldings to hold the glass. We shall also find a few examples of iron used for the upper parts, and some where wood is used for the whole screen. There is not much question but that marble is the most suitable material for the portions of the screen below the level of the counter; neither is there much doubt that bronze is the best material for the upper portions of the screen.

It is important that the floors of the banking room be well considered in selecting the materials of which they are to be made. Not only are the surfaces subject to severe wear, but in the public portions they may have to bear the added test of being frequently tracked over with muddy footsteps and spotted with water from dripping umbrellas. In the private or working portions of the bank the surface must also, in addition to the normal walking about of employes, stand the wear incident to the trundling around of book or file busses.

For the public portions of the banking room it is fitting that the floor be made part of the design of the room. The material, of course, does not need to be especially suited to foot comfort or quietness. For purposes of design as well as for wear, marble or stone is most desirable. Marble can be found in suitable colors and tones to secure almost any desired result. For general wearing qualities, the best is probably the hard, gray varieties with very little veining. The gray Tennessee is very largely used, and in color and tone gives a desirable surface, lending itself well to combinations with other marbles. The gray is somewhat easier to keep clean than white, and is more restful to the eye. Marble of other colors is often used in forming borders and patterns. The problem in such cases is to find marbles having the imperfections which we call veinings of the proper colors and tone, and at the same time of sufficient hardness to wear evenly with the fields. Some of the heavily veined marbles are rather soft in character, and would not give satisfactory service where subjected to wear from thousands of feet. There are, however, several kinds of marble suitable for service on floors and still of pleasing colors, so that almost any desired combination may be obtained.

Foreign marbles have been most extensively used where decorative effect has been desired, but there are many domestic marbles which can be used to advantage and which will give excellent results.

Much stone has been used of late in floors, sometimes in combination with marble or other materials. The stone most favored is travertine, which unquestionably is charming in color and texture and has most excellent wearing qualities, judging by the durability of ancient structures built of this

Guardian Savings and Trust Co., Cleveland
Walker & Weeks, Architects
Coffered and painted plaster ceiling in monumental room

material. It has very desirable "non-slip" qualities, and therefore is an excellent material for use on stairs, ramps and the like, and its cost is little more than marble. Marble mosaic is used frequently and gives very satisfactory service, besides lending itself to interesting color schemes. The cost is less than marble in large blocks, and of course it is easier to lay. Its general effect naturally is not as dignified as a floor of marble or stone, but its wearing qualities, when properly laid, are eminently satisfactory. Terrazzo has the advantage of being plastic, and can be obtained and applied quickly. It is somewhat limited in its color possibilities, and suggests itself for use in places where funds are not available for the more impressive materials. The surface should contain at least 90 per cent of marble chips, and it will be more compact in appearance and seem more like a marble floor if the small marble chips called *terrazzini* are used.

This material can be laid in several ways,—in rectangles without apparent joints, with areas marked off by lines of marble cubes, or by means of brass or bronze division strips, thus giving opportunity for considerable variety in design.

There are many varieties of tile available for the floor of the public spaces of the banking rooms, and countless designs can be developed with this material. No fault can be found with its wearing qualities. With the hard, vitreous tile the choice of color is somewhat limited. If the rougher glazed or semi-glazed tile is used, color possibilities are multiplied, but results would seem apt to be less dignified than with the simple, smooth tile.

Rubber tile can be obtained in almost any color and size. Great improvements have been made in this material since the first interlocking rubber tile floors were used. It can be obtained in squares up to say 18 inches, and in long strips for use in borders and, if desired, made to imitate the veining of marble. Naturally the illusion is not perfect, any more than scagliola imitates marble with fidelity, but the material has desirable qualities. It is quiet and easily cleaned, and the tones in general are soft. It can be laid directly on a troweled cement floor, and thus takes up less floor thickness than marble or tile.

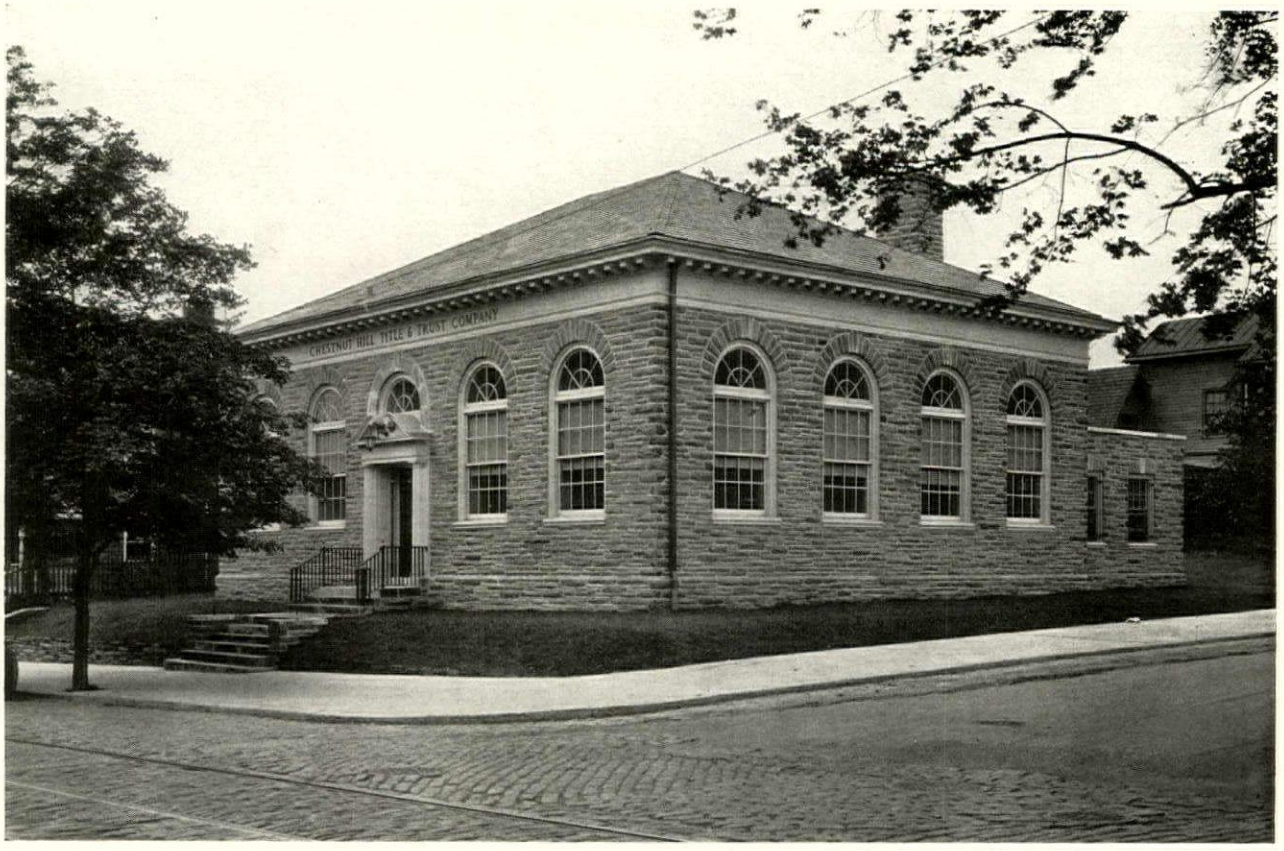
When we consider the most suitable types of flooring for the working spaces of the banking rooms, we must first recognize that one of the prime requisites is that the material be quiet, *i. e.*, absorbing the sound of footsteps and the movement of furniture on it, and also that it give foot comfort. To fulfill these requirements the material must be elastic and still hard enough not to be easily dented by chair legs, table legs and the like, and with a surface dense enough to be easily cleaned. Among the materials of the sort outlined linoleum or linoleum tile are the most common and among the most satisfactory. There are several makes or brands of linoleum which can be laid in lengths as desired and in widths of 6 feet. Linoleum tile are obtainable in almost any size, and can be laid in a variety of patterns. The tile may be laid close together or with narrow strips of a darker color between them. Linoleum in strips and that in the shape of tile is secured to the under surface of wood or masonry with a special cement, presents a very comfortable and durable wearing surface, and is quite satisfactory in appearance.

Granulated cork compressed into tile of sizes up to 18 inches square makes an almost ideal floor for the working space. It is quite resilient, though perhaps it is a little less easily cleaned than the linoleum, and wears well. This material is of neutral tones and restful to the eye as well as to the feet. Numerous composition floors are manufactured and applied in plastic form. Some of them make a satisfactory working floor, but so many of this kind of materials have proved unsatisfactory that only careful examination and comparison with existing installations can be depended upon to determine whether they should be used. Wood is used in the working spaces in many banks where conditions will not allow the use of a better kind of floor, but it is not as comfortable as linoleum or cork and is not as easily kept clean. Where employes are required to stand for long periods, it is usually found that mats of linoleum or rubber are required to relieve the weariness that comes with standing.

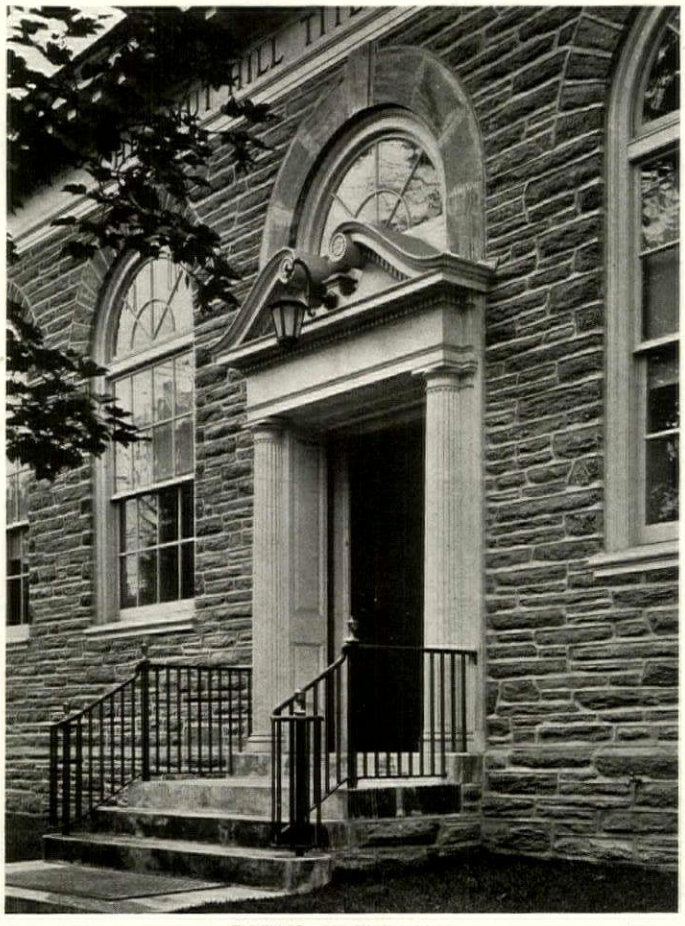
For ease of cleaning and to avoid the worn or scrubbed-off appearance which occurs where the bases and floors join, it is wise to insert some member which will not show the marks of the mop or scrubbing brush. A narrow strip of marble, say 3 inches high around the walls below the wood base or wainscot, will afford the desired protection and add to the appearance of the room. It is possible also to obtain sanitary coved bases made of cork or linoleum for use with such floors.

Counter tops, referring to those in the working parts of the bank, can be made with exposed surfaces of wood, linoleum, rubber, cork, or even marble or glass. Very hard and durable surfaces should be used where coins are handled and counted. Glass is the best material for use at the deal plates. It can be obtained in black, and if finished with a ground surface will not show scratch marks from constant handling of coins. If white glass is used it is also well to have the surface ground. For the other parts of the counters some softer material is desirable, and for this purpose linoleum laid on a wood or metal base is best. It is cemented down, has very few joints, and is quiet and clean. It can be obtained in good shades of brown or green. The edges of the counters should be protected with a metal moulding to keep the linoleum from being broken off or becoming loose. Cork can be used in much the same manner as the linoleum. Its wearing qualities and appearance are good, and as the blocks are cut very true and can be laid close, the numerous joints will do no harm.

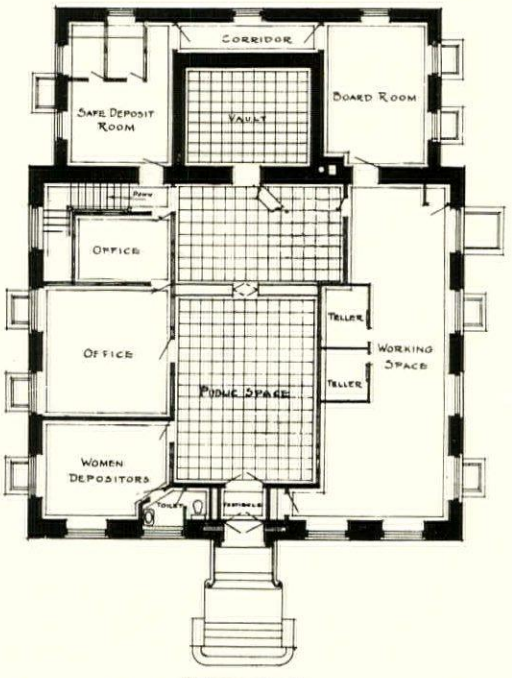
It is hoped that enough of the advantages and objections to the most common materials have been pointed out here to be of some service in specifying material for a modern banking house interior.




GENERAL VIEW OF EXTERIOR



DETAIL OF ENTRANCE




FLOOR PLAN

*Type of construction, Semi-fireproof; Exterior materials, Stone from local quarry, slate roof, limestone trimmings; Interior materials, Concrete floors, terrazzo and marble finish, sand-finish plaster on metal lath; Windows, Wood, double-hung; Counter screens, Marble, steel and glass; Vault and safe deposit provision, Vault for money, and safe deposit sections; Special departments provided for, Retiring room for women depositors; Heating, Direct hot water system, radiators in recesses under windows.*

CHESTNUT HILL TITLE AND TRUST COMPANY, CHESTNUT HILL, PA.

A. H. BROCKIE, ARCHITECT

# The Individual Bank Building

## MEETING THE NEEDS OF SUBURBS AND SMALL CITIES

By WILLARD J. BALL
*of Thomas M. James Company, Architects, Boston*

THERE has been evidenced during the past few years an increasing demand on the part of banking institutions for individual buildings, devoted entirely to their particular needs. To one who has had the privilege of watching this growth over a period of 15 or 20 years the development has not appeared extraordinary, but on the contrary it has been a slow but steady process of evolution. The results are to be appreciated in all of our large cities and in many of the smaller communities from coast to coast. There has been a marked stimulation of civic pride in most instances, while public appreciation of and a desire for more harmonious surroundings has reached a higher level. It is not meant that this one type of building has been the only one responsible for this tendency on the part of the public, but it is sincerely believed that it has had a great deal to do with it. The profession, always modest, may yet assume that its years of patient work for the greater public appreciation of the fine arts have counted for something. Certain it is that such buildings as have been designed, especially during the past five years, are sufficient proof of the sincerity of this feeling on the part of the architectural profession, and that in this instance particularly architects may claim their rightful share in the working out of an especially difficult problem.

The public reacts quite consciously to the beauty of these individual buildings,—first and foremost, undoubtedly, because of the fact that the buildings house banks; second, because of their simple and dignified appearance; and third, because the people themselves can have some part in the functioning of these institutions, and can point with definite, personal pride to *their* bank. This process of education of the public has not been easy, but like all developments, where conscientious, hard work towards this end has been done by any group or by any person, the results have always justified the means. To those who have labored in this particular field of bank architecture there is a sense of pride, and they hope it is justifiable, because they have tried to look at the problem as in a state of development, a problem which has been constantly changing and becoming more complex in its organization, due to the greater demands of the modern business world upon it.

The writer, looking back some 20 years, remembers the dingy and dark banking rooms of Boston and New York, where the officers were almost inaccessible to the general public, and where the feeling of the customer was usually one of fear in which there was certainly no particular personal feeling of gratification because of the fact that personal business dealings were transacted at such an institution. He also can picture still the very inadequate provisions made for taking care of the general public, and the still more severe conditions imposed upon the workers in the institutions. The early efforts at that time of several members of the architectural profession are worthy of note, and although no particular reference to individual architects and their work will be made here, many of these institutions still remain and most of them, which were developed during the five or ten years immediately after the period we have just mentioned, are still adequate for the needs of the institutions, or have been made so by recent alteration work.

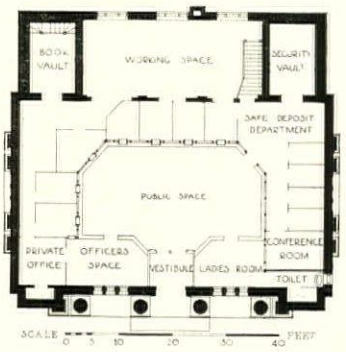
These banks, however, show the almost utter unfamiliarity of the architect with the bankers' problems. Departmental needs had not, it is true, become so great or so complex as at the present time, but the approach by the general architectural firm towards the banking problem in the early days cannot be said to have been one which produced the best results. There has been, gradually, an attempt at specialization on the part of many of the profession which has brought about distinctly good results. In fact it may be said that unless an architect does specialize on some one or two classes of work he will never attain the highest possible results. One knows of the splendid results of this specialization in such work as railroad stations, hotels, schools, theaters and hospitals—why not the bank? There are a few architectural firms or individuals in the country who have made such a serious and prolonged study of the banking problem from the architectural standpoint, and to them belongs the credit for having developed this most modern and individual type of building.

It is believed, and not without cause, that no successful solution can be reached without a painstaking survey of the needs of the particular institution under consideration. Nay, one will go so far as to say that correct planning of a bank depends entirely upon the successful analysis of the routine of the bank in all its phases. Very few people who have no particular knowledge of banking business have any idea of the very complex nature of the departmental functions. In the main the fundamental processes of banking are the same, but each institution has its own particular methods which it adheres to because it has found them to be of greater service than other methods. All of this has its effect upon the routing of items through the bank, and therefore, necessarily, a direct effect upon the planning of the building.

Right here let it be said, however, that it is sincerely believed that unless an architect has met a great many of these banking problems, he will be tempted to complicate his plan too greatly. Many

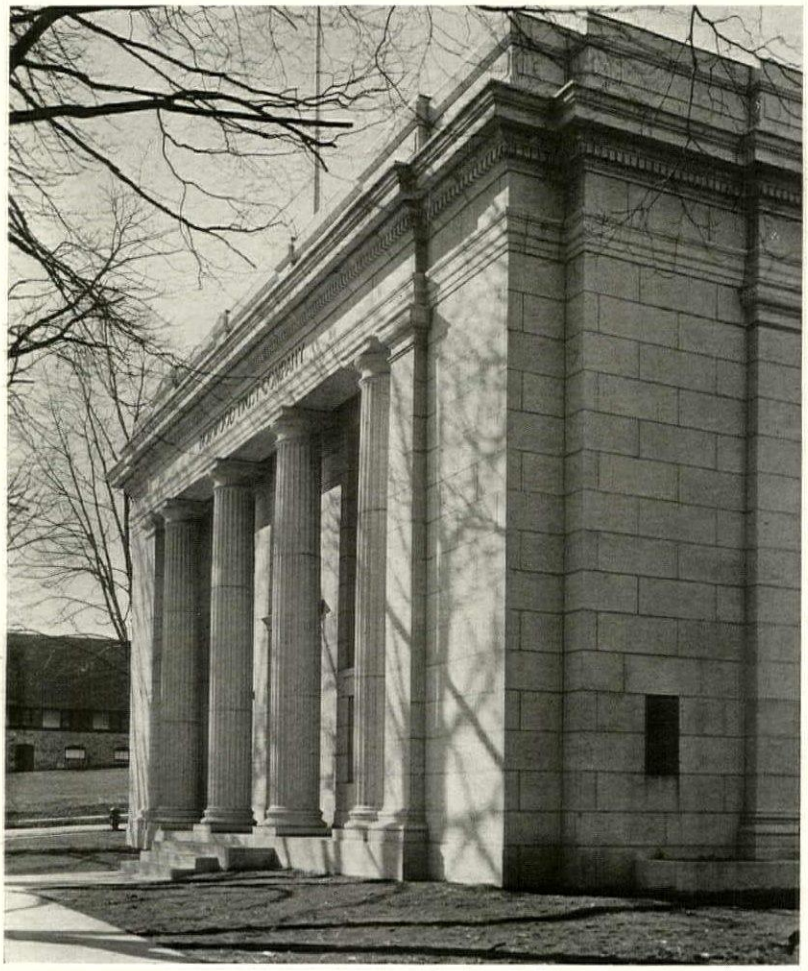
architects fell into this pit during the early stages of their work. It can be said, however, that the simplification of the equipment of the various departments has been the result of many years of study, and has of late years proved that it does take care of the bank's needs in a way that the more complex equipment could not do. Changes in the system and expansion from year to year cannot be absorbed by the over-elaborated equipment installations, whereas the standard unit equipment can be applied to satisfy practically any need with simple changes.

Upon visiting a bank with a view to planning for its needs, the architect should have in mind that he needs certain information. He should have a complete list of the personnel of each department. He should be able in a short space of time to follow the routings of all items from the time they come into the bank until the time they are charged on the bank's books, or until they leave the bank. There are so many of the details of banking which do not particularly concern the architect that it is very difficult for the non-specialist to obtain the information which will help him in his planning. This, of course, comes only through the study of a great many varying problems in banks of widely different types.



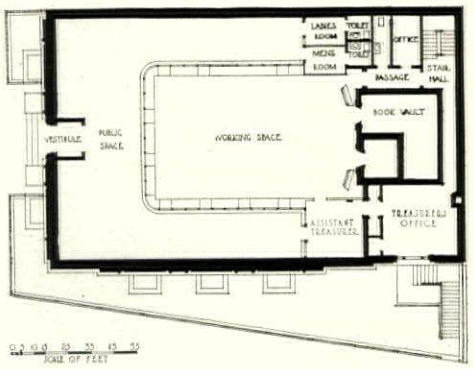
First Floor Plan

Often one has to deal with the so-called one-man bank, where there are perhaps two or three clerks other than the cashier or treasurer. Such an institution has perhaps reached the limits of its capacities under the present system, and desires in its new building to have such planning as will take care of its expanding business for a good many years. This has meant the introduction of the so-called check teller system which is in use now pretty generally throughout the east and west with, of course, certain modifications, but the commercial bank has found it greatly to its advantage. A study of this system as worked out in any of the larger banking institutions will be of great benefit to any architect wishing to undertake the solution of the commercial bankers' problem. Under this system, in general, all of the items coming into the various departments and listed therein are passed on to a central clearing house or check teller, or pivot department, as it is variously called. Here the records of all items passing through the bank are kept, and this offers a means of checking back against each department at the end of the day's work and locating readily any error made by any department, in fact locating the individual making the error. From this department are routed the items to the bookkeepers who handle the bank's own check, the discount department, collection department, and the transit department, providing the collection department is large enough to be split up and have a transit department. This is the framework of the bank. The tellers in the cages are meeting the public, whereas the check tellers, the bookkeepers and the transit department are busily engaged keeping the accounts and sending the items to their proper destinations. The architect's problem, then, is to so analyze this routing as to obtain the quickest disposal of all items. One could, of course, go through a more detailed account of the framework of a bank, but this would entail too lengthy a description for the purposes of this article. Let it merely be said that there are over 40 departmental titles, most of which are found in every bank and all of which have to be taken into consideration by the architect in planning.


Detail of Front
Norwood Trust Company, Norwood, Mass.
Thomas M. James Co., Architects

Only commercial banks have


GENERAL VIEW OF EXTERIOR




*Type of construction, Concrete; Exterior materials, Granite, Indiana limestone and brick; bronze doors; Interior materials, Marble, bronze, mahogany and plaster; Windows, Wood; Counter screens, Marble and bronze; Vault and safe deposit provision, Security and book vaults; vault for storage in basement; Type of lighting, Direct; Heating, Steam; Date of general contract, September, 1917; Total building cost, $95,000; Cubic foot cost, 48 cts. A mezzanine floor at the rear provides space for trustees' room.*

BANKING ROOM

ELIOT SAVINGS BANK, ROXBURY, MASS.

THOMAS M. JAMES CO., ARCHITECTS

been mentioned. The savings bank problem is very different, and while it is not as complex as the commercial bank, still it requires a very definite study of its needs. In most instances, the so-called "island" plan, with the working force in the central portion of the island, adjacent to the vaults, and the public on the front and two sides, has worked out to the best advantage. The savings bank problem requires that it employ only a small force, and that each clerk necessarily has several duties. Also the bookkeeping department has of necessity to be located near the tellers' windows, or at least this has been up to the present the accepted arrangement. There will, no doubt, soon be other interesting developments.

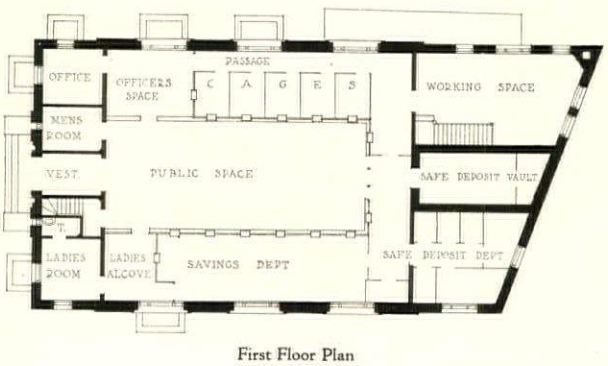
The modern system of bookkeeping has introduced the machine. There is no question as to the utility of the bookkeeping machine when used in the statement department. There has been no better solution offered, and it seems to meet every need of this department. On the question, however, of keeping the commercial department ledgers, bankers are about equally divided for and against. Many of the banks which during the war took over the machine posting of commercial accounts, have now gone back to the hand-posted ledger, either the loose leaf or the old "Boston" ledger. It will not be attempted at this time to enter into a discussion further, as there are points it is believed both in favor of and against the use of both systems.

So much of the work of the bank can be done in one large room that it was most natural to develop the high ceiled, main banking room with large windows wherever possible, with a skylight for both light and ventilation. The vault, usually placed at the rear and accessible from the working space and also the public space for the accommodation of safe deposit customers, was the next step. By placing this vault in the rear of the building, it was possible to obtain a safe deposit department and a machine room on the first floor in back of the rear wall of the banking room, and above this a mezzanine floor accommodating the directors' room and possibly additional working space.

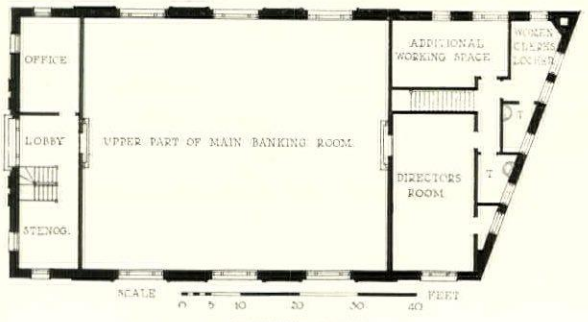
Variations of this plan have been made in order to fit special needs, placing the directors' room on the mezzanine at the front of building and giving opportunity for closed private offices on the first floor leading out of the officers' space, also an opportunity for customers' rooms, etc., leading directly from the public space. Where the directors' room is placed at the front of the building, the rear mezzanine can be used for expansion of the bookkeeping and check tellers' departments, as well as the transit department. It is easy, therefore, to see how well this individual building fits the needs of the average bank.

The exterior, of course, is an expression of the interior, and it is possible to obtain many variations of practically the same scheme.

General View of Exterior
Ticonic National Bank, Waterville, Me.
Thomas M. James Co., Architects



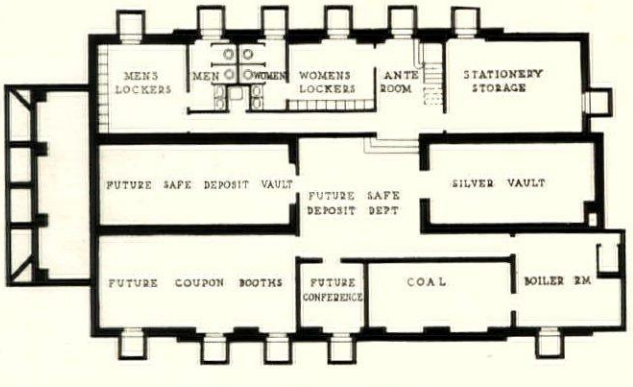

First Floor Plan



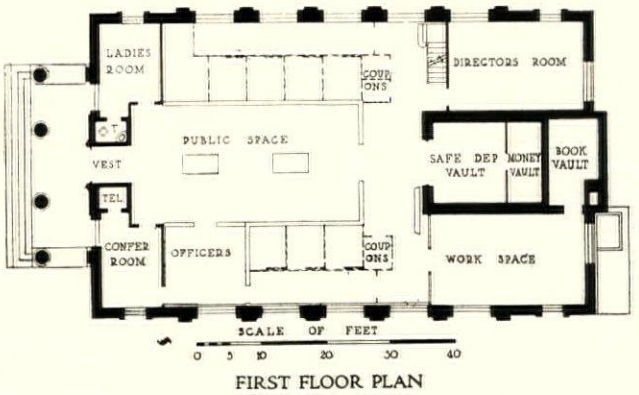

Second Floor Plan


*Photos by Tebbs Architectural Photographic Co.* GENERAL EXTERIOR VIEW

Type of construction, Fireproof. Exterior materials, Limestone; Interior materials, Marble and plaster; Windows, Steel; Counter screens, Marble; Heating, Steam; Total building cost, Approximately $175,000



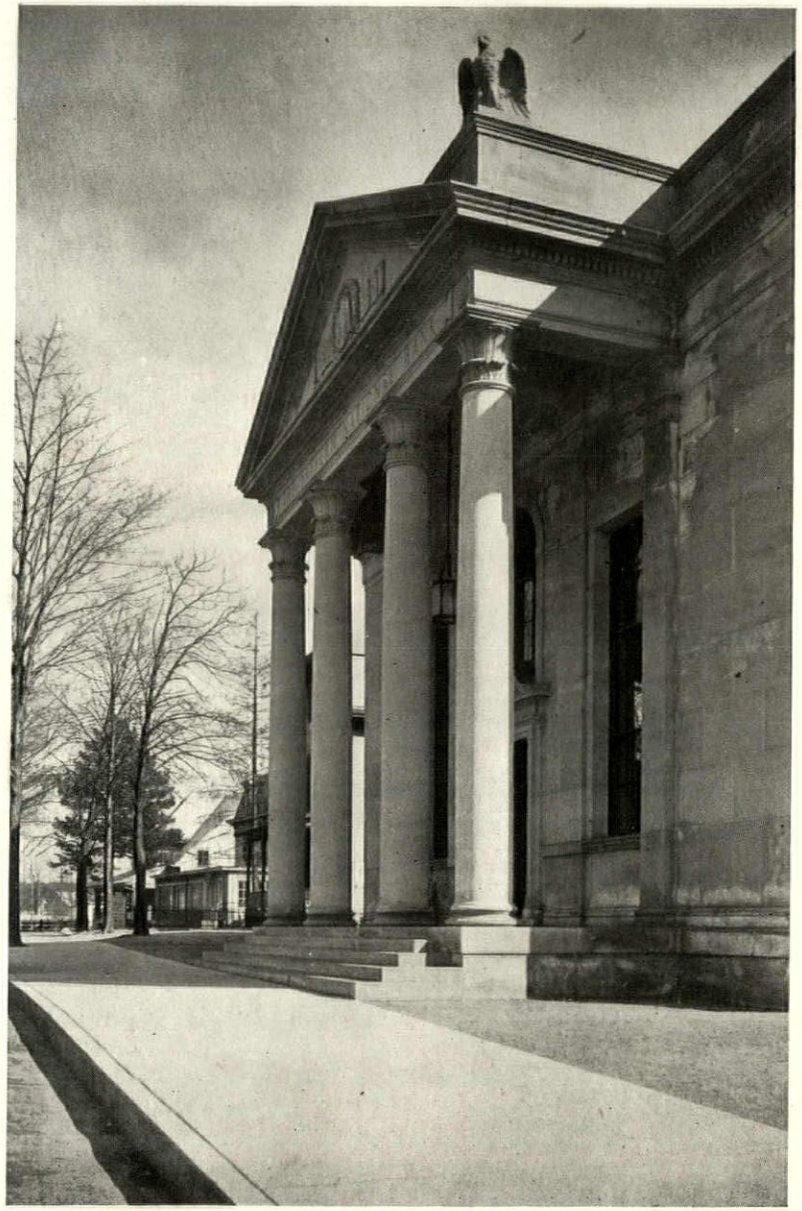

BASEMENT FLOOR PLAN




FIRST FLOOR PLAN

SUFFERN NATIONAL BANK, SUFFERN, N. Y.

ALFRED HOPKINS, ARCHITECT



*Photos by John Wallace Gillies* DETAIL OF PORTICO

OFFICERS' SPACE

SUFFERN NATIONAL BANK, SUFFERN, N. Y.
ALFRED HOPKINS, ARCHITECT

PUBLIC SPACE


FRONT FACADE

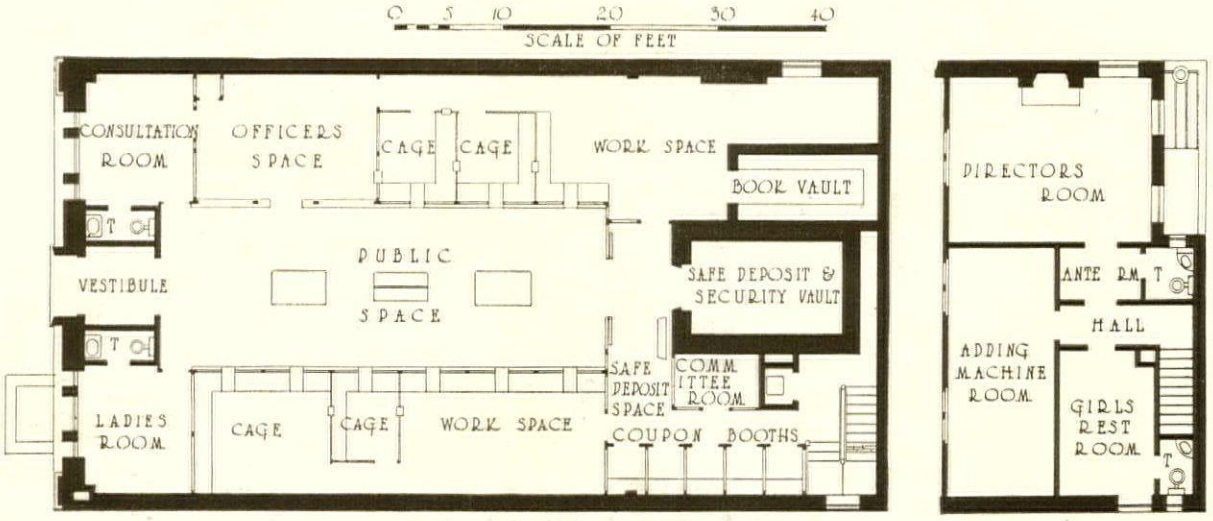
FIRST NATIONAL BANK OF WALLINGFORD, WALLINGFORD

HOLMES & WINSLOW, ARCHITECTS

FIRST NATIONAL BANK
WALLINGFORD, CONN.

Illustration on Plate 81

Type of construction. Fireproof
Exterior materials. Limestone
Interior materials. Marble, wood and imitation stone
Windows. Steel sash
Special department provided for safe deposit department
Type of lighting. Direct
Heating. Vapor vacuum (steam)
Date of general contract. February 1922
Total building cost. $77,538
Cubic foot cost. 62 cts.




FIRST AND MEZZANINE FLOOR PLANS

BANKING ROOM


GENERAL VIEW OF EXTERIOR

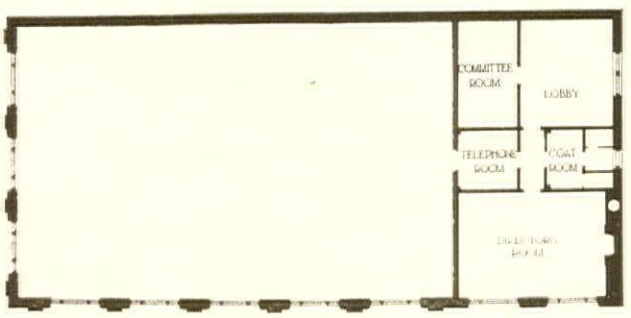
SEACOAST TRUST COMPANY, ASBURY PARK, N. J.

THOMAS M. JAMES, ARCHITECT

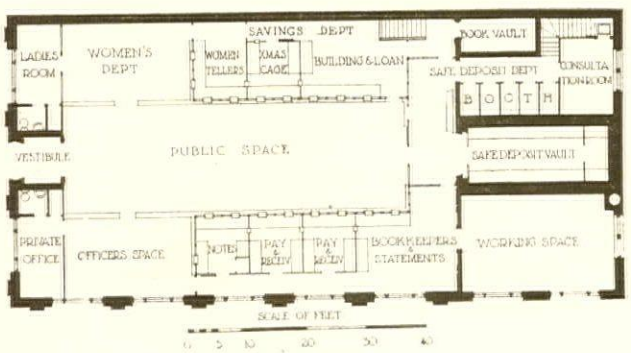
SEACOAST TRUST COMPANY
ASBURY PARK, N. J.

Illustration on Plate 82

Type of construction. Fireproof
Exterior materials. Granite and stone
Interior materials. Marble, bronze, plaster and mahogany
Windows. Wood
Counter screens. Bronze and marble
Vault and safe deposit provision. Combined on first floor
Type of lighting. Direct
Heating. Vapor
Date of general contract. July, 1921
Total building cost. $180,000
Cubic foot cost. 82 cts.



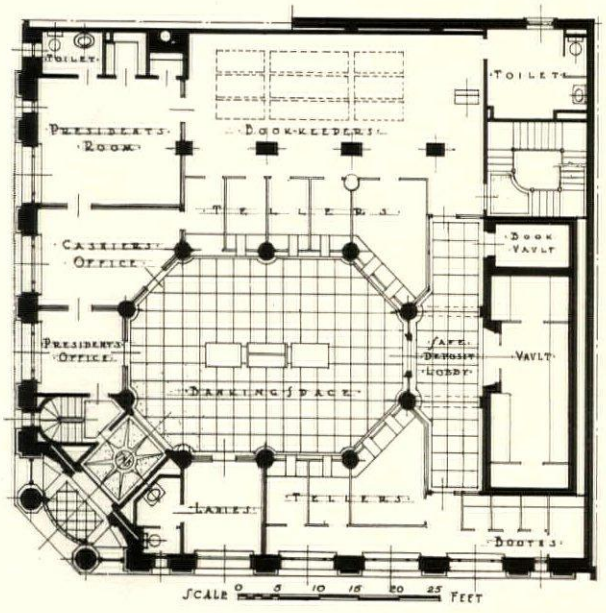

MEZZANINE FLOOR PLAN



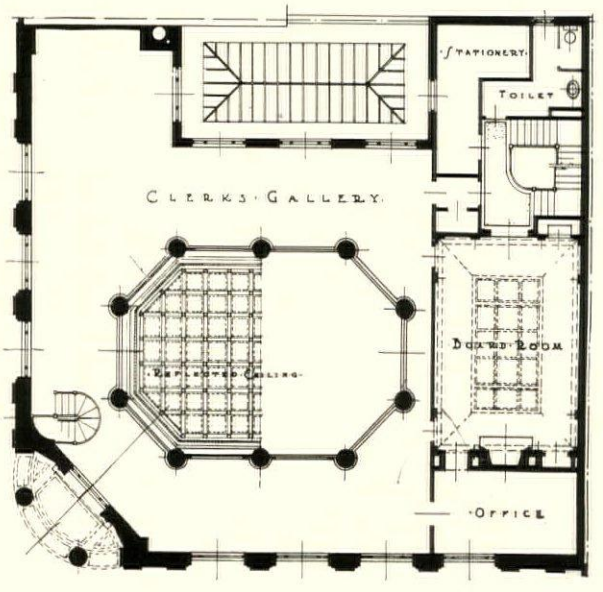

FIRST FLOOR PLAN


GENERAL VIEW OF EXTERIOR

Type of construction, Fireproof; Exterior materials, White limestone; Interior materials, Italian marble, mahogany; Windows, Bronze sash; Counter screens, Bronze and marble; Special departments provided for, Trust department; Type of lighting, Indirect; Heating, Vacuum vapor; Date of general contract, November, 1921; Total building cost, $200,000; Cubic foot cost, 85 cts.




FIRST FLOOR PLAN




SECOND FLOOR PLAN

FARMERS AND MECHANICS NATIONAL BANK, GEORGETOWN, D. C.

MARSH & PETER, ARCHITECTS

# The Lighting of Banks

By A. L. POWELL, *Illuminating Engineer*

A THOROUGHLY satisfactory building really depends on the preliminary planning of the lighting simultaneously with that of the structural elements, and as banks are a type of public building, elaborate in structure with special lighting requirements, the best results are obtained only when this feature is carefully considered beforehand.

It is fairly safe to say that there is no phase of building design or equipment which has undergone and is experiencing as rapid changes as lighting. The architect has an infinite number of details to keep in mind when planning and supervising the construction of a building, but all too often a structure such as a bank is planned and even actually built before the question of lighting is taken up. When the illuminating engineer comes to the work he often finds it impossible to install the type of lighting best suited, due to inadequate provisions as to space, wiring capacity and the like. For example, adequate space should be available for lamps and reflectors above skylights, where such lighting is to be employed. Flexible control and a sufficient number of circuits to take care of future demands should be provided for. Convenient outlets at frequent intervals to meet particular conditions are necessary.

The lighting system in the bank should be such as to impress the patrons with the dignity of the institution. The idea that the building is merely a cold storage place for currency should be eliminated by making the interior comfortable and inviting. The first feature can be secured through the selection of the proper types of fixtures or lamps. They should in general be massive and substantial without being unduly ornate. The ordinary commercial type of equipment is quite unsuited to the high class financial institution. The bank can be made attractive and comfortable by providing an adequate intensity of illumination and by the elimination of glaring, brilliant and annoying light sources. In other words, the lighting must take into account quality and quantity.

There is no question that natural light or daylight is generally satisfactory as a means of illumination and should always be provided where possible. On the other hand, there have been numerous cases where improperly placed or poorly designed windows and skylights have produced glaring, annoying conditions. Three principal means of accomplishing the desired results are: exterior windows, windows in light shafts or wells, and skylights. The illumination from exterior windows falls off very rapidly toward the center of the room, and the variation in intensity with any such system is much greater than ever prevails with a well designed artificial lighting system. The ratio of room width to ceiling height is a governing factor in determining whether this form of lighting is acceptable. Prism glass, of course, has a field in modifying the distri-

Fig. 1. Night view of a well lighted public space in a bank; 300-watt lamps in semi-indirect bowls on centers 18 x 32 furnish uniform 5-foot candle illumination

Fig. 2. Banking room of monumental character with cove lighting in public space and indirect pendants in working spaces. Check desk lamps provided

bution of daylight, and is of service in such cases.* In general, a one-story banking room of average dimensions will not have sufficient light in the center of the room for close work when dependence is placed on side windows alone. Extending the windows as close as possible to the ceiling assists in obtaining a desirable distribution. Corner banking rooms, at least two stories in height, may sometimes be well lighted from side windows.

Provision should be made for controlling daylight from windows by means of shades or patent blinds. For the best results, shades should be translucent rather than opaque, thus when drawn providing a lower intensity of diffused light rather than producing a sharp shadow. Double rollers, pulling up and down, located midway of the height, will permit a more comfortable control of light. Where structural conditions permit, skylights provide a means of securing good illumination in the portion of the room not well served by side windows. Where skylights are installed they can also be so equipped as to become the principal sources of artificial light. The choice of the glass for the ceiling is a matter of considerable importance. It should be efficient, or, in other words, transmit as much light as possible, and should be of such a character that there is little or no "spotting" effect from the light sources above it. To eliminate the spotting effect the glass must have more or less diffusion. The less diffusing it is, the closer together the units must be placed. Greater diffusion, on the other hand, generally means a higher absorption. There are on the market a number of types of figured or rippled crystal glass which have a fairly high transmission and eliminate the spotting by refraction rather than by diffusion. Some of these are especially well suited for skylight work.* If it is desired to control the distribution of light through the ceiling, as for example, by directing light against the walls with reflectors set at an angle above the ceiling panes, then some form of roughened or rippled crystal glass is necessary. If merely diffusion with maximum intensity downward is wanted, then opal glass will give this effect regardless of the type of equipment above the glass.

Where opal glass is used the light sources themselves furnish light to the ceiling, and the glass ceiling in turn lights the room. But unfortunately the opal, in becoming a secondary source, illuminates in all directions, and it is necessary to add to the loss of light between lamps and the glass ceiling the loss due to the glass lighting the attic as well as the room below; hence the resultant efficiency is very low. With crystal glass the ceiling itself is not a secondary lighting source; it serves to scatter the light which is being transmitted, and there is very little returned light. In the matter of appearance there is a certain amount of "life" to a ceiling of crystal glass that is not obtainable with opal.

To control the amount of daylight which enters the room the upper skylight may be made of glass of relatively high absorption, or shades or louvers can be used to cut down the intensity. Controlled daylight should not be obtained through the lower skylight, for we must have a high transmission of the artificial light. In some cases the upper skylight is tinted a light amber and used as a filter to bring the daylight to the color value of the artificial light.

Even though excellent natural lighting be provided, there are many days when the intensity is too low for efficient vision; there are parts of the building which are not reached by the daylight, and finally much of a bank's work must be done after nightfall. An adequate system of artificial illumination is therefore essential, and upon its success depends the comfort of patrons and employes.

Within the past few years there have been remarkable advances in designing the light source itself as well as in reflecting and diffusing accessories. The modern lamps give about six times the light for the same power as was obtained from the lamp

*A complete study of this subject will be found in the *Transactions of the Illuminating Engineering Society*, Vol. 9, 1914, p. 643.

*A full discussion of this topic will be found in the *Transactions of the Illuminating Engineering Society*, Vol. 9, 1914, p. 1011.

of 15 years ago. The lamp itself is by no means a complete lighting unit. It produces the raw light which must be modified, redirected and diffused before it is thoroughly satisfactory for illumination, and it needs reflectors, globes, shades or other accessories to produce these results. Three general systems of illumination have been developed, all of which are applicable to an interior such as a bank. These are known as direct (where most of the light is sent downward to the work), semi-indirect (where most of the light is sent to the ceiling and then reflected downward, some being transmitted through the glassware of the fixture), and totally indirect (where all the light is first directed upward). The indirect or semi-indirect systems are not recommended for use under dark ceilings or skylights.

*Public Spaces.* These areas should naturally receive the most attention from the decorative standpoint, but on the other hand this quality should not be over-stressed. The main banking space should be equipped with general lighting of an intensity of from 4- to 6-foot candles.

Individual types of equipment vary considerably as to efficiency, and the color of surroundings has an appreciable effect on the resultant intensity. In general, the value considered desirable can be obtained with light colored surroundings by installing lamps of such wattage as to give these specific consumptions: diffused direct light, 1 to 1½ watts per square foot; semi-indirect light, 1¼ to 1¾ watts per square foot; totally indirect light, 1½ to 2 watts per square foot. A pleasing yet simple and inexpensive installation of semi-indirect fixtures, consisting of opalescent glass bowls and neat, three-chain hangers, is to be seen in use in Fig. 1. Here it will be noted that the working area, as is usually the case, adjoins the public space and with such a system as pictured larger lamps can be installed in the units over the working portions to provide the high intensity needed here for bookkeeping and clerical work.

As another example of the wide latitude now at our disposal in planning artificial illumination we might examine Fig. 3. A neat trough above the cage grille conceals inverted, mirrored glass reflectors and lamps furnishing indirect lighting. 75-watt lamps in mirrored glass reflectors are spaced on centers 3 x 5 feet above the glass skylight and furnish enough direct light to render the glass somewhat more luminous than the surrounding ceiling. Lighting from above the skylight should usually be supplemented by diffuse direct lighting or indirect lighting as shown here, otherwise the architectural details around the skylight and on the ceiling are lost and rather severe contrasts between the glass area and the ceiling prevail. If the general lighting provided is not deemed adequate for the patrons' desks, they should be equipped with local units producing an intensity of from 15- to 20-foot candles. Desk lamps should be carefully chosen and so placed that direct and reflected glare is minimized.

Fig. 3. 75-watt lamps in mirrored glass, direct lighting reflectors are used above the skylight; 100-watt lamps in inverted mirror reflectors above the cages provide indirect illumination and make the ceiling luminous

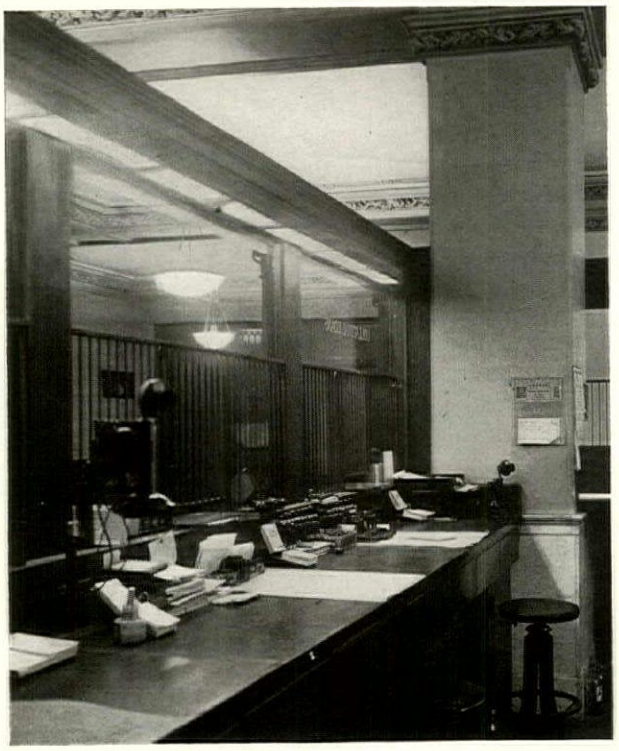


Fig. 4. Typical cage grille continuous fixture using 25-watt lamps in small mirrored reflectors on 14-inch centers

*Working Areas.* With the high efficiency of the present-day illuminants, the old forms of local or drop lighting are being gradually eliminated, and the multiplicity of unsightly cords and tin shades, which formerly occupied the space behind the cages, is becoming a thing of the past.

The general system of lighting can often be supplemented by cage grille fixtures, of the type shown in Fig. 4, to raise the intensity at the various wickets to something of over 10-foot candle power. This form of lighting will assist in detecting fraud and speed up the work. The best types of grille fixtures employ suitable mirrored glass reflectors and relatively small lamps, 10- or 15-watt, on 8-inch centers. The distribution of light should be such as to prevent glare and give an even illumination over the desk tops. A diffusing glass plate over the opening prevents annoying reflections.

*Directors' Rooms.* Board and meeting rooms have the same general requirements for lighting as offices, although a moderate intensity, of from 3- to 5-foot candles, is sufficient. There is comparatively little close work carried on here. In many instances these rooms are finished in dark woodwork, which makes the lighting problem quite complex.

It is almost impossible to comfortably illuminate to a high level a room finished throughout with dark woodwork. There will always be a rather severe contrast in brightness. Light colored surroundings assist materially in diffusing the light, reducing shadows and eliminating contrasts. In the room with dark woodwork bracket units should always be avoided. Enclosing, diffusing globes with suitable, clear lamps, hung high, out of the ordinary angle of view, are probably the best means of illumination. The character and design of the supporting fixture will depend on the general elaborateness of the room decoration.

*Vaults.* The vaults are used primarily for the storage of money and valuable documents, and little actual work is carried on here. A lower intensity of illumination (3- to 4-foot candles) will be adequate. The boxes extend from the floor to the very top of the room, and a flood of light in all directions is necessary. In most instances it is inadvisable to pierce the armor plate of the safe in order to furnish electrical current for lighting purposes. A convenient arrangement to overcome this difficulty is to locate a receptacle *outside* of the vault, connected to the power supply, and another *inside* of the vault, feeding the lighting circuit. When the steel door is opened a flexible cable with a plug at each end connects the two receptacles. With such an arrangement as this a circuit-breaker or small fuse should be installed in the individual circuit, for occasionally through oversight the steel door is accidentally closed on the cable, thus short-circuiting the line.

*Coupon Booths.* The small rooms, resembling telephone booths, used by the patrons of the bank for examining securities, clipping coupons, etc., should be lighted by desk lamps or bracket fixtures placed above the tables. No other general illumination is necessary, save that it is most desirable to provide 10-watt lamps directly *beneath* the tables. Many times when sorting certificates or coupons one is dropped, and the search for this on the dark floor is most annoying. The device suggested will be a real comfort in such an event.

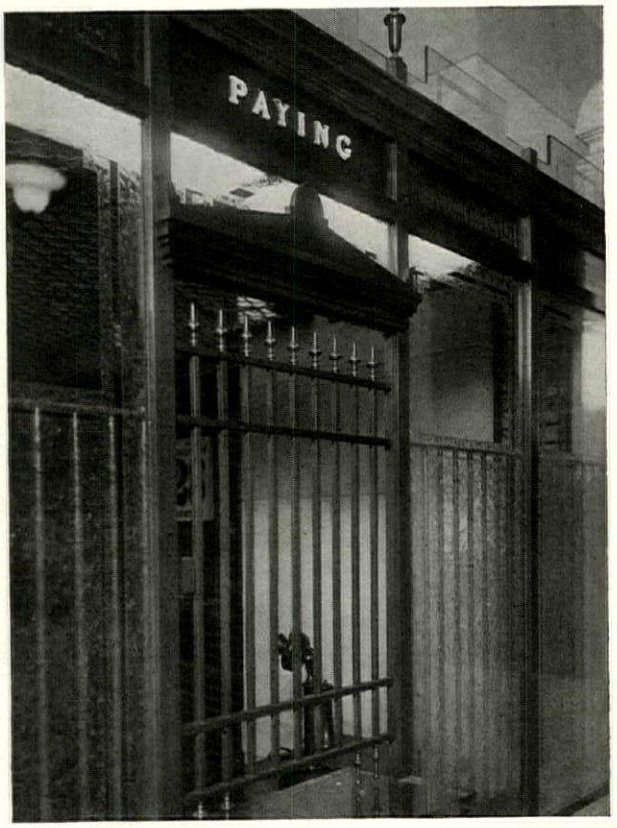



Fig. 5. Neat, luminous signs above the wickets are convenient and readily combined with screen design

# Heating and Ventilating of Bank Buildings

By ARTHUR K. OHMES
*of Tenney & Ohmes, Consulting Engineers, New York*

THE requirements to be met in the design of an economical and satisfactory heating and ventilating equipment for a large bank building may under certain conditions be quite difficult, and then again be quite simple. This statement will be readily understood when all factors pertaining to the design are carefully analyzed. The small country or branch bank's heating plant is very simple; artificial ventilation is practically unknown, hence these bank buildings will not be discussed.

Business considerations demand that the building be located in the trade or financial center of the city. This means that the building site is almost invariably selected on streets where there is much noise from various kinds of traffic. Since "quietness" appears to be one of the prime requirements in successful banking, open windows are frequently objectionable, even if at certain times atmospheric conditions permit them to be opened.

While there is a certain "standardization" in school, hospital and office building construction, no "standardization" has been attempted in larger bank buildings. Every such building requires therefore its own careful analysis as to the heating and ventilating requirements to be met. It is obvious that entirely different problems must be met in chilly Maine and warm and sunny Florida. It is also well to take into account the fact that almost all banks are continually expanding, not only in size, but also in new departments, and that additional facilities for doing business become necessary every few years. Before these facilities are provided the various departments are crowded to the limit, and with it the ventilating requirements are increased. Particular attention must be given to the present tendency of having some of the important departments in underground spaces, creating a most difficult ventilating problem.

## Banking Spaces above Ground

The medium sized bank, employing about 50 people, seldom requires an extensive ventilating system unless it has very few windows which cannot be opened on account of dust, traffic noise, automobile engine odors, etc., or because it is located in a very cold climate where windows must be kept closed for months at a time to avoid intolerable and even dangerous drafts.

A few years ago a bank and office building was erected in a fair sized city in Kentucky. The ground floor contained the banking room, and the owners directed the provision of good air supply and exhaust ventilation, and the plans were worked out accordingly. When bids were taken the cost of the building was found to be in excess of the estimated cost, and it was decided to reduce the expense all along the line, and the fairly expensive equipment was of course omitted. Only exhaust ventilation was provided. Large radiators as shown in detail on Fig. 1 were provided to permit a slight opening of windows even in the coldest weather. The bank is doing a successful business despite the omission of the expensive ventilation apparatus worked out in the original plans. For all other details see "Building No. 1" in "Schedule No. 1."

Now contrast this experience with another banking room in New York. This bank had a very complete ventilating system as detailed under "Build-

| BUILD'G No. | DIMENSIONS OF BANKING ROOM | | | IMPORTANT DETAILS OF BANKING ROOM | | | | FIGURED QUANTITIES OF ARTIFICIAL VENTILATION | | | | ASSUMED MAXIMUM APPROXIMATE NUMBER OF PERSONS IN ROOM | RATIO PER PERSON IN BANKING ROOM FOR ASSUMED MAXIMUM NUMBER OF PERSONS. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | WIDTH | LENGTH | HEIGHT | FLOOR AREA SQ.FT. | CUBIC CONTENTS CU.FT. | WINDOW AREA SQ.FT. | SKYLIGHT AREA SQ.FT. | TOTAL AIR SUPPLY PER HOUR CU.FT. | TOTAL EXHAUST PER HOUR CU.FT. | AIR SUPPLY CHANGES PER HOUR | EXHAUST CHANGES PER HOUR | | FLOOR AREA SQ.FT. | CUBIC CONTENTS CU.FT. | WINDOW AREA SQ.FT. | SKYLIGHT AREA SQ.FT. | ARTIFICIAL AIR SUPPLY PER HOUR CU FT | ARTIFICIAL EXHAUST PER HOUR CU FT |
| | | | | MEDIUM SIZED BANKING ROOMS | | | | | | | | | | | | | | |
| 1 | 45 | 44 | 98 | 1970 | 56,000 | 720 | — | — | 11,200 | — | 2.0 | 50 | 40.0 | 1120.0 | 14.4 | — | — | 225.0 |
| 2 | 34 | 93 | 16 | 3150 | 50,000 | 330 | 750 | 250,000 | 200,000 | 5.0 | 4.0 | 60 | 52.5 | 830.0 | 5.5 | 12.5 | 4,150 | 3330 |
| 3 | 32 | 38 | 20 | 1220 | 24,400 | 256 | — | — | — | — | — | 25 | 49.0 | 970.0 | 10.1 | — | — | — |
| 4 | 43 | 75 | 38 | 3200 | 12,300 | 1340 | — | 36,900 | 246,000 | 3.0 | 2.0 | 75 | 43.0 | 1640.0 | 18.0 | — | 4900 | 3550 |
| | | | | LARGE BANKING ROOMS | | | | | | | | | | | | | | |
| 5 | 130 | 185 | 55 | 24200 | 1,330,000 | 2900 | 1600 | 4,500,000 | 3,000,000 | 3.4 | 2.25 | 500 | 48.0 | 2800.0 | 5.8 | 3.2 | 9,000 | 6,000 |
| 6 | 85 | 105 | 85 | 9000 | 770,000 | 2900 | 1600 | 1,920,000 | 1,500,000 | 2.5 | 2.0 | 250 | 36.0 | 3100.0 | 11.6 | 6.4 | 7,700 | 6,000 |
| 7 | 81 | 120 | 52 | 9700 | 500000 | 2400 | — | 1,500,000 | 1,000,000 | 3.0 | 2.0 | 300 | 32.0 | 1660.0 | 8.0 | — | 5,000 | 3,300 |
| 8 | 82 | 155 | 48 | 12,700 | 610,000 | 2100 | 1400 | 1,830,000 | 1220,000 | 3.0 | 2.0 | 350 | 36.5 | 1740.0 | 6.0 | 4.0 | 5200 | 3,500 |

Schedule No. 1

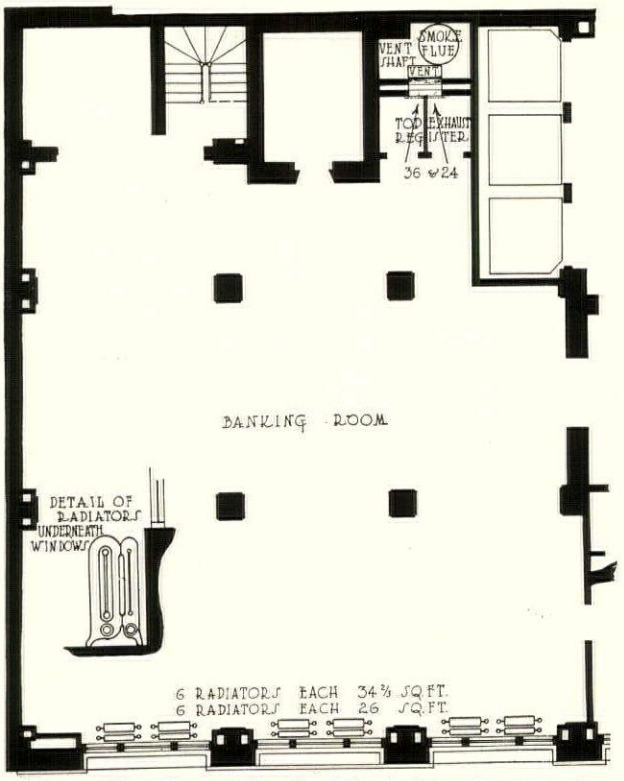



Fig. 1. Floor Plan and Details of Simple Direct Heating and Exhaust Ventilation

ing No. 2" in "Schedule No. 1." Windows were stationary because it was felt they could not be opened on account of street noise, dust, etc. Soon after the opening of the bank an air washer had to be installed. Later on when the banking room was enlarged a still more complete system of air supply was decided upon and installed in connection with the ventilating system for the addition. Another banking room was very simply treated and detailed under "Building No. 3" in "Schedule No. 1." This bank building is located in Tennessee, and the large room has no ventilation, but an interior bookkeeper's room has supply and exhaust ventilation and the working mezzanine only exhaust ventilation. A banking building, on the other hand, with very much the same general outlines, located along the Canadian border, where windows cannot be opened in the winter months, was provided as detailed under "Building No. 4" in "Schedule No. 1" with a good air supply and exhaust ventilating system throughout. The owners desired good ventilation for the original building, and now that a new extension is to be built, a similar, complete apparatus was decided upon.

When we now consider banks whose resources run into the millions, with hundreds of employes, we find usually a well defined desire for artificial ventilation. Some details of larger banks, so treated, are given under "Buildings Nos. 5, 6, 7 and 8" in "Schedule No. 1." The air supply and exhaust ventilation for banking rooms Nos. 7 and 8 is reversible; that is, by means of turning a damper the air can either be introduced near the ceiling and exhausted from near the floor or introduced at the bottom and exhausted from the top of the room. It should, however, be said that care must be taken in arranging bottom registers, otherwise objectionable drafts will be felt.

The main features of a reversible ventilating system are shown in Fig. 2. It will be noted that the air supply is introduced at the top and exhausted at the bottom when the damper is in a vertical position. To reverse the ventilation the damper is turned into a horizontal position, and if the air currents are traced as shown in dotted lines it will be seen that air is now introduced at the bottom and the air is exhausted at the top.

But even in large banking rooms the climatic conditions must be considered. Thus, for instance, for a bank in a large city of central Canada, where double and air-tight windows must be used, a very complete air supply and exhaust system must not only be installed for ventilation, but it may be required to minimize in-drafts and to assist the heating in temperatures frequently of 30° below zero. Again, it is questionable that the same banking room would require more than a very simple exhaust ventilating system with ample radiators in Florida, where the temperature is seldom lower than 30° above zero. Architects always object to unsightly air supply registers, but it is usually possible to arrange them symmetrically on the walls over windows or in a continuous frieze, or still better to hide them altogether in the tops of cornices. Under no conditions should ceiling registers ever be used for air supply, because it is practically never possible to prevent drafts. Experience has shown that air supply introduced through ceiling registers, even if at only a few degrees lower than the room temperature, results usually in drafts, no matter how high the room may be.

If air supply ventilation is to be provided, too much emphasis cannot be laid on the fact that an air inlet must be located where really fresh air can be obtained. It is useless to take air from a dirty back alley or from sidewalk gratings and to rely upon an air-washer to purify the air from contamination such as excessive dust and dirt, automobile

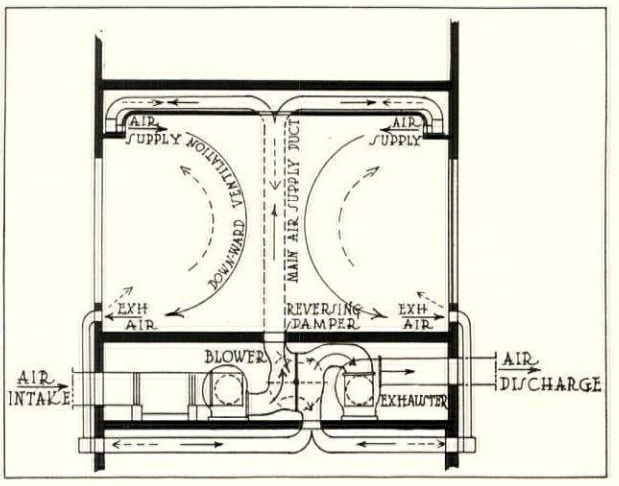



Fig. 2. Reversible Ventilating System. Two Directions Indicated by Full and Dotted Arrows

engine odors, paper, refuse, etc. Roof air inlets are likely to be contaminated by smoke, fuel gases, plumbing vents, foul air, kitchen discharges, etc. The best place for the air inlet in our crowded, busy cities is usually in a large court or, still better, on the shady side of the street some 50 feet above the sidewalk in high buildings, or halfway up the building in case of a low structure.

## Heating

Both steam and hot water heating systems have been successfully used in all kinds of climates. Automatic temperature regulation in all larger rooms is still desirable, for it is usually found that in crowded rooms fewer arguments will arise when an automatic device is installed to regulate the temperature instead of letting half a dozen people take a hand at it. Special consideration must be given to the prevention of down-drafts from large windows, walls, ceilings and skylights. Hand in hand with special down-draft planning, however, must go good and tight construction, particularly in cold climates. A simple down-draft prevention plan is indicated in Fig. 3 which is self-explanatory.

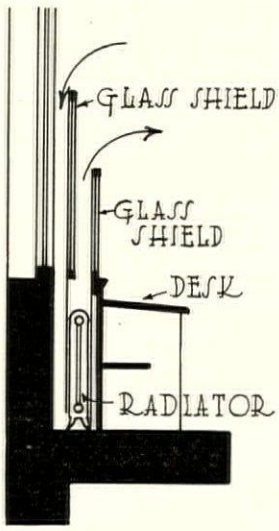



Fig. 3. Down-Draft Prevention Scheme

The entrances must be well protected to prevent objectionable cold in-drafts. This is of particular importance in a high building, if the banking room communicates directly with elevator shafts, stair wells, etc. There is in every building when being heated a so-called neutral zone. Below this zone the pressure within the building is less than the outside pressure, and above this zone the pressure within the building is more than the pressure surrounding the building. These pressure conditions, which are graphically shown in Fig. 4, result in an inward rush of air below the neutral zone and an outward rush of air above the neutral zone.

If a rather extreme case be taken of say a building having 10,000,000 cubic feet contents, we find the air inside the building if at 70° temperature weighs 749.4 tons; a similar amount of air at zero temperature surrounding the building, however, weighs 863.5 tons, the difference being 114.1 tons. The air in the building is being kept from moving upward by the outside walls, windows and ceilings. It is, therefore, of great importance to be extremely generous with the heating surfaces for the entrances. The revolving door is almost unavoidable, and if storm doors and radiators are used they will take care of the severest conditions. Frequently radiators are objectionable, and indirect heat must be used. If so, it is well to provide for entrance heating a separate small fan, operating under high pressure, with steam coils arranged for sectional control.

## Heat and Power Supply

Some 25 years ago almost all large bank buildings had their own power plants, utilizing the exhaust steam from power generation for heating. Coal was cheap at that time and electric current high, and it was altogether the most economical proposition. Wherever a bank building can be heated by street steam or from outside sources, it should be done. Most of the large bank buildings in lower New York have used street steam supply for years. If, however, a power plant is to be installed, it should be carefully kept away from all underground working spaces, safe deposit vaults, etc. If this is not done the waste heat will seriously affect these spaces, reducing the efficiency of the workers to such an extent as to dissipate many times the small saving effected by having a power plant.

## Working Spaces below Ground

There is at present a decided tendency in many large banks in the great cities to locate workrooms, security transfer departments, bookkeepers, etc., immediately below the ground floor, in other words, in spaces where there are no windows and where all ventilation must be secured by artificial means. Too much emphasis cannot be laid upon the fact that if building conditions require underground working spaces the least the bank can do is to provide the best artificial ventilation that can be procured. Architects should strive to secure as high rooms as possible and to make the problem of the ventilating engineer no more difficult than absolutely necessary.

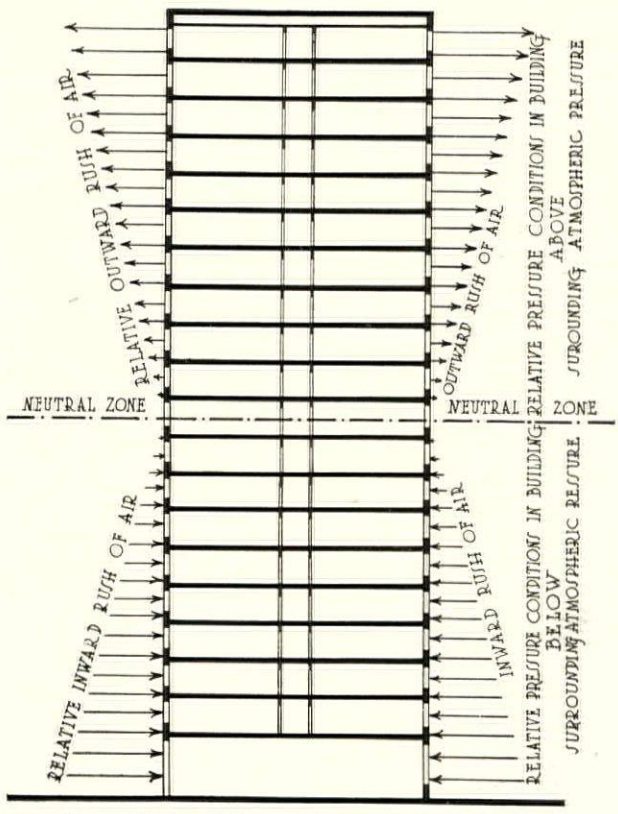



Fig. 4. Sectional Diagram of Office Building Indicating Different Pressures above and below a Neutral Zone

The number of air changes to be provided will vary with the climatic conditions, because the ventilation is always judged by the temperature conditions maintained.

Generally speaking, it will be found that for a room 11 feet high about ten changes per hour are desirable for cities like New York or Philadelphia. These changes may be reduced 25 per cent for average northern locations, and should be increased at least 25 per cent for southern locations. It is still more important to follow scrupulously the suggestions made heretofore for air inlet locations, and in addition all possibilities of heat increase to air supply in ducts and flues must be avoided.

### Safe Deposit Vaults, Etc.

The general remarks made under "underground rooms" as to air changes pertain to vault ventilation, excepting that physical difficulties make vault ventilation somewhat more difficult. A ventilating system for a vault must not interfere with the safety, fire-and waterproofing features of the vault. This requirement means each day a 17-hour interruption in the service of the ventilating system. Over Sundays and holidays the vault may be without any air change for 40 hours or longer. As doors in vaults must be absolutely air-and watertight, the ventilating ducts must be disconnected and no air movement whatever takes place. It is natural that the air in a large vault will be oppressive when it is opened.

The problem is therefore always to bring into the vault a very large amount of air to flush out the smells created by paper money, books and bonds, the latter two producing a particularly disagreeable odor from the glue used in the bindings. Very small vaults should be provided with disc fans so arranged as to discharge air out of the vaults into the surrounding spaces. A very simple and effective ventilating system for a medium sized vault is to locate an air supply register opposite the main door, which will discharge about 1,000 cubic feet of air per minute at about 10-foot velocity per second. This velocity is more than sufficient to drive the fresh air into the vault and out of the emergency door. The exhaust register over the emergency door removes the air as it is driven out of the vault. In larger vaults it becomes necessary to have an air-distributing system inside, this duct being connected by hinged joints over the door.

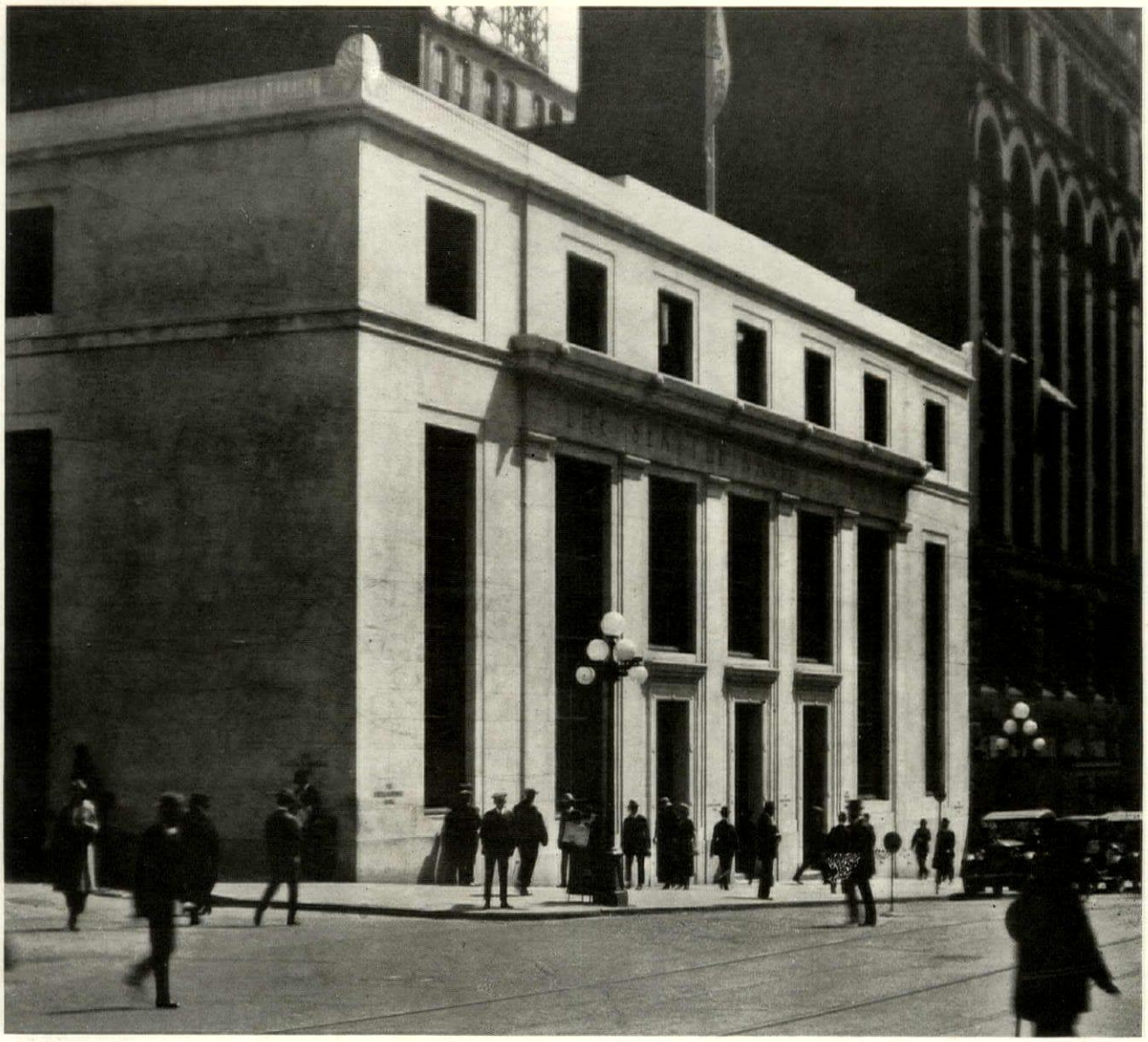
### Artificial Cooling

In view of the ever-increasing use of underground working spaces, the constant demands for more comfort, and the continuous striving for better working conditions to secure not only health but with it more accurate and quicker work, there would seem to be little doubt that artificial cooling will be more and more used in the future. The refrigeration work, now being mostly done by electricity, is not a matter of very great expense, because electrical current can now be had almost anywhere at low cost. The required condensing water is practically all used again in most cases for domestic purposes. The provision of artificial cooling, however, does not mean that precautions to prevent engine and boiler room and smoke flue waste heat can be disregarded. Indeed, more care than ever should be taken to keep heat nuisances away from cooled rooms, and thus secure cooling at a minimum cost of operation and installation.

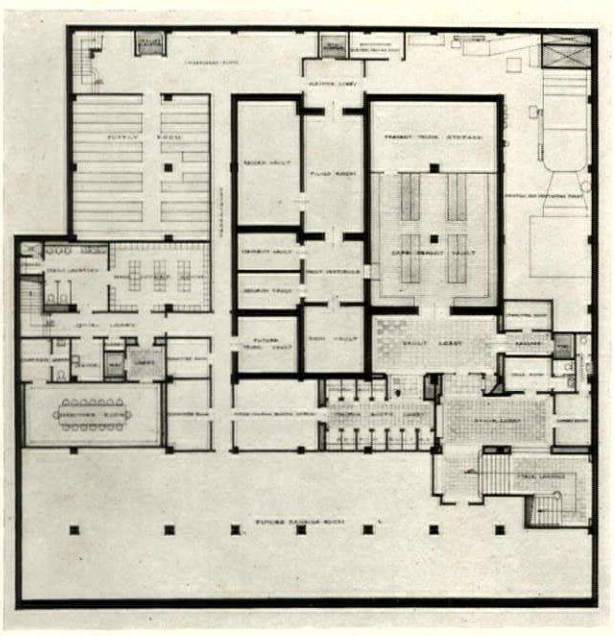
The temperature of the cooled rooms must bear some relation to the outside temperature, for a constant inside temperature of 70° when the outside is varying between 70° and 92° is neither required nor healthy. The room should be cooled to give it a feeling of freshness and coolness, and no more.

In order to show what proportions an artificial cooling plant may assume, a few words of description of the plant in the most important financial institution of our country, the New York Stock Exchange, of which Trowbridge & Livingston are architects, may be of interest. The building has 6,000,000 cubic feet. Artificial cooling has been provided for the board rooms, for stock and bond trading on the ground floor, and for stock clearing corporation quarters, vaults, coupon booths, barber shop and banking rooms in basement and sub-basement. The board rooms have 1,500,000 cubic feet of contents. The stock clearing corporation quarters, the vaults, coupon booths, barber shops and banking room in basement and sub-basement have 1,000,000 cubic feet contents.

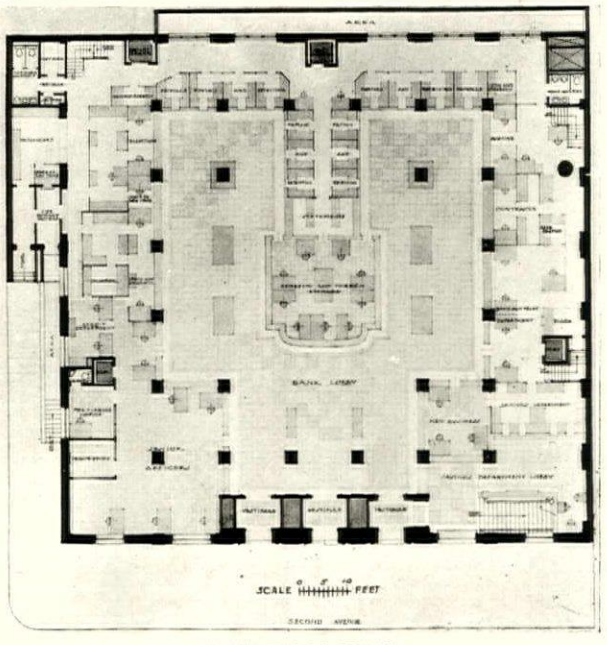
The board room population alone consists of 1,650 persons in constant movement and usually under the maximum of nervous tension. The heat emission of this number of persons in the board room is fully equal to that of the same number of hard working laborers. The board rooms have 21,000 square feet of floor area, giving 12.6 square feet per person, as compared to standard school practice of 20 square feet per person. In addition to the heat from this source, there is an unprecedented volume of 1,500,000 cubic feet of compressed air per hour, at well over 100° temperature in hot summer weather discharged into the board room from a very complicated pneumatic tube system which is installed for handling messages. As a comparison, let it be said that the average compressed air capacity for pneumatic service of the largest hotel is only about 18,000 cubic feet per hour. The necessity of an adequate supply of fresh and cooled air is self-evident. The air is cooled by four brine cooling bunkers containing 47,000 lineal feet of 1¼-inch galvanized iron pipe. Two of these bunkers are located on the fifth floor, 90 feet above the sidewalk. They are used for the board rooms, located above street level. One bunker is located 30 feet below the sidewalk, and another 62 feet below the sidewalk. These bunkers are used in connection with the basement and sub-basement spaces. The brine is circulated by four pumps, each driven by a 40-h.p. motor. The refrigerating machines themselves are located three or four floors below the sidewalk and have a capacity of 750 tons, driven by four motors of 1,600 h.p. capacity, current supplied from central station.



GENERAL EXTERIOR VIEW



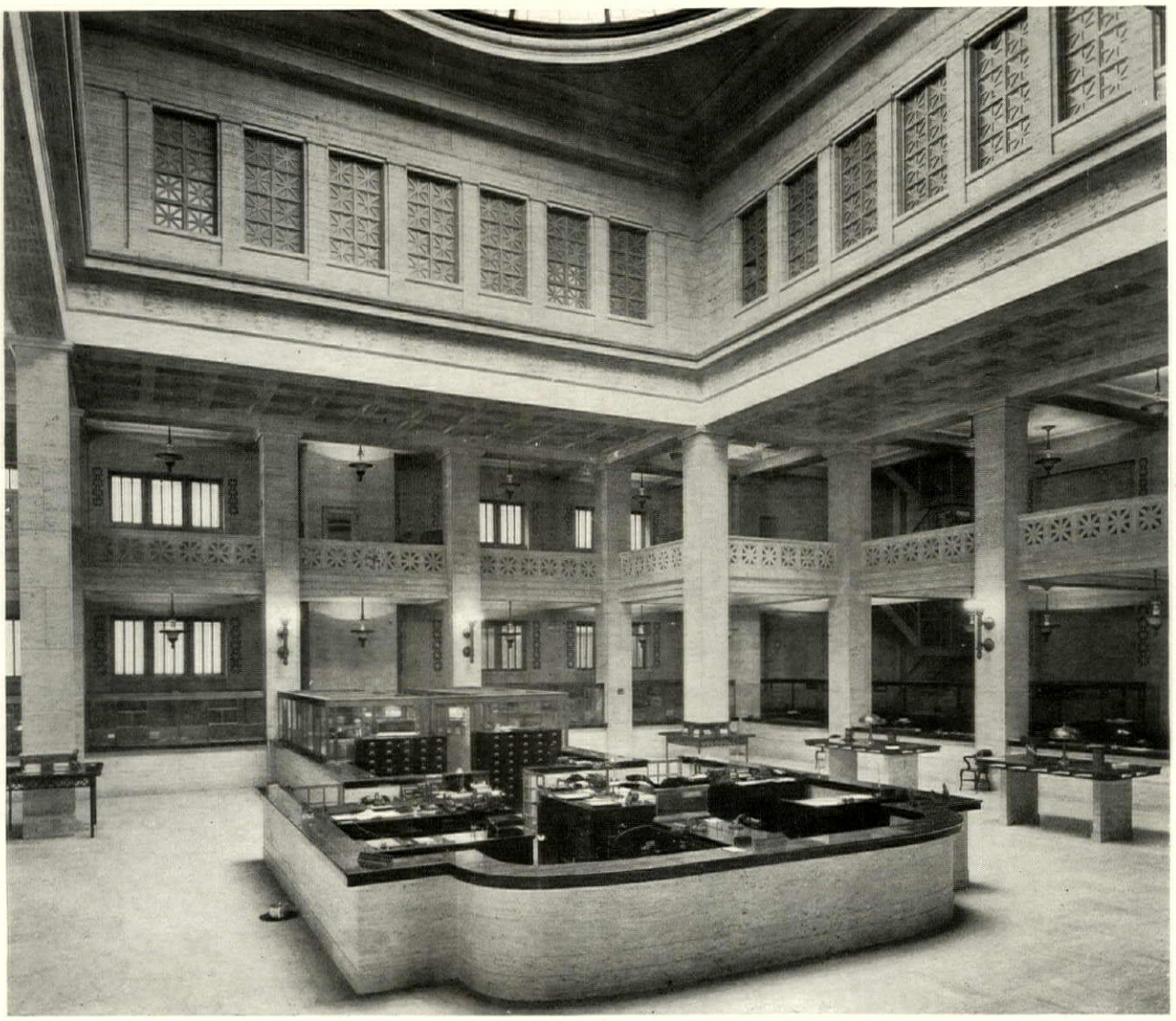
BASEMENT FLOOR PLAN



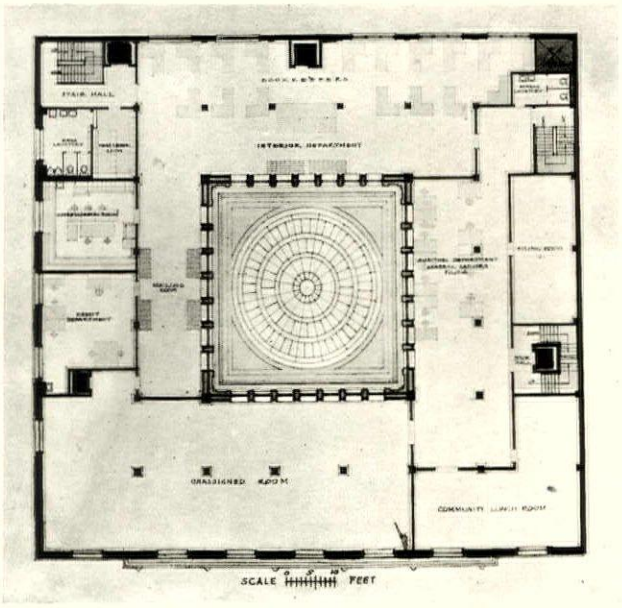
FIRST FLOOR PLAN

SEATTLE NATIONAL BANK, SEATTLE

DOYLE & MERRIAM, ARCHITECTS



GENERAL INTERIOR VIEW




SECOND FLOOR PLAN

Type of construction. Reinforced concrete frame and floor system; brick filled walls
Exterior materials Marble
Interior materials. Marble floors; lower portions of walls, columns and screen travertine; upper portions artificial travertine; counter and check desk tops, black and gold marble
Windows. Steel sash
Counter screens. Travertine, marble, drawn bronze and glass
Vault and safe deposit provision. Security, book, storage and safe deposit vaults; electric protection
Special departments. Bond and safe deposit departments
Type of lighting. Indirect
Heating and ventilating. Forced blast, washed air, thermostatic control
Date of general contract. July, 1921
Total building cost. $450,000
Cubic foot cost. 60 cts.

## SEATTLE NATIONAL BANK, SEATTLE

DOYLE & MERRIAM, ARCHITECTS


GENERAL EXTERIOR VIEW

BANKING ROOM

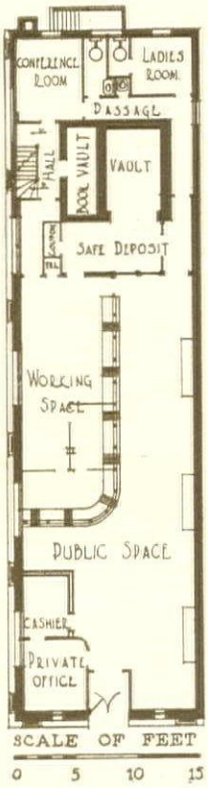
CITIZENS NATIONAL BANK, COVINGTON, VA.

ALFRED C. BOSSOM, ARCHITECT

CITIZENS NATIONAL BANK
COVINGTON, VA.

Illustration on Plate 86

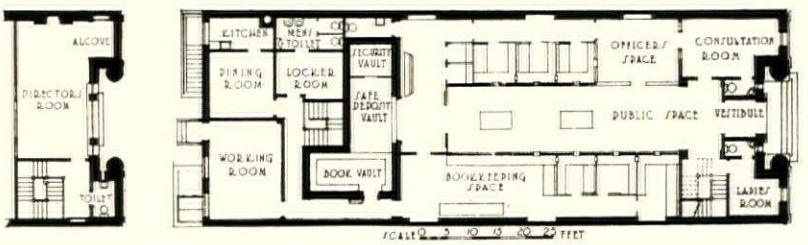
Type of construction. Fireproof
Exterior materials. Cast stone
Interior materials. Marble, plaster and bronze
Windows. Wood
Counter screens. Bronze and marble
Type of lighting. Direct
Heating. Low pressure steam
Total building cost. $160,000, including vault




FIRST FLOOR PLAN


GENERAL VIEW OF EXTERIOR

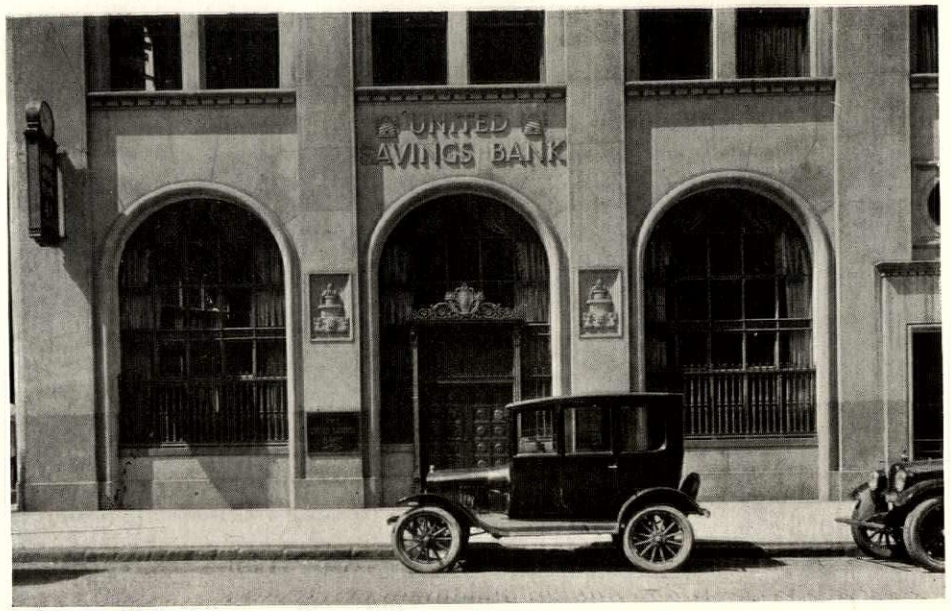
Fireproof construction; Exterior, Marble; Interior, Marble, mahogany and ornamental plaster; Windows, Steel sash and frames; Counter screens, Marble, bronze and mahogany; 450 safe deposit boxes; Book and storage vaults; Lighting, Direct and indirect; Heating, Steam; Date of general contract, February, 1921; Cost, $100,497.77; Cubic foot cost, 65 cts.




FIRST AND MEZZANINE FLOOR PLANS

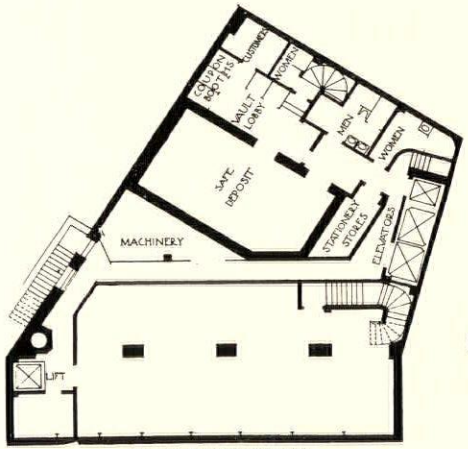
NATIONAL EXCHANGE BANK, AUGUSTA, GA.

MOWBRAY & UFFINGER, ARCHITECTS

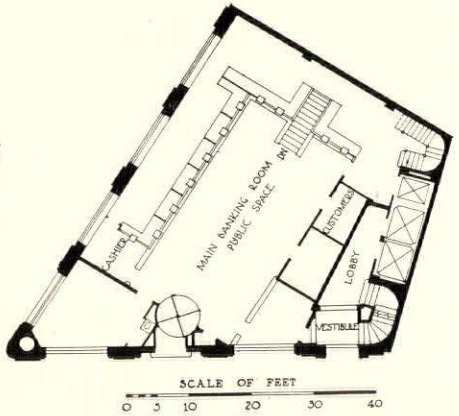



BANK ENTRANCE

Type of construction, Fireproof; Exterior material, Limestone; Interior material, Marble; Windows, Steel sash; Counter screens, Bronze and marble; Type of lighting, Direct; Heating, Steam.




BASEMENT PLAN




FIRST FLOOR PLAN


VIEW OF FRONT FACADE

UNITED SAVINGS BANK, DETROIT

ALBERT KAHN, ARCHITECT

# Vault Protection

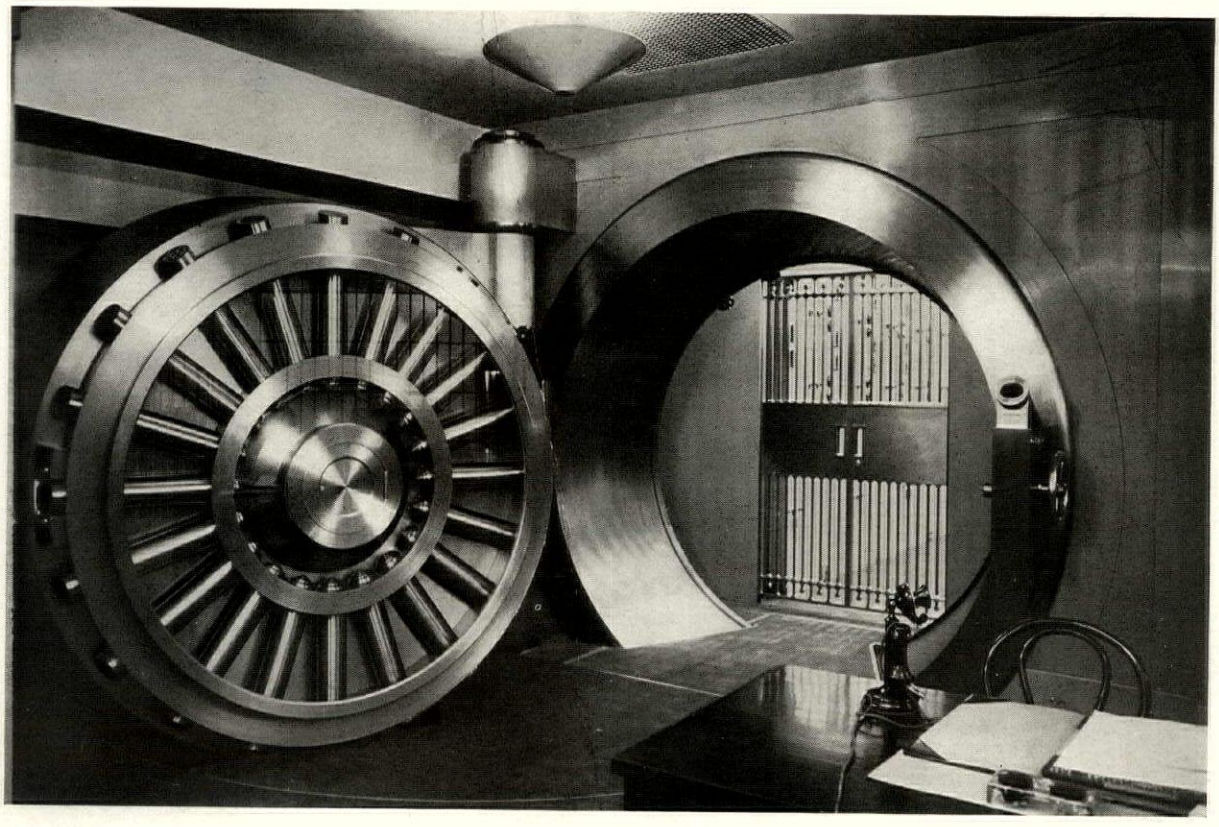
*By* FREDERICK S. HOLMES, *Bank Vault Engineer, New York*

FOR more than a generation the fundamental principles of vault design remained unchanged. Great progress was made by increasing thicknesses and weights, and in refining construction details, but as no new destructive forces had made their appearance during that time, and as all then known methods of attack had been successfully met, safe and vault work at the end of that period was of practically the same general character as at the beginning.

A few years ago, however, the invention, perfection and wide commercial adoption of the oxy-acetylene cutter-burner brought about a revolution in the industry; constructions which previous to that time would have resisted attack for many hours, fell in value to an equal number of minutes. This menace, however, was soon met by the invention and production of various kinds of metals and materials, singly and in combination, which sufficiently resisted the flame, and while in general the time value of the new constructions was less per dollar of cost, the designer and manufacturer felt that the problem had been solved. Matters remained in this condition, however, only for a short time, for a further discovery was made by experimenters who were endeavoring to further extend the commercial adaptability of the acetylene torch, and while this discovery has had, so far at least, little value in either the arts or sciences, it can be readily used as a burglarious device. It consists in a combination of the torch with a so-called fluxing rod, and no material nor combination of materials has thus far been found immune to its action.

The almost immediate influence of the development of this torch was reactionary and to the detriment not only of the vault manufacturing business, but even more so to the purchasers of new work, because there prevailed the mistaken belief that metals had been rendered valueless for purposes of protection, and that reinforced concrete in excessive thicknesses must take their place. The industry paused for but a brief period while research was made for an answer to a question seemingly more difficult than that raised by the initial introduction of the use of the torch. Not one, but many quite satisfactory replies have been made in the form of combinations of metals or metals and materials which do not actually stop the action of this new process, but so retard it as to make its use in burglary a negligible factor.

These remarks apply equally to large and expensive constructions for urban institutions and to the installations made in small country banks. All

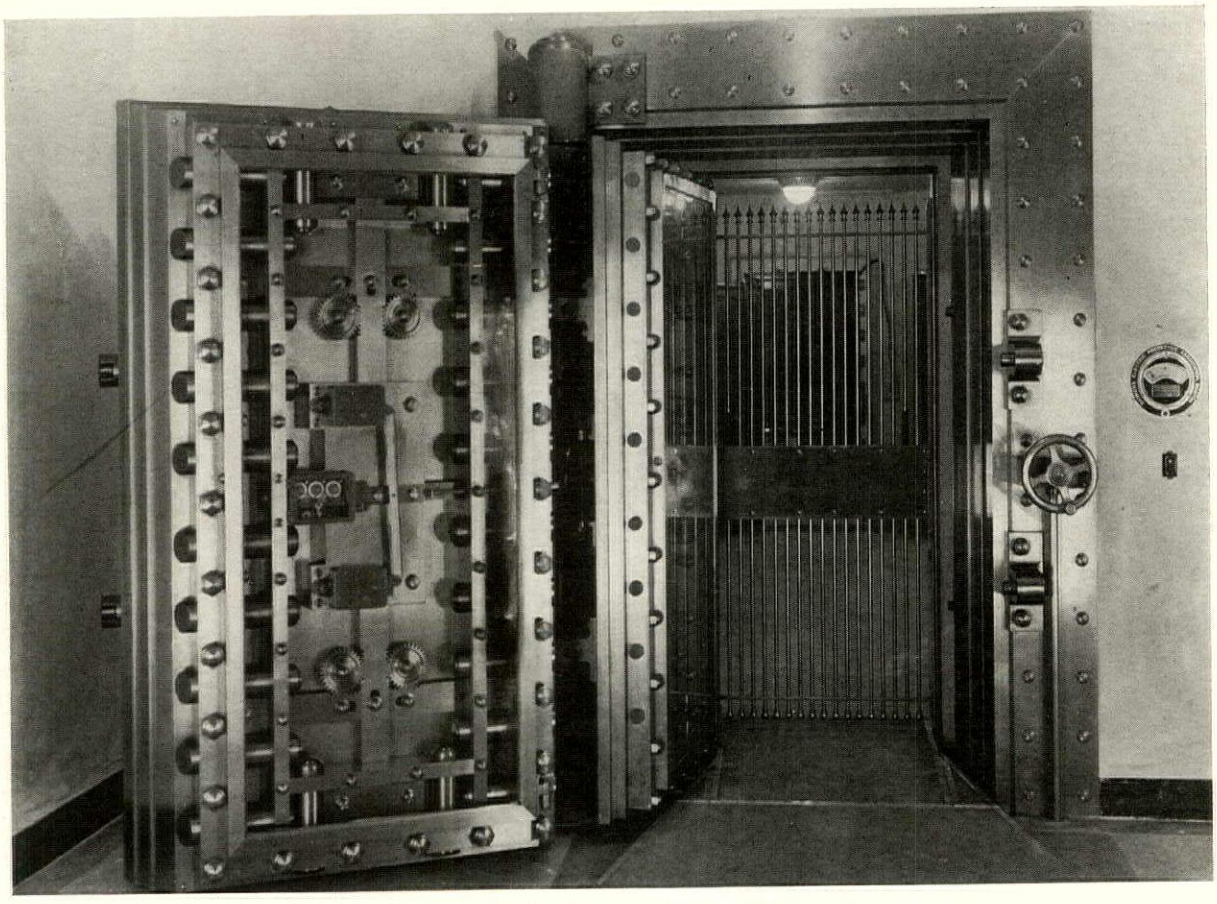


Entrance to Main Security Vault, Federal Reserve Bank, New York
Combination locks and bolt-throwing mechanism on the jamb; time lock in center of door; all bolt-operating mechanism concealed
Frederick S. Holmes, Vault Engineer

must expect to pay considerably more for any given time protection than was necessary a few years ago, and this handicap will probably be found so great in many instances that the designer cannot produce fully satisfactory results. There is, however, one grain of satisfaction, provided advantage is taken of the use of the new materials even to a limited extent, in the fact that the materials will produce vaults so much stronger than most existing structures as to provide a relatively high degree of security.

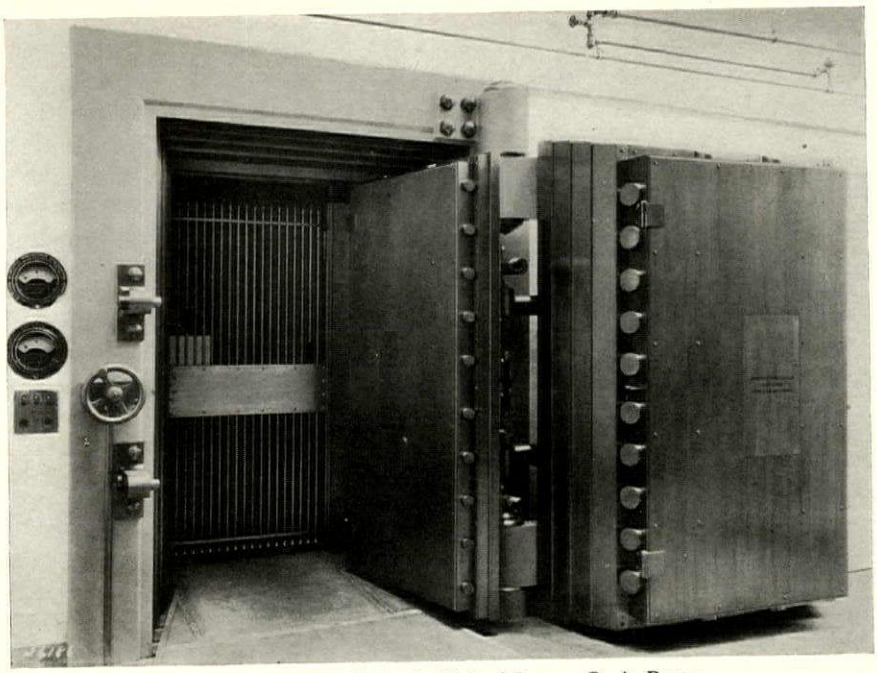
Since the torch or torch and rod combination has come into use it has been comparatively easy to cut a manhole section through a vault lining, to push the core into the vault and then to climb through the hole; the addition of anti-cutting materials very materially lengthens the time consumed in such an operation, but still leaves the method as the most practical way of entering even modern vaults. It is evident that the erection of a barrier or buttressing element upon the inside of a vault lining would prevent the pushing of the cut section into the vault. It is also evident that if the vault lining were firmly and at frequent intervals anchored to this buttressing work it could not be pulled out, but further time-consuming operations must be conducted to remove the manhole slab, either by cutting it up into small pieces or by getting openings behind it and using large quantities of explosives to break the anchorage and blow it out, and then to complete the manhole through the buttress. Recent vaults are being built in this manner, and while the inner wall is of comparatively inexpensive construction, being composed of beams, anchors and concrete work, because of its function it is probably worth more per dollar of cost than any other element of the design.

A word about the falling value of reinforced concrete for protection purposes other than as a resistant to heat and to falling bodies should be included. Architects and laymen alike are impressed with the known strength of this material for general construction purposes. This impression is strengthened as they note its resistance to drill, chisel and explosives where demolition is being carried on or changes made in seasoned material, and it has been natural enough to think of it as an ideal material for vaults. Its adoption for this purpose is country-wide, and dependence has been placed exclusively upon it in a great many instances. Previous to the appearance of the torch there was much to be said in favor of such work, particularly if the walls were thick and contained heavy section reinforcement. All such members, however, once exposed are readily cut by the burner; the difficulty heretofore has been to free them from the concrete. The use of the hand chisel and hammer, of whatever weight, is slow; pneumatic tools are not in the burglar's line, neither are explosive charges sufficiently heavy to effect requisite disruption within a brief period; but



Entrance to Safe Deposit Vault, Addition to National Shawmut Bank, Boston
Bolt-throwing mechanism exposed on inner face of door
Parker, Thomas & Rice, Architects; Benjamin F. Tripp, Vault Engineer

electrical chisels approximating the power of heavy pneumatics are on the market, and still heavier chisels are to follow. These are burglars' tools, and of course electrical current is to be had in all banks. With them concrete is rapidly cleared away and light reinforcement is cut; where the members are heavy the torch can be substituted; little skill is required in the use of such instruments, and the hammer noises can be effectually blanketed. There are indeed some designs of reinforced walls that are easily penetrated with hand hammer and chisel alone, and where neither other equipment nor skill is necessary to cut through them.



One of Seven Vaults in the Federal Reserve Bank, Boston
All mechanism for bolt-throwing concealed
R. Clipston Sturgis, Architect; Benjamin F. Tripp, Vault Engineer

Modifications of door construction have followed rather closely the changes in the wall designs, increasing thickness in the cheaper grades of work being almost universal. This is made necessary because a balanced construction requires that the door should resist simple penetration at one or two points at critical locations opposite locking devices, for the same length of time that is required to cut a manhole through the vault lining.

Hinge and pressure mechanism, bolt work, time and combination locks and connections, and other related details have undergone little change in recent years, except as they may have been made heavier and somewhat simplified in design, have received more workmanlike attention, and have acquired a better finish. In some instances the combination locks, dogging and bolt-throwing mechanism have been transferred from the door proper to the door frame; this leaves a solid door without spindle holes and makes it necessary to penetrate the door opposite the timelock, and the frame opposite the combinations, and so prolongs the time of attack.

For many years it was found practicable to open doors held locked by failure of their mechanism by the use of long instruments through a small hole in the vault's walls, even at some distance from the bolt work. This small opening could be made in much less time than would be required for the making of a manhole; the value of the work was lessened proportionally by this difference in time, so that in many vaults of modern construction the combination locks, dogging devices and bolt-throwing mechanism, and occasionally the timelock as well, are protected against this sort of manipulation by being protected by heavy steel plates so placed as to be not readily reached.

More and more, steps or rebates at the door joints are being lengthened or done away with entirely, for the perfectly good reason that each rebate provides a seat against which explosives may act to blow out the door. The complete elimination of the steps has a double value; such a joint offers no resistance in or out to explosives, and the resulting smooth surface is far more impressive and suggestive of strength than is the case when the eye must jump from one break to another. It is of course necessary to retain the so-called striker section at the inside corner of the door for the purpose of holding a waterproofing gasket, but as the door need not strike directly against this rebate, and as the gasket offers little resistance to explosive force, it in no way interferes with the inflowing gases.

The long established custom of building vaults upon their own foundations and practically not connected with any building construction is still considered best, although departures from this principle are allowable where it seems necessary to support a vault upon the building framing if sufficient reinforcements are provided to compensate for falling loads as well as static weights, and if the framing, columns, etc., are so tied to the vault and provided with breaking joints outside the vault lines of such character as to insure, in the event of serious distortion to the frame, or building collapse, that the structural steel work included within the vault walls shall not tear out. Complete observation of all six sides of the vault structure is always to be desired. The exterior finish of a vault must depend largely upon its relation to the surrounding building construction, but many vaults, particularly those used for safe deposit purposes, or where they might otherwise become unduly striking, are so merged into the interior decoration schemes that

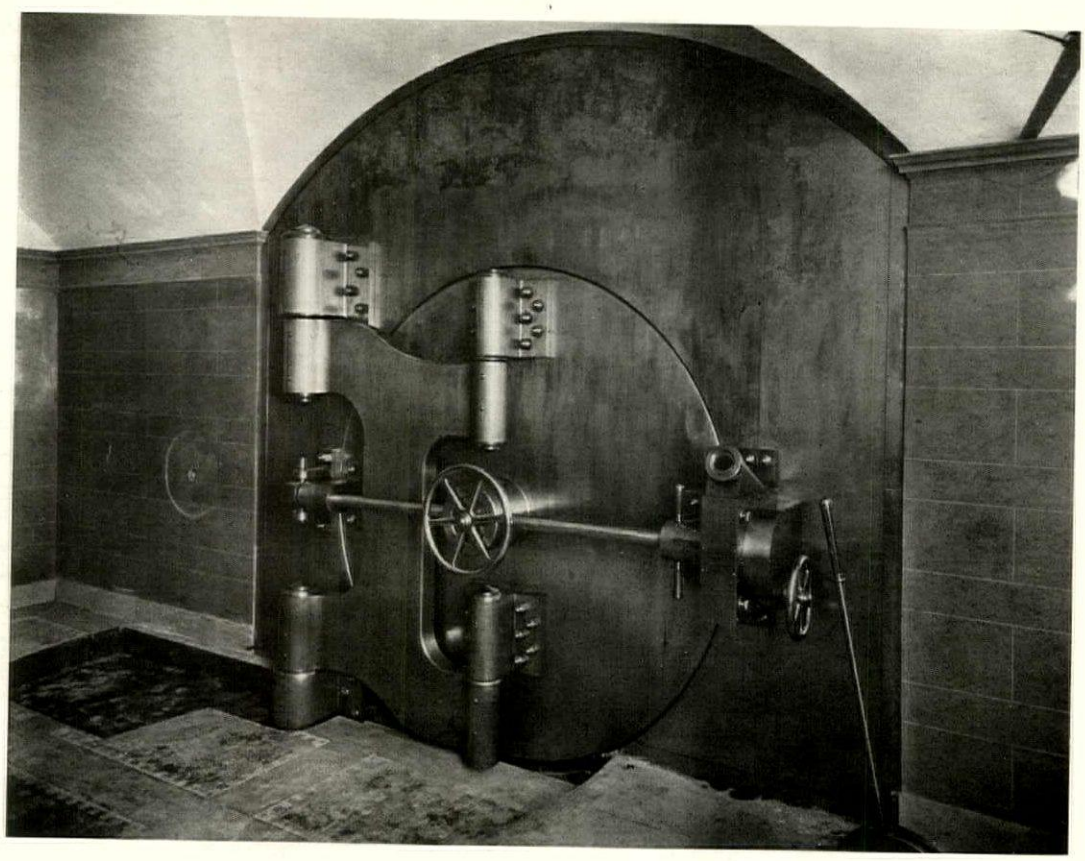
this effect is largely lost, which is to be desired.

Electrical protection is now so well known and so almost universally adopted that it seems automatically to take its place as one of the factors of vault protection. There are many systems on the market, some much better than others, but all of value, partly as real protection in the event of attack and partly as a prevention of attack. Occasionally two systems are used on the same vault, in which case each supervises the other. Intrinsically weak structures depend more upon electrical protection because of their lack of inherent strength; but the electrical equipment should also be used upon the heaviest and strongest of vaults or at least upon their doors, as its presence acts to prevent the unauthorized opening of the vault by inside parties.

The subject of vault ventilation, which in years gone by was almost entirely neglected, is now receiving the attention that it deserves. The problem is quite different from that of ventilating a room, although until recently it has been treated in much the same way. A vault has no fenestration, and frequently but one door, and all of the heat units generated by the lighting system as well as those given off by people in the vault must be taken out by forced draft. This is best effected, where an emergency entrance is provided, by opening this door into a pressure or plenum chamber and distributing the air inside the vault by suitable ducts over or beneath the interior equipment, liberating it at the dead ends of transepts or other similar locations and allowing it to find its way out through the main entrance and picking it up just outside the vault by a ceiling exhaust register.

If the vault is large and the building pressure low, it may be best to put the vault on a separate system with a high pressure fan on the outside, or to use a booster just inside the vault. If the vault is double and has two entrances, one to a security division and a second to a safe deposit department, a satisfactory ventilating scheme is frequently obtained by using a push and pull fan between the two compartments, drawing the air in through one door to the ends of transepts or other similar places, and delivering it under pressure from similar locations in the opposite side of the vault. If there is but one entrance to the vault and the interior is of any considerable size, a sectional duct may be secured to the underside of the foot plate bridging the doorway, where automatic connection may be made both inside and outside, and air forced in and liberated at the ends of aisles to be exhausted through the doorway. If the vault is exceptionally large, a combination system of supply and exhaust may be installed through an emergency or ventilating entrance, the location of the delivery and exhaust registers being determined by the interior equipment.

To sum up, 50 years ago the whole matter was not much more than a job for a blacksmith; today it is a highly specialized and diversified engineering proposition, and should be so considered and treated.



Entrance to Safe Deposit Vault, National Commercial Bank & Trust Co., Albany
Surface of door and frame of polished steel; lowering platform in front
York & Sawyer, Architects; Frederick S. Holmes, Vault Engineer

# The Reduction of Noise in Banks and Offices

*By* CLIFFORD M. SWAN, S.B., A.M.
*Consulting Engineer, New York*

TWO officials of a well known institution in New York were recently walking in earnest converse through the corridors of their new building. They were surrounded by the usual babel of echoing sound common to such public spaces, and were, moreover, unpleasantly conscious of their own voices reflected back upon them, making both speaking and hearing difficult and uncomfortable. They stepped through a door into a department on a large open floor, when suddenly it seemed as if a blanket had been thrown over their heads shutting off all sound. They stopped in sheer amazement until it dawned upon them that the ceiling of this department had been covered with material intended to absorb the sound and produce just the condition of quiet noted. The contrast in conditions was impressive, much like that experienced when a train emerges from the subway onto an open viaduct. Conversation could be carried on without strain, and the usual sounds of the office were minimized to an unbelievable degree. The two officials received a practical demonstration of the work which they had previously approved on theoretical grounds such as no verbal description had ever conveyed to them.

The quieting of offices and workrooms is a comparatively recent development of technical science. Following logically as a result of the acoustical researches of the late Prof. Wallace C. Sabine of Harvard University, it has been welcomed alike by office managers, efficiency experts, welfare workers and physicians as a necessary factor in the conservation of human energy, quite as important as problems of heating, lighting and ventilation. The amount of noise developed in a bank, office building, hospital, or restaurant of fireproof construction is far greater than is perhaps commonly appreciated. The modern city dweller becomes so accustomed to life in the midst of a continual racket that often he does not realize how aggravated is the condition, nor what a drain on the nervous system is involved.

The interior finish of a first class, fireproof building consists chiefly of materials such as concrete, hard plaster, marble, stone, terrazzo and glazed tile. Wood, even for trim and furniture, is largely barred, and in its place metal is now used. When a sound wave strikes such surfaces, only a small fraction of the energy is absorbed, and the major portion of the sound is reflected. Hence, when any sound is produced, it is reflected back and forth from surface to surface many hundred times before it is so far absorbed that it cannot be heard. Such a process consumes several seconds of time, and naturally all other sounds produced in that period add their energy to the first and to one another, so that the result is a piling up of sound, making it many times louder than would be the case if the reverberatory condition did not exist. Thus the usual office noises, such as proceed from typewriters, adding machines, telephone bells and conversation, and from street noises entering from outside, are all magnified into a great din.

The mind apparently becomes accustomed to all this noise by eliminating it from the waking consciousness, just as a man can become so absorbed in thought as not to be aware of a person's speaking to him. Psychologists tell us that the sound registers on the subconscious mind, however, and produces its effect just as surely as if we were aware that we had heard it. There is no escape from the action of the noise on the brain and nervous system. The result inevitably is fatigue, lessened powers of concentrated and accurate thinking, and a general lowering of efficiency. This is harmful alike to the health of the workers and the good of the business.

Anything which will absorb sound will, if introduced into a room such as described, tend to improve conditions by diminishing the amount of reverberation and so the volume of noise. The clothing of employes acts in this direction, but is not enough to correct it. Heavy hangings, rugs, carpets and upholstered furniture do the same, but of course are not usually practicable excepting in private offices. The remedy must, therefore, lie in the application of absorbent materials to walls or ceilings, usually the latter. Such materials fall in two classes,—structural materials such as acoustical tile or plaster, and corrective materials like hair felt which must be covered with a concealing fabric of one type or another. Both classes have their advantages and their limitations.

Architecturally, the most interesting of these substances are the tile, brick or block manufactured in such a way as to have a structure of intercommunicating interstices of suitable sizes which permit the sound to penetrate and be absorbed. The principle was worked out by the joint researches of the late Prof. Sabine* and Mr. Guastavino. Several types of tile and artificial stone are now on the market and are being used with excellent results, being excellent sound-absorbers. Since in office quieting work they must usually be placed upon the ceiling, they naturally lend themselves from an architectural standpoint rather to vaulted forms of design than to flat ceilings, but they can, if desired, be perfectly well used on the latter. Use is often made of acoustical plaster, which was the next result of the research following the two materials just described. Such plaster has thus far been used only to a limited extent in practice. It is considerably more expensive than ordinary plaster, and its use requires

*"Collected Papers on Acoustics," Wallace C. Sabine, Harvard University Press, pp. 207-209; also *The Brickbuilder*, January, 1914.

exceedingly careful supervision and faithful carrying out of instructions in order to insure its proper application in a way to produce efficient results.

Other materials have frequently appeared on the market with fantastic and misleading claims to acoustical value. It is well to note that the only genuine basis on which such a claim can legitimately rest is the sound-absorbing quality, and that this depends not only on the degree of porosity, but also upon the fact that the pores must communicate with each other and be of approximately uniform size. In other words, it must have a structure much like a sponge of very fine texture.

Probably the most popular material for office quieting is hair felt.* If such a felt is made of perfectly clean, pure cattle hair, well matted, it is odorless, permanent and efficient. Nor is it inflammable as are vegetable fibers. In thickness, it should be normally 1 inch. There is no advantage to be gained by using a greater thickness, as this would increase the absorption only for the lower pitches which are seldom a factor in acoustical problems. For the sake of appearance, the felt must be concealed from view by a covering of some sort of fabric which will not reflect sound striking it, and which will harmonize with the architectural features, the decoration and the furnishings of the room. For instance, in a lofty banking room, with ornamental plaster ceiling and stone walls, a beautiful effect can be obtained by hanging pads of felt against the walls with tapestries over them.

In the average bank or business office, however, the spaces which are most in need of quieting treatment are those devoted to typewriters, addressographs, adding machines, telegraph instruments, and other noise-producing devices, or those in which a great degree of quiet is essential, such as telephone switchboard and conference rooms. These are usually situated on floors with height not greatly over 12 feet and little wall space, so that the ceiling is clearly indicated as the necessary location for the quieting treatment. The felt can readily be applied to the ceiling, but a difficulty arises in deciding upon an efficient covering. If muslin or canvas is stretched over the felt and then painted to simulate a plaster surface, the membrane loses its porosity and becomes stiff and reflects a large proportion of the short wave lengths or high pitched sounds which are characteristic of office noises. The heavier the cloth and the paint the greater is the reduction in efficiency. This effect is not as marked for the sound of the voice, but the click of a typewriter or adding machine is reflected with almost undiminished intensity. On the other hand, if the muslin is not painted, but dyed to the desired color, then the porosity and absorption are left unimpaired, but the surface soils rapidly on account of the constant circulation of dust-laden air through it, and soon becomes unsightly.

Recently a membrane has appeared which solves the difficulty. The painted cloth was satisfactory for all but high pitched sounds; by the simple device of perforating the cloth with holes suitably sized and spaced, the penetrability of the membrane for these sounds is restored and the absorbing power of the treatment is as great as with uncovered felt. Such a membrane can be painted with any kind of paint without impairing its efficiency as long as the holes are not filmed over. Such a ceiling, of course, shows a pattern composed of rows of small polka dots, but the effect is not unpleasing, and the light reflection is not greatly diminished. It is, at the present time, the most satisfactory solution of the problem as far as treating noisy offices is concerned, and has been adopted for extensive use in the new buildings of the Federal Reserve Bank, New York, of the Union Trust Co., Cleveland, and other large institutions.

A word should be said regarding the layout of offices with regard to the acoustical problem. In general, a large open floor is preferable as a working space rather than a number of small offices separated by partitions. Not only are the ventilation and the accessibility of such an arrangement better, but the space is much more readily quieted by the ceiling treatment than in a small office where the ceiling forms a smaller proportion of the total interior surface. Noise-producing instruments should, as far as possible, be segregated and isolated in departments by themselves in order to reduce the expense of installing quieting treatment. There is no objection, however, to scattered machines on an open floor, provided the ceiling has received treatment as a whole, but this, of course, is not as economical an arrangement. Single machines, in small offices, should be of the so-called noiseless variety.

Individual offices and conference rooms may either be divided off by solid tile and plaster partitions or by wood and glass extending upward all or part of the distance to the ceiling. Such rooms with walls of the full height are treated as individual units; those whose partitions do not reach the ceiling must be considered in their relation to contiguous offices or floor spaces. If the distance between the tops of the partitions and the ceiling is much greater than 1 foot, there can be little isolation, as sounds will carry in a direct air path over the tops of the partitions, regardless of the nature of the ceiling. With only a small gap near the ceiling, however, and with absorptive treatment on the ceiling, little sound will pass over, and a considerable degree of privacy will be established. Such an arrangement is often desirable on account of the superiority of ventilation over the fully enclosed office.

It is manifestly impossible in a short article to do more than outline the general problems of bank and office noise and the ways in which they are met. Similar problems exist in hospitals, restaurants, indoor gymnasiums, swimming pools, shooting ranges, bowling alleys, and the like. Often there are complications, such as sound transmitted through walls or floors. Like all technical problems, the various cases which arise must be the subject of expert study in order to arrive at their adequate solutions.

* "Collected Papers on Acoustics," pp. 157-161.

# The Fifty-Sixth Convention of the A.I.A.

MAY 16, 17 AND 18, 1923, WASHINGTON

THE convention at Washington gave evidence of the progressive spirit and growing influence of architects. The Institute may well feel proud of the success which has attended its efforts to secure a wider representation of American architects in its membership. The new members secured in 1922 totaled 271, making a membership of 2,714 at the opening of the convention. The quota of delegates to membership was reduced last year 50 per cent, so that the conventions would not become unwieldy, and with this reduction there was an attendance of delegates and members totaling 244. By action of this convention this reduced representation has been made permanent.

The work of linking the members of the Institute together has been furthered by holding meetings of the board during the past year in different sections of the country, and with the directors elected this year the recently inaugurated plan of regional distribution of directors has been completed. This will tend to encourage the holding of smaller regional conventions where local problems can be discussed fully and their nature brought to the Institute at large through the attendance of the board. Such a regional meeting was recently held at Charleston, in which delegates from four of the southern chapters participated.

It will perhaps surprise no one to hear that the subject of competitions was of major importance in the convention, because it is always discussed where architects gather. A step has now been taken, however, which may eventually settle this moot topic. The conflicting and varied state and municipal regulations governing competitions have become apparent, and it is realized that the Institute cannot effectively lay down principles for the guidance of its members that will be fair to them in consideration of the many architects who are not obligated to follow Institute procedure, when legal procedure regarding competitions is so far from being standard. The note of progress in this convention was therefore the beginning of an attempt to frame a law governing competitions that it is hoped will be adopted by the various state and municipal governments. This naturally entails a large amount of study, and it presents an opportunity of giving serious consideration to the various proposals that have been made by several chapters from time to time in the past. The Institute has been successful in the legislative work it has undertaken with regard to architects' registration, and success in standardizing competition procedure will go a long way in removing the difficulties which many architects honestly enough find in the way of their becoming Institute members.

In compliance with the trend of the hour the Institute is giving attention to industrial relations. Architects generally have come to realize that their traditional policy of aloofness in the differences between employers and employes is not constructive, and that because of their neutral, professional position they are in a position to lend help and advice to a situation that calls for clear thinking and honest, man-to-man dealing. Results of architects' active interest in industrial relations are already evidenced by active movements to recruit apprentices to the building trades on a permanent basis in New York, Philadelphia, Boston and some of the cities of the Pacific coast. This work is being carried out by local groups, chiefly organized under the principles of the Building Congress, in which representatives of all the elements of the building industry, including labor, come together on an equal footing. These groups are serving to dispel the distrust and suspicion that have too long retarded the industry, and their success should stimulate architects in other cities to meet their local problems in a similar manner.

In this same field is the National Board of Jurisdictional Awards, for which the Institute was largely responsible. There has persisted a feeling in parts of the country where open shop conditions prevail that the Institute exceeded its authority in requiring architects in writing specifications to be governed by the board's decisions with regard to the subdivisions of contracts. Repeated interpretations that the decisions were effective only in territories where building operations are carried on under agreements between organized employers and labor unions were not sufficient, and now, largely at the insistence of southern California, a statement to this effect has been definitely adopted as governing members of the Institute. Ernest J. Russell, who has so well served the Institute as its representative on the board and also as the president of the jurisdictional board, tendered his resignation at the convention. Mr. Russell was accorded hearty thanks for his long and untiring efforts, and it is sincerely hoped that a man of similar tact and good judgment will be found to carry on the work he has so ably established.

The work of the Structural Service Committee, which has been expanding rapidly during the few years of its existence, has demonstrated the need for such service as it renders architects. A year ago the Producers' Section was inaugurated, by which such manufacturers of building materials as desired might co-operate with the committee and receive its advice with regard to their advertising and other sales efforts directed to the architect.

The Committee on the Preservation of Historic Monuments reported the successful restoration of a small portion of the Fine Arts Building of the Columbian Exposition in Chicago. During the convention news was received that the South Park Com-

missioners, of Chicago, had decided in favor of restoring the entire building, and thus the efforts of the Chicago chapter, in which George Maher has taken so long an active part, have been rewarded. It is hoped that the restoration will be worthy of the efforts of those who have saved the building.

Preliminary steps were taken at this convention looking to the restoration of the "Octagon," the Institute's headquarters, and for the development of the property to provide an assembly hall and exhibition gallery large enough for Institute and similar society purposes in Washington. Plans are being carefully developed, and the opportunity for criticism and suggestions will be open to every Institute member before they are accepted. Final action on the scheme is deferred till the 1924 convention.

During the discussion of the "Octagon" problem announcement was made of the gift to the Institute of $5,000 by the Associated Architects of Los Angeles for the restoration and furnishing of the drawing room. This will make possible the restoration of the room to be made adequately and to reflect again the dignity it possessed when the house was temporarily the official residence of President Madison. The Associated Architects of Los Angeles, it is interesting to note, is a group of Institute members who have formed a working agreement to design the public buildings of Los Angeles and thus give to the city the benefit of the best architectural advice. Profits resulting from their commissions are applied to educational or other works to advance the cause of architecture.

The officers of the Institute elected for 1924 are:
President, William B. Faville, San Francisco.
First Vice-president, N. Max Dunning, Chicago.
Second Vice-president, William Stanley Parker, Boston.
Secretary, Edwin H. Brown, Minneapolis.
Treasurer, D. Everett Waid, New York.

Directors for the third, fifth and eighth regional districts, respectively, are:
Clarence C. Zantzinger, Philadelphia.
C. Herrick Hammond, Chicago.
William E. Fisher, Denver.

The closing event of the convention was the banquet and pageant at the Lincoln Memorial in connection with the presentation of the gold medal to Henry Bacon, F.A.I.A. Never in the history of the Institute, and perhaps never in the entire history of American art, was there a more impressive or inspiring occasion. The Lincoln Memorial has within the few short years of its existence become a shrine of American patriotism, and it was highly fitting that on its broad steps and terraces the tribute of his fellow architects and the tribute of the American people, represented by the president of the nation, should be given the author of its design. It is without any reservation the noblest monument of modern times, and it was a truly noble outpouring of affection and praise that the gathering of 500 architects, sculptors, painters and other representatives of the arts paid Mr. Bacon.

The banquet was held in a large, gayly lighted tent spread at the eastern end of the lagoon in front of the memorial. Special robes of blue, orange, green, light and dark red were supplied to the guests, those at each table being of the same color. Gorgeous banners representing the various Institute chapters, architectural schools and clubs were grouped at the ends of the tables. During the dinner the changing lights of closing dusk brought out the majesty and beauty of the memorial in the distance. At the close of the banquet an exceedingly gracious tribute was paid Mr. Bacon in the address by Royal Cortissoz.

Upon a signal that President Harding had reached the memorial the progress of the pageant was begun. The president of the Institute with the distinguished guests, Mr. Bacon, and his collaborators on the memorial, Daniel Chester French and Jules Guerin, boarded the barge of honor moored before the banquet tent. This simulated a Roman galley, with a huge red sail displaying the Institute seal, and on its deck a pedestal held burning green fire. To the slow cadence of ceremonial music by the Marine Band on the deck, the barge was drawn the length of the great lagoon, and there followed on either bank the robed guests with a brilliant banner marking every 20 feet or so. As the memorial was approached and those at the heads of the columns began mounting the steps leading to the memorial, the splendor and beauty of ancient Greece seemed to live again. Lights playing across the front of the memorial caught the brilliant robes and banners; the foreground was an intense black, and the huge seated figure of Lincoln stood out dark against a purple light which illumined the recesses of the great structure. The immense scale of the memorial was made evident when the figures of President Harding and Chief Justice Taft appeared between two of the columns as they started down the steps to meet the approaching barge. The majesty of the setting and the beauty of the brilliant, radiant colors against the deep shadows of the evening can best be conveyed by liking them to Walcott's water colors of ancient Roman festivals. The president and Chief Justice Taft occupied a box on the third tier of steps, and behind them and at either side were massed the banners. The guests were arranged in two large groups on the terrace immediately below. The president of the Institute introduced Chief Justice Taft who in turn introduced President Harding. The president expressed the gratitude of the people for the efforts of Mr. Bacon and his collaborators in producing the memorial, and after gracious compliments to Mr. Bacon presented him with the gold medal. Mr. Bacon responded in a brief and simple manner, and thus was brought to a close an event that was inspiring to all who witnessed it. As a signal honor to Mr. Bacon it will be warmly cherished by him, but it marks no less a distinction to the entire profession, and architects may justly feel the thrill of accomplishment and the utmost in public recognition which the presence of the chief executive of the nation bestowed upon their work.