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Paint, Its History and Properties*

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THE use of paint for decorative and preservative purposes dates far back into history, but in the brief space at our disposal we will only consider some of the more prominent types of modern paints and their most important properties.

Paint is described, in a general way, as the mixture of finely divided particles of solid matter called the "pigment" in a liquid called the "vehicle." Asphalt paint is merely solid asphaltum dissolved in benzine or some other vehicle. The pigment functions to hide the surface over which the paint is applied, to resist the action of weather and wear, and to give color. The selection of the most suitable pigment or combination of pigments depends very largely upon the relative importance of these functions under the conditions for which the paint is intended to be used. The vehicle functions as the carrying and cementing body; it dries and binds together the solid particles of pigment in somewhat the same way that Portland cement and water unite sand and broken stone to form concrete.

The types of paints best known are three, differentiated by the vehicles used to carry and cement their pigments. The most important are the oil paints, but the enamel paints are now used quite extensively and cold water paints are daily becoming more popular for interior walls. Asphalt paint is really a varnish. The varnishes differ from the paints in that they do not ordinarily have a pigment, though occasionally a little is added to give color, and we then approach what is known as "enamel paint."

The oil paints consist of pigment ground in a paint mill with oil as a vehicle, to which is added a small proportion of Japan drier to cause a fairly rapid solidification when the paint is applied.

Linseed oil, which is pressed from flaxseed, is the best known vehicle used in the oil paints. Until recent years it was employed for all the better paints of this type, but it has the defect that a film of it is readily penetrated by water.

Other vehicles as substitutes and improvements were diligently sought because of this unfortunate non-waterproof property of linseed oil. Among others, fish oil, Soya bean oil and corn oil have been carefully tested and successfully used under certain conditions, but the greatest advance has been made by using China wood oil. The latter, when properly manufactured, is very resistant to water, and it is largely employed at the present time in the manufacture of both paints and varnishes.

The enamel paints consist of pigment ground in a vehicle of varnish which consists ordinarily of gum or resin, oil and turpentine. The evaporation of the turpentine leaves the gum and oil as a strong cementing medium for the pigment. Some of these enamels are very serviceable and resistant to weather, and the coating dries with an excellent gloss.

Cold water paints consist of pigment, combined with gum, caslin, etc., that dissolves in water to form the vehicle at the time of application. The evaporation of the water leaves the gum to serve as the cementing medium for the pigment. Some paints of this type have very fair weather resistance.

White lead pigment is one of the oldest and best known. It was originally made from pieces of metallic lead called "buckles" that were corroded to form the white powder termed "basic carbonate" and known as "white lead." This process is largely used at the present time, though other methods have been adopted to shorten the period required for manufacture and to improve the product. White lead, as first produced, is purified, dried and powdered before being sent to the paint mill. White lead paint, when the pigment is properly ground with an oil vehicle of good grade, has great covering and hiding qualities. Unfortunately, it also has certain disadvantages. It is very poisonous, and on exposure to weather it has the property of "chalking." When one's hand is rubbed over a

*Lecture delivered before the Extension Course on Industrial Chemistry at McGill University.

FIG. 1
White lead paint, showing chalked condition.

board which has been painted with it for a year or more the hand becomes coated with a white powder. Chemical action between the white lead and the oil causes the change in a white lead paint film, and this action is so marked that in the course of a few years the house which has been covered with an excellent quality of white lead paint may be but poorly protected, especially if it is exposed to salt sea air. Figure 1 shows the general appearance of this condition when examined with a magnifying glass, while Figure 2 shows the condition in contrast of a better proportioned paint subjected to exactly the same exposure and use.

Zinc oxide pigment is another which is well and favorably known. Owing to its non-poisonous properties it is more desirable than white lead for interior work. This pigment used alone is unsatisfactory, however, as it produces a brittle coating that is liable to crack, as illustrated by Figure 3. Other pigments commonly used are Red Oxide of Iron, Ochre, Sienna, Ultramarine, Prussian Blue, Chrome Yellow, Lamp Black, and many others.

FIG. 3
Zinc oxide paint, showing cracked condition.

Co-operation is as effective in promoting efficiency with pigments as with people, and by far the best results have been obtained with paints in which suitable pigments have been properly combined. Little was known about the reactions between pigments and vehicles, or the reasons for good or bad service of paints made from given materials, until comparatively recent times. Certain bad combinations were shunned from sad experience. It was learned, for instance, that white lead paint mixed with ultramarine blue will darken, owing to the formation of black sulphide of lead, and that a sign coated with white lead paint will sometimes change from white to yellow within an hour if exposed to the sulphur fumes from a locomotive.

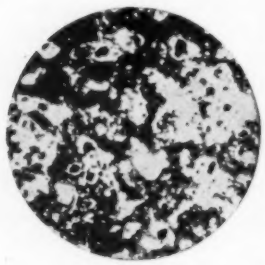


FIG. 4
Short-lived, coarse-particled pigment paint.

The study of paints was given great impetus about the year 1890, through the published investigations of Dr. Charles B. Dudley, for many years the able, widely known and respected chemist of the Pennsylvania Railroad. In his studies, among other things, the properties of paint materials were systematically investigated, and what was learned brought about radical changes in the composition and manufacture of paints. Much valuable information resulted from Dr. Dudley's work. It was clearly realized, for example, that the effectiveness of a paint did not by any means depend upon its cost per gallon or pound. As a matter of fact, it was proved that some of the most durable paints could be obtained at a minimum cost.

FIG. 2
Better proportioned paint in contrast.

Other large corporations followed the lead of the Pennsylvania. The results of some of these investigations were presented by the writer before the Franklin Institute and elsewhere. The size and form of the particles of the pigment were shown to have a great influence upon the life of a paint coating, though this subject had not previously received any attention. A brief description of a case that clearly illustrates this point may be of interest.

Two bridge paints had been used upon the lines of the Reading Railroad for a period of about ten years. These paints were made by the same manufacturer, and contained almost the same proportions of the same materials. Though they were exposed side by side and under like conditions all along the road, one of them became known for its good service and the other for very poor service. The life of one was twice that of the other. The difference between the service rendered by these paints was so marked that we determined to get at the real causes so as to bring the quality of all our paint deliveries to the same high standard of durability represented by the better paint.

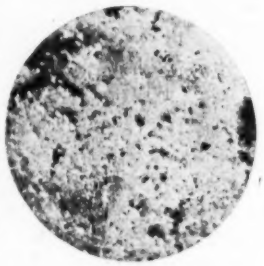


FIG. 5
Long-lived, fine particled pigment paint.

The discovery that the main difference between the two paints was in the relative size of the particles of the pigments resulted from this investigation. In the long-lived paint these particles ranged from 2 to 10 ten-thousandths of an inch in diameter, with comparatively few of the maximum sizes; while in the short-lived paint the diameters ranged from 2 to 180 ten-thousandths of an inch. The average diameter, as nearly as we could estimate, of the particles of the pigment of the satisfactory paint was 4 ten-thousandths of an inch, against 80 ten-thousandths of an inch for the unsatisfactory paint; and as the volumes of spheres are to one another as the cubes of their diameters it follows that the average particle of the pigment of the good paint was 8000 times smaller in volume than that of the bad.

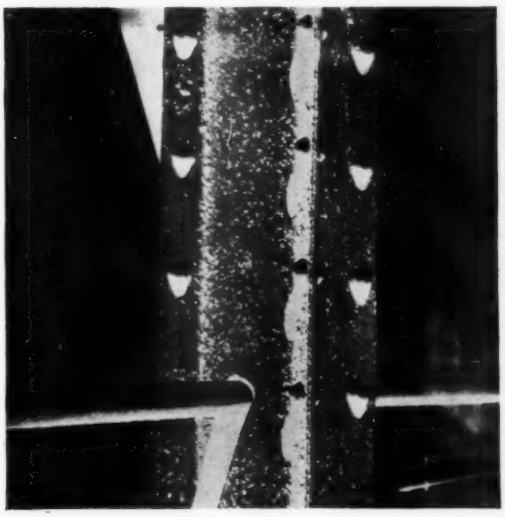


FIG. 6

The composition of these two paints was about twenty-five per cent Oxide of Iron combined with inert matter, such as clay and gypsum, as a filler, ground in pure linseed oil, with a small proportion of Japan drier as a vehicle. The details of the investigation may be found in the Journal of the Franklin Institute for July, 1904.

The reason why this difference in the size of the particles of pigment makes so marked a showing in the service of the two paints is that where the particles are coarse, relatively large oil spaces surround them; and as linseed oil is by no means waterproof, as we have mentioned, the effect of the weather is soon noticed in such paints. Surface tension also operates in favor of the paint having the finer-particled pigment, on the same principle that causes fine sand, when wet, to hold together, where coarse sand or gravel will not. Figure 4 shows the appearance of a paint film of the short-lived coarse-particles-pigment paint, and Figure 5 shows that which had fine-particled pigment and was long-lived. Figure 6 shows a portion of a bridge after the paints upon it had been exposed for four years. The upright column had been coated with the bad paint, and the horizontal railing with the good. Figure 7 is another part of the same bridge in which the upright post was coated with the good paint and the horizontal railing with the bad. In both pictures and in both positions the paint with the fine-particled pigment is seen to be in good condition, while the other is not.

These tests demonstrated that some of the most durable paints were composed of the simplest and least expensive of pigments, and created a good deal of interest because the findings ran counter to the preconceived ideas of many who had assumed that in order to be really good and give long service a paint must be composed of one of the more expensive pigments such as white lead, and that those which contained the so-called "inert materials" were to be looked upon as "doped" products.

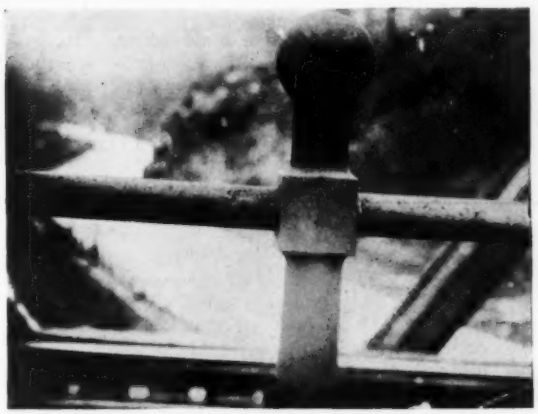


FIG. 7

It became necessary, because of these conditions, to determine the truths about the properties and characteristics of the different paint materials, and the work was finally undertaken by the Scientific Section of the Paint Manufacturers' Association of the United States. A fence was built at Atlantic City, and several hundred panels were coated with paints of different formulæ in order to determine the value under exposure to the weather at the seashore of the more important materials used as pigments, and also to show the most durable combinations of the various pigments under such conditions. Exposures were made on iron and steel panels as well; and subsequently test fences were erected in

other parts of the country in order to get varying climatic conditions.

The tests were made under the supervision of the American Society of Testing Materials, and a vast fund of information regarding the service value of various compositions and combinations was obtained. Materials that many considered as adulterants not long ago are now known to have a definite value in the design of high-grade paints. Misrepresentation still exists under the stress of competition, but the general plane of the paint industry is distinctly better for the simple reason that the principles of manufacture, the relation between cause and effect as applied to paints, and the properties of paint materials are all far more thoroughly understood than was the case even at the beginning of the twentieth century.

It will be clear from what has now been said that in order to be serviceable a paint must be composed of a pigment that is of a character well adapted to the conditions under which it is to be used; that this material must be in the most effective physical condition, and that it must be carried in a vehicle which will form an effective bond between its particles and at the same time be as nearly weatherproof as possible.

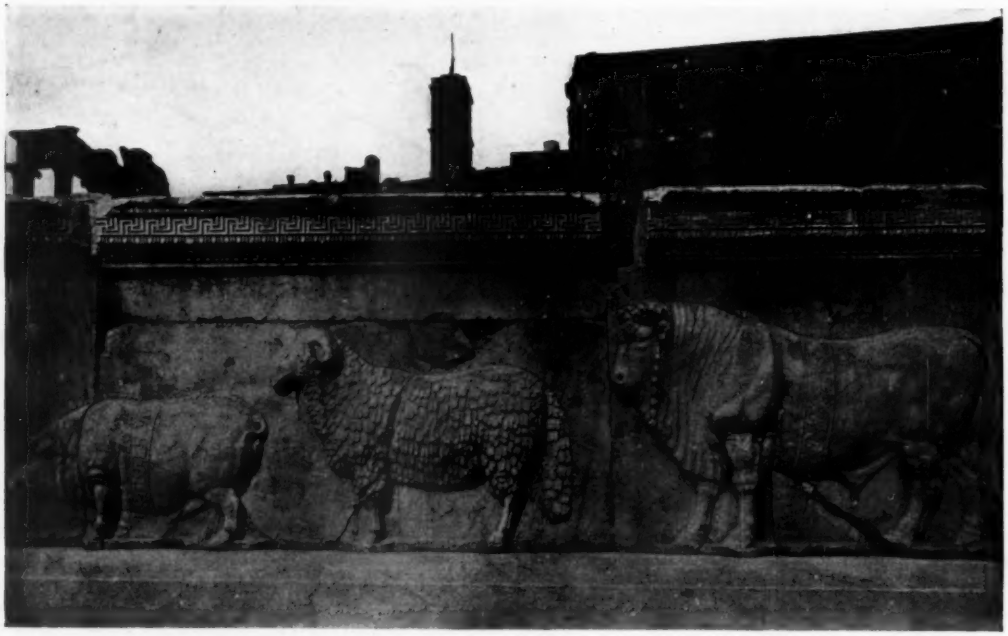
The spreading quality is a factor that should be very carefully borne in mind when purchasing paints. That having the pigment composed of the most finely divided particles, other things being equal, will spread farthest.

Specific gravity is another important factor, and should be studied accurately by the purchasing agent who is buying by the pound. The paint of the least specific gravity will be the greatest in bulk; and it is bulk, not weight, that counts in determining the spreading capacity of paints.

The labor cost of applying the paint is usually far greater than the cost of the paint itself, and it is important to remember this as a special incentive for the purchasing of the most desirable paint for the purpose.

Specifications for various types of paints were the natural outcome of all the foregoing investigations and experiments with paints and paint materials. Such specifications have been drawn by the writer and others to cover paints for use under many different conditions. These can be filled by any manufacturer who is willing to give care and attention to the work. Some of them, in fact, now carry these preparations in regular stock.

Final testing is, of course, absolutely necessary, for it is useless to buy according to specifications, or even on promises, unless the paints actually delivered are tested to determine whether they are as specified or represented.



The Barre City Hospital

EDWARD F. STEVENS, the architect of the Barre, Vt., City Hospital, in an early issue of *The Modern Hospital* emphasizes the necessity for fire-resisting construction of hospitals. He states that the officials connected with this institution were early in accord with their architect, feeling that, being limited in funds, it was better to sacrifice some of the architectural embellishment rather than to risk the loss of human life by the erection of a non-fire-resisting building.

In order to accomplish this purpose the architect was, to use his own words, "compelled to cut many corners and to leave off frills," but in no case was this necessary economy permitted to act as sacrificing the comfort of the patients.

This small, 32-bed hospital, as completed, reflects the skill and specialized architectural ability of its designer, and is worthy of study as an example of honest, straightforward planning and construction, combined with the essentials for meeting the requirements of a building of this type.

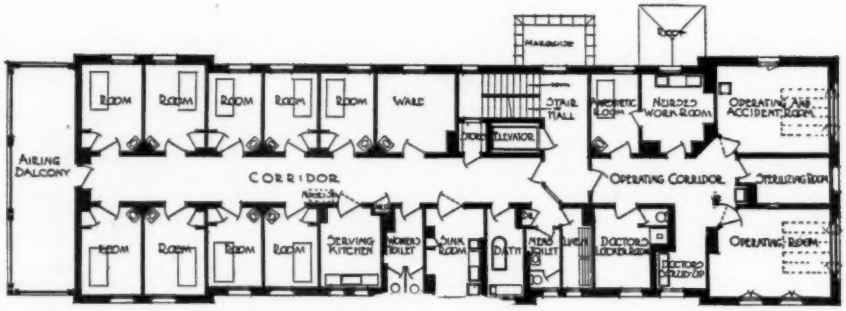
The building is located on the hills overlooking the city, and has a southeasterly exposure.

On the entrance level or ground floor, the administration, the heating and the kitchen departments, as well as the Roentgen Ray and laboratory departments are located. This is made possible owing to the contour of the land leaving the easterly side wholly above ground. The same Vermont hill allows the first floor to be entered on the westerly side, where the ambulance door is located.

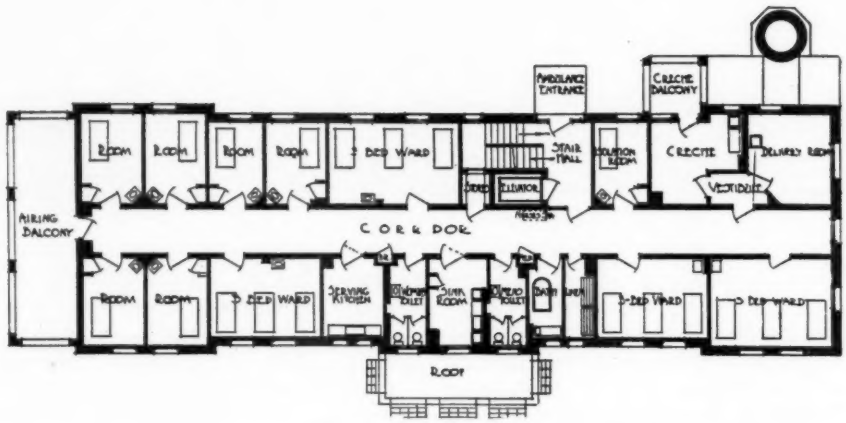
With the general offices and utilities provided for on the ground floor, the first and second floors become all available for the care of patients.

The architect in planning this hospital provided for no large wards. It was believed that a better

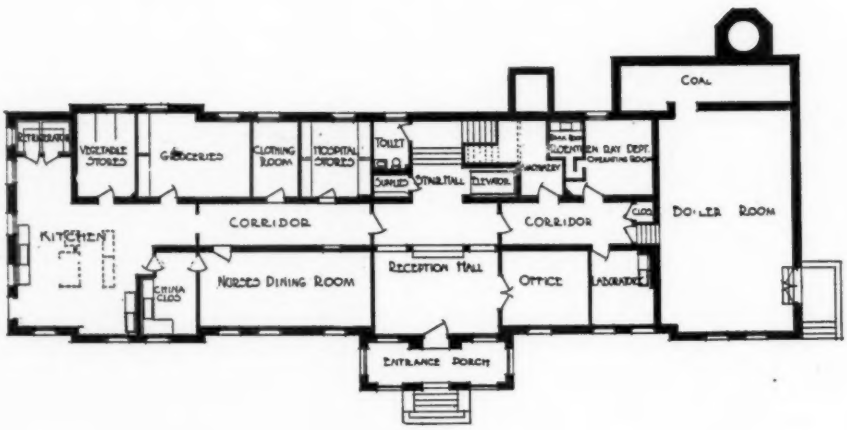
OPERATING ROOM



SECOND FLOOR PLAN



FIRST FLOOR PLAN



GROUND FLOOR PLAN

BARRE CITY HOSPITAL, BARRE, VT.

EDWARD F. STEVENS, *ARCHITECT*

segregation could be obtained by creating smaller wards. For this reason there are located on the first floor four 3-bed wards and seven single wards.

There is also a small maternity department, with delivery room, creche and bathing facilities.

The second floor is almost wholly planned for private patients. There are one 4-bed children's ward and nine private wards.

There is also provided on this floor a complete operating department. This comprises two operating rooms, anesthetic room, nurses' workroom, sterilizing room and a surgeon's locker room.

This department is shut off from the patients' quarters and is planned to give the most efficient service.

There are on each floor ample serving kitchens, sink rooms, bath and toilet rooms, linen storage closets, medicine chests and nurses' stations.

A feature of the plan is the location of large airing balconies on the south side, which afford opportunity for patients to rest in the open air. All doors leading to this balcony are of sufficient width to admit beds. This balcony is easily accessible from the elevators.

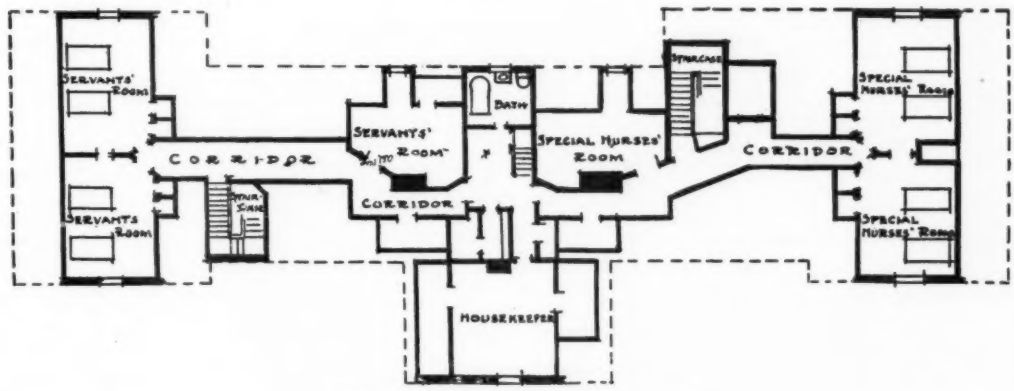
The materials of construction are common brick and terra-cotta, with floors of iron and concrete. The interior walls are of hollow tile, the floor finish of terrazzo, cement and linoleum. The finish throughout is simple, the windows are wide and the interior coloring cheerful and attractive. Equally simple and economical, but thoroughly efficient, is all of the equipment.

The Hospital That Was a House

The Choate Memorial Hospital, Woburn, Mass.

EDWARD F. STEVENS, *Architect*

EVERY patriotic citizen is "doing his bit." The younger men and women are seeking active service where, with a fine spirit of adventure, they may be close to the stirring scenes that constitute the greatest and most destructive of all wars. The older ones are seeking, each in their various spheres, some opportunity to lend a hand in the struggle that means so much to the whole civilized world.



ATTIC FLOOR, CHOATE HOSPITAL

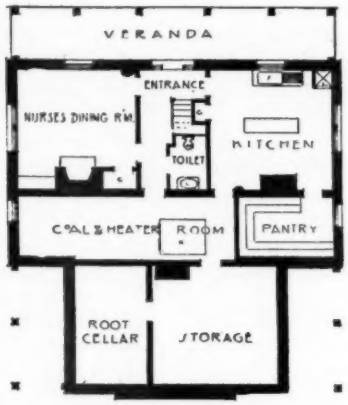
To further this effort many offers of money and of houses have been made to help the Government in its preparation to meet every need in the prosecution of our war work. The care of the soldier, the work to keep him a well and efficient fighting unit is, of course, the first and most important consideration.

Hospitals have been built in many places, but often it has not been found possible to erect them with sufficient speed to meet the imperative demand. It is in such emergencies that patriotic citizens of large means have offered their homes to the Government in order that our fighting men may be cared for.

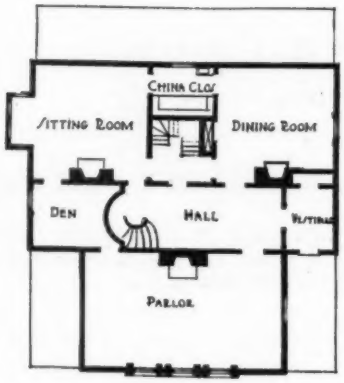
The hospital designed by Mr. Stevens from a dwelling at Woburn, Mass., as a nucleus is an instance of a patriotic action on the one hand, and on the other the creation of a well planned and equipped hospital undertaken by a man fitted by

CHOATE MEMORIAL HOSPITAL

EDWARD F. STEVENS, *ARCHITECT*

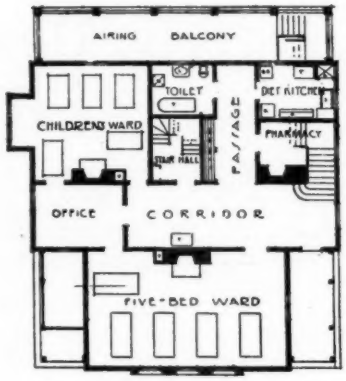


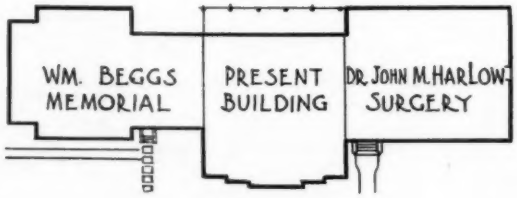
BASEMENT PLAN, CHOATE HOSPITAL AS FIRST REMODELED

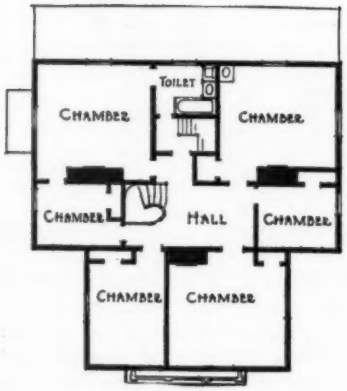


AT LEFT: FIRST FLOOR OF CHOATE HOMESTEAD BEFORE REMODELING

AT RIGHT: THE FIRST FLOOR REMODELED

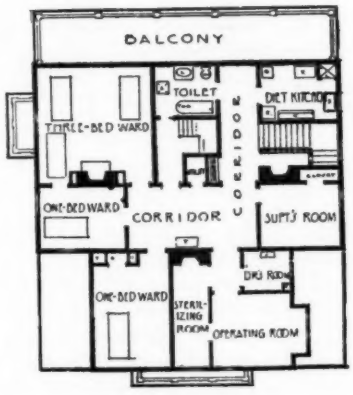


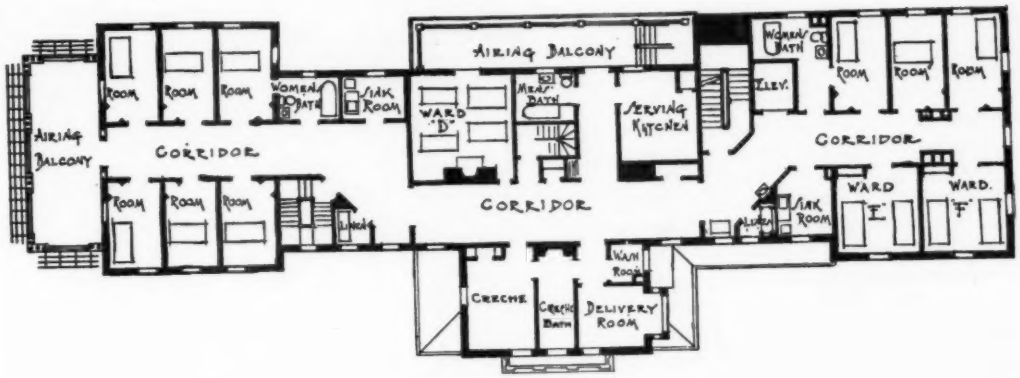




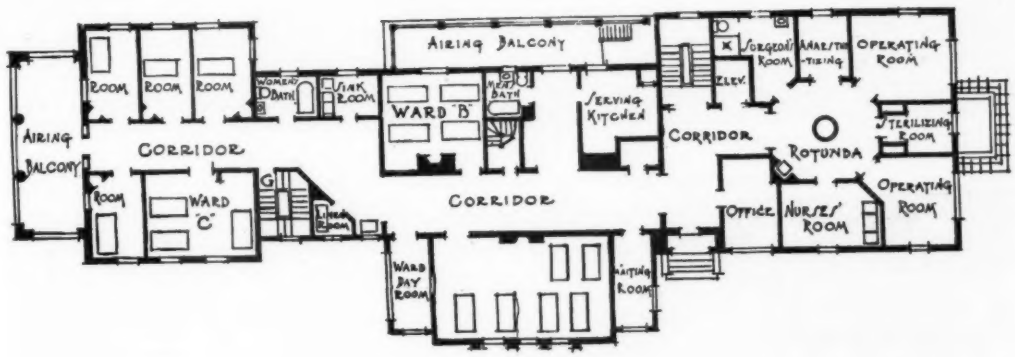
AT LEFT: THE SECOND FLOOR BEFORE REMODELING

AT RIGHT: THE SECOND FLOOR REMODELED

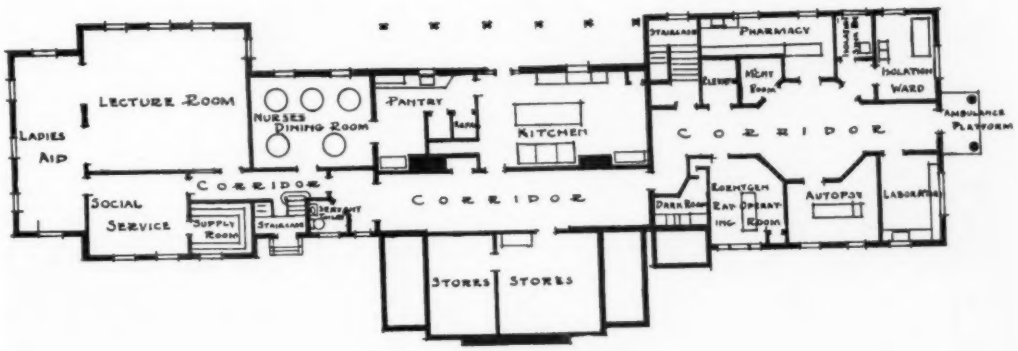




SECOND FLOOR



FIRST FLOOR



GROUND FLOOR

CHOATE MEMORIAL HOSPITAL, WOBURN, MASS.

EDWARD F. STEVENS, *ARCHITECT*

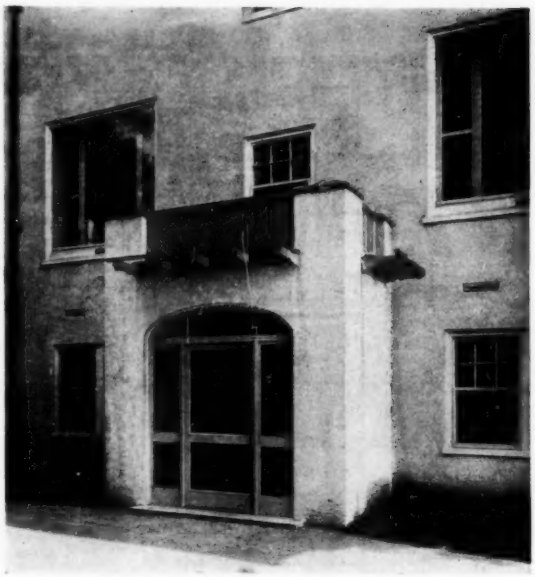
long training and experience to meet a present emergency.

The transformation of the Choate house at Woburn represents two periods of activity. In the initial operation but few changes were necessary to create a small hospital, fully adequate to care for the demands on its facilities. But later, when its efficient management and its place in the community had demonstrated the great value of its service, it became necessary to take in other buildings and plan for a much larger and more complete institution.

The successive stages in the progress of this building, the transformation of a large, dignified New England residence to its new use as a modern hospital can be studied in the plans that accompany this article.

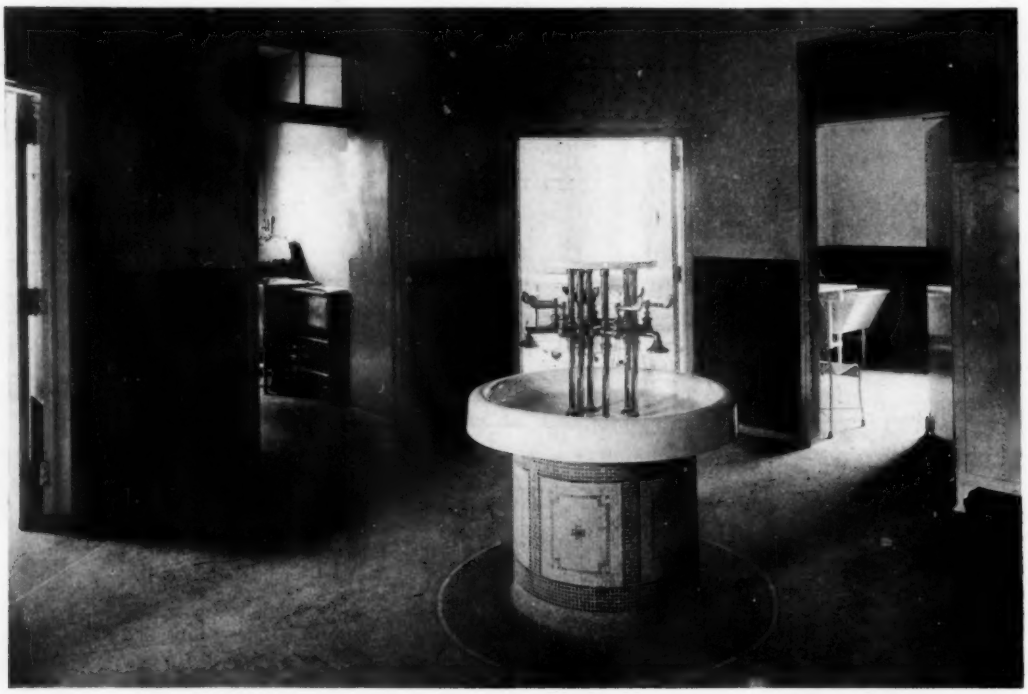
The new portions are planned to meet the deficiency of the old building. A new main entrance and office have been created and a new operating department provided. The operating department consists of two north-lighted operating rooms, a sterilizing room, an anesthetizing room, a nurses' workroom and a surgeons' locker and dressing room.

All these rooms are grouped around an octagonal



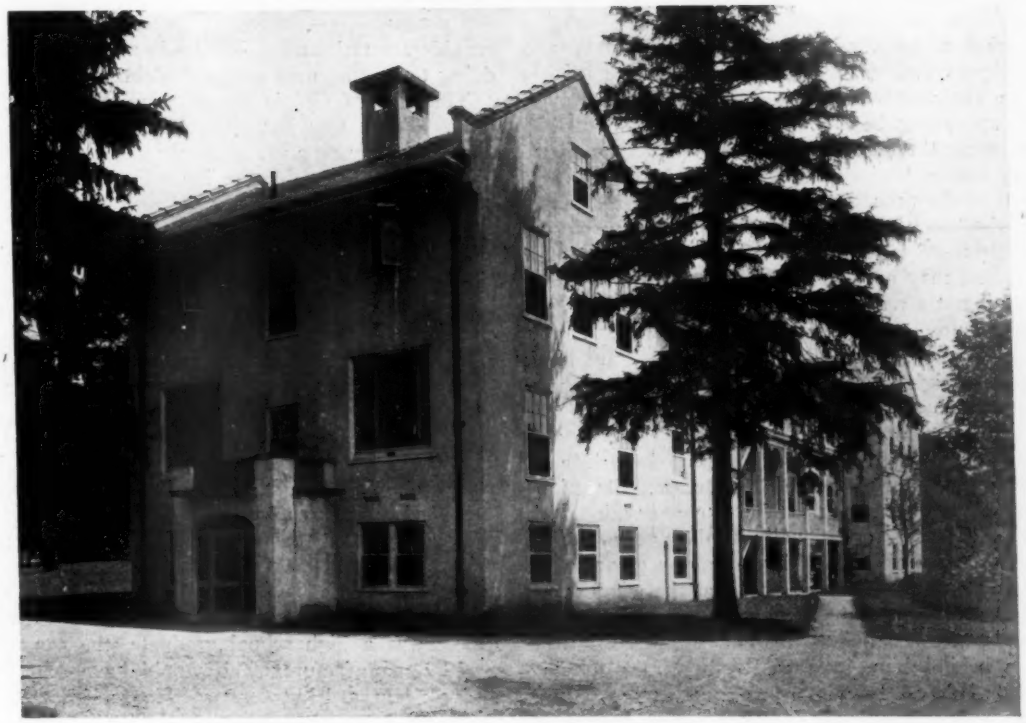
AMBULANCE ENTRANCE

CHOATE MEMORIAL HOSPITAL



SURGEONS' "SCRUB-UP"

CHOATE MEMORIAL HOSPITAL



CHOATE MEMORIAL HOSPITAL, WOBURN, MASS.

EDWARD F. STEVENS, *ARCHITECT*

rotunda, in the center of which is a triple "scrub up" fountain, designed not only as a necessary utility but also as an architectural feature of this department. The base of the fountain is of mosaic; the bowl is porcelain-enameled, 40 in. in diameter; the flow of water is controlled by the latest type of elbow valves. The whole fountain is surmounted by a utility shelf of opal glass. The rotunda is sufficiently large to permit the easy movement of wheeled structures on all sides.

The floors in this department are of terrazzo and the walls hard enameled plaster.

The high and wide north windows give the best daylight for an operating room, while four specially designed artificial lights provide adequate illumination at night.

The ambulance entrance is below the surgical department and adjoins the laboratory, the X-ray and the autopsy rooms.

The nurses' dining rooms, the lecture and the ladies' aid rooms are in the basement. An automatic electric elevator connects all stories.

These buildings, with nurses' residence on the site, make a complete thirty-three bed hospital.

Training the Office Boy

By RAYMOND M. ROBINSON

DIRECTLY across the street from the room in which I spend most of my working hours is an office, apparently that of a construction company; possibly of a firm of engineers. My range of vision extends back only eight or ten feet from the window, and includes only a desk, at which is sometimes seated a large man of forty odd years, whose head is unusually bald; a drafting table whereon are piled blueprints and catalogues and what appear to be sample bricks; and a chair or two. Besides the bald-headed man, who appears to be the most important individual in the office, there are a couple of slightly younger men, whose business evidently takes them away much of the time, and the office boy. It is the latter who has inspired the writing of this article.

Cedric—so we have come to call him, although his name may be Thomas or Aloysius or anything else—is not a remarkable youth in appearance. He is a common, everyday office boy, a year or two out of grammar school. Unable, or perhaps unwilling, to attend high school, he has seemingly drifted into the first job that has come his way, taking his five or six dollars a week with the hope that it may be increased some day, but without a definite idea of how to go about to insure the increase. Occasionally he is to be seen at the table in conversation with one of the men; occasionally he disappears for an hour or so, in all probability out on an errand; but the greater part of the day he is at the window.

In warm weather he sits on the sill, gazing down into the street, oblivious to what is going on in the room behind him, interested only in the moving crowds below. In winter he merely takes refuge behind the closed sash. His view is somewhat more limited, but he makes the most of it. Yet it does not appear that he is deliberately shirking his work, for generally the bald-headed gentleman is present. The simple truth seems to be that the boy has nothing to do. He is obviously hired to run errands when required, and if there are no errands for him in the course of a forenoon he may amuse himself as he chooses, which means that he has a very easy and a very monotonous job. No doubt his employer thinks that he is a most considerate taskmaster, but he is not; he is really doing the young man an incalculable injury.

The case of Cedric brings to mind other office boys. There was Pete, whose huge, shaggy, red head surmounting an exceedingly small frame made him so ridiculous that he immediately became an office jester with unlimited privileges of free speech and no idea of discipline or duty. There was another boy who came to us with quiet, serious mien, lacking totally in Pete's ability to entertain, but with a huge curiosity and a willingness to ask questions that eventually raised him to a position of considerable importance with the firm. Then there was Walter, who had left school because of necessity, he said, and who confessed that his greatest desire was to study architecture, but it soon appeared that he had left school simply because he didn't like it, and that he was no more interested in architecture than in Hindu mythology. He lasted six months and then resigned to accept a better paying position as assistant to a truck driver.

Finally, there was Edward Albert. Edward Albert was a high school graduate, the son of a wealthy manufacturer who would have sent him through Harvard but for two things: Edward Albert's inability to find time to study for entrance examinations, and his conviction that if he should succeed in entering his social duties and his attention

to sports would leave him no opportunity to attend lectures. So Edward Albert tried architecture—tried it sorely, in fact. He got along well enough for a while, for he was by no means dull, but it soon became evident that progress above twelve dollars a week would be slow. His salary lasted twenty-four hours as a rule and he was broke the rest of the week, for his father had cut off his allowance. One point remained in his favor—he was a good sport. If his week's wages went on Saturday night in a glorious riot of high living, he never complained, nor would he borrow money. He lived on doughnuts and coffee until next pay day. At last he was fired "for his own good." We kept track of him for a while, saw him try insurance, book selling and a half dozen other lines, until he finally found his berth in the theatrical business, where, according to report, he has made good.

Four boys, all started on the road to architecture. Only one stuck to it successfully.

What, then, about Cedric?

His case is worth studying, not because of any especial interest in the boy himself, but because he represents a type of which every profession has thousands of examples. The fellow is wasting three-fourths of his time in the profitless occupation of looking out of a window. Why? Whose fault is it? Is it because he is lazy? Not necessarily.

The fault lies chiefly in his employer. He should determine first of all whether the boy has any aptitude for the office business; whether he will be worth more in time than he is now. If not, he should be dropped from the payroll at once and steered into some sort of work which will give him a better opportunity to succeed. If, on the other hand, he is worth keeping, the employer should take enough interest in him to give him a careful training. He should be taught to use his spare time in learning the fundamentals of the business. Assuming that it is a construction company that employs him, he should be shown the numerous samples of building materials that lie about the room, taught to recognize granite, limestone and marbles at a glance, to know the difference between Portland cement and natural cement, to identify the common woods and the various grades of bricks. He should be encouraged to read such books and pamphlets as will educate him along technical lines. He should be taken out occasionally to see buildings in process of construction that he may learn by experience how concrete is mixed, how masonry is laid, and how wood frames are put together. He should learn to read plans, to be able to judge distances on scale drawings, to recognize the various methods of indicating materials on paper, to be able to read a specification with a fair idea of what it means. All these things and a thousand others any intelligent office boy with a desire to go ahead can be taught by his employers, if they can but be made to see that it is for their own interest as well as the boy's to train him properly.

It is quite likely, however, that the bald-headed gentleman across the street would insist that he has no time to play schoolteacher. Hasn't he? Isn't the training of the employees an important part of the day's work?

A group of architects were recently discussing the fate of a firm which fifteen years ago ranked among the greatest in the country. To-day, with the founder dead, little more than the name remains. Three or four draftsmen can handle the work with ease. From a quarter of a million or more a year in commissions they have dropped to a place where they are glad to take on garages and alteration jobs which once they would have turned aside. War conditions, to be sure, are partly responsible, but not primarily, for the downfall commenced several years ago. The real reason was given by one of their former employees, a man who now does four times as much business in his own office as the original firm does. He said that in the prosperous days no effort was ever made to train men to carry on the business. Men were hired for certain work and kept for that work alone. It was never assumed that these same men might some day be needed to assume entire control of the business. It was a one man firm, and when that man died there was no one left big enough to take his place. Yet any one of a dozen former draftsmen had the ability, if it had been properly directed, to succeed to the business, but they saw that they were being suppressed and they got out.

The first question an employer should ask himself upon engaging an office boy is this: for what is he hired—errand boy or apprentice? If it is solely to dust the furniture—a job which, by the way, few boys undertake now—and to do errands, then there is nothing more to be said except that it is hard on the boy. But if he is really to be an apprentice it is advisable to find out why he applied for the position. Is it because he has chosen it as a stepping stone to a better position that he really wants, or merely because it is the first job he has run across? If the former, keep him, study him, train him. If the latter, the chances are that he will never prove of much value. If he is worth keeping, find out if he is interested in drawing; if he has any ability worth cultivating. If, after a reasonable trial, he seems to have no talent for drafting, it is hardly worth while to entertain hopes of making a designer out of him. It may be, however, that he is of a mathematical turn of mind.

He may make a construction man, a specification writer or a superintendent. Find out, then, what he is good for, and develop his talent. Some day his services will pay for the trouble of training him. Once he is on his way to success, however, make it worth his while to stay with you, for no business man wants to train an employee for a good position with another firm.

It may be that genius will take strange ways of revealing itself. One young fellow wasted much time during office hours drawing Indians and girls' heads on the margins of his papers. Fortunately one of his employers appreciated his skill enough to place him in an evening life class where his ability could be cultivated. One of his drawings was published recently, a perspective of a big hotel. It was well drawn, effective, but the striking feature, that which gave it a snap and liveliness that few architectural renderings possess, was the figures which composed the foreground—men and women, horses, dogs and automobiles. His success in this sort of work is due largely to the man who saw where the boy's greatest ability lay and helped him to make the most of it.

There was another boy who seemed fascinated by the marble samples of which the office had an excellent collection. Their names meant little until someone took pains to explain them to him, to teach him to pronounce *verd antique,* and to give him some idea of their comparative values. To-day he is considered something of an authority on marbles.

When the office boy is sent to the job to deliver a blueprint and lingers to watch the riveters at their work he is showing an interest which may be worth encouraging.

It is a mistake to assume that a lad is a lucky find simply because he proves to be an efficient office boy. Ability to index drawings and to run a typewriter with two fingers is not evidence of fitness for the architectural profession. Such an employee might be equally successful in an insurance office or a brokerage house.

As for the boy who leaves school at an early age to go to work, unless his circumstances absolutely compel him to earn a living, perhaps the best advice that can be given him is to go back to his books and stick to them as long as he can. Education never unfitted a man for any job, notwithstanding the notions of certain of our self-made men. If he can spend his summer vacations, or at least a part of them, in an office, the experience will be of value. If he can go through college he will find that most of his classmates in the architectural courses are doing office work summers. There is a certain amount of practical experience to be gained before a draftsman becomes of much value; if this period of apprenticeship can be covered before the close of the college career the student makes his real start just so much farther up the ladder.

One may even go so far as to advise the young man who is planning an architectural career to spend a year or more in a good office before entering college—at least before commencing his course in the architectural school. The youth who tries to absorb a course in general construction without having had office training will get far less out of it than the one who has some knowledge of building to begin with. One young man of my acquaintance entered an office immediately after his graduation from high school, stayed a year, then left to work for a contractor, taking whatever odd jobs he could find that would give him a chance to watch the construction of a big city hotel. After a year at this sort of thing he entered college, took his degree in architecture, meanwhile returning to an architect's office summers, and came out of school perhaps better prepared to demand a good salary as a draftsman than any other man of his class.

Another man did not attempt to enter college until he had spent nearly five years in an office. Then he passed off his four years' course in three years and was considered one of the brilliant men of his class. In another five years he had his own office.

For the boy who is out of school there are the courses at the various architectural clubs, evening classes and Saturday afternoon excursions, which afford excellent instruction at small expense.

To employers, then, I would offer this suggestion: Watch your boy during the first weeks of his employment; determine whether or not he is in the right place, and either drop him before he wastes any more of his time or else make it your business to teach him his chosen profession. It is the only fair thing to him, to your own office, and to the profession of which he is to become a member.

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VOL. CXIII JUNE 26, 1918 NO. 2218

Efficient Organization

SPEEDING up our war preparations has not been confined to the ship-workers or to engineers largely engaged in the construction of cantonments.

Architects' offices engaged in planning for the many large industrial housing operations all over the country are setting new records in the prompt and efficient turning out of enormous quantities of drawings and voluminous specifications necessary to be prepared before any action can intelligently be taken.

Every large architectural office and, in fact, most smaller ones as well, have always been organized to meet just such emergencies, and while the speed with which these drawings have been produced has called forth favorable comment from the daily press, architects and those who have business relations with them know that there are no better organized or more efficient organizations than those of the modern architectural office. The fact that a certain firm of architects completed working drawings for an industrial village of more than four hundred houses and the necessary community center buildings in two weeks and two days moves the Philadelphia *Ledger* to remark that it proves the architect can speed up his work when occasion requires. What is really proven is that the *Ledger* in common with most other daily papers has no accurate conception of the complete organization, in every department and every detail, of a large architectural office.

On the occasion of the recent visit of the French and British Commissions to this country, the decorative treatment of Fifth Avenue on an elaborate scale was decided on. This work was given over to a group of architects. In a period of less than three days the entire complicated scheme was developed and installed. Pylons, flagpole foundations and many heavy features were constructed of concrete. All this complicated material was put out by these various offices, not at the expense of other work then in the office, but simply as a special and patriotic work in which the architects and their employees entered with the keenest zest and utmost celerity. Many similar instances could be cited, all proving that the idea, unfortunately too prevalent, that architects are not keenly alive to the value of time as money is an erroneous one. In most instances the apparent activity of the builders on the work is due simply to the fact that, thanks to the efficient preparation of plans and specifications, the careful forethought by the architects in every detail has made it possible to reach amazing records of construction.

Designation Targets

ARTISTS in New York, among whom are a number of architects, are performing an effective war service in the painting for use by the army of what are known as designation targets.

These targets are used to train recruits indoors in the rudiments of rifle and machine gun fire and later to instruct the soldier in tactics and strategy.

The object of these targets is to define, in absolute terms, the essential objects of the landscape.

In their composition the end sought is that of the general type of country seen along the Western front. For elementary designation the smaller sizes are used, generally about 3 by 6 ft., while an extended panorama will be painted to a size up to 5 by 9 ft.

An accurate conception of one of these "targets" may be had from the following extract from a circular sent out by the Salmagundi Club of New York to its artist members. It states:

> The first class target should be very simple, introducing for example farm houses. ruins, road, trees and simple distance.
>
> The more complicated targets should picture a wide angle panorama the principal objects of which should be placed in the middle ground, that is to say, between 300 yards to about 3000 yards, this being the limit covered by machine gun fire. The student sits from 25 ft. to 75 ft. from the

target. If the object in the distance is not distinct he uses long range glasses.

True perspective is essential, both linear and aerial. Objects should be introduced in the middle ground, the approximate size of which is known, such as a man, wagon, etc., to ascertain relative size. The point of view is that of a man lying down, and the perspective should be rendered accordingly. High mountains should not be introduced. Familiar objects such as church spires, should not be repeated in the same picture to confuse designation. The general type of country should be similar to that seen on the Western front, rolling but not mountainous, introducing distant hills, fields, hay stacks, trees or other cover, roads, rivers, bridges, railroads, telegraph poles and other points of strategical vantage. Details should be clear and precise."

Referring to the method of use, this circular of information further states:

"The designation target proper is for the purpose of defining in definite and absolute terms the objects pictured in the landscape. It is the means of identifying the particular place to be fired upon. The officer gives the range and specifications thus: Range 550 yards; ruined cottage, window below chimney, left. He then sees that his instruction has been understood exactly and that the range and aim is correct."

The Salmagundi Club has turned its large galleries into a temporary studio, in which artists of national reputation may daily be found busily engaged in the painting of these valuable aids to military training.

Artists Criticize Design of Our War Medals

DISSATISFACTION on the part of artists with the Distinguished Service Cross for gallantry in war has been pronounced and has finally crystallized in action by the National Sculpture Society and the National Academy.

The former has, through its president, forwarded a letter to Secretary Baker sharply criticizing the design of the war medal, a number of which have already been awarded and sent to France. The National Academy has appointed a committee on medals and insignia to act with the Government if invited, that proper care may be had in the designing of all forms of medals which it may be decided to award to any branch of our armed forces. It is learned that in the creation of the design for this medal the co-operation of the National Societies of Artists was not asked for, although their advice on such an important matter would logically seem the first to have been sought and pursued. This is an added instance where the counsel of men trained in a special field has been ignored, and the inevitably unfortunate result has been reached.

Inasmuch as Congress will probably enact a law that will permit our men in France to receive and wear the decorations for valor conferred by our allies, it would be extremely unfortunate if our own medals of honor should be so artistically inferior as to excite adverse criticism by comparison.

Paul Manship, the sculptor who visited Washington for the purpose of personally expressing his opinion as to the artistic short-comings of this Distinguished Service Cross, has stated that it is not only poor in design, but also that it is of ecclesiastical rather than of military character.

While the past cannot be undone, there is a possibility that in view of the unanimous opinion of artists as to the inferiority of design of this cross, it may be abandoned and a new and more fitting one supplied.

Men who have already won this cross and have had it pinned to their blouses by some distinguished officer, will not, it is believed, be willing to exchange it for some one of a newer and better design, about which no memory attaches.

It has been stated officially that there was no disposition to slight the artists, and that all that is possible will be done to correct what is now found to have been an error.

This will result to the satisfaction of men who may in future receive this decoration, but will undoubtedly not serve to cause the wearers of the present inartistically designed cross the greatest amount of satisfaction.

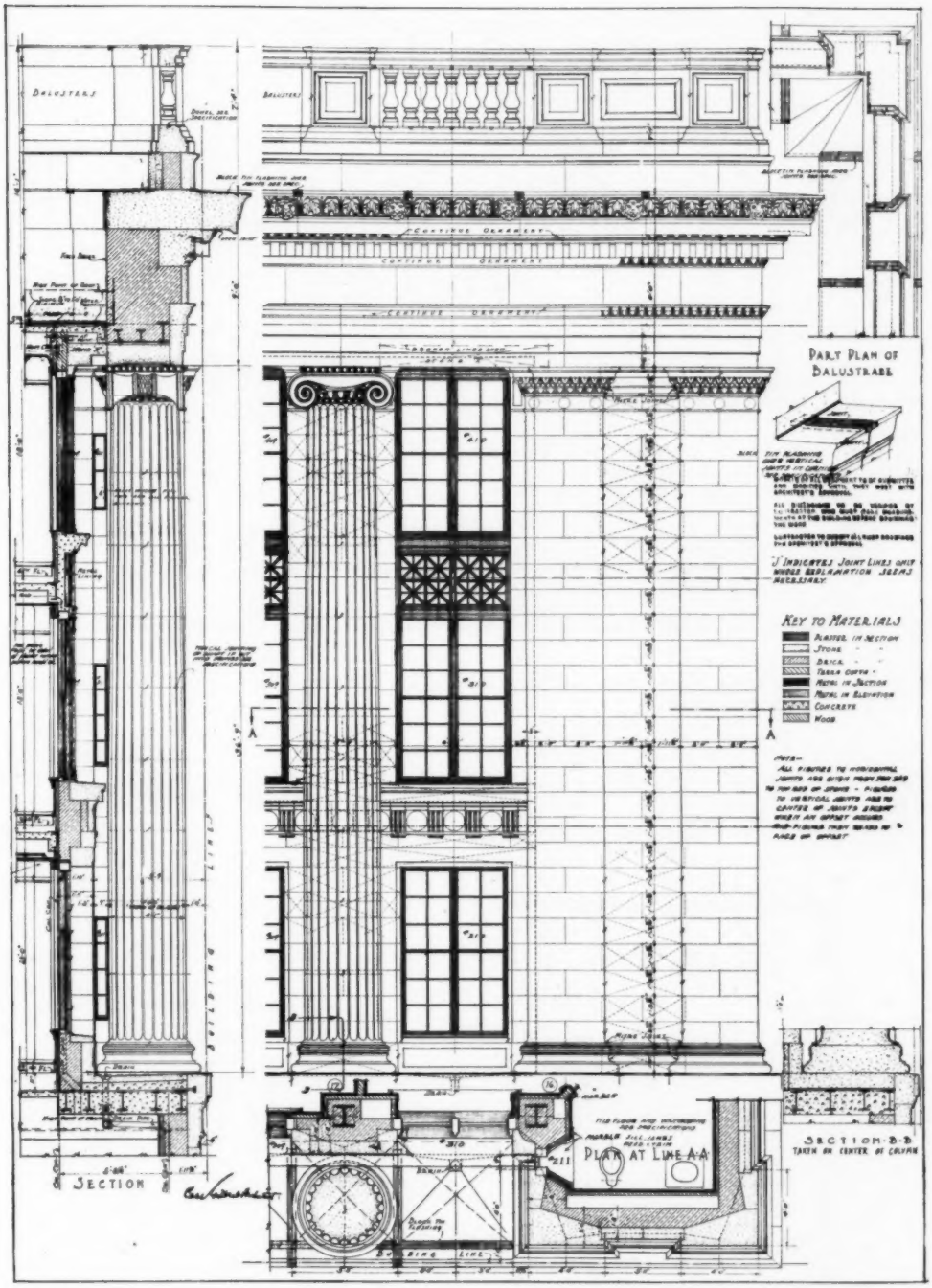
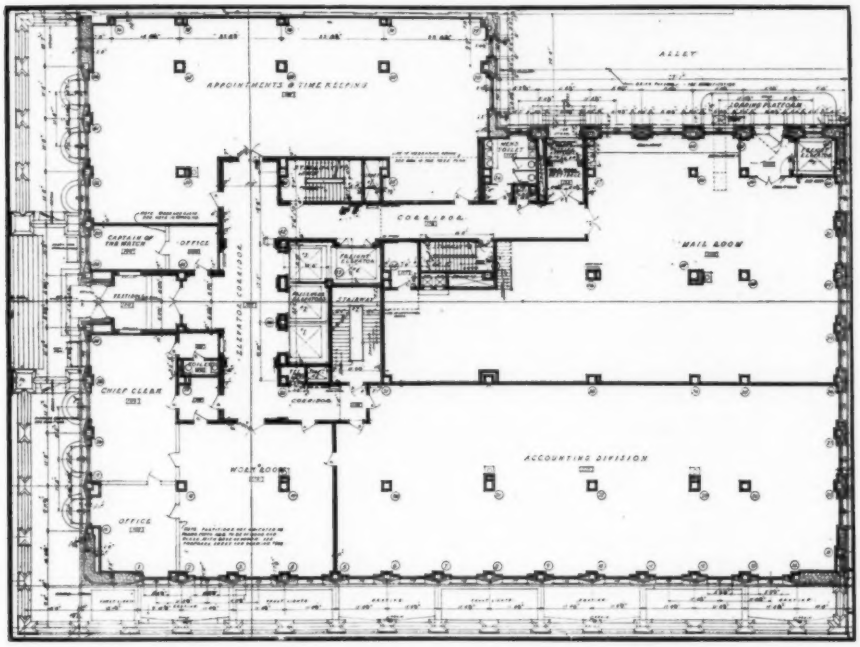


PLATE 227

UNITED STATES TREASURY ANNEX, WASHINGTON, D. C.

CASS GILBERT, *ARCHITECT*



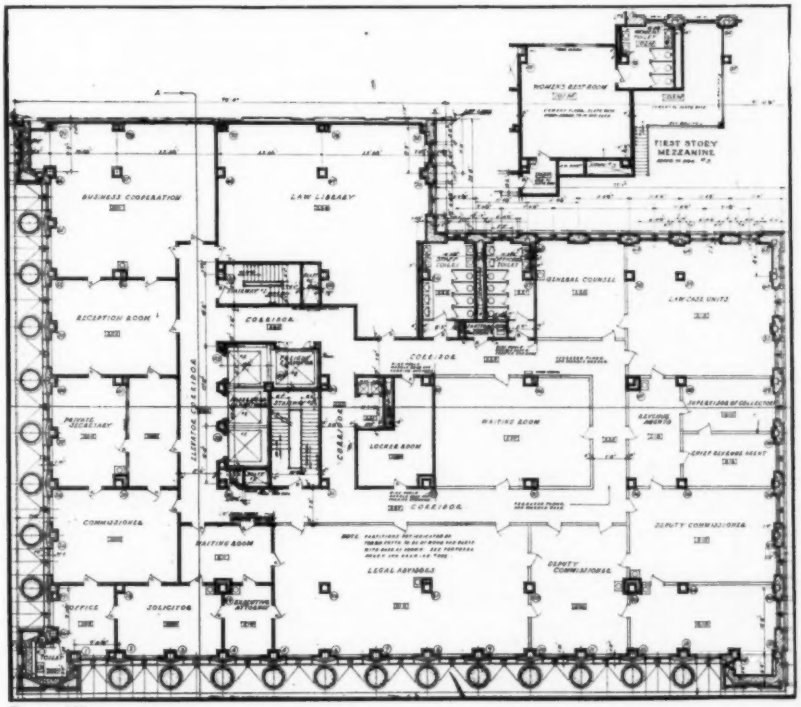


PLATE 228

UNITED STATES TREASURY ANNEX, WASHINGTON, D. C.

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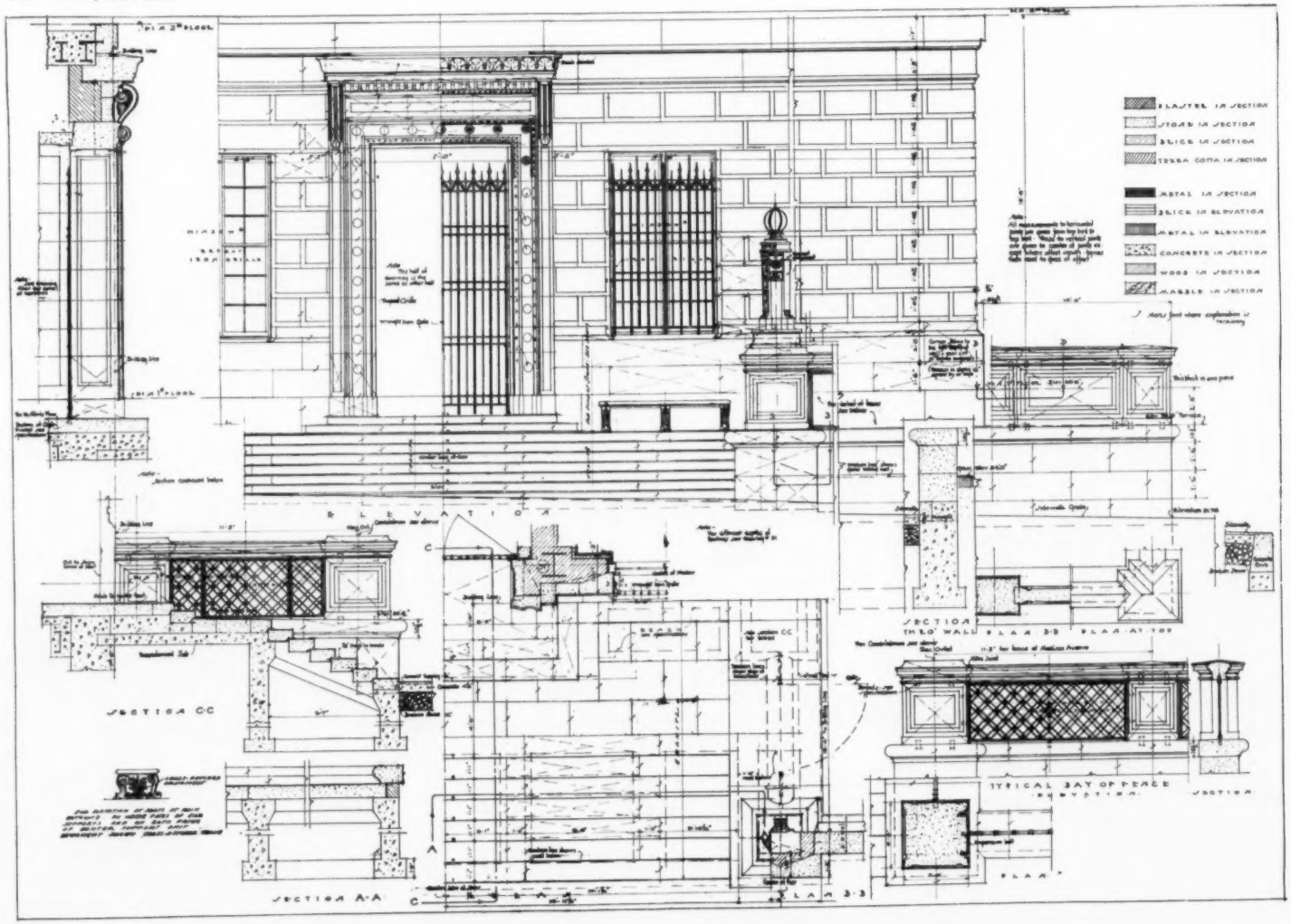

PLATE 229

UNITED STATES TREASURY ANNEX, WASHINGTON, D. C.

CASS GILBERT, *ARCHITECT*

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JUNE 26, 1918

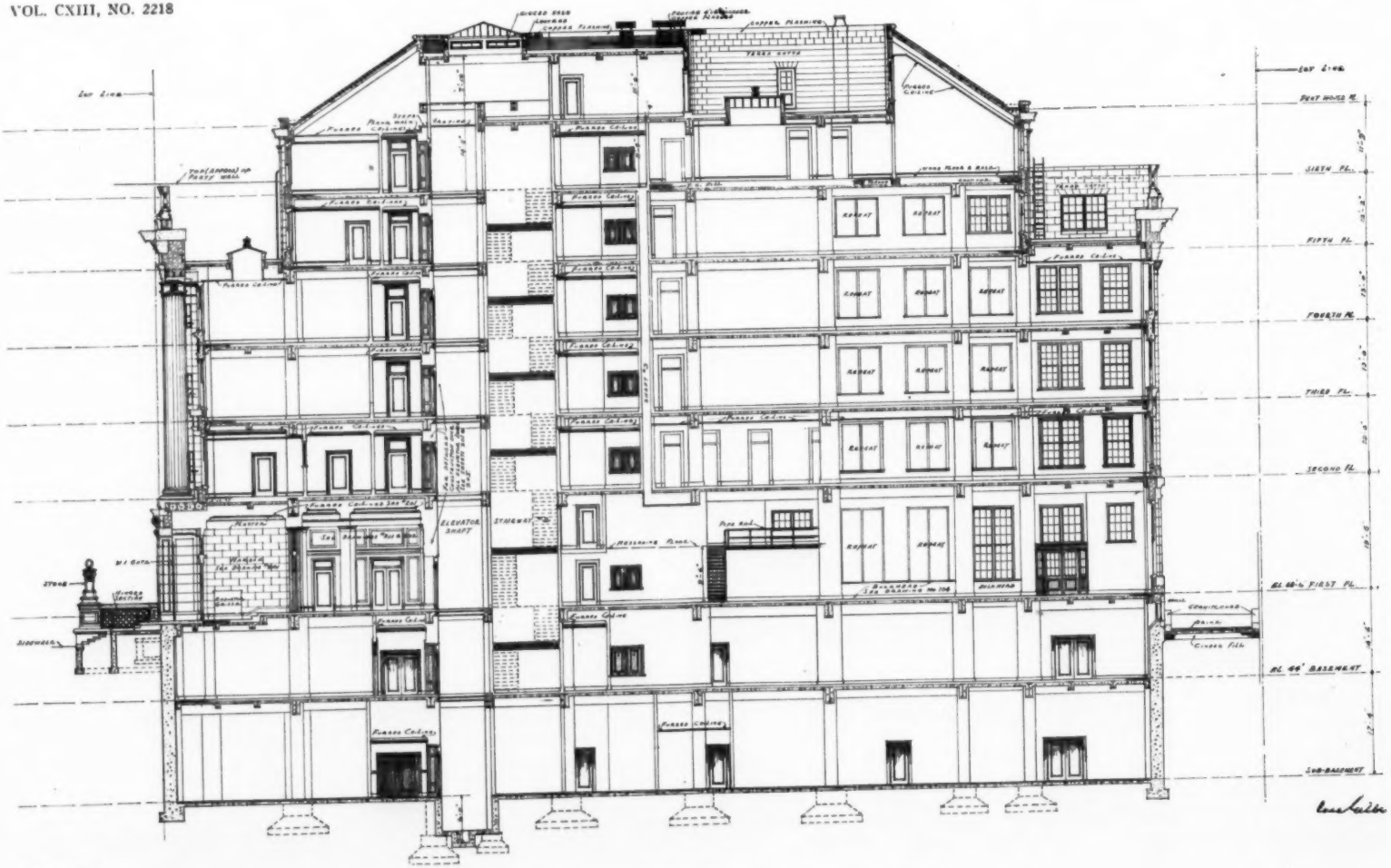

PLATE 230

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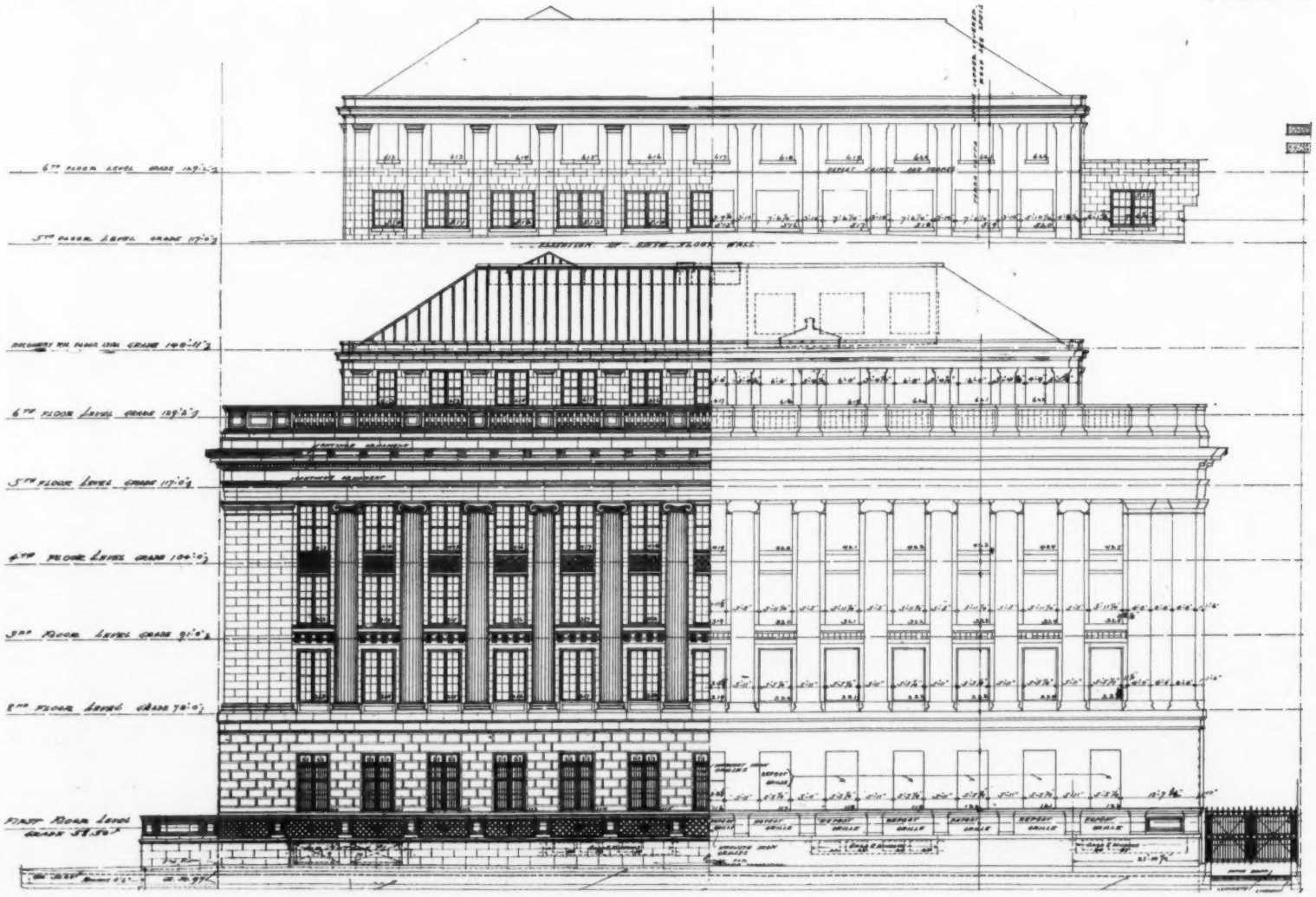


PLATE 231

UNITED STATES TREASURY ANNEX, WASHINGTON, D. C.

CASS GILBERT, *ARCHITECT*

PLATE 232

HOUSE OF EARL BRONAUGH, JENNINGS LODGE, ORE.

LAWRENCE & HOLFORD, *ARCHITECTS*

PLATE 233

HOUSE OF EARL BRONAUGH, JENNINGS LODGE, ORE.

LAWRENCE & HOLFORD, *ARCHITECTS*

PLATE 234

HOUSE OF CHARLES T. LADD, PORTLAND, ORE.

LAWRENCE & HOLFORD, *ARCHITECTS*

LIVING ROOM.

PLATE 235

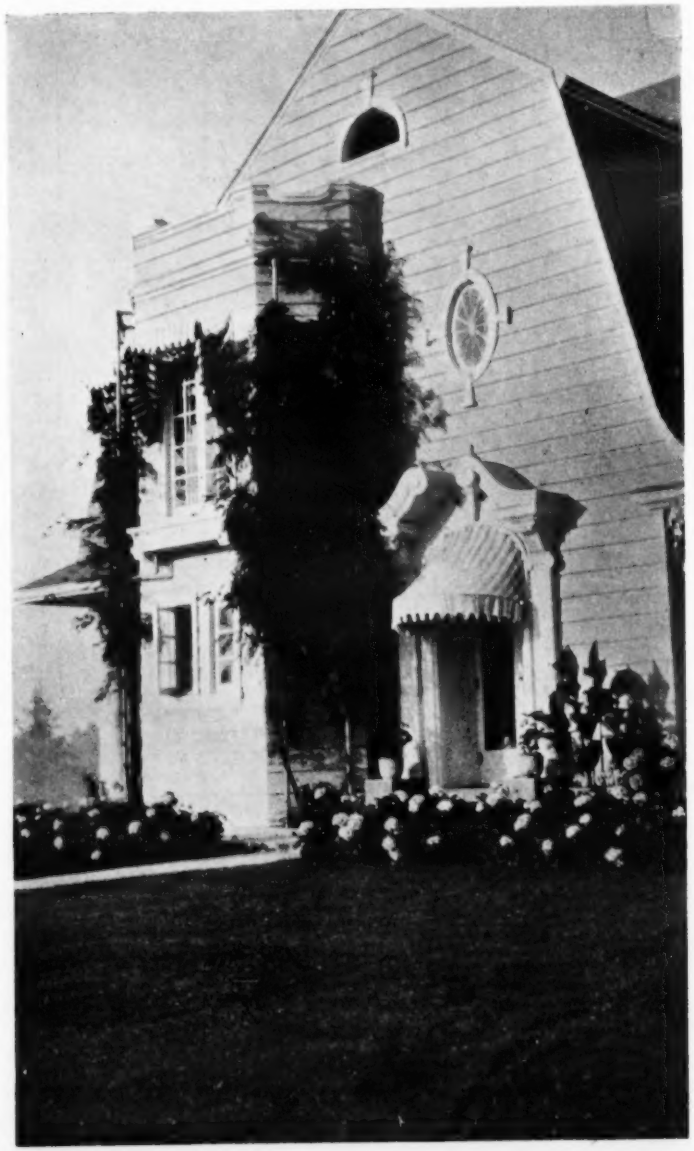
HOUSE OF CHARLES T. LADD, PORTLAND, ORE.

LAWRENCE & HOLFORD, *ARCHITECTS*

PLATE 236

HOUSE OF CHARLES E. LADD, CARLTON, ORE.

LAWRENCE & HOLFORD, *ARCHITECTS*



HOUSE OF CHARLES E. LADD, CARLTON, ORE.

LAWRENCE & HOLFORD, *ARCHITECTS*

PLATE 237

Progress of Army Hospitals

In the last six months $25,173,417 has been spent by the Government on additions and improvements to the hospital establishment of the army. The new buildings consist of hospitals, convalescent barracks, infirmaries and nurses' quarters, and the figures given represent only work that has been finished or which is nearing completion.

To both of the hospitals at Camp Gordon and Camp Dodge a 500-bed addition, including officers' and nurses' quarters, has been built at a cost of $550,000.

Additional two-story ward convalescent barracks are being provided at National Army and National Guard base hospitals, adding from 300 to 900 beds to each hospital. The total estimated cost of this construction is $9,179,000. Umbrella sheds to connect these barracks are being constructed.

At each National Army cantonment, two regimental infirmaries have been erected, while one regimental infirmary has been constructed at each National Guard camp and remount depot. The total cost of these is estimated at $344,000.

At National Guard camps and National Army cantonments dental infirmary operating buildings have been erected at an estimated cost of $912,000. A dental infirmary and an eye, ear, nose, and throat clinic have been erected at each National Guard camp, at a total cost of $139,200.

An additional 1,500-bed hospital is now nearing completion at Camp Merritt, at a cost of $1,115,000. Work to cost about $220,000 is being done at Camp Stuart to provide a tent hospital and additional hospital buildings. The engineers' training camp at Belvoir, Va., will soon have finished a 500-bed hospital, costing $1,125,000.

Construction in progress at the United States Army general hospitals is as follows:

At Walter Reed General Hospital, Washington, D. C., additional hospital buildings; estimated cost, $733,400.

At Denver, Col., a 1,000-bed tuberculosis hospital; estimated cost, $1,720,000.

At Azalea, N. C., a 1,000-bed hospital for the treatment of tuberculosis patients; approximate cost, $1,325,000.

A 120-bed hospital is under construction at the Norfolk Quartermaster Terminal, Norfolk, Va.; approximate cost, $205,000.

1,500-bed hospital has been erected at the United States General Hospital No. 3, Colonia, N. J.; estimated cost, $1,612,000.

At United States General Hospital No. 6, at Fort McPherson, Ga.; additional two-story quarters for nurses, accommodating 150, are being erected, at an approximate cost of $88,700.

A hospital for the care and education of blind soldiers known as the United States General Hospital No. 7 is being erected at Roland Park, Md., at an estimated cost of $140,446.

A tuberculosis hospital capable of caring for 650 patients is being constructed at General Hospital No. 8 at Otisville, N. Y., at an estimated cost of $957,000.

The Lakewood Hotel and "Florence-in-the-Pines" at Lakewood, N. J., have been leased for hospital purposes at an annual rental of $58,500.

A hospital that will care for 1,762 patients is nearing completion at Fox Hills, N. Y., which will cost $2,075,000.

At General Hospital No. 14, at Fort Oglethorpe, Ga., two-story convalescent barracks are being erected, giving added bed accommodation of about 1,000 at an approximate cost of $202,200.

Among the other extraordinary accommodations, nurses' quarters and additions to officers' quarters have been constructed at National Guard camps and National Army cantonments at a cost approximating $1,000,000. Wards and isolation wards for the treatment of female nurses are being erected at all National Army cantonments and National Guard camps and at Camps Merritt, Stuart, Humphreys, Johnston and General Hospitals No. 2, Fort McHenry, Md.; No. 6, Fort McPherson; No. 8, Otisville, N. Y., and No. 10 Fox Hills, N. Y., at an estimated cost of $181,350. Sanitary accommodations for female nurses have been installed in the wards at the hospitals at National Army cantonments.

To Relieve Industrial Housing Shortage

The Emergency Housing Committee is now taking definite action with a view to alleviating the present housing shortage.

Additional housing accommodations for workers in shipyards and plants making munitions and supplies are to be provided as speedily as possible.

Projects now under consideration are located at Phillipsburgh and Elizabeth, both in New Jersey. It is stated that at least one million dollars will be expended at each place.

The plans for these developments are now being prepared by architects whose names have not yet been announced.

According to present plans, it is believed the Emergency Housing Committee will expend $1,000,000 at Watertown, N. Y.; a like amount at Niagara Falls; $500,000 at Utica; and $250,000 at West Troy.

Use of Building Materials in War Time

Local material for construction is not always as satisfactory as material that has to be brought from a distant source. Some thirty or forty years ago material used in construction was largely determined by the products of the immediate vicinity.

Steel was not used to any considerable extent. Lumber was cut and prepared within a few miles of the site of the structure to be erected. If stone was used, and even in those days it was a favorite building material, it was the native stone quarried near the site of the building. Very little of the material used in the construction of any of the buildings of three or four decades ago was brought any considerable distance.

As time advanced and the nation grew wealthy and buildings of modern type were developed, transportation entered more and more into the problem of cost. A great part of the material used in the construction of buildings to-day is transported long distances.

It is neither possible nor desirable to return to the primitive practices of former years. But it often happens that a product can be obtained near at hand that will answer admirably in a construction need. In times of war, and especially at a time when fuel, labor and transportation space is as badly needed as at present, it is desirable that when local products can be satisfactorily substituted for those which come from a long distance, an effort should be made to use them.

It is quite true that the local product may not give as satisfactory service, or may not be as desirable as the product produced in some other locality. But it is also often true that there are very good local products excellently suited for use in construction work which have never obtained favor because attention of the consumers has not been directed to their good qualities. In war times it behooves every community to take stock of available local products, the use of which will not be detrimental to the completed structure.

Architects and engineers can render a valuable service in this respect, not only to the nation as a whole, but to the locality in which there may be some neglected and unappreciated available product of excellence. The architect and engineer must use discrimination in this respect. There are products of tried and tested excellence made in distant localities, and adapted to use in buildings, in highways and in roads for which there is no satisfactory local substitute. There are other instances in which the local product is as good as the one produced at some far point, and in such cases it should have the preference.—*Improvement Bulletin.*

Housing Competition by Journal A. I. A.

The *Journal of The American Institute of Architects* announces a competition, organized jointly with the *Ladies' Home Journal,* for the best solution of the house problem.

It is stated that in planning this competition the endeavor has been to approach the housing problem from a new angle and to develop it along new lines.

The competition is in three parts:

PART I. THE SOCIAL PURPOSE.
PART II. THE ECONOMIC METHOD.
PART III. THE PHYSICAL PLAN.

All competitors will be required to submit the following:

Under Part I a thesis in which there shall be set forth the social purpose which house-building should seek to attain.

Under Part II there must be described the proposed economic method of financing and administering the community to be created and maintained without likelihood of slums and the general deterioration which usually has accompanied unchecked private development.

Under Part III there shall be submitted a rough sketch plan to show the physical scheme of the proposed development. The prizes, which are offered jointly by the *Journal of the American Institute of Architects* and the *Ladies' Home Journal* are as follows:

THE WINNING SOLUTION	$1,000
THE SECOND PRIZE	500
THE THIRD PRIZE	250
THE FOURTH PRIZE	150
THE FIFTH PRIZE	100

Changes in Courses

In view of the conditions created by the war, some changes have been made in the regular architectural programs of the University of Michigan. The first of these is an increased requirement in scientific building construction, increasing work in this field beyond the heretofore normal requirement in architectural schools; the second consists in providing elective hours which will enable architectural students to pursue one of a number of special courses which prepare men for specific technical government service.

A number of the architectural students are now completing the special course in ship construction given by this University at the request of the Gov-

ernment. These men will thus be able to use their technical training in a most helpful way. The advanced students are just completing the planning of an industrial town, in which everything from the plant and public buildings to the various housing types is being worked out.

The Menace to Amiens Cathedral

Can we hope that Amiens Cathedral, called by Viollet-le-Duc, "The Parthenon of Gothic Art," will escape a fate similar to that which has overtaken Rheims? Words fail to convey the regret that every one feels in the desecration of Rheims, and each will hope the stately Amiens may be spared.

Like Rheims, both inside and out, Amiens is luxuriant in sculpture. Not only separate figures of prophets, saints and martyrs are there in great abundance, but many groups and panel pieces, known among the master-pieces of this form of art, abound.

Amiens is the third largest cathedral in Europe. So well has its interior lighting been handled that, to quote a writer in a London journal, "One hardly realizes that in passing through the magnificent portal an enclosed interior has been entered, for there is no perceptible diminution of the broad daylight of the surrounding streets."

Amiens was begun in 1220.

New Powder Plants Open

The War Department authorizes the statement that operations in the Government's new powder plants near Charleston, W. Va., and Nashville, Tenn., have begun, two months ahead of schedule. The Nashville plant started a week ago, and the Director of the Explosive Plants Division has reported that the Charleston plant has also started.

These plants are beginning with the production of sulphuric and nitric acids, constituent parts in the manufacture of smokeless powder. The $120,000,000 allotted for the plants is expected to give the Government a smokeless powder production capacity equal to all other American plants combined.

Hospital for Our Navy

The American Navy is to have a hospital of its own at London. For this purpose Mrs. Frederick Edward Guest, wife of Captain Guest, member of Parliament, has turned over to the American Red Cross her residence in Park Lane, known as Alford House. Mrs. Guest was formerly Amy Phipps, daughter of Henry Phipps of Pittsburgh.

Alford House is one of the finest residences in the fashionable West End of London. It occupies an entire block and has an ample lawn and an elaborate roof-garden. It has been called "Marble House," because the entire interior is finished in the finest of Italian marbles.

The hospital will contain many beds and will be used for both officers and men. The institution will be the twenty-fifth which the American Red Cross has established in England.

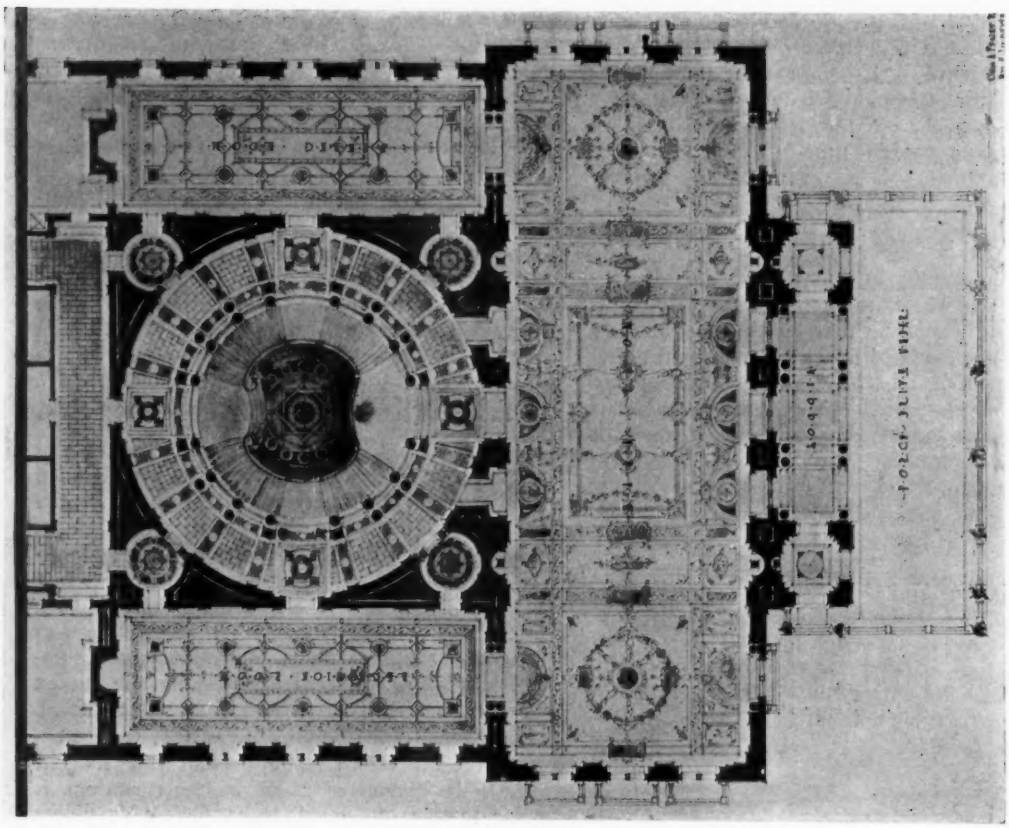
Aiding in Aeronautical Work

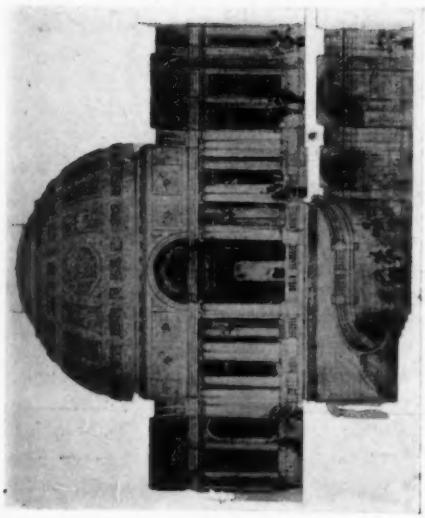
Suitable sites for additional aerological stations for the observation, measurement and investigation of atmospheric phenomena in the aid of aeronautics have been selected by the Weather Bureau at Broken Arrow, Okla.; Ellendale, N. Dak.; Droesbeck, Tex.; Leesburg, Ga.; and Royal Center, Ind. This was done under the Army appropriation act for the year ending June 30, 1918, authorizing $100,000 for this purpose. Installation of equipment has been completed at the Ellendale station and daily free air observations are being obtained. It is expected that free air observations will be begun at the other four stations about July 1. The work to be conducted at all of these stations is similar to that at Drexel, Nebr., where daily kite flights are made, and about twice each month the atmospheric changes during the day at different altitudes are studied by means of successive flights continuing from 30 to 40 hours.

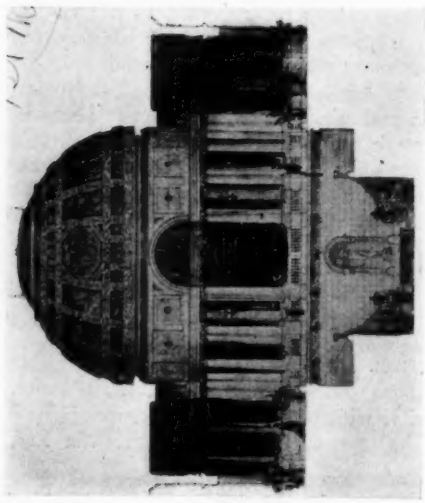
Court House Site Taken

The Federal Government has formerly taken over from the city of New York and the Court House Board the site of the proposed courthouse at Lafayette and Centre Streets, and will immediately begin the erection of barracks for housing a Provost Marshal's Guard.

The Government is to have the use of the property for the duration of the war, the agreement specifying that when it is handed back to the city the Government shall remove all buildings, fences and structures at its own expense. The agreement also provides that should it become necessary for the Court House Board to resume possession of the premises the Court House Board shall give to the War Department reasonable notice before retaking possession.







W. H. LIVINGSTON—FIRST MEDAL, UNIVERSITY OF PENNSYLVANIA
CLASS "A"—VI PROJET. A BALLROOM STAIRCASE
STUDENT WORK—BEAUX-ARTS INSTITUTE OF DESIGN

Beaux-Arts Institute of Design

Official Notification of Awards—Judgment of June 4th, 1918

PROGRAM CLASS "A"—VI PROJET

The Committee on Architecture proposes as subject for this Competition:

"A BALLROOM STAIRCASE"

INTRODUCTION:

The importance given to the monumental interior staircase is relatively modern, that is, since the period of the Renaissance. The past four centuries have produced many splendid examples, of which that of the Farnese Palace, the Escalier des Ambassadeurs at Risailles and those of Caserta and of the Paris Opera are the apogee.

The value to be given a staircase, however, must be relative to the importance of the building, and here lies one of the greatest difficulties in its design, for an exaggerated value given a stairs in a small edifice produces as ridiculous an effect as an inadequate one in a large building produces a mean effect.

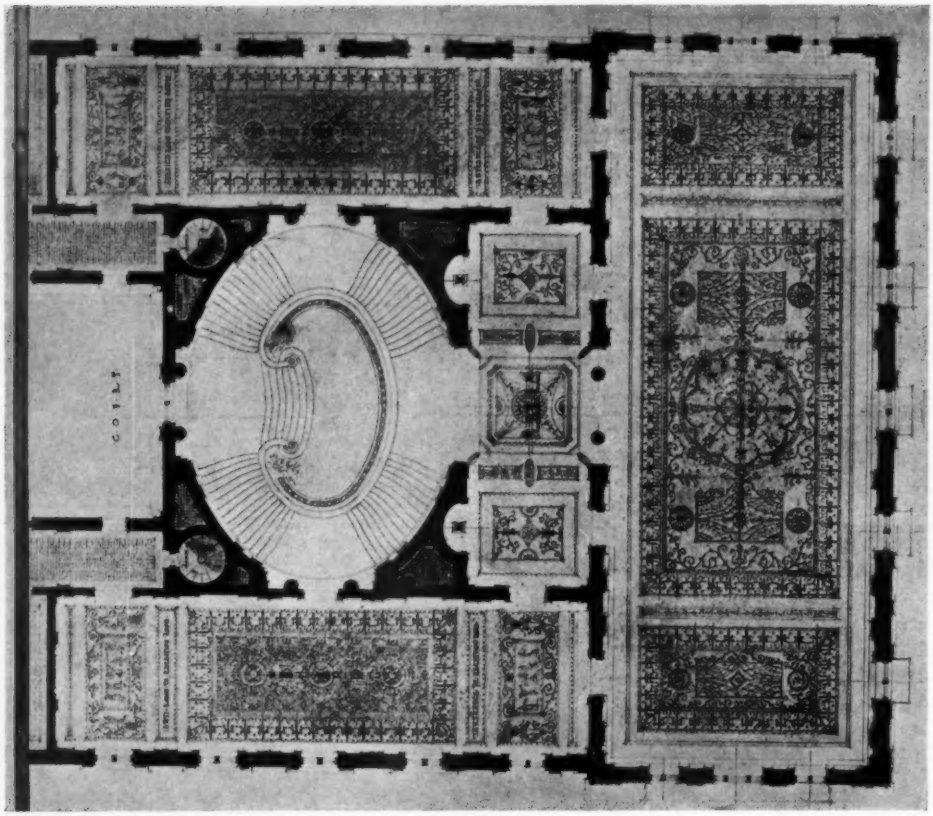
Under no circumstances must a staircase be neglected in studying a plan. It must never be stuck away in an unused corner, nor must a hallway be narrowed down to allow the stairs to be fitted in at some indeterminate part of its length; on the contrary, it should always occupy a space of its own called a cage or well containing its landings, initial, intermediate and terminal, which should not be confused with the vestibules or hallways which it serves.

In the design of a staircase the following points should be kept in mind: The line of greatest travel is approximately 20 inches from the rail, and along this line the pitch should be uniform and in the case of a monumental staircase should not exceed 27 degrees from the horizontal. At other points if it is necessary to vary the pitch along a line normal to the stairs, this should be done at a uniform rate, so that such variation will be as imperceptible as possible to the person mounting or descending the stairs. Landings should occur at least once in each 10 feet of vertical rise. Balustrades should not be less than 30 inches high at the front of the step, except that where ramps are used, as in the staircase of the Grand Theatre at Bordeaux, the width of the ramp compensates for its lack of height above the step, and prevents the feeling of danger and uneasiness to which it would otherwise give rise. In a staircase where a portion of the run is divided, the width of the main run should be at least one-third greater than the width of one of the branches.

Monumental stairs are of two kinds: those built between walls where each step forms a lintel; or those built with one or with two free standing stringers.

E. L. HOWARD—CORNELL UNIVERSITY, PRIZE AND FIRST MENTION

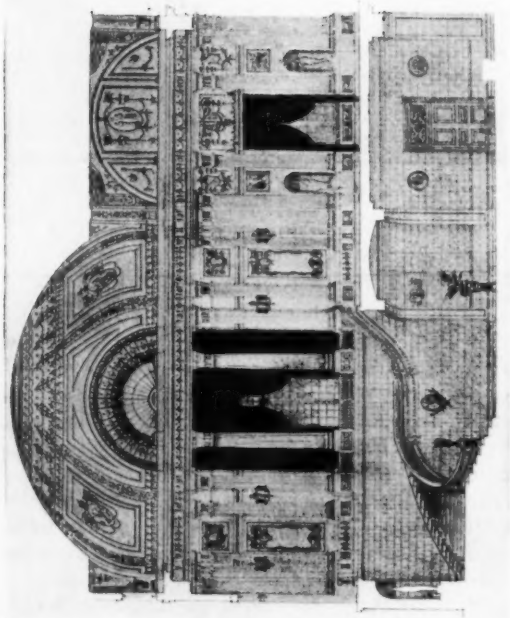
CLASS "B"—VI. ESQUISSE-ESQUISSE—A HERMITAGE

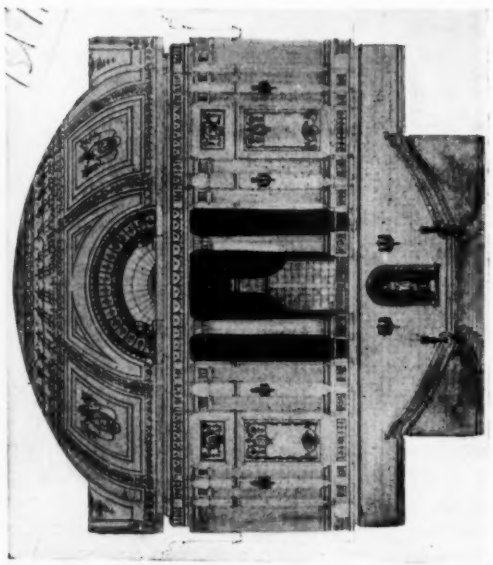


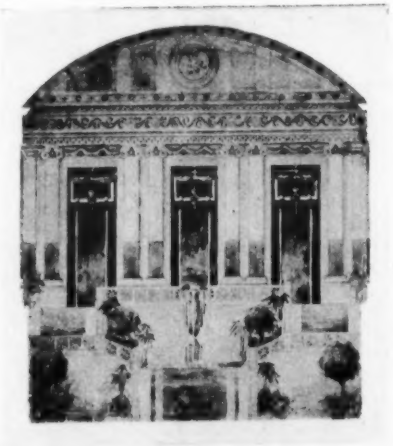
A. C. BIEBER—FIRST MEDAL, UNIVERSITY OF PENNSYLVANIA

CLASS "A"—VI PROJET. A BALLROOM STAIRCASE

STUDENT WORK—BEAUX-ARTS INSTITUTE OF DESIGN







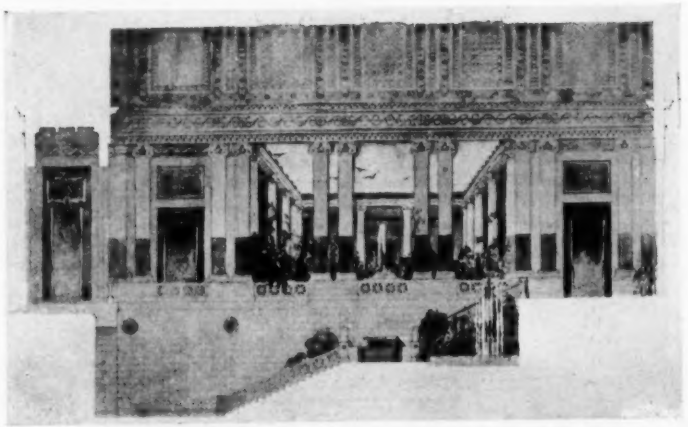
J. C. JANNEY

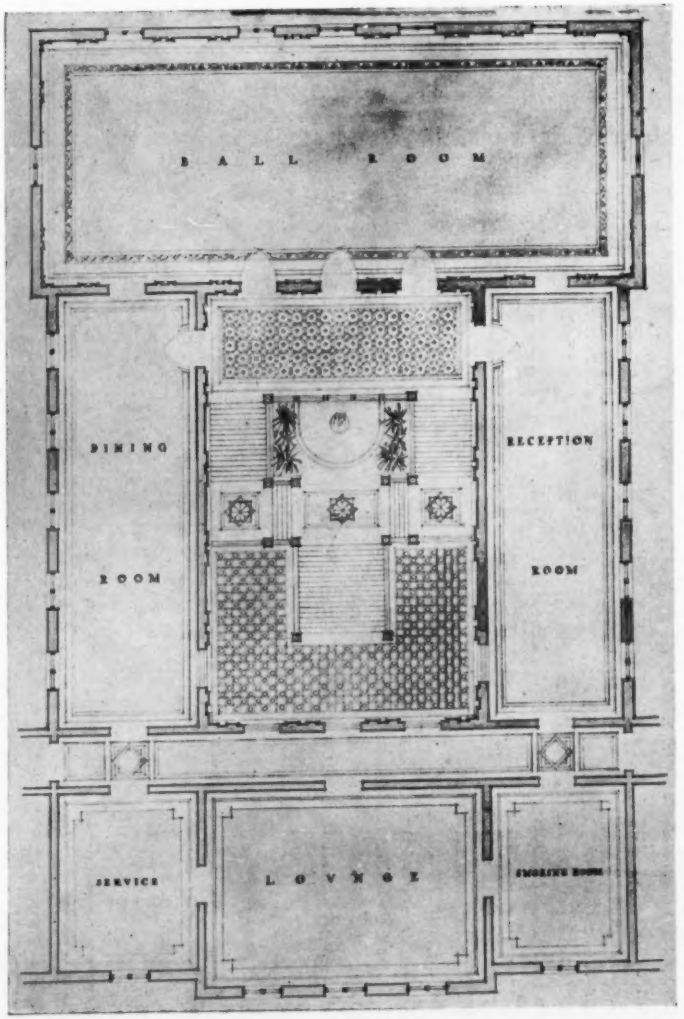
▽

FIRST MEDAL

▽

UNIVERSITY OF
PENNSYLVANIA





CLASS "A"—VI PROJET. A BALLROOM STAIRCASE

STUDENT WORK—BEAUX-ARTS INSTITUTE OF DESIGN

In the first class are straight flights of stairs in one run used either singly or forming a pair, while circular or polygonal stairs with an open inner well, or those dividing to the right and left at the first landing, may belong also to the second class in measure as free stringers are used in place of the inner wall, or, as at the Opera in Paris, when the steps rest on two stringers, both standing disengaged from the walls, allowing the decorative treatment of these latter to be free from the trapezoidal and triangular panels which are otherwise formed by the slope of the steps. There are even some examples of staircases of fanciful forms standing entirely free, except for the top landing, from the walls of their wells.

THE PROBLEM:

The subject of this problem is a monumental staircase in the wing of a large hotel which leads from an entrance vestibule to the ballroom on the second floor.

The ground floor will contain a covered driveway entering on a spacious vestibule on each side of which will be cloakrooms and necessary conveniences for the guests; on the second floor the staircase will lead to an ample circulation which will open on a ballroom of about 4000 sq. ft., a large reception room and a dining-room of about the same dimensions as the reception room. The height of the second floor is 18 ft. above the floor of the vestibule.

JURY OF AWARD: F. A. Godley, L. Warren, W. L. Bottomley, H. R. Sedgwick, L. F. Peck, R. M. Hood, L. E. Smith, G. A. Licht, F. C. Hirons, H. W. Corbett, G. H. Bickley, M. B. Stout, D. J. Baum and L. Ayers.

This jury also served as jury of award for Class "A"-VI Esquisse-Esquisse, Class "B"-VI Esquisse-Esquisse (Spiering prize), Class "A" and "B" Archæology-VI Projet and Measured Drawings. For the awarding of the Spiering Prize Messrs. G. A. Licht, F. C. Hirons, H. W. Corbett, G. H. Bickley, M. B. Stout and D. J. Baum were excluded from the jury.

Number of drawings submitted: 15.

AWARDS

FIRST MEDAL: J. C. Janney, W. H. Livingston and A. C. Bieber, University of Pennsylvania, Philadelphia.

SECOND MEDAL: A. V. Fisher, University of Pennsylvania, Philadelphia; J. F. Harbeson, "T" Square Club, Philadelphia.

MENTION: M. A. Bernhardt, H. Hermanns, R. D. Kennedy, J. W. Brooks, G. M. Martin, S. H. Gordon, L. D. Cook and A. C. Runzler, University of Pennsylvania, Philadelphia; H. D. Watterson, Carnegie Institute of Technology, Pittsburgh; I. Demchick, "T" Square Club, Philadelphia.

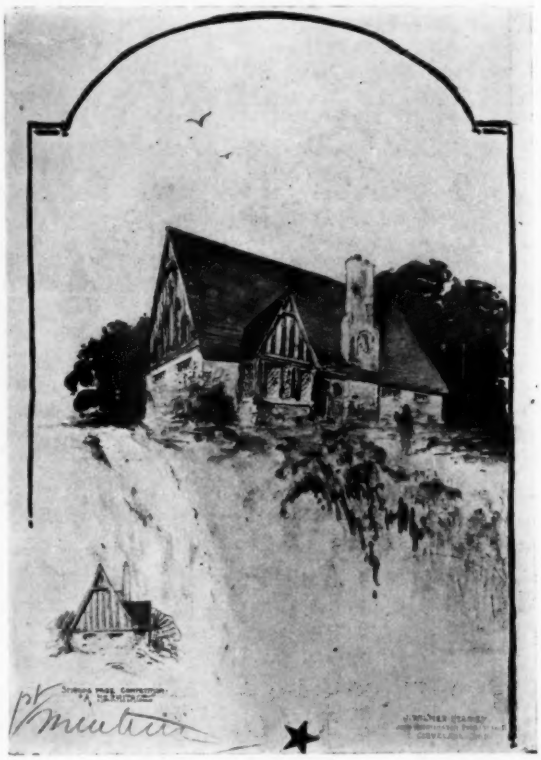
PROGRAM

CLASS "A"—VI ESQUISSE—ESQUISSE

The Committee on Architecture proposes as subject for this Competition:

"A REFORMATORY VILLAGE"

The modern idea in planning reformatories is to provide accommodations for inmates that avoid the character of institution by creating a scheme that

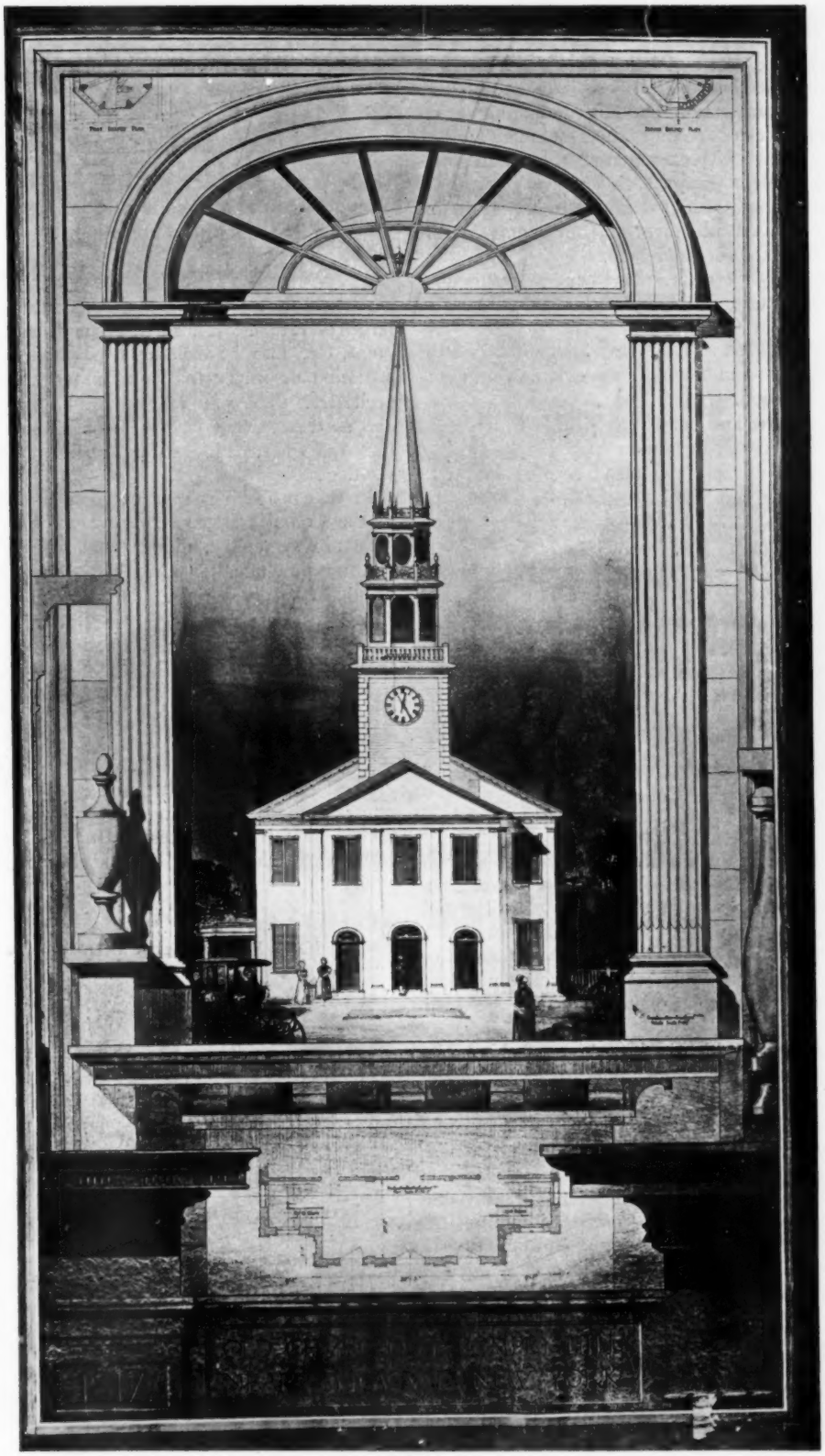


J. W. HERSHEY—JOHN HUNTINGTON POLYTECHNIC INSTITUTE, FIRST MENTION

CLASS "B"—VI. ESQUISSE-ESQUISSE—
A HERMITAGE

will enable as nearly as possible the conditions and influences of home life to obtain. For this reason the inmates are divided into classes according to the level of life to which they are accustomed and according to their personal and moral character, and are assigned to cottages, each containing about thirty rooms so that each may have his own bedroom, with a common sitting-room for each cottage. Proper supervision is maintained by a paid cottage superintendent and by inmate monitors on each floor.

The village is to be placed on a piece of property



R. P. VAN DER POEL—THIRD MEDAL, UNIVERSITY OF SYRACUSE
CLASS "A" AND "B," ARCHAEOLOGY—VI MEASURED DRAWING.

500 feet by 500 feet and is to provide accommodations for about 600 boys. There is to be:

1. An administration building containing a reception room, clerks' rooms, superintendent's office, physician's office with examination room, and storerooms for general supplies.

2. Kitchen and dining-rooms. The dining-rooms should be divided into three or four rooms for the inmates and one for paid help.

3. A laundry. Heating plant (and power house) and shops where the inmates are taught useful trades.

4. Cottages for 600 inmates, which should not be too widely scattered, owing to the desirable economy of administration.

5. An athletic and recreation field, which should provide for the more common sports.

6. A chapel which will also serve as an auditorium.

Awards: No mentions awarded.

PROGRAM

SPIERING PRIZE COMPETITION

A prize founded in memory of Louis C. Spiering; from funds bequeathed by him to the Society and given for the best solution of the last Class "B" Esquisse-Esquisse for the season.

CLASS "B"—VI ESQUISSE-ESQUISSE

The Committee on Architecture proposed as subject for this Competition:

"A HERMITAGE"

In our sense of the word, a Hermitage is a small building or pavilion built on a private estate as a refuge from the disturbances of everyday life and as a place for study and reflection. In the XVIII century they were very usual, and at the present day they are not uncommonly found in country places where they occupy some picturesque and secluded spot.

The Hermitage which is the subject of this problem is situated on the country place of a playwright upon a ledge of rock by a small waterfall, overlooking a valley. It consists of a room of about 800 square feet in which shall be arranged a sleeping alcove and a large bay window widely open to the view. There should also be provided a bathroom and a kitchenette. The picturesque possibilities of the site should be taken advantage of to the utmost.

Number of drawings submitted: 10.

AWARDS

PRIZE, $50: E. L. Howard, Cornell University, Ithaca.

FIRST MENTION: E. L. Howard, Cornell University, Ithaca; J. W. Hershey, John Huntington, Polytechnic Institute, Cleveland.

MENTION: R. Bailey and C. D. Lewis, Cornell University, Ithaca; H. W. Frederick, Portland Architectural Club, Portland.

PROGRAM

CLASS "A" AND "B" ARCHÆOLOGY—VI PROJET

The Committee on Architecture proposes as subject of this Competition:

"A COLONIAL MUSIC PAVILION"

Among the decorative features of the gardens of large private estates, such as pergolas, fountains, pools, etc., may be included a pavilion for the presentation of music that does not demand a large orchestra. The pavilion should be small in size, and so treated that it is open on all sides in order that the guests may gather about it in pleasant weather.

In this problem such a pavilion is to be treated in the Colonial style. The characteristics of this style are symmetry, dignity and simplicity. This does not preclude, however, the lightness and gaiety suitable for this subject. Its forms and ornament, drawn from classic sources, were greatly influenced by the very common use of wood, used either alone or in conjunction with brick or stone. Cornices, columns, balustrades and ornaments of wood were typical of this style, the detail and proportions being refined to suit the material.

The pavilion is not to exceed 250 feet in its greatest dimension in plan, and is to be built upon a terrace the greatest dimension of which is not to exceed 50 feet. This terrace may be ornamented with balustrades, vases, etc., in character with the pavilion.

AWARDS

MENTION: F. J. Kuchler, University of Pennsylvania, Philadelphia.

CLASS "A" AND "B" ARCHÆOLOGY—VI MEASURED DRAWING

TITLE:

OLD CHURCH AT POMPEY HILL, NEAR SYRACUSE, N. Y.

AWARD

THIRD MEDAL: R. P. Vander Poel, Syracuse University, Syracuse.

TITLE:

ENTRANCE TO THE BARTON-MEYERS HOUSE, NORFOLK, VIRGINIA—1791.

AWARD

MENTION: A. Sharove, Carnegie Institute of Technology, Pittsburgh.

TITLE:

THE MISSION DELORES AT SAN FRANCISCO.

AWARD

MENTION: E. E. Weihe, Atelier A. Brown, Jr.—S. F. A. C., San Francisco.

Department of Architectural Engineering

A SHOP WITH WHITE WALLS AND CEILING FOR SMALL MACHINE WORK, FINISHING AND ASSEMBLING

Semi-indirect lighting furnishes ample light for all purposes.

Nightlighting the Factory

In Three Parts—Part II

IN the designing of an artificial lighting system there are several factors employed in the calculations which are special to these problems. Among them are the foot-candle, the lumen and a coefficient of utilization.

A foot-candle represents an intensity of illumination equal to that produced at a point on a plane which is one foot distant from a source of one candle and which is perpendicular to the light rays at that point. The foot-candle is a unit applying to a point on a surface and the average intensity of illumination on a plane is the average of the foot-candles at a number of points on the plane. By referring to Fig. 1 it is apparent that the same amount of light that illuminates the plane A illuminates the plane B upon the withdrawal of plane A, and the same is true regarding plane C. It follows that as the area of plane B is four times that of A, and that of C is nine times that of A, the intensity of the illumination on planes B and C will decrease as these areas increase. Therefore the intensity of illumination decreases in proportion to the square of the distance from the light source.

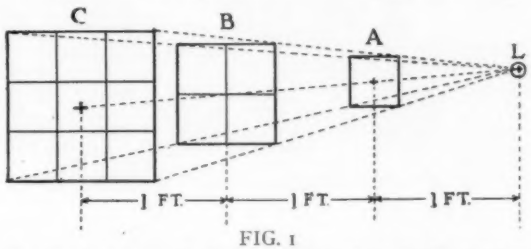


FIG. 1

The Illumination on a Surface Varies Inversely as the Square of the Distance from the Source to the Surface.

A METAL WORKING PLACE WITH LIGHT CEILING AND MEDIUM WALLS

Lamps spaced 15 ft. on centers longitudinally and 11½ ft. transversely with outer rows 3½ ft. from the walls. Lighting units, located 11 ft. above the working plane, consist of 200-watt lamps with porcelain enameled metal-cap diffusing units. Excellent diffusion with little interference from belting and freedom from sharp shadows.

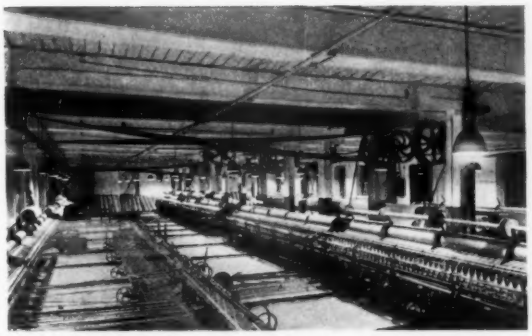
The intensity of illumination cannot be judged by the brightness of the surface considered but can only be determined by photometric measurement. A black cloth lighted with a given intensity of light will not appear as bright as a white cloth under the same conditions, because the light falling on the black cloth is absorbed. The brightness of an article depends on the reflection factor of its surface and the intensity of light.

The term lumen is comparatively new but is adopted as a necessity in these calculations. The lumen is a measurement of the *quantity* of light while the foot-candle is the measure of the *intensity* of light. We are familiar with the rating of lamps in the terms of watts. The watt, being a measure of electrical energy, is not a measure of illumination. The watt then is a factor in the cost of light rather than in the quantity of light. The amount of light emitted by an electrical lamp is not in proportion to the watts consumed and it is therefore necessary to rate the lighting ability of a lamp in terms of lumens.

When a uniform light source of one candle power is at the center of a sphere of one foot radius, the intensity of illumination is one foot-candle at every point on the interior of the sphere. The area of the surface of such a sphere is 12.57 sq. ft. (4π) and the term lumen denotes the quantity of light received on each square foot of the surface of the sphere. Or the lumen is the quantity of light received from a source of one candle-power upon a surface of one square foot, every point of which is one foot distant from the light

A WORSTED GOODS FACTORY WITH LOCAL LIGHTS

Resulting in sharp contrasts between light and dark portions of the room. Light walls and ceiling give same assistance to a very bad lighting installation.



A WORSTED MILL WITH LOCALIZED GENERAL ILLUMINATION

Lamps installed in porcelain-enameled bowl-shaped steel reflectors. Mounting high enough to prevent glare. Good light at the work. White walls and ceiling with light-colored material a distinct aid to the general illumination.

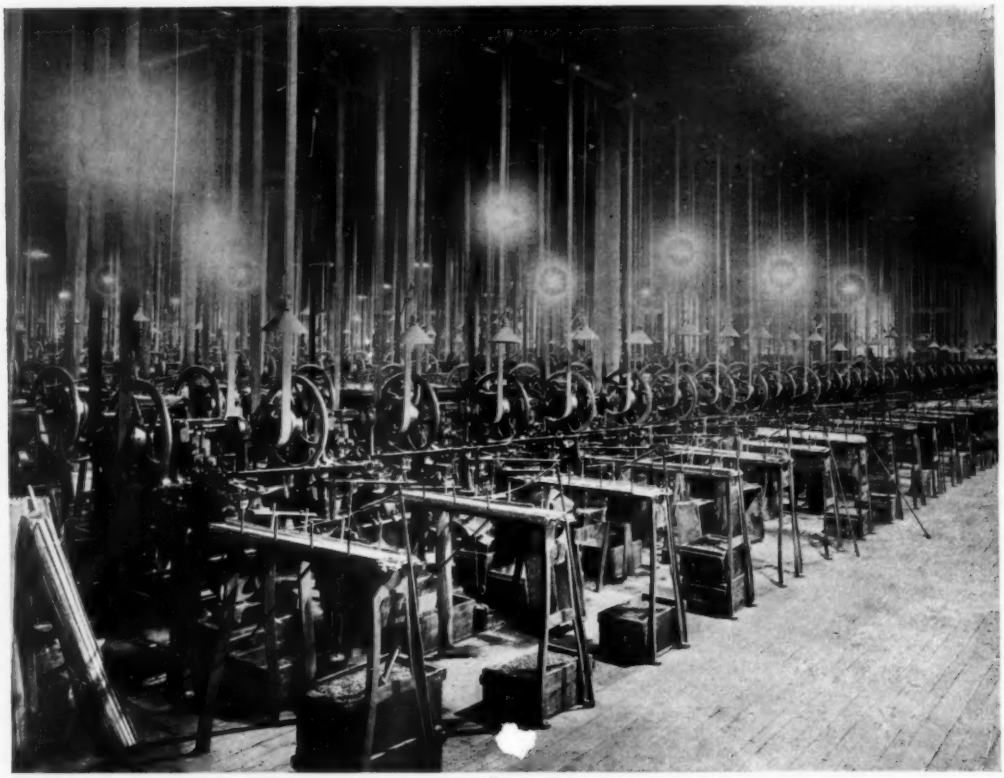
source. Hence a light source of one spherical candle-power will produce an intensity of one foot-candle over 12.57 sq. ft. or 12.57 lumens. One lumen is emitted by 0.07958 spherical candle-power.

If the inside of the sphere is painted black to render its surface non-reflecting and an opening made which is one square foot in area, then the quantity of light emitted would represent one lumen. If the sphere has a radius of four feet the intensity of the light at any point would be 0.0625 foot-candles. If all of the light received on the upper half of the one-foot radius sphere could be redirected to the surface of the lower hemisphere, the intensity of the light at any point would be doubled and become two foot-candles; but the total lumens would remain 12.57 in number. Again, if all of the light could be redirected to the lower hemisphere and projected onto a plane having an area of 25 square feet the average intensity over this area would necessarily be 0.5028 foot-candles.

As one lumen is the quantity of light falling on one square foot of the interior of a sphere of one foot radius and lighted by a source of one candle-power, it follows that if one lumen is so utilized that *all* of the light is spread over a surface of one square foot, that surface will be lighted to an average intensity of one foot-candle. The distance of the plane from the lamp, and its angle to the direction of the rays, would be immaterial as long as all of the light emitted by the lamp were intercepted by the plane. Therefore the average illumination upon any plane is equal to the total lumens re-

MACHINE AND ASSEMBLING SHOP WITH ARC LAMP INSTALLATION

The center lights have a 40-ft. mounting and are above the traveling crane and have 20 ft. mounting above and below the mezzanine floor at the sides, resulting in excellent distribution of light.



A COMPARATIVELY LOW WORK ROOM WITH 250-WATT LAMPS

Mounted midway between the work plane and the ceiling. Illumination at the work is good. The original individual lamps over the machines are still in place.

ceived upon it divided by the area in square feet over which this light flux is distributed.

Lamps do not emit light of equal intensity in all directions, and it is by photometric measurement

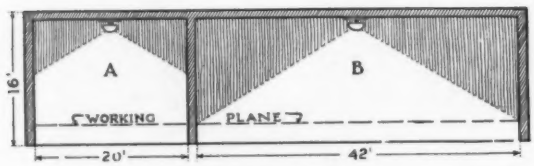


FIG. 2

Influence of the Room Proportions on the Coefficient of Utilization.

that the average intensity over the surface of a sphere is obtained. The maximum candle-power of a lamp is naturally in a horizontal direction and the ratio of the average to the maximum intensity produced on the sphere is known as the spherical reduction factor of the lamp.

Of the total light given off by a lamp some portion of it fails to reach the plane which is to be illuminated. This is due to the absorption of light in the surface of the reflectors, by light rays being cross-directed within the reflector, by the fixture and by walls and ceiling. Some of the light falling on the ceiling and walls may be redirected to the desired place.

This drop between the total light and that which

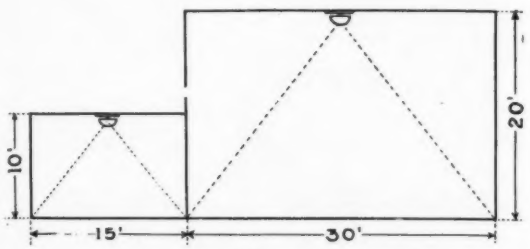


FIG. 3

Influence of the Room Proportions on Percentage of Light Utilized.

is actually available at a designated point is estimated and its value is represented by a percentage

of the total light known as the coefficient of utilization.

By referring to Figure 2 it will be seen that the relation of the width of the room to the ceiling height has an important influence on the utilization of light. The light falling on the walls of section A is lost in so far as the working plane is concerned, except such as may be reflected from the walls. In section B all of the light falls on the working plane. In these cases the ratio of the room width to the ceiling height is 1.25 and 2.625 respectively. In Table I these ratios range from 1 to 5, and where the ratio is small a low utilization obtains because of the proportion of light falling on the walls. The influence of the color of the walls and ceiling are also indicated in these factors given in Table 1. These colors are grouped in three degrees of shade, designated as light, medium and dark, and the percentage of the light which they will reflect is indicated. It is apparent that the lightness of these surfaces has an important bearing on the design of an artificial lighting equipment, and this same factor has a very important influence in the utilization of daylight also. In this same table the shape and kind of reflector is measured in respect to its influence on the utilization of light.

TABLE I

COEFFICIENTS OF UTILIZATION

This table applies to installations in *square rooms* having sufficient lighting units symmetrically arranged to produce reasonably uniform illumination. To obtain the coefficient for any rectangular room, find the value for a square room of the narrow dimension and add one-third of the difference between this value and the coefficient for a square room of the long dimension.

Reflection Factor: Ceiling			Light 70%			Medium 50%		Dark 30%
Reflection Factor: Walls			Light 50%	Medium 35%	Dark 20%	Medium 35%	Dark 20%	Dark 20%
Reflector Type	Light Output	Ratio = Room Width / Ceiling Height						
Prismatic Glass	90° to 180°—22%	1	.42	.38	.35	.36	.34	.33
		1½	.50	.46	.43	.44	.42	.41
		2	.56	.52	.49	.50	.47	.45
		3	.63	.59	.55	.56	.53	.51
Bowl-Frosted Lamp	0° to 90°—65%	5	.70	.66	.63	.63	.60	.57
Light Opal	90° to 180°—35%	1	.31	.27	.24	.24	.21	.18
		1½	.37	.33	.30	.30	.27	.24
		2	.43	.39	.35	.34	.31	.27
		3	.49	.45	.41	.39	.36	.31
Bowl-Frosted Lamp	0° to 90°—50%	5	.56	.52	.48	.45	.42	.36
Dense Opal	90° to 180°—20%	1	.41	.37	.34	.35	.33	.32
		1½	.49	.45	.42	.43	.41	.39
		2	.54	.50	.47	.48	.46	.44
		3	.60	.56	.53	.53	.51	.49
Bowl-Frosted Lamp	0° to 90°—60%	5	.67	.63	.59	.59	.57	.54
Steel Bowl	90° to 180°— 0%	1	.38	.36	.34	.35	.33	.33
		1½	.45	.43	.41	.42	.40	.40
		2	.49	.47	.45	.46	.44	.44
		3	.54	.52	.50	.51	.49	.49
Porcelain Enameled	0° to 90°—65%	5	.59	.57	.55	.56	.54	.54
Steel Dome	90° to 180°— 0%	1	.43	.40	.38	.39	.37	.37
		1½	.52	.49	.47	.48	.46	.46
		2	.57	.54	.52	.53	.51	.51
		3	.63	.60	.58	.59	.57	.57
Porcelain Enameled	0° to 90°—80%	5	.69	.66	.64	.65	.63	.63
Indirect	90° to 180°—80%	1	.22	.19	.17	.14	.12	.07
		1½	.27	.24	.22	.17	.15	.09
		2	.31	.28	.26	.20	.18	.11
		3	.36	.33	.31	.24	.22	.13
Mirrored Glass	0° to 90°— 0%	5	.42	.39	.37	.28	.26	.16
Semi-Indirect	90° to 180°—60%	1	.27	.24	.21	.20	.17	.14
		1½	.34	.30	.27	.25	.22	.18
		2	.39	.35	.32	.29	.26	.21
		3	.45	.41	.38	.34	.31	.25
Light Opal	0° to 90°—25%	5	.51	.47	.44	.40	.37	.29
Semi-Indirect	90° to 180°—70%	1	.24	.21	.19	.16	.14	.10
		1½	.30	.27	.24	.20	.18	.13
		2	.34	.31	.28	.23	.21	.15
		3	.39	.36	.33	.27	.25	.18
Dense Opal	0° to 90°—10%	5	.45	.42	.39	.32	.30	.21
Enclosing	90° to 180°—35%	1	.23	.20	.17	.18	.16	.14
		1½	.30	.26	.23	.24	.21	.19
		2	.35	.31	.28	.28	.25	.22
		3	.41	.37	.34	.33	.30	.26
Light Opal	0° to 90°—40%	5	.48	.44	.41	.39	.36	.31
Semi-Enclosing	90° to 180°—20%	1	.32	.28	.26	.27	.25	.23
		1½	.40	.36	.33	.34	.32	.30
		2	.45	.41	.38	.39	.37	.35
		3	.52	.47	.44	.45	.42	.40
Opal Bowl	0° to 90°—50%	5	.59	.54	.51	.51	.48	.46

The absolute height in feet at which the lighting unit is mounted has, in itself, no influence on the *percentage* of light utilized, so long as the same relative proportions are maintained. In Figure 3 the ratio of room width to height is the same for both sections and the effectiveness of the lighting equipment is the same as far as the percentage of utilization of light is concerned. If in the larger section a lighting unit is used which emits four times as many total lumens as the unit employed in the smaller section, the intensity of illumination will be the same.

The location of light sources so as to insure a uniform illumination is established by the use of ratios of maximum spacing distance to mounting height for various kinds of reflector equipment. Uniformity of illumination will be the result if the values given in Table 2 are not exceeded. These spacings can be decreased with no disturbance to uniformity of illumination. Lighting units can be secured which give a high degree of uniformity, with wider spacings than those listed, but long heavy shadows would result which are decidedly objectionable. It should be remembered that uniformity of illumination is only essential or desirable in work places, schools, stores and where articles are exhibited for inspection. In places devoted more to social uses a lack of uniformity of illumination and the presence of shadows is very desirable. Note in Table 2 the mounting height is the distance between the working plane and the lamp; except for indirect and semi-indirect systems the distance is from the working plane to the ceiling, for in this case the ceiling is the light source.

TABLE NO. II—RECOMMENDED MAXIMUM SPACINGS AND MINIMUM MOUNTING HEIGHTS FOR VARIOUS UNITS

(Mounting height equals distance of light source above plane of illumination.)

Equipment	*Ratio = Spacing / Mounting Height	†Ratio = Mounting Height / Spacing
Prismatic, Mirror, or Aluminum		
Intensive	1½	⅔
Focusing	¾	1⅓
Extensive	1⅔	⅗
Indirect or Semi-indirect	1½‡	⅔‡
Opal or Porcelain Enamel		
Bowl	1⅔	⅗
Dome	1⅔	⅗
Totally Enclosing		
Glass	1⅔	⅗
Semi-Enclosing	1½	⅔

*To get maximum spacing distance, multiply Ratio by mounting height.

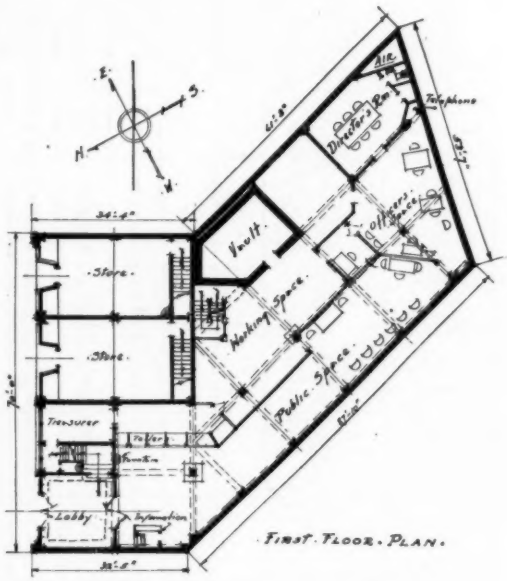
†To get minimum mounting height, multiply Ratio by spacing distance.

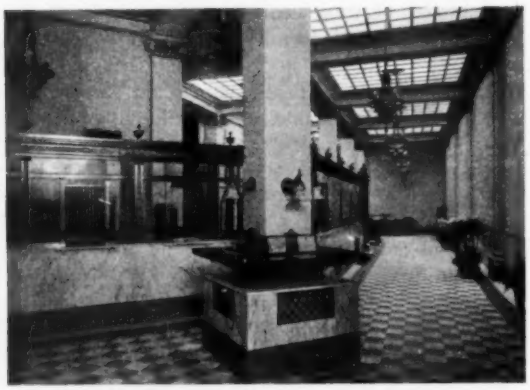
‡Height equals distance between ceiling and plane of illumination.

The Railroadmen's Savings Building

THIS building was erected to house one of the largest building and loan associations in this country—The Railroadmen's Building and Savings Association of Indianapolis.

The irregularly shaped plan is due to the fact that the building faces one of the diagonal streets to be found in that city. With the exception of two storerooms, the first floor is devoted to the business of the association. The working arrangement of the association's quarters is divided into two distinct parts. The business of deposits and withdrawals is conducted at the front adjoining the entrance lobby and is equipped like a banking space used for that purpose. The business of negotiating loans and signing the documents is carried on in the rear

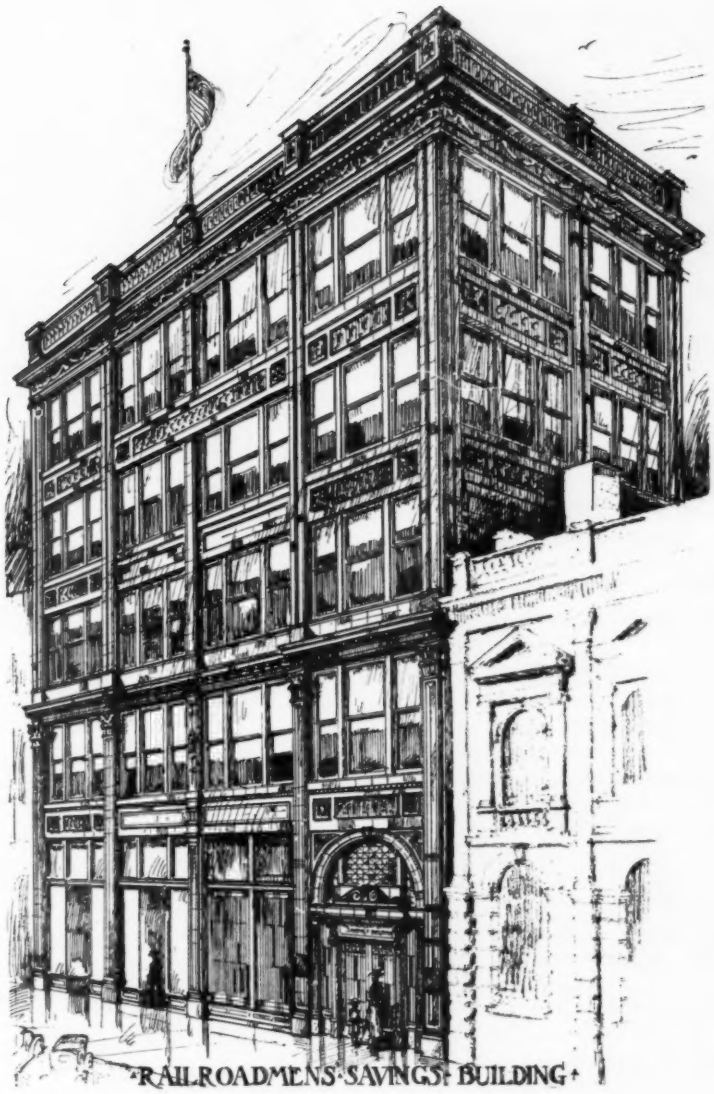




INTERIOR VIEW TOWARD THE REAR

and between these two portions is a space used as a waiting room. A working space for clerks, directors' room and treasurer's office is provided.

A three-story vault extends through the basement and first story. As the building occupies the entire lot and adjoins no alleys, the larger portion



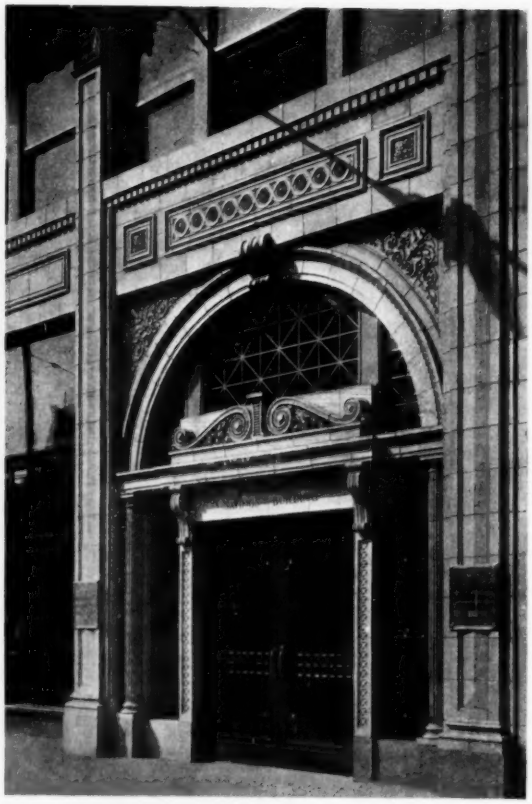
FERMOR S. CANNON, *ARCHITECT*

of the first story is lighted by means of skylights. This portion of the building is heated and ventilated by a blower system used in connection with a humidity controlling apparatus. On the second floor is located the rest room for the women clerks. The

INTERIOR VIEW TOWARD THE ENTRANCE

lobby and entrance trim and wainscoting are of gray marble, the floors of the lobby and public spaces are finished in dark gray and white ceramic mosaic. The walls of the lobby are trimmed with marble, the panels being plastered in Caen stone finish.

The building is constructed with a reinforced-concrete frame with floor panels of combination tile and concrete. The elevations are faced with terra-cotta in light buff limestone effect. The building is designed to be erected in two operations, the upper three stories to be added to the two lower stories. The cost of the building with all equipment totals 31 cents per cubic foot. The building was designed and construction supervised by Fermor S. Cannon, architect.



THE MAIN ENTRANCE

RAILROADMEN'S SAVINGS BUILDING
FERMOR S. CANNON, *ARCHITECT*

Industrial Information

"Buckeye" Conduit

"Buckeye" conduit is manufactured, from ore to finished product, by the Youngstown Sheet & Tube Company, Youngstown, Ohio. This company has issued a little booklet, telling why "Buckeye" conduit is good conduit, why one should use this conduit, and illustrating some of the buildings in which it has been installed.

Safety Switches

The Square D Company, Detroit, Mich., steel enclosed switch manufacturers, call attention to some of the very important features of their Square D safety switches, which are made under National Electrical Code specifications and are approved by the Underwriters' Laboratories for both fire and accident prevention.

The switch is of very simple construction, completely enclosed in a sheet steel box, so designed that ample wiring space is provided inside to make the necessary connections, the corners of which are electrically welded, thus assuring durability. The box is provided with a hinged cover, held closed with a simple spring, and the switch is operated by a crank handle located on the outside. Raised letters on the box indicate the "on" and "off" position of the switch.

The switch may be locked in the "off" position to prevent accidents while repairs are being made on apparatus controlled by it, provision being made for three individual padlocks. The advantages of these are obvious when there is more than one man working on the line or equipment. When each man starts to work he locks the switch in the "off" position. This eliminates the possibility of either man throwing the switch "on" before all are finished working. Means are also provided to seal the cover to prevent unauthorized persons over-fusing the switch or tampering with live connections in any way; but the electrician has access to it at all times and can make his tests or inspection without stopping the motor or delaying production.

The switch is provided with a quick-break mechanism which is absolutely positive and insures a simultaneous break at all blades. This positive action makes longevity of the copper blades and the switch jaws a certainty.

Another feature is the interchangeability of end plates, which are furnished blank, with knock-outs, or with porcelain outlet covers for open wiring, according to installation requirements. Convenient knock-outs are furnished in the sides of the switch and make possible "tapping-off."

This company's catalog, No. 24-B, contains description, specifications and prices of these switches, as well as valuable motor wiring data.

Plaster Board

Bishopric stucco or plaster board, manufactured by the Bishopric Mfg. Company, Winton Place, Cincinnati, Ohio, is made of dove-tailed lath, imbedded in toughened asphalt mastic, on a background of waterproofed fiber-board. As stated in the company's folder, the lath keep the surface rigid; the dovetail grips and holds cement or plaster so it cannot crack, crumble or disintegrate; the asphalt mastic is damp-proof, vermin-proof, sound deadening and fire-resisting. This material is designed as a foundation for stucco, cement or plaster, for both interior and exterior construction. This company also publishes a book giving the details of use of this material, together with some interesting comparisons of costs.

Company's House Organ Aids Employees' War Gardens

In "Safety Hints," the house organ of the Whitaker-Glessner Company, Wheeling, W. Va., timely hints as to the management of a war garden are presented for the benefit of the company's employees who are so employing their leisure. In this sheet, which is published by the employees of the company, all sorts of lively and pertinent things

are to be found. The cautioning for safety is well seasoned with jokes, bits of verse, personals and the like. The part which this company is doing to help win the war is also narrated in this booklet, which tells of the amounts subscribed to Liberty loans, Red Cross and the like, as well as the list of the men in service.

Non-Staining Mortar

Some of the qualities required in good mortar, including strength, density, imperviousness to water, quick setting and absence of pigments which will cause ordinary or chemical stains, are described in a new book issued by the Atlas Portland Cement Company, 30 Broad Street, New York. This book embodies a very interesting monograph on mortar, its possibilities and its history. A series of specifications, suggested for various uses of mortar, is also to be found here. Tables of strength and physical and chemical properties of Atlas-White cement are given at the back of the book.

Of equal interest, at least, are the photographic illustrations scattered through this booklet. The Wisconsin State Capitol, the Yale Club, New York, the United States Post Offices of New York and Washington, the Mary Baker Eddy Memorial, the Grand Central Terminal, New York, and many other public buildings of note in which Atlas-White mortar was used are among them. This booklet will be sent to any architect interested in the subject, upon request to the Atlas Portland Cement Company, 30 Broad Street, New York City.

Roller Screen with Automatic Locking Strips at Sides

A roller screen, with automatic locking strips at the sides, effectually preventing any sag, is manufactured by the Home Accessory Department of the Motors Appliance Company, East Moline, Illinois. "Loctite" is the name of this product. A folder is published by this company showing just how this screen operates, what its construction is, together with a graphic presentation of the uses and advantages of this type of mechanism.

Trackless Door Hangers

No-Trac hangers, enabling sliding doors to be operated without the use of track and trolleys, are manufactured by the Coburn Trolley Track Mfg. Company, Holyoke, Mass. The principle upon which these hangers operate is that of the pendulum, modified by being connected to a crank arm. This modification gives the point at which the door is suspended a motion in a straight line. The hanger itself is attached to the transom bar or wall above the door opening.

As pointed out by this company's literature on the subject, "The advantages of a No-Trac hanger are its extreme simplicity, its ease of operation, its durability, and long life, its quiet operation, and the fact that a self-closing device can easily be applied. There is no bearing on the entire hanger, which turns through one half revolution. This fact alone accounts for the ease in operation, as well as the long life of the hanger, since the wear on the parts is almost negligible. The adjustment of the door is the simplest thing possible, as it is only necessary to turn one screw on the adjusting plate on the door. This is of exceptional value when the door slides into the pocket."

The Coburn Company has devoted a large booklet to the description of this product; it may be had upon request.

House Organ of Charles H. Brown Paint Company

The Statesman is the house organ of the Charles H. Brown Paint Company, Fulton and Clinton Streets, Brooklyn, N. Y. This bulletin, which is a large four-page folder, is edited particularly in the interests of dealers, although much of the material it contains is of general interest. Photographic illustration of a Chinese Masonic Temple at Port-of-Spain, Trinidad, on which Brown Company's paints were used is one of the interesting features of the first issue of the year, accompanied as it is with a sketch of the life and customs of the people there. Photographs of the offices of this company are shown on the first page of the bulletin.

An Erasing Machine

A circular eraser driven by motor, is advertised by Kolesch and Company, 138 Fulton Street, New York. This is a device which might be welcome in some drafting rooms. It consists of a variable speed motor, which can be attached to any electric light socket, and which will operate on either direct or alternating current. There is a flexible shaft 3 ft. long, which is attached to a countershaft driven by a belt. The cost of the machine is not prohibitive. It will be sent to any architect on ten days' trial.