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MARENGO PRIMARY SCHOOL, ALHAMBRA, CAL.
MESSRS. ALLISON & ALLISON, *ARCHITECTS*

FIRE PROTECTION OF SCHOOLS

Extracts from proceedings of annual meeting, National Fire Protection Association, with an introduction by William O. Ludlow, member Committee on Fire Protection of the New York Chapter, American Institute of Architects

THAT the average schoolhouse as built to-day is infinitely superior in beauty, sanitation and safety to that of twenty years ago, is due largely to the efforts of such men as William B. Ittner and C. B. J. Snyder, the authors of the papers printed in part herein. These papers should be in the hands of every school commissioner and of every architect who plans a school building.

The buildings of recent construction in our metropolitan districts are, as a rule, planned by men of training and ability, and the matter of safeguarding the lives of children from fire, therefore, is cared for to some degree as a consequence. The greatest dangers to-day exist largely in the incompetent men of the rural districts, and in the many old fire-traps still existing.

But what has the average architect to do with the menace of these old buildings; are they not entirely in the hands of school boards who should look after their safety?

I believe that every architect should, from the nature of his calling, be a leader in his community, particularly in any matter pertaining to the work of his profession. I believe that he should be a man of such civic spirit that an unsafe public building in his community is to him a moral responsibility, for his knowledge and his training not only enable him to recognize the danger but to point out how it can best be avoided. It usually avails little for him to simply urge that the old

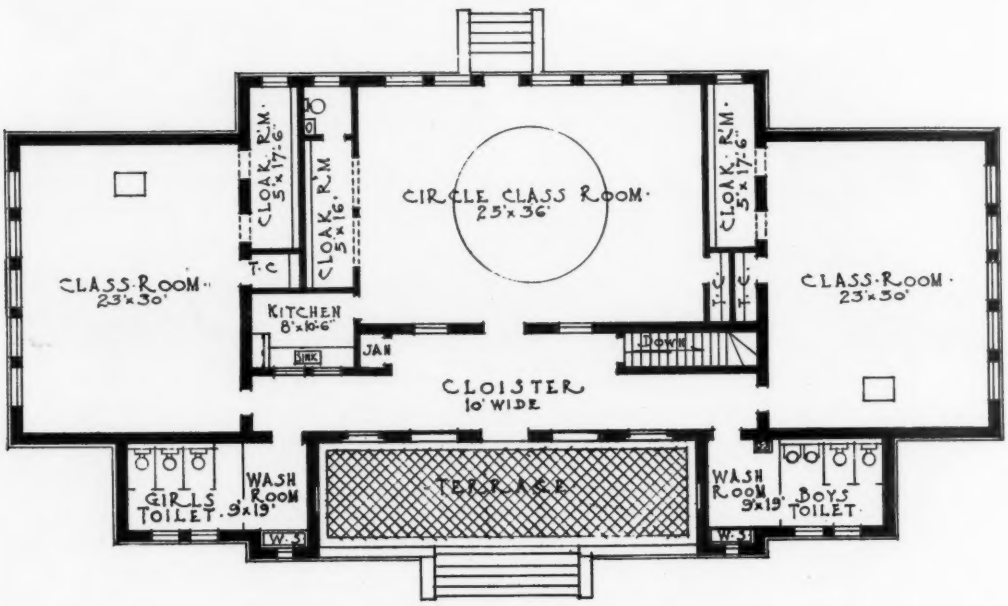
building be torn down and a new one built, for in many communities that is a financial impossibility, and out-of-date buildings will unfortunately be with us for years to come.

But without being intrusive or giving the impression of "hunting a job," if he has some tact and sufficient knowledge, he can point out many ways where a small expenditure will greatly decrease the danger to the lives of teachers and children. It is all very well to argue that this is the duty of the School Board—it is—but the average school commissioner, like most public officials under our form of government, fills any particular office as an incident, and unless aroused to his responsibilities usually fails to appreciate their gravity. Further than that, it is quite evident that we will not be taken seriously by the public as professional men until we ourselves more generally consider our calling something more than a mere means to bread and butter.

As to the other danger I have mentioned, the planning of rural schools by incompetent persons, I can only hope that publications such as THE AMERICAN ARCHITECT, *The School Board Journal* and papers such as are in part reprinted below, will more and more be put into the hands of school boards, and that the committees of the chapters of the American Institute of Architects, to which such educational work is delegated, will give the time and thought to promulgate the information which is the *a priori* essential of safe and adequate planning.

I want to emphasize just another point or two in connection with planning for fire protection.

It is essential to plan every schoolhouse for escape from fire, but even more necessary to plan for the prevention of fire. One of the most frequent causes of trouble is defective electric wiring. It is commonly admitted that the average life of high grade wire insulation is 10 to 15 years; what happens after that? Open wiring now used in the cheaper grade of school buildings should be absolutely avoided in the specifications, and the architect should see that the wiring contract should not be allowed to get into the hands



MARENGO PRIMARY SCHOOL, ALHAMBRA, CAL.
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of any but a first-class electrician. Then the system should not only receive thorough test on completion, but at proper intervals thereafter. This is not common practice, but good practice.

The automatic sprinkler, now almost unheard of in school construction, should protect those prolific sources of fire—the boiler room, chemical laboratories and manual training rooms. This is not often done on account of the expense, and this expense is in a large part due to the requirement of the Board of Fire Underwriters for two sources of supply. Providing one good source of supply—usually a large connection to the public water mains—often materially decreases the cost with only a slight decrease in usefulness.

Then, although perhaps not always within the architect's province, that source of many a fire, the combustible scrap basket, should be forever banished, not only from schools, but from every public building. It should be a tight metal box open only at the top.

The cigarette, the "burnt" match and the mischievous boy must generally, however, be guarded against by proper discipline and supervision, and the absolute avoidance of the collection of paper, rubbish, waste, etc., in corners, closets and basement.

Perhaps most important of all is the education of the Boards of Education in rural and suburban communities in the economic as well as protective advantages of fire-resisting construction. The saving in upkeep and depreciation should be figured in dollars and cents, and as to first cost, the fact should be more generally known that metal lath, metal lumber, and reinforced concrete have brought the cost of this form of construction surprisingly close to that of brick and timber.

There should be no such thing as a non-fire-resisting schoolhouse, and this will be accomplished soon or late according as we architects have the courage of our convictions. WM. O. LUDLOW.

Extracts from the Paper by Mr. Ittner:

The intense commercialism of our times has brought to the highest state of development our office buildings, factory buildings and commercial buildings of all types, but school buildings, though playing perhaps the most important part in the development of our people, have been and still are in a great measure sadly deficient. It was Edward Atkinson, I believe, one of our most noted authorities on fire protection, who stated that "In 1899, 485 college buildings and schools were burned, and the rate of destruction is increasing." "I have examined several college buildings, memorial halls and the like," said Mr. Atkinson, "and have never found a class in which heavy damage or complete destruction had been more adequately provided for by the masters of combustible architecture."

It seems strange that such conditions should exist in buildings devoted to the housing and education of the young, but the truth of Mr. Atkinson's statement must come home to all who have had to do in any manner with the management or survey of school buildings.

UNION HIGH SCHOOL, REDONDO BEACH, CAL.
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Why such conditions are tolerated seems difficult of explanation, except on the grounds of sheer ignorance of the requirements, or disregard of them in the interest of false economy. It requires a considerable jolt generally to awaken the public interest and conscience. Although the lessons of Collinwood and other similar disasters have been costly in the extreme, they have not been without their compensation in arousing the public and school authorities everywhere to a full realization of the conditions prevalent in our schools. The investigations which have followed these disasters warrant the assertion that fire protection in existing school buildings—and when I say existing buildings I mean buildings built some years previous to this time—is needed generally throughout the country, and such investigations have in some instances brought substantial results. The results in a great number of cases, however, have been more in the direction of means of escape from fire, and legislation to enforce the same, than in safe building and a permanent movement looking to fire protection.

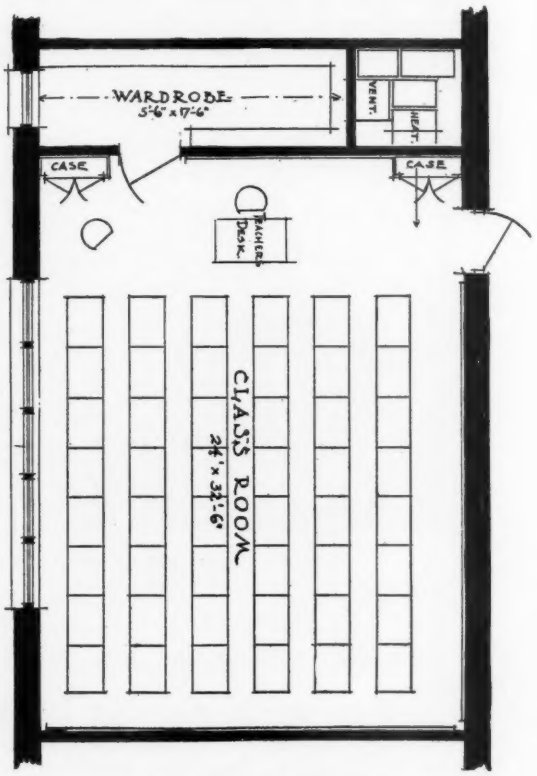
Boards of education, yielding to popular demand and the clamor of the public press, have been satisfied to erect buildings with questionable means of exit, inadequate stairways of combustible construction, and one or more fire escapes, which are believed to be all that is required for the safety of their occupants in case of fire. The success of such means of exit, when the trial comes and the pupils are in a panic, is very questionable.

After an extensive study of the matter, the best authorities agree that there should be no fire escapes on the ideal school building, but that ample and well located inside stairways are the only means of emptying school buildings promptly and safely, and that this, together with making the buildings, both old and new, immune from fire through the application of modern methods, should be the aim of all school authorities.

It is held by many that the proper protection against fire can be had only through the use of fireproof materials, but all school buildings cannot be erected fireproof, nor is it necessary that they should be to make them safe, if proper methods of construction are employed. Where funds will not permit the erection of fireproof buildings, it will require but a small additional outlay to fireproof the corridor floors and stairways and, where it is good practice, to separate the boiler and heating plant from the building. It is not absolutely necessary that this be done, for at a small additional expense such rooms can be isolated in a manner to eliminate all danger.

School buildings should be fireproof whenever funds will permit, but while this practice should be encouraged generally, the safety of our building depends quite as much upon its general plan, the location of its stairways, corridors and exits, the disposition of the rooms, its height and the site upon which it is located.

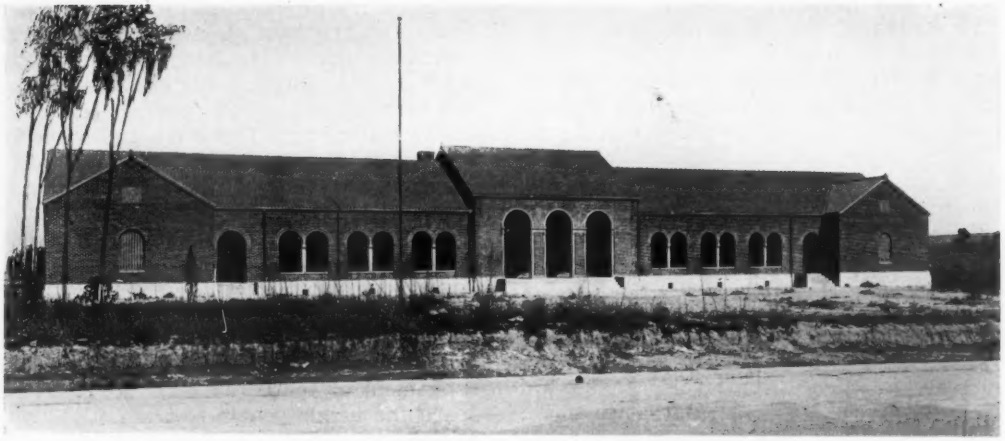
The building should be low, preferably not more than two stories above the basement. This, of course, is not possible in large cities where buildings of three or more stories are required to provide the necessary accommoda-



A TYPICAL CLASSROOM

tions. Such buildings are rendered safe by adequate stairways and exits and the most modern fireproofing methods, but they are the exception and not the rule, and we will address our remarks to general practice and not to special problems.

If large in plan, the floor areas in the buildings should be reduced by masonry walls, thus limiting the areas open to fire. The stairways, ample in number, should be located in a manner to reduce horizontal travel distance from classroom to exit, and the exit should terminate at the street or yard level, and practically outside of the building, in order to obviate passing



FREEMONT AVENUE SCHOOL, ALHAMBRA, CAL.

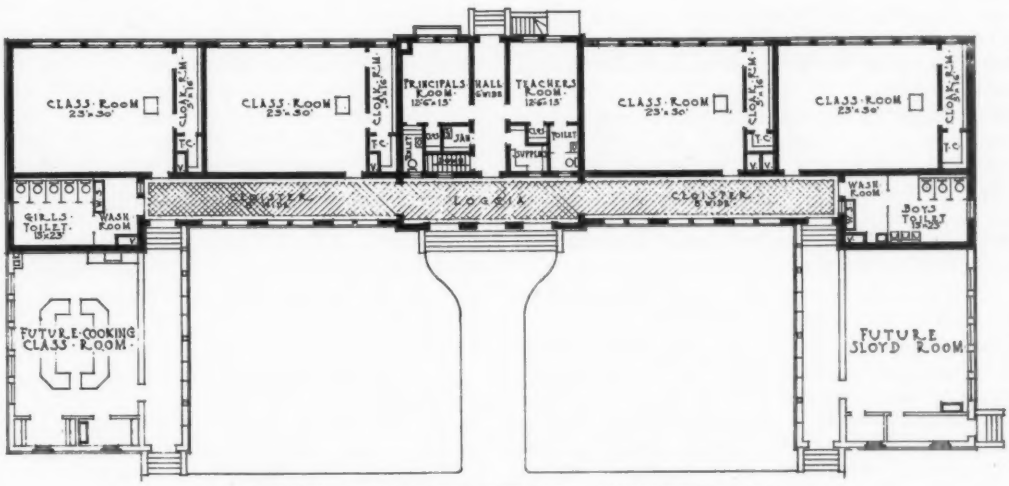
MESSRS. ALLISON & ALLISON, *ARCHITECTS*

through halls or corridors before reaching the open air.

Stairways in proper number should always be provided, and no stairway should be more than five feet in width. Stairs should always be in two runs from story to story, should have broad landings, and there should be a handrail on the balustrade as well as the wall. Such a stairway will enable two files of children to go down abreast in perfect order without pushing or crowding.

The location and number of stairways is a matter of great importance, and this is one of the serious weaknesses in our school buildings, as the number is often reduced in the interest of economy. Stairways should be separated and arranged to serve definite groups of rooms, and located for direct lines of travel from classroom to stairway. Thus a natural division of students is formed and congestion avoided. A closed balustrade of proper height is to be preferred to the open balustrade or boxed-in type of stair, and under no circumstances should the space under a stairway be used for storage.

The number of stairways and exits in a school building is a matter of calculating accommodations for the number of persons and the number of floors to be served. It is a problem for the individual building, and all that can be given is a working rule suggested by practice and experience, namely, that 120 persons in lines, two abreast, can pass a given point in less than one minute. If, therefore, stairways and exits in sufficient number are



FREEMONT AVENUE SCHOOL, ALHAMBRA, CAL.

introduced and properly placed to empty our building in three minutes or less, we are entirely safe.

In the matter of stairways and exits, the use of what is customary by the pupils a number of times each day during the entire school year will always prove the most efficient means of egress in *any* emergency.

The importance of the corridors or halls in the planning of school buildings is very often overlooked by school authorities, and in a great many buildings their width and natural lighting are sacrificed in the interest of additional classroom space. This is a serious mistake, as corridors should be wide enough to prevent congestion, and, where no fixed rule can be laid down, it may be said, in general, that for main corridors twelve feet may be taken as a minimum, with eight feet for side or secondary corridors, while fourteen feet and ten feet would be better. In high schools the minimum width for main corridors should be fourteen feet. The practice of placing wardrobes in corridors should be condemned on sanitary grounds alone, to say nothing of the congestion and confusion resulting from having them so located, and the practice of lining the corridors with lockers is open to almost as serious an objection.

The lighting of the corridor is carried to the extreme in Continental schools, because it is lighted practically the entire length. The economy of the plan, though, is not as great as it is when the corridors are closed in for a portion of their length. In the old-fashioned school, or dumb-bell school, the corridor was lined with rooms on both sides, and the stairways were located at the two ends. Such a corridor had very little light from the ends and borrowed its light from the schoolrooms. That type of school is gradually going out of date, and we are building more and more the open plan, or approaching more nearly what might be considered this ideal condition.

The classroom should have but a single door to the corridor, and this should be at the teacher's end of the room. I know in that there is considerable divergence of opinion, but this arrangement will give the teacher perfect control of the pupils under all conditions, and prevent them stampeding from the room, which is very apt to be the case if the room has a second doorway or an exit through the wardrobe.

Basements or cellars, as well-known firebreeders, should not be found in buildings designed for the highest degree of fire protection. A better practice is to make this story practically level with the grade; give it good height and provide it with a window surface equal to or approximating that of the classrooms above. Such a story provides, at the least expense, the space for the heating and ventilating plant, rooms for manual training, domestic art, and other rooms designed for equipment more or less hazardous.

The boiler room, fuel room and room for the heating apparatus should be cut off effectually, and all should be inclosed in masonry walls, fireproofed at the ceiling or floor above; the best practice precludes any doorway from these rooms to the remainder of the basement, and, while this may prove of some inconvenience to the janitor, it provides maximum safety. Such doorway, if one is provided, should be a standard, automatic closing fire door. In the arrangement of the boiler and fuel rooms ample space and height should be allowed to give easy access to all parts of the apparatus. Wood should be excluded entirely from this portion of the building, and there should be adequate natural light and ventilation.

In conclusion, I think it may be stated, with some authority, that a school plan which involves correct principles of natural lighting, sanitation and hygiene, as now well understood, must by the very nature of such a plan be reasonably safe in its general arrangement. All that remains, then, is the intelligent application of modern fire prevention methods in determining the construction and detail in order to have our buildings not only immune from fire but safe and comfortable to live in.

Mr. C. B. J. Snyder's Paper, read on this occasion, was, in part, as follows:

While it is true that in the city of New York we for many years prior to 1908 erected all our new school buildings of the standard fireproof construction type, in accordance with our building regulations, yet there were many points upon which there were no rules or data, especially as to stairway and exit.

In addition to this, we constantly realized that our greatest work lay really in a reduction of the fire hazard and the increase of safety of the occupants in the older school buildings.

Here again there was a lack of data upon which to work, and it was, therefore, during a period of several months in the years 1908-1909 that I acted as chairman of a committee consisting of engineers from our five building bureaus, together with a deputy chief from the uniformed force of our Fire Department.

Our object was the preparation of definite standards and rules for fire prevention work in our public schools as applying to brick structures of both fireproof and non-fireproof type.

After first determining to continue the practice of protecting all vertical openings and the

use of fireproof stairways enclosed on each floor with smoke and fireproof partitions, we then considered the problem as to the fixing of a standard whereby judgment might be reached even by the layman as to whether or not a building was sufficiently equipped with stairways to render it safe for occupation.

This had for its further object the prevention of the filing of promiscuous orders against a building for the construction of outside fire escapes, the utter uselessness of which, as compared with the fireproof enclosed type of stairs, has become quite well recognized.

After weeks and months of consideration, in which numerous premises were inspected and fire drills witnessed, a unanimous decision was reached that each building should have a sufficient number of fireproof stairways, enclosed with fireproof materials, to permit of its occupants vacating in not more than three minutes a non-fireproof building, and not to exceed three and one-half minutes a fireproof structure.

This limit of three and one-half minutes might, so far as safety is concerned, have been exceeded.

The time was thus fixed because of the desire of the officials of the Fire Department that the premises be entirely vacated by the time the first piece of apparatus arrived.

I believe that all school buildings, whether one or more stories in height, should be of fireproof construction throughout.

The comparative increase in cost between the fireproof and non-fireproof type is continually being lowered, due to improvements in methods and materials, so that under normal market conditions the authorities in every community, whether large or small, should refuse to authorize the construction of non-fireproof school buildings.

In this they will have the support of the people, if there be placed before them the fact that in the erection of a properly planned fireproof public school building there is not only a guarantee as to the safety of the investment, but also that which is of greater importance, the absolute peace of mind as to the security of their children in attendance.

Further, that the difference in cost will be largely offset by the reduction or elimination of fire insurance charges and an annual saving in the cost of repairs and maintenance.

I am not in favor of constructing school buildings of more than four stories in height because of the stair climbing involved. Height alone does not prevent their being planned for safety as to occupants and the practical elimination of the fire hazard. Careful planning will first of all take into consideration the number, location and width of stairways.

GARVEY AVENUE SCHOOL, ALHAMBRA, CAL.
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The number will be fixed by the total capacity of the building which must use stairways for exits.

Our practice has been to estimate stair requirements on the basis of fifteen square feet per pupil for all rooms or spaces used for academic or other instruction.

We have found that the highest standard of service is obtained with a stair four feet in width for an elementary school and five feet in width in buildings used for high schools or other form of occupation.

This width provides for not more than two lines abreast, each with a handrail.

All stairs, except perhaps those forming the main entrance, which should not extend above the first story, should be enclosed with fire and

smoke proof materials throughout, access to the enclosure being by means of self-acting kalamein doors.

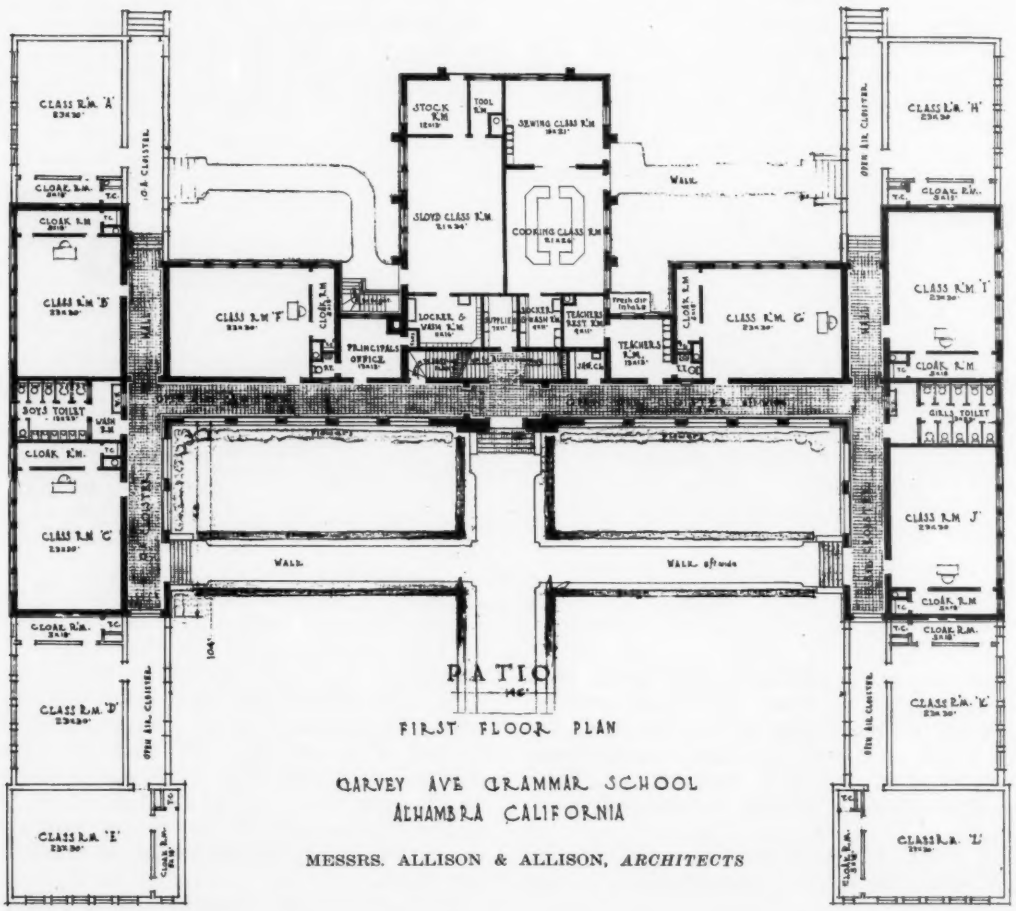
All stair doors above the first floor or basement where exit is had should open into the stairway following the line of flow of pupils. At the first story or basement they should open out toward the exit gate. All exit doors should open out.

Exits should be planned on the basis of stair service and such further capacity as circumstances might seem to demand in order to prevent crowding or congestion.

This list can be easily lengthened by any one familiar with the conditions, but it is not too much to say, in considering the planning of school buildings for safety, that we should give the greatest attention to the making safe of those of the old types which have been the cause of such awful loss of life.

I believe that architects and engineers are both fully alive to the situation as relates to new construction, which is by far the more attractive and pleasant work, but I beg of you to still keep before the people the absolute need of the taking of prompt measures to make safe the older buildings in which, by far, the greater number of the school children of this country are taught.

In the discussion following Mr. Ittner's and Mr. Snyder's papers, the matter of stairways was considered by a number of speakers.



FIRST FLOOR PLAN

GARVEY AVE GRAMMAR SCHOOL
ALHAMBRA CALIFORNIA

MESSRS. ALLISON & ALLISON, *ARCHITECTS*

The point of view of the State Commissioner of School Buildings, as expressed by Mr. S. A. Challman, Commissioner of the State of Minnesota, is of particular interest. During the course of his address Mr. Challman stated:

Many of the school buildings now in use fall far short in the matter of safety. All of them may have their boiler and fuel rooms made fire-

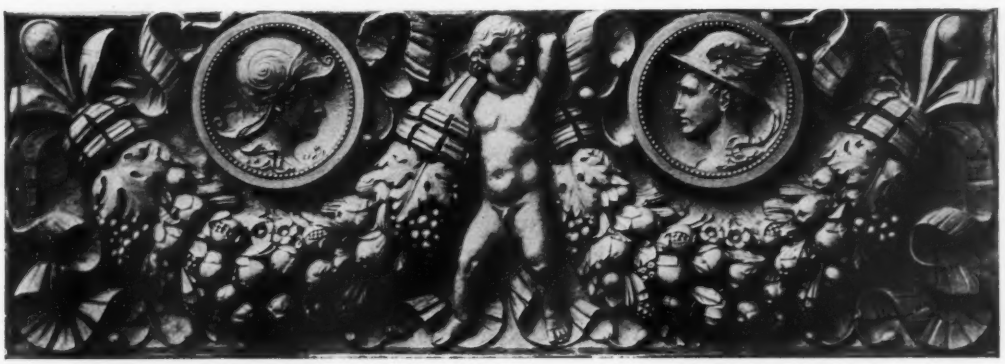
proof, but beyond this changes are often prohibitive. We must therefore look for other means whereby safety may be secured. Three ways are open to us and it may be the part of wisdom to choose all three.

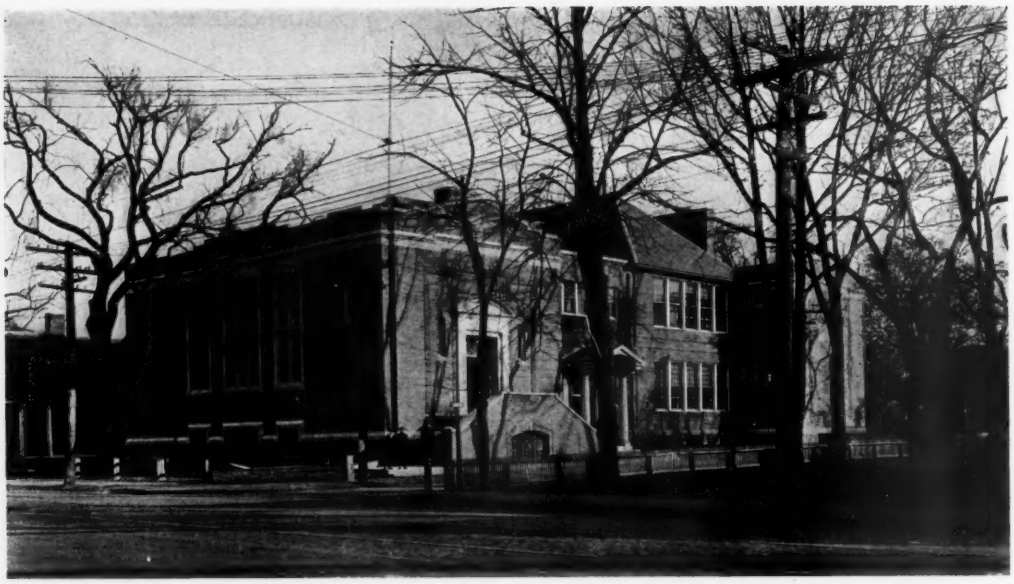
One would be to facilitate the means of egress by building stairs of proper widths in such parts of the building as may be without them. The location of outside doors at the foot of stairways is another very important consideration. The form of bolt release is still another very vital question in this connection. With regard to the width of stairways it would seem that the conditions which should govern are these: First, each child should have access to a handrail; second, no stairway should be wide enough to invite the possibility of permitting a third child sufficient room to get between the two who are following the handrails, as in case of a panic such children are apt to stumble and disaster is almost certain to follow. The width between handrails is therefore the real question, and the stairway may be wide enough to have four children pass down abreast if it is provided with a center handrail. Only in rare cases should fire escapes be resorted to, and when provided they should be of a type which would justify their claim to the name.

The second way is to install a fire alarm system. This is already quite common in all our buildings and consists ordinarily of gongs and classroom bells. Instructions as to their operation should in the nature of the case be posted in one or more conspicuous places, so that not only the alarm itself is readily understood but the means by which the alarm is given is familiar to all.

The third way is to install fire-fighting apparatus. We have become used to the unused hose and reel in a number of buildings, and in considering the likelihood of its use by the occupants of the building at the time of fire, we are, I think, well nigh of the opinion that it hardly justifies the cost of installation and upkeep. Chemical fire extinguishers respond sooner and give quicker results. The unwinding of the reel and the turning of the valve is apt to deter those seeking safety from the attempt to use the apparatus, while the inverting of the chemical extinguishers is so rapid and easy a process that hardly any one would hesitate about taking the chance of using the apparatus, if he is strong enough to handle it and it is placed within easy reach. The size and location of these extinguishers is a matter of careful consideration when it comes to school buildings, as a heavy extinguisher would not likely have any one within reach who could use it in case of a blaze. The extinguisher for a school should be of a type which any woman or twelve-year-old boy could handle with confidence.

Far in advance, however, of any other method of fighting schoolhouse fires and insuring the safety of children is the automatic sprinkler. There can be no argument as to the desirability of its installation, as the very principles upon which it is constructed are based upon good common sense and a sound application of scientific knowledge. The proper care of a building requires that the basement stairway, corridors and space for heating plant and fuel room be equipped with this form of fire protection, and that laboratories for manual training, cooking and chemistry and storage rooms for paints, oils, paper and other inflammable material should be similarly protected. No building is as safe with any other form of fire protection as it is with the automatic sprinkler. The fact that it can be as readily installed in an old building as in a new is a further reason for urging its installation in all schools providing for 100 pupils or more.



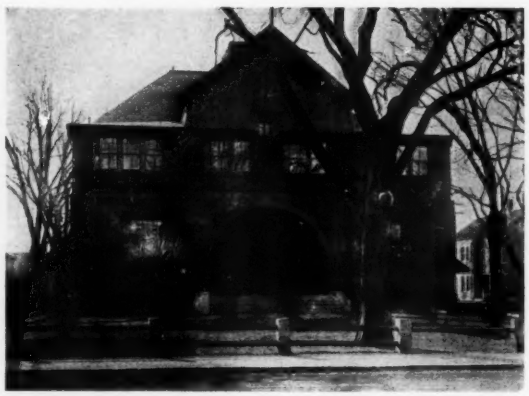


THOMAS HILL SCHOOL, WALTHAM, MASS.
MESSRS. BRAINERD & LEEDS, *ARCHITECTS*

SCHOOL REMODELING OR ENLARGEMENT

By MESSRS. BRAINERD & LEEDS, *Architects*

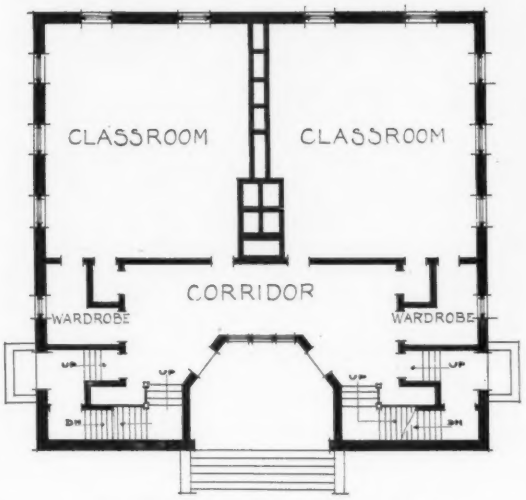
MEMBERS of School Committees as well as most architects, will at some time find themselves confronted with the question as to whether it is best to remodel and enlarge the existing school building, making it conform to the new needs and conditions, or build a new school following the standards of the most modern requirements. This question of what shall we do with the old and outgrown school building, and how to make it efficient, is one that requires thought and study even more than the planning of an entirely new building. It is also a most frequent cause of a division of opinion among the school officers and of adverse criticism of their acts and their wisdom in the expenditure of the public moneys. To the architect it means that he must study fully the conditions as they exist, the provisions that are needed to conform to present requirements, and foresight for future needs. No absolute rules can be laid down as to just how far it is best to go in altering the old school building or when to strike out entirely new, and this is where the special training of the architect and his familiarity with educational and structural problems is most required.



THE ORIGINAL THOMAS HILL SCHOOL

Neither the av-

erage school board nor superintendent should be expected to possess the knowledge of just what is the most economical and efficient method of obtaining the results in building, and what are the requirements of the State and Town laws. In fact it is often the architect's duty, especially in the case of the smaller communities, to inform his clients as to the exact requirements and possibilities of a school building.

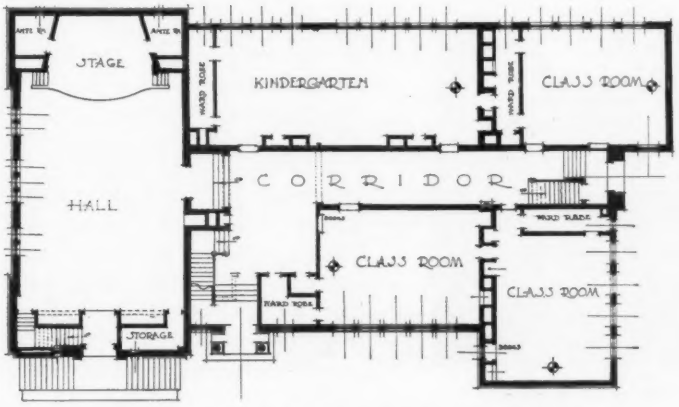


ORIGINAL FIRST FLOOR PLAN
THOMAS HILL SCHOOL

ENTRANCE DETAIL THOMAS HILL SCHOOL
WALTHAM, MASS.
MESSRS. BRAINERD & LEEDS, *ARCHITECTS*

The starting point is to study thoroughly what has been done and the conditions as they exist. An inspection of the existing building will give rise to the following questions in the mind of the experienced architect—is the existing building sufficiently well constructed to ensure safety and to make it advisable to expend money in alterations? Are the stairways arranged so as to give ample means of egress in case of fire? Are the plumbing and heating conditions sanitary and ample for convenience and comfort, and have the classrooms the standard amounts of light and fresh air?

The remainder of this article will be devoted to a description of the remodeling and enlargement of a few schools in which the results obtained have been pronounced satisfactory.



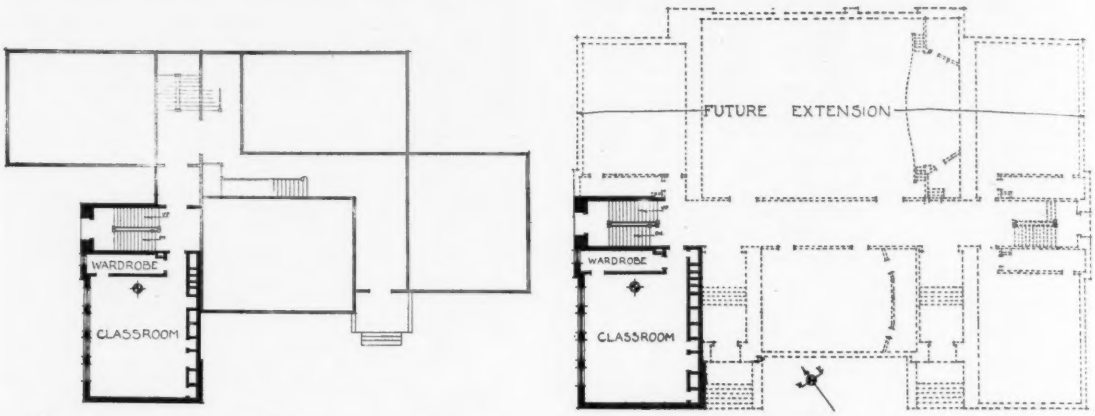
FIRST FLOOR PLAN, THOMAS HILL SCHOOL

THE THOMAS HILL SCHOOL

The Thomas Hill School is a case of a building which is not only remodeled but enlarged. In the winter of 1913-14 the school board of

Waltham, Mass., found that there was need for four more classrooms in the central portion of the city. The erection of a new building was considered not desirable from an educational, administrative, or financial standpoint, therefore the needed rooms were to be added to one of the several buildings.

Of the buildings available, the Thomas Hill School offered the greatest possibilities. It was located on a lot with streets on two sides, having its major axis running north and south. The surroundings were such that rooms might be added on both the east and south sides. The building was a substantial structure of brick with a slate roof. The interior finish and fittings were in good condition. As the accompanying plan will show, the width of the existing classrooms was too great, the lighting was defective and the stairways were poorly placed. The plumbing and the heating apparatus were worn out.

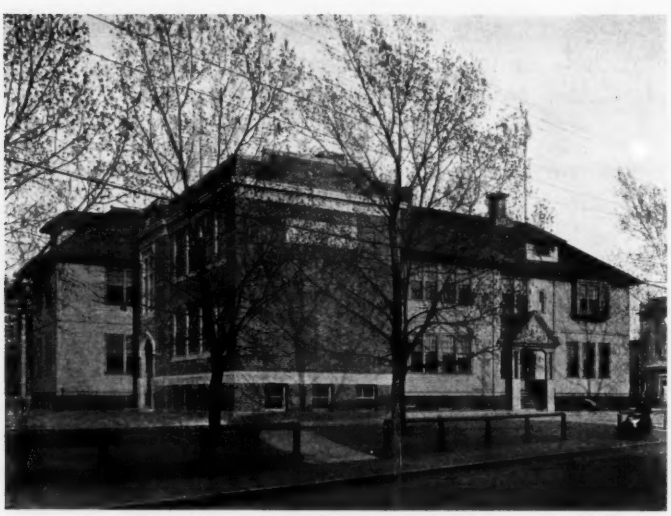


OLD NEW

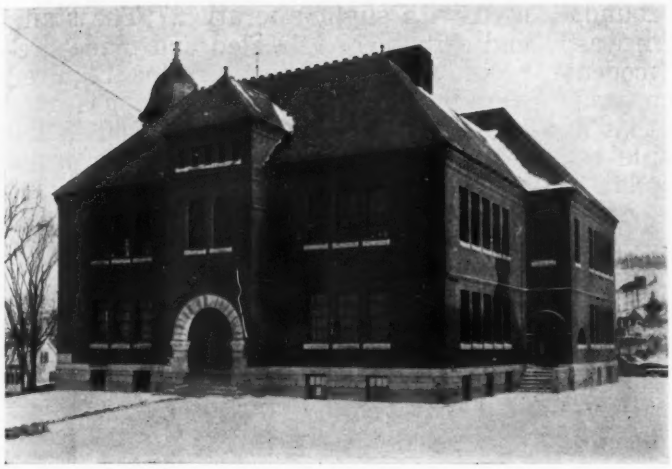
SHIRLEY STREET SCHOOL

The plan of the remodeled building shows the changes made. The width of the existing classrooms was reduced to 23 feet, giving a suitable central corridor leading to new classrooms at the south of the building. The piers between the windows on the sides of the existing classrooms were just wide enough to permit the insertion in their place of the old windows from the south end. Steel mullions were introduced to support the masonry overhead. Thus all of the windows which had formerly been placed on both the sides and the ends were grouped on the sides. All the classrooms thus are lighted from one side and are in every way modern and comfortable.

The brick walls of the new corridor were built up to carry the ends of the class-



SHIRLEY STREET SCHOOL, WINTHROP, MASS.
MESSRS. BRAINERD & LEEDS, *ARCHITECTS*



SPAULDING HIGH SCHOOL, BARRE, VT.
MESSRS. BRAINERD & LEEDS, *ARCHITECTS*

room floor timbers, permitting the corridor floor to be cut out and replaced with fireproof construction.

On each story two classrooms were added to the south of the building and an assembly hall was placed at the north with an entrance near the main street, so that it might be used as a social center.

The new corridor which is cut through the old portion of the building, and the new stairway at its end, are of reinforced concrete with finished surfaces of terrazzo. A new fireproof boiler room was constructed under the addition.

The exterior required few changes. The original roof was left intact, but a portico was added over the side entrance to conform in style with the new additions. The brick of the old portions and that of the new are so nearly the same color and texture that there will soon be very little evidence of the additions.

The result is a building conforming to the best modern practice in school architecture in every respect, except that the first floor is a little nearer grade, reducing slightly the lighting of the basement. This was overcome in the gymnasium by keeping the assembly hall floor higher than the old main floor.

The entire cost of the improvements was $44,000, a saving of about $14,000 over the cost of a similar amount of accommodations in new buildings which were erected at the same time in adjacent cities by the same architects. The work was done in several months' less time than needed for an entirely new building, and there was no expense for a new site.

THE SHIRLEY STREET SCHOOL

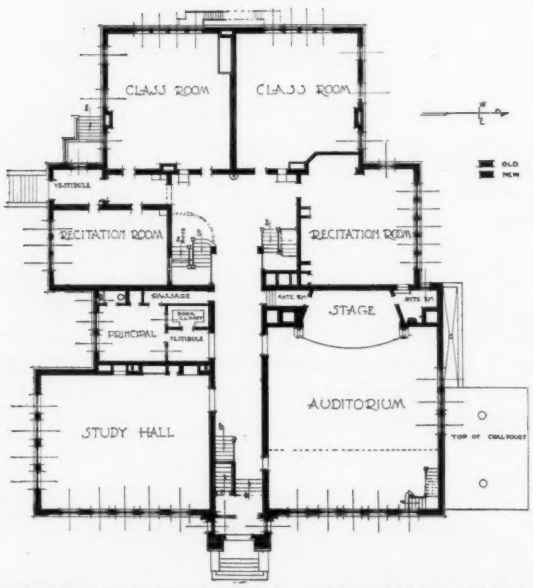
The Shirley Street School at Winthrop, Mass., presents a case of enlargement without remodeling. Here two additional rooms were required in a district which had a wooden structure which was suitable for several years' more use. The sanitaries were worn out and required entire replacing; the heating plant was in good condition and of sufficient size to care for the two additional rooms.

The school board at first advanced the idea that two rooms in wood construction

SPAULDING HIGH SCHOOL, BARRE, VT.

would solve the problem. It was found, however, that the policy of the town was fixed against the erection of wooden school buildings. The suggestion was therefore made by the architects that a brick addition be built which should be the beginning of a brick building later to replace the wooden one. The suggestion was accepted, and the two rooms were built as shown in the accompanying plans and photograph.

The present exterior of the school, while it is incongruous architecturally, shows very clearly that a brick building will ultimately replace the wooden structure. The new building is to contain ten



STEVENS HIGH SCHOOL, CLAREMONT, N. H.

classrooms and an assembly hall. Note that the new scheme does not appreciably lessen the amount of play ground.

The first floor of the new portion is higher than the old, as modern usages require a lighter basement.

THE STEVENS HIGH SCHOOL
CLAREMONT, N. H.

In this case it was decided that the classrooms of the old building could be used with slight alteration. The stairs and exits were relocated and made fireproof. The additional rooms required were built in front, both for appearance and to preserve the athletic field in the rear. If more space is needed in ten or fifteen years, the old portion can be replaced by a larger wing. The retaining of the old structure saved a present expense of about $20,000 without impairing the efficiency of the school, while the heating, ventilating, plumbing and electrical equipment of the whole building is new.

THE SPAULDING HIGH SCHOOL
BARRE, VT.

In this building we were employed as consulting architects in association with Mr. F. A. Walker, of Barre.

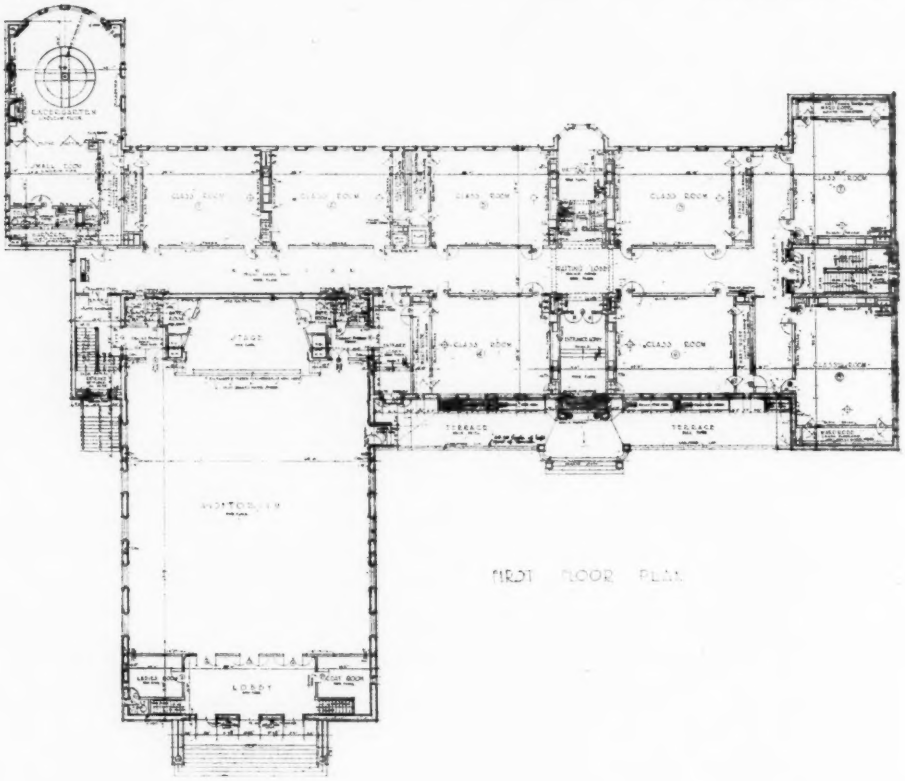
The problem was to take a school accommodating 500 pupils and alter and add to it so that it would adequately accommodate 250 pupils of the seventh and eighth grades and 500 high school pupils and to allow for future growth. As the building was dignified and had beautiful grounds in front, it was decided to place the addition at the side and allow for a future extension to the rear. The high school is placed in the new building and in the second story of the older building, with new toilet and locker rooms in the basement for each sex. This leaves the first floor of the old building, with its toilets, for the seventh and eighth grades.

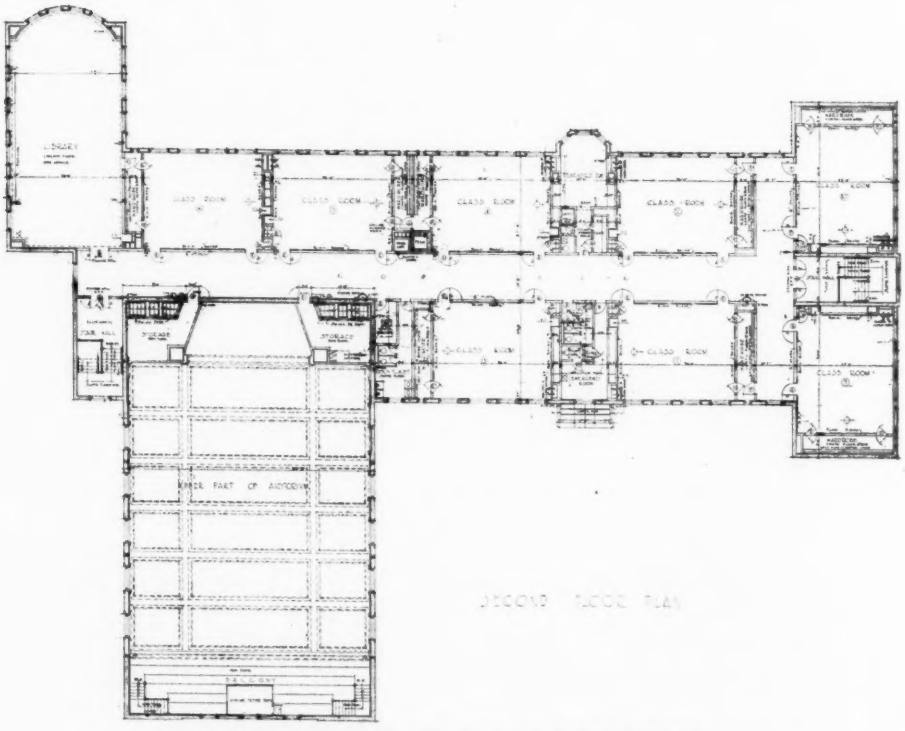
The older building is utilized with a minimum of alteration, costing $2500, and the expenditure for the new building was $59,259. The assembly hall was placed next the street on the second floor of the new part and the gymnasium was directly below in the basement. The staircases were so placed that both the hall and the gymnasium can be opened for evening use without opening the remainder of the building. The fireproof boiler room was placed in the center between the old and new parts and has an open court above and space for an additional boiler.

SALTONSTALL SCHOOL, SALEM, MASS.

MR. JAMES E. McLAUGHLIN, *ARCHITECT*

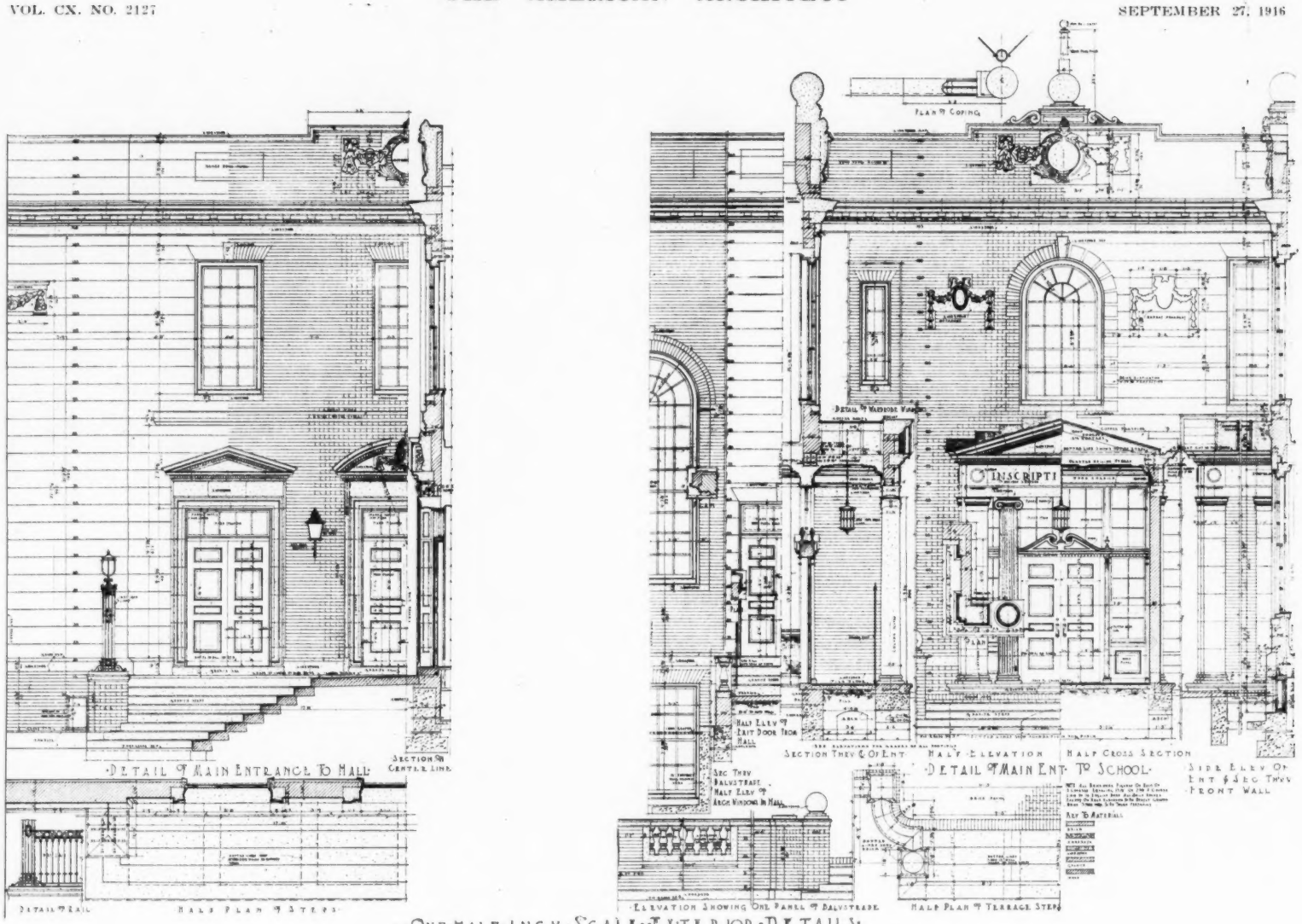
(See text pages for descriptive article)





SALTONSTALL SCHOOL, SALEM, MASS.

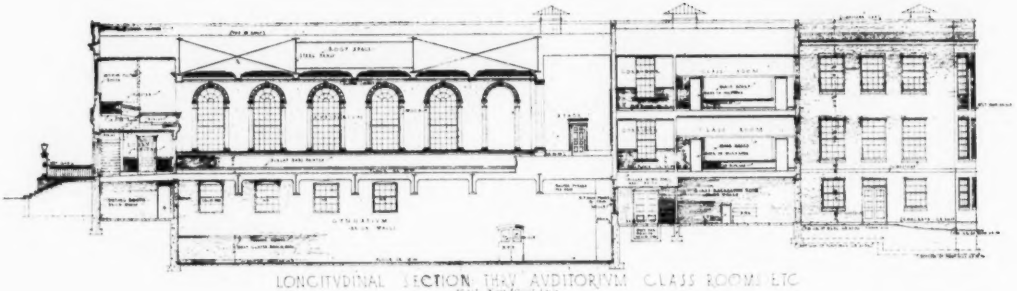
MR. JAMES E. McLAUGHLIN, *ARCHITECT*



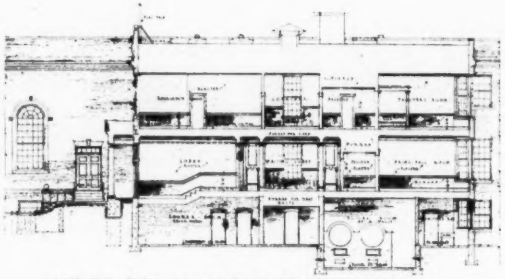
ONE-HALF INCH SCALE EXTERIOR DETAILS

SALTONSTALL SCHOOL, SALEM, MASS.

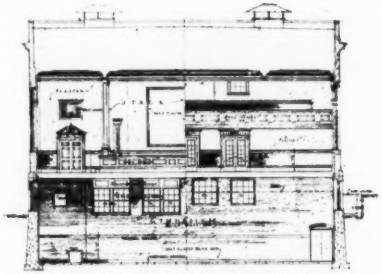
MR. JAMES E. McLAUGHLIN, *ARCHITECT*



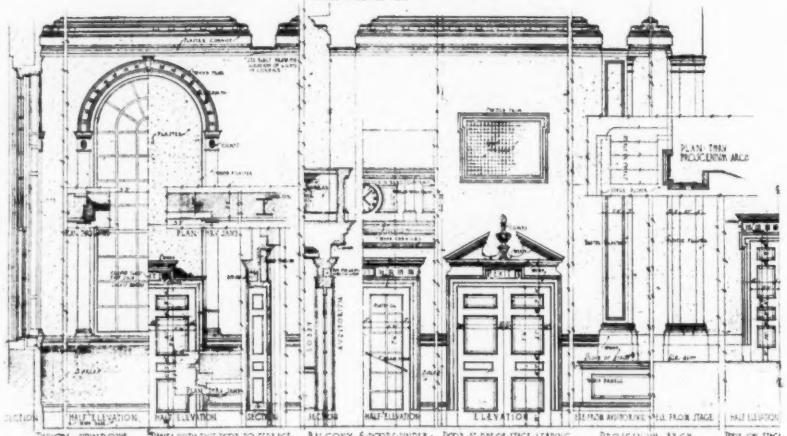
LONGITUDINAL SECTION THRU AUDITORIUM CLASS ROOMS ETC



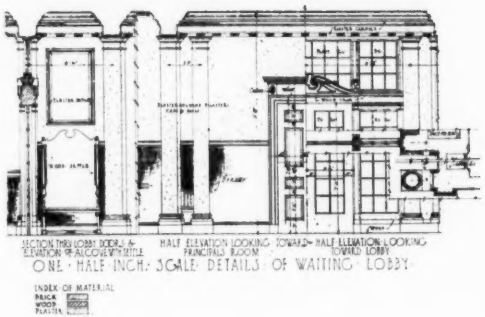
SECTION THRU MAIN ENTRANCE TO SCHOOL ETC



LOOKING TOWARD STAGE LOOKING TOWARD LOBBY
TRANVERSE SECTION THRU AUDITORIUM



TYPICAL WINDOW PANEL WITH EXIT DOOR TO TERRACE BALCONY & DOORS UNDER BOOK AT END OF STAGE LEADING PROSCENIUM ARCH DOOR ON STAGE
ONE HALF INCH SCALE DETAILS OF FINISH IN AUDITORIUM



SECTION THRU LOBBY DOORS & ELEVATION OF ALCOVE WITH TITLE HALF ELEVATION LOOKING TOWARD PRINCIPALS ROOM HALF ELEVATION LOOKING TOWARD LOBBY
ONE HALF INCH SCALE DETAILS OF WAITING LOBBY

INDEX OF MATERIAL
BRICK
WOOD
PLASTER

SALTONSTALL SCHOOL, SALEM, MASS.

MR. JAMES E. McLAUGHLIN, *ARCHITECT*

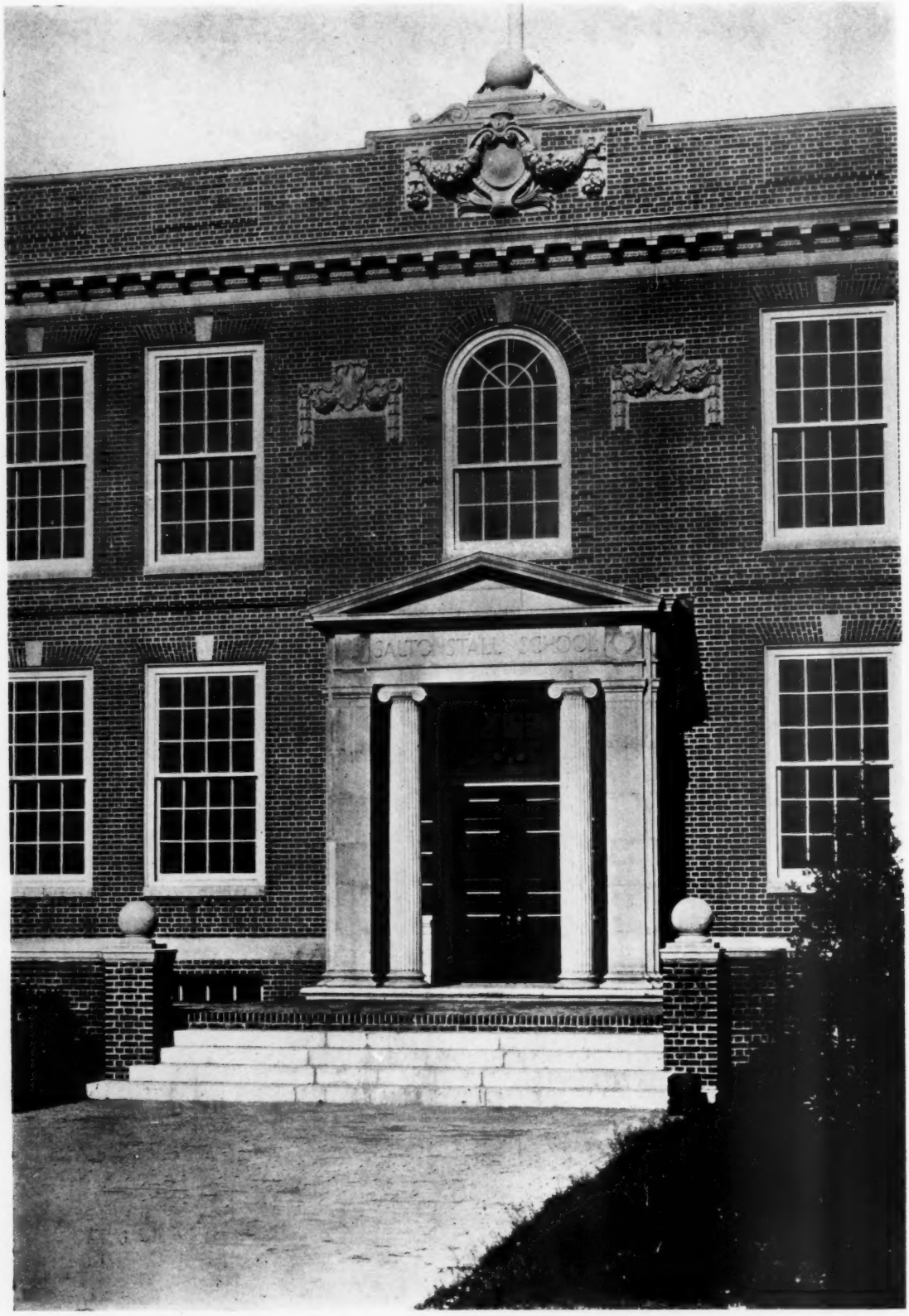
ENTRANCE HALL

SALTONSTALL SCHOOL, SALEM, MASS.

MR. JAMES E. McLAUGHLIN, *ARCHITECT*

SALTONSTALL SCHOOL, SALEM, MASS.

MR. JAMES E. McLAUGHLIN, *ARCHITECT*



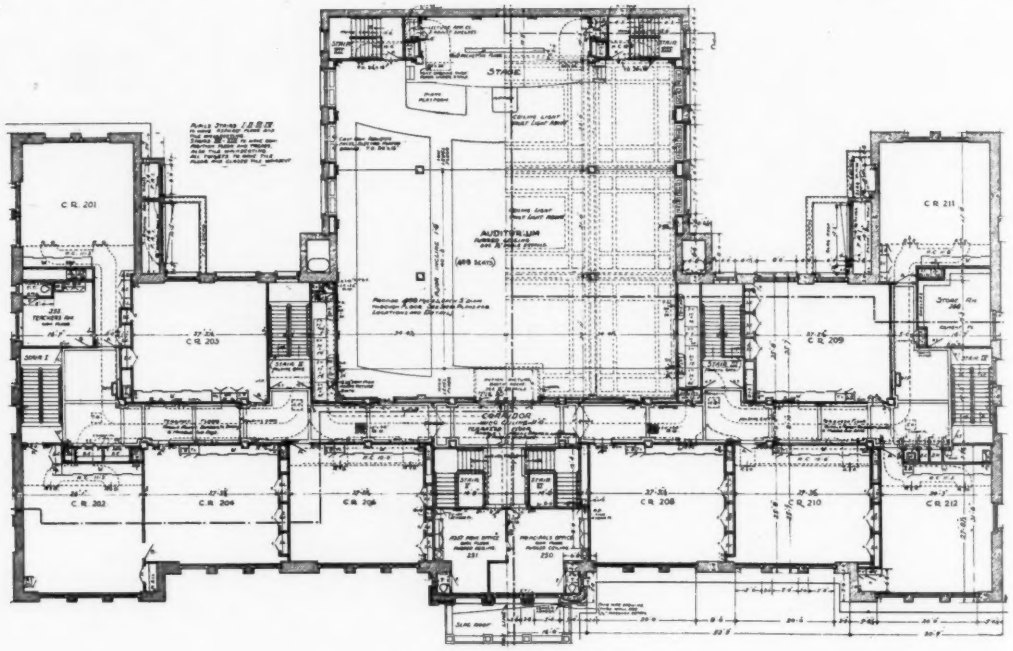
SALTONSTALL SCHOOL, SALEM, MASS.

MR. JAMES E. McLAUGHLIN, *ARCHITECT*

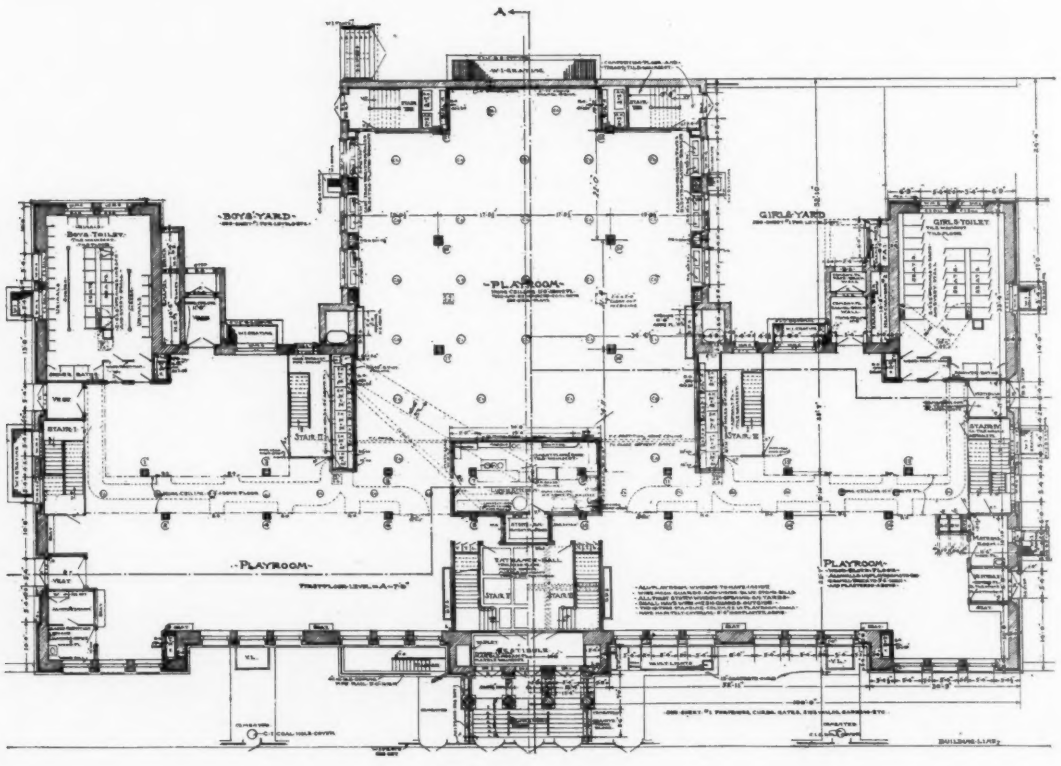
INTERVALE SCHOOL (PUBLIC SCHOOL NO. 54), BOROUGH OF THE BRONX, N. Y.

C. B. J. SNYDER, F. A. I. A., *ARCHITECT*

(For additional illustration and description see text)



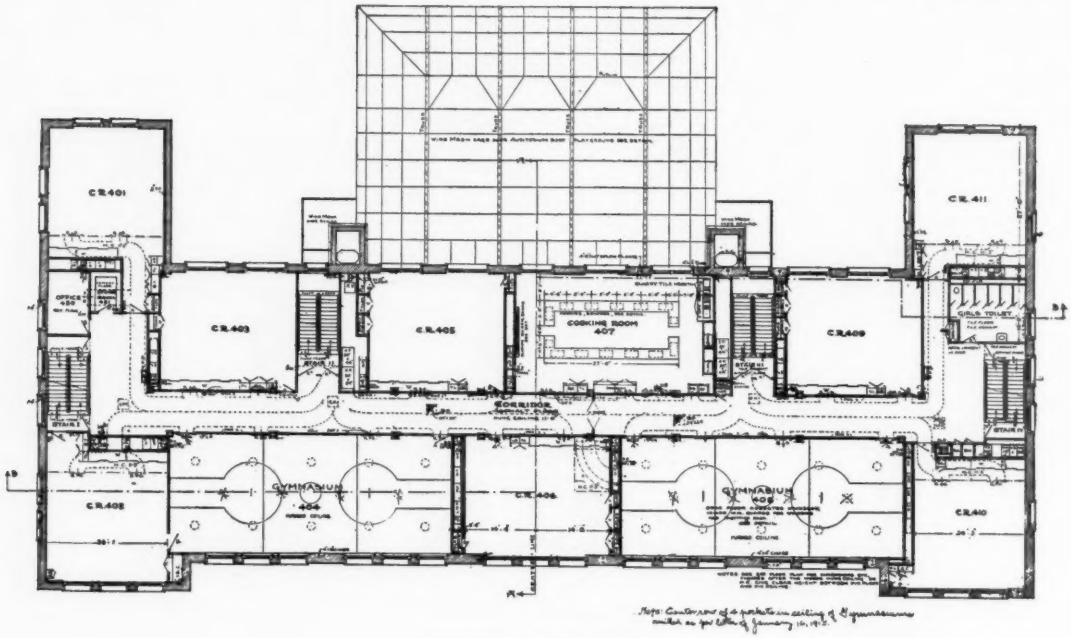
SECOND FLOOR PLAN



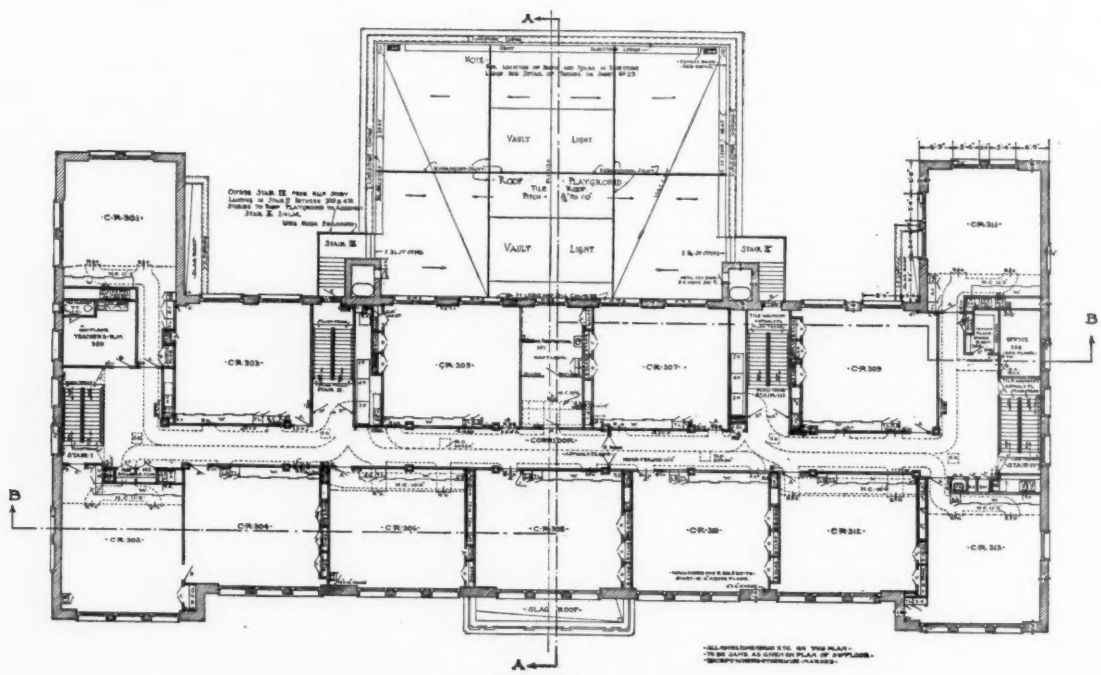
FIRST FLOOR PLAN

INTERVALE SCHOOL (PUBLIC SCHOOL NO. 54), BOROUGH OF THE BRONX, N. Y.

C. B. J. SNYDER, F. A. I. A., *ARCHITECT*



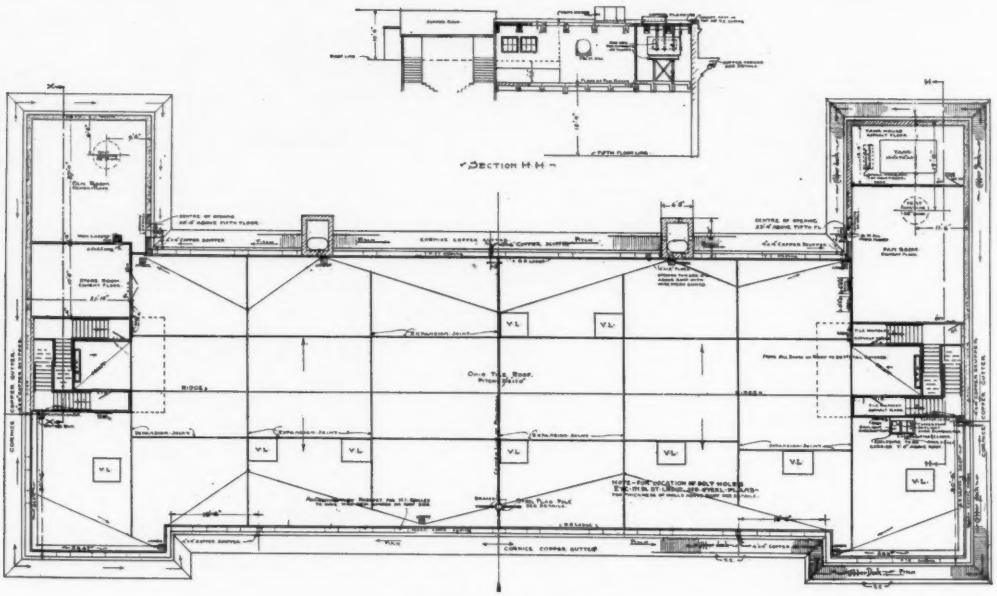
FOURTH FLOOR PLAN



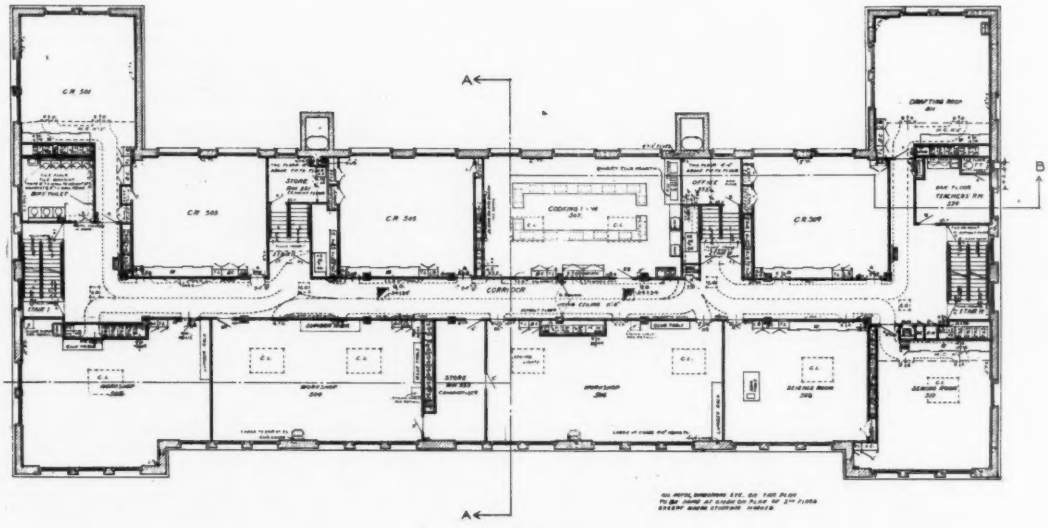
THIRD FLOOR PLAN

INTERVALE SCHOOL (PUBLIC SCHOOL NO. 54), BOROUGH OF THE BRONX, N. Y.

C. B. J. SNYDER, F. A. I. A., *ARCHITECT*



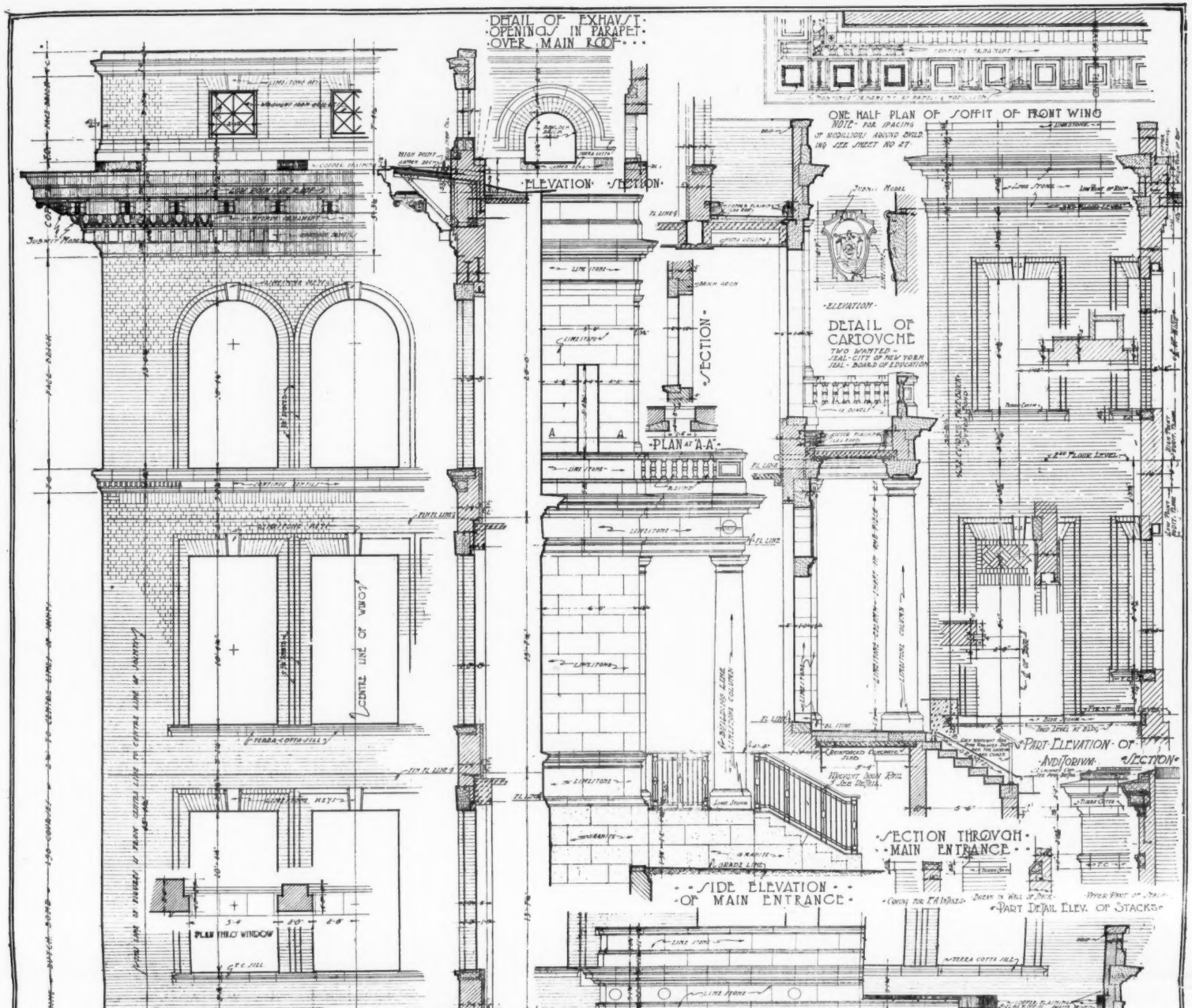
PLAN OF ROOF

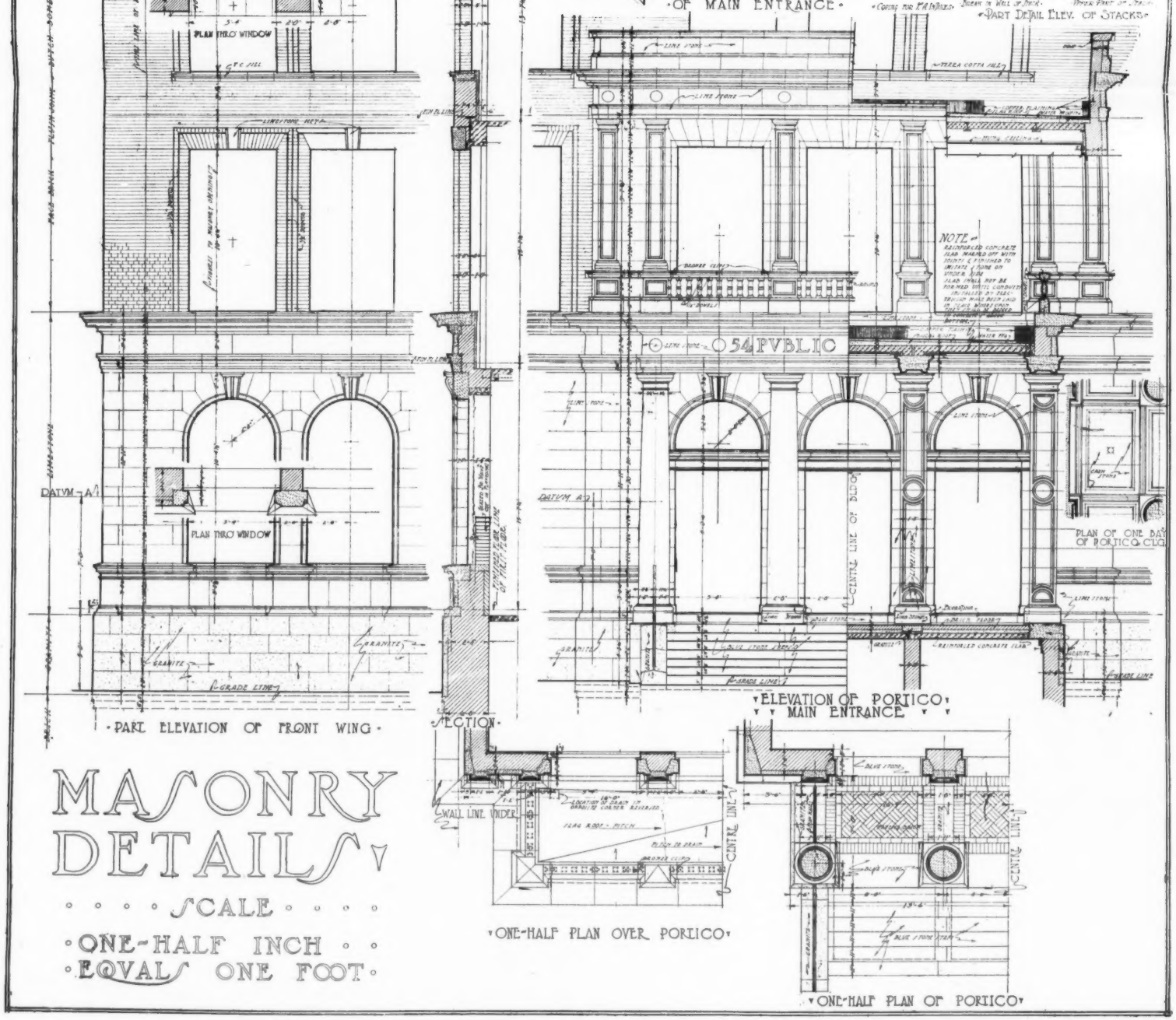


PLAN OF FIFTH FLOOR

INTERVALE SCHOOL (PUBLIC SCHOOL NO. 54), BOROUGH OF THE BRONX, N. Y.

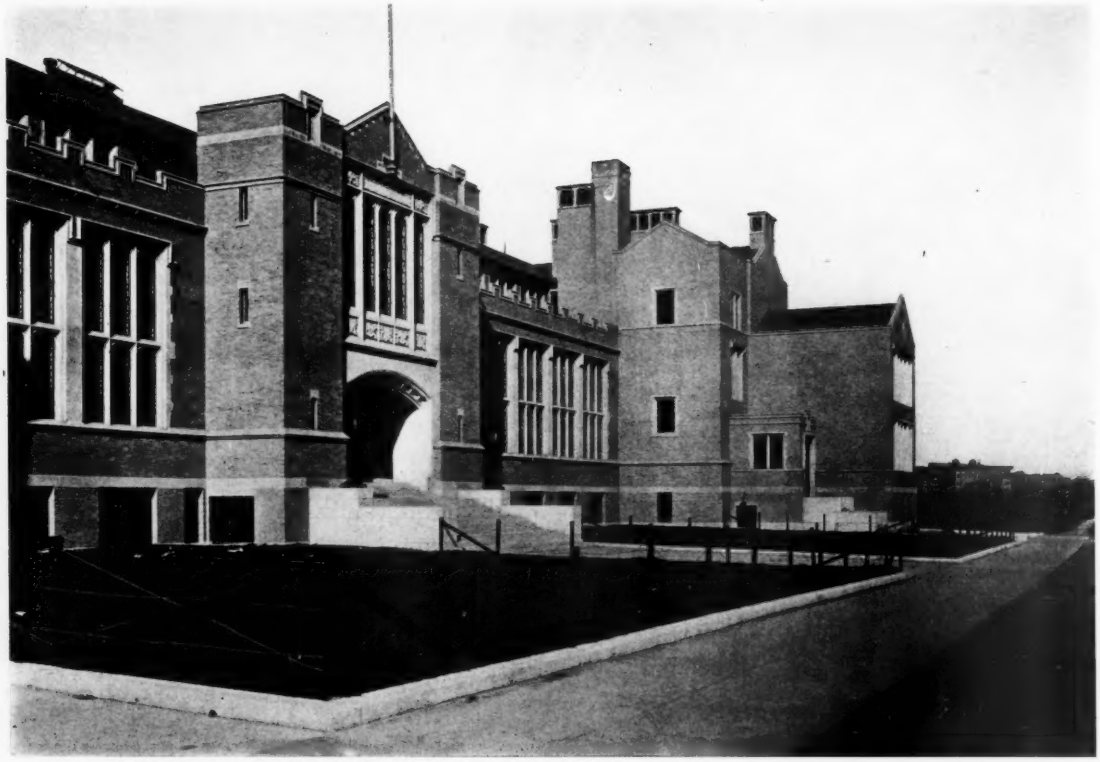
C. B. J. SNYDER, F. A. I. A., *ARCHITECT*

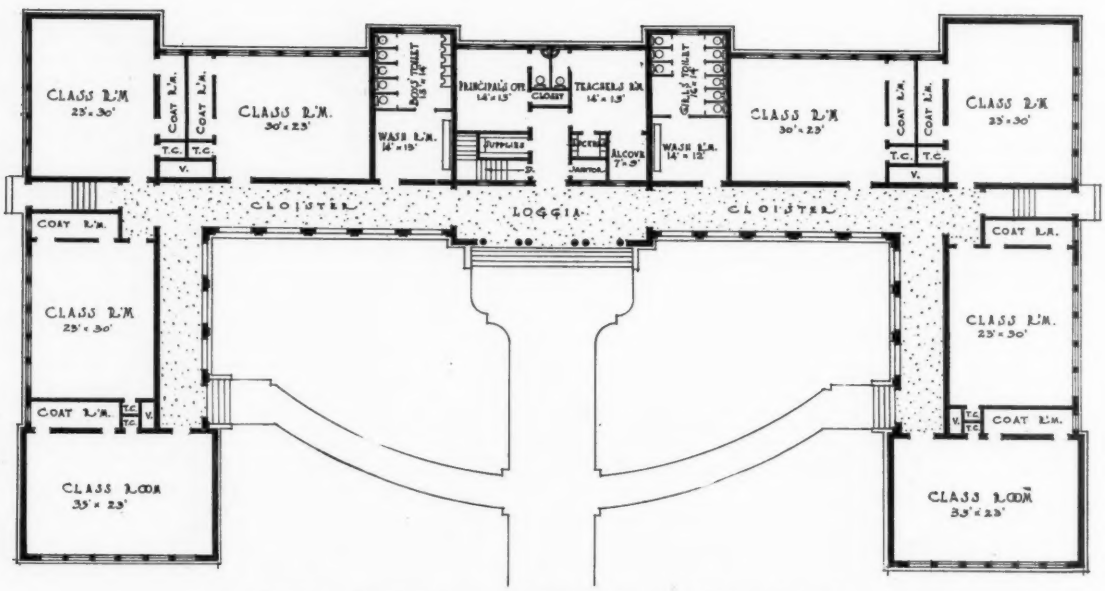

DETAIL OF EXHAUST OPENINGS IN PARAPET OVER MAIN ROOF
ELEVATION SECTION
ONE HALF PLAN OF SOFFIT OF FRONT WING
NOTE: FOR SPACING OF MODILLIONS AROUND BUILDING SEE SHEET NO 27
DETAIL OF CARTOUCHE
TWO WANTED
SEAL CITY OF NEW YORK
SEAL BOARD OF EDUCATION
SECTION
PLAN AT A-A
CENTRE LINE OF WING
PLAN THRO WINDOW
SIDE ELEVATION OF MAIN ENTRANCE
SECTION THROUGH MAIN ENTRANCE
PART ELEVATION OF AUDITORIUM
SECTION
PART DETAIL ELEV. OF STACKS



INTERVALE SCHOOL (PUBLIC SCHOOL NO. 54), BOROUGH OF THE BRONX, N. Y.

C. B. J. SNYDER, F. A. I. A., *ARCHITECT*

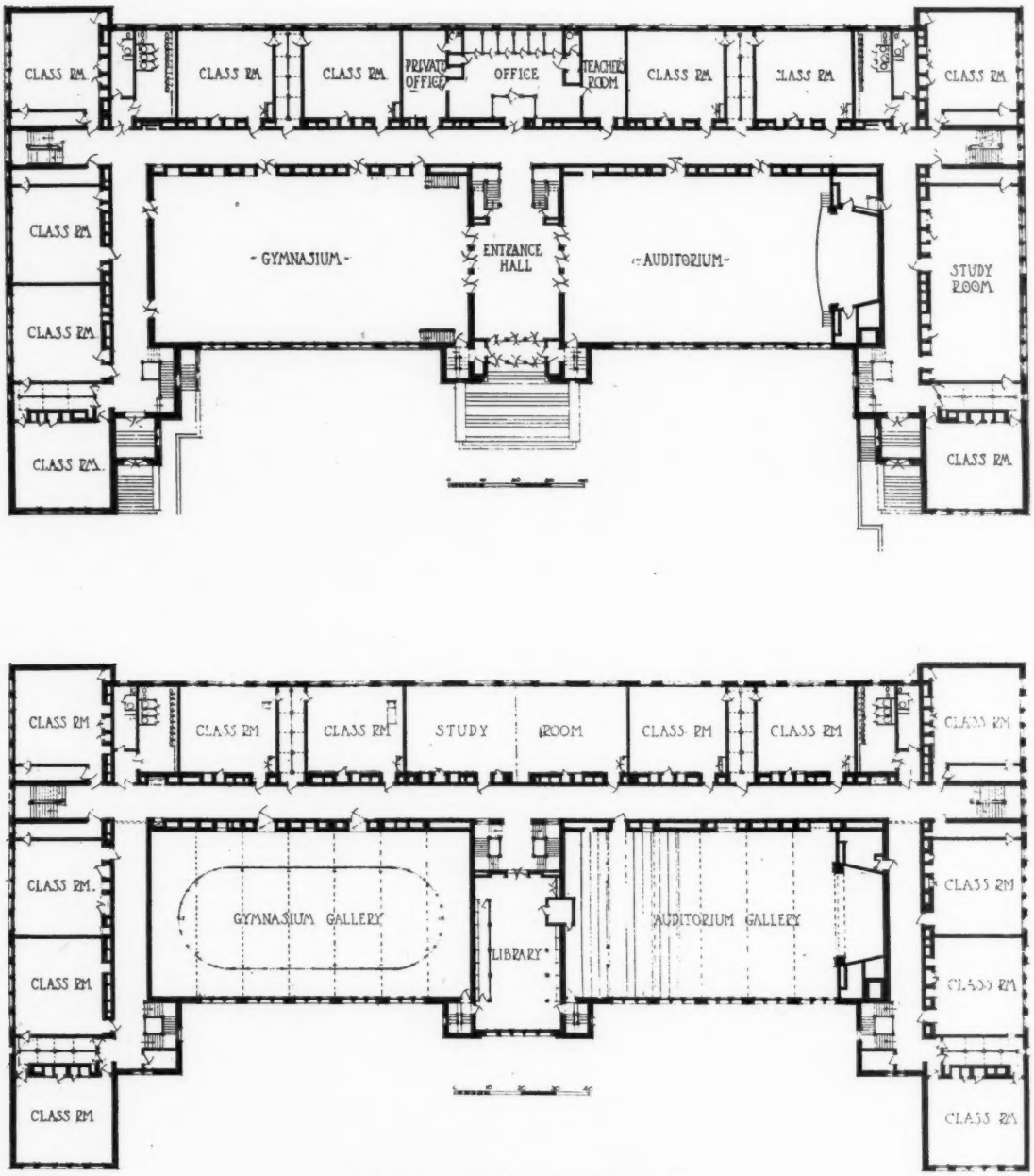




HIGH SCHOOL OF COMMERCE, BOSTON, MASS.

MR. C. HOWARD WALKER AND MESSRS. KILHAM & HOPKINS, *ASSOCIATED ARCHITECTS*

(See text pages for description)



FIRST AND SECOND FLOOR PLANS

HIGH SCHOOL OF COMMERCE, BOSTON, MASS.

MR. C. HOWARD WALKER AND MESSRS. KILHAM & HOPKINS, *ASSOCIATED ARCHITECTS*

HIGH SCHOOL OF COMMERCE, BOSTON, MASS.

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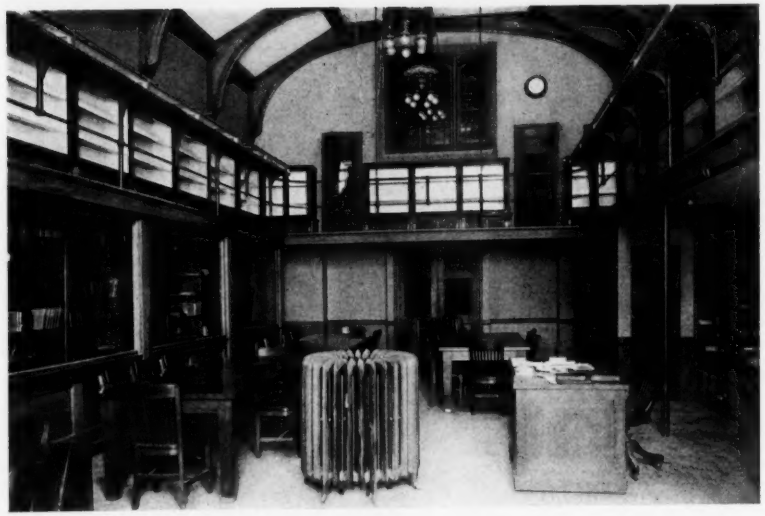
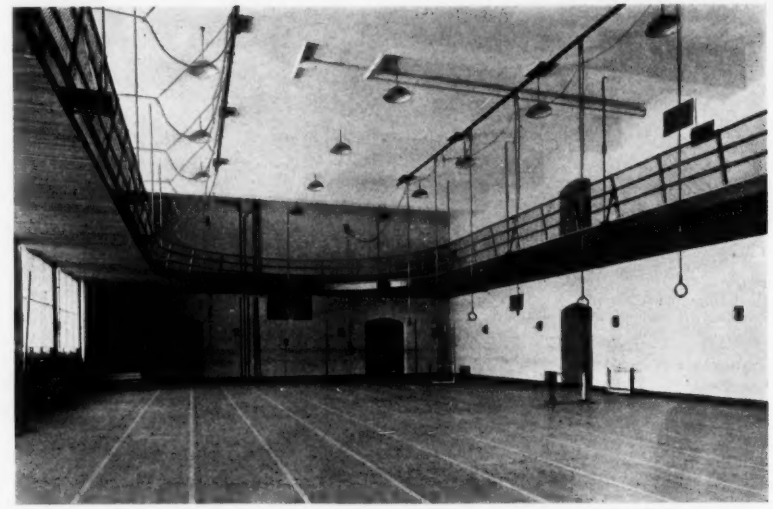


LIBRARY



GYMNASIUM

ADVANCED CHEMICAL LABORATORY

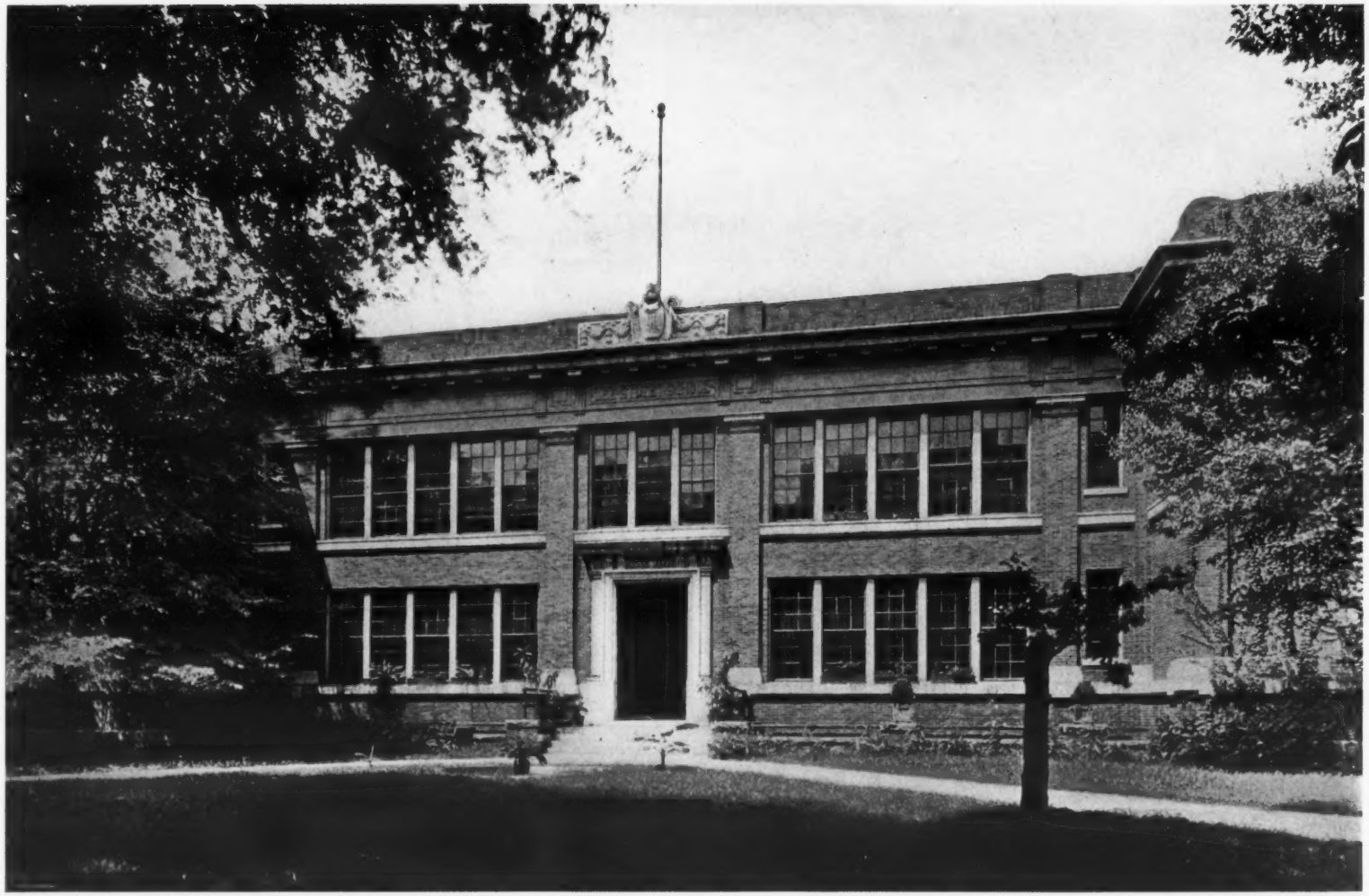
PHYSICAL LABORATORY

HIGH SCHOOL OF COMMERCE, BOSTON, MASS.

MR. C. HOWARD WALKER AND MESSRS. KILHAM & HOPKINS, *ASSOCIATED ARCHITECTS*

THE AMERICAN ARCHITECT

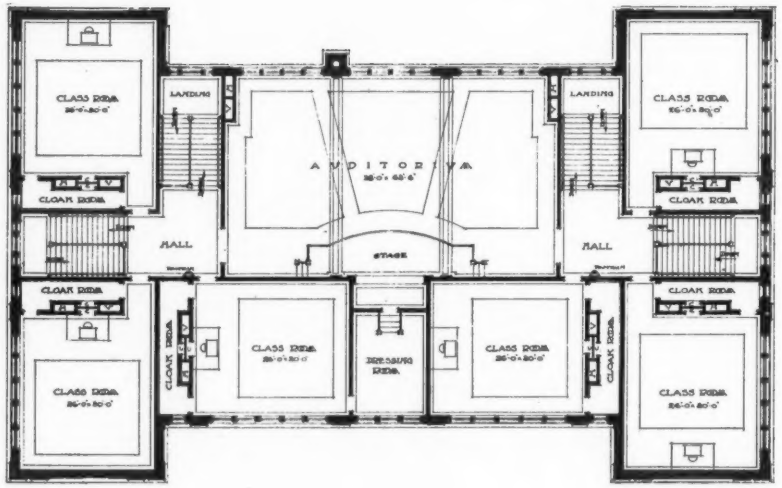
VOL. CX, NO. 2127 SEPTEMBER 27, 1916

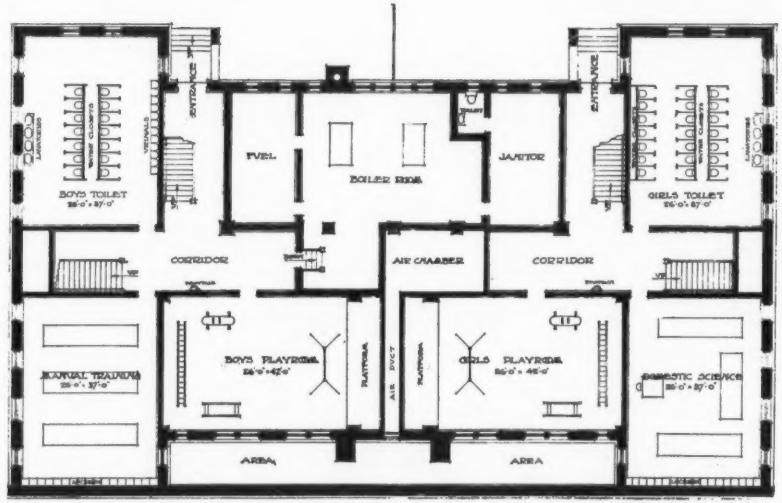


LEE STREET SCHOOL, ATLANTA, GA.

MR. EDWARD EMMETT DOUGHERTY, *ARCHITECT*

Exterior Walls—Tapestry effect with warm shades of gray and light brown. Trimmings—Terra cotta of light buff color; galvanized iron cornice. Construction—Solid brick outside walls and heavy joists, tar and gravel roof. Heating—Blower system, automatic regulation.





LEE STREET SCHOOL, ATLANTA, GA.

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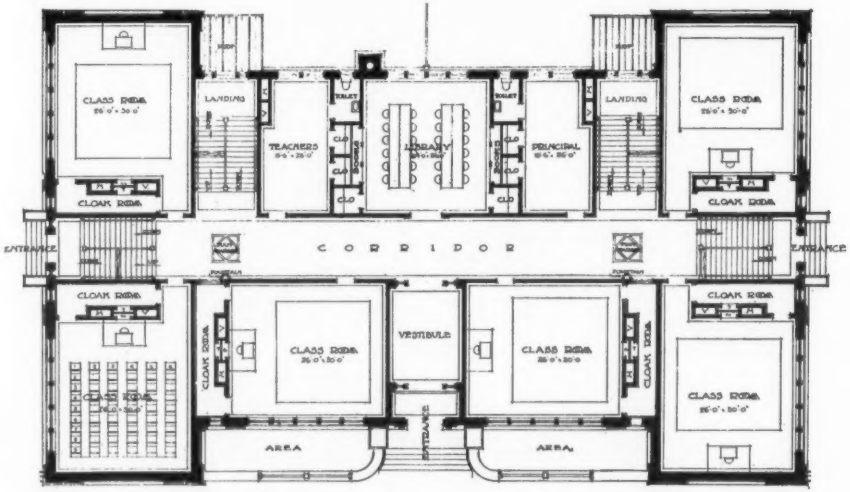
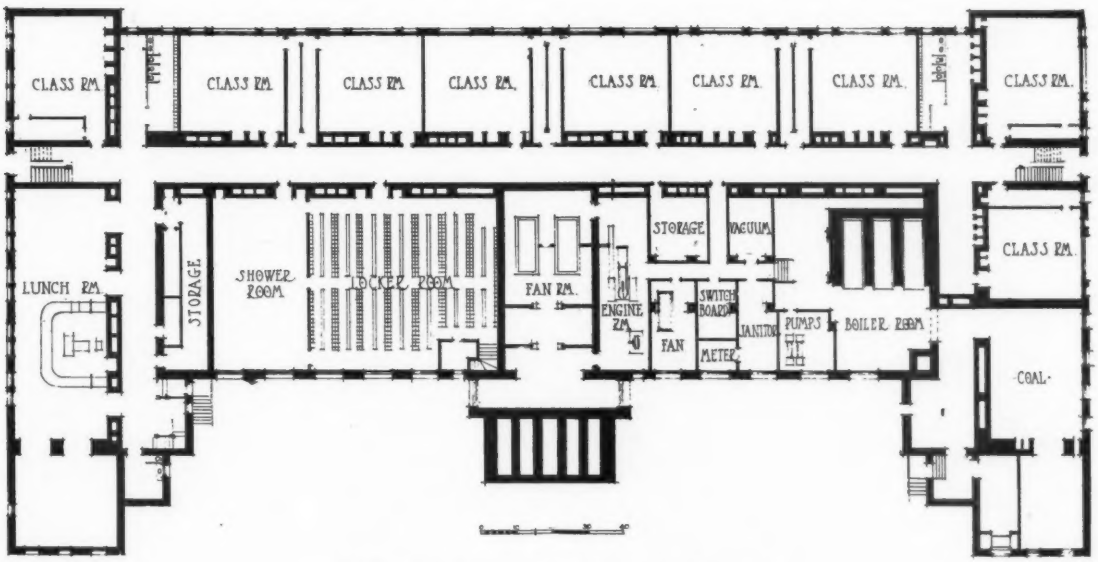
MR. EDWARD EMMETT DOUGHERTY,
ARCHITECT

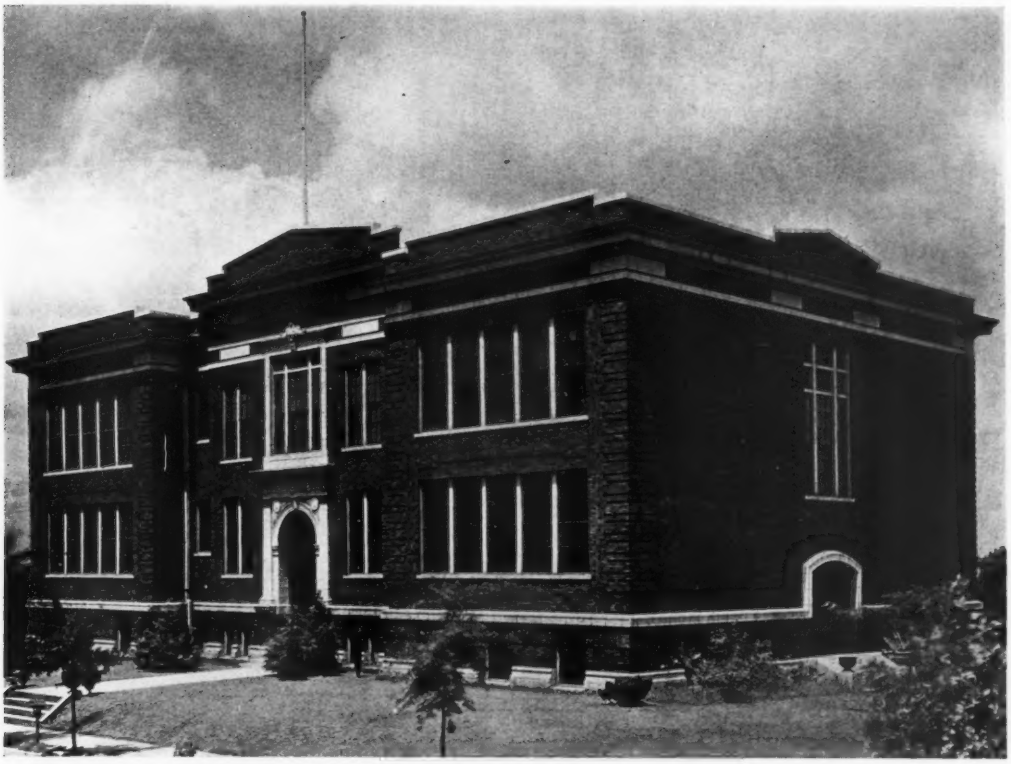


THE PATIO

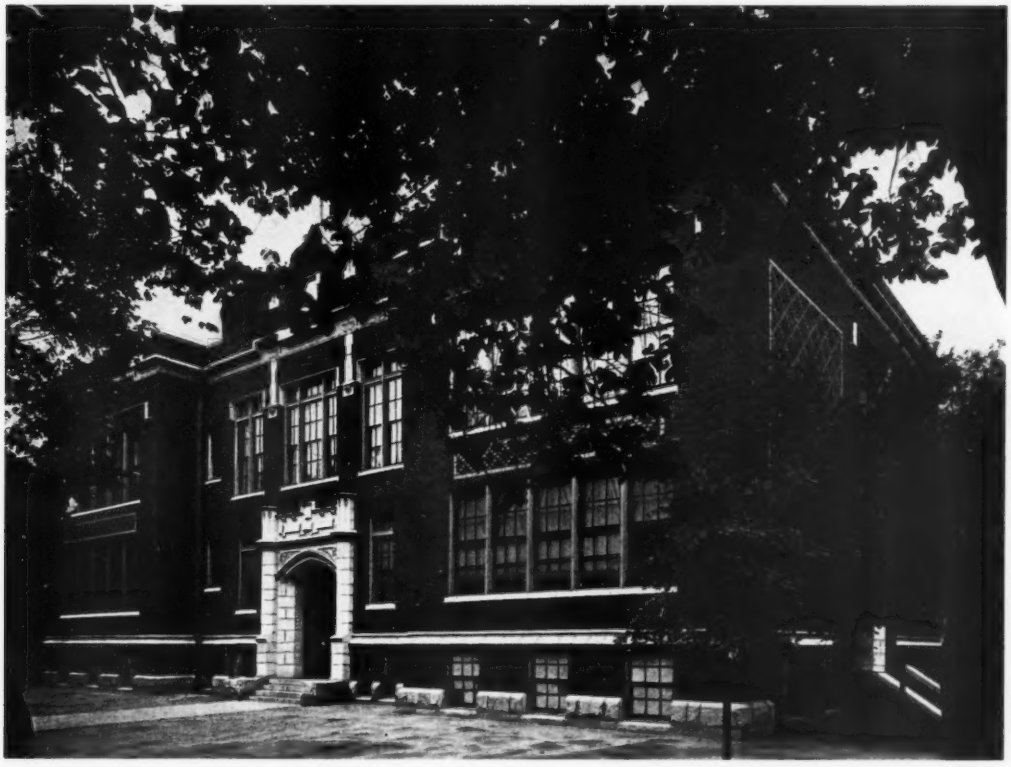


GRAMMAR SCHOOL, GLENDORA, CAL.

MESSRS. ALLISON & ALLISON, *ARCHITECTS*



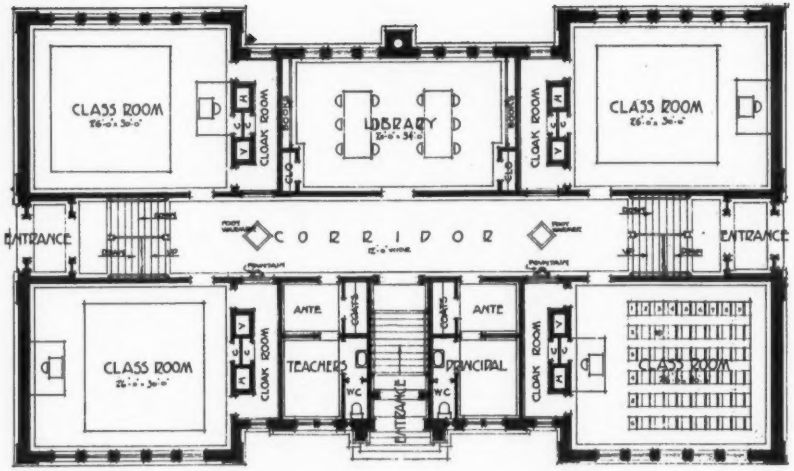
HIGHLAND PARK SCHOOL, ATLANTA, GA.

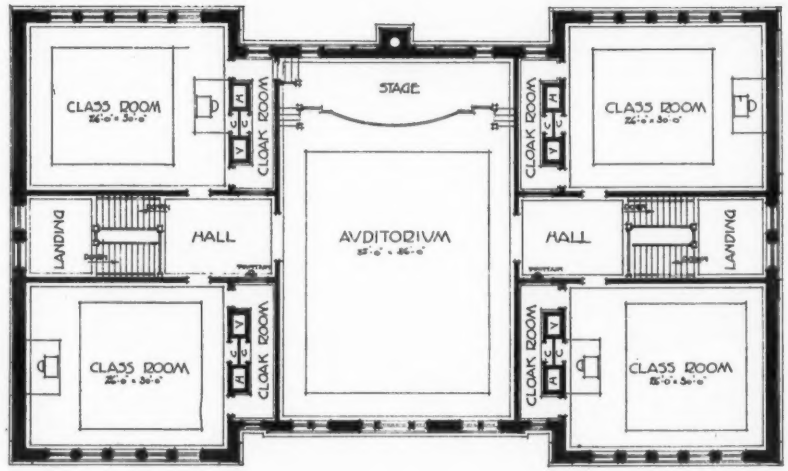


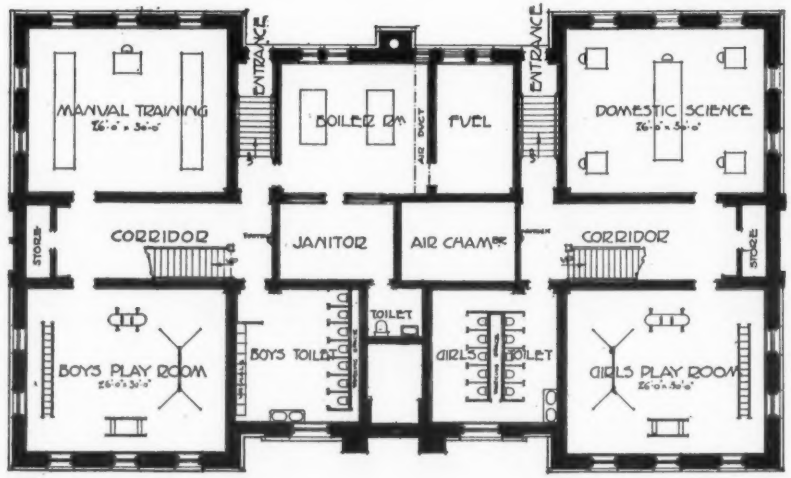
CREW STREET SCHOOL, ATLANTA, GA.

MR. EDWARD EMMETT DOUGHERTY, *ARCHITECT*

Both Schools: Exterior walls—tapestry effect in variegated shades of brown, red and gun metal; trimmings—buff terra cotta; construction—solid brick outside walls, heavy joists, tar and gravel roof, hardwood floors. Heating—blower system with automatic regulation.







HIGHLAND PARK SCHOOL, ATLANTA, GA.

□ □

MR. EDWARD EMMETT DOUGHERTY, *ARCHITECT*

□ □

NOTE—These plans also apply to Crew Street School

THOMAS CORNERS SCHOOL, GLENVILLE, N. Y.

BEUKENTHAL SCHOOL, HARDINS CROSSING, N. Y.

SCHOOL, TRIBES HILL, N. Y.

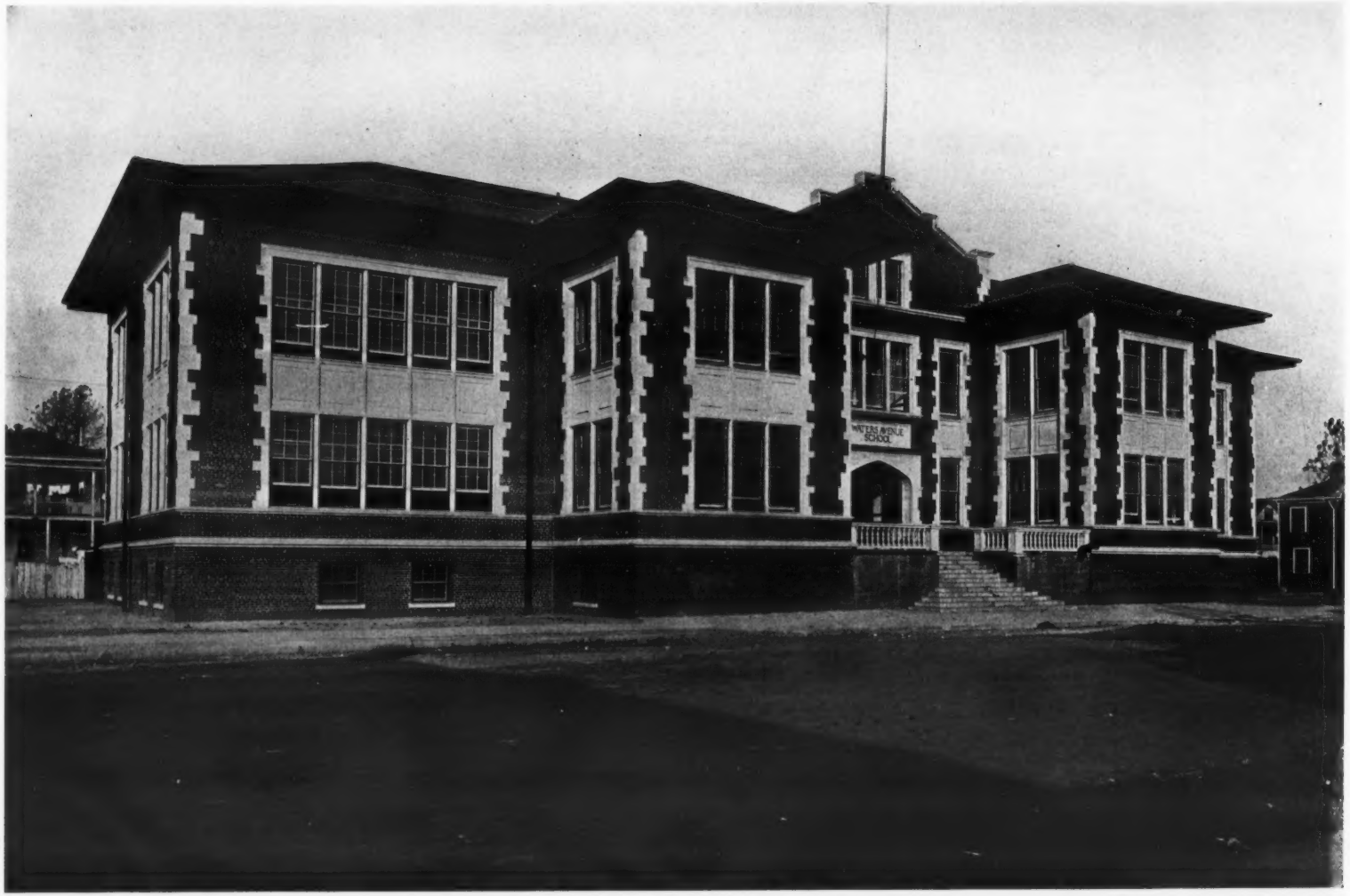
THREE SMALL SCHOOLHOUSES

EDWARD GRANT ATKINSON, *ARCHITECT*

The THOMAS CORNERS SCHOOL—Common brick laid in white mortar with artificial stone trimmings. Accommodates 60 pupils, one room having a capacity of 20 pupils, which can be used as a recitation room, but by opening of folding doors can be thrown in the larger room, giving a large hall for community meetings. The building has gravity steam heat and its own water and sewer systems. Total cost $7,700.

The BEUKENTHAL SCHOOL is a two-room school with a large auditorium occupying the entire second floor, used for social center purposes. Heated by steam and ventilated by means of a fan located in basement. It has electric lights, its own sewer system and water. The exterior walls are of local split face cobble stones. The stucco is of a brownish-cream color, and the roof is of unfading green slate. Total cost $12,000.

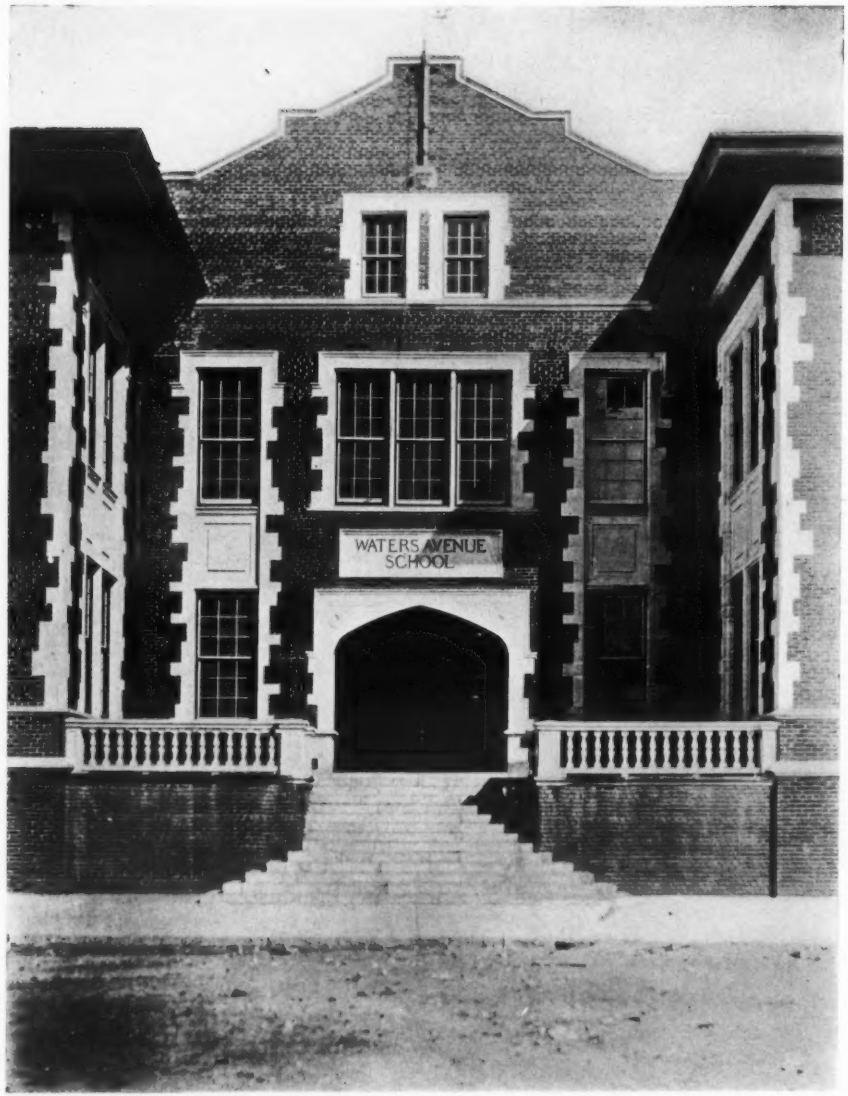
The TRIBES HILL SCHOOL is a four-room school, accommodating 160 pupils, with principal's office on second floor and large play room in basement. It has its own sewer and water systems, steam heat and fan ventilation, electric lights and telephone. The exterior combines a blue stone base, common red brick laid in white mortar, and trimmings of artificial stone. The roof is of black slate. Total cost $15,000.



WATERS AVENUE SCHOOL, SAVANNAH, GA.

MR. J. DE BRUYN KOPS, *ARCHITECT*

(See text pages for description)

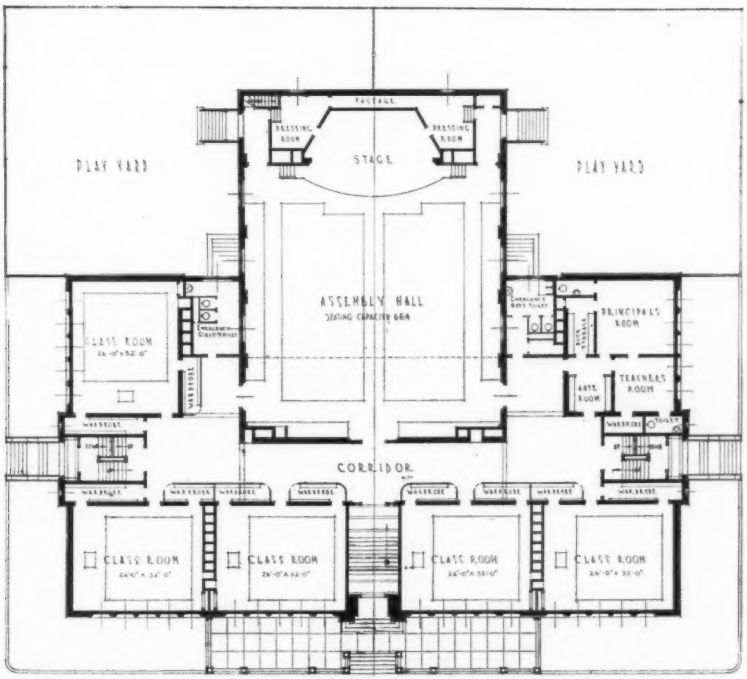


FIRST FLOOR PLAN

SECOND FLOOR PLAN

WATERS AVENUE SCHOOL, SAVANNAH, GA.

MR. J. DE BRUYN KOPS, *ARCHITECT*



LAUREL HILL AVENUE SCHOOL, PROVIDENCE, R. I.

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MESSRS. CLARKE & HOWE, *ARCHITECTS*

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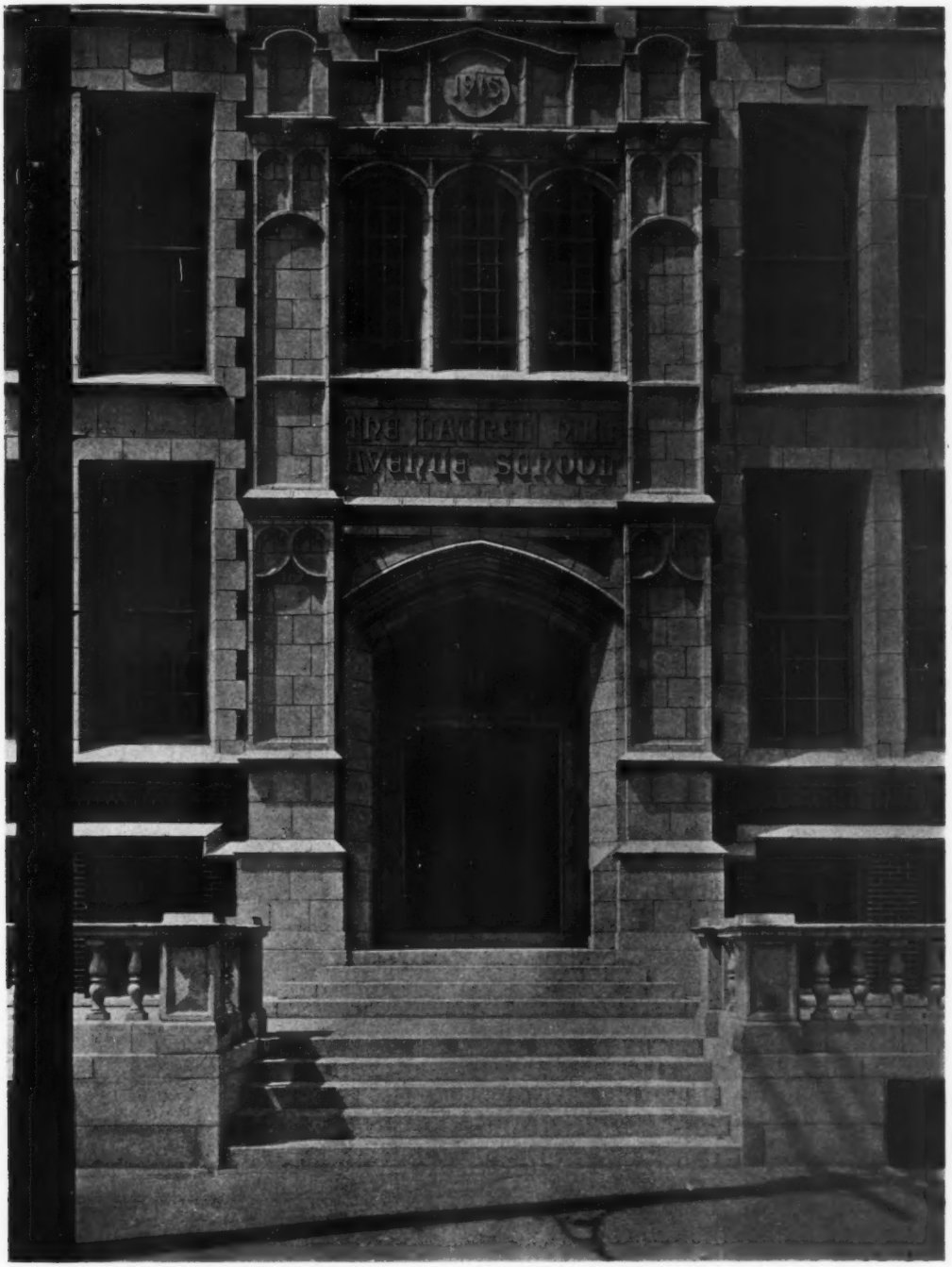
(See text pages for description)



LAUREL HILL AVENUE SCHOOL, PROVIDENCE, R. I.

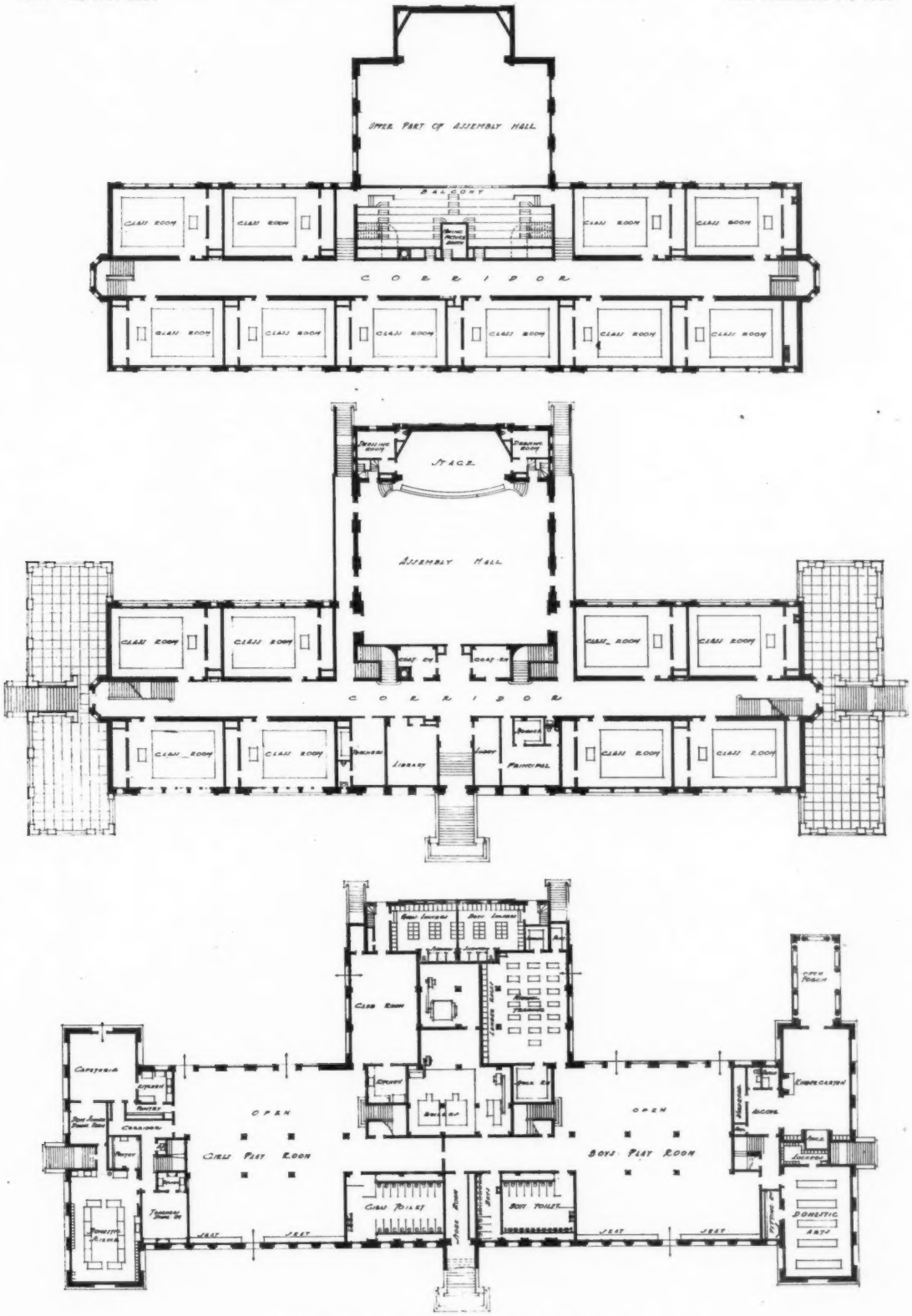
MESSRS. CLARKE & HOWE, *ARCHITECTS*

(For additional illustrations of this school, see plate section)

CLAWSON SCHOOL, OAKLAND, CAL.

MR. JOHN J. DONOVAN, *ARCHITECT*

(For description and additional illustration of this school, see text pages)



CLAWSON SCHOOL, OAKLAND, CAL.

MR. JOHN J. DONOVAN, *ARCHITECT*

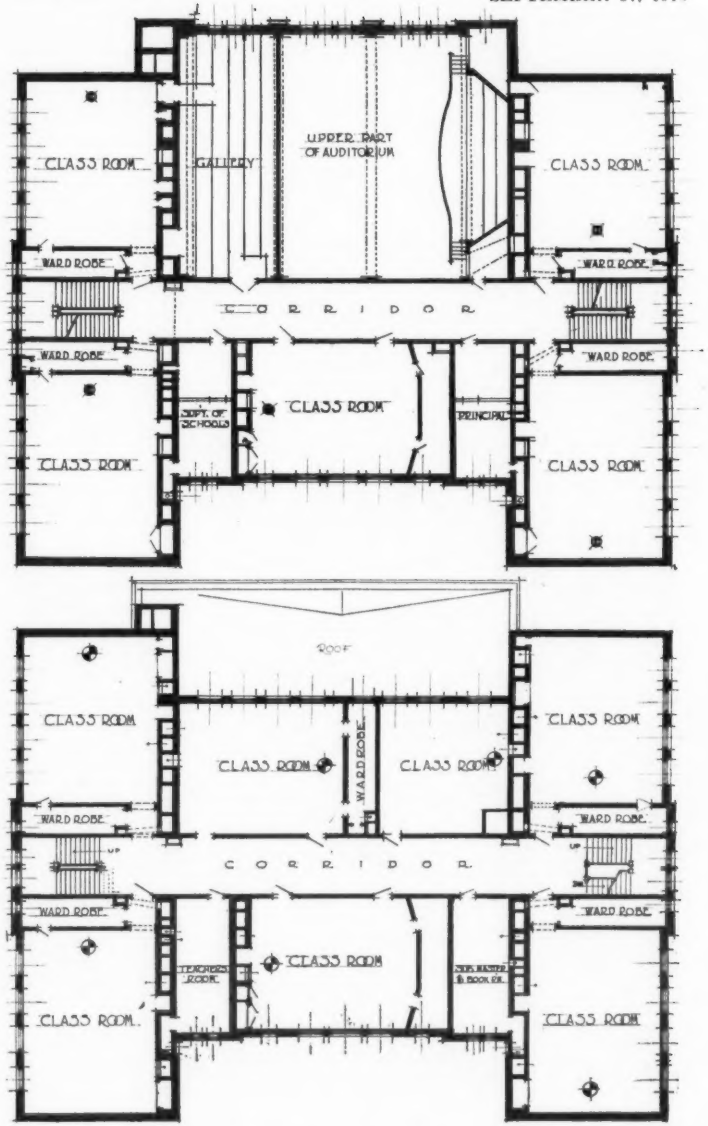
CLAWSON SCHOOL, OAKLAND, CAL.

MR. JOHN J. DONOVAN, *ARCHITECT*

HADLEY SCHOOL, SWAMPSCOTT, MASS.

MESSRS. BRAINERD & LEEDS, *ARCHITECTS*

DETAIL MAIN ENTRANCE



SECOND AND THIRD FLOOR PLANS

HADLEY SCHOOL, SWAMPSCOTT, MASS.

MESSRS. BRAINERD & LEEDS, *ARCHITECTS*

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VOL. CX SEPTEMBER 27, 1916 No. 2127

SCHOOL BUILDINGS

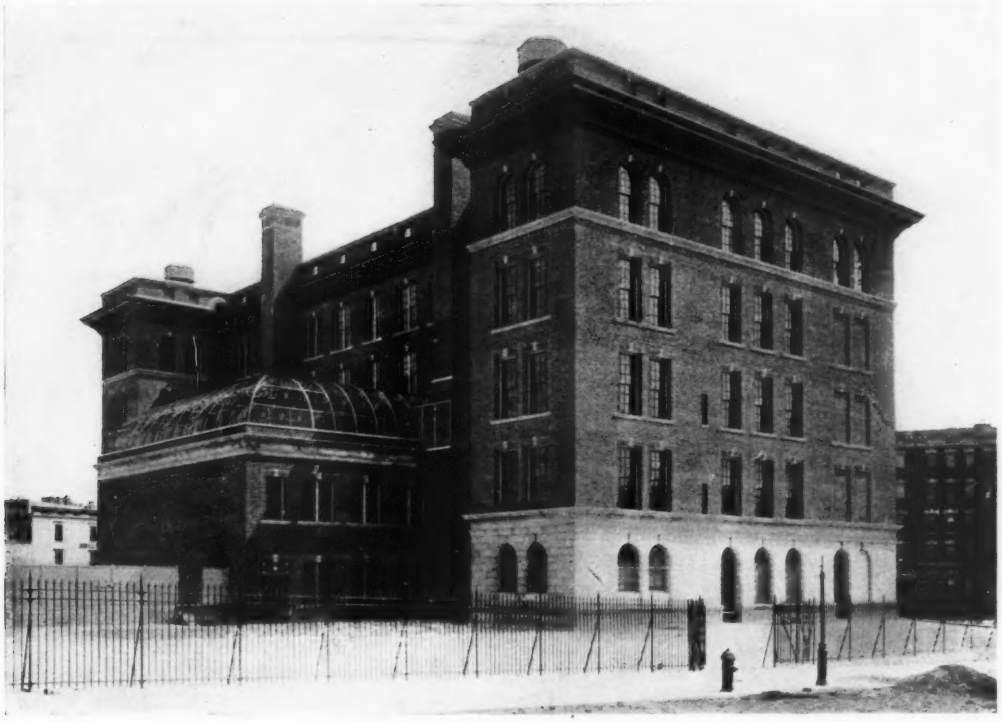
THAT the public schools of this country constitute a vital element in the training of the young for future citizenship is beyond question. Equally indisputable is the fact that this element has taken on added importance within recent years by reason of its wonderful development. It would be trite to point out the contrast between the one-room rural school of fifty years ago and the modern vocational or high school building, yet, to study this evolution and follow the gradual progress that has been made, ascertaining its cause and detecting its tendencies, is to become better acquainted with the educational movement in this country to which may be traced many of the chief attributes which characterize us as a nation. The essential problems of school architecture incident to this development, involving requirements of plan all of which exert an influence on the design, have been many and complex, and their solution has demonstrated the resourcefulness and ability of the modern architect. In addition to the bald necessity of providing accommodations for the various classes of pupils, study has been given to arrangements that would facilitate the operation of the school as a machine, to the features of sanitation, hygiene, ventilation, heating, lighting, and the general comfort of pupils. All these subjects have been considered from both scientific and practical viewpoints, and the result is the efficient well-balanced plant that we call a school building. In view of the great amount of thought and attention that has been given these matters, and the progress that has been made in their development, it is somewhat difficult to understand how one of relatively greater importance, that of adequate fire protection, has been so frequently overlooked or neglected. In spite of all precautions that are regularly taken to protect the health, eyesight and general well-being of the pupil, there are innumerable school buildings to be found in which proper steps have not been taken to safeguard the occupants from the danger of fire. It would seem as though furnishing that protection was the first and most important duty of a school board and the architect employed by it to design new buildings or remodel those that no longer comply with modern requirements of either educational methods or safety.

Mr. William O. Ludlow, in an article printed in this issue, points out what he believes to be the plain duty of every member of the profession. In our opinion he understates rather than overstates this obligation. The conditions indicated unquestionably exist. It is not simply a professional duty on the part of architects to do what they can to safeguard the lives of school children; it is a moral obligation of citizenship, and one which by reason of his training and education an architect should more readily realize and more effectively discharge than can the layman. Great improvement in our schools has obviously been accomplished during the past decade, and a rare ability in the design and plan of school buildings to meet special conditions and requirements has been shown. But, unless due cognizance of a matter of such prime impor-

tance as the safety of the children who attend schools is taken, and adequate means for their protection are provided, the greatest obligation of the profession to society has not been discharged. Until children are fully as safe in any part of a school building to which their duties call them as they would be in their own homes under the most favorable conditions, the technical performance of our professional function has not been properly or completely accomplished.

AN article by Mr. C. B. J. Snyder, architect to the New York Board of Education, which appears on another page in this issue, will doubtless be of special interest to architects engaged in school building work. It describes in some detail the recently constructed Intervale school building in the borough of Bronx. The feature of this building which possesses this special interest is its provision to serve as a community center. This structure has been planned, in fact, to provide for certain uses that represent a new relation of the school building to the communal life of its neighborhood. Probably this use for a school building represents the latest tendency in the development of buildings for educational purposes, and is a result in some measure of the work of social welfare organizations. That architects will be called upon to meet this new requirement in the planning of school buildings there can be little doubt, as the idea that school buildings belong to the people for their use and benefit at any time and in any way that will best serve the general purpose of education and improvement is fast gaining ground in the larger cities and will probably spread quickly throughout the country. In the school building referred to we find a concrete example of the manner in which a building designed primarily for school purposes can be made to serve the community in which it is located in a variety of ways without detracting from its value as an educational center. The idea is comparatively new in this country. While there are records of a few relatively unimportant exceptions, the general impression has heretofore prevailed that the schoolhouse could be used for no other purpose than to provide a place where the brief daily school exercises could be held. They were not adapted in their plan to any further use. Each week from Friday afternoon until Monday morning the schoolhouse stood deserted save for the caretakers, and during long summer vacations it was closed and idle.

Intervale school building has been designed to meet the new conditions due to changing features of civic life. It will fulfill to a larger degree and in a broader way than its prototype the primary purpose of all school buildings, which is to serve the needs of education and the preparation of the inhabitants of the neighborhood for citizenship, regardless of age.



VIEW FROM SOUTHWEST

THE INTERVALE SCHOOL

PUBLIC SCHOOL 54, BOROUGH OF THE BRONX, NEW YORK*

By C. B. J. SNYDER, F.A.I.A.

RECOMMENDATIONS for the designing of two buildings for intermediate schools is the reason, perhaps, for the departure in the design and plan for this building, which occupies the block front on Intervale Place, between Freeman and Chisholm Streets, Borough of The Bronx.

The plan indicates a radical departure from the usual type, inasmuch as the first story has been enlarged so as to provide indoor playroom of upwards of 13,000 square feet.

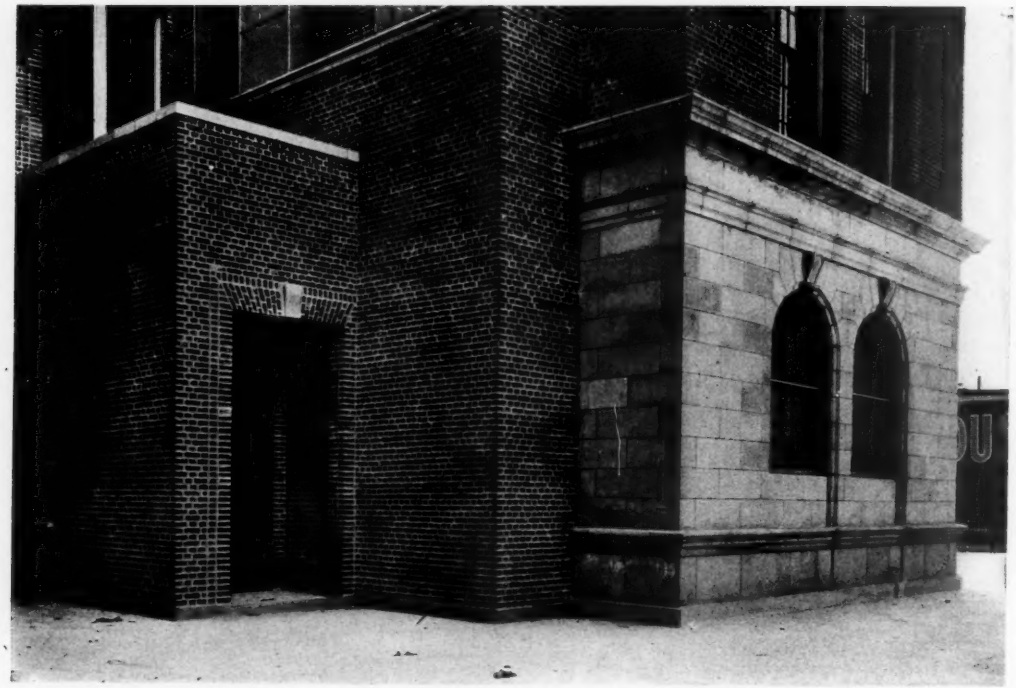
This is paved with wood block flooring, set in mastic, not only thus providing a superior floor surface for the children at their supervised play, but also for the neighborhood dances, which have recently become such a feature in various school centers throughout the city.

The service kitchen is sufficiently large not only to provide for lunches for the pupils, but also for large functions for which the school buildings have at times been used, such as neighborhood Thanksgiving dinners, Fourth of July celebrations and other similar functions.

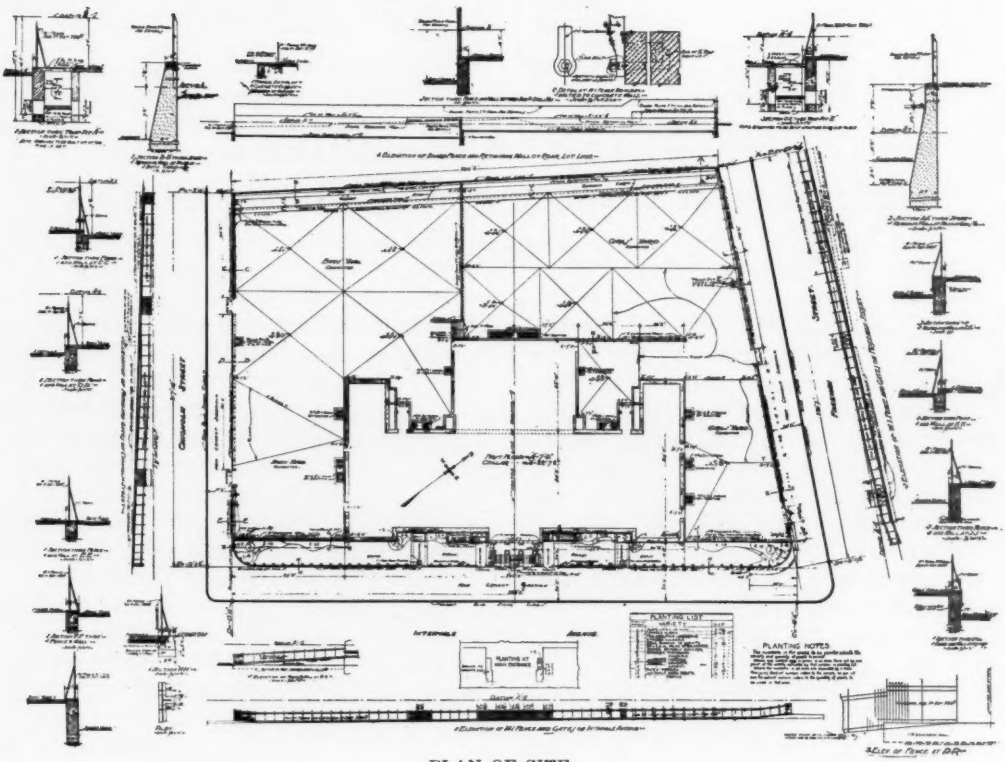
The auditorium is on the second floor, one flight up from the street, and has been provided with 408 tablet arm chairs of special design, the pedestals being used for ventilating purposes.

This type of chair requires more floor space each than the ordinary opera chair, but the tablet arm, together with the book

*For additional illustrations see plate section.



DETAIL OF LOWER STORIES



PLAN OF SITE

INTERVALE SCHOOL, BOROUGH OF THE BRONX, NEW YORK

MR. C. B. J. SNYDER, *ARCHITECT*

boxes beneath same, will afford special facilities for the use of the room for purposes of instruction.

The principal's offices occupy a commanding position at the head of the first flight of stairs.

The various floors are given over to classrooms and special activities.

The roof playground over the auditorium is about 3500 square feet, covered with wire mesh upon steel trusses.

The main roof has also been arranged for playground purposes and will afford an area of 10,100 square feet.

The building is of standard fireproof construction throughout, no wood being used for floors, in corridors or passageways.

The stairways are of iron and steel, with composition treads and enclosed with smoke and fireproof partitions from top to bottom, access thereto being by kalameined doors, a material which is also used for doors, sash and trim of all storage closets, domestic science rooms and all other points where there may be a possibility of communicating fire.

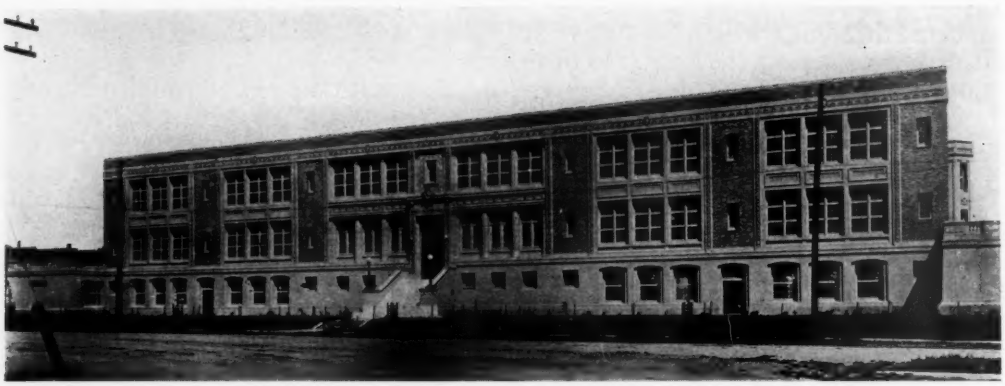
In addition, kalameined doors and trim are also placed at strategic points at the center of the corridor on each floor, thus providing what may be termed horizontal exits, but in reality is a fire and smoke-proof stop which will very largely contribute to a reduction in damage in the event of fire in any particular room.

The cost of the building complete, including heating and ventilating apparatus (which, together with coal storage space, occupies the cellar, placed beneath the first story playroom), the electric, sanitary and furniture equipment, including special equipment for gymnasium, is $405,800.

There were, however, several extraordinary items of expense, due to the peculiarities of the site, necessitating an outlay for excavation of the rock, building retaining walls, etc., amounting to $16,700, so that under normal conditions of a site the building would have cost about $389,-100, or .2446 cent per cubic foot.

LINCOLN WOOD SCHOOL, EVANSTON, ILL.

MESSRS. PERKINS, FELLOWS & HAMILTON, *ARCHITECTS*



THE CLAWSON SCHOOL, OAKLAND, CAL.*

By JOHN J. DONOVAN, *Architect*

THE new Clawson School, central grammar school, Oakland, Cal., is located on a level lot of land which is bounded by streets permitting the best orientation, as the classrooms have east and west light for natural lighting. The photographs of the classrooms show how completely the rooms may be converted into open air rooms. To assist the natural ventilation there are also transoms on the opposite side of the classrooms opening into the corridors which permit free circulation of air.

On the ground floor, termed the "Basement," although it is six inches above finish grade, are the open-air playrooms, one for boys and one for girls, which are a feature of this floor plan. These playrooms are enclosed on three sides and entirely open on the east and are likely to be used in the future as gymnasia. Besides the playrooms, the ground floor contains the Domestic Science Room, Cafeteria, Domestic Arts Room, Kindergarten, Community Club Room, Manual Training Room, Boys' and Girls' Toilet Rooms, Boys' and Girls' Shower Rooms and Boiler and Fan Rooms.

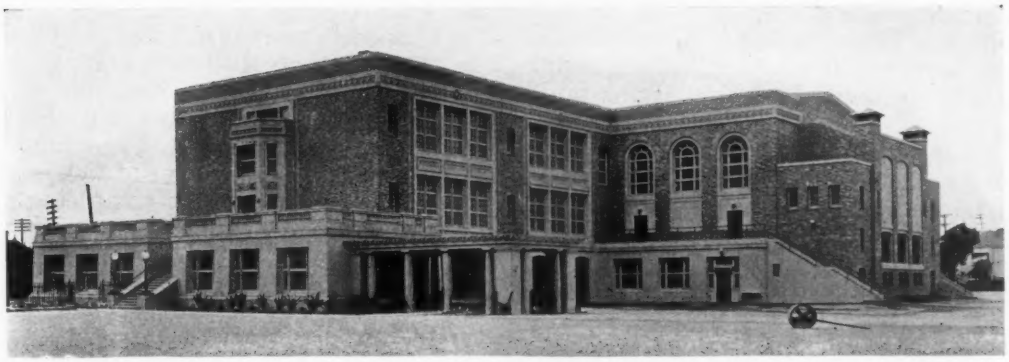
The Domestic Science and Domestic Arts Rooms are particularly good examples of rooms for this departmental work. It will be noticed in the grouping of the Domestic Science Plan that the Teachers' Dining Room, Cafeteria, Kitchen, Pantry and the Domestic Science Dining Room are grouped around the Domestic Science Room.

The Kindergarten contains within the room itself, a large fireplace. The room is thoroughly ventilated and well heated. At one end of the long axis of the room is a small stage.

On the first floor above the ground floor, there are, besides the classrooms, the Assembly Hall, Principal's Suite, the Library and Teachers' Rest Room. At first the Assembly Hall was planned to serve as a Gymnasium as well as an assembly room, but the open-air playrooms in the basement will answer every purpose for gymnasia. However, the arrangement for the Assembly Hall is such as to permit a wide use of this room. It is quite convenient to the play yard, also to the showers on the ground floor. Above the wainscot of the Assembly Hall has been applied acoustical felt and burlap. The acoustics of this room need no correction. My experience in school work leads me to advise that all assembly halls should be treated somewhat in this manner if they are to be used successfully.

Much care was given to placing the moving picture booth so that the picture rays would strike the canvas at the proper angles, another matter to which attention must be given in designing

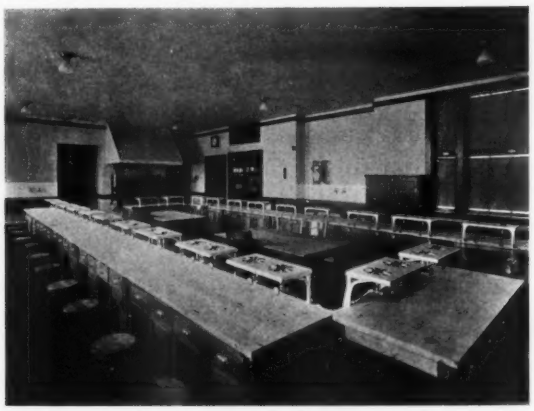
*For additional illustrations of this school see plate section.



GENERAL VIEW

school assembly halls when moving picture booths are installed.

Structurally, the building is of reinforced concrete frame with reinforced concrete floor slabs throughout, including the roof slabs. The first story has reinforced concrete exterior walls with plaster surfaces. Above that, mottled buff brick, varying in color, and decorative architectural terra cotta have been used on the exterior of the building. These brick walls are somewhat interesting in their texture. There were seven or eight colors used haphazardly in the laying of the bricks, purposely avoiding preponder-



LABORATORY

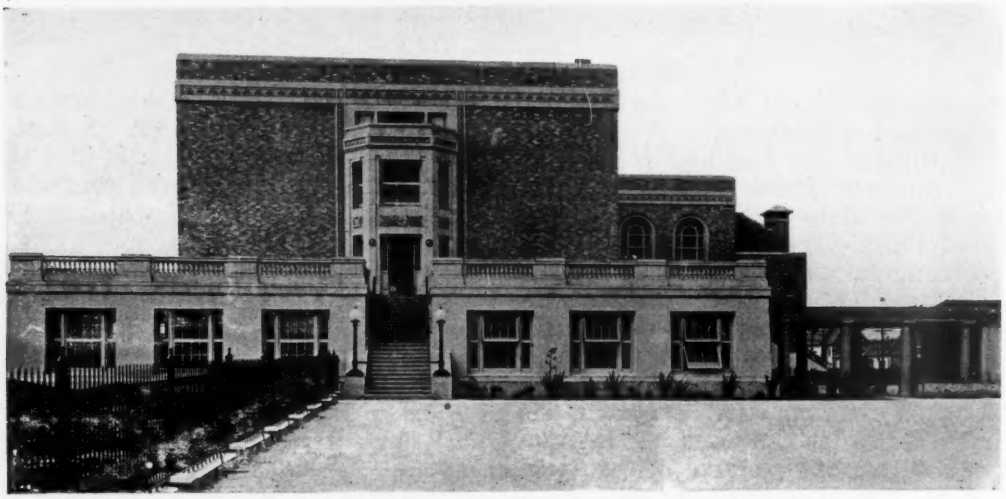
ance of any one color. This haphazardly mixing of selected colors has given to the brick work a rather pleasing tapestry effect. And these panels of brick work have been bounded by flatly glazed architectural terra cotta of a gray tone and mottled texture which harmonizes quite well with the brick work. A feature of the design of the exterior is that of making use of the reinforced concrete piers between the windows, which are struc-

TYPICAL CLASSROOM

KINDERGARTEN

tural piers as well as a part of the composition. Every consideration has been given to the heating, ventilating, plumbing and electrical problems of the building.

The building cost $161,943.74. There was a sufficient balance in the appropriation to enable us to properly treat the grounds including the planting in front and sides and the playground at the rear and sides. And it seems to me that this practice of completing the building by surrounding it with properly arranged lawns, walks and the planting of good shrubbery will mean a great deal toward instilling interest and admiration for school work. As a matter of fact, we cannot consider our work completed until the landscape work has been studied and executed.



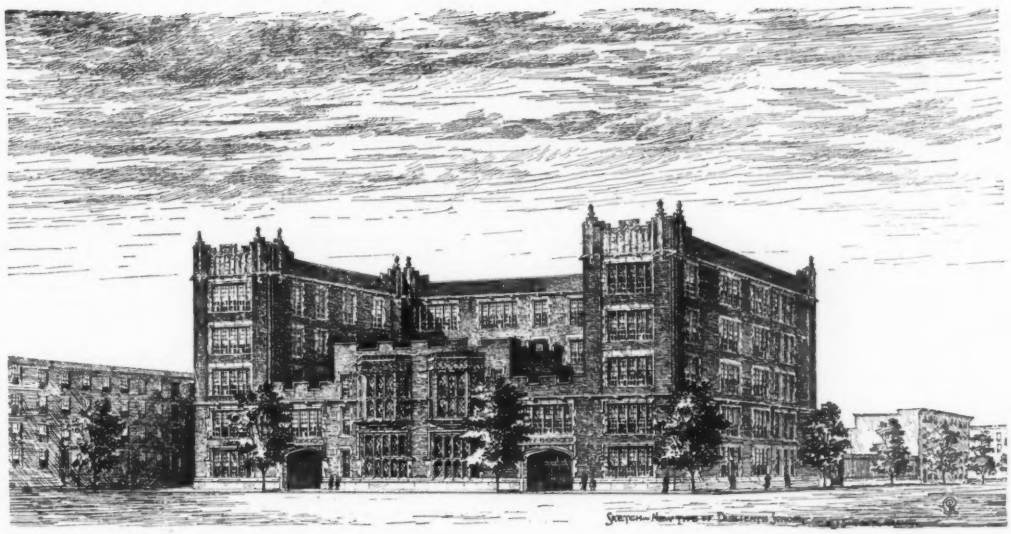
END VIEW, CLAWSON SCHOOL

Pharaoh's Palace of Menepthah

It is stated in the daily press that the University of Pennsylvania Museum has received a letter from Dr. Clarence S. Fisher, head of the Eckley B. Coxe expedition in Egypt, announcing that he has completed his work of excavating the ruins of the Palace of Menepthah.

Since his last letter he has made the important discovery that the palace he had partially uncovered is almost exactly twice the size he had supposed. This makes it among the largest palaces of ancient Egypt.

The portion originally excavated seemed to be complete in itself, as it contained the throneroom where Moses and Aaron appeared from time to time before Pharaoh and demanded the release of the Israelites. Surrounding the throneroom are many chambers, and the front contained a notable vestibule with rows of enormous pillars beautifully carved. But it now appears that back of this series of rooms was a portion of the palace about 140 feet long, containing many rooms, and apparently some very rich colonnades were in existence at the time of the destruction of the building.



DUPLICATE TYPE SCHOOL BUILDING

By C. B. J. SNYDER, F.A.I.A.

A STUDY of the sketch plans for the new type of duplicate school would indicate that a further effort has been made to provide facilities which may be readily made use of through the civic spirit of the neighborhood, and at the same time increase the opportunity for the wider use of the school plant for teaching purposes through provisions being made for a duplicate school.

The key to the design of the floor plan was the necessity of so placing the auditorium that it would be protected from the noise of the children at play and at the same time be accessible not only for the pupils but for public meetings as well.

There has, therefore, been brought about an entire reversal of floor plans from that shown for the Intervale School, the auditorium, in this case, being placed at the front of the building.

One of the defects in the planning of elementary schools has always been the lack of a dignified place not only for the reception of pupils but of their parents, a space which, when need should arise, could be also used for reception purposes.

Such a space has been provided in this building through the covering over of the court between the auditorium and one of the wings of the building.

This space will be about 30 by 70 feet, and while termed "art gallery" on the plan, is really a large, well-lighted hall, which is easily subject to interior decoration.

Immediately adjacent are the principal's office and library, the latter containing about two thousand square feet.

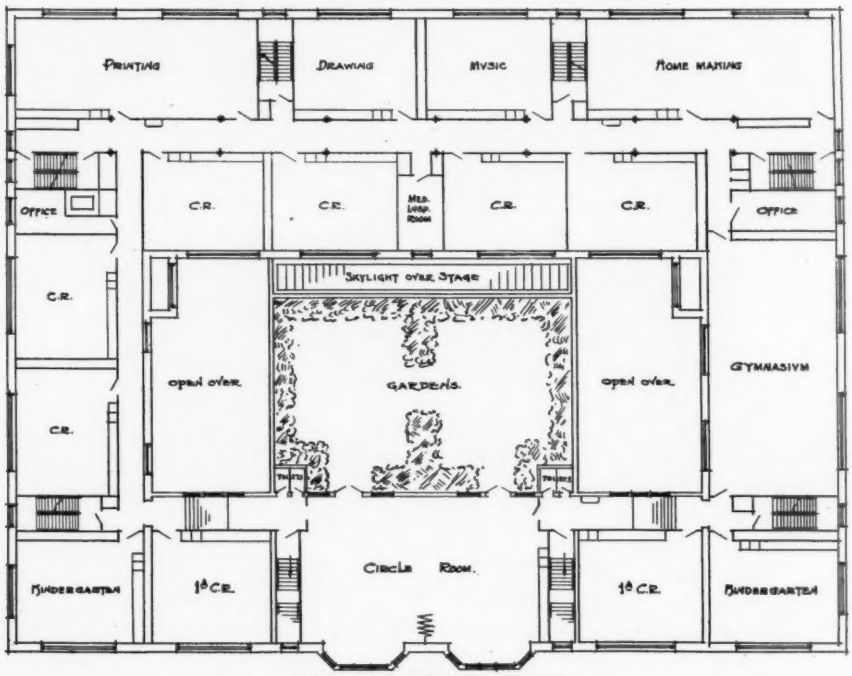
The program for a duplicate school requires the use of the auditorium, the library and the indoor playroom at the same time that classrooms, shops and other activities are in progress.

It is, therefore, necessary to so plan them as to prevent interference and at the same time permit of easy circulation, due to the changing of classes, which occurs each fifty minutes.

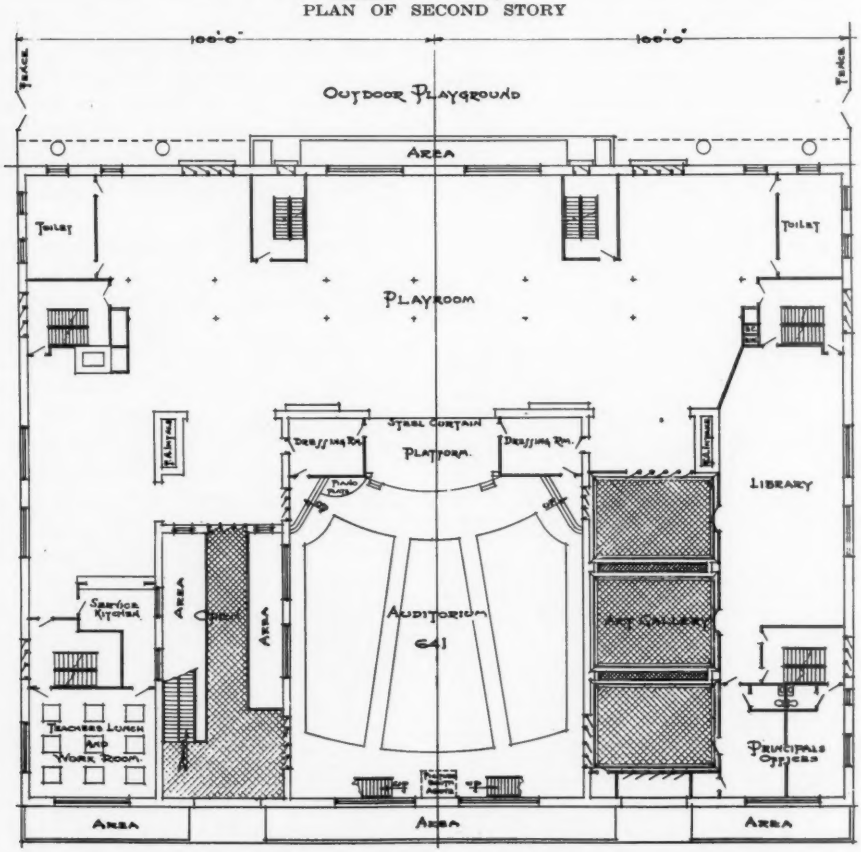
Ample means of ingress and egress have been provided for the auditorium, as well as provision for the clothing of the children.

At times there is demand for a large platform space, which heretofore it has been impossible to provide for.

In this case the plan indicates a division between the rear of the platform and the playground (the two being upon the



PLAN OF SECOND STORY



PLAN OF FIRST STORY, DUPLICATE TYPE SCHOOL BUILDING

C. B. J. SNYDER, F. A. I. A., *ARCHITECT*

same level) by a steel or other fireproof curtain, which, when raised, will provide ample space for the presentation of pageants, which seem to be regarded as so desirable.

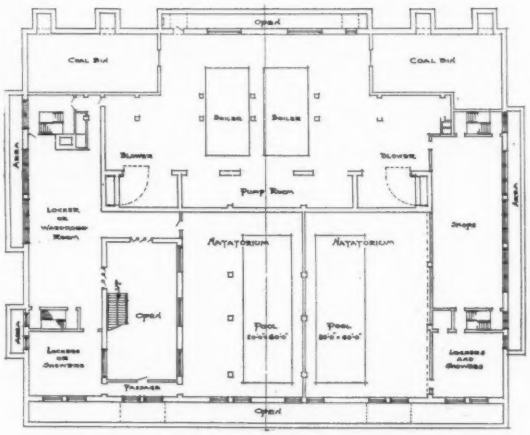
A teachers' lunch and workroom is provided, adjacent to which is a service kitchen which is especially designed for the preparation of children's lunches.

The rear portion of the auditorium is only one story high, but the design carries the two-story feature across the front so as to provide for ease in the circulation of classes to and from the auditorium and across from one wing of the building to the other as the needs of the program demand.

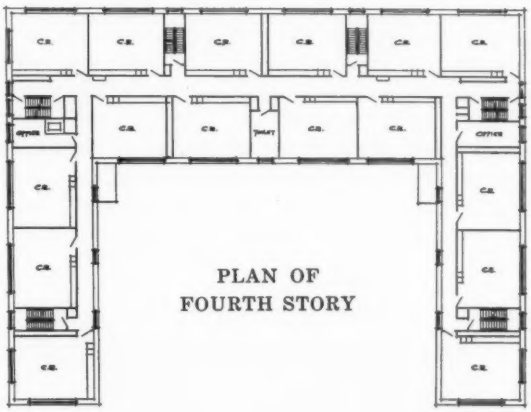
The center or circle room will be about 60 feet in length by 34 feet in width, and this will be subdivided as needed by flexible partitions.

The six rooms, therefore, across the front will be assigned to the kindergarten and 1 A classes, which, with the garden, will, under the new program, provide for from nine to twelve classes.

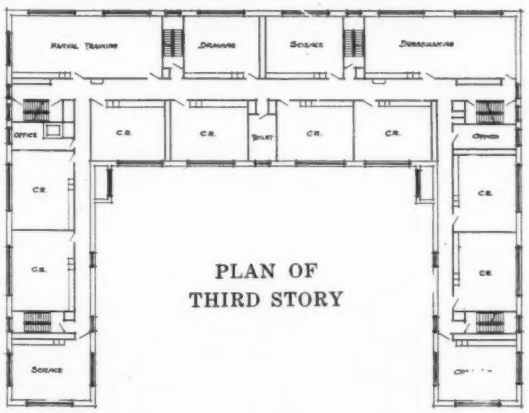
The usual type of unit classroom planning has been adhered to, so that the omission of partitions will provide space for shop or other activities as required, without interference with heating and ventilating flues.



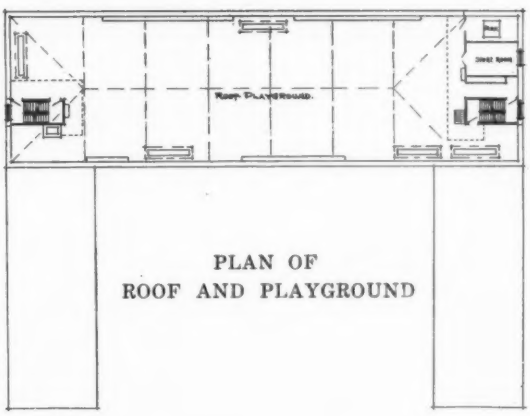
PLAN OF BASEMENT



PLAN OF FOURTH STORY



PLAN OF THIRD STORY



PLAN OF ROOF AND PLAYGROUND

It is believed that the requirements of the present Building Code of this city represent the extremes as far as stairway and exit facilities are concerned.

These sketches, therefore, provide for four single and two double stairways

from the upper stories down to the street level.

Not only are they important so far as regular stair service may be concerned, but also in a duplicate school, to facilitate the interchange of classes at the fifty-minute intervals.

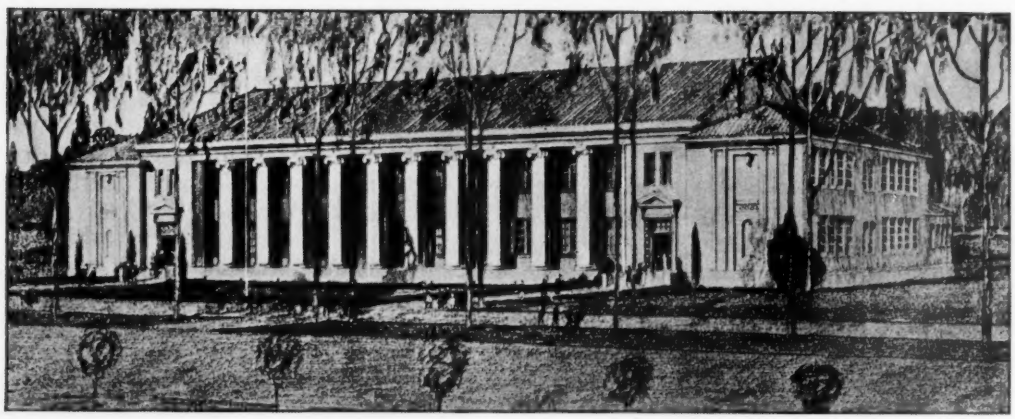
Spacing has been such as to insure this without an undue width of corridors, which are kept clear of all encroachments except, possibly, drinking fountains.

The longitudinal corridor receives outside light at the end, while the transverse corridors are lighted at the sides.

The story beneath the street level will provide not only for heating and ventilating apparatus and coal storage, but also for one swimming pool for the boys and another for the girls, each with locker and shower rooms.

There is space for lockers or wardrobes to receive the clothing, if necessary, of those pupils who may be engaged in certain activities in the basement or first story.

There is also about two thousand square feet of space which will be assigned to a shop, as may be selected, more especially one of a character such as sheet metal work, which is apt to prove annoying (because of noise) if placed in the upper part of a building.



GRAMMAR SCHOOL, COLTON, CAL.

MESSRS. ALLISON & ALLISON, *ARCHITECTS*

SALTONSTALL SCHOOL, SALEM, MASS.*

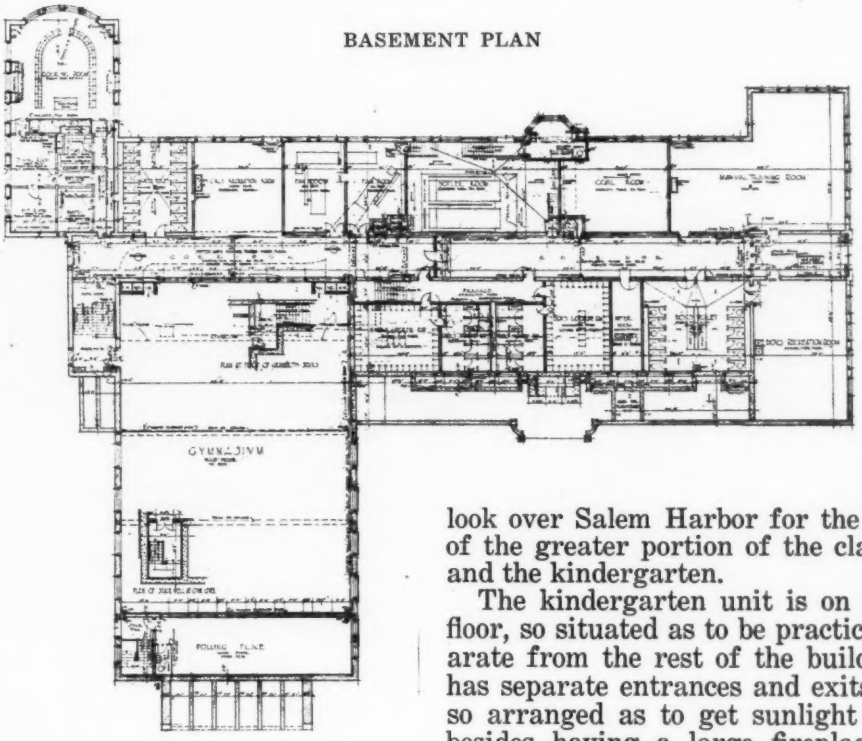
MR. JAMES E. MCLAUGHLIN, *Architect*

THE lot on which the building stands has a narrow frontage facing west on a principal thoroughfare; while toward the rear it falls gradually to the waters of Salem Harbor. To best meet the conditions of the site, the building was placed well back from the street to avoid the noise of traffic, and the auditorium was so located as to extend well out toward the front of the lot, making it thereby easily accessible both for the school and for the use of the general public. The depth of lot permitted space for a playground in the rear, which meets the needs of the neighborhood, and will also be used as an outdoor gymnasium for the school.

The entrance to the school building is through an entrance lobby of Colonial design. The master's room opens off the main corridor which leads from the lobby and is centrally placed for the convenience of the public.

It will be noticed that the classrooms are larger than the standard size prevailing in Boston, and were made so to admit of more liberal spacing of desks and wider aisles. Advantage is taken of the sunny exposure at the rear and the outlook over Salem Harbor for the location of the greater portion of the classrooms and the kindergarten.

BASEMENT PLAN



The kindergarten unit is on the first floor, so situated as to be practically separate from the rest of the building. It has separate entrances and exits, and is so arranged as to get sunlight all day, besides having a large fireplace which will give added cheerfulness on dull days.

The basement, which is above ground on the rear, contains the domestic science rooms and the manual training rooms. In the domestic science unit, a small housekeeping suite is provided for the training of pupils and is completely equipped with modern furniture. The manual training room is fitted with the usual work benches and tools.

A small lecture room, marked "Library" on the plan, is placed on the second floor and will be used for public func-

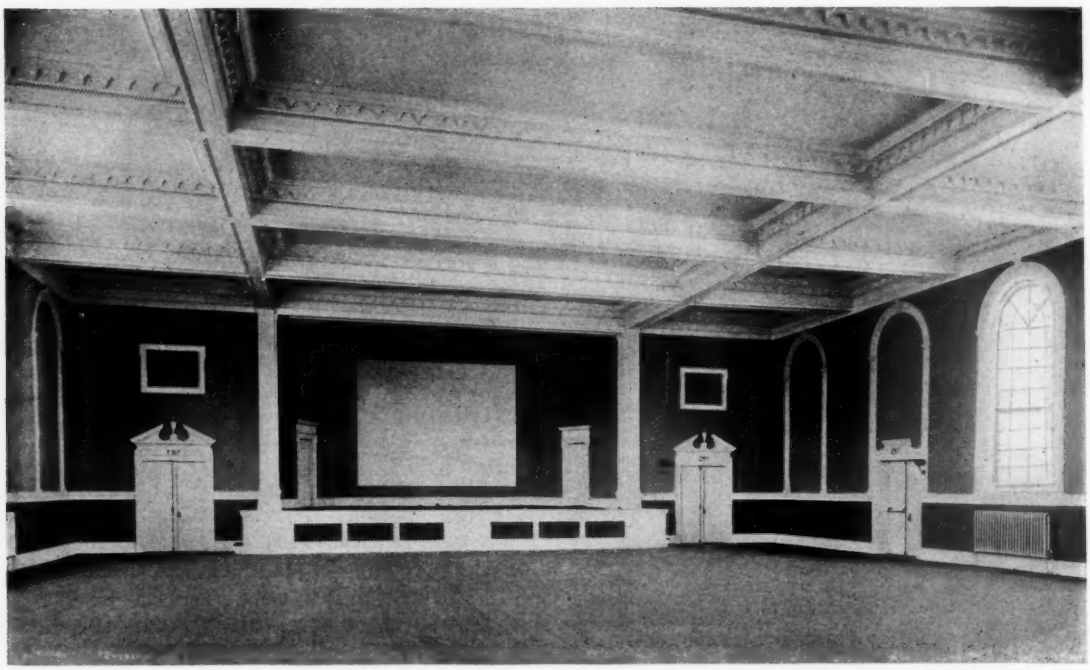
*For additional illustrations of this school, see plate section.

tions as well as by the school. This room is a replica of a drawing room of an early Colonial mansion of note, and is provided with curtain and lantern for illustrated lectures.

Much thought was given to the type of construction used owing to the disastrous fire which devastated the locality in which the school is situated, and after careful consideration second-class construction was adopted with a system of automatic sprinklers throughout. The stairways, however, are fireproof and enclosed in brick walls. The auditorium is also separated from the school building by fire walls and the door openings are protected with automatic fire doors. In covering the building with insurance, an unusually low rate was obtained owing to the protection afforded.

The exterior of red water-struck brick, laid with an English bond, with limestone trimmings, harmonizes in its quiet Classicism with the Colonial architecture which is characteristic of Salem.

In designing the heating equipment of the building, the mechanical system of ventilation was used on account of the size of the building, and was divided into two parts, the hall and gymnasium being on a separate system from that of the school proper. The heat is furnished to all rooms through the blower fans at 70 deg., and direct radiation in all rooms furnishes the extra heat necessary in cold weather. All direct radiation, as well as the blower system, is under automatic control and requires no attention on the part of the teachers beyond setting the dials at the required heat for each room.



AUDITORIUM

The entire artifical lighting of the building is by electricity, direct light only being used, and is the most up-to-date system in schoolhouse work. In the auditorium the stage is equipped with both footlights and border lights, and has a permanent plaster screen at the rear of the stage for moving pictures, the hall being equipped with a three-machine booth at the balcony end. The lights in the gymnasium are set close to the corners of the beams, are covered with wire

grilles, give a soft diffused light over the entire floor and offer no obstruction to the playing of basket ball or other games.

Each classroom is equipped with intercommunicating telephone through the principal's office; and with a program clock controlled by a master clock also in the principal's office.

This building, including the cost of furniture and landscape work, cost $175,000, or approximately 17 cents per cubic foot. This figure makes it one of the lowest cost buildings of its type erected in New England.

High School of Commerce, Boston, Mass.

MESSRS. KILHAM & HOPKINS, *Architects*

THE Boston High School of Commerce is constructed of light gray brick with limestone trimmings. It is designed especially for instruction in commercial courses and hence contains no manual training or special vocational departments. On either side of the main entrance on the first floor are a large assembly hall and a gymnasium. The basement contains the locker and shower rooms for the gymnasium, the lunch room and, on the west side which is well above grade, a range of standard-size classrooms. The first and second floors contain in addition to the gymnasium and assembly hall additional classrooms and also a library, while the third story is devoted to the physical and chemical laboratories, the bank and various lecture halls. The building is of fireproof construction and cost about $475,000.

Laurel Hill Avenue Grammar School, City of Providence, R. I.

MESSRS. CLARKE & HOWE, *Architects*

THE building is of fireproof construction throughout except that doors, window sash and interior trim, and also the finish floors in the classrooms, are of wood. The outside walls are of red brick with terra cotta trimmings. The floor construction is a combination of tile and reinforced concrete; the partitions are of terra cotta block. The heating and venting is on the indirect gravity system, supplemented by direct radiation. The main building is three stories high above basement. The assembly hall is two stories high and is lighted by a very large skylight.

The building is so planned that its capacity can be practically doubled by carrying corridor and classrooms around the exposed sides of the assembly hall arranged symmetrically with those already built. When this is done each side elevation will be symmetrical. The basement contains boiler room, shower rooms, toilet rooms, manual training room and large playrooms. The second and third floors are in general duplicates of the first story, although there are domestic science rooms and a library on the third floor.

The cost of the building, including general construction, heating, plumbing and electrical work, was 17 8/10 cents per cubic foot.

Waters Avenue School, Savannah, Ga.

MR. J. DEBRUYN KOPS, *Architect*

FOUNDATION is of concrete, and the walls and partitions are of red brick.

Steps (exterior) are of granite, and all other stone moldings and panels are of Indiana limestone.

Roof is of slate, variegated in color from green to purple, with the purple predominating. Cornice is of copper.

The floor of the children's toilets, which are in the basement, is of cement, the teachers' toilet rooms and the janitors' closet have tile floors, and all of the other floors are of rift pine. A cove connects all floors with the baseboard, and eliminates the angle.

The boiler room is made fireproof with metal window sash and frames, tin-clad doors, and a reinforced concrete slab for a ceiling, which is supported by steel beams encased in concrete.

A vacuum cleaner is in the basement with numerous hose outlets and pilot

lights, to tell when the machine is running, on the floors above.

All partitions and walls are furred and plastered, sand-finished and so far have been left in their natural color. All angles are coved. The walls of the corridors have a wainscot band at a height of about four and one-half feet and all below that are plastered with cement, smooth finish.

All doors open outward and are provided with a special lock which permits them to be opened by the knob at all times from the inside, even after being locked by the key from the outside. All the exterior doors are fitted with panic exit fixtures.

The interior woodwork is stained a medium dark, soft reddish brown and is varnished and rubbed to a velvety finish. All exterior woodwork is finished in "verde antique."

The ceilings on both floors are 13 ft. in height. Picture moldings and slate blackboards are placed in all rooms.

Beaux Arts Institute of Design

IT is under this title, and incorporated under the Board of Regents of the State of New York, as a school to teach design in architecture and also sculpture and mural painting in their relation to architecture, that the educational work hitherto conducted by the Society of Beaux Arts Architects will henceforth be known, this society having voluntarily surrendered the educational privileges of its own charter so that a new institution, controlled, however, by the same principals and persons which had carried on its former school work, might extend itself into fields broader than those proper to a purely architectural association.

The Society of Beaux Arts Architects has deeded over to the Beaux Arts Institute of Design its building at 126 East 75th Street, and the latter institution opened its courses on September 18th. They will be identical with those hitherto conducted there by the Society of Beaux Arts Architects.

The department of architecture has associated with itself a committee of the Society of Beaux Arts Architects; that of sculpture with one of the National Sculpture Society, and that of mural painting with one of the Society of Mural Painters for teaching these three branches of art.

Circulars of information for these courses may be obtained by writing to the Beaux Arts Institute of Design, 126 East 75th Street.

INDUSTRIAL INFORMATION

Grinnell Automatic Sprinklers

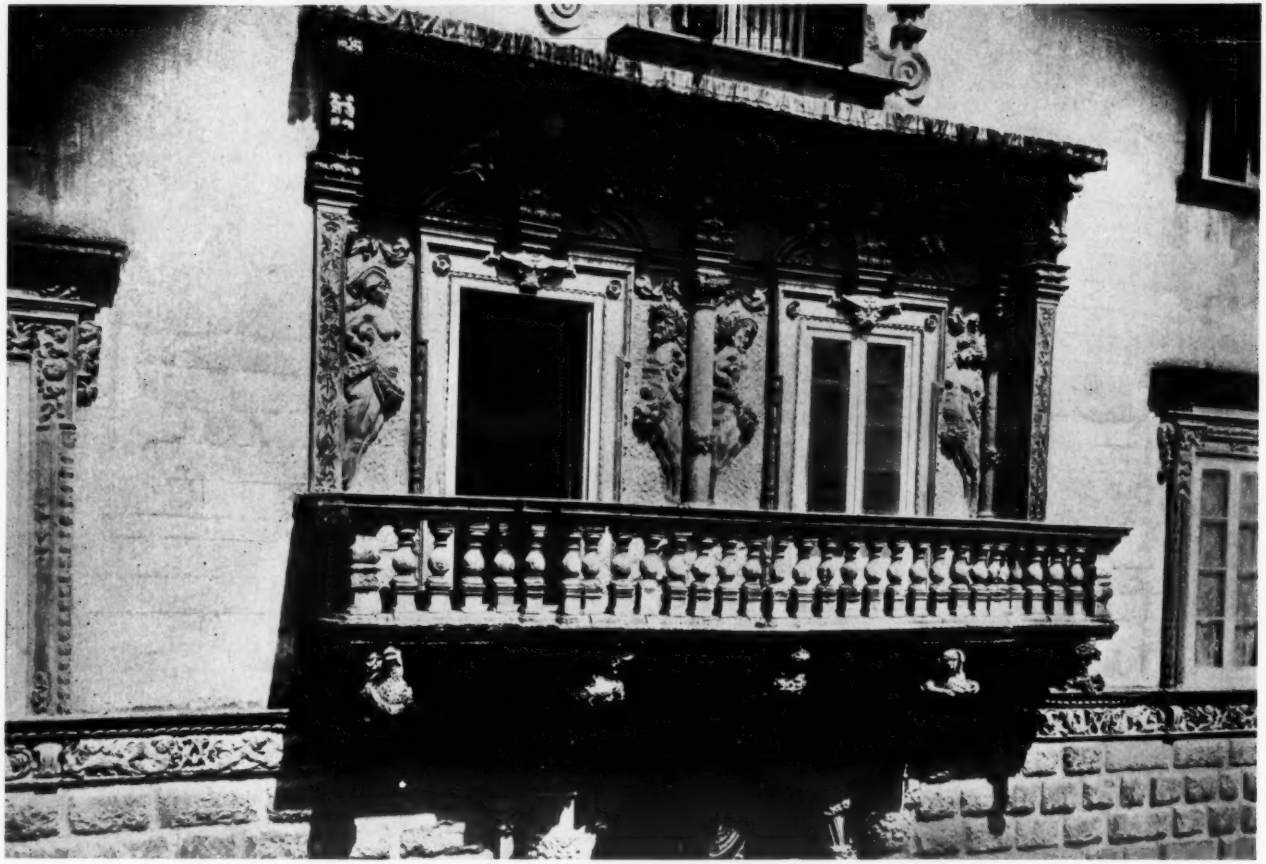
Grinnell Automatic Sprinkler Bulletin No. 83 is devoted to a number of articles which can scarcely fail to be of interest to architects. Among them is one concerning the fatal Peabody fire, which is termed an inevitable climax to the senseless burning of school properties. The article is illustrated by photographs taken after the fire, and emphasis is laid on the fact that in all probability an automatic sprinkler equipment would have prevented this disaster as it has innumerable others.

The bulletin contains a great deal of information on the subject of fire protection which should be in the possession of architects generally. Copy will be sent upon request.

Office and School Furniture

Illinois School Furniture Company, Rockford, Ill., has issued an attractive catalog of office and school furniture manufactured by that concern. This includes office desks and tables, bookcases, teachers' desks and pupils' desks of various types. In addition there are shown illustrations of miscellaneous furniture, including map cases, dictionary holders, and chairs suitable for either teachers' or office purposes.

Any special furniture for school or commercial use will be manufactured as required. This catalog is issued to dealers and jobbers of the United States and Canada. It is not intended to replace past and present issues of this company's customers in their respective territories.



BALCONY, PALAZZO FRAGIANNI-LAMARRA, BARLETTA, ITALY (17TH CENTURY)