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# SCHOOL ARCHITECTURE IN CALIFORNIA



D+S



*California, Dept. of Public Instruction*  
**School Architecture**  
**in California**

Issued by  
The Superintendent of Public Instruction  
Sacramento, Cal.

CALIFORNIA  
STATE PRINTING OFFICE  
1914



Santa Paula Grammar School. A practical adaptation of the old Spanish colonial architecture.



Santa Paula Grammar School. Eight rooms about a simple court.



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## INTRODUCTORY.

*To the School People of California:*

Five years ago we sent you the first handbook on school architecture ever issued by the State. It was introduced by this sentiment:

"It is almost as cheap to build a beautiful schoolhouse as an ugly one, when we know how. California, like old Greece, is a land of beautiful things. Sun and sea and mountains, streams and trees and flowers conspire to make it a place inspiring to the painter, the poet, the musician, and delightful as a dwelling place for man. This attractiveness and beauty are practical assets of priceless value to the State. We who live here now should give to our landscapes tasteful and harmonious schoolhouses, not dreary shanties surrounded by slovenly barnyards. Our schools, reflecting the public spirit, should be handsome and prosperous, and must not teach slatternly lessons of unthrift to the little boys and girls who are coming on. Here is our Opportunity to touch and to improve the long procession of the future."

This handbook made its mark upon the State. Schoolhouses are better lighted because of it and school grounds are of larger size. It created public interest in the school plant. There are constant calls made for it long after the supply is exhausted, and it seems desirable to have something of the kind on hand constantly for sending out to inquiring school officers.

It is not possible to prepare and publish exact plans and specifications ready to use in every particular place. Only broad types and general ideas of buildings can be treated in this way. The specific structure for the particular district must be worked out by the local people on the ground, suited to local conditions.

The plan of this second booklet is to show in a graphic way some excellent examples of the different types of school buildings that are being constructed to-day in California, so as to build up in the minds of the people a distinct ideal of what modern schoolhouses ought to be. The pictures and plans have been chosen from the whole State by a jury of competent and well-known school architects, who have given their work for the good of the cause. I hope the volume will be studied by those who are concerned in building our schools, and that its tendency may be toward better conditions for the boys and girls and finer landscapes for the Golden State.

EDWARD HYATT,  
Superintendent Public Instruction.



Old school in Mendocino County before remodeling.



Remodeled Mill Creek School in Mendocino County, showing what can be done in many country districts.

## FOREWORD.

On the evening of June 17, 1913, the Jury of Architects appointed by the Superintendent of Public Instruction, met at the San Francisco Architectural Club where the photographs and drawings of California schools submitted for publication had been displayed.

The following architects were present :

Lewis P. Hobart of San Francisco.

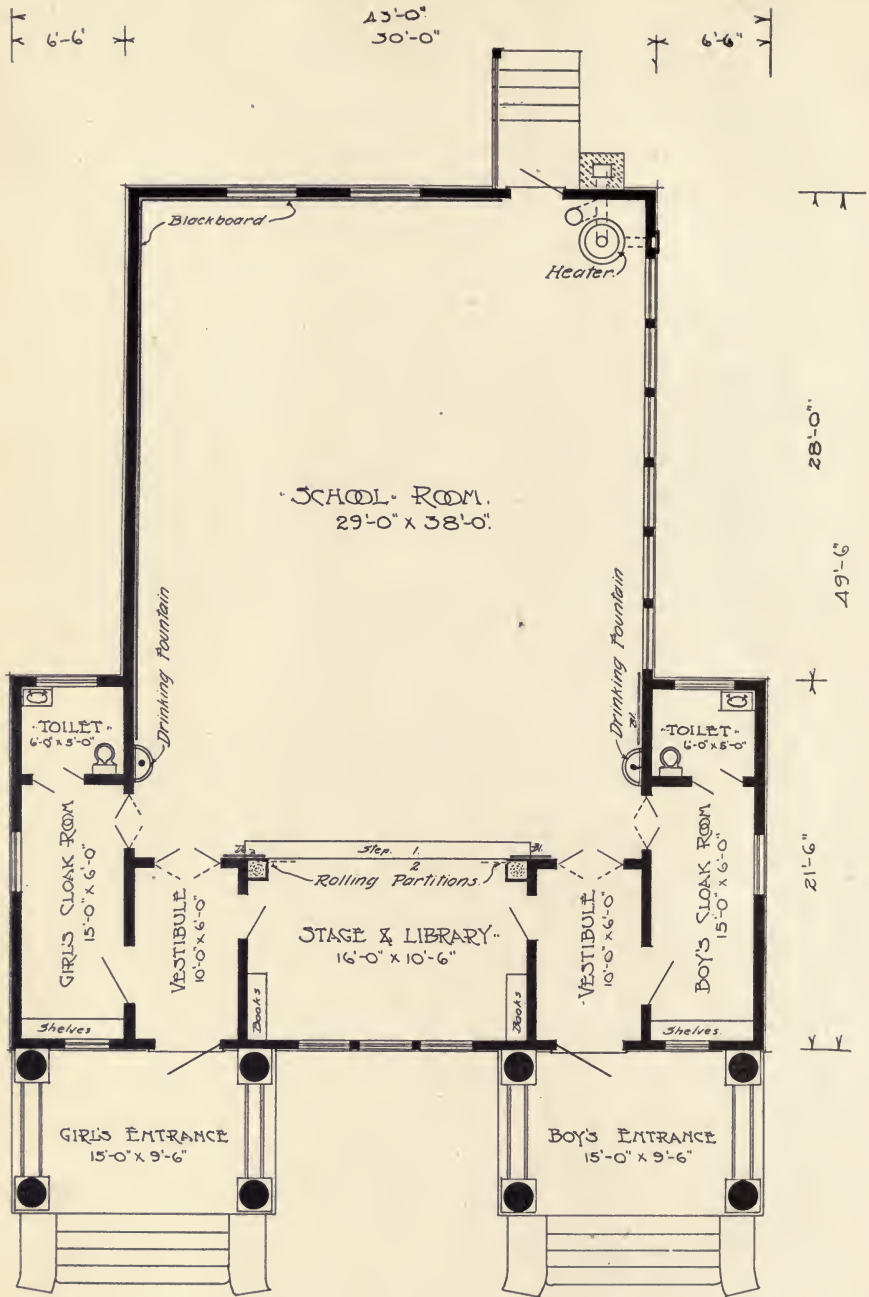
Chas. S. Kaiser of Sacramento.

John W. Woollett, State Architect.

J. J. Donovan of Oakland.

C. H. Cheney of San Francisco.

Some four hundred photographs, drawings and blue prints were received, and of this number the Jury selected about thirty-five as advantageous for publication.



- FLOOR PLAN -  
SCALE - 1/4 IN. = 1 FT

A simple one-room country school.



# SCHOOL ARCHITECTURE.

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## REPORT OF THE JURY OF ARCHITECTS.

By CHARLES HENRY CHENEY, Secretary.

When in 1909 the Superintendent of Public Instruction sent out a request to the city and county superintendents throughout California for examples of the best school architecture in their districts, there was a prompt and hearty response, productive of a very large number of school drawings and schemes. These were later published under the title of "School Architecture in California."

However, while there was a great demand for this pamphlet and the buildings embodied therein certainly did much to stimulate a further interest in school building, it was obvious that by getting out a new volume there might be a great opportunity to improve the standards and character of school architecture, if the architects of the State would co-operate in advising the best schools to be published and thus draw them to the attention of boards of trustees and school people generally.

An advisory committee of architects was therefore appointed from different parts of the State to act as a Jury to pass on all designs and plans submitted. It was understood at the outset that only such designs as this Jury professionally advised would be printed in the report.

### The Basis of the Judgment.

As the object of this publication was to draw attention only to the better school architecture, it was decided that of the plans submitted only those which were sure to set a standard for the school boards of the State should be considered. Thus the question immediately arose as to what is the chief problem of school architecture in California and how best to direct attention towards its proper solution.

During the school year 1912-13 there was set aside and expended in this State for new buildings the sum of \$7,372,215.18. This was distributed over kindergartens, elementary schools, high schools, and normal schools. Hence, the importance to the State of obtaining not alone the highest practical results, but also the best designs and architecture.

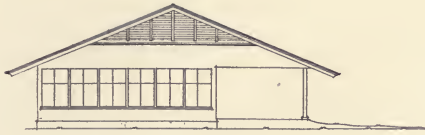
If so many buildings at such great cost are set up annually as an object lesson to all the younger generation, is it not absolutely essential that they should advance the highest and noblest ideas possible, that they should form a nucleus for the patriotic sentiments of their respective communities? Should they not help to attract the incoming population which most of this State is so anxious to have?



Open-air classroom at Pasadena. Note simplicity and freedom.



Another view of open-air classroom at Pasadena.



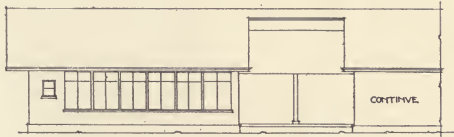
SOUTH ELEVATION



SECTION THRU CLASS ROOM  
LOOKING NORTH

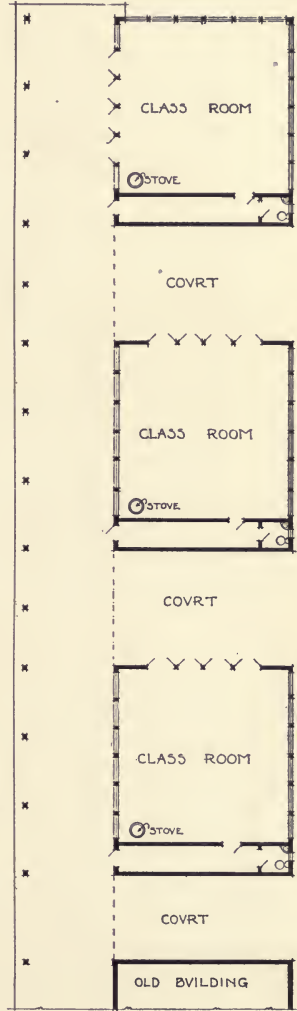


SECTION THRU COVRT  
LOOKING NORTH



PART OF WEST ELEVATION

POLYTECHNIC ELEMENTARY SCHOOL  
OVT OF DOOR CLASS ROOM  
PASADENA CALIFORNIA

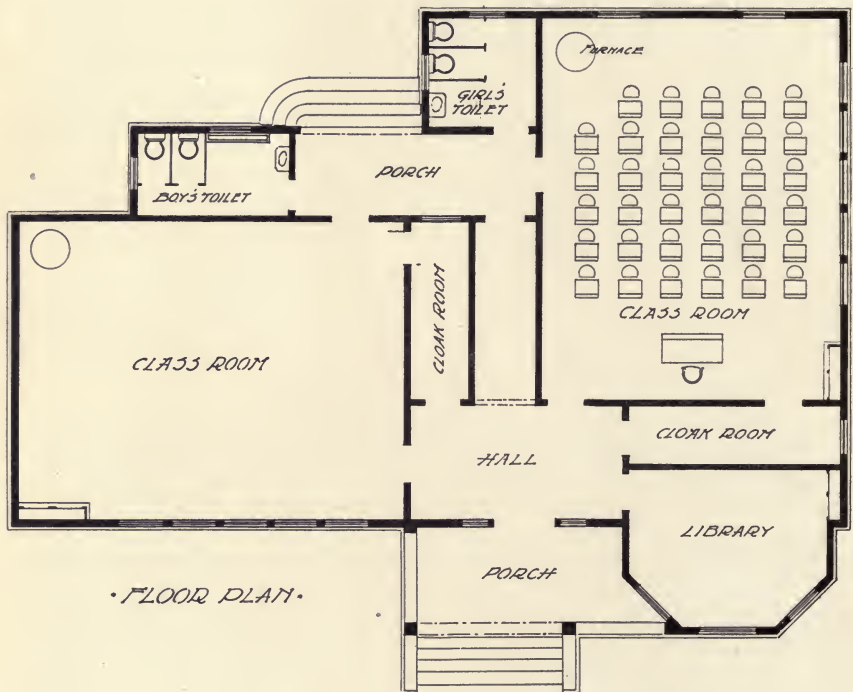


Open-air classroom unit from Pasadena, valuable for simplicity and economy.

### Place Good Buildings Where They Can Be Seen.

The placing of fine schools or other public buildings to block the end of a street receives much attention in other countries. America is just beginning to take cognizance of this idea, owing to the checkerboard plan with which our cities are generally afflicted.

Good architecture is one of the strongest of favorable impressions that any municipality can make on its visitors, and if buildings can be so placed as to call attention to the fact that the taxpayers' money is well spent, the prestige and civic pride of the city can be greatly enhanced.



Two-room country school.

The featuring of fine schools or other public buildings stopping the vistas of long streets forms a distinct relief to the monotony of the checkerboard plan.

This is a matter to be kept in mind by school boards in selecting future sites. It is in no way necessary, however, that school buildings be made monuments of architecture. Most attempts in this direction have impaired the value of the buildings as schools, as well as giving a false face to their function. In fact, it is unfortunately true that the lighting and efficiency of many buildings in this State are completely spoiled by attempts of this kind to make a big show.



### The Plan and the Exterior Design.

School architecture is a special problem. The practical requirements are many and diverse and the solution of the planning problem alone requires an experienced and well trained architect. While California in most parts of the State does not present the rigorous climatic conditions of the Eastern States, the problems of school design are nevertheless very much the same throughout the country.

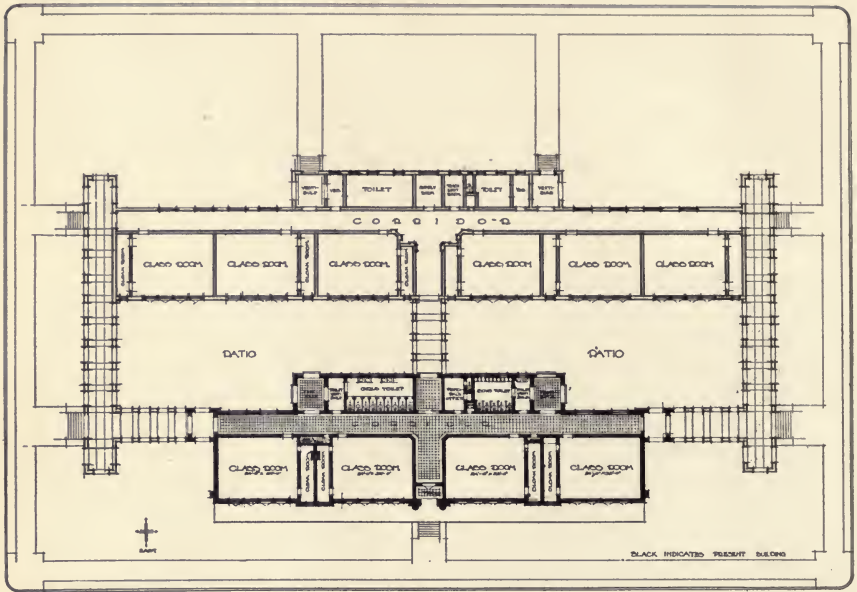
There are two distinct sides to the architect's problem: planning, and the design of the exterior and interior. While from the practical stand-



Front and rear views Grant and Jefferson four-room Grammar School at San Diego.

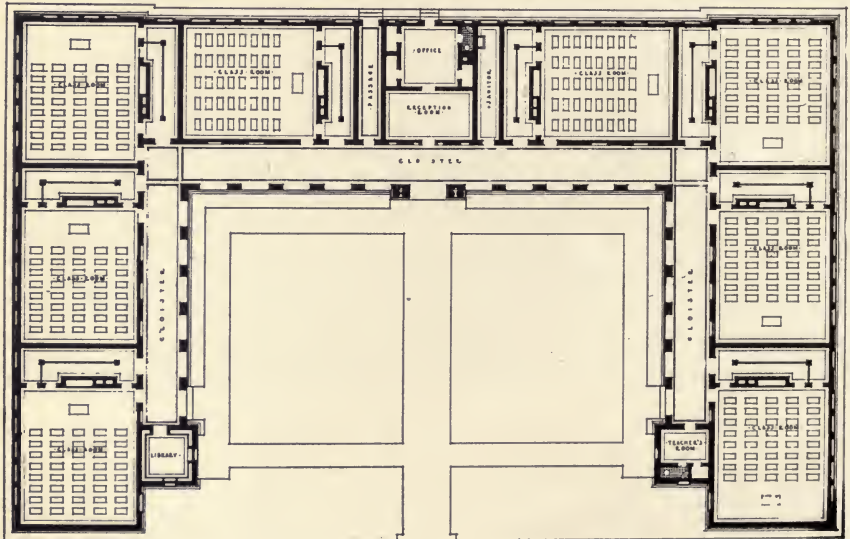
point the plan has the preponderance of importance, the problem of obtaining an attractive and dignified building is also of final consequence to every school board.

It requires more than a good carpenter or contractor to obtain either of these results, yet it is unfortunately true that in the interior and country communities it is very difficult to obtain a well trained architect to



Floor plan of Grant and Jefferson School at San Diego.

Scale 1/8" = 1'-0"



Grammar School at Santa Paula. See frontispiece for elevation.

undertake the work. While it may also be true that local pride might favor a local design, such preference is very liable to be the undoing of school boards.

#### **Good Architecture a Matter of Evolution.**

Is it right for local boards to work for anything but the highest results in buildings which are to determine the future efficiency and health of the generation? Should they not have at their command the best sources of information possible and be cognizant of the latest development in school architecture? Should public money be spent for anything but the finest buildings possible? Good results in architecture are largely a matter of evolution, of study, with a knowledge of the previous forward steps in design.

It is evident that if the foremost examples of each type of school building in these United States could be distributed to each member of every board of trustees in California, they could then go on improving and making over until we had built up a school architecture founded upon the best that is in existence.

#### **The School Site.**

With this in mind, it is easier to undertake the school problem. First to be considered are the requirements for the study of a school plan. What is the orientation, the approach, the size and drainage of the site? The number of classrooms, special rooms and their relation one to another? How much playground space is necessary? The amount of preliminary study put on these points largely determines the value of the solution.

The first problem, the size of the site, is a matter which is undergoing a tremendous change for the better in this State at the present time. The great value of organized play and the increasing interest in the opening of school buildings to the larger community for use after school hours, has led to the now generally adopted idea that every school should have ten or twelve acres of ground if possible. While the congested conditions in some cities make this impracticable in many cases, it is still significant to see municipalities as large as Los Angeles and Oakland purchasing such sites.

The orientation or placing of school buildings with relation to the points of the compass is an exceedingly important matter. A site where the general directions of enclosing streets are at an angle with the north and south is greatly preferable in that it admits the sunlight at some time of the day to the most of the rooms of the building. The beneficent effect of sunshine as a germ destroyer can not be denied and must be sought wherever possible. High ground, that is ground sloping off from the building site, is equally important from the sanitation standpoint.





A one-story example in brick. Artesia Grammar School.



Detail of Artesia Grammar School.



### **The New One-Story Multiple Unit School Building.**

As the sites grow more ample there is no question but that school buildings all on one floor are greatly to be desired. For hygienic reasons the girl students at least should not be subjected to too frequent climbing of stairs. The added danger of panic in the case of fire or earthquake has made the tendency all in the direction of one-story buildings.

The satisfactory new multiple unit building has also the advantage that if only part of the classrooms are built at first additional rooms can be added comfortably and conveniently as they are required, without ruining the appearance of the building until the maximum advisable under one principal (generally twenty-four classrooms) has been reached. The present movement for open air classrooms can also be easily handled by having the window side of the room entirely removable. Some very good examples of the one-story type were submitted and are published herein.

### **The Typical Classroom.**

In studying out a plan, the chief problem is to so simplify the requirements as to get their proper relation one to another. For instance, the size and arrangement of a typical schoolroom has been studied upon for years and in the Oakland investigation of 1912 the amount of data collected on this subject led the authorities there to as final a conclusion as has been made on this subject anywhere in the United States. Yet it was evident at the present exhibition at the first glance that nine out of ten of the school designers represented seemed absolutely unfamiliar with the findings so close at hand.

Briefly, the best typical schoolroom would have all the light on one side of the room, the window area of glass being approximately twenty-five per cent of the floor area, with the one entrance door near the teacher's desk. The wardrobe should have two doors opening out of the classroom, one on each side of the teacher, but with no doors entering into the hallway. It should make room for a maximum of forty pupils' desks.

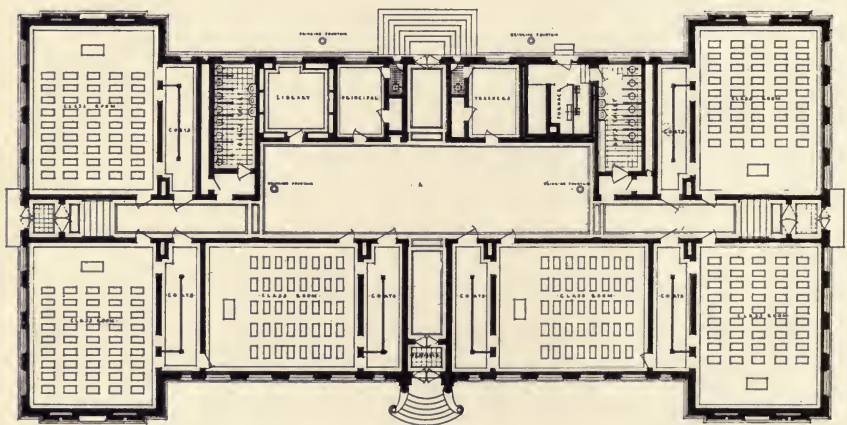
Having settled upon a classroom unit the grouping of these units about the central vestibule and assembly hall, together with the arrangement of other special rooms, the principal's office, teacher's room and music, manual training, domestic science rooms, etc. (if they are to be included), is the next problem.

### **Special Rooms Other Than Classrooms.**

The determination of the special rooms required, other than classrooms, is a matter now provoking much important discussion. The assembly room with its moving picture apparatus and other fittings is being included in most of the new buildings in Oakland and Los Angeles,



Rear view of eight-room Grammar School at Artesia.



Main floor plan of Grammar School at Artesia.

and it is generally considered by educators a necessary and very useful adjunct to every school building. Placed where it can be cut off from the rest of the building for use in the evening, it can be of great service to the community both for educational and entertainment purposes.

A community club room to be used also as a branch public library or a possible voting booth, is another recent improvement widely accepted. Principal's and teachers' rooms and the arrangement for gymnasias for boys and girls, preferably in adjoining wings, form the basis for many neat adjustments in making a good plan. Toilets must be conveniently placed with respect to each group of classrooms and the classrooms arranged with corridors on the side opposite the lighting and in such a way as to make a short and convenient communication between the different parts.

The discussions of the Jury finally led to the other members unanimously requesting Mr. J. J. Donovan of Oakland to submit a brief outline of the work being done there for publication with this report.

With these points adjusted the question of design of the exterior should become a simple expression of the arrangements within.

#### **The Buildings Selected for Publication.**

The above outline of building requirements was briefly the basis upon which the architects of the Jury acted in considering the buildings to be offered as examples of the best school architecture in the State. While there is no question that a splendid lot of buildings were selected, many of them fell short in one particular or other. However, the Jury was much delighted at the sum total of really good buildings that have already been constructed in California and unanimously expressed the opinion that this State has a decidedly beautiful and advanced trend to its school architecture.

In considering the different classes of buildings the Jury was immediately impressed by the very small number of country schools of any kind submitted, although by actual count the district schools of the State greatly exceed all others in number.

The Jury was asked by Mr. Hyatt to freely criticize the drawings to be published, with the understanding that whatever was said would be accepted for the good of the cause. The points where the designs selected could be improved upon are therefore frankly gone into in this report with the hope that the architects concerned will accept the criticism in good faith and understand that the Jury were unanimous in the selection of each drawing as representative of the best type of school building in California.

In hanging the drawings the buildings were grouped into seven types, according to the announcement sent out, and the Jury appointed was careful to select the best examples presented in each class. However,





Beautiful rambling wooden High School building at Nordhoff.



Wild Rose Grammar School at Monrovia. Good handling of a two-story building.



there was sometimes more than one building in each group that seemed worthy of having attention directed to it, and in some cases several examples have been published.

#### **One-Room Buildings.**

The problem of the one-room school is a good deal more difficult to handle than may be supposed. If reduced to its first elements, it is almost an axiom of school building that the best light is obtained from one side of the room. Most of the mistakes seen in our rural school-houses would immediately be eliminated if this were adhered to, but unfortunately the fact that the one-room school usually has three exposed sides seems to offer great temptations to architects to use them all for lighting, causing bad cross lights and generally bad cross draughts. The problem of the entrances is really small in comparison.

A one-room school from Visalia showed an interesting plan, with many admirable features. The opening of the cloakrooms into the vestibule was criticized as not being controllable from the teacher's desk and the monumental entrance porches deprecated.

The remodeled district school of Mill Creek, Mendocino County, provoked much comment upon its neat character, considering what had been done with the old building.

The simple open air classroom unit from Pasadena is valuable both for its simplicity and dignity, also for its clear-cut and economical arrangement. Here, again, the Jury preferred the opening of the cloakroom into the classroom only. The question of cross light was brought up, but was thought to be properly handled. On the whole the design is highly complimented and attention is directed to this successful solution of the problem.

#### **Two-Room Buildings.**

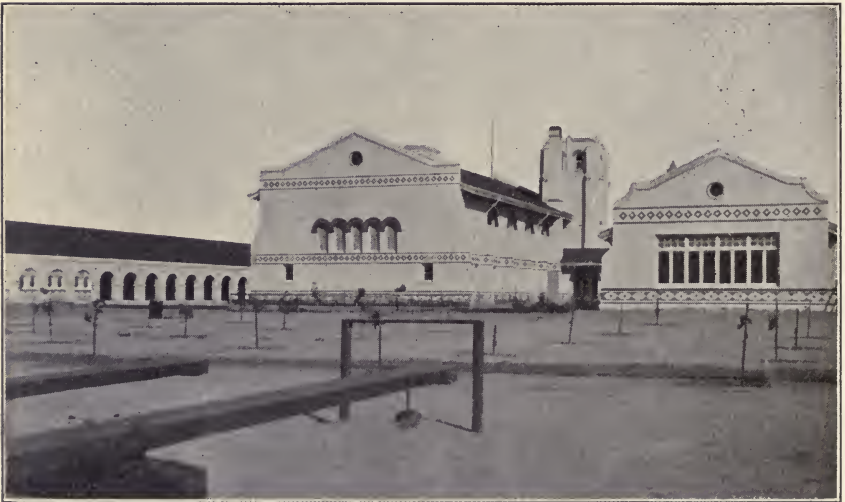
The two-room plan published was found by the Jury to have the same suggestion as to cloakrooms and generally as to the number of outside doors to the classrooms. The Jury was practically unanimous in agreeing with the recent findings of the Oakland School Building Commission that it is best to have one outside door only to each classroom, and that as near to the teacher's desk as possible in order that she may have absolute control of the children.

#### **Four-Room School Buildings.**

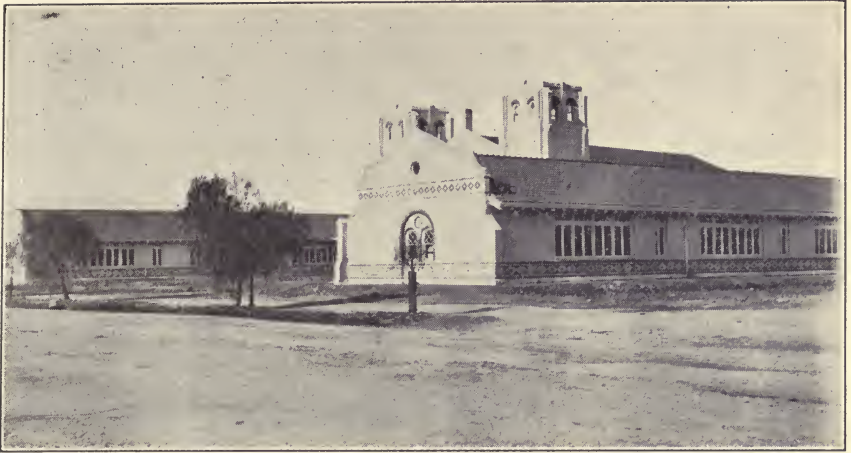
The Grant and Jefferson School of San Diego furnished an admirable example of a simple arrangement for a four-room building. It has the great advantage of being extensible without destroying the architecture of the building. It also has a straightforward plan and is in the appropriate Spanish style, with provision for the addition of another group of rooms in the rear.



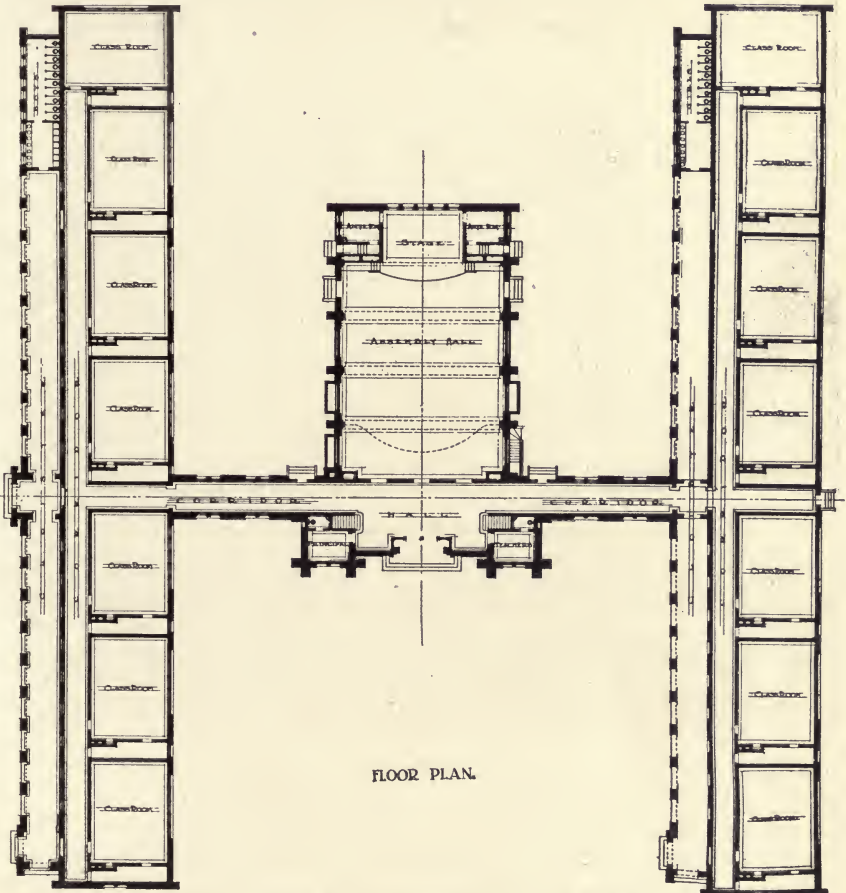
Front view of the Lincoln Grammar School at Madera, a beautiful and commodious building.



Rear view of the Lincoln Grammar School at Madera. Observe the fine effect of design in red bricks against a white background of cement bricks.



Side view of the Lincoln Grammar School at Madera.



FLOOR PLAN.

Floor plan of Lincoln Grammar School at Madera.



**Grammar School Buildings.**

Another impressive example of the Spanish style was found in the Santa Paula Grammar School, which presents eight classrooms arranged as simply as possible about an admirable cloistered court. The Jury again questioned the cloakrooms opening into the passageway, but on the whole found both plan and elevations commendable.

The Artesia Grammar School is a splendid example of good architecture, particularly well studied and pleasing. There has been a good deal of discussion about circular headed windows for classrooms, since the arched opening makes a very undesirable shadow on the ceiling, and hence an uneven reflected light. In this case the overhang of the roof



The Wilmington High School presents a refined and beautiful exterior.

casts a shadow which perhaps relieves this somewhat, but there is no question that the near grouping of square-headed windows as in Santa Paula is more desirable.

An interesting example of a rambling one-story building at Nordhoff was also considered worthy of publication.

The Wild Rose Grammar School of Monrovia presents a simple arrangement of a two-story building and was considered a good handling of this problem, where crowded city conditions make land too scarce to build all upon one floor.

As a grammar school with a group plan and assembly hall, the new Lincoln school of Madera is both interesting and out of the ordinary.



The use of brick patterns on the exterior contrasts with the white surfaces and furnishes a very good example of possibilities of design which have been scarcely attempted in California as yet.



Detail of entrance to the Wilmington High School.

#### High School Buildings.

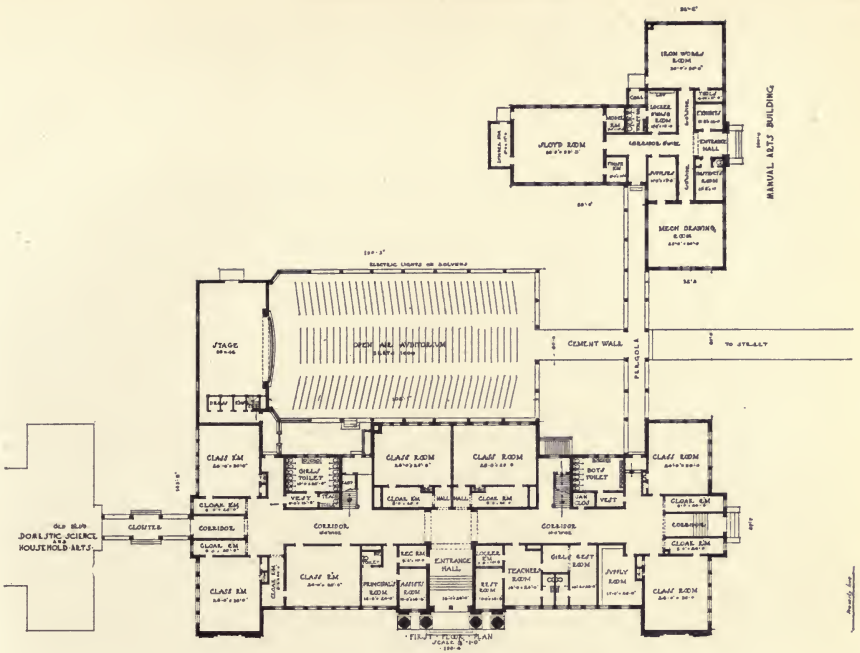
The Wilmington High School, Los Angeles, presents a refined and beautiful exterior and typifies an architecture of the civilization to which California really belongs. The use of brick in school buildings is here



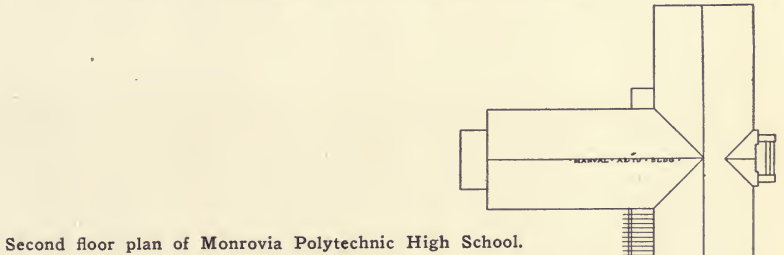
Monrovia Polytechnic High School, showing remarkable open-air auditorium.



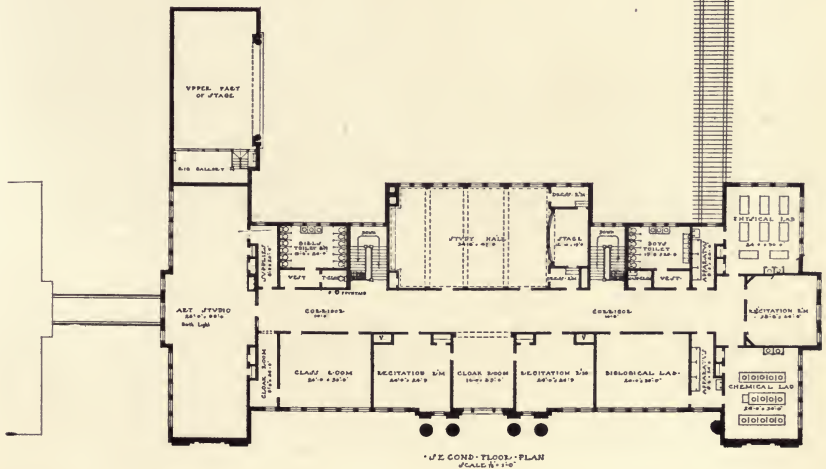
Monrovia Polytechnic High School, showing beautiful cloister between the main building and the Manual Arts Building.



First floor plan of Monrovia Polytechnic High School.



Second floor plan of Monrovia Polytechnic High School.



3RD FLOOR PLAN



carried to an extremely high order of art and inspired the Jury with much hope for the future.

The Princeton Union High School shows the simple handling of the requirements of a small union district.



Santa Monica Polytechnic High School on top of a hill overlooking the sea. Easily foremost in recent development.

#### Polytechnic High Schools.

The Santa Monica group was easily foremost in recent developments of this character shown. The building is particularly well adapted to its site on the top of a hill. The group plan has been well arranged upon the site and with reference to the central building, and the grouping of



Princeton Union High School in Colusa County.

the rooms is well studied and incorporates most of the latest developments in modern school building. The placing of special rooms and the arrangement of the manual arts building also have much to commend them.





Detail of main entrance, Santa Monica Polytechnic High School.

The Monrovia High School also offers a well handled idea in its open air auditorium, which is here reproduced. High school pageants, folk dancing, dramatics, debating and other matters which demand auditorium space are being increasingly turned into the open air. It is very evident that California presents unusual possibilities in this direction, and every opportunity should be encouraged to provide open air theaters.

#### **Normal School Buildings.**

The State Normal School at San Jose presents a striking contrast to most school buildings in this State, and with its enclosed arcaded court and tile roofs presents an exterior which the Jury felt was highly to be commended. The simple arrangement of the plan is noteworthy, with the light all uniformly on the outside of the building and the passageways open to a protected court.

The drawings for the new Los Angeles State Normal School are again different in character and smack of good design. The group plan around an irregular court, ties in very well the related buildings, presenting a campus arrangement on a small scale which at a glance shows the size and importance which these, the real present-day colleges of the country, are fast assuming. The location of the manual arts and kindergarten rooms and dining hall to one side, and the placing of the athletic field and agricultural gardens all show a very happy solution of a difficult problem.

The Santa Barbara School of Manual Arts is a different type which has many requirements common to other schools and the way they have been developed may well be studied.

#### **Recommendations of the Jury.**

The above selections on the whole present surprisingly good examples of school architecture and there is no question that if the types pointed out be followed as a basis for future building, the school system of this State and the cities in which the structures are located will be a great deal better off.

This is, indeed, the earnest hope of every member of the Jury. Every effort was certainly made to give an impartial judgment, the chief regret being that an even larger number of typical buildings were not submitted, particularly from San Francisco and the northern part of the State.

There is no use overlooking the fact that there is little effective guidance of school trustees and school people generally to secure the acceptance of good designs only. With this idea there was passed at the last session of the legislature a concurrent resolution appointing a committee of architects and hold-over senators and assemblymen to draft an effective and comprehensive law, providing for the establishment of a

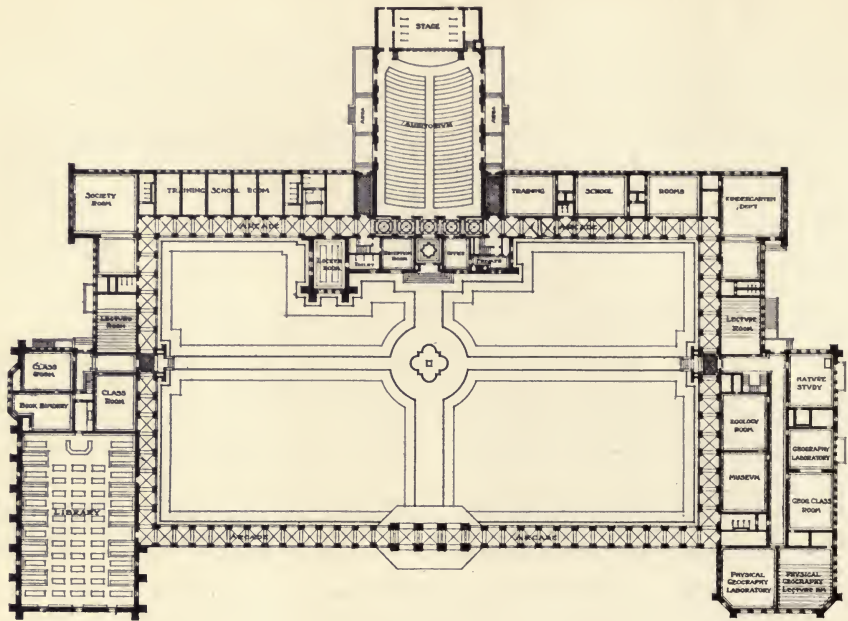


Grand tower of San Jose State Normal School. Cost of building \$250,000.

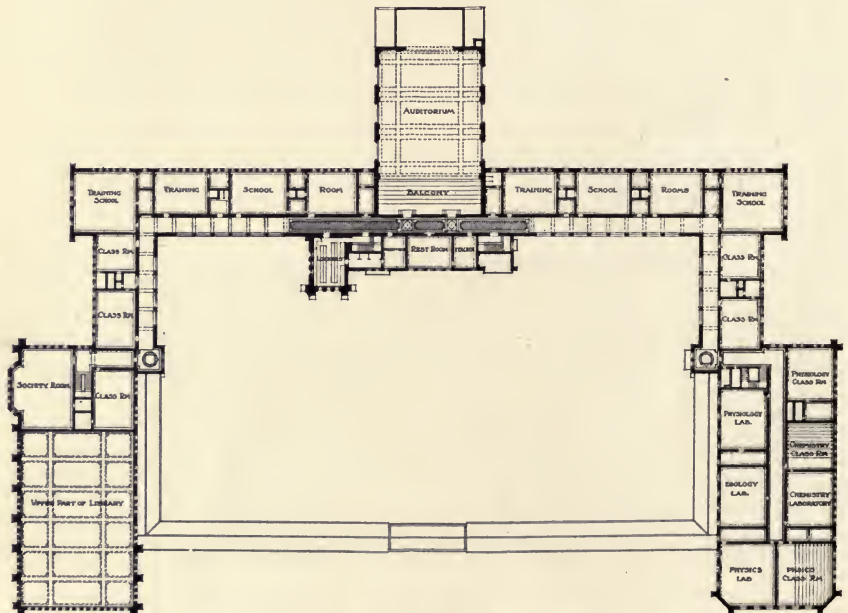


Entrance to the great court of the San Jose State Normal School.





First floor of San Jose State Normal School.



Second floor of San Jose State Normal School.



state art commission, to be reported to the next legislature in 1915 for action. Such a commission now exists in several Eastern States and in the city of New York, where it has been a great success in raising the standard of public buildings generally.

It is proposed that a commission of architects and others versed in matters of art be established to act without pay, to pass upon all school buildings and upon state, county and municipal buildings, with the sole purpose of preventing by veto power the erection of unsightly and poorly designed structures.

While this is somewhat of a new idea in California it certainly is the most effective method yet found to insure expert inspection of our school buildings. Undoubtedly such a commission could do a great deal of good and would meet with the wholesome respect of the community. If men of the highest type agree to give a small part of their time each month, as they are now doing in New York and elsewhere, to the good of their state, there is reason to believe they will prove equally public spirited in California.

While some opposition will undoubtedly be met until the value of such a commission has been demonstrated, it must be remembered that this is not in any sense a new idea in America and that California is no longer a pioneer state. It now stands, particularly in its school system, as nearly the highest exponent of culture and learning in the United States. Our school buildings must needs live up to our school teaching standards and become typical of the greatest advance in school building and school architecture in America, instead of being sadly unsuccessful in design, as in so many cases.

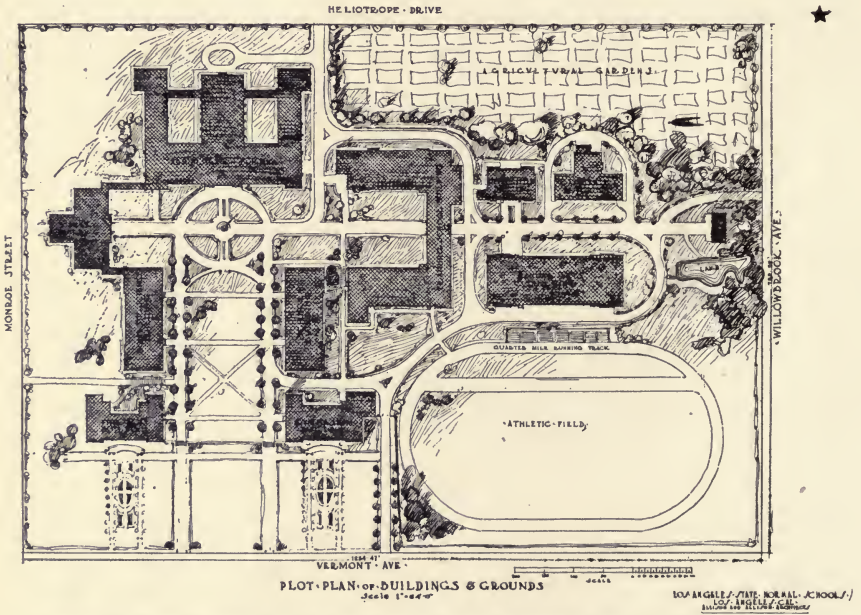
There is every reason why California with its unusual climatic conditions should develop an architecture of as cultivated and distinguished a type as any old world country. Such a development must be a steady progress in design—the sifting and holding up to public notice of the best buildings, and the discouragement and elimination of poor ones.

It is sincerely to be hoped that the next legislature will provide for such a state art commission and that capable men be appointed to it with ample powers and tact to make its judgments secure a real advance in the standards of school architecture.

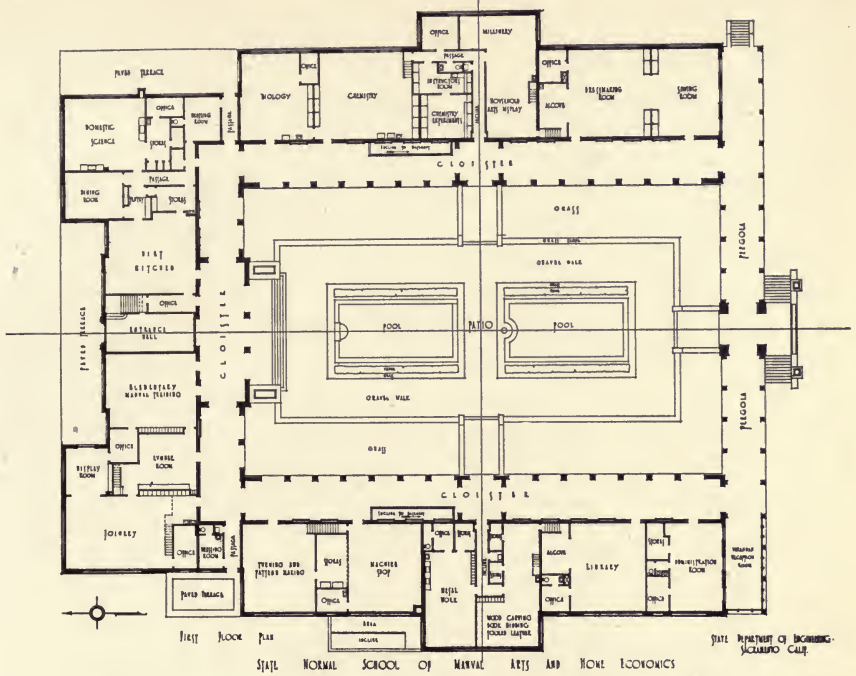
In closing this report the Jury unanimously expressed the conviction that such an inspection of the progress in school building as has been attempted herein, if repeated annually for the next decade, might be productive of a concentration of thought in the State along the right lines, until California had indeed developed a demand for real architecture, and would not permit the perpetration of anything else.



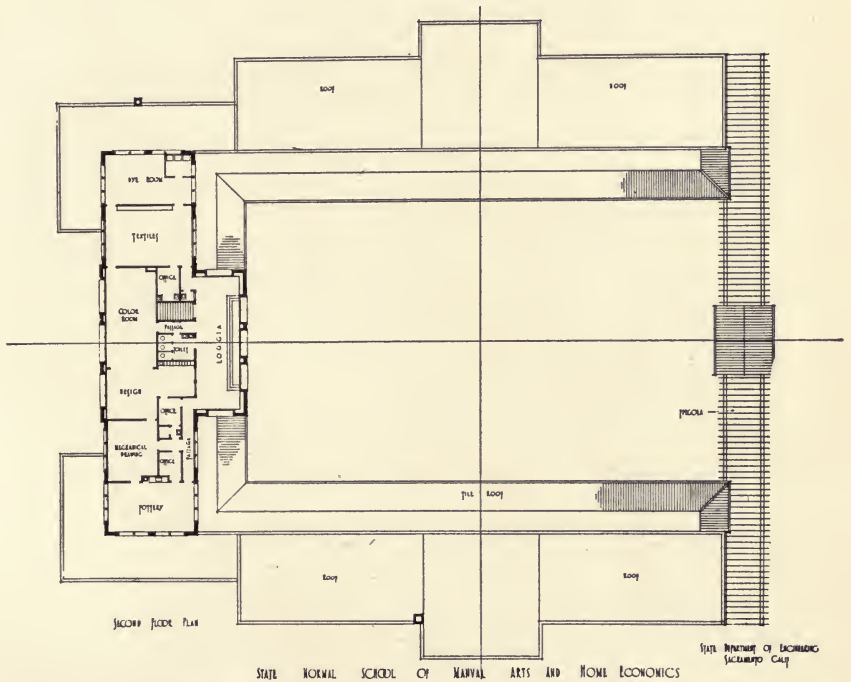
Main court of Los Angeles State Normal School.



Buildings and grounds of the Los Angeles State Normal School. Twenty-two acres of land. Cost of buildings \$600,000.



First floor Santa Barbara State Normal School. Cost of building \$125,000.



Second floor of Santa Barbara State Normal School.

It may be well next year, and in succeeding years, to select and publish, first, plans of the best new buildings of the year, and secondly, plans of the best of the old buildings which the progress of the year still holds worthy to be taken as examples, adding thereto such buildings as had been overlooked in previous reports and eliminating those displaced in standard by the new buildings. There would then be a sort of progressive competition leading to a definite indication of the progress made.

As soon as the community as a whole begins to know and distinguish, there is bound to be a sharp advance in both the demands of school trustees and in the knowledge and the character of design offered by architects themselves.



## NEW SCHOOL BUILDING WORK OF OAKLAND.

By J. J. DONOVAN.

On January 12, 1912, the Board of Education of the city of Oakland appointed an honorary committee to study and consider the needs for the proposed school work which was to involve an expenditure of \$2,000,000. This honorary commission was composed of the following persons:

J. W. McClymonds, City Superintendent, Chairman;  
A. C. Barker, Assistant Superintendent;  
Morris E. Cox, Assistant Superintendent;  
Dr. Leonard P. Ayers, Associate Director Russell Sage Foundation;  
Dr. C. G. Hyde, University of California;  
Dr. D. S. Snedden, Massachusetts Commissioner of Education;  
Mrs. Fred. C. Turner, Oakland;  
John Galen Howard, University of California;  
Dr. Lewis N. Terman, Stanford University;  
Dr. F. B. Dresslar, U. S. Bureau of Education;  
The Supervising Architect.

Dr. Dresslar, Dr. Snedden and Dr. Ayers were to aid the Commission by correspondence. The principal of each school was a member of the commission so far as his own school was concerned.

Some few years ago it was comparatively a simple matter to plan and build a school building to meet the needs of the times, but now, with the demands made upon the school, the task is more complex and difficult.

The active members of the Commission met regularly, and at each meeting vigorous discussions were entered into. Some of the questions were as follows: What rooms, other than regular classrooms, are needed? This brought out considerable discussion, which evolved the Assembly Hall, Neighborhood Club Room, Branch of the Public Library, Principal's Suite, Teachers' Rest Room, Teachers' Lunch Room, and various other rooms, as desirable adjuncts to the modern school.

What rooms could be made to serve more than one purpose?

Give an estimate of floor space needed and the proper proportions of a classroom, in the three grades, namely, Primary, Grammar and High. Give size of other rooms needed, other than regular classrooms.

Provided there are classrooms on either side of the corridor, what should be the width of the corridor?

If classrooms are placed on one side of the corridor, what should be its width?

A question which brought out interesting discussion was: Should the basement floor level be below the outside grade? It was unanimously decided that the basement floor, when used for playroom purposes, should

not be lower than the outside ground level, and it was also unanimously decided that in no case should classrooms be placed below grade level.

The question of gymnasiums indicated fully in the answers that the open air gymnasium was most desired, but just how to accomplish this and have the gymnasium serve its purpose on rainy days was only solved in the preparation of the drawings and careful study of this feature.

Something like 200 other questions were asked, all of which were reported on, some favorably, others unfavorably, but the drawings and the buildings themselves are the best answers to all the questions.

The committee were unanimous on many points, but principally upon these: that the buildings should be constructed of permanent material; that the classrooms be so designed that they could be easily converted into open air rooms without exposing the children to the danger of drafts; that the sanitary and plumbing systems should be most modern; and that the heating and ventilating apparatus should be as perfect as modern heating engineering could devise.

The factor of safety practically determined the materials which were used, and in all cases reinforced concrete or steel frames fireproofed with concrete and curtain walls of brick and architectural terra cotta or concrete treated with a pleasing plaster finish were the materials which were used in the construction. It will be noticed that almost all of this work consists of one-story school buildings, located on liberal grounds. This idea was earnestly urged by various civic organizations of the city.

#### The Open-air Classroom.

Just how to obtain the open air classroom and building was a problem which gave us much thought and it required the elimination of many window patents, for of course this must be acquired by the use of a window which would take the place of the old double-hung, which at its best can only allow one half of the frame open. The sash finally used opens out to a sloping or horizontal position and the entire frame opening, which extends from a point two feet above the floor to the ceiling, is divided into thirds, so that these three sashes are easily operated. This permits the entire frame opening to be utilized for fresh air.

Coupled with this sash arrangement transoms, five and six in number, were placed in the opposite wall of the classroom above the blackboard close to the ceiling and opening into the corridors or cloisters.

In the schools now finished this proves to be a happy and desirable arrangement, extremely healthful for the teacher and children. On a warm day the entire side of one of these classrooms is opened, and with the transoms opened on the opposite side the air is fresh and free from odors.

The question might be asked, How does this operate on the sunny side of the building? As a matter of fact the orientation of the building was



Inside of open-air classroom, looking toward the windows. Intended for anæmic children.



Interior of typical classroom, looking toward the ventilating transoms that open into the corridor.



planned so that sunshine might enter all classrooms at some time of the day. The order of desirability in this section is east, west and south, respectively, so one can easily see that at some period of the day the open side of the classroom will receive the sun. The sashes, however, may be



A modern corridor, showing arrangement of transoms opening from classrooms. Note ventilation, fire gong and hose reels.

opened to any angle up to 145 degrees with the normal, and opening the sashes to the same angle, with the shades on the under side, the room may be thrown open almost completely without sunshine coming into the room.

### The Classrooms.

To return to the building proper it is necessary to take the classroom as the first unit, and in following the recommendations of the committee, a model room has been developed. The size of the room is 20 feet 6 inches (wide) by 31 feet 6 inches (long) and 13 feet high in the clear.

Back of the teacher's desk, about 4 feet 6 inches in width, and extending the width of the room is the wardrobe and teachers' closet divided by a low partition. On the various plans shown herewith the classroom is well outlined, but it may be of service to the layman to further describe it. The windows face on the east, west and south, as above mentioned, as this orientation is adaptable for the Oakland climate, but in the interior of the State, where the temperature is higher during the day, the east, west and north orientation is much better. Light should enter the classroom only from one side of the room, and that should be on the left of the pupil, with the windows towards the rear of the room as far back as possible and permissible with good construction and design. In no room should light enter from more than one side, for if windows are placed at the back of the room, not only is it disagreeable for the teacher, but cross lights will occur on the desks of the pupils.

Classrooms have but one entrance and in the work in Oakland these doors have been made 3 feet 6 inches in width. The wardrobe is inside the classroom and free from the corridor in order to give the teacher control and discipline. This, too, prevents petty pilfering, and in time of danger from panic the teacher has many advantages at hand to preserve order.

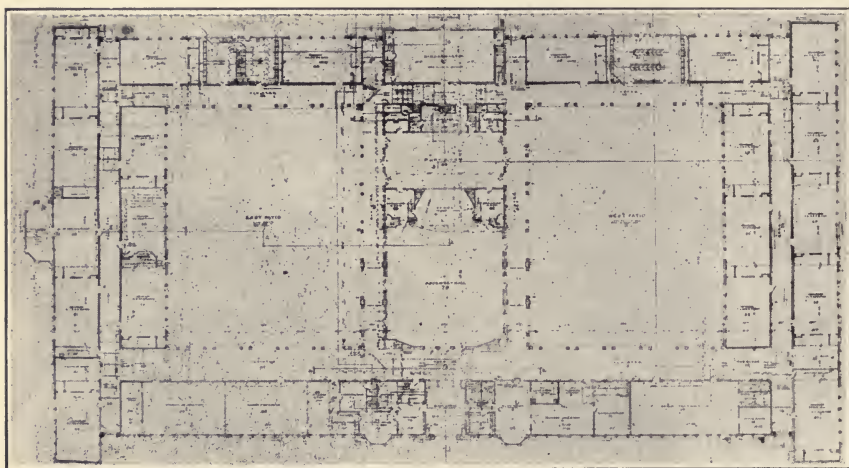
As for the material of the rooms, this is a matter of choice depending entirely upon economy, but in no case should anything but slate blackboards be used and substitutes chosen as a last resort. Chalk writing on slate blackboard requires hardly any effort on the part of the student, and the slate assists the child to acquire a legible form and an easy style. On the other hand the usual substitute tends to retard the chalk and the hand drags. On various tests made it was found that more chalk dust is thrown off by the composition than by the slate. The height of the chalk rails for the primary classes has been established 2 feet 2 inches from the floor, for the grammar grades 2 feet 9 inches, and for the high school grades 2 feet 10 inches. The height of the blackboard itself is 3 feet, but the board back of the teacher's desk is 4 feet 6 inches in height.

Sanitary picture molds and bases are provided in all classrooms and corridors, and the door stiles and window stools have very little projection, thus eliminating dust-catching surfaces.

The room is heated both by air drawn from above the roof, passing over a steam radiator stack and forced by fans into the rooms through ducts leading from the fan chamber, also by direct radiation; that is, by radiators placed under the windows. The indirect system is to be used only on very cold or damp days and the direct system when it is necessary to warm the room for a brief period when the sunshine is not on that side of the building. A complete account of the heating system is given later on.

#### Rooms other than Classrooms.

The honorary commission were unanimous in the opinion that all new school buildings should contain an Assembly Hall which would seat from 400 to 800. Inasmuch as the Assembly Hall was to be used for public



Floor plan of the Emerson School, nineteen rooms. The patios are paved and have fountain in center. Includes rooms for domestic science, modeling, plants, manual training, lunches, principal, assembly, play, rest and kindergarten.

purposes, such as lectures, political discussions and free entertainments, and as it was an adjunct to the Club Room and the Branch Library, these rooms were in all cases placed close to each other. The corridors to the classrooms are shut off from trespass by collapsible gates.

Each Assembly Hall contains a fireproof moving picture room electrically equipped for both stereopticon and kinoscope pictures.

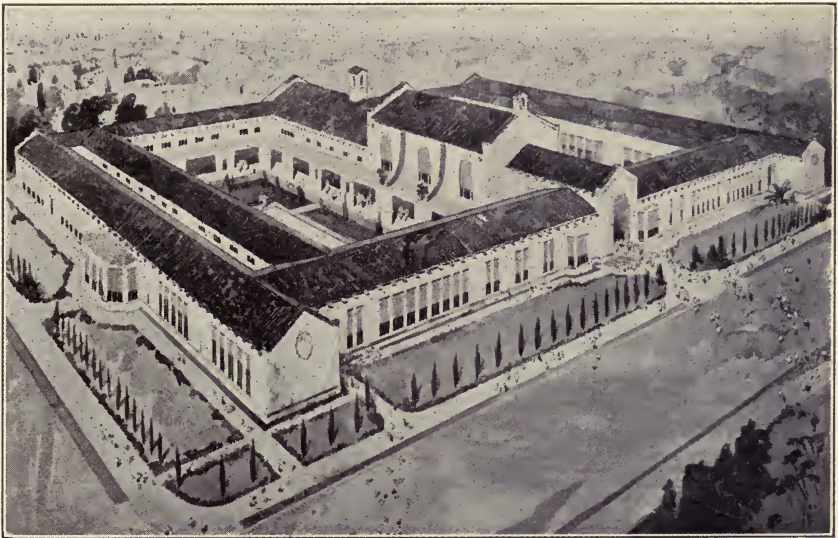
The Principal's Suite generally consists of a reception room, main office, and small library with a map room in close proximity.

Teachers' Lunch and Rest Rooms have been provided, and in the former a small kitchen, in the form of an alcove, is a part of the room. This kitchen will contain gas range, sink and cupboards so that the teachers can provide a warm lunch for themselves. In nearly all cases



the Teachers' Rest Room has been placed in a pleasant location and possesses a pleasing outlook. Toilets and lavatories are provided in connection with the rest room, and the Board of Education intends to furnish these rest rooms with comfortable and suitable furniture. The Medical Room, which is located near the Principal's Suite, contains bath, toilet and medicine closet, together with an electric heater for preparing water quickly.

Considerable discussion arose at one of the meetings as to the uses of the Club Room, it being debated whether this room should be given up entirely to club freedom and privileges, which would include smoking and possibly billiard playing. The latter was not seriously considered,



Emerson School, one story, reinforced concrete, cement finish, trimmed with brick, red tile roof. The cloisters serve as playgrounds during wet weather, and give openness and freedom of circulation. One of the very best examples.

but in regard to the former it was thought that this club room should be a place where the men of the community might go in the evening and feel at home and enjoy the comforts and pleasures a man might expect in a well regulated club. Accordingly the room was to be pleasingly designed, and in many cases it contains fireplaces, reading tables, and comfortable chairs.

As the Mothers' Club was also to meet here, in the afternoon, it was thought wise to provide a small kitchen, with gas range, sink and cupboard, so that afternoon teas might be served there to the members.

The Library, adjacent to the Club Room, will be used as a reference library for the Club's use as well as for distribution of books.





the future will contain this provision. Hose reels are placed every 100 feet and fire-alarm gongs are placed near them.

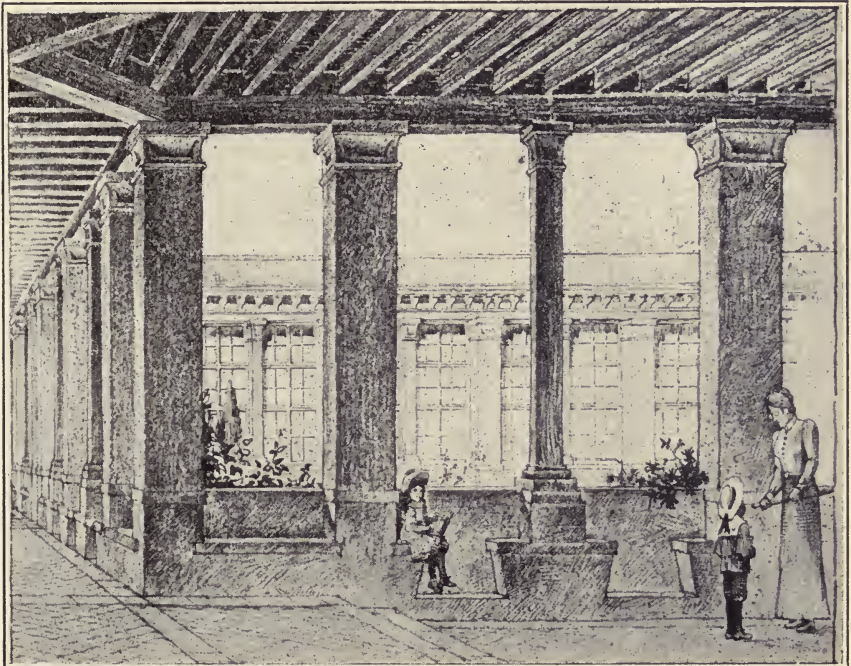
Another precaution, taken to prevent danger from panic is that of the arrangement of the doors and hardware attached. First of all the classroom doors open outward, and can be locked only from the outside and



Fifty-fourth and Market Primary School, one story, six classrooms.

never can the door be closed to one inside the room. What is true of the classroom doors is also true of all doors in the building and every entrance door is equipped with panic bolts, locked only from the exterior, which when pushed against open wide.

The electrical work, while not elaborate, has been well studied. All grammar classrooms are lighted by semi-indirect fixtures for evening



Fifty-fourth and Market Primary School, looking toward playground. Note how cloisters and corridors are formed. Fixed sashes shut away the noise of railroad trains 200 feet away which pass every two minutes.

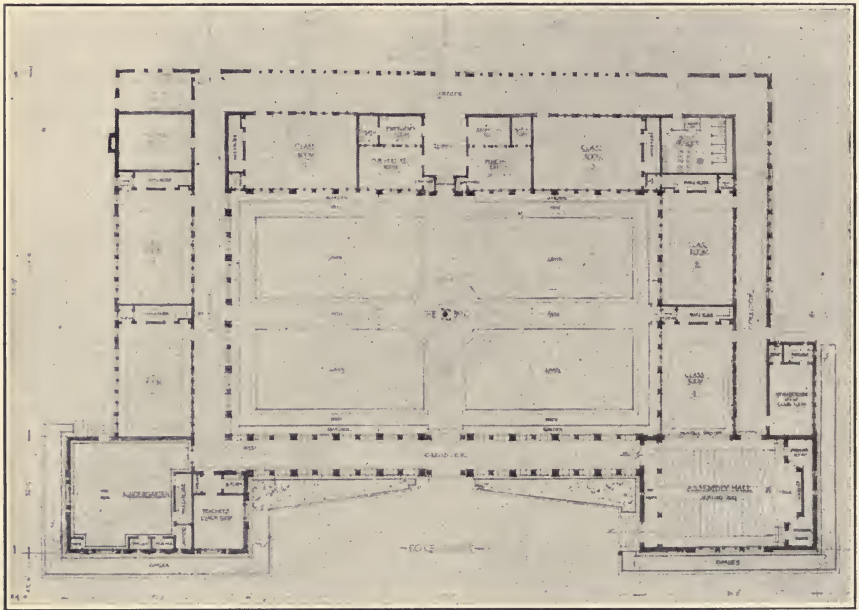


study. The halls, corridors and club rooms are also equipped with lighting fixtures.

Some of the special features are the intercommunicating telephone system and the program clocks and gongs. The former system is such that the principal may talk to one teacher or all of the teachers at the same time. The program clocks are regulated by a master clock and the program gongs controlled by push buttons in the principal's office.

#### Manual Training Building.

It will be noted that the building is composed of pavilions connected by corridors. It is two stories in height and the lower left-hand pavilion is to be used for the Commercial courses. The pavilion next to it is the



Fifty-fourth and Market Street Primary School. Six classrooms, kindergarten, assembly, neighborhood club room, principal's suite, teachers' rest room, emergency room, lunch room. One story, with patios inside the cloister.

Academic Department and the central building is the Administration Department and Assembly Hall, the latter seating 1,700 people. The pavilion next to the Assembly Hall is the Science Department, to be used in the study of Chemistry, Physics, Geology and Botany. The pavilion toward the lower right-hand corner is for Domestic Science and Arts, and contains classrooms for Millinery, Dressmaking, Cloak-making, Cooking, Laundering. A very unique feature, on the second floor, is the Apartment Suite which in itself contains a Living Room

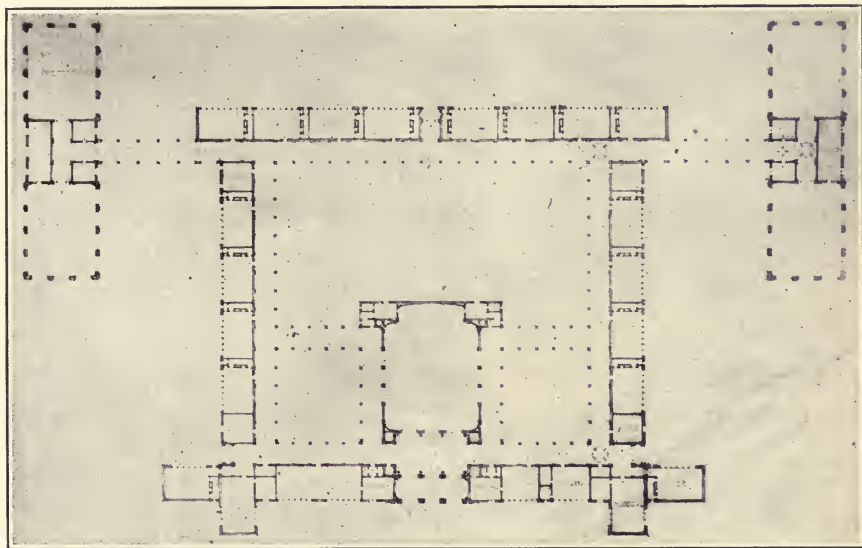
with its fireplace, Dining Room, Kitchen, Pantry, Bedroom and Bathroom. Two girls will be assigned each week for the care of the apartment and the entertainment which will be connected with it.

The pavilion just to the west of this is the Drawing Department, so placed as to receive the best light, and this department will probably be

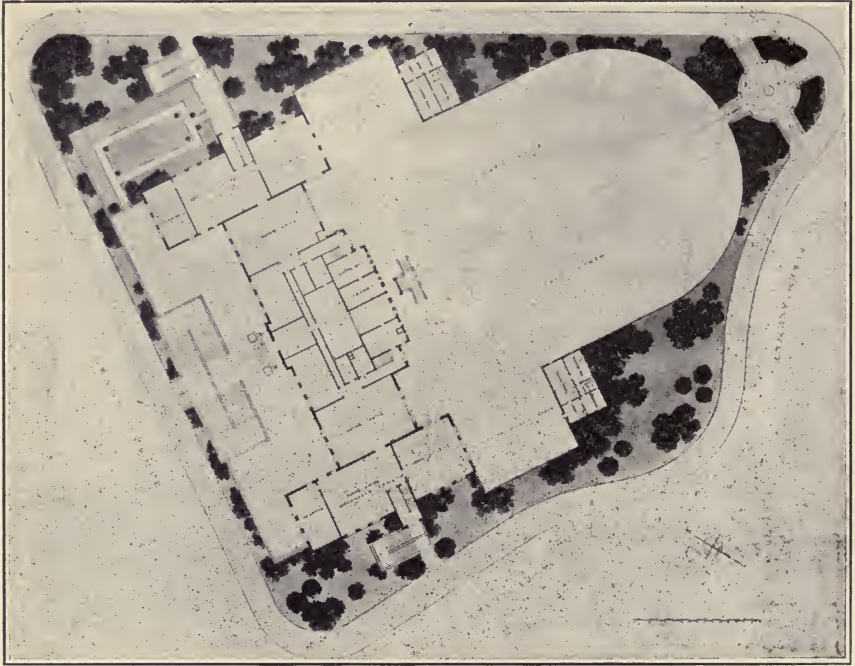


Elevation of Lockwood School on a 17-acre site. Ten rooms at present.

one of the best equipped of its kind in the country. On the second floor are the free-hand, modeling, photography and architectural drawing rooms, and on the lower floor the mechanical drawing rooms with rooms for models.



Lockwood School, reinforced concrete frame with walls of terra cotta blocks. Note the open cloister effect. An example of the unit plan.

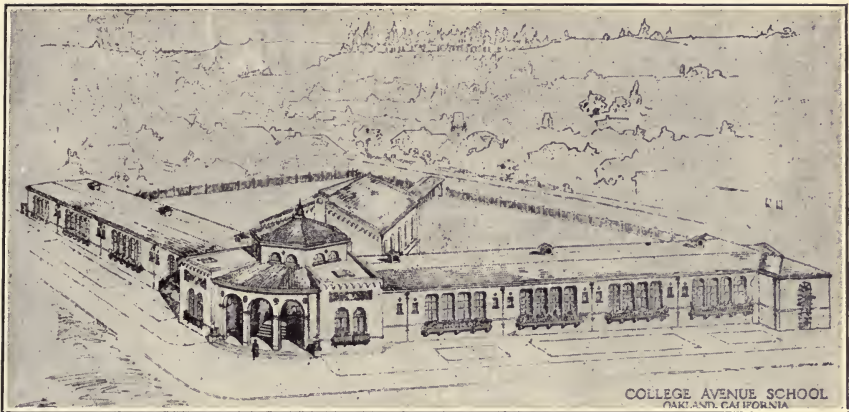


Floor plan of Lakeview School, three stories high. A notable feature is the boys and girls outdoor gymnasium and the experimental gardens.

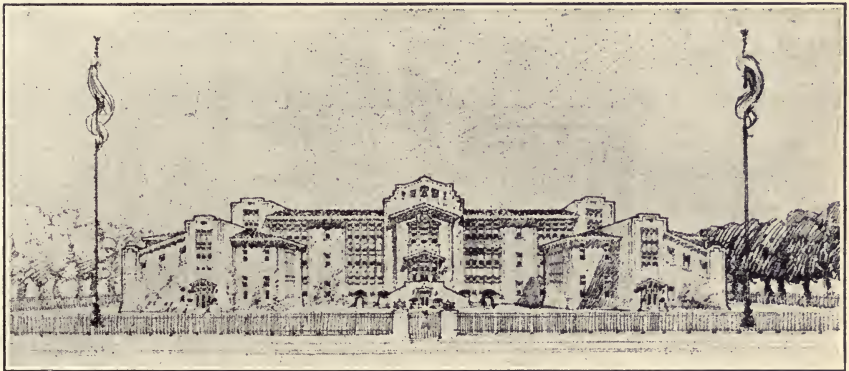


Photograph of Claremont or College Avenue School, eleven classrooms and accessory rooms.

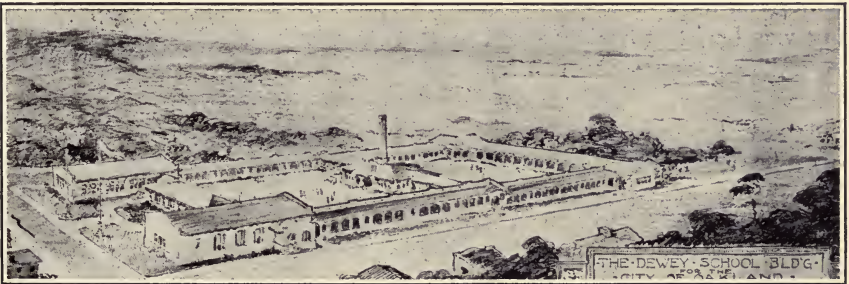




Bird's-eye view of the Claremont or College Avenue School. Reinforced concrete, trimmed with terra cotta, tile roof.



West street elevation of Durant School. Reinforced concrete, trimmed in terra cotta, with red tile roof. One of the best two-story buildings.



Bird's-eye view of Dewey School. Reinforced concrete throughout, made up of classrooms and cloisters. Assembly hall in one of end pavilions, manual training and domestic science in the other.

Note on the cut below the smaller buildings to the west of the main building and just north of the campus. These are the shops. There are four buildings in all, connected by a long corridor which divides each building into two shops. Building No. 1 contains the Machine Shop on the south and the Forge Shop on the north. Building No. 2 the Foundry on the south and the Electrical Shop on the north. Building No. 3 the Carpentry Shop on the south and the Metals Shop on the north. Building No. 4 the Pattern Shop on the south and the Cabinet Shop on the north.



Manual Training and Commercial High School.

Each of these shops is large and spacious, each being approximately 177 feet by 47 feet, one story in height. They are designed and built to look exactly like shops—both exterior and interior, resembling the modern motor shops of the East.

The buildings to the south of the campus are the Boys' and Girls' Gymnasiums, with enclosures at each end.

This building and site cost \$600,000. Fifteen months were spent in study and preparation of the drawings and specifications, and the architectural planning was done in conjunction with the department heads, so that the success of the school is due almost entirely to this collaboration. The space required for each department, the arrangements of the desks, tables and fixtures, was first laid out and then, one might say, the building was built around them. The length of the east façade is 851 feet. A unique feature was worked out at the main entrance. Here the entrance platform is larger than the stage platform and will seat approximately eighty people, and it is here that the graduating classes may hold their commencement exercises facing the amphitheater-like foreground, which will be a sloping lawn where as many as 10,000 people may be seated.

#### Plumbing.

In the past the plumbing of our schools included the abominable latrine water-closets and urinals, which are nothing less than open cess-pools. These latrines were cast iron troughs which contain the waste

matter until a bucket filled by dripping water overbalances and ineffectually flushes the trough. Sometimes this flush works and sometimes it doesn't, and when it fails to perform its function the janitor is called in to use a hose. This may be all right in some places where they have a good janitor, but I can safely say that without exception school build-



Objectionable latrine urinals with cast iron stalls. Out of date.

ings containing these latrines are not fit places for even the lowest animals to frequent, to say nothing of the little children placed under the care of a fostering and well meaning community.

The latrines in school buildings, where additions were added, were torn out, and in all the additions, as well as all the new buildings individual vitreous china water-closets and urinals of the very best make were installed.

The water-closets are of the wash-down or syphon jet make, weighing about 45 pounds each, and are provided in all cases with a back vent, which is known in the plumbing trade as the Boston vent, the use of which will be described later on.

The urinals are the one-piece vitreous china urinal, about 18 inches wide and 4 feet 6 inches high, extending down below the floor and separated from each other by approximately 6 to 8 inches, so that the space between each urinal can be cleaned and flushed. The roughing of these urinals is so arranged that a free vent is obtained from the room to the utility chamber back of the wall to the rear of the urinals. There are about 20 of these urinals and 30 water-closets in each school, and we



have not found this installation much more expensive than the old latrine system, but we have found it to be sanitary, hygienic, and clean.

Having disposed of what the fixtures of the toilets should be, an all important question arose as to how the toilet room itself should be vented, for to force air in at the top of the room and draw it out through a register face at the base of one of the walls meant that foul odors must pass across the faces of pupils and into their lungs. To avoid this the



Objectionable and obsolete latrine toilet. Should be discarded.

utility chamber was devised for both water-closets and urinals and a galvanized iron duct was brought into the utility chamber from a suction fan in the basement, which also served to force the foul air from its fan chamber to the roof. The back vent from the water-closet penetrates the wall of the utility chamber and the vent from the roughing to the urinal opens into its chamber and as these chambers were made almost air-tight, all foul odors and the air of the room are drawn downward through the fixtures into these chambers, thence to the fan chamber and thence to the roof.

The supply of fresh air is taken through one of the many windows which light the toilet rooms, each room lighted directly by daylight.

To further obtain a sanitary condition the walls, ceiling and metal stall are painted with several coats of white enamel paint on top of three good coats of lead and oil. The floors of the toilet rooms are laid with a mastic cement, likewise the sanitary base, so that these rooms are immaculately white with the exception of the dark mastic floor.

Sanitary drinking fountains have been amply provided in the yards and corridors. In the yards the fountains are enameled iron to prevent breakage, and in the corridors they are vitreous china and of a simple but good design. Individual vitreous china lavatories have also been provided, and the faucets attached to the lavatory are of the water closing pressure type, so that all that is necessary for the child to do is to



Modern up-to-date plumbing. Vitreous china urinals and toilets with utility chamber.

press the button on top of the faucet and a stream of water flows for a period of three to ten seconds as the faucet may be regulated. The Board of Education at its last meeting, October 6, 1913, abolished entirely the roller towel. Therefore with the conditions as provided above good results should be obtained.

#### Heating and Ventilating Apparatus.

The problem of heating and ventilation for the Oakland schools was given considerable study with the idea of designing a plant which would give much better conditions in the schoolrooms than has been the general practice. It was determined that a fresh air supply of 2,250 cubic feet of air per minute should be delivered to each standard classroom, this amount being equivalent to 50 cubic feet per pupil and producing an air change in the classrooms of approximately twenty-one times per hour or a little better than a complete air change every three minutes.

The manual training and domestic science rooms have been provided with about ten complete changes of air per hour.

The plants have all been designed on the basis of direct radiation for heating and supplementary air supply for ventilation only, with the idea that either portion of the system might be run singly if desired, and that a better heat regulation would be obtained with the double system.

In line with this idea direct radiators have been placed under the windows in each of the classrooms, provided with solid screens in front of same to obviate the possibility of any disagreeable radiating effects on the pupils sitting close to the radiators. Each classroom has been provided with automatic temperature control arranged to operate the supply valves on the direct radiators, thereby directly controlling the amount of heat necessary to supply the demands of the rooms.

The air supply is delivered to the classrooms through a large screened opening at the platform end of the room and at an elevation of about 9 feet above the floor, and foul air exhaust is provided through the two coatroom doors and thence through the ceiling of the coatroom to the attic. This arrangement keeps the coatrooms thoroughly ventilated with an exceedingly large volume of air at all times.

Each fresh-air inlet opening has been provided with deflecting plates to break up the direct-air currents, and to avoid draughts in the rooms.

Low pressure cast iron sectional boilers have been installed for the supply of steam to the direct radiators in the rooms, and also for the supply of steam to the indirect tempering stacks which warm the air for ventilation whenever the temperature outside is below the desired temperature of the air admitted to the classrooms.

The steam boilers and system of piping have been arranged on the gravity principle so that no mechanical apparatus is necessary for the return of condensation to the boilers, and this is effected solely by gravity both from the direct radiators and from the tempering coils.

The main fresh-air inlets have been placed in or near the roof, as far from the street level as possible, and the air is drawn into the building through a large air shaft, then passed through the tempering coil and finally delivered through the main ventilating fans from which a system of galvanized iron ducts leads to the several rooms.

In all cases where it has been impossible to locate the air inlet near the roof of the building, air washers have been installed for the thorough cleaning of the air. These washers are of the spray type in which all of the air is drawn through a fine spray of water.

The fresh air supply fans are of the housed pattern, some of the ordinary paddle-wheel type and others of the later multiblade pattern; and these are all designed to run at moderate speeds to avoid excessive pressure and so as to operate without noise. All of the fans are driven by means of alternating current motors and ordinary leather belt drives.



A thermostat in the main fresh air chamber controls the supply of steam to the tempering coil and consequently maintains the temperature of the air admitted to the classrooms at a constant point of about 65 to 70 degrees.

The main toilets in each building are ventilated by a special exhaust fan of the same general type and style as the fresh air fans above described. These toilet exhaust fans are designed to handle sufficient air to produce fifteen to twenty changes of air per hour in the toilet rooms and all of this air is drawn from the utility chambers behind the toilet fixtures, each fixture communicating with this chamber by a special vent opening through the fixture itself; thus producing the very maximum of exhaust ventilating efficiency by drawing all of the air immediately from the most objectionable points.

All of the boilers are operated with fuel oil burned by the latest types of burners which produce the maximum of economy in fuel consumption.

In the installation of oil burning apparatus an equivalent evaporation of twelve pounds of water per pound of fuel oil has been demanded and in the one school tested at the present writing this demand has been exceeded by a little over 10 per cent.

Burners of the air atomizing and mechanical atomizing types will be installed, thus supplying the latest improvements in the method of fuel consumption. The burners and their machinery operate automatically, thus requiring the minimum of attention and skill on the part of the person in charge.

In conclusion, do not select a site until you know the size of the building you are to build, and determine the size of the building by the requirements, then have a sketch made of the building which will meet the wants, and from that point the size of the site can be determined upon. If this method is followed there will be fewer heart burnings and disappointments. The usual method, which is generally wrong, is to guess at the size of the site, misjudge the appropriation for the building, and in the end receive not what is required but a makeshift instead.

## APPENDIX.

The following pages were prepared after the report of the Jury of Architects was completed, so that body must not be considered responsible for any of them.

\* \* \*

It is of interest to all school builders to know that the law of 1872, requiring advertising for plans and specifications and letting of contracts to architects whose plans have been accepted is not considered as operative at the present time. The Attorney General in an opinion rendered December 6, 1912, holds that the law has been repealed by



The first open-air school. Charlottenburg, Germany, in 1904.

later legislation on the same subject. School boards, therefore, have a right under the present law to employ architects for school buildings without advertising for plans when they choose to do so.

\* \* \*

'Tis true that we can not spend too much money upon our children. Undeniably money spent upon the better training of its young people is a good investment for any municipality, one that returns to the community many times and in many ways.

Yet this should not make an occasion for prodigality or for unwise expenditures. It is quite possible to spend great sums that do not really benefit the children, that the children do not need. It is easy to spend the money that some one else must pay. It is such a simple matter to vote a hundred thousand dollars in bonds payable twenty or thirty years hence that thrifty people should take warning and should look somewhat forward into the future. These bonds must be paid. Moreover, they must not only be paid, but they must be paid twice over, since in less than twenty years the interest exceeds the principal. Worse still, in less than

twenty years a schoolhouse grows old, inadequate, out of style. The architecture of to-day is the amusement of to-morrow.

Therefore, think twice before you too heavily saddle the burden of debt upon the future of your neighborhood. Paying for a dead horse looks ill to us. Perhaps it may seem still more galling to our grandchildren when they are called on to pay half a million for an obsolete, impossible schoolhouse!

\* \* \*

More strongly every year is California school architecture marked by adaptations of the outdoor idea. Probably the ultimate plan will be



An English open-air school. Introduced in the suburbs of London in 1907.

practically an outdoor schoolhouse, because this state is peculiarly fitted for it. If it is better for the health and growth of the children and costs less money to build, why in the name of Heaven should it *not* become the dominant feature of our architecture? Answer that if you can!

Here follow some pictures showing the development of the outdoor idea in recent years.

\* \* \*

Schools are here and there discarding the time honored school desk because it restrains freedom of movement and hampers actual work. It does not fit into real life, because neither before nor afterward do people live in wooden cages. The increasing variety of school activities is likely to push out more and more the formal school furniture. The following letter from a teacher in San Diego County, with its two little pictures, illustrates this point:

"I want to tell you about a receptacle for the pupils' text-books that our board has placed in the schoolroom.



We are using a table and chair for each pupil, instead of a desk, and like them very much. The pupil may place his table and chair in any part of the room or in any position that is most comfortable.

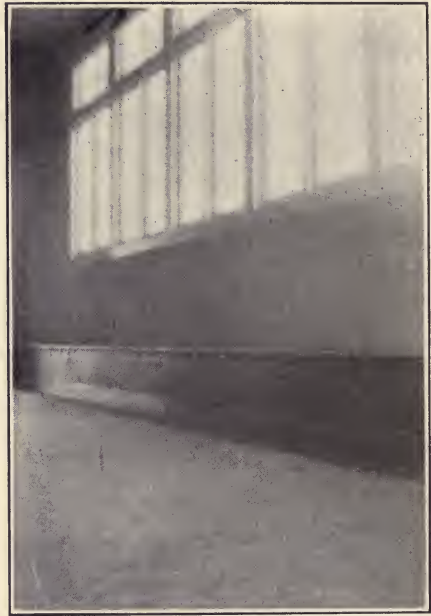
But the question has been, What shall we do with the books when they are to be put away? The library is crowded and each pupil needs a space of his own. 'Necessity is the mother of invention,' so we thought out a plan and had a box made along the side of the room. This box is 16 inches high, 16 inches wide and 33 feet long.

The top has three long lids made of 6 and 10-inch boards; the 6-inch one fastened to the partitions and the 10-inch board fastened to the 6-inch one by strap hinges.

When these are closed down, it makes a very comfortable seat to sit on, either at a class recitation or a social center gathering.



Receptacle for text-books at La Mesa School. Open.



Receptacle for books at La Mesa School. Closed, it is useful as a seat.

The box has no back or bottom, so at any time it may be drawn out and the floor cleaned. It is made of clear surfaced boards at a cost of about 45 cents per linear foot.

Inside the box are partitions 12 inches apart and each pupil has one apartment thus made for his books. The teacher also has quite a large space for supplies that are needed every day. That part of the box near the stove has a space for coal and kindling.

We don't know how we ever taught school without it.—GRACE M. STEPHENSON, La Mesa Heights School."



An open-air school in New Orleans.



Open-air classroom in Massachusetts. Heat supplied by food and confined by hoods and blankets.



Front view of the beautiful Hacienda open-air school in Santa Clara County.



Interior of Hacienda School, showing open-air features.



C. Bryant Shaefer, in the *School Board Journal*, suggests an idea that is worth thinking about—placing halls outside instead of inside the schoolhouse. His remarks and his pictures follow:

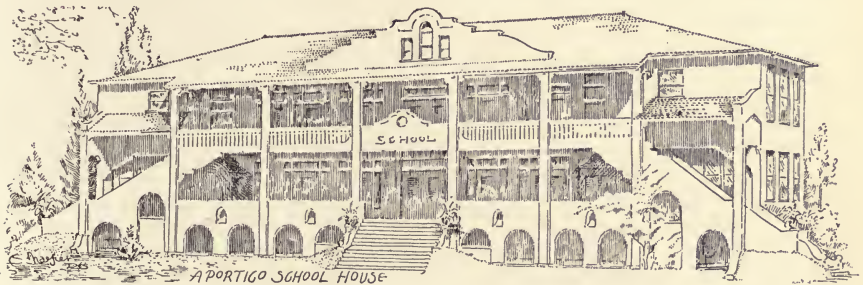
Why build schoolhouses with great enclosed hallways?

Why have stairways in a dangerous pocket?

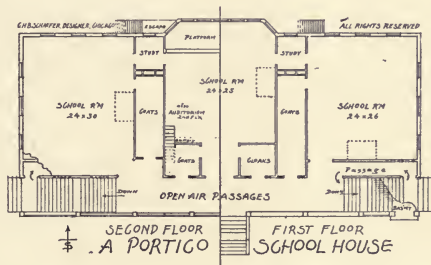
Why make buildings hard to get into and worse to get out of?

It is better for children to accommodate themselves to moderate accessories than to wean them from open air, activity and self-helpfulness, with old people's comforts. It is more economical now and in the years to come.

In this suggested design for a schoolhouse a front porch on each story serves for the usual hallway, which is so costly to build and



An interesting suggestion. Why not build the hallways outside instead of inside?



expensive to heat. The open stairways are independent for each floor. They do not need ventilation, or heating; they cannot fill with smoke and even in a wood structure would be the last thing to burn.

The materials of construction may be concrete, brick or any accessible fireproof material. That is for the local architect to decide.

While educators are recommending open windows and open-air studies would it not be healthier and more economical to dispense with some of the unnecessary interior arrangements in order to accomplish the same object?

\* \* \*

In building schoolhouses, the school board should well consider what it owes to the community in the way of protection from fire and panic. The school board is responsible for seeing that all buildings are panic proof, all new buildings fireproof and all old buildings fire retarding.

The terrible Collinwood fire in 1908 burned 173 children and two teachers to death—a terrible, a heart-rending tragedy. How would you feel if you were the trustees in like case?

Yet the Collinwood disaster was not the result of unusual carelessness or unusual construction. It was a brick building with wooden floors and partitions. The doors were double and the stairs were open. The cellar was not fireproof and the heating apparatus was defective. It was no whit worse than tens of thousands of other American schools that dot the landscape to-day. Most children escape being burned to death



Side view of open-air school at College Park, in Santa Clara County.

because most fires occur when schools are not in session. Safety results from two things—careful thought and thoughtful care. Assembly rooms should be on the ground floor, so that egress shall be easy. Basement fires spread through open stairways. Halls and stairways should be unobstructed. Properly built stairs with hand rails make the best fire escapes and should always be fireproof, because in panics people try to escape by the exits they commonly use. The use of noncombustible material for the outside walls does not ensure safety from fire. Wooden walls may blaze within a concrete shell, as wooden sticks blaze within an iron stove. In each case the flames are fanned by a draft. Drafts are dangerous. Stair wells and air shafts should be isolated by fireproof walls and doors. Cut the attic by a partition. Avoid drafts everywhere as a pestilence.

A California school superintendent should make himself an authority upon school building. He should know what is being done in other places, should know the good features to be repeated, the bad points to be avoided, should be able to pass judgment promptly and intelligently upon school plans, should be able to advise and help school officers with



See this happy little San Diego County school studying under the pepper trees, where the fierce light is tempered by the shade.

their improvements. The superintendent's office should be a headquarters for ideas and for discussions about school building and school improvement. Photographs, plans, drawings, diagrams, books, should be found there, illustrating the latest and best ideas concerning the architecture, heating, lighting, ventilating, planting and fire protection of our



schools: The superintendent has a special responsibility here that he must not lose sight of in the hurly burly of other duties.

\* \* \*

To improve a thing we must reform its worst points. Unquestionably, the worst point about the rural school is its water-closets. As a rule, these closets, particularly those of the boys, are in a filthy and shameless condition—and for a very good reason—because they are not cleaned and inspected properly. It seems to be a self-perpetuating nuisance—the boys of to-day continually see these buildings in a wet, unwholesome



Interior of College Park Open-air School. Observe fine effect in cheerful demeanor of pupils, even in presence of county superintendent and teachers.

condition, marked by every obscene device and thought that can be made by knife or pencil or chalk. They become familiar with these things and *expect* them to be so—and they *are* so, and continue so when the boys grow to be the men.

It is a bad thing for our small children to come in constant contact with uncleanness and immorality on their school grounds. This condition is not found at the homes; why should we tolerate it at the school? If we can clean up the school closets and keep them clean, it will be a fine piece of work, one that we shall have a right to be proud of—no less praiseworthy than floating the American flag from the schoolhouse or planting it about with trees.

The way to accomplish this reform is this:

*First*—Put the closets into thoroughly good condition—clean, new, brightly painted, with no suggestion of their old rottenness to be seen

at all. Hinged seats should be provided, or urinals of wood or iron. Sanded walls are a good thing, too. Everything should be made of double strength, so that rough and heavy use can not damage it.

*Second*—Turn the clean closets over to the teacher and janitor, and insist upon their having the same attention as other school property—daily sweeping and scrubbing when necessary and constant watchfulness. The teacher will be able to manage the children if she is held responsible for it; and if outside trespassers offend, bring them to justice if possible, but let the school *repair the injury at once*. Furnish the janitor with paint, disinfectants, tools, when he needs them. Have



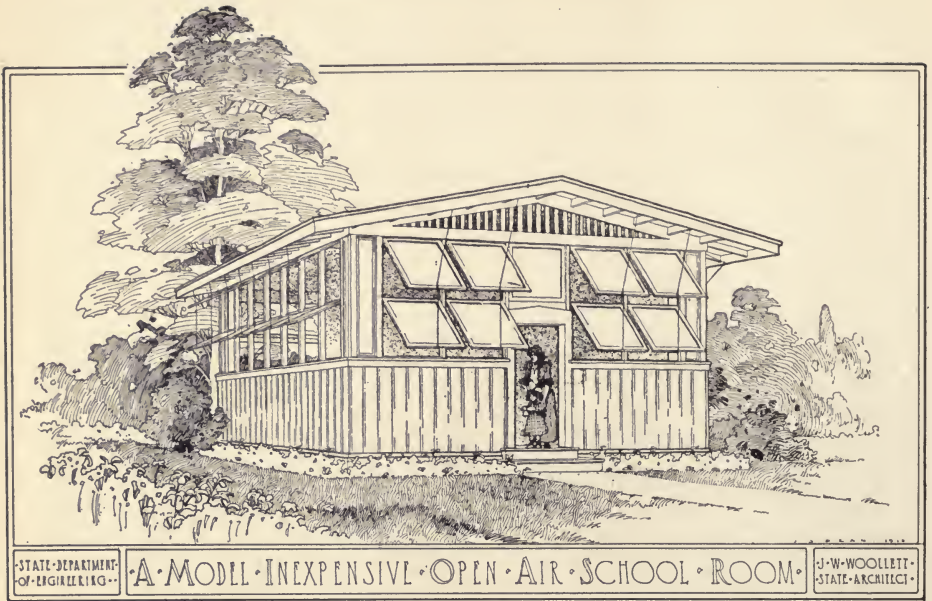
Open-air classroom at San Bernardino. Who would not enjoy this?

a distinct understanding with the janitor as to the things to be done. Let the trustee inspect the closets whenever he goes near, and make somebody smoke for every neglect—and they will stay clean!

\* \* \*

Schools are changing continually to admit the real world, to let in the activities and the life of the men and women who are doing bread and butter things in the world of to-day. Manual training, for instance, is eagerly welcomed everywhere.

Now, there are different ways of taking in the manual idea. One is the perfectly ladylike way, where a beautiful and expensive room is expensively fitted up with lovely varnished benches, and a world of bright and shining tools arranged in perfect order in drawers and racks, possibly tied up with pink ribbon. The children march in stiffly and spend an hour a week in making cunning little matchesafes, ribbon boxes,



STATE DEPARTMENT OF ENGINEERING

A MODEL INEXPENSIVE OPEN AIR SCHOOL ROOM

J. W. WOOLLETT - STATE ARCHITECT

Here is the famous Fresno Out-door School that has been duplicated so many times in the State.



Red Bluff Manual Training Building, as originally built by the boys. Size 24 by 40, cost \$600



pin trays, beautifully sandpapered and adorned with complex designs in colors.

This sort of a thing is well adapted to school life, but it is not real life, and the children soon discover that it is only a feeble pedagogical imitation of the real thing.

Fortunate is the school that can undertake and carry out a piece of work that the world can see and recognize, something that is real man's work or woman's work, some big and striking thing that commands attention and respect in the work-a-day world outside. The big boys and big girls don't leave such a school, but stay with it to the end, and



Red Bluff Manual Training Building after first change, size 24 by 60.

develop in it a steadiness and power of will and judgment that stay with them and serve them through life. This is genuine manual training. The idea is graphically illustrated in the four accompanying photographs.

The original building was 24 by 40 feet in size. This proved too small for the increasing interest, so it was cut in two, one end moved out and a 20-foot addition built between the two parts. This again became too small, so it was split, one side moved out 28 feet and a two-story building interpolated.

This makes an excellent building 52 by 60 feet, containing blacksmith shop, wood-working shop and finishing room. It is equipped with home-made benches and lockers. All of the work, from the drafting of plans to the painting, including the cement work, was done by the boys of the school, without any outside assistance. The total cost is less than

\$2,000. It is a comfortable size for the fifty boys of the school and it is their own—they made it. What a magnificent experience it was, to every one who helped!

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This publication does not give much direct help to the builders of small, one-room schools. The small schoolhouse naturally does not



Red Bluff Manual Training Building. Splitting its shell for the third transformation. A genuine piece of work by the boys.



Red Bluff Manual Training Building in its final form, 52 by 60, cost \$2,000. All work done by the boys.

appeal so strongly to architects as do the more ambitious structures, therefore it never gets so much professional attention. Later we shall make good this lack by issuing another bulletin devoted entirely to the rural, one-room school.



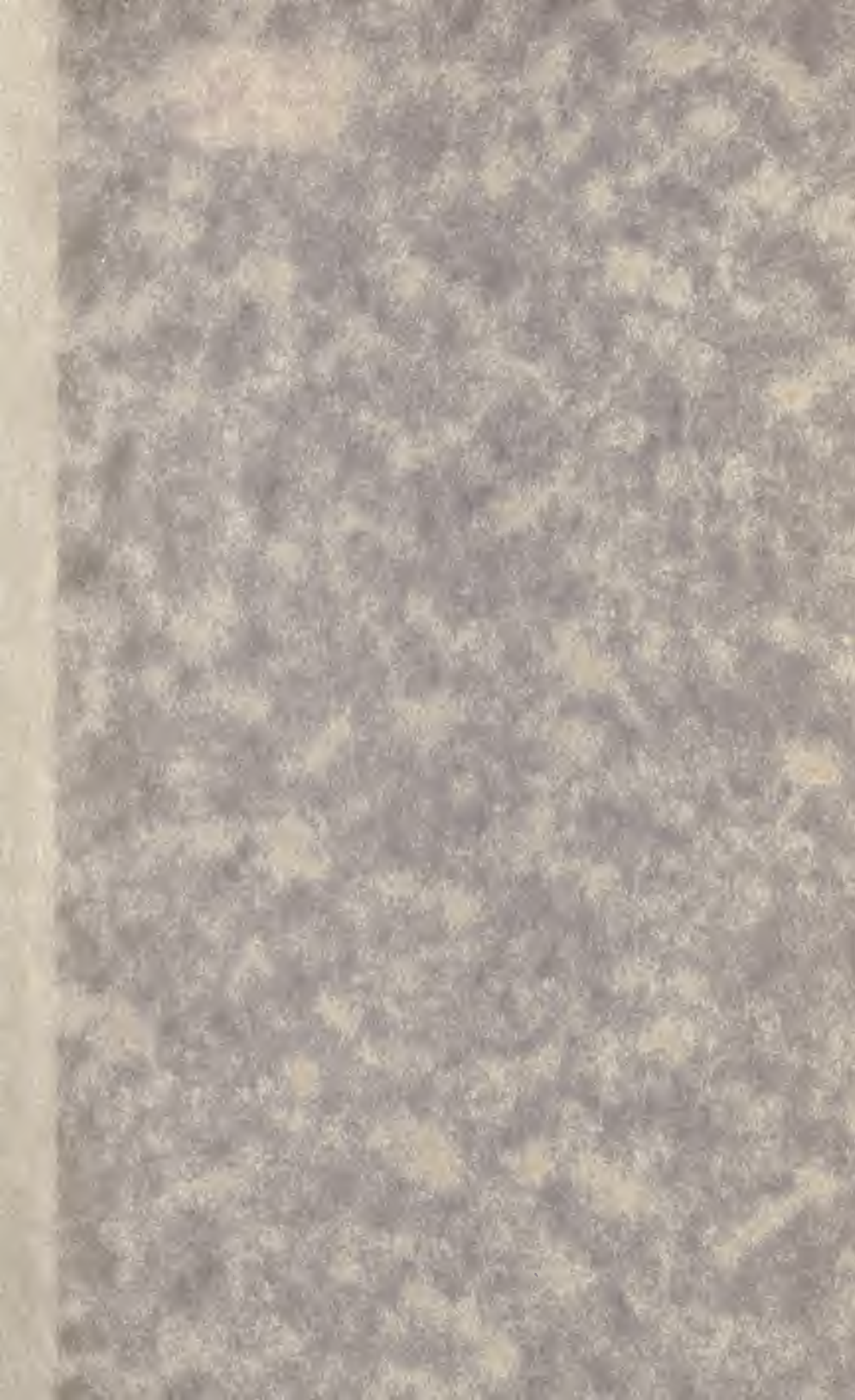














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