FUNCTIONAL PLANNING OF ELEMENTARY SCHOOL BUILDINGS

By

ALICE BARROWS

Specialist in School Building Problems
Office of Education

BULLETIN 1936, No. 19

UNITED STATES DEPARTMENT OF THE INTERIOR - - *Harold L. Ickes*, Secretary
U.S. OFFICE OF EDUCATION - - - - - - - - - - - - - - - *J. W. Studebaker*, Commissioner

UNITED STATES GOVERNMENT PRINTING OFFICE - - - - - - - - - - - WASHINGTON : 1937

For sale by the Superintendent of Documents, Washington, D. C. - - - - - - - - - - Price 25 cents

CONTENTS

TABLES

CHARTS

FLOOR PLANS

APPENDIXES

FOREWORD

The study of "Functional Planning of Elementary School Buildings" is a cooperative piece of work carried to completion by the Office of Education with very generous assistance from the National Advisory Council on School Building Problems. The Office is under deep obligation to the National Advisory Council for the time and thought which the officers and members of its regional councils have given both in the planning of the work and in the evaluation of the results; and to many superintendents of schools and architects for their generous cooperation in providing the floor plans of school buildings which served as the basis for the study.

This study is especially important at the present time because of the increase in school building construction made possible through the grants and loans of the Public Works Administration and because there are numerous indications of accelerated activity in the school building field. Furthermore, as stated above, this study was organized and carried on in cooperation with school superintendents and architects of wide experience who are today actively engaged in finding practical solutions for school building problems.

J. W. STUDEBAKER, *Commissioner.*

INTRODUCTION

"Functional planning of elementary school buildings" is a research study on school-building problems undertaken by the Office of Education in cooperation with the National Advisory Council on School Building Problems. Before explaining the purposes and methods of the study, it is important to describe briefly the reasons for the organization of the national advisory council and the way in which it cooperates with the Office of Education in school-building studies.

NATIONAL ADVISORY COUNCIL ON SCHOOL BUILDING PROBLEMS

The National Advisory Council on School Building Problems was organized under the auspices of the Office of Education at the request of the State superintendents and commissioners of education. Its purpose is to secure (1) comprehensive data on methods of solving school-building problems in different parts of the country and under different types of school organization, (2) expert analysis of the data collected, and (3) constructive suggestions in regard to methods of solving school-building problems.

The national advisory council was organized because the school-building problem has become a highly technical one which requires for its solution the cooperative effort of many different types of experts—school superintendents, school-building architects, landscape architects, health specialists, and heating, ventilating, lighting, and sanitation experts. It was organized on the basis of regional councils because it was decided that if the Office of Education is to serve as a national clearing house of information on school building problems, it is necessary to secure information through decentralized geographical units. School-building problems cannot be studied at long range. They must be studied in terms of actual school-building situations and methods of meeting them; they must take into account the differences due to geographical location, climate, educational aims and methods, availability of expert service, etc.

For these reasons the national advisory council was organized into 11 regional councils which consist of the following: [1]

Members.—For each regional council, one State superintendent, three city superintendents, one county superintendent, one school board member, one architect. Members serve for 1, 2, or 3 years. The architect member is always the regional director of the American Institute of Architects for that region and serves as long as he is regional director. One of his duties is to recommend to the United States Commissioner of Education the appointment of school building architects in this region.

Ex-officio members.—These consist of heads of divisions of schoolhouse planning in State and city school systems, and architects and engineers in such divisions appointed on request of State and city superintendents.[2] They are members as long as they hold office in the State or city school building divisions.

Advisory architects.—The advisory architects are nominated by the architect member of the advisory council, who is the regional director of the American Institute of Architects for each region, and are appointed by the United States Commissioner of Education. They serve for the term of the regional director who nominates them. There are 109 advisory architects. The number for each region varies from 6 to 16.

Officers and executive committee of the advisory council.—The officers consist of the chairman, vice chairman, and secretary. For the year 1932-33, when the study of "The functional planning of elementary school buildings" was completed, the chairman was the then United States Commissioner of Education, Dr. William John Cooper, the vice chairman, Dr. Charles L. Spain, deputy superintendent of schools, Detroit, Mich., and the secretary, Alice Barrows, specialist in school-building problems, Office of Education. The executive committee consists of the officers and the chairman of each of the 11 regional councils.

METHOD OF CONDUCTING RESEARCH

At the First National Conference of the National Advisory Council on School Building Problems, it was voted unanimously that the first research to be conducted should be a study of "The Functional Planning of School Buildings", and that the first part of the study should be limited to elementary school buildings.

[1] The full list of members, ex-officio members, and architects for each regional council is given in the appendix A.
[2] University professors who have specialized in school building planning were later added as "university advisers."

The study was carried on cooperatively through the regional councils in the following manner: (1) At the request of the regional councils, the secretary prepared a tentative draft of the questionnaire on which the study was to be based,[3] and submitted it for criticisms and suggestions at the regional council meetings held in each of the regions; (2) after the plan of work had been approved, the members of the councils selected 100 cities to be asked to cooperate in the study, and the secretary revised the questionnaire and sent it to the cities, requesting that the data asked for should be sent in the form of exhibits of the most modern elementary school building in each of the cities; (3) after returns had been received from 40 cities, a preliminary tabulation was made, and the secretary held a second series of regional conferences with the members and advisory architects in order to check the tabulations and interpretations of the data with those in each region who had answered the questionnaire and who were familiar with the local conditions of each region; (4) when full returns had been received from 74 cities, a complete exhibit of the 74 elementary school buildings was shown, and a preliminary report of the results of the study submitted at the third annual conference of the National Advisory Council on School Building Problems.

The advisory council voted that "because of the wealth of material collected, the remainder of the year should be given to a complete tabulation of all phases of the study, the writing of the report, and the preparation of charts which should present the findings in graphic form." The complete report was submitted in May 1933 to the editorial committee of the national advisory council, chairman, Charles L. Spain, deputy superintendent of schools, Detroit, Mich.; members, HuBert C. Eicher, director, division of school buildings, Pennsylvania State Department of Education; Joseph H. Hixson, director, school buildings and grounds, New York State Department of Education; and James O. Betelle, architect, who unanimously approved it and transmitted it to the United States Commissioner of Education.

There are decided values in such a cooperative method of conducting research studies because the work accomplished had its roots in a common understanding and knowledge of the problem among the 148 superintendents and architects who cooperated in making the study, as well as among the 208 members of the national advisory council. Moreover, the material has been checked and rechecked in the light of conditions peculiar to each region and by actual visits to at least a third of the buildings included in the study.

[3] Pt. I of the questionnaire was sent to the superintendent to answer: It asked for data on the total estimated capacity of the school, grades included, size of class, length of school day, etc., together with a copy of the educational program of the school showing the location of every class every hour of the day. Pt. II of the questionnaire was sent to the architect of the building. The architect was asked to send all data in regard to the building on six mounts. Dummies of each mount were sent so that there would be no chance of misunderstanding as to either the material asked for, or the method of presenting it. The material for each mount was as follows: Mount 1, photograph of the exterior of the building; mount 2, plot plan of grounds and building, showing the location of the building and the lay-out of the grounds; mount 3, first floor plan; mount 4, second floor plan; mount 5, statistical data on the building; mount 6, the educational program. (A copy of the program was made by the superintendent and sent to the architect to put on mount 6.)

CHAPTER I: SIGNIFICANCE OF THE STUDY

THERE ARE four points of significance in the study of "The Functional Planning of Elementary School Buildings." First, it shows that the elementary school curriculum is in process of dynamic change, and that these changes are radically affecting the planning of school buildings. The buildings in the study were planned for four different types of school organization. The educational programs and floor plans for these buildings are given so that superintendents and architects who wish to plan buildings for any of the four types may profit by the accumulated experience of others in the field.

Second, it shows that to the extent to which schools plan the administrative aspects of their educational programs so as to get a simultaneous, balanced use of all facilities, waste space is eliminated and the cubic foot costs per pupil are lowered.

Third, it gives illuminating data in regard to the question which is raised by taxpayers in many communities as to whether the school can afford to continue to give educational facilities now considered necessary in a modern educational program, i. e., opportunities for play, music, art, science, shop, training for leisure, etc. The present study shows that under a partially departmentalized, or balanced-load, administrative program, all these modern facilities can be maintained either in new buildings or in existing buildings at no greater cost, in fact, at less cost, than was necessary under the other types of administrative programs which did not use their auditoriums, gymnasiums, and special activity rooms at the same time that the classrooms were in use.

Fourth, the study shows how new and existing buildings may be organized on various types of school programs so as to eliminate waste, and yet maintain for children modern educational opportunities. Programs for schools of various sizes are given showing how this has been done by many of the schools included in the study.

PURPOSE OF THE STUDY

The purpose of the study was to discover how the kinds of education to be carried on in a school affect every detail of the plans for the building—general lay-out, types of rooms, their dimensions, equipment, and arrangement; the design, size, and equipment of the auditorium, gymnasiums, and playrooms, etc. In other words, the purpose was not to work out hard and fast standards of school building construction but, rather, to show how the changing ideals and methods of elementary school education are affecting the design and construction of school buildings.

The social and industrial changes of the past 75 years have brought about fundamental changes in the conception of the function of the elementary school and therefore in the planning of elementary school buildings.

Seventy-five years ago children in this country received only a small part of their education in school. The school was the place for the teaching of the "Three R's", and it was not so necessary for it to include other elements of a child's education since the community life itself supplied many essentials of a good education, such as opportunities for the development of good health, training in skills, and use of leisure. The need for playgrounds or gymnasiums was not so pressing because there was all outdoors for children to play in. It was not so urgent to have science laboratories because a child's scientific curiosity was constantly nourished and developed in the country through intimate acquaintance with all aspects of nature—the earth at different seasons of the year, the stars at night, trees, birds, animals, brooks, rivers, the sea. He was always exploring this amazing world about him, soaking up knowledge about it through his very pores, and by a process of trial and error gaining some sense of control over it. He knew the signs of the seasons. He knew the differences between cedar and birch and fir and pine; he knew the smell and feel of them, what he could do with them. He had a healthy respect for the ways of nature and of animals, the sea at high and low tide or in a storm, a swollen river, a falling tree, a drought, a storm. Furthermore, the conditions of life outside school gave him a practical manual training course. He learned to use tools in making things that were needed and, in the unhurried tempo of those days, there was leisure to develop skill and artistry in their use. Community centers as such were relatively unnecessary because the life of the community was full of human interest in its leisure-time activities as well as in its work activities.

These were the conditions 75 years ago. They still obtained in some places 25 years ago, but the flow of population to the cities had already begun and even a quarter of a century ago nearly half the total population was living in cities. A few far-sighted school administrators were realizing that the traditional little red schoolhouse of former days would not meet the needs of children in congested cities. Statistics on juvenile crime were accumulating to show the disastrous effects of city life upon children. There was a growing recog-

nition of the fact that the city had deprived children of one of the essentials of their education—the opportunity for wholesome outdoor play; and that the city home, with its ready-made food, furniture, and clothes had eliminated the reasons for many of the activities of the home which had had great educational value for children. Leisure was becoming a menace, not an opportunity; street play with all its demoralizing influence, commercialized amusement places, and cheap movies were taking the place of the social life of the smaller communities in which everyone shared.

In other words, social and industrial changes had brought about radical changes in the environment of children, with the result that it is now recognized that the school must provide much more than the training in the "three R's"; it must return to children the educational opportunities which they used to have outside of school. This broader social viewpoint of school administrators with regard to the responsibilities of the school for children who are growing up in our present industrial society is admirably expressed by Charles L. Spain, deputy superintendent of schools, Detroit, Mich., in a recent bulletin, when he says:[1]

> Facing as we are today a complex civilization with its baffling situations which demand constant readjustment on the part of the individual, popular education would utterly fail to meet its responsibilities if it provided for the oncoming generation nothing but the tools of learning. A curriculum which directs its appeal merely to memory and intellect would fall far short in this industrial age. It must strike more directly at the roots of child nature. It must promote physical health, emotional stability, right attitudes toward life and its problems, and a sense of obligation toward society as a whole. These things are basic in the development of character and citizenship.
>
> In a day when the great mass of people dwelt in rural districts and small towns, where play space was ample, where swimming facilities were near at hand, where household duties, chores, and the simple industries of the home and community provided vocational training, where gardens, fields, and woods made contact with nature easy for all, the community itself gave the child those experiences which prepared him for the life which he was to live and the "essentials" as far as the schools were concerned were the "three R's."
>
> Today we face a very different situation. Over half of our people are crowded into restricted areas. For the younger children the play space has become the public highway, natural opportunities for learning to swim are largely wanting, chores and chances for vocational training are rare outside of factories, and direct contacts with nature are few.
>
> In this situation children must be introduced to a society more difficult to understand than ever before, imposing great responsibilities upon the younger generation, providing them with more opportunities for leisure, while at the same time many of the traditional social sanctions which kept youth in restraint seem to have lost their potency.
>
> In the midst of a highly organized industrial society the school, appreciative of its opportunities and responsive to the demands of a progressive community, has undertaken to provide for the children some of the opportunities which the industrial age has taken away. So in Detroit ample playgrounds, gymnasiums, and playrooms represent the public commons of an earlier time; swimming pools under hygienic conditions replace the "old swimmin' hole"; manual and industrial arts and home economics stand for the chores and home industries of a by-gone day, while music, art, the library, and the varied activities of the auditorium provide interests which help the child to spend his leisure time in a worth-while way.

These changes in the conception of the function of the elementary school have resulted in much experimentation in the development of the elementary curriculum, and this, in turn, has radically affected the planning of elementary school buildings. These buildings can no longer be judged merely on the basis of whether they meet certain standards of heating, lighting, ventilating, etc. Nor can they be judged on the basis of former standards in regard to classroom size, etc. The modern school building must now be appraised on the basis of the effectiveness with which it has been planned and constructed to carry out the educational program on which the school is to operate; and different programs will call for different types of buildings.

These changes in habits and standards are normal and most encouraging and yet they have naturally given rise to confusion and often to some irritation between school authorities and architects. Old standards no longer apply. And yet new methods and standards have not been worked out. Often the school authorities are not clear as to what they want, and in many cases no mechanism has been set up for cooperative planning between the superintendent and architect. To quote Dr. Charles L. Spain again:

> Forward-looking communities are coming to realize that the new school program of specialized activities must be housed in a building which provides highly specialized rooms and facilities. To plan and erect buildings of this sort, having due regard for the needs of the curriculum, the demands of safety, the dictates of good architecture, and the financial resources of the community offers a challenge to the superintendent of schools and the architect which they did not receive in earlier years. It also makes a demand upon their resources which few of them are prepared to meet. The architect must scrap many of his old ideas and readjust his viewpoint, and the superintendent must equip himself with new data and a technique which in the past he did not find necessary.

What is needed is to recognize the fact that the problem of elementary school building planning is a dynamic one which changes, and which will continue to change, as ideals and methods of elementary school education change and develop. A return to the more or less static or slowly changing conditions of a simpler civilization is no more possible in education and in school building planning than it is in any other department of modern life. But, having accepted the present situation as normal and natural, it is both desirable and

[1] Economy and the Modern Curriculum. Detroit Educational Bulletin, 16: 2-3, January–February 1933.

possible to determine whether, within this process of change, there are developing fairly well-defined types of school organization, to analyze the kinds of school programs that are used to carry out these different types of organization, and to discover how school buildings are being planned so as to carry out as efficiently as possible the function of these different kinds of elementary school programs.

That is the purpose of the present study. Neither the Office of Education nor the members of the National Advisory Council on School Building Problems pretend to say whether one type of school organization is preferable to another. All that has been attempted is to show how the different types of programs affect the planning of buildings so that school superintendents and architects who wish to erect a building of a given type may profit by the experience of others in planning buildings for that type. It is not assumed that the plans for different types of schools which are included in the study are the best that can be evolved. On the contrary, it is hoped that the data contained in the present study may assist superintendents and architects in developing and refining the science of functional planning of school buildings.

CHAPTER II: SCOPE OF THE STUDY

Number of Cities Cooperating in the Study—Number of Buildings Based on a School Building Survey—Types of School Organization for Which Buildings Were Planned

CITIES COOPERATING IN THE STUDY

SEVENTY-FOUR cities in 40 States cooperated in the study. The members of each of the 11 regional councils of the National Advisory Council on School Building Problems, through their knowledge of school building problems and their information on school building construction in each region, selected cities where they knew that new school buildings, planned along modern lines, were being erected. The buildings were not selected because it was decided by a process of elimination that they were the best in the regions. To have done this would have been to prejudge the whole study. It was assumed that there was no single "best way" of meeting the varied demands of the elementary school but that it was desirable to obtain data on how these demands were being met, so that architects and superintendents who had specialized on school building problems might evaluate the trends in school building planning as indicated by the results of the study. The cities having been selected, each superintendent was asked to choose one elementary school building in his city which he considered the most modern that had been planned to date for his school system. An alphabetical list of the cities included in the study with the names of the school buildings, and the names of the superintendents and of the architects who designed the buildings will be found in appendix B. The number of school buildings by regions and by States is given in appendix C.

NUMBER OF PLANS BASED ON SCHOOL BUILDING SURVEYS

Since the first steps in scientific school building planning is to determine whether the building is needed, where it is needed, and how many pupils are to be accommodated, the first question asked was whether the planning of the buildings had been based on a school building survey. Too often in the past, school buildings have been erected because the school authorities or the community thought, rather than knew, that the buildings were needed. Good functional planning must be based upon a scientific study of the total school building situation and the place of a given school in that situation. If that is not done, the capacity of the newly erected building may be inadequate within a year or two after the building is completed, or the school may be larger than is needed for its particular district. In either case, there is waste of time, effort, and money.

The answers from the cities cooperating in the study showed that school building surveys are of two general types. The first type is the continuous school building survey which can only be carried on in cities that have permanent school building departments. Such departments not only keep a careful check on population trends and the capacity and adequacy of existing buildings, but also some of these departments now have as a member of their staff the "educational planner", that is, the person who has the training, technique, and vision to translate the school curriculum and activities into carefully worked-out terms and standards which are intelligible to architects and engineers. The educational planner is responsible for working out the school program, interpreting it to the architect, assisting him in making preliminary sketches of the building, and in checking the plans at every step to make sure that the completed building fits the program. The architect may be a member of the school building division of the city school system or he may be an outside architect called in to erect a given building. In cities which cannot afford an educational planner in its school building division, the superintendent or one of his assistants takes charge of the educational planning of the building.

The continuous school building survey is likely to be more efficient and more economical in the long run than the short-term survey, but the permanent staff to carry on such surveys usually cannot be afforded except by the larger cities. The second type of survey, therefore, is the special school building survey which is carried on for a limited period in order to work out a school building program in cities or towns or rural communities where the school building needs are pressing either because of failure to provide for them over a period of years, or because of sudden changes in population due to some recent industrial development. For this type of survey the city or town usually calls in an outside organization such as a school building division of a State department of education, or a State or private institution of higher learning. In some instances, such services are provided by school building architects who employ as part of their staffs persons to make school building surveys.

Such school building surveys, whether special or continuous, involve studies of population trends, careful checking and changing of school boundaries in accordance with changes in population, far-sighted planning with regard to selection and purchase of sites, and

careful checking of every detail of the planning of the building so that it may meet the requirements of the present educational program, and yet be flexible and expansible.

It was found that 47 of the 70 buildings (67.1 percent), which were planned for the four chief types of school organization, were based on school building surveys. (See chart I.)[1] Probably the figures are an understatement rather than an overstatement because of the fact that in some instances the question was evidently not clearly understood. For example, at least four cities, where it is known that continuous school building surveys are carried on, replied that the buildings were not based on preliminary surveys. This was doubtless due to the fact that they interpreted surveys as meaning special school building surveys.

RELATION OF THE EDUCATIONAL PROGRAM TO PLANNING THE BUILDING

Because functional planning of a school building, if it is to be effective, involves translating the educational aims and methods of the school into an actual workable program, each superintendent of the 74 cities included in the study was asked to state whether an educational program for the school had been made before the building was planned, and whether the program was explained and interpreted to the architect and the building plans checked with the program.

The importance of the school program in far-sighted building planning can hardly be overestimated. It is really a working blueprint of the school organization. Just as the architect furnishes the blueprints of floor plans of the building to the school superintendent to show how the building is planned so in many cities the school superintendent, or educational planner, makes a blueprint of the school organization in the form of the school program which shows the number and kind of rooms to be provided. The factors that have to be considered in making such a program have a direct and practical bearing upon the size and design of the building, and the details of its construction. Again, the number of pupils to a class has a direct bearing upon the size of rooms. Not only the kind of activities to be carried on in the building but the way they are to be taught will affect the planning of the rooms. For example, if art, music, and science are to be taught in an art room, music room, and science room, with the special equipment for each of these subjects in each of these rooms, the plans for built-in equipment will be very different from what they would be if all these subjects were to be taught in each classroom.

Because of these considerations it was important to find out how many of the cities had worked out the educational program before the building was planned. The returns showed that in 51 cities, or 68.9 percent of the total, the school authorities worked out the educational program before the building was planned and consulted with the architect in regard to plans for such a program. Six cities reported that the program was worked out before the building was planned but that the program was not submitted to the architect. Seventeen of the seventy-four cities did not work out the educational program before the building was planned. These 17 cities were asked to send the program in operation in the school so that it would be possible to determine the kind of school organization carried on in the building after it was completed.

TYPES OF SCHOOL ORGANIZATION FOR WHICH THE BUILDINGS WERE PLANNED

In order to determine the types of school organization for which the buildings were planned, the first task was to analyze the school programs so that they could be classified under certain general types.

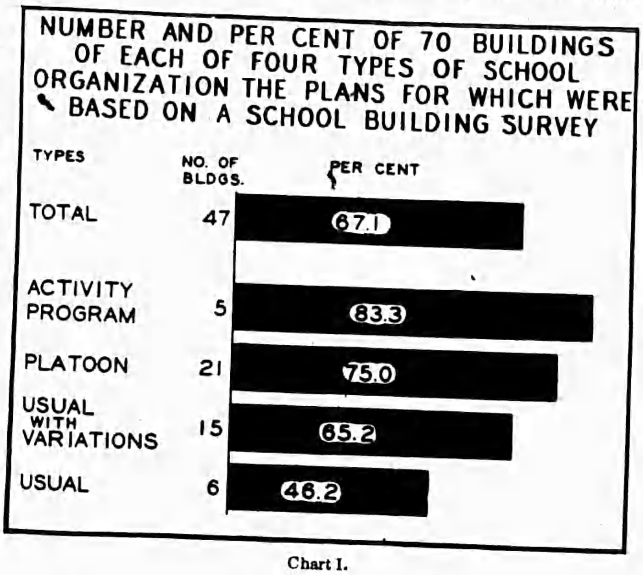


Chart I.

By far the largest part of the time in making the study was consumed in making this analysis of the programs. One reason for this was that the forms in which they were made were almost as many as the number of programs. Some were teacher programs instead of pupil programs, some gave the location of classes but not the names of the activities taught in the rooms, some gave the time allotment for subjects but not the places where the subjects were taught. Also, the methods of designating classes were innumerable; for example, 1A, A1, A[1], or L1 for the lowest class. It soon became evident that it would be impossible to make any comparison of types of programs until they were all reduced to a common form. This was done and the transcribed programs were sent to the superintendents to be checked and approved.[2]

[1] This does not include the three buildings planned for either one of three types of schools, or the one building planned for the *Cooperative Group* type. Of these four buildings, two were based on a school building survey.

[2] See appendix E for "Explanation of Educational Programs."

Time-consuming as was this program study, yet it was most illuminating in showing the variety of experimentation that is going on in the development of curricula to fit the needs of present-day children. It proved what has already been referred to, that is, that elementary school education is in process of dynamic change; that the old "sit and listen" school is passing away and that flexible programs of enriched activities are being devised to meet the needs of children in different types of communities. The variety of ways in which these needs are being met are striking not only with regard to the educational opportunities offered in the school but the ways in which they are being offered. But, in spite of the many variations in the programs, analysis showed that they could be classified under the following four main types of school organization: [3]

"Usual" type of school organization.—By this is meant the type of school program in which (1) one teacher teaches all subjects in one room to one grade or section within a grade and (2) there are no special rooms.

"Usual with variations" type of school organization.—By this is meant the type of school program in which one teacher teaches all subjects to one grade or section within a grade but takes the pupils to special rooms for special subjects; or the type of program in which, in addition to the classroom teachers, there are special teachers for special subjects who go to the regular classrooms to teach the special subjects. The *Cooperative Group* plan is one variation of this type of school organization. Because of the fact that the *Cooperative Group* plan program differs from the other types of *Usual with Variations* programs, the one school of this type has, in some instances, been tabulated separately from the other schools of this type.

"Platoon" type of school organization.—By this is meant the type of school program in which a school is divided into an A school and a B school, one having the uneven-numbered classes, and the other the even-numbered classes. Each school has the same number of classes, and each contains all the six or eight grades. While the A school is in classrooms, often called homerooms, the B school is in special activity rooms, such as art, music, shop, science, library, etc., and in the auditorium, gymnasium, and playgrounds. At the end of the first or second period in the morning, the A school, which has been in classrooms, goes to special activity rooms, auditorium, and play, and school B goes to the homerooms. The same procedure occurs in the afternoon.

"Activity program" type of school organization.—By this is meant the type of school organization in which, in most cases, all subjects are taught by one teacher in one room, but on the basis of educational projects that require much activity material for each room, i. e., work benches, science material, art material, etc.

So far as the actual type of organization is concerned the program of the *Activity Program* type of school which has no special activity rooms is the same as that for the *Usual* type of school, while the *Activity Program* type of school which has special activity rooms is the same as for the *Usual with Variations* type of school. The difference in the latter case, however, is that the *Activity Program* type of school calls for special equipment for special activities in every room and therefore necessitates a classroom of larger dimensions than the *Usual with Variations* type.

The educational facilities provided for in buildings planned for these different types of school organization together with certain background facts in regard to when the buildings were erected and the size and types of cities in which they are located, will be given in chapter III.

[3] See appendix D for list of buildings by types of school organization for which they were planned.

CHAPTER III: PLANNING BUILDINGS FOR FOUR DIFFERENT TYPES OF SCHOOL ORGANIZATION

DATES WHEN BUILDINGS WERE ERECTED

THE MAJORITY of the 74 buildings, 81.2 percent, were erected between 1927 and 1932.[1] Nearly half the buildings (48.8 percent) were erected between 1930 and 1932. (See chart II.)

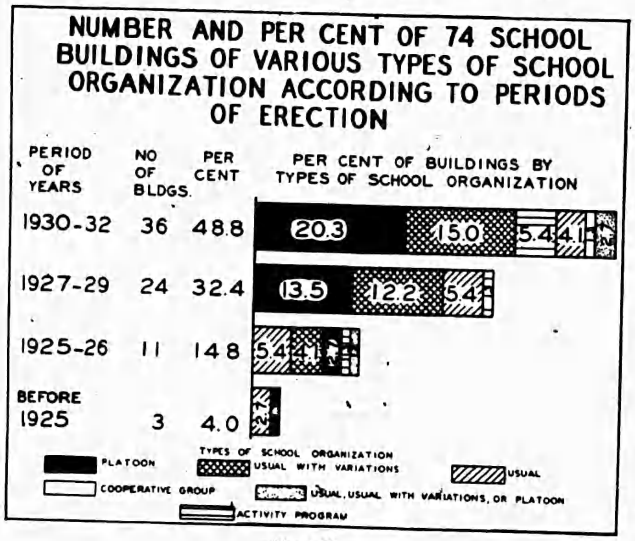


Chart II.

SIZE OF CITIES IN WHICH BUILDINGS WERE LOCATED

More than 40 percent of all the buildings were located in cities of 100,000 and over; 32.4 percent were in cities of 25,000 to 100,000. (See chart III.) In other words, 72.9 percent of the school buildings, or nearly three-quarters of the total number, were in cities of 25,000 and over. Only 17.6 percent were in cities of 10,000 to 25,000, and 9.5 percent in cities and towns of less than 10,000. The original plan for the study was to have as many school buildings from small cities and rural communities as from the larger cities. Consequently, the questionnaire was sent to a large number of these groups, but in most cases the superintendents or architects of the smaller communities replied that the cost of making the plot plans and floor plans which were essential to the study would make it impossible for them to participate in the study.

Almost all the school buildings planned for the *Activity Program* type and *Platoon* type of school organization were located in cities having a population of 25,000 or more; for example, table 1 shows that 66.7 percent of the *Activity Program* type and 53.5 percent of the *Platoon* type were located in cities of 100,000 and over; while only 35 percent of the *Usual with Variations*, and 23 percent of the *Usual* type were in cities of this size. The buildings for the *Usual* type of school were largely located in the smaller cities; for example, 61.6 percent of the *Usual* type were in cities of 25,000 or less, while only 34.6 percent of the *Usual with Variations*, 3.6 percent of the *Platoon*, and none of the *Activity Program* type of school were in cities of 25,000 or less.

SITES PROVIDED FOR THE SCHOOL BUILDINGS

The school site—its size, dimensions, character of the ground, location of the building, and space for play—is of fundamental importance in school building planning since it conditions the development of an adequate play and recreation program, and also the possibilities of adding to the existing school plant.

During the past 25 years there has been a striking change in the attitude of school authorities and the general public in regard to the importance of the school site in the development of a modern educational program. A quarter of a century ago school buildings in cities were located on sites often chosen because they were not desirable for any other purpose; they were usually small and irregular in shape, and often the ground was not level. Usually the building was placed squarely in the center of the site leaving almost no clear space for play. Such a situation was not serious in the days when there was still plenty of vacant space in cities. But with the development of the modern

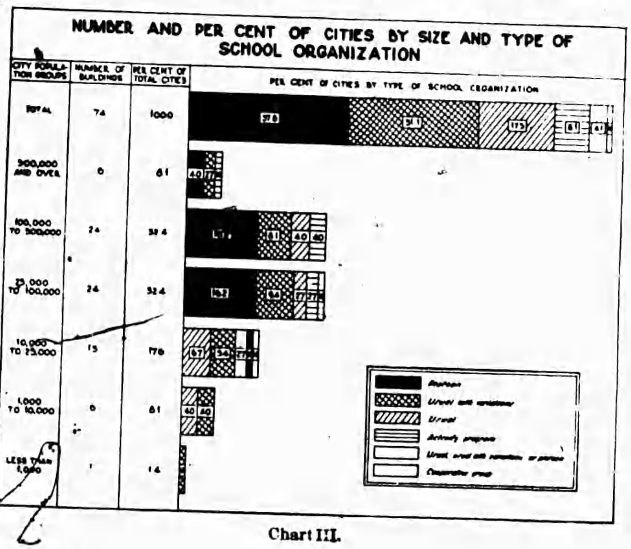


Chart III.

[1] See appendix F for dates of erection of buildings planned for each type of school organization.

industrial city, with its tendency to cover all available space with factories, tenements, apartment houses, and offices, communities which have inherited the small school sites of former days find them entirely inadequate to meet the play and recreation needs of children and adults. It is generally recognized now that if such needs are not met outside of school through park and recreation departments, then the school must provide the facilities for the play and recreation so essential for the wholesome growth of children. Consequently, the tendency now is to provide much larger sites, more carefully chosen than in former days.

TABLE 1.—PERCENT OF CITIES, ARRANGED BY SIZE, HAVING VARIOUS TYPES OF SCHOOL ORGANIZATION

Population group	Number of Cities by Type of School Organization						
	Usual	Usual with variations	Platoon	Activity program	Cooperative group	Usual, usual with variations, or platoon	Total
1	2	3	4	5	6	7	8
	Number						
Total	13	23	28	6	1	3	74
500,000 and over		2	3	1			6
100,000–500,000	3	6	12	3			24
25,000–100,000	2	7	12	2		1	24
10,000–25,000	5	4	1		1	2	13
1,000–10,000	3	3					6
Less than 1,000		1					1
	Percent						
500,000 and over		8.8	10.7	16.7			8.1
100,000–500,000	23.0	26.2	42.8	50.0			32.4
25,000–100,000	15.4	30.4	42.8	33.3		33.3	32.4
10,000–25,000	38.5	17.4	3.7		100.0	66.7	17.6
1,000–10,000	23.1	12.9					8.1
Less than 1,000		4.3					1.4

The character of the cities cooperating in the present study, the plot plans for the schools, and an analysis of their educational programs illustrate these points. It is clear from a study of the school programs that two factors conditioned the size and lay-out of the site; first, the vision, or lack of vision on the part of the community or constituted school authority as to the importance of play and recreation in the life of children and of the community; and, second, the availability of land at the price the school district can pay. For example, in the schools of Pittsburgh, physical education and play are a part of the daily program. Every child has a period of 45 minutes every day for play under the direction of trained play-directors who give all their time to this work. There is probably no city in the country where the importance of play for children is more fully realized, but land in the congested parts of the city where the children are is expensive, and the school sites are often on the side of a hill. The result is that in the Pittsburgh schools where outdoor playgrounds are limited, ample provision is made for play in gymnasiums and playrooms. On the other hand, Detroit's school program also provides for a period of 30 minutes' play every day for every child under the direction of play-directors, but it was possible for Detroit, in connection with a comprehensive school building program started 15 years ago to secure large sites, often 5 acres in size; and, because of the topography of Detroit, level land was more easily available.

Since 54 of the 74 buildings, or 72.9 percent, were located in cities of 25,000 population and over, and since one-half of this number were in eastern industrial cities of 100,000 population and over, it is not surprising to find that more than one-third of the school buildings, 37.8 percent, had sites of 1 to 3 acres; and that 36.5 percent had sites of 3 to 5 acres. The median site was between 3 and 4 acres. However, the range in size is more significant than the median size of site, for it shows a tendency that is important in the development of the elementary school plant. As will be seen from chart IV the range in size of site is from 1 to 25 acres. Four school buildings of the *Platoon* type, three of the *Usual with Variations*, two of the *Activity Program*, and one of the *Usual* type, had sites of 5 to 7 acres; while two buildings of the *Usual with Variations* type and one of the *Platoon* type had sites of 8 to 10 acres; one building of the *Platoon* and one of the *Usual* type had sites of 12 to 13 acres; one of the *Usual* type had a site of between 14 to 15 acres; and one school building of the *Platoon* type had a 25-acre site.[2]

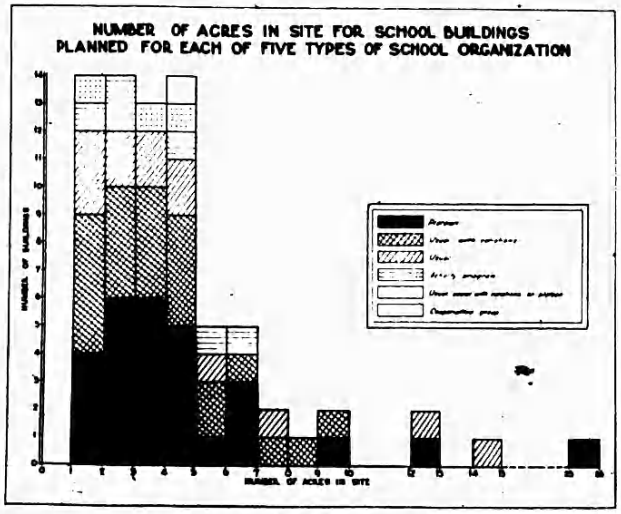
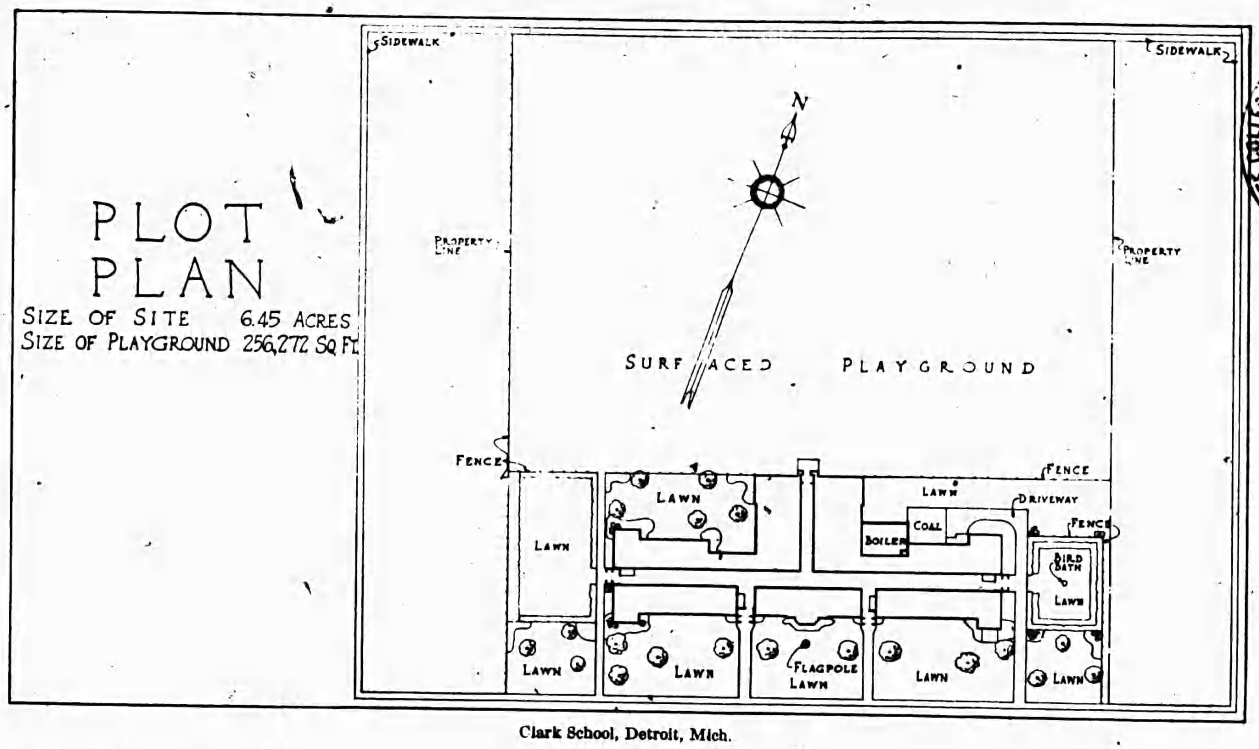


Chart IV.

[2] The school with the 25-acre site is the Lew Wallace situated in Gary, Ind. The unit included in this study is the primary building of what is to be a complete school of 12 grades. The complete schools of 12 grades in Gary, Ind., are housed in a large central building, on one side of which is the primary school building, and on the other a shop building. All school sites in Gary are at least 10 acres in size but those for the complete schools, comprising the elementary, junior, and senior high school grades, are usually 25 acres or more.



Clark School, Detroit, Mich.

The location of the building on the site is almost equally important with the size of the site. The building should be so placed as to leave as much space as possible for play, and yet allow for additions to the building. It is interesting to find that, in the majority of the sites for the 74 schools, the buildings were placed at one end or at one corner of the site so as to leave the largest possible amount of space for play, and also adequate space for additions to the buildings.

Another point in regard to the site that has not received much attention until recently is the question of the lay-out of the site. In general, there appear to be two points of view on this subject among the schools that give a definite time allotment for play in the educational program. According to one point of view, it is desirable to have 3 or 4 acres of play space, well-surfaced, but not broken up into play areas for specific play activities. The following plot plan for the Detroit, Mich., school illustrates this point. According to the other point of view, it is desirable to allot certain sections of the playground for different play activities, i. e., for apparatus work, for baseball, for soccer, as well as for school gardens and animal husbandry. The plot plan for the Pasadena, Calif., school illustrates this point of view.

EDUCATIONAL FACILITIES FOR FOUR DIFFERENT TYPES OF SCHOOL ORGANIZATION

What kinds of educational facilities were provided in buildings planned for each of the four types of school organization? What percent of the total rooms were classrooms, special activity rooms, kindergartens, and rooms for such special groups as sight-saving, etc., in buildings planned for the *Usual*, *Usual with Variations*, *Activity Program*, and *Platoon* types of school organizations?[3] In answering this question for buildings for each type of school, the grades provided for in each group of schools will first be given since it is generally assumed that the number and variety of special activity rooms increases with the age and grade of the pupils—an assumption which the following facts show is not necessarily true.

EDUCATIONAL FACILITIES FOR THE USUAL TYPE OF SCHOOL

Thirteen of the 74 school buildings were planned for the *Usual* type of school organization. The grades included in these schools were as follows:

Grades:	*Number of schools*
1–3	1
1–6	8
1–7	1
1–8	3

[3] See appendix G for definitions of different types of rooms as given in tables and charts, and appendix H for educational facilities provided in each of the 74 buildings included in the study.

The educational programs of these schools called for classrooms and kindergartens, but no special activity rooms. In one school there were six rooms designated as "Other", that is, rooms for crippled and deaf children, and for sight-saving and open-air classes. Of the 131 rooms in these 113 schools, 118, or 90.1 percent, were classrooms; 6 were "Other" rooms; and 7 were kindergartens. (See chart V.) The fact that the educational programs for these schools did not call for such special activity rooms as music, art, etc., does not necessarily indicate that modern methods of teaching may not be carried on in these schools. All that it indicates is that the type of program or type of teaching does not, in the opinion of school authorities, require either special rooms for special subjects as in the *Usual with Variations* or *Platoon* type of school, or the type of classroom required for the *Activity Program* type of school.

There were 3 auditorium-gymnasiums and 6 auditoriums in the 13 schools. There were only two playrooms, and no gymnasiums.

The Wyman School of Winchester, Mass., is an illustration of a building planned for this type of school organization, with an auditorium.

EDUCATIONAL FACILITIES FOR THE *USUAL WITH VARIATIONS* TYPE OF SCHOOL

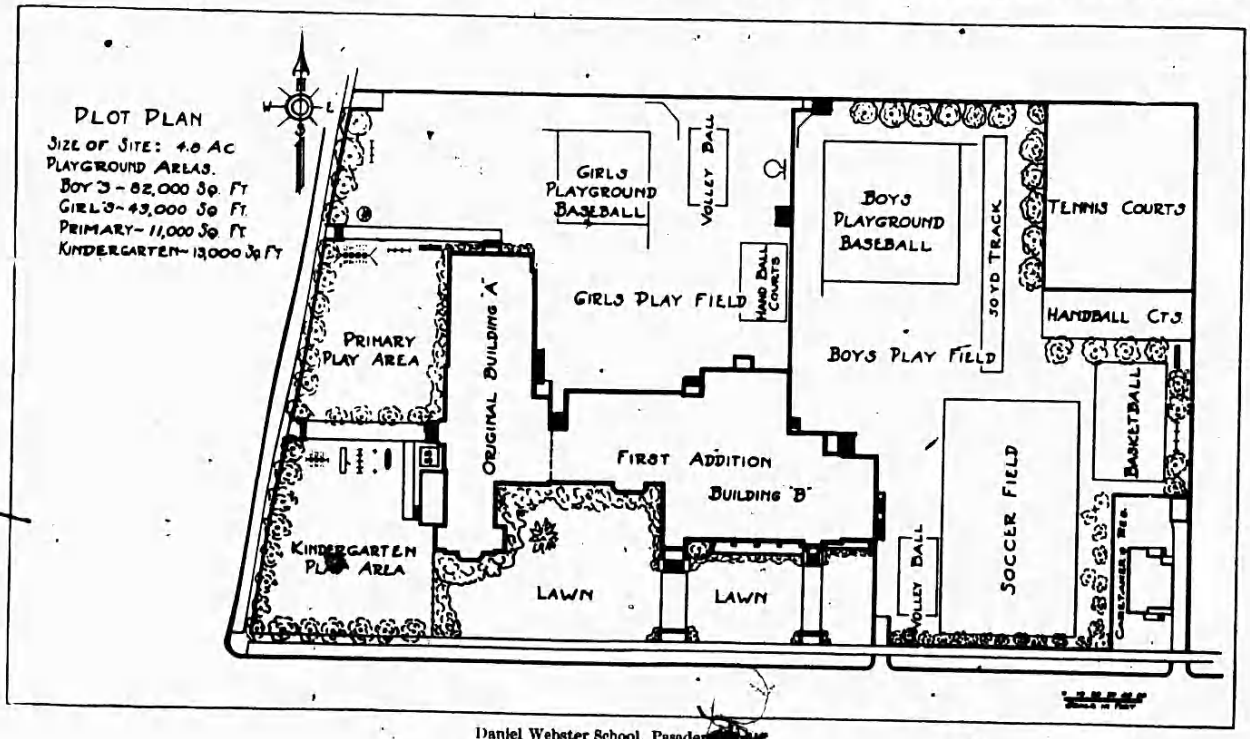
Twenty-three of the seventy-four school buildings were planned for the *Usual with Variations* type of school organization. The grade range in these schools was from grades 1–6 to grades 1–10. Fifteen of the twenty-three schools had either grades 1–5, 1–6, or 1–7, and did not have a departmentalized form of organization, five of the schools had some of their grades departmentalized, while three schools were called combined elementary and junior high schools, with grades 1–8, 1–9, and 1–10. (See table 2.)

TABLE 2.—GRADES IN SCHOOLS OF THE *USUAL WITH VARIATIONS* TYPE

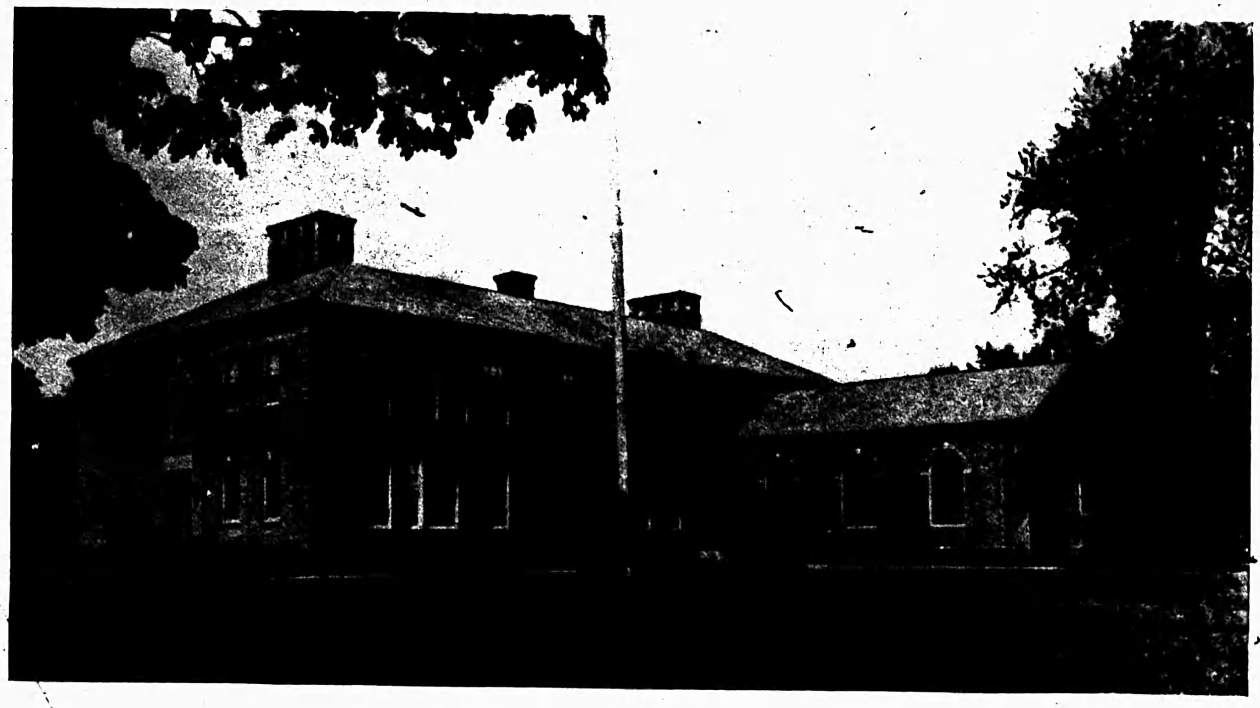
Grades	Number of schools having grades			
	Not departmentalized	Departmentalized	Elementary and junior high school	Total
1	2	3	4	5
1–5	2			2
1–6	10	1		11
1–7	3	2		5
1–8		2	1	3
1–9			1	1
1–10			1	1
Total	15	5	3	23

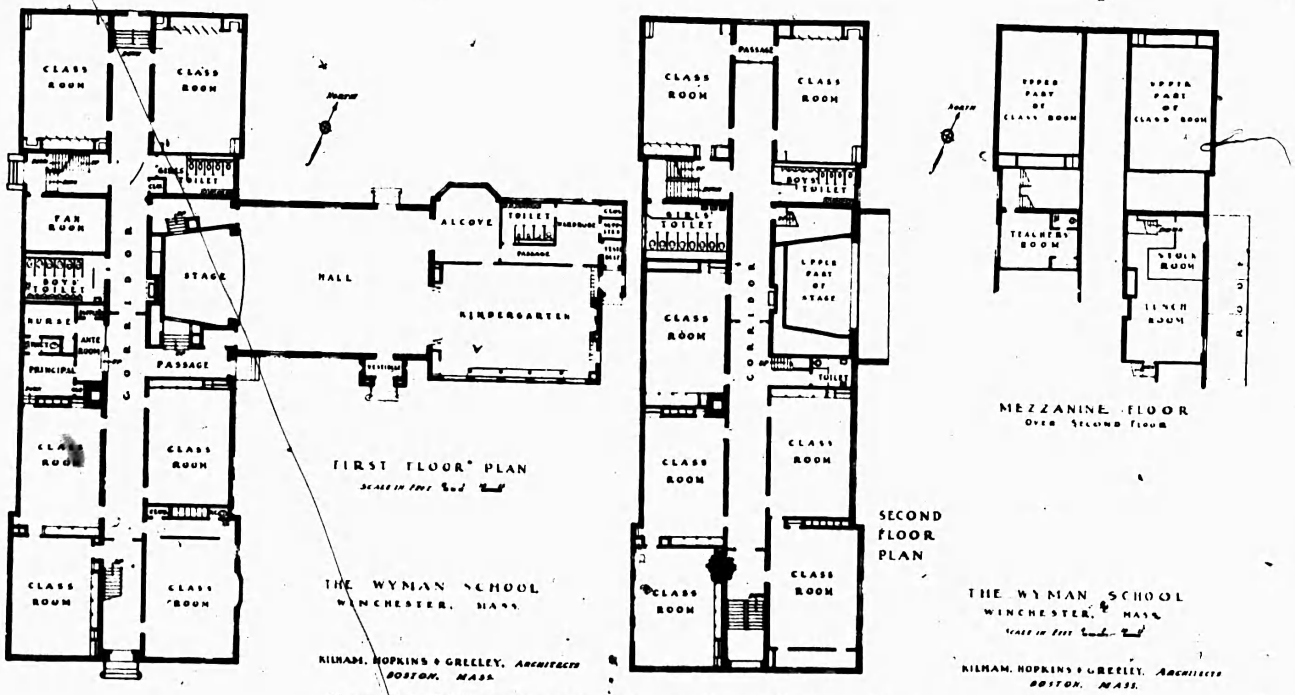
The educational programs of these schools called not only for classrooms, kindergartens, and "Other" rooms, but for special activity rooms. Of the 497 rooms in the 23 school buildings, 380, or 76.5 percent, were classrooms; 82, or 16.5 percent were special activity rooms; 12, or 2.4 percent, "Other" rooms; and 23, or 4.6 percent were kindergartens. (See chart V.)

There were 12 different kinds of special activity rooms in these schools. (See table 3.) It is not surprising to find that 35.4 percent of all the 82 special activity rooms in



Daniel Webster School, Pasadena, Calif.

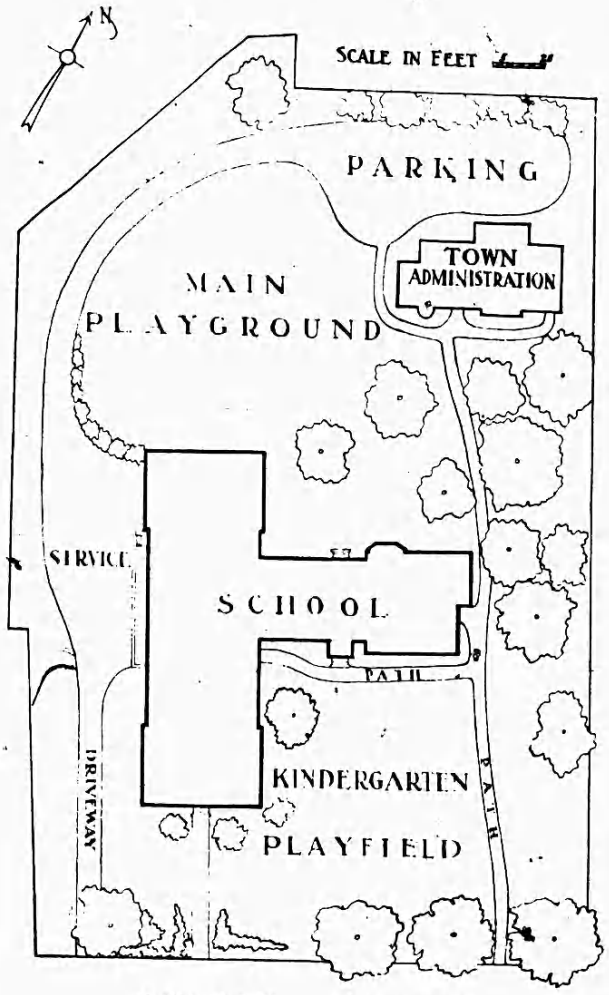




Wyman School, Winchester, Mass. Kilham, Hopkins, and Greeley, Architects.

these schools were cooking and sewing rooms and shops, because this type of special activity has been included for some time in elementary schools, but it is significant of the development of the elementary school that 44 percent of the special activity rooms were libraries, art rooms, music rooms, and science rooms. (See chart VI.)

Furthermore, this type of room was not confined to the departmentalized schools and junior high schools. Fifteen of the buildings planned for the *Usual with Variations* type of organization did not have a departmentalized organization, and yet had 27 special activity rooms. For example, Janesville, Wis., had an art room, a library, and a music room, and Lincoln, Nebr., had a library, two music rooms, a cooking and sewing room, and a visual education room. In these 12 schools, 12.8 percent of all the rooms were special activity rooms, while in the departmentalized schools, 17.9 percent of the total rooms were special activity rooms; and in the combined elementary and junior high school, 32.9 percent. (See table 4.)



Wyman School, Winchester, Mass.

NUMBER AND PER CENT OF TOTAL ROOMS THAT ARE CLASSROOMS, SPECIAL ACTIVITY ROOMS, KINDERGARTENS, AND OTHER ROOMS IN SCHOOL BUILDINGS HAVING EACH OF FIVE TYPES OF SCHOOL ORGANIZATION

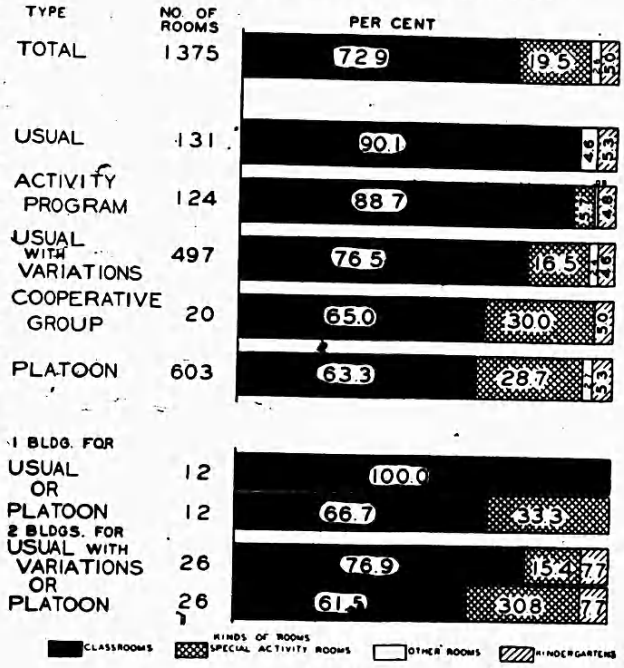


Chart V.

In other words, in the schools of the *Usual with Variations* type of organization, whether departmentalized or not, the school authorities evidently felt that effective teaching of art, music, science, literature,

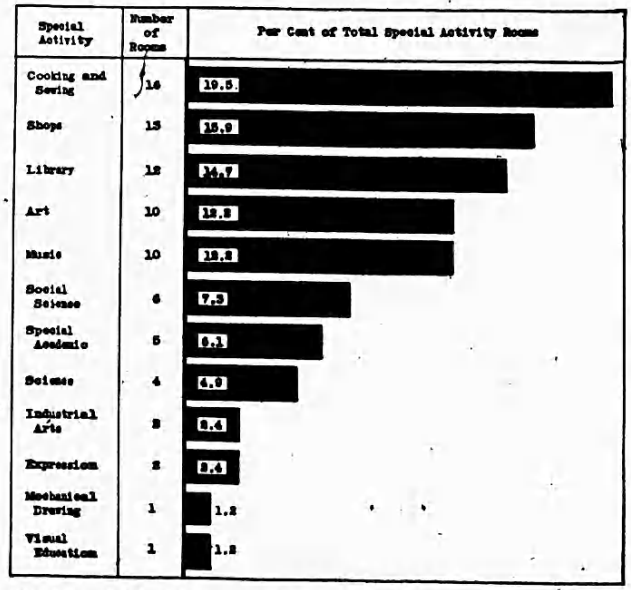


Chart VI.—Kind of Special Activity Rooms, and Number and Percent of Each Kind in Buildings Planned for the Usual with Variations Type of School Organization.

etc., could best be done in rooms especially equipped for these subjects.

In addition to the classrooms and special activity rooms in these school buildings of the *Usual with Variations* type, there were 7 combined auditorium-gymnasiums, and 13 auditoriums; there were 10 gymnasiums, and 8 play-rooms.

The Wilson School of Janesville, Wis., is an example of a school building planned for the *Usual with Variations* type of organization, with grades 1–7, not departmentalized. The Longfellow School of Pontiac, Mich., is an example of a building planned for the *Usual with Variations* type, grades 1–6, with grades 4–6 departmentalized. The Wilbur Wright School of Dayton, Ohio, is an example of a building planned for the *Usual with Variations* type with grades 1–6 elementary, and grades 7–9, junior high school.

TABLE 3.—NUMBER AND KIND OF SPECIAL ACTIVITY ROOMS IN BUILDINGS PLANNED FOR THE *USUAL WITH VARIATIONS* TYPE OF SCHOOL ORGANIZATION[1]

City and State	Special activity rooms: Total special activity rooms	Art	Library and literature	Music	Science	Cooking and sewing	Shops	Social science	Special academic	Industrial arts	Expression	Mechanical drawing	Other	Total classrooms and special activity rooms
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Dayton, Ohio	20	2	1	1	2	3	3	3			2	1	[2]	39
New Orleans, La	9		1	1		4	3							47
Pontiac, Mich	6		2					2	1	1				16
Aurora, Ill	5	1	1			2	1							30
Lincoln, Nebr	5		1	2		1							1	28
Philadelphia, Pa	5					2	1		1	1				34
Syracuse, N. Y	4	1		1	1		1							34
Sierra Madre, Calif	3	1	1	1										17
Janesville, Wis	3	1	1	1										20
Atlanta, Ga	3	1	1		1									13
Winona, Minn	2		1						1					12
Rochester, N. Y	2		1	1										16
Dayton, Wyo	2					1	1							6
Los Angeles, Calif	2					1	1							26
West Lafayette, Ind	2	1		1										24
Kenmore, N. Y	2	1		1										33
Wenatchee, Wash	2	1						1						11
Kansas City, Mo	2					2								13
Winston-Salem, N. C	1		1											10
Montclair, N. J	1						[3]1							10
Waterloo, Iowa	1						1							13
Total	82	10	12	10	4	16	13	6	3	2	2	1	3	452

[1] 2 schools are omitted from this list. In the first school, the floor plans provided for a music and art room, but the program had not been worked out before the building was planned, and by the time the building was completed the room was changed temporarily to a classroom. In the second school, the special activity rooms were only half a unit in size and no special activity was designated.

[2] Typewriting.

TABLE 4.—NUMBER OF SPECIAL ACTIVITY ROOMS IN SCHOOLS NOT HAVING DEPARTMENTALIZED ORGANIZATION, HAVING DEPARTMENTALIZED ORGANIZATION, AND HAVING COMBINED ELEMENTARY AND JUNIOR HIGH SCHOOL ORGANIZATION

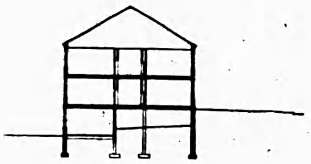
USUAL WITH VARIATIONS

City and State	Total special activity rooms	Total classrooms and special activity rooms	Percent special activity rooms are of total rooms
Schools not having departmentalized organization			
Lincoln, Nebr	5	28	
Sierra Madre, Calif	3	17	
Janesville, Wis	3	20	
Atlanta, Ga	3	13	
Winona, Minn	2	12	
Rochester, N. Y	2	16	
Los Angeles, Calif	2	26	
Kenmore, N. Y	2	33	
Kansas City, Mo	2	13	
Winston-Salem, N. C	1	10	
Montclair, N. J	1	10	
Waterloo, Iowa	1	13	
Total	27	211	12.8
Schools having departmentalized organization			
New Orleans, La	9	47	
Pontiac, Mich	6	16	
Aurora, Ill	5	30	
Philadelphia, Pa	5	34	
West Lafayette, Ind	2	24	
Wenatchee, Wash	2	11	
Total	29	162	17.9
Schools having combined elementary and junior high school organization			
Dayton, Ohio	20	39	
Syracuse, N. Y	4	34	
Dayton, Wyo	2	6	
Total	26	79	32.9

EDUCATIONAL FACILITIES FOR THE ACTIVITY PROGRAM TYPE OF SCHOOL

Six of the seventy-four buildings were planned for the *Activity Program* type of schools. Two of these schools had grades 1–5 and four had grades 1–6.

The educational programs of four of these schools called for classrooms and also special activity rooms; two of the buildings required only classrooms. Of the 124 rooms in the 6 schools, 110, or 88.7 percent, were classrooms, and 7, or 5.7 percent, were special activity rooms. (See chart V.) One school had one "Other" room and five schools had six kindergartens. Although the percentage of rooms that were classrooms in buildings for this type of school was nearly the same as for the *Usual* type, yet the classrooms in half the schools of the *Activity Program* type were different both in size and equipment from those for the *Usual* type of



SECTION

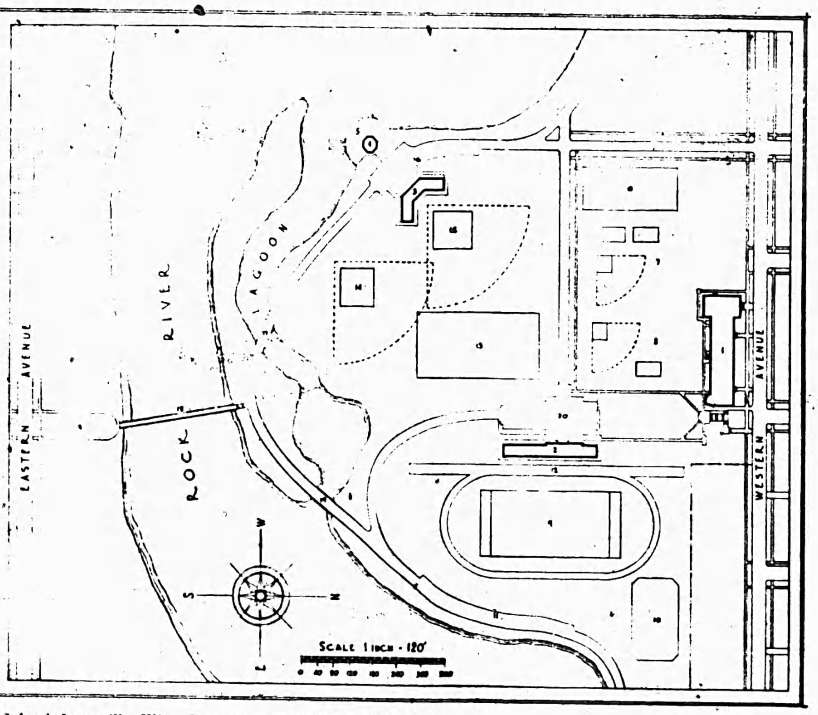
PLOT PLAN

1 School Is Located In Public Park.
2 Size Of Site Devoted Primarily For School And School Playgrounds 5½ Acres.
3 Majority Of Park Is Devoted To High School Fields And Public Playgrounds.
4 Boys Playground 91560 Square Feet.
5 Girls Playground 53320 Square Feet.

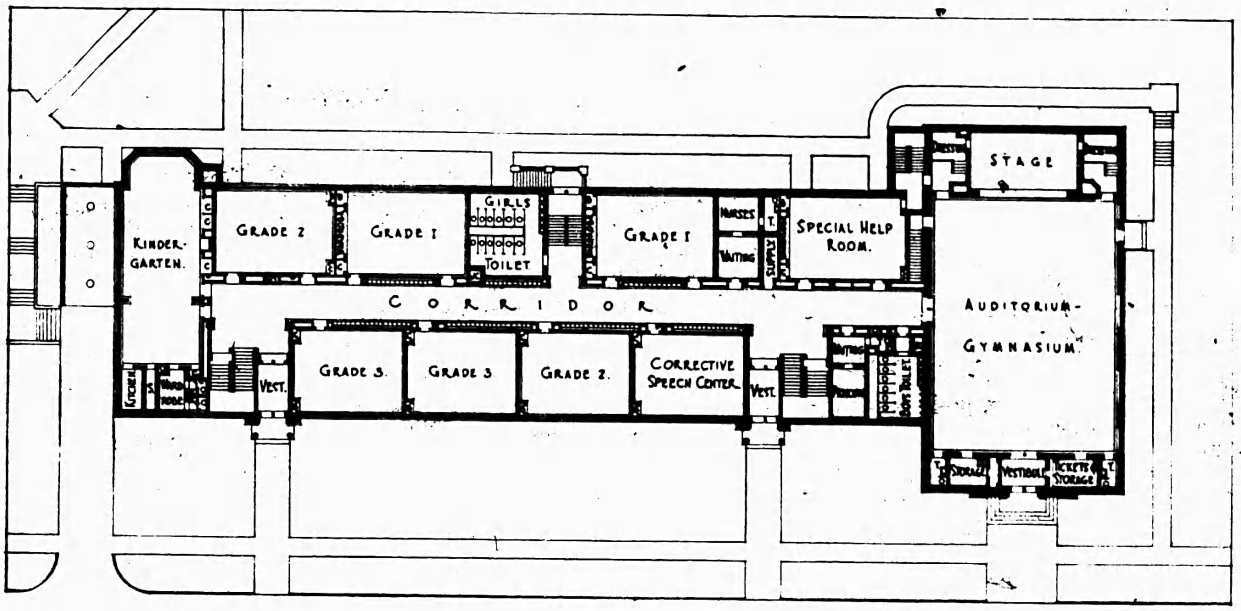
SCHEDULE OF GROUNDS

1 School	11 Parking Area
2 Stadium & Field House	12 ¼ Mile Running Track
3 Grandstand	13 Practice Football Field
4 Refreshment Stand	14 Practice Baseball
5 Boat Dock	15 Baseball Diamond
6 Tennis Courts	16 Parking Area
7 Boys Playground	17 Bridge
8 Girls Playground	18 Foot Bridge
9 High School Field	19 Bridge
10 Tennis Courts	20 Parking Area

NOTE:
This Entire Project Will Be A Future Developement With The Exception Of The Boys & Girls Present Playground

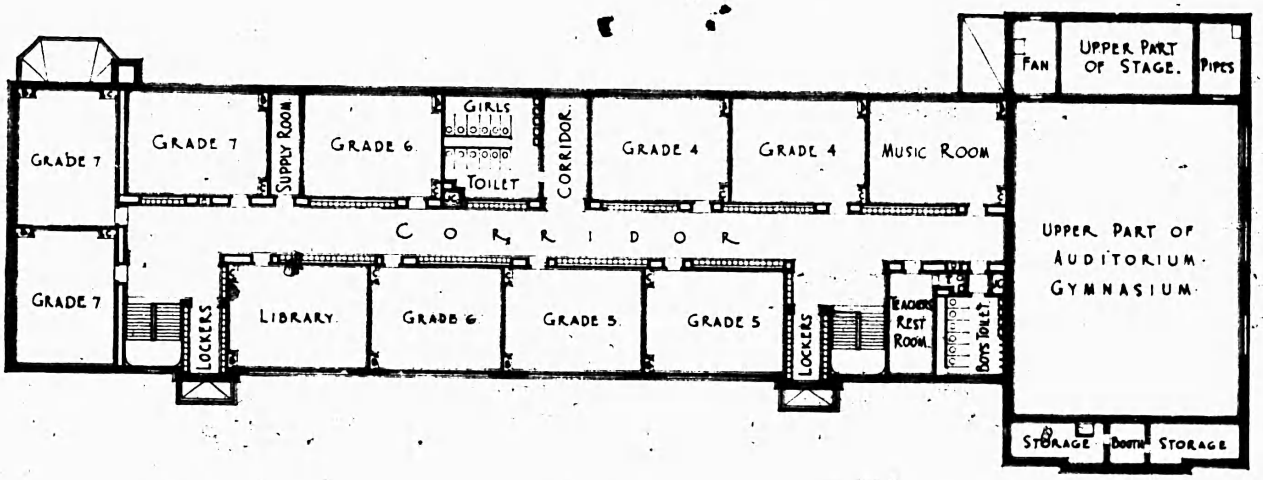


Wilson School, Janesville, Wis. Law, Law, and Potter, Architects.



FIRST FLOOR PLAN

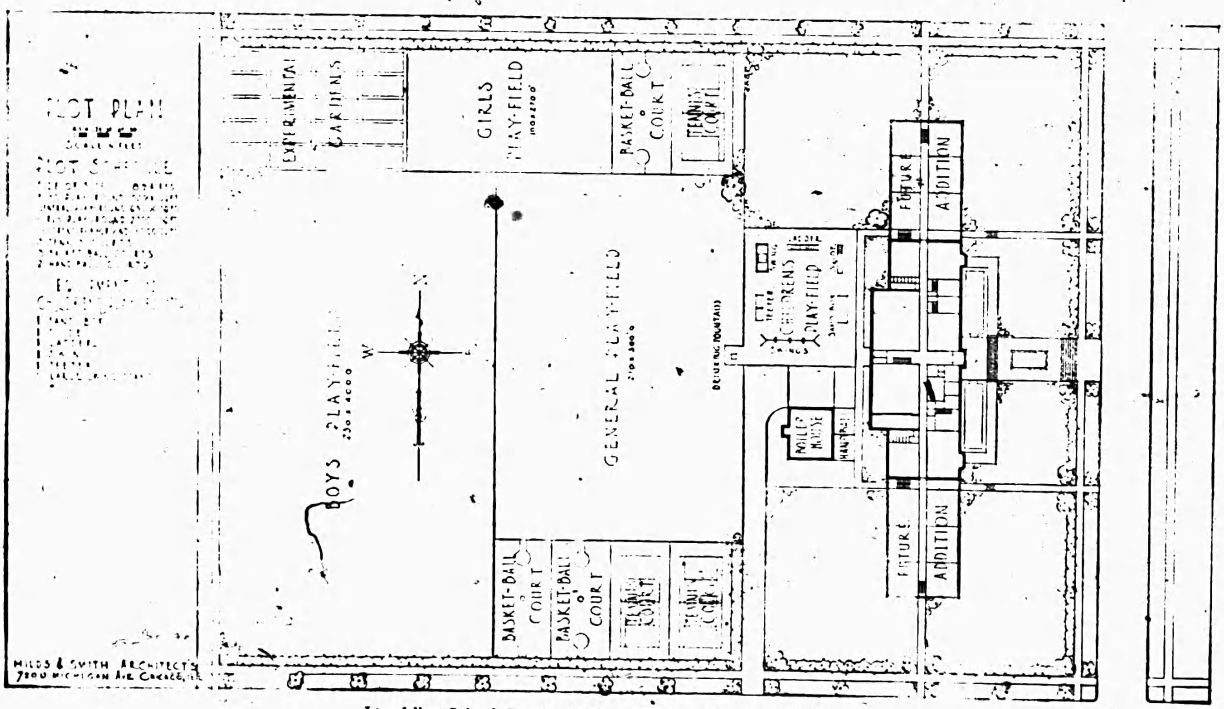
0 10 20 30



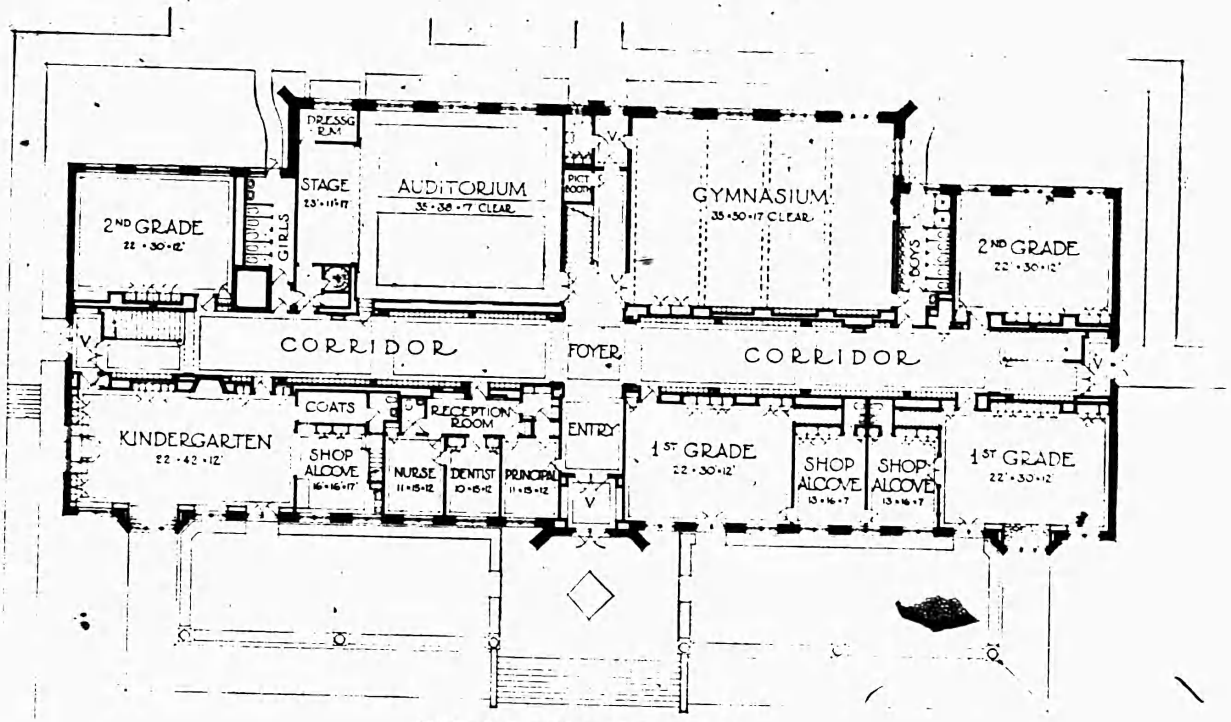
SECOND FLOOR PLAN

0 10 20 30

*Wilson School, Janesville, Wis. Law, Law, and Potter, Architects.



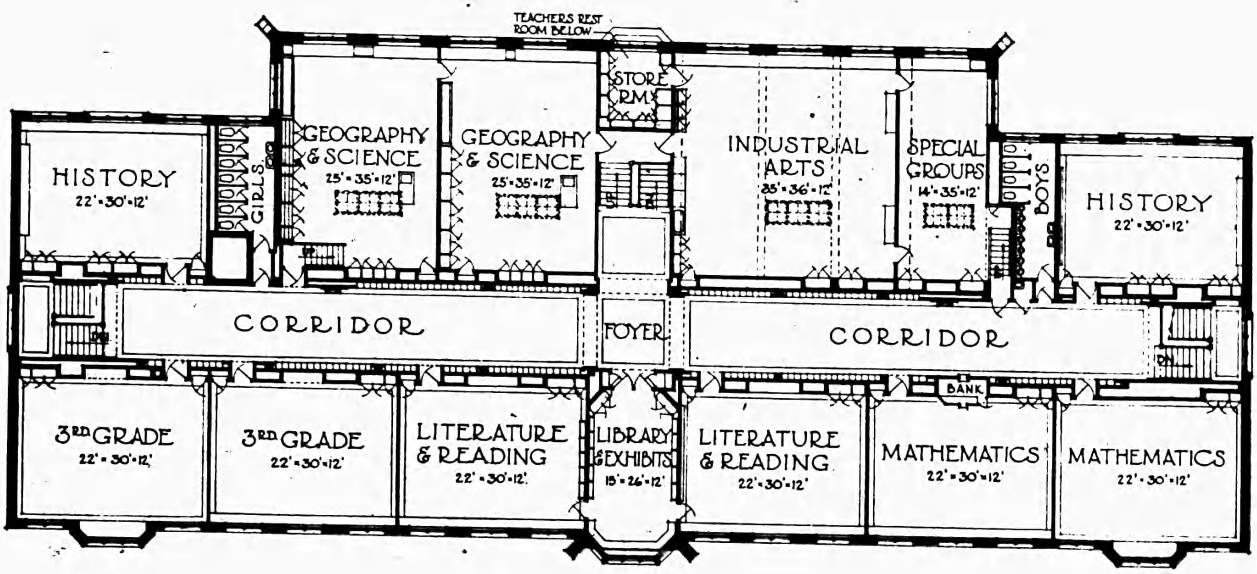
Longfellow School, Pontiac, Mich. Childs and Smith, Architects.



FIRST · FLOOR · PLAN

0' 5' 10' 15' 20' 25' 30' 35'

SCALE IN FEET.



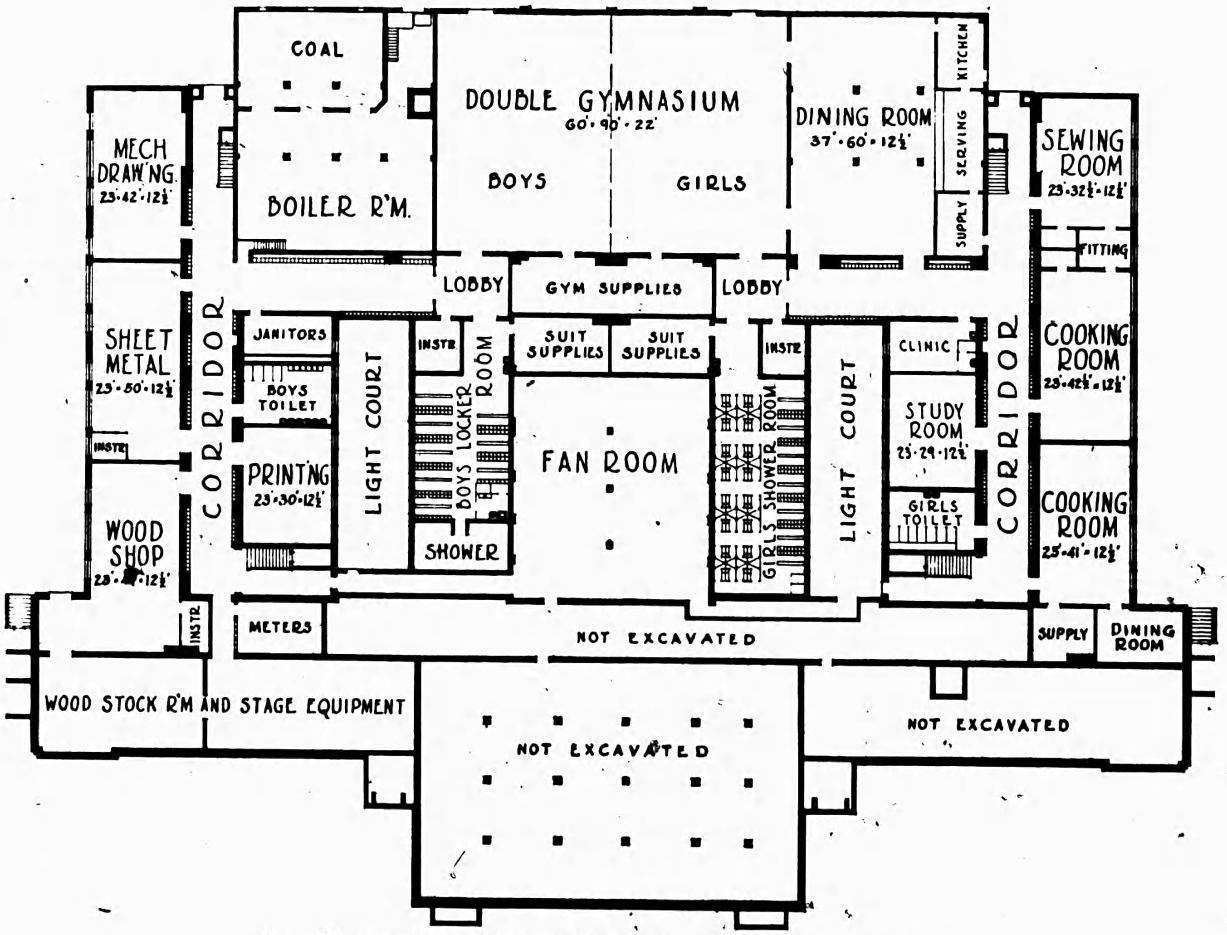
SECOND · FLOOR · PLAN

0' 5' 10' 15' 20' 25' 30' 35'

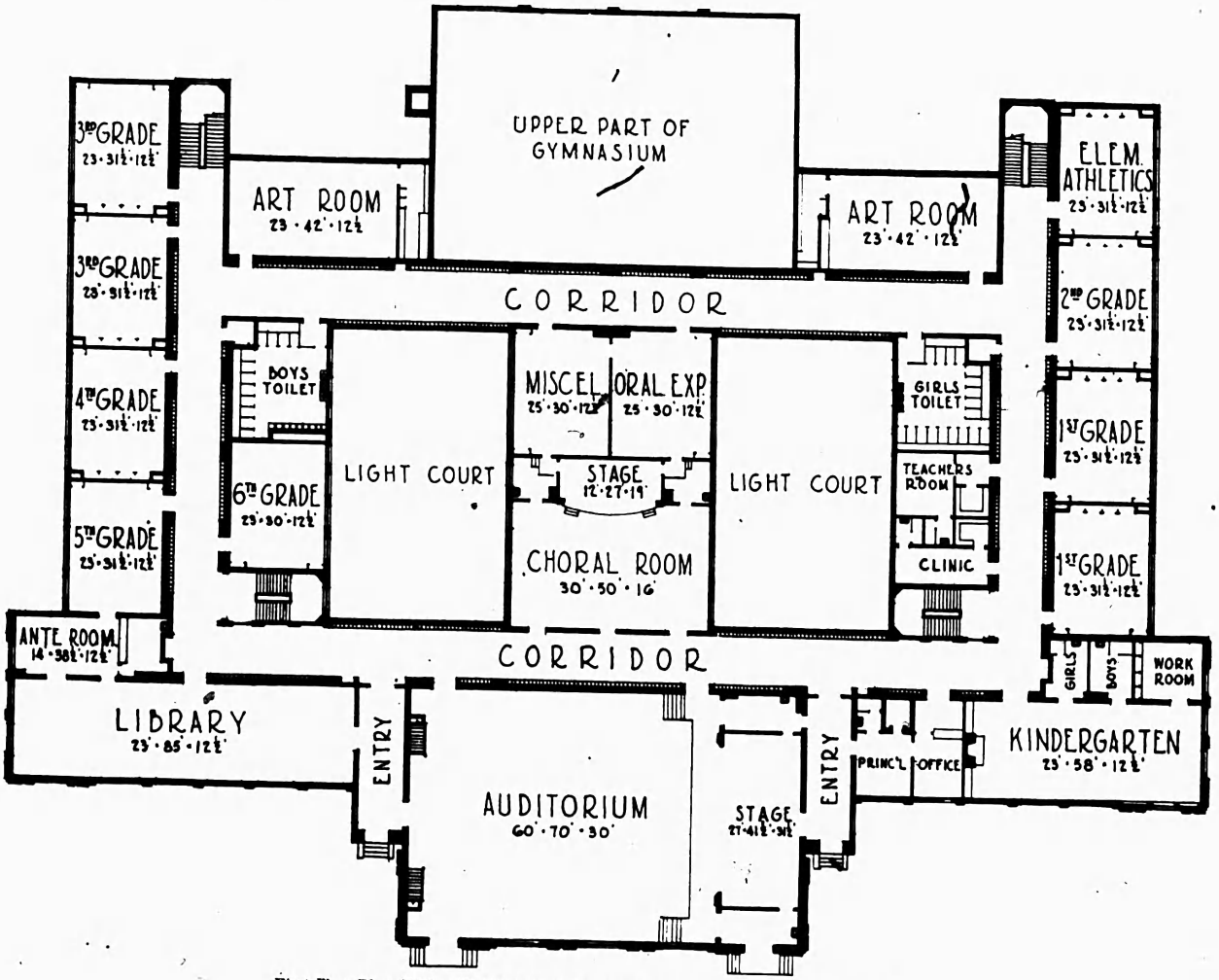
SCALE · IN · FEET.

Longfellow School, Pontiac, Mich. Childs and Smith, Architects.

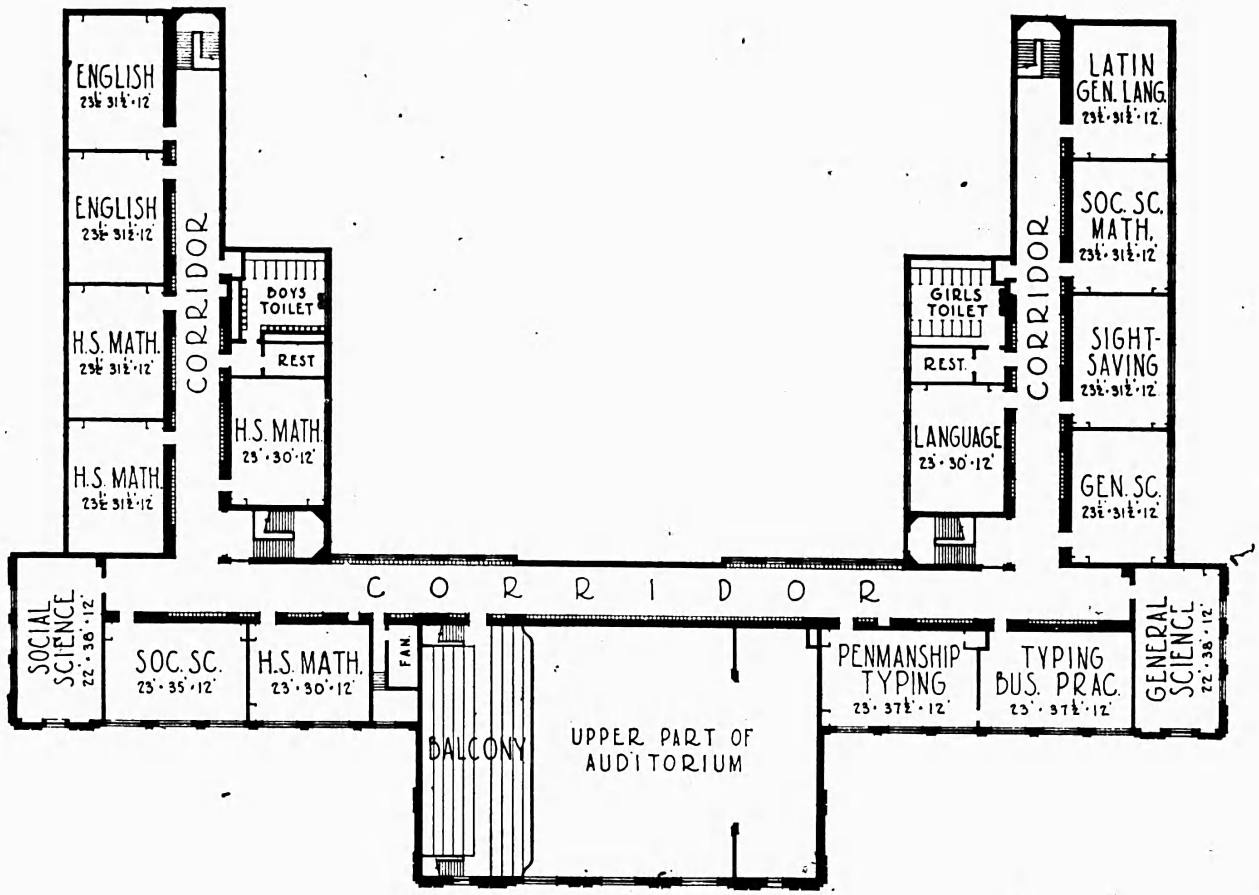
Wilbur Wright School, Dayton, Ohio. Herman and Brown, Architects.



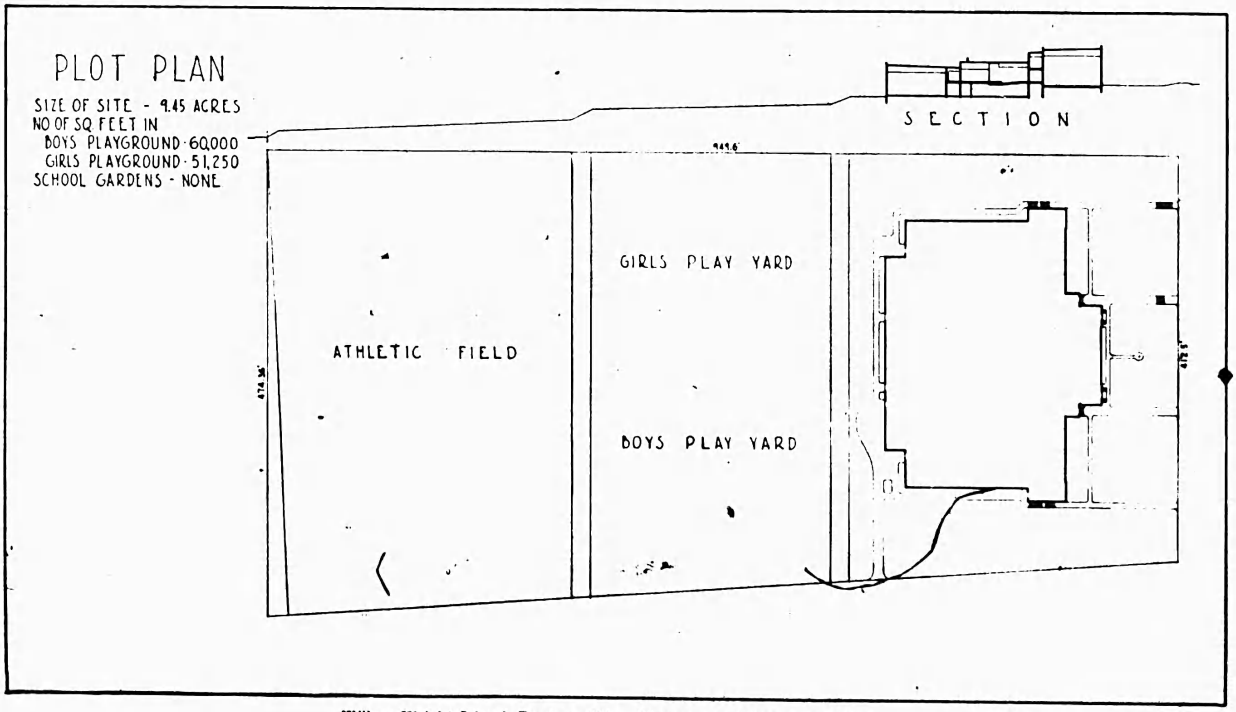
Ground Floor Plan, Wilbur Wright School, Dayton, Ohio. Hermann and Brown, Architects.



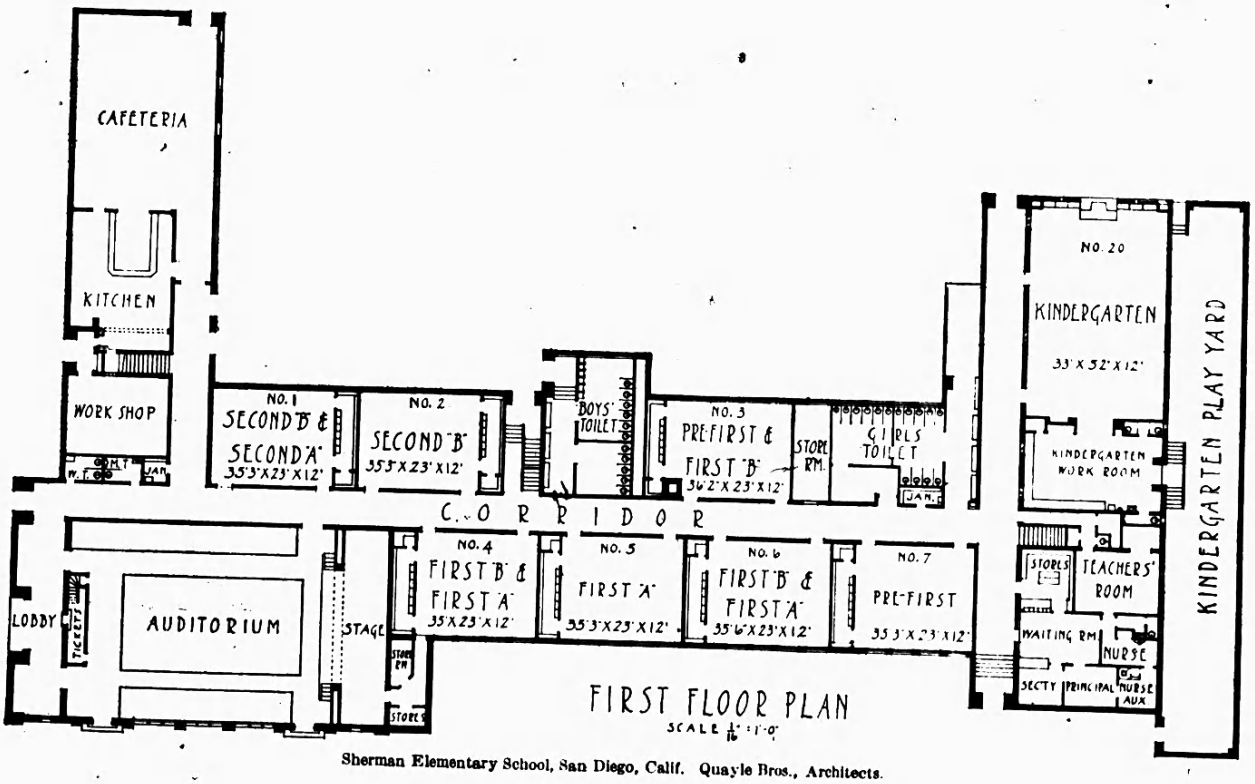
First Floor Plan, Wilbur Wright School, Dayton, Ohio. Hermann and Brown, Architects.



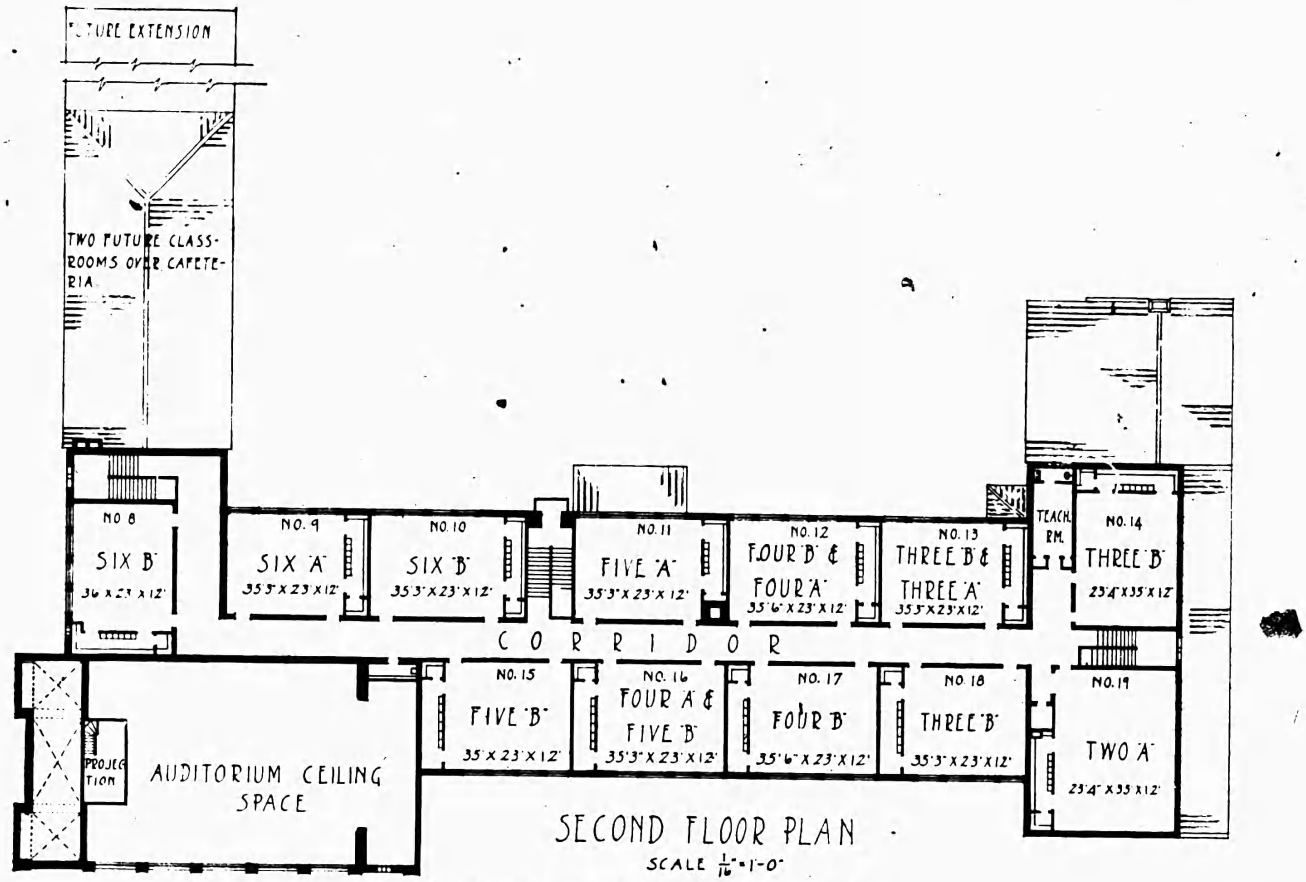
Second Floor Plan, Wilbur Wright School, Dayton, Ohio.



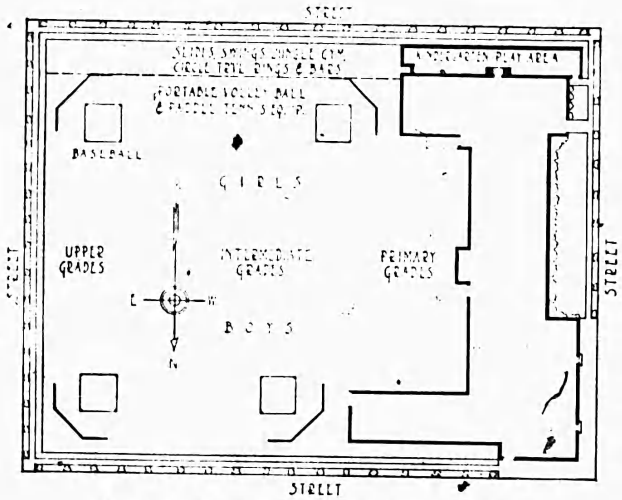
Wilbur Wright School, Dayton, Ohio. Hermann and Brown, Architects.



Sherman Elementary School, San Diego, Calif. Quayle Bros., Architects.



Sherman Elementary School, San Diego, Calif. Quayle Bros., Architects.



Plot plan, Sherman Elementary School, San Diego, Calif.
Size of Site, 2¾ Acres
Number of square feet in playground, 78,840.

school, because of the kind of activity provided for in the educational program. For example, the dimensions of classrooms for the *Activity Program* classes in the San Diego, Calif., school building were 23′ by 35′3″ as against 20′ by 30′ or 23′ by 30′ in schools for the *Usual* type.

In addition to the classrooms and special activity rooms, five of the schools of the *Activity Program* type had auditoriums and one had a combined auditorium-gymnasium. There was one playroom in one school (San Francisco). The lack of gymnasiums or playrooms in the other five school buildings may have been due to the fact that they were all situated in either Southern California or in Texas.

EDUCATIONAL FACILITIES FOR THE PLATOON TYPE OF SCHOOL

Twenty-eight of the seventy-four school buildings were planned for the *Platoon* type of school organiza-

tion. The grades included in the platoon plan in these schools varied considerably. Seven schools had all the grades—1–6, 4–6, or 1–9—in the platoon organization. Nineteen schools omitted from the platoon organization either grade 1, or grades 1–2, 1–3, or 1–5. One school (Dallas, Tex.) had grades 1–4 on the platoon plan, and grades 5–7 departmentalized, and in another school (Reading, Pa.), grades 1–2B were non-platoon, grades 2A–3A were platoon, and grades 4B–6A were departmentalized. To summarize these figures:

Grades not included in the platoon organization in 28 platoon schools:	*Number of schools*
1	6
1–2	11
1–2 and 4–6	1
1–3	1
1–5	1
5–7	1

As will be seen from table 5 the majority of the 28 platoon schools were 6-grade schools. Nineteen schools had grades 1–6; 1 had grades 4–6; 2 had grades 1–7; 5 had grades 1–8; and 1 had grades 1–9.

The educational programs of these schools called not only for classrooms, kindergartens, and "Other" rooms, but also for a large number of special activity rooms. For example, in the 28 school buildings, there were 603 rooms, of which 382, or 63.3 percent, were classrooms, 173, or 28.7 percent, were special activity rooms; 16, or 2.7 percent, "Other" rooms; and 32, or 5.3 percent, kindergartens. (See chart V.)

TABLE 5.—GRADES IN SCHOOLS OF THE PLATOON TYPE

Grades and number of schools	Grades included in—		
	Non-platoon program	Platoon program	Departmental program
1	2	3	4
Schools having:			
Grades 1–6:			
5		1–6	
4	1	2–6	
3	1–2R	2A–6	
6	1–2	3–6	
1	1–2B	2A–3	4–6
Grades 4–6:			
1		4–6	
Grades 1–7:			
1		1–4	5–7
1	1A–1B	1B–7A	
Grades 1–8:			
1	1B	1A–8A	
1	1–2B	2A–8	
1	1–2	3–8	
1	1–3B	3A–8	
1	1–5A	5B–8	
Grades 1–9:			
1		1–9	

Chart VII shows the percent of special activity rooms in these 28 schools. It is interesting to note, in contrast with the special activity rooms in the *Usual with*

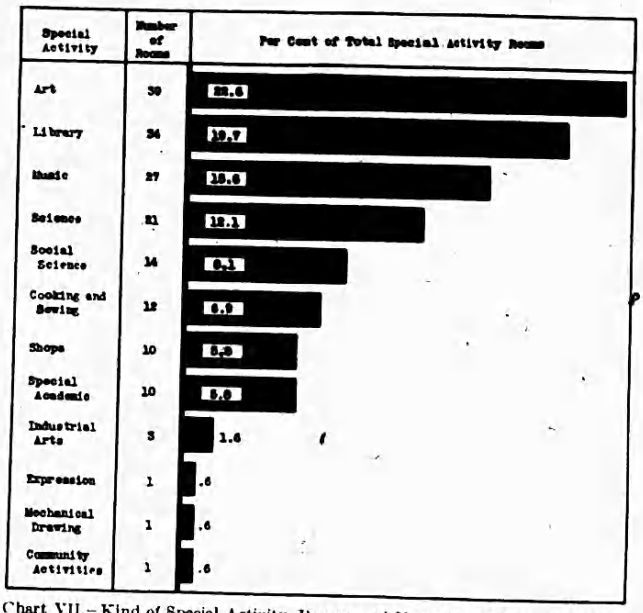


Chart VII.—Kind of Special Activity Rooms, and Number and Percent of Each Kind in Buildings Planned for the Platoon Type of School Organization.

TABLE 6.—NUMBER AND KIND OF SPECIAL ACTIVITY ROOMS IN BUILDINGS PLANNED FOR THE PLATOON TYPE OF SCHOOL ORGANIZATION [1]

City and State	Total special activity rooms	Total rooms for platoon classes	Special activity rooms														
			Art	Art combinations	Library	Music	Science	Social science	Cooking and sewing	Shops	Special academic	Industrial arts	Expression	Mechanical drawing	Community activities	Number of different special activity rooms
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Passaic, N. J.	15	40	1		1	2	2		2	4		2		1		8
Newark, N. J.	11	26	3		1	1	1		2	1	2					5
Baltimore, Md.	11	22	3		3	1		2	2							3
Portland, Oreg.	10	26	1	1	1	1	1	3	1	1						6
Birmingham, Ala.	9	21	1		3	1	2		1	1						5
Detroit, Mich.	9	21	1		3	1	1	1	1	1						6
Wilmington, Del.	8	20	1		3	1	2		1							4
New Britain, Conn.	7	12	1		1	1	1	1			2					4
Greenwich, Conn.	7	12	1		1	1		1	2	1						5
Mount Vernon, N. Y.	7	17	1		1	1	2	1		1						5
Denver, Colo.	7	17		4	1	1					1					4
Knoxville, Tenn.	6	13	1		1	1	1	1			1					5
Pittsburgh, Pa.	6	13	1		1	1	1				2		1		1	6
New Castle, Pa.	6	10	1			1	1	1				1				4
Seattle, Wash.	5	11		1	2	1										3
Santa Monica, Calif.	5	11	1		1	1		2								4
South Bend, Ind.	4	12	1		1	1	1				1					4
Tulsa, Okla.	4	13	1		1	1	1									3
Chester, Pa.	4	10	1		1	1	1									4
Fort Smith, Ark.	4	10		1	1	1		1								4
Fargo, N. Dak.	4	10		2	1						1					3
Reading, Pa.	3	8		1		1					1					3
St. Joseph, Mo.	3	8		1	1		1									3
Newton, Iowa	3	7	1		1		1									3
Gary, Ind.	3	10	1			1	1									3
Rockford, Ill.	3	8	1		1	1										3
Dallas, Tex.	2	11	1			1										2
Little Rock, Ark.	2	6	1		1											2
Total	168	402	26	11	33	25	21	14	12	10	10	3	1	1	1	134

[1] Five special activity rooms for departmental classes in two schools having departmentalization in addition to the platoon organization are omitted from this list.

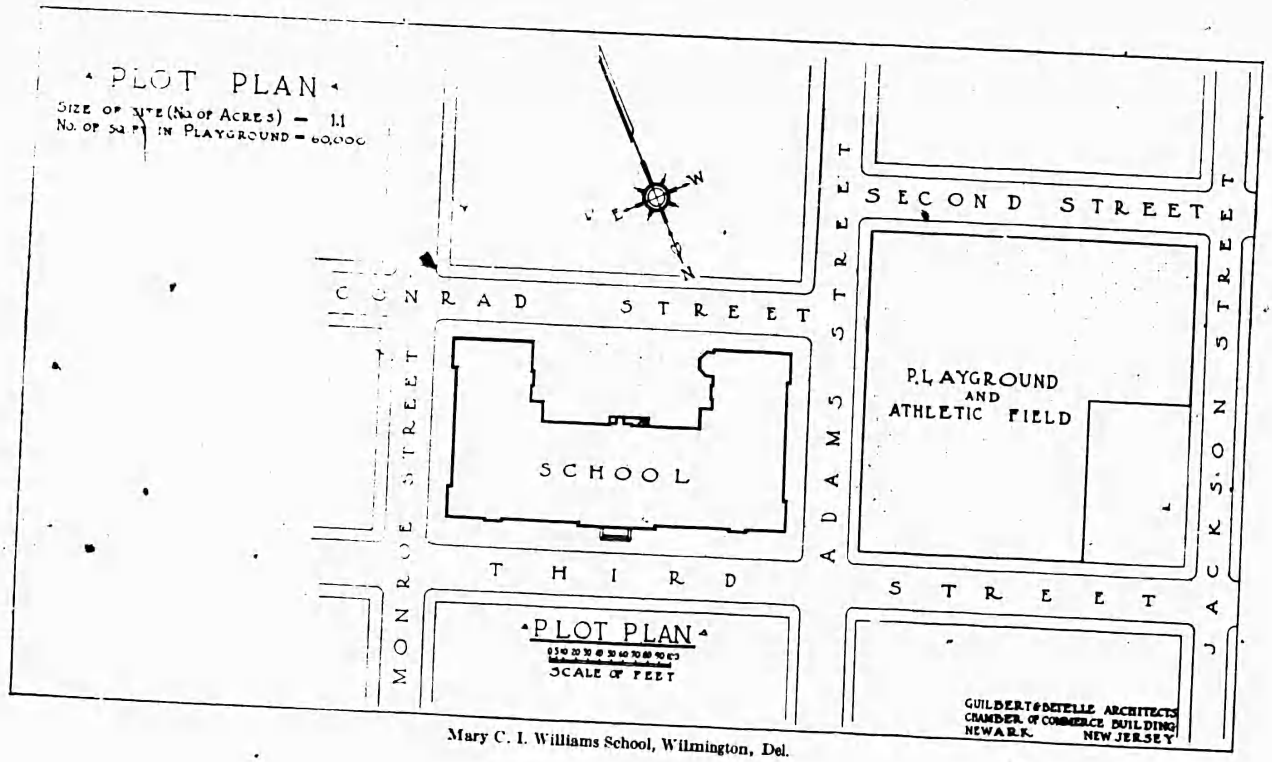
Variations type of school that 70 percent of all the special activity rooms in the platoon schools were art rooms, libraries, music rooms, and science rooms, and only 12.7 percent were cooking rooms and shops.

Furthermore, 168 of the 173 special activity rooms in these 28 schools, were used by the grades operating on the platoon organization. Omitting the rooms for nonplatoon and departmental classes, it is found that of the 402 rooms for platoon classes, 168, or 41.8 percent were special activity rooms. (See table 6.) Of this number, 33 were libraries, 26 art rooms, 11 rooms for art and nature study, art and social science, and other combinations of art and other subjects, 25 music rooms, 21 science rooms, 14 social science rooms, 12 cooking and sewing rooms, 10 shops, 10 special rooms for arithmetic, English, and other academic subjects, 3 industrial art rooms, and 1 room each for expression, mechanical drawing, and community activities. Furthermore, these special activity rooms were fairly evenly distributed among the 28 schools. For example, 20 schools had from 3 to 8 special activity rooms apiece, and only 2 schools had as few as 2 special activity rooms.

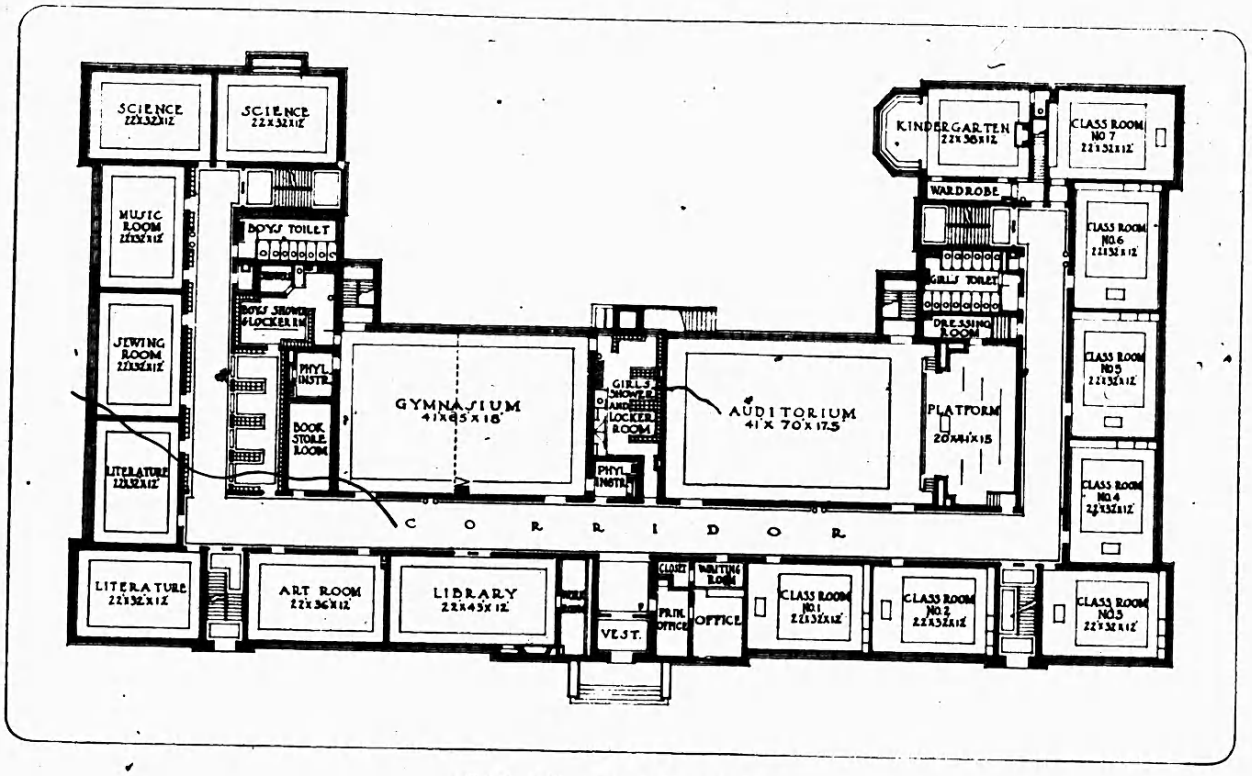
It will be noted that the percentage of special activity rooms to total rooms in these 28 *Platoon* schools (41.8 percent) was higher than the percentage of special activity rooms to total rooms in the combined elementary and junior high schools in the *Usual with Variations* group (32.9 percent). This is particularly interesting in view of the fact that 19 of the *Platoon* schools were 6-grade schools. Furthermore, the 7 other schools in this group that had grades 1–8 and grades 1–9 did not have a departmental or junior high school organization, but operated grades 7–8 and 7–9 in those schools on the *Platoon* plan.

In addition to the classrooms and special activity rooms, there were in the 28 *Platoon* schools 27 auditoriums and 6 combined auditorium-gymnasiums. There were also 19 gymnasiums and 21 playrooms, or 40 indoor play units for the 28 schools.

The floor plans for the Mary C. I. Williams School of Wilmington, Del., is an example of a building for a *Platoon* school with *Nonplatoon* and *Platoon* classes. The John L. Vestal School of Portland, Oreg., is an example of a school with all grades on the *Platoon* plan.



Mary C. I. Williams School, Wilmington, Del.

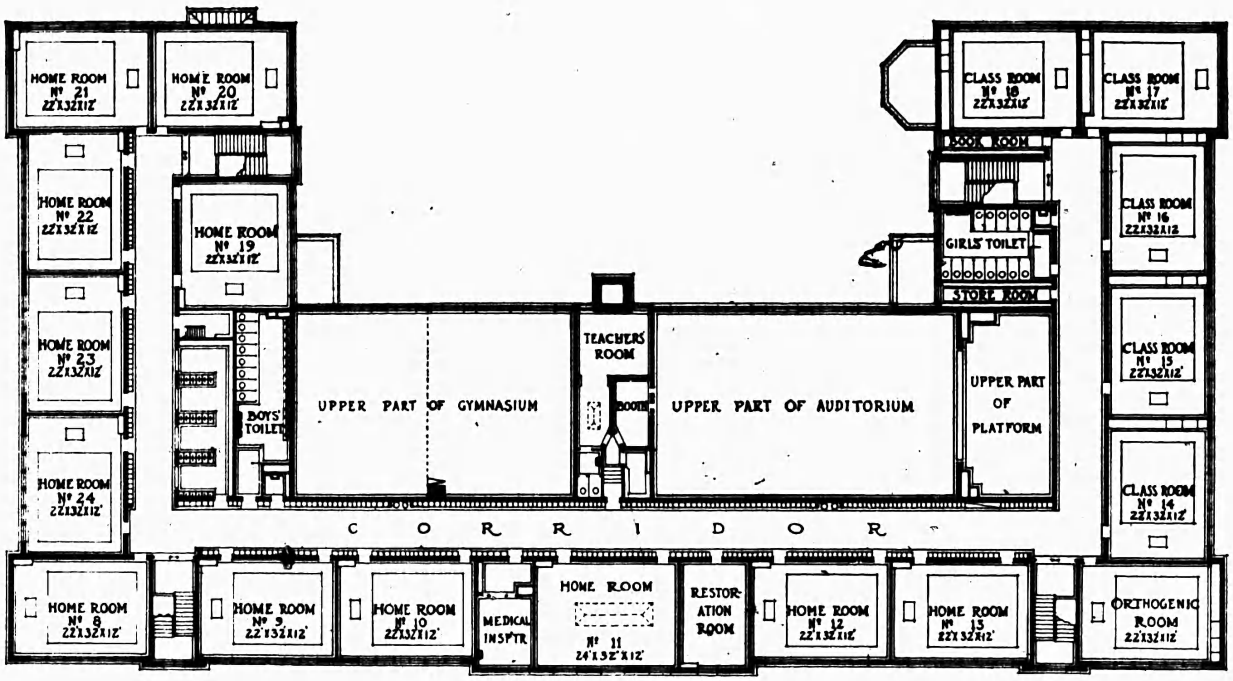


FIRST FLOOR PLAN

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

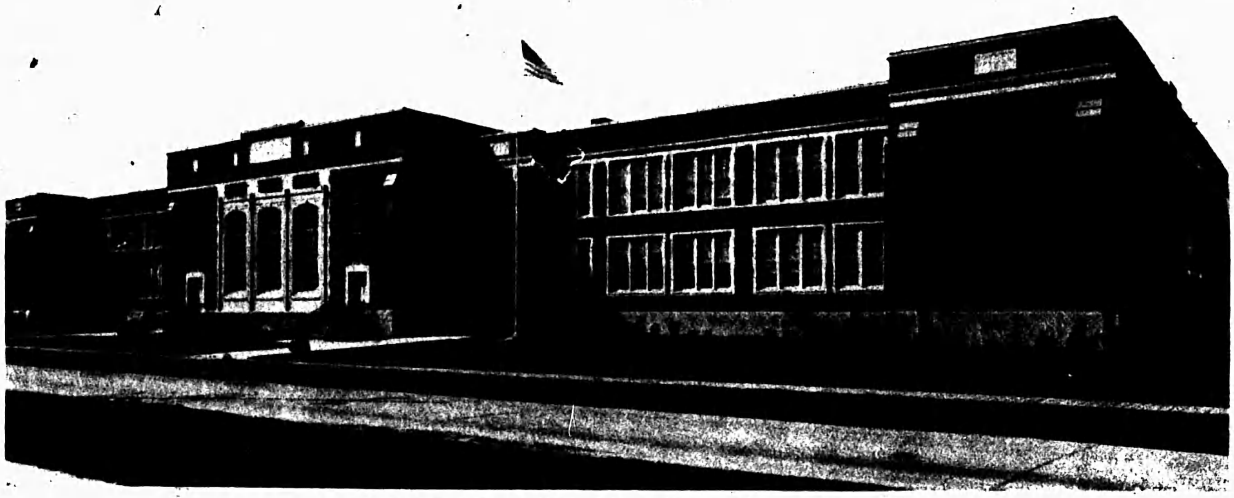
SCALE OF FEET

Mary C. I. Williams School, Wilmington, Del. Guilbert and Betelle, Architects.

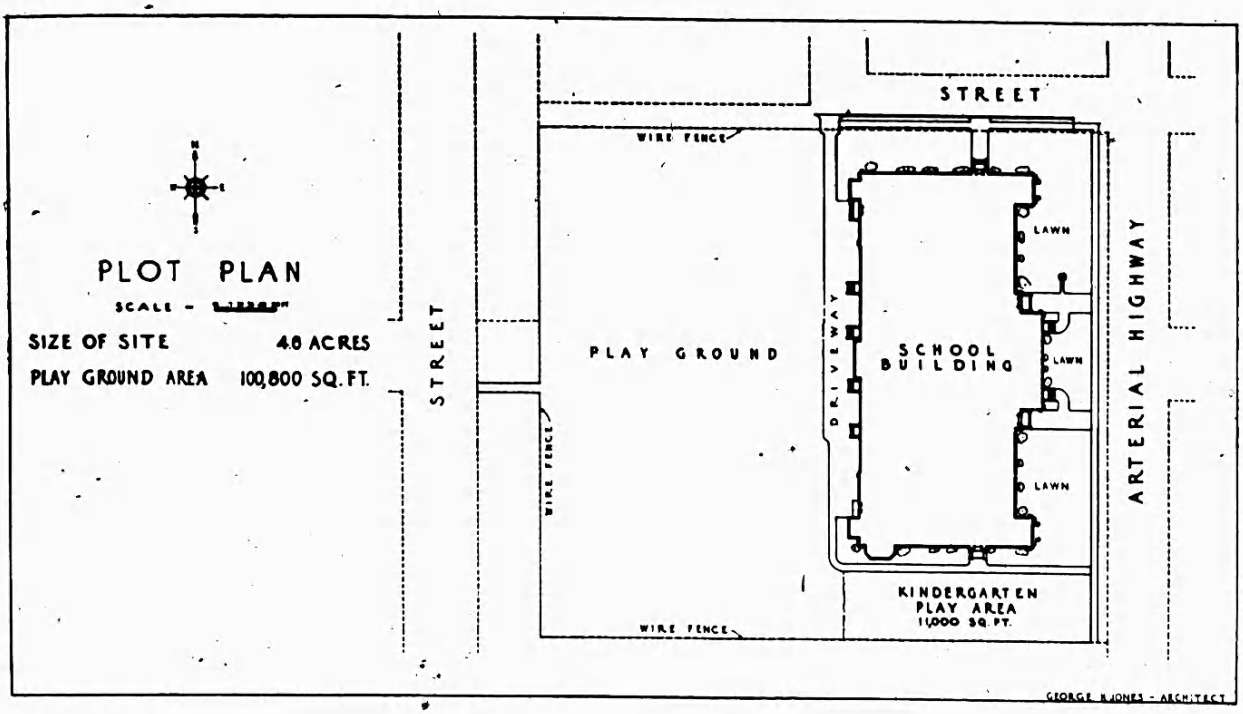


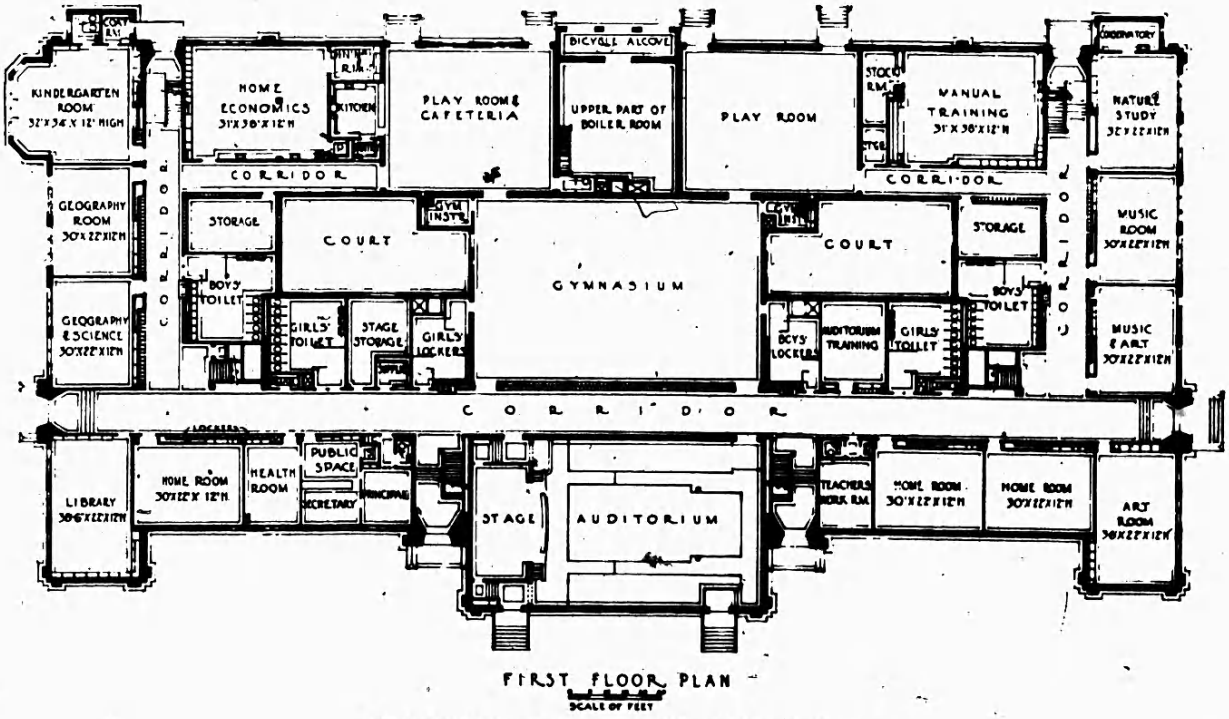
SECOND FLOOR PLAN

Mary C. I. Williams School, Wilmington, Del. Guilbert and Betelle, Architects.



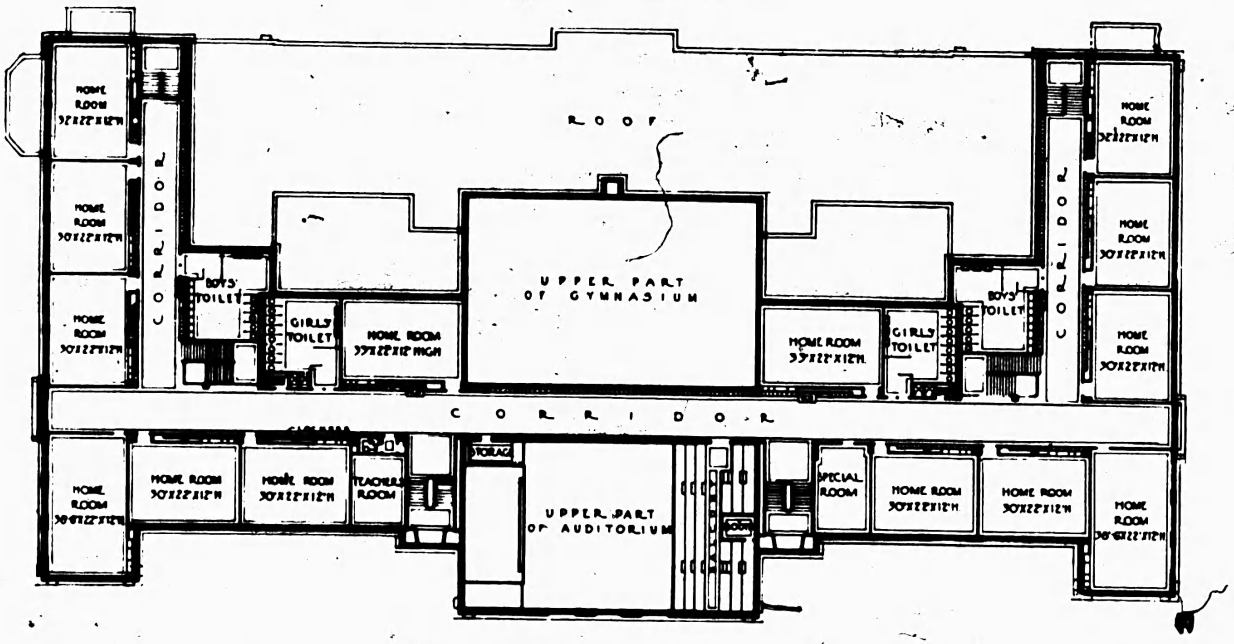
John L. Vestal School, Portland, Oreg. George H. Jones, Architect.





FIRST FLOOR PLAN
SCALE OF FEET

John L. Vestal School, Portland, Oreg. George H. Jones, Architect.



SECOND FLOOR PLAN

John L. Vestal School, Portland, Oreg. George H. Jones, Architect.

CHAPTER IV: CAPACITY AND UTILIZATION OF THE SCHOOL PLANTS

THE QUESTION that naturally arises from a study of the data given in the previous chapter in regard to the number and kinds of rooms provided in buildings for four different types of school organization is how school systems can afford to provide, in addition to classrooms, such a large number of special activity rooms, auditoriums, gymnasiums, and playrooms.

The answer to that question is extremely important, particularly when much is being said as to the necessity of eliminating such modern educational facilities as libraries, music rooms, art rooms, science laboratories, auditoriums, and gymnasiums, and returning to what is commonly called the 3–R school. Before it can be decided whether children are to be deprived of these modern educational facilities on the grounds of economy, it is first necessary to answer the following questions: Is the number of cubic feet per pupil increased where such modern educational facilities as auditoriums, gymnasiums, and playrooms are included in the building? What proportion of the total instructional area is used for each of these facilities under different types of school organization? Does the inclusion of auditoriums, gymnasiums, and special activity rooms decrease or increase the capacity of the building?

The data obtained in this study answer these questions in no uncertain terms. *They show that there is no reason, for purposes of economy, to return to the 3–R school, provided that full use is made of the educational facilities included in the building.*

PERCENT OF TOTAL FLOOR AREA USED FOR INSTRUCTIONAL PURPOSES

An important factor in the economical planning of any school building is the percentage of the total floor area that is used for instructional purposes. Therefore, before determining the percentage of instructional area used for the different educational facilities, the buildings were analyzed in order to determine what proportions of the total floor area were devoted to instructional and noninstructional purposes.[1]

In 74.3 percent of all the buildings more than 50 percent of the total floor area was used for instructional purposes. (See chart VIII.) In fact, 25.7 percent of all the 74 buildings used more than 60 percent of the total floor area for instructional purposes. In 85.7 percent of the *Platoon* school buildings, 83.3 percent of the *Activity program*, 65.2 percent of the *Usual with Variations*, and 61.6 percent of the *Usual* type of school, more than 50 percent of the total floor area was used for instructional purposes.

SPACE REQUIRED FOR MODERN EDUCATIONAL FACILITIES, AND NUMBER OF CUBIC FEET PER PUPIL

The next question is whether the inclusion of the modern educational facilities considered desirable for the children of present-day civilization added materially to the cubage of the building. What percent of the total instructional area was used for classrooms, special activity rooms, auditoriums, and gymnasiums under the different types of school organization? How many cubic feet per pupil were required in order to provide these facilities?[2]

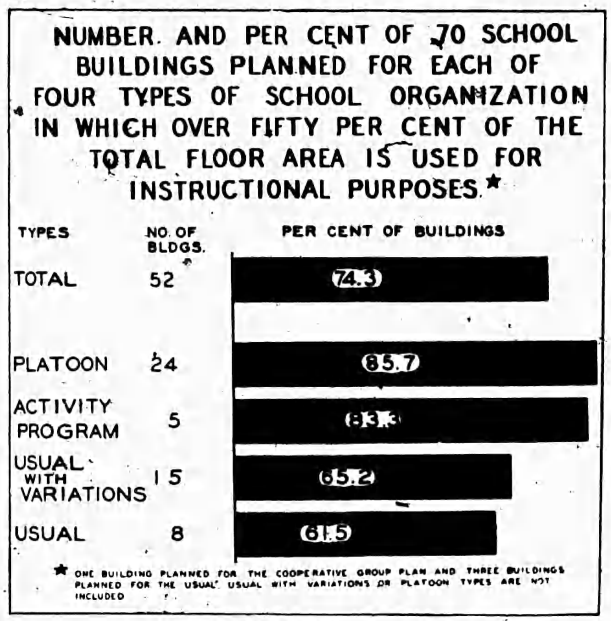


Chart VIII.

Chart IX and table 7 answer these questions better than any mere words. Summarized, however, they reveal the following facts:

[1] See appendix I for definitions of units in "Instructional" and "Noninstructional" space.

[2] See appendix J for "Number of Cubic Feet Per Pupil for 74 School Buildings for Different Types of School Organization."

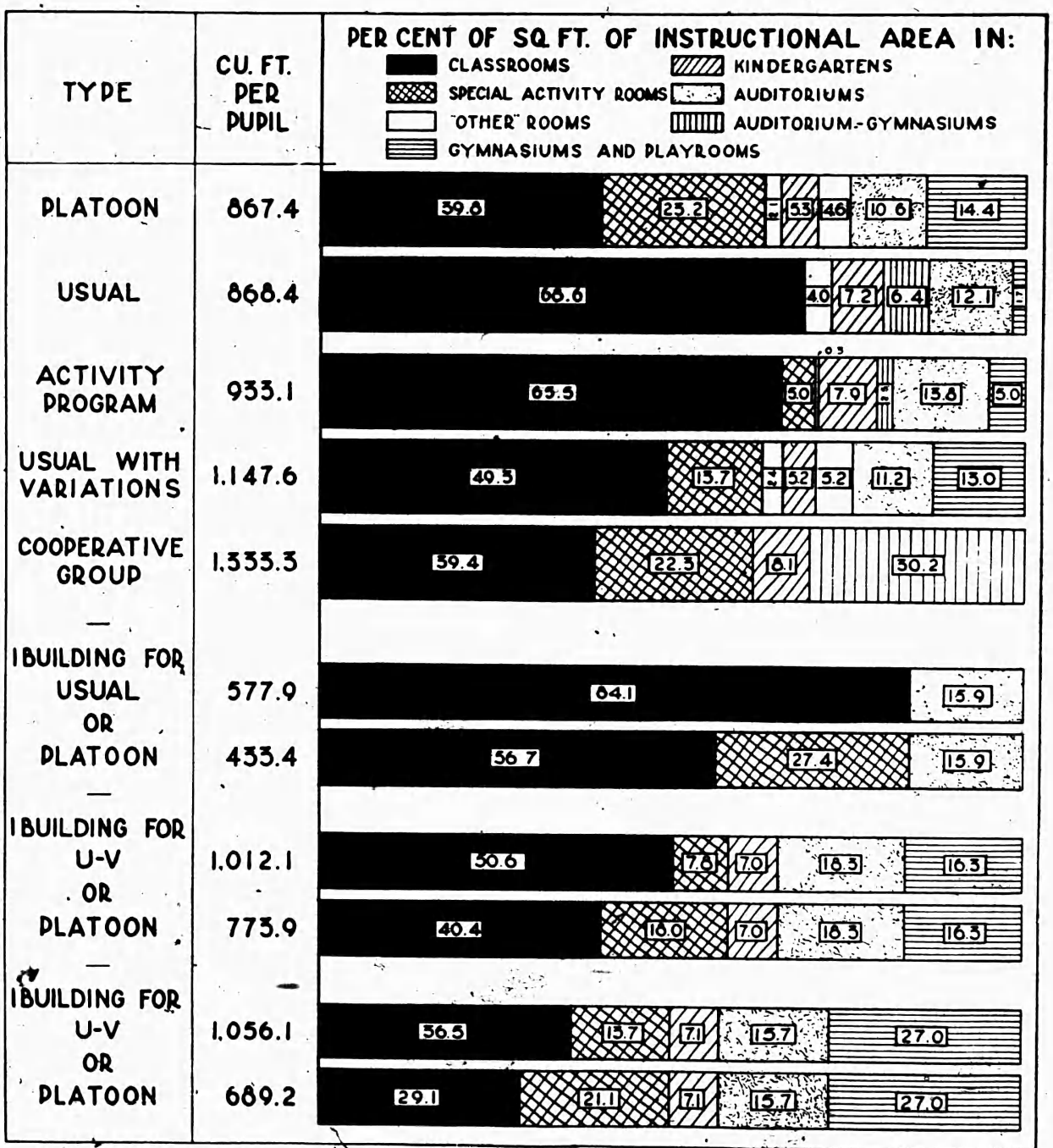


Chart IX.—For Buildings Having Various Types of Organization, Percent of Square Feet of Instructional Area Used for Classrooms, Special Activity Rooms, Kindergartens, "Other" Rooms, Auditoriums, and Gymnasiums.

TABLE 7.—NUMBER OF CUBIC FEET PER PUPIL IN SCHOOL BUILDINGS FOR VARIOUS TYPES OF SCHOOL ORGANIZATION: CAPACITY (NUMBER OF CLASSES), NUMBER OF ROOMS, COMBINED AUDITORIUM-GYMNASIUMS, AUDITORIUMS, GYMNASIUMS, AND PLAYROOMS

Type of school organization	Number of buildings	Total number of cubic feet in buildings	Number of cubic feet per pupil	Per pupil cost on basis of 30 cents per cubic foot	Capacity (incl. kdg. and "Other") on basis of educational program (no. of classes)	Educational Contents of Buildings								
						Total number of rooms	Classrooms	Kindergartens	Special activity rooms	"Other"	Combined auditorium-gymnasiums	Auditoriums	Gymnasiums	Playrooms
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Platoon	28	23,178,321.6	867.4	$260.22	668	603	382	32	173	16	6	27	19	20
Usual	13	4,550,563.3	868.4	260.52	131	131	118	7		6	3	6		2
Activity program	6	4,292,351.8	933.1	279.93	115	124	110	6	7	1	1	5		1
Usual with variations	23	19,969,915.7	1,147.6	344.28	435	494	[1] 379	23	[2] 80	12	7	13	10	8
Cooperative group	1	800,000.0	1,333.3	399.99	15	20	13	1	6		1			
1 building planned for either:														
Usual	1	277,419.3	577.9	173.37	12	12	12					1		
Platoon	1	277,419.3	433.4	130.02	16	12	8		4			1		
2 buildings planned for either:														
Usual with variations	1	526,315.7	1,012.1	303.63	13	13	10	1	2			1	1	
Platoon	1	526,315.7	773.9	232.17	17	13	8	1	4			1	1	
Usual with variations	1	468,656.7	1,056.1	316.83	11	13	10	1	2			1	1	
Platoon	1	468,656.7	689.2	206.76	17	13	8	1	4			1	1	

[1] Exclusive of 1 classroom in a bungalow.
[2] Exclusive of 2 special activity rooms in a bungalow.

For buildings for the "Usual" type of school.—In the 13 schools planned for this type of organization, in which 90 percent of all the rooms are classrooms, 68.6 percent of the total instructional area was used for classrooms, 12.1 percent for auditoriums, 6.4 per cent for combined auditorium-gynasiums, and only 1.7 percent for playrooms. None of the instructional area was used for special activity rooms. In addition, 4 percent was for "Other" rooms and 7.2 percent for kindergartens. *The number of cubic feet per pupil was 868.4.*

For buildings for the "Platoon" type of school.—In the 28 school buildings planned for this type of organization in which there were 173 special activity rooms, 33 combined auditorium-gymnasiums and auditoriums, and 40 gymnasiums and playrooms, only 39.8 percent of the total instructional area was used for classrooms, 23.2 percent for special activity rooms, 4.6 percent for combined auditorium-gymnasiums, 10.6 percent for auditoriums, 14.3 percent for gymnasiums and playrooms, 2 percent for "Other" rooms, and 5.2 percent for kindergartens. *The number of cubic feet per pupil was 867.4.*

For buildings for the "Usual with Variations" type of school.—In the 23 schools planned for this type in which there were 82 special activity rooms, 20 combined auditorium-gynmasiums or auditoriums, and 18 gymnasiums and playrooms, 49.3 percent of the total instructional area was used for classrooms, 13.7 percent for special activity rooms, 5.2 percent for combined auditorium-gymnasiums, 11.2 percent for auditoriums, 13 percent for gymnasiums and playrooms, 2.4 percent for "Other" rooms, and 5.2 percent for kindergartens. *The number of cubic feet per pupil was 1,147.6.*

In the one building planned for the *Cooperative Group* type of school organization, which is a variation of the *Usual with Variations* type, 39.4 percent of the total instructional area was used for classrooms, 22.3 percent for special activity rooms, 30.2 percent for combined auditorium-gymnasiums, and 8.1 percent for kindergartens. *The number of cubic feet per pupil was 1,333.3.*

For buildings for the "Activity Program" type of school.—In the six buildings planned for this type, in which the majority of the rooms are classrooms, and in which there are seven special activity rooms in the six buildings, four auditorium-gymnasiums or auditoriums, no gymnasiums, and one playroom, 65.5 percent of the total instructional area was used for classrooms, 5 percent for special activity rooms, 2.5 percent for combined auditorium-gymnasiums, 13.8 percent for auditoriums, 5 percent for playrooms, 0.3 percent for "Other" rooms, and 7.9 percent for kindergartens. *The number of cubic feet per pupil was 933.1.*

In other words, the smallest number of cubic feet per pupil (867.4) was required for schools of the *Platoon* type, and yet 23.2 percent of the total instructional area was given to special activity rooms for music, art, libraries, science, etc., 15.2 percent to auditoriums, and 14.3 percent to gymnasiums and playrooms; while in the schools of the *Usual* type the number of cubic feet required was approximately the same (868.4), and yet no special activity rooms were provided, 18.5 percent of the space was given to auditoriums, and only 1.7 percent to playrooms. (See table 8.)

If the cost per cubic foot is estimated at 30 cents, which was the average cubic foot cost for the 74 buildings, then the cost per pupil for the 28 *Platoon* schools was $260.22, with 173 special activity rooms, 33 audi-

toriums and auditorium-gymnasiums, and 40 gymnasiums and playrooms, as against $260.52 for the 13 schools of the *Usual* type with no special activity rooms, only 2 playrooms, and 9 auditoriums and auditorium-gymnasiums.

TABLE 8.—SUMMARY OF NUMBER OF CUBIC FEET PER PUPIL AND PERCENT OF TOTAL OF INSTRUCTIONAL AREA USED FOR ROOMS, AUDITORIUM-GYMNASIUMS, AUDITORIUMS, GYMNASIUMS, AND PLAYROOMS IN BUILDINGS FOR EACH OF FOUR TYPES OF SCHOOL ORGANIZATION

Type of school organization	Number of cubic feet per pupil	Percent of total instructional area used for—				
		Classrooms	Special activity rooms	Kindergarten and other rooms	Auditorium and auditorium-gymnasium	Gymnasium and playroom
1	2	3	4	5	6	7
Platoon	867.4	39.8	23.2	7.4	15.2	14.4
Usual	868.4	68.6		11.2	18.5	1.7
Activity program	933.1	65.5	5.0	8.2	16.3	5.0
Usual with variations	1,147.6	49.3	13.7	7.6	16.4	13.0

Evidently it costs no more to have music rooms, art rooms, science laboratories, auditoriums, and gymnasiums in schools organized on the *Platoon* plan than not to have them. In contrast, the *Usual* school, with no special activity rooms and very limited play space, costs slightly more per pupil than the schools on the *Platoon* plan.

On the other hand, in the buildings planned for the *Usual with Variations* type of school, with about the same percentage of instructional area in auditoriums and gymnasiums as in *Platoon* schools, and less percentage of space for special activity rooms, the number of cubic feet per pupil is 1,147.6, or 280.2 cubic feet per pupil higher than in the *Platoon* schools. The cost per pupil for the *Usual with Variations* type of school was $344.28.

Furthermore, in schools of the *Activity Program* type, where the percent of the total instructional area in classrooms and in auditoriums and gymnasiums is nearly the same as for schools of the *Usual* type, the number of cubic feet is 933.1, or 65.7 cubic feet per pupil higher than in the *Usual* type of school. The cost per pupil for the *Activity Program* type of school was $279.93.

The differences in the number of cubic feet per pupil and the allotment of space for educational facilities is even more strikingly brought out in the analysis of the buildings planned to be used for the *Usual*, *Usual with Variations*, or *Platoon* types of school organization. For example, in one of the buildings planned for either the *Usual with Variations* or *Platoon* type (the Laura J. Pettibone School, of Hannibal, Mo.), the percent of instructional area for kindergartens, auditoriums, and gymnasiums is the same whether the building is used for either the *Usual with Variations* or *Platoon* type of school, but the percent of instructional area for classrooms and special activity rooms differs decidedly under the two types of organization, i. e., under the *Usual with Variations* type, 50.6 percent of the instructional area would be used for classrooms and 7.8 percent for special activity rooms, while under the *Platoon* type, 40.5 percent would be used for classrooms and 18 percent for special activity rooms. The number of cubic feet per pupil under the *Usual with Variations* type would be 1,012.1, and under the *Platoon* type, 773.9, because of the greater capacity under this type of school organization.

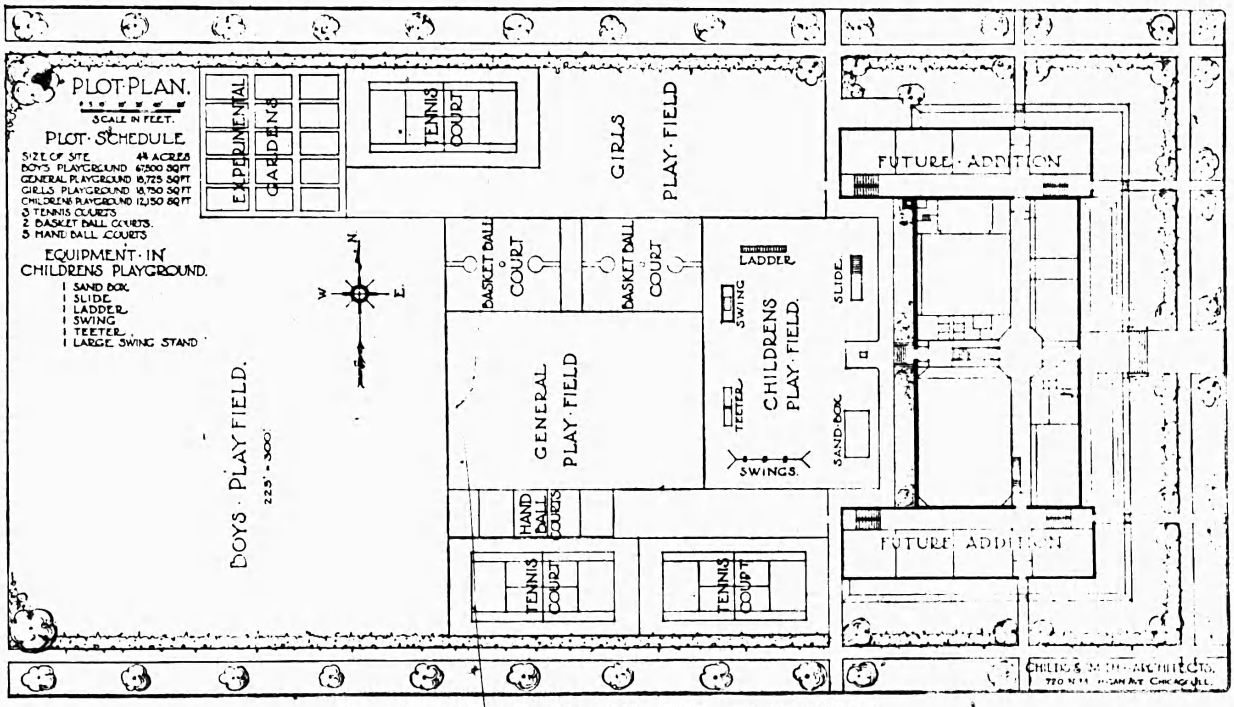
In the other building planned for the same two types of school organization (the Joseph Koenig School of Two Rivers, Wis.) the percentage of instructional area for kindergarten, auditorium, and gymnasiums was again the same under both types, but the difference came in the percent of space for classrooms and special activity rooms, that is, 36.5 percent of the total instructional area was used for classrooms, and 13.7 percent for special activity rooms under the *Usual with Variations* type, while under the *Platoon* type, 29.1 percent would be used for classrooms, and 21.1 percent for special activity rooms. The number of cubic feet per pupil under the *Usual with Variations* type would be 1,056.1 and under the *Platoon* type, 689.2, because of the greater capacity under the latter type of school organization. (See chart IX.)

CAPACITY OF BUILDINGS UNDER DIFFERENT TYPES OF SCHOOL ORGANIZATION [1]

Why should there be such a difference in the number of cubic feet per pupil and corresponding per pupil costs for buildings planned for these four different types of school organization? The answer is found in the differences in the *capacities* of school buildings of the same size under different types of school organization. For example, a building with 12 rooms, an auditorium, and a gymnasium under the *Usual* or *Activity Program* types of school organization accommodated 12 classes; under the *Usual with Variations* type, 10 classes; and under the *Platoon* type, 14 or 16 classes. It is obvious, therefore, that the number of cubic feet per pupil in a 12-room building and the corresponding per pupil costs would differ greatly according to the type of organization on which the school operated.

One of the first comments usually made when school capacity is mentioned is that estimates of capacity are largely guess-work and that it is impossible to make accurate estimates. It is true that, unless estimates of capacity are based on programs for a given school

[1] The estimated capacities of each of the buildings included in the study will be found in appendix K.



Joseph Koenig School, Two Rivers, Wis. Childs and Smith, Architects.

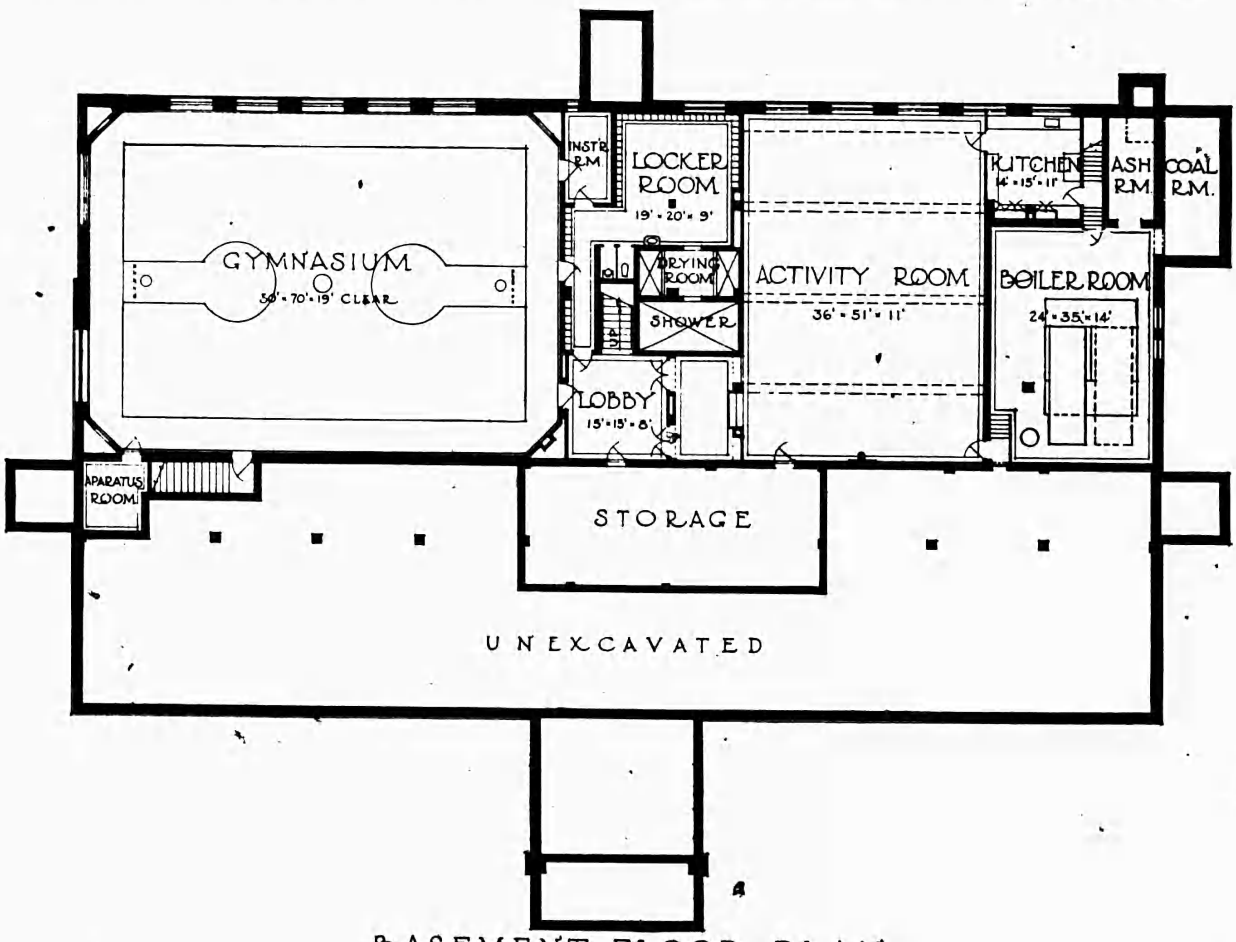
building, or one similar to it, showing where each class is located each hour of the day, there is no way of checking to find out if the estimates are correct, and the scepticism in regard to their accuracy is entirely justified. But, on the other hand, the fact that there may be three different estimates of capacity for a building of a given number of rooms does not mean that any of them is necessarily inaccurate. Each one may represent the exact number of pupils that can be accommodated in the building *for a given type of school organization as operated by a given school system*, but it does not mean that one type of program does not give a higher capacity than another.

For these reasons, as has already been stated, each superintendent was asked to state not only what was the total estimated capacity of his school but also to submit the educational program, listing each room in the building, the number of classes at 40 pupils per class,[1] and the location of each class in some room in the building every hour of every day in the week. The estimates of capacity for each school were found to be accurate on the basis of the programs and floor plans. It should be remembered throughout this discussion, however, that "total estimated capacity" of a building means, as it always should, "total estimated capacity of the building on the basis of the educational program."

PERCENT THAT CLASSES WERE OF ROOMS FOR SCHOOLS OF DIFFERENT TYPES

What were the differences in the capacities of the buildings in each group of schools? Schools which have the same number of classes as rooms obviously have a higher capacity than schools where there are fewer classes than rooms. Chart X shows the percent that

[1] The size of class differed greatly in different schools. Therefore, since it was necessary to have a common base in comparing capacities of schools, the size of class for the purposes of this report was arbitrarily fixed at 40 pupils. Since the kindergarten was not included as part of the elementary school program, the total capacity of any of the schools exclusive of kindergarten can be obtained by subtracting the number of kindergarten classes at 40 pupils per class from the total estimated capacity of the school.



BASEMENT FLOOR PLAN.

0' 5' 10' 15' 20' 25' 30' 35'

SCALE IN FEET.

Joseph Koenig School, Two Rivers, Wis. Childs and Smith, Architects.

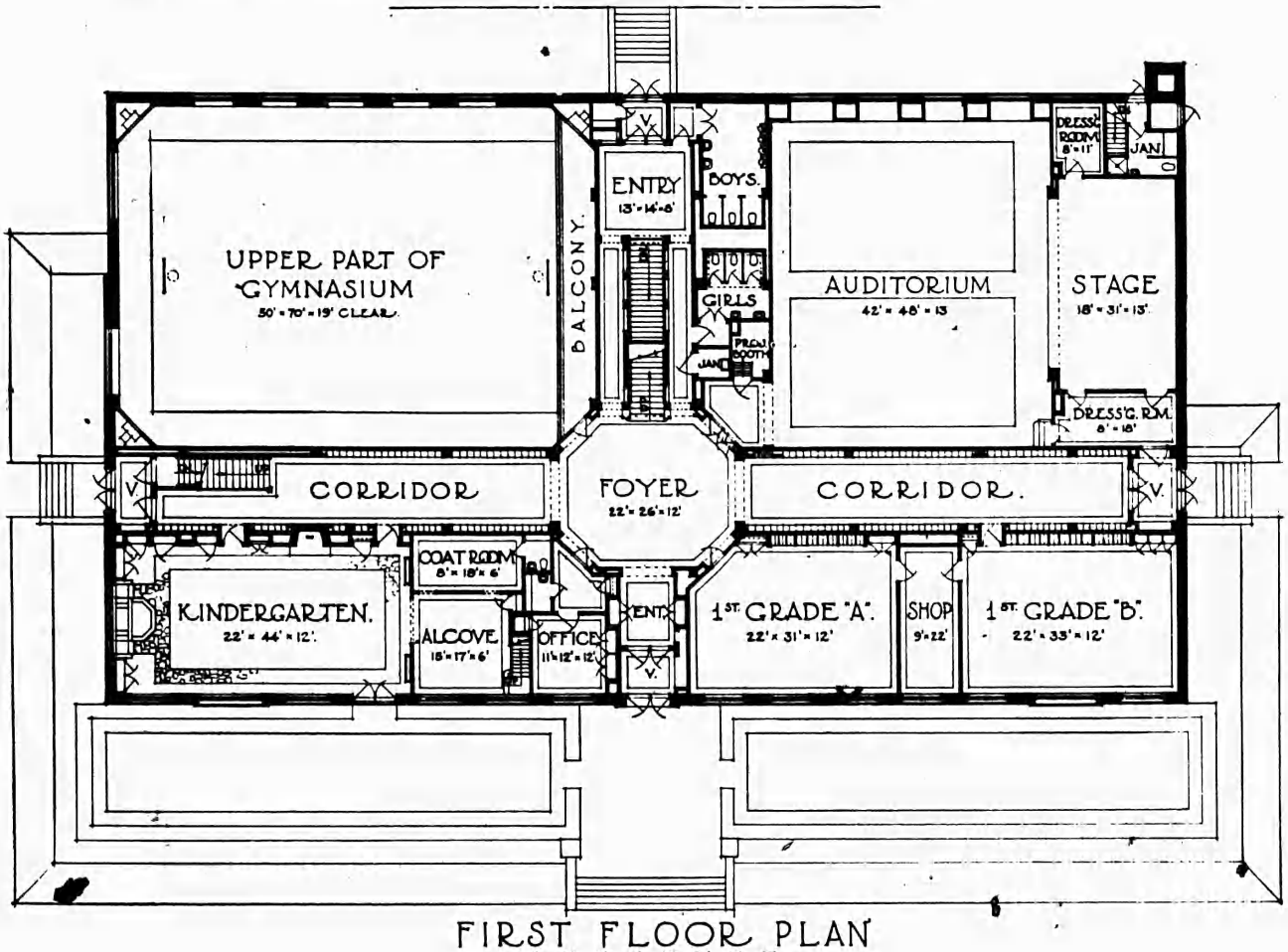
classes were of rooms [5] for the schools of each of five types of school organization. For example, in the 13 schools of the *Usual* type there were as many classes as there were rooms (131 classes and 131 rooms). In other words, the percent that classes were of rooms for this type of school was 100 percent. In the 6 *Activity Program* type of schools there were 124 rooms and 115 classes, that is, classes were 92.7 percent of rooms. In the 23 *Usual with Variations* type of schools there were 497 rooms and 435 classes, or 62 *fewer* classes than rooms, that is, classes were 87.5 percent of rooms. In the one school of the *Cooperative Group* type, which is a variation of the *Usual with Variations* type, the percent that classes were of rooms was 75, since there were 20 rooms and 15 classes. In the 28 schools of the *Platoon* type there were 603 rooms and 668 classes, or 65 *more* classes than rooms, that is, classes were 110.8 percent of rooms.

The differences in capacity under the different types of school organization are well illustrated by one of the buildings deliberately planned to be used *either* for the *Usual with Variations* or *Platoon* type of organization. For example, in the building for the Joseph Koenig Elementary School of Two Rivers, Wis., there were 12 rooms, plus the kindergarten, auditorium, and gymnasium. If the building were used for the *Usual with Variations* type of organization, there would be 10 classes, and the percent that classes are of rooms would be 84.6 percent. The reason why there are fewer classes than rooms is that 10 of the rooms are classrooms and 2 are special activity rooms. When a class goes to a special activity room, the classroom is vacant and vice versa, or again, when classes go to the auditorium, or gymnasium, classrooms are vacant.[6]

If this same building of 12 rooms were used for the *Platoon* type of school organization, either 14 or 16

[5] The percent that classes were of rooms was secured as follows: If the total estimated capacity of the school was 10 classes, and if there were 10 rooms, i. e., classrooms, special activity rooms, "Other" rooms, and kindergarten, then the percent that classes were of rooms was 100 percent. On the other hand, if there were 10 classes and 12 rooms, then the percent that classes were of rooms was 83.3 percent; or if there were 12 classes and 10 rooms, the percent classes were of rooms was 120 percent.

[6] See appendix L–1 for educational program for Two Rivers, Wis., on the *Usual with Variations* type of school organization.



FIRST FLOOR PLAN

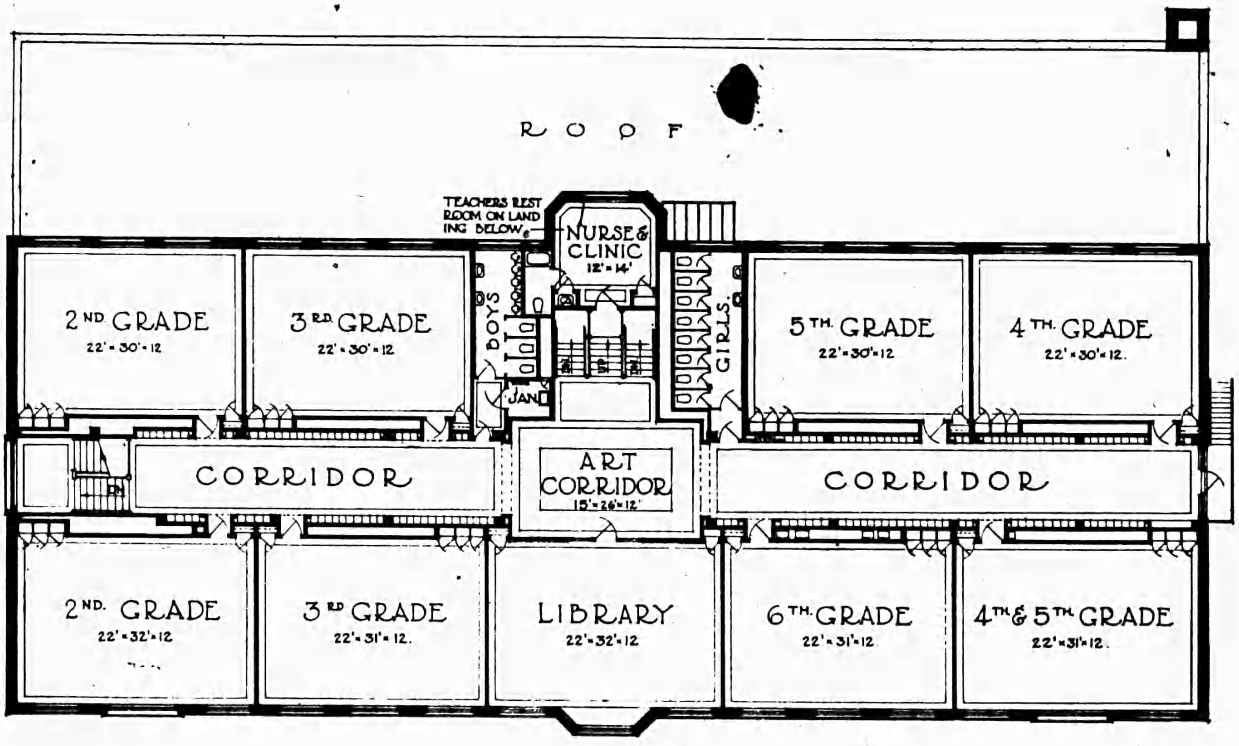
SCALE IN FEET.

Joseph Koenig Elementary School, Two Rivers, Wis. Childs and Smith, Architects.

classes could be accommodated, depending upon whether there were one or two classes in the auditorium and gymnasium. Under this type of organization, 8 of the 12 rooms could be used as classrooms, and 4 as special activity rooms. Half the school would be in classrooms at any one time while the other half would be in special activity rooms, the auditorium, and the gymnasium. This is done by dividing the school into two schools each containing the 6 grades. The first school includes the uneven-numbered classes, and the second school the even-numbered classes. While the uneven-numbered classes are in the homerooms for the first two periods, the even-numbered classes are in special activity rooms, the auditorium, and the gymnasium. That is, one class is in music and speech, one in art and handwork, one in nature study, and one in the library, one or two classes are in the auditorium, and one or two are in the gymnasium. At the end of the second period, the even-numbered classes go to the four special activity rooms, auditorium, and gymnasium. The same procedure is followed in the afternoon. Each class spends two periods at one time in academic work in the homerooms, but no class spends more than one period at a time in a special activity room, auditorium, or gymnasium. There will be found in appendix L–2 an educational program on the Platoon plan for the Two Rivers, Wis., building. This is not an hypothetical program but is the same program that was used for the platoon school building of 12 rooms, auditorium, and gymnasium at South Bend, Ind. (one of the buildings included in this study), except that in the South Bend program grades 3 and 4 were in the auditorium only 3 days a week.

UTILIZATION OF SCHOOL PLANTS UNDER DIFFERENT TYPES OF SCHOOL ORGANIZATION

It is obvious that the capacity of a building will depend upon the extent to which the program calls for full utilization of the space in the building. If the program leaves certain rooms vacant when pupils are in other rooms, it is clear that the capacity of the building will not be as great as though all rooms were used continuously. For example, under the *Usual with Variations* type of school program, the Two Rivers, Wis., building had a capacity of 10 classes; the classrooms were used from 61.8 percent to 91.2 percent of



SECOND FLOOR PLAN

SCALE OF FEET.

Joseph Koenig Elementary School, Two Rivers, Wis. Childs and Smith, Architects.

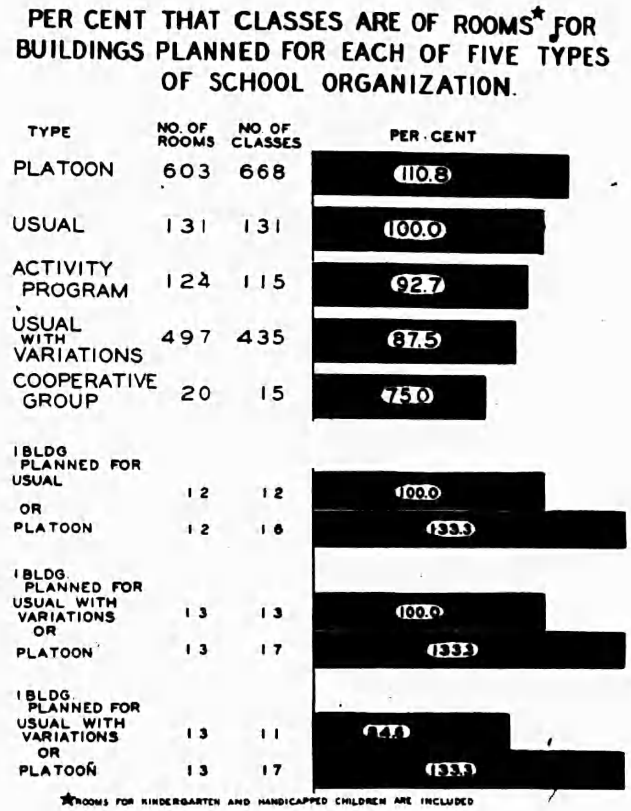


Chart X.

the total school day; the library was used 8.8 percent of the day; classes were not scheduled to either the activity room or the auditorium; the gymnasium was used 76.5 percent of the day. (See chart XI.)[7] On the other hand, this same building under the *Platoon* program could accommodate 16 classes because, as chart XII shows, the 8 classrooms, 4 special activity rooms, auditorium, and gymnasium would be in use 100 percent of the day.

A review of the programs and floor plans of the other buildings included in the study show the same wide variation in capacities and utilization of buildings under different types of school organization. For example, table 9 shows the capacities of seven school buildings divided into two groups having approximately the same number of rooms, yet with widely different capacities.

TABLE 9.—COMPARISON OF CAPACITIES OF 7 SCHOOL BUILDINGS PLANNED FOR VARIOUS TYPES OF SCHOOL ORGANIZATION

City and State	Type of school	Number of rooms	Capacity (number of classes)	Number of: Auditorium-gymnasium	Auditorium	Gymnasium	Playrooms
1	2	3	4	5	6	7	8
Waterloo, Iowa	U-Var.[1]	13	12	1			2
Winchester, Mass.	Usual	13	13		1		
Tulsa, Okla.	Platoon	[2] 13	[2] 18	1			
Pontiac, Mich.	U-Var	16	12		1	1	
Denver, Colo.	Platoon	[3] 17	[3] 20		1	1	
San Diego, Calif.	Activity	19	19		1		
Wilmington, Del	Platoon	[4] 20	[4] 24		1	2	

[1] "U-Var." refers to "Usual with Variations."
[2] Exclusive of 4 rooms for 4 nonplatoon classes for preprimary and grade 1. These classes do not use the auditorium or gymnasium.
[3] Exclusive of 4 rooms for 4 nonplatoon classes for grade 1. These classes do not use the auditorium or gymnasium.
[4] Exclusive of 12 rooms for 12 nonplatoon classes for grades 1–2B; and 1 room for an orthogenic class. These classes do not use the auditorium or gymnasium.

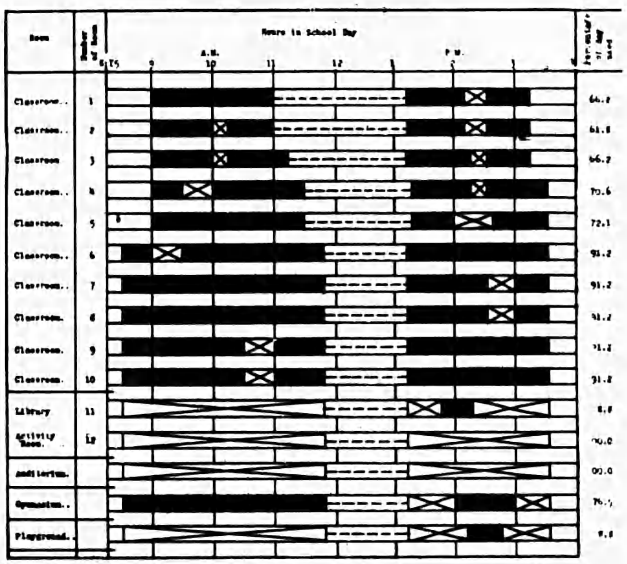


Chart XI.—"Usual with Variations" Type of School Organization, Two Rivers, Wis., Joseph Koenig School, Utilization of School Plant Based on Educational Program for One Day. Grades 1–6, 12 Rooms, 10 Classes.

[7] Chart XI and the others on the utilization of space in school buildings are based on the educational programs. In the first column is given the name of every room in the building plus the auditorium-gymnasium, auditorium, gymnasium, or playroom. The number of rooms is given in the second column (the auditorium, gymnasium, etc., are not numbered). Along the top of the chart are given the hours in the school day. The first notation is "8:15 a. m." and the last "4 p. m." The reason for this is that this represents the longest school day in any of the schools included in the study.

The percentage of the school day that each one of the educational units is in use is indicated in the last column on the chart. It will be noticed that in some of the charts the day differs for different classes. For example, the day for the lower grades in chart XI began at 9 a.m. and ended at 3:30 p. m., exclusive of lunch, but the day for the upper grades began at 8:30 a. m. and ended at 3:30 p. m., exclusive of lunch. The percentage of the total school day that each room is in use is based on the longest school day for any one class in the building for which the chart was made. It was decided to follow this procedure because the purpose of the chart was to show to what extent each educational unit was utilized during the school day. If the primary rooms are used an hour less than the other rooms in the building, then it is true that, from the standpoint of utilization of space, the primary rooms are used a smaller percentage of the school day than the other rooms in the building.

The black space on the chart indicates that the room is occupied. The space with dashes indicates the lunch period. The white space with a cross in it indicates that the room is not occupied although the school is in session. It will be noticed that some facilities, such as the activity room in chart XI, are indicated as unoccupied during the whole day. This does not mean that the activity room is never used, but that on the day that it is used by a given class the room of that class or some other educational unit in the building is vacant. Therefore, from the standpoint of utilization of space, that activity room is not used.

It was found that some schools had different programs for each day of the week, while others changed the program either every other week, or every 8 or 10 weeks. *The educational programs* give the programs for every day in the week, but in the *utilization charts* the program is given for one day only. This was done because, although the rooms occupied by each class each period of the day might differ from day to to day, the *number of periods* that each room, auditorium, or gymnasium is occupied each day, is practically the same. Therefore, from the standpoint of utilization of space, charts showing the use of space for 1 day are accurate, and also easier to read than a chart based on a week's program.

The buildings for Waterloo, Iowa, Winchester, Mass., and Tulsa, Okla., each had 13 rooms,[8] yet the Waterloo building planned for the *Usual with Variations* type of program had a capacity for 12 classes; the Winchester

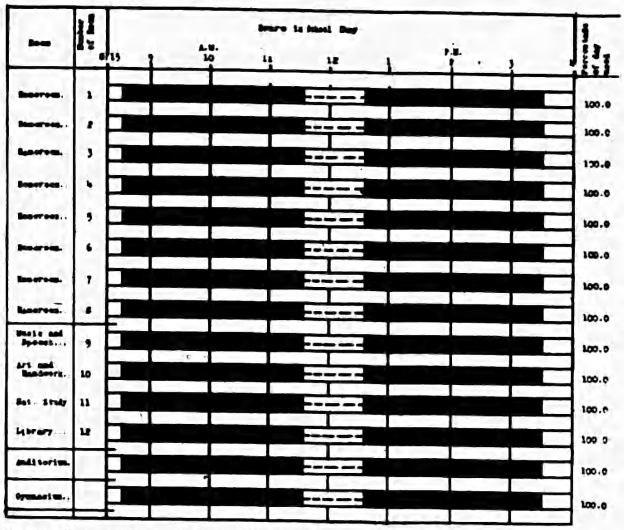


CHART XII.—"Platoon" Type of School Organization, Two Rivers, Wis., Joseph Koenig School. Utilization of School Plant Based on Educational Program for One Day. Grades 1–6, 12 Rooms, 16 Classes.

building planned for the *Usual* type of school had a capacity for 13 classes; and the Tulsa building planned for the *Platoon* type of school had a capacity for 18 classes. The charts on utilization of space in these buildings show the following facts.

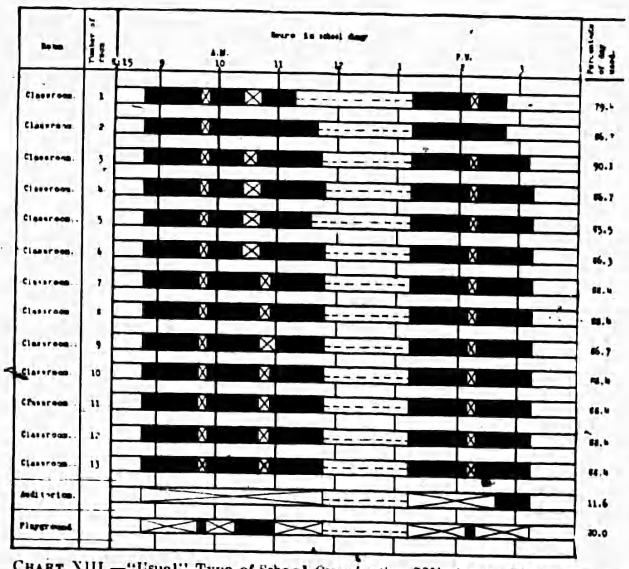


CHART XIII.—"Usual" Type of School Organization, Winchester, Mass., Wyman School. Utilization of School Plant Based on Educational Program for One Day. Grades 1–6, 13 Rooms, 13 Classes.

Winchester, Mass.—Building for "Usual" Type of School—13 Rooms, Auditorium—13 Classes—Grades 1–6

The length of the school day varied greatly for different grades. For example, in this school grade 1A had a 4-hour day; grade 1B had 4 hours and 20 minutes; grade 3A had 4 hours and 45 minutes; and the other grades had a 5-hour day. The classrooms were used from 79.4 percent to 90.1 percent of the school day. The majority of classrooms were vacant about 12 percent of the day. There were no special activity rooms in this building. The auditorium was used only 11.6 percent of the day, from 2:40 to 3:15 p. m. and then by only half of each of two classes. The playground was in use only 20 percent of the school day. (See chart XIII.)[9]

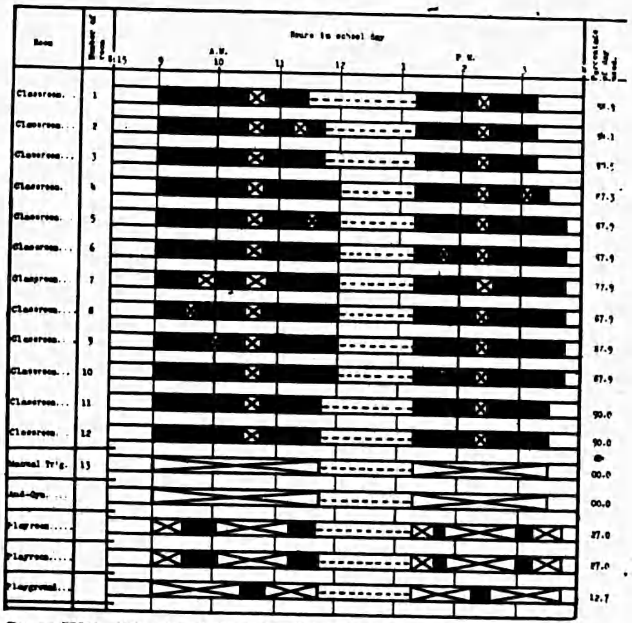


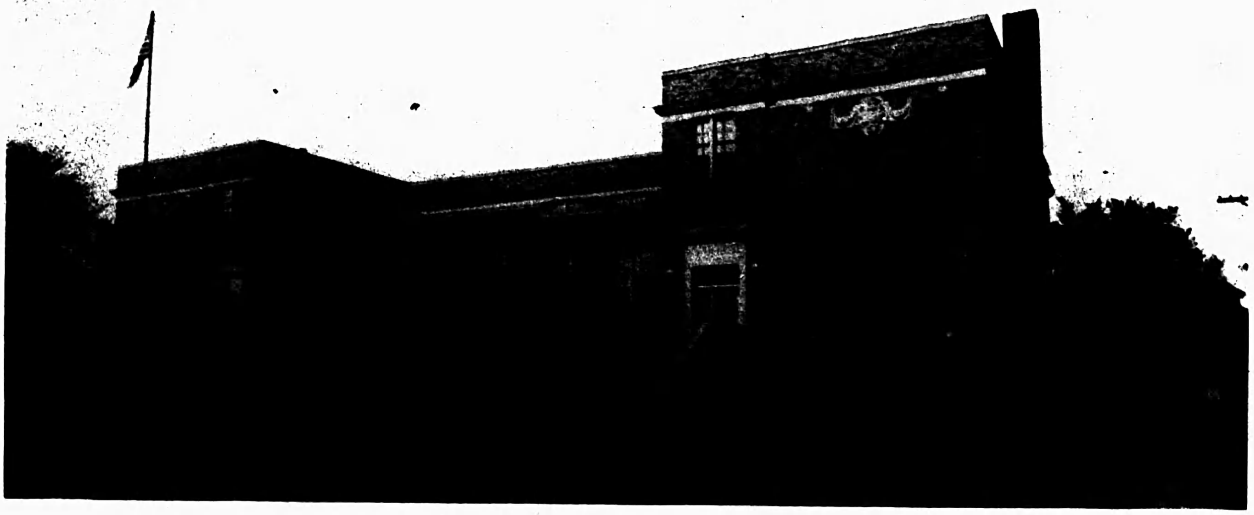
CHART XIV.—"Usual with Variations" Type of School Organization, Waterloo, Iowa, Hawthorne Elementary School. Utilization of School Plant Based on Educational Program for One Day. Grades 1–7, 12 Classes, 13 Rooms.

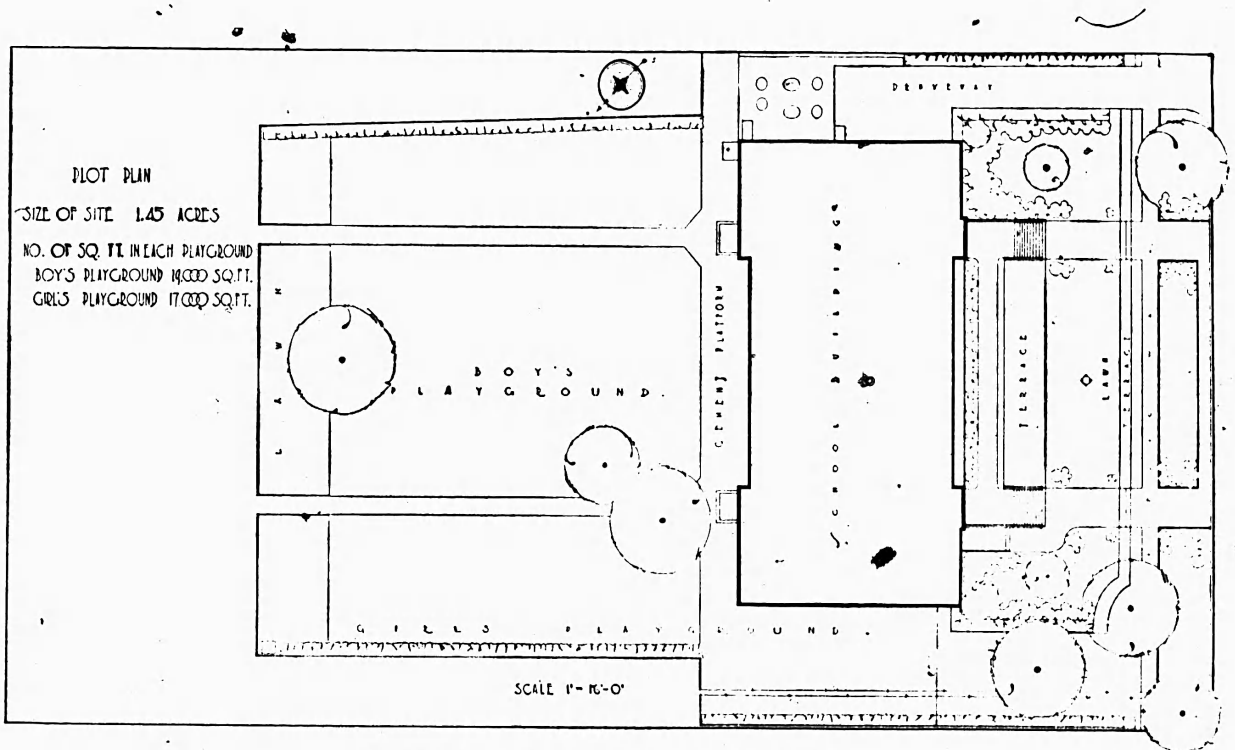
Waterloo, Iowa—Building for "Usual with Variations" Type of School—13 Rooms, Auditorium-Gymnasium, 2 Playrooms—12 Classes—Grades 1–7

The length of the school day was 4 hours and 30 minutes for grade 1B, 4 hours and 45 minutes for grades 1A–2B and grade 2; and 5 hours and 20 minutes for grades 4–7. There were 12 classrooms, used from 77.9 to 90 percent of the school day. There was one special activity room for manual training which was used only on Wednesday afternoons by two classes, and the classrooms of those classes were vacant when

[8] The Tulsa building had 17 rooms but 4 of the rooms were for nonplatoon preprimary and first-grade classes. The program for these classes is separate from the *Platoon* school program and does not include the use of the auditorium-gymnasium.

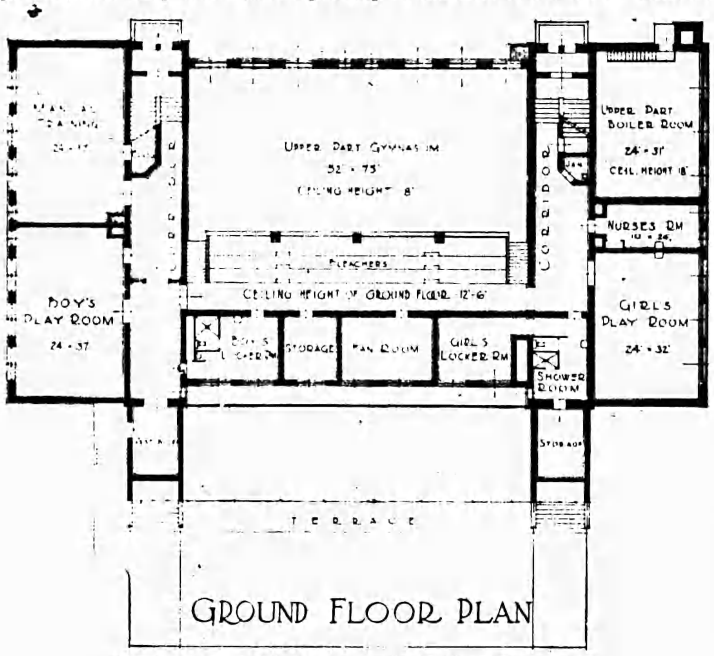
[9] See appendix M for program of Winchester, Mass., school, and chapter III for floor plans of the building.





Hawthorne School, Waterloo, Iowa. M. B. Cleveland, Architect.

the classes went to manual training. According to the program, no classes were scheduled to the auditorium-gymnasium. *This does not mean that classes did not go to the auditorium-gymnasium for special programs, but they were not regularly scheduled there and since the classrooms were vacant when the auditorium-gymnasium was in use, and vice versa, the auditorium-gymnasium, from the standpoint of utilization of space, was not used.* There were 2 playrooms in this building, each of which was used 27 percent of the day. (See chart XIV.) [10]



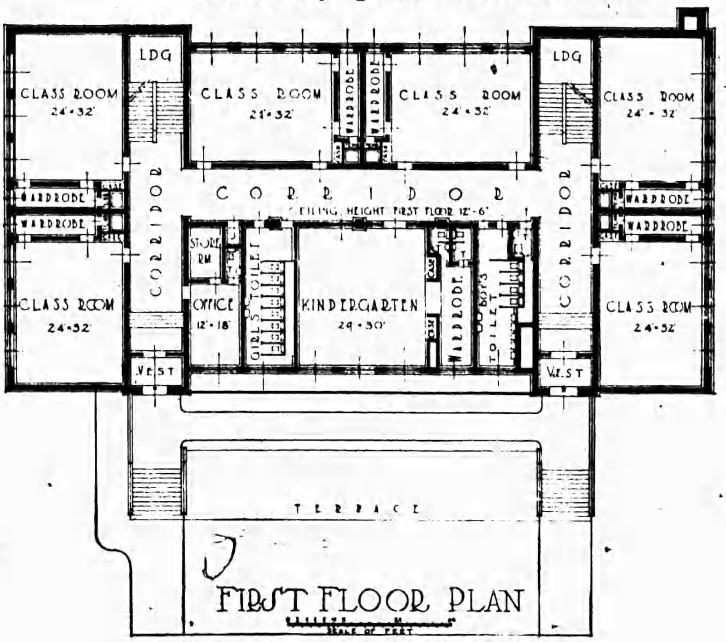
Hawthorne School, Waterloo, Iowa. M. B. Cleveland, Architect.

Tulsa, Okla.—Building for "Platoon" Type of School—13 rooms,[11] Auditorium-Gymnasium—18 Classes—Grades 1–6

The length of the school day was 6 hours for all grades, divided into eight periods of 45 minutes each. There were nine classrooms used 100 percent of the school day; and four special activity rooms—art, music, science, literature, which were used 100 percent of the day. The auditorium-gymnasium and the playground were used 100 percent of the day; two classes were in the auditorium and two classes on the playground each of the eight periods in the day. The auditorium-gymnasium in the Tulsa building was so built that one-third of it was used as an auditorium, while the other two-thirds was used as a gymnasium, separated from the auditorium by folding doors. Since the climate in Tulsa is such that the children can play on the playground nearly 100 percent of the time, it is not often necessary to use the gymnasium for play. (See chart XV.) [12]

For those interested in school organization, the program of the Tulsa school is worth careful study as it shows clearly how the *Platoon* type of program can operate to secure full utilization of the building. Furthermore, by following a class through each period of the day, it is possible to find out the kind of activities in which the pupils engage during the day. For example, class 15, which is grade 5A, starts the day with academic work in the homeroom, i. e., arithmetic and English, for 2 periods, then on Monday goes to science for the third period, to play for the fourth, and then to lunch. In the afternoon, the class goes again to the homeroom for academic work, i. e., geography and history, at 2 o'clock to music, and then to the auditorium. In other words, each class has four periods of academic work (180 minutes), two periods of special activities (45 minutes each), one period of auditorium (45 minutes), and one period of play (45 minutes).

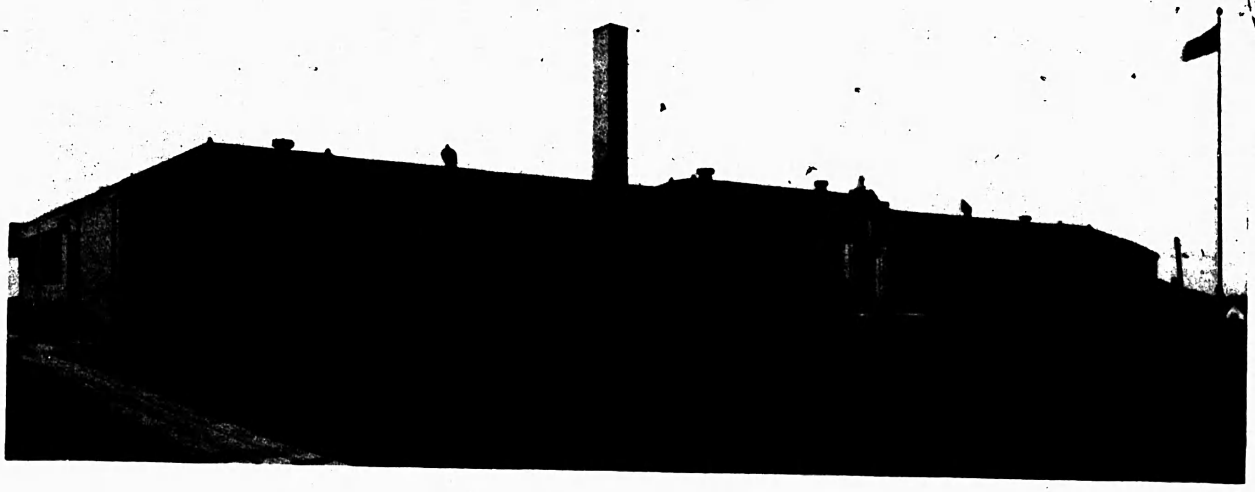
The next group of buildings in table 9 has rooms varying in number from 16 to 20. The

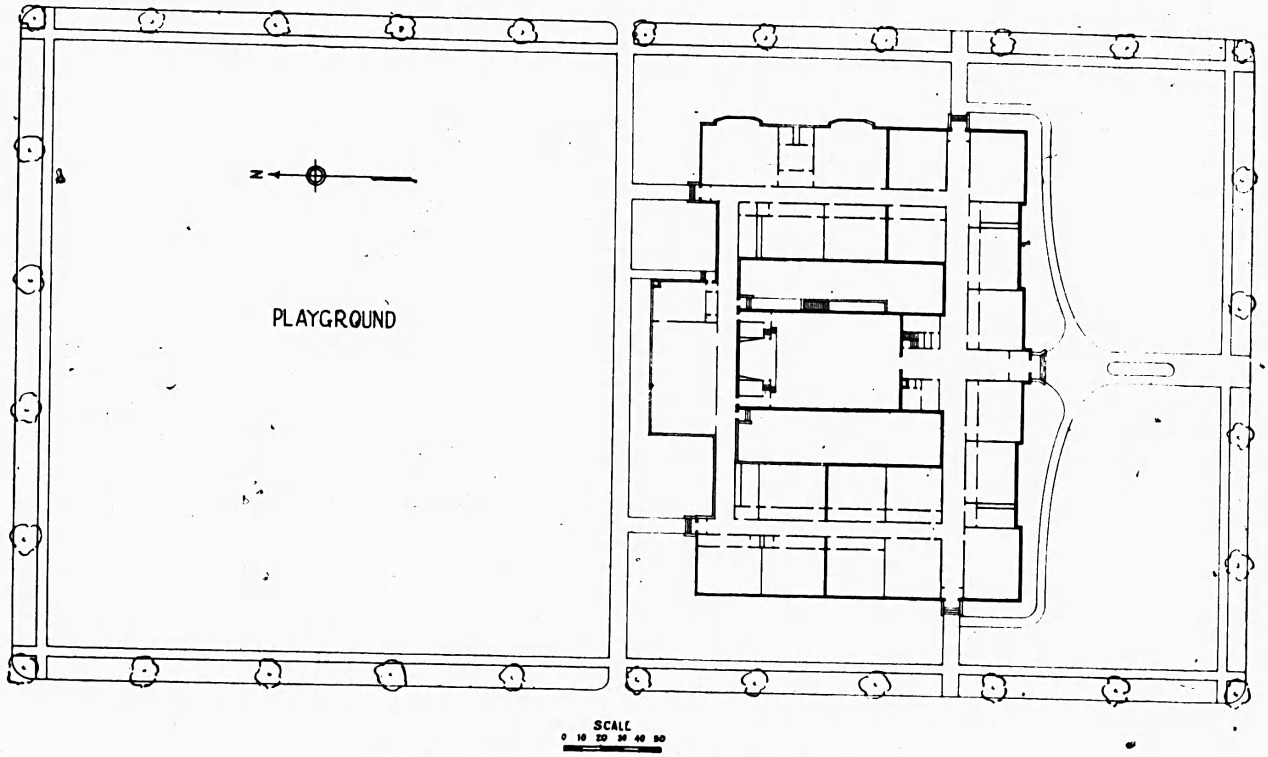


Hawthorne School, Waterloo, Iowa. M. B. Cleveland, Architect.

building for Pontiac, Mich., planned for the *Usual with Variations* type, had 16 rooms and a capacity for 12 classes; the Denver building, planned for the *Platoon* type, had 17

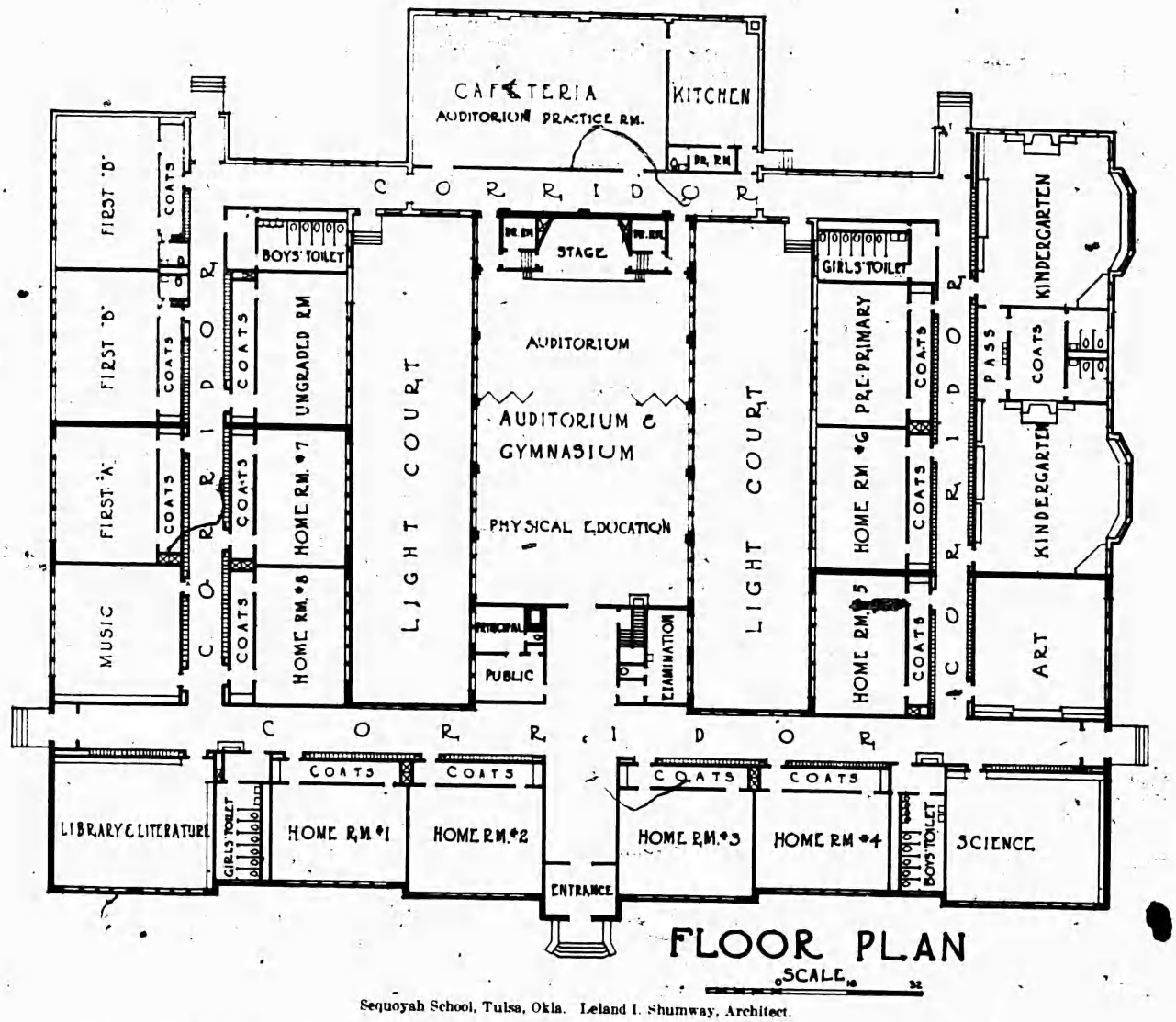
[10] See appendix N for program of Waterloo, Iowa, school.
[11] Exclusive of four nonplatoon rooms for four nonplatoon classes.
[12] See appendix O for program of Tulsa, Okla., school.





Sequoyah School, Tulsa, Okla. Leland I. Shumway, Architect.

115112°—37——4



Sequoyah School, Tulsa, Okla. Leland I. Shumway, Architect.

rooms and a capacity for 20 classes; the San Diego building, planned for the *Activity Program* type, had 19 rooms and a capacity for 19 classes; while the Wilmington building, planned for the *Platoon* type, had 20 rooms and a capacity for 24 classes. The charts on utilization of space in these buildings show the following facts:

Pontiac, Mich.—Building for "Usual With Variations" Type of School—16 Rooms, Auditorium, Gymnasium—12 Classes—Grades 1–6

In this school, grades 1–3 operated on the *Usual* type of program, while grades 4–6 were organized on a departmentalized program. For these latter grades, there were six academic rooms—two history, two mathematic, and two literature rooms; plus four special activity rooms—two geography and science, one industrial arts room, and one special groups room. The length of the school day was 4 hours and 45 minutes for the first grade; 5 hours and 15 minutes for the second grade; and 5 hours and 30 minutes for grades 3–6. There were 12 classrooms for all grades, and they were used 75.8 to 93.9 percent of the school day. None of the four special activity rooms for the departmental classes had classes scheduled to them except the industrial arts room which was used 34.8 percent of the time, and when it was in use the classrooms were not in use. No classes were scheduled to the auditorium. The gymnasium was in use 59.8 percent of the time. It was used the whole of the afternoon except for recess; however, the chart does not show what is shown by the program, that is, that when the boys in two classes were sent to the gymnasium, the girls in the same classes remained in their classrooms, and the next period the process was reversed. This means

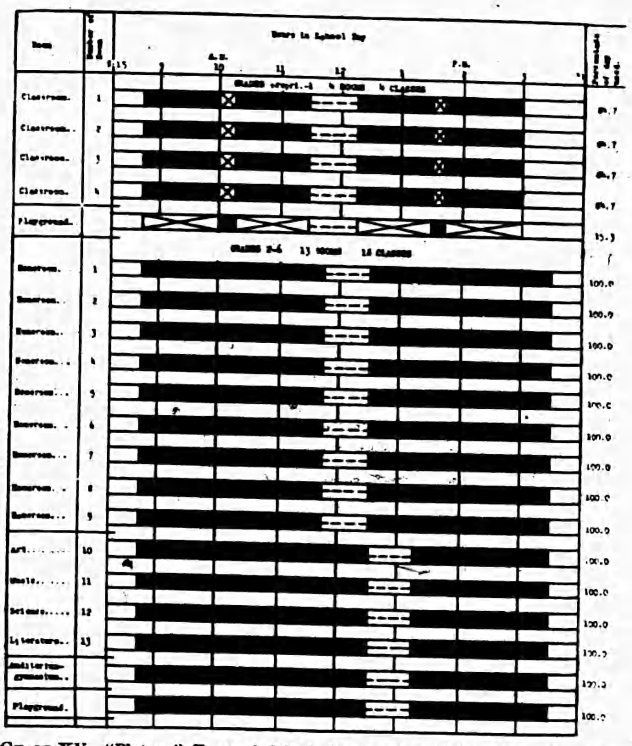


CHART XV.—"Platoon" Type of School Organization, Tulsa, Okla., Sequoyah School. Utilization of School Plant Based on Educational Program for One Day. Grades, Preprimary—6, 17 rooms, 22 Classes.

that those classrooms and the gymnasium were each used by half a class. (See chart XVI.) [13]

Denver, Colo.—Building for "Platoon" Type of School—17 Rooms,[14] 1 Auditorium, Gymnasium—20 Classes—Grades 1–6

The length of the school day is 5 hours and 30 minutes for all grades. There were 10 classrooms, used 100 percent of the school day; and 7 special activity rooms—library, music, two social science and art, two art and science, and an English room—which were used 100 percent of the school day.—The auditorium and the gymnasium were used 100 percent of the school day; two classes were in the auditorium and two classes in the gymnasium each period of the day. (See chart XVII.) [15]

San Diego, Calif.—Building for "Activity Program" Type of School—19 Rooms, Auditorium—19 Classes—Grades 1–6

The length of the school day is 5 hours and 5 minutes for all grades. There were 19 classrooms, each one in use 90.2 percent of the school day. There were no special activity rooms, and no classes were scheduled to the auditorium. The playground was in use 9.8 percent of the day, that is, all classes went to the playground for recess for 15 minutes in the morning and 15 minutes in the afternoon. (See chart XVIII.) [16]

Wilmington, Del.—Building for "Platoon" Type of School—20 Rooms,[17] 1 Auditorium, 2 Gymnasiums—24 Classes—Grades 1–6

The length of the school day was 6 hours for all grades in the *Platoon* school. There were 12 classrooms for the 24 classes; and they were all used 100 percent of the school day. There were eight special activity rooms—music, applied art, manual art, library, two science, and two literature rooms. They were all used 100 percent of the school day except the music room which was used 66.7 percent of the day and the library which was used 50 percent of the day. The auditorium was in use 100 percent of the school day. In 8 of the 12 periods there were 2 classes in the auditorium each period, and in the remaining 4 periods 1 class each period. One of the gymnasiums was used 100 percent of the school day, with two classes using it each period. The other gymnasium was used 91.7 percent of the school day, one class occupying it nearly every period. (See chart XIX.) [18]

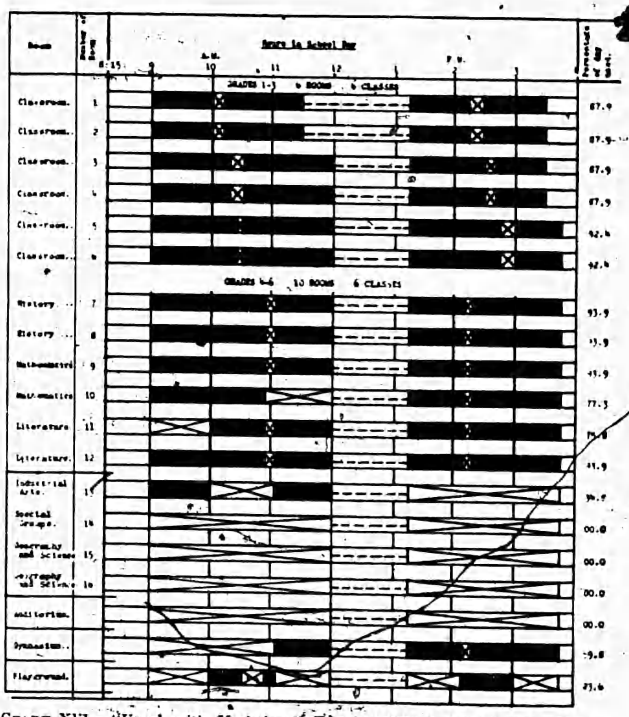


CHART XVI.—"Usual with Variations" Type of School Organization, Pontiac, Mich., Longfellow School. Utilization of School Plant Based on Educational Program for One Day. Grades 1-6, 16 Rooms, 12 Classes.

[13] See appendix P for program of Pontiac, Mich., school, and ch. III for floor plans.
[14] Exclusive of 4 nonplatoon rooms for 4 nonplatoon classes.
[15] See appendix Q for program of the Denver, Colo., school.
[16] See appendix R for program of San Diego, Calif., school, and ch. III for floor plans.
[17] Exclusive of 12 nonplatoon rooms for 12 nonplatoon classes for grades 1–2, and 1 orthogenic room.
[18] See appendix S for program of Wilmington, Del., school, and ch. III for floor plans.

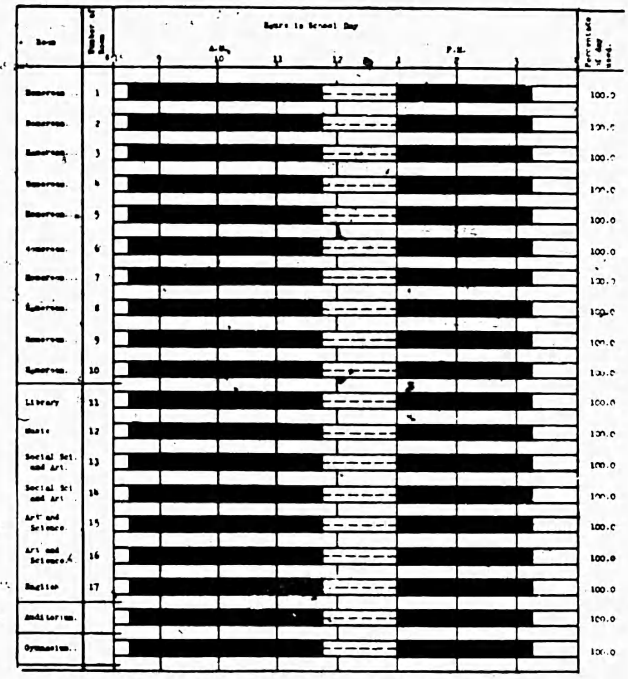
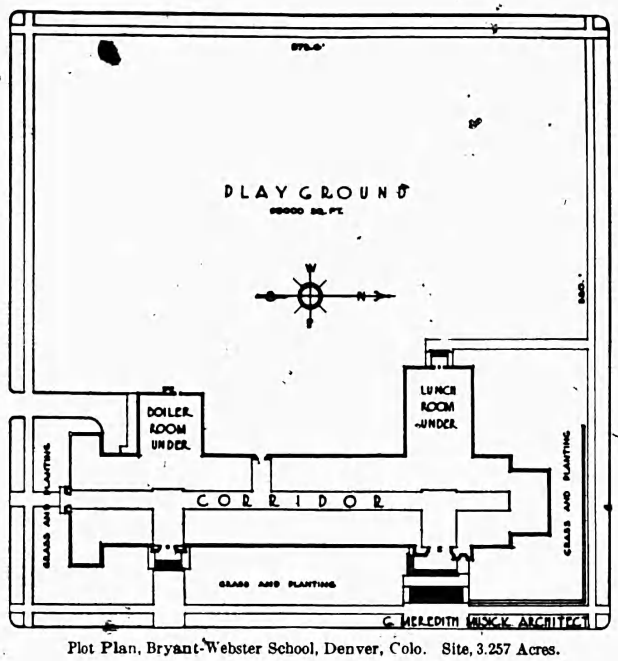
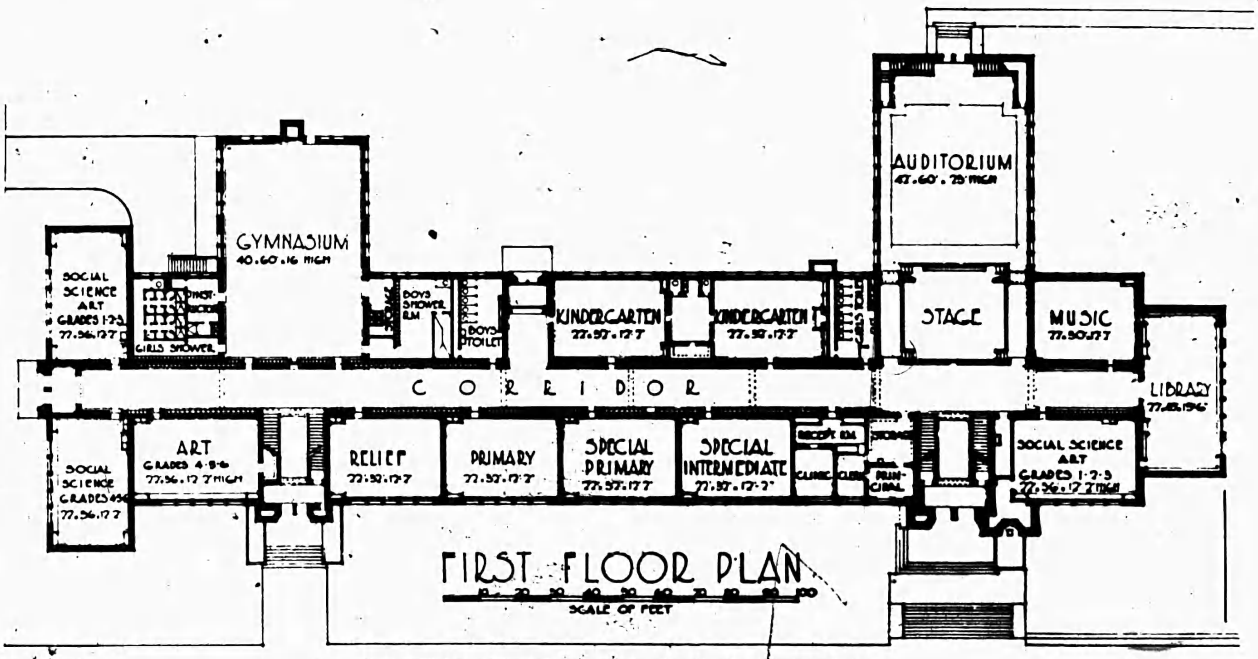


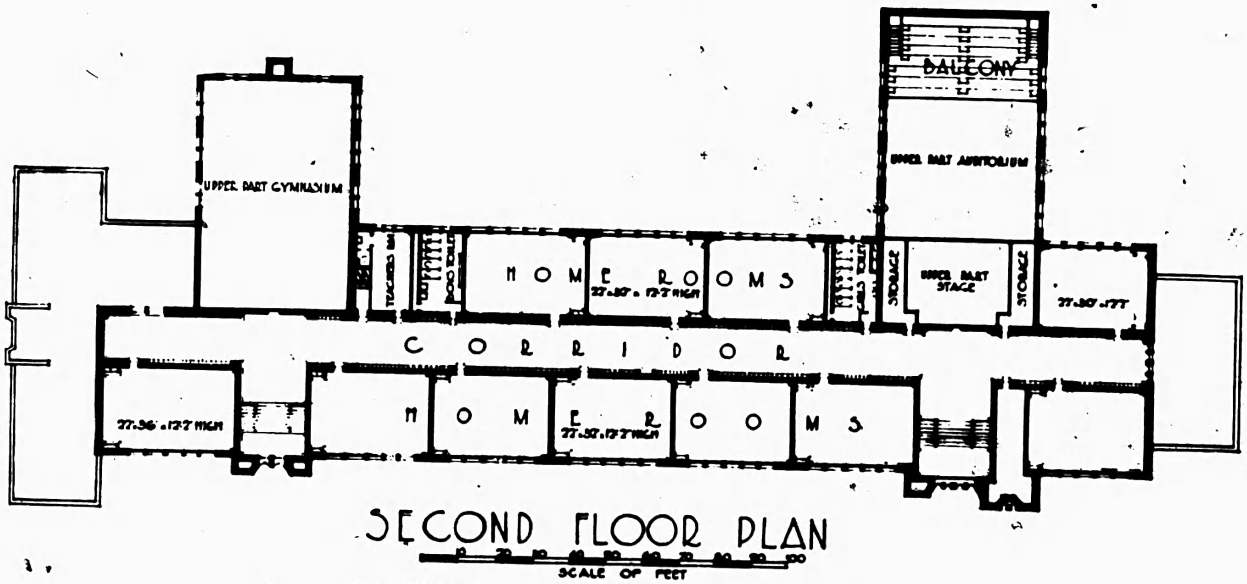
CHART XVII.—"Platoon" Type of School Organization, Denver, Colo., Bryant-Webster School. Utilization of School Plant Based on Educational Program for One Day. Grades 1-6, 17 Rooms, 20 Classes.



Plot Plan, Bryant-Webster School, Denver, Colo. Site, 3.257 Acres.



Bryant-Webster School, Denver, Colo. G. Meredith Musick, Architect.



SECOND FLOOR PLAN

Bryant-Webster School, Denver, Colo. G. Meredith Musick, Architect.

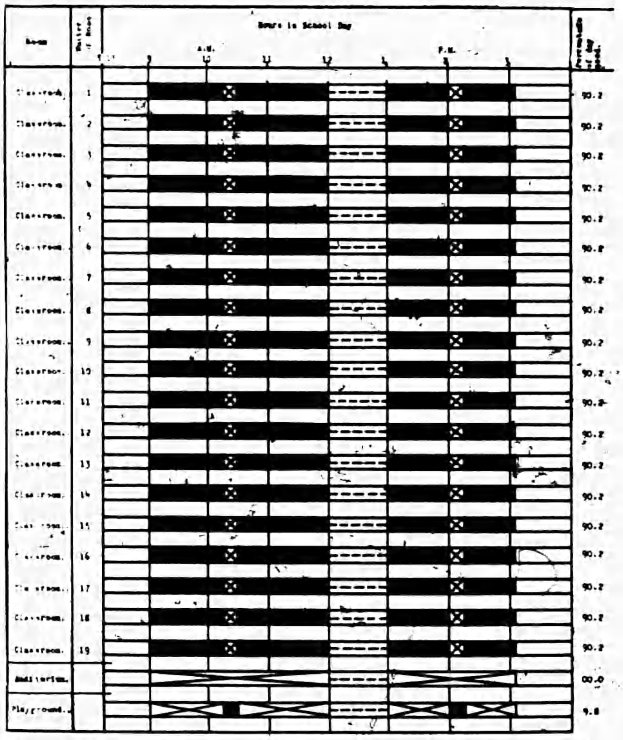


CHART XVIII.—"Activity Program" Type of School Organization, San Diego, Calif., Sherman School. Utilization of School Plant Based on Educational Program for One Day. Grades 1–6, 19 Rooms, 19 Classes.

To summarize the foregoing data on the effect of the educational program on the utilization of building space: It is clear that the differences in the capacities of these seven buildings which were planned for four different types of school organization were due to the extent to which all educational facilities in the building were used at the same time, that is, the extent to which there was multiple use of facilities. In the building planned for the *Usual with Variations* type of school, the capacity of the building was decreased by the addition of such enriched facilities as special activity rooms, auditoriums, and gymnasiums, because these facilities were not used when the classrooms were in use. On the other hand, the inclusion of special activity rooms, auditoriums, and gymnasiums in the *Platoon* school resulted in increase in capacity because the special activity rooms, auditoriums, gymnasiums, and classrooms were in use every period of the day. The result was that a school of 13 rooms of the *Usual with Variations* type accommodated 12 classes, whereas a school of the *Platoon* type with the same number of rooms accommodated 18 classes.

The buildings for the *Usual* and the *Activity Program* types of school had a larger capacity than the buildings for the *Usual with Variations* type because the buildings for these first two types did not have special activity rooms. On the other hand, they had smaller capacities than *Platoon* schools because they had auditoriums and playrooms which were not used when the classrooms were used. The result was that the school of the *Activity Program* type in San Diego, which had 19 rooms all of which were classrooms, accommodated 19 classes whereas, the *Platoon* school in Wilmington, Del., which had 20 rooms, of which 12 were classrooms and 8 were special activity rooms, accommodated 24 classes. The number of cubic feet per pupil for the San Diego school (996.4 cubic feet) was considerably higher than in the Wilmington building (902.2 cubic feet) (see appendix J), both because the capacity in

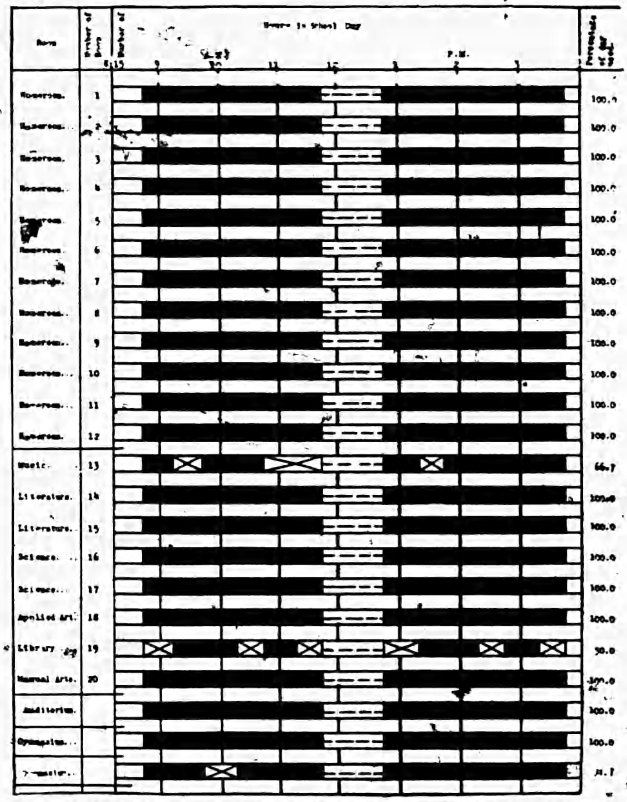


CHART XIX.—"Platoon" Type of School Organization, Wilmington, Del., Mary C. I. Williams School. Utilization of School Plant Based on Educational Program for One Day. Grades 3–6, 20 Rooms, 24 Classes.

the former building was less, and also because the classrooms in the San Diego building were decidedly larger (23 feet by 35 feet 3 inches) than the classrooms in the Wilmington building (22 by 32 feet). This increase in size of classrooms was found to be characteristic of the *Activity Program* type of school owing to the fact that the program calls for equipment for art, science, shop, library, etc., in each classroom rather than the centering of the equipment for each of these subjects in special rooms.

FAILURE TO USE AUDITORIUMS AND GYMNASIUMS LOWERS CAPACITY OF BUILDINGS

Obviously, the greatest waste in building space in the seven buildings referred to in table 9, lay in the lack of use of the auditoriums and the gymnasiums. The audi-

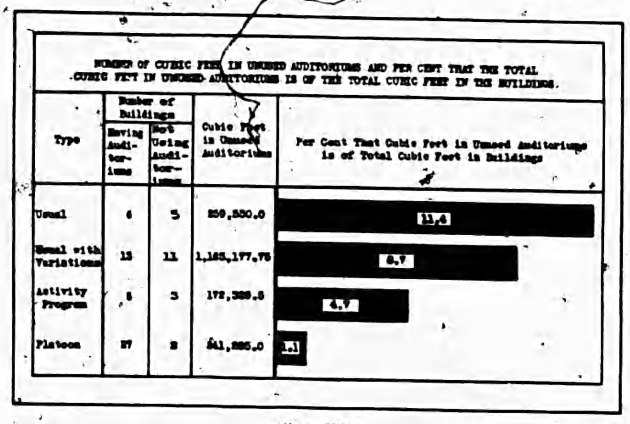


Chart XX.

toriums and gymnasiums in the three *Platoon* schools were used 100 percent of the school day with the exception of the school in Wilmington where one of the gymnasiums was used only 91.7 percent of the day. Of the four buildings of the *Usual, Usual with Variations*, and *Activity Program* types, only one school scheduled classes to the auditorium at all, and in this one building the auditorium was used by only two classes, and for only 11.6 percent of the day. The use of the gymnasiums by these three types of schools was hardly better; for example, the play space was used in the school of the *Usual* type only 8.2 percent of the day; and in the *Activity Program* type of school only 9.8 percent; while in the two schools of the *Usual with Variations* type, the gymnasiums were used 27 percent and 59.8 percent of the day, respectively.

This failure to use the auditoriums and gymnasiums was not limited to these buildings but, on the contrary, was characteristic, in varying degrees, of all the schools of the *Usual, Usual with Variations*, and *Activity Program* type of school organization. The following data illustrate this point:

USE OF THE AUDITORIUM IN SCHOOLS OF 4 DIFFERENT TYPES OF ORGANIZATION

Fifty-one of the seventy-four buildings had auditoriums, but in 21 of these 51 buildings, classes were not scheduled to the auditorium. There were 1,836,342.25 cubic feet in these unused auditoriums. (See chart XX.) At 30 cents per cubic foot, this amounts to $550,902.68, or more than half a million dollars invested in auditoriums that stood idle when other parts of the building were in use. The total number of cubic feet in unused auditorium space in the 21 buildings was sufficient to build a school that would accommodate 1,772 pupils.[19]

When the number of schools which not only had auditoriums but used them is considered, the facts show (see chart XXI) that the *Platoon* group not only had the largest percentage of schools with auditoriums (96.4 percent) but also had the largest percentage of schools scheduling classes regularly to the auditorium (92.6 percent). Furthermore, the auditoriums in this type of school were used on the average 86.6 percent of the total minutes in the school week; and yet, the percent of total instructional area in buildings of this type which was given to auditorium space (11.1 percent) was the lowest among the buildings for the four different types of school organization. Of the group of schools which had the next largest percentage of buildings with auditoriums, that is, the *Activity Program* type, only 40 percent of these schools scheduled classes to the auditorium, and the auditoriums were used only 18.1 percent of the total minutes in the school week; yet, 15.9 percent of the total instructional area in these buildings was used for auditoriums.

The *Usual with Variations*, type of school, which most closely resembled schools of the *Platoon* type with regard to the educational facilities offered, though not with regard to their use, had auditoriums in 13 schools (56.5 percent), but classes were scheduled to the auditorium in only 2 of these schools (15.4 percent), and the auditoriums were in use in these buildings only 40.6 percent of the school week. The percent of total instructional area given to auditoriums in this type of school was 16 percent. The schools of the *Usual* type had the lowest percentage of buildings having auditoriums (46.2 percent), and only one of the schools of this type (16.7 percent) scheduled classes to the auditorium; the auditorium was in use only 38.8 percent of the total school week, and yet 22.7 percent of the total instructional area in the buildings of this type was used for auditoriums.

These facts are particularly interesting in view of the percent of the total capacity of the school provided for in auditoriums in the 51 buildings of various types of school organization having auditoriums. (See chart XXII.) For example, in *Platoon* schools, 31.7 percent of the total capacity of the school was provided for in the auditoriums; in the 5 schools of the *Activity Program* type having auditoriums, 52.9 percent of the total capacity was provided for in the auditorium; in the 13 schools of the *Usual with Variations* type having auditoriums, 69.5 percent of the total capacity of the school was provided for in auditoriums; in 6 schools of the *Usual* type, 76.9 percent of the total capacity of the

[19] For example, the schools of the *Usual* type require 868.4 cubic feet per pupil; therefore, the 259,550 cubic feet in unused auditoriums would, in the 5 schools of the *Usual* type, furnish school building accommodations for 298 pupils. In the schools of the *Usual with Variations* type, 1,147.6 cubic feet are required for each pupil, therefore, the 1,163,177.75 cubic feet in unused auditoriums in the 11 schools of this type would be equal to the cubage needed to house 1,013 pupils. In schools of the *Activity Program* type, 933.1 cubic feet per pupil are required; therefore, the 172,329.5 cubic feet in unused auditoriums in the 3 schools of this type would furnish school building accommodations for 184 pupils. In schools of the *Platoon* type, 867.4 cubic feet per pupil are required; therefore, the 241,285 cubic feet in unused auditoriums in the 2 schools of this type would furnish school building accommodations for 278 pupils.

school was provided for in the auditorium. In other words, the schools using the auditoriums least provided for the largest percentage of the total school capacity in the auditorium, while the buildings that used the auditoriums most provided for the smallest percentage of the total school capacity in the auditorium.

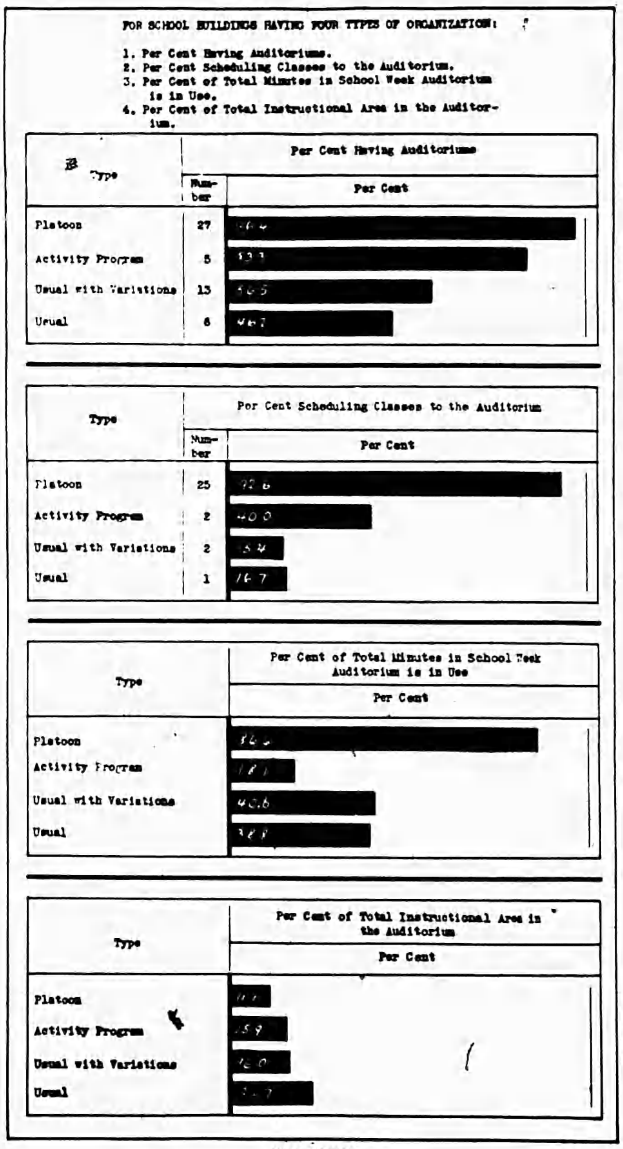


Chart XXI.

It is probably true that the auditoriums in all the buildings were used for adult activities in the evening, and it might be said that their erection was justified for that purpose alone. Certainly the community use of school buildings is most important and auditoriums should be available for such use, but the erection of such expensive units is far easier to justify if it can be shown that they are used as a regular part of the day school program. Therefore, school administrators will be interested in the fact that 25 of the 74 buildings not only had auditoriums but scheduled classes to them regularly in the day school, and used them 86.6 percent of the total school week.

USE OF GYMNASIUMS AND PLAYROOMS IN SCHOOLS OF FOUR DIFFERENT TYPES

There were fewer schools that had gymnasiums or playrooms than had auditoriums, but a larger proportion of the schools used the gymnasiums and playrooms. For example, 51 of the 74 buildings had auditoriums, and 30, or 58.8 percent, used them, while 36 of the 74 buildings had gymnasiums or playrooms, or both, and 30 of these buildings used the gymnasiums and playrooms. (See chart XXIII.)

In Platoon schools.—Twenty-two schools, or 78.5 percent of all platoon schools, had 40 gymnasiums and playrooms, or both. Since classes were scheduled regularly to play every period of the day in *Platoon* schools, it may seem surprising that all 28 schools did not have gymnasiums and playrooms. The reason is that auditorium-gymnasiums were used for play in the other six buildings. These buildings also had auditoriums. All the schools, 100 percent, having gymnasiums and playrooms scheduled classes regularly to them; the gymnasiums and playrooms were used 90.1 percent of the total minutes in the school week; 17 percent of the total instructional area was used for gymnasiums and playrooms.

In the "Usual with Variations" type of school.—Eleven of the 23 schools, or 47.8 percent, had 18 gymnasiums and playrooms; classes were scheduled to gymnasiums and playrooms in 54.5 percent of the schools that had indoor play space. The gymnasiums and playrooms were used less than half (43.3 percent) of the total minutes in the school week, and yet 19.3 percent of the total instructional area in the buildings was given to gymnasiums and playrooms.

In the "Activity Program" type of school.—One of the six schools had one playroom. Five of the six schools of this type were situated either in Southern California or in Texas where the climate does not require indoor play space. The 1 school having a playroom did not schedule classes regularly to it; 19.8 percent of the total instructional area in this building was given to the playroom.

In the "Usual" type of school.—There were no gymnasiums in the buildings for this type of school, and only two schools (15.4 percent) had playrooms. The schools having playrooms scheduled classes to them regularly, but the playrooms were used only 22.9 percent of the total minutes in the school week; yet about one-fifth (21.3 percent) of the total instructional area was given to the playrooms in these two schools.

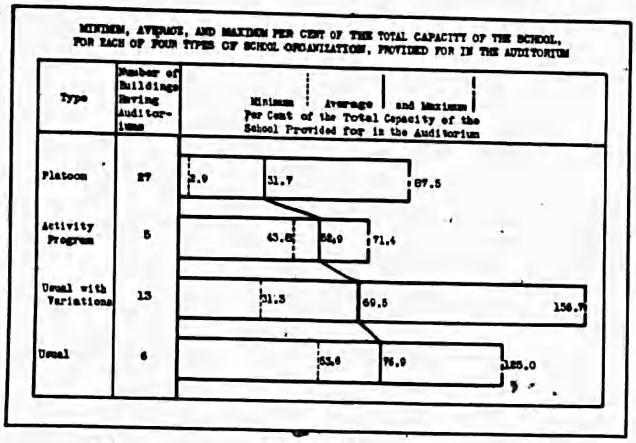


Chart XXII.

It is clear from the foregoing that the group of schools (*Platoon* type), which had the largest percentage of buildings with gymnasiums and playrooms, devoted the smallest percentage of total instructional area to gymnasiums and playrooms (17 percent), while the schools of the *Usual* type which had the smallest percentage of schools with gymnasiums and playrooms, and used them only a little more than one-fifth of the school week, devoted the largest percentage of the total instructional area to indoor play space (21.3 percent).

When the recognized importance of play and physical education for children is considered, it may come as a surprise to many that only 36 of the 70 buildings [20] had gymnasiums and playrooms. Even more striking is the fact that 22 of these 36 buildings (61.1 percent) having gymnasiums and play facilities were *Platoon* schools, and that only 14 schools (approximately 40 percent) of the other 3 types of school organization had gymnasiums or playrooms.

Chart XXIV shows that for *Platoon* schools and the *Usual with Variations* type of school having gymnasiums and play facilities, the percentage of buildings having gymnasiums, having playrooms, and having both gymnasiums and playrooms is similar. For example, of the 22 *Platoon* schools having gymnasiums and playrooms, 40.9 percent had gymnasiums, 31.8 percent had playrooms, and 27.3 percent had both gymnasiums and playrooms; and of the 11 *Usual with Variations* schools having gymnasiums and playrooms, 45.4 percent had gymnasiums, 27.3 percent, playrooms, and 27.3 percent both gymnasiums and playrooms. On the other hand, the 2 schools of the *Usual* type, and the 1 *Activity Program* type of school had playrooms only.

USE OF COMBINED AUDITORIUM-GYMNASIUMS IN SCHOOLS OF THE FOUR DIFFERENT TYPES

Seventeen of the buildings had combined auditorium gymnasiums. Of this number, seven were planned for the *Usual* type of school, six for the *Platoon* type, three for the *Usual with Variations* type, and one for the *Activity Program* type.

The argument usually given for having a combined auditorium-gymnasium instead of a separate auditorium and separate gymnasium is that the auditorium-gymnasium can be used for both auditorium and play activities, and is therefore less expensive than the separate auditorium and gymnasium. This matter was discussed at some length by the regional councils of the National Advisory Council on School Building Problems when the preliminary report of this study was made to them. The opinion of the majority of the members was that an educational unit planned for both auditorium and play activities was not satisfactory for either auditorium or play activity. They

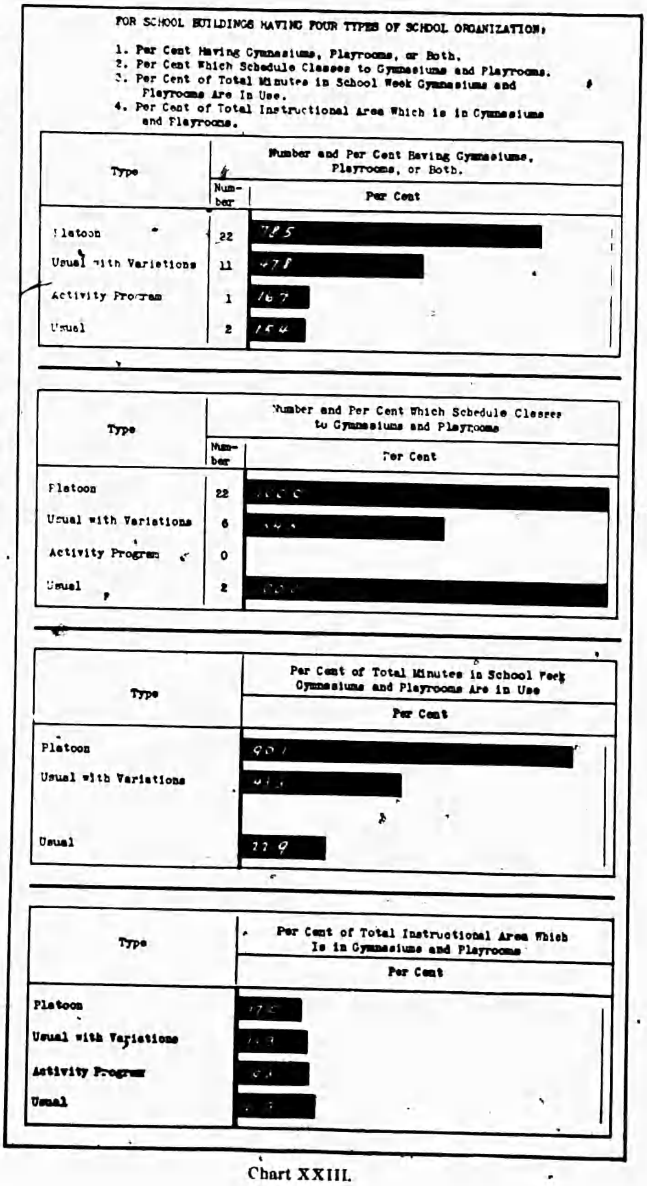


Chart XXIII.

[20] These 70 buildings do not include the 1 building for the *Cooperative Group* type, or the 3 buildings planned for the *Usual, Usual with Variations*, or *Platoon* type.

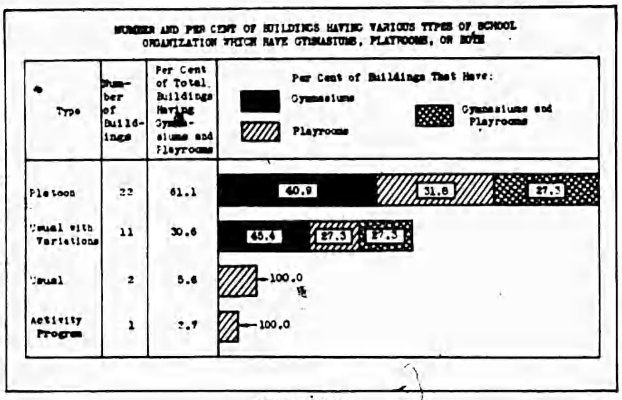


Chart XXIV.

pointed out that if basketball baskets were needed for the gymnasium work then, when it was necessary to use the auditorium-gymnasium for auditorium activities, the baskets either had to be carted away or a mechanism worked out by which they could be raised to the ceiling. Again, when the auditorium-gymnasium was to be used as a gymnasium, the chairs for the auditorium had to be disposed of. This meant that the janitor either had to cart away the chairs, or run them under the auditorium stage. If they were put under the stage then the stage had to be higher than an auditorium stage should be.

In view of these and other disadvantages of a combined auditorium-gymnasium, the members of the national advisory council asked that the data in regard to this unit in the school buildings be analyzed with a view to answering the following two questions: (1) If the combined auditorium-gymnasium is supposed to be used for both auditorium and play activities, do the data show that there is fuller utilization of the auditorium-gymnasium than of the separate auditorium and separate gymnasium; (2) is it true that the combined auditorium-gymnasium is less expensive than a separate auditorium and separate gymnasium, that is, does the combined auditorium-gymnasium require less cubage than the two separate units?

The answer to the first question will be found in chart XXV. As will be seen from that chart, in 11 of the 17 schools which had combined auditorium-gymnasiums, classes were scheduled to the combined auditorium-gymnasium, but the percent of total minutes in the school week that the auditorium-gymnasiums were in use in these buildings was practically the same as in the case of the schools that had separate auditoriums and gymnasiums. In other words, there was no fuller utilization of the auditorium-gymnasium than of the separate auditoriums and separate gymnasiums. For example, the schools of the *Usual with Variations* type which had separate auditoriums and gymnasiums, used the auditorium 40.6 percent of the school week, and the gymnasiums and playrooms 43.3 percent of the school week, whereas the schools of this type which had combined auditorium-gymnasiums used the auditorium-gymnasiums 39.8 percent of the school week. The schools of the *Usual* type with separate auditoriums used the auditoriums 38.8 percent of the school week while those of the same type which had auditorium-gymnasiums used them 49.2 percent of the school week. The *Platoon* schools, with combined auditorium-gymnasiums, used them about the same percentage of the school week, 92.3 percent, as did the schools of this type with separate auditoriums and separate gymnasiums. However, it should be pointed out that in the case of five of the six *Platoon* schools that had auditorium-gymnasiums, five of them also had auditoriums, and consequently these schools used the auditorium-gymnasiums only for play.[21] Apparently the reason for having auditorium-gymnasiums instead of gymnasiums in these buildings was due to the pressure in those cities for a large central auditorium for adult basketball games and other community activities.

TABLE 10.—COMPARISON OF NUMBER OF CUBIC FEET IN A COMBINED AUDITORIUM-GYMNASIUM IN A BUILDING FOR THE *USUAL WITH VARIATIONS* TYPE OF SCHOOL, WITH THE NUMBER OF CUBIC FEET IN AN AUDITORIUM AND A GYMNASIUM IN ANOTHER BUILDING FOR THE *USUAL WITH VARIATIONS* TYPE OF SCHOOL

City	Number of cubic feet in—			
	Auditorium-gymnasium	1 auditorium and 1 gymnasium		
		Auditorium	Gymnasium	Total
1	2	3	4	5
Janesville, Wis	145,936.5	.....	.....	145,936.5
Joplin, Mo	.....	74,304	72,576	146,880.0

As to the second question raised by the national advisory council, the data collected showed that it was no more expensive to have a separate auditorium and a separate gymnasium in a school building than a combined auditorium-gymnasium, provided that the auditorium was not planned to take care of the total capacity of the school. For example, the building for the Janesville, Wis., school had 20 rooms, exclusive of the kindergarten, and a combined auditorium-gymnasium; the Joplin, Mo., building had 19 rooms, exclusive of the kindergarten, and a separate auditorium and separate gymnasium. The capacity of the two buildings was practically the same. Table 10 shows that there were 145,956.5 cubic feet in the combined auditorium-gymnasium in Janesville, whereas in the

[21] The other *Platoon* school with a combined auditorium-gymnasium was in Tulsa, Okla., which used the auditorium-gymnasium only for auditorium purposes since the climate in Tulsa made it possible for the pupils to play out-of-doors during practically the entire year.

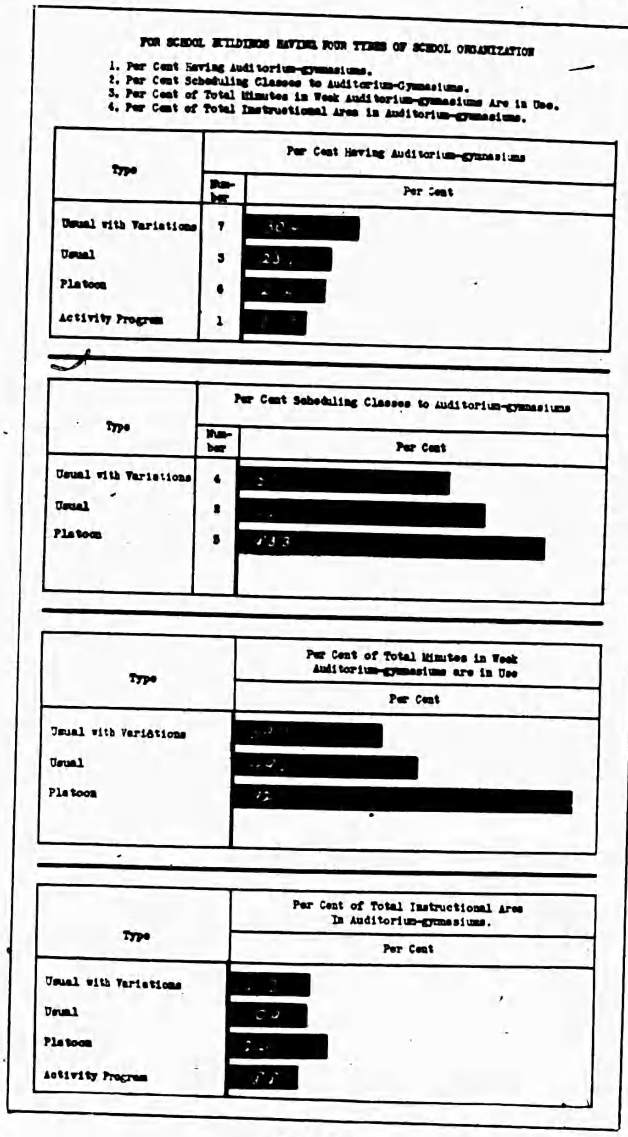


Chart XXV.

Joplin school building there were 74,304 cubic feet in the auditorium and 72,576 cubic feet in the gymnasium, making a total of 146,880 cubic feet in these two separate units, or practically the same cubage as in the auditorium-gymnasium in the Janesville school.

If the number of square feet in these units is considered, it is found that the dimensions of the combined auditorium-gymnasium in the Janesville school were 50 by 100 feet, or a total of 5,000 square feet; while in the Joplin school the dimensions of the gymnasium were 40 by 72 feet and of the auditorium 43 by 72 feet, or a total of 5,976 square feet for the two units, or slightly more than in the Janesville school. However, if the building for the Detroit, Mich., school in which there were an auditorium, a gymnasium, and a playroom, is considered, it is found that in this building, in which these units were used by 24 classes during the day, the dimensions of the auditorium were 40 by 42 feet, of the gymnasium 40 by 60 feet, and of the playroom 23 by 40 feet, making a total of 5,000 square feet for these three units. In other words, the number of square feet in the separate auditorium, gymnasium, and playroom, in the Detroit building, was the same as in the combined auditorium-gymnasium in the Janesville school.

CONCLUSION

As was stated in the beginning of this report, dynamic changes are occurring in the elementary school curriculum, due to fundamental changes in social and industrial conditions, which necessitate a richer and more varied school life for children. These changes in the curriculum are bringing about radical changes in the planning of school buildings. The modern school building, according to the data collected in the present study, provides opportunities for a more intensive training in the arts and sciences, in play and recreation, and in leisure-time activities, as well as in academic work, than were provided 50 years ago. It is hoped that the present study may be of value in offering examples of the variety of experimentation that is going on in the attempt to plan buildings to fit the varied requirements of a modern elementary school program.

APPENDIXES

APPENDIX A: NATIONAL ADVISORY COUNCIL ON SCHOOL BUILDING PROBLEMS, 1933

Officers and Executive Committee, Members, and Advisory Architects, Who Organized "Functional Planning of Elementary School Buildings" In Cooperation with the Office of Education

Chairman:

WILLIAM JOHN COOPER,[1] United States Commissioner of Education, 1929 33.

Vice chairman:

CHARLES L. SPAIN, Deputy Superintendent of Schools, Detroit, Mich.

Secretary:

ALICE BARROWS, Specialist in School Building Problems, Office of Education, Washington, D. C.

EXECUTIVE COMMITTEE

(The Executive Committee consists of the chairmen of the 11 regional councils, in addition to the chairman, vice-chairman, and secretary)

New England Region:

A. J. STODDARD, Superintendent of Schools, Providence, R. I.

New York Region:

JOSEPH H. HIXSON, Director, Division of Buildings and Grounds, State Department of Education, Albany, N. Y.

Middle Atlantic Region:

HUBERT C. EICHER, Director, Division of School Buildings, State Department of Public Instruction, Harrisburg, Pa.

South Atlantic Region:

CHARLES B. GLENN, Superintendent of Schools, Birmingham, Ala.

Great Lakes Region:

CHARLES L. SPAIN, Deputy Superintendent of Schools, Detroit, Mich.

Central States Region:

MILLARD C. LEFLER, Superintendent of Schools, Lincoln, Nebr.

North Central Region:

CARROLL R. REED, Superintendent of Schools, Minneapolis, Minn.

Gulf States Region:

C. M. HIRST, State Commissioner of Education, Little Rock, Ark.

Northwestern Region:

CHARLES A. RICE, Superintendent of Schools, Portland, Oreg.

Rocky Mountain Region:

HOMER W. ANDERSON, Deputy Superintendent of Schools, Denver, Colo.

Sierra Nevada Region:

VIERLING KERSEY, State Superintendent of Public Instruction, Sacramento, Calif.

[1] Deceased.

MEMBERS AND ADVISORY ARCHITECTS

NEW ENGLAND REGION

(States included—Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island)

Members

State commissioner:

PRINGLE, JAMES, Concord, N. H.

City superintendents:

GRAVES, S. MONROE, Wellesley, Mass.
HOLMES, STANLEY H., New Britain, Conn.
STODDARD, A. J., Providence, R. I.

County superintendent: ———

School board member: ———

Architect (A. I. A. director):

GRAY, GEORGE H., New Haven, Conn.

Ex-officio members

LIBBY, R. J., State Agent for Rural Education, State Department of Education, Augusta, Maine.

ANDERSON, ERIK, Assistant Superintendent in Charge of Buildings, Board of Education, Providence, R. I.

Advisory architects

BROOKS, W. F., Hartford, Conn.

BURR, G. HOUSTON, Boston, Mass.

COOPER, FRANK IRVING, Boston, Mass.[1]

CALDWELL, EDWARD B., Jr., Bridgeport, Conn.

DOANE, RALPH H., Boston, Mass.

HAMILTON, LORENZO, Meridian, Conn.

HOWE and CHURCH, Providence, R. I.

KILHAM, HOPKINS & GREELEY, Boston, Mass.

PIERCE, THOMAS J. H., Providence, R. I.

PRENTICE, T. MERRILL, Hartford, Conn.

RITCHIE, JAMES H., Boston, Mass.

STURGIS, R. CLIPSTON, Boston, Mass.

SUNDERLAND, PHILIP N., Danbury, Conn.

WALKER, WM. R., Providence, R. I.

WALSH, LOUIS A., Waterbury, Conn.

New York Region

(State included—New York)

Members

State commissioner:
Graves, Frank P., Albany, N. Y.
City superintendents:
Miller, A. W., Glens Falls, N. Y.
West, Herbert S., Rochester, N. Y.
Holmes, Wm. H., Mount Vernon, N. Y.
County superintendent:
Cheney, Charles H., White Plains, N. Y.
School board member:
Wood, Frank H., Chatham, N. Y.
Architect (A. I. A. regional director):
Brockway, Albert L., Syracuse, N. Y.

Ex-officio members

State school building directors:
Hixson, Joseph H., Albany, N. Y.
City school building directors:
Scherer, Francis R., Rochester, N. Y.
McNeil, Daniel, Buffalo, N. Y.

Advisory architects

Bessell, Wesley S., New York, N. Y.
Bley, Lawrence, Buffalo, N. Y.
Chamberlain, G. Howard, Yonkers, N. Y.
Clark, Carl W., Cortland, N. Y.
Cummings, George B., Binghamton, N. Y.
Delano & Aldrich, New York, N. Y.
Gordon, Edwin S., Rochester, N. Y.
Green, Edward B., Buffalo, N. Y.
Hathaway, Herbert M., New York, N. Y.
King, Melvin L., Syracuse, N. Y.
Randall, James A., Syracuse, N. Y.
Schmill, Karl, Buffalo, N. Y.

Middle Atlantic Region

(States included—Pennsylvania, New Jersey, Maryland, District of Columbia, West Virginia)

Members

State commissioner:
Eliott, Charles H., Trenton, N. J.
City superintendents;
Graham, Ben G., Pittsburgh, Pa.
Kraybill, D. B., Wheeling, W. Va.
Pickell, Frank G., Montclair, N. J.[1]
County superintendent:
Broome, E. W., Rockville, Md.
School board member:
Aaron, Marcus, Pittsburgh, Pa.
Architect (A.I.A. regional director):
Betelle, James O., Newark, N. J.

Ex-officio members—State school building directors

Eicher, Hubert C., State Department of Education, Harrisburg, Pa.

[1] Deceased.

Advisory architects

Brazer, Clarence W., Chester, Pa.
Catherine, Irwin T., Philadelphia, Pa.
Cutler, Howard W., Washington, D. C.
Barney, W. Pope, Philadelphia, Pa.
Green, M. Edwin, Harrisburg, Pa.
Ingham, Charles T., Pittsburgh, Pa.
Kelley, John F., Passaic, N. J.
Nolting, Wm. G., Baltimore, Md.
Pringle, Thomas, Pittsburgh, Pa.
Robling, Oliver J., Pittsburgh, Pa.
Shaub, Henry Y., Lancaster, Pa.
Stotz, Charles M., Pittsburgh, Pa.

South Atlantic Region

(States included—Virginia, North Carolina, South Carolina, Alabama, Florida, Georgia)

Members

State superintendent:
Duggan, M. L., Atlanta, Ga.
City superintendents:
Glenn, Charles B., Birmingham, Ala.
Kelley, John G., Bennettsville, S. C.
Hunter, Reid, Atlanta, Ga.
County superintendent:
Eleazer, G. Miller, Columbia, S. C.
School board member: (None.)
Architect (A. I. A. regional director):
Adams, F. O., Tampa, Fla.

Ex-officio members—State school building directors

Clemons, S. T., Columbia, S. C.
Graham, J. L., Atlanta, Ga.
Ledbetter, R. E., Montgomery, Ala.
Long, Raymond V., Richmond, Va.
Martin, J. O., Atlanta, Ga.

Advisory architects

Martin, Hugh, Birmingham, Ala.
Noland, Wm. C., Richmond, Va.
Northup, Willard C., Winston-Salem, N. C.
Sayward, Wm. J., Atlanta, Ga.
Walker, Nat G., Ft. Myers, Fla.
Wilson, Charles C., Columbia, S. C.

Great Lakes Region

(States included—Ohio, Kentucky, Indiana, Michigan, Illinois)

Members

State superintendent:
Blair, Francis G., Springfield, Ill.
City superintendents:
Hill, Henry H., Lexington, Ky.
Spain, Charles L., Detroit, Mich.
Wirt, William A., Gary, Ind.
County superintendent:
Hall, H. E., Bowling Green, Ohio.
School board member:
Murphy, Milton E., Akron, Ohio.
Architect (A. I. A. regional director):
Hewitt, Herbert E., Peoria, Ill.

GREAT LAKES REGION—Continued

Ex-officio members

State school building directors

BROOKER, J. W., Frankfort, Ky.
THASHER, HARRY M., Springfield, Ill.

City school building directors

SCHULZ, GEORGE, Detroit, Mich.

Advisory architects

CHILDS, FRANK A., Chicago, Ill.
DOHMEN, A. G., Detroit, Mich.
LLEWELLYN, JOS. C., Chicago, Ill.
MACCORNACK, WALTER ROY, Cleveland, Ohio.
MALCOMSON, W. G., Detroit, Mich.
PERKINS, DWIGHT H., Chicago, Ill.
WILDERMUTH, JOE H., Gary, Ind.
GARBER, FREDERICK W., Cincinnati, Ohio.

CENTRAL STATES REGION

(States included—Nebraska, Kansas, Missouri, Oklahoma)

Members

State superintendent:
TAYLOR, CHARLES, Lincoln, Nebr.
City superintendents:
BARBEE, F. H., St. Joseph, Mo.
PRUNTY, MERLE C., Tulsa, Okla.
LEFLER, MILLARD C., Lincoln, Nebr.
County superintendent:
WALLACE, DAVE, Topeka, Kans.
School board member:
TODD, D. C., St. Louis, Mo.
Architect (A. I. A. regional director):
MANN, FREDERICK M., Minneapolis, Minn.

Ex-officio members—State school building directors

PRUETT, HASKELL, Oklahoma City, Okla.

Advisory architects

CRAIG, FRITZ, Lincoln, Nebr.
FRITON, ERNEST, St. Louis, Mo.
ITTNER, WILLIAM B., St. Louis, Mo.[1]
MEGINNIS, H. W., Lincoln, Nebr.
WILSON, WALTER, Lincoln, Nebr.

NORTH CENTRAL REGION

(States included—Iowa, North Dakota, South Dakota, Minnesota, Wisconsin)

Members

State Superintendent:
GIFFEN, H. C., Pierre, S. Dak.
City superintendents:
REED, CARROLL R., Minneapolis, Minn.
POTTER, M. C., Milwaukee, Wis.
MOORE, J. G., Fargo, N. Dak.
County superintendent: (None.)
School board member: (None.)
HUBER, JACOB G., Sioux City, Iowa.
Architect, (A. I. A. regional director):
MANN, FREDERICK M., Minneapolis, Minn.

Ex-officio members—State school building directors

CHALLMAN, SAMUEL A., St. Paul, Minn.
SCHMIDT, H. W., Madison, Wis.

Advisory architects

BISSELL, CYRUS, Y., Minneapolis, Minn.
DEGELLEKE, G. B., Milwaukee, Wis.
ENGER, E. H., Minneapolis, Minn.
MACOMBER, WILLIAM K., Minneapolis, Minn.
THOMAS, OREN, Des Moines, Iowa.

GULF STATES REGION

(States included—Tennessee, Mississippi, Arkansas, Louisiana, Texas)

Members

State superintendent:
HIRST, C. M., Little Rock, Ark.
City superintendents:
RAMSEY, J. W., Fort Smith, Ark.
CROZIER, N. R., Dallas, Tex.
BAUER, NICHOLAS, New Orleans, La.
County superintendent:
POWERS, SUE, Memphis, Tenn.
School board member:
HOWIE, J. B., Gulfport, Miss.
Architect (A. I. A. regional director):
FURBRINGER, M. H., Memphis, Tenn.

Ex-officio members—State school building directors

BAKER, J. ODELL, Little Rock, Ark.
CALHOUN, J. B., Nashville, Tenn.
ECKLES, W. G., Jackson, Miss.
HORN, J. FRED., Austin, Tex.

Advisory architects

ALMAND, JOHN, Little Rock, Ark.
BASSHAM, T. E., Fort Smith, Ark.
DEWITT, ROSCOE P., Dallas, Tex.
EICHENBAUM, HOWARD, Little Rock, Ark.
GEISECKE & HARRIS, Austin, Tex.
HARALSON, J. J., Fort Smith, Ark.
HARDING, TOM, Little Rock, Ark.
MANN, WANGER & KING, Little Rock, Ark.
KING, CLARENCE, Shreveport, La.
NEILD, EDWARD F., Shreveport, La.
PAYNE, HARRY D., Houston, Tex.
PETTER & MCANINEH, Little Rock, Ark.
PHELPS, RAYMOND, San Antonio, Tex.
THOMPSON, SANDERS & GINICCHIO, Little Rock, Ark.
VOELCKER, HERBERT, Wichita Falls, Tex.
WITTENBERG & DELONEY, Little Rock, Ark.

[1] Deceased.

Northwestern Region

(States included—Washington, Oregon, Montana, Idaho)

Members

State superintendent:
Davis, Mrs. Myrtle C., Boise, Idaho.
City superintendents:
McClure, Worth, Seattle, Wash.
Rice, Charles A., Portland, Oreg.
Pratt, Orville C., Spokane, Wash.
County superintendent:
Peterson, Fred, Klamath Falls, Oreg.
School board member:
Glines, Mrs. G. M., Portland, Oreg.
Architect (A. I. A. regional director):
Ashton, Raymond J., Salt Lake City, Utah.

Ex-officio members—City school building directors

O'Dell, Matthew, Portland, Oreg.

Advisory architects

Cohagen, Chandler C., Billings, Mont.
Doty, Harold W., Portland, Oreg.
Jones, George H., Portland, Oreg.
Lawrence, Ellis, Portland, Oreg.
Naramore, F. A., Seattle, Wash.
Paradice, Frank H., Jr., Pocatello, Idaho.
Thomas, Harlan, Seattle, Wash.
Whitehouse, Harold C., Spokane, Wash.
Willson, Fred F., Bozeman, Mont.

Rocky Mountain Region

(States included—Colorado, Wyoming, Utah, New Mexico)

Members

State superintendent:
Lewis, Inez, Denver, Colo.
City superintendents:
Anderson, Homer W., Denver, Colo.
Child, George N., Salt Lake City, Utah.
Milne, John, Albuquerque, N. Mex.
County superintendent:
Ogle, Andrew, Greeley, Colo.
School board member:
Burgon, Heber J., Sandy, Utah.
Architect (A. I. A. regional director):
Ashton, Raymond J., Salt Lake City, Utah.

Advisory architects

Buell, Temple, Denver, Colo.
Frewen, Frank W., Jr., Denver, Colo.
Hesselden, Louis G., Albuquerque, N. Mex.
Hoyt, Merrill, Denver, Colo.
Musick, G. Meredith, Denver, Colo.
Williamson, George, Denver, Colo.

Sierra Nevada Region

(States included—California, Nevada, Arizona)

Members

State superintendent:
Kersey, Vierling, Sacramento, Calif.
City superintendents:
Martin, F. F., Santa Monica, Calif.
Rose, C. E., Tucson, Ariz.
Gwinn, J. M., San Francisco, Calif.
County superintendent:
York, Ada, San Diego, Calif.
School board member:
Baskerville, Harry H., Los Angeles, Calif.
Architect (A. I. A. regional director):
Meyer, Fred H., San Francisco, Calif.

Ex-officio members

State school building directors

Hill, Andrew P., Jr., Sacramento, Calif.

City school building directors

Evans, F. O., Los Angeles, Calif.

Advisory architects

Allison, J. E., Los Angeles, Calif.
Austin, John C., Los Angeles, Calif.
Chambers, H. C., Los Angeles, Calif.
Donovan, John J., Oakland, Calif.
Hunt, Myron, Los Angeles, Calif.
Kistner, T. C., Los Angeles, Calif.
Lesher and Mahoney, Phoenix, Ariz.
Norman F. Marsh, Los Angeles, Calif.
Nibecher, A. S., Jr., Los Angeles, Calif.
Place, Roy, Tucson, Ariz.
Powell, Herbert J., Los Angeles, Calif.
Quayle Bros., San Diego, Calif.
Rutherford, Francis B., Santa Monica, Calif.
Weeks, W. H., San Francisco, Calif.[1]

[1] Deceased.

APPENDIX B: CITIES IN WHICH SCHOOL BUILDINGS INCLUDED IN THE STUDY ARE LOCATED: NAME OF SCHOOL, NAME OF SUPERINTENDENT, AND NAME OF ARCHITECT

City and State	Name of school	Superindendent	Architect
1	2	3	4
Alexandria, La	Rosenthal	W. J. Avery	Herman J. Duncan.
Atlanta, Ga	Capitol View	Willis A. Sutton	G. Lloyd Preacher Co.
Aurora, Ill	C. M. Bardwell	K. D. Waldo	Jos. C. Llewellyn.
Baltimore, Md	Canton	David E. Weglein	Wyatt & Nolting.
Bennettsville, S. C	Bennettsville Primary	John G. Kelly	H. D. Harrell.
Birmingham, Ala	Norwood Elementary	C. B. Glenn	Warren, Knight & Davis.
Bradford, Pa	Hobson Place	James F. Butterworth	T. K. Hendryx.
Brandon, Vt	Forestdale Graded	Mrs. Flavia C. Partlow	Frank Lyman Austin.
Chester, Pa	John Wetherill	David A. Ward	Clarence W. Brazer.
Crescent, Utah	Crescent	D. C. Jensen	Ashton & Evans.
Dallas, Tex	Roger Q. Mills	N. R. Crozier	Bryan & Sharp.
Dayton, Ohio	Wilbur Wright	Claude V. Courter	Herman & Brown.
Dayton, Wyo	Dayton Public	A. A. Davidson	Everett E. Shores.
Denver, Colo	Bryant-Webster	A. L. Threlkeld	G. Meredith Musick.
Detroit, Mich	Clark	Frank Cody	McGrath & Dohman.
Fairfield, Ala	Forty-third Street	B. B. Baker	Denham & Denham.
Fargo, N. Dak	Emerson H. Smith	J. G. Moore	Wm. T. Kurke.
Fort Smith, Ark	Trusty	J. W. Ramsey	Perkins, Chatten & Hammond.
Gary, Ind	Lew Wallace	William Wirt	William B. Ittner.
Glens Falls, N. Y	Broad Street	A. W. Miller	Tooker & Marsh.
Greenwich, Conn	Cos Cob	Edwin C. Andrews	Guilbert & Betelle.
Hamilton County, Tenn	Anna B. Lacey	Arthur L. Rankin	Wm. Crutchfield.
Hannibal, Mo	Laura J. Pettibone	E. T. Miller	Malcolm S. Martin.
Houston, Tex	Wharton Elementary	E. E. Oberholtzer	Harry D. Payne.
Jackson, Miss	Whitfield	E. L. Bailey	C. H. Lindsley.
Janesville, Wis	Wilson	L. R. Creutz	Law, Law & Potter.
Joplin, Mo	West Central	J. A. Koontz	Felt, Dunham & Kriehn.
Kansas City, Mo	William Rockhill Nelson	George Melcher	Charles A. Smith.
Kenmore, N. Y	Lindbergh Elementary	F. C. Densberger	Benning C. Buell.
Knoxville, Tenn	Brownlow	Harry H. Clark	Barber & McMurray.
Lincoln, Nebr	Clinton	Millard C. Lefler	McGinnis & Schaumberg.
Little Rock, Ark	Forest Park	R. C. Hall	Thompson, Sanders & Ginocchio.
Los Angeles, Calif	Third Street	Frank A. Bouelle	A. S. Nibecher, Jr.
Montclair, N. J	Bradford	Frank G. Pickell	Starrett & Van Vleck.
Mount Vernon, N. Y	School No. 16	William H. Holmes	Warren S. Holmes.
Newark, N. J	Bragaw Avenue	John H. Logan	Frank Grad.
New Britain, Conn	Benjamin Franklin	Stanley H. Holmes	Warren S. Holmes.
New Castle, Pa	Arthur McGill	Clyde C. Green	Thayer Co.
New Orleans, La	Martin Behrman	Nicholas Bauer	E. A. Christy.
Newton, Iowa	Emerson Hough	B. C. Berg	Proudfoot, Rawson, Souers & Thomas.
Omaha, Nebr	Jackson	Homer W. Anderson	F. A. Henniger & Son.
Pasadena, Calif	Daniel Webster	J. A. Sexson	
Passaic, N. J	Memorial	Fred S. Shepherd	John Kelly.
Philadelphia, Pa	Clara Barton	Edwin C. Broome	Irwin T. Catharine.
Pittsburgh, Pa	Lincoln	Ben G. Graham	Pringle & Robling.

APPENDIX B—Continued

City and State	Name of school	Superintendent	Architect
1	2	3	4
Pontiac, Mich	Longfellow Elementary	James H. Harris	Frank A. Childs.
Portland, Oreg	John L. Vestal	Charles A. Rice	George H. Jones.
Reading, Pa	Tyson-Schoener	Amanda E. Stout	Muhlenberg Bros.
Rochester, N. Y	Frank Fowler Dow	Herbert S. Weet	Francis R. Scherer.
Rockford, Ill	R. K. Welsh	Frank A. Jensen	Peterson & Johnson.
Saginaw, Mich	Handley	Chester F. Miller	Frantz & Spence.
St. Joseph, Mo	Webster	F. H. Barbee	Eugene R. Meier.
San Antonio, Tex	Woodlawn	B. W. Hartley	Atlee & Ayers.
San Diego, Calif	Sherman	Walter R. Hepner	Quayle Bros.
San Francisco, Calif	Lafayette	J. M. Gwinn	John Reid.
San Jose, Calif	M. R. Trace	Walter L. Backrodt	W. H. Weeks.
Santa Monica, Calif	Madison	Frederick F. Martin	Francis B. Rutherford.
Seattle, Wash	Daniel Bagley	Worth McClure	F. A. Naramore.
Sierra Madre, Calif	Sierra Madre Elementary	Elizabeth Steinberger	Herbert J. Powell.
South Bend, Ind	Madison	Frank E. Allen	Austin & Shambleau.
South Cabot, Vt	Cabot	Max W. Barrows	
Syracuse, N. Y	Washington Irving	G. Carl Alverson	Randall & Vedder.
Tucson, Ariz	Sam Hughes	C. E. Rose	Roy Place.
Tulsa, Okla	Sequoyah	Merle C. Prunty	Leland I. Schumway.
Two Rivers, Wis	Joseph Koenig	Fred G. Bishop	Frank A. Childs.
Waterloo, Iowa	Hawthorne	Charles W. Kline	M. B. Cleveland.
Wellesley, Mass	L. Allen Kingsbury	S. Monroe Graves	Benjamin Proctor, Jr.
Wenatchee, Wash	Stevens	G. Martin Warren	L. Solberg.
West Lafayette, Ind	Morton	F. A. Burtsfield	Walter Scholder.
Wichita, Kans	Alcott	L. W. Mayberry	Glen H. Thomas.
Wilmington, Del	Mary C. I. Williams	S. M. Stouffer	Guilbert & Betelle.
Winchester, Mass	Wyman	James J. Quinn	Kilham, Hopkins & Greeley.
Winona, Minn	Central	D. F. Dickerson	Boyum, Schubert & Sorenson.
Winston-Salem, N. C	Ardmore	R. H. Latham	Hall Crews.

APPENDIX C: NUMBER OF SCHOOL BUILDINGS OF EACH TYPE OF SCHOOL ORGANIZATION, BY STATES AND REGIONS

State	Region [1]	Type of School Organization						
		Usual	Usual with Variations	Platoon	Activity program	Cooperative Group	Usual, Usual with Variations, or Platoon	Total
1	2	3	4	5	6	7	8	9
Alabama	S. A.	1		1				2
Arizona	S. N.						1	1
Arkansas	G. S.			2				2
California	S. N.		2	1	4			7
Colorado	R. M.			1				1
Connecticut	N. E.			2				2
Delaware	M. A.			1				1
Georgia	S. A.		1					1
Indiana	G. L.		1	2				3
Illinois	G. L.		1	1				2
Iowa	N. C.		1	1				2
Kansas	C. S.	1						1
Louisiana	G. S.	1	1					2
Maryland	M. A.			1				1
Massachusetts	N. E.	2						2
Michigan	G. L.	1	1	1				3
Minnesota	N. C.		1					1
Mississippi	G. S.	1						1
Missouri	C. S.		2	1			1	4
Nebraska	C. S.	1	1					2
New Jersey	M. A.		1	2				3
New York	N. Y.		3	1		1		5
North Carolina	S. A.		1					1
North Dakota	N. C.			1				1
Ohio	G. L.		1					1
Oklahoma	C. S.			1				1
Oregon	N. W.			1				1
Pennsylvania	M. A.	1	1	4				6
South Carolina	S. A.	1						1
Tennessee	G. S.	1		1				2
Texas	G. S.			1	2			3
Utah	R. M.		1					1
Vermont	N. E.	2						2
Washington	N. W.		1	1				2
Wisconsin	N. C.		1				1	2
Wyoming	R. M.		1					1
Total		13	23	28	6	1	3	74

[1] S. A. = South Atlantic; S. N. = Sierra Nevada; G. S. = Gulf States; R. M. = Rocky Mountain; N. E. = New England; M. A. = Middle Atlantic; G. L. = Great Lakes; N. C. = North Central; C. S. = Central States; N. W. = Northwestern; N. Y. = New York.

APPENDIX D: SCHOOL BUILDINGS IN THE STUDY GROUPED ACCORDING TO TYPES OF SCHOOL ORGANIZATION FOR WHICH THEY WERE PLANNED

"Usual" Type

City and State in which buildings are located	Name of school building
Alexandria, La	Rosenthal.
Bennettsville, S. C	Bennettsville Primary.
Bradford, Pa	Hobson Place.
Brandon, Vt	Forestdale Graded.
Fairfield, Ala	Forty-third Street.
Hamilton County, Tenn	Anna B. Lacey.
Jackson, Miss	Whitfield.
Omaha, Nebr	Jackson.
Saginaw, Mich	Handley.
South Cabot, Vt	Cabot.
Wellesley, Mass	L. Allen Kingsbury.
Wichita, Kans	Alcott.
Winchester, Mass	Wyman.

"Usual With Variations" Type

City and State in which buildings are located	Name of school building
Atlanta, Ga	Capitol View.
Aurora, Ill	C. M. Bardwell.
Crescent, Utah	Crescent.
Dayton, Ohio	Wilbur-Wright.
Dayton, Wyo	Dayton Public.
Janesville, Wis	Wilson.
Joplin, Mo	West Central.
Kansas City, Mo	William Rockhill Nelson.
Kenmore, N. Y	Lindbergh Elementary.
Lincoln, Nebr	Clinton.
Los Angeles, Calif	Third Street.
Montclair, N. J	Bradford.
New Orleans, La	Martin Behrman.

"USUAL WITH VARIATIONS" TYPE—Continued

City and State in which buildings are located	Name of school building
Philadelphia, Pa	Clara Barton.
Pontiac, Mich	Longfellow Elementary.
Rochester, N. Y	Frank Fowler Dow.
Sierra Madre, Calif	Sierra Madre Elementary.
Syracuse, N. Y	Washington Irving.
Waterloo, Iowa	Hawthorne.
Wenatchee, Wash	Stevens.
West Lafayette, Ind	Morton.
Winston-Salem, N. C	Ardmore.
Winona, Minn	Central.

"COOPERATIVE GROUP" TYPE

City and State in which buildings are located	Name of school building
Glens Falls, N. Y	Broad Street.

"PLATOON" TYPE

City and State in which buildings are located	Name of school building
Baltimore	Canton.
Birmingham, Ala	Norwood Elementary.
Chester, Pa	John Wetherill.
Dallas, Tex	Roger Q. Mills.
Denver, Colo	Bryant-Webster.
Detroit, Mich	Clark.
Fargo, N. Dak	Emerson H. Smith.
Fort Smith, Ark	Trusty.
Gary, Ind	Lew Wallace.
Greenwich, Conn	Cos Cob.
Little Rock, Ark	Forest Park.
Knoxville, Tenn	Brownlow.
Mount Vernon, N. Y	School No. 16.
Newark, N. J	Bragaw Avenue.

"PLATOON" TYPE—Continued

City and State in which buildings are located	Name of school building
New Britain, Conn	Benjamin Franklin.
New Castle, Pa	Arthur McGill.
Newton, Iowa	Emerson Hough.
Passaic, N. J	Memorial.
Pittsburgh, Pa	Lincoln.
Portland, Oreg	John L. Vestal.
Reading, Pa	Tyson-Schoener.
Rockford, Ill	R. K. Welsh.
Santa Monica, Calif	Madison.
Seattle, Wash	Daniel Bagley.
St. Joseph, Mo	Webster.
South Bend, Ind	Madison.
Tulsa, Okla	Sequoyah.
Wilmington, Del	Mary C. I. Williams.

"ACTIVITY PROGRAM" TYPE

City and State in which buildings are located	Name of school building
Houston, Tex	Wharton Elementary.
Pasadena, Calif	Daniel Webster.
San Antonio, Tex	Woodlawn.
San Diego, Calif	Sherman.
San Francisco, Calif	Lafayette.
San Jose, Calif	M. R. Trace.

SCHOOLS PLANNED FOR EITHER "USUAL", "USUAL WITH VARIATIONS", OR "PLATOON" TYPE OF SCHOOL ORGANIZATION

City and State in which buildings are located	Name of school building
Hannibal, Mo	Laura J. Pettibone.
Tucson, Ariz	Sam Hughes.
Two Rivers, Wis	Joseph Koenig.

APPENDIX E: EXPLANATION OF EDUCATIONAL PROGRAMS

IN ORDER that a comparative study of the programs of the 74 buildings might be made, all the educational programs were transferred to one form. That form was so made that the reader could easily see how many classes and grades there were in the school, how many rooms, the kind of activities carried on in each room, and the location of each class each period of the day. For example:

Key to classes.—Because the grades were designated in so many different ways, each grade was given a class number, e. g., "Grade 1A", with 40 pupils, is "class 1", "grade 1B", with 40 pupils, is "class 2", etc. Under "Key to Classes", the class numbers are in the left-hand column and the corresponding grades in the right-hand column.

Rooms.—In the first column of the program each room is listed and numbered, and the room is named according to the kind of activity carried on in it. For example, in the *Platoon* school, "homeroom" refers to rooms in which such academic subjects as reading, writing, arithmetic, and sometimes geography and history are taught; "music", "art" rooms, etc., refer to rooms planned and equipped for the teaching of those subjects alone. In the schools of the *Usual* type, "classroom" refers to rooms in which all the subjects are taught. In schools of the *Usual with Variations* type and the *Activity Program* type, "Classroom" refers to rooms in which either all the subjects are taught, or all but one, two, three, or four subjects; music and art rooms, etc., in these types of schools are rooms to which pupils go for these particular subjects.

The auditorium-gymnasium, auditorium, gymnasium, and playroom are not numbered since they are not "rooms", but are larger educational units. Since the capacity of a school depends upon the number of rooms plus space provided in auditoriums, gymnasiums, and

playrooms, it is important to be able to see at a glance the number of rooms *plus* the number of these additional educational units.

Teacher (subject taught).—This column gives the subject taught by the teachers in each educational unit. It does *not* give the number of teachers in the school.

Periods.—In these columns are given the different periods in the school day, and each class is located in the room to which it goes each period. In the *Platoon* schools, the periods are the same for every class throughout the day. In the schools of the *Usual, Usual with Variations,* and *Activity Program* types, the periods often differ for different classes, and they are so designated on the program.

To read a *Platoon* program, select one class, find its location the first two periods, and then glance down the figures under the next period until that class number is found; follow this procedure throughout the day. In this way it is possible to find out exactly where each class is located each period of the day. In schools of the other three types, read *across* the program for each class; when a blank space is indicated, refer to the special activity rooms, auditorium, or gymnasiums for the location of the class in these activities at the time that its classroom is vacant.

APPENDIX F: NUMBER AND PERCENT OF BUILDINGS OF VARIOUS TYPES OF SCHOOL ORGANIZATION ACCORDING TO PERIODS OF ERECTION

Year buildings were erected	Total	Type of School Organization: Usual	Usual with Variations	Platoon	Activity program	Cooperative group	Usual, Usual with Variations, or Platoon
1	2	3	4	5	6	7	8
Number							
Total	**74**	**13**	**23**	**28**	**6**	**1**	**3**
1932	3			2			1
1931	8	1	1	5			1
1930	25	2	10	8	4		1
1929	9	2	5	1	1		
1928	7	1		6			
1927	8	1	4	3			
1926	8	3	2	2	1		
1925	3	1	1				1
1924	2	1		1			
1923							
1922							
1921	1	1					
Percent							
1932	4.1			7.1		100.0	
1931	10.8	7.7	4.3	17.9			33.3
1930	33.8	15.4	43.5	28.6	66.6		33.3
1929	12.2	15.4	21.8	3.6	16.7		
1928	9.4	7.7		21.4			
1927	10.8	7.7	17.4	10.7			
1926	10.8	23.0	8.7	7.1	16.7		
1925	4.1	7.7	4.3				33.3
1924	2.7	7.7		3.6			
1923							
1922							
1921	1.3	7.7					

APPENDIX G: DEFINITION OF TERMS IN TABLES AND CHARTS

Kdg.—Kindergarten.

Classrooms.—All rooms, exclusive of kindergartens, special activity rooms, and "Other" rooms.

Special activity rooms.—Rooms planned and equipped for one or, at most, two nonacademic subjects, i. e., art, music, nature study, science, social science, library, cooking and sewing, manual training.

Other rooms.—Rooms for open-air classes, sight-saving, deaf, mental deviates, etc.

Auditorium-gymnasium.—Planned to be used either as an auditorium or a gymnasium. The gymnasium is on the auditorium stage, or the whole auditorium floor is used as a gymnasium, or part of the auditorium floor is used as a gymnasium, and separated from the auditorium by folding doors. The floor is always level.

Auditorium.—Planned to be used as an auditorium, with stage, and level floor and movable or fixed seats, or sloping floor and opera seats.

Gymnasium.—Planned for gymnasium and play activities, with an 18 or 20 foot ceiling height, and often with showers.

Playroom.—A smaller room, with lower ceiling height, and without showers; used largely by primary pupils.

Total rooms.—Includes Kindergartens, classrooms, special activity rooms, "Other" rooms, but not auditorium-gymnasiums, auditoriums, gymnasiums, or playrooms.

Total Estimated Capacity—

As given.—This is the capacity based on the educational program in use with the number of pupils per class as given. This varies from 25 to 44.5 pupils per class.

At 40 pupils per class.—Same as above except that the number of pupils per class for classes in all schools is 40.

Number of cubic feet per pupil on basis of educational program at 40 pupils per class.—This figure is secured by dividing the total number of cubic feet in the building by the number of pupils according to the educational program in use at 40 pupils per class.

APPENDIX H: EDUCATIONAL FACILITIES (NUMBER AND KIND OF ROOMS; NUMBER OF COMBINED AUDITORIUM-GYMNASIUMS, AUDITORIUMS, GYMNASIUMS, PLAYROOMS); GRADES INCLUDED; AND EXTIMATED CAPACITY BASED ON EDUCATIONAL PROGRAMS OF 74 SCHOOL BUILDINGS ON VARIOUS TYPES OF SCHOOL ORGANIZATION

City and State	Region	Grades	Number and Kinds of Rooms							Indoor Play Space		Total Estimated Capacity, on Basis of Educational Program				
			Kindergartens	Total rooms (exclusive of kindergarten)	Classrooms	Special activity rooms	"Other"	Combined auditorium gymnasiums	Auditoriums	Gymnasiums	Playrooms	Number of classes in kindergarten	Number of pupils in kindergarten [1]	Number of classes (exclusive of kindergarten)	Number of pupils (exclusive of kindergarten)	Average number of pupils per class as given
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
"USUAL" TYPE (13)																
South Cabot, Vt.	N. E.	1-8		1	1	(2)			(3)		1			1 [4]	33	33.
Brandon, Vt.	N. E.	1-8		4	4				1					4	140	35.
Jackson, Miss.	G. S.	1-6		6	6									6	240	40.
Bennettsville, S. C.	S. A.	1-3		7	7									7	280	40.
Bradford, Pa.	M. A.	1-6		8	8			1						8	320	40.
Wichita, Kans.	C. S.	Kindergarten, 1-6	1	8	8				1			1	40	8	320	40.
Hamilton County, Tenn	G. S.	1-6		8	8				1					8	320	40.
Wellesley, Mass.	N. E.	Kindergarten, 1-6	1	9	9						1	1	40	9	315	35.
Fairfield, Ala.	S. A.	Kindergarten, 1-6	1	12	12				1			1	40	12	540	45.
Winchester, Mass.	N. E.	Kindergarten, 1-6	1	13	13				1			1	40	13	455	35.
Omaha, Nebr.	C. S.	Kindergarten, 1-8	1	14	14	(3)		1				1	40	14	560	40.
Saginaw, Mich.	G. L.	Kindergarten, 1-6	1	16	10		6	1				1	40	16	640	40.
Alexandria, La.	G. S.	Kindergarten, 1-7	1	18	18				1			1	40	18	720	40.
Total			7	124	118		6	3	6		2	7	280	124	4,883	39.
"USUAL WITH VARIATIONS" TYPE (23)																
Crescent, Utah	R. M.	1-5		4	4									4	132	33.
Dayton, Wyo. [5]	N. W.	1-10		6	4			1						4	132	33.
Winston-Salem, N. C.	S. A.	1-5		10	9	2								10	350	35.
Montclair, N. J.	M. A.	Kindergarten, 1-6	1	10	9	1			1		1			9	270	30.
Wenatchee, Wash.	N. W.	1-6 (D)		11	9	2				1		1	40	11	401.5	36.5.
Winona, Minn.	N. C.	Kindergarten, 1-6	1	12	10	2								10	400	40.
Kansas City, Mo.	C. S.	Kindergarten, 1-7	1	13	11	2			1			1	40	11	440	40.
Waterloo, Iowa	N. C.	Kindergarten, 1-7	1	13	12	2			1	1	1	1	40	12	480	40.
Atlanta, Ga.	S. A.	Kindergarten, 1-6	3	13	10	3		1			2	1	40	10	400	40.
Rochester, N. Y.	N. Y.	Kindergarten, 1-6	1	16	[7] 14	2			1	1		3	120	10	400	40.
Pontiac, Mich.	G. L.	Kindergarten, 1-6 (D)	1	16	[8] 10	6				1		1	40	11	490	35.
Sierra Madre, Calif.	S. N.	Kindergarten, 1-6	1	17	13	3			1			1	40	12	432	36.
Joplin, Mo.	C. S.	Kindergarten, 1-6	1	19	[9] 19	(3)	1		1			1	40	14	490	35.
Janesville, Wis.	N. C.	Kindergarten, 1-7	1	20	15	3			1	1		1	40	19	665	35.
West Lafayette, Ind.	G. L.	Kindergarten, 1-8 (D)	1	24	[10] 22	2	2	1				1	40	17	595	35.
Los Angeles, Calif.	S. N.	Kindergarten, 1-6	1	25	[11] 23	[11] 2			1	1	1	1	40	23	874	38.
Lincoln, Nebr.	C. S.	Kindergarten, 1-6	2	28	20	5	3	1				1	40	23	828	36.
Aurora, Ill.	G. L.	Kindergarten 1-7 (D)	1	30	[12] 25	5					2	2	80	23	805	35.
Kenmore, N. Y.	N. Y.	Kindergarten, 1-6	1	33	31	2			1	1	2	1	40	25	900	36.
Syracuse, N. Y. [6]	N. Y.	Kindergarten, 1-8 (1-6 elementary, 7-8 junior high school).	1	34	28 (21 elementary, 7 junior high school).	4	2	1				1	40	31	1,085	35.
Philadelphia, Pa.	M. A.	Kindergarten, 1-8 (D)	1	34	29	5						1	40	31	1,085	35.
Dayton, Ohio [6]	G. L.	Kindergarten, 1-9 (1-6 elementary, 7-9 junior high school).	1	39	18 (5 grades 1-3, 3 grades 4-6, 10 grades 7-9).	20	1		1	2	1	1	40	20	1,218	42.
New Orleans, La.	G. S.	Kindergarten, 1-7 (D)	2	47	35 (17 grades 1-4, 18 grades 5-7).	9	3		1		1	2	80	32 (5 grades 1-3, 3 grades 4-6, 23 grades 7-9, 1 "Other").	1,280 (200 grades 1-3, 120 grades 4-6, 920 grades 7-9, 40 "Other").	40.
Total			23	474	380	82	12	7	13	10	9	23	920	412	15,272.5	37
														38 (17 grades 1-4, 18 grades 5-7, 3 "Other").	1,520 (680 grades 1-4, 720 grades 5-7, 120 "Other").	40.

See footnotes at end of table.

APPENDIX H: EDUCATIONAL FACILITIES (NUMBER AND KIND OF ROOMS; NUMBER OF COMBINED AUDITORIUM-GYMNASIUMS, AUDITORIUMS, GYMNASIUMS, PLAYROOMS); GRADES INCLUDED; AND ESTIMATED CAPACITY BASED ON EDUCATIONAL PROGRAMS OF 74 SCHOOL BUILDINGS ON VARIOUS TYPES OF SCHOOL ORGANIZATION—Continued

"COOPERATIVE GROUP" TYPE (1)

City and State	Region	Grades	Number and Kinds of Rooms					Combined auditorium-gymnasiums	Auditoriums	Indoor Play Space		Total Estimated Capacity, on Basis of Educational Program				
			Kindergartens	Total rooms (exclusive of kindergarten)	Classrooms	Special activity rooms	"Other"			Gymnasiums	Playrooms	Number of classes in kindergarten	Number of pupils in kindergarten	Number of classes (exclusive of kindergarten)	Number of pupils (exclusive of kindergarten)	Average number of pupils per class as given
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Glens Falls, N. Y.	N. Y.	Kindergarten, 1–6, (1–3 trad., 4–6 cooperative).	1	19 (8 trad., 11 cooperative).	13 (8 trad., 5 cooperative).	6		1				1	40	14 (8 trad., 6 cooperative).	[15] 420 (240 trad., 180 cooperative).	30.
Total			1	19	13	6		1				1	40	14	420	30.

"PLATOON" TYPE (28)

Fargo, N. Dak.	N. C.	Kindergarten, 1–6	1	10	6	4			1	1		1	40	12	480	40.
Rockford, Ill.	G. L.	Kindergarten, 1–6 (1 nonplatoon, 2–6 platoon).	1	10 (2 nonplatoon, 8 platoon).	7 (2 nonplatoon, 5 platoon).	3		(17)	[18] 1			1	40	12 (2 nonplatoon, 10 platoon).	480 (80 nonplatoon, 400 platoon).	40.
New Castle, Pa.	M. A.	Kindergarten, 1–6.	1	10	4	6		1	[19] 1		2	1	40	13	494	38.
St. Joseph, Mo.	C. S.	Kindergarten, 1–6 (1–2 nonplatoon, 3–6 platoon).	1	11 (3 nonplatoon, 8 platoon).	8 (3 nonplatoon, 5 platoon).	3		[20] 1	[21] 1			1	40	13 (3 nonplatoon, 10 platoon).	533 (123 nonplatoon, 410 platoon).	41.
Chester, Pa.	M. A.	Kindergarten, 1–6 (1 nonplatoon, 2–6 platoon).	1	11 (1 nonplatoon, 10 platoon).	7 (1 nonplatoon, 6 platoon).	4			1		2	1	40	13 (1 nonplatoon, 12 platoon).	520 (40 nonplatoon, 480 platoon).	40.
Gary, Ind.	G. L.	Kindergarten, 1–6.	2	10	7	3			1	2		2	80	18	720	40.
Fort Smith, Ark.	G. S.	1–6 (1–2 nonplatoon, 3–6 platoon).		12 (2 nonplatoon, 10 platoon).	8 (2 nonplatoon, 6 platoon).	4			1					14 (2 nonplatoon, 12 platoon).	586 (82 nonplatoon, 504 platoon).	41 nonplatoon, 42 platoon.
Newton, Iowa.	N. C.	Kindergarten, 1–6 (1–2 nonplatoon, 3–6 platoon).	1	12 (4 nonplatoon, 7 platoon, 1 "Other").	8 (4 nonplatoon, 4 platoon).	3	1		1	1		1	40	13 (4 nonplatoon, 8 platoon, 1 "Other").	520 (160 nonplatoon, 320 platoon, 40 "Other").	40.
Little Rock, Ark.	G. S.	1–6 (1–2 nonplatoon, 3–6 platoon).		14 (8 nonplatoon, 6 platoon).	12 (8 nonplatoon, 4 platoon).	2			1					16 (8 nonplatoon, 8 platoon).	640 (320 nonplatoon, 320 platoon).	40.
Pittsburgh, Pa.	M. A.	Kindergarten, 1–6.	1	15 (13 platoon, 2 "Other").	7	6	2		1		2	1	40	16 (14 platoon, 2 "Other").	640 (560 platoon, 80 "Other").	40.
Santa Monica, Calif.	S. N.	4–6		15 (11 platoon 4 "Other").	6	5	4		1		[23] 1			16 (12 platoon 4 "Other").	560 (420 platoon 140 "Other").	35.
Tulsa, Okla.	C. S.	Kindergarten, 1–6 (preprimary 1 nonplatoon 2–6 platoon).	2	17 (1 preprimary 3 nonplatoon 13 platoon).	13 (1 preprimary 3 nonplatoon 9 platoon).	4		[23] 1	(23)	(23)		2	80	22 (1 preprimary 3 nonplatoon 18 platoon).	880 (40 preprimary 120 nonplatoon 720 platoon).	40.
Mount Vernon, N. Y.	N. Y.	Kindergarten, 1–6.	2	17	10	7			1	1		2	80	18	630	35.
Seattle, Wash.	N. W.	Kindergarten, 1–8 (1–3B nonplatoon 3A–8 platoon).	1	18 (7 nonplatoon 11 platoon).	13 (7 nonplatoon 6 platoon).	5			1	1	2	1	40	19 (7 nonplatoon 12 platoon).	760 (280 nonplatoon 480 platoon).	40.
Knoxville, Tenn.	G. S.	Kindergarten, 1–6 (1–2B nonplatoon 2A–6 platoon).	1	18 (5 nonplatoon 13 platoon).	12 (5 nonplatoon 7 platoon).	6		1	1			1	40	19 (5 nonplatoon 14 platoon).	760 (200 nonplatoon 560 platoon).	40.
Dallas, Tex.	G. S.	Kindergarten, 1–7 (D)	1	19 (11 platoon 8 departmentalized).	15 (9 platoon 6 departmentalized). [1]	4 (2 platoon 2 departmentalized).			1	(25) 1	1	1	40	24 (16 platoon 8 departmentalized).	912 (608 platoon 304 departmentalized).	38.
New Britain, Conn.	N. E.	Kindergarten, 1–6 (1–2 nonplatoon 3–6 platoon).	1	20 (8 nonplatoon 12 platoon).	13 (8 nonplatoon 5 platoon).	7 [26]			1	1		1	40	18 (8 nonplatoon 10 platoon).	648 (288 nonplatoon 360 platoon).	36.
Denver, Colo.	R. M.	Kindergarten, 1–6 (1 nonplatoon 2–6 platoon).	2	21 (4 nonplatoon 17 platoon).	14 (4 nonplatoon 10 platoon).	7			1	1		[27] 2	80	24 (4 nonplatoon 20 platoon).	912 (152 nonplatoon 760 platoon).	38.
South Bend, Ind.	G. L.	Kindergarten, 1–6 (1–2 nonplatoon 3–6 platoon).	1	24 (12 nonplatoon 12 platoon).	20 (12 nonplatoon 8 platoon). [27]	4			1	1		1	40	28 (12 nonplatoon 16 platoon).	896 (384 nonplatoon 512 platoon).	32.
Portland, Oreg.	N. W.	Kindergarten, 1–9	1	26	16	10			1	1	2	1	40	30	1,149	38.3.

Detroit, Mich	G. L	Kindergarten, 1–7 (1A–1B nonplatoon 1B–7A platoon).	2	28 (4 nonplatoon 21 platoon 3 "Other").	16 (4 nonplatoon 12 platoon).	9	3		1	1	1	2	80	31 (4 nonplatoon 24 platoon 3 "Other").	1,379.5 (178 nonplatoon 1,068 platoon 133.5 "Other").	44.5.
Newark, N. J	M. A	Kindergarten, 1–8 (1B nonplatoon 1A–8A platoon).	1	28 (2 nonplatoon 26 platoon).	17 (2 nonplatoon 15 platoon).	11			1	1	1	1	40	32 (2 nonplatoon 30 platoon).	1,280 (80 nonplatoon 1,200 platoon).	40.
Greenwich, Conn	N. E	Kindergarten, 1–8 (1–5A nonplatoon 5B–8 platoon).	2	29 (17 nonplatoon 12 platoon).	22 (17 nonplatoon 5 platoon).	7			1	1	2	2	80	27 (17 nonplatoon 10 platoon).	972 (612 nonplatoon 360 platoon).	36.
Birmingham, Ala	S. A	1–8 (1–2 nonplatoon 3–8 platoon).		33 (12 nonplatoon 21 platoon).	24 (12 nonplatoon 12 platoon).	9			1		2			36 (12 nonplatoon 24 platoon).	1,260 (420 nonplatoon 840 platoon).	35.
Wilmington, Del	M. A	Kindergarten, 1–6 (1–2B nonplatoon 2A–6 platoon).	1	33 (12 nonplatoon 20 platoon 1 "Other").	24 (12 nonplatoon 12 platoon).	8	1		1	2		1	40	37 (12 nonplatoon 24 platoon 1 "Other").	1,332 (432 nonplatoon 864 platoon 36 "Other").	36.
Baltimore, Md	M. A	Kindergarten, 1–6 (1–2B nonplatoon 2A–6 platoon).	1	33 (9 nonplatoon 22 platoon 2 "Other").	20 (9 nonplatoon 11 platoon).	11	2		1	2	1	1	40	83 (9 nonplatoon 22 platoon 2 "Other").	1,320 (360 nonplatoon 880 platoon 80 "Other").	40.
Reading, Pa	M. A	Kindergarten, 1–6 (D) (1–2B nonplatoon 2A–3 platoon 4–6 departmentalized).	1	32 (5 nonplatoon 8 platoon 16 departmentalized 3 "Other").	23 (5 nonplatoon 5 platoon 13 departmentalized).	6 (3 platoon 3 departmentalized).	3	1	1		1	1	40	34 (5 nonplatoon 10 platoon 16 departmentalized 3 "Other").	1,258 (185 nonplatoon 370 platoon 592 departmentalized 111 "Other").	37.
Passaic, N. J	M. A	Kindergarten, 1–8 (1 2B nonplatoon 2A–8 platoon).	3	45 (5 nonplatoon 40 platoon).	30 (5 nonplatoon 25 platoon).	15			1	2		3	120	48 (10 nonplatoon 38 platoon).	1,920 (400 nonplatoon 1,520 platoon).	40.
Total			32	571	382	173	16	6	27	19	20	32	1,280	636	23,681.5	39.

"ACTIVITY PROGRAM" TYPE (6)

San Jose, Calif	S. N	Kindergarten, 1–6	1	15	14	1			1			1	40	14	490	35.
San Antonio, Tex	G. S	Preprimary 1–5		16	16				1					16	560	35.
Houston, Tex	G. S	Kindergarten, 1–5	1	18	17	1		1				1	40	17	680	40.
San Diego, Calif	S. N	Kindergarten, 1–6	1	19	19				1			1	40	19	741	39.
Pasadena, Calif	S. N	Kindergarten, 1–6	1	22	20	2			1			1	40	20	600	30.
San Francisco, Calif	S. N	Kindergarten, 1–6	2	28	24	3 [24]	1		1		1	2	80	24	840	35.
Total			6	118	110	7	1	1	5		1	6	240	110	3,911	31.

SCHOOLS PLANNED FOR EITHER "USUAL", "USUAL WITH VARIATIONS", OR "PLATOON" TYPE (3)

Three Buildings Planned for:																
Usual:																
Tucson, Ariz	S. N	1–6		12	12				1					12	480	40.
Usual with variations:																
Hannibal, Mo	C. S	Kindergarten, 1–6	1	12	10	2			1	1		1	40	12	300	25.
Two Rivers, Wis	N. C	Kindergarten, 1–6	1	12	10	2			1	1		1	40	10	360	36.
Total			2	36	32	4			3	2		2	80	34	1,140	34.
Three Buildings Planned for:																
Platoon:																
Tucson, Ariz	S. N	1–6		12	8	4			[29] 1					16	640	40.
Hannibal, Mo	C. S	Kindergarten, 1–6	1	12	8	4			1	1		1	40	16	400	25.
Two Rivers, Wis	N. C	Kindergarten, 1–6	1	12	8	4			1	1		1	40	16	576	36.
Total			2	36	24	12			3	2		2	80	48	1,616	34.

[1] Because of lack of definite and comprehensive information on number of pupils in the kindergarten, we have arbitrarily used 40 pupils to a class.

[2] There is a small room, 16 by 16 by 9, which is listed as a "library" but, according to the program, no classes are scheduled there. It is apparently used as a reference room and book supply room.

[3] Classroom used as an auditorium.

[4] There are 8 grades in 1 classroom.

[5] A room, 12 by 17, at end of second floor corridor called "music and art" is used as office for music teacher.

[6] Superintendent lists this school as an "Elementary and junior high school."

[7] One of these is a unit and a half large and is called a "lecture room." Under the traditional plan it is used as a classroom but it is reported that the building is so planned that the platoon type of school organization can be used if desired. In that case the "lecture room" will be used as auditorium and the auditorium-gymnasium as a gymnasium.

[8] The classrooms for grades 4–6 are: 2 history, 2 mathematics. These grades are departmentalized and there are special activity rooms for each subject but we have listed only the history and mathematics rooms as classrooms. The other 6 subjects are listed under "special activities," 2 geography and science, industrial arts, special groups, 2 literature.

[9] Of the 8 classrooms on the first floor, 4 have 4 activity rooms between the classrooms. These activity rooms are one-half unit large. This makes 2 whole units for 4 activity rooms. There are also a "primary workroom" and an "activity room" each about one-half unit large not attached to classrooms.

[10] Grades 7–8 are departmentalized but all rooms are given as classrooms except the music and art rooms which are listed as special activity rooms.

[11] The gymnasium has a stage.

[12] Includes 1 classroom in a bungalow.

[13] 1 manual training and 1 cooking and sewing room in bungalow.

[14] Playroom in bungalow. (Physical correction room.)

[15] (Grades 5–7 are departmentalized but all rooms are given as classrooms except art, library, cooking and sewing, and manual training. This makes 11 classrooms and 5 special activity rooms—total, 16 rooms.

[16] The total estimated capacity of the school is 550 (30 pupils per class, or 720 pupils at 40 pupils per class), but the program for the school operating on that capacity was not sent.

[17] Used as a gymnasium during the day and for community purposes at night.

[18] A room, 22 by 32 by 12, on the second floor is used as an auditorium.

[19] This is called a "combined auditorium-library."

[20] Used for gymnasium only.

[21] The music room is used as an auditorium. There is an auditorium training room adjoining it.

[22] This is a classroom called "physical education."

[23] This combined auditorium-gymnasium is so built that the auditorium with its stage is at the front of the room and the gymnasium at the rear separated by folding doors. Since the pupils have their play out of doors it is rarely used as a gymnasium.

[24] The 6 rooms for grades H5–H7 are as follows: English, history, geography, arithmetic, writing, reading. These have been counted as academic rooms.

[25] Classroom unit used as physical education room.

[26] There are 6 special activity rooms plus 1 room used for "special tutoring."

[27] This is not the figure given on the program sent in. Programs were sent for a 4-class nonplatoon school and a 16-class platoon school with the following rooms: 4 for nonplatoon and 12 for platoon. This makes only 16 rooms, however, and there are 24. 8 rooms for nonplatoon classes have been added.

[28] There are a library, general activities room off the auditorium, and a "workroom" which is now used as a science and nature study museum.

[29] The auditorium is planned for the new addition at which time the school will be organized on the platoon plan.

APPENDIX I: DEFINITION OF UNITS IN "INSTRUCTIONAL" AND "NONINSTRUCTIONAL" SPACE

Units Included in "Instructional Space"

Classrooms
Homerooms
Special activity rooms
"Activity alcoves" or Small "Activity rooms."

} Does NOT include coatrooms and wardrobes.

Kindergarten units:

Includes kindergarten room, workrooms, toilets, wardrobes, etc., in connection with kindergarten unit.

"Other" rooms:

For example, health units, open-air rooms, sight-saving rooms, rooms for mental deviates, etc.

Auditoriums:

Includes auditorium floor, and stage, dressing rooms, balcony, picture booth, check rooms, ticket offices (in the few cases where they exist).

Gymnasiums:

Includes the gymnasium itself, plus showers and toilets, locker rooms, gymnasium director's office, apparatus rooms.

Playrooms:

Includes rooms used for play usually for younger children. These rooms are smaller than gymnasiums, without showers, locker rooms, etc.

Units Included in "Noninstructional Space"

Administrative units:

Includes principal's suite (principal's office, clerk's office, waiting room, toilet for principal's office, locker for principal's office); doctor's office, clinic, nurse's rooms, waiting room; teachers' rest room, toilet for teachers' rest room, lunchroom for teacher's rest room, locker for teachers' rest room.

Does NOT include supply rooms, bookrooms, or store rooms which are not directly in the principal's suite.

Cafeterias and lunchrooms:

Does NOT include lunchrooms in open-air suites, or lunchrooms in teachers' rest rooms, or separate teachers' lunchrooms.

Facilities for wraps:

Coatrooms:

Does NOT include coat rooms in kindergartens, or in teachers' rest rooms, or in administrative units.

Wardrobes:

Does NOT include wardrobes in kindergartens, teachers' rest rooms, or administrative units.

Lockers:

Does NOT include lockers in connection with gymnasiums, kindergartens, teachers' rest rooms, or administrative units.

Toilets:

Does NOT include toilets connected with gymnasium shower rooms, or kindergarten, or principal's or teachers' offices, or rest rooms.

"Other" noninstructional space:

Corridors, stairways, bookrooms, storerooms (does NOT include those in principal's office), supply rooms (does NOT include those in principal's office), janitor's rooms (includes janitor's store room).

APPENDIX J: NUMBER OF CUBIC FEET PER PUPIL FOR 74 SCHOOL BUILDINGS HAVING DIFFERENT TYPES OF SCHOOL ORGANIZATION, ON THE BASIS OF EDUCATIONAL PROGRAMS, AT 40 PUPILS PER CLASS

City and State	Number of cubic feet per pupil on basis of educational program at 40 pupils per class	Total number of cubic feet in building (including outside walls)	Type of building	Facilities Provided									
				Total rooms (including kindergarten)	Kindergarten	Classrooms	Homerooms	Special activity rooms	"Other" rooms	Combined auditorium-gymnasiums	Auditorium	Gymnasiums	Playrooms
1	2	3	4	5	6	7	8	9	10	11	12	13	14
"USUAL" TYPE (13)													
Bradford, Pa	636.9	203,836.8	B	8		8							
Alexandria, La	644.4	489,819.0	D	19	1	18					1		1
South Cabot, Vt	742.0	29,681.0	E	1		1							
Brandon, Vt	783.3	125,339.5	C–A	4		4					1		
Jackson, Miss	807.1	193,721.3	D	6		6							
Bennettsville, S. C	859.4	240,648.6	D	7		7				1			
Winchester, Mass	862.5	483,007.1	B	14	1	13			6	1	1		
Saginaw, Mich	890.2	605,373.7	A	17	1	10					1		
Fairfield, Ala	896.5	466,183.5	C	13	1	12							1
Wellesley, Mass	966.3	387,520.0	C	10	1	9							
Hamilton County, Tenn	1,013.4	324,293.7	C	8		8				1	1		
Omaha, Nebr	1,038.3	625,014.1	A	15	1	14					1		
Wichita, Kans	1,050.3	378,125.0	A	9	1	8							
Total	868.4	4,350,563.3		131	7	118			6	3	6		2

APPENDIX J: NUMBER OF CUBIC FEET PER PUPIL FOR 74 SCHOOL BUILDINGS HAVING DIFFERENT TYPES OF SCHOOL ORGANIZATION, ON THE BASIS OF EDUCATIONAL PROGRAMS, AT 40 PUPILS PER CLASS—Continued

City and State	Number of cubic feet per pupil on basis of educational program at 40 pupils per class	Total number of cubic feet in building (including outside walls)	Type of building	Facilities Provided: Total rooms (including kindergarten)	Kindergarten	Classrooms	Homerooms	Special activity rooms	"Other" rooms	Combined auditorium-gymnasiums	Auditorium	Gymnasiums	Playrooms
1	2	3	4	5	6	7	8	9	10	11	12	13	14
"USUAL WITH VARIATIONS" TYPE (23)													
Wenatchee, Wash.	613.6	270,000.0	D	11		9		2					
West Lafayette, Ind	636.9	611,457.8	B	25	1	22		2				1	
Joplin, Mo.	666.0	532,836.3	C	20	1	19					1	1	
Los Angeles, Calif.	883.0	847,733.0	C	23	1	[2] 22		[3]			1		
Waterloo, Iowa	961.5	500,000.0	B	14	1	12		1		1			2
New Orleans, La.	989.2	1,582,758.6	B	49	2	35		9	3		1		1
Philadelphia, Pa.	1,047.6	1,256,169.0	A	35	1	29		5			1		1
Syracuse, N. Y.	1,078.3	1,380,230.7	A	35	1	28		[4]	2	1			
Janesville, Wis.	1,059.7	763,053.2	B	21	1	15		3	2	1			
Pontiac, Mich.	1,131.2	588,272.5	B	17	1	10		6			1	1	
Winona, Minn.	1,185.7	521,739.1	A	13	1	10		2			1		
Atlanta, Ga.	1,202.1	625,134.1	B	16	3	10		3			1	1	
Kenmore, N. Y.	1,279.6	1,637,931.0	A	34	1	31		2			1	2	
Winston-Salem, N. C.	1,292.9	517,193.0	A-C	10		9		1			1		
Lincoln, Nebr.	1,305.1	1,305,119.3	B-A[5]	30	2	20		5	3	1			
Montclair, N. J.	1,312.5	525,018.0	B	11	1	9		1		1			
Crescent, Utah	1,378.6	220,583.3	B-A	4		4				1			
Sierra Madre, Calif.	1,409.0	845,415.0	B	18	1	13		3	1		1		
Dayton, Ohio	1,468.0	1,937,796.1	B	40	1	18		20	1		1	2	1
Aurora, Ill.	1,474.3	1,533,330.2	B	31	1	25		5			1	1	2
Rochester, N. Y.	1,503.7	902,242.6	A-B	17	1	14		2		1			
Dayton, Wyo.	1,574.3	91,891.8	D	6		4		2					
Kansas City, Mo.	2,029.1	974,011.2	D	14	1	11		2			1	1	1
Total	**1,147.6**	**19,969,915.8**		**494**	**23**	**379**		**80**	**12**	**7**	**13**	**10**	**8**
"COOPERATIVE GROUP" TYPE (1)													
Glens Falls, N. Y.	1,333.3	800,000.0	B	20	1	13		6		1			
"PLATOON" TYPE (28)													
Gary, Ind.	407.4	325,976.1	A	12	2		7	3			1	2	
Birmingham, Ala.	492.2	708,773.1	B	33		12	12	9			1		2
Dallas, Tex.	506.3	506,305.0	B	20	1	6	9	4			1		1
Tulsa, Okla.	611.3	586,851.9	C	19	2	4	9	4		1			
Knoxville, Tenn.	659.3	527,519.2	B	19	1	5	7	6		1			
Chester, Pa.	669.7	375,069.7	A	12	1	1	6	4			1		2
Little Rock, Ark.	785.6	502,808.4	B	14		8	4	2			1		
Reading, Pa.	796.5	1,115,180.7	A	33	1	18	5	6	3	1	1		1
Newton, Iowa	799.0	447,470.8	A	13	1	4	4	3	1		1	1	
New Castle, Pa.	825.1	462,109.7	B	11	1		4	6		1	1		2
South Bend, Ind.	869.4	1,008,524.4	B	25	1	12	8	4			1	1	
Seattle, Wash.	873.0	698,412.6	B	19	1	7	6	5			1	1	2
Detroit, Mich.	884.8	1,167,951.6	B	30	2	4	12	9	3		1	1	1
Fort Smith, Ark.	895.0	501,212.1	C	12		2	6	4			1		
Greenwich, Conn.	896.0	1,039,426.5	B	31	2	17	5	7			1	1	2
Newark, N. J.	901.8	1,190,476.1	B	29	1	2	15	11			1	1	1
Wilmington, Del.	902.2	1,371,428.5	B	34	1	12	12	8	1		1	2	
New Britain, Conn.	919.3	698,737.1	B	21	1	8	5	7			1	1	
Denver, Colo.	927.1	964,285.7	C	23	2	4	10	7			1	1	
Passaic, N. J.	933.7	1,904,761.9	B	48	3	5	25	15			1	2	
Portland, Oreg.	943.2	1,169,611.3	B-A	27	1		16	10			1	1	2
Fargo, N. Dak.	977.5	508,333.3	A	11	1		6	4			1	1	
Pittsburgh, Pa.	1,032.0	701,774.5	A	16	1		7	6	2		1		2
Mount Vernon, N. Y.	1,112.5	890,069.6	B	19	2		10	7			1	1	
St. Joseph, Mo.	1,182.2	662,065.3	B-A	12	1	3	5	3		1	1		
Santa Monica, Calif.	1,225.9	784,616.6	C	15			6	5	4		1		1
Baltimore, Md.	1,233.2	1,677,279.8	B	34	1	9	11	11	2		1	2	1
Rockford, Ill.	1,310.1	681,290.1	A	11	1	2	5	3		1	1		
Total	**867.4**	**23,178,321.6**		**603**	**32**	**145**	**237**	**173**	**16**	**6**	**27**	**19**	**20**
"ACTIVITY PROGRAM" TYPE (6)													
San Antonio, Tex.	583.1	373,317.2	B	16		16					1		
Houston, Tex.	667.0	487,483.5	C	19	1	17		1		1			
San Jose, Calif.	901.8	541,086.9	C	16	1	14		1			1		
San Diego, Calif.	996.4	797,189.4	C	20	1	19					1		
Pasadena, Calif.	1,163.4	997,316.8	C	23	1	20		2			1		
San Francisco, Calif.	1,095.9	1,095,958.0	B	30	2	24		3	1		1		1
Total	**933.1**	**4,292,351.8**		**124**	**6**	**110**		**7**	**1**	**1**	**5**		**1**
SCHOOLS PLANNED FOR EITHER "USUAL", "USUAL WITH VARIATIONS", OR "PLATOON" TYPE (3)													
Tucson, Ariz.:													
Usual	577.9	277,419.3	C	12		12					1		
Platoon	433.4	277,419.3	C	12			8	4			1		
Hannibal, Mo. (U-Var.)	1,012.1	526,315.7	B	13	1	10		2			1	1	
Two Rivers, Wis. (U-Var.)	1,065.1	468,656.7	B	13	1	10		2			1	1	
Total	**1,038.6**	**994,972.4**		**26**	**2**	**20**		**4**			**2**	**2**	
Hannibal, Mo. (Platoon)	773.9	526,315.7	B	13	1		8	4			1	1	
Two Rivers, Wis. (Platoon)	689.2	468,656.7	B	13	1		8	4			1	1	
Total	**731.5**	**994,972.4**		**26**	**2**		**16**	**8**			**2**	**2**	

[1] As given by the architects.
[2] Exclusive of classroom in bungalow.
[3] There are two special activity rooms but they are in bungalows.
[4] Included in the floor plans but not erected at the time the study was made.

APPENDIX K: ESTIMATED CAPACITY, INCLUDING KINDERGARTEN AND "OTHER" ROOMS, OF 74 SCHOOL BUILDINGS, HAVING VARIOUS TYPES OF SCHOOL ORGANIZATION, ON THE BASIS OF THE EDUCATIONAL PROGRAM AT 40 PUPILS PER CLASS

City and State	Total capacity, inclusive of kindergarten and "other" rooms, on basis of educational program at 40 pupils per class		Facilities provided									
	Number of pupils	Number of classes	Total rooms (including kindergarten)	Classrooms	Homerooms	Special activity rooms	"Other" rooms	Kindergartens	Combined auditorium-gymnasiums	Auditoriums	Gymnasiums	Playrooms
1	2	3	4	5	6	7	8	9	10	11	12	13
"USUAL" TYPE (13)												
South Cabot, Vt	40	1	1	1								1
Brandon, Vt	160	4	4	4						1		
Jackson, Miss	240	6	6	6								
Bennettsville, S. C	280	7	7	7					1			
Bradford, Pa	320	8	8	8								
Hamilton County, Tenn	320	8	8	8						1		
Wichita, Kans	360	9	9	8				1		1		
Wellesley, Mass	400	10	10	9				1				1
Fairfield, Ala	520	13	13	12				1		1		
Winchester, Mass	560	14	14	13				1		1		
Omaha, Nebr	600	15	15	14				1	1			
Saginaw, Mich	680	17	17	10			6	1	1			
Alexandria, La	760	19	19	18				1		1		
Total	5,240	131	131	118			6	7	3	6		2
"USUAL WITH VARIATIONS" TYPE (23)												
Crescent, Utah	160	4	4	4					1			
Dayton, Wyo	160	4	6	4		2						
Winston-Salem, N. C	400	10	10	9		1				1		
Montclair, N. J	400	10	11	9		1		1	1			
Wenatchee, Wash	440	11	11	9		2						
Winona, Minn	440	11	13	10		2		1		1		
Kansas City, Mo	480	12	14	11		2		1		1	1	1
Waterloo, Iowa	520	13	14	12		1		1	1			2
Atlanta, Ga	520	13	16	10		3		3		1	1	
Pontiac, Mich	520	13	17	10		6		1		1	1	
Rochester, N. Y	600	15	15	14		2		1	1			
Sierra Madre, Calif	600	15	18	13		3	1	1		1		
Janesville, Wis	720	18	21	15		3	2	1	1			
Joplin, Mo	800	20	20	19				1		1	1	
West Lafayette, Ind	960	24	25	22		2		1			1	
Los Angeles, Calif	960	24	26	23		2		1		1		1
Lincoln, Nebr	1,000	25	30	20		5	3	2	1			
Aurora, Ill	1,040	26	31	25		5		1		1	1	2
Philadelphia, Pa	1,200	30	35	29		5		1		1		1
Kenmore, N. Y	1,280	32	34	31		2		1		1	2	
Syracuse, N. Y	1,280	32	35	28		4	2	1	1			
Dayton, Ohio	1,320	33	40	18		20	1	1		1	2	1
New Orleans, La	1,600	40	49	35		9	3	2		1		1
Total	17,400	435	497	380		82	12	23	7	13	10	9
"PLATOON" TYPE (28)												
Fargo, N. Dak	520	13	11		6	4		1		1	1	
Rockford, Ill	520	13	11	2	5	3		1	1	1		
New Castle, Pa	560	14	11		4	6		1	1	1		2
Fort Smith, Ark	560	14	12	2	6	4				1		
St. Joseph, Mo	560	14	12	3	5	3		1	1	1		
Chester, Pa	560	14	12	1	6	4		1		1		2
Newton, Iowa	560	14	13	4	4	3	1	1		1	1	
Little Rock, Ark	640	16	14	8	4	2				1		
Santa Monica, Calif	640	16	15		6	5	4			1		1
Pittsburgh, Pa	680	17	16		7	6	2	1		1		2
New Britain, Conn	760	19	21	8	5	7		1		1	1	
Gary, Ind	800	20	12		7	3		2		1	2	
Seattle, Wash	800	20	19	7	6	5		1		1	1	2
Knoxville, Tenn	800	20	19	5	7	6		1		1		
Mount Vernon, N. Y	800	20	19		10	7		2		1	1	
Tulsa, Okla	960	24	19	4	9	4		2	1			
Dallas, Tex	1,000	25	20	6	9	4		1		1		1
Denver, Colo	1,040	26	23	4	10	7		2		1	1	
South Bend, Ind	1,160	29	25	12	8	4		1		1	1	
Greenwich, Conn	1,160	29	31	17	5	7		2		1	1	2

[1] Does not include 1 classroom or 2 special activity rooms in bungalows.

APPENDIX K: ESTIMATED CAPACITY, INCLUDING KINDERGARTEN AND "OTHER" ROOMS, OF 74 SCHOOL BUILDINGS, HAVING VARIOUS TYPES OF SCHOOL ORGANIZATION, ON THE BASIS OF THE EDUCATIONAL PROGRAM AT 40 PUPILS PER CLASS—Continued

City and State	Total capacity, inclusive of kindergarten and "other" rooms; on basis of educational program at 40 pupils per class		Facilities provided									
	Number of pupils	Number of classes	Total rooms (including kindergarten)	Classrooms	Homerooms	Special activity rooms	"Other" rooms	Kindergartens	Combined auditorium-gymnasiums	Auditoriums	Gymnasiums	Playrooms
1	2	3	4	5	6	7	8	9	10	11	12	13
"PLATOON" TYPE (28)—Continued												
Portland, Oreg	1,240	31	27		16	10		1		1	1	2
Newark, N. J	1,320	33	29	2	15	11		1		1	1	1
Detroit, Mich	1,320	33	30	4	12	9	3	2		1	1	1
Baltimore, Md	1,360	34	34	9	11	11	2	1		1	2	1
Reading, Pa	1,400	35	33	18	5	6	3	1	1	1		1
Birmingham, Ala	1,440	36	33	12	12	9						
Wilmington, Del	1,520	38	34	12	12	8	1	1		1	2	2
Passaic, N. J	2,040	51	48	5	25	15		3		1	2	
Total	**26,000**	**668**	**603**	**145**	**237**	**173**	**16**	**32**	**6**	**27**	**19**	**20**
"COOPERATIVE GROUP" TYPE (1)												
Glens Falls, N. Y.	600	15	20	13		6		1	1			
"ACTIVITY PROGRAM" TYPE (6)												
San Jose, Calif	600	15	16	14		1		1		1		
San Antonio, Tex	640	16	16	16								
Houston, Tex	720	18	19	17		1		1	1	1		
San Diego, Calif	800	20	20	19				1				
Pasadena, Calif	840	21	23	20		2		1		1		
San Francisco, Calif	1,000	25	30	24		3	1	2		1		1
Total	**4,600**	**115**	**124**	**110**		**7**	**1**	**6**	**1**	**5**		**1**
SCHOOLS PLANNED FOR EITHER "USUAL", "USUAL WITH VARIATIONS", OR "PLATOON" TYPE (3)												
Tucson, Ariz.:												
(Usual)	480	12	12	12								
(Platoon)	640	16	12		8	4				1		
Two Rivers, Wis.-(U-Var)	440	11	13	10		2		1		1	1	
Hannibal, Mo. (U-Var)	520	13	13	10		2		1		1	1	
Total	**960**	**24**	**26**	**20**		**4**		**2**		**2**	**2**	
Two Rivers, Wis. (Platoon)	680	17	13		8	4		1		1	1	
Hannibal, Mo. (Platoon)	680	17	13		8	4		1		1	1	
Total	**1,360**	**34**	**26**		**16**	**8**		**2**		**2**	**2**	

APPENDIX L–1: TWO RIVERS, WIS., EDUCATIONAL PROGRAM FOR THE JOSEPH KOENIG ELE

GRADES 1–6—10

[Key to classes: Class 1, 1A[1]; class 2, 1B; class 3, 2A; class 4, 2B–3A; class 5,

No. of room and room used	Teacher of grade—	Class no.	Day	Subjects by Periods							
1	2	3	4	5	6	7	8	9	10	11	12
1. Classroom	1A	1	Monday	9:00–9:20 Reading	9:20–9:30 Numbers	9:30–10:00 Physical education.	10:00–10:05 Recess	10:05–10:30 Reading	10:30–10:50 Music	10:50–11:00 Stories	11:00–1:00 Lunch
			Tuesday	do	do	do	do	do	do	do	do
			Wednesday	do	do	do	do	do	do	do	do
			Thursday	do	do	do	do	do	do	do	do
			Friday	Penmanship	do	do	10:00–10:15 Reading	10:15–10:30 Reading	do	do	do
2. Classroom	1B	2	Monday	9:00–9:20 Music	9:20–9:35 Reading	9:35–9:50 Reading	9:50–10:00 Milk	10:00–10:30	10:30–10:40 Numbers	10:40–10:50 Spelling	10:50–11:00 Health
			Tuesday	9:00–9:15 Music	9:15–9:45 Art	9:45–10:00 Health and lavatory.	10:00–10:30	10:30–10:45 Reading	10:45–11:00 Reading	11:00–1:10 Lunch	1:10–1:30 Penmanship
			Wednesday	9:00–9:20 Penmanship	9:20–9:35 Reading	9:35–9:50 Reading	9:50–10:00 Milk	10:00–10:30	10:30–10:40 Numbers	10:40–10:50 Spelling	10:50–11:00 Health
			Thursday	do	do	do	do		do	do	do
			Friday	9:00–9:25 Music	9:25–9:45 Penmanship	9:45–10:00 Milk	10:00–10:30	10:30–10:50 Reading	10:50–11:00 Reading	11:00–1:10 Lunch	1:10–1:30 Art
3. Classroom	2A	3	Monday	9:00–9:25 Arithmetic	9:25–9:45 Reading	9:45–10:10 Music	10:10–10:30	10:30–10:35 Recess	10:35–10:40 Reflection	10:40–11:00 Penmanship	11:00–11:15 Reading
			Tuesday	do	do	do		do	do	do	do
			Wednesday	do	do	do		do	do	do	do
			Thursday	do	do	do		do	do	do	do
			Friday	do	do	do		do	do	do	do
4. Classroom	2B–3A	4	Monday	9:00–9:15 Reading	9:15–9:30 Reading	9:30–9:45	9:45–10:00	10:00–10:15 Numbers	10:15–10:35 Penmanship	10:35–10:50 Numbers	10:50–11:10 Music
			Tuesday	do	do			Art	do	do	do
			Wednesday	do	do				Vocabulary	do	do
			Thursday	do	do				Numbers	do	do
			Friday	do	do				Vocabulary	do	do
5. Classroom	3B	5	Monday	9:00–9:25 Arithmetic	9:25–9:45 Music	9:45–10:10 English	10:10–10:30 Penmanship	10:30–10:35 Lavatory	10:35–11:00 Geography	11:00–11:30 Spelling	11:30–1:15 Lunch
			Tuesday	do	do	do	do	do	do	Arithmetic	do
			Wednesday	9:00–9:30 Arithmetic	9:30–9:45 Reading	9:45–10:00 English	10:00–10:30 Geography	10:30–11:00	11:00–11:30 Spelling	11:30–1:15 Lunch	1:15–1:45 Reading
			Thursday	do	do	9:45–10:10 English	10:10–10:30 Penmanship	10:30–10:35 Lavatory	10:35–11:00 Geography	11:00–11:30 Spelling	11:30–1:15 Lunch
			Friday	9:00–9:25 Arithmetic	9:25–9:45 Music	9:45–10:10 English	Reading	do	Spelling	Penmanship	do
6. Classroom	4A–4B	6	Monday	8:30–9:00 Music	9:00–9:30	9:30–10:00 Language and penmanship.	10:00–10:25 Study history.	10:25–10:30 Recess	10:30–10:45 Health	10:45–11:48 Arithmetic	11:48–1:10 Lunch
			Tuesday	do		do	10:00–10:15 Study history.	10:15–11:00 Art	11:00–11:48 Arithmetic	11:48–1:10 Lunch	1:10–1:40 Geography
			Wednesday	do		do	10:00–10:25 Study history	10:25–10:30 Recess	10:30–10:45 Health	10:45–11:48 Arithmetic	11:48–1:10 Lunch
			Thursday	do		do	do	do	do	do	do
			Friday	do		do	do	do	do	do	do
7. Classroom	5A	7	Monday	8:30–9:15 History	9:15–9:35 Spelling	9:35–10:20 Arithmetic	10:20–10:25 Recess	10:25–10:40 Arithmetic	10:40–11:10 Reading	11:10–11:35 Music	11:35–11:48 Story
			Tuesday	Art	do	do	do	do	do	do	Penmanship
			Wednesday	History	do	do	do	do	do	Art	Art
			Thursday	do	do	do	do	do	do	Music	Story
			Friday	do	do	do	do	do	do	do	do
8. Classroom	5B		Monday	do	do	do	do	do	do	do	Penmanship
			Tuesday	Art	do	do	do	do	do	Art	Art
			Wednesday	History	do	do	do	do	do	Music	Story
			Thursday	do	do	do	do	do	do	do	do
			Friday	do	do	do	do	do	do	do	do

[1] 1A refers to the grade.

MENTARY SCHOOL FOR 1 WEEK; "USUAL WITH VARIATIONS" TYPE OF SCHOOL ORGANIZATION

CLASSES, 12 ROOMS

3B; class 6, 4A–4B; class 7, 5A; class 8, 5B; class 9, 6A; class 10, 6B;

SUBJECTS BY PERIODS

13	14	15	16	17	18	19	20	21	22	23
1:08–1:30 Reading	*1:30–1:50* Reading	*1:50–2:10* Penmanship	*2:10–2:30*	*2:30–3:00* Drawing	*3:00–3:15* Language					
do	*1:30–1:55* Reading	*1:55–2:00* Recess	*2:00–2:30* Drawing	*2:30–2:45*	*2:45–3:00* Language	*3:00–3:15* Penmanship				
do	do	*1:55–2:15* Drawing	*2:15–2:30* Penmanship		do	Health.				
do	do	do	do		do	Do.				
1:08–1:35 Reading	*1:35–1:55* Reading	*1:55–2:00* Recess	*2:00–2:30* Drawing		do	Do.				
11:00–1:10 Lunch	*1:10–1:30* Reading	*1:30–1:50* Reading	*1:50–2:10* Penmanship	*2:10–2:30*	*2:30–3:00* Art	*3:00–3:15* Language.				
1:30–1:50 Language	*1:50–2:00* Lavatory	*2:00–2:10* Numbers	*2:10–2:30*	*2:30–2:50* Reading	*2:50–3:15* Reading.					
11:00–1:10 Lunch	*1:10–1:30* Reading	*1:30–1:55* Reading	*1:55–2:10* Music	*2:10–2:30*	*2:30–3:00* Art	*3:00–3:15* Language.				
do	do	do	do		do	Do				
1:30–2:00 Language	*2:00–2:10* Health	*2:10–2:30*	*2:30–2:50* Reading	*2:50–3:15* Reading.						
11:15–1:08 Lunch	*1:08–2:00* Art	*2:00–2:15* Reading	*2:15–2:30*	*2:30–2:35* Recess	*2:35–2:50* Reading	*2:50–3:00* Spelling	*3:00–3:15* Language			
do	do	do		do	do	do	Do.			
do	*1:08–1:30* Spelling	*1:30–2:00* Phrase drawing.	*2:00–2:15* Reading	*2:15–2:30*	*2:30–2:35* Recess	*2:35–2:50* Reading	*2:50–3:15* Music.			
do	do	do	do		do	do	Do.			
do	*1:08–2:00* Art	*2:00–2:15* Reading	*2:15–2:30*	*2:30–2:35* Recess	*2:35–2:50* Reading	*2:50–3:00* Spelling	*3:00–3:15* Language.			
11:10–11:30 Numbers	*11:30–1:15* Lunch	*1:15–1:30* Language	*1:30–1:45* Language	*1:45–2:00* Art	*2:00–2:15* Art	*2:15–2:30*	*2:30–2:45* Reading	*2:45–3:00* Reading	*3:00–3:15* Spelling	*3:15–3:30* Spelling.
do	do	do	do		Vocabulary		do	do	do	Do.
do	do	do	do	Art	Art		do	do	do	Do.
do	do	do	do	Vocabulary			do	do	do	Do.
do	do	do	do		Activity		do	do	do	Do.
1:15–1:45 Reading	*1:45–2:00* Arithmetic	*2:00–2:35*	*2:35–3:30* Arithmetic.							
do	Spelling		Art.							
1:45–2:10 Penmanship	*2:10–2:15* Lavatory	*2:15–2:35* Arithmetic	*2:35–3:30* Art.							
1:15–1:45 Reading	*1:45–2:00* Arithmetic	*2:00–2:30*	*2:30–2:35* Arithmetic.	*2:35–3:30* Music.						
do	do		*2:30–3:00* Arithmetic	*3:00–3:30* Mixed program.						
1:10–1:40 Geography	*1:40–2:05* Spelling	*2:05–2:20* Penmanship	*2:20–2:25* Recess	*2:25–3:00* History	*3:00–3:30* Reading					
1:40–2:05 Spelling	*2:05–2:20* Penmanship	*2:20–2:25* Recess	*2:25–3:00* History	*3:00–3:30* Reading						
1:10–1:40 Geography	*1:40–2:05* Spelling	*2:05–2:20* Penmanship	*2:20–2:25* Recess	*2:25–3:00* History	*3:00–3:30* Reading.					
do	do	do	do	do	Do.					
do	do	do	do	do	Do.					
11:48–1:10 Lunch	*1:10–1:40* Geography	*1:40–2:10* Language	*2:10–2:30* Nature study	*2:30–3:00*	*3:00–3:30* Penmanship and study.					
do	do	do	History		Study and activities					
do	do	do	Penmanship	Health	Do.					
do	do	do	do		Do.					
do	do	do	Reading		Do.					
do	do	do	Nature study		Penmanship and study.					
do	do	do	History		Study and activities.					
do	do	do	Penmanship	Health	Do.					
do	do	do	do		Do.					
do	do	do	Reading		Do.					

APPENDIX L–1: TWO RIVERS WIS., EDUCATIONAL PROGRAM FOR THE JOSEPH KOENIG ELEMEN

GRADES 1–6—10

[Key to classes: Class 1, 1A; class 2, 1B; class 3, 2A; class 4, 2B–3A; class 5,

No. of room and room used	Teacher of grade—	Class no.	Day	Subjects by Periods							
1	2	3	4	5	6	7	8	9	10	11	12
9 Classroom	6A	9	Monday	8:30–8:50 Study	8:50–9:50 Arithmetic	9:50–10:10 Spelling	10:10–10:30 Music	10:30–11:00	11:00–11:30 Nature study	11:30–11:50 Penmanship	11:50–1:10 Lunch
			Tuesday	8:30–9:10 Study	9:10–9:50 Arithmetic	do	do		11:00–11:50 Art	11:50–1:10 Lunch	1:10–1:35 Geography
			Wednesday	8:30–9:00	9:00–9:50 Arithmetic	9:50–10:10 Spelling	10:10–10:30 Health	10:30–11:00 Story hour	11:00–11:30 Study	11:30–11:50 Penmanship	11:50–1:10 Lunch
			Thursday	8:30–8:50 Study	8:50–9:50 Arithmetic	do	do		11:00–11:50 Art	11:50–1:10 Lunch	1:10–1:35 Geography
			Friday	do	do	do	Music		11:00–11:30 Nature study	11:30–11:50 Penmanship	11:50–1:10 Lunch
10 Classroom	6B	10	Monday	do	do	do	do		do	do	do
			Tuesday	8:30–9:10 Study	9:10–9:50 Arithmetic	do	do		11:00–11:50 Art	11:50–1:10 Lunch	1:10–1:35 Geography
			Wednesday	8:30–9:00	9:00–9:50 Arithmetic	do	Health	Story hour	11:00–11:30 Study	11:30–11:50 Penmanship	11:50–1:10 Lunch
			Thursday	8:30–8:50 Study	8:50–9:50 Arithmetic	do	do		11:00–11:50 Art	11:50–1:10 Lunch	1:10–1:35 Geography
			Friday	do	do	do	Music		11:00–11:30 Nature study	11:30–11:50 Penmanship	11:50–1:10 Lunch
11 Library	Library		Monday								
			Tuesday								
			Wednesday								
			Thursday								
			Friday								
12 Activity room			Monday								
			Tuesday								
			Wednesday								
			Thursday								
			Friday								
Auditorium	Auditorium		Monday								
			Tuesday								
			Wednesday								
			Thursday								
			Friday								
				8:30–9:00	9:00–9:30	9:30–9:45	9:45–10:00	10:10–10:30	10:00–10:30	10:30–11:00	11:10–11:35
Gymnasium	Gymnasium		Monday		6	4	4	3	2	8	
			Tuesday		6	4		3	2	8	
			Wednesday	[18]	6	4	4	3	2	5	7
			Thursday		6	4	4	3	2	8	
			Friday		6	4	4	3	2	8	
Playground			Monday								
			Tuesday								
			Wednesday								
			Thursday								
			Friday								

[1] Refers to class number. See "Key to classes."

TARY SCHOOL FOR 1 WEEK; "USUAL WITH VARIATIONS" TYPE OF SCHOOL ORGANIZATION—Con.

CLASSES, 12 ROOMS

3B; class 6, 4A–4B; class 7, 5A; class 8, 5B; class 9, 6A; class 10, 6B]

SUBJECTS BY PERIODS

13	14	15	16	17	18	19	20	21	22	23
1:10–1:35 Geography	1:35–2:15 Language	2:15–2:20 Recess	2:20–2:50 Reading	2:50–3:30 History.						
1:35–2:15 Language	2:15–2:20 Recess	2:20–2:50 Reading	2:50–3:30 History.							
1:10–1:35 Geography	1:35–2:15 Language	2:15–2:20 Recess	2:20–2:50 Reading	2:50–3:30 History.						
1:35–2:15 Language	2:15–2:20 Recess	2:20–2:50 Reading	2:50–3:30 History.							
1:10–1:35 Geography	1:35–2:15 Language	2:15–2:20 Recess	2:20–2:50 Reading	2:50–3:30 History.						
do	do	do	do	do						
1:35–2:15 Language	2:15–2:20 Recess	2:20–2:50 Reading	2:50–3:30 History.							
1:10–1:35 Geography	1:35–2:15 Language	2:15–2:20 Recess	2:20–2:50 Reading	2:50–3:30 History.						
1:35–2:15 Language	2:15–2:20 Recess	2:20–2:50 Reading	2:50–3:30 History.							
1:10–1:35 Geography	1:35–2:15 Language	2:15–2:20 Recess	2:20–2:50 Reading	2:50–3:30 History.						
	1:45–2:00	2:00–2:15								
	4	4								
	4									
11:35–11:48		2:00–2:30	2:00–2:35	2:30–3:00						
			5	7						
			5	7						
7	9									
		5		7						
		5		7						
		2:10–2:30	2:15–2:30	2:30–2:45						
		1–2	3–4							
		2	3–4	1						
		2	3–4	1						
		2	3–4	1						
		2	3–4	1						

APPENDIX L–2: TWO RIVERS, WIS., EDUCATIONAL PROGRAM OF THE JOSEPH KOENIG ELEMENTARY SCHOOL FOR ONE DAY, ON THE *PLATOON* TYPE

GRADES 1–6—16 CLASSES[1]—12 ROOMS

[Key to classes: Class 1, 1A; class 2, 1B; class 3, 1A; class 4, 1B; class 5, 2A; class 6, 2B; class 7, 2A; class 8, 2B; class 9, 3A; class 10, 3B; class 11, 4A; class 12, 4B; class 13, 5A class 14, 5B; class 15, 6A; class 16, 6B]

Number of room and room used	Teacher of—	LOCATION OF CLASSES BY PERIODS AND SUBJECTS								
1	2	3	4	5	6	7	8	9	10	11
		8:30–9:15	9:15–10:00	10:00–10:45	10:45–11:30	11:30–12:30	12:30–1:15	1:15–2:00	2:00–2:45	2:45–3:30
1. Homeroom	Academic work	1	1	2	2	Lunch	1	1	2	2
2. Homeroom	do	3	3	4	4	do	3	3	4	4
3. Homeroom	do	5	5	6	6	do	5	5	6	6
4. Homeroom	do	7	7	8	8	do	7	7	8	8
5. Homeroom	do	9	9	10	10	do	9	9	10	10
6. Homeroom	do	11	11	12	12	do	11	11	12	12
7. Homeroom	do	13	13	14	14	do	13	13	14	14
8. Homeroom	do	15	15	16	16	do	15	15	16	16
9. Music and speech	Music and speech	2	4	1	3	do	10	12	9	11
10. Art and handwork	Art and handwork	4	3	2	1	do	12	10	11	9
11. Nature study	Nature study	6	8	5	7	do	14	16	13	15
12. Library	Library	8	6	7	5	do	16	14	15	13
Auditorium	Auditorium	10, 12	14, 16	9, 11	13, 15	do	2, 4	6, 8	1, 3	5, 7
Gymnasium	Gymnasium	14, 16	10, 12	13, 15	9, 11	do	6, 8	2, 4	3, 7	1, 3

[1] If there were only 1 class in the auditorium and 1 class in the gymnasium at one time, then the capacity of the building would be 14 instead of 16 classes.

APPENDIX M: WINCHESTER, MASS., EDUCATIONAL PROGRAM OF THE WYMAN

GRADES 1–6—13 CLASSES, 13 ROOMS

[Key to classes: Class 1, 1A [1]; class 2, 1B; class 3, 2A; class 4, 2B; class 5, 3A; class 6, 3B; class 7, 4A;

Number of room and room used	Teacher of grade—	Class number	Subjects by Periods							
1	2	3	4	5	6	7	8	9	10	11
1. Classroom	1A	1	*8:45–8:55* Opening exercises	*8:55–9:05* Plans for day	*9:05–9:15* Phonics	*9:15–9:30* Reading	*9:30–9:40* Music	*9:40–9:50*	*9:50–10:00* Milk	*10:00–10:20* Reading
2. Classroom	1B	2	do	do	*9:05–9:15* Reading	*9:15–9:25* Reading	*9:25–9:40* Reading	*9:40–9:50*	*9:50–10:00* Milk	*10:00–10:10* Rhymes
3. Classroom	2A	3	do	do	*9:05–9:20* Oral arithmetic.	*9:20–9:40* Written arithmetic.	*9:40–9:50*	*9:50–10:00* Milk	*10:00–10:20* Reading	*10:20–10:35*
4. Classroom	2B	4	do	do	*9:05–9:40* Arithmetic	*9:40–9:50*	*9:50–10:00* Milk	*10:00–10:20* Reading	*10:20–10:40*	*10:40–10:55* Reading
5. Classroom	3A	5	do	do	*9:05–9:25* Reading	*9:25–9:40* Penmanship	*9:40–9:50*	*9:50–10:00* Milk	*10:00–10:20* Reading	*10:20–10:40*
6. Classroom	3B	6	do	do	*9:05–9:25* Reading	*9:25–9:40* Penmanship	*9:40–9:50*	*9:50–10:00* Milk	*10:00–10:20* Reading	*10:20–10:40*
7. Classroom	4A	7	do	do	do	do		do	*10:00–10:40* Arithmetic	*10:40–10:55*
8. Classroom	4B	8	do	do	do	do		do	do	
9. Classroom	5A	9	*8:45–8:50* Opening exercises	*8:50–9:00* Plans for day	*9:00–9:40* Geography	*9:40–9:50*	*9:50–10:00* Milk	*10:00–10:40* Reading	*10:40–11:00*	*11:00–11:25* Spelling
10. Classroom	5B	10	*8:45–8:55* Opening exercises	*8:55–9:05* Plans for day	*9:05–9:40* Geography		do	do	*10:40–10:55* Arithmetic	*10:55–11:30* Spelling
11. Classroom	6A	11	*8:45–8:50* Opening exercises	*8:50–9:00* Courts tests	*9:00–9:15* Penmanship	*9:15–9:40* History	*9:40–9:50*	*9:50–10:00* Milk	*10:00–10:40* Arithmetic	*10:40–10:55*
12. Classroom	6B	12	*8:45–8:55* Opening exercises	*8:55–9:25* History	*9:25–9:40* Penmanship	*9:40–9:50*	*9:50–10:00* Milk	*10:00–10:40* Arithmetic	*10:40–10:55*	*10:55–11:30* Geography
13. Classroom	"Special help"	13	do	do	do		do	do		do
Auditorium										
Playground						*9:40–9:50:* 1, 2, 3, 4, 6, 6, 7, 8, 9, 10, 11, 12, 13 (physical education)		*10:20–10:55* 3	*10:20–10:40* 1, 4, 5, 6	*10:40–10:55* 7, 8, 10, 11, 12, 13.

[1] 1A refers to the grade.
[2] Twice a week.
[3] Three times a week.

ELEMENTARY SCHOOL FOR ONE DAY ON "USUAL" TYPE OF SCHOOL ORGANIZATION

(EXCLUSIVE OF KINDERGARTEN)

class 8, 4B; class 9, 5A; class 10, 5B; class 11, 6A; class 12, 6B; class 13, "Special help"]

SUBJECTS BY PERIODS

12	13	14	15	16	17	18	19	20	21	22
10:20–10:40	10:40–10:55 Reading	10:55–11:15 Language and library.	11:15–1:15 Lunch	1:15–1:30 Reading	1:30–1:45 Penmanship	1:45–2:00 Reading	2:00–2:10 Reading	2:10–2:20	2:20–2:30 Songs	2:30–2:45 Thrift and science.
10:10–10:40 Writing	10:40–10:55 Phonics	10:55–11:05 Music	11:05–1:15 Lunch	1:15–1:25 Reading	1:25–1:40 Reading	1:40–1:45 Songs	1:45–2:00 Reading	2:00–2:20 Language	2:20–2:30 Science or health.	2:30–2:45 Art or nature study.
10:35–10:55 Penmanship	10:55–11:10 Reading	11:10–11:30 Spelling	11:30–11:40 Story hour	11:40–1:15 Lunch	1:15–1:35 Language and literature.	1:35–1:55 Music	1:55–2:10 Reading	2:10–2:20	2:20–2:35 Reading	2:35–3:10 Art, science, health.
10:55–11:05 Language and literature.	11:05–11:20 Spelling	11:20–11:35 Penmanship	11:35–11:45 Story hour	11:45–1:15 Lunch	1:15–1:30 Language	1:30–1:50 Music	1:50–2:10 Reading	2:10–2:20	2:20–2:45 Reading	2:45–3:15 Art, science, health.
10:40–10:55 Spelling	10:55–11:30 Arithmetic	11:30–11:45 Story hour	11:45–1:15 Lunch	1:15–1:30 Geography or history.	1:30–1:50 Music	1:50–2:10 Language and literature.	2:10–2:20	2:20–2:40 Reading	2:40–3:15 Art,[2] reading.[3]	
10:40–10:55 Spelling	10:55–11:35 Arithmetic	11:35–11:45 Story hour	11:45–1:15 Lunch	1:15–1:30 Geography and history.	1:30–1:50 Music	1:50–2:10 Language and literature.	2:10–2:20	2:20–2:40 Reading	2:40–3:15 Art,[2] safety and health	
10:55–11:15 Reading	11:15–11:30 Spelling	11:30–11:45 Story hour	11:45–1:15 Lunch	1:15–1:35 Geography	1:35–1:55 Music	1:55–2:10 Language and literature.	2:10–2:20	2:20–2:45 History	2:45–3:15 Art, science, hygiene, assembly.	
do	do	do	do	do	do	do		do	do	
11:25–11:45 Arithmetic	11:45–1:15 Lunch	1:15–1:35 History	1:35–1:55 Music	1:55–2:10 Penmanship	2:10–2:20	2:20–2:40 Language	2:40–3:15 Art, citizenship, health.			
11:30–11:45 Arithmetic	do	do	do	do		2:20–2:45 Language	2:45–3:15 Art, citizenship, health.			
10:55–11:25 Geography	11:25–11:45 Spelling	11:45–1:15 Lunch	1:15–1:50 English	1:50–2:10 Music	2:10–2:20	2:20–2:50 Art and free	2:50–3:15 Reading.			
11:30–11:45 Spelling	11:45–1:15 Lunch	1:15–1:50 Language and literature.	1:50–2:10 Music	2:10–2:20	2:20–2:45 Reading	2:45–3:15 Art, science, thrift.				
do	do	do	do		do	do				
						2:45–3:15 7, 8.				
10:40–11:00 9					2:10–2:20 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13.					

APPENDIX N: WATERLOO, IOWA, EDUCATIONAL PROGRAM OF THE HAWTHORNE ELEMEN

GRADES 1-7—12

[Key to Classes: Class 1, 1B [1]; class 2, 1A–2B; class 3, 2; class 4,3B; class 5, 3A–4B; class 6, 4;

No. of room and room used	Teacher of grade	Class no.	Subjects by Periods									
1	2	3	4	5	6	7	8	9	10	11	12	13
1. Classroom	1B	1	9:00–9:05 Opening exercises.	9:05–9:25 Music.	9:25–9:45 Reading	9:45–10:05 Reading	10:05–10:10 Games	10:10–10:30 Reading	10:30–10:45	10:45–11:05 Writing	11:05–11:15 Phonics	11:15–11:30 Reading
2. Classroom	1A–2B	2	9:00–9:05 Opening exercises.	9:05–9:15 Health and citizenship.	9:15–9:35 Word study, 1A.	9:35–9:55 Word study, 2B.	9:55–10:15 Reading, 1A.	10:15–10:30 Reading, 2B.	10:30–10:45	10:45–11:00 Phonics, 1A	11:00–11:15 Music	11:15–11:30
3. Classroom	2d	3	9:00–9:10 Opening exercises.	9:10–9:25 Music	9:25–9:35 Spelling, B.	9:35–9:50 Phonics, A.	9:50–10:10 Reading, B.	10:10–10:30 Reading, A.	10:30–10:45	10:45–11:00 Penmanship.	11:00–11:20 Arithmetic, B.	11:20–11:25 Rest
4. Classroom	3B	4	9:00–9:10 Opening exercises.	9:10–9:30 Reading	9:30–9:45 Reading	9:45–10:00 Reading	10:00–10:15 Reading	10:15–10:30 Penmanship.	10:30–10:45	10:45–10:55 Help in arithmetic.	10:55–11:15 Arithmetic	11:15–11:35 Arithmetic
5. Classroom	3A–4B	5	9:00–9:10 Opening exercises.	9:10–9:30 Arithmetic, 3A.	9:30–9:55 Arithmetic, 4B.	9:55–10:15 Penmanship.	10:15–10:30 Reading, 3A.	10:30–10:45	10:45–11:05 Language.	11:05–11:30 Reading, 4B	11:30–11:40	11:40–11:50 Spelling, 3A
6. Classroom	4th	6	9:00–9:05 Opening exercises.	9:05–9:30 Arithmetic, A.	9:30–9:55 Arithmetic, B.	9:55–10:15 Penmanship.	10:15–10:30 Spelling	10:30–10:45	10:45–11:10 Geography, A.	11:10–11:35 Music	11:35–12:00 Geography, B.	12:00–1:15 Lunch
7. Classroom	5th	7	9:00–9:10 Opening exercises.	9:10–9:40 Arithmetic, B1–B2—geography, A	9:40–10:00	10:00–10:30 Hygiene, A—Language B1–B2.	10:30–10:50	10:50–11:15 Music	11:15–11:40 Spelling, A—Reading, B1–B2.	11:40–12:00 Art	12:00–1:15 Lunch	1:15–1:45 Study, A—Geography, B1–B2.
8. Classroom	6B	8	9:00–9:05 Inspection and citizenship.	9:05–9:30 Arithmetic, A.	9:30–9:40	9:40–10:05 Arithmetic, B.	10:05–10:30 Music	10:30–10:45	10:45–11:10 Spelling	11:10–11:35 Geography, A.	11:35–12:00 Geography, B.	12:00–1:15 Lunch
9. Classroom	6A–7B	9	9:00–9:05 Opening exercises.	9:05–9:30 Arithmetic, 7B.	9:30–9:55 Music	9:55–10:05	10:05–10:30 Arithmetic, 6A.	10:30–10:45	10:45–11:15 Geography, 7B.	11:15–11:40 Geography, 6A.	11:40–12:00 Penmanship.	12:00–1:15 Lunch
10. Classroom	7A–7B	10	9:00–9:30 Music	9:30–10:00 Arithmetic, 7A.	10:00–10:30 Arithmetic, 7B.	10:30–10:45	10:45–11:10 Geography, 7B Civics, 7A.	11:10–11:40 Geography, 7A.	11:40–12:00 Penmanship.	12:00–1:15 Lunch	1:15–1:40 Language, 7B.	1:40–1:50
11. Classroom	7B	11	9:00–9:10 Opening exercises.	9:10–9:20 Phonics	9:20–10:15 Reading	10:15–10:30 Penmanship.	10:30–10:45 Recess	10:45–11:45 Numbers	11:45–1:15 Lunch	1:15–1:25 Opening	1:25–2:15 Reading, Geography.	2:15–2:30 Recess
12. Classroom	Ungraded	12	9:00–9:10 Devotions, health.	9:10–9:20 Phonics	9:20–10:15 Reading	10:15–10:30 Penmanship.	10:30–10:45	10:45–11:45 Numbers	11:45–1:15 Lunch	1:15–1:25 Patriotic exercises and singing.	1:25–1:55 General lesson study	1:55–2:15 Reading, geography, history.
13. Manual training.	Monday. Tuesday. Wednesday afternoon. Thursday, all day—6th and 7th grades. Friday.											
Auditorium-gymnasium.	Monday. Tuesday. Wednesday. Thursday. Friday.											
Playroom (girls)	Monday. Tuesday. Wednesday. Thursday. Friday.		9:30–9:40 8		9:40–10:00 7		9:55–10:05 9	11:15–11:30 2		11:30–11:40 5		
Playroom (boys).	Monday. Tuesday. Wednesday. Thursday. Friday.		9:30–9:40 8		9:40–10:00 7		9:55–10:05 9	11:15–11:30 2		11:30–11:40 5		
Playground					10:30–10:50 7		10:30–10:45 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12					

[1] 1B refers to grade.

TARY SCHOOL FOR ONE DAY ON "USUAL WITH VARIATIONS" SCHOOL ORGANIZATION

CLASSES—13 ROOMS

class 7, 5; class 8, 6B; class 9, 6A–7B; class 10, 7A–7B; class 11, 7B; class 12, ungraded]

SUBJECTS BY PERIODS

14	15	16	17	18	19	20	21	22	23	24	25
11:30–1:15 Lunch	1:15–1:30 Phonics	1:30–1:50 Reading	1:50–1:55 Games	1:55–2:15 Language	2:15–2:30	2:30–2:50 Reading	2:50–3:00 Literature	3:00–3:15 Drawing			
11:30–11:45 Numbers, 2B	11:45–1:15 Lunch	1:15–1:20 Opening exercises	1:20–1:40 Reading, 2B	1:40–2:00 Reading, 1A	2:00–2:15 Spelling, 2B	2:15–2:30	2:30–2:45 Penmanship	2:45–3:00 Drawing	3:00–3:15 Language		
11:25–11:45 Arithmetic	11:45–1:15 Lunch	1:15–1:20 Opening exercises	1:20–1:40 Language	1:40–2:00 Reading, A	2:00–2:15 Drawing	2:15–2:30	2:30–3:00 Reading or phonics, B	3:00–3:10 Spelling, A	3:10–3:15		
11:35–11:55 Music	11:55–12:00 Stories	12:00–1:15 Lunch	1:15–1:20 Opening exercises	1:20–1:45 Language	1:45–2:00 Study	2:00–2:15 Spelling	2:15–2:30	2:30–2:40 Phonics	2:40–3:00 Reading	3:00–3:10	3:10–3:25 Reading
11:50–12:00 Spelling, 4B	12:00–1:15 Lunch	1:15–1:25 Opening exercises	1:25–1:50 Geography	1:50–2:15 Geography	2:15–2:30	2:30–2:50 Reading	2:50–3:10 Drawing	3:10–3:30 Language, 4B	3:30–3:45 Music		
1:15–1:20 Opening exercises	1:20–1:40 Reading, A	1:40–1:50	1:50–2:15 Reading, B	2:15–2:30	2:30–2:55 Language, A	2:55–3:20 Language, B	3:20–3:45 Drawing				
1:45–2:15 Arithmetic, A—Hygiene, B	2:15–2:35	2:35–2:55 Penmanship	2:55–3:20 Language, A—Spelling, B	3:20–3:45 Reading, A—Study, B							
1:15–1:50 Reading	1:50–2:15 Penmanship	2:15–2:30	2:30–2:55 Language, A	2:55–3:20 Language, B	3:20–3:45 Reading						
1:15–1:35 Reading, 7B	1:35–2:00 Reading, 6A	2:00–2:15 Spelling	2:15–2:30	2:30–2:55 Language, 6A	2:55–3:20 Language, 7B	3:20–3:45 History, 6A—Hygiene, 7B					
1:50–2:15 Language, 7A	2:15–2:30	2:30–3:00 Reading and art, 7B	3:00–3:15 Spelling	3:15–3:45 Reading, 7A—Hygiene, 7B							
2:30–2:45 Language	2:45–3:00 Spelling	3:00–3:30 Art, drawing, industrial work									
2:15–2:30	2:30–2:45 Language	2:45–3:00 Spelling	3:00–3:30 Industrial art								

1:40–1:50 6, 10			3:00–3:10 4	3:00–3:15 3							
1:40–1:50 6, 10			3:00–3:10 4	3:00–3:15 3							
		2:15–2:30 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12		2:15–2:35 7							

APPENDIX O: TULSA, OKLA., EDUCATIONAL PROGRAM OF THE SEQUOYAH ELEMENTARY SCHOOL FOR 1 WEEK ON "PLATOON" TYPE OF SCHOOL ORGANIZATION

[Key to classes: Class 1, 2B[1]; class 2, 2B; class 3, 2B; class 4, special (ungraded); class 5, 2A; class 6, 3B; class 7, 3B; class 8, 3A; class 9, 4B; class 10, 4B; class 11, 4A; class 12, 5B; class 13, special (ungraded); class 14, 5B; class 15, 5A; class 16, 6B; class 17, 6B; class 18, 6A]

GRADES 2-6: 18 CLASSES, 13 ROOMS

Number of room and room used	Teacher of—	Days	Location of Classes, by Periods and Subjects							
			8:45–9:30	9:30–10:15	10:15–11:00	11:00–11:45	11:45–12:30	12:30–1:15	1:15–2:00	2:00–2:45	2:45–3:30
1. Homeroom	Academic work	Every day in week	1	1	2	2	Lunch	1	1	2	2
2. Homeroom	do	do	3	3	[2] 4	[2] 4	do	3	3	[2] 4	[2] 4
3. Homeroom	do	do	5	5	6	6	do	5	5	6	6
4. Homeroom	do	do	7	7	8	8	do	7	7	8	8
5. Homeroom	do	do	9	9	10	10	do	9	9	10	10
6. Homeroom	do	do	11	11	12	12	do	11	11	12	12
7. Homeroom	do	do	[3] 13	[3] 13	14	14	do	[3] 13	[3] 13	14	14
8. Homeroom	do	do	15	15	16	16	do	15	15	16	16
9. Homeroom	do	do	17	17	18	18	do	17	17	18	18
10. Art	Art	Monday	18	14	17	11–[3] 13	10	(3)	[3] 4–6	1	7
		Tuesday	16	12	15	9	8	(3)	2	3	5
		Wednesady	18	14	17	11–[3] 13	10	(3)	[3] 4–6	1	7
		Thursday	16	12	15	9	8	(3)	2	3	5
		Friday	18	14	17	11–[3] 13	10	(3)	[3] 4–6	1	7
11. Music	Music	Monday	14	16	5	3	2	(3)	8	15	11
		Tuesday	12	18	7	1	[3] 4–6	(3)	10	17	9–[3] 13
		Wednesday	14	16	5	3	2	(3)	8	15	11
		Thursday	12	18	7	1	[3] 4–6	(3)	10	17	9–[3] 13
		Friday	14	16	5	3	2	(3)	8	15	11
12. Science	Science	Monday	16	12	15	9	8	(3)	2	3	5
		Tuesday	18	14	17	11–[3] 13	10	(3)	[3] 4–6	1	7
		Wednesday	16	12	15	9	8	(3)	2	3	5
		Thursday	18	14	17	11–[3] 13	10	(3)	[3] 4–6	1	7
		Friday	16	12	15	9	8	(3)	2	3	5
13. Literature	Literature	Monday	12	18	7	1	[3] 4–6	(3)	10	17	9–[3] 13
		Tuesday	14	16	5	3	2	(3)	8	15	11
		Wednesday	12	18	7	1	[3] 4–6	(3)	10	17	9–[3] 13
		Thursday	14	16	5	3	2	(3)	8	15	11
		Friday	12	18	7	1	[3] 4–6	(3)	10	17	9–[3] 13
Auditorium-gymnasium	Auditorium		8–10	2–[3] 4–6	1–3	5–7	12–14	(3)	16 18	9–11–13	15 17
Playground	Playground		2–[3] 4–6	8–10	9–11, [3] 13	15–17	16–18	(3)	12–14	5–7	1–3

[1] 2B refers to grade.
[2] Special
[3] Lunch.

APPENDIX P: PONTIAC, MICH., EDUCATIONAL PROGRAM OF THE LONGFELLOW ELEMENTARY

PROGRAM FOR GRADES

[Key to Classes: Class 1, 1A[1]; class 2, 1B; class

No. of room and room used	Teacher of grade—	Class number	Subjects by Periods						
1	2	3	4	5	6	7	8	9	10
1. Classroom	1A	1	*9:00–9:10* Opening exercises.	*9:10–9:25* Writing	*9:25–9:40* Phonics	*9:40–10:00* Physical education.	*10:00–10:10*	*10:10–10:30* Reading, grade 1.	*10:30–10:50* Reading, grade 2.
2. Classroom	1B	2	do	do	do	do		do	do
3. Classroom	2A	3	*9:00–9:10* Opening exercises.	*9:10–9:35* Reading, grade 1.	*9:35–9:55* Reading, grade 2.	*9:55–10:15* Reading, grade 3.	*10:15–10:30*	*10:30–11:05* Numbers	*11:05–11:20* Phonics
4. Classroom	2B	4	do	do	do	do		do	do
5. Classroom	3A	5	*9:00–9:10* Opening exercises.	*9:10–9:30* Arithmetic, grade 1.	*9:30–9:50* Physical education.	*9:50–10:10* Arithmetic, grade 2.	*10:10–10:20* Phonics	*10:20–10:30*	*10:30–10:50* Reading, grade 1.
6. Classroom	3B	6	do	do	do	do	do		do
Playground	Playground						*10:00–10:10* 1	*10:15–10:30* 2	

[1] 1A refers to grade.

APPENDIX Q: DENVER, COLO., EDUCATIONAL PROGRAM OF THE BRYANT-WEBSTER ELEMENTARY SCHOOL FOR 1 DAY ON "PLATOON" TYPE OF SCHOOL ORGANIZATION

GRADES 1–6: 20 CLASSES, 17 ROOMS

[Key to Classes: Class 1, 1A[1]; class 2, 2B; class 3, 2B; class 4, 2A; class 5, 2A; class 6, 3B; class 7, 3B; class 8, 3A; class 9, 4B; class 10, 4B; class 11, 4A; class 12, 4A; class 13, 5B; class 14, 5B; class 15, 5A; class 16, 5A; class 17, 6B; class 18, 6B; class 19, 6B–6A; class 20, 6A]

No. of room and room used	Teacher of—	Location of Classes by Periods and Subjects										
		8:45–9:15	9:15–9:45	9:45–10:15	10:15–10:45	10:45–11:15	11:15–11:45	11:45–1:00	1:00–1:30	1:30–2:00	2:00–2:30	2:30–3:15
1. Homeroom	Academic work	19	19	19	20	20	20	Lunch	19	19	20	20
2. Homeroom	do	17	17	17	18	18	18	do	17	17	18	18
3. Homeroom	do	15	15	15	16	16	16	do	15	15	16	16
4. Homeroom	do	13	13	13	14	14	14	do	13	13	14	14
5. Homeroom	do	11	11	11	12	12	12	do	11	11	12	12
6. Homeroom	do	9	9	9	10	10	10	do	9	9	10	10
7. Homeroom	do	7	7	7	8	8	8	do	7	7	8	8
8. Homeroom	do	5	5	5	6	6	6	do	5	5	6	6
9. Homeroom	do	3	3	3	4	4	4	do	3	3	4	4
10. Homeroom	do	1	1	1	2	2	2	do	1	1	2	2
11. Social science and art	Social science and art	14	14	18	13	13	11	do	6	18	17	17
12. Social science and art	do	16	16	20	15	15	9	do	8	20	19	19
13. Art and science	Art and science	2	2	6	1	1	7	do	12	12	7	11
14. Art and science	do	4	4	8	3	3	5	do	10	10	5	9
15. Music	Music	20	12	4	11	19	3	do	14	6	13	7
16. Library	Library	18	10	2	9	17	1	do	16	8	15	5
17. English	English	8	20	12	7	11	19	do	4	14	3	13
Auditorium	Auditorium	6	18	10	5	9	17	do	2	15	1	15
Gymnasium	Gymnasium	10–12	6–8	14–16	17–19	5–7	13–15	do	18–20	2–4	9–11	1–3

[1] 1A refers to grade.

SCHOOL FOR 1 WEEK ON "USUAL WITH VARIATIONS" TYPE OF SCHOOL ORGANIZATION

1–3: 6 CLASSES, 6 ROOMS

3, 2A; class 4, 2B; class 5, 3A; class 6, 3B]

Subjects by Periods										
11	12	13	14	15	16	17	18	19	20	21
10:50–11:10 Reading, grade 3.	11:10–11:30 Music.	11:30–1:15 Lunch.	1:15–1:35 Reading, grade 1.	1:35–1:55 Reading, grade 2.	1:55–2:10 Reading, grade 3.	2:15–2:30	2:30–2:45 Incidental and chart reading.	2:45–3:30 Social study.		
do	do	do	do	do	do		do	do		
11:30–11:40 Music.	11:40–12:00 Spelling.	12:00–1:15 Lunch.	1:15–1:35 Reading, grade 1.	1:35–1:55 Reading, grade 2.	1:55–2:10 Reading, grade 3.	2:10–2:30 Physical education.	2:30–2:40	2:40–2:50 Incidental and library reading.	2:50–3:30 Social study.	
do	do	do	do	do	do	do		do	do	
10:50–11:10 Reading, grade 2.	11:10–11:30 Music.	11:30–12:00 Art.	12:00–1:15 Lunch.	1:15–1:35 Reading, grade 1.	1:35–1:55 Reading, grade 2.	1:55–2:15 Writing.	2:15–2:45 Language or commercial life and history.	2:45–3:00	3:00–3:20 Spelling.	3:20–3:45 Nature study or geography.
do	do	do	do	do	do	do	do		do	Do.
10:20–10:50 3						2:15–2:30 1	2:30–2:40 2	2:45–3:00 3		

APPENDIX P: PONTIAC, MICH., EDUCATIONAL PROGRAM OF THE LONGFELLOW ELEMENTARY

PROGRAM FOR GRADES

[Key to Classes: Class 1, 4A; class 2, 4B; class

No. of room and room used	Teacher of—	Day	Class number	Subjects by Periods				
				9:00–9:30	9:30–10:00	10:00–10:30	10:30–10:55	10:55–11:05
1	2	3	4	5	6	7	8	9
1. History	Not specified	Monday	1	Arithmetic	English	Study	Study	
		Tuesday	1	do	do	Science	do	
		Wednesday	1	do	do	Study		
		Thursday	1	do	do	Science	Study	
		Friday	1	do	do	Study		
2. History	do	Monday	2	Study	Study	Geography	Music	
		Tuesday	2		do	do	do	
		Wednesday	2	Study	Science	do	do	
		Tuesday	2		Study	do	do	
		Friday	2	Study	Science	do	do	
3. Mathematics	do	Monday	3	Geography	Music	English	Arithmetic	
		Tuesday	3	do	do	do	do	
		Wednesday	3	do	do	do	do	
		Thursday	3	do	do	do	do	
		Friday	3	do	do	do	do	
4. Mathematics	do	Monday	4	History	Arithmetic	Music	Reading	
		Tuesday	4	do	do	do	do	
		Wednesday	4	do	do	do	do	
		Thursday	4	do	do	do	do	
		Friday	4	do	do	do	do	
5. Literature	do	Monday	5			History	Geography	
		Tuesday	5	Study	Study	do	do	
		Wednesday	5			do	do	
		Thursday	5	Study	Study	do	do	
		Friday	5	do	do	do	do	
6. Literature	do	Monday	6	English	Geography	Study	Study	
		Tuesday	6	do	do			
		Wednesday	6	do	do	Science	Study	
		Thursday	6	do	do			
		Friday	6	do	do	Science	Study	
7. Industrial art	do	Monday		5	5			
		Tuesday		2	2			
		Wednesday		5	5	6	6	
		Thursday		2	2	1	1	
		Friday				6	6	
8. Special groups	do	Monday				1	1	
		Tuesday						
		Wednesday						
		Thursday						
		Friday						
9. Geography and science	do	Monday						
		Tuesday						
		Wednesday						
		Thursday						
		Friday						
10. Geography and science	do	Monday						
		Tuesday						
		Wednesday						
		Thursday						
		Friday						
Auditorium Gymnasium	Physical training	Monday						
		Tuesday						
		Wednesday						
		Thursday						
		Friday						
[redacted] round recess								1, 6

SCHOOL FOR 1 WEEK ON "USUAL WITH VARIATIONS" TYPE OF SCHOOL ORGANIZATION—Contd.

4–6: 6 CLASSES, 10 ROOMS

3, 5A; class 4, 5B; class 5, 6A; class 6, 6B]

SUBJECTS BY PERIODS								
11:05–11:30	11:30–12:00	12:00–1:15	1:15–1:45	1:45–2:10	2:10–2:20	2:20–2:45	2:45–3:15	3:15–3:45
10	11	12	13	14	15	16	17	18
Study (girls)	Geography	Lunch	Music	History		Study (boys)	Spelling	Reading.
do	do	do	do	do		do	do	Do.
do	do	do	do	do		do	do	Do.
do	do	do	do	do		do	do	Do.
do	do	do	do	do		do	do	Do.
Study (girls)	Arithmetic	do	Reading	Spelling		Study (boys)	English	History.
do	do	do	do	do		do	do	Do.
do	do	do	do	do		do	do	Do.
do	do	do	do	do		do	do	Do.
do	do	do	do	do		do	do	Do.
Study	Study	do	History	Study		Reading	Spelling (girls)	Spelling (boys).
do	Science	do	do	do		do	do	Do.
	Study	do	do	do		do	do	Do.
Study	Science	do	do	do		do	do	Do.
	Study	do	do	do		do	do	Do.
		do	Geography	English		Science	Spelling (girls)	Spelling (boys).
Study	Study	do	do	do		Study	do	Do.
do	do	do	do	do		Science	do	Do.
		do	do	do		Study	do	Do.
Study	Study	do	do	do		do	do	Do.
English	Reading	do	Spelling (girls)	Spelling (boys)		Arithmetic	Study	Music.
do	do	do	do	do		do	do	Do.
do	do	do	do	do		do	do	Do.
do	do	do	do	do		do	do	Do.
do	do	do	do	do		do	do	Do.
Reading	Music	do	do	do		History	do	Arithmetic.
do	do	do	do	do		do	do	Do.
do	do	do	do	do		do	do	Do.
do	do	do	do	do		do	do	Do.
do	do	do	do	do		do	do	Do.
4	4	do						
		do						
3	3	do						
4	4	do						
3	3	do						
		do						
		do						
		do						
		do						
		do						
		do						
		do						
		do						
		do						
		do						
		do						
		do						
		do						
		do						
1-2 (boys)		do	5–6 (B)	5–6 (G)		1-2 (G)	3 4 (B)	3 4 (G).
do		do	do	do		do	do	Do.
do		do	do	do		do	do	Do.
do		do	do	do		do	do	Do.
do		do	do	do		do	do	Do.
					1.5			

APPENDIX R: SAN DIEGO, CALIF., EDUCATIONAL PROGRAM OF THE SHERMAN ELEMENTARY SCHOOL FOR 1 DAY ON "ACTIVITY PROGRAM" TYPE OF SCHOOL ORGANIZATION

GRADES 1-6: 19 CLASSES, 19 ROOMS

[Key to classes: Class 1, prefirst [1]; class 2, prefirst, 1B; class 3, 1B-1A; class 4, 1B-1A; class 5, 1A; class 6, 2B; class 7, 2B-2A; class 8, 2A; class 9, 3B; class 10, 3B; class 11, 3B-3A; class 12, 4B; class 13, 4B-4A; class 14, 4A-5B; class 15, 5B; class 16, 5A; class 17, 6B; class 18, 6B; class 19, 6A]

Number of room and room used	Teacher of grade—	Class No.	Location of Classes by Periods			Number of room and room used	Teacher of grade—	Class No.	Location of Classes by Periods		
			9:00–12:00	12:00–1:00	1:00–3:05				9:00–12:00	12:00–1:00	1:00–3:05
1. Classroom	Prefirst	1	Class 1	Lunch	Class 1.	12. Classroom	4B	12	Class 12	Lunch	Class 12.
2. Classroom	Prefirst and 1B	2	Class 2	do	Class 2.	13. Classroom	4B–4A	13	Class 13	do	Class 13.
3. Classroom	1B–1A	3	Class 3	do	Class 3.	14. Classroom	4A–5B	14	Class 14	do	Class 14.
4. Classroom	1B–1A	4	Class 4	do	Class 4.	15. Classroom	5B	15	Class 15	do	Class 15.
5. Classroom	1A	5	Class 5	do	Class 5.	16. Classroom	5A	16	Class 16	do	Class 16.
6. Classroom	2B	6	Class 6	do	Class 6.	17. Classroom	6B	17	Class 17	do	Class 17.
7. Classroom	2B–2A	7	Class 7	do	Class 7	18. Classroom	6B	18	Class 18	do	Class 18.
8. Classroom	2A	8	Class 8	do	Class 8.	19. Classroom	6A	19	Class 19	do	Class 19.
9. Classroom	3B	9	Class 9	do	Class 9.	Auditorium					
10. Classroom	3B	10	Class 10	do	Class 10.						
11. Classroom	3B–3A	11	Class 11	do	Class 11.	Playground			10:05–10:30, 1–19.		2:00–2:15, 1–19.

[1] Prefirst refers to grade.

APPENDIX S: WILMINGTON, DEL., EDUCATIONAL PROGRAM OF THE MARY C. I. WILLIAMS' ELEMENTARY SCHOOL FOR 1 WEEK ON "PLATOON" TYPE OF SCHOOL ORGANIZATION

GRADES 3-6, 24 CLASSES, 20 ROOMS

[Key to Classes: Class 1, A3 [1]; class 2, A3; class 3, A3; class 4, B4; class 5, B4; class 6, B4; class 7, B4; class 8, A4; class, 9, A4; class 10, A4; class 11, B5; class 12, B5; class 13, B5; class 14, B5; class 15, A5; class 16, A5; class 17, A5; class 18, A5; class 19, B6; class 20, B6; class 21, B6; class 22, B6; class 23, A6; class 24, A6]

No. of room and room used	Teacher of—	Days	Location of Classes by Periods and Subjects												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
			8:45–9:15	9:15–9:45	9:45–10:15	10:15–10:45	10:45–11:15	11:15–11:45	11:45–12:45	12:45–1:15	1:15–1:45	1:45–2:15	2:15–2:45	2:45–3:15	3:15–3:45
1. Homeroom	Academic work	Every day in the week.	1	1	1	2	2	2	Lunch	1	1	1	2	2	2
2. Homeroom	do	do	3	3	3	4	4	4	do	3	3	3	4	4	4
3. Homeroom	do	do	5	5	5	6	6	6	do	5	5	5	6	6	6
4. Homeroom	do	do	7	7	7	8	8	8	do	7	7	7	8	8	8
5. Homeroom	do	do	9	9	9	10	10	10	do	9	9	9	10	10	10
6. Homeroom	do	do	11	11	11	12	12	12	do	11	11	11	12	12	12
7. Homeroom	do	do	13	13	13	14	14	14	do	13	13	13	14	14	14
8. Homeroom	do	do	15	15	15	16	16	16	do	15	15	15	16	16	16
9. Homeroom	do	do	17	17	17	18	18	18	do	17	17	17	18	18	18
10. Homeroom	do	do	19	19	19	20	20	20	do	19	19	19	20	20	20
11. Homeroom	do	do	21	21	21	22	22	22	do	21	21	21	22	22	22
12. Homeroom	do	do	23	23	23	24	24	24	do	23	23	23	24	24	24
Music	Music	Monday	6		14	5			do	2		10	3	19	9
		Tuesday	8	22		7	21		do	4	18		1	17	
		Wednesday	6	24	16	5	23	15	do	2	20	12		19	11
		Thursday	24		16	23		15	do	20		12	1		11
		Friday	8	22	14	7	21	13	do	4	18	10	3	17	9
14. Literature	Literature	Monday	4	12	2	3	11	1	do	8	16	6	7	15	5
		Tuesday	4	12	2	3	11	1	do	8	16	6	7	15	5
		Wednesday	4	12	2	3	11	1	do	8	16	6	7	15	5
		Thursday	4	12	2	3	11	1	do	8	16	6	7	15	5
		Friday	4	12	2	3	11	1	do	8	16	6	7	15	5
15. Literature	do	Monday	18	20	10	17	19	9	do	24	22	14	23	21	13
		Tuesday	18	20	10	17	19	9	do	24	22	14	23	21	13
		Wednesday	18	20	10	17	19	9	do	24	22	14	23	21	13
		Thursday	18	20	10	17	19	9	do	24	22	14	23	21	13
		Friday	18	20	10	17	19	9	do	24	22	14	23	21	13
16. Science	Science	Monday	2	10	4	1	9	3	do	6	14	8	5	13	7
		Tuesday	2	10	4	1	9	3	do	6	14	8	5	13	7
		Wednesday	2	10	4	1	9	3	do	6	14	8	5	13	7
		Thursday	2	10	4	1	9	3	do	6	14	8	5	13	7
		Friday	2	10	4	1	9	3	do	6	14	8	5	13	7
17. Science	do	Monday	20	18	12	19	17	11	do	22	24	16	21	23	15
		Tuesday	20	18	12	19	17	11	do	22	24	16	21	23	15
		Wednesday	20	18	12	19	17	11	do	22	24	16	21	23	15
		Thursday	20	18	12	19	17	11	do	22	24	16	21	23	15
		Friday	20	18	12	19	17	11	do	22	24	16	21	23	15
18. Applied art	Applied art	Monday	8	16	16	7	15	15	do	4	12	12	1	11	11
		Tuesday	6	14	14	5		5	do	2	10	10	3		9
		Wednesday	8		6	7	13	13	do	4			3	9	
		Thursday	22	22		21	21		do	18	18	2	17	17	1
		Friday	24	24		23	23		do	20	20		19	19	
19. Library	Library	Monday		22	8		21		do		18	4		17	6
		Tuesday	22	24		21	23	7	do	18	20		17	19	
		Wednesday		16	14		15	13	do		12	2	1	11	9
		Thursday	8	24	6	7	23	5	do	4	20	10	3	19	3
		Friday	6	14	16	5	13	15	do	2	10	12	1	9	11
20. Manual arts	Manual arts	Monday	24	24	24	23	23	23	do	20	20	20	19	19	19
		Tuesday	16	16	16	15	15	15	do	12	12	12	11	11	11
		Wednesday	22	22	22	21	21	21	do	18	18	18	17	17	17
		Thursday	14	14	14	13	13	13	do		5–7	5–7		4–6	4–6
		Friday					6		do		9	9		8–10	8–10

[1] A3 refers to grade.

APPENDIX S: WILMINGTON, DEL., EDUCATIONAL PROGRAM OF THE MARY C. I. WILLIAMS' ELEMENTARY SCHOOL FOR 1 WEEK ON "PLATOON" TYPE OF SCHOOL ORGANIZATION—Contd.

No. of room and room used	Teacher of—	Days	Location of Classes by Periods and Subjects												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
			8:45–9:15	9:15–9:45	9:45–10:15	10:15–10:45	10:45–11:15	11:15–11:45	11:45–12:45	12:45–1:15	1:15–1:45	1:45–2:15	2:15–2:45	2:45–3:15	3:15–3:45
Auditorium	Auditorium	Monday	16–14	6–8	22	15–13	5–7	21	do	10–12	2–4	18	9–11	1–3	17
		Tuesday	14	6–8	24–22	13	5–7	21–23	do	10	2–4	18–20	9	1–3	17–19
		Wednesday	16–14	6–8	24	15–13	5–7	23	do	10–12	2–4	20	9–11	1–3	19
		Thursday	16	6–8	24–22	15	5–7	23–20	do	10–12	2–4	18–20	9–11	1–3	17–19
		Friday	16–14	6–8	24–22	15–13	5–7	23–21	do	10–12	2–4	18–20	9–11	1–3	17–19
Gymnasium	Gymnasium	Monday	12–10	2–4	20–18	11–9	1–3	19–17	do	16–14	6–8	24–22	15–13	5–7	23–21
		Tuesday	12–10	2–4	20–18	11–9	1–3	19–17	do	16–14	6–8	24–22	15–13	5–7	23–21
		Wednesday	12–10	2–4	20–18	11–9	1–3	19–17	do	16–14	6–8	24–22	15–13	5–7	23–21
		Thursday	12–10	2–4	20–18	11–9	1–3	19–17	do	16–14	6–8	24–22	15–13	5–7	23–21
		Friday	10	2–4	20–18	11–9	1–3	19–17	do	16–14	6–8	24–22	15–13	5–7	23–21
Playroom	Playroom	Monday	22	14		21	13	5	do	18	10	2	17	9	1–3
		Tuesday	24	14	6	23	13		do	20		2–4	19		1–3
		Wednesday	24	14	8	23		7	do	20			19		1–3
		Thursday	6	16	8	25	15	7	do		10–12	2–4		11–9	
		Friday	2	16	8	21	15		do	18	12	2	17	11–5	1–3