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PUBLIC SCHOOL SYSTEM, DISTRICT OF COLUMBIA

LETTER

FROM

HERBERT D. BROWN
CHIEF OF THE ^{U.S.} BUREAU OF EFFICIENCY

TO

SENATOR LAWRENCE C. PHIPPS

TRANSMITTING IN RESPONSE TO HIS REQUEST, ON BEHALF OF
THE SENATE COMMITTEE IN CHARGE OF APPROPRIATIONS FOR
THE DISTRICT OF COLUMBIA, A REPORT OF A SURVEY OF THE
PUBLIC SCHOOL SYSTEM IN THE DISTRICT OF COLUMBIA



UNITED STATES
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SENATE RESOLUTION NO. 144

[Submitted by Mr. PHIPPS]

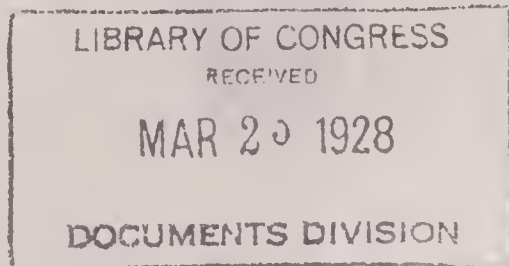
IN THE SENATE OF THE UNITED STATES,
February 16 (calendar day, February 17), 1928.

Resolved, That the manuscript of the report of a survey of the public schools of the District of Columbia, transmitted by the United States Bureau of Efficiency to Senator Lawrence C. Phipps, chairman of the Senate Subcommittee on Appropriations for the consideration of the District of Columbia appropriation bill, be printed with illustrations as a Senate document.

Attest:

EDWIN P. THAYER,
Secretary.

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CONTENTS

	Page
Letter of transmittal	v
General summary of report	1
Part I. Statutory authority for the system of public schools in the District of Columbia	19
II. Organization and administration	29
III. The teaching staff	53
IV. The building situation	99
V. Business management	143
VI. Custody of buildings	153
VII. Repair and alteration of buildings	163
VIII. School health supervision	171
Appendix A. History of the Washington public schools	177
Appendix B. Proposed reorganization bill approved by the Board of Education June 11, 1924	182
Appendix C. Report of a survey of the heating and ventilating systems of the District public schools	185
Appendix D. Report of a survey of conditions affecting health and safety in the public schools of the District of Columbia	196

EXHIBITS

Exhibit 1. Chart A.—General organization, public schools, Washington, D. C., opposite	32
Exhibit 2. Chart B.—Organization of white public schools, Washington, D. C., opposite	32
Exhibit 3. Chart C.—Organization of colored public schools, Washington, D. C., opposite	32
Exhibit 4. Average number of pupils enrolled in the public schools of the District of Columbia for the period of 10 years ending June 30, 1927	55
Exhibit 5. Whole number of pupils enrolled in the public schools of the District of Columbia for the period of 10 years ending June 30, 1927	57
Exhibit 6. Average number of pupils in daily attendance in the public schools of the District of Columbia for the period of 10 years ending June 30, 1927	59
Exhibit 7. Number of teachers in the public schools of the District of Columbia for the period of 10 years ending June 30, 1927	61
Exhibit 8. Age distribution of children of census age resident in the District of Columbia school year 1926-27	125
Exhibit 9. Classification of children of census age in the District of Columbia school year 1926-27	125
Exhibit 10. Enrollment of nonresident children of census age in schools in the District of Columbia school year 1926-27	126
Exhibit 11. Total number of children of compulsory school age, the number enrolled in school, and the per cent enrolled, District of Columbia, school year 1926-27	126
Exhibit 12. Map of elementary school divisions (white), public schools, District of Columbia, opposite	126
Exhibit 12A. Map of white school census, 1926-27, opposite	126
Exhibit 13. Map of elementary school divisions (colored), public schools, District of Columbia, opposite	126
Exhibit 13A. Map of colored school census, 1926-27, opposite	126
Exhibit 14. Elementary school buildings, their location, and a general description of each	127
Exhibit 15. Normal schools, high schools, vocational schools, their location, and a general description of each	133
Exhibit 16. Classification of rooms in elementary school buildings	135
Exhibit 17. Classification of rooms in normal schools, high schools, and vocational schools	140

LETTER OF TRANSMITTAL

JANUARY 30, 1928.

Hon. L. C. PHIPPS,
United States Senate, Washington, D. C.

MY DEAR SENATOR: With further reference to your letter of February 15, 1927, in which you requested on behalf of the Senate committee in charge of appropriations for the District of Columbia, that the Bureau of Efficiency undertake a complete survey of the public-school system of the District of Columbia, I am transmitting herewith the report, dated January 3, 1928, of Messrs. Herbert H. Rapp and Paul Rapp, of our staff, who were in immediate charge of the survey. The report is composed of the following parts:

General summary of report.

Part I. Statutory authority for the system of public schools in the District of Columbia.

Part II. Organization and administration.

Part III. The teaching staff.

Part IV. The building situation.

Part V. Business management.

Part VI. Custody of buildings.

Part VII. Repair and alteration of buildings.

Part VIII. School health supervision.

Appendix A. History of the Washington public schools.

Appendix B. Proposed reorganization bill approved by the Board of Education, June 11, 1924.

Appendix C. Report of a survey of the heating and ventilating systems of the District public schools.

Appendix D. Report of a survey of conditions affecting health and safety in the public schools of the District of Columbia.

We desire to make acknowledgment of the valuable assistance rendered by the United States Public Health Service in the investigation and their preparation of those parts of the report covering "School health supervision" and "Survey of conditions affecting health and safety in the public schools of the District of Columbia," and by the United States Bureau of Mines in the investigation and their preparation of that part of the report covering the "Survey of the heating and ventilating systems of the District public schools."

I trust that the report will prove satisfactory to your committee. However, if there is any additional information that you may desire, or if you should care to discuss the report in any of its aspects, please be good enough to call upon us.

Very truly yours,

HERBERT D. BROWN,
Chief Bureau of Efficiency.

PUBLIC-SCHOOL SYSTEM, DISTRICT OF COLUMBIA

GENERAL SUMMARY OF REPORT

PART I. STATUTORY AUTHORITY FOR THE SYSTEM OF PUBLIC SCHOOLS IN THE DISTRICT OF COLUMBIA

Organic act of 1906 (p. 19¹).—The control of the public schools in the District of Columbia is vested in a Board of Education of nine members created by an act of Congress approved June 20, 1906. This act provides for the appointment of board members by the Supreme Court judges of the District of Columbia, and prescribes the organization of the board and its general duties, and the duties of the superintendent of schools, the assistant superintendents, and certain other officers. Subsequent acts have amended and supplemented the organic act of 1906, but none of this legislation has affected the basic organization and administration of education in the District of Columbia established by that act.

Relationship of the Board of Education to the District Commissioners (p. 20).—A review of the history of the public schools in the District of Columbia indicates that the relationship between the Board of Education and the commissioners, which was established by the act of 1906, has on the whole given general satisfaction. This act provides that the Board of Education shall determine school policies and direct expenditures in conformity therewith, and that the commissioners and certain other municipal officers shall serve the school system in the matter of the purchase of supplies and equipment, the acquisition of sites, the construction and repair of buildings, the disbursement of funds, and the audit of expenditures.

It is believed that nothing would be accomplished by a change in the relationship that now exists between the Commissioners of the District of Columbia and the Board of Education. However, the provision of the organic act of 1906 that the annual estimates of the Board of Education shall be transmitted by the commissioners with their estimates accompanied by such recommendations as they may deem proper, which was repealed by the act of June 29, 1922, should in our opinion be reenacted.² (Recommendation No. 1.) In addition, the responsibility of the Board of Education in the matters of the acquisition of school sites and the construction and repair of school buildings should be clearly defined by law. Land for school sites and school playgrounds should be purchased by the Commis-

¹ Page references are to the full report.

² The estimates would be submitted by the commissioners to the Bureau of the Budget in accordance with present practice.

sioners of the District of Columbia on recommendation of the Board of Education. (Recommendation No. 2.) The Commissioners of the District of Columbia should be charged with the construction of all school buildings after consultation with the Board of Education and upon its approval of the plans and specifications. (Recommendation No. 3.)

Appointment of members of the Board of Education (p. 27).—It is our opinion that judicial officers should not be charged with the administrative duty of appointing members of the Board of Education. With reference to an elective school board, the Bureau of Efficiency feels that the matter of the enfranchisement of the citizens of the District of Columbia is one wholly outside the scope of this investigation, for it is believed that any decision by Congress in the matter of an elective Board of Education would only follow the granting of the franchise in the District of Columbia. We believe, therefore, that under present conditions the best method of selection of members of the school board is appointment by the President of the United States by and with the advice and consent of the Senate. (Recommendation No. 4.) Appointments of school-board members made in such a manner will have received the consideration not only of the President but also of the members of the congressional committees on the District of Columbia, who, by reason of their responsibility for recommending legislation to Congress in matters affecting the District of Columbia, are in close touch with the community and its needs.

PART II. ORGANIZATION AND ADMINISTRATION

In Part II the organization and administration of the public-school system of the District of Columbia are considered under three heads, namely, Board of Education, executive offices, and public schools. The functions, duties, and personnel of the various units composing these major divisions are described in detail under the following headings:

1. Board of Education:
 - Officers (p. 29).
 - Committees (p. 30).
2. Executive offices:
 - Office of the superintendent of schools (p. 32).
 - Office of the first assistant superintendent (white) (p. 32).
 - Office of the assistant superintendent (white) in charge of the organization and management of elementary schools (p. 33).
 - Office of the assistant superintendent (white) in charge of instruction in elementary schools (p. 33).
 - Office of the assistant superintendent (white) in charge of educational research (p. 33).
 - Office of the first assistant superintendent (colored) (p. 34).
 - Office of the assistant superintendent (colored) in charge of elementary schools (p. 34).
 - Office of the assistant superintendent (colored) in charge of educational research (p. 35).
 - Board of examiners (white) (p. 35).
 - Board of examiners (colored) (p. 35).
 - Office of business manager (p. 36).
 - Office of superintendent of janitors (p. 37).
 - Department of school attendance and work permits (p. 37).
 - Office of statistics and publications (p. 39).
 - Community center department (p. 39).

3. Public schools :

- Elementary schools (p. 40).
- Special schools (p. 43).
- Vocational schools (p. 44).
- Junior high schools (p. 44).
- Senior high schools (p. 45).
- Normal schools (p. 46).

In our opinion the plan of organization of the Washington school system is generally satisfactory and, under proper management, should adequately serve its purpose of securing an economical and efficient administration of the public schools. The various functions are for the most part logically distributed and clearly defined. We therefore have no radical changes to recommend, but we do feel that several changes should be made in order to secure a more effective operation of the school system.

The following are our recommendations regarding the general organization and administration of the public schools. Recommendations concerning detailed methods are included in subsequent sections of the report relating to particular departments.

1. The supervision of the white junior high schools should be transferred from the first assistant superintendent to the assistant superintendent in charge of the organization and management of elementary schools (p. 47).

2. The authority of the supervising principals should be extended to include the organization of junior high schools in their respective divisions (p. 47).

3. Each of the supervising principals should be provided with a full-time clerk (p. 48).

4. The two positions of white and colored directors of kindergartens should be abolished when the present incumbents have retired and their duties transferred respectively to the white assistant superintendent in charge of instruction in elementary schools and the colored director of primary instruction (p. 48).

5. The authority of the colored director of primary instruction should be extended to include supervision of instruction in the fifth and sixth grades (p. 48).

6. The clerical staff of the departments of research should be increased by three clerks (two for the white and one for the colored), in order to relieve the research teachers and supplementary teachers of the routine scoring tests and tabulating the results (p. 49).

7. The staff of the department of school attendance and work permits should be increased by adding two attendance officers and two child-labor inspectors (p. 49).

8. An enlarged statistical office should be organized and placed in charge of a trained statistician with two additional clerks; and the procurement of printing should be transferred from the office of statistics to the business manager's office (p. 51).

9. The clerical pool should be transferred from the office of the first assistant superintendent (white) to the office of the business manager (p. 51).

10. The office of assistant superintendent in charge of buildings and grounds should be created to which should be transferred the responsibility for all work relating to the repair and alteration of school buildings and equipment and the supervision over the custodial and engineering forces of the school system (p. 51).

PART III. THE TEACHING STAFF

Introduction (p. 53).—During a 10-year period from 1918 to 1927 the average enrollment in all the public schools of Washington increased from 51,748 to 69,740, or 35 per cent. At the same time the teachers (including teaching principals) increased from 1,830 to 2,687, or 47 per cent. There are several reasons why the number of teachers has increased more rapidly than the enrollment. As far as the elementary schools are concerned, the increase in teachers has resulted from—

1. The reduction in the number of oversize classes.
2. The establishment of small opportunity classes for slow children.
3. The creation of a group of supplementary and research teachers for the purpose of testing the intelligence of children and providing individual instruction for those who have fallen behind in their studies.
4. The expansion of the staff of special-subject teachers, with the addition of several new subjects to the curriculum.

The large increase in the enrollment of Washington's high schools, especially the junior high schools, is another reason for the increase in teachers during the 10-year period. The enrollment in the high-school grades (9-12) has increased much more rapidly than the enrollment in the elementary grades (1-8). Between 1918 and 1927 the average enrollment in the high-school grades increased over 100 per cent, as compared with an increase of only 22 per cent in the elementary grades. Moreover, 50 per cent of the increase in the elementary grades was in grades 7 and 8 of the junior high schools.

Elementary schools (p. 64).—The teaching staff of the elementary schools is discussed under the following headings: Kindergartens, grades 1-8, special schools and classes, special-subject teachers, miscellaneous teachers (supplementary teachers, research teachers, and primary-instruction assistants), vocational schools, and platoon schools. The loads of these various types of teachers are analyzed in detail and comparison is made with the loads of similar teachers in other cities.

On March 11, 1927, teachers of regular-grade classes in the Washington elementary schools had an average load of 36 pupils, which compared favorably with the loads of similar teachers in seven comparable cities. However, when all teachers were included, Washington was at the bottom of the list with an average of 27 pupils per teacher. The main reasons for this difference are to be found in the unusually large number of kindergarten teachers and special-subject teachers carried on the Washington rolls.

Kindergartens (p. 65).—The average number of children enrolled in kindergartens has increased at a more rapid rate than the number of kindergartners over a 10-year period. However, in comparison with other cities Washington has a disproportionately large number of kindergartners, because they teach only one session of three hours a day, and two of them are usually assigned to a kindergarten. Double sessions are not recommended for Washington because parents are generally opposed to afternoon sessions, and the two-session plan would involve shorter sessions for individual children. But two kindergartners should not be assigned to a kindergarten until its enrollment reaches 40 children. No additional kindergartners should be provided until such time as the present excess has been absorbed

either by opening new kindergartens or by transferring to the grades kindergartners holding elementary-school licenses. (Recommendation No. 1.) The afternoon program of kindergartners should be more carefully supervised so as to increase the time devoted to coaching primary children. (Recommendation No. 2.)

Grades 1-8, elementary schools (p. 69).—The average number of pupils enrolled per elementary-school teacher of regular classes was 36 on March 11, 1927. This average compares favorably with similar averages in other cities. It is our opinion that the school officials have attempted to organize the regular grade classes as far as practicable on the basis of a standard of 40 pupils. Additional teachers will be required therefore to take care of the regular increase in enrollment resulting from the natural growth of the city. (Recommendation No. 3.)

Special schools and classes (p. 73).—On March 11, 1927, the average number of pupils of teachers of special classes (atypical, ungraded, open-window, health, and opportunity) was 18, which compares favorably with the loads of similar teachers in other cities. Consideration should be given to the establishment of additional special school centers for atypical and ungraded children with adequate facilities for teaching manual arts. (Recommendation No. 4.) As opportunity offers additional open-air classes should be opened and a sight-conservation class should be established. (Recommendation No. 5.)

Special-subject teachers (p. 76).—Washington has an unusually large number of special-subject teachers. There are two types of special teachers, itinerant and special center. The itinerant teachers travel from one school to another and teach their subjects in the regular classrooms in the presence of the grade teachers. The special-center teachers teach manual arts in specially equipped rooms, and while pupils are attending these classes the grade teacher is without a class or with only part of a class. This system of special instruction is unsatisfactory because it results in both a duplication of teacher service and a loss of instructional space, and it does not provide for adequate supervision of the regular teacher's instruction in the special subjects. The number of itinerant special-subject teachers should gradually be reduced and some form of platooning or departmentalization introduced in order that teachers may specialize in those subjects for which they are best fitted and that pupils may have the advantage of expert instruction in all subjects. (Recommendation No. 6.) For purposes of supervision the itinerant teachers should be replaced by a much smaller number of assistants to the directors, who will serve as inspectors and instructors of special subjects in the same way that the assistants in primary instruction now serve for the regular subjects. (Recommendation No. 8.)

Miscellaneous teachers (p. 80).—Miscellaneous teachers include supplementary teachers, research teachers, and primary instruction assistants. Supplementary teachers devote approximately one half their time to coaching backward children and the other half to assisting the research departments. Research teachers spend all their time in the administration and interpretation of intelligence tests. Primary instruction assistants serve as inspectors and instructors of grade teachers, and rate them at the end of the year on the quality

of their work. These various types of teachers perform services which have for their object the improvement in the quality of teaching and the increase in the efficiency of instruction.

Vocational schools (p. 82).—The teaching personnel of the vocational schools is supplied out of the regular allowance for elementary-school teachers. On account of the specialized nature of trade instruction, classes are small and the number of teachers is therefore proportionately higher than in other schools.

Platoon schools (p. 83).—Washington has one platoon school, the Park View, which has been in existence since 1919. The Park View School, however, can not be considered typical of the modern platoon school as operated in such cities as Detroit, Pittsburgh, and Newark. In the first place, the building is not well suited to its purpose, and in the second place the school day has not been programmed so as to secure a proper balance between the various work, study, and play activities. However, the platoon plan at Park View has indicated that instructional space and teacher service may be used more intensively under this plan.

But aside from the financial economies claimed for the platoon school there is a sincere difference of opinion among educators as to its educational advantages. In attempting to evaluate the conflicting claims of the advocates and opponents of the platoon school, one is impressed by the theoretical nature of much of the discussion on the subject, especially with reference to the objections of its opponents. Many cities of the country have adopted the plan, and the United States Bureau of Education reports that "in the opinion of superintendents who have organized schools on the plan its rapid growth is due in large measure to the fact that under the plan it is possible, financially and administratively, to give to all children in a school system the opportunities for an enriched curriculum of work and play and study which the development of cities has made it imperative to provide for city children." While the experience of other cities is not conclusive, as far as Washington is concerned, nevertheless, the results achieved justify us in recommending a scientific experiment with the platoon organization in local schools for the purpose of comparing both financial costs and educational results in platoon and nonplatoon schools.

If an impartial study indicates that local conditions are such as not to justify such a radical form of reorganization, perhaps some modification of the platoon plan or some form of departmentalization may be developed which will achieve similar results. It is therefore recommended that the Board of Education undertake a platoon-school experiment by establishing two platoon schools, one white and one colored, by adapting to this purpose two of the new standard 16-room elementary school buildings. (Recommendation No. 7.) For the purpose of this experiment these two platoon schools should be paired with two nonplatoon schools similar in size and in composition of population. The educational results and financial costs of the two types of schools should then be measured and compared at regular intervals. Such an experiment extending over a series of years will supply the basis of fact, which is now lacking, for the adoption of an educational policy of the highest importance.

Junior high schools (p. 89).—In comparison with junior high school teachers in other cities, similar teachers in Washington at the time of our study had a low average number of pupils. The pupil-period loads were below the standards established by the Board of Education. The main reason for this condition is in our opinion the relatively small size of most of the junior high schools. As the enrollments of the junior high schools increase it should become possible gradually to increase the number of pupils assigned to teachers, so that their loads will more nearly approximate the standard.

Senior high schools (p. 92).—In comparison with senior high school teachers in other cities, similar teachers in Washington had slightly less than the average number of pupils. The pupil-period loads were below the standards established by the Board of Education.

Curriculum (p. 94).—As far as the curriculum is concerned Washington has kept pace with the nation-wide movement for curriculum revision.

Efficiency of instruction (p. 94).—The departments of educational research measure the results of instruction currently and recommend such changes in curriculum and methods as are necessary to improve teaching and increase learning. It is our opinion that the teachers are carefully selected and that the organization of the teaching staff is based upon sound principles. The various groups of workers are well balanced as far as size is concerned, and on the whole their efforts are satisfactorily coordinated. During recent years considerable thought has been given to improving the efficiency of supervision in the schools, but there is still room for improvement in this direction. The whole subject of supervision in the junior and senior high schools, with special reference to the duties of directors of special subjects and heads of departments, should be reconsidered in view of the experience of the past five years. (Recommendation No. 9.) Centralized systems of teachers' personnel records should also be established in the offices of the boards of examiners. (Recommendation No. 10.)

Summary of teacher requirements 1927-28, 1928-29 (pp. 87, 91, 94).—Additional teachers are recommended as follows (recommendation No. 11):

Elementary schools:

1927-28—15 class 1A.

1928-29—20 class 1A.

5 class 1A (vocational schools).

Junior high schools:

1927-28—12 class 2A.

6 class 2C.

1928-29—11 class 2A } whole year.

6 class 2C }

14 class 2A } half year.

4 class 2C }

Senior high schools:

1927-28—None.

1928-29—2 class 3A.

If our recommendations for the absorption of excess kindergartners by the regular grades and for the gradual replacement of teachers of special subjects by a smaller number of supervisors are adopted and

made effective immediately, it will be possible to reduce the estimate for 1928-29 in the same amount that the number of these teachers can be reduced during that year.

PART IV. THE BUILDING SITUATION

Introduction (p. 99).—A review of the history of the development of the Washington public schools indicates that the school authorities have always had difficulty in procuring sufficient funds to meet the needs for buildings and sites occasioned by an increasing school enrollment and by obsolescence. This has been due, we believe, in large measure to the "pay-as-you-go" policy of financing expenditures of the District government, which makes impossible the consummation of any large program of capital additions over a short period of time without an undue increase in the tax rate of the District of Columbia.

Five-year building program (p. 105).—In view of the representations made from time to time by the school authorities and the District Commissioners relative to the acute schoolhouse situation that came into being during the war and postwar periods, the subcommittees on schools and playgrounds of the Committees on the District of Columbia in the Senate and House of Representatives made an inquiry into the matter, which resulted finally in the passage of the five-year school building program act on February 26, 1925. The act authorized the purchase of land for school sites and school playgrounds in particular vicinities and the construction of buildings of specified capacity for elementary schools, vocational schools, junior high schools, and senior high schools. It was estimated at the time of the passage of the act that the five-year building program would cost \$20,185,000. On this basis appropriations of \$4,037,000 annually for five years would have been necessary to complete the program as planned. Appropriations applicable to the projects included in the five-year building program during the fiscal years 1926, 1927, and 1928 totaled \$9,257,250. At the annual rate of \$4,037,000 contemplated by the act, a total of \$12,111,000 would have been necessary for these three years. The program will, therefore, be \$2,853,750 in arrears at the close of the fiscal year 1928.

Construction under five-year program (p. 107).—The construction under the 1926 and 1927 appropriations has supplied a sufficient number of rooms to provide accommodations for the increased elementary-school enrollment during these years and to reduce by 56 rooms the shortage which existed in 1924. It is estimated that the construction items included in the 1928 appropriation act will result in a further reduction of about 40 rooms in this shortage. With reference to the high-school accommodations, the net excess of 2,971 pupils in 1924 has been reduced to 2,073 in 1927, and it is estimated that the construction during 1928 will reduce this excess by another 1,000 pupils.

Analysis of five-year building program (p. 108).—A detailed study of the five-year building program indicates that it was carefully prepared with due regard to the needs of the various sections of the city. Some modifications will be necessary on account of shifts in both the white and colored populations which could not

have been foreseen. These modifications will involve the entire elimination of certain items, the postponement of others, and the transfer of several from one division to another.

The buildings still to be constructed under the five-year program, including those already appropriated for, will provide a total of 407 elementary classrooms. On October 14, 1927, the shortage of schoolhouse accommodations in elementary schools was 374 rooms. Therefore, if the five-year building program is carried out as originally planned, this shortage will practically be eliminated by the end of 1930, making due allowance for such additional rooms as will be necessary on account of increased enrollment in the fiscal years 1929 and 1930. The proposed junior high schools will also provide accommodations sufficient to eliminate the congestion which still exists in the senior high schools.

Summary of remaining items in five-year building program (p. 117).—A summary of the remaining land and building items in the five-year program indicating our opinion as to the order of precedence for both buildings and land is given below. These tables are based upon a detailed analysis of the evidences of congestion in the various divisions. New schools should be erected in accordance with needs as indicated by these evidences of congestion. (Recommendation No. 1.) The figure 1929 after an item indicates that it is carried in the 1929 Budget:

Divisions I-IX. White

Rank	Division	Buildings
1	I	Grant Road, 8 rooms (1929).
2	I	Reno Junior High School (and land).
3	V	Park View, 8-room addition.
4	III	Fourteenth and Upshur Streets, 8 rooms (1929).
5	VIII	Jefferson Junior High School (and land).
6	III	Raymond, 8-room addition (1929).
7	IV	Nineteenth Street and Columbia Road, 24 rooms (1929).
8	VIII	Bowen, 4-room addition (1929).
9	III	Brightwood Junior High School (1929).
10	V	Brookland, Woodridge Junior High School (P. and S. 1929).
11	VI	Kingsman Junior High School (and land).
12	III	Keene, 4-room addition.
13	VII	Congress Heights, 4-room addition in place of addition to Lenox.
14	I	Janney, 8-room addition.
15	III	Fourteenth Street and Kalmia Road, 8 rooms (P. and S. 1929).
16	III	Truesdell, 4-room addition.
17	VII	Buchanan, 4-room addition.
18	III	Bancroft, 8-room addition.
19	VIII	Fairbrother, 12-room addition (and land). ^a
20	VI	Stuart Junior High School, addition.
21	III	Macfarland Junior High School, addition.
22	I-IX	Business High School.

The proposed addition to the Kenilworth School and the building to replace the Abbot School are not needed and may be transferred to other localities.

Rank	Division	Land
1	I	Reno Junior High School.
2	VIII	For replacement of Jefferson Junior High School.
3	VI	Kingsman Junior High School.
4	I	For addition to E. V. Brown School.
5	I	Wesley Heights.
6	V	Michigan Avenue NE.
7	I	Connecticut Avenue and Upton Street.
8	VIII	For addition to Fairbrother School.

The sites at Twelfth Street and Rhode Island Avenue and at Foxhall Road and Calvert Street should be reconsidered. The land items at Sixteenth and Webster Streets and at the Lenox and Abbot Schools are not needed and may be transferred to other localities.

Divisions X-XIII. Colored

Rank	Division	Buildings
1	XII	Health School (and land).
2	XIII	Old Bell, 8 rooms (and land) (1929).
3	XIII	Burrville, 8-room addition (1929).
4	X	Garrison, 8-room addition (and land).
5	X	Morgan, 8-room addition (1929).
6	X	Francis Junior High School, addition in place of addition to the Phillips School (1929).
7	XIII	Lovejoy, 8-room addition (and land).
8	XI	Substitute 8 rooms in Division XI for proposed additions to Reno and Military Road.
9	XIII	Lincoln-Giddings, 16 rooms (and land).
10	XIII	Cardozo (Randall), 12 rooms.
11	XIII	Crummell, 6-room addition.
12	XIII	Syphax, 4-room addition.
13	XIII	Deanwood, 8-room addition (and land).
14	XIII	Birney, 8-room addition (and land).

Rank	Division	Land
1	XII	Health School (1929).
2	XIII	For replacement of old Bell School (1929).
3	X	For addition to Garrison School.
4	XIII	For addition to Lovejoy School.
5	XIII	For replacement of Lincoln School.
6	XIII	For addition to Deanwood School.
7	XIII	For addition to Birney School.
8	X-XIII	For addition to Armstrong High School.

Gymnasium-assembly halls (p. 118).—The remaining gymnasium-assembly hall items in the five-year building program for schools which now have 16 or more rooms are as follows: Eaton, Takoma, Wheatley, Buchanan, Bruce, Garrison, Douglas-Simmons, Lovejoy, and Deanwood. When these have been constructed all schools with 16 or more rooms except Emery, Monroe, and Stevens will be provided either with assembly halls or combination gymnasium-assembly halls.

Playgrounds (p. 118).—Only 4 out of 26 playgrounds carried in the five-year program have been appropriated for. The remaining playground items are as follows:

Division I:

Addison School.
Eaton School.
Toner School.
Jackson School.

Division III:

Hubbard School.
Johnson School.
Petworth School.

Division V:

Brookland School.
Eckington School.

Division VI:

Benning School.
Ludlow School.
Carbery School.

Division VII:

Cranch School.
Ketcham-Van Buren School.

Division X:

Montgomery School.
Stevens School.
Sumner-Magruder School.

Division XI:

Slater-Langston School.

Division XIII:

Banneker School.
Douglas-Simmons School.
Jones School.
Payne School.

There is no doubt about the need of additional playground space adjoining the above-mentioned schools. In nearly all cases the present playground area is considerably less than the generally accepted standard of 50 square feet for each pupil regularly enrolled.

Cost of the remaining items in the five-year building program (p. 119).—If the purpose of the five-year school building act is to be carried out, appropriations in the approximate amount of \$11,000,000 will have to be provided during the two remaining fiscal years of the five-year period, namely, 1929 and 1930. The 1929 Budget contains items for buildings and grounds for the public schools amounting to \$2,478,500, including only \$95,000 for land covering two building sites and two playgrounds. Twenty-one site items and 22 playground items remain to be appropriated for, and unless the 1929 appropriations provide for the majority of the site items the school and District officials will be seriously handicapped in preparing a satisfactory construction program for the fiscal year 1930. It is therefore recommended that the 1929 appropriations include the majority of the remaining site items in the five-year program. (Recommendation No. 2.)

No recommendation is made in regard to the 125 per cent restriction which has been placed upon land purchases, for it is understood that Congress has under consideration a revision of the method of acquisition of land in the District of Columbia by the Federal and District Governments, including a change in the condemnation jury and court procedure. Attention is invited to the fact that in other large cities capital expenditures of this magnitude are usually financed by long-term bond issues. The District of Columbia, however, has been on a "pay-as-you-go" fiscal basis since the establishment of the permanent commission form of government in 1878.

Plans of new buildings (p. 119).—The standard plans for Washington's new school buildings conform to the plans which have been generally adopted by the large cities of the United States. But revisions will have to be made in these plans from time to time as a result of experience and changes in curriculum and methods. It is therefore recommended that two committees be appointed by the superintendent of schools, one for elementary schools and one for junior high schools, to make a continuous study of building facilities as they relate to educational needs. (Recommendation No. 3.)

With reference to building specifications and actual construction the Bureau of Efficiency is now engaged in a survey of the office of the municipal architect, a report on which will be submitted later.

Building sites (p. 120).—The remaining recommendations in Part III relate mainly to building sites. They are as follows:

The selection of building sites should be based upon an analysis of both the school census and the enrollment reports, supplemented by studies of the surveys of public-utility companies, the volume of building operations, etc. (Recommendation No. 4.)

Sites should be centrally located with reference to the districts which they are designed to serve, and should be relatively free from noise and other distractions. (Recommendation No. 5.)

Sites should be large enough to provide adequate playground space and room for future expansion. (Recommendation No. 6.)

Small elementary school units should not be constructed when extensions to existing schools will provide the additional accommodations required. (Recommendation No. 7.)

PART V. BUSINESS MANAGEMENT

Duties of business manager (p. 143).—Supervision over the business affairs of the public-school system is lodged with the business manager. He directs the procurement and distribution of supplies and equipment in accordance with the policies adopted by the educational officers, and supervises the preparation of pay rolls, the auditing of vouchers, and the maintenance of fiscal accounts and property records. The various financial statements and reports of the system are prepared under his supervision, and he assists the finance committee of the Board of Education and the superintendent of schools in the preparation of the school budget. He has charge of the repair and alteration of buildings and the installation and replacement of all furniture and equipment.

Procurement of supplies and equipment (p. 143).—The present plan of recommending awards in connection with the procurement of supplies and equipment results in duplication of effort. It involves a thorough independent consideration of the various proposals submitted on any proposed purchase by two separate offices, namely, the office of the business manager and the District purchasing office. This objection may be overcome by establishing a board of award for school supplies and equipment, consisting of not less than three nor more than five members appointed by the commissioners, composed of representatives of the District purchasing office and of the school system, one of whom shall be the business manager. (Recommendation No. 1.)

Distribution (p. 145).—No entirely satisfactory system of storage and distribution of supplies and equipment can be made effective for the public schools until adequate storage space is provided. The present storehouse does not contain sufficient floor space to meet the present needs; it is poorly arranged for storage purposes; and it is located off the railroad, making double handling and double truckage of supplies necessary. Adequate space for the receipt, inspection, storage, and distribution of public-school supplies should be provided in the proposed Government warehouse. (Recommendation No. 2.)

Inspection (p. 145).—The inspection of supplies and equipment can not be placed on an entirely satisfactory basis while the present storehouse conditions continue to exist. Adequate facilities for receipt and storage would reduce to a minimum deliveries made direct to the schools, thus permitting of centralized and uniform inspection. The responsibility for the inspection of special school-house equipment (other than building construction items) should be transferred to the proposed office of assistant superintendent in charge of buildings and grounds. (Recommendation No. 3.)

Fiscal accounting (p. 147).—The system of fiscal accounts in use in the public-school system is similar to the one maintained by the office of the auditor of the District of Columbia. It is generally satisfactory from the standpoint of supplying the necessary information to administer intelligently the several school appropriations, but it is believed that it can be considerably improved by the introduction

of more modern accounting forms and procedure which have been successfully installed in various Federal offices during the last few years with the approval of the Comptroller General of the United States.

Property accounting (p. 147).—The public-school system maintains no property accounts. No personal accountability has been established for schoolhouse equipment valued at approximately two and a half million dollars which is found scattered among 168 buildings throughout the city. Neither are any stock records maintained for materials delivered to and issued from the storehouse, which approximate \$250,000 in value annually. Some of the principals of the schools have established for their own information and guidance records covering the property located in the buildings under their charge, but they lack uniformity. Although nothing has come to our attention which would indicate any irregularities in connection with the receipt and distribution of supplies and equipment, still the absence of a property accounting control breeds carelessness and invites leakage. A system of property accountability should, therefore, be established in the public-school system. (Recommendation No. 4.) A system of records is outlined which will not only establish property accountability but will also provide considerable information in regard to the school plant and equipment which is essential to the effective administration of the school system. Two additional clerks will be required in the office of the business manager to handle the system.

Accounting for school and activity funds (p. 149).—The office of the business manager should be charged with establishing the methods of accounting for the various school and activity funds and with making an examination of the transactions therein in sufficient detail to satisfy himself that all moneys received have been accounted for, that all expenditures have been regularly made, and that the balance in any fund is actually on hand or on deposit. (Recommendation No. 5. This recommendation does not apply to the school savings banks.)

Repair and alteration of buildings (p. 150).—The responsibility for all work relating to the repair and alteration of school buildings should be transferred to the proposed office of the assistant superintendent in charge of buildings and grounds. (Recommendation No. 6.)

Repair and replacement of furniture and equipment (p. 151).—The responsibility for all work relating to the repair and replacement of furniture and equipment should be transferred to the proposed office of the assistant superintendent in charge of buildings and grounds. (Recommendation No. 7.)

PART VI. CUSTODY OF BUILDINGS

Duties of superintendent of janitors (p. 153).—The superintendent of janitors, under the general direction of the superintendent of schools, is responsible for the protection, cleaning, heating, and ventilating of all public-school buildings in the District of Columbia and for the care and cleaning of school grounds. He is also charged with the inspection of the buildings with respect to their sanitary

condition and the operation of their heating and ventilating equipment, and with the moving of furniture and other school equipment. He personally supervises the selection, assignment, and instruction of all employees of the custodial force and through his assistants supervises their work.

Selection of personnel (p. 154).—Employees of the custodial force are selected by the superintendent of janitors largely upon the basis of the impression made upon him by applicants for positions during his interview with them. No tests of any kind are employed and references are not regularly investigated.

Instruction of personnel (p. 155).—The instruction given employees of the custodial force in their work by the superintendent of janitors and his assistants is negligible. The absence of instructions is particularly noticeable in connection with the operation of heating and ventilating equipment.

Inspection (p. 156).—The custodial management has been lax in the performance of this important duty. No definite program of inspection for the system as a whole has been established, and visits to school buildings are made largely in connection with answering complaints of principals and janitors and investigating conditions reported by the health officers.

Assignment of personnel (p. 157).—A careful examination of the assignments of custodial employees in relation to plant facilities indicates that the personnel for the various buildings has not been determined upon the basis of a thorough analysis of the needs.

Performance, supply, and equipment standards (p. 158).—No studies have been made by the custodial management toward the end of establishing performance, supply, and equipment standards.

Repairs to equipment (p. 159).—There are a number of minor jobs not generally handled by the janitors and engineers at present, which they could perform if given the proper instruction and the necessary tool kit and supplies.

Records and reports (p. 160).—The records kept by the superintendent of janitors and his assistants are inadequate, and no regular reports are made to the superintendent of schools.

Recommendations (p. 160).—The present custodial management has failed to measure up to its responsibilities in every one of its major functions. A change in custodial management should be made in order to secure an effective supervision over all matters relating to the custody and operation of buildings. These functions should be transferred from the superintendent of janitors to the proposed office of the assistant superintendent in charge of buildings and grounds, who should be a mechanical engineer or architect of proved administrative ability. This official would also be charged with the responsibility for repairs and alterations to buildings and equipment, thus centralizing the direction of all activities of the school system relating to the operation and maintenance of buildings, grounds, and equipment.

PART VII. REPAIR AND ALTERATION OF BUILDINGS

Repair program (p. 163).—The school buildings have not been kept in a satisfactory condition of repair for many years on account of the insufficiency of funds provided for their upkeep as well as

the unsystematic methods in use for handling building-maintenance work. The first difficulty has been partly corrected by the increased appropriations granted for the fiscal years 1926, 1927, and 1928, which have made possible the establishment of a repair program that is gradually disposing of the many deferred items of building maintenance. There is a large amount of repair and replacement work still to be done before the school buildings can be considered in a satisfactory condition. It is our opinion that the item of \$529,610 in the 1929 budget for repairs and improvements to buildings, exclusive of grounds, should be granted. (Recommendation No. 1.) Approximately \$200,000 of this amount is applicable to deferred maintenance, for it is estimated that the total annual cost of maintenance of the present physical plant of the Washington schools, after it has been put in a good state of repair, will be \$325,000. The estimates of our engineers indicate that the total deferred maintenance, exclusive of grounds, amounts to approximately \$1,000,000. At an annual rate of \$200,000 it will require five years, beginning with the fiscal year 1929, to dispose of this item.

School grounds (p. 163).—The office of the municipal architect estimates that \$430,000 will be required for the improvement of school grounds, including grading, laying of walks, surfacing of playgrounds, sodding of lawns, and setting of shrubbery. It is our opinion that if a program of beautification of school grounds is approved, it will require the estimated \$430,000 for its completion. In any event, the \$100,000 included in the 1929 budget for the improvement of school grounds should be granted for the purpose of treating the grounds of several new school buildings, and of improving the run-down condition of grounds surrounding many old buildings. (Recommendation No. 2.)

When a program of beautification of school grounds is adopted, a qualified landscape architect should be employed in the municipal architect's office to have charge of the plan and its execution. The design for the treatment of the ground areas around all new District buildings will come under his supervision and he will act as advisor to the proposed assistant superintendent in charge of buildings and grounds in the matter of the improvement and upkeep of the school grounds. It would also be necessary to add a principal gardener to the personnel of the repair shop.

Present organization and methods (p. 164).—The responsibility for making repairs to school buildings is divided between the Board of Education and the municipal architect. The school officials determine the repair program and the municipal architect is charged with its execution. Ordinary repairs and minor alterations are made by the District repair shop, a branch of the municipal architect's office, which serves the entire District government in this connection. As far as the work performed by the repair shop is concerned, it was found to be generally satisfactory. In the case of major alterations, plans are prepared by the office of the municipal architect in consultation with the school officials, and contracts are let by the commissioners in the same manner as with new building construction.

An analysis of the methods of handling repairs to school buildings indicates that the plan of maintenance is unsystematic and haphazard. The reports of our engineers indicate that requests are not

being made for all necessary repairs, and that all repair items ordered to be executed by the school authorities are not necessary considering the present status of the general repair program. No regular inspection of buildings is made to determine actual repair needs.

Proposed organization (p. 168).—The remedy for the present unsatisfactory condition in respect to the repair and alteration of school buildings lies, in our opinion, in the transfer of the entire responsibility for this activity to the school authorities. The direct supervision of the work should be placed in charge of a qualified mechanical engineer or architect of proved administrative ability, who would rank as an assistant superintendent of schools, coordinate with the business manager, to be known as the assistant superintendent in charge of buildings and grounds. (Recommendation No. 3.) Supervision over the custodial and engineering forces of the school system, and the work of repair and replacement of furniture should also be assigned to the proposed office. Under such a plan of organization, all the activities of the school system relating to the operation and maintenance of buildings, grounds, and equipment would be centralized in a technically qualified, responsible school official, who would be in a position to use his combined forces in such a manner as to provide for the most economical and efficient operation and maintenance of the physical plant of the school system.

PART VIII. SCHOOL HEALTH SUPERVISION³

Duties of medical staff.—There were 61,191 children enrolled in the kindergarten and the grades, including the seventh and eighth grades of the junior high schools, during the school years 1925-26. Of this number 16,483 were actually given a physical examination. Of the 8,900 kindergarten and first-grade children in school only 3,571 were examined; 92.8 per cent of these children had defects of one nature or another requiring medical attention.

In addition to making physical examinations of children the medical inspectors are required to make sanitary surveys of the school buildings and grounds, medical examination of teacher applicants and applicants for admission to the normal schools, mentally retarded pupils, and applicants for child-labor permits.

School nurses.—The school nurses assist the medical examiners, do follow-up work, accompany children to clinics, etc. With the large number of children the present staff of nurses was able to accomplish only a part of the work required. Of 10,806 cases referred to them, 5,058 were completed in treatment for various conditions.

Dental hygiene.—Of the 22,388 children examined for dental defects 78.6 per cent required treatment. About 30 per cent of these defects were corrected at the school dental clinics.

Cost of school health supervision.—The average cost for each school child was only 88 cents. This sum indicates the hopeless inadequacy of the present organization, due to lack of both funds and appreciation of effort. In 1923 in a study of 65 cities of over 100,000 population there were 23 cities expending from \$1 to \$2 per pupil for school health supervision.

Personnel and budget recommended.—An organization and budget are recommended to bring the school health supervision in the Dis-

³ This part of the report was prepared by the U. S. Public Health Service (pp. 171-175).

trict of Columbia to the equal of other progressive cities. This budget totals \$139,100, as compared with the 1926 budget of \$66,145. It provides for additional medical examiners and nurses, a director of nurses and two nurse supervisors, a psychologist, a part-time psychiatrist, and two psychiatric social workers.

The prescribed budget of \$139,100 for 75,000 children would be \$1.80 per pupil. It would place the school health supervision among the leaders but not first. It is not to be hoped that this budget will be approved at once, but it is the goal to be reached within five years.

A survey of conditions affecting health and safety in the public schools of the District of Columbia was also made by the United States Public Health Service. A summary of the findings is appended because they have a direct bearing on the general subject of health supervision.

The school buildings of the District are subject to much improvement. The essential features which can be remedied now are:

1. Glass window-board ventilators for all classrooms with sash windows.
2. Reliable thermometers, properly placed, in each classroom.
3. The instruction of teachers in the principles of ventilating their rooms.
4. The replacement of worn-out classroom furniture.
5. The proper equipment of windows with shades and instruction in their use.
6. The painting of walls and ceilings of classrooms at more frequent intervals.
7. The furnishing of slate blackboards and limiting them to the front wall and right wall of the grade rooms.
8. Smooth hardwood floors in all rooms used for kindergartens and first grades.
9. Toilet and lavatory facilities for kindergarten children.
10. Hard surfacing of sufficient area about the school building for restricted play in wet weather.
11. Ample number of drinking fountains.
12. Ample number and satisfactory placing of lavatory facilities.

For future planning the following important features should receive consideration:

1. Sufficient playground area to give each pupil the minimum of 50 square feet.
2. Modern heating plant.
3. All new school plans to receive the examination and approval of the chief of the health supervision and medical inspection of schools.
4. The ample provision in school buildings for teachers' rest rooms, medical examination rooms, and children's rest rooms in each building.
5. Special buildings for atypical children now housed in makeshift, overcrowded buildings.

There are four appendices to the report, as follows:

- Appendix A: History of the Washington public schools.
 Appendix B: Proposed reorganization bill approved by the Board of Education, June 11, 1924.
 Appendix C: Report of a survey of the heating and ventilating systems of the District public schools, prepared by the United States Bureau of Mines.
 Appendix D: Report of a survey of conditions affecting health and safety in the public schools of the District of Columbia, prepared by the United States Public Health Service.

HERBERT H. RAPP,
 PAUL L. RAPP.

UNITED STATES BUREAU OF EFFICIENCY,
 Washington, D. C., January 3, 1928.

PART I

STATUTORY AUTHORITY FOR THE SYSTEM OF PUBLIC SCHOOLS IN THE DISTRICT OF COLUMBIA

The control of the public schools in the District of Columbia is vested in a Board of Education of nine members created by an act of Congress approved June 20, 1906. (34 Stat. L., 316.) This act provides as follows:

Membership of the Board.

The board shall consist of nine members, all of whom shall have been for five years immediately preceding their appointment bona fide residents of the District of Columbia, and three of whom shall be women. The members of the board, who shall serve without compensation, shall be appointed by the supreme court judges of the District of Columbia for terms of three years each and shall be eligible for reappointment.¹ Vacancies for unexpired terms, caused by death, resignation, or otherwise, shall be filled by the supreme court judges.

Organization and Meetings.

The board shall appoint a secretary, who shall not be a member of the board. It shall hold stated meetings at least once a month during the school year and such additional meetings as it may from time to time determine. All meetings of the board shall be open to the public, except committee meetings dealing with the appointment of teachers.

General Duties of the Board.

The board shall determine all questions of general policy relating to the schools, appoint the executive officers provided for in the act, define their duties, and direct expenditures. All expenditures of public funds for school purposes shall be made and accounted for as provided by law under the direction and control of the Commissioners of the District of Columbia.

The board shall transmit annually on the first day of October to the Commissioners of the District of Columbia an estimate in detail of the amount of money required for the public schools for the ensuing year, and the commissioners shall transmit the same in their annual estimate of appropriations for the District of Columbia, with such recommendations as they may deem proper. (This provision was repealed by the act of June 29, 1922, which made a change in the manner of financing the expenditures of the District of Columbia,

¹The original appointments under the act were required to be made 3 for 1 year, 3 for 2 years, and 3 for 3 years.

whereby the school estimates are made a part of the budget of the commissioners, subject to their review and revision.)

The board shall appoint all teachers and all other employees provided for in the act. No appointment, promotion, transfer, or dismissal of any director, supervising principal, principal, head of department, teacher, or any other subordinate to the superintendent of schools shall be made by the Board of Education except upon the written recommendation of the superintendent of schools.

Superintendent of Schools.

The board shall appoint one superintendent for all the public schools in the District of Columbia, who shall hold office for a term of three years, and who shall have the direction of and supervision in all matters pertaining to the instruction in all the schools under the Board of Education. He shall have a seat on the board and the right to speak on all matters before the board, but not the right to vote. The board shall have the power to remove the superintendent at any time for adequate cause affecting his character and efficiency as superintendent.

Assistant Superintendents of Schools.

The board, upon the written recommendation of the superintendent of schools, shall appoint one white assistant superintendent for the white schools and one colored assistant superintendent for the colored schools. The white assistant superintendent, under the direction of the superintendent of schools, shall have general supervision over the white schools, and the colored assistant superintendent, under the direction of the superintendent of schools, shall have sole charge of all teachers, classes, and schools in which colored children are taught. (The amendatory act of June 4, 1924, changed the designation of these superintendents to first assistant superintendents.)

The act also provides for certain other officers and for two boards of examiners, a classification of teachers by grade, the manner of qualifying for positions under the act, and a salary schedule.

Since the passage of the organic act in 1906 Congress has passed the following legislation relating to the public schools: A child labor law, on May 28, 1908; a teachers' retirement law, on January 15, 1920 (amended June 11, 1926); a teachers' pay law amending the salary schedules established in the 1906 act, on June 4, 1924; a compulsory school attendance law, on February 4, 1925; and a five year school building program law, on February 26, 1925. The annual school appropriation acts have also at times carried legislative provisions, but none of this legislation has affected the basic organization and administration of education in the District of Columbia established by the organic act of 1906.

Relationship of the Board of Education to the District Commissioners.

Section 2 of the organic act of 1906 establishing the public-school system for the District of Columbia provides as follows:

The control of the public schools of the District of Columbia is hereby vested in a Board of Education. * * *

The board shall determine all questions of general policy relating to the schools, shall appoint the executive officers hereinafter provided for, define their duties, and direct expenditures.

However, this section also contains the following provision :

All expenditures of public funds for such school purposes shall be made and accounted for as now provided by law under the direction and control of the Commissioners of the District of Columbia. * * *

The duties imposed upon the board of education and upon the Commissioners of the District of Columbia by this language appear to be conflicting. In order to determine the intent of the law, therefore, it is necessary to review the history of the public schools in the District of Columbia prior to the passage of the organic act.²

The public schools of the District of Columbia have always been a part of the municipal government, although the several bodies charged with the administration of the school system at various times have had certain duties imposed upon them specifically by law.

The first board of 13 school trustees established for the city of Washington under the original municipal form of government composed of a mayor and city council was granted broad powers of administration over the school system by an act of the city council in 1804. The "superintendence" of schools was placed under the direction of the board, and it was empowered to pass all necessary by-laws, to receive donations, and to vest and apply the funds placed under its care in such manner as it saw fit. The membership of the board was at first partially chosen by joint ballot of the two houses of the council, an elective body, and partially by individuals who had contributed to the support of the schools. Later, in 1818, the election by contributors was discontinued, and all members were chosen by joint ballot of the city council.

A review of the proceedings relating to the schools during their development under the municipality indicates that the municipal officers and the board of school trustees uniformly cooperated to the fullest extent in the advancement of the public schools. During the period 1805-1844 the growth of the school system was retarded on account of the odium which had been brought upon the schools by the requirement that free education be offered only to the poor, and to the insufficiency of funds provided by the city council for school support. However, as a result of the demand of the community for a change, the continued recommendations of the mayor for a more liberal policy, and the sympathetic interest of a leading councilman, the school system was reorganized by an act of the city council of December 6, 1844. A board of 13 trustees was provided for, composed of 3 persons elected annually, by joint ballot of the 2 boards of the city council from each of the 4 school districts into which the city was divided, and the mayor of the city as president ex officio. The control of the schools was vested in the board by this act, and it was granted the same broad authority in regard to the administration of school affairs which had been provided in earlier acts.

The reorganization of 1844 marks a new area in the operation of the public schools of Washington. In 1848 the first direct school tax was levied, and from that time forward the city council was liberal in its support of the schools, supplementing the school fund by means of appropriations from other revenues. It was in this year

² A more detailed history will be found in Appendix A.

also that the city council abolished all tuition fees in the schools, thereby adopting the policy of universal eligibility of white children.

On November 12, 1858, the city council passed an act which provided that the members of the board of school trustees should be appointed annually by the mayor, by and with the advice and consent of the board of aldermen, and enlarged the powers of the board, making them more definite, but not materially changing the organization as established in 1844. The board consisted of three persons from each of the four school districts of the city and the mayor as president *ex officio*.

The act of 1858 vested the management of all the public schools in the city of Washington in the board of school trustees. The board was empowered to appoint and remove at pleasure all teachers, to prescribe the courses of study and the books to be used in the schools, to execute such by-laws and rules and regulations for the management of the schools as it might deem necessary or proper, and to determine upon and transact all business relating to the schools, in accordance with its by-laws and regulations and subject to the laws of the municipal corporation. It was required to furnish annually to the city council estimates of the amounts necessary to meet the expenses of the schools for the following year, and to report annually to the two houses of the city council, giving a full account of the proceedings for the preceding year. Practical supervision over the schools was also provided for by means of sub-boards composed of divisions of the board, one sub-board for each school district.

In 1869 the city council provided for the appointment by the mayor, by and with the advice and consent of the aldermen, of a superintendent of public schools to have general supervision over the schools under rules established by the board of trustees.

By an act of Congress of February 21, 1871, the separate governments of the cities of Washington and Georgetown and of the county of Washington were abolished and a government for the District of Columbia established, similar in organization to that provided for the Territories of the United States, composed of a territorial governor and a legislative assembly. The transition to another form of government did not change the organization of the board of trustees of the Washington public school system, nor the authority of its superintendent. In fact, the superintendent's jurisdiction was extended to include the Georgetown and Washington County schools. Separate boards of trustees continued to function, however, for the Washington schools, the Georgetown schools, and the Washington County schools. Moreover, in 1873, Congress transferred to the territorial government the control of the colored schools of Washington and Georgetown, which had previously been vested in a board of trustees appointed by the Secretary of the Interior. The board of trustees for the colored schools was continued, however, as was also their superintendent. Consequently at the beginning of 1874 the school system consisted of four boards of trustees and two superintendents.

The territorial form of government for the District of Columbia was abolished by an Act of Congress approved June 20, 1874. In its stead was established a commission form of government under

which the executive authority was vested in three commissioners, and the legislative functions were reserved by Congress to itself. This form of government was considered merely as a temporary expedient at the time it was established, but by an act of June 11, 1878, Congress made it permanent with few alterations. This act transferred the powers and duties of the board of school trustees to the commissioners and provided for the appointment of a new board of 19 school trustees who were to serve for such terms as the commissioners might fix.

Soon after the first board of commissioners came into office in 1874, it ordered the replacement of the four boards of school trustees by one board composed of 19 members, 5 of whom were colored. Eleven members were chosen from the city of Washington, three from the city of Georgetown, and five from the county of Washington. The two superintendencies were retained, however, one for the white schools and one for the colored schools.

During the existence of the territorial government, and the first commission government, the schools of the District of Columbia continued their healthy growth and development as a result of the combined efforts of the officials of the new District of Columbia government and the boards of school trustees. In fact, the harmonious relations between these two groups of officials continued to exist until the creation of the permanent commission government in 1878.

Shortly after the passage of the act of 1878, difficulties arose in connection with the administration of the schools. Supervision over the operation of the school system was assigned by the board of commissioners to one of its civilian members, who exercised a control over the schools similar to that maintained by the commissioners over the other departments of the municipal government. This virtually resulted in a one-man control over the schools, since it is customary for the commissioners to accept the recommendations of their associates in connection with the routine operation of the departments specifically assigned to them. The commissioners appointed the members of the board of trustees with such terms as they themselves fixed and likewise appointed the two superintendents,³ who operated practically independently of the trustees. Moreover, the powers of the board of trustees were indefinite, for, although the act of 1878 creating the board provided that it should have the duties in regard to the care and management of the schools authorized by existing law, it was held by the attorney for the District of Columbia by an opinion rendered the commissioners under date of September 25, 1883, that the powers of the board were subordinated to the general control over schools vested by the act in the commissioners. He said:

The appointment of the board does not divest the commissioners of the power which the law assigns to it. The trustees are an agency the law itself designates as proper to be employed to care for and manage the schools, and so long as the board exists this share of the commissioners' duties are by it performed, but in subordination to the common head of the District government, which can overrule the action of the board in any given case, and may abolish the board itself.

³ One in charge of the white schools and one in charge of the colored schools.

In addition to the duties which the law by its own action invests the trustees with, it is competent for the commissioners to delegate to them the residue of their powers and duties under the act which expressly authorizes such action.⁴

The commissioners did not, however, delegate the powers involving the control of the schools to the board of trustees. Consequently the indefiniteness of the authority of the commissioners and of the board of trustees, as well as that of the superintendents, brought to an end the smooth operation of the system that had prevailed during the periods of the city government, the territorial government, and the first commission form of government. Dissatisfaction arose, criticism was heard, and in 1900, after an investigation by the Senate Committee on the District of Columbia, the law was changed.

The act of June 6, 1900, provided for a board of education composed of seven members appointed by the Commissioners of the District of Columbia for terms of seven years, except for the first appointments which were made in such a manner as to have one term of office terminate each year. Compensation of the members of the board was authorized at the rate of \$10 for each meeting personally attended, but the total for any one member for a year was not to exceed \$500.

The board was granted complete jurisdiction over all administrative matters connected with the public schools, except that all expenditures of public funds for school purposes were to be made and accounted for under the direction and control of the Commissioners of the District of Columbia. Specific power was granted to the board to appoint a superintendent of schools and two assistant superintendents, one of whom, under the direction of the superintendent, was to have charge of schools for colored children. The board was further empowered to employ and remove all teachers, officers, and other employees connected with the school system. Finally, the board was required to transmit annually to the Commissioners of the District of Columbia an estimate in detail of the amount of money required for the public schools for the ensuing year, which the commissioners included in their annual estimate of appropriations for the District of Columbia with such recommendations as they deemed proper.

It is interesting to note how closely the powers granted this newly created Board of Education conform to those with which the board of school trustees was clothed by the city council in 1858 (see p. 22), and by virtue of which the schools were smoothly and effectively operated until 1878.

Attention is invited to the fact that although complete jurisdiction over all administrative matters connected with the schools was vested in the Board of Education by the act of 1900, all expenditures of public funds for school purposes were to be made and accounted for under the direction and control of the commissioners. It is our opinion that Congress by this requirement did not intend in any way to restrict the Board of Education in its determination of school policies and in its direction of school expenditures in connection therewith, but that it had in mind solely: (1) The direction of expend-

⁴ Letter of A. G. Riddle, attorney for the District of Columbia, to the commissioners, September 25, 1883.

itures from the standpoint of the actual purchase of supplies and equipment required by the Board of Education, the acquisition of school sites, and the construction and repair of school buildings; and (2) the control of expenditures by audit and by disbursement. The commissioners and other municipal officers were charged with these functions for the entire municipal government, and apparently Congress saw no good reason, although the suggestion was made, for duplicating the administrative machinery which had been set up to discharge them.

The school system had not been operating long under the Board of Education created in 1900, when criticism was heard, aimed particularly at the board itself on account of its activities in connection with the details of professional supervision over the schools. It was at this time, too, that a movement throughout the country to divorce school systems from municipal governments was gaining momentum, and representations were made to Congress that an independent Board of Education for the District of Columbia was desirable, whose members should be appointed by the President, by and with the advice and consent of the Senate.

Hearings were held by the Senate and House Committees on the District of Columbia in 1906 on the subject of the proposed changes in the administration of school affairs, which resulted in the passage of the act of June 20, 1906, establishing the public-school system in the District of Columbia as it exists to-day. (See pp. 19-20.) By this act Congress definitely placed the determination of school policies in the Board of Education, making it effectually a legislative body in the matter of school affairs, and made the superintendent the chief school executive charged with the duty of putting those policies into effect. At the same time any possibility of control over school affairs by the municipal officers of the District of Columbia was removed by the transfer of the power of appointment of the members of the Board of Education from the commissioners to the Supreme Court judges of the District of Columbia.

Notwithstanding the great volume of opinion offered the committee by various groups and individuals favoring the complete divorcement of the school system from the municipal government, Congress did not see fit to make such a change, and continued the relationship between the Board of Education and the Commissioners, which had been established by the act of 1900. That is, while the Board of Education determines school policies and directs expenditures in conformity therewith, the commissioners and certain other municipal officers serve the school system in the matter of the purchase of supplies and equipment, the acquisition of sites, the construction and repair of buildings, the disbursement of funds, and the audit of expenditures. For the discharge of these functions machinery exists in the municipal government.

Recommendations.

It is believed that nothing would be accomplished by a change in the relationship that now exists between the Commissioners of the District of Columbia and the Board of Education. However, the provision of the organic act of 1906 that the annual estimates of the Board of Education shall be transmitted by the commissioners with their estimates accompanied by such recommendations as they

may deem proper, which was repealed by the act of June 29, 1922, should in our opinion be reenacted.⁵ In addition, the responsibility of the Board of Education in the matters of the acquisition of school sites and the construction and repair of school buildings should be clearly defined by law.

The present organization of the school system, whereby the Board of Education determines school policies and the superintendent executes them, is in accordance with the best practice in city school administration, while the policy of having the so-called service departments of the municipal government serve the schools is based upon sound business management. The argument which is generally advanced in support of the divorcement of the school system from the municipal government, namely, that the schools must be protected from the exploitation and neglect which is possible under a local political control of municipal affairs, does not, in our opinion, hold good for the District of Columbia with its commission form of government. The Board of Education and the school officers themselves are apparently of that belief, for the bill which they were instrumental in having submitted in Congress in 1925, providing for a Board of Education, independent of the commissioners, proposed that the purchasing officer, the auditor, and the disbursing officer of the District of Columbia should also act as officers of the Board of Education in their respective capacities.⁶ They also proposed that land for school sites and school playgrounds should continue to be acquired by the commissioners, but upon the recommendation of the Board of Education, and that the commissioners should continue to be charged with the construction of all school buildings and with the alteration, repair, and improvement to buildings, but only after consultation with and approval by the Board of Education of the plans and specifications.

The present fiscal plan of the District of Columbia provides that the various departments of the municipal government, including the school system, submit their annual estimates of appropriations to the commissioners, who review and revise them and prepare the final estimates for the entire District government for submission to the Bureau of the Budget. We believe that under this plan there is a danger that the schools may suffer in favor of other departments for whose activities the commissioners are directly responsible. This condition may be overcome by the reenactment of the provision contained in the organic act of 1906, repealed in 1922, whereby the school estimates were required to be transmitted by the commissioners with their estimates accompanied by such recommendations as they might deem proper.

In connection with the construction of school buildings the present law requires that the plans and specifications therefor shall be prepared under the supervision of the municipal architect, after consultation with the Board of Education, and shall be approved by the commissioners. The commissioners are also empowered to purchase land for school sites and school playgrounds under their general authority to acquire all real property for the use of the District of

⁵ The estimates would be submitted by the commissioners to the Bureau of the Budget in accordance with present practice.

⁶ See Appendix B for a copy of the bill, H. R. 11404, 68th Cong., 2d sess.

Columbia. During recent years the commissioners have cooperated to the fullest extent with the Board of Education in the planning of school buildings and in the purchase of school sites and playgrounds. However, it is believed desirable that the responsibility of the Board of Education in these matters be definitely established by legislation providing that land for school sites and school playgrounds shall be purchased by the commissioners on recommendation of the Board of Education, and that the commissioners shall be charged with the construction of all school buildings after consultation with the Board of Education and upon its approval of the plans and specifications. The responsibility for the repair and alteration of school buildings, with the exception of major projects requiring architectural services, should in our opinion be transferred to the school authorities. This subject is discussed fully under recommendation No. 10 of Part II.

It is believed that the independence proposed in its reorganization bill will be granted the Board of Education by these simple provisions, namely, (1) the submission to the Bureau of the Budget for its consideration of the original estimates of the Board of Education, and (2) the clear definition of the responsibility of the Board of Education in connection with the purchase of school sites and playgrounds and the construction of school buildings. Moreover, under such a plan the school officials would not be subject to the difficulties of administration inherent in the board's proposal, whereby the auditor, the purchasing officer, and the disbursing officer of the District of Columbia, who are appointees of the commissioners, would act in their respective capacities as subordinates of an independent board of education.

In regard to the manner of appointment of the members of the Board of Education, it is held by many of the citizens that the experience of the last 10 years in the District of Columbia has proven that a board appointed by Federal judges is not apt to be responsive to the wishes of the community. It is claimed that judges, by the very nature of their calling, dissociate themselves from any active interest in municipal affairs, and that therefore they are not in a position to select those citizens who are best qualified for the important and responsible duties of members of the Board of Education. We believe that there is a measure of truth in this statement. Aside from this consideration, however, it is our opinion that judicial officers should not be charged with administrative duties, and for this reason, if for no other, the method of appointment should be changed.

An elective board has been agitated during the last few years. In fact, a bill, known as the Gasque bill (H. R. 58), providing for the establishment of such a board was submitted in the Sixth-ninth Congress, first session, and extensive hearings were held thereon by the subcommittee on Elective Franchise and Education of the Committee on the District of Columbia. Elective boards, composed for the most part of members elected at large, are in control of the school affairs of a great majority of the cities in this country to-day. However, there is a tendency among the larger cities toward the adoption of the short ballot, which results in placing the responsibility for the conduct of a municipality's affairs in a few elective officials who make all appointments, including members of the

school board. Regardless of the merits of an elective school board, the Bureau of Efficiency feels that the matter of the enfranchisement of the citizens of the District of Columbia is one wholly outside the scope of this investigation, for it is believed that any decision by Congress in the matter of an elective board of education would only follow the granting of the franchise in the District of Columbia.

The question then arises as to whether there is available any other method of appointment of the members of the board of education in the District of Columbia which would meet the objections to the present method. We believe such a method is appointment by the President of the United States by and with the advice and consent of the Senate. Appointments of school board members made in such a manner will have received the consideration not only of the President but also of the members of the Congressional Committees on the District of Columbia, who, by reason of their responsibility for recommending legislation to Congress in matters affecting the District of Columbia, are in close touch with the community and its needs.

In conclusion, therefore, it is recommended that:

1. The annual estimates of appropriations of the Board of Education of the District of Columbia should be transmitted to the Bureau of the Budget by the commissioners with their estimates accompanied by such recommendations as they may deem proper.

2. Land for school sites and school playgrounds should be purchased by the Commissioners of the District of Columbia on recommendation of the Board of Education.

3. The Commissioners of the District of Columbia should be charged with the construction of all school buildings after consultation with the Board of Education and upon its approval of the plans and specifications.

4. The members of the Board of Education of the District of Columbia should be appointed by the President of the United States by and with the advice and consent of the Senate.

PART II

ORGANIZATION AND ADMINISTRATION

The Board of Education.

The Board of Education determines the policies of the school system and elects the superintendent of schools. It consists of nine members appointed under the law by the judges of the Supreme Court of the District of Columbia.

For the purpose of organization the board has established the following officers and standing committees of three members each:

President of the board.

Vice president of the board.

Secretary of the board.

Standing committees:

- (1) Finance; (2) legislation; (3) rules; (4) personnel; (5) buildings, grounds, and equipment; (6) athletics and playgrounds; (7) community use of buildings; (8) complaints and appeals.

The president and vice president, who are elected annually at the board's first meeting in July, must be members of the board, while the secretary, who is not a member of the board but whose position is established by law, is elected by the board and continues in service during good behavior and efficiency.

The duties of the officers and standing committees are as follows:

The president of the board presides at the meetings of the board and appoints all committees. The members of the standing committees are designated by the president within 10 days after his election and continue until their successors are appointed. Special committees are appointed as the occasion requires, and unless otherwise ordered they cease to exist upon the performance of the special duty to which they are assigned. The president is *ex officio* a member of all committees and is privileged to vote at all meetings of committees.

The vice president of the board acts as, and performs the duties of, president in the absence of the latter or at his request.

The secretary of the board is the custodian of all the records of the board; he keeps a journal of its proceedings, certifies all pay rolls and requisitions for supplies and equipment, conducts the general correspondence of the board, and performs such other duties pertaining to his office as are from time to time required of him by the board or its president.

The superintendent of schools has a seat in the board under the law and the right to speak on all matters before the board, but not the right to vote. His duties are described in detail in the next section of this report.

The committee on finance is charged with the consideration of all matters relating to the accounts and financial administration of the school system, including the preparation, after consultation with the superintendent of schools, of the annual estimates for the maintenance of the schools. It is the duty of the committee also to represent the board, with the president, in all such matters before the commissioners, the Bureau of the Budget, and Congress.

The committee on legislation has charge of all legislation affecting the schools other than appropriations. It is the duty of the committee to prepare measures providing for new legislation, and to follow such legislation through Congress.

The committee on rules submits to the board such changes in and amendments to the rules and by-laws as it may from time to time deem necessary, and considers and reports upon such amendments as may be referred to it by the board. The committee is required to submit copies of any proposed changes in the rules and by-laws to each member of the board at least one week before said changes are to be acted upon.

The committee on personnel is charged with general supervision over all matters of policy affecting the employees of the school system. Nominations made by the superintendent of schools for the appointment of candidates to supervisory and administrative positions and recommendations for promotion or reduction of such employees are made to this committee, which transmits them to the board at the next meeting with recommendations as to approval or disapproval.

The committee on buildings, grounds, and equipment is charged with supervision over all matters relating to the physical properties of the schools. All matters coming before the board relating to the selection of sites, the sanitary, heating, lighting, and ventilating equipment of school buildings, plans for the erection, repair, improvement, or furnishing of any school building are referred to this committee. The committee is also required to report from time to time on the condition of the buildings under the control of the board, and to make recommendations for whatever may be required for the convenience, health, and comfort of the pupils, and the preservation of the property.

The committee on athletics and playgrounds is charged with the supervision over all matters relating to military organizations and instruction, athletics, and playgrounds.

The committee on community use of buildings has charge of all matters relating to the use of school buildings and premises by community centers and all organizations outside the schools. It is required to formulate the rules and regulations for the use of public-school buildings or property and to submit such rules and regulations for the approval of the board. All requests for permission to use school property not covered by such rules are referred to this committee for recommendation to the board.

The committee on complaints and appeals receives from the superintendent of schools all complaints and appeals affecting the employees of the board which have not been satisfactorily adjusted. Appeals addressed to the Board of Education are also considered by the committee and transmitted to the board with recommendations.

The reports of committees are required to be in writing and must be signed by all the members who concur therein. Unless otherwise ordered, committees are required to report at the next stated meeting on all matters referred to them by the board.

Meetings of the board are held as follows:

The stated meetings are held on the first and third Wednesdays of each month during the school year at 3.30 o'clock in the afternoon.

Special meetings may be called by the president or in response to a request made by at least three members of the board, and the object of the special meeting must be stated in the call.

All meetings of standing committees are held at the call of their respective chairmen.

The following is the order of business of the board:

1. Calling of roll.
2. Reading of journal.
3. Communications received by the board.
4. Reports of superintendent of schools.
5. Reports of standing committees.
6. Reports of special committees.
7. Unfinished business.
8. New business.
9. Adjournment.

The offices of the Board of Education are located in the Franklin Administration Building. In addition to the secretary, its staff consists of one stenographer, four clerks, and a messenger.

THE EXECUTIVE OFFICES

Introduction.

Separate schools are provided by law for white and colored children in the District of Columbia. Although there is only one Board of Education and one superintendent of schools, the white and colored school systems have separate boards of examiners and are virtually autonomous under their respective first assistant superintendents. However, the entire school system, both white and colored, is served by the same central service establishments, including the office of business manager, the office of superintendent of janitors, the department of school attendance and work permits, and the community center department.

The administrative organization of the public schools of the District of Columbia is composed of the following units:

Office of the superintendent of schools.

Office of the first assistant superintendent (white).

Office of the assistant superintendent (white) in charge of the organization and management of elementary schools.

Office of the assistant superintendent (white) in charge of instruction in elementary schools.

Office of the assistant superintendent (white) in charge of educational research.

Office of the first assistant superintendent (colored).

Office of the assistant superintendent (colored) in charge of elementary schools.

Office of the assistant superintendent (colored) in charge of educational research.

Board of examiners (white).
Board of examiners (colored).
Office of business manager.
Office of superintendent of janitors.
Department of school attendance and work permits.
Office of statistics and publications.
Community-center department.
(See attached organization chart opposite.)

Office of the Superintendent of Schools.

The superintendent of schools is the chief executive officer of the board of education and directs the administration of the school system in accordance with the laws of Congress and the by-laws, rules, and orders of the Board of Education. He is elected by the board for a term of three years, but he may be removed at any time for adequate cause affecting his character and efficiency as superintendent by a majority vote of the board.

As chairman of the boards of examiners the superintendent examines into the fitness of all applicants for positions in the public schools. He nominates all officers and teachers, recommends all promotions, demotions, transfers and dismissals, and reports on the continued fitness of all school employees. Within certain limitations laid down by the rules of the Board of Education the superintendent prescribes the duties and directs the work of all officers, teachers, and others subordinate to him.

The superintendent is charged with the enforcement of the compulsory education laws and the issuance of work permits. He is responsible for preparing complete courses of study to be pursued in the various schools and for submitting them to the Board of Education for approval. He is also required to prepare annually a list of suitable textbooks for submission to the Board of Education.

From time to time the superintendent reports to the Board of Education on the condition of the buildings, books, and all other school property. At the close of the school year he submits a written report to the Board of Education describing the school activities of the year and making necessary recommendations. He also assembles annually for the Board of Education and its finance committee such information relating to the needs of the public-school system as he deems necessary for the preparation of the school estimates.

Office of the First Assistant Superintendent (White).

The first assistant superintendent in charge of white schools is the superintendent's chief deputy in that branch of the school system. In the absence of the superintendent he acts as his deputy in all matters not especially delegated by act of Congress to the superintendent or to the colored first assistant superintendent of schools. He has general direction and supervision over all employees, classes, and schools in which white pupils are taught. He has immediate charge of the supervision of instruction, organization, and management of the white vocational schools, junior high schools, senior high schools, and the Wilson Normal School. The principals of these schools and the heads of departments are immediately responsible for the proper performance of their duties to the first assistant

GENERAL ORGANIZATION - PUBLIC SCHOOLS WASHINGTON, D.C.

AS OF DECEMBER 15, 1927

BOARD OF EDUCATION			
9	BOARD MEMBERS	[No Compensation]	
1	Secretary	CAF-9	\$ 3200
1	Clerk	" 4	1800
1	"	" 2	1440
1/2	"	" "	660
1	Clerk (Operator)	" "	1380
1	"	" 1	1200
1	Messenger	Cu-3	1080
PERSONNEL 6 1/2		PAYROLL \$ 10,760	

BOARD OF EXAMINERS FOR WHITE SCHOOLS		
1	Chief Examiner	\$4300
1	Clerk	CAF-4 1800
PERSONNEL 2		PAYROLL \$6,100

BOARD OF EXAMINERS FOR COLORED SCHOOLS		
1	Chief Examiner (Assistant Superintendent in Charge of Educational Research)	\$1740
1	Clerk	CAF-4 1800
PERSONNEL 1		PAYROLL \$1740

OFFICE OF SUPERINTENDENT OF SCHOOLS		
1	Superintendent	\$10,000
1	Secretary to Superintendent	CAF-9 2000
1	Clerk	" 4 1740
1	"	" 2 1380
PERSONNEL 4		PAYROLL \$15,120

OFFICE OF STATISTICS AND PUBLICATIONS		
1	Clerk	CAF-4 \$1800
1	"	" 2 1380
PERSONNEL 2		PAYROLL \$3,180

FIRST ASSISTANT SUPERINTENDENT FOR WHITE SCHOOLS		
1	First Assistant Superintendent	\$5600
1	Clerk	CAF-3 1560
[SEE CHART B FOR DETAILED ORGANIZATION]		
PERSONNEL 2		PAYROLL \$7,160

FIRST ASSISTANT SUPERINTENDENT FOR COLORED SCHOOLS		
1	First Assistant Superintendent	\$5600
1	Clerk	CAF-3 1500
[SEE CHART C FOR DETAILED ORGANIZATION]		
PERSONNEL 2		PAYROLL \$7,100

ASSISTANT SUPERINTENDENT IN CHARGE OF BUSINESS AFFAIRS		
1	Assistant Superintendent	\$ 4400
1	Chief Accountant	CAF-9 3200
1	Clerk	" 5 1860
1	"	" 4 1740
1	"	" 3 1680
1	"	" 3 1620
1	"	" 2 1500
3	"	" 2 1320
1	Cabinetmaker	Cu-6 1740
PERSONNEL 11		PAYROLL \$21,700

STORE HOUSE		
1	Storekeeper	CAF-5 \$ 2000
1	Ass't Storekeeper	" 2 1440
1	Helper	Cu-3 1260
1	Laborer	" 2 1020
1	"	" " 960
PERSONNEL 5		PAYROLL \$6,680

COMMUNITY CENTER DEPARTMENT		
1	Director	\$ 3300
1	General Secretary	2200
1	" "	2100
7	Community Secretaries	1700
PERSONNEL 10		PAYROLL \$19,300

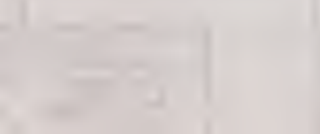
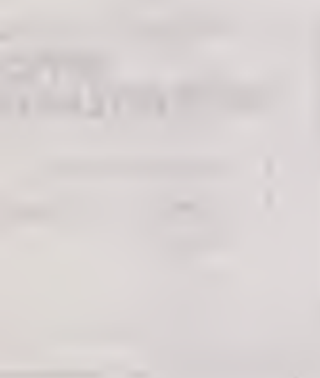
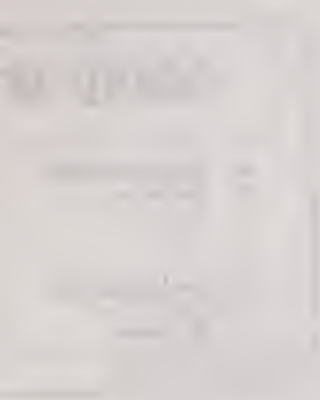
SUPERINTENDENT OF JANITORS		
1	Superintendent	CAF-9 \$ 3200
1	Clerk	" 3 1560
PERSONNEL 2		PAYROLL \$4,760

DEPARTMENT OF SCHOOL ATTENDANCE AND WORK PERMITS		
1	Director	\$ 3500
8	Attendance Officers	1700
1	" "	1600
2	" "	1500
4	Census Enumerators	1600
2	" "	1500
1	Clerk	CAF-3 1500
1	" "	1320
4	" "	1140
PERSONNEL 24		PAYROLL \$38,480

ASSISTANT SUPERINTENDENT IN CHARGE OF WHITE SCHOOLS			
1	Ass't Supt	Cu-0	\$ 2100
ENGINEERS, JANITORS, LABORERS, ETC.			
1		Cu-0	1920
1		Cu-7	1980
2		" "	1800
2		Cu-6	1740
12		" "	1600
9		" "	1620
10		" "	1560
6		" "	1500
1		Cu-5	1500
5		" "	1440
7		" "	1360
19		" "	1320
1		Cu-4	1320
11		" "	1260
19		" "	1200
19		" "	1140
5		Cu-3	1200
13		" "	1140
19		" "	1080
35		" "	1020
5		Cu-2	1140
11		" "	1080
19		" "	1020
33		" "	960
66		" "	900
1		SP-3	1440
1		" "	1320
2		Cu-1	600
REGULAR PERSONNEL 336		PAYROLL \$ 384,540	
CARETAKERS 31		5268	
TOTAL 367		\$ 389,808	

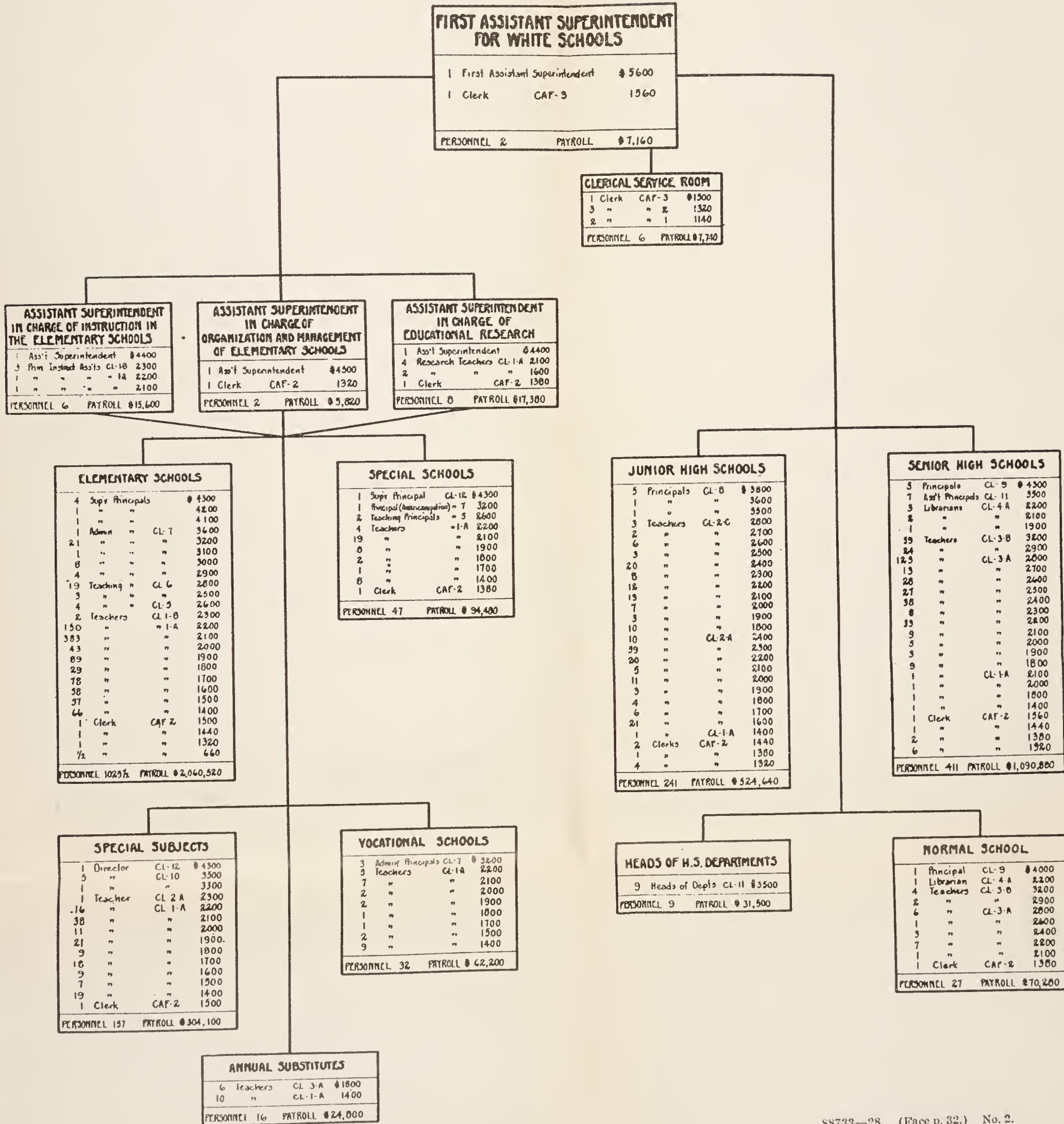
ASSISTANT SUPERINTENDENT IN CHARGE OF COLORED SCHOOLS			
1	Ass't Supt	Cu-0	\$ 1920
ENGINEERS, JANITORS, LABORERS, ETC.			
1		Cu-7	1660
1		" "	1680
1		Cu-6	1680
4		" "	1620
9		" "	1560
5		" "	1500
1		" "	1440
5		" "	1360
6		" "	1320
1		Cu-4	1440
2		" "	1320
11		" "	1200
12		" "	1140
1		Cu-3	1260
4		" "	1200
4		" "	1140
10		" "	1080
8		" "	1020
1		Cu-2	1140
2		" "	1080
11		" "	1020
18		" "	960
29		" "	900
REGULAR PERSONNEL 148		PAYROLL \$ 169,860	
CARETAKERS 21		2724	
TOTAL 169		\$ 172,584	

GENERAL ORGANIZATION OF THE



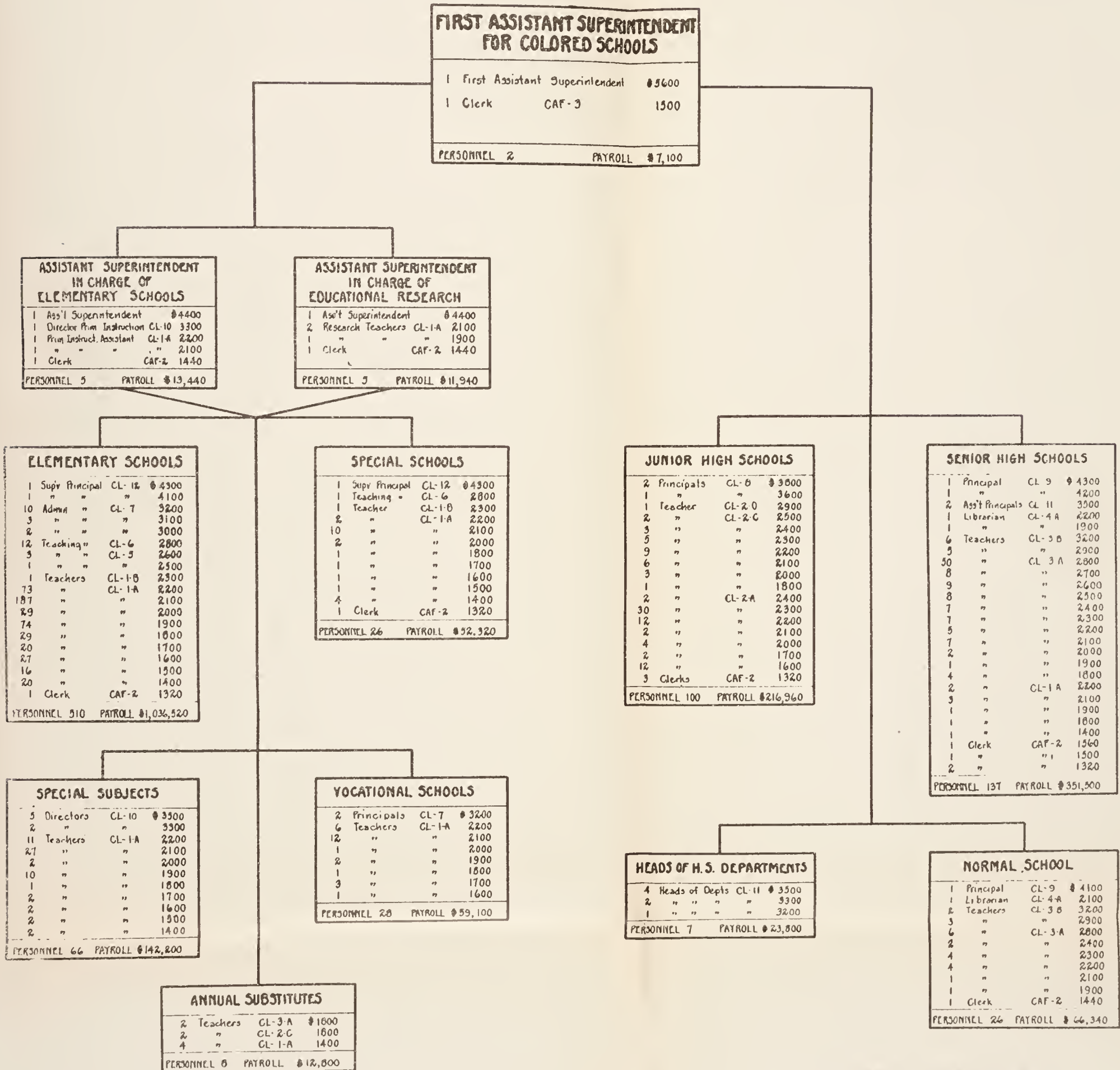
ORGANIZATION OF WHITE PUBLIC SCHOOLS WASHINGTON, D.C.

AS OF DECEMBER 15, 1927



ORGANIZATION OF COLORED PUBLIC SCHOOLS WASHINGTON, D.C.

AS OF DECEMBER 15, 1927



superintendent. The first assistant superintendent also supervises the operations of the clerical pool composed of six stenographers, typists, and clerks, who serve all offices in the Franklin Administration Building.

Office of the Assistant Superintendent (White) in Charge of the Organization and Management of Elementary Schools.

This assistant superintendent is charged with the general direction and supervision of the organization and management of the white elementary schools from the kindergarten through the eighth grade. He supervises instruction only in grades 7 and 8. He also has supervision over the activities of the directors of special subjects, and the supervising principals of the white divisions are immediately responsible to him for the proper performance of their duties.

Office of Assistant Superintendent (White) in Charge of Instruction in Elementary Schools.

This assistant superintendent is responsible for the supervision of instruction in kindergartens and the grades from 1 to 6, and also for the direction of instruction in the demonstration schools. She has five assistants who are specially qualified by training and experience for the work of inspection and instruction of teachers. These assistants visit teachers in their classrooms at least once a month and observe the quality of their teaching. As occasion requires they take charge of classes and give demonstration lessons. Detailed records are kept of each visit and written reports made to both teachers and principals.

All the teachers of each grade from 1 to 6 are called together at regular intervals to discuss problems of general interest. These conferences are supplemented by group meetings for the instruction of teachers who require assistance in some particular subject or method.

Office of Assistant Superintendent (White) in Charge of Educational Research.

The assistant superintendent in charge of educational research supervises the administration of intelligence and achievement tests and acts as advisory officer in the classification of pupils in accordance with their mental measurements. She is also advisory officer in connection with adjustments relating to problems of curricula and administration.

During the past year (1926-27) the initial testing program was practically completed. This program provided for group testing of each child in the elementary schools by at least two intelligence tests, followed in the first grade by a reading test and in grades 3 to 8 by a battery of school-achievement tests. The fundamental purpose of these tests is to enable principals to classify their pupils into homogenous groups according to intelligence so that they may secure the greatest possible benefit from school attendance. The groups are known as X, Y, Z, corresponding to above average, average, and below average. Both the courses of study and the methods of teaching are adjusted to the particular group in order that the children may progress in their studies at the highest rate of which they are capable.

The group tests described above are supplemented by individual studies of problem children. On the basis of these studies some children are recommended for exclusion from school as noneducable, and others for transfer to a typical school for subnormal pupils or to opportunity classes for retarded pupils. Neurotic children suffering from emotional and volitional instability rather than mental inferiority are referred to private psychiatrists for adjustment of their difficulties.

The staff of the research department consists of six full-time research teachers and one full-time clerk. In addition, 26 supplementary teachers devoted one-half their time during the school year 1926-27 to giving and scoring tests, tabulating test results, and interpreting them to principals and teachers. With their assistance it has been possible to complete the initial intelligence survey and to reorganize the schools on the X-Y-Z plan. The test results have also materially assisted the supplementary teachers in their coaching work as they are now in a position to diagnose intelligently the individual child's difficulty and to prescribe the proper treatment.

There is a considerable amount of clerical work involved in scoring intelligence tests and in preparing classification sheets and posting individual records. The classification sheets are in the form of tabulations showing for each class the names of the children, their test scores, their mental and chronological ages, and their intelligence quotients. The individual records are designed to accumulate the test results for each child throughout its school career. Since only one clerk was available on the staff of the research department, much of this clerical work had to be done by the supplementary teachers. Only the intelligence tests are scored by the supplementary teachers. The achievement tests are scored by the regular teachers since they are merely standardized tests which to some extent take the place of the old-style essay examinations.

Office of the First Assistant Superintendent (Colored).

The first assistant superintendent in charge of colored schools is the superintendent's chief deputy in that branch of the school system. He has general direction and supervision over all employees, classes, and schools in which colored pupils are taught. He has immediate charge of the supervision of instruction, organization, and management of the colored vocational schools, junior high schools, senior high schools, and the Miner Normal School. The principals of these schools and the heads of departments are immediately responsible for the proper performance of their duties to the first assistant superintendent.

Office of the Assistant Superintendent (Colored) in Charge of Elementary Schools.

This assistant superintendent is charged with the general direction and supervision of instruction, organization, and management of the elementary schools from the kindergarten through the eighth grade. He supervises the work of the directors of special subjects, and the supervising principals of the colored divisions are immediately responsible to him for the proper performance of their duties.

A difference in organization should be noted here between the white and the colored systems. The colored system has one less

assistant superintendent than the white. In the white system the supervision of the elementary schools is divided between the two assistant superintendents, the one being responsible for organization and management and the other for instruction. In the colored system one assistant superintendent is charged with the entire responsibility for the supervision of the elementary schools. However, he has a director of primary instruction with two assistants who are directly responsible for the supervision of instruction in the grades from one to four.

Office of Assistant Superintendent (Colored) in Charge of Educational Research.

The duties of the colored assistant superintendent in charge of educational research are similar to those of the corresponding white assistant superintendent. Both are charged with the direction of educational research for their respective systems, and although their problems differ in degree they are the same in kind. The general plan of their work has been the same, with minor differences of emphasis. Both have practically completed their general surveys of intelligence and achievement, and in addition have performed a considerable amount of clinical work with problem children. The assistant superintendent (colored) has not attempted to maintain cumulative records of the scores of individual children. On the other hand, he has developed a plan of procedure for coaching work, and has undertaken the standardization of educational-guidance programs in the junior and senior high schools.

The staff of the research department for the colored schools consists of three full-time research teachers and one full-time clerk. In addition, six supplementary teachers and one normal-school teacher devoted one-half their time during the school year 1926-27 to the administration of the test program and to the interpretation of results to principals and teachers.

The assistant superintendent in charge of educational research is also chief examiner of the board of examiners for the colored schools. Further details concerning this feature of his work will be found under the heading "Boards of examiners."

Boards of Examiners.

There are two separate boards of examiners, one for white and one for colored schools. Since there is no difference in the organization and functions of the two boards they will be described under one heading.

Each board of examiners consists of the superintendent of schools as chairman and not less than four nor more than six members of the supervisory or teaching staff of the schools. The Board of Education on the recommendation of the superintendent of schools designates annually the supervisors or teachers for membership on these boards. The chief examiner of the board of examiners for white schools, who is appointed for an indefinite term, is the chief administrative officer of the board and acts as its secretary. The colored assistant superintendent in charge of educational research is chief examiner of the board of examiners for colored schools.

The boards of examiners hold examinations of applicants for positions as teachers, librarians, and clerks, for promotion in salary

from Group A to Group B of any class, for promotion from a lower to a higher salary class, and for promotion or appointment to elementary school principalships. In conducting examinations the respective boards request the assistance of such directors, heads of departments, principals, and teachers as they deem necessary. The marking of both written and oral examinations is made on a scale and in accordance with a plan agreed upon in advance by the respective boards. A permanent record is kept of the standing of each candidate in each subject.

In reporting the results of examinations, the respective boards submit to the Board of Education through the superintendent of schools the names of the successful candidates arranged in order of rank with a statement showing the total mark of each candidate. After the list has been approved by the Board of Education, teachers' licenses valid for two years are issued to the successful candidates. The respective boards of examiners prepare an eligible list consisting of the names of all persons who have successfully passed examinations in the same subject and whose eligibility has not expired. The names of the successful candidates are arranged in order of rank in accordance with the total mark of each candidate irrespective of the date of the examination. Appointments are made from these eligible lists in the order of their rank as vacancies occur in various positions. The positions of teaching principal and administrative principal in the elementary schools are exceptions to the general procedure outlined above with reference to the preparation of eligible lists and the making of appointments. In preparing lists of eligibles for these positions the boards of examiners rank the names of successful candidates in groups of five, and the superintendent recommends to the Board of Education the appointment of the person within the highest group who in his opinion is best fitted for the existing vacancy. Recommendations for the appointment of supervisory and administrative positions, including directors, heads of departments, high school principals, supervising principals, and assistant superintendents, are made by the superintendent of schools direct to the committee on personnel of the Board of Education.

The respective boards of examiners determine the amount of longevity placement to which teachers with experience in accredited schools are entitled. They also determine the amount of teaching experience to which teachers and other employees are entitled under the provisions of the retirement act.

Office of the Business Manager.

The business manager, who ranks as an assistant superintendent, has supervision over the business affairs of the school system. He directs the procurement and distribution of supplies and equipment in accordance with the policies adopted by the educational officers, and supervises the preparation of pay rolls, the auditing of vouchers, and the maintenance of fiscal accounts and property records. The various financial statements and reports of the system are prepared under his supervision, and he assists the finance committee of the board and the superintendent in the preparation of the school budget. He has charge of the repair and alteration of buildings and the installation, repair, and replacement of all furniture and equipment.

He certifies all requisitions for supplies and equipment and for repairs to buildings and approves all vouchers for payment.¹

The personnel of the office of business manager consists of a chief accountant, a bookkeeper, a pay-roll clerk, two requisition clerks, a personnel clerk, and three stenographers. The warehouse force consists of a storekeeper, an assistant storekeeper, a receiving clerk, two requisition fillers, and two laborers. A cabinetmaker who repairs furniture in the schools is also attached to this office.

Office of Superintendent of Janitors.

The superintendent of janitors, under the direction of the superintendent of schools, is responsible for the protection, cleaning, heating, and ventilating of all public-school buildings in the District of Columbia, and the care and cleaning of school grounds. He is also charged with the inspection of the buildings and their heating and ventilating equipment, and the moving of furniture and other school equipment. He personally supervises the selection, assignment, and instruction of all employees of the janitorial and custodial staff, and through his assistants supervises their work. Recommendations for personnel changes, including appointments, transfers, promotions, demotions, and terminations, are submitted by the superintendent of janitors to the Board of Education through the assistant superintendents and the superintendent of schools.

The superintendent of janitors has two assistants, one for the colored and one for the white schools. The superintendent and his assistants make their headquarters at Franklin School, where they have an office and the services of a part-time clerk. The personnel of the janitorial force consists of 482 regular employees of various grades and classes, including janitors, engineers, firemen, coal passers, electricians, laborers, matrons, watchmen, and gardeners. In addition, there are 21 caretakers who are employed part time to clean and heat special rooms and portable buildings. On the regular force there are 31 employees who receive in addition to their annual salary extra compensation for the care of special rooms and portables.

Department of School Attendance and Work Permits.

The compulsory school attendance law, passed by Congress February 4, 1925, centralizes in the department of school attendance and work permits the responsibility for the enforcement of school attendance and child-labor regulations, and the maintenance of a continuous school census. There are consequently three divisions in the department, as follows: School census, school attendance, and child labor.

Every year a census is taken of all persons between the ages of 3 and 18 years residing either temporarily or permanently within the District of Columbia. This information affords the basis for enforcement of both school attendance and child-labor requirements. The annual census begins on July 1, when the entire field force of the department is assigned to canvassing the homes of the city for children between the ages of 3 and 18. The information collected by the enumerators is transcribed by clerks to individual card records,

¹ Under the law the purchasing agent of the District of Columbia makes all school purchases, the District repair shop repairs all school buildings, and the disbursing officer of the District of Columbia makes all school disbursements.

showing for each child its name, address, race, sex, date and place of birth, the school attended, and the names of its parents. For the purpose of keeping the census material current between annual enumerations the law requires the principal of every public, private, or parochial school to report every child under 18 years of age who enrolls in or withdraws from his school. All changes of address of school children are also reported regularly, and proper changes noted on the child's census card. In the fall of each year every public, private, and parochial school is required to furnish a complete enrollment of its children, which is later checked against the census records.

Regular attendance at a public, private, or parochial school is required by law of all children between the ages of 7 and 16 years, except those between the ages of 14 and 16 who have completed the eighth grade and are regularly and legally employed. Special provision is also made for those mentally and physically unfit to profit from school attendance. Every principal must report to the attendance department the name and address of any child enrolled in his school who has been absent two full-day sessions or four one-half day sessions or more in any school month, together with the reason for the absence as far as known. These reports are assigned to attendance officers for investigation. They visit the home in order to ascertain the cause of the absence, and to return the child to school if the absence is illegal. When the officers visit a home where the absence, although illegal, is due to conditions and circumstances which could be remedied through social treatment, they report the matter to the proper social agency for cooperation in working out a plan of adjustment. In cases of continued irregular attendance the parent or guardian is summoned to bring the child for an informal hearing before the director of the department. If illegal absences continue after the hearing or the summons to appear before the director is ignored, the case is referred to the juvenile court which has jurisdiction in all cases arising under the act.

The enforcement of the provisions of the child labor law is another function of the department of school attendance and work permits. This law forbids the employment of children under 14 years of age except in certain street trades, as noted below. It also provides that any child between the ages of 14 and 16 years who has completed the eighth grade and is in sound health may be excused from further attendance at school if he is lawfully and regularly employed. Work permits are issued to such children after they have proved their age and school attendance and a doctor has certified them as physically fit for the contemplated work. Employers of minors under 16 years of age are required to post work permits for such persons, and they are forbidden to employ them more than 8 hours in any one day or before 6 a. m. or after 7 p. m. or in excess of 48 hours in a week. Permits are also issued for before and after school work and Saturday and holiday employment to children between 14 and 16 years of age who have not completed the eighth grade. During the summer vacation the grade requirement is waived, making it possible for a 14-year-old child to work full time on a vacation certificate, even though he has not completed the eighth grade. Permits and badges are issued for street selling outside school hours for boys between the ages of 10 and 16 years, but

no child to whom such a permit and badge is issued may engage in selling before 6 o'clock in the morning or after 10 o'clock in the evening.

The staff of the department of school attendance and work permits consists of the director, 12 attendance officers, 5 census enumerators, 1 child-labor clerk, 1 stenographer, and 4 file and record clerks. During the summer the attendance officers serve as census enumerators. The department has no child-labor inspectors, although the child labor law of 1908 authorized the commissioners to appoint two inspectors to enforce its provisions. For many years two police officers were detailed to this work, but in June, 1925, when the present attendance department was established they were withdrawn.

Office of Statistics and Publications.

The office of statistics and publications, as its name implies, has two functions, namely, (1) to compile certain regular statistical reports with reference to teachers, pupils, and buildings, and to prepare special reports from time to time as requested by school officials; and (2) to estimate the cost of printing jobs, to prepare copy for the printer, and to read and correct proof.

The school year is divided into six report periods, three in the first and three in the second semester. At the end of each report period each teacher is required to prepare from her record book an attendance report. The building principal combines the teachers' reports into a consolidated report for her building or buildings, and sends them to the office of statistics and publications. On the last day of October of each year all teachers are required to submit a report of the ages and nationalities of their pupils. From these reports the office compiles statistical statements showing the number and distribution of teachers and of pupils, and a series of attendance reports showing for each class of school and for the entire system the whole number enrolled, the average number belonging, and the average attendance. The special reports referred to above are similar in character to the regular reports, being largely compilations of figures without interpretation of any kind.

Printing is paid for out of the contingent and miscellaneous appropriation, and a board of apportionment allots annually the amount for this purpose. There are forms committees for elementary schools and for high schools which pass upon all suggested changes in forms. The office of statistics and publications acts as a clearing house between the schools and the Government Printing Office for all printed matter, including forms and pamphlets of various kinds.

The staff of the office of statistics and publication consists of two statistical clerks.

Community-Center Department.

The community-center department is responsible for the promotion of neighborhood organization throughout the District of Columbia, and supervises the use of school buildings as community forums and civic centers after regular school hours. During the past year 19 schools were used as centers for a wide variety of activities, including physical training, instrumental and vocal music, dramatics, rhythmic and social dancing, classes in hand work, and group meetings of many kinds, both social and educational.

Each center is governed by an advisory committee composed of the school principal, representatives of the local citizens' association, and the local parent-teachers' association, and two members elected at large from the community. The chairman of the advisory committees of the white centers together with four members appointed at large by the superintendent constitute the Central advisory council, and the chairman of the advisory committees of the colored centers together with two members appointed at large constitute the Dunbar advisory council. The two councils meeting together make up the community center council for the whole city. These councils act in an advisory capacity to the director of the community center department and assist her in the formulation of policies and the planning of general activities.

The staff of the department consists of the following full-time employees: The director, two general secretaries, and seven community secretaries. In addition there are two clerks, one mechanic, and a number of part-time secretaries, assistant secretaries, supervisors, teachers, and leaders, who are paid from the community-center fund.

THE PUBLIC SCHOOLS

Introduction.

As an introduction to our discussion of the schools of the District of Columbia a brief statement of their number and distribution is given below. The general plan of organization which has been adopted for the District schools is the so-called 6-3-3 plan with six elementary grades, three junior high-school grades, and three senior high-school grades. There are still a number of seventh and eighth grades in elementary schools but they will gradually be transferred as additional junior high schools are constructed.

Kind of school	Number of buildings		
	White	Colored	Total
Elementary schools	94	39	133
Special schools ¹	4	1	5
Vocational schools	2	4	6
Junior high schools	8	4	12
Senior high schools	5	2	7
Normal schools	1	1	2
Total	116	49	165

¹ Special classes in regular school buildings are not included in this total.

² Includes the Lenox-French Vocational School as two separate buildings.

³ Includes as a separate building the Brightwood annex to the Macfarland Junior High School.

⁴ Includes as a separate building the Simmons annex to the Shaw Junior High School.

Elementary Schools.

For administrative purposes the elementary schools of the District of Columbia are organized into 13 divisions, the white schools including divisions 1 to 9, and the colored schools divisions 10 to 13. At the present time 133 buildings are used to house elementary-school pupils, and in addition 64 portables and 8 rented buildings are still in use on account of congested conditions in certain sections of the city. The regular schools vary in size from 1-room frame buildings to modern 20-room brick structures, but the 8-room neighborhood school is still the prevailing type.

The local educational officers responsible for the organization, management, and supervision of the elementary schools are the supervising principals. There are seven white and three colored supervising principals, who are assigned as follows: White—one each to divisions 1, 3, 5, 6, 7, and 9, and one to the three divisions 2, 4, and 8; colored—one each to divisions 12 and 13, and one to the two divisions 10 and 11. The supervising principals of divisions 9 and 12 are charged with the supervision of all special activities in the elementary schools, including atypical, ungraded, health, open-air, and Americanization schools and classes, and they also supervise night schools and vacation schools.

Each supervising principal has authority over all employees, classes, and schools of his division. He organizes the classes within the several school buildings, classifies the pupils in the various grades, and assigns teachers to classes. As often as practicable he visits each school for the purpose of unifying and standardizing classroom instruction, and from time to time he holds meetings and conferences with teachers. He also keeps records of the attendance and punctuality of employees, provides substitutes for teachers who are absent, and at the end of the school year rates the efficiency of each one of the employees under his jurisdiction. In all matters pertaining to the elementary schools in his division the supervising principal is the channel of communication between the schools and headquarters. Rules and orders of the Board of Education and the superintendent are transmitted by the supervising principal to the schools, and he is held responsible for the impartial enforcement of all such regulations and instructions. School reports of various kinds and requisitions for textbooks, supplies, equipment, building repairs, etc., flow through his office to the superintendent. Two of the supervising principals are assigned full-time clerks to assist them with their office work, one has a clerk four days a week, and the other seven have clerks only three days a week.

There are two classes of elementary-school principals, namely, administrative and teaching, and on December 15, 1927, the principals were rather evenly divided between the two classes, as follows: 49 administrative principals and 42 teaching principals. Administrative principals are relieved of the duty of teaching regularly, while teaching principals are assigned full-time classes. There are two classes of teaching principals based upon the number of rooms under their supervision as follows: 4 to 5 rooms and 8 to 15 rooms. The large majority of teaching principals are responsible for eight rooms, and therefore fall in the latter class. The smallest school unit justifying the appointment of an administrative principal is 16 rooms. Only the newer school buildings have as many as 16 rooms, and therefore the majority of the administrative principals are responsible for the supervision of two buildings. In some cases the two buildings are on the same square; in other cases they are separated by half a mile or more.

Principals are the responsible administrative heads of their respective schools and as such have authority over teachers, pupils, and janitors in the buildings assigned to them. They are required to observe the rules and orders of the Board of Education and the directions of administrative and supervisory officers. Administra-

tive principals enforce established courses of study and supervise instruction. All principals are responsible for the cleanliness and sanitation of their respective buildings, and they share with the janitors the responsibility for the care and safety of school property.

Principals are also required to keep certain records concerning teachers and pupils and to submit regular reports to the supervising principals. No clerical assistance, however, is provided in any of the elementary schools for this purpose.

With the single exception of the Park View Platoon School, the elementary schools of the District are organized on the traditional basis of one teacher to each classroom. Kindergartens with enrollments of 30 or more pupils are usually assigned two teachers, one of whom is designated principal kindergartner, and the other assistant kindergartner. Each grade teacher has personal charge of her class during the entire school day. She prepares her own program, allotting time to the various subjects in the curriculum as required by the official time schedule. Printed courses of study are furnished teachers for guidance in planning their lessons. Each teacher is required to keep in the official book provided therefor a record of the attendance of pupils and a record of the proficiency of pupils in their studies.

The regular school day is from 9 to 3 with one hour for lunch, between 12 and 1, and recesses of 15 minutes in the morning and 10 minutes in the afternoon. Kindergarten hours are from 9 to 12, with a few exceptions in congested sections where afternoon sessions must be held from 1 to 4. There are also a number of part-time classes in grades 1 and 2 which alternate between morning and afternoon sessions of three and one-half hours per day (9 to 12.30 and 12.30 to 4). All these teachers, however, are required to work five hours per day five days per week.

On December 15, 1927, there were 1,441 elementary-school teachers, including 42 teaching principals, distributed as follows: White 952 and colored 489. Of this total 195 were kindergartners, 125 of whom were white and 70 colored.

Instruction by the regular grade teachers in certain subjects is supplemented by periodical visits of itinerant special teachers to the classrooms. These subjects are art, music, physical training, nature study, visual education, and penmanship. The teachers of art, music, and physical training visit all classes from the first to the eighth grades on an average of once every three weeks. Nature-study teachers visit only the upper grades and their visits are somewhat more frequent. During her visit the special teacher assumes charge of the class and teaches a lesson of 30, 40, or at most 50 minutes. She is in no sense a supervisor, although she is expected to interpret to the regular teacher the course of study and to demonstrate the most approved methods of teaching the subject. The regular teacher, however, is primarily responsible for the teaching of the particular subject for the full time required by the time schedule, which with a single exception is not less than 60 minutes a week.

Domestic art (sewing), domestic science (housekeeping and cooking), and manual training are taught to sixth, seventh, and eighth grade pupils at special centers. In these cases the pupils go to the teacher instead of the teacher going to the pupil. Most of the special centers are located in regular school buildings, and in some cases

children must travel considerable distances to reach them. The shop subjects differ from the other special subjects because the regular teacher assumes no responsibility for their teaching. Special center programs are usually arranged so that both boys and girls do not leave their classroom at the same time, and therefore the regular teacher is seldom left without at least part of her class. Sewing is taught by itinerant teachers to third, fourth, and fifth grade girls in the home classrooms, while the regular teacher keeps the boys occupied with some quiet study.

The supervisory officers responsible for instruction in the special subjects are called directors. Both the white and the colored schools have six directors of special subjects, but they are somewhat differently distributed. The white directors are as follows: Domestic art, domestic science, manual training, drawing, music, and physical training. The colored directors are as follows: Household arts (combining domestic art and domestic science), manual training, drawing, music, physical training, and nature study. In the white schools nature study is in charge of one of the staff teachers, who is relieved of teaching to supervise the work of her associates. The directors of special subjects are responsible for the supervision of the methods of teaching in their respective subjects and for the interpretation of courses of study to teachers in elementary schools and junior high schools.

On December 15, 1927, there were 12 directors and 208 special teachers, of whom 149 were white and 59 colored. The distribution of teachers by subjects was as follows: Domestic art 46, domestic science 41, manual training 32, music 24, physical training 17, nature study 25, drawing 18, visual education 4, and penmanship 1.

In the discussion of the research departments reference was made to the supplementary teachers. They are really teachers who are relieved of regular classroom instruction for a variety of purposes as follows: To coach pupils who have fallen behind in their studies, to administer standardized intelligence and achievement tests and to organize the results, to relieve teaching principals in the larger buildings, and to substitute for teaching principals and teachers who must absent themselves from their classes in line of duty. On December 15, 1927, there were 32 supplementary teachers of whom 29 were white and 3 colored.

Special Schools.

The ninth division of the white schools and the twelfth division of the colored schools are really departments of special schools and activities. These activities include the following: Atypical classes for mentally subnormal children, ungraded classes for delinquent and truant boys and girls, open window classes for anaemic and underweight children, Americanization classes for foreign born children and adults, health schools for tubercular children, and individual instruction in the correction and improvement of defective speech. Five buildings, including two health schools, are used to house special classes, but most of this work is conducted in regular elementary school buildings.² Night schools (elementary, high,

² Four rented buildings, the house of detention, and the Cook Temporary Home are also used to house atypical and ungraded classes.

and vocational) and vacation schools (elementary, junior, and senior high) are also included among the special activities supervised by the supervising principals of the ninth and the twelfth divisions. The supervising principal of the twelfth division is also responsible for promoting visual instruction in colored elementary schools, but in the white schools the teacher in charge of this activity reports to an assistant superintendent of schools. On December 15, 1927, there were 68 full-time day school teachers of special classes, including three teaching principals, of whom 44 were white and 24 colored. There is also one administrative principal in the ninth division, who supervises the Americanization school.

Vocational Schools.

There are 5 vocational schools in the District, 1 for white boys, 1 for white girls, 1 for white boys and girls, 1 for colored boys, and 1 for colored girls. The aim of these schools is to prepare for certain trades children who plan to leave school for work when they have completed the elementary course or reached the compulsory school-age limit of 16 years. These schools are of elementary rank and admit children who are 14 years of age and have completed the sixth grade. Most of the full courses cover two years, half of the time being devoted to academic subjects and the other half to shop practice. Among the trades taught are printing, plumbing, auto repair, sheet metal, electrical, carpentry, bricklaying, and machine shop for boys, and dressmaking, cafeteria management, millinery, and arcraft for girls. On December 15, 1927, there were 55 teachers in the vocational schools, 29 of whom were white and 26 colored.

Junior High Schools.

As previously stated, the general plan of organization adopted for the schools of the District is the 6-3-3 plan, with six grades in the elementary schools and three each in the junior and senior high schools. The organization is still incomplete, but with the completion of the five-year building program all seventh, eighth, and ninth grade pupils, with a few exceptions, will be housed in junior high schools. At the present time there are 10 junior high schools, 7 white and 3 colored. Two new junior high schools, 1 white and 1 colored, are under construction, and 4 more white junior high schools are provided for in the five-year building program.

Three general courses are offered by the junior high schools, namely, academic, commercial, and practical arts. Most of them offer all three courses, but since the junior high schools (with one exception) are community schools, the character of a school will vary to some extent according to the nature of the community which it serves. Some of the junior high schools are therefore predominantly academic and emphasize preparation for professional careers, while others are predominantly vocational and emphasize training for careers in the trades and in business.

The school day in the junior high schools begins at 9 o'clock in the morning and closes at 3 o'clock in the afternoon. In order to permit pupils to return home for luncheon, the lunch period is 45 minutes in length. There are seven recitation periods of 43 minutes each in the school day. Definite periods are also set aside for opening exercises in both morning and afternoon sessions, and one of the regular

periods is given over each day for assemblies and other extra-curricular activities.

The junior high schools are organized on the basis of limited departmentalization in grade seven, with a gradual increase in the amount of departmentalization through the eighth grade and the ninth grade, where the departmental work is similar to that of the senior high school. Limited departmentalization in grade seven is achieved by requiring academic teachers to teach two subjects to the same class of pupils, so that no pupil has more than three teachers of academic subjects. Moreover, the home teacher of each class is usually one of these teachers and she also has charge of the extra-curricular activities of her pupils, including club meetings and educational and vocational guidance. The standard established by the board of education for teachers of academic subjects in junior high schools is 750 pupil periods per week, and for teachers of shop subjects 600 pupil periods per week. On December 15, 1927, there were 321 teachers in the junior high schools, of whom 227 were white and 94 colored. Each junior high school is in charge of a principal who is assigned a full-time clerk.

Senior High Schools.

The five white senior high schools of Washington are organized as general high schools serving particular sections of the city, and two of them, namely, Business and McKinley Technical, also serve the entire city in their special fields. On the other hand, the two colored senior high schools, Dunbar and Armstrong, serve all of Washington, the former specializing in academic and business courses and the latter in technical courses.

The ninth-grade pupils in the senior high schools have been gradually reduced until now they represent about 70 per cent of the total, the other 30 per cent being provided for in junior high schools. In another three or four years most of the ninth-grade pupils will be provided for in junior high schools, and both junior and senior high schools will be organized on a three-year basis.

The school day in the senior high schools is from 9 a. m. to 2.30 p. m. and is divided into six periods of 45 minutes each and a lunch period of 30 minutes. Each high school has at least one lunch period and some have two because the lunchroom facilities will not take care of all the pupils at one time.

The senior high schools of Washington are organized on the departmental basis with the majority of teachers teaching only one subject. The standard established by the board of education for teachers of academic subjects in senior high schools is 700 pupil-periods per week and for teachers of shop subjects 600 pupil-periods per week. On December 15, 1927, there were 510 teachers in the senior high schools, of whom 383 were white and 127 colored. Each senior high school is in charge of a principal, who is assisted by one or two assistant principals, and one to three clerks, the number varying according to the size of the school. One librarian is also assigned to each high school, except Central High School, which on account of its large enrollment has two librarians.

The principals of both junior and senior high schools are assisted in the supervision of particular subjects by heads of departments. Each head of department teaches one class for five periods a week

and the rest of his time is devoted to visiting classes throughout the city for the purpose of unifying and standardizing classroom instruction in his particular subject. There are 16 heads of departments, of whom 9 are white and 7 colored. The white department heads are as follows: Business practice, chemistry and biology, English, history, Latin, mathematics, modern languages, physical training, and physics. The colored department heads are as follows: Business practice, English and history, languages, mathematics, applied science, physical training, and general science.

Normal Schools.

Washington has two normal schools, one for white and one for colored students. These schools prepare their graduates for positions as teachers in the elementary schools. The course was recently increased from two to three years, in accordance with a recommendation of the United States Bureau of Education. On December 15, 1927, there were 47 teachers in the normal schools, of whom 24 were white and 23 colored. Each normal school is in charge of a principal, who is assigned one full-time clerk and a librarian.

RECOMMENDATIONS

In our opinion the plan of organization of the Washington school system is generally satisfactory, and under proper management should adequately serve its purpose of securing an economical and efficient administration of the public schools. The various functions are for the most part logically distributed and clearly defined. We therefore have no radical changes to recommend, but we do feel that several changes in organization and methods should be made in order to secure a more effective operation of the school system.

The following are our recommendations regarding the general organization and administration of the public schools. Recommendations concerning detailed methods will be included in subsequent sections of the report relating to particular departments:

1. The supervision of the white junior high schools should be transferred from the first assistant superintendent to the assistant superintendent in charge of the organization of elementary schools.

2. The authority of the supervising principals should be extended to include the organization of junior high schools in their respective divisions.

3. Each of the supervising principals should be provided with a full-time clerk.

4. The two positions of white and colored directors of kindergartens should be abolished when the present incumbents have retired and their duties transferred, respectively, to the white assistant superintendent in charge of instruction in elementary schools and the colored director of primary instruction.

5. The authority of the colored director of primary instruction should be extended to include supervision of instruction in the fifth and sixth grades.

6. The clerical staff of the departments of research should be increased in order to relieve the research teachers and supplementary teachers of the routine of scoring tests and tabulating the results.

7. The staff of the department of school attendance and work permits should be increased by adding two attendance officers and two child-labor inspectors.

8. An enlarged statistical office should be organized and placed in charge of a trained statistician, and the procurement of printing should be transferred from the office of statistics to the business manager's office.

9. The clerical pool should be transferred from the office of the first assistant superintendent (white) to the office of the business manager.

10. The office of assistant superintendent in charge of buildings and grounds should be created, to which should be transferred the responsibility for all work relating to the repair and alteration of school buildings and equipment and the supervision over the custodial and engineering forces of the school system.

Recommendation No. 1.—The supervision of the white junior high schools should be transferred from the first assistant superintendent to the assistant superintendent in charge of the organization and administration of elementary schools.

The first assistant superintendent (white) is undoubtedly overloaded with the responsibility for supervising the junior and senior high schools and the normal school, in addition to his general administrative duties. On the other hand, the assistant superintendent's load will gradually become lighter as the seventh and eighth grades are transferred to the junior high schools. The assistant superintendent should therefore be able to supervise the junior high schools more intensively than they are supervised by the first assistant at the present time. There are several reasons why the junior high schools require more intensive supervision. In the first place, they lack the traditions of the elementary schools and the senior high schools, and in the second place, their organization and methods are still more or less experimental. The junior high-school principals are laboring valiantly in the solution of their special problems, but they need constant advice and assistance from headquarters. It is also suggested that the principals be called together in conference at more frequent intervals for the discussion of subjects of common interest, such as courses of study, teaching methods, educational and vocational guidance, and extra-curricular activities.

Recommendation No. 2.—The authority of the supervising principals should be extended to include the organization of junior high schools in their respective divisions.

This recommendation is a corollary of recommendation No. 1. At the present time the supervising principals organize the classes in the elementary schools of their respective divisions under the direction of the assistant superintendent in charge of the organization and administration of elementary schools. By extending their authority to include the organization of classes in the junior high schools a closer coordination should be secured between the elementary schools and the junior high schools. Moreover, the junior high schools as organized in Washington are essentially community schools and therefore logically should be organized in the first instance by the supervising principals who are familiar with conditions in their divisions.

Recommendation No. 3.—Each of the supervising principals should be provided with a full-time clerk.

At the present time two of the supervising principals are assigned full-time clerks to assist them with their office work, one has a clerk four days a week, and the other seven have clerks only three days a week. In our opinion each of the supervising principals should be provided with a full-time clerk, and it is therefore recommended that the 1929 appropriations include four clerks for this purpose. As previously pointed out, the supervising principal is the channel of communication between the schools and headquarters, and the amount of clerical work which this function involves is so great that it can not be handled by a part-time clerk. The supervising principal must therefore spend time on routine details which should be devoted to his strictly educational duties.

Recommendation No. 4.—The two positions of white and colored directors of kindergartens should be abolished when the present incumbents retire and their duties transferred respectively to the white assistant superintendent in charge of instruction in elementary schools and the colored director of primary instruction.

For many years the kindergarten was merely an adjunct to the elementary school, and its aims and methods differed sufficiently from those of the grades to justify a separate organization with independent supervision. But now that the kindergarten has become an integral part of the elementary school with common aims and similar methods there is no longer any good reason for this separation. Formerly kindergartners were paid less than elementary-school teachers and worked fewer hours, but now they are paid exactly the same salary and are required to work the same number of hours.

The supervision of instruction in the kindergarten is a logical extension of the function of the white assistant superintendent in charge of elementary instruction and of the colored director of primary instruction. By the addition of a trained kindergartner to each of their staffs they will readily be able to absorb the duties of the kindergarten directors. The centralization of the supervision of instruction in both the kindergarten and the grades in one place should likewise result in better coordination between the two.

Recommendation No. 5.—The authority of the colored director of primary instruction should be extended to include supervision of instruction in the fifth and sixth grades.

At the present time the colored director of primary instruction supervises classroom teaching in grades 1, 2, 3, and 4 of the elementary schools under the direction of an assistant superintendent. No specific provision is made for the inspection and instruction of teachers in grades 5 and 6. As previously stated, grades 7 and 8 are gradually being transferred to junior high schools, where instruction is supervised by directors of special subjects and heads of departments. Formerly a director of intermediate instruction was responsible for the supervision of instruction in grades 5, 6, 7, and 8, but this position has been abolished in both the white and the colored schools. In the white schools an assistant superintendent supervises the instruction in all six grades of the elementary schools, and it is recommended that the colored schools adopt a similar plan by extending the authority of the director of primary instruction to

include the supervision of teachers in grades 5 and 6. It is also suggested that the title of the position be changed to director of elementary instruction. The adoption of this recommendation should result in better coordination between the upper and lower grades of the elementary schools and in the unification and standardization of classroom instruction in all grades.

Recommendation No. 6.—The clerical staff of the departments of research should be increased in order to relieve the research teachers and the supplementary teachers of the routine of scoring mental tests and tabulating the results.

It has already been pointed out that since their organization two years ago the departments of research have completed the mental testing of the children in the elementary schools. The results of the tests have been used by principals as a basis for classifying their pupils into X, Y, Z groups according to their innate abilities. Better instruction has therefore been made possible by the adjustment of methods and courses of study to the individual capacities and needs of the several groups. This program could not have been carried out in two years without using the supplementary teachers as a field force. The administration of mental tests and interpretation of test results seems a logical extension of the function of the supplementary teachers, and there is no doubt that their work with backward and problem pupils has been materially assisted by the better diagnosis of individual cases which the tests have made possible.

On the other hand, both the supplementary teachers and the research teachers have been required to devote an excessive amount of time to the mechanical routine of scoring mental tests and tabulating the results. Much of this work can admittedly be done by statistical clerks, but since no clerks were available the teachers were required to perform the service. At the present time the research departments have only one clerk each, who acts as stenographer, typist, and general office assistant to the assistant superintendent in charge. It is suggested that two more clerks be assigned to the white research department and one to the colored research department for the purpose of scoring tests, tabulating results, and keeping any necessary records. With this assistance the research and supplementary teachers should be able to devote more of their time to the investigation of educational problems and the diagnosis and treatment of backward and problem children.

Recommendation No. 7.—The staff of the department of school attendance and work permits should be increased by adding two attendance officers and two child-labor inspectors.

As previously indicated, the major function of the department of school attendance and work permits is the enforcement of the compulsory school attendance law. The basis for the enforcement of the law is the annual school census supplemented by the reports of teachers concerning the absences of children in their classes. It is the duty of the attendance officers to investigate absences and return the children to school if the absences are illegal. There are 12 attendance officers, 7 serving the white schools and 5 the colored schools. Each attendance officer is assigned all of the schools located in a definite district of the city. In 1926–27 the average load of the

attendance officers was nearly 6,000 children. The total number of cases reported for special investigation was 28,609, or an average of about 60 cases per attendance officer during each week of the school year. These case loads are excessive according to any reasonable standard, and consequently many incomplete cases are left at the end of each year. Nevertheless, our analysis of the census records indicates that the compulsory school attendance law is being well enforced.

Comparison with several other cities in the United States indicates that the load of attendance officers in the District of Columbia is considerably higher than the average. For example, Cleveland and New York have an attendance officer for approximately every 4,000 children. Some cities also have home visitors or visiting teachers in addition to their attendance officers. In Washington the attendance officers perform some of the functions of visiting teachers by serving as a connecting link between the home and the school and bringing about a better understanding between them. They are social workers rather than police officers, and much of their time is devoted to securing the cooperation of community agencies so that bad home conditions may be remedied and irregular attendance prevented in the future. Cases are referred to the juvenile court only as a last resort after every other means of enforcing the law has been exhausted. However, the heavy loads which the attendance officers are carrying at the present time make intensive work difficult, and cases can not always be followed up as promptly as their nature demands. With two additional attendance officers the average load may be reduced with the confident expectation that the services of this department to the schools and the children will be improved.

Attendance officers should also be granted a more liberal allowance for transportation than the two and one-half car tokens per day which the present allotment provides. The district of each attendance officer is so large that it can not be covered adequately without frequent use of street cars and busses. Consequently the officers have been obliged to supplement the meager car-fare allowance out of their own funds or waste valuable time in walking long distances. The prevailing practice in other cities is to reimburse attendance officers for their actual car-fare expenses incurred on official business, and it is suggested that the same plan be followed in Washington.

At the present time the attendance department has no child-labor inspectors on its staff to enforce the provisions of the child-labor law of 1908. This law authorizes the commissioners to appoint two inspectors to enforce its provisions, and for many years two police officers were detailed to this work, but in June, 1925, when the present attendance department was established, they were withdrawn. The attendance officers report such violations as they occasionally come across in their day's work, and these are vigorously prosecuted. But a regular staff of inspectors is required to enforce the provisions of the law relating to the posting of work permits, the prohibition of certain types of employment, the limitations on hours of work, and the regulation of street selling outside of school hours. Some of the provisions of the child-labor law are virtually

a dead letter to-day because inspectors are not provided for the examination of places where children are employed. It is therefore recommended that the department of attendance and work permits be provided with two child-labor inspectors who shall enjoy the same rank and receive the same salary as attendance officers.

Recommendation No. 8.—An enlarged statistical office should be organized and placed in charge of a trained statistician, and the requisition of printing should be transferred from the office of statistics to the business manager's office.

At the present time the staff of the office of statistics consists of two statistical clerks who devote most of their time to the compilation of tables showing the distribution of teachers and pupils. In our opinion this office should be reorganized and placed in charge of a trained statistician, who is qualified to interpret the material he collects and to undertake research problems relating both to the educational and business administration of the school system. The superintendent and his assistants must now spend considerable time each year in the analysis of statistical material which should be performed by the office of statistics. Furthermore, many essential studies have not been made because of the inadequate statistical organization. For example, the school census files contain a wealth of material which has never been used in connection with the selection of sites for new buildings. Questions of school policy should not be settled upon the basis of mere opinion when exact data are available. But the data must be analyzed and interpreted, and for this purpose a statistician with an adequate clerical staff is essential. We therefore recommend three additional positions for the office of statistical as follows: One statistician in grade P-3 (\$3,000-\$3,600), and two statistical clerks, one in CAF-3 (\$1,500-\$1,860) and one in CAF-2 (\$1,320-\$1,680).

The requisition of printing, which is now performed by the office of statistics, should be transferred to the business manager's office because it is essentially a procurement function. In this connection the business manager should keep an index of current forms by title and number and a file containing a sample of each form. The adoption of this recommendation will centralize in one office the responsibility for procurement of all printing and will eliminate the overlapping of functions which now exists between the office of statistics and the business manager's office.

Recommendation No. 9.—The clerical pool should be transferred from the office of the first assistant superintendent (white) to the office of the business manager.

At the present time the first assistant superintendent supervises the operations of the clerical pool at the Franklin administration building, evidently because the office occupied by the clerks is in close proximity to his own office. Since the clerical pool is a general service unit composed of stenographers and clerks serving all the administrative offices, it belongs more logically in the office of the business manager.

Recommendation No. 10.—The office of assistant superintendent in charge of buildings and grounds should be created to which should be transferred the responsibility for all work relating to the repair and alteration of school buildings and equipment and the supervision over the custodial and engineering forces of the school system.

The responsibility for the repair and alteration of school buildings is at present divided between the school officials and the municipal architect. The board of education determines the repair program, and the municipal architect is charged with its execution.

Ordinary repairs and minor alterations are made by the District repair shop, a branch of the municipal architect's office, which maintains an average force of approximately 200 skilled tradesmen and laborers. In case of major alterations, such as the installation of new heating plants or the installation of complete new toilet facilities, plans are prepared by the office of the municipal architect in consultation with the school officials and contracts are left by the commissioners in the same manner as with new building construction.

Under this plan of handling repairs to buildings the requests for particular items originate for the most part with the principals in charge of the various school buildings. Such requests are approved by the supervisory educational officers concerned and finally by the business manager. These approvals are merely a matter of office routine. They do not in any sense constitute a real determination of needs, for they are not based upon an actual inspection of the facilities involved, except in occasional instances, and, moreover, the approving officers are not technically qualified to pass upon such matters, nor do they receive advice from anyone so qualified. On the other hand, the operations of the repair shop extend only to the supervision of the work ordered to be performed by the school authorities, and do not, except for the heating plants, include inspection for the purpose of determining repair needs. An unsystematic and haphazard program of building repairs and alterations naturally results from such methods. (See Part VII.)

It is believed that this condition should be remedied by transferring to the school authorities the responsibility for the execution of the work relating to repairs and alterations of buildings. The direct supervision of this work should be placed in charge of a qualified mechanical engineer or architect of proved administrative ability, who would rank as an assistant superintendent of schools, coordinate with the business manager, to be known as the assistant superintendent in charge of buildings and grounds. Supervision over the custodial and engineering forces of the school system and the work of repair and replacement of furniture and equipment should also be assigned to the proposed office of assistant superintendent in charge of buildings and grounds. Under such a plan of organization all the activities of the school system relating to the operation and maintenance of buildings, grounds, and equipment would be centralized in one technically qualified, responsible school official, who would be in a position to use his combined forces in such a manner as to provide for more economical operation and systematic maintenance. Moreover, the assistant superintendent in charge of buildings and grounds would act as the technical advisor to the superintendent of schools and the Board of Education in all matters coming within his field of activity, and as the coordinator between the office of the municipal architect and the school system.

PART III

THE TEACHING STAFF

Introduction.

Educators are in general agreement that the size of a teaching staff must be determined not merely by the number of pupils enrolled nor by the organization of the pupils into grades and classes, but also by the character of the curriculum and the efficiency of the instruction. Certainly general averages of pupils per teacher for entire school systems are practically worthless because they conceal more than they reveal. Even a single average for elementary schools is of little value unless carefully analyzed into its constituent parts. In nearly all progressive cities there are four distinct groups of teachers in the elementary schools, namely, kindergartners, teachers of the regular grades from 1 to 8, teachers of special classes of handicapped children, and teachers of special subjects. In addition, there are frequently miscellaneous teachers, such as tutor, supplementary, research, and visiting teachers, who teach only part time or do not teach at all. Vocational schools, which are usually of elementary rank, also demand independent consideration. Then there are the junior high schools and senior high schools with peculiar problems of their own requiring individual analysis. Another factor of importance is the type of school organization, whether platoon or non-platoon, whether 8-4, 6-3-3, 9-3, or 6-6. Each of these groups must be studied separately, and when comparisons are made with other cities the several groups must be clearly distinguished.

The following study of the teaching staff in the Washington schools is based, in the first place, upon a detailed analysis of teacher personnel and pupil enrollment as of March 11, 1927. This date was selected in preference to the last day of the semester in June because conditions in March are more representative, since many children leave school during the closing weeks of the school year, and also because the enrollment figures which were gathered from other cities were for late March or early April. The second source of information is a series of four tables covering the past 10 years, which show (1) the number of teachers classified by types of schools, and (2) the enrollment of pupils classified as follows: Whole enrollment, average enrollment or average number belonging, and average attendance.¹ A word of explanation concerning these various enrollment figures and their uses will be given at this point, since we shall have occasion to refer to them frequently in the course of this report. Whole enrollment includes all children who have been on the rolls during a particular period although some may have died or left the

¹ The tables referred to will be found opposite p. 54.

city. "At date" or actual enrollment is the number of children on the rolls as of a certain day. Average enrollment is the arithmetic mean of all the actual daily enrollments, and the average attendance is the arithmetic mean of the number of children present at each school session. The United States Bureau of Education uses only the whole enrollment and the average daily attendance in its biennial statistical report of city school systems, because they are definite figures and therefore comparable for all cities. On the other hand, actual enrollments and average enrollments vary to a considerable extent according to the length of time children are carried on the rolls. In some jurisdictions they are dropped after being absent several days, while in others they are carried indefinitely. Average enrollment is therefore undoubtedly the best figure to use when making comparisons within the same city for purposes of determining teacher needs or building needs, because it represents the number of children for whom accommodations must be provided. Actual enrollments may also be used for this purpose if taken at the same time of year in each case. On the other hand, comparisons between cities must usually be based upon average daily attendance, and this is the figure which is invariably used in computing per capita costs.

EXHIBIT 4

Average number of pupils enrolled in the public schools of the District of Columbia for the period of 10 years ending June 30, 1927

WHITE AND COLORED

School year	Elementary schools					Junior high schools			Senior high schools	Normal schools	Grand total	Increase (+) or decrease (-)
	Kinder-garten ¹	Grades I-VIII ²	Americanization, atypical, ungraded, health, etc.	Vocational schools	Total	Grades VII-VIII	Grade IX	Total				
									Grades IX-XII	Grades XIII-XIV		
1917-18	2,500.0	42,373.5	316.3	130.1	45,319.9				6,248.0	180.3	51,748.2	+1,112.7
1918-19	2,457.2	43,445.8	391.5	50.4	46,344.9				6,379.0	137.0	52,860.9	+3,728.3
1919-20	2,663.3	45,296.0	479.8	85.4	48,524.5	466.1	59.2	525.3	7,359.7	179.7	56,589.2	+2,121.8
1920-21	2,781.0	45,615.0	596.7	108.5	49,101.2	563.5	189.3	752.8	8,635.8	221.2	58,711.0	+263.5
1921-22	2,987.1	43,935.2	634.0	139.5	47,695.8	698.6	353.5	1,052.1	9,899.6	327.0	58,974.5	+3,589.0
1922-23	2,956.3	46,538.3	596.3	169.2	50,260.1	638.9	454.9	1,260.8	10,595.1	447.5	62,563.5	+1,155.4
1923-24	3,148.1	45,230.9	636.3	199.4	49,204.7	2,489.6	1,155.5	3,128.5	10,868.0	517.5	63,718.9	+1,187.4
1924-25	3,231.1	44,742.5	680.0	267.1	48,920.7	3,326.4	1,383.3	4,479.9	10,910.8	594.9	64,906.3	+638.3
1925-26	3,599.7	44,140.5	858.7	418.5	49,017.4	3,733.0	1,463.4	5,116.3	10,710.0	700.9	65,541.6	+4,195.7
1926-27	4,209.6	45,803.8	1,013.5	744.7	51,771.6	4,765.1		6,228.5	11,053.4	686.8	69,740.3	
1917-18	1,602.7	29,655.4	180.7		31,438.8				4,822.0	83.3	36,344.1	+1,331.9
1918-19	1,664.7	30,657.7	235.6		32,558.0				5,055.0	63.0	37,676.0	+1,808.8
1919-20	1,726.9	31,230.7	299.2		33,276.8	295.1	38.2	333.3	5,800.0	74.7	39,484.8	+1,201.0
1920-21	1,796.6	31,255.2	419.8		33,471.6	315.6	145.6	461.2	6,656.9	96.1	40,685.8	-77.9
1921-22	1,938.0	29,866.8	452.6		32,257.4	380.0	274.1	654.1	7,553.5	142.9	40,607.9	+2,232.6
1922-23	1,916.8	31,403.5	433.1		33,753.4	516.4	337.9	854.3	8,030.5	202.3	42,840.5	+463.3
1923-24	1,998.6	30,222.7	477.2		32,698.5	1,853.9	475.8	2,329.7	8,211.6	227.5	43,463.3	+468.3
1924-25	2,047.8	29,505.8	489.6		32,043.2	2,565.2	879.9	3,445.1	8,195.4	243.9	43,981.6	-59.6
1925-26	2,302.4	28,675.5	557.9	71.1	31,606.9	2,825.6	1,127.1	3,952.7	8,031.3	281.1	43,872.0	+2,569.7
1926-27	2,801.0	29,729.7	667.3	350.6	33,548.6	3,277.5	1,140.9	4,418.4	8,228.2	246.5	46,441.7	

WHITE PUPILS

¹ The enrollment in kindergarten practice classes taught by normal school teachers is included in these totals. During 1926-27 the average enrollment in such classes was approximately 80 pupils, 60 white and 20 colored.
² The enrollment in practice classes taught by normal-school teachers and in opportunity classes is included in these totals. During 1926-27 the average enrollment in practice classes was approximately 900 (750 white and 150 colored), and in opportunity classes approximately 730 (689 white and 41 colored).

Average number of pupils enrolled in the public schools of the District of Columbia for the period of 10 years ending June 30, 1927—Continued

COLORED PUPILS

School year	Elementary schools				Junior high schools			Senior high schools	Normal schools	Grand total	Increase (+) or decrease (-)	
	Kinder-garten	Grades I-VIII	Americanization, atypical, ungraded, health, etc.	Vocational schools	Total	Grades VII-VIII	Grade IX	Total	Grades IX-XII			Grades XIII-XIV
1917-18	897.3	12,718.1	135.6	130.1	13,881.1	171.0			1,426.0	97.0	15,404.1	
1918-19	792.5	12,788.1	155.9	50.4	13,786.9				1,324.0	74.0	15,184.9	
1919-20	936.4	14,045.3	180.6	85.4	15,247.7	247.9	21.0	192.0	1,559.7	105.0	17,104.4	
1920-21	984.4	14,359.8	176.9	108.5	15,629.6	318.6	43.7	291.6	1,978.9	125.1	18,025.2	
1921-22	1,049.1	14,068.4	181.4	139.5	15,438.4	289.5	79.4	398.0	2,346.1	184.1	18,366.6	
1922-23	1,039.5	15,134.8	163.2	169.2	16,506.7	635.7	117.0	406.5	2,564.6	245.2	19,723.0	
1923-24	1,149.5	14,998.2	159.1	199.4	16,506.2	761.2	163.1	798.8	2,656.4	294.2	20,255.6	
1924-25	1,183.3	15,236.7	190.4	267.1	16,877.5	907.4	273.6	1,034.8	2,715.4	347.0	20,974.7	
1925-26	1,297.3	15,465.0	300.8	347.4	17,410.5	1,163.6	256.2	1,163.6	2,678.7	419.8	21,672.6	
1926-27	1,408.6	16,074.1	346.2	394.1	18,223.0	1,487.6	322.5	1,810.1	2,825.2	440.3	23,298.6	

EXHIBIT 5

Whole number of pupils enrolled in the public schools of the District of Columbia for the period of 10 years ending June 30, 1927*

WHITE AND COLORED

School year	Elementary schools				Junior high schools			Senior high schools	Normal schools	Grand total	Increase (+) or decrease (-)
	Kindergarten ¹	Grades I-VIII ²	Americanization, atypical, ungraded, health, etc.	Vocational schools	Total	Grade IX	Total				
1917-18	4,089	49,428	424	185	54,126			7,197	213	61,536	+703
1918-19	4,069	50,248	637	82	55,036			7,045	158	62,239	+3,059
1919-20	4,392	50,748	845	103	56,088	81	622	8,389	199	65,298	+1,766
1920-21	4,435	51,307	1,112	140	56,994	190	749	9,081	240	67,064	+2,477
1921-22	4,617	51,893	1,091	171	57,772	334	1,110	10,294	365	69,541	+1,962
1922-23	4,718	52,181	1,219	209	58,327	503	1,415	11,269	492	71,503	+1,070
1923-24	4,981	50,186	1,656	259	57,082	2,756	3,291	11,642	558	72,573	+394
1924-25	5,071	49,243	1,659	341	56,314	1,212	4,483	11,516	654	72,967	+1,896
1925-26	5,659	48,345	1,620	539	56,163	1,412	5,400	11,517	783	74,863	+1,501
1926-27	5,902	49,940	1,796	835	58,473	1,491	5,809	11,348	734	76,364	

WHITE PUPILS

1917-18	2,859	34,667	238		37,764			5,484	97	43,345	+1,006
1918-19	2,992	35,314	416		38,722			5,562	67	44,351	+1,424
1919-20	3,067	35,118	605		38,790	327	376	6,522	87	45,775	+920
1920-21	3,068	35,212	887		39,167	331	478	6,952	98	46,695	+1,363
1921-22	3,204	35,352	862		39,418	421	688	7,790	162	48,058	+697
1922-23	3,267	35,157	1,001		39,425	570	957	8,450	222	49,054	+1,396
1923-24	3,337	33,623	1,359		38,319	2,062	2,469	8,685	238	49,711	+657
1924-25	3,420	32,728	1,366		37,514	2,472	3,367	8,564	272	49,717	+6
1925-26	3,844	32,134	1,269	84	37,331	1,130	4,150	8,542	311	50,334	+617
1926-27	4,088	32,407	1,391	376	38,262	1,144	4,250	8,406	259	51,177	+843

¹ The enrollment in kindergarten practice classes taught by normal-school teachers is included in these totals.
² The enrollment in practice classes taught by normal-school teachers and in opportunity classes is included in these totals.

Whole number of pupils enrolled in the public schools of the District of Columbia for the period of 10 years ending June 30, 1927—Con.

COLORED PUPILS

School year	Elementary schools				Junior high schools			Senior high schools	Normal schools	Grand total	Increase (+) or decrease (-)	
	Kindergarten	Grades I-VIII	Americanization, atypical, ungraded, health, etc.	Vocational schools	Total	Grades VII-VIII	Grade IX	Total	Grades IX-XII			Grades XIII-XIV
1917-18	1,230	14,761	186	185	16,362				1,713	116	18,191	
1918-19	1,077	14,934	221	82	16,314				1,483	91	17,888	-303
1919-20	1,325	15,630	240	103	17,298			246	1,867	112	19,523	+1,635
1920-21	1,367	16,095	225	140	17,827	214	32	271	2,129	142	20,369	+846
1921-22	1,413	16,541	229	171	18,354	228	43	271	2,504	203	21,483	+1,114
1922-23	1,451	17,024	218	200	18,902	342	116	458	2,819	270	22,449	+966
1923-24	1,644	16,563	297	259	18,763	694	128	822	2,957	320	22,862	+413
1924-25	1,651	16,515	293	341	18,800	799	317	1,116	2,952	382	23,250	+388
1925-26	1,815	17,211	351	455	19,832	968	282	1,250	2,975	472	24,529	+1,279
1926-27	1,814	17,533	405	459	20,211	1,212	347	1,559	2,942	475	25,187	+658

EXHIBIT 6

Average number of pupils in daily attendance in the public schools of the District of Columbia for the period of 10 years ending June 30, 1927

WHITE AND COLORED

School year	Elementary schools					Junior high schools			Senior high schools Grades IX-XII	Normal schools Grades XIII-XIV	Grand total	Increase (+) or decrease (-)
	Kinder-garten ¹	Grades I-VIII ²	Americanization atypical, ungraded, health, etc.	Vocational schools	Total	Grades VII-VIII	Grade IX	Total				
1917-18	2,178.7	39,398.0	287.3	116.0	41,980.0				5,804.0	172.0	47,956.0	+1,122.5
1918-19	2,176.1	40,418.4	355.6	45.4	42,995.5	427.1	54.6	481.7	5,951.0	132.0	49,078.5	+3,660.0
1919-20	2,363.8	42,332.1	437.8	77.5	45,211.2	527.0	179.8	706.8	6,871.2	174.4	52,738.5	+2,556.9
1920-21	2,509.1	43,091.6	549.0	97.7	46,247.4	632.7	333.8	966.5	8,125.4	215.8	55,295.4	+350.3
1921-22	2,687.8	41,635.9	580.9	123.5	45,028.1	745.9	426.3	1,172.2	9,312.4	318.7	55,645.7	+3,123.7
1922-23	2,659.6	43,836.4	546.5	152.1	47,194.6	2,352.8	605.9	2,958.7	9,969.7	434.9	60,034.4	+1,263.0
1923-24	2,833.3	42,722.4	577.6	180.7	46,314.0	3,149.8	1,091.8	4,241.6	10,255.8	505.9	61,312.8	+1,278.4
1924-25	2,938.0	42,431.4	628.3	241.2	46,238.9	3,524.2	1,311.5	4,835.7	10,252.0	685.0	61,778.5	+463.7
1925-26	3,260.8	41,769.6	790.1	371.2	46,191.7	4,404.2	1,362.1	5,766.3	10,066.1	670.2	64,106.5	+2,328.0
1926-27	3,509.9	42,386.5	888.6	642.6	47,427.6				10,242.4			
WHITE PUPILS												
1917-18	1,370.4	27,552.4	165.2		29,088.0				4,491.0	79.0	33,658.0	+1,235.4
1918-19	1,452.5	28,459.5	213.4		30,125.4				4,707.0	61.0	34,893.4	+1,754.0
1919-20	1,505.3	29,097.3	271.4		30,874.0	270.0	35.0	305.0	5,396.2	72.2	36,647.4	+1,568.7
1920-21	1,600.5	29,450.1	385.5		31,436.1	294.9	138.4	433.3	6,233.3	93.4	38,216.1	+24.5
1921-22	1,721.9	28,256.8	413.4		30,392.1	352.6	258.0	610.6	7,039.5	138.4	38,240.6	+1,926.0
1922-23	1,708.0	29,520.0	398.0		31,626.0	477.1	315.2	792.3	7,551.5	196.8	40,166.6	+727.1
1923-24	1,785.8	28,498.6	431.6		30,716.0	1,757.6	450.2	2,207.8	7,752.1	217.8	40,893.7	+527.7
1924-25	1,848.1	27,929.8	450.3		30,228.2	2,427.5	832.4	3,259.9	7,691.0	242.3	41,421.4	+100.7
1925-26	2,062.5	27,107.8	511.6	59.7	29,741.6	2,671.0	1,073.3	3,744.3	7,560.3	274.5	41,320.7	+1,563.1
1926-27	2,259.1	27,599.0	602.0	308.5	30,768.6	3,074.9	1,078.6	4,153.5	7,721.4	240.3	42,883.8	

¹ The attendance in kindergarten practice classes taught by normal-school teachers is included in these totals.
² The attendance in practice classes taught by normal-school teachers and in opportunity classes is included in these totals.

EXHIBIT 6—Continued

Average number of pupils in daily attendance in the public schools of the District of Columbia for the period of 10 years ending June 30, 1927—Continued

COLORED PUPILS

School year	Elementary schools						Junior high schools			Senior high schools	Normal schools	Grand total	Increase (+) or decrease (-)
	Kinder-garten	Grades I-VIII	Americanization atypical, ungraded, health, etc.	Vocational schools	Total	Grades VII-VIII	Grade IX	Total	Grades IX-XII	Grades XIII-XIV			
											Total		
1917-18.....	808.3	11,845.6	122.1	116.0	12,892.0	-----	-----	-----	1,313.0	93.0	14,298.0	-----	
1918-19.....	723.6	11,958.9	142.2	45.4	12,870.1	-----	-----	-----	1,244.0	71.0	14,185.1	-112.9	
1919-20.....	858.5	13,234.8	166.4	77.5	14,337.2	157.1	19.6	176.7	1,473.0	102.2	16,091.1	+1,906.0	
1920-21.....	908.6	13,641.5	163.5	97.7	14,811.3	232.1	41.4	273.5	1,872.1	122.4	17,079.3	+988.2	
1921-22.....	965.9	13,379.1	167.5	123.5	14,636.0	300.1	75.8	375.9	2,212.9	180.3	17,405.1	+325.8	
1922-23.....	951.6	14,316.4	148.5	152.1	15,568.6	268.8	111.1	379.9	2,418.2	238.1	18,604.8	+1,199.7	
1923-24.....	1,047.5	14,223.8	146.0	180.7	15,598.0	595.2	155.7	750.9	2,503.7	288.1	19,140.7	+535.9	
1924-25.....	1,089.9	14,501.6	178.0	241.2	16,010.7	722.3	259.4	981.7	2,561.0	338.0	19,891.4	+750.7	
1925-26.....	1,198.3	14,661.8	278.5	311.5	16,450.1	853.2	238.2	1,091.4	2,506.8	410.5	20,457.8	+566.4	
1926-27.....	1,250.8	14,787.5	286.6	334.1	16,659.0	1,329.3	283.5	1,612.8	2,521.0	429.9	21,222.7	+764.9	

EXHIBIT 7

Number of teachers in the public schools of the District of Columbia for the period of 10 years ending June 30, 1927

WHITE AND COLORED

School year	Elementary schools										Secondary schools			Normal schools, grades 13-14	Grand total	
	Kindergarten	Grades 1-8		Special schools and classes		Special subjects	Miscellaneous		Supplementary	Vocational schools	Total	Junior high grades 7-9	Senior high grades 9-12			Total
		Regular teachers	Teaching principals	Americanization, atypical, ungraded, health, etc.	Opportunity		Research	Primary instruction								
1917-18	158	1,024	123	25	129	4	20	1,483	320	27	1,830					
1918-19	161	1,071	123	35	150	5	20	1,565	348	27	1,940					
1919-20	163	1,127	123	38	162	5	19	1,637	379	26	2,068					
1920-21	165	1,211	89	38	163	5	19	1,690	413	26	2,224					
1921-22	176	1,210	82	45	172	5	23	1,717	54	26	2,224					
1922-23	182	1,258	66	48	191	5	24	1,780	63	28	2,326					
1923-24	195	1,243	65	61	198	6	17	1,816	159	27	2,494					
1924-25	199	1,235	60	47	210	5	19	1,826	230	38	2,589					
1925-26	198	1,244	55	67	203	5	23	1,853	248	43	2,640					
1926-27	201	1,159	45	67	205	7	50	1,826	312	46	2,687					

WHITE TEACHERS

1917-18	103	702	83	18	83	3	992	236	17	1,245
1918-19	107	746	83	23	98	3	1,060	261	15	1,336
1919-20	106	787	83	26	107	3	1,112	282	14	1,425
1920-21	106	843	62	26	110	3	1,150	311	15	1,499
1921-22	111	835	58	31	120	3	1,161	321	15	1,530
1922-23	112	873	40	32	133	3	1,197	340	15	1,595
1923-24	117	852	40	39	129	4	1,207	371	15	1,712
1924-25	122	835	37	32	142	6	1,214	374	19	1,787
1925-26	123	850	35	42	141	3	1,244	373	22	1,833
1926-27	127	767	29	44	140	5	1,213	378	24	1,841

EXHIBIT 7—Continued
Number of teachers in the public schools of the District of Columbia for the period of 10 years ending June 30, 1927—Continued

COLORED TEACHERS

School year	Elementary schools										Secondary schools			Grand total	
	Grades 1-8		Special schools and classes		Special subjects	Miscellaneous		Supplementary schools	Vocational schools	Total	Junior high grades 7-9	Senior high grades 9-12	Total		Normal schools, grades 13-14
	Kindergarten	Regular teachers	Teaching principals	Americanization, atypical, ungraded, health, etc.		Oppor-tunity	Research								
1917-18.....	55	322	40	7	46	1	20	491	84	84	10	585			
1918-19.....	54	325	40	12	52	2	20	505	87	87	12	604			
1919-20.....	57	340	40	12	55	2	19	525	76	106	12	643			
1920-21.....	59	368	27	12	53	2	19	540	102	120	11	671			
1921-22.....	65	375	24	14	52	2	23	556	106	127	11	694			
1922-23.....	70	385	26	16	58	2	24	583	115	135	13	731			
1923-24.....	78	391	25	22	69	2	17	609	121	161	12	782			
1924-25.....	77	402	23	15	68	2	19	612	121	171	19	802			
1925-26.....	75	394	20	25	62	2	23	609	123	177	21	807			
1926-27.....	74	392	16	23	65	2	10	613	125	211	22	846			

In making comparisons between the loads of Washington teachers and teachers in other cities, we have used extensively the following reports of the United States Bureau of Education:

1. A preliminary study of teacher load in elementary schools, by Frank M. Phillips, chief Division of Statistics. 1927.

2. Teaching load in 136 city high schools, City School Leaflet No. 9, June, 1923.

3. Advance sheets of "Statistics of city school systems, 1925-1926," the biennial bulletin of the United States Bureau of Education.

Representatives of the Bureau of Efficiency also visited a number of cities in the same general population group as Washington and gathered detailed information concerning the organization and administration of schools as well as the loads of teachers.

During a 10-year period from 1918 to 1927 the average enrollment in all the public schools of Washington increased from 51,748 to 69,740, or 35 per cent. At the same time the teachers (including teaching principals) increased from 1,830 to 2,687, or 47 per cent. An analysis of these totals by schools is shown in the following table:

Table showing by types of schools the average enrollment and the number of teachers for the years 1917-18 and 1926-27 and the percentage of increase

Schools	Average enrollment		Number of teachers		Increases	
	1917-18	1926-27	1917-18	1926-27	Enroll- ment	Teachers
Kindergartens.....	2,500	4,209.6	158	201	<i>Per cent</i> 68	<i>Per cent</i> 27
Elementary schools:						
Grades 1 to 8.....	42,373.5	45,803.8	1,280	1,508	8	18
Special schools.....	316.3	1,013.5	25	67	220	170
Vocational schools.....	130.1	744.7	20	50	430	150
Junior high schools:						
Grades 7, 8.....	(1)	4,765.1	(1)	312	-----	-----
Grade 9.....		1,463.4				
Senior high schools, grades 9 to 12.....	6,248	11,053.4	320	503	77	57
Normal schools, grades 13, 14.....	180.3	686.8	27	46	281	70
Total.....	51,748.2	69,740.3	1,830	2,687	35	47

¹ Junior high schools were not established until 1919-20.

There are several reasons why the number of teachers has increased more rapidly than the enrollment. As far as the elementary schools are concerned the increase in teachers has resulted from—

(1) The reduction in the number of oversize classes.

(2) The establishment of small opportunity classes for dull children.

(3) The creation of a group of supplementary and research teachers for the purpose of testing the intelligence of children and providing individual instruction for those who have fallen behind in their studies, and

(4) The expansion of the staff of special subject teachers with the addition of several new subjects to the curriculum.

Each of these items will be considered at length in the following section of the report under the heading "Elementary schools."

With reference to high schools it is interesting to note that the enrollment in the high-school grades (9 to 12) has increased much more rapidly than the enrollment in the elementary grades (1 to 8).

Between 1918 and 1927 the average enrollment in the high school grades increased over 100 per cent as compared with an increase of only 22 per cent in the elementary grades. Moreover, 50 per cent of the increase in the elementary grades was in grades 7 and 8 of the junior high schools. The recent increases in high-school enrollment have therefore been greater than in any other unit of the Washington public schools.

The growth in secondary education has characterized school systems throughout the country. In 1890 but 3 persons out of every 1,000 in the United States attended high school, and in 1924 the number had risen to 26 persons out of every 1,000. In 1924 Washington with 30 students in high school to each 1,000 of its population ranked nineteenth in this respect among all the States of the country. Moreover, since 1924 the number of high-school students in Washington has increased from 30 to 32 to each 1,000 of its population.

The large increase in the enrollment of Washington's high schools, especially the junior high schools, is another reason for the increase in the number of teachers noted above. It is well known that junior high schools require more teachers in proportion to the number of pupils than do elementary schools. New subjects are added to the curriculum, specialists must be provided to teach them, and children are permitted a choice of electives. For these reasons classes are considerably smaller. There is no doubt that the enriched curriculum and the specialized instruction in junior high schools increases per capita costs both for teachers and for buildings. But the cities of the United States evidently consider the additional expense justified if the phenomenal growth of the junior high school movement is any criterion.

ELEMENTARY SCHOOLS

Introduction.

Our discussion of the teaching staff of the elementary schools will be subdivided as follows:

1. Kindergartens.
2. Elementary schools (grades 1 to 8).
3. Special schools and classes.
4. Special subject teachers.
5. Miscellaneous teachers.
6. Vocational schools.
7. Platoon schools.
8. Summary of teacher requirements.

The loads of these various types of teachers will be analyzed in detail and comparison made with the loads of similar teachers in other cities, and finally an estimate will be furnished of additional teachers needed in 1927-28 and 1928-29.

The table on the following page shows the loads of elementary-school teachers in Washington and seven comparable cities which were surveyed by the Bureau of Efficiency. Teachers of regular grade classes in the Washington schools have an average load of 36 pupils, which compares favorably with the loads of similar teachers in the other cities. However, when all teachers are included, Washington is at the bottom of the list with an average of 27 pupils per teacher.

The main reasons for this difference are to be found in the unusually large number of kindergarten teachers and teachers of special subjects carried on the Washington rolls. Both of these groups of teachers will be discussed at length in the following sections of the report.

Table showing loads of elementary-school teachers in Washington and seven other cities, March-April, 1927

[NOTE.—All averages are based upon actual enrollments, and with a single exception no platoon schools are included in the averages]

City	Average number of pupils per regular classroom			Average number of pupils per teacher (including all teachers) ³	Average size of elementary schools
	Kindergarten ¹	Grades 1-8	Special schools and classes ²		
Washington.....	19.3	36	18	27	441
Rochester.....	40.1	32.6	19.9	30.7	766
Newark.....	47		14.7	⁴ 35.5	939
Buffalo.....	40	33.1	9	28.6	778
St. Louis.....		40.5	15.2	38.4	684
Cleveland.....	45.2	37.2	21.5	34.4	839
Minneapolis.....	44.8	37.4	13.1	34.8	565
Milwaukee.....	40.5	42.7	21.5	38.4	692

¹ In some cities kindergarteners teach only half a day and in others a full day.

² Special schools and classes include atypical or subnormal, open air, opportunity, deaf, blind, ungraded, incorrigible, speech correction, sight conservation, etc.

³ In addition to regular classroom teachers this includes teachers of special subjects (manual training, music, physical training, etc.), coaching or tutor teachers, and research and visiting teachers.

⁴ Average of 35.5 includes both platoon and nonplatoon schools.

1. Kindergartens.

In Washington the normal hours of kindergartens are from 9 to 12 in the morning. On account of congested conditions in certain sections of the city some kindergartens still meet from 1 to 4 in the afternoon, but as additional rooms become available these kindergartens will be scheduled for the regular morning hours. Kindergartens uniformly teach only one session of three hours per day, although they are required to "render a full day of professional service," to quote the policy adopted by the Board of Education on October 2, 1920. Prior to that time kindergarteners evidently served only three hours a day and were paid a lower salary than teachers of the first grade. But now all elementary school-teachers from the kindergarten through the eighth grade are in the same salary class, namely 1A, with a range from \$1,400 to \$2,200.

With a few exceptions kindergartens having an enrollment of 30 or more children are assigned two kindergarteners, designated as principal and assistant. The principal is in charge of the kindergarten, and the assistant helps her in carrying out the program. The principal is usually the senior in point of service, but the actual duties of the two are practically identical except that the assistant usually plays the piano for the rhythms and games and during the

opening and closing exercises. A typical kindergarten program follows:

- 9.00- 9.20—Morning circle.
- 9.20- 9.30—Rhythms.
- 9.30-10.15—Work period.
- 10.15-10.30—Recess.
- 10.30-11.00—Lunch and rest.
- 11.00-11.10—Music.
- 11.10-11.20—Songs or stories.
- 11.20-11.50—Games.
- 11.50-12.00—Dismissal.

An analysis of the programs of about 200 kindergartners indicates that the afternoon hours from 1 to 3 (or the morning hours from 10 to 12 in the case of afternoon kindergartens) are spent largely in planning and preparation for the next day's work and in coaching individual children who return for special instruction. Some of the kindergartners also coach children in the lower grades and occasionally conduct grade classes in such subjects as handwork, rhythms, and stories. Other afternoon duties include occasional excursions with the children and visits to the homes of absentees. Many of the kindergartners likewise spend considerable time in so-called building activities such as eye testing, weighing and measuring underweight children, keeping the milk fund, playing the piano for school functions, and assisting the principal with her record work. The research departments have used a number of kindergartners during their free periods for intelligence testing in the lower grades. Once a month kindergartners are required to attend demonstration classes, and several times a month they meet with their director of kindergartens for discussion of classroom problems.

On March 11, 1927, there were 113 kindergartens with 202 kindergartners, an average of one and three-quarters kindergartners per kindergarten. With one exception, each of the 84 kindergartens with enrollments of 30 or more had 2 kindergartners, and 5 kindergartens with less than 30 enrolled had 2 kindergartners each. The average number of pupils per kindergarten was 34.6, and the average number of pupils per kindergartner 19.3. Based upon the average enrollment of kindergartens during the entire school year 1926-27, which was 4,209 as compared with 3,907 on March 11, 1927, the corresponding averages were 37.3 and 20.8. A tabulation is appended showing for both white and colored schools a distribution of classes according to size and according to the number of teachers assigned to each class on March 11, 1927.

Table showing the number of kindergarten classes and teachers, distributed according to class enrollment on March 11, 1927

Number enrolled	White		Colored		Total	
	Classes	Teachers	Classes	Teachers	Classes	Teachers
11.....	1	1			1	1
14.....	1	1			1	1
15.....	1	1			1	1
17.....	1	1			1	1
18.....	1	2			1	2
19.....	2	2			2	2
20.....	1	1			1	1
21.....	1	1			1	1

Table showing the number of kindergarten classes and teachers, distributed according to class enrollment on March 11, 1927—Continued

Number enrolled	White		Colored		Total	
	Classes	Teachers	Classes	Teachers	Classes	Teachers
22.....			1	1	1	1
23.....	4	4			4	4
25.....	3	3			3	3
26.....	2	2	1	2	3	4
27.....			1	2	1	2
28.....	3	4	2	4	5	8
29.....	2	2	1	2	3	4
30.....	2	4	5	10	7	14
31.....	1	1	4	7	5	8
32.....	2	4	3	6	5	10
33.....	2	4			2	4
34.....	2	4	4	8	6	12
35.....	2	4	2	4	4	8
36.....	6	12	2	4	8	16
37.....	1	2	2	4	3	6
38.....	5	10	1	2	6	12
39.....	2	4	3	6	5	10
40.....	2	4	2	4	4	8
41.....	4	8	1	2	5	10
42.....	3	6	3	6	6	12
43.....	1	2			1	2
44.....	3	6			3	6
45.....	1	2			1	2
46.....	2	4			2	4
47.....	4	8			4	8
48.....			1	2	1	2
49.....	1	2			1	2
50.....	2	4			2	4
51.....	1	2			1	2
55.....	2	4			2	4
Total.....	74	126	39	76	113	202

Total pupils, 3,907; average pupils per class, 34.6; average pupils per teacher, 19.3.

Over a 10-year period the average enrollment of kindergartens has increased more rapidly than the number of kindergartners. The actual increase in average enrollment between 1918 and 1927 was from 2,500 to 4,209, or 68 per cent, whereas the kindergartners increased from 158 to 201, or 27 per cent.

However, in comparison with other cities Washington has a disproportionately large number of kindergartners. There are two reasons for this condition, namely (1) kindergartners in most cities teach two sessions a day, one in the morning and another in the afternoon, and (2) only one kindergartner is usually assigned to a kindergarten. Advance sheets of the United States Bureau of Education's "Statistics of City School Systems, 1925-26" show that there is not another city among cities of 100,000 population and more which makes as liberal provision for kindergartners as does Washington. The recent report of the United States Bureau of Education entitled "A Preliminary Report of Teacher Load in Elementary Schools" states that all but 6 of 71 kindergarten teachers report full-day or double sessions. The average number of hours they spent in session with pupils was 3.867 as compared with 3 in Washington, and the average number of pupils under their care was 28.7 as compared with 19.3, and the average number of pupil-hours per week 555.7 as compared with 289.5. An independent investigation made by the Bureau of Efficiency of the schools in seven cities comparable in size with Washington indicates the same general conditions, but the number of pupils per teacher was considerably higher than

shown by the Bureau of Education. We are therefore forced to conclude that the kindergartners in Washington have a lighter teaching load than kindergartners in other cities, because for the most part they teach only one session a day, and because two teachers are assigned to the great majority of classes. They likewise have a lighter load than the grade teachers in Washington who average 36 pupils per class, as will be shown later.

Throughout the above discussion on the loads of Washington kindergartners no consideration has been given to the duties performed by them during the two hours when they are relieved of regular class work. This is in accordance with the practice of the Bureau of Education which considers only the hours actually spent with pupils in the classroom when figuring teacher loads. Some of the afternoon work of kindergartners, such as coaching backward pupils, might be evaluated in terms of pupil hours and added to their loads. But the time spent in coaching and the number of pupils coached varies so widely as to make such a computation exceedingly difficult. In any event, the disproportion pointed out above would still exist because a large proportion of the afternoon hours are spent in nonteaching activities. Most of these activities are educational in character, but some of them, such as planning work, preparing materials, and attending conferences, are required of all teachers and normally should be performed after regular school hours.

The present policy with reference to kindergartens has existed for many years. As indicated above, it involves large classes with two teachers and one teaching session of three hours in the morning. The large classes have been made necessary by a lack of classroom accommodations, but in our opinion the assignment of two teachers to a class of 30 is excessive. However, two teachers for kindergarten classes with enrollments of 40 or more children is a reasonable standard. We are also convinced that the morning hours from 9 to 12, both from a hygienic and educational standpoint, are normally the best hours for conducting kindergarten classes. Parents are generally opposed to sending their children to afternoon classes because they are tired from their morning's play when they arrive at school. There is another objection to the two-session plan as operated by other cities in that it involves shorter sessions of two or at most two and one-half hours for individual children.

Since kindergartners are required to serve a full day of five hours, and only three are spent in regular classroom instruction, the problem which now presents itself is how shall the other two hours be spent to the best advantage. The school authorities have attempted to solve this problem by requiring kindergartners to encourage slow children to return for coaching in the afternoon. But this plan has met with only moderate success on account of the objection of parents to afternoon sessions. In a few schools kindergartners qualified to teach primary subjects have been assigned to coaching first and second grade children. The recent addition of a year to the normal course has resulted in the formulation of plans by the superintendent for a three-year kindergarten-primary course, which will qualify its graduates to teach both in the kindergarten and the primary grades. But there are undoubtedly a large number of kindergartners now in the system who can coach primary children, and they should be assigned to this work when necessary. In other words, the kinder-

gartners in their afternoon hours should be considered as supplementary teachers for the primary grades, since the present supplementary teachers do not as a rule coach children under the third grade.

Our study of the programs of kindergartners indicates that the scheduling of their afternoon hours should be more carefully supervised. In a number of instances kindergartners reported no regular afternoon duties or only preparation for the next day's work. In our opinion kindergartners should prepare their work and attend conferences after school hours as other teachers do. Most of the other afternoon activities, such as intelligence testing, eye testing, weighing and measuring anemic children, etc., seem entirely legitimate from an educational standpoint, but visiting the homes of absent children is the function of the attendance department.

We therefore recommend (1) that no additional kindergartners be provided until such time as the present excess has been absorbed either by the opening of new kindergartens or by transferring to the grades kindergartners holding elementary school licenses; and (2) that the afternoon programs of kindergartners be more carefully supervised so as to increase the time devoted to coaching primary children.

2. Elementary Schools (Grades 1 to 8).

At the present time Washington is in a state of transition from the 8-4 plan of organization (8 elementary grades and 4 high school grades) to the 6-3-3 plan (6 elementary grades, 3 junior high school grades, and 3 senior high school grades). Less than one-half of the elementary schools still have the full eight grades and the others have only six grades. Eventually all except a few outlying schools will lose their seventh and eighth grades to the junior high schools.

Since 1923, classes in all grades have been organized on the basis of a five-hour day. Prior to that time the regular school day for children in grades 1 and 2 was three or three and one-half hours per day. There are still a number of part-time first and second grade classes in certain congested sections of the city meeting from 9 to 12.30 or from 1 to 4.30. As additional rooms become available these part-time classes will be converted into full-day classes meeting from 9 to 12 and 1 to 3.

The elementary schools are organized on the traditional plan of one teacher to a class and one class to a room. However, it is often necessary to assign children of more than one grade to a single teacher because there are not enough children of one grade to form a class of normal size.

The grade teacher is responsible for teaching the following subjects: Handwriting, language (composition and grammar), spelling and word analysis, reading and literature, arithmetic, history and civics, geography, elementary science, drawing, music, physical training, and hygiene. In elementary science, drawing, music, and physical training she is assisted by special teachers who give demonstration lessons to her class in their particular subjects on the average of once every three weeks. Manual arts (joinery, sewing, housekeeping, and cooking) are taught for the most part in special centers, and the grade teacher assumes no responsibility for the teaching of these subjects.

Below is the standard time schedule which has been adopted for the elementary schools.

Weekly program, public schools of the District of Columbia

[Time schedule—1,500 minutes]

	Grades							
	1	2	3	4	5	6	7	8
Opening exercises.....	100	90	50	50	50	50	50	50
Handwriting.....	75	75	75	75	60	60	30	30
Music.....	90	80	60	60	75	70	70	70
Recess.....	90	75	125	125	125	125	125	125
Physical training.....	100	100	75	75	100	90	90	90
Drawing.....	120	120	90	90	90	80	80	80
Manual arts.....			45	45	60	150	180	180
Hygiene.....	10	10	30	30	25	25	25	25
Geography.....			60	80	¹ 130	¹ 150	¹ 140	¹ 105A
Elementary science.....	60	60	75	80	40	40	40	40
Arithmetic.....	35	150	215	215	¹ 200	¹ 185	¹ 175	¹ 150
Algebra.....								¹ 105B
History and civics.....	30	40	75	80	¹ 120	¹ 120	¹ 140	¹ 150
Language.....	90	70	100	100	¹ 150	¹ 150	¹ 150	¹ 200
Reading and literature.....	500	475	275	245	¹ 170	¹ 120	¹ 120	¹ 120
Spelling and word analysis.....	60	60	75	75	75	60	60	60
Unassigned time.....	120	75	75	75	30	25	25	25
Dismissal.....	20	20						
Total.....	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500

¹ A minimum of 20 minutes less, or a maximum of 20 minutes more is allowable under exceptional conditions upon the recommendation of the administrative principal and the approval of supervising principal

Teachers are required to prepare their programs so as to allot the specified number of minutes each week to the various subjects. Typical programs indicating the proper order of studies are also furnished teachers by the departments of primary instruction. An examination of over 1,200 programs indicates that for the most part they have been carefully prepared according to specifications, making due allowance for a certain amount of flexibility. The programs of teachers of part-time classes show that the hour and one-half from 10.30 to 12 in the morning or from 1 to 3 in the afternoon is devoted largely to coaching slow pupils in their own classes or in other primary grades.

According to the rules of the Board of Education, "so far as practicable not more than 40 pupils shall be assigned to one teacher in the elementary schools." But due to a shortage of classrooms there are still a considerable number of classes with enrollments of over 40, although the great majority are under that figure. Two tables are appended showing the average number of pupils per teacher for each grade and a distribution of classes according to the number of pupils enrolled on March 11, 1927. In the white schools these averages range from 32.8 for the second grade to 37 for the fourth grade, the general average for all grades being 34.9. In the colored schools the averages range from 35.7 for classes of two or more grades to 38.8 for the third and fourth grades, the general average for all grades being 37.9. The general average for all classes both white and colored is 36. An analysis of the 1,173 classes included shows that 902 have enrollments of 40 or less and 271 have enrollments of 41 or more.

Table showing average number of pupils enrolled on March 11, 1927, per elementary-school teacher of regular classes

Grades	White	Colored	White and colored	Grades	White	Colored	White and colored
1.....	33.5	36.9	34.8	6.....	35.2	37.4	35.9
2.....	32.8	38.6	35.0	7.....	37.0	38.2	37.3
3.....	35.1	38.8	36.5	8.....	35.8	37.8	36.2
4.....	36.8	38.8	37.5	Mixed.....	32.9	35.7	33.9
5.....	36.2	38.5	36.9	All grades.....	34.9	37.9	36.0

Table showing distribution of regular classes according to the number of pupils enrolled on March 11, 1927

Number enrolled	White	Colored	Total number of regular classes	Total enrollment	Number enrolled	White	Colored	Total number of regular classes	Total enrollment
16.....	1		1	16	36.....	35	25	60	2,160
18.....	1		1	18	37.....	50	23	73	2,701
19.....	2		2	38	38.....	69	25	94	3,572
20.....	1	1	2	40	39.....	48	24	72	2,808
21.....	4		4	84	40.....	43	25	68	2,720
22.....	6		6	132	41.....	28	21	49	2,009
23.....	11		11	253	42.....	34	30	64	2,688
24.....	11		11	264	43.....	26	24	50	2,150
25.....	9	4	13	325	44.....	15	21	36	1,584
26.....	15	5	20	520	45.....	12	19	31	1,395
27.....	28	2	30	810	46.....	7	4	11	506
28.....	21	3	24	672	47.....	4	10	14	658
29.....	32	4	36	1,044	48.....	2	6	8	384
30.....	38	13	51	1,530	49.....	1	3	4	196
31.....	29	16	45	1,395	50.....		2	2	100
32.....	48	23	71	2,272	52.....		2	2	104
33.....	37	23	60	1,980					
34.....	56	20	76	2,584	Total.....	765	408	1,173	42,197
35.....	41	30	71	2,485					

NOTE.—The above table includes classes taught by teaching principals, but does not include teachers at the Park View platoon school.

At the present time Washington compares favorably with other cities in the United States with respect to the load of its regular elementary-school teachers. This conclusion is based upon two studies, one made by the Bureau of Education in 1926, covering 117 cities selected to represent all the States and cities of the various sizes,² and the other made by the Bureau of Efficiency, covering six cities in the same population group as Washington.

The average load of the regular elementary-school teachers in Washington is 900 pupil-hours per week, based on a class of 36 and a five-hour day, five days a week. This is a higher average than the average for any grade shown in the study of the Bureau of Education referred to above. However, the Bureau of Education's questionnaire was not quite clear as to whether attendance or enrollment should be considered as the basis for the number of pupils. Undoubtedly some teachers indicated the number of pupils on their rolls while others listed the actual number in attendance. But even if we reduce the above averages from an actual enrollment to an

² A Preliminary Study of Teacher Load in Elementary Schools, by Frank M. Phillips, chief, Division of Statistics, U. S. Bureau of Education.

average attendance basis by reducing them 8 per cent, Washington is still above the average in nearly all grades, both in number of pupils and in number of pupil-hours, as the following table will show.

Table showing loads of regular elementary-school teachers in 117 cities and in Washington

[Based upon Bureau of Education's preliminary study of teacher load in elementary schools]

Grade	Average number of pupils		Average number of pupil-hours	
	117 cities	Washington	117 cities	Washington
1.....	32.7	34.8	741.9	800.4
2.....	33.2	35.0	788.0	805.0
3.....	33.3	36.5	847.0	839.5
4.....	34.6	37.5	895.7	862.5
5.....	34.1	36.9	890.1	848.7
6.....	33.4	35.9	869.6	825.7
7.....	30.3	37.3	781.8	857.9
8.....	29.2	33.9	762.6	779.7

The Bureau of Efficiency's investigation of teacher loads in six cities shows that Washington's regular elementary school teachers carry loads of about the average for these cities. In one of the cities the average number of pupils per teacher is over 42 because most of the classes are oversize according to the Washington standard. The actual averages in the six cities were 32.6, 33.1, 40.5, 37.2, 37.4, and 42.7, as compared with 36 for Washington.

As shown by the above tabulation of classes according to the number of pupils enrolled in the Washington schools there are a number of classes with less than 30 pupils. Several reasons may be indicated for these undersize classes. With few exceptions Washington has more elementary schools in proportion to its school population than any city of its size. This is due to the fact that Washington is a residential city and has a low density of population (8,030 per square mile) in comparison with such industrial cities as Newark, Buffalo, Jersey City, and St. Louis with 19,421, 14,237, 24,252, and 13,457, respectively. The dual system of white and colored schools is another factor contributing to the large number of small school buildings scattered throughout the city, although it is usually possible to organize the colored schools with larger classes because the population is more concentrated. Small schools of this nature are always more difficult to organize with full classes than large schools serving more densely populated areas. On this account the Board of Education has adopted a standard plan for its new elementary schools with twice the number of regular classrooms contained in the old schools. Whenever possible, two neighboring schools of the old type are organized as a single school in order to utilize the largest possible number of sittings.

The shifting nature of the white and colored population also results occasionally in reducing the size of classes, as witness the Toner, Ross, and Gage Schools. Then again there are sparsely populated districts on the outskirts of the city which can not supply a sufficient number of children to fill the standard quota. Such districts are served by the Stanton, Garfield, and Keene Schools. Finally, it fre-

quently happens that in a particular school there are too many pupils for one teacher, but not enough to supply the full quota for two.

In conclusion, it is our opinion that the school officials have attempted to organize the regular grade classes as far as practicable on the basis of a standard of 40 pupils. However, there are still many part-time and oversize classes due not to a shortage of teachers but to the lack of sufficient classrooms. As new classrooms are acquired additional teachers will be needed in the grades to reduce oversize classes and provide for the regular increase in enrollment resulting from the natural growth of the city.

3. Special Schools and Classes.

Special schools and classes include the three following groups:

1. Atypical, ungraded, health, speech improvement, and open window.
2. Americanization.
3. Opportunity.

The first or subnormal group is composed of children with definite mental or physical handicaps. Atypical children are mentally deficient to such a degree as to be unable to profit by instruction in regular classes, but still they are not feeble-minded in the sense that they should be confined in institutions as a social menace. With instruction by special teachers who are qualified to adjust courses of study and methods to individual needs, these children may confidently be expected to become self-supporting members of society. The ungraded classes are composed for the most part of incorrigible children who present special behavior problems. With proper diagnosis and treatment they can usually be adjusted to lead normal lives, whereas if left to themselves they might become juvenile delinquents. The health schools have been established for the care and instruction of children who are suffering from tuberculosis of a contagious nature and must therefore be segregated. Open window classes provide special facilities for underweight and anemic children, and speech improvement classes are organized for the purpose of curing children with defects of speech such as lispings and stammering.

There are two types of organization for special instruction, namely, special centers occupying entire buildings and single classes in regular elementary schools. The two health schools, one white and one colored, are necessarily housed in special buildings, but the two open-window classes make use of regular classrooms in standard buildings. Speech improvement teachers are assigned small groups in a number of schools and use whatever rooms are available. Atypical and ungraded classes are organized according to both plans. In the white schools the majority of the classes are located in special buildings, while in the colored schools virtually all the classes are assigned rooms in regular schools. Both types of organization have their special advocates, but it is unnecessary at this time to enter into a discussion of the arguments for and against segregation of subnormal children. In our opinion there is a place for both types of organization in a city as large as Washington.

Atypical and ungraded classes now located in special buildings are for the most part poorly housed in condemned schools and in rented buildings. The handwork activities provided for these classes both in special or regular building also seems inadequate, especially in view of the fact that most of these children are motor-minded and many of them will later enter the trades.

The Washington Health School for white children is a model of its kind, but the Harrison Health School for colored children is an old elementary school building poorly adapted to its present purpose. The grounds are inadequate, the backyards adjoining the grounds are insanitary, there are no baths, and the basement is damp. The United States Public Health Service will report later in more detail on the organization and management of both the health schools and the open window classes.

There is one Americanization school (white) where foreigners are taught English and prepared for citizenship. Classes are held at various hours of the day and evening to meet the needs of students, and a few classes are conducted in the homes for the benefit of women who are unable to leave their households.

All the above special classes are organized under two supervising principals, one white and one colored, who are in charge of the ninth and twelfth divisions, respectively. The opportunity classes, however, are not under their supervision. They are organized as needed in particular schools for the instruction of retarded children, who for various reasons have been unable to keep pace with the regular classes. Usually they are below average in mentality and some of them suffer from emotional instability. If left to compete with children of their own age they often become habitual repeaters and develop exaggerated inferiority complexes. It is therefore economical to assign small groups of such slow children to specially trained teachers who can carry them along at their own best pace.

There were 105 teachers of special classes on March 11, 1927, distributed as follows:

Atypical.....	24	Americanization.....	6
Ungraded.....	19	Speech correction.....	10
Health.....	5	Special typing.....	1
Open window.....	2		
Opportunity.....	38	Total.....	105

In addition several manual arts teachers were assigned full time to instruction of special classes of atypical, ungraded, and tubercular children. A tabulation is attached showing the distribution of special classes by kind and size in both the white and colored schools. The speech correction teachers are not included in this table because they are itinerant teachers and much of their instruction is of an individual nature. The Americanization teachers are likewise omitted but for an exactly opposite reason because their classes are unusually large and vary considerably in size.

Table showing distribution of special classes according to number enrolled in each type of class on March 11, 1927

Number enrolled	White					Colored					Total classes	Total enrollment
	Atypical	Ungraded	Open window	Health	Opportunity	Atypical	Ungraded	Open window	Health	Opportunity		
7.....	2										2	14
8.....		1									1	8
9.....		2					1				3	27
10.....	1	2									3	30
11.....		1				1					2	22
12.....							2				2	24
13.....	2	2				2	2			1	9	117
14.....	2				1	1					4	56
15.....	4									1	5	75
16.....	4				3						7	112
17.....	2				4						6	102
18.....	1				3				1		5	90
19.....					1	2	2				5	95
20.....			1						1		2	40
21.....					6		2				8	168
22.....					4						4	88
23.....					1			1	1	1	4	92
24.....					4						4	96
25.....					2		2				4	100
26.....				1	2						3	78
30.....					3						3	90
31.....				1							1	31
33.....					1						1	33
Total.....	18	8	1	2	35	6	11	1	3	3	88	1,588

Average number of pupils per teacher:

Atypical classes.....	14.3
Ungraded classes.....	14.3
Opportunity classes.....	21.4
All special classes.....	18.0

The average loads of special teachers is rather difficult to compute on a pupil-hour basis because the hours of their classes are not uniform. The average number of pupils of all special teachers (excluding Americanization and speech-correction teachers) is 18. Teachers of atypical classes average 14.3, teachers of ungraded classes, 14.3, and teachers of opportunity classes 21.4. Atypical classes range in size from 7 to 19, ungraded classes from 8 to 25, and opportunity classes from 13 to 33.

During the last 10 years there has been a steady growth in the enrollment of special classes, and the number of special teachers has increased in about the same proportion as the enrollment. Ten years ago the average enrollment in special classes was only 316, and in 1926-27 it was over 1,500. The main reason for this increase is the emphasis of modern education upon individual differences and the development of a tool in the intelligence test which has made possible the determination of such differences for purposes of classifying children.

The average loads of special teachers as indicated above compare favorably with those of other cities. In comparison with 18 for

Washington, the United States Bureau of Education's "Preliminary study of teacher load in elementary schools" indicates an average of 15.8 for a group of 21 teachers of opportunity, subnormal, and retarded classes. The Bureau of Efficiency's investigation of teacher loads in seven cities indicates that the average load of Washington's special teachers is about midway between the top and bottom of the list of averages, which are as follows: 9, 13.1, 14.7, 15.2, 18 (Washington), 19.9, 21.5, and 21.5. An average of 15 to 20 seems reasonable and it is evidently the commonly accepted standard.

In conclusion, it may be stated that Washington has recognized the problem of the subnormal and handicapped child and compares favorably with other cities in the provision which it has made for instruction in special schools and classes. But this provision can by no means be termed adequate. There is need for the establishment of additional special school centers, both white and colored, with adequate facilities for teaching handwork and manual arts. There is no doubt that the special school center permits of a more economical use of both teachers and equipment. The small classes noted above with enrollments of seven, eight, and nine pupils could be combined with the larger classes to make classes of normal size. However, it may be necessary to provide transportation in the way of busses or street-car tokens for those children who are required to travel any great distance from their homes to these centers, as is now done in the case of tubercular children.

Other needs that may be mentioned are a new colored health school, additional open-air classes, and more opportunity classes in the colored schools. Many cities have established sight-conservation classes but Washington has no class of this nature, although its need has been demonstrated and school officials have given the subject considerable study.

4. Special-Subject Teachers.

In 1906 the Senate Committee of the District of Columbia reported that—

Washington ranks very high in special instruction given in its public schools. In cooking teachers, for example, we rank fourth, in number of sewing teachers we rank third, in manual training fourth, physical training fifth, music and drawing teachers we rank second; that is, there is only one other city in the country that exceeds Washington in the number of music and drawing teachers. In short, we have 107 special teachers in the District of Columbia, and 12 directors of these special teachers, who are assisting in the teaching of music, drawing, domestic science, domestic art, physical culture, and kindergarten.

Bear in mind that the regular grade teacher does the teaching to the pupil, the special teacher is to teach the teacher, and the director is to direct the teacher of the teacher that teaches the children. Your committee has no doubt that these special teachers are doing good work and are deserving. However, they are fully persuaded that there are more than are necessary, and the very high showing that Washington makes as compared with other cities that are much larger even than Washington, in this particular, demonstrates that we have gone clear beyond any other city. This is a matter, however, that the Board of Education and the superintendent of schools should handle as a matter of detail. They should give it attention with an eye to the welfare of the schools and also with a proper consideration of the expense to the District. Too much of "special subjects" is not only expensive financially but is also expensive to the time and energy of the pupils. (P. 2, Report No. 3974, 59th Cong., 1st sess., entitled "Salaries of Teachers, etc., District of Columbia.")

The condition described above as existing in 1906 still exists to a large extent at the present time. In the intervening years the special teachers have nearly doubled in number and two new subjects (elementary science and visual education) have been added to the list. There are two types of special teachers—itinerant and special center. The itinerant teachers travel from one school to another and teach their subjects in the regular classrooms in the presence of the grade teachers. The subjects taught in this manner are music, drawing, and physical training in grades 1 to 8, elementary science in grades 4 to 8, and sewing in grades 3, 4, and 5. Special center teachers include the following teachers of manual arts: Manual training, domestic science, and domestic art. For the most part these teachers have their own rooms to which the children report for instruction. There is a director for each special subject in both the white and the colored schools who is responsible for the course of study and for the supervision of instruction.

The itinerant special teacher is essentially a teacher and not a supervisor. Her lessons are in the nature of models, since she is expected to demonstrate approved methods of teaching the subject for the benefit of the grade teacher. She also interprets the course of study and usually indicates the subjects to be covered prior to her next visit. The visits of the itinerant teachers vary in the different subjects from once every two weeks to once every four weeks, and individual lessons average from 30 to 60 minutes. On the other hand, the official time schedule requires that music, drawing, physical training and elementary science shall each be taught on an average of about 80 minutes per week. Itinerant teachers as a whole teach less than 20 per cent of the time allotted to special subjects. The regular grade teacher is the person primarily responsible for instruction in these subjects, since she must teach over 80 per cent of the time allotment. In the last analysis, therefore, the effectiveness of the teaching of music, drawing, physical training, and elementary science depends upon the knowledge and skill of the grade teacher.

The fundamental defect of such a system is that it does not provide for adequate supervision of the work done in the special subjects by the grade teacher. In only one subject is any attempt made by the special teachers to inspect the methods and results of the latter's instruction. The physical-training teachers in the white schools spend part of each period in observing the grade teachers conduct the prescribed lesson, and this observation forms the basis of suggestions for improvement and for an efficiency rating at the end of the school year. No attempt is made by other special teachers to pass upon the quality of the grade teachers' instruction, except incidentally through the progress shown by the children. While the special teacher is in charge of the class, the regular teacher is supposed to observe carefully her methods and to assist her when necessary, but in several instances teachers were seen working at their desks or sitting in the back of the room marking papers. Many of the grade teachers are just as well qualified to teach the special subjects as the special teachers themselves. Obviously in their cases periodical demonstration lessons are unnecessary. In other cases the demonstration lessons are of dubious value if the teachers are not checked up regularly on their work.

The manual-arts group of special teachers differs in several fundamental respects from the itinerant group just described. They teach their subjects of manual training, sewing, cooking, and housekeeping at specially equipped centers; they teach only children in grades 6, 7, and 8; and they teach the full time allotted to manual arts without any assistance from grade teachers. The centers are located in various schools throughout the District, each center usually serving a number of schools in the neighborhood. In many cases children must walk a half mile or more from their school to the center. The large schools, such as Brown and Mott, have centers of their own which serve only the pupils in the one building.

The official time schedule shows the following number of minutes allotted to manual arts in grades 3, 4, 5, 6, 7, and 8, respectively: 45, 45, 60, 150, 180, and 180. In grades 3, 4, and 5, manual arts for girls consists of sewing, which is taught by itinerant teachers in regular classrooms. No corresponding activity has been provided for boys, and the grade teacher usually keeps them occupied with some quiet study during the sewing lesson. It should also be mentioned that sewing has been dropped from the third grade in the colored schools, and that some classes in both white and colored schools are visited by sewing teachers only every other week. In grades 6, 7, and 8 the girls receive their full allotment of time, one half in sewing and the other half in housekeeping or cooking. The boys, however, receive only half of their allotment in manual training, which means woodwork. Special center programs are usually worked out so as not to leave a grade teacher without at least part of her class. In a typical class of 40 pupils there will be 20 boys and 20 girls. Ten of the girls will go to the sewing center at 9 o'clock and 10 to the cooking center, while 10 boys will go to the manual training center at 9 o'clock and 10 will stay in their home rooms, and at 10.30 the two groups of boys and girls will change places. The grade teacher usually devotes the 90 minutes during which she has only one-half her class of boys to individual instruction in their weak subjects.

A study of the programs of special teachers indicates that for the most part their time is fully occupied. Not much time is lost in traveling, because teachers usually spend a full day at each school. However, it happens occasionally that lessons must be omitted because of some change in the school's program for the day, and these lessons are seldom made up.

During the last 10 years the number of special teachers has increased much more rapidly than the number of pupils. In 1917-18 there were 133 special teachers, and on March 11, 1927, there were 205, an increase of over 50 per cent while the average enrollment increased only 9 per cent.³ One reason for this increase is the addition of several new subjects, and another reason is the greater emphasis which has been laid on special subjects in recent years. The following table shows the distribution of directors and teachers according to subjects in both the white and the colored schools:

³ The number of directors of special subjects has remained the same, namely, 12.

Table showing distribution of directors and teachers of special subjects on March 11, 1927

Subject	Teachers		Directors		Total
	White	Colored	White	Colored	
Drawing.....	11	5	1	1	18
Music.....	16	7	1	1	25
Physical training.....	9	6	1	1	17
Manual training.....	24	9	1	1	35
Domestic science.....	28	12	1	1	42
Domestic art.....	33	13	1		47
Elementary science.....	17	8		1	26
Visual education.....	3	1			4
Penmanship.....		1			1
Auditorium.....	1	1			2
Total.....	142	63	6	6	217

Finally we come to the question, why special teachers? Relatively few teachers in charge of the regular classes had the technical knowledge necessary to teach music, drawing, physical training, and manual arts when these subjects were first introduced into the schools. The curriculum of the standard two-year normal course was already crowded, and no serious attempt was made to supply this deficiency in the teacher's training. Moreover, it was felt that teachers of subjects like music and drawing required a special native talent and special training, which could not be provided in the regular normal-school course. There is no doubt that it requires an exceptional teacher to teach adequately all the subjects in the modern elementary-school curriculum. The weekly program reproduced on page 70 lists 13 subjects which are taught in all grades above the second. Furthermore, the reorganization of the elementary school curriculum has resulted in the allotment of more time to play, physical training, drawing, music, the industrial arts, and to the content subjects, such as history and geography. According to the 1926 report of the Commissioner of Education—

the relative amount of time given to the three R's has diminished from 57.55 per cent of the total weekly allotment in 1904 to 50.58 per cent, while the content subjects have increased from 14.42 to 15.53 per cent and the special subjects from 27.97 to 33.89 per cent. If, however, the increased school year is taken into account the three R's receive practically as much time as they ever did.

Various plans have been adopted by the schools of the country to solve the educational problem of the modern city which has resulted from this enrichment of the curriculum. The work-study-play or platoon plan of organization has been adopted by many cities as a solution of the problem. It is claimed that this plan makes possible an enriched curriculum of music, art, physical training, manual training, etc., without affecting results in the three R's and without increased cost.⁴ As far as the seventh and eighth grades are concerned, the junior high school has solved the problem by means of the departmental system. Various experiments with modifications of the platoon and departmental plans are being conducted by several cities for the purpose of determining which is better adapted to local needs. Washington has taken a step in the right direction by grad-

⁴ The platoon plan is discussed in more detail in a following section of this report.

ually transferring the seventh and eighth grades to junior high schools, but the problem of specialized instruction in the other six grades still remains to be solved. Moreover, the transfer of the seventh and eighth grades to the junior high schools has raised another problem in connection with the future use of the manual arts centers.

There is no doubt that the present condition with reference to special teachers in the elementary schools of Washington is unsatisfactory, resulting as it does in both a duplication of teacher service and a loss of instructional space. School officials have been working on this problem for some time, and now that the normal course has been increased from two to three years it seems in fair way of solution. Additional training may now be provided in subjects like music, drawing, physical training, and elementary science, so that normal-school graduates in the future will be qualified to teach these subjects without the assistance of itinerant special teachers. As far as the manual arts are concerned, a plan is at present being developed for the introduction of a program of industrial arts in the lower grades, which will give both boys and girls the full-time allotment in manual arts and at the same time provide a use for the special centers. Some form of platooning or departmentalization, however, seems necessary in order that teachers may specialize in those subjects for which they are best fitted and that the pupils may have the advantage of expert instruction in all subjects. If such a plan is adopted it will undoubtedly be possible to assign a number of the itinerant special teachers to particular schools where they will teach the full-time allotment in their respective subjects.

For purposes of supervision the itinerant teachers should in our opinion eventually be replaced by a much smaller number of assistants to the directors, who will serve as inspectors and instructors of special subjects in the same way that the assistants in primary instruction now serve for regular subjects. Such assistants should be specialists in their particular fields and should be paid accordingly. Their functions will be to visit teachers in their classrooms regularly and observe the quality of their teaching, to take charge of classes if necessary and give demonstration lessons, and to conduct group meetings for the instruction of teachers who are weak in subject matter or method. It is our belief that such a plan will result in better all-round instruction in the special subjects and in more economical administration by eliminating the duplication which now exists between teachers of special subjects and teachers of regular classes.

Such a reorganization as recommended above will have to be introduced gradually. Both teachers and parents must be educated to the necessary changes in school organization, and various personnel adjustments will be required. No attempt has been made to work out the details of the suggested reorganization because we feel that this is an administrative problem which should be left to the school officials who are familiar with all its phases.

5. Miscellaneous Teachers.

Miscellaneous teachers include supplementary teachers, research assistants, and primary instruction assistants. Each of these groups will be discussed briefly.

Supplementary teachers are elementary-school teachers who have no regular classes assigned to them. They made their first appearance

in 1921 as coaching teachers, but coaching is only one of many duties which they now perform. Approximately one-half of the supplementary teacher's time is devoted to giving and scoring tests, tabulating test data, and interpreting test results to principals and teachers. The other half of her time she spends for the most part in coaching pupils at the school to which she is assigned. Among her other duties are taking charge of the classes of teachers and teaching principals who must absent themselves for official reasons, substituting for teachers who report sick until substitutes arrive, occasionally assisting the principal in the preparation of reports, and conferring with teachers concerning the progress and needs of particular children. Several of the supplementary teachers serve as regular relief teachers for teaching principals in large schools which do not have the 16 rooms necessary to justify an administrative principal.

It has already been pointed out in another connection that the administration of mental tests and the interpretation of test results seem a logical extension of the function of the supplementary teachers. There is no doubt that their work with backward and problem children has been materially assisted by the better diagnosis of individual cases which the tests have made possible. Under the old type of coaching there was a decided danger that a teacher might spend most of her time upon subnormal children who could not be fitted to return to regular classes and for whom the ordinary type of coaching was ineffective. Such children are now sent to atypical classes, and the supplementary teacher is thus enabled to devote her attention to those children who can profit most from her assistance. The various tests and clinical studies are invaluable aids to her in formulating and adopting devices and procedures for the purpose of remedying the difficulties found. It is not easy to measure the actual value of the coaching activities of the supplementary teachers, but there is no doubt that they have been instrumental in reducing both retardation and repetition in the elementary schools.

The suggestion has already been made that the supplementary teachers be relieved of the routine clerical work in connection with the scoring of tests so that they may be able to devote a larger proportion of their time to coaching. We also doubt the advisability of assigning supplementary teachers to particular schools for the purpose of relieving teaching principals of their regular teaching duties.

In the second semester of the school year 1926-27 there were 44 supplementary teachers—34 in the white schools and 10 in the colored schools. For the most part these teachers were assigned to schools having 16 or more rooms in charge of administrative principals. But in several instances two supplementary teachers were assigned to one school, while other schools of similar size had none. Since there are not enough supplementary teachers to serve all schools, it is suggested that hereafter they be definitely attached to the offices of the several supervising principals rather than to particular schools. The supervising principals may then assign them to the school or schools in their divisions where the greatest need exists for such services as the supplementary teachers are able to render.

The research assistants and the primary instruction assistants are teachers who do not teach. The former group assist the directors of research in the administration of a program of mental measurement

and educational research, which has already been described at some length in Part II of this report. In our opinion the work which they are doing requires the services of experienced teachers who have been trained in the psychology of individual differences and the technique of intelligence testing. All of them have been recruited from the elementary schools of Washington, and the research directors have supplied the special training which they lacked by means of extension courses. As to the value of their work, we have already expressed a positive opinion. By means of the mental test it has made possible the classification of children for teaching purposes according to individual abilities, and by means of the achievement test it has furnished an objective measurement of the progress of pupils and a basis for comparison with pupils in other cities throughout the country.

On March 11, 1927, there were 10 research assistants—6 white and 4 colored. On account of the lack of clerical assistance in the research departments they were required to spend a considerable portion of their time in the routine work of preparing charts and posting records. If several additional clerks are provided as previously recommended they will be able to devote most of their time to strictly research work.

The instruction assistants are really assistant supervisors of instruction. During 1926-27 there were seven of them—five in the white schools and two in the colored schools. In the white schools they are attached to the office of the assistant superintendent in charge of instruction in the elementary schools, and in the colored schools to the office of the director of primary instruction. They serve as inspectors and instructors of the grade teachers and rate them at the end of the year on the quality of their work. However, the instruction assistants are classified the same as elementary-school teachers so far as salary is concerned. Since they act as supervisors, it seems reasonable that they should be paid higher salaries than the teachers whom they supervise. If they have the qualifications of normal-school teachers, which most of them have, 3A seems the proper class for them.

6. Vocational Schools.

At the present time there are five vocational schools—one each for white and colored boys, and one each for white and colored girls, and one for white boys and girls. The white vocational school for boys was established in 1925-26 and the school for girls in 1926-27. The other white school has been in existence for some years as a prevocational school. The colored vocational schools have been in existence for a number of years. During the war they suffered a considerable slump, but since 1920 there has been a steady increase in enrollment.

Both of the recently organized white schools have met with a gratifying response on the part of boys and girls who wish to enter the trades. The school for boys is located in the old Abbot School, because no other building was available for the purpose. It has already outgrown these quarters and is now occupying several rooms in the Columbia Junior High School and the Polk School. The girls' school has been assigned the Dennison School, which will serve the purpose during its experimental period.

Both colored schools are adequately housed. The boys occupy the old Phelps School, which has been fairly well adapted to its

purpose. There is a large yard in the rear of this school which will permit of an extension for additional shops when they are needed. The Washington Vocational School for Colored Girls is located in a building which was especially constructed for trade training, and an extension of eight rooms has been authorized to house the gradually increasing enrollment.

The teaching personnel of the vocational schools has been supplied out of the regular allowance for elementary-school teachers. With the transfer of seventh and eighth grades to the junior high schools, a number of manual arts teachers have also become available for assignment to these schools. On account of the specialized nature of trade instruction, classes are small and the number of teachers needed is therefore proportionately higher than in other schools. The enrollment of the five vocational schools on March 11, 1927, was 855, and the number of teachers was 50—an average of 17.1 pupils per teacher. There seems little doubt that the enrollment of the vocational schools will continue to increase with the expansion of their facilities, and additional teachers will therefore be required from time to time as such increases occur.

7. Platoon Schools.

The aims of the platoon form of school organization, as stated by one of its advocates,⁵ are as follows:

(1) Better instruction and improved results in special branches without increased expense and without sacrificing the regular subjects of the curriculum.

(2) The filling of important gaps in the present curriculum without the increase in cost that often prohibits such additions.

(3) A more constant use of the school building and especially increased use of facilities usually considered "extras," such as auditoriums, gymnasiums, manual training rooms, and the like.

(4) A larger enrollment within the same building.

According to the 1926 report of the Bureau of Education the—
plan is being rapidly adopted by the cities of the country. In 1914 there were nine cities in six States which had schools organized on the work-study-play or platoon plan. In June, 1926, there were 110 cities in 33 States having such schools. In other words, in the last 12 years there has been a 1,122 per cent increase in the number of cities having this type of school organization. The 110 cities have a total population of over 17,000,000. Not only has the number of cities adopting the plan increased but there is a tendency to increase the number of schools on the plan in cities where it has been tried. For example, there are now 34 cities with a population of 5,988,607 which have organized all their schools on the plan, or have adopted it as a city-wide policy. Of these 34 cities, 22 already have all their schools on the platoon plan.

In the opinion of superintendents who have organized schools on the plan its rapid growth is due in large measure to the fact that under the plan it is possible, financially and administratively, to give to all children in a school system the opportunities for an enriched curriculum of work and play and study which the development of cities has made it imperative to provide for city children. They contend that changed social and industrial conditions have created a new educational problem—that of making cities fit places in which to bring up children.

The distinctive feature of the platoon school is the division of all of the school classes into two large groups, or platoons, alternating between the "home rooms," where the basic subjects are taught, and the rooms for special activities, where children receive training

⁵ Shattuck O. Hartwell, *Overcrowded Schools and the Platoon Plan*, Cleveland Foundation, 1916, p. 21.

in social, physical, and vocational subjects. While the classes of one platoon are in the home room for 90 minutes receiving instruction in composition, grammar, reading, spelling, arithmetic, and penmanship, the classes of the opposite platoon are distributed for three 30-minute periods among the activities of gymnasium, play, auditorium, science, literature, drawing, music, and manual arts. The alternating of the platoons in the middle of the morning and the middle of the afternoon divides a 6-hour day into three hours of home room work and three hours of special activities for every child, or a 5-hour day into two and one-half hours each of home room work and special activities. In most cities where the platoon plan has been adopted the length of the school day has been increased from one-half hour to an hour and one-half in order to allow more time for work and play activities.

Under ideal conditions where a building contains an auditorium, gymnasium, and rooms designed for special subjects, it is claimed that the building can be operated as a platoon school at a capacity one-third greater than as a traditional or departmental school. For example, such a building with 18 classrooms, accommodating 18 sections of 40 pupils, or a total of 720 children, on the traditional plan, will accommodate 24 sections or 960 pupils on the platoon plan. In old buildings, where gymnasiums and auditoriums must be adapted to the platoon organization, the pupil capacity can generally be increased from 15 to 25 per cent.

In spite of the financial economies indicated for the platoon school, there is a sincere difference of opinion among educators as to its educational advantages. One of the foremost opponents of the platoon school maintains that—

no highly artificial plan can minister as adequately to the complex and highly interrelated needs of the growing child as can a natural plan, permitting more intimate personal contact, interplay of minds, and sympathy between pupils and teachers.⁶

Natural learning conditions, it is claimed, can not be maintained under conditions requiring each special-subject teacher to care for hundreds of different pupils and requiring each child to meet and adapt itself daily to a number of different teachers. In this same connection it is urged that departmentalization in the elementary school results in disintegration, because instead of having a series of related experiences with a common end, what the pupil really has is a series of unrelated experiences, in which he realizes no common purpose.

Proponents of the platoon school reply that—

first, only half of the work of the platoon school is departmentalized; second, the other half is done in the home room where the contact between pupil and teacher is the same as in the traditional school; and, third, in that part of the work which is done departmentally vital contacts between pupils and teacher grow with the years, for the pupil has the same special teachers year after year. Almost everyone agrees that the daily grind of pupils with one teacher, considering the wide extent of the curriculum of the elementary school, is unsatisfactory. Very few people, indeed, would advocate extreme departmentalization; that is, a different teacher for each of the 12 or 14 subjects in the elementary school curriculum. The platoon school is exactly half way between these two extremes.⁷

⁶ F. G. Bonser, *Teachers College Record*, December, 1925, p. 310.

⁷ Wm. L. Connor, *Bulletin No. 5, Bureau of Educational Research, Cleveland Public Schools*, 1925.

In attempting to evaluate the conflicting claims of the advocates and opponents of the platoon school, one is impressed by the theoretical nature of much of the discussion on the subject, especially with reference to the objections of its opponents. It is true that the results secured by the platoon and the nonplatoon schools are not all measurable. On the other hand, the experience of Detroit, Pittsburgh, and Newark goes to show that in well-organized platoon schools which have adopted the longer day, outcomes are as good or better than they are in traditional schools. While the experience of these cities is not conclusive as far as Washington is concerned, nevertheless the results achieved justify us in recommending a scientific experiment with the platoon organization in several local schools for the purpose of comparing both financial costs and educational results in platoon and nonplatoon schools. The departments of educational research are certainly qualified to undertake such a study, and Washington has a number of nonplatoon schools comparing favorably with any in the country. But its one platoon school is hardly a fair sample of the type and will require considerable reorganization if it is to be used as one of the schools in the experiment. The organization of the platoon schools should be assigned to an administrative official who has studied the plan at first hand, and who can be depended upon to analyze impartially its operation in the experimental schools.

Washington now has one platoon school, the Park View, which has been in existence since 1919. The Park View School, however, can not be considered typical of the modern platoon school as operated in such cities as Detroit, Pittsburgh, and Newark. In the first place, the building is not well suited to its purpose, because it lacks the facilities in the way of gymnasium and special rooms and equipment which are usually considered necessary to the proper functioning of a work-study-play school. In the second place, the school day has not been programmed so as to secure a proper balance between the various work, study, and play activities.

Park View is nominally a 16-room building, but by using corridor space on the second floor and all rooms in the basement, this number has been increased to 22.⁸ There were 11 home sections last year using 11 of the regular rooms. The other five regular classrooms were used as special rooms—two for drawing, and one each for music, dramatics, and history and literature. A second-floor corridor originally designed as a library was used for teaching elementary science and geography. The other five rooms located in the basement were as follows: Two playrooms, one sewing room, one cooking room, and one manual-training room. In addition the school has a reasonably well-equipped auditorium, although it is much larger than necessary. The school has no outdoor play space but enjoys the use of a large municipal playground which serves the same purpose.

A careful study of the Park View program for the second semester of the school year 1926-27 indicates that the balanced program of work, study, and play which is claimed for the platoon school can not be secured without additional special facilities, and in all probability a longer school day is also essential to the success of the plan.

⁸ During 1926-27 Park View also had five portables, but there were an equal number of out-of-platoon classes. On Mar. 11, 1927, the actual enrollment was 881 and the total number of teachers 33, but the enrollment during the first semester averaged about 1,000.

In order to provide time for such activities as dramatics and auditorium assemblies, it has been necessary to eliminate both morning and afternoon recesses, amounting to 25 minutes a day. This elimination has resulted in a total loss of free play time, which is usually considered essential for growing children. Furthermore, the lack of a sufficient number of manual-arts rooms made it necessary to reduce the allotment of time for work in grades 6, 7, and 8 to one-half the number of minutes required by the regular schedule. In no case was this allotment more than 90 minutes a week, and in 8B it was only 60 minutes. Time which should have been assigned to play or work was in many cases spent in so-called supervised study in the assembly hall, which is poorly adapted to this purpose because the lighting is inadequate and there are no desks. As far as the basic subjects are concerned, the two and one-half hours spent in the home room usually provide all the time that the schedule demands, but in several instances the exigencies of program making have resulted in reducing the required allotment for special subjects such as music and drawing.

On the other hand, it must be admitted that in spite of the difficulties mentioned above the platoon plan at Park View has indicated how the capacity of a school may be increased by the intensive use of instructional space, including auditorium, play rooms, and shops. Furthermore, there is no duplication of teacher service such as exists in other schools visited by itinerant special-subject teachers, so that on the whole the plan has effected some economies in the assignment of teachers. The principal and teachers of the Park View School, the supervising principal of the division, and the parents of the community, therefore, deserve considerable credit for undertaking an experiment in educational organization under trying conditions.

Nevertheless, it can hardly be claimed that the platoon school has had a fair trial in Washington. We have already pointed out in our discussion of special-subject teachers that the present organization of the Washington schools involves a duplication of teacher service and a waste of instructional space, resulting in relatively high per capita costs both of instruction and of buildings. If the platoon school can reduce these costs without sacrificing any of the educational advantages of the present system, or if it can offer more or better instruction at the same cost, the taxpayers of Washington and the Nation are entitled to this information. On the other hand, if an impartial study indicates that local conditions are such as not to justify such a radical form or reorganization, perhaps some modification of the platoon plan or some form of departmentalization may be developed which will achieve similar results.

It is therefore recommended that the Board of Education undertake a platoon-school experiment by establishing two platoon schools, one white and one colored, by adapting to this purpose two of the new standard 16-room elementary school buildings. For the purposes of this experiment these two platoon schools should be paired with two nonplatoon schools similar in size and in composition of population, and each pair of schools should be approximately equal in teaching efficiency. Any initial difference in the ability and achievement of the pupils in the two types of schools will be indicated by the tests of the research departments. At the close of each semester these departments will measure the achievements of the pupils.

Each school should also be rated twice a year on certain types of pupil activity, such as deportment, self-control, morale, and initiative, by committees of five persons composed of the assistant superintendent in charge of instruction in elementary schools, the assistant superintendent in charge of research, and one representative each of the supervising principals, the administrative principals, and the teaching staff. Comparative studies of curricula and of costs by the research departments will supplement the achievement tests and the ratings of pupil activity. An experiment such as that outlined above extending over a series of years will supply the basis of fact, which is now lacking for the adoption of an educational policy of the highest importance.

8. Summary of Teacher Requirements.

The following table shows the average enrollments and the annual increases for the last 10 years in the elementary schools and grades 7 and 8 of the junior high schools:

Table showing average enrollments in elementary schools and grades 7 and 8 of the junior high schools from 1917 to 1927

Year	Average enrollment	In-creases	Year	Average enrollment	In-creases
1917-18	45,319		1922-23	51,066	2,672
1918-19	46,344	1,025	1923-24	51,694	628
1919-20	48,990	2,646	1924-25	52,247	553
1920-21	49,664	674	1925-26	52,750	503
1921-22	48,394	¹ 1,270	1926-27	56,536	3,786

¹ Decrease.

The average increase for the last 10 years in the elementary grades has therefore been 1,246, but the annual increases have varied considerably, and in one year there was an actual decrease. During 1926-27 the increase was over three times the average for the 10-year period. In view of this unusual growth last year it is estimated that the increase in enrollment for 1927-28 will not exceed 1,000. Since no junior high schools will be opened during the current year, most of this increase in enrollment will have to be provided for in the elementary schools. We therefore feel that the Board of Education's original estimate of 15 additional 1A teachers on account of increased enrollment is conservative. To provide accommodations for the increased enrollment, 24 new classrooms have become available as follows: Burroughs, 8; Woodridge, 8; and Bruce 8. Four additional rooms will become available at Smothers on February 1, 1928. Last year there were 15 teachers teaching in part-time classes or in portables connected with these buildings, so that 13 teachers will be needed for the new classrooms, leaving two teachers for new classes which may have to be opened in other parts of the city. There were also seven unused 1A salaries on June 30, 1927, which should be sufficient for such additional teachers as may be needed during the current year.

For the school year 1928-29 it is estimated that the enrollment in the elementary schools and the seventh and eighth grades of the junior high schools will increase about 1,000 pupils. Since no new

junior high schools are scheduled to be opened until the second semester, probably 80 per cent of the initial increase, or 800, will have to be provided for in the elementary schools. On the basis of a standard class of 40, this means 20 additional teachers of class 1A, which is three less than requested by the Board of Education in its original estimates. Twenty-four new classrooms will become available in September, 1928, as follows: Potomac Heights, 4; Barnard, 8; Bryan, 6; and Langdon, 6 (net). Since 15 teachers of part-time and portable classes are available at these schools, the net requirement for this purpose will be 9 teachers. The other 11 teachers will be required to provide for the increased enrollment and to relieve congestion in rapidly growing sections of the city.

With reference to the vocational schools, it is thought that the present personnel will be sufficient during 1927-28 with such additions as may be necessary from the manual arts teachers. However, in 1928-29 special provision should be made for five new positions of class 1A, two at M. M. Washington, two at Abbot, and one at Dennison to provide for the increased enrollment which will undoubtedly follow the increase in the number of classrooms at these schools.

The Board of Education has requested in its budget that a special salary of \$2,500 per year be allowed for "trade teachers in regularly organized trade schools teaching the following trades: Painting, printing, plumbing, sheet-metal work, plastering, bricklaying, automobile construction and repair, woodworking, and electrical construction. This request is based upon the difficulty of securing properly qualified teachers of trade subjects for the present class 1A salary (\$1,400 to \$2,200). Skilled tradesmen with teaching ability of the type desired are usually earning from \$50 to \$70 per week. The entrance salary of \$1,400 per year is hardly sufficient to attract even second-rate workmen or retired veterans. It should be pointed out that only the male trade teachers in the two vocational schools for boys are included in this request. The amendment quoted above is couched in such terms as to exclude female teachers and also male shop teachers in the elementary schools. In our opinion the request is a reasonable one and should be granted.

The above estimates of 15 positions of class 1A for 1927-28, and 25 for 1928-29 do not include any provision for additional kindergartners or teachers of special subjects. All other additions to the teaching staff, including both teachers of regular and special classes (atypical, ungraded, open window, tubercular, opportunity, etc.), and teachers of vocational classes will have to be made from these 40 positions.

If our recommendations for the absorption of excess kindergartners by the regular grades and for the gradual replacement of teachers of special subjects by a smaller number of supervisors are adopted and made effective immediately it will be possible to reduce the estimate for 1928-29 in the same amount that the number of these teachers can be reduced during that year. Special-subject teachers for the platoon schools recommended above may be recruited from the present special corps, so that no additional teachers will be needed for this purpose.

SECONDARY SCHOOLS

Introduction.

As in the case of elementary schools it was found necessary to study separately the various types of schools and teachers, so in the case of secondary schools we must distinguish clearly between junior and senior high schools and between teachers of various subjects. In studying teacher loads separate averages must be computed for home-room teachers and for subject teachers, and the various subject teachers must be grouped according to the general nature of the subject taught into academic (languages, history, mathematics, etc.), shop (electrical, machine, automobile, etc.), and group activities (physical training and music).

The study which follows is based upon a detailed analysis of the individual programs of teachers in the junior and senior high schools, supplemented by room schedules showing the use made of each classroom during every hour of the day, for the second semester of the school year 1926-27. Comparisons with other cities are based upon City School Leaflet No. 9 of the Bureau of Education entitled "Teaching load in 136 city schools" (June, 1923), and upon an independent investigation by the Bureau of Efficiency of the teaching load in seven cities comparable in size with Washington.

Reference has already been made to the adoption of the 6-3-3 plan by Washington and to the rapid growth of its junior high schools. The Bureau of Education reports that—

The movement to reorganize the school system, with six years in the elementary-school and six years in the secondary-school grades continues without abatement in all classes of cities throughout the country. The larger cities have almost uniformly adopted the 6-3-3 form of organization, but in the smaller cities there is no such uniformity of practice. * * *

Whatever the form of organization the aim should be to provide courses of study better suited to the needs of modern city life and to the needs of children from 12 to 18 years of age. The aim of the early part of the secondary-school course, the junior high school, is to provide general courses in mathematics, physical science, social science, languages, manual arts, etc., so as to permit the pupils to explore their interests, aptitudes, and capacities. Such exploration permits a pupil to elect more wisely when he enters senior high school, and for the pupil who leaves school at the end of the ninth grade the general courses are of greater practical and cultural value than was the drill upon the three R's in the old-time grammar school, which is passing away for the newer type of organization.⁹

Junior High Schools.

The first junior high school was established in Washington in 1919-20 and the average enrollment that year was 525 students with a total of 26 teachers. On March 11, 1927, there were 10 junior high schools with an enrollment of 7,058 students and 309 teachers. The five-year building program provides for six additional junior high schools, and when these are completed practically all seventh, eighth, and ninth grades will be housed in these schools.

The junior high schools in Washington are organized on a limited departmentalization plan so that many of the teachers are required to teach two subjects. In addition the home teacher of each class has charge of the extra-curricular activities of her pupils, including club meetings and educational and vocational guidance. So far as practicable each teacher of academic subjects in a junior high school is assigned to teach 750 pupil-periods per week, and each teacher of shop subjects 600 pupil-periods per week, which are reasonable

⁹ Annual Report of the Commissioner of Education, 1926, pp. 9 and 10.

standards compared with those in the elementary schools on the one hand and the senior high schools on the other. These standards are based upon the actual number of teaching periods, and no credit is granted for the extra-curricular activities which nearly all teachers are required to undertake. If any teacher's regular load is reduced on account of an unusually heavy program of extra-curricular activities the other teachers in the school are required to absorb the difference.

On March 11, 1927, the average number of students per home teacher was 30.3, and the average number of students for all teachers was 22.8. The reason for this difference is that teachers of shop subjects and teachers of music and physical training are not usually assigned home sections.

In comparison with junior high schools in other cities, Washington teachers have a low average number of pupils as shown by the following table. These averages are based upon the average daily attendance for the school year 1925-26 as reported to the Bureau of Education.

Table showing average number of pupils in daily attendance per junior high school teacher during the school year 1925-26

St. Louis, Mo.....	27.8	San Francisco, Calif.....	22.6
Kansas City, Mo.....	27.0	St. Paul, Minn.....	21.9
Baltimore, Md.....	26.3	Oakland, Calif.....	21.6
Columbus, Ohio.....	24.8	Cincinnati, Ohio.....	20.1
Jersey City, N. J.....	24.1	Washington, D. C.....	19.5
Denver, Colo.....	23.8	Atlanta, Ga.....	19.4
Cleveland, Ohio.....	23.4	Rochester, N. Y.....	16.0

During the second semester of 1926-27 the teachers of academic subjects had an average load of 718 pupil-periods, and teachers of shop subjects an average load of 523 pupil-periods.¹⁰ In both cases these loads are below the standard of 750 and 600 pupil-periods, respectively.

There are several reasons why the average number of pupils per teacher in the Washington junior high schools is less than in many other cities, and why the load in pupil-periods is below the standard established by the Board of Education. Perhaps the most important reason is the small size of the junior high schools in Washington, as compared with those in other large cities. The average number of pupils attending the junior high schools in the cities listed in the above table was 824, while in Washington it was only 600. Junior high schools of 1,000 are not uncommon and some run even higher. Small secondary schools nearly always require more teachers in proportion to the number of students than large schools. At least one teacher must be provided for each subject even though there are not a sufficient number of pupils to make a full class, and two teachers are often necessary because there are too many pupils for one teacher although less than the number required to provide a standard load for both. This condition is especially common in the case of elective subjects and ninth-grade subjects. A full class may elect Latin in the eighth grade, but the natural mortality may reduce the class to half its size in the ninth grade. But the school can not decline to offer the advanced course without breaking faith with its pupils. Most of the junior high schools offer a choice of shop

¹⁰ These averages do not include Stuart and Francis Junior High Schools which were newly organized on Feb. 1, 1927. Music and physical training are not included in the above averages.

subjects, and consequently few shop teachers carry the standard load of 600 pupil-periods. The uneven distribution which often exists between boys and girls is another factor which must be taken into consideration in this connection. As the enrollments of the junior high schools increase it should become possible gradually to increase the number of pupils assigned to these teachers, so that the loads will more nearly approximate the standard.

The analysis of the individual teacher's programs for the second semester of last year indicated that, based upon the standard load, there were in many of the junior high schools small excesses of teachers in individual subjects amounting usually to one-tenth or two-tenths of a teacher. There were likewise some shortages of the same character, but they were considerably smaller in number than the excesses. Only one school showed any real excess of teachers, namely, Columbia Junior High School, where the enrollment has been falling off rather rapidly on account of the changing character of the neighborhood. On the other hand, several of the schools showed real shortages, namely, Stuart and Francis, which were organized in February, 1927, and Shaw, where the enrollment has been increasing rapidly.

Based upon the real excesses and shortages determined by the above analysis and the needs for the extension to the Hine Junior High School, it is estimated that 15 additional teachers are now necessary in the junior high schools. Three more teachers should be sufficient to provide for the increased enrollment during the current year in view of the small excesses which existed last year in nearly all subjects. We therefore recommend that 18 additional junior high school salaries (12, 2A, and 6, 2C) be provided for the second semester of 1927-28, in order to secure for each pupil the fullest possible educational advantages without overloading the teachers.

For the fiscal year 1928-29 the Board of Education estimates that eight additional teachers will be required to provide for increased enrollment in the junior high schools. In our previous discussion of the needs for teachers in the elementary schools it was stated that a probable increase of 1,000 pupils is indicated in grades 1 to 8, 20 per cent of which, amounting to 200 pupils, would probably take place in grades 7 and 8 of the junior high schools. A probable increase of another 100 pupils in grade 9 makes a total of 300. In our opinion eight teachers is therefore a conservative estimate of the requirements for additional personnel in the junior high schools to provide for increased enrollment in 1928-29.

Two new junior high schools and additions to two of the present schools will be opened in 1928-29, and these will also require a number of additional teachers. The list of these buildings is as follows:

Building	Estimated date of completion	Rooms	Teachers available	Teachers needed
Garnet-Patterson.....	Feb. 1, 1929	24	15	9
Gordon.....	do.....	24	15	9
Langley (addition).....	Sept. 1, 1928	16	9	7
Shaw (to occupy old McKinley).....	do.....	64	39	25
		For adjustments.		2
				27

All seventh and eighth grades in near-by elementary schools will be transferred into these buildings. The salaries of the teachers of seventh and eighth grade classes thus closed and the salaries of the few special subject teachers (manual and household arts, music, drawing, physical training, and elementary science) will be converted into junior high school salaries. These conversions are made on the basis of 1.6 junior high school teachers to each elementary school teacher whose class is closed out, which is about the proportion between the average pupil load of elementary school teachers and junior high school teachers. We have already explained at some length why more teachers are needed in the junior high schools than in the elementary schools for the same number of pupils. Each teacher teaches only one or at most two subjects, and there are more subjects to be taught. Furthermore, pupils are allowed a certain amount of choice in the selection of subjects. Consequently classes are in nearly all cases smaller than in the elementary school where one teacher teaches all the subjects of her grade and no election of subjects is permitted to pupils.

In our opinion the estimate of 27 additional junior high school teachers for new classrooms and adjustments in 1928-29 is entirely reasonable. However, 18 of these teachers will be required for only one-half year since the Garnet-Patterson and Gordon Schools will not be ready until February 1, 1929. The total additional requirements for 1928-29, therefore, will be 17 teachers for a whole year and 18 teachers for a half year.

It has been customary in the past to divide the junior high school salaries between classes 2A and 2C in about the proportion of two to one. We believe that this practice is a reasonable one, and therefore suggest that the positions recommended above be distributed in the same proportion.

Senior High Schools.

The average enrollment in the senior high schools showed a steady growth until 1924 when the junior high schools had been firmly established. Between 1924 and 1927 the average enrollment increased less than 200, and the teaching force was stabilized at about 500. Over a 10-year period the teachers have increased just about as fast as the enrollment. The average enrollment in 1917-18 was 6,248, and in 1926-27 it was 11,053, an increase of 77 per cent. During the same years the teachers increased from 302 to 503, an increase of 66 per cent.

The standard load for teachers of academic subjects in the senior high schools is 700 pupil-periods and for teachers of shop subjects 600 pupil-periods. These are reasonable standards compared with those of other cities, and as in the case of junior high schools no credit is allowed for extra-curricular activities.

On March 11, 1927, the actual enrollment of all senior high schools was 11,564, and the number of teachers 503. The average number of students per home teacher was 32.1, and the average number of students for all teachers was 23. As in the junior high schools the reason for this difference is that teachers of shop subjects and teachers of music and physical training are not usually assigned home sections.

In comparison with senior high school teachers in other cities, Washington teachers carry a load slightly lower than the average.

The following table shows the average number of pupils per high school teacher in 28 cities comparable in size with Washington. These averages are based upon the average daily attendance for the school year 1925-26 as reported to the Bureau of Education.

Average number of pupils in daily attendance per senior high-school teacher during the school year 1925-26

	Pupils		Pupils
Seattle, Wash.....	27.2	Jersey City, N. J.....	21.8
Boston, Mass.....	25.2	Indianapolis, Ind.....	21.5
New Orleans, La.....	24.9	San Francisco, Calif.....	21.2
Milwaukee, Wis.....	24.6	Atlanta, Ga.....	21.1
Portland, Oreg.....	24.3	Louisville, Ky.....	20.6
Toledo, Ohio.....	24.1	Washington, D. C.....	20.3
Baltimore, Md.....	22.9	Oakland, Calif.....	19.8
St. Louis, Mo.....	22.7	Cincinnati, Ohio.....	19.6
Birmingham, Ala.....	22.7	Pittsburgh, Pa.....	19.4
Kansas City, Mo.....	22.7	Omaha, Nebr.....	19.2
St. Paul, Minn.....	22.6	Providence, R. I.....	18.3
Columbus, Ohio.....	22.4	Minneapolis, Minn.....	17.7
Cleveland, Ohio.....	22.3	Buffalo, N. Y.....	16.9
Denver, Colo.....	22.3	Rochester, N. Y.....	16.2
Newark, N. J.....	21.9		

During the second semester of 1926-27 the teachers of academic subjects, including the natural sciences, had an average load of 658 pupil-periods, and teachers of shop subjects an average load of 500 pupil-periods.¹¹ In both cases these loads were below the local Board of Education standard of 700 and 600 pupil-periods, respectively. But still they compare favorably with the loads shown in the Bureau of Education's leaflet of June, 1923, entitled "Teaching Load in 136 City High Schools." When the average loads for all these cities are adjusted to a comparable basis with those in Washington by reducing the length of the teaching period to 43 minutes and increasing the number of pupil-periods proportionately, the final average is 654 pupil-periods for academic subjects, and 559 pupil-periods for shop subjects.

The reasons why the average load of senior high school teachers is below the standard established by the Board of Education are similar to those mentioned above in our discussion of junior high schools, except that the senior high schools are larger than the junior high schools, and therefore the organization problem should be simpler. However, the strict departmentalization of subjects, and the wider choice of electives which is granted students more than counterbalances this advantage. With very few exceptions senior high school teachers teach only one subject whereas many junior high school teachers teach two subjects. Consequently there is a lack of flexibility in the organization of the senior high schools. To obviate this difficulty the boards of examiners are now requiring all candidates for senior high school positions to qualify in two subjects, a major and a minor. The elective system results in a large number of small classes, especially in advanced courses and in shop subjects. No way has yet been found of meeting this problem without unduly restricting the range of choice which is the basis of the elective system. However, electives should not in our opinion continue to be offered when

¹¹ Music and physical training are not included in these averages.

the registration falls so low that teachers have less than half the standard load, as was the case in several shop subjects last year.

An analysis of the individual teacher's programs indicates that there is a small excess of teachers in nearly all subjects in the senior high schools. These excesses, together with six unused salaries, which existed on June 30, 1927, should be sufficient to meet the needs occasioned by increased enrollment during the years 1927-28 and 1928-29. Consequently no additional senior high-school positions are recommended for this purpose. However, the request for two teachers in 1928-29 to facilitate the organization of a colored business high school separate from the Dunbar High School seems reasonable and should be granted.

Normal Schools.

The normal schools have shown a steady growth in average enrollment during the last 10 years, from 180 in 1917-18 to 686 in 1926-27. During the same period the teachers increased from 27 to 46. Last year 17 of the 46 teachers were engaged in practice teaching in the elementary schools, and the enrollment of their classes on March 11, 1927, was 989.

At the request of the local Board of Education the United States Bureau of Education made an exhaustive survey of the normal schools of the District of Columbia and recommended a number of changes relating to organization, courses of instruction, faculties, and pupils. Since most of these recommendations have already been adopted, it is our opinion that the normal schools conform to the high standards established by the Bureau of Education.

Curriculum and Efficiency of Instruction.

At the beginning of this report it was stated that the character of the curriculum and the efficiency of the instruction are important factors in determining the adequacy of a teaching staff. Both of these factors were therefore studied at first hand. Present courses of study as well as various plans for revision were carefully examined, and the efficiency of the staff was considered under the following headings: The individuals composing the staff, the organization for carrying out their work, and the results they have obtained.

As far as the curriculum is concerned, Washington has kept pace with the nation-wide movement for curriculum revision. The superintendent of the Washington schools has been a member of the commission on the curriculum of the department of superintendence of the National Education Association since its organization in 1924. He was also chairman of the committee on curriculum revision in nature study and elementary science whose report was published as a part of the 1926 yearbook of the department of superintendence. Later the same committee developed a course of study for the Washington public schools along the lines of their previous report. The new course in nature study and elementary science for kindergartens and grades one to six was approved by the Board of Education on June 9, 1926.

The revision of courses in other subjects was initiated by the superintendent on January 7, 1926, when he requested the assistance of the supervising principals in the organization of committees to recommend revised courses in arithmetic, reading and literature, English, history, and geography. These committees were appointed in due

course, each committee being composed of representatives of each of the first six grades and the kindergarten in addition to several officers. It is expected that the revised courses of study will be submitted to the Board of Education for its approval early during the school year 1927-28.

The revision of the junior high school course of study will be undertaken in the near future along the lines indicated in the 1927 yearbook of the department of superintendence of the National Education Association entitled "The Junior High School Curriculum." Any necessary revisions in the senior high school course of study will follow later after the commission on the curriculum of the department of superintendence has submitted its report on the curriculum of the senior high school.

With reference to the efficiency of instruction, we were unable to make any detailed analysis of the training, experience, age, sex, and social composition of the individual members of the teaching staff on account of the inadequacy of the personnel records. However, it is our opinion that the teachers are carefully selected after a rigid examination covering not only their training and experience, but also their health, character, and personality. Educational standards are high, but recruiting is not a difficult problem, because the salaries paid teachers under the law of June 4, 1924, compare favorably with those paid in other cities of over 100,000 population.¹² Furthermore, the general organization of the boards of examiners and the division of functions between the superintendent of schools and the Board of Education relating to the selection of personnel, are in accordance with the best practice in city school administration. However, there is one defect which should be pointed out in this place, namely, the lack of a centralized system of personnel records. At the present time such records are scattered among four different offices, and consequently it is impossible to secure in any one place a complete history of individual teachers. The logical place for keeping this central record of personnel is in the office of the board of examiners.

The organization of the teaching staff, as previously indicated in Part II, is based upon sound principles. Functions are clearly defined, and there is no overlapping of lines of authority. The various groups of workers (supervising principals, principals, heads of departments, directors, and teachers) are well balanced as far as size is concerned, and on the whole their efforts are satisfactorily coordinated.

During recent years considerable thought has been given to improving the efficiency of supervision in the schools. One of the methods employed to secure the desired result was the appointment of free principals in the elementary schools. Prior to 1922 there were no real principals in the elementary schools. Each building was in charge of a teaching principal who usually taught the eighth grade. In the school year 1921-22 a program was inaugurated looking toward the ultimate displacement of the teaching principal by a free or administrative principal in charge of a building or a group of buildings with 16 or more classrooms. During the school year 1921-22, 31 of these administrative principals were appointed. A number of additional ones were created in the following years when teaching principals resigned or retired and when new 16-room build-

¹² Salaries paid teachers, principals, and certain other school employees, 1926-27, 59 cities over 100,000 population.—National Education Association, January, 1927.

ings were completed. At the present time the number of these administrative principals is 49. There is no doubt that the local direction of education within the schools, which was formerly carried by the supervising principals, has been improved by the appointment of administrative principals. These principals are still required to teach at times in the several classes for the purpose of stimulating interest among pupils, aiding the teachers in discipline and in methods of teaching, and getting into close touch with the work of the pupils and teachers. But most of their time is devoted to supervising classroom work, settling questions of discipline, holding conferences with teachers, making a study of the special needs of individual pupils, keeping in touch with parents and with representatives of parent-teacher associations, and dealing with school nurses, medical inspectors, and attendance officers.

The departments of instruction, which operate from headquarters under the general supervision of assistant superintendents (one white and one colored), serve as staff advisers to principals and teachers in elementary schools throughout the city. These departments establish standards of instruction in the regular subjects based upon the most approved pedagogical principles, and by frequent inspection assistants make certain that they are being applied correctly. The special directors perform similar functions for their several specialties, namely, kindergartens, manual arts, household arts, music, drawing, physical training, and elementary science.

We have already made several recommendations with a view to improving the supervision in the elementary schools. In Part II it was recommended that the two positions of white and colored directors of kindergartens should be abolished when the present incumbents retire, and that their duties be transferred respectively to the white assistant superintendent in charge of instruction in elementary schools and the colored director of primary instruction.¹³ We have also recommended above that for purposes of supervision the itinerant teachers should eventually be replaced by a much smaller number of assistants to the directors who will serve as inspectors and instructors of special subjects in the same way that the assistants in primary instruction now serve for the regular subjects.¹⁴

At the present time each junior high school has one principal. Senior high schools, however, are assigned one assistant principal (female) when the number of pupils exceeds 1,000, and an additional assistant principal (male) when the number exceeds 1,500. These standards are entirely reasonable compared with those of other cities. On June 30, 1927, there were seven principals and nine assistant principals of senior high schools.

There are nine heads of departments in the high schools for white pupils and seven in the high schools for colored pupils. Each head of department supervises his subject in the several associated high schools. In his annual report for 1921-22 the superintendent of schools pointed out that this plan for the unification of the work in the high-school subjects differs from the general practice throughout the country and that the system in Washington had not worked out wholly satisfactorily. After careful study a set of rules was adopted

¹³ See Recommendation No. 4, Pt. II, p. 48.

¹⁴ See p. 80, Pt. III.

on June 21, 1922, governing the duties of heads of departments. But it can hardly be said that these rules have resulted in a satisfactory operation of the system. Evidently the system itself is at fault rather than the regulations. The growth of the junior high schools in recent years has further complicated the problem. At the present time there is some overlapping of functions between heads of departments and directors of special subjects in the junior high schools due to the fact that the junior high school is composed of one high school grade (9) and two elementary grades (7 and 8). In our opinion the whole subject of supervision of instruction in the high schools should be reconsidered at this time in view of the experience of the last five years.

With reference to the efficiency of the teaching staff no attempt was made either to rate the teachers at work or to measure results as shown by the accomplishment of the children. These are educational problems requiring a specialized technique, and the limitations of time did not permit of an exhaustive analysis of this sort even if we had considered it necessary. It should be noted that the school system itself provides for the rating of teachers and the measuring of results currently.

Elementary-school teachers are rated by the supervising principals in cooperation with administrative principals and by the directors of primary instruction. High-school teachers are rated by their principals and by the heads of departments. The rating system seems to be working satisfactorily, although the number of elements on which teachers are rated is in our opinion excessive. The rating sheet might also be simplified by the adoption of the graphic scale which is now used for rating nonteaching employees.

The measurement of instruction is one of the functions of the departments of educational research. Each year the departments plan to make an investigation of some subject in the hope that the findings may result in improving instruction and increasing learning by means of better adaptations of the curriculum to pupil differences. The following quotation from the report of the Board of Education for 1925-26 (p. 70) is a summary of one of these investigations:

Our first arithmetic tests showed that while Washington children were for the most part above the average standards grade for grade in arithmetic knowledge, they were in many schools from one to three semesters retarded in arithmetic facility. This seemed to be the result of inadequate or wasteful drill. The matter was presented to teachers, principals, supervising principals, and the directors of primary instruction, with the result that the recommendation of the department of research was followed and modern practice materials, such as Courtis practice tests, or Thorndike exercise books, were purchased and this material introduced in 47 schools.

These materials automatically adapt the work to the ability of each pupil, giving him the practice in his particular weak points, thereby cutting down reteaching and premature teaching. A year after the introduction of this material and the changes it necessitated in the methods of drill in arithmetic another survey was made of the speed and accuracy. (The results showed that the schools had bettered their achievement because individual differences were being considered.)

Recommendations.

The recommendations included in this part of the report may be summarized as follows:

1. No additional kindergartners should be provided until such time as the present excess has been absorbed either by opening new

kindergartens or by transferring to the grades kindergartners holding elementary school licenses.

2. The afternoon programs of kindergartners should be more carefully supervised so as to increase the time devoted to coaching primary children.

3. Since regular grade classes in the elementary schools are organized for the most part on the basis of a standard of 40 pupils, additional teachers should be provided in the grades to take care of the regular increase in enrollment resulting from the natural growth of the city.

4. Consideration should be given to the establishment of additional special school centers for atypical and ungraded children with adequate facilities for teaching manual arts.

5. As opportunity offers additional open-air classes should be opened and a sight-conservation class should be established.

6. The number of itinerant special subject teachers should gradually be reduced, and some form of platooning or departmentalization introduced into the elementary schools in order that teachers may specialize in those subjects for which they are best fitted and that pupils may have the advantage of expert instruction in all subjects.

7. The Board of Education should undertake a platoon-school experiment by establishing two platoon schools, one white and one colored, by adapting to this purpose two of the new standard 16-room elementary school buildings.

8. For purposes of supervision the itinerant teachers should eventually be replaced by a much smaller number of assistants to the directors, who will serve as inspectors and instructors of special subjects in the same way that the assistants in primary instruction now serve for the regular subjects.

9. The whole subject of supervision in the junior and senior high schools, with special reference to the duties of directors of special subjects and heads of departments, should be reconsidered in view of the experience of the past five years.

10. Centralized systems of teachers' personnel records should be established in the offices of the boards of examiners.

11. Our recommendations for additional teachers are as follows:

Elementary schools:

1927-28	-----	15 class 1A.
1928-29	-----	20 class 1A. 5 class 1A (vocational schools).

Junior high schools:

1927-28	-----	12 class 2A. 6 class 2C.
1928-29	-----	11 class 2A } whole year. 6 class 2C } 14 class 2A } half year. 4 class 2C }

Senior high schools:

1927-28	-----	None.
1928-29	-----	2 class 3A.

If our recommendations for the absorption of excess kindergartners by the regular grades and for the gradual replacement of teachers of special subjects by a smaller number of supervisors are adopted and made effective immediately, it will be possible to reduce the estimate for 1928-29 in the same amount that the number of these teachers can be reduced during that year.

PART IV

THE BUILDING SITUATION

A review of the history of the development of the Washington public schools indicates that the school authorities have always had difficulty in procuring sufficient funds to meet the needs for buildings and sites occasioned by an increasing school enrollment and by obsolescence. This has been due, we believe, in large measure to the "pay-as-you-go" policy of financing expenditures of the District government, which makes impossible the consummation of any large program of capital additions over a short period of time without an undue increase in the tax rate of the District of Columbia.

Congressional Investigation—1882.

At various times the shortage of schoolhouse accommodations has become so acute as to provoke special congressional investigations. By a resolution of the House of Representatives, approved on February 20, 1882, a commission, consisting of a surgeon of the United States Army, the United States Commissioner of Education, and the Architect of the United States Capitol, was appointed to make an exhaustive survey of the school-building situation in the District of Columbia and to report to the House with recommendations. The commission's report indicates that a serious shortage of schoolhouse accommodations existed at that time. It states in part:

The amount appropriated for the construction of new buildings in the District during the last three years has not been sufficient to do more than meet the demand for accommodation due to the annual increase of the pupils during the same time. * * *

It is believed that this statement sufficiently accounts for the fact that there has been little or no diminution in the number of rented buildings, notwithstanding the number of new buildings which have been constructed.¹

The commission recommended increased appropriations for the construction of school buildings. In this connection, its report states:

The commission has carefully considered the existing wants of the District for additional school accommodation.

Looking at this side of the question only, it would appear that there is at the present time great demand for additional school buildings. * * * Taking all these things into consideration it is the opinion of the commission that for the next three or four years at least the sum of \$100,000 per annum should be expended in the construction of new buildings upon plans to be approved by a board of experts, and that, setting all other considerations aside, it will be much more economical to make this expenditure than to pay the rents of the structures which these new buildings would replace.

¹ 36 buildings generally unsuitable for school purposes were rented at the time, which represented 27 per cent of the total school-building facilities.

Congressional Investigation—1906–1908.

Again in 1906, by the organic act establishing the present school system, Congress created a schoolhouse commission, consisting of the superintendent of schools of the District of Columbia, the Supervising Architect of the United States Treasury, and the Engineer Commissioner of the District of Columbia, which was charged with the duty of formulating a general school-building program for the consideration of Congress. The commission submitted its report on February 25, 1908, containing 18 recommendations, of which the following are of particular interest at this time.

Immediate Abandonment of Ten Buildings.

The commission recommended the immediate abandonment of the following school buildings: Potomac, McCormick, Thomson, John F. Cook, Threlkeld, High Street, Hillsdale, Bunker Hill, Garfield, and Johnson Annex.

The following tabulation shows the location of each building, the year erected, its present status, and the number of years elapsed before the recommendation was carried out:

Building	Year erected	Present status	Number of years before recommendation was carried out
Potomac School, Twelfth Street between Maryland Avenue and E Street SW.	1870	Abandoned as a school building in 1912; now used as a storehouse.	4
McCormick School, Third between M and N Streets SE.	1870	Demolished in 1916–17 by act of Congress taking site into navy yard.	8
Thomson, Strong John, School, Twelfth and L Streets NW.	1877	Old brick structure demolished in 1911 when new building was erected.	3
Cook, John F., School, O near Fifth Street NW.	1868	Abandoned as a school building in 1926; now used as a storehouse.	18
Threlkeld School, Thirty-sixth and Prospect Streets NW.	1868	Abandoned for regular grades in summer of 1919; since then used for children in atypical classes.	
High Street School, Wisconsin Avenue and Thirty-third Street NW.	1853	Demolished in 1910; lot now used as the site of Wisconsin Avenue Manual Training School, erected in 1912.	2
Hillsdale School, Nichols Avenue SE.	1871	Abandoned in 1913; lot only.	5
Bunker Hill School, Bunker Hill Road, between Fourteenth and Sixteenth Streets NE.	1883	Brick building (1 room) still standing in rear of new building; not used.	5
Garfield School, Alabama Avenue and Twenty-fifth Street SE.	1887	Demolished in 1910; new building erected on site in 1910.	2
Johnson Annex School, Hiatt Place and Lamont Street NW.	1871	Demolished in 1916; lot now part of the site of the Johnson School erected in 1895.	8

Attention is invited to the fact that although the Threlkeld School was abandoned for regular grade work in 1919 it is still being used for atypical classes, and that most of the buildings were continued in use for several years after the recommendation for immediate abandonment was made.

Early Abandonment of Eight Other Buildings.

The commission recommended the early abandonment of the following schools: Webster, Abbot, Berret, Lincoln, Force, Adams, Bradley, and Jefferson.

The following tabulation shows the location of each building, year erected, number of rooms, and the present use:

Building	Year erected	Rooms	Present use
Webster School, Tenth and H Streets N.W.	1884	12	Americanization school and elementary school; white.
Abbot School, Fifth Street and New York Avenue N.W.	1869	9	Elementary school; white.
Berret School, Fourteenth and Q Streets N.W.	1889	9	Offices of directors of music, drawing, and kindergartens, and manual arts center.
Lincoln School, Second and C Streets S.E.	1871	12	Elementary school; colored.
Force School, Seventeenth and Eighteenth Streets N.W.	1879	12	Elementary school; white.
Adams School, R Street between Seventeenth Street and New Hampshire Avenue N.W.	1888	8	Do.
Bradley School, Thirteenth between C and D Streets S.W.	1887	8	Do.
Jefferson School, Sixth and D Streets S.W.	1872	20	Junior high school; white.

With the exception of the Berret School each of these buildings recommended for early abandonment is still being used to its full capacity as a school. The Berret is now used for teaching domestic science, domestic art, and manual training to pupils sent there from other schools in the vicinity; it also contains the offices of the directors of drawing, kindergartens, and music.

Assembly Halls and Gymnasiums.

The commission also recommended a more liberal provision in new buildings for assembly halls and gymnasiums, but no consistent policy was adopted until recently regarding these facilities. Certain elementary school buildings, which have been erected or enlarged since 1908, have been provided with assembly halls, while others have not. No elementary schools in the District of Columbia are provided with gymnasiums, although the 16-room buildings erected during the last few years under the five-year building program contain a combination gymnasium and assembly hall.

Playgrounds and Athletic Fields.

The commission recommended a more liberal provision for playground space and the establishment of athletic fields, but many of the elementary schools still have inadequate playgrounds according to generally accepted standards. However, in most of these cases provision has been made in the five-year building program for the purchase of additional land.

Increased Appropriations for Sites and Buildings.

The commission recommended "a substantial increase in the size of the appropriation for sites and buildings for the next three to five years to make up for the present backward condition of our schools due to insufficient appropriations for new buildings of recent years." In discussing this recommendation the commission stated:

Within the past 10 years the total of appropriations for new buildings, including the purchase of sites, has been about \$2,850,000. In the fiscal years 1901, 1902, 1907, 1908 only did the appropriations for new school buildings and sites exceed \$300,000. It should also here be noted that this period of 10 years has seen the erection in the District of two of its high schools, besides the Armstrong Manual Training School. It is believed by the commission that in these 10 years the District has fallen behind in the construction of new buildings to the extent of at least \$2,000,000, and that there exists now an immediate need for new construction to meet this defect, a need which should be remedied by as liberal appropriations as possible for the succeeding two or three years. * * * The commission believes that an authorization in new school buildings and grounds for the

fiscal year 1909 of about \$1,000,000 should be made, and that about the same sum should be appropriated for each of the three or four succeeding years, after which time a normal basis will be reached of about \$600,000 per year for new buildings and from \$100,000 to \$150,000 a year for repairs to buildings, to plumbing, and to heating and ventilating apparatus. These figures are based on an authorization or requirement of a better class of construction in the building. Most of the latest buildings in the District are not fireproof and are built at a cost of about 11½ cents per cubic foot. It is believed that the type of construction should be raised to a cost of about 17 cents per cubic foot, the cost decreasing for the larger buildings. This contemplates fireproof construction, up to the ceiling of the top floor.

The amounts appropriated by Congress for buildings and grounds during the period 1909-1920, as compared with the amounts recommended by the commission, are as follows:

Year	Amount recommended by the commission	Amount appropriated	Year	Amount recommended by the commission	Amount appropriated
1909.....	\$1,000,000.00	\$528,000.00	1916.....	\$600,000.00	\$775,500.00
1910.....	1,000,000.00	807,000.00	1917.....	600,000.00	387,930.50
1911.....	1,000,000.00	613,500.00	1918.....	600,000.00	753,500.00
1912.....	1,000,000.00	739,725.00	1919.....	600,000.00	17,150.00
1913.....	600,000.00	139,000.00	1920.....	600,000.00	260,000.00
1914.....	600,000.00	597,000.00			
1915.....	600,000.00	1,053,300.00	Total.....	8,800,000.00	6,461,605.50

¹ Excluding \$231,000 provided for portables as an emergency war measure.

² Excluding \$25,000 provided for portables as an emergency war measure.

The above tabulation shows that during the period 1909 to 1920 the appropriations for school buildings and grounds were approximately \$2,500,000 less than the amount recommended by the commission. Meanwhile, the cost of construction had risen from 17 cents per cubic foot in 1908 to 50 cents per cubic foot in 1920, and the school enrollment had increased to an extent that could not have been foreseen in 1908. Continually rising prices, coupled with the restrictions placed upon building by the War Industries Board, practically brought schoolhouse construction to a standstill during the war and the immediate postwar periods. In fact, the appropriations for the fiscal years 1919 and 1920, with a few minor exceptions, covered portable buildings only, while approximately \$1,000,000 which was available for expenditure on definitely authorized projects during the fiscal year 1918 remained unexpended at the beginning of the fiscal year 1921.

Shortage of Schoolhouse Accommodations, 1920.

The shortage of schoolhouse accommodations at the beginning of the fiscal year 1921, therefore, was without doubt the most serious that had existed in the history of the Washington public schools. It was estimated that \$10,000,000 would have been required at that time to make up for this shortage, including the replacement of buildings previously recommended for abandonment. The estimates of school-building needs submitted to Congress for the fiscal year 1921, however, did not reflect the true situation, for the commissioners had reduced the requests of the Board of Education in order to keep the total estimates of appropriations for the entire District government within the limits set by law.

The item for buildings and grounds, public schools, carried in the regular 1921 appropriation act, approved June 5, 1920, amounted to

but \$402,600, which, with the exception of one new item, covered additional amounts on account of increased construction costs for projects already authorized. The regular appropriation act for the fiscal year 1922, approved February 22, 1921, carried \$980,000 for buildings and grounds, as compared with the commissioner's estimate of \$1,702,000. In this connection, it is interesting to note that both the commissioners and the school officials called the attention of the House Appropriations Subcommittee to the serious shortage in schoolhouse accommodations at the hearings held on the 1922 District of Columbia appropriation bill, and suggested that the funds needed might be raised by a bond issue.

Meanwhile, the superintendent of schools had made an exhaustive study of the schoolhouse situation and had submitted to the Board of Education, on December 1, 1920, a special report on schoolhouse accommodations. This report indicated that 183 additional classrooms were needed immediately to provide adequately for pupils actually enrolled in the elementary schools, which it was estimated would cost \$5,327,500. These classrooms were distributed as follows:

	Classrooms
To eliminate the use of portable schoolhouses.....	72
To eliminate rented quarters.....	¹ 15
To eliminate undesirable rooms.....	21
To reduce oversize classes.....	57
To eliminate part-time classes.....	18
Total.....	² 183

The superintendent recommended in his report that a comprehensive building program should be undertaken immediately, which should provide the city with 200 additional elementary school classrooms within the following two years. He analyzed the elementary classroom situation by divisions of the city, indicating where additional facilities were required and pointing out the most urgent needs. The superintendent also invited attention to the congestion in the high schools at the time, but made no definite recommendations for the immediate future, since the proposed establishment of two junior high schools, and the opening of the new Eastern High School, which had already been authorized and partially appropriated for, would provide some relief to the high schools then in operation.

Appropriations for Buildings and Grounds, 1921-1925.

The regular appropriation act for the fiscal year 1921 provided funds sufficient to place only 48 elementary classrooms under construction, while the regular 1922 appropriation act authorized 16 additional elementary classrooms. In view of the inadequacy of these appropriations, steps were taken by the Board of Education, after the passage of the regular appropriation act for 1922 on February 22, 1921, to secure relief by a deficiency appropriation.

Accordingly, the Commissioners of the District, upon the request of the Board of Education, submitted to Congress supplemental estimates to cover the cost of urgently needed school sites and buildings. This resulted in the inclusion in the second deficiency act,

¹ This figure was later revised to 41.

² This total does not include buildings recommended for abandonment in 1908 which were still in use at the time.

1921, approved June 16, 1921, of buildings and grounds items for the public schools amounting to \$1,544,000 and the authority to enter further into obligations on this account in the amount of \$400,000. Thirty-six additional elementary-school classrooms and two 24-room junior high schools were provided for, excluding 16 elementary classrooms authorized for replacement of unsuitable quarters, which were not included in the superintendent's report of shortages. It was estimated that the two junior high schools would include accommodations equivalent to 28 elementary classrooms. Therefore, the regular appropriation acts of 1921 and 1922, the second deficiency act of 1921, and prior appropriation acts provided for but 128 elementary classrooms as against the shortage of 183 existing in November, 1920.

The items carried in these appropriation acts were not sufficient, therefore, to make up for the shortage of schoolhouse accommodations that existed in November, 1920, leaving out of consideration the abandonment of buildings then in use which had been recommended for immediate or early abandonment in 1908. Moreover, the increase in enrollment of the schools, which demanded the addition of about 25 classrooms annually, had not been provided for. The superintendent of schools in his annual report for the fiscal year 1921 in discussing the building problem recommended that a definite policy be adopted whereby the deficiencies of the past should be made up within a reasonable period of time. He said:

The superintendent of schools believes that it will take an expenditure of an additional appropriation of more than \$2,000,000 annually (exclusive of additional items on account of projects already authorized) for a period of five or more years before the children of the public schools will be housed adequately. The request for \$2,000,000 in the deficiency bill was based upon the general belief on the part of school and district officers that a similar appropriation annually for a period of years would be a better policy than a larger appropriation made at any one time.

The regular appropriations for school buildings and grounds for the fiscal years 1923, 1924, and 1925 were not made in accordance with the program of \$2,000,000 a year recommended by the superintendent. In fact, \$1,400,000 of the \$2,036,000 appropriated for 1923 covered additional items on account of projects previously authorized, leaving only \$636,000 for new projects, while the appropriation for 1924 amounted to \$1,300,000 and that for 1925 to \$1,242,500. In addition, \$32,260 became available in 1924 by the deficiency act approved April 2, 1924. The annual appropriations for school buildings and grounds for the fiscal years 1921 to 1925 may be summarized as follows:

1921—Available at the beginning of the year for projects previously authorized	\$921, 785
Appropriation act	402, 600
1922—Appropriation act	980, 000
Second deficiency act, 1921	1, 544, 000
1923—Appropriation act	2, 036, 000
1924—Appropriation act	1, 300, 000
Deficiency act, 1924	32, 260
1925—Appropriation act	1, 242, 500
	8, 459, 145

While these funds relieved the congestion to some extent, they fell far short of providing facilities to house adequately the school

population of the District. It will be recalled that the superintendent of schools estimated that at the beginning of the fiscal year 1921 the accumulated shortage of schoolhouse accommodations amounted to \$10,000,000. Meantime, the enrollment of the schools had increased from 58,711 in 1921 to 64,906 in 1925. Moreover, in 1923, the school authorities adopted the policy of a full school day for the pupils of grades 1 and 2 of the elementary schools, who had previously attended school for a half day only. This made necessary 150 additional elementary classrooms on account of the elimination of part-time classes.

During the period covering the school years 1920-21 to 1924-25, inclusive, 161 new elementary classrooms were opened, while 24 classrooms were under construction at the close of the school year 1924-25. Two new junior high schools of 24 rooms each and one new senior high school with an estimated capacity of 1,800 pupils were also opened during this period, while at the close of the school year 1924-25 additions to senior high schools providing accommodations for approximately 1,350 pupils were under construction.

Five-Year Building Program.

The superintendent's comparison of the building situation as of November 1, 1920, and November 1, 1924, follows:

Report of shortage of schoolhouse accommodations, elementary schools, November 1, 1920, and November 1, 1924

	1920	1924
Classrooms needed:		
To eliminate portables.....	73	57
To eliminate rented quarters.....	41	24
To eliminate undesirable rooms.....	21	30
To reduce oversize classes.....	57	40
To eliminate part-time classes—		
Grades 1 and 2.....	¹ 150	123
Above grade 2.....	18	6
To abandon buildings recommended for immediate abandonment in 1908, still in use.....	² 12	² 12
To abandon buildings recommended for early abandonment in 1908, still in use.....	³ 90	³ 90
To abandon other buildings now unfit for use.....	⁴ 25	⁵ 66
Total.....	487	448

¹ Although the policy of full-time for grades 1 and 2 was not adopted until 1923, these rooms are included in 1920 in order to make the totals for 1920 and 1924 comparable.

² John F. Cook, 8 rooms; Threlkeld, 4 rooms.

³ Abbot, 9 rooms; Adams, 8 rooms; Berret, 9 rooms; Bradley, 8 rooms; Force, 12 rooms; Jefferson, 20 rooms; Lincoln, 12 rooms; Webster, 12 rooms.

⁴ Bell, 8 rooms; Chain Bridge, 1 room (abandoned in 1923); Hamilton, 4 rooms; Smothers, 4 rooms (abandoned in 1922); Tenley, 8 rooms.

⁵ Bell, 8 rooms; Hamilton, 4 rooms; Tenley, 8 rooms; Arthur, 8 rooms; Brightwood, 8 rooms; Garnet, 12 rooms; Langdon, 10 rooms; Patterson, 8 rooms.

Report of shortage of schoolhouse accommodations, high schools, November 1, 1920, and November 1, 1924

	1920	1924
Student capacity—all high schools.....	7,720	9,300
Enrollment, Nov. 1.....	8,984	12,271
Net shortage.....	1,264	2,971

In view of the representations made from time to time by the school authorities and the District Commissioners relative to the acute schoolhouse situation that came into being during the war and immediate postwar periods, the subcommittees on schools and playgrounds of the Committees on the District of Columbia of the Senate and House of Representatives made an inquiry into the matter, which resulted finally in the passage of the five-year school building program act on February 26, 1925. The Senate subcommittee held hearings on the "building program" of the public schools on May 5, 6, and 7, 1921, when the superintendent's special report on schoolhouse accommodations of December 1, 1920, was given consideration. Joint hearings on schools and playgrounds were held on December 16, 1921, and continued through January 9, 19, 27, February 10 and 17, and June 22, 1922. Consideration was given by the joint subcommittee to various phases of the organization and administration of Washington's public-school system. On February 26, 1923, the report of the subcommittee entitled "Reorganization of the schools of the District of Columbia" (Senate Doc. No. 315, 67th Cong., fourth session) was submitted to the Committees of the Senate and House of Representatives on the District of Columbia. Among other things the subcommittee recommended "that a definite policy be adopted which shall provide from year to year sufficient schoolhouse accommodations, in order that it make it possible for the Board of Education to eliminate part-time instruction, the use of portable schoolhouses, the use of undesirable school buildings now accommodating classes, and the reduction of the size of classes in both elementary and high schools to the standard generally accepted as desirable." It was on the basis of this report and the testimony obtained by the committee, together with information collected by the school officials, that the legislation authorizing the five-year school building program was prepared.

The five-year school building program act is a legislative authorization for making appropriations from year to year, in order that by 1930 the school children of Washington will be suitably housed in buildings adequate to provide the instruction and training which an up-to-date system of public education ought to provide.

The purpose of the act is stated in its preamble as follows:

That it is the purpose of this act, which shall hereafter be known as the five-year school building program act, to provide a sufficient number of school buildings to make it possible: To abandon all portables; to eliminate the use of rented buildings; to abandon the use of undesirable rooms; to reduce elementary school classes to a standard of not more than 40 pupils per class; to provide a five-hour day of instruction for elementary school pupils, thereby eliminating part-time classes; to abandon all school buildings recommended for immediate or early abandonment in 1908; to abandon other school buildings which have become unfit for further use since 1908; to provide a full day of instruction for high-school pupils thereby eliminating the "double-shift" program in the high schools; to provide for the annual increase in enrollment of pupils during said five-year period; and, in general, to provide in the District of Columbia a program of schoolhouse construction which shall exemplify the best in schoolhouse planning, schoolhouse construction, and educational accommodations.

The five-year school building program act authorizes the purchase of land for school sites and school playgrounds in particular vicinities and the construction of buildings of specified capacity for elementary schools, vocational schools, junior high schools, and senior high

schools. The policies of the Board of Education in respect to the following matters were indorsed by the provisions of the act:

(1) The conduct of the school system on the 6-3-3 basis; that is, six years of elementary school work, three years of junior high school work, and three years of senior high school work.

(2) The establishment of elementary school units of 16 or more regular classrooms. In such cases where 16 rooms are not needed immediately, provision is made for four or eight room extensible units with the intention of enlarging such buildings as the need arises.

(3) The provision of a combined assembly hall and gymnasium for each elementary school building of 16 rooms or more.

(4) The provision of special facilities for instruction in manual training for boys and domestic art and domestic science for girls in each 16-room elementary school building.

(5) The provision of adequate outdoor play space for all pupils.

The act provides that it shall become effective on the 1st day of July, 1925, and that estimates of expenditures for buildings and grounds for the public schools shall thereafter be prepared in accordance with its provisions.

It was estimated at the time of the passage of the act that the five-year building program would cost \$20,185,000. On this basis appropriations of \$4,037,000 annually for five years would have been necessary to complete the program as planned.

Appropriations applicable to the projects included in the five-year building program have been made as follows for the fiscal years 1926, 1927, and 1928:

Fiscal year 1926 ² —	
Regular appropriation act.....	\$1, 495, 000
Second deficiency act, 1925.....	2, 534, 000
First deficiency act, 1926.....	138, 000
Fiscal year 1927—	
Regular appropriation act.....	2, 296, 000
Fiscal year 1928—	
Regular appropriation act.....	2, 794, 250
Total.....	9, 257, 250

At the annual rate of \$4,037,000 contemplated by the five-year school building program act, a total of \$12,111,000 would have been necessary for these three years. The program will, therefore, be \$2,853,750 in arrears at the close of the fiscal year 1928.

Construction Under Five-year Program.

The construction under the 1926 and 1927 appropriations has supplied a sufficient number of rooms to provide accommodations for the increased elementary school enrollment during these years and to reduce by 56 rooms the shortage which existed in 1924. The following table shows the condition on October 14, 1927, as compared with November 1, 1924. The shortages indicated as of October 14, 1927, are based upon our detailed analysis of the enrollment on that date.

² Excluding additional items on projects authorized prior to the adoption of the five-year building program.

Report of shortage of schoolhouse accommodations, elementary schools, November 1, 1924, and October 14, 1927

	1924	1927
Classrooms needed:		
To eliminate portables.....	57	64
To eliminate rented quarters.....	24	21
To eliminate undesirable rooms.....	30	18
To reduce oversize classes.....	40	36
To eliminate part-time classes—		
Grades 1 and 2.....	123	99
Grade 3.....	6	4
To abandon buildings recommended for immediate abandonment in 1908, still in use.....	12	14
To abandon buildings recommended for early abandonment in 1908, still in use.....	90	90
To abandon other buildings now unfit for use.....	66	² 54
	448	390
Less:.....	³ 20	³ 18
Totals.....	428	372

¹ The reduction from 12 to 4 is accounted for by the abandonment of the John F. Cook School in 1926.

² The reduction from 66 to 54 is accounted for by the abandonment of the Hamilton School in 1925, and the Patterson School in 1927.

³ Our analysis indicates that the usual method of computing the number of rooms needed to reduce oversize classes to normal size overstates the needs by approximately 50 per cent. A corresponding deduction has therefore been made in both 1924 and 1927.

It is estimated that the construction items included in the 1928 appropriation act will result in a further reduction of about 40 rooms in this shortage.³ When these rooms become available several old buildings including Garnet and Langdon will be abandoned, and it will be possible to eliminate some of the portables and reduce the number of part-time classes.

With reference to the high school accommodations the net excess of 2,971 pupils in 1924 has been reduced to 2,073 in 1927. The completion of the McKinley Technical High School and two new junior high schools (Gordon and Garnet-Patterson) will probably reduce this shortage by another 1,000 pupils.

The slow progress indicated above in reducing the accumulated shortages of the war and postwar years is largely due to the fact that the appropriations for the three fiscal years 1926, 1927, and 1928 were nearly \$3,000,000 less than three-fifths of the total estimated cost of the five-year building program. Another factor was the abnormal increase in average enrollment during the school year 1927 which amounted to 4,195 pupils, or slightly more than twice the average annual increase for the previous 10-year period.

Analysis of the Five-year Building Program.

A detailed study of the five-year building program indicates that on the whole it was carefully prepared with due regard to the needs of the various sections of the city. Of course, some modifications will be necessary on account of shifts in both the white and colored populations which could not have been foreseen. These modifications will involve the entire elimination of certain items, the postponement of others, and the transfer of several from one division to another.

The buildings still to be constructed under the five-year program, including those already appropriated for, will provide a total of 407 elementary classrooms. On October 14, 1927, the shortage of school-

³ This estimate makes due allowance for rooms required to provide for the normal increase in enrollment during the year.

house accommodations in elementary schools was 374 rooms. Therefore, if the five-year building program is carried out as originally planned this shortage will practically be eliminated by the end of 1930, making due allowance for such additional rooms as will be necessary on account of increased enrollment in the fiscal years 1929 and 1930. The proposed junior high schools will also provide accommodations for ninth-grade pupils sufficient to eliminate the congestion which still exists in the senior high schools.

The following analysis of the remaining items in the five-year program is based upon a tabulation of the school census of 1926-27, a series of spot maps showing the residence of each census child and a survey of the present school-building facilities. A study was also made of enrollment figures for the past 10 years, and in order to bring the analysis up to date the number and distribution of the school children and the schoolhouse accommodations as of October 14, 1927, were minutely analyzed.⁴

At the present time the main centers of congestion in the white schools (Divisions I to IX) are in the first and third divisions. The appropriations for 1928 and the budget for 1929 will provide accommodations sufficient to relieve the overcrowding in the schools of the third division. However, the schools of the first division, outside of Georgetown, especially in Cleveland Park, Tenleytown, and Chevy Chase, will receive little if any relief, since the only item included for these rapidly growing sections is an eight-room school at Grant Road. Some provision for additional construction in the first division is undoubtedly the most pressing need in Divisions I to IX at this time. Another item which should be included at an early date is the eight-room addition to the Park View School.

The main center of congestion in the colored schools (Divisions X to XIII) is in the tenth and eleventh divisions north and south of Florida Avenue between North Capitol and Fourteenth Streets. Only one item of construction, the Garnet-Patterson Junior High School, is carried in the 1928 appropriations and the 1929 budget for this congested area. Little relief may be expected from this junior high school, since two elementary schools, the Garnet and the Patterson, must be razed to make way for the new structure. Some provision for an addition to the elementary schools in this neighborhood is therefore the most pressing need in Divisions X to XIII. Additional construction should also be provided in 1929 in the congested section of Division XIII north of the Lovejoy School.

In the following pages the five-year building program will be analyzed by divisions. The items in the 1928 appropriation act and in the 1929 Budget will be enumerated in detail, and certain changes will be suggested in the Budget items and in the remaining construction items based upon our studies of census and enrollment statistics.

The following table shows by divisions as of October 14, 1927, the number of portables, the number of undesirable rooms, the number of part-time classes, the number of excess pupils in over-size classes, and the number of vacant rooms.⁵

⁴ Maps and tabulations will be found at the end of this part of the report.

⁵ A schedule showing this information in detail as to individual schools will be found at the end of this part of the report.

Table showing evidences of congestion in the elementary schools on October 14, 1927

Division	Number of portables	Number of undesirable rooms	Number of part-time classes	Number of excess pupils in oversize classes	Number of vacant rooms
White schools:					
I.....	12	5	30	213	4
II, IV, VIII.....	1			18	3
III.....	11	1	22	187	5
V.....	8	4	20	101	3
VI.....	4		14	101	2
VII.....	5	2	14	74	1
Total (white).....	41	12	100	694	18
Colored schools:					
X, XI.....	14	5	48	306	
XIII.....	9	1	58	433	3
Total (colored).....	23	6	106	739	3
Grand total (white and colored).....	64	18	206	1,433	21

¹8 of these rooms have been occupied since this report was prepared on October 14, 1927.

DIVISION I

The following projects have been authorized for 1928 in Division I: A four-room building at Potomac Heights, and the Gordon Junior High School. The Potomac Heights School will afford relief to the Reservoir School, and will make possible the abandonment of the antiquated one-room Conduit Road School. The Gordon Junior High School will relieve congestion in the Georgetown schools, especially Curtis, Hyde, and Fillmore, by taking over their seventh and eighth grades. For 1929 the budget includes only an eight-room building at Grant Road and Ellicott Street. There are only three elementary schools in this large and rapidly growing section of the city, namely, E. V. Brown, Tenley-Janney, and John Eaton. Since the opening of the school year, two portables have been erected at Wesley Heights and three at Grant Road to provide accommodations for the children of the lower grades. E. V. Brown has 10 part-time classes and 3 portables, John Eaton has 6 part-time classes and 1 portable and Tenley-Janney has 2 part-time classes. All of these schools also have a number of oversize classes. Moreover, the Tenley School has for a number of years been listed as unfit for use by the superintendent of schools, and the medical inspector of the department of health reported in June, 1927, that "the building is extremely old and should be abandoned when the opportunity permits." The eight-room building at Grant Road will therefore afford little relief to this district. In our opinion the most feasible way to relieve the congestion at the schools mentioned above is to expedite the construction of the Reno Junior High School. We therefore recommend not only an appropriation for a site for the Reno School but also an appropriation for plans and specifications and for starting construction.

Of the remaining items for Division I in the five-year program one is for construction, namely, an eight-room addition to the Janney School, and four are for land for elementary schools, namely, in Wesley Heights, at Connecticut Avenue and Upton Street, at Foxhall Road and Calvert Street, and for an addition to the E. V. Brown

School. The addition to the Janney School is designed to replace the present Tenley School. With reference to the sites mentioned above, provision should be made in the 1929 appropriations for the acquisition of those at Wesley Heights and the E. V. Brown School. The site at Connecticut Avenue and Upton Street is centrally located in a large and growing residential section, but the one at Foxhall Road and Calvert Street should be relocated to the east because it is too near the proposed Potomac Heights and Wesley Heights Schools. However, schools will not be needed at these two sites for several years to come.

DIVISIONS II, IV, AND VIII

Divisions II, IV, and VIII will be treated under one heading, since they are considered a single administrative unit under one supervising principal. With the exception of the Jefferson Junior High School, the schools in these divisions are not crowded; they have no part-time classes; and several of the schools have vacant rooms. The only items carried in the 1928 appropriation act for these divisions are plans and specifications for a 24-room building at Nineteenth Street and Columbia Road, and the 1929 Budget includes the construction of this building and the construction of a four-room addition to the Bowen School in lieu of the previously authorized addition to the Amidon School. The 24-room building at Nineteenth Street and Columbia Road is designed to replace the Force and Adams Schools, which were recommended for early abandonment by the congressional committee in 1908. The four-room addition to the Bowen School is designed to house the special classes now occupying a rented building at 810 Sixth Street SW.

The remaining items in the five-year building program for Divisions II, IV, and VIII are land and a 12-room addition to the Fairbrother School to replace the Bradley School, land and building to replace the Abbot School, and land and building to replace the Jefferson Junior High School, all of which were recommended for early abandonment in 1908. In view of the projected Federal building program in the territory served by the Bradley School, we believe that the addition to the Fairbrother School should be reconsidered. The eight-room building to replace the Abbot School is an item which may be transferred to another district since an elementary school is not needed for this purpose on account of the changed character of the neighborhood. Last year the Abbot School was converted from an elementary school into a vocational school, and it will serve this purpose until some other building becomes available. With reference to the Jefferson Junior High School, some provision should be made in the 1929 appropriations for replacing this school, since noise and smoke nuisances result from its close proximity to the railroad, and the building is poorly adapted to junior high school needs.

DIVISION III

The following projects have been authorized for 1928 in Division III: An eight-room addition to the Barnard School and plans for the Brightwood Junior High School. For 1929 the Budget includes the construction of the Brightwood Junior High School, an eight-room

addition to the Raymond School, an eight-room building at Fourteenth and Upshur Streets, and plans and specifications for an eight-room building at Fourteenth Street and Kalmia Road. In our opinion all of these requests with the possible exception of the last item, at Fourteenth Street and Kalmia Road, should be granted. The eight-room addition to the Barnard School will eliminate four part-time classes and relieve congestion at the Truesdell School, which now has three portables. The eight-room addition to the Raymond School will also eliminate four part-time classes and afford some relief to a crowded school in Division V, namely, the Park View School, which has six part-time classes and five portables. The eight-room building at Fourteenth and Upshur Streets will serve a rapidly growing section and relieve the Petworth School, which has six part-time classes and two portables. The Brightwood Junior High School will afford relief to all the schools in the northern section of Division III, especially the Takoma School, and will also make possible the abandonment of the annex to the Macfarland Junior High School at the old Brightwood School. We are of the opinion that the plans and specifications for the school at Fourteenth Street and Kalmia Road may wait for another year, because it is doubtful whether the present development of this section will justify an eight-room building for several years to come. Serious consideration should also be given to constructing an addition to the Takoma Park School as a substitute for the proposed school at Fourteenth Street and Kalmia Road.

The remaining items for Division III in the five-year program are a 4-room addition to the Keene School, a 4-room addition to the Truesdell School, an 8-room addition to the Bancroft School, a second wing for the Macfarland Junior High School, and land for a school at Sixteenth and Webster Streets. At the present time the Keene School has 4 regular classrooms and 3 portables to house its 7 classes. The Woodburn section, which is served by the Keene School, has developed slowly during the past five years, but the present enrollment is sufficient to justify a four-room addition in the near future. The four rooms at Truesdell will be required eventually to replace the old section of the present school. The addition to the Macfarland Junior High School is not an urgent item in view of the contemplated construction of the Brightwood Junior High School to the north. As far as the Bancroft addition is concerned, it should be considered in connection with the Powell Junior High School. The capacity of the latter should be enlarged, since it now serves only four elementary schools in its immediate vicinity, namely, Bancroft, Johnson, Hubbard, and Raymond. The Monroe, the Cooke, and the Morgan Schools, which may be considered in its district, are not served by any junior high school. When the Bancroft is enlarged it may be possible to work out some plan for transferring the children at the Johnson to neighboring schools and converting the Johnson into an addition to the Powell. If this plan is not feasible the Powell may require a third-story addition to increase its capacity sufficiently to accommodate all the seventh and eighth grade children in its neighborhood. With reference to the site at Sixteenth and Webster Streets, we are of the opinion that this item may be postponed indefinitely. The section to the west of Sixteenth Street between Randolph Street and Blagden Avenue is sparsely populated and will be adequately

served for some time to come by the present West School, the proposed school at Fourteenth and Upshur Streets, and the addition to the Bancroft School.

DIVISION V

The following projects have been authorized for 1928 in Division V: A 16-room building to replace the present Langdon School and the completion of an addition to the Langley Junior High School. For 1929 the budget includes only plans and specifications for the Brookland-Woodridge Junior High School. The 16-room building in Langdon is designed to replace the present 10-room frame structure and two rented rooms, and the four additional rooms should provide some relief to the crowded Brookland School, which now has three portables and six part-time classes. The addition to the Langley Junior High School will provide adequate facilities for the seventh, eighth, and ninth grades in its present district and a proposed extension to the west in contemplation of the eventual replacement of the Columbia Junior High School. The Brookland-Woodridge Junior High School will furnish junior high school instruction for a rapidly growing suburban area.

The remaining items in the five-year program in Division V are land for a building north of Michigan Avenue, land for a building at Twelfth Street and Rhode Island Avenue, and an eight-room addition to the Park View School. As far as the site on Michigan Avenue is concerned, it is located in a section which has developed rapidly in recent years, and the two-room Bunker Hill School, now housing three classes, is no longer adequate to serve the community. Provision should therefore be made in the 1929 appropriations for acquiring this site. The site at Twelfth Street and Rhode Island Avenue, however, should be carefully reconsidered in its relation to the railroads on the south and the west. At the present time there are few dwellings on the south side of Rhode Island Avenue in this neighborhood, and it is doubtful whether any development of a residential character will be undertaken on account of the presence of a large cemetery and the close proximity of the railroad yards. Moreover, a school at Twelfth Street and Rhode Island Avenue would not be located advantageously to serve the children of Edgewood Park, which is located in a pocket between the Baltimore & Ohio Railroad and Glenwood Cemetery. Some of these children must now walk nearly a mile to school at Emery-Eckington, but the distance to the proposed school would not be reduced, because the only way to reach it is by way of Rhode Island Avenue.

The Park View School has approximately 1,000 pupils enrolled in a 16-room building and 5 portables. Six classes have been placed on part time, and the grades from the third to the eighth have been platooned in order to utilize all the space in the building for instructional purposes, including the auditorium, two playrooms, and a third-floor corridor. In 1927, \$154,000 was appropriated for an eight-room addition to the school, but, due to a controversy concerning the exact nature of the addition, this amount was made available for the general purchase of land. Some solution of this problem should be devised immediately in order that construction may be started at an early date.

DIVISION VI

There are no items for Division VI in either the 1928 appropriations or the 1929 budget. The remaining items in the five-year program for this division are land and building for the Kingsman Junior High School, the construction of two wings at the Stuart Junior High School, and a four-room addition to the Kenilworth School. In our opinion the 1929 appropriations should include an item for the Kingsman site in order to provide junior high school facilities for the children of this district and to release elementary school rooms for future enrollment. The additional wings for the Stuart Junior High School will not be needed for several years. The Kenilworth item may be postponed indefinitely as the section has not grown in accordance with expectations.

DIVISION VII

Only one project has been authorized for 1928 in Division VII, namely, a six-room addition to the Bryan School, which will relieve congestion at both the Bryan and the Buchanan Schools, where there are now two portables and eight part-time classes. There are no items for Division VII in the 1929 budget. The remaining items for this division in the five-year program are a four-room addition to the Buchanan School and a four-room addition to the Lenox School. The four-room addition to the Buchanan will be needed in the near future, but the four-room addition to the Lenox may be postponed indefinitely because the white population in this section is moving to the east. It is probable that the four-room addition to the Buchanan will also afford relief to the Cranch and Tyler Schools, where there are now six part-time classes. The four rooms not needed at the Lenox School may be transferred to the Congress Heights School, which is using two portables and two undesirable rooms in an old frame building.

DIVISIONS X AND XI

Divisions X and XI will be treated under one heading since they are considered a single administrative unit under one supervising principal. The only items authorized for 1928 in these two divisions are completion of the Garnet-Patterson Junior High School and plans and specifications for an eight-room addition to the Morgan School (in place of the Wilson School which will be converted from a colored to a white school). Since the Garnet-Patterson Junior High School is being erected on the site of the present Garnet School and the former Patterson School it will afford little relief to this congested colored section. The 1929 Budget includes an 8-room addition to the Morgan School and a 10-room addition to the Francis Junior High School. The addition to the Morgan School will make possible the elimination of three portables and will provide accommodations for a congested area south of Florida Avenue. The addition to the Francis Junior High School was not contemplated by the five-year building program but may be considered as a substitute for the eight-room addition to the Phillips School. It will provide junior high school facilities for an increasing school population and

afford relief to the Briggs, Montgomery, and Phillips Schools, each of which has two part-time classes.

The remaining items in the five-year program for Divisions X and XI are land and an eight-room addition to the Garrison School, a four-room addition to the Military Road School, and a four-room addition to the Reno School. It is planned to move the Health School, which now occupies the Harrison School, to a new site and convert this building into a regular elementary school. The Harrison School and the addition to the Garrison School are both needed in addition to the Garnet-Patterson Junior High School in order to relieve congestion at the Garrison, Cleveland, and Bruce Schools, and to house the pupils now attending the Garnet School, which will be razed on February 1, 1928. The Garrison School has 6 portables and 2 part-time classes, the Cleveland has 4 portables and 10 part-time classes, and the Garnet has 1 portable and 8 part-time classes. In our opinion the four-room additions are not needed at the Reno and Military Road Schools, and the eight rooms should be transferred to this congested Florida Avenue section in order to afford relief to the Mott, Langston, and Cook Schools. The Mott has 10, the Langston has 6, and the Cook has 2 part-time classes, and each of these schools also has a number of oversize classes. It is believed, therefore, that the 1929 appropriations should include both the land and addition at the Garrison School, and that provision should be made in the following year for eight additional rooms in the eastern part of the Florida Avenue section.

DIVISION XII

The only item for Division XII, a site for the new Health School, is carried in the 1929 Budget. This may be considered a substitute item, since it was not carried as such in the five-year program. The original plan was to construct an addition to the Harrison School containing a rest room, a dining room, and a kitchen, and to convert it into a health school. But the Harrison School has been found unsuitable for this purpose, and it is now planned to construct a Health School on a more appropriate site and to convert the Harrison School into a regular elementary school.

DIVISION XIII

There are no projects authorized in 1928 for Division XIII, but the 1929 budget includes an eight-room addition to the Burrville School, and land and an eight-room building to replace the old Bell School. The 1927 appropriation included a four-room addition to the Smothers School, which will become available on February 1, 1928. The net increase is, therefore, 12 rooms during three years in a highly congested division with 9 portables, 58 part-time classes, and 89 oversize classes with an excess of 433 pupils. The five-year building act authorizes land and additions for the Deanwood, Birney, and Lovejoy Schools, and additions for the Crummel and Syphax Schools, as well as a 12-room building to replace the Cardozo School⁶ and a 16-room building to replace the Lincoln

⁶ Formerly called the Randall School.

school. In our opinion appropriations should be granted in 1929 for the construction of the eight-room addition to the Lovejoy School as well as for the site. This addition will afford relief both to the Lovejoy and Logan Schools, which have eight and six part-time classes, respectively. The eight-room addition to the Burrville School, noted above as being included in the 1929 Budget, will eliminate two portables and eight part-time classes. The four-room addition to the Smothers School will be opened in February and result in the elimination of two portables. The additions to Burrville and Smothers will relieve congestion somewhat at the Deanwood School which is in the same section of the city. However, the complete elimination of the eight part-time classes at the Deanwood School will not be possible until its addition is constructed. The additions to the Crummel, Birney, and Syphax Schools will all be needed in the near future. Crummel has four part-time classes, Birney has two part-time classes and one portable, and Syphax has four part-time classes and two portables. When the Shaw Junior High School moves into the old McKinley Building, the eight-room Simmons Building now used by Shaw will become available for an elementary school. These eight rooms will be used to relieve congestion at the Banneker, Jones, and Douglas Schools, which now have eight part-time classes, and to house the regular classes now at the Twining School, which will be converted into a special center for atypical children. With reference to the replacement of the Lincoln and Cardozo Schools, both of these buildings are in bad condition and should be abandoned as soon as new buildings can be constructed to house their pupils.

Junior High Schools.

The junior high schools in the five-year building program have all been considered above under their respective divisions. When the five-year program is completed the large majority of seventh, eighth, and ninth grade children will be housed in junior high schools. At the present time several of the recently constructed junior high schools are not filled to capacity because they were designed to accommodate the increase in enrollment in their districts for several years to come. Two more junior high schools, one white and one colored, will probably be needed at some future time in order to provide accommodations for all such children, with the possible exception of seventh and eighth grade children attending elementary schools in the eastern section of the city on the other side of the Anacostia River. The white school will probably be located in the northwest in the neighborhood of Scott Circle, and the colored school in the northeast in the neighborhood of the Lovejoy School. When the white junior high schools have all been constructed it will undoubtedly be possible to close the Columbia Junior High School, which now serves the entire city, and convert it into a vocational school. This will make possible the abandonment of the old Abbot School which is now used for vocational instruction.

With reference to the seventh and eighth grade children attending the schools across the Anacostia River, it is improbable that their number will justify separate junior high schools in that section of the city for a number of years to come. However, junior high school departments might be established at the Ketcham-Van Buren and the Deanwood Schools in order to provide junior high school facilities in those neighborhoods.

Senior High Schools.

Under senior high schools there are two remaining items in the five-year program, namely, a new building for the Business High School and land for an extension to the Armstrong Technical High School. In our opinion the new Business High School is not an urgent item and its construction should be postponed until the program of elementary school and junior high school construction has been completed. Since 1922 the enrollment at the Business High School has been gradually reduced, and although it is still in excess of the rated capacity, the congestion is not serious. Moreover, no definite plans have been made for the use of the old Business High School when the new building becomes available. With reference to the land item for the Armstrong Technical High School the site should be acquired as soon as possible, but the addition will not be needed for several years to come.

Summary of Building and Land Items.

A summary of the remaining items in the five-year program indicating our opinion as to the order of precedence for both buildings and land is given below.

Divisions I-IX. White

Rank	Division	Buildings
1	I	Grant Road, 8 rooms.
2	I	Reno Junior High School (and land).
3	V	Park View, 8-room addition.
4	III	Fourteenth and Upshur Streets, 8 rooms.
5	VIII	Jefferson Junior High School (and land).
6	III	Raymond, 8-room addition.
7	IV	Nineteenth Street and Columbia Road, 24 rooms.
8	VIII	Bowen, 4-room addition.
9	III	Brightwood Junior High School.
10	V	Brookland-Woodridge Junior High School.
11	VI	Kingsman Junior High School (and land).
12	III	Keene, 4-room addition.
13	VII	Congress Heights, 4-room addition in place of addition to Lenox.
14	I	Janney, 8-room addition.
15	III	Fourteenth Street and Kalmia Road, 8 rooms.
16	III	Truesdell, 4-room addition.
17	VII	Buchanan, 4-room addition.
18	III	Baneroff, 8-room addition.
19	VIII	Fairbrother, 12-room addition (and land).
20	VI	Stuart Junior High School, addition.
21	III	Macfarland Junior High School, addition.
22	I-IX	Business High School.

The proposed addition to the Kenilworth School and the building to replace the Abbot School are not needed and may be transferred to other localities.

Rank	Division	Land
1	I	Reno Junior High School.
2	VIII	For replacement of Jefferson Junior High School.
3	VI	Kingsman Junior High School.
4	I	For addition to E. V. Brown School.
5	I	Wesley Heights.
6	V	Michigan Avenue NE.
7	I	Connecticut Avenue and Upton Street.
8	VIII	For addition to Fairbrother School.

The sites at Twelfth Street and Rhode Island Avenue and at Foxhall Road and Calvert Street should be reconsidered as suggested above. The land items at Sixteenth and Webster Streets and at the Lenox and Abbot Schools are not needed and may be transferred to other localities.

Divisions X-XIII Colored

Rank	Division	Buildings
1	XII	Health School (and land).
2	XIII	Old Bell, 8 rooms (and land).
3	XIII	Burrville, 8-room addition.
4	X	Garrison, 8-room addition (and land).
5	X	Morgan, 8-room addition.
6	X	Francis Junior High School, addition in place of addition to Phillips School.
7	XIII	Lovejoy, 8-room addition (and land).
8	XI	Substitute 8 rooms in Division XI for proposed additions to Reno and Military Road
9	XIII	Lincoln-Giddings, 16 rooms (and land).
10	XIII	Cardozo (Randall), 12 rooms.
11	XIII	Crummell, 6-room addition.
12	XIII	Syphax, 4-room addition.
13	XIII	Deanwood, 8-room addition (and land).
14	XIII	Birney, 8-room addition (and land).

Rank	Division	Land
1	XII	Health School.
2	XIII	For replacement of Old Bell School.
3	X	For addition to Garrison School.
4	XIII	For addition to Lovejoy School.
5	XIII	For replacement of Lincoln School.
6	XIII	For addition to Deanwood School.
7	XIII	For addition to Birney School.
8	X-XIII	For addition to Armstrong High School.

Gymnasium-Assembly Halls.

The remaining gymnasium-assembly hall items in the five-year building program for schools which now have 16 or more rooms are as follows: Eaton, Takoma, Wheatley, Buchanan, Bruce, Garrison, Douglas-Simmons, Lovejoy, and Deanwood. When these have been constructed all schools with 16 or more rooms except Emery, Monroe, and Stevens will be provided either with assembly halls or combination gymnasium-assembly halls. The 1929 Budget includes the construction of halls at the Takoma and Wheatley Schools, and plans and specifications for the halls at the Eaton and Buchanan Schools.

Playgrounds.

Only 4 out of 26 playgrounds carried in the five-year program have been appropriated for. The remaining playground items are as follows:

- Division I. Addison, Eaton, Toner, and Jackson Schools.
- III. Hubbard, Johnson, and Petworth Schools.
- V. Brookland and Eckington Schools.
- VI. Benning, Ludlow, and Carbery Schools.
- VII. Cranch and Ketcham-Van Buren Schools.
- X. Montgomery, Stevens, and Sumner-Magruder Schools.
- XI. Slater-Langston School.
- XIII. Banneker, Douglas-Simmons, Jones, and Payne Schools.

There is no doubt about the need of additional playground space adjoining the above-mentioned schools. In nearly all cases the present playground area is considerably less than the generally accepted standard of 50 square feet for each pupil regularly enrolled.

On account of the restricted playground area at many of these schools, it is necessary for the children to play in the streets during the morning and afternoon recesses and during the lunch hour. Moreover, teachers are handicapped in their efforts to conduct outdoor lessons in physical training by the lack of adequate playground space.

Cost of the Remaining Items in the Five-Year Building Program.

It will be recalled that it was estimated at the time of the passage of the five-year school building act that the program would cost \$20,185,000. Appropriations made to date applicable to projects included in the program amount to \$9,257,250, leaving a balance of \$10,927,750 still to be provided for on the basis of this estimate. A careful review of the remaining building and land items in the light of present construction costs and land values indicates that it will require approximately this amount to complete the program.

If the purpose of the five-year school building act is to be carried out, therefore, appropriations in the approximate amount of \$11,000,000 will have to be provided during the two remaining fiscal years of the five-year period, 1929 and 1930. The 1929 Budget contains items for buildings and grounds for the public schools amounting to \$2,478,500, including only \$95,000 for land covering two building sites. The appropriations for 1928 carried but \$37,250 for land items, covering two buildings sites and two playgrounds. Twenty-one building site items and 22 playground items included in the five-year program remain to be appropriated for, and unless the 1929 appropriations provide for the majority of the site items, the school and district officials will be seriously handicapped in preparing a satisfactory construction program for the fiscal year 1930. In view of the 125 per cent restriction Congress has placed upon land purchases, the Budget Bureau has established the practice of not including in the Budget, with few exceptions, land items which investigation by the commissioners indicates can not be acquired within 125 per cent of their assessed valuation. This accounts for the few land items included in the 1928 and 1929 Budgets. No recommendation is made in regard to the 125 per cent restriction, however, for it is understood that Congress has under consideration a revision of the method of acquisition of land in the District of Columbia by the Federal and District Governments, including a change in the condemnation jury and court procedure.

Attention is invited to the fact that in other large cities capital expenditures of this magnitude are usually financed by long-term bond issues. The District of Columbia, however, has been on a "pay-as-you-go" fiscal basis since the establishment of the permanent commission form of government in 1878.

Plans and Specifications of New Buildings.

The Bureau of Efficiency is now engaged in making a survey of the office of the municipal architect, which is charged with the responsibility, under the general supervision of the commissioners, of preparing the plans and specifications of school buildings, of letting contracts therefor, and of supervising construction. The report on these activities will be submitted later.

Attention is invited at this time to the fact that in the matter of instructional space the facilities provided by Washington in its new school buildings have been adopted as standard by many of the large

cities of the United States. In elementary schools these facilities include in addition to the regular classrooms, manual-arts rooms, household-arts rooms, libraries, first-aid rooms, and auditoriums. With reference to gymnasiums, a number of cities provide both auditoriums and gymnasiums, but not many have adopted the combination auditorium-gymnasium, which Washington has included in its standard plan. The present tendency in elementary-school construction seems to be toward the provision of separate auditoriums and gymnasiums of smaller size occupying together relatively the same space as the large auditorium or the combination auditorium-gymnasium. The smaller units are designed for continuous use with small groups, whereas the large unit is designed to accommodate the whole student body at one time.

In junior high schools practically all cities provide in addition to regular recitation rooms, shops, laboratories, domestic science and domestic art rooms, drawing rooms, auditoriums, gymnasiums, libraries, lunch rooms, and first-aid rooms. All of these facilities are included in Washington's new junior high schools.

The standard plans for Washington's new school buildings, therefore, conform to the plans which have been generally adopted by the large cities of the United States. But revisions will have to be made in these plans from time to time as a result of experience and changes in curriculum and methods. It is therefore suggested that two committees be appointed by the superintendent of schools, one for elementary schools and one for junior high schools, to make a continuous study of building facilities as they relate to educational needs.

Conclusions and Recommendations.

In concluding this section of the report several suggestions will be made concerning the selection of future building sites. As previously indicated no use has been made in the past of the school census for this purpose. When the school statistician is appointed, he should be required to undertake continuing studies of population distribution and enrollment statistics which shall serve as a basis for all future building programs. His studies of population trends should make it possible to locate sites in outlying districts before the cost of land reaches prohibitive figures. When such sites are purchased they should be large enough to provide for playground space and for future expansion. It is a short-sighted policy to wait until a district has developed before purchasing land for additions to present buildings.

At the present time Washington has too many small elementary school buildings. The policy in the past seems to have been to construct new schools as neighborhoods developed instead of building additions to existing schools. Repetition of this error should be guarded against in the future. The proposed building at Sixteenth and Webster Streets is a case in point. There is hardly a square in the District to be served by a school at this location which does not fall within a half-mile radius of the West, the Bancroft, or the Fourteenth and Upshur Street schools.

The present administration has adopted a 20-room⁷ elementary school building accommodating a maximum of 680 pupils as the standard for future construction. Smaller buildings are usually

⁷ 16 regular classrooms, 1 kindergarten room, and 1 manual-training room, 1 domestic-science room, and 1 domestic art room.

constructed so that they may be expanded into the larger standard size buildings when the increasing enrollment justifies an addition. These are all steps in the right direction. As the city becomes more densely populated it is proposed to build elementary schools of even larger size such as the new Adams School, which will accommodate 1,000 pupils. There is no doubt that large units of this character may be administered more advantageously both from an educational and a business standpoint than isolated units of smaller size. The initial cost of the large building is relatively less, and it makes possible the economical use of special rooms, a more constant use of certain parts of the equipment, and a finer adjustment of grading and promotion plans.

In locating new buildings care should be exercised to avoid sites which are adjacent to natural barriers such as parks and rivers, because they severely restrict the area to be served by the school and often result in undersize classes and vacant rooms. The Toner, the Van Ness, and the Bradley Schools are examples of such faulty locations. These are all buildings which were constructed under former administrations. The new buildings provided for in the five-year program have on the whole been centrally located.

A final consideration in connection with the location of buildings is freedom from noise and other distractions. Locations near a railroad or adjacent to heavily traveled thoroughfares should therefore be avoided. The Jefferson School was recommended for early abandonment in 1908 mainly on account of its proximity to the railroad, but in 1922 the new Bell School was constructed on the other side of the same railroad. It may be pointed out in this connection that ideal sites are not always available, and that the final choice of a site must be the result of certain compromises. But definitely undesirable sites should in every case be avoided even though the initial cost of a desirable site may seem high.

A summary of the recommendations included in this part of the report is as follows:

1. New schools should be erected in accordance with needs as indicated by the various evidences of congestion in their districts. (The two tables on page 117 and page 118 indicate our opinion as to the order of precedence of the various building items.)

2. The appropriations for 1929 should include the majority of the site items in the five-year building program if schoolhouse construction is not to be seriously handicapped during the fiscal year 1930.

3. Two committees should be appointed by the superintendent of schools, one for elementary schools and one for junior high schools, to make a continuous study of building facilities as they relate to educational needs.

4. The selection of building sites should be based upon an analysis of both the school census and the enrollment reports, supplemented by studies of the surveys of public utility companies, the volume of building operations, etc.

5. Sites should be centrally located with reference to the districts which they are designed to serve, and should be relatively free from noise and other distractions.

6. Sites should be large enough to provide adequate playground space and room for future expansion.

7. Small elementary school units should not be constructed when extensions to existing schools will provide the additional accommodations required.

Table showing evidences of congestion in the elementary schools on October 14, 1927

WHITE SCHOOLS

	Number of portables	Number of undesirable rooms	Number of part-time classes	Number of excess pupils, oversize classes	Number of vacant rooms
DIVISION I					
Addison.....				4	
Brown.....	3	1	10	68	
Grant Road.....	3				
Conduit Road.....					
Corcoran.....					
Jackson.....			2	2	
Curtis.....			2	9	
Hyde.....			4	6	
Eaton.....	1	4	6	31	
Fillmore.....	2		2	32	
Grant.....				7	
Weightman.....					
Toner.....					14
Oyster.....				4	
Reservoir.....	1		2	4	
Tenley.....			2	23	
Janney.....				23	
Wesley Heights.....	2				
Total.....	12	5	30	213	4
DIVISIONS II, IV, AND VIII					
II					
Morgan.....					
Thomson.....					1
Webster.....					
IV					
Force.....	1				
Adams.....				12	
Henry.....					1
Polk.....					
VIII					
Amidon.....				2	
Bradley.....					
Fairbrother.....					
Rossell.....				2	
Greenleaf.....					1
Smallwood.....				2	
Bowen.....					
Total.....	1	0	0	18	3
DIVISION III					
Barnard.....			4	3	
Brightwood.....				10	3
Cooke.....	1			21	
Hubbard.....				1	
Raymond.....			4	19	
Johnson.....			4	31	
Bancroft.....			2	5	
Kcene.....	3				
Petworth.....	2		6	13	
Ross.....					2
Takoma.....	2			30	
Truesdell.....	3			21	
West.....				11	
Whittier.....		1	2	22	
Total.....	11	1	22	187	5

¹Two of these rooms are now used by the elementary science teachers (Dec. 15, 1927).

²This room is now occupied by a regular class (Dec. 15, 1927).

³One of these rooms is now occupied by a regular class (December 15, 1927).

Table showing evidences of congestion in the elementary schools on October 14, 1927—
Continued

WHITE SCHOOLS

	Number of port- ables	Number of unde- sirable rooms	Number or part- time classes	Number of excess pupils, oversize classes	Number of vacant rooms
DIVISION V					
Brookland.....	3		6	4	
Bunker Hill.....				3	
Burroughs.....				18	
Emery.....			2	2	
Eckington.....				9	1
Gage.....				10	1
Gales.....			2	11	
Arthur.....			4	20	
Langdon.....				8	
Monroe.....				5	
Seaton.....				1	
Blake.....				10	1
Woodridge.....	5	4	6		
Park View.....					
Total.....	8	4	20	101	3
DIVISION VI					
Benning.....	1			4	
Blair.....				4	
Hayes.....				10	
Blow.....				1	
Edmonds.....			2	2	
Maury.....	1		4	15	
Kenilworth.....				1	
Kingsman.....	2		2		
Ludlow.....					
Taylor.....				3	1
Madison.....			2	2	
Peabody.....				8	
Hilton.....					
Carbery.....					1
Pierce.....			2	1	
Webb.....			2	6	
Wheatley.....				44	
Total.....	4	0	14	101	2
DIVISION VII					
Brent.....				1	
Dent.....				14	
Bryan.....	2		4	12	
Buchanan.....			4	7	
Congress Heights.....	2	2		5	
Cranch.....			2	4	
Tyler.....			4		
Ketcham.....				16	
Van Buren.....					
Randle Highlands.....				4	
Orr.....	1			1	
Stanton.....					
Van Ness.....					1
Wallach.....				10	
Towers.....					
Total.....	5	2	14	74	1

¹ This room is now occupied by a regular class (Dec. 15, 1927).

² This room is now used for manual training (Dec. 15, 1927).

³ This room is now used for basketry and sewing (Dec. 15, 1927).

Table showing evidences of congestion in the elementary schools on October 14, 1927—
Continued

COLORED SCHOOLS

	Number of portables	Number of undesirable rooms	Number or part-time classes	Number of excess pupils, oversize classes	Number of vacant rooms
DIVISIONS X AND XI					
X					
Briggs.....			2		
Montgomery.....			2		
Bruce.....		5	4	29	
Chain Bridge.....					
Cleveland.....	4		10	45	
Garrison.....	6		2	44	
Military Road.....				2	
Phillips.....			2	1	
Reno.....				5	
Stevens.....				1	
Summer.....				12	
Magruder.....					
Wilson.....	3			21	
Wormley.....				3	
XI					
Cook.....			2	34	
Garnet.....	1		8	40	
Mott.....			10	35	
Slater.....				12	
Langston.....			6	22	
Total.....	14	5	48	306	0
DIVISION XIII					
Ambush.....				14	
Banneker.....			4	42	
Jones.....			2	34	
Bates Road.....	1				
New Bell.....				11	
Birney.....	1		2	19	
Burrville.....	2		8	35	
Cardozo.....			2	29	
Old Bell.....				2	
Crummell.....			4	5	
Deanwood.....			8	19	
Douglas.....			2	20	
Twining.....			2		
Garfield.....					3
Lincoln.....				13	
Giddings.....	1		4	56	
Logan.....			6	33	
Lovejoy.....			8	36	
Payne.....			2	14	
Smothers.....	2	1		20	
Syphax.....	2		4	31	
Total.....	9	1	58	433	3
Grand total.....	64	18	206	1,433	⁶ 21

⁶ Eight of these rooms were in use on Dec. 15, 1927.

EXHIBIT 8

Table showing age distribution of children of census age (3 to 17, inclusive) resident in the District of Columbia, school year 1926-27

Age	Number of children			Age	Number of children		
	White	Colored	Total		White	Colored	Total
3.....	2,680	1,385	¹ 4,065	12.....	4,813	2,126	6,939
4.....	4,451	2,153	¹ 6,604	13.....	4,712	2,202	6,914
5.....	5,362	2,536	¹ 7,898	14.....	4,745	2,276	7,021
6.....	5,548	2,689	8,237	15.....	4,524	2,002	6,526
7.....	5,122	2,362	7,484	16.....	4,298	1,977	6,275
8.....	5,074	2,174	7,248	17.....	3,912	1,646	5,558
9.....	4,811	2,065	6,876	No record.....	45	74	119
10.....	4,758	2,152	6,910				
11.....	4,641	2,151	6,792	Total.....	69,496	31,970	101,466

¹ It is doubtful whether this total includes all the children of the age indicated on account of the difficulty of securing a complete enumeration of children of preschool age.

EXHIBIT 9

Table showing classification of children of census age (3 to 17, inclusive) in the District of Columbia, school year 1926-27

	Number of children		
	White	Colored	Total
Enrolled at school:			
Public schools in District of Columbia.....	45,691	23,869	¹ 69,560
Parochial schools in District of Columbia.....	6,995	733	7,728
Private schools in District of Columbia.....	² 2,789	67	2,856
Correctional schools in District of Columbia.....	³ 14	⁴ 102	116
Public schools outside District of Columbia.....	51	38	89
Parochial schools outside District of Columbia.....	22	5	27
Private schools outside District of Columbia.....	127	12	139
Schools outside District of Columbia (kind not reported).....	503	222	725
Total.....	56,192	25,048	81,240
Not enrolled at school:			
Under compulsory school age.....	9,848	4,941	14,789
Deficient.....	149	69	218
Employed—			
Above compulsory school age.....	2,136	937	3,073
Compulsory school age—			
With permit.....	75	19	94
Without permit.....	194	165	359
Others—			
Above compulsory school age.....	659	428	1,087
Compulsory school age.....	239	349	588
Age not reported.....	4	14	18
Total.....	13,304	6,922	20,226
Grand total.....	69,496	31,970	101,466

¹ This does not include the enrollment of nonresidents and pupils 18 years of age and over as follows: Nonresidents, white, 2,253; colored, 224; total, 2,477; pupils 18 years of age and over, white, 1,524; colored: 1,041; total, 2,665; grand total, 5,142.

² Includes students in Columbia Institution for the Deaf.

³ National Training School.

⁴ National Training School and Industrial Home School.

EXHIBIT 10

Table showing the enrollment of nonresident children between the ages of 3 and 17 years, inclusive, in schools in the District of Columbia, school year, 1926-27

Type of school	Number of children		
	White	Colored	Total
Public schools, District of Columbia.....	2,253	224	2,477
Parochial schools, District of Columbia.....	250	6	256
Private schools, District of Columbia.....	284	2	286
Total.....	2,787	232	3,019

EXHIBIT 11

Table showing by certain age groups the total number of children of compulsory school age, the number enrolled in school, and the per cent enrolled, District of Columbia, school year 1926-27

Age group	White	Colored	Total
Total, 7 to 13 years, inclusive.....	33,931	15,232	49,163
Number enrolled.....	33,715	14,975	48,690
Per cent enrolled.....	99.36	98.31	99.04
Total, 14 and 15 years ¹	9,269	4,278	13,547
Number enrolled.....	8,861	3,949	12,810
Per cent enrolled.....	95.60	92.31	94.56

¹ Children of these ages may be excused from attendance at school if lawfully and regularly employed.

Table showing the total number of children of census age but not of compulsory school age and the number enrolled in school, District of Columbia, school year 1926-27

Age group	White	Colored	Total
Total under compulsory school age (3 to 6, inclusive).....	18,041	8,763	26,804
Number enrolled.....	8,183	3,820	12,003
Total above compulsory school age (16 and 17).....	8,210	3,623	11,833
Number enrolled.....	5,394	2,247	7,641

NOTE.—The total number of children of census age as indicated by the above tables is 101,347, and the total number of children enrolled is 81,141. The difference between these totals and the totals shown by Exhibits 8 and 9 represent "no record" children.



MAP OF THE
PERMANENT SYSTEM OF HIGHWAYS
DISTRICT OF COLUMBIA

PREPARED UNDER THE DIRECTION OF THE ENGINEER COMMISSIONER, D.C.
IN THE OFFICE OF THE SURVEYOR.

Scale
0 5000 10000 FEET

1926

EXISTING HIGHWAYS IN FULL LINES
PROPOSED DOTTED LINES

KEY

- = ELEMENTARY AND VOCATIONAL SCHOOLS
- ▲ = JUNIOR HIGH SCHOOLS
- = HIGH SCHOOLS
- ★ = NORMAL SCHOOL
- ◆ = NEW LOCATIONS



WHITE SCHOOL CENSUS - 1926-1927

EACH DOT REPRESENTS ONE CHILD OF CENSUS AGE [THREE TO SEVENTEEN INCLUSIVE] RESIDENT IN THE DISTRICT OF COLUMBIA IN THE SCHOOL YEAR 1926-1927

○ = ELEMENTARY AND VOCATIONAL

- 3 WHELEY HEIGHTS PORTABLES
- 9 WALLING
- 14 IRELAND
- 23 DEARIN
- 25 CONDUIT ROAD
- 24 CURTIS
- 21 ARBOTT
- 31 FEARNOT
- 32 FORCE
- 35 HEARTY
- 33 GRANT ROAD PORTABLES
- 24 GALE
- 36 FAY BUREN ANNEX
- 41 GRANT
- 42 AMMON
- 44 MORSE
- 46 DEWITT
- 48 BERTINUS
- 50 BLAIR
- 51 YESTER
- 52 O. HINDSON
- 53 HINDSON
- 54 HEIGHTMAN
- 55 HALEY
- 58 CARBERT
- 59 TAYLOR
- 60 BRADLEY
- 61 BLAKE
- 64 SMALLWOOD
- 65 ADAMS
- 66 ROBERT
- 67 LENOX
- 68 GONICKMAN
- 69 JACKSON
- 70 ARTHUR
- 71 MADISON
- 72 MORRIS
- 74 GALE
- 80 POLA
- 81 VAN BURKEN
- 82 TAYLOR
- 86 FILMORE
- 87 PIERCE
- 88 JOHNSON
- 89 BUCHANAN
- 90 KEENE
- 92 TENLEY
- 93 BROADLAND
- 95 BRIZZLEAF
- 97 HAYES
- 98 LANGDON
- 99 ROSS
- 100 BRADLEY
- 101 CONGRESS HEIGHTS & WHEELER
- 102 C.V. BROWN
- 104 TONER
- 105 HILTON
- 106 ECKINGTON
- 108 THOMPSON
- 109 HUBBARD
- 120 DEWITT
- 121 WYCOB
- 122 OPR
- 123 S.J. DOWNEN
- 125 PURGAN
- 126 KENT WORTH
- 131 FETTERMAN
- 133 EMERY
- 135 COMBESS
- 136 WICKLEY
- 137 CRAWNER
- 138 STANTON
- 141 FRENCH
- 142 LUDLOW
- 143 GIBB
- 145 BLOM
- 146 ROSS
- 147 HAYES
- 149 KETCHAM
- 150 W.H. WESS
- 151 TRUCKELL
- 154 H.D. COOK
- 155 BROWN
- 156 THOMPSON
- 159 FARMINGTON
- 160 JOHN CANN
- 161 BUNCKER HILL ROAD
- 162 WEST
- 164 WISCONSIN AVE.
- 165 FARMER WILKINSONS
- 175 PARK VIEW
- 177 BURROUGHS
- 178 KINGMAN
- 180 EMERY
- 181 DANCREFT
- 182 RAYBROOK
- 183 JANNETT
- 184 HEALTH SCHOOL
- 185 STEER
- 186 BRIGHTWOOD
- 187 DANFORD
- 188 WHITTIER
- 189 WOODRIDGE
- 203 JEFFERSON
- 205 COLUMBIA
- 206 MITCHELL
- 207 MACFARLAND ANNEX
- 208 POWELL
- 209 MACFARLAND
- 210 LANGLEY
- 211 STURGE
- 212 WISCONSIN AVE.
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- 250 WISCONSIN AVE.

△ = JUNIOR HIGH

- 203 JEFFERSON
- 205 COLUMBIA
- 206 MITCHELL
- 207 MACFARLAND ANNEX
- 208 POWELL
- 209 MACFARLAND
- 210 LANGLEY
- 211 STURGE
- 212 WISCONSIN AVE.
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□ = HIGH

- 111 WESTERN
- 130 PICHINLEY
- 144 BUSINESS
- 173 CENTRAL
- 174 EASTVIEW
- 162 WILSON

Authorizations and Proposals

- 191 NEW MARYLENE TECHNICAL HIGH SCHOOL
- 192 GORDON JUNIOR HIGH SCHOOL
- 193 POTOMAC HEIGHTS SCHOOL [4-ROOM BUILDING]
- 204 BRIGHTWOOD JUNIOR HIGH SCHOOL
- 205 19th STREET & COLUMBIA ROAD [20-ROOM BUILDING]
- 206 14th & UPSHUR STREETS [8-ROOM BUILDING]
- 207 14th STREET & KALPHA ROAD [8-ROOM BUILDING]
- 208 BROADLAND-WOODRIDGE JUNIOR HIGH SCHOOL [unimproved]
- 209 REED JUNIOR HIGH SCHOOL
- 210 WICKLEY HEIGHTS ELEMENTARY SCHOOL
- 211 14th STREET & KALPHA ROAD [8-ROOM BUILDING]
- 212 KINGMAN JUNIOR HIGH SCHOOL

ADDITIONS TO PRESENT LOCATIONS

- 100 LANGDON SCHOOL [6-ROOM BUILDING TO REPLACE 10-ROOM SCHOOL]
- 101 BERTINUS SCHOOL [6-ROOM ADDITION]
- 102 LANELEY JUNIOR HIGH SCHOOL [ADDITION]
- 103 BARKHARDT SCHOOL [8-ROOM ADDITION]
- 104 GRANT ROAD [8-ROOM BUILDING]
- 105 WESTERN [8-ROOM ADDITION]
- 106 RAYBROOK SCHOOL [8-ROOM ADDITION]
- 107 JANNEY SCHOOL [8-ROOM BUILDING TO REPLACE PRESENT SCHOOL]
- 108 PUGHAN AVENUE, N.E. [ELEMENTARY SCHOOL SITE]
- 109 KENT WORTH SCHOOL [8-ROOM ADDITION]
- 110 BUCHANAN SCHOOL [8-ROOM ADDITION]
- 111 LENOX SCHOOL [LARGE 4-ROOM ADDITION]
- 112 ANTON SCHOOL [8-ROOM ADDITION]
- 113 MACFARLAND JUNIOR HIGH SCHOOL [ADDITION]
- 114 STURGE JUNIOR HIGH SCHOOL [ADDITION]
- 115 JEFFERSON JUNIOR HIGH SCHOOL [SITE AND BUILDING]
- 116 BUSINESS HIGH SCHOOL [NEW BUILDING]

REMAINING ITEMS IN THE 5-YEAR BUILDING PROGRAM, NOT DEFINITELY AUTHORIZED OR LOCATED, EXCLUSIVE OF PLAYGROUND SITES AND GYMNASIUM-ASSEMBLY HALLS

- 107 JANNEY SCHOOL [8-ROOM ADDITION TO REPLACE PRESENT SCHOOL]
- CONNECTICUT AVE. & UPUR STREET [ELEMENTARY SCHOOL SITE]
- 110 BUCHANAN SCHOOL [LARGE 4-ROOM ADDITION]
- 111 LENOX SCHOOL [LARGE 4-ROOM ADDITION]
- 112 ANTON SCHOOL [8-ROOM ADDITION]
- 113 MACFARLAND JUNIOR HIGH SCHOOL [ADDITION]
- 114 STURGE JUNIOR HIGH SCHOOL [ADDITION]
- 115 JEFFERSON JUNIOR HIGH SCHOOL [SITE AND BUILDING]
- 116 BUSINESS HIGH SCHOOL [NEW BUILDING]

SITES PROPOSED BY THE BOARD OF EDUCATION

- 117 FAIRBROTHER SCHOOL [12-ROOM ADDITION TO REPLACE THE BRADLEY SCHOOL]

Scale: 1" = 5000 FEET



MAP OF THE
PERMANENT SYSTEM OF HIGHWAYS
DISTRICT OF COLUMBIA

PREPARED UNDER THE DIRECTION OF THE ENGINEER COMMISSIONER D. C.
IN THE OFFICE OF THE SURVEYOR

SCALE
1" = 1 MILE
LATEST REVISION
1917

- KEY
- ELEMENTARY AND VOCATIONAL SCHOOLS
 - ▲ JUNIOR HIGH SCHOOLS
 - HIGH SCHOOLS
 - ★ NORMAL SCHOOL
 - ◆ NEW LOCATIONS



COLORED SCHOOL CENSUS - 1926-1927

EACH DOT REPRESENTS ONE CHILD OF CENSUS AGE [THREE TO SEVENTEEN INCLUSIVE] RESIDENT IN THE DISTRICT OF COLUMBIA IN THE SCHOOL YEAR 1926-1927

- O = ELEMENTARY & VOCATIONAL**
- 13. DATES ROAD PORTABLE
 - 18. LINCOLN
 - 20. SUMNER
 - 24. HANNET
 - 36. DANIELS
 - 45. TWING
 - 49. WRENLEY
 - 57. PHILLIPS
 - 62. MAGDOCK
 - 65. BIDDING
 - 75. BIKERS
 - 76. GARRISON
 - 77. JONES
 - 78. BELL (OLD)
 - 79. AMDOER
 - 80. SLATER
 - 81. PHILLIPS
 - 84. HANSON
 - 86. WILSON
 - 89. LONGT
 - 91. STEVENS
 - 96. PATRICK
 - 99. DOUGLASS
 - 110. BRUCE
 - 124. LINDSEY
 - 127. DYPHAT
 - 132. LANSTON
 - 139. REIS
 - 140. MCLEMMON
 - 148. CARROLL
 - 152. SCARLETT
 - 156. GARFIELD
 - 165. CLEVELAND
 - 167. CUMMELL
 - 170. BURKELLE
 - 171. MILLARY
 - 172. HANCOCK
 - 179. BELL (NEW)
 - 182. SPOTTERS
 - 183. MOH
 - 185. CHAMBERLAIN
 - 189. J. P. COOK (NEW)

- △ = JUNIOR HIGH**
- 23. RANDALL
 - 82. SHAW
 - 185. FRANCIS
- = HIGH**
- 128. AQUISTON
 - 174. DUMBAR
- ☆ = NORMAL**
- 169. MINER

- AUTHORIZATIONS AND PROPOSALS**
- ◇ = NEW LOCATIONS**
- 201. BARNETT PATTERSON JUNIOR HIGH SCHOOL (Unauthorized building)
 - 228. HEALTH SCHOOL (Proposed site)
 - 210. CARROLL SCHOOL - REPLACEMENT OF OLD BELL AND CARROLL SCHOOLS (Proposed site)
- ADDITIONS TO PRESENT LOCATIONS**
- AUTHORIZED BUILDINGS**
- 172. FRANKLIN WASHINGTON VOCATIONAL SCHOOL (8-room addition)
 - 182. SPOTTERS SCHOOL (4-room addition)
- OWNED SITES**
- 89. WILSON SCHOOL (8-room addition - addition will actually be made to the present school which will be received from the white system in exchange for the Wilson school)
 - 170. BURKELLE SCHOOL (8-room addition)
 - 184. FRANCIS JUNIOR HIGH SCHOOL (addition)

- REMAINING ITEMS IN THE 5-YEAR BUILDING PROGRAM, NOT DEFINITELY AUTHORIZED OR LOCATED, EXCLUSIVE OF PLAYGROUND SITES AND GYM NASIUM-ASSEMBLY HALLS**
- 111. MILITARY ROAD SCHOOL (8-room addition)
 - 21. PHILLIPS SCHOOL (8-room addition)
 - 159. KING SCHOOL (4-room addition)
 - 155. DEANWOOD SCHOOL (LAND AND 8-room addition)
 - 161. CUMMELL SCHOOL (4-room addition)
 - 43. GIBBS SCHOOL (LAND AND 16-room addition to replace the 12-room LINDSEY SCHOOL)
 - 181. DUNCAN SCHOOL (LAND AND 8-room addition)
 - 124. STYRAE SCHOOL (8-room addition)

- SITES PROPOSED BY THE BOARD OF EDUCATION**
- 74. GARRISON SCHOOL (8-room addition)
 - 84. HANSON SCHOOL (8-room addition)
 - 189. HANSTRONG TECHNICAL HIGH SCHOOL (addition)

Scale: 1" = 5000 FEET

Table showing elementary school buildings, their location, and a general description of each

DIVISIONS I-IX (WHITE SCHOOLS)

Num-ber of build-ing	Name of school	Location	When erected	Type	Number of stories	How heated	How ventilated
	FIRST DIVISION						
53	Addison	P Street between Wisconsin Avenue and Thirty-third Street NW.	1885	Brick	2 floors and basement	Hot air	Natural.
113	Brown, E. V.	Connecticut Avenue and McKinley Street NW	1898-1918	do	do	Steam, direct	Do.
25	Conduit Road	Conduit Road near Ashby Place NW	1874	Frame	1 floor, no basement	Stoves (2)	Do.
68	Corcoran	Twenty-eighth Street between M and N Streets NW.	1889	Brick	2 floors and basement	Steam, direct	Do.
69	Jackson	R Street between Thirty-first and Avon Place NW	1889	do	do	do	Do.
26	Curtis	O Street between Thirty-second and Thirty-third Streets NW.	1875	do	3 floors and basement	do	Do.
147	Hyde	P Street between Wisconsin Avenue and Thirty-third Street NW	1907	do	2 floors and basement	Hot air	Do.
160	Eaton	Thirty-fourth and Lowell Streets NW	1911, 1922	do	do	Hot air (old building); steam, direct and indirect (new building).	Natural (old building); artificial (new building).
92	Fillmore	Thirty-fifth Street between R and S Streets NW	1882	do	do	Steam, direct	Natural.
41	Grant	G Street between Twenty-first and Twenty-second Streets NW.	1882	do	3 floors and basement	Steam, direct and indirect	Natural and artificial.
54	Weightman	Twenty-third and M Streets NW	1886	do	2 floors and basement	Hot air	Natural.
114	Tonet	Twenty-fourth and F Streets NW	1898	do	do	do	Do.
	Industrial Home	Wisconsin Avenue and Thirty-fifth Street NW		do	do	Steam, direct and indirect	Artificial.
190	Oyster	Twenty-fourth and Calvert Streets NW	1927	do	do	Steam, direct	Natural.
110	Reservoir	Clark and Ellicott Place NW	1897	Frame	do	Hot air	Do.
102	Tenley	Wisconsin Avenue and Yuma Street NW	1887-1896	Brick	do	Steam, direct	Do.
187	Janney	do	1925	do	3 floors and boiler room	do	Artificial.
164	Wisconsin Avenue	Thirty-third Street and Wisconsin Avenue NW	1912	do	2 floors and basement	Steam, direct and indirect	Do.
	SECOND DIVISION						
125	Morgan	California and Champlain Streets NW	1901	do	do	Hot air	Natural.
156	Thompson	Twelfth and L Streets NW	1910-1924	do	3 floors and basement	Steam, direct and indirect	Artificial.
66	Berret	Fourteenth and Q Streets NW	1889	do	do	Hot air	Natural.
	THIRD DIVISION						
193	Barnard	Fifth and Decatur Streets NW	1927	do	do	Steam, direct	Artificial.
191	Brightwood	Thirteenth and Nicholson Streets NW	1926	do	3 floors and boiler room	Steam, direct and indirect	Do.

Table showing elementary school buildings, their location, and a general description of each—Continued

DIVISIONS I-IX (WHITE SCHOOLS)—Continued

Number of building	Name of school	Location	When erected	Type	Number of stories	How heated	How ventilated
	THIRD DIVISION— continued						
154	Cooke, H. D.	Seventeenth Street between Euclid and Fuller NW.	1909-1922	Brick	2 floors and basement.	Hot air	Natural.
119	Hubbard	Kenyon Street between Eleventh and Thirteenth Streets NW.	1900	do	do	do	Do.
186	Raymond	Spring and Rock Creek Church Roads NW.	1925	do	3 floors and boiler room.	Steam, direct and indirect	Artificial.
95	Johnson	Hiatt Place and Lamont Street NW.	1895	do	2 floors and basement	do	Do.
184	Bancroft	Eighteenth and Newton Streets NW.	1924	do	do	Steam, direct	Do.
101	Keene	Blair Road and Riggs Road NW.	1896	do	do	Hot air	Natural.
131	Petworth	Shepherd Street between Eighth and Ninth Streets NW.	{1902-1908 1921	do	3 floors and boiler room.	Steam, direct and indirect	{Natural and arti- ficial.
146	Ross	Harvard Street between Eleventh and Thirteenth NW.	1906	do	2 floors and basement.	Steam, indirect	Artificial.
118	Takoma	Piney Branch Road and Dahlia Street NW	{1899-1903 1921	do	do	Steam, direct and indirect	{Natural and arti- ficial.
151	Truesdell	Ninth and Ingraham Streets NW	1908-1926	do	do	Hot air (old building); steam, direct (new build- ing).	Natural (old build- ing; artificial (new building). Artificial.
163	West	Farragut Street between Thirteenth and Fourteenth NW.	1912-1921	do	3 floors and boiler room.	Steam, direct and indirect	Do.
194	Whittier	Fifth and Sheridan Streets NW	1926	do	do	Steam, direct	Do.
	FOURTH DIVISION						
32	Force	Massachusetts Avenue between Seventeenth and Eighteenth NW.	1879	do	3 floors and basement.	do	Do.
65	Adams	R Street between Seventeenth and New Hampshire Avenue NW.	1888	do	2 floors and basement.	Hot air	Natural.
33	Henry	P Street between Sixth and Seventh Streets NW	1880	do	3 floors and basement.	Steam, direct	Do.
86	Polk	Seventh and P Streets NW	1891	do	2 floors and basement.	do	Do.
	FIFTH DIVISION						
103	Brookland	Tenth and Monroe Streets NE	1891-1896- 1903	do	do	Steam, direct and indirect	Artificial

161	Bunker Hill	Bunker Hill Road, between Fourteenth and Sixteenth Streets, N.E.	1911	do	1 floor and basement	Hot air	Natural
177	Burroughs	Eighteenth and Monroe Streets N.E.	1922-1926	do	do	Steam, direct	Natural (old building), Artificial (new building).
133	Emery	Lincoln Road and Prospect Street N.E.	1904-1908	do	2 floors and basement	do	Do.
116	Eckington	First and Quincy Streets N.E.	1898	do	do	do	Do.
143	Gage	Second Street, between U and V Streets N.W.	1902-1908	do	do	Hot air	Artificial.
36	Gales	Massachusetts Avenue and G Street N.W.	1881	do	3 floors and basement	Steam, direct and indirect	Natural.
70	Arthur	Arthur Place, between B Street and Indiana Avenue N.W.	1889	do	2 floors and basement	Hot air	Artificial.
108	Langdon	Twentieth and Franklin Streets N.E.	1897-1908	Frame	do	do	Do.
72	Monroe	Columbia Road, between Georgia and Sherman Avenues N.W.	1889-1922	Brick	do	Steam, direct and indirect	Artificial.
175	Parkview	Warder Street, between Newton and Otis Streets N.W.	1916	do	do	do	Artificial and natural.
22	Seaton	Eye Street, between Second and Third Streets N.W.	1871	do	3 floors and basement	do	Artificial.
61	Blake	North Capitol Street, between K and L Streets	1887	do	2 floors and basement	Hot air	Natural.
198	Woodridge	Central Avenue and Vista Street N.E.	1927	do	3 floors and boiler room.	Steam, direct	Artificial.
SIXTH DIVISION							
48	Benning	Anacostia Road and Foote Street N.E.	1883-1911	do	2 floors and basement	Steam, direct and indirect	Artificial.
50	Blair	Eye Street between Sixth and Seventh Streets N.E.	1884	do	do	Hot air	Natural.
107	Hayes	Fifth and K Streets N.E.	1897	do	do	do	Do.
55	Mauzy	B Street between Twelfth and Thirteenth Streets N.E.	1886	do	do	do	Do.
128	Kenilworth	Kenilworth Avenue between Ord and Polk Streets N.E.	1901	do	do	do	Do.
178	Kingsman	Fourteenth and E Streets N.E.	1922	do	3 floors and boiler room.	Steam, direct	Artificial.
142	Ludlow	Sixth and G Streets N.E.	1904	do	2 floors and basement	Hot air	Natural.
88	Taylor	Seventh and G Streets N.E.	1891	do	do	Steam, direct	Do.
71	Madison	Tenth and G Streets N.E.	1889	do	do	do	Do.
31	Peabody	Fifth and C Streets N.E.	1879	do	4 floors and basement	do	Do.
115	Hilton	Sixth Street between B and C Streets N.E.	1898	do	2 floors and basement	Hot air	Do.
58	Carberry	Fifth Street between D & E Streets N.E.	1887	do	do	Steam, direct	Do.
94	Pierce	Fourteenth and G Streets N.E.	1894	do	2 floors and basement	Hot air	Do.
121	Webb	Fifteenth and Rosedale Streets N.E.	1900	do	do	do	Do.
136	Wheatley	Montello Avenue and Neal Street N.E.	1903-1922	do	3 floors and boiler room.	Steam, direct and indirect	Artificial.
145	Blow	Benning Road and Nineteenth Street N.E.	1906	do	2 floors and basement	Hot air	Natural.
135	Edmonds	Ninth and D Streets N.E.	1903	do	do	do	Do.
SEVENTH DIVISION							
46	Brent	Third and D Streets SE.	1883	do	do	Steam, direct	Natural
120	Dent	Second and South Carolina Avenue SE.	1900	do	do	Steam, direct and indirect	Natural and artificial.
155	Bryan	Thirteenth and B Streets SE.	1909	do	do	Hot air	Natural.

Table showing elementary school buildings, their location, and a general description of each—Continued

DIVISIONS I-IX (WHITE SCHOOLS)—Continued

Number of building	Name of school	Location	When erected	Type	Number of stories	How heated	How ventilated
	SEVENTH DIVISION—continued						
96	Buchanan	E Street between Thirteenth and Fourteenth Streets SE.	1895-1923	Brick	2 floors and basement	Steam, direct and indirect	Natural (old building). Artificial (new building).
111	Congress Heights	Nichols and Alabama Avenues SE	1898	do	do	do	Artificial and natural.
137	Congress Heights Annex. Cranch	do		Frame	1 floor, no basement	Stoves	Natural.
83	Tyler	Twelfth and G Streets SE	1872-1903	Brick	2 floors and basement	Steam, direct and indirect	Artificial and natural.
149	Ketcham	Eleventh Street between G and I Streets SE	1890	do	do	Steam, direct	Natural.
87	Van Buren	Fifteenth Street and Good Hope Road SE	1909	do	3 floors and basement	Hot air	Do.
38	Van Buren Annex	W Street between Thirteenth and Fourteenth Streets SE	1891	do	2 floors and basement	Steam, direct	Do.
166	Randle Highlands	V Street between Thirteenth and Fourteenth Streets SE	1881	do	3 floors, no basement	Stoves	Do.
122	Orr	Pennsylvania Avenue and Q Street SE	1912	do	2 floors and basement	Hot air	Do.
138	Stanton	Twenty-second and Prout Streets SE	1900	do	do	do	Do.
150	Van Ness	Alabama Avenue and Good Hope Road SE	1903	Stucco frame.	1 floor and basement	do	Do.
4	Wallach	Fourth and M Streets SE	1909	Brick	2 floors and basement	do	Do.
	EIGHTH DIVISION	D Street between Seventh and Eighth Streets SE	1864	do	3 floors and basement	Steam, direct and indirect	Artificial.
42	Amidon	Sixth and F Streets SW	1882	do	2 floors and basement	Hot air	Natural.
60	Bradley	Thirteen-and-a-half Street between C and D Streets SW	1887	do	do	do	Do.
159	Fairbrother	Tenth and E Streets SW	1911	do	do	do	Do.
109	Rossell	Ninth and E Streets SW	1897	do	do	do	Do.
105	Greenleaf	Four-and-a-half Street between M and N Streets SW	1896	do	do	do	Do.
64	Smallwood	I Street between Third and Four-and-a-half Streets SW	1888	do	do	Steam, direct	Do.
123	Bowen	Third and K Streets SW	1901	do	do	do	Do.

DIVISIONS X-XIII (COLORED SCHOOLS)

188	NINTH DIVISION Health	Allison Street between Thirteenth and Fourteenth Streets NW.	1925	do	1 floor and basement	Steam, direct	Natural.
44	Morse	R Street between New Jersey Avenue and Fifth Street NW.	1883	do	2 floors and basement	do	Do.
14	Threlkeld	Thirty-sixth and Prospect Streets NW.	1868	do	do	Hot air	Do.
51	Webster	Tenth and H Streets NW.	1884	do	3 floors and basement	Steam, direct and indirect	Artificial.
DIVISIONS X-XIII (COLORED SCHOOLS)							
75	TENTH DIVISION Briggs	Twenty-second and E Streets NW.	1889	Brick	2 floors and basement	Steam, direct	Natural.
140	Montgomery	Twenty-seventh Street between I and K Streets NW.	1903	do	do	Hot air	Do.
112	Bruce	Kenyon Street between Georgia and Sherman Avenues NW.	1898-1927	do	do	Steam, direct	Do.
185	Chain Bridge	Forty-ninth and Garfield Streets NW.	1923	Frame	2 floors, no basement	Hot water	Do.
165	Cleveland	Eighth and T Streets NW.	1912	Brick	2 floors and basement	Hot air	Do.
76	Garrison	Twelfth Street between R and S Streets NW.	1889-1924	do	do	Steam, direct	Artificial (new building). Natural (old building).
171	Military Road	Military Road near Brightwood.	1912	do	do	Steam, direct and indirect	Artificial.
81	Phillips	N Street between Twenty-seventh and Twenty-eighth Streets NW.	1890	do	do	Steam, direct	Natural.
139	Reno	Howard and Fessenden Streets NW.	1903	Frame	1 floor and basement	Hot air	Do.
97	Stevens	Twenty-first Street between K and L Streets NW.	1868-1896	Brick	3 floors and basement	Steam, direct	Do.
19	Summer	Seventeenth and M Streets NW.	1871	do	do	Steam, direct and indirect	Artificial and natural.
62	Magruder	M Street between Sixteenth and Seventeenth Streets NW.	1887	do	do	Hot air	Natural.
89	Wilson	Seventeenth Street between Euclid Street and Kalorama Road NW.		do	2 floors and basement	Steam, direct	Do.
49	Wormley	Prospect Street between Thirty-third and Thirty-fourth Streets NW.	1884	do	do	do	Do.
ELEVENTH DIVISION							
189	Cook, J. F.	P Street between North Capitol and First Streets NW.	1925	do	3 floors and boiler room	Steam, direct and indirect	Artificial.
34	Garnet	Tenth and U Streets NW.	1880	do	3 floors and basement	Steam, direct	Natural.
153-183	Mott	Fourth and Bryant Streets NW.	1909-1922	do	2 floors and basement	do	Artificial.
80	Slater	P Street between North Capitol and First Streets NW.	1890	do	do	do	Natural.
132	Langston	do	1902	do	do	Hot air	Do.
TWELFTH DIVISION							
84	Harrison Health	Thirteenth Street between V and W Streets NW.	1890	do	do	Steam, direct	Do.

Table showing elementary school buildings, their location, and a general description of each—Continued

DIVISIONS X-XIII (COLORED SCHOOLS)—Continued

Num-ber of build- ing	Name of school	Location	When erected	Type	Number of stories	How heated	How ventilated
	THIRTEENTH DIVI- SION						
79	Ambush.....	L Street between Sixth and Seventh Streets SW..	1889	Brick.....	2 floors and basement.	Steam direct.....	Natural.
39	Banneker.....	Third Street between K and L Streets NW.....	1882	do.....	do.....	do.....	Do.
77	Jones.....	First and L Streets NW.....	1889	do.....	do.....	do.....	Do.
179	Bell-New.....	Second Street between Virginia Avenue and D Street SW.	1923-1926	do.....	3 floors and boiler room	Steam, direct and indirect.....	Artificial.
127	Birney.....	Nichols Avenue and Howard Road SE.....	1901	do.....	2 floors and basement.	do.....	Do.
170	Burrville.....	Division Avenue and Hayes Street NE.....	1912-1922	do.....	3 floors and boiler room.	do.....	Do.
148	Cardozo.....	First and Eye Streets SW.....	1876	do.....	2 floors and basement.	Hot air.....	Natural.
78	Bell-Old.....	First Street between B and C Streets SW.....	1889	do.....	do.....	do.....	Do.
167	Crummell.....	Gallaudet and Fourteenth Streets NE.....	1912	do.....	do.....	do.....	Do.
152	Deanwood.....	Whittingham and Lane Places NE.....	1909-1921- 22	do.....	3 floors and boiler room	Steam, direct.....	Natural (old build- ing). Artificial (new building).
99	Douglass.....	First and Pierce Streets NW.....	1896	do.....	2 floors and basement.	Steam, indirect.....	Artificial.
45	Twining.....	Third Street between N and O Streets NW.....	1883	do.....	do.....	Hot air.....	Natural.
158	Garfield.....	Alabama Avenue and Twenty-sixth Street SE.....	1910	do.....	do.....	do.....	Do.
63	Giddings.....	Third and G Streets SE.....	1887	do.....	do.....	do.....	Do.
18	Lincoln.....	Second and C Streets SE.....	1871	do.....	3 floors and basement.	Steam, direct and indirect.....	Natural and artifi- cial.
90	Logan.....	Third and G Streets NE.....	1891	do.....	2 floors and basement.	Steam, direct.....	Natural.
124	Lovejoy.....	Twelfth and D Streets NE.....	1872-1901- 1923	do.....	do.....	Hot air (old building) Steam, direct and indirect (new building).	Natural (old build- ing). Artificia (new building).
98	Payne.....	Fifteenth and C Streets SE.....	1896	do.....	do.....	Hot air.....	Natural.
182	Smothers.....	Forty-fourth and Brooks Streets NE.....	1923	do.....	2 floors and boiler room	Steam, direct.....	Do.
126	Syphax.....	Half Street between N and O Streets SW.....	1901	do.....	2 floors and basement.	Steam, direct and indirect.....	Artificial.

EXHIBIT 15

Table showing normal schools, high schools, and vocational schools, their location, and a general description of each

WHITE SCHOOLS

Number of building	Name of school	Location	When erected	Type	Number of stories	How heated	How ventilated
162	NORMAL SCHOOL Wilson	Eloventh and Harvard Streets NW	1912	Brick	3 floors and basement	Steam, direct and indirect	Artificial.
173	SENIOR HIGH SCHOOLS Central	Thirteenth and Clifton Streets NW	1916	do	3 floors, basement, and subbasement	do	Do.
176	Eastern	Eighteenth and East Capitol Streets NE	1923	do	4 floors and basement	do	Do.
117	Western	Thirty-fifth Street between R and Reservoir NW	1898-1924	do	3 floors and basement	do	Do.
144	Business	Ninth Street and Rhode Island Avenue NW	1905	do	do	do	Do.
130	McKinley	Seventh Street and Rhode Island Avenue NW	1902-1904-1912	do	do	Heated air and hot water	Natural and artificial.
43	JUNIOR HIGH SCHOOLS Columbia	O Street between Sixth and Seventh Streets NW	1883	do	do	Steam, direct and indirect	Do.
85	Iline	Seventh and C Streets SE	1891-1927	do	do	Steam, direct	Natural.
23	Jefferson	Sixth and D Streets SW	1872	do	do	Steam, direct and indirect	Do.
181	Langley	First and T Streets NE	1924	do	3 floors and boiler room	do	Natural and artificial.
180	Macfarland	Webster Street and Iowa Avenue NW	1923	do	3 floors and basement	do	Do.
104	Macfarland Annex	Georgia Avenue and Peabody Street NW	1886-1896	do	2 floors and basement	Steam, direct	Natural.
157	Powell	Hyatt Place between Park Road and Irving Street NW	1910-1915	do	do	Steam, direct and indirect	Natural and artificial.
196	Stuart	Fourth and Fifth, E and F Streets NE	1927	do	3 floors and basement	do	Artificial.
27	VOCATIONAL SCHOOLS Abbot	Sixth Street and New York Avenue NW	1869	do	do	Hot air and hot water	Natural.
52	Dennison	S Street between Thirteenth and Fourteenth Streets NW	1884	do	do	Steam, direct	Do.
67	Lenox	Fifth Street between G Street and Virginia Avenue SE	1889	do	2 floors and basement	do	Do.
141	French	Seventh and G Streets SE	1904	do	do	Hot air	Do.

Table showing normal schools, high schools, and vocational schools, their location, and a general description of each—Continued

COLORED SCHOOLS

Number of building	Name of school	Location	When erected	Type	Number of stories	How heated	How ventilated
169	NORMAL SCHOOL Miner	Georgia Avenue and Howard Place NW	1913	Brick	3 floors and boiler room.	Steam, direct and indirect	Natural and artificial.
129	SENIOR HIGH SCHOOLS Armstrong	P Street between First and Third Streets NW	1902-1925	do	3 floors and basement	do	Do.
174	Dunbar	First Street between N and O Streets NW	1916	do	4 floors and basement	do	Do.
195	JUNIOR HIGH SCHOOLS Francis	Twenty-fourth and N Streets NW	1926	do	3 floors and boiler room	do	Do.
28	Randall	First and Eye Streets SW	1907-1926	do	2 floors and basement	do	Do.
82	Shaw	New Jersey Avenue and First Street NW	1890	do	3 floors and basement	Steam, direct	Natural.
134	Simmons (Shaw Annex)	do	1903	do	2 floors and basement	Steam, indirect	Artificial.
57	VOCATIONAL SCHOOLS Phelps	T Street and Vermont Avenue NW	1887-1922	do	do	Steam, direct	Natural.
172	Washington, M. M.	O Street between North Capital and First Streets NW	1912	do	do	do	Do.

EXHIBIT 16

Table showing classification of rooms in elementary school buildings

DIVISION I-IX (WHITE SCHOOLS)

Name of school	Number of special classrooms											Number of other rooms										
	Kindergartens	Opportunity	Manual training	Cooking	Sewing	Housekeeping	Coaching	Ungraded	Atypical	Miscellaneous	Total special rooms	Auditoriums	Auditorium-gymnasiums	Boys' play-rooms	Girls' play-rooms	Principals' offices	Other offices	Teachers' test rooms	Judicators' rooms	Storerooms	Miscellaneous rooms	
First division:																						
Addison.....	7		1	1	1					4	1			1	1			2	1	1		
Brown, E. V.....	15		1	1	1																	
Conduit Road.....	1									1												
Corcoran.....	7									1												
Jackson.....	7									1												
Curtis.....	7	2								3	1											
Hyde.....	6	1								2							1					1 dental clinic.
Eaton.....	15	1	1	1						4							1					
Fillmore.....	7									1							4 classrooms.					
Grant.....	8		1	1						3								2				
Weightman.....	7									1												
Toner.....	4	1								2												
Industrial Home.....	3									1												
Oyster.....	7	1			1				1	3												1 dental clinic; 1 library.
Reservoir.....	4																					
Tenley.....	3	1	1	1	1					5												
Janney.....	7		1			1				2												
Wisconsin.....			2	1	1	1				5												
Morgan.....	7	1								1												
Thompson.....	15	1								2	1						1 assistant superintendent of research.					

1 Hall room.
 2 Also used for coaching.
 3 Used by opportunity class.
 4 These rooms were originally playgrounds.

Table showing classification of rooms in elementary school buildings—Continued

DIVISION I-IX (WHITE SCHOOLS)—Continued

Name of school	Number of regular classrooms										Number of special classrooms										Number of other rooms									
	Kindergartens	Opportunity	Manual training	Cooking	Sewing	Housekeeping	Coaching	Ungraded	Atypical	Miscellaneous	Total special rooms	Auditoriums	Gymnasiums	Boys' play-rooms	Girls' play-rooms	Principals' offices	Other offices	Teachers' rest rooms	Janitors' rooms	Storerooms	Miscellaneous rooms									
Second division—Contd.																														
Berret.....			2	1	1	1			1 vacant.....	6							3 directors of music; director of drawing; director of kindergartens.		1	2										
Third division:																														
Barnard.....	7	1				2				3			1	1	1			1	1	1	1 library, 1 medical room. 1 library, 1 clinic.									
Brightwood.....	13	1	1	1	1	2		1		9		1	1	1	1			1	1	3										
Cooke, H. D.....	18	1	1	1						4	1		1	1	1			1	1	2										
Hubbard.....	5		1	1	1	1				3			1	1	1			1	1	1										
Raymond.....	7	1	1							2			1	1	1		1 supervising principal.	1	1	2										
Johnson.....	7	1								1			1	2	1			1	1	4										
Bancroft.....	8	1								2			1	1	1			1	1											
Keene.....	4		1	1						2			1	1	1			1	1											
Petworth.....	13	1	1	1	1	1				6	1		2	1	1			1	1	1										
Ross.....	8									1			1	1	1			1	1	1	1 first-aid room.									
Takoma.....	15	1	1	1	1	1				5			1	1	1			1	2	1										
Truesdell.....	12	2								2			1	2	1			1	1	1	1 stereopticon room. 1 library, 1 clinic.									
West.....	15	1	1	1	1	1				5	1		1	1	1			1	1	2										
Whittier.....	7	1				2				3			1	1	1			2	1	1	1 library.									
Fourth division:																														
Force.....	12									3			1	1	1			1	1	1										
Adams.....	5		2							3			1	1	1			1	1	1										
Henry.....	9	2	1							3			1	1	1		1 supervising principal.	1	1	1	1 dental clinic.									
Polk.....	4		1							4			10	1				2		1										
Fifth division:																														
Brookland.....	11	1								1			1	1	1			1	1	2										
Bunker Hill.....	2	1								1			1	1	1			1	1	1										
Burroughs.....	14	2	1	1	1		2			7	1		1	1	1			2		2										

PART V

BUSINESS MANAGEMENT

Supervision over the business affairs of the public-school system is lodged with the business manager, who ranks as an assistant superintendent. He directs the procurement and distribution of supplies and equipment in accordance with the policies adopted by the educational officers, and supervises the preparation of pay rolls, the auditing of vouchers, and the maintenance of fiscal accounts and property records. The various financial statements and reports of the system are prepared under his supervision, and he assists the finance committee of the Board of Education and the superintendent of schools in the preparation of the school budget. He has charge of the repair and alteration of buildings and the installation, repair, and replacement of all furniture and equipment.

PROCUREMENT, DISTRIBUTION, AND INSPECTION OF SUPPLIES AND EQUIPMENT

Procurement.

All purchases of supplies and equipment for the public schools are made by the purchasing officer of the District of Columbia upon requisitions signed by the business manager of the school system and the secretary of the Board of Education, and approved by the president of the board. Staples and special materials used by several bureaus and offices of the Federal and District Governments are purchased from contractors with whom the Federal General Supply Committee has entered into agreement to supply all Government needs at terms and prices as set forth in its annual schedule of supplies. In the procurement of such supplies the office of the business manager prepares requisitions on the District purchasing officer, listing the items desired and indicating their reference numbers in the General Supply Committee schedule. After referring the requisitions to the District auditor for approval as to legality of purchase and availability of funds, the purchasing officer issues purchase orders upon the General Supply Committee contractors for delivery of the materials to the school system. Upon the receipt of the material on any order, the receiving officer, if everything is regular, certifies upon an invoice forwarded him by the office of the business manager that the materials have been received in good condition and that they are in accordance with specifications. The contractor's voucher, which has in the meantime been forwarded to the office of the business manager for approval by the District auditor's office, is then examined, approved, and returned to the auditor for final audit and scheduling for payment by the District disbursing officer.

In the matter of the procurement of special school supplies and equipment, which includes all textbooks and practically all school-room furniture and equipment, specifications are prepared by the office of the business manager in collaboration with the educational officers. When the proposed purchase involves an expenditure of \$1,000 or over, proposal forms are prepared with specifications attached, which are sent to the District purchasing officer, who advertises the needs in the names of the Commissioners of the District of Columbia, and informs the public that sealed proposals to supply the same must be received up to a certain time on a particular date. The bids are publicly opened in the office of the secretary to the commissioners by a representative of the purchasing officer, and are sent to the purchasing office where an abstract of them is prepared. They are then forwarded with the abstract to the office of the business manager for recommendation as to the action to be taken. The business manager reviews the various proposals and decides upon the one whose acceptance he will recommend to the purchasing officer. When necessary, he advises with the educational officers in making his determination, and in cases of purchases involving comparatively large expenditures, he appoints a committee or requests the superintendent to appoint one to act with him in making the recommendation. In a recent purchase of schoolhouse furniture (recommended for purchase on August 18, 1927), costing approximately \$75,000, the committee which made a unanimous recommendation, consisted of the acting superintendent of schools, the first assistant superintendent in charge of colored schools, the business manager, the supervisor of manual training, and the principal of the McKinley Technical High School. In all cases where a proposal other than the lowest is recommended for acceptance, the reasons for such action must be stated fully, and the recommendation must receive the approval of the superintendent of schools.

Upon the receipt of the recommendation from the business manager, accompanied by a requisition and the proposals and abstract, the purchasing office reviews all documents and recommends an award to the commissioners after the District auditor's office has approved the purchase as to legality and availability of funds. Upon the making of the final award by the commissioners in board session, a formal contract with the successful bidder is prepared and executed. The documents used in connection with the receipt of the materials and the payments to the contractor are the same under this method of purchasing as for the purchases made from the General Supply Committee schedule described above.

In cases where a proposed purchase of special school supplies or equipment involves an expenditure of less than \$1,000, the office of the business manager prepares a request for prices on the purchasing office, specifying the materials desired. The purchasing office then sends out invitations for bids to three or more supply houses. Upon the receipt of the bids they are abstracted upon the price request form, which is returned to the office of the business manager for recommendation as to award. The business manager reviews the bids and decides upon the one whose acceptance he will recommend, advising with the educational officers where necessary. He then prepares a memorandum of recommendation, which is forwarded to the purchasing office with a requisition and the price request form. All

documents are reviewed by the purchasing office, which prepares a purchase order on the successful bidder after the District auditor's office has approved the purchase as to legality and availability of funds. The documents used in connection with the receipt of the materials and the payments to the contractor are the same under this method of purchasing as under the other two methods described above.

Distribution.

All textbooks and school supplies in common use throughout the system are delivered to the public-school storehouse located in an old elementary school building at 429 O Street NW. They are distributed from here to the schools in leased motor trucks on the basis of requisitions prepared by the principals and approved by the supervising principals or directors of departments and the business manager. Schoolroom furniture and equipment are delivered direct to the school buildings, as are also special laboratory and shop supplies and equipment and bulky custodial supplies.

Inspection.

Supplies and equipment delivered to the storehouse are inspected by the storekeeper or one of his assistants. In the case of any doubt as to whether a particular item meets with specifications, the storekeeper requests the advice of the director of the department involved, such as kindergarten, domestic science, manual training, etc.

Schoolroom furniture and equipment delivered direct to school buildings in large quantities, such as the initial installation for a new building, are inspected by a committee whose members are particularly qualified to make such inspections, composed of the director of the department of manual training as chairman, and several of his assistants. Responsibility for the inspection of occasional small direct deliveries of replacement furniture and equipment and of special materials, such as laboratory supplies, rests with the school principals. The principals are also charged with the inspection of major items of equipment and their installation, such as cafeteria, gymnasium, and stage equipment, which do not form a part of building construction.

Recommendations.

The present plan of recommending awards in connection with the procurement of supplies and equipment not included in the General Supply Committee schedule results in duplication of effort. It involves a thorough independent consideration of the various proposals submitted on any proposed purchase by two separate offices, namely, the office of the business manager of the school system and the District purchasing office. This objection may be overcome by establishing a board of award for school supplies and equipment, consisting of not less than three nor more than five members appointed by the commissioners, composed of representatives of the District purchasing office and of the school system, one of whom shall be the business manager. It would be the duty of the board to consider fully all bids received on any proposed purchase and to recommend an award to the purchasing officer. The board would, of course, summon to its meetings such advisors as may be needed to test samples, inspect performance, or pass upon technical features of the articles to be purchased.

Attention is invited to the fact that the District Commissioners and school officials already have this recommendation under consideration in connection with a report submitted by the Bureau of Efficiency on the purchasing methods of the District of Columbia.

No entirely satisfactory system of storage and distribution of supplies and equipment can be made effective for the public schools until adequate storage space is provided. The present public-school storehouse at 429 O Street NW., is a converted elementary school building, but notwithstanding the extensive alterations that have been made, it is poorly suited for the purpose. In the first place, the building does not contain sufficient floor space to meet the present needs. The abandoned Hamilton elementary school building on Bladensburg Road is now used as an auxiliary storehouse, and the basement of the administration building, the old Franklin School on Thirteenth and K Streets NW., is frequently used for storage purposes. Secondly, the O Street storehouse is poorly arranged for storage purposes, for it has been impossible to remove the walls dividing the former classrooms, since they form the only support for the floors. The floors above the ground will carry only a comparatively small load, while certain portions of the floors where the support is particularly weak can not be used at all. Moreover, the two entrances to the building and the corridor on the ground floor are so arranged as to make expeditious receiving and shipping of supplies impossible. In the third place, the storehouse is located off the railroad, making double handling and double truckage of supplies necessary.

The Bureau of Efficiency has brought to the attention of the officials of the Federal Government charged with the planning of public buildings the great need for a general Government warehouse in the District of Columbia located on a railroad siding, which will serve all establishments of the Federal and District Governments for the receipt, inspection, storage, and distribution of supplies. A tract of land owned by the United States Government with suitable rail connections, which will make an ideal site for such a warehouse, has been located, and it is expected that definite plans for the building will be presented to the Seventieth Congress. Adequate space for the receipt, inspection, storage, and distribution of public-school supplies and equipment should be provided in such a warehouse.

With regard to the use of leased motor trucks by the school system for hauling purposes, the Bureau of Efficiency contemplates making a vehicular equipment survey for the entire government of the District of Columbia, which will cover the needs of all its branches, including the public schools. Such a survey will determine which of the three possible methods of hauling school supplies and equipment is the most efficient and economical, namely, (1) the leasing of motor trucks, as at present, (2) the ownership by the school system of its own trucks used exclusively for school purposes, or (3) the use by the schools of trucks supplied as needed by a general service station operated by the District Commissioners for the entire District government.

The inspection of supplies and equipment can not be placed on an entirely satisfactory basis, while the present storehouse conditions continue to exist. Adequate facilities for receipt and storage would reduce to a minimum deliveries made direct to the schools, thus permitting of centralized and uniform inspection.

In the matter of inspection of furniture and equipment it is believed that the responsibility for such inspection should be lodged with the proposed office of assistant superintendent in charge of buildings and grounds. At present the inspection of schoolroom furniture and equipment is made by a committee of qualified educational officers of the manual training department, while special equipment, such as cafeteria and stage equipment, which often involves structural work in its installation, is inspected by the school principals. The schoolroom furniture and equipment committee is performing satisfactory service in this respect, but the time its members devote to this work is taken away from their important educational duties. On the other hand, the inspection by school principals of special equipment and its installation is generally not satisfactory, for only in exceptional cases is a principal qualified to pass upon such items. Then, too, when the complete special equipment of a large high-school building is involved, the time required for its inspection is so great as to cause the principal's regular work to suffer. The personnel of the proposed office of assistant superintendent in charge of buildings and grounds should conduct these inspections as a part of its regular duties.

Fiscal accounting.

The system of fiscal accounts in use in the public-school system is similar to the one maintained by the office of the auditor of the District of Columbia. It provides for the recording of the various fiscal transactions by appropriations and permits of the determination currently of the unencumbered and unexpended balances of appropriations, as well as the unencumbered balances of allotments.

The system is generally satisfactory from the standpoint of supplying the necessary information to administer intelligently the several school funds, but it is believed that it can be considerably improved by the introduction of more modern accounting forms and procedure which have been successfully installed in various Federal offices during the last few years with the approval of the Comptroller General of the United States. However, no recommendation for a change is made at this time, since the Bureau of Efficiency has in contemplation a study of the fiscal accounting methods of the entire District government, the report on which will cover all District accounting offices, including the office of the business manager of the school system.

It should be noted that the improved system of accounts referred to above provides for a detailed classification by objects of expenditures, and that it adapts itself to the accrual method of accounting which is recommended by many school accountants.

Property accounting.

The public-school system maintains no property accounts. No personal accountability has been established for the schoolhouse equipment valued at approximately two and a half million dollars (replacement value), which is found scattered throughout the city among 168 buildings.

This equipment consists of such items as desks, chairs, tables, cabinets, typewriters, office appliances, sewing machines, electric irons, dishes, tableware, kitchen utensils, machine tools, hand tools, musical instruments, gymnasium apparatus, etc. Neither are any

stock records maintained for materials delivered to and issued from the storehouse, which approximate \$250,000 in value annually. Some of the principals of the schools, it is true, have voluntarily established for their own information and guidance records covering the property located in the buildings under their charge. However, these records lack uniformity, being kept in many instances on sheets of composition paper ruled in such a manner as to meet the ideas of the individuals keeping them as to what a satisfactory property accounting form should be. As far as the property accountability records of the office of the business manager are concerned, they terminate with the certification on the invoices by the storekeeper, or the school principal in the case of direct deliveries, that the material has been received and that it meets with specifications. The business manager's office, it might be mentioned, receives copies of invoices listing property transferred from one building to another and of condemnation reports, but these are simply placed in the files. Apparently these forms are survivals of a property accounting system of an earlier day.

It is our opinion that the school system should be criticized for its failure to maintain adequate property accountability records. Although nothing has come to our attention which would indicate any irregularities in connection with the receipt and distribution of supplies and equipment, still the absence of a property accounting control breeds carelessness and invites leakage. It is just as important in our opinion to account for property as it is to account for cash.

It is recommended, therefore, that a property accounting system be introduced in the school system providing for the following records:

1. Perpetual inventory record of all materials carried in the storehouse, to be maintained at the storehouse.

2. Nonexpendable property records showing for each school the property of a semipermanent nature for which the school principal is held accountable, to be maintained by the office of the business manager.

3. Lists of nonexpendable and expendable property to be maintained by the schools, showing for each school the items of property on hand at the beginning of the school year, the receipts during the year, the issues during the year, and the items on hand at the close of the year.

4. Plant record to be maintained by the business manager's office, showing for each school building, the year built, the type of construction, the number of stories, the cubage, the cost of the site, the cost of building construction, the type of heating plant, the type of ventilating system, the fire protective apparatus, the toilet facilities, the number of regular classrooms and their size, the special rooms, such as auditoriums, gymnasiums, laboratories, shops, playrooms, etc., and their size, and other rooms, such as offices, storerooms, lunch rooms, etc., and their size. To this record should be attached a drawing of the site indicating the size of the site, the location of the building upon it, the size of the building, and the portion of the site given over to playgrounds and to lawns.

The records outlined above will not only establish property accountability, but will also provide considerable information in regard to the school plant and equipment which is essential to the effective administration of the school system. At the present time, when any such information is required, a request is made upon the various educational officers in the field concerned to supply it immediately.

Two additional clerks, one grade 5 clerk and one grade 2 clerk, will be required in the office of the business manager to handle the property accounting work outlined above. The duties of the grade 5 clerk will be to establish the records in the business manager's office, in the storehouse, and in the schools, to maintain the plant record

and the record of nonexpendable property in the business manager's office, to audit occasionally the property accounts of the storehouse and of the schools, and to supervise generally the entire system of property accounting under the general direction of the business manager. The grade 2 clerk will keep the property accounts at the storehouse.

The data necessary to establish the plant record has for the most part been gathered by representatives of the Bureau of Efficiency, for it was found necessary in order to procure any reliable information regarding the school buildings and their facilities to visit them personally, since in no office in the school system nor in the District government was a complete current record to be found. Drawings of the school sites are now being prepared by the office of the municipal architect.

Accounting for School and Activity Funds.

Numerous funds are maintained throughout the school system in connection with its various activities, such as community-center funds, lunch-room funds, laboratory funds, athletic funds, etc. The manner of controlling and accounting for such funds is left entirely to the schools or activities which maintain them. The only requirement of the central office is that an annual report for each fund shall be submitted to the business manager, showing the balance in the fund at the beginning of the year, the receipts and expenditures during the year and the balance at the close of the year. This statement is certified to by the custodian of the fund, and by the committee which has been designated by the head of the school or activity concerned to audit the transactions in the fund.

It is our opinion that the office of the business manager should be charged with establishing the methods of accounting for the various school and activity funds and with making an examination of the transactions therein in sufficient detail to satisfy himself that all moneys received have been accounted for, that all expenditures have been regularly made, and that the balance in any fund is actually on hand or on deposit.

Savings banks are also conducted by several of the high schools as a part of the course in business practice and for the encouragement of thrift among the students. These banks are likewise used as depositories for the several school funds. Supervision over the operations of the banks rests with the principals of the schools. The head of the department of business practice acts in an advisory capacity to the several principals in this connection, and appoints committees to audit the transactions of the banks. Copies of the audit reports are forwarded to the first assistant superintendent of schools, and are included in the annual report of the head of the department of business practice to the superintendent of schools.

It is believed that the operation of the school banks will be more effectively controlled by placing them under the supervision of a board of three members, with the head of the department of business practice as chairman, appointed by the superintendent of schools. It will be the duty of the board to determine the methods of conducting the business of the banks, to supervise their operations generally, and to appoint audit committees for the examination of their affairs. Copies of all audit reports will be submitted to the superintendent of schools.

The appointment of the officers of the banks will, as heretofore, be made by the administrative heads of the respective schools.

Repair and Alteration of Buildings.

The situation in regard to the repair and alteration of school buildings is described in Part II of the report in connection with the recommendation for the creation of the office of assistant superintendent in charge of buildings and grounds. However, in order to make this section of the report on business management complete, the discussion relating to the proposed office is repeated here.

The responsibility for the repair and alteration of school buildings is at present divided between the school officials and the municipal architect. The Board of Education determines the repair program, and the municipal architect is charged with its execution. Ordinary repairs and minor alterations are made by the District repair shop, a branch of the municipal architect's office, which maintains an average force of approximately 200 skilled tradesmen and laborers. In the case of major alterations, such as the installation of new heating plants or the installation of complete new toilet facilities, plans are prepared by the office of the municipal architect in consultation with the school officials and contracts are let by the commissioners, in the same manner as with new building construction.

Under this plan of handling repairs to buildings, the requests for particular items originate for the most part with the principals in charge of the various school buildings. Such requests are approved by the supervisory educational officers concerned and finally by the business manager. These approvals are merely a matter of office routine. They do not in any sense constitute a real determination of needs, for they are not based upon an actual inspection of the facilities involved, except in occasional instances, and moreover the approving officers are not technically qualified to pass upon such matters nor do they receive advice from anyone so qualified. On the other hand, the operations of the repair shop extend only to the supervision of the work ordered to be performed by the school authorities, and do not, except for the heating plants, include inspection for the purpose of determining repair needs. An unsystematic and haphazard program of building repairs and alterations naturally results from such methods. (See Part VII.)

It is believed that this condition should be remedied by transferring to the school authorities the responsibility for the execution of the work relating to repairs and alterations of buildings. The direct supervision of this work should be placed in charge of a qualified mechanical engineer or architect of proved administrative ability, who would rank as an assistant superintendent of schools, coordinate with the business manager, to be known as the assistant superintendent in charge of buildings and grounds. Supervision over the custodial and engineering forces of the school system, and the work of repair and replacement of furniture and equipment should also be assigned to the proposed office of assistant superintendent in charge of buildings and grounds.

Under such a plan of organization, all the activities of the school system relating to the operation and maintenance of buildings, grounds, and equipment, would be centralized in one technically qualified, responsible school official, who would be in a position to use his combined forces in such a manner as to provide for more economical operation and systematic maintenance. Moreover, the assistant superintendent in charge of buildings and grounds would act as the technical advisor to the superintendent of schools and the Board of Education in all matters coming within his field of activity, and as the coordinator between the office of the municipal architect and the school system.

Repair and replacement of furniture and equipment.

The office of the business manager now has charge over the repair and replacement of furniture and equipment. One cabinetmaker is employed on general furniture repairs, a small cabinet shop being maintained in the basement of the Franklin Building for this purpose. It is planned to expand this activity, however, in view of the large amount of furniture in need of resurfacing and repair.

The program of furniture replacement has not been definitely worked out, since no systematic survey of the condition of the furniture in use has been made. However, a considerable number of the pupils' desks and chairs in use in the elementary schools should be replaced immediately on account of wear and tear and obsolescence.

The supervision over the repair and replacement of furniture and equipment should, in our opinion, be transferred to the proposed office of assistant superintendent in charge of buildings and grounds, in order that all activities relating to the physical school plant may be centralized under one official.

SUMMARY

The recommendations relating to the office of the business manager are summarized as follows:

(1) A board of award for school supplies and equipment should be appointed, consisting of not less than three nor more than five members, composed of representatives of the District purchasing office and of the school system, one of whom shall be the business manager.

(2) Adequate space for the receipt, inspection, storage, and distribution of public-school supplies and equipment should be provided in the proposed Government warehouse.

(3) The inspection of special schoolhouse equipment (other than building construction items) should be transferred to the proposed office of assistant superintendent in charge of buildings and grounds.

(4) A system of property accountability should be established in the public-school system.

(5) The office of the business manager should be charged with establishing the methods of accounting for the various school and activity funds and with making an examination of the transactions

therein in sufficient detail to satisfy himself that all moneys received have been accounted for, that all expenditures have been regularly made, and that the balance in any fund is actually on hand or on deposit. (This recommendation does not apply to the school savings banks.)

(6) The responsibility for all work relating to the repair and alteration of school buildings should be transferred to the proposed office of assistant superintendent in charge of buildings and grounds.

(7) The responsibility for all work relating to the repair and replacement of furniture and equipment should be transferred to the proposed office of assistant superintendent in charge of buildings and grounds.

PART VI

CUSTODY OF BUILDINGS

The superintendent of janitors, under the general direction of the superintendent of schools, is responsible for the protection, cleaning, heating, and ventilating of all public-school buildings in the District of Columbia and for the care and cleaning of school grounds. He is also charged with the inspection of the buildings with respect to their sanitary condition and the operation of their heating and ventilating equipment, and with the moving of furniture and other school equipment. He personally supervises the selection, assignment, and instruction of all employees of the custodial force and through his assistants supervises their work. Recommendations for personnel changes in his force, including appointments, transfers, promotions, demotions, and terminations are submitted by the superintendent of janitors to the Board of Education through the assistant superintendents and the superintendent of schools.

The superintendent of janitors has two assistants, one for the white and one for the colored schools. The superintendent and his assistants make their headquarters at the Franklin School, where they have an office and the services of a part-time clerk. The personnel of the custodial force consists of 482 regular employees of various grades and classes, including steam engineers, janitors, firemen, coal passers, electricians, laborers, matrons, watchmen, and gardeners. In addition there are 21 caretakers who are employed part time to clean and heat special rooms and portable buildings. On the regular force there are 31 employees who receive in addition to their annual salary extra compensation for the care of special rooms and portables.

“Rule of Thumb” is the only term that fitly describes the present management of the custodial department of the Washington public-school system. While the other departments have on the whole kept pace with modern advances in the fields of organization and management, the custodial department has lagged far behind in this respect. It is operating the physical plant, composed of 168 buildings representing an investment of approximately \$30,000,000 (replacement value) and requiring the services of 482 full-time employees, in a manner that one might expect to find in an organization for a single building, where the details of the custodial work would come under the close personal supervision of the man in charge.

The various divisions into which the work of the custodial department logically falls will be described briefly below, and under each

division the shortcomings of the present management will be indicated. The divisions are as follows:

1. Selection of personnel.
2. Instruction of personnel.
3. Inspection.
4. Assignment of personnel.
5. Performance, supply, and equipment standards.
6. Repairs to equipment.
7. Records and reports.

1. Selection of Personnel.

Employees of the custodial force are selected by the superintendent of janitors largely upon the basis of the impression made upon him by applicants for positions during his interviews with them. Although each person seeking a position on the force is required to prepare an application supplying, among other things, the names of former employers and the terms of service with each, as well as the names of several character references, and vouchers of two former employers, the superintendent of janitors only occasionally communicates with the references, and then usually by telephone. In his selection of employees he relies almost altogether upon what he considers his ability to size up a man's qualifications and character during a short interview.

As far as the qualifications of an employee for particular work are concerned it is believed that the method of selection outlined above would not be subject to serious objection in the case of low-grade janitorial positions if the employees were carefully instructed in their duties and the work was closely observed for a reasonable period of time after their employment. But such is not the case, as will be pointed out in the subsequent sections of the report on instruction and inspection. However, with respect to supervisory janitors and steam engineers for plants that require licensed operators, it is our opinion that a man's qualifications should be carefully and thoroughly investigated before he is trusted with the responsibility inherent in these positions. The supervisory janitorial positions are usually filled by promotion, so that there should be no question as to a man's qualifications when he is assigned to such a position. However, the failure of the superintendent of janitors and his assistants to make systematic and adequate inspections raises a doubt as to whether the men on the force best qualified for and deserving of such positions are usually assigned to them. As to the steam engineers for plants other than those having gravity return, it is required by the by-laws and rules of the Board of Education that these employees "must hold the license required by the Commissioners of the District of Columbia." A man's qualifications for this work, therefore, are determined by his ability to pass the tests given by the board of examiners of steam engineers in accordance with the provisions of the act regulating steam engineering in the District of Columbia.¹ Licenses are issued to persons passing the tests, and, except for the operation of boilers with gravity returns, it is unlawful for any person to act as a steam

¹ Act approved Feb. 28, 1887, as amended Mar. 4, 1925.

or other operating engineer in the District of Columbia who has not been regularly licensed.² The law also provides that:

Any owner or lessee of any engine or steam boiler or the secretary of any corporation, who shall employ a steam or other operating engineer as such who has not been regularly licensed to act as such or any person operating without a license or in violation of the provisions of this act shall on conviction thereof by the police court of the District of Columbia, be fined \$40 * * *.

Notwithstanding the provisions of the law regulating steam engineering in the District of Columbia, the requirements of the commissioners, and the rule of the Board of Education, we find that a number of the steam engineers of the school system do not hold the class of license required by the board of examiners of steam engineers for the equipment under their charge. Two such engineers hold no District of Columbia license, both having failed to qualify in their examinations before the board of examiners of steam engineers. In fact, one of them, has failed to qualify on three occasions. Nevertheless, he continues to act as a regular shift engineer at one of the large senior high schools having a plant of 750 horsepower capacity, which under the commissioners' requirements should be operated only by a first-class steam engineer.

2. Instruction of Personnel.

The instruction given employees of the custodial force in their work by the superintendent of janitors and his assistants is negligible. This statement is based upon the reports of our investigators and engineers who visited all school buildings and observed the custodial employees at work. The absence of instruction is particularly noticeable in connection with the operation of the heating and ventilating equipment. Many cases of improper firing were noted, and there was a general complaint upon the part of the operators of hand-fired furnaces regarding the coal furnished by the Government fuel yards. This is a high-grade but low-cost fuel, and with proper instruction, the firemen should experience no difficulty in its use. The frequent and costly repairs made to heating equipment by the District repair shop in order to keep the plants in satisfactory operating condition are also an indication of unintelligent operation. As far as ventilating equipment is concerned, many janitors showed a woeful ignorance of the system under their charge. The various parts of the system and the functions of each had never been explained to them, nor were they instructed in its method of operation. (See secs. E and F of the Report of a Survey of the Heating and Ventilating Systems of the District Public Schools, conducted under the direction of the United States Bureau of Mines, Appendix C.)

Employees are assigned to buildings by the superintendent of janitors with only general instructions as to the performance of their duties. Several instances came to our attention where employees new to the system were handed the keys to their respective buildings, which they were simply told to clean daily. This means that an employee assigned to a building which is allotted but one custodial position is practically thrown upon his own resources. If he is new

² The commissioners' requirements provide that a steam engineer holding a first-class license may operate a plant of any horsepower; one holding a second-class license may operate a plant whose horsepower does not exceed 75; and one holding a third-class license may operate a plant whose horsepower does not exceed 25.

to the school system he must work out his own salvation, while if he has been transferred from a larger building he may or may not have absorbed some knowledge as to how most effectively to keep his building in a sanitary condition and how properly to operate his heating plant. In the latter case the value of the instruction received will depend altogether upon the individual efficiency of the janitor under whom he worked. In other words, in the matter of the custodial work of the schools, each building is practically a unit unto itself. It is good or bad according to the standards of the janitor in charge and the principal of the school.

The uniformity of economical custodial service which should exist in a large school system is lacking in the Washington schools on account of the failure of the superintendent of janitors to provide adequate instruction and inspection and to establish performance, supply, and equipment standards. He contents himself apparently with calling a semiannual meeting of all custodial employees and reading to them a statement of their duties, with no suggestions as to the manner of performance, and relying upon the principals and the health officers to bring to his attention any deficiencies in execution. If no complaints regarding a building are received he concludes that the work is being satisfactorily performed, whereas under this negative plan of supervision fuel is being wasted, heating plants and other equipment are being abused, and the most effective use is not being made of labor, supplies, and equipment.

In this connection, it should be noted that although under the by-laws and rules of the Board of Education the janitor has charge of his building under the direction of the principal, the latter is line authority only and can extend solely to the general cleanliness of the building and to the supply of sufficient heat and ventilation. The economical use of the time of custodial employees, the economical use of fuel and supplies, and the proper care of the heating, ventilating and other building equipment are all staff matters which must be supervised intensively by a qualified custodial management.

3. Inspection.

The superintendent of janitors and his two assistants are charged with the duty of inspecting the school buildings with respect to their sanitary condition and the operation of their heating and ventilating equipment.

The reports of our investigators and engineers indicate that the custodial management has been lax in the performance of this important duty. No definite program of inspection for the system as a whole has been established. With reference to the inspections made by the superintendent of janitors himself, it appears that his visits to school buildings are made largely in connection with answering complaints of principals and janitors and investigating conditions reported by the health officers. He makes no record of the buildings he has visited, nor of the conditions he finds. Moreover, the inspections of the assistant superintendent of janitors for the white schools are also made largely on this basis of negative supervision. He plans no inspection schedule, he keeps no record of the buildings he has visited, he makes no memoranda of his findings, nor does he prepare any reports. The assistant superintendent of janitors for the colored schools, on the other hand, has made an attempt to inspect his schools

systematically and visit them at regular intervals. But he prepares no reports for the information of the superintendent of janitors or of the principals.

However, the failure of the custodial management to instruct its employees in the performance of their duties and to check them as to the economical use of fuel and the proper care of buildings and equipment has resulted in making the present inspection at best solely a determination as to whether or not a building is on the whole in a sanitary condition and is adequately heated. As a matter of fact, the principals are required to satisfy themselves that the custodial employees accomplish these results from day to day. But the principals are not concerned with the manner of their accomplishment nor with the cost involved. These are matters which come under the jurisdiction of the custodial management, and they can be controlled only by adequate instruction of the employees in their work and detailed inspection of its manner of performance.

With respect to cleanliness, varying standards were found throughout the system. A number of instances of poor house cleaning were noted but not as many as might have been expected in view of the reports that had come to our attention regarding unsanitary conditions in the schools. It can only be concluded that the improved condition of the school buildings found by our representatives was due to two factors, as follows:

The first factor was the clarification by the superintendent of the schools at about the time the survey began of the relationship between the principals and the custodial employees of their buildings. He made it clear that the principals were responsible for the cleanliness and sanitary condition of their buildings and that locally the custodial employees were under their direction. Prior to that announcement, the lines of authority had not been clearly defined, and many custodial employees believed that they were under the sole direction of the superintendent of janitors. The principals, moreover, were not altogether certain of their authority in this connection, and in many instances they hesitated to issue instructions to custodial employees.

The second factor was the visits of our investigators and engineers to the buildings throughout the system. As soon as the survey got under way, word was passed among the employees that the program included the inspection of all buildings. Naturally there was a tendency to be "on dress parade." This in itself is the best argument that can be advanced for thorough inspections by qualified employees.

4. Assignment of Personnel.

A careful examination of the assignments of custodial employees in relation to plant facilities indicates that the personnel for the various buildings has not been determined upon the basis of a thorough analysis of the needs.

The personnel required for a particular building, with the exception of the small eight-room buildings which are cared for by a single employee, is dependent upon the size and physical condition of the building, grounds, and mechanical equipment, and upon any peculiar features in connection with the plant which make for difficulty of performance of the janitorial work. Time did not permit of a detailed study of these factors as applied to each building, but in view of the marked inconsistencies noted in the assignment of personnel

and of the observations made of the work of the custodial forces in the large buildings, it can safely be said that building forces do not in many instances represent actual needs. Some buildings are overmanned, while others are undermanned. The real needs for a building can only be determined after a careful analysis of the various tasks to be performed and the establishment of methods and standards of performance. Such determinations have not been made by the custodial management.

The inconsistencies in the present assignments of custodial personnel may be illustrated by the assignments of assistant engineers and laborers in the high schools. The following senior highs each have two assistant engineers: Central, Eastern, Western, and Armstrong. McKinley and Dunbar have one each, and Business has none. It seems unreasonable that Western should have two assistant engineers and Business none, in view of the fact that both plants have approximately the same boiler capacity, and there is little difference in the size of the two buildings. Dunbar and McKinley, on the other hand, which have double the boiler capacity of Western, are assigned only one assistant engineer. Randall, Stuart, Francis, and Shaw Junior High Schools each have one assistant engineer, and Columbia, Macfarland, Hine, and Langley have none. The Shaw Junior High School is the only junior high school which has a plant comparing favorably in size with those of the smaller senior high schools.

Armstrong, Dunbar, McKinley, and Western High Schools have approximately the same number of classrooms, but the labor forces in these buildings vary from four to nine employees. It follows, therefore, that laborers in certain buildings are required to perform more work than laborers in other buildings. In fact, the number of rooms cared for daily by individual laborers varies from 8 in one instance to 23 in another. Another evidence of improper assignment of laborers is indicated by a comparison of the forces in junior high schools with those in senior high schools. Stuart and Francis Junior High Schools each have four laborers, which is the same number assigned to Business and McKinley Senior High Schools, which have double the number of rooms.

5. Performance, Supply, and Equipment Standards.

No studies have been made by the custodial management toward the end of establishing performance, supply, or equipment standards. Many of the tasks performed by the janitors and laborers are measurable, and they occur with regularity. It is, therefore, possible to determine what constitutes a fair day's work for these tasks to be used as a basis for establishing individual performance requirements and total personnel needs. Attention is invited to the fact that in several other big city systems studies of this nature have resulted in the adoption of a plan of cleaning large buildings which is less costly than the one in effect in Washington. In Washington laborers are employed on a salary basis and work around the buildings during the entire school day. It is frequently difficult for them to perform their work expeditiously on account of class sessions, and practically all interior cleaning must be postponed until the end of the school day when it is hurriedly performed in order to assure a reasonable quitting time. Under the other plan the janitor in charge and one or two laborers are on hand during the school day and the other laborers, who are employed on an hourly basis, report after school

hours when their work can be performed without interruption. This does not apply, of course, to the engineering and firing personnel.

The custodial management does not conduct experiments with various makes and styles of supplies and equipment for the purpose of determining the most serviceable materials for its needs, as is done by the more progressive school custodial departments. It has established annual supply quotas representing the quantities of the various items of supplies considered adequate for one year. These quotas have not been accurately determined, however, for in many cases the quantities allowed are in excess of actual needs, while in other cases they are not sufficient. For example, one dust brush is allowed for each custodial employee, including engineers and firemen, who seldom perform any cleaning work. Two corn brooms and 1 gallon of disinfectant are allowed each building regardless of size. Fifty gallons of floor oil, 50 gallons of kerosene, 1 gallon of turpentine, and 1 gallon of linseed oil are allowed each building regardless of size with a few exceptions in the cases of the largest buildings.

As far as the mechanical equipment of the school buildings is concerned, the engineers of the office of the municipal architect determine the types to be installed in the new buildings. But the coordination between the designers of the equipment and the operating personnel of the buildings, which is essential to the adoption of the best types of equipment, is lacking. This is well illustrated by the manner in which the central vacuum-cleaning equipment of the Eastern High School has been handled. Central vacuum cleaning systems have been adopted as standard equipment for all new buildings by many school boards during the last few years as a result of the improvement of mechanical cleaning over hand methods. When the plans for Eastern High School were prepared in 1921, the municipal architect provided for a central vacuum-cleaning system, which was installed at a cost of \$5,300. The equipment is not now being used. It appears that the custodial force at the Eastern High School after using the equipment for a short time decided that they did not like it. They preferred to clean by hand, so they gathered all the equipment together and stored it away in the basement of the building. As far as can be learned the custodial management made no investigation to determine whether or not any real objection to the vacuum system existed. Notwithstanding this experience at Eastern High School, a central vacuum-cleaning system is being installed in the new McKinley High School at a cost of \$17,034.

6. Repairs to Equipment.

The janitors as a rule perform minor repair work on furniture and other building equipment, such as lockers, window shades, and plumbing fixtures. However, it is believed that a careful survey of the repair work on school buildings and equipment will indicate a number of minor jobs not generally handled by the janitors at present, which they could perform if given the proper instruction and the necessary emergency tool kit and supplies.

The licensed steam engineers of the school system generally handle little of the repair work required to be done on the heating and ventilating systems under their charge. In many cases the District repair shop is called upon to make the simplest of such repairs, neces-

sarily at a comparatively high cost, since the repairman spends as much, if not more, time in going to and from the job as he does in performing the work. The licensed engineers should be qualified to handle the ordinary repairs to their equipment, and they should, in our opinion, be supplied with the necessary tools and a stock of emergency supplies to make this possible.

7. Records and Reports.

At the time the school survey was begun the records of the office of superintendent of janitors consisted of the following: A card record of custodial employees arranged alphabetically, showing for each employee his name, position, school assignment, home address and telephone number, and family status; a file of application blanks, arranged by classes of positions; a copy of the custodial pay roll, arranged as to schools for the high schools and as to divisions for the elementary schools; a copy of all orders of the Board of Education, arranged chronologically, showing personnel changes in the custodial service; and a file of copies of requisitions for the moving, transferring, and setting of furniture.

The following essential records were lacking: A record showing the custodial employees assigned to each elementary school, the boiler capacity in horsepower of the various heating plants, the high and low pressure plants and their equipment, the licensed engineers and the class of license held by each, the class of license required for the operation of particular plants, the number of rooms in each building, and the number of rooms or portables assigned to caretakers.

A record has recently been established in the office of the superintendent of janitors showing the assignments of custodial employees under elementary school buildings. A list has also been prepared, at the request of the boiler inspector of the District of Columbia, showing the type of heating plant in each building and its boiler equipment. Another list was prepared recently at the request of the Personnel Classification Board, showing for each custodial employee, his school assignment, the class of license he holds, if any, his salary grade, and the number of rooms in the building to which he is assigned.

No regular reports are made by the custodial management.

It is apparent, therefore, that the superintendent of janitors and his assistants rely almost entirely on their memories for the information necessary to administer the custodial department of a school system involving the care of 168 buildings and the supervision of 482 full-time employees.

RECOMMENDATIONS

The above analysis indicates clearly that the present custodial management has failed to measure up to its responsibilities in every one of its major functions. In large measure the superintendent of janitors must shoulder the blame for this state of affairs. But the school officials are not entirely blameless in the matter, since they have made no serious attempt to reform the present management, although undoubtedly they are familiar with its shortcomings. It is evident that the superintendent of schools and his assistants have been satisfied with much less than might reasonably have been expected from the custodial management. Why should not the same

high standards of performance which are demanded of the other departments of the service be required of the custodial department?

It is our opinion, as pointed out in Part II of the report, that the direction of all activities of the school system relating to the operation and maintenance of buildings, grounds, and equipment should be placed in charge of a qualified mechanical engineer or architect of proved administrative ability, who would rank as an assistant superintendent of schools, coordinate with the business manager, to be known as the assistant superintendent in charge of buildings and grounds. This official would be in a position to use his combined forces in such a manner as to provide for the most economical and efficient operation and maintenance of the entire physical plant of the school system.

The activities that would be transferred under this plan to the proposed office of assistant superintendent in charge of buildings and grounds are the following:

(1) Custody and operation of buildings, now directly supervised by the superintendent of janitors under the general direction of the superintendent of schools.

(2) Repair and alteration of buildings. The responsibility for this activity is now divided between the school authorities and the municipal architect. The office of the business manager determines the repair schedule, while the District repair shop, under the general direction of the municipal architect, is charged with its execution.

(3) The repair and replacement of school furniture and equipment, now under the direction of the business manager.

PART VII

REPAIR AND ALTERATION OF BUILDINGS

Repair Program.

The school buildings and grounds have not been kept in a satisfactory condition of repair for many years on account of the insufficiency of funds provided for their upkeep as well as the haphazard and unsystematic methods in use for handling building maintenance work. The first difficulty has been partly corrected by the increased appropriations granted for the fiscal years 1926, 1927, and 1928, which have made possible the establishment of a repair program that is gradually disposing of the many deferred items of building maintenance. There is a large amount of repair and replacement work still to be done before the school buildings can be considered to be in a satisfactory condition.¹ The program of replacement of the hot-air heating plants that have outlived their usefulness, the program of interior painting, the program of replacement of unsatisfactory toilet facilities, and the program of general repairs are still under way and at the present rate of progress will require several years for their completion. It is our opinion, based upon the findings of our engineers who have made a detailed survey of the condition of the school buildings, that the item of \$529,610 in the 1929 budget for repairs and improvements to school buildings, exclusive of grounds, should be granted. Approximately \$200,000 of this amount is applicable to deferred maintenance, for it is estimated that the total annual cost of maintenance of the present physical plant of the Washington schools after it has been put in a good state of repair will be \$325,000. The estimates of our engineers indicate that the total deferred maintenance, exclusive of grounds, amounts to approximately \$1,000,000. At an annual rate of \$200,000 it will require five years, beginning with the fiscal year 1929, to dispose of this item.

School Grounds.

With respect to school grounds, the office of the municipal architect estimates that \$430,000 will be required for their improvement, including grading, laying of walks, surfacing of playgrounds, sodding of lawns and setting of shrubbery for several new buildings, the resurfacing of a number of old playgrounds, and the beautification generally of the grounds of the old buildings. It is not possible to defray the cost of such work with construction funds for the new buildings authorized by the second deficiency appropriation act of

¹ In this connection see Appendix C (report of a survey of the heating and ventilating systems of the District public schools) and Appendix D (report of a survey of conditions affecting health and safety in the public schools of the District of Columbia).

1925 and by the regular annual appropriation acts for the fiscal years 1926 and 1927 on account of the provision in these acts that the construction of any building authorized therein shall be awarded in a single contract, exclusive of heating, lighting, and plumbing.² The budget for the fiscal year 1929 includes \$100,000, to be made available from the unexpended balances of the above construction appropriations, for the improvement of school grounds surrounding buildings constructed under appropriations for the fiscal year 1927 and prior fiscal years. A review of the estimate submitted by the office of the municipal architect, which was prepared by the grading and cementing department of the District repair shop, indicates that so far as individual buildings are concerned the improvements recommended in many instances are not in accordance with the best practice of the art of landscape treatment. However, it is our opinion that if a program of beautification of school grounds is approved, it will require the estimated \$430,000 for its completion. In any event, the \$100,000 included in the 1929 budget should be granted for the purpose of treating the grounds of several new school buildings which are practically in the condition they were left by the contractors, and of improving the run-down condition of grounds surrounding many old buildings.

It is our belief that if a program of school-ground beautification is approved, a qualified landscape architect should be employed to have charge of the plan and its execution. He should be attached to the office of the municipal architect. The design for the treatment of the ground areas around all new District buildings will thus come under his supervision, and, if our recommendation for the transfer of the repair shop to the school authorities is made effective, he will act as the advisor to the proposed assistant superintendent in charge of buildings and grounds in the matter of the improvement and upkeep of school grounds. It would also be necessary to add a principal gardener to the personnel of the repair shop, whose duties it would be to prepare sites, to seed and plant lawns, flower beds, shrubbery, and ornamental and shade trees, and to maintain such landscape improvements by all forms of cultivation, including pruning and surgery.

Present Organization and Methods.

In connection with the method of handling repairs to school buildings, it should first be pointed out that the responsibility for this work is divided between the Board of Education and the municipal architect. The school officials determine the repair program, and the municipal architect is charged with its execution. Ordinary repairs and minor alterations are made by the District repair shop, a branch of the municipal architect's office, which serves the entire District government in this connection. It maintains an average force of approximately 200 skilled tradesmen and laborers. In the case of major alterations, such as the installation of new heating plants or the installation of complete new toilet facilities, plans are prepared by the office of the municipal architect in consultation with the school officials, and contracts are let by the commissioners in the same manner as with new building construction.

² This difficulty has been corrected by the regular appropriation act of 1923, which also excepts painting and treatment of grounds from the single contract provision.

The procedure for handling ordinary repairs and minor alterations to school buildings is as follows:

Requests for repairs to buildings and grounds are prepared by the school principals on forms prescribed and furnished by the school system. In the case of elementary schools the requests are sent first to the supervising principals for approval, who forward them to the office of the business manager for attention, while for the normal, senior high, junior high, and vocational schools the requests are sent to the business manager through the first assistant superintendents. The business manager reviews the requests and forwards those that he considers reasonable and regular in every way to the District repair shop with his approval, after he has designated them as emergency, essential, or desirable. The approved requests constitute the authority of the repair shop to perform the work indicated. Boilers, furnaces, steam and gas engines, motors and fans are periodically inspected and repaired by repair shop mechanics. During the interim between inspections requests for emergency repairs to heating and ventilating equipment are telephoned to the repair shop. In such cases the principals immediately prepare written requests for the work and submit them in the same manner as described above for regular requests for repairs.

Work of an emergency nature is executed promptly. An allotment of at least \$40,000 is made annually for emergency repairs, any unexpended balance of which is utilized for regular repair work. Requests for work not in the nature of an emergency are held by the repair shop in a pending file containing all unfilled requests, arranged as to schools. On June 1 and December 1 of each year, the repair shop prepares from its file of requests a schedule for each school building showing the pending repair items and the estimated cost of each.³ The complete files of these schedules are known as the June and December repair lists. Upon the completion of a semiannual repair list, the superintendent of repairs reviews the many items, and indicates by a check mark those that he believes should be executed during the next six-months' period. His determination of the items to be included in the repair program is not based, except in occasional instances, upon an actual inspection of the various buildings. It is a desk review. It should be noted in this connection, however, that the superintendent of repairs and his foremen are continually visiting the school buildings in connection with the supervision of their workmen. Occasionally principals request their advice in the matter of requests for repairs, but they make no regular inspections as to repair needs.

The superintendent of repairs after making his check of the repair list forwards it, together with an estimate of the total cost including shop overhead, to the business manager of the school system through the municipal architect and the engineer commissioner. The business manager reviews the items appearing on the repair list in detail and places a check mark opposite those he believes should be executed during the next six-months' period. In the majority of cases his check marks coincide with those of the superintendent of repairs. Not infrequently, however, he checks an item omitted by the superintendent or leaves unchecked one included by the latter. However,

³ The June schedules also include all recommendations for repairs and improvements made by the fire and health departments.

the business manager's determination of the items to be included in the repair program is not based, except in occasional instances, upon an actual inspection of the various buildings. It also is a desk review.

The business manager, after completion of his review of the repair list, prepares a summarized statement of his recommended repair program for the action of the committee on buildings, grounds, and equipment of the Board of Education.⁴ Upon the approval of the plan by the committee, the summary with the repair list attached is returned to the repair shop through the engineer commissioner and the municipal architect, and becomes the program by which the superintendent of repairs is governed during the following six months. A change in the recommended program by the committee on buildings, grounds, and equipment, the office of the engineer commissioner, or the office of the municipal architect is a rare occurrence.

It is evident from the above description of the methods in operation for the handling of repairs to school buildings that the plan of maintenance is unsystematic and haphazard. The requests for repairs originate with the principals, who for the most part on account of their limited knowledge of building construction, report only such needs as are apparent on the surface. The approval of the requests by the supervisory educational officers and by the business manager is largely a matter of office routine, while the preparation and review of the repair lists are accomplished without definite knowledge of the actual repair needs on the part of any individual concerned, either from first-hand inspections of the buildings or from reports of qualified inspectors.

The reports of our engineers, who personally inspected all school buildings in the District of Columbia indicate, first, that requests are not being made for all necessary repairs, and second, that all repair items ordered to be executed by the school authorities are not necessary considering the present status of the general repair program. A system which permits such a condition to exist results in waste, for not only are funds expended in certain cases before more pressing needs have been met, but actual needs in other cases are not being met on account of the failure to report them, causing abnormal depreciation and eventual increased cost of maintenance.

Several outstanding examples of unsystematic and haphazard repair jobs are the following:

1. The interior paint schedule for the fiscal year 1928 was determined for the system as a whole, on the basis of the proportionate distribution to the several school divisions of the funds allotted for painting according to the approximate total building wall space remaining in the entire paint program for each division. Within divisions, the buildings were scheduled for painting on the basis of recommendations of the supervising principals. This has resulted in the scheduling of certain buildings for painting which are in much better condition than others which were not included in the schedule.

2. The Langdon School building was painted, inside and out, at a cost of \$2,601.56 during the fiscal year 1927, when a request was being made in the 1928 Budget for land and building to replace the Langdon School, which was granted.

⁴ The authority of the business manager in this connection dates from Mar. 1, 1927. Prior to that date the committee on buildings, grounds, and equipment reviewed the repair lists in detail and prepared the repair program.

3. The Langdon School building was also electrified during the fiscal year 1926, replacing illumination by gas, at a cost of \$1,269.54.

4. The Garnet School building was electrified during the fiscal years 1924 and 1925, replacing illumination by gas, at a cost of \$1,838.32. This building will be razed in March, 1928, to make way for the Garnet-Patterson Junior High School, the authority for which was included in the appropriations for the fiscal year 1927.

5. The artificial illumination of the Van Ness School was changed from gas to electricity during the fiscal year 1927 at a cost of \$1,696.41. Upon the completion of the work it was discovered that the service connection to the school from the conduits of the Potomac Electric Power Co. would cost approximately \$3,600, which was considered prohibitive.⁵ The school now has no artificial illumination whatsoever.

6. A condition regarding artificial illumination similar to that of the Van Ness School exists at the Syphax School. Gas was replaced by electricity during the fiscal year 1927 at a cost of \$1,533.93. A service connection to the school would cost approximately \$3,500. Since this cost has been considered prohibitive, the school is now without any artificial illumination whatsoever.

7. In their examination of the Central High School plant our engineers found that the electric-generating plant was being operated in such a manner as to make possible the carrying of the total load for all lights and motors, approximately 1,050 amperes, for a limited time only. The two generators—500 and 800 amperes normal-load capacity—had never been synchronized to run parallel, and the larger generator had to carry the entire load when the demands on the plant were at their peak. It frequently happened, therefore, that insufficient illumination for the building was available. The engineer and electricians at Central High School had become convinced apparently that the only solution of the difficulty lay in the installation of a new generating plant, which would have cost approximately \$20,000. The matter was not referred by the school authorities to the District repair shop for attention. A study of the situation by our engineers resulted in the correction of the difficulty at a cost of \$250. The two generators now work in unison when necessary, producing 1,800 amperes or 700 amperes more than the peak load.

Section E of the engineering report (Appendix C) on the survey of the heating and ventilating systems of the District of Columbia public schools, conducted under the direction of the United States Bureau of Mines, indicates a number of the ordinary repair needs which are not as a rule reported.

A review of the repairs made during the last few years to buildings scheduled for abandonment indicates that no consistent repair program for these buildings has been adopted. In some cases repairs have been made that might have been dispensed with, while in other cases essential repairs have not been made.

As far as the quality of the work performed by the District repair shop is concerned, the reports of our engineers and of the school principals indicate that it is generally satisfactory. An investigation of the detailed job costs is now being made, and from the information gathered to date it appears that the costs in three of the eight depart-

⁵ It is understood that the cost for such a connection would now be about \$2,000. This reduction is due to the extension of electric service to residences in the vicinity of the school.

ments of the repair shop are higher than they should be. The cost of the other five departments appear to be uniformly reasonable, however. The reasons for the apparently high costs in three departments are being examined into further. In this connection, attention is invited to the fact that a misconception has arisen in some quarters regarding repair costs, because of the assumption that the estimate made by the repair shop is the approximate cost of the job. We have found that the estimates of the repair shop are in the majority of cases higher than the actual costs, which is explained by the desire to keep within the estimates in order that no shortages may arise in allotments of funds.

Proposed Organization.

The remedy for the present unsatisfactory condition in respect to the repair and alteration of school buildings lies, in our opinion, in the transfer of the entire responsibility for this activity to the school authorities, as was pointed out in Part II of the report. The direct supervision of the work should be placed in charge of a qualified mechanical engineer or architect of proved administrative ability, who would rank as an assistant superintendent of schools, coordinate with the business manager, to be known as the assistant superintendent in charge of buildings and grounds. Supervision over the custodial and engineering forces of the school system, and the work of repair and replacement of furniture and equipment should also be assigned to the proposed office of assistant superintendent in charge of buildings and grounds. Under such a plan of organization, all the activities of the school system relating to the operation and maintenance of buildings, grounds, and equipment would be centralized in one technically qualified, responsible school official, who would be in a position to use his combined forces in such a manner as to provide for more economical operation and systematic maintenance. Moreover, the assistant superintendent in charge of buildings and grounds, would act as the technical advisor to the superintendent of schools and the Board of Education in all matters coming within his field of activity, and as the coordinator between the office of the municipal architect and the school system.

It is our opinion that the savings which will be accomplished by such a centralization of authority over the several activities relating to the physical plant of the school system will defray the cost many times over of necessary building inspection and increased cost of supervision. These savings will result from:

1. A systematic program of repairs to buildings and equipment based upon reports of qualified inspectors.

2. A more flexible organization of the custodial and repair forces, permitting of—

- (a) The establishment of a definite program of minor repairs to be made by the steam engineers and janitors.

- (b) The detail to the repair force of excess personnel of the steam engineering and janitorial forces which exists at certain periods of the year, particularly during the vacation seasons.

3. Better care of the physical plant by the steam engineers and janitors, whose buildings will be checked periodically by the inspectors.

4. A closer coordination between the designers of school buildings and building equipment and the operating forces of the buildings.

It may be held that the transfer of the repair shop to the school authorities will make necessary the establishment of a second shop to handle the repairs to buildings owned by the District of Columbia outside of the school system. In our opinion this objection should carry no weight in view of the benefits to be derived from the proposed consolidation and the savings which will be effected. Furthermore, approximately 85 per cent of the work performed by the repair shop is in connection with school buildings and grounds. We see no reason why, if the proposed plan were made effective, the commissioners could not make arrangements with the school system to have the relatively small amount of repair work for the remaining District buildings handled by the school shop.

The recommendations relating to repair and alteration of buildings may be summarized as follows:

1. The item of \$529,610 in the 1929 budget for repairs and improvements to buildings, exclusive of grounds, should be granted.
2. The item of \$100,000 in the 1929 budget for the improvement of school grounds should be granted for the purpose of treating the grounds of several new school buildings and improving the run-down condition of grounds surrounding many old buildings.
3. The supervision of the repair and alteration of school buildings should be placed in charge of a qualified mechanical engineer or architect of proved administrative ability who would rank as an assistant superintendent of schools, coordinate with the business manager, to be known as the assistant superintendent in charge of buildings and grounds.

PART VIII
SCHOOL HEALTH SUPERVISION ¹

[By Dr. Grover A. Kempf, surgeon in charge, and Dr. S. Blanche Sterling, acting assistant surgeon, field investigations in child hygiene, United States Public Health Service]

The medical inspection of the school children of the District of Columbia is herein summarized. The present organization and its work and the needs of the division of medical inspection of schools are briefly discussed with the hope that the extent of the problem may be clear to all those interested.

School population of the District in 1926, housed in 160 school buildings

	White	Colored	Total
Kindergarten.....	3,844	1,815	5,659
Grades 1-8.....	32,134	17,211	49,345
Ungraded special.....	1,269	351	1,620
Vocational.....	84	455	539
Junior high grades 7 and 8.....	3,020	968	3,988
Grade 9.....	1,130	282	1,412
Senior high.....	8,542	2,975	11,517
Normal.....	311	472	783
Total.....	50,334	24,529	74,863

Number of school days.....	181
Average enrollment.....	65,544
Average daily attendance.....	61,778
Number of school buildings.....	160

Personnel and Expenditures.

Division of medical inspection of schools, fiscal year 1926

Chief medical and sanitary inspector.....	\$3,800
12 physicians, 3 hours a day for 5 days a week, at \$1,680 per annum.....	20,160
10 school nurses for full time, at \$1,680.....	16,800
4 dental inspectors part time, at \$1,500.....	6,000
8 dental operators part time, at \$1,500.....	12,000
4 dental prophylactic operators, at \$1,320.....	5,280
Dental clinic maintenance.....	1,000
Supplies, forms, etc.....	500
Auto allowance, child medical inspection.....	205
Car tokens, nurses, etc. (from school funds).....	400
Total.....	66,145

¹ The direction and control of the medical inspection and sanitary conditions of the Washington public schools are vested in the health officer of the District of Columbia. The survey of these activities was conducted by the United States Public Health Service.

Activities of Fiscal Year 1926.

The essentials of the work done in the school year of 1925-26 are given below. The report for 1926-27 has not been completed. There has been no important change of the organization in 1926-27, so the work of last year will serve to show what has been done and the needs of the division of the medical inspection of schools.

Examinations.—There were 61,191 children enrolled in the kindergarten and the grades, including the junior high (seventh and eighth grades). Of this number of children, 16,483 were actually given a physical examination. Of the 8,900 kindergarten and first-grade children in school, only 3,571 were examined; 92.8 per cent of these children had defects of one nature or another requiring medical attention.

Physical defects.—Some of the more important defects are enumerated to show the need and value of this examination.

	Per cent
Poor nutrition.....	23.7
Defective vision.....	12.6
Enlarged tonsils.....	45.3
Nasal obstruction (adenoids).....	18.2
Defective teeth.....	63.5
Cardiac disease.....	2.2
Nervous system defects.....	3.4
Orthopedic defects.....	10.6
Speech defects.....	3.8

These percentages will show little variation in any new group of untreated children.

As the medical school inspection personnel could examine only 3,571 of these kindergarten and first-grade children, there were over 5,000 with the same number of defects who were not seen by the physician.

Other duties of medical staff.—In addition to this work, the medical inspectors are required to make sanitary surveys of the school buildings and grounds, medical examination of teacher applicants and applicants for admission to the normal schools, mentally retarded pupils, and applicants for child labor permits.

School nurses.—There were 10 school nurses devoting their full time to school work assisting the medical examiners, doing follow-up work, accompanying children to clinics, etc.

Ten nurses means one nurse to each of 6,119 grade school children. With this large number of children the nurses were able to accomplish but a part of the work required. Of 10,806 cases referred to them, 5,058 were completed in treatment for various conditions.

Dental hygiene.—Dental hygiene is an important feature in the health of the school child. The organization has:

4 dental inspectors (part time).....	\$6,000
8 dental operators (part time).....	12,000
4 dental prophylactic operators.....	5,280
Maintenance of dental clinics.....	1,000
Supplies.....	500

Total.....	24,780
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Number of pupils examined.....	22,388
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Of these examined, 78.6 per cent required dental treatment.

Total number of cavities—filling recommended.....	\$28, 616
Total number of extractions recommended.....	10, 140
	<hr/>
	38, 756
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Four dental clinics are in operation:

Total number of fillings done.....	8, 420
Total number of extractions done.....	3, 179
	<hr/>
	11, 599
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Fillings per pupil.....	2. 8
Extractions per pupil.....	1. 1
Dental prophylactic operators.....	4

These operators work full time in instructing pupils in oral hygiene and in actual prophylactic work.

Number of children receiving prophylactic treatments.....	6, 469
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Cost of School Health Supervision.

In the attempt to accomplish all this work the average cost for each school child was only 88 cents. This sum indicates the hopeless inadequacy of the present organization, due to lack of both funds and appreciation of effort.

In 1923 in a study of 65 cities of over 100,000 population there were 23 cities expending from \$1 to \$2 per pupil for school health supervision.

Personnel and Budget Recommended.

The following organization and budget are recommended to bring the school health supervision in the District of Columbia to the equal of other progressive cities. That this should be consummated can hardly be questioned, because the District of Columbia should be the leader in health practice for the other cities of the country to follow and not to ridicule.

1 director of school health supervision.....	\$4, 500
20 medical examiners (part-time), at \$2,000 (3 hours per day, 5 days per week).....	40, 000
1 psychiatrist (part time).....	1, 500
1 psychologist (full time).....	2, 400
2 psychiatric social workers, at \$2,000.....	4, 000
1 director of school nurses.....	3, 000
2 nurse supervisors, at \$2,400.....	4, 800
28 school nurses, at \$1,800.....	50, 400
6 dental operators (part-time), at \$1,600.....	9, 600
6 dental hygienists (full time), at \$1,600.....	9, 600
1 stenographer.....	1, 500
1 clerk.....	1, 200
Dental equipment, supplies, etc.....	3, 000
Transportation of nurses.....	3, 000
Forms.....	600
	<hr/>
Total.....	139, 100

The 1926 budget of \$66,145 for 74,863 public-school and kindergarten children is 88 cents per pupil of these grades.

The prescribed budget of \$139,100 for 75,000 children of these grades would be \$1.80.

This budget would place the school health supervision among the leaders but not first. The budget recommended is therefore not unreasonable.

An explanation of this budget is necessary. It is not to be hoped that this budget will be approved at once, but it is the goal to be reached within five years.

Director.—The proposed salary of the director of school health supervision is not exorbitant for a well-qualified full-time physician. Years of training and experience are necessary to meet the demands of this office.

Medical examiners.—Twenty medical examiners are recommended at \$2,000, at 3 hours per day for 5 days per week during 11 months of the year. The salary is fair for the work demanded of the medical examiner.

He must be a qualified physician fond of work with children. His time allotted will permit a detailed examination of about 1,100 children a year, and allow time for sanitary inspections of schools and examination of selected children.

A complete physical examination of all pupils enrolled in all grades each year is not to be recommended at this time, but facilities should be provided for annual examinations in the kindergarten, first, third, and eighth grades.

The proposed plan will permit inspection by the school nurse to select children of other grades who may need special attention.

Preschool children.—During the two summer months the staff would examine preschool children at the schools as arranged for by the associated private organizations.

Director of nurses.—A director of nurses is absolutely essential to the coordination and efficiency of a large staff of field nurses. Her salary should be sufficient to attract a qualified nurse.

At least two field working supervisors are necessary to the efficient work of the nursing staff.

School nurses.—Twenty-eight school nurses is a minimum for the number of children in this city. With the assistance of this number of nurses the medical examiners can do their work and the follow-up attention required can be carried out. Furthermore, all the children in each nurse's district will pass her inspection and remain more directly under her care.

Adequate provision for the transportation of nurses will be necessary. The Budget allows four street-car fares a day per nurse. Automobiles are necessary for the supervising nurses.

Dental operators.—This number is increased to six. Adequate provision for dental treatment of all school children is out of the question, but sufficient operators are designated to attempt to treat the emergency and indigent cases.

Dental hygienists.—The dental hygienist will assist the dental operator in the daily morning clinics. Without assistance the dental operator can care for 6 children and with assistance he can treat 10 children.

The dental hygienist will also do prophylactic work and teach oral hygiene. Dental equipment and supplies should be adequate at all times.

Behavior problems in school children.—No school health service can ever be considered adequate unless some provision is made for the care and study of behavior problems in children. To establish this service the following personnel has been included:

Psychiatrist.—He will serve part time and should be well qualified and interested in child problems.

Psychologist.—The psychologist will serve full time for the study and care of behavior problems.

Psychiatric social workers.—The psychiatric social workers will work full time assisting the psychologist.

A report of a survey of conditions affecting health and safety in the public schools of the District of Columbia will be found in Appendix D. This report was prepared by the offices of child hygiene and industrial hygiene investigations of the Public Health Service. A summary of the findings is appended because they have a direct bearing on the general subject of school health supervision.

The school buildings of the District are subject to much improvement. The essential features which can be remedied now are:

Glass window-board ventilators for all classrooms with sash windows.

Reliable thermometers properly placed in each classroom.

The instruction of teachers in the principles of ventilating the rooms.

The replacement of worn-out classroom furniture.

The proper equipment of windows with shades and instruction in their use.

The painting of walls and ceilings of classrooms at more frequent intervals.

The furnishing of slate blackboards and limiting them to the front wall and right wall of the grade rooms.

Smooth hardwood floors in all rooms used for kindergartens and first grades.

Toilet and lavatory facilities for kindergarten children.

Hard surfacing of sufficient area about the school building for restricted play in wet weather.

Ample number of drinking fountains.

Ample number and satisfactory placing of lavatory facilities.

For future planning the following important features should receive consideration:

Sufficient playground area to give each pupil the minimum of 50 square feet.

Modern heating plants.

All new school plans to receive the examination and approval of the chief of the health supervision and medical inspection of schools.

The ample provision in school buildings for teachers' rest rooms, medical examination rooms, and children's rest rooms in each building.

Special buildings for the atypical children now housed in makeshift, overcrowded buildings.

APPENDIX A

HISTORY OF THE WASHINGTON PUBLIC SCHOOLS

Congress, by an act of May 3, 1802, established the city of Washington with a regular municipal government. This act, as amended in 1804, was in effect the first charter of Washington. It provided for a mayor of the city appointed annually by the President of the United States and a city council composed of two chambers consisting of nine members each elected annually on separate ballots by the free white male citizens who paid taxes. The mayor appointed all other officers of the corporation. In accordance with the provision in the city charter for the "establishment and superintendence of schools," the city council on December 5, 1804, passed an act "to establish and endow a permanent institution for the education of youth in the city of Washington," which provided for a board of trustees of public schools. This board was composed of 13 members, 7 of whom were chosen annually by the joint ballot of the 2 houses of the council and the other 6 by private individuals who had contributed more than \$10 to the support of the public schools. The "superintendence of public schools within the city of Washington" was placed under the direction of the board, and it was granted the power to pass all necessary by-laws not inconsistent with the act, to receive donations, and to vest and apply the funds placed under its care in such manner as it saw fit. The act also provided an annual appropriation of not exceeding \$1,500 for the support of the schools on account of the education of the children of the poor, who alone received free tuition.

In 1816, Washington was divided into two school districts by act of the city council, each with a separate board of trustees. One board consisted of 9 trustees, 6 of whom were chosen by joint ballot of the 2 houses of the city council and 3 of whom were elected by contributors; the other consisted of 7 trustees, all chosen by joint ballot of the 2 houses of the city council. By the act of July 11, 1818, the city council discontinued the election of trustees by contributors, and provided that all members of the two boards should be chosen by joint ballot of the city council. In 1820 the trustees were forbidden by an act of the city council to receive any "pay pupils," and the schools thereafter consisted entirely of children "whose parents were unable to pay for their tuition."

During the period 1802-1844 the public schools grew slowly and developed little. This was due largely to the odium which had been brought upon the system by the requirement that education be offered only to the poor, and to the insufficiency of funds provided for the support of the schools. In fact, the schools were financed during this period in large part with funds raised by lotteries authorized by the city council. Public opinion favoring a change in the system made more and more insistent demands upon the city authorities, and finally, after heroic work on the part of the mayor in bringing the seriousness of the situation before the community and the city council, the schools were reorganized by an act of December 4, 1844.

Meanwhile, several changes had been made in the city charter, the most important of which were in connection with the manner of selection of the city authorities. By the charter of 1820 the city corporation was composed of a mayor, a board of aldermen, and a board of common council. The mayor was elected biennially by direct vote of the citizens. The board of aldermen consisted of eight members, elected for a term of two years, two from each of the four wards into which the city was divided. The members of the board of aldermen were divided into two equal classes, one-half of them retiring annually. The board of common council was composed of 12 members, 3 being elected from each ward for a term of 1 year. The elective franchise continued to be restricted to white male citizens who paid taxes. All other officers of the corporation were appointed by the mayor, by and with the advice and consent of the board of aldermen. The charter remained practically unaltered until 1848, when it was amended to provide for the election of the assessor, regis-

ter, collector, and surveyor of the city, and the extension of suffrage to all free white males of 21 years of age who were subject to the school tax, and who had paid such tax and all other taxes upon personal property legally assessed against them. Thereafter, no change of any note was made in the city government until the city of Washington was merged with the other parts of the District of Columbia in the organization of a Territorial government in 1871.

By the act of the city council of December 4, 1844, reorganizing the school system, one board of 13 trustees was provided for, composed of 3 persons elected annually by joint ballot of the 2 boards of the common council from each of the 4 school districts into which the city was divided, and the mayor of the city as president of the board, *ex officio*. The control of the schools was vested in the board by this act, and it was granted the same broad authority in regard to the administration of school affairs which had been provided in earlier acts.

The reorganization of 1844 marked a new era in the operation of the public schools of Washington. A new spirit was manifested toward the schools by the city council, for, while during the period 1805-1844 the appropriation for public-school support had averaged \$1,511.92 annually, the funds provided during the first five years after the reorganization averaged slightly over \$5,000 a year. Moreover, after experimenting with a combined free and pay plan of tuition for over three years without success, all tuition fees were abolished by an act of the city council of August 17, 1848, and universal eligibility of white children was adopted.

In 1848 the first direct school tax was levied, and from that time forward the city council was liberal in its support of the schools, supplementing the school fund by means of appropriations from other revenues. During the five-year period, 1849-1853, the appropriations for school purposes amounted to \$77,284.40, only \$3,000 less than had been provided during the entire preceding 44 years, while during the 13-year period, 1854-1866, which was one of schoolhouse construction, the appropriations amounted to \$648,448.84.

In 1857 an act providing for a superintendent of public instruction to be appointed by the board of trustees was passed by the city council, but was vetoed by the mayor on the ground that such an officer should be nominated by the mayor in the same manner as other corporate officers. In 1858 an act was passed which provided that the members of the board of school trustees should be appointed by the mayor, by and with the advice and consent of the board of aldermen: it also enlarged the powers of the board, but did not materially change its organization as provided by the act of 1844.

The act of 1858 vested the management of all the public schools in the city of Washington in the board of school trustees. The board was empowered to appoint and remove at pleasure all teachers, to prescribe the course of studies and the books to be used in the schools, to execute such by-laws and rules and regulations for the management of the schools as it might deem necessary or proper, and to determine upon and transact all business relating to the schools in accordance with its by-laws and regulations and subject to the laws of the municipal corporation. It was required to furnish annually to the city council estimates of the amounts necessary to meet the expenses of the schools for the following year and to report annually to the two houses of the city council, giving a full account of the proceedings for the preceding year. Practical supervision over the schools was also provided for by the act by means of sub-boards composed of divisions of the board, one sub-board for each school district.

In 1869 the city council provided for the appointment by the mayor, by and with the advice and consent of the aldermen, of a superintendent of public schools, to have general supervision over the schools under rules established by the board of trustees.

By an act of Congress of February 21, 1871, the separate governments of the cities of Washington and Georgetown and of the county of Washington were abolished and a government for the District of Columbia established similar in organization to that provided for the Territories of the United States. The governor, in whom was vested the executive power, was appointed by the President of the United States, by and with the advice and consent of the Senate, for a term of four years. He was empowered to commission all officers appointed or elected to offices of the District government. The legislative assembly was composed of a council and a house of delegates. The council was composed of 11 members, who were appointed by the President of the

United States, by and with the advice and consent of the Senate, and the house of delegates was composed of 22 members elected for a term of one year. A secretary, appointed for the same term and in the same manner as the governor, was also provided for, who was to take the place of that officer in case of the latter's absence or disability.

The transition to another form of government did not change the organization of the board of trustees of the Washington public-school system, nor the authority of its superintendent. By acts approved August 21 and 23, 1871, the legislative assembly created the offices of superintendent of the Georgetown schools and superintendent of county schools. The governor extended the jurisdiction of the superintendent of the Washington schools to the Georgetown schools, but appointed a separate superintendent of the county schools. However, in the following year supervision over the county schools was also assigned to the superintendent of the Washington schools. But the boards of trustees of the Georgetown schools and of the Washington County schools continued to control the school affairs of their respective territories. The colored schools of Washington as originally established by Congress were entirely independent of the local municipal governments, their management being lodged in the Department of the Interior, and no change was made in this respect by the act creating the new form of government. However, by an act of Congress approved March 3, 1873, the control of the colored schools of Washington and Georgetown was transferred to the government of the District of Columbia, and it was made the duty of the governor to appoint a board of nine trustees and a superintendent for the control and management of these schools. We find, therefore, at the beginning of 1874, the control of the public schools of the District of Columbia vested in four separate boards of trustees, one for the white schools of the city of Washington, one for the white schools of Georgetown, one for the schools of the county of Washington, and one for the colored schools of the cities of Washington and Georgetown. There were but two superintendents of schools, however, one for the white schools of Washington and Georgetown and the county schools, and one for the colored schools of Washington and Georgetown.

The early history of the Georgetown schools, the schools of the county of Washington, and the colored schools follows:

Until 1842 Georgetown's school activities had been restricted to aiding private schools. By the ordinance of December 31, 1842, however, the municipality took over the schools then in operation and supported by appropriations of public money. The ordinance also provided for the establishment of a board of seven guardians, in whom was vested the control over the schools and who were appointed annually by joint ballots of the two boards of the city council. The board of guardians continued to direct the policies of the Georgetown schools under the Territorial form of government established in 1871.

The first system of free public schools in the county of Washington, outside of the cities of Washington and Georgetown, was organized under the provisions of an act of Congress approved June 25, 1864. It provided for a board of seven school commissioners, each representing a school district, to be appointed annually by the levy court, and to have control over the school system. The school funds raised by an annual school tax levied by the levy court were required to be spent on white and colored schools in proportion to the number of white and colored children between the ages of 6 and 17. The board of school commissioners continued to direct the policies of the county schools under the Territorial form of government established in 1871.

There were no public schools for colored children in the District of Columbia before the Civil War. However, as early as 1807 a school for the instruction of the children of free colored people was opened in Washington. From that time until 1860 there were always schools of this character, some of them being managed at times as free schools. They received no public aid, however, the cost of operating the free schools being defrayed by contributions from relief societies. In 1862 Congress passed an act vesting the control of the colored schools of Washington and Georgetown in a board of three trustees, who were named by the act, and whose successors were to be appointed by the Secretary of the Interior. The act also provided for the support of the schools by authorizing a school tax on the property of colored persons. The funds acquired from this source did not prove adequate, however, and in 1864 Congress required the municipal governments of Washington and Georgetown to set apart annually from their school funds such a proportionate part thereof as the number of colored children between the ages of 6 and 17 bore to the whole number of

children of school age in the two cities. The board of trustees for the colored schools of Washington and Georgetown was increased to nine members in 1873, and the power of appointing the members thereof was vested in the governor of the Territorial government of the District of Columbia.

The territorial form of government for the District of Columbia was abolished by an act of Congress approved June 20, 1874. In its stead was established a commission form of government, under which the executive authority was vested in three commissioners appointed by the President of the United States, by and with the advice and consent of the Senate, and the legislative functions were reserved by Congress to itself. This form of government was considered at the time it was established merely as a temporary expedient, the act creating it providing for the appointment of a joint select committee to prepare a suitable form of government for the District of Columbia and to report to Congress drafts of statutes to carry its recommendations into effect. After consideration of various proposals over a period of four years, Congress, by an act of June 11, 1878, made permanent the commission form of government for the District of Columbia. This act still remains the organic law of the District, although it has undergone many alterations.

The act of 1878 continues the District of Columbia as a municipal corporation. It vests the control of the local administration of the District of Columbia in a board of three commissioners who devote their entire time to the public service. In addition, while Congress acts as the legislature of the District of Columbia, it has, however, conferred upon the commissioners extensive powers of legislation with reference to matters of local interest.

Two commissioners are appointed from civil life by the President of the United States, by and with the advice and consent of the Senate, and hold office for a term of three years. The civil commissioners must be citizens of the United States and must have been residents of the District of Columbia for three years immediately preceding their appointment. They are eligible for reappointment. As the third commissioner the President of the United States details an officer of the Corps of Engineers of the United States Army who has attained at least the grade of captain and has served in the Engineer Corps for at least 15 years. It has been customary to retain an engineer officer as commissioner for a period of not more than four years.

All taxes collected by the District government are required to be paid into the Treasury of the United States, and all expenditures of the District must be made in accordance with appropriations authorized by Congress on itemized vouchers which have been audited and approved by the auditor of the District of Columbia and certified by the commissioners. The accounts of all accountable officers of the District are settled and adjusted by the General Accounting Office of the United States.

Soon after the first board of commissioners came into office in 1874 it ordered the replacement of the 4 boards of trustees then in control of school affairs by 1 board, composed of 19 members, 5 of whom were colored. Eleven members were chosen from the city of Washington, three from the city of Georgetown, and five from the county of Washington. The two superintendencies were retained, however; one for the white schools and one for the colored schools.

By the act of 1878 establishing permanently the commission form of government for the District of Columbia, the powers and duties of the board of school trustees were transferred to the commissioners. The act provided, however, for the appointment by the commissioners of a new board of 19 school trustees who were to serve for such terms as the commissioners might fix. In 1882 the membership of the board of school trustees was reduced to nine. By an act of March 1, 1895, Congress authorized the commissioners to appoint women as members of the board of school trustees, and increased the membership on that account to 11.

In 1900 the Senate Committee on the District of Columbia undertook an exhaustive inquiry into the organization and management of the public schools. The hearings held by the committee developed the indefiniteness of the authority granted the board of school trustees by the act of 1878, which had practically resulted in the assumption by the board of commissioners of the power of administration over the schools. To remedy this situation Congress passed an act providing for a board of education composed of seven members appointed by the Commissioners of the District of Columbia for terms of seven years, except for the first appointments, which were made in such a manner as to have one term of office terminate each year. Compensation of

the members of the board was authorized at the rate of \$10 for each meeting personally attended, but the total for any one member for a year was not to exceed \$500.

The board was granted complete jurisdiction over all administrative matters connected with the public schools, except that all expenditures of public funds for school purposes were to be made and accounted for under the direction and control of the Commissioners of the District of Columbia as provided for by law. Specific power was granted to the board to appoint a superintendent of schools and two assistant superintendents, one of whom, under the direction of the superintendent, was to have charge of schools for colored children. The board was further empowered to employ and remove all teachers, officers, and other employees connected with the school system. Finally, the board was required to transmit annually to the Commissioners of the District of Columbia an estimate in detail of the amount of money required for the public schools for the ensuing year, which the commissioners were to include in their annual estimate of appropriations for the District of Columbia with such recommendations as they deemed proper.

After examining into the administration of the public schools of the District of Columbia under the provisions of the act of 1900, Congress passed a new organic act in 1906 establishing the school system as it exists to-day. The act of June 20, 1906, vests the control of the public schools in a board of education consisting of nine members, all of whom shall have been five years resident in the District of Columbia immediately preceding their appointment, and three of whom shall be women. The members of the board, who serve without compensation, are appointed by the Supreme Court judges of the District of Columbia, for terms of three years each, except that the original appointments under the act were three for one year, three for two years, and three for three years. Members are eligible for reappointment.

The board determines all questions of general policy relating to the schools, appoints certain executive officers and defines their duties, and directs expenditures, which are made and accounted for under the direction and control of the Commissioners of the District of Columbia. The board appoints one superintendent of schools for a term of three years, who is charged with the direction and supervision of all matters pertaining to the instruction in the schools. The superintendent has a seat in the board and the right to speak on all matters before the board, but not the right to vote. The board has the power to remove the superintendent at any time for adequate cause affecting his character and efficiency as superintendent.

No appointment, promotion, transfer, or dismissal of any director, supervising principal, principal, head of department, teacher, or any other subordinate to the superintendent of schools, may be made by the Board of Education, except upon the written recommendation of the superintendent. The board, upon the written recommendation of the superintendent, appoints one first assistant superintendent for the white schools and one first assistant superintendent for the colored schools, who, under the direction of the superintendent, have general supervision over the schools in their respective divisions. The act also provides specifically for certain other officers and two boards of examiners, one for the white schools and one for the colored schools.

Under the organic act of 1906 the commissioners were required to transmit the annual estimates of needs of the Board of Education as determined by the board in the estimates of appropriations for the District of Columbia with such recommendations as they might deem proper. This practice was discontinued, however, by the act of June 29, 1922, which made a change in the manner of financing the expenditures of the District of Columbia, whereby the school estimates are made a part of the budget of the commissioners, subject to their review and revision.

APPENDIX B

PROPOSED REORGANIZATION BILL APPROVED BY THE BOARD OF EDUCATION JUNE 11, 1924

[H. R. 11404, Sixty-eighth Congress, second session]

A BILL To amend sections 2 and 3 of an act entitled "An act to regulate the salaries of teachers, school officers, and other employees of the Board of Education of the District of Columbia," approved June 20, 1906

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That sections 2 and 3 of the act entitled "An act to regulate the salaries of teachers, school officers, and other employees of the Board of Education of the District of Columbia," approved June 20, 1906, be, and the same are hereby, amended to read as follows:

I. THE BOARD OF EDUCATION AND ITS FUNCTIONS

SEC. 2. The control of the public schools of the District of Columbia is hereby vested in a Board of Education to consist of nine members, all of whom shall have been for five years immediately preceding their appointment bona fide residents of the District of Columbia and three of whom shall be women. The members of the Board of Education shall be appointed by the Supreme Court judges of the District of Columbia for terms of three years each, except that the original appointments under this act shall be as follows: Three for one year, three for two years, and three for three years, and members shall be eligible for reappointment. The members shall serve without compensation. Vacancies for unexpired terms, caused by death, resignation, or otherwise, shall be filled by the judges of the Supreme Court of the District of Columbia. The board shall meet for organization within 30 days after appointment. They shall appoint a secretary, who shall not be a member of the board, and they shall hold stated meetings at least once a month during the school year, and such additional meetings as they may from time to time provide for. The organization meeting and all regular meetings shall be open to the public, but nothing herein provided shall prevent the Board of Education from holding such conferences as in its judgment may be deemed necessary.

No appointment, promotion, transfer, or dismissal of any director, supervising principal, principal, head of department, teacher, or any other subordinate to the superintendent of schools shall be made by the Board of Education except upon the written recommendation of the superintendent of schools.

The board shall determine all questions of general policy relating to the schools, shall appoint the executive officers hereinafter provided for, define their duties, and direct expenditures.

The board shall appoint all teachers in the manner hereinafter prescribed and all other employees provided for in this act.

The board shall annually, at such time and in such form as may be required by law, transmit to the director of the Bureau of the Budget an estimate in detail of the amount of money required for the operation of an efficient school system in the District of Columbia for the ensuing year.

The purchasing officer of the District of Columbia shall also be the purchasing officer for the Board of Education.

The auditor of the District of Columbia shall also be the auditor for the Board of Education. The expenditure of funds appropriated for the public-school system shall be made under the direction and control of the Board of Education.

The disbursing officer of the District of Columbia shall also be the disbursing officer for the Board of Education. The method of disbursement of moneys appropriated for the payment of salaries of employees of the public-school system shall be defined by the Board of Education.

Land for school sites and school playgrounds shall be purchased by the Commissioners of the District of Columbia on recommendation of the Board of Education. The Commissioners of the District of Columbia shall be charged with the construction of all school buildings, alterations, repairs, and improvements, after consultation with and approval by the Board of Education, of the plans and specifications therefor.

II. THE SUPERINTENDENT OF SCHOOLS AND THE ADMINISTRATIVE STAFF

SEC. 3. The board of education shall appoint one superintendent for all the public schools in the District of Columbia, who shall hold said office for a term of three years, and who shall have the direction of and supervision in all matters pertaining to the instruction in all the schools under the board of education. He shall have a seat in the board and the right to speak on all matters before the board, but not the right to vote.

The board shall have power to remove the superintendent at any time for adequate cause affecting his character and efficiency as superintendent.

The board, upon the written recommendation of the superintendent of schools, shall also appoint one white first assistant superintendent for the white schools and one colored first assistant superintendent for the colored schools.

The white first assistant superintendent in charge of white schools shall be the superintendent's chief deputy in that division of the school system. Under the direction of the superintendent of schools, he shall have general direction and supervision over teachers, classes, and schools for white pupils. In the absence of the superintendent of schools, the first assistant superintendent for white schools shall be his deputy in respect to all matters not specifically delegated by act of Congress to the first assistant superintendent for colored schools. He shall perform such other duties as may be prescribed by the superintendent of schools.

The colored first assistant superintendent in charge of colored schools shall be the superintendent's chief deputy in that division of the school system. Under the direction of the superintendent of schools, he shall have sole charge of all employees, classes, and schools in which colored children are taught. He shall perform such other duties as may be prescribed by the superintendent of schools.

The board shall also appoint a business manager, who shall rank in salary as an assistant superintendent and who shall have charge, under the direction of the superintendent, of all matters pertaining to the business management of the school system.

The board shall appoint two directors of educational research in the school system, one white and one colored, who shall rank in salary as assistant superintendents, and who shall, under the direction of the superintendent, carry on a continuous scientific study of their respective divisions of the school system in the interest of financial economy and of efficiency of instruction.

The Board of Education shall abolish the positions of director of intermediate instruction and director of primary instruction in the white schools and shall reduce the number of supervising principalships in the white schools from nine to five as the services of the present incumbents are terminated by death, retirement, resignation, or promotion: and in lieu of each two positions thus abolished the board shall appoint assistant superintendents of schools as follows:

(a) One assistant superintendent for kindergarten and elementary education in Grades I, II, III, and IV.

(b) One assistant superintendent for elementary and junior high school education in Grades V, VI, VII, VIII, and IX.

(c) One assistant superintendent for educational extensions and supplementary educational activities.

Each of the above assistant superintendents shall perform such other duties as the superintendent of schools may direct.

The board of education shall reduce the number of supervising principalships in the colored schools from four to two, as the services of the present incumbents are terminated by death, retirement, resignation, or promotion, and in lieu of the two positions thus abolished the board shall, on the written recommendation of the colored first assistant superintendent in charge of colored schools, approved by the superintendent of schools, appoint a colored assistant superintendent of schools.

The colored assistant superintendent of schools shall, under the direction of the colored first assistant superintendent in charge of the colored schools, have general supervision over kindergarten and elementary education, and

shall be designated by the superintendent of schools as chief examiner for the board of examiners for the colored schools. He shall perform such other duties as may be prescribed by the superintendent of schools.

The board of education shall abolish the positions of director of domestic science and director of domestic art in the white schools, as the services of the present incumbents are terminated by death, retirement, resignation, or promotion, and in lieu thereof shall appoint one director of home economics for the white schools.

The board of education shall abolish the positions of assistant director of domestic science and the assistant director of domestic art in the colored schools as the services of the present incumbents are terminated by death, retirement, resignation, or promotion, and in lieu thereof shall appoint one director of home economics for the colored schools.

The foregoing officers shall be appointed by the board of education upon the written recommendation of the superintendent of schools.

Nothing in the amendments herein made to sections 2 and 3 shall be construed as legislating out of office any person now in the service, except as specifically stated, or as requiring that any person now in service shall be required to be reappointed by reason of the operation of this act.

APPENDIX C

REPORT OF A SURVEY OF THE HEATING AND VENTILATING SYSTEMS OF THE DISTRICT PUBLIC SCHOOLS, BY THE BUREAU OF MINES

Mr. O. P. Hood,
Chief Engineer, Mechanical Division.

SIR: An investigation has been made of the heating and ventilating equipment of the public schools of the District of Columbia. It was made with a view of observing the following:

A. The temperature and ventilation maintained in the buildings and the effect upon comfort and cleanliness.

B. The general design of the heating systems with regard to—

1. Fitness for being operated efficiently and at reasonable loads.
2. Adaptability to use the low-priced fuels available in the District, and to operate smokelessly.
3. Adequacy of the draft.
4. Cost of maintenance.

C. The coal and ash handling arrangements.

D. The general design of the ventilating systems.

E. The general condition of the heating and ventilating equipment.

F. The operating personnel.

G. The general safety.

There follows a discussion of each of these items in order and certain general recommendations based upon the observations. There is included also in separate cover the original field notes, in which will be found specific items of detail pertinent to each school.

GENERAL SUMMARY OF HEATING SYSTEM

During the school year 1926-27 there were 92 buildings and 3 additions being heated by steam. At the beginning of the school year 1927-28 there will have been added to this number 12 remodeled old schools and 1 new school, raising this total to 105 buildings and 3 additions heated by steam. The McKinley Technical High School is the only building entirely heated by hot water. Twenty-five buildings were heated with warm-air furnaces, the air being circulated by gravity. Of this number 10 were being remodeled this summer with steam-heating systems and one was razed to give room for a new structure. This leaves a balance of 14 buildings heated by warm air, gravity circulation. Forty-five buildings were heated by warm-air furnaces, using fans to circulate the air, three of which have been enlarged with steam-heated additions. Two of these buildings are being remodeled and enlarged. When completed they are to be heated by steam, leaving a balance of 43 buildings using fan circulation of air. The Van Buren Annex and two one-room permanent schools located in the thinly populated sections of the city were heated by stoves, as were also about 75 portable one-room buildings.

(A) THE TEMPERATURE AND VENTILATION MAINTAINED IN THE BUILDINGS AND THE EFFECT UPON COMFORT AND CLEANLINESS

STEAM AND HOT-WATER HEATING

The temperature, comfort, and ventilation maintained in the public schools can be considered in general as being satisfactory where steam or hot water is used for heating. One difficulty in these systems is that generally some one room is slower to heat than others. Such rooms are usually those located farthest from the boilers or exposed to the north or west winds. The fresh air used for ventilating in these buildings is not polluted by anything that can

be attributed to the heating system, since the furnace gases can not be mixed with the fresh air as frequently happens in the warm-air furnace. The cleanliness of the buildings is not much affected by these systems, as the boiler rooms are isolated in most cases from the rest of the basement, preventing, to a great extent, the escape of furnace dirt into the building.

WARM-AIR HEATING

Where the buildings are equipped with warm-air heating systems, their temperature and ventilation are less satisfactory and they are not so clean.

There is a constant liability of these systems being operated at one or another extreme, either with large volumes of air at a lower heating temperature, thereby causing abnormal drafts, or operated with small volumes of air at higher temperatures, either being unsatisfactory.

The buildings where hot-air heaters have been installed are old. There is an excess infiltration of cold air about loose-fitting windows. This causes a disturbance of the normal flow of air to be expected in such systems. In some rooms the flow of air is frequently reversed, thereby preventing them from being adequately heated.

Cracks frequently open in the furnace structure which allows smoke, soot, and gas to mix with the fresh air entering the heater and to be sent to the rooms.

The furnaces in many buildings are located in open basements, and not in isolated rooms. This allows the dirt common to their operation to filter through the building.

Dirt, smoke, and odors rapidly penetrate these buildings as the fresh-air intakes are in most cases at the grade level and frequently face either a playyard or alley. Any dust created, as when ashes are being collected, enters the building through these intakes. Garbage awaiting collection in the alley when not properly covered or when being collected creates odors which are carried into the building.

It is not uncommon with the warm-air heat for the teachers or children to be obliged to get extra wraps, or to find it necessary to combine classes in favorably situated rooms on very cold, windy days.

It is frequently necessary to wheel coal and ashes through the basement from and to storage. This operation produces much dirt which, unless swept up immediately, is tracked through the building by the children.

STOVES

When ordinary stoves are used they are placed in the classrooms with the usual primitive results.

(B) THE GENERAL DESIGN OF THE HEATING SYSTEMS

The steam-generating plants vary in size and capacity from high-pressure power plants capable of generating electrical current needed in the buildings to the more common low-pressure heating plants. Water-tube and fire-tube steel boilers and cast-iron sectional boilers are used.

The water-tube boilers have straight, slightly inclined tubes and longitudinal drums. The fire-tube boilers are either vertical or horizontal, the latter being either of the standard return tubular or the down-draft type.

WATER-TUBE BOILERS

Water-tube boilers are installed in all normal schools, senior high schools (except Western High School), the Brown grade school, and the M Street heating plant. Mechanical stokers are installed only in the M Street heating plant and the senior high schools, where they are placed only under the boilers which carry the heavy winter loads. One forced-draft installation is at the Armstrong Technical High School. It serves the boiler used to carry the winter load.

The Brown School is the only one of these buildings equipped with a single boiler. All of the other installations have boilers connected so that any unit can be placed in or out of service. This arrangement is favorable to economic operation. Each unit is capable of carrying an overload and can burn the lower-priced fuels. With the natural draft available, however, no unit can now

be forced to carry its full possible overload and therefore the maximum capacity of each unit is never reached. With the exception of the Brown School, each boiler room was designed for its function, and it was therefore possible to design the boiler setting and the stack so as to make smokeless combustion possible. With proper firing, no excessive smoke should be produced.

All the plants of this group other than the Brown School generate steam at a pressure from 60 to 110 pounds per square inch gauge. At the Brown School steam is generated at about 20 pounds per square inch gauge. This steam is delivered either direct to the distributing mains of the heating systems through pressure reducing valves or to engines generating electricity for the building. The steam exhausted from these engines is delivered to the heating systems. In these cases the engines render a dual service, that of generating electricity and of acting as pressure-reducing valves.

Complete electric power plants have been installed at the Armstrong Technical High School, McKinley Technical High School, and Central High School. At the Wilson Normal Training School a steam engine drives an electric generator which serves the fresh-air ventilating fan motor. In each of these buildings provision has been made to use power from the Potomac Electric Power Co. when desired.

The power plant of Central High School generates direct current, while only alternating current can be purchased. The Department of Chemistry suffers from this arrangement as their ventilating fans, wound to use direct current, can not be operated on purchased current, thereby making it impossible to remove fumes or noxious gases from the room when purchased current must be used.

The maintenance cost of these heating plants for the past five years, as shown by District of Columbia repair shop records, were studied together with the amount of coal delivered. The average cost of maintenance per ton of coal delivered showed a wide variation from \$0.54 to \$4.28, Eastern High School being the lowest, the Dunbar High School and the Armstrong Technical High School ranking next. The highest expenditure was for the Wilson Normal School where the cost of maintenance was about two-thirds the cost of the fuel. It is desirable to have reliable maintenance costs extending over a period of years and, if possible, covering the life of the plant since it was installed. Such records are not now available. However, all of these maintenance costs, with the possible exception of the two lowest, are quite high.

VERTICAL FIRE-TUBE BOILERS

Vertical fire-tube boilers have been installed in a few buildings to supply steam to cafeterias for cooking and for heating water for general service. They are not connected to the heating system. The feed-water supply is through a hand-controlled valve on the city water line. The steam once used is exhausted to the atmosphere. While these boilers are all hand fired and capable of burning low-priced fuels satisfactorily, the arrangement is not efficient when all costs are considered. When each is placed in service an operator must be assigned solely to the unit, who must always be alert and see that the proper water level is maintained under the ever-fluctuating load and that the boiler pressure never equals or exceeds that of the city water supply. At the Eastern High School, where such a unit has been installed, a complete piping system has been built into the building to return to the boiler all condensate from the exhaust steam, but this has never been connected to the units served or to the boiler. No statement can be made relative to the cost of maintenance of the boilers used for this service, as the available records do not itemize the expenditures for each individual unit.

RETURN TUBULAR BOILERS

Horizontal return tubular boilers are only used for heating. All the installations are comparatively old, the most recent being put in about 1910. They are rated as power boilers, equipped with grates that burn low-priced fuels and are operated at low pressure under natural draft. Firing is done by hand. Where more than one unit is installed they are connected so that any unit can be put in or out of service. This is favorable to economical operation. The basements of these buildings were not designed to serve as boiler rooms. On account of low basement headroom it was necessary to excavate for all these

boilers. This makes it necessary to fire them from sunken pits, which vary in depth down to about 5 feet. None of the pits are sufficiently large for an operator to properly tend his fires. This materially lowers his efficiency as well as that of the plant. These installations were completed before much consideration was given to boiler settings for smoke abatement, and they do not operate smokelessly at all times. The limited headroom makes it difficult to correct this condition.

The costs of maintenance for these plants also show wide variation. Attention is called to the Columbia Junior High School, where the average cost of repairs for five years is about \$0.27 per ton of coal delivered, which is somewhere near good power-plant practice.

BOILERS WITH DOWN-DRAFT FURNACES

Low-pressure down-draft smokeless boilers are also used for heating. They are all operated under natural draft and are hand fired. They are well adapted to burning run-of-mine bituminous coal and are quite efficient boilers when properly fired. Where more than one boiler is installed they are so connected that any unit can be placed in or out of service. As the name implies, these boilers, when properly installed and operated, can have smokeless combustion. To fire them properly requires special instruction. In several instances the upper grates have been removed, thereby removing the special advantage of the smokeless feature. There are also firemen who do not use the upper grate. In either case smokeless combustion can not be successfully maintained nor the full capacity of the boiler attained.

CAST-IRON SECTIONAL BOILERS

About one-half of the steam-heated buildings are equipped with vertical cast-iron sectional boilers. They are all low-pressure boilers and operate under natural draft. Firing is done by hand. Although low-priced fuels have been furnished for these units, there is a general complaint that it is unsatisfactory, which is partly due to the grate-bar openings being too wide. Where more than one unit has been installed they are connected so that any unit can be placed in or out of service. Most buildings have a draft satisfactory for the loads they carry. These boilers have been used extensively to replace the worn-out warm-air furnaces in remodeled buildings, but direct comparisons of net cost of maintenance can not be made, as the latter have been installed too short a period of time.

HEATING BY HOT WATER

Hot water is the heating medium for the McKinley Technical High School and for certain basement classrooms and toilet additions of several buildings otherwise heated by warm air. At the McKinley Technical High School the water is heated by steam—the exhaust from the engines in the power plant or, if necessary, by live steam taken direct from the boilers. It is circulated throughout the building by pumps. This general method of combining production of electricity and heating steam gives good, economical results. The other hot-water installations, being of an auxiliary nature, are small, and to reduce to a minimum the care and attention required they have been equipped to burn anthracite coal.

HEATING BY WARM AIR

The warm-air heating systems are of two types: Those arranged so that an individual furnace can only supply its connected load, and those arranged so that any one of several furnaces in a battery may supply all sections of the building.

In the former installations the load of one furnace can not be transferred to or carried by the others. This necessitates the maintaining of fires in each furnace throughout the entire heating season. Such practice lowers the operating efficiency and increases both the fuel consumption and hours of labor. In all these cases the furnaces are located in the open basement under the rooms which they heat. The coal and ashes must be transported through the open basement, the dirt from which increases the janitorial duties. Fresh air is admitted under the furnaces from opened windows. Over the furnaces and to the sides are brick flues through which the heated air passes on its way to

the classrooms. It is circulated either by gravity or by fans. With gravity circulation each furnace supplies warm air to two classrooms, one above the other, and also aids in heating the first-floor corridor. When fans are used the load per boiler is increased to include two more classrooms, one above the other. All offices and the second-floor corridors are dependent upon the general warmth of the buildings for their heat. Radiation from the furnaces and smoke pipes is insufficient to properly warm the basements. It is also frequently necessary to install gas stoves in the offices to heat them properly, and to install coal stoves in the basement toilet rooms to keep the pipes from freezing.

In the later installations, where flexible operation is provided, the furnaces are placed in rows or batteries and are usually located in isolated rooms. In each instance the fresh air forced to the furnaces by fans is heated and rises to a chamber over the battery, where individual sheet-metal ducts carry this warm air to each room and corridor. This system maintains a more uniform heat distribution throughout the entire building. With this arrangement it is possible to put in or take out of service any furnace.

In either system the same style of furnace has been used. These furnaces were originally designed to burn large-size anthracite coal and they are not well suited to the cheaper run-of-mine bituminous coal now used. Larger combustion chambers are needed for smokeless combustion of such coal, and grate bars with smaller air openings are more suitable.

At many buildings insufficient furnace drafts have been reported. This difficulty may be due to the change from anthracite to bituminous coal, the latter giving off quickly at times large volumes of gases. In some cases the stack does not extend above surrounding roofs, a condition which always adversely affects the drafts.

In all cases the smoke pipes from the furnace to the stack are long, horizontal, and contain several bends, creating resistance to the flow of gases. Furthermore, they are generally not insulated, which tends to cool the gases, thereby lowering the draft. The design can not be said to be good.

From such records as are available for fuel consumption a saving of approximately 16 per cent of the fuel is made when steam heat replaces the warm-air heat in the general type of eight-room buildings now served by warm air. Records of maintenance on these warm-air furnace equipments show a range from about \$10 to \$100 per furnace per year over a five-year period.

Where stoves are installed in the classrooms for heating they must, of course, render satisfactory service in severe weather. This necessitates that they operate during the greater part of the heating season under partial load, which gives them a low operating efficiency. They can only be attended before and after school hours and at recess periods. On this account a slow-burning fuel, namely, anthracite, must be used. This means the use of a high-priced fuel. The result is a high operating cost for fuel per room heated.

All schools use run-of-mine bituminous coal for heating except seven, and those are heated by stoves.

(C) COAL AND ASH HANDLING ARRANGEMENTS

The arrangements for handling the coal and ashes are in general of a low modern standard. This is particularly true of all buildings designed prior to 1908. However, in many buildings of modern design, sufficient weight has not been given apparently to this subject.

At the older buildings, the coal is stored either in the basement or in an adjacent underground storage space. In general, these spaces are not conveniently located or properly reinforced to allow direct dumping from the trucks. The coal delivered to these buildings is usually dumped at the curb or in the alley. If the building is erected on a terrace, the coal is carried to storage; otherwise, it is wheeled. Where basement storages are provided, the coal is dumped through or in front of windows and shoveled back. At the underground storage spaces it is dumped through manholes and shoveled back. These services are rendered by the Government fuel yards.

Many of the storages are not adjacent to the boiler rooms and the fireman must wheel the coal across the open basement to the fires. This is prohibited by a few principals during school hours.

The removal of coal from the underground storages is laborious at most buildings. All spaces are low in head room which makes it necessary for the firemen to stand in a stooped position while entering and remaining in them.

Their floor levels are usually below the basement-floor levels. This requires runways or ramps which are either made of plank laid within the storage or of concrete built into the basement floor running downward to the storage level. The former arrangement gives such low entrance doors that the firemen do not have sufficient head room while wheeling coal up the runways and into the basements. The ramp arrangement is a hazard to the children who may be in the room.

At the newer buildings, the storages are arranged for direct truck dumping either through manholes to underground storage or through chutes to basement storage. However, at many buildings the trucks can not always get to the manholes, no proper drives having been provided. The trucks can not cross the unprepared ground except when it is dry or frozen, and in some instances the principals will not permit them to cross the school yard at any time. This again necessitates street or alley dumping of the coal and wheeling to storage, which materially increases the delivery cost. In these newer buildings the storages have been located adjacent to the isolated boiler rooms. The dust and dirt common to wheeling from storage to the fires in these cases does not enter the rest of the building. In several buildings the shoveling of coal into storage is difficult as sufficient room for an operator to work has not been provided.

For supplementary information relative to this subject attention is called to two extensive and detailed reports prepared by the Government fuel yards and forwarded to the chief coordinator's office of the Bureau of the Budget.

Ashes are usually wheeled from the furnace to the ash storage located either in the basement, in an underground storage space, or in the open yard. When the furnace is not located in an isolated room the transporting of ashes is through the open basement. Where isolated boiler rooms have been provided, the ash storage is generally located adjacent to them.

At the older buildings, little consideration has been given to the convenient removal of ash from storage and this is frequently quite laborious. If the basement storages have windows, they are small. The ashes are either shoveled or hoisted in buckets through them to the ground level. If there are no windows, the ashes are carried in suitable containers through the basement and up the stairs. They are then either wheeled or carried to trucks at the curb or in the alley.

The underground storages are usually equipped with small-diameter manholes up through which the ashes must be shoveled or elevated in buckets for removal. They are then shoveled or dumped into wheelbarrows or larger containers and taken to the trucks. These storages are smaller than those used for coal and are also of low headroom, which makes working in them difficult.

Where outside storages are provided they consist of small buildings or open bins, and are usually placed in the most out-of-the-way corner of the yard. Owing to the basement arrangements, it is frequently necessary to carry the ashes to them rather than use a wheelbarrow. Generally they are located on or near an alley, but where not, the distance over which the ashes must be transported for final removal is great. The building sidewalks are used for this transporting, which give an added opportunity for dust to enter the building if removed on school days. Where alley entrances are available many of the openings provided for this removal are of insufficient size, thereby causing much ground spillage that must be rehandled.

At most of the newer buildings the ashes are wheeled from the furnaces to storages adjacent to the boiler rooms. These storages are at least partially underground, which allows for overhead trapdoors. The ashes are removed in large containers and dumped into trucks, being raised to the surface by a portable hoist placed over the trapdoor opening. Although a number of these buildings are not provided with proper drives, the ash storages are usually of ample size to permit removal in weather that will allow the trucks to reach them, provided they are not barred from the school yard by the principal. In certain buildings a narrow firing pit, from 3 to 5 feet deep, is used. The fireman must work in a very limited space that permits of little coal storing and no ash accumulation. This greatly increases the general difficulties of handling both coal and ashes.

At the recently designed McKinley Technical High School, one of the largest of the present school plants, the coal and ash handling has been given careful and satisfactory consideration.

(D) THE GENERAL DESIGN OF THE VENTILATING SYSTEMS

There are many schemes of ventilation used in the public schools. They include various combinations of air inlet and outlet. Fresh air is admitted to the class rooms through open windows, or small grills located behind specially designed radiators, or air registers which are located in inside walls either at the floor or about 8 feet above the floor. Foul air is removed through open windows, or through small grills at the floor under each window, or through large grills located in an inside wall at the floor.

Open-window ventilation is relied upon in some of the permanent buildings, which include the two health schools, and also all portable buildings. It is very desirable to have the windows in these buildings equipped with baffles mounted on the sills at such an angle as to deflect the fresh air upward into the rooms, thereby tending to prevent direct drafts. In many instances these have been provided. The personal equation is the governing factor in the satisfactory operation of such a scheme, for it is the teacher who controls it and regulates it according to his or her physical condition or mental conception of proper ventilation.

The admission of fresh air through grills located under the windows back of the radiators is a modification of the open-window scheme. These fresh-air inlets are equipped with louvered dampers, which are either hand controlled or thermostatically controlled from the room temperature. The radiators are specially designed to baffle the air, thereby tending to prevent direct drafts. Where the hand-controlled dampers are installed the personal equation again governs the effectiveness of the system. Where the dampers are thermostatically controlled, the classroom ventilation immediately becomes subordinated to the heating system, which condition may prove detrimental to good health. For instance, should the room temperature be below normal and the room fully occupied, the thermostats keep these dampers closed or only partially opened, and the full amount of air intended for each occupant is not always supplied.

Where fresh air is admitted through grills in an inside wall it is always preheated before entering the room. This scheme is used in all warm air heated buildings and many heated with steam radiators.

Of the warm air heated buildings, only a few of the oldest schools have these grills located at the floor level. In all of these cases portable screens are placed in front of the grill to change the direction of the entering air. The other buildings have these registers located about 8 feet above the floor, making the use of baffles unnecessary. Where fresh warm air is serving the dual purpose of heating and ventilating, the quantity necessary to heat the building normally exceeds that required for ventilation.

Most of the buildings heated with steam radiators, which receive preheated fresh air in this manner, have their inlet grills located about 8 feet above the floor. The quantity of air supplied is based upon the current practice of the heating and ventilating engineers at the time the equipment was installed. The special advantage of this system is that it can be operated independently of the heating system, thereby insuring proper ventilation at all times.

In most of these preheated air installations the circulation is mechanically forced by fans.

The removal of foul air through small grills under the windows will only be found in some of the older buildings. It is not effective and the teaching staff frequently resort to opening windows. Where these buildings are heated with warm air this practice of opening windows tends to short-circuit the heating systems. These buildings are gradually being remodeled with steam-heating systems and improved ventilation.

The majority of buildings are equipped with foul-air grills located in an inside wall at the floor. They discharge into brick chimneys or sheet-metal ducts. Only some of the older buildings have the brick chimneys, which in each case discharge above the roof. The sheet-metal ducts discharge (*a*) into the attic, (*b*) into attic trunk lines, or (*c*) direct to roof ventilators.

When the foul air is discharged directly into the attic, a ventilator is installed on the roof, or some other means for its escape is provided. This method does not work out well in practice and causes many complaints. It is no longer being installed.

The attic trunk lines collect the foul air from all the classrooms and discharge it into a small room in the attic over which there is a roof ventilator of louvered cupola. Many buildings have fans in these attic rooms to insure proper removal of the foul air. All of the newer buildings and many that have been remodeled are equipped with these attic trunk lines or have the foul-air ducts connected direct to the roof ventilators. Either arrangement apparently gives satisfaction.

A number of installations have auxiliary exhaust grills located about 8 feet above the floor and directly over the floor exhaust grills. These discharge into a common exhaust duct. They are intended to be used only in the non-heating season to help remove the warm air from the ceiling.

There is a difference of opinion among heating and ventilating engineers as to the proper design and installation of ventilating equipment. This accounts for the variety of schemes used in the public schools. The rooms which report the most satisfactory ventilation are those which use open windows for air inlet and those which use preheated air having the following design. Both the inlet and outlet grills are in the same inside wall. This wall always faces the windows. The inlet grill is about 8 feet above the floor and the outlet grill is at the floor. For rooms that have one entrance door, the inlet grill is located in the corner farthest from it and the outlet grill in the corner nearest to the door. For rooms that have two entrance doors, the inlet grill is either between them or in one corner and the outlet grill is near the door farthest from the inlet grill. With either arrangement the exhaust grills are connected through sheet-metal ducts direct to roof ventilators or into attic trunk lines which are equipped with suction fans.

The rooms which report the most unsatisfactory ventilation have the inlet and exhaust grills close together. This is most pronounced in the warm-air heated buildings which complain also of insufficient heat.

A new arrangement for the removal of foul air from the classrooms is being installed in several of the buildings now under construction. The cloakrooms are partitioned off from the classrooms. In this partition wall at the floor are a series of small grills. In the ceiling of the cloakroom there is a large grill which is connected to the exhaust system. The foul air of the classroom is drawn through these small floor grills to the cloakroom where it raises to enter the exhaust system through the ceiling grill. As none of these buildings was commissioned for service at the time this report was prepared, the effectiveness of this system can not be reported.

The toilet ventilation in all buildings is through separate isolated systems. The foul air is removed by gravity, which in many buildings is augmented by burning gas in the flues or ducts, or by suction fans installed in the attics. Fresh air is usually admitted to these rooms through opened windows. All inside toilets are equipped with skylights and some means for the removal of the foul air so as to prevent its entering the building proper.

(E) THE GENERAL CONDITION OF THE HEATING AND VENTILATING EQUIPMENT

The general condition of the heating and ventilating equipment may be considered in general as satisfactory.

At the present time there is apparently no thorough inspection made of the buildings other than by the principal in charge. Each year he reports the condition of his building by listing the repairs and alterations desired. The principal not always being familiar with the mechanical equipment installed in his building, these repairs are itemized by the janitor who has seldom included anything but the heating equipment which is exposed and easily seen. This leaves much of the equipment, which is partially concealed in the building, the attic, and on the roof uninspected and not reported.

Because of this lack of inspection the following conditions were found:

(1) Exhaust ducts from the toilets and classrooms have become damaged, their seams ripped open, and their effectiveness seriously impaired.

(2) Brick chimneys are in need of reconditioning, the bricks need repointing, the capstones reset, and in some instances their tops rebuilt.

(3) Steel stacks built into the brick chimneys have rusted away in places, leaving them materially weakened.

(4) Sheet-metal hoods placed over the tops of the chimneys or ventilator stacks are badly rusted and need replacement.

(5) Roof ventilators damaged by storms are in need of repair.

(6) Control chains to the attic dampers in the exhaust ducts are either broken off or shortened, so as to make their operation ineffective or laborious.

(7) Outside wall grills, back of the radiators, have rusted away and where the radiator baffles have been removed or damaged, direct drafts into the classrooms occur.

(8) Thermostats which control the louvered grills back of the radiators stick and fail to render proper service.

(9) Insulation used to cover the boilers, smoke pipes, or breechings, and steam pipes is badly cracked or broken out of place and lost.

Although these conditions are not common to all buildings, nor all found in any one building, they are sufficiently important to be reported for correction.

The gas engines which drive the ventilating fans are always reconditioned whenever reported, but on account of their age, they are frequently difficult to start or operate.

Steel boilers are the only part of the equipment that do not come under the above plan of inspection. As the law requires that such boilers be inspected annually, the District repair shop is assigned the duty of preparing them for this inspection. This preparation includes all reconditioning and repairing. No order from the principal is necessary for this service.

(F) THE OPERATING PERSONNEL

It is evident from section E of this report that the efficiency, as a whole, of the operating personnel is not of the highest standard. This should not be charged against the operators so much as charged against the administrative staff for the following reasons:

The operating staff has not been properly instructed with reference to the equipment furnished, its intended use, operation, or maintenance. All instructions are issued orally by one assigned to that duty from the public schools, department of administration, or the fireman who is being relieved from duty. These instructions are frequently poorly explained, some parts omitted and are seldom repeated. The result is that much is forgotten and after several changes in personnel the new man is thrown onto his own resources, which are frequently meager.

There is no uniformity of operating practice in similar boiler rooms or buildings. This shows that there is no coordination of ideas leading to improved methods of operation.

No building that was reported hard to heat has apparently been thoroughly investigated to locate the causes, which in many cases have been found correctable at comparatively small cost.

The principals having jurisdiction over the buildings are sometimes unfair in their demands, by requiring too much janitorial service when the warmth of the building is paramount, or by issuing orders that are laborious and difficult to fulfill.

On the other hand, there is almost a universal complaint made by the operators in the buildings having hand-fired furnaces about the kind of fuel supplied, i. e., run-of-mine bituminous, their objections being that it is hard to handle under their conditions and the fires do not respond to forcing. This is a common attitude of both fireman and management to expect to cure troubles by adding to the cost of fuel rather than to use more care and give more attention.

Inasmuch as the coal supplied comes from the best coal fields in the United States, and is a high-grade coal, it would seem reasonable to expect that a fireman should be able to use such coal effectively. Where his difficulties are due to poor equipment, his complaints should be specific and not general.

The run-of-mine coal from these fields contains a large per cent of fine or small coal. The firemen prefer lump coal, as it requires much less skill to use and larger charges can be put in at one time, allowing longer periods between firings. Such coal has no greater heating value than the run-of-mine and its greatly increased cost is prohibitive.

It is interesting to note the general response of the operators and their willingness to cooperate on any suggestion that would improve their conditions. This shows that if constructive relationships existed between the administrative and operative staffs many of these conditions could be rectified.

(G) THE GENERAL SAFETY

The heating equipment in most schools is well safeguarded to protect the occupants of the buildings. The buildings originally warm air heated, whether remodeled with steam heat or not, are the only ones in which emergency exits from the furnace or boiler rooms have not been provided. Where high-pressure plants are installed each boiler is reconditioned and thoroughly inspected annually to obtain safe operation.

Several of the large buildings have small vertical high-pressure boilers. These boilers as before explained receive their water from the city mains through hand-controlled valves, and therefore can only be operated at pressures below that maintained in these mains. If for any reason, the boiler pressure becomes higher, or the city water pressure fails, immediate action must be taken to prevent injury to life or equipment. To operate these boilers safely, it is necessary to assign one employee to them, whose services can not be used elsewhere. This increases the personnel, cost of service, and accident hazard.

It is unsafe to enter the attics of a number of these buildings, as they are not floored or provided with suitable walkways properly protected with guard rails. A false step from a rafter edge would cause one to fall through the ceiling to the floor below or drop more than 30 feet into open brick-lined shafts between partition walls which are closed at the bottom.

There was extensive seepage of water into the east fresh-air plenum chamber at the Stuart Junior High School which, having no outlet, soon became stagnant. The odors arising from this water diffuse with the preheated fresh air and enter the class rooms. Efforts have been made to properly drain this water so as not to allow its entrance to the plenum chamber.

The school desks permanently fastened to the floors have, in several instances, been found to be as close as 17 inches from the radiators. The medical officers suggest that the minimum distance should be 24 inches.

GENERAL RECOMMENDATIONS

1. In remodeling the warm-air heated buildings to steam heat and improved ventilation, preference should be given, first, to the buildings having gravity circulation, and second, to the buildings not having isolated furnace rooms.

2. The buildings which resort to open-window ventilation should be equipped with window-sill baffles.

3. Buildings equipped with wood-frame windows which are not weather-stripped should be inspected for excessive infiltration of cold air. Where weather stripping is needed it should be metallic and not felt.

4. All furniture fastened to the class room floors should be located with reference to the radiators as recommended by the medical authorities.

5. All openings in the attics should be protected with guard rails to prevent accidents.

6. All attics should be provided with electrical illumination and those unfloored should be equipped with foot walks, protected with guard rails leading from the attic entrance to installed equipment.

7. The harboring or breeding of pigeons or other fowl in the attics should be prohibited.

8. All chimney tops should be at least 2 feet above surrounding roofs.

9. Careful individual consideration should be given to the replacement with electric motors of the many gas engines now used to operate fans.

10. Attention should be given to improving many of the present coal-handling arrangements, and no changes, alterations, or new construction should be made without the cooperation of the Bureau of Mines as recommended by the Chief Coordinator of the Bureau of the Budget.

11. The restricted firing pits should be enlarged in so far as possible.

12. All new building design which calls for coal storages under the buildings should allow ample room for an operator to efficiently put the coal into storage.

13. The buildings now being supplied with anthracite coal should be investigated to determine whether bituminous coal can be used as effectively.

14. Any complaint relative to the quality of coal delivered to any school should be reported to the Bureau of Mines through the supervisor of firemen in time to permit this bureau to inspect and sample the coal in question.

15. A training school should be established for the janitors and firemen to better instruct them in their duties.

16. A circular should be compiled and issued to each of the firing personnel and the principal at each building, which describes in detail the mechanical and electrical equipment installed, with definite instructions as to how and by whom it is to be operated, adjusted, or repaired.

17. The vertical steel boilers used to supply steam to the cafeterias for cooking and domestic hot-water heaters, being high-pressure boilers, should be equipped to receive water throughout their entire range of working pressures.

18. Where schools are to be erected on sites adjoining present schools, or where schools of considerable capacity are contemplated, there should be given more consideration, than has apparently been given in the past, to the installation of central heating plants and also to the production of the electrical needs from prime movers using steam exhausting to the heating system. This latter arrangement offers possibilities of savings under certain load conditions. The new McKinley Technical High School is an outstanding case where proper consideration was not given to the possibilities of producing electricity.

19. Where there is contemplated fuel-burning plants of considerable capacity or plants having special features involving the proper choice of fuel, there should be cooperation with the Bureau of Mines on these projects as recommended by the Chief Coordinator of the Bureau of the Budget.

20. There should be closer cooperation between the designers and the operators and in general more accent should be given to efficient equipment.

21. More frequent and more thorough inspections should be made of the various items of equipment in order that it may be maintained in good condition.

Respectfully submitted.

JAMES H. PLATT, *Associate Engineer.*

Approved:

J. F. BARKLEY, *Fuel Engineer.*

DECEMBER 6, 1927.

APPENDIX D

REPORT OF A SURVEY OF CONDITIONS AFFECTING HEALTH AND SAFETY IN THE PUBLIC SCHOOLS OF THE DISTRICT OF COLUMBIA

[Prepared by the offices of Child Hygiene and Industrial Hygiene Investigations of the United States Public Health Service¹]

The purpose of the survey of the public schools of the District of Columbia is to show the actual conditions of the schools from the viewpoint of certain hygienic standards. There are recognized fundamental requirements of a school, and these will be presented before taking up the individual problems in the District.

REQUIREMENTS

SITE REQUIREMENTS

Before planning a building, the site is first chosen. This is very important for the future of a school and requires careful and serious consideration.

Sufficient area for the school building and playground are the main requirements. The recommended number of square feet of playground per child is 50. We must remember that the playground is the only safe play place for a child in these days of automobile danger. The school playground may well be the general playground for play after hours and on Saturdays.

The site must be accessible to the children. It should not be too near noise nuisances, as railroads and factories. The school building should not have obstruction to light from adjacent buildings or trees, and ample space is necessary to prevent this.

The ground should be well drained and a sufficient area should be hard-surfaced for play in wet weather.

The playground should be equipped with play apparatus.

These requirements are simple and yet many of the District schools lamentably lack all of them.

THE SCHOOL BUILDING

The school building should meet certain requirements. Its architecture should be attractive. It should be fireproof and be well heated and lighted, and the classrooms so arranged as to receive the maximum of natural light. The building should be set apart so as not to have obstruction from trees and buildings.

HEATING

The heating of the building is one of the most important features. The buildings of the District are heated by one of five methods:

1. Stoves.
2. Hot-air furnace.
3. Hot-air furnace with fan.
4. Steam heat direct.
5. Steam heat direct and indirect.

Steam heat direct with window ventilation and gravity exhaust has not received the attention here that it merits. Stoves are still used in the portable schools and in one permanent structure. The hot-air furnace has many faults, but some of these may be overcome if properly regulated. This will be taken up later in this report.

Each school room should be provided with a standard thermometer which should be properly placed.

¹Data regarding building facilities for the purpose of this report were gathered by representatives of the Bureau of Efficiency on questionnaires prepared by the Public Health Service.

TOILETS

Toilets should be separate for boys and girls and the entrance should be as far apart as possible. There is no question that the old basement or cellar type of toilet should be abandoned. There should be a minimum of one toilet seat to 25 boys and one urinal to every 15 boys, and one toilet seat to 15 girls. Toilets should be well ventilated and have exposure to sunlight if possible.

WATER SUPPLY

The water supply in the District is excellent and there should be no reason for inadequate drinking facilities in every school in the District. There should be a fountain to every 50 children. The drinking fountain should be of the sanitary type where the stream curves from the side of the fountain so that the child's mouth can not come in contact with the bubbler.

Drinking fountains should be conveniently located and preferably arranged in a "battery" so that large groups of children can drink during the recess periods.

LAVATORIES

Washing facilities should be provided and at least be equal to those found in the moderate home. (This is rare, indeed, in our schools.) Hot and cold water should always be provided. There should be one washbowl to every 25 children. Liquid soap and paper towels are a necessity.

If fundamental health habits are to be taught to children, these conveniences are necessary. It is important to note how few District schools are so equipped.

REST ROOMS, ETC.

Each school building should be provided with a teachers' room, medical examination room, janitor's room, and ample storeroom.

THE SURVEY

Each school building in the District was visited and inspected in detail. These individual reports are available so that information on a certain school building is readily accessible to anyone interested.

PLAYGROUNDS

The first summary is that on the playground area of 139 schools. Of these 123 were grade schools, 7 junior high schools,² and 9 high schools.³ It is evident that the elementary school children need ample space for active playing as this is the time of life when running play is part of the nature of the child. As said before, 50 square feet playground area is the minimum to be considered and more is to be preferred.

Of the 123 grade schools, 88 of them have less than 50 square feet per pupil. Of these 88 schools, 24 have less than 20 square feet of playground per child. Forty-one grade schools answer the standard requirements. Of the 7 junior high schools, 4 of them have less than 50 square feet per pupil. Of the 9 high schools, 6 of them have less than the minimum of 50 square feet per pupil. Seventy per cent of the schools of the District have less than the minimum standard of playground area.

HEATING AND VENTILATION

The next important features of a school to be considered are the heating and ventilation. Fifty-two schools are still heated with hot air. Special recommendations on the regulation of the heat and ventilation of a building using this type of furnace are submitted.

Three schools were selected for special study of temperature and ventilation. These schools constituted the three main types of heating. Assistant Physical Chemist Bloomfield made the following report. This is given in detail because heating and ventilation of a school building are two of the three most important features of a school.

² Playground data was lacking on three junior high schools.

³ Includes the two normal schools.

The three schools chosen for this study, the Grant, Weightman, and Francis Junior High, were considered as representative of the main types of schools in the District. A number of rooms were selected as being representative of the building and certain ventilation observations were made in these rooms in order to obtain a picture of the conditions being maintained in the building. These observations consisted of dry and wet bulb temperatures, heat loss as indicated by the dry and wet Kata thermometers, air motion, type of ventilation in use, number of windows open, sense of comfort and any additional information which might prove of value.

The Grant School is one of the old-fashioned brick structures heated by indirect and direct methods. Heated air enters the room through a rectangular duct, 6 square feet in area, located near the ceiling. Air is removed from these rooms through natural means, such as windows of the old-fashioned sash type, and doors, as well as through two rectangular openings, connected to an exhaust fan. These openings are each $1\frac{3}{4}$ square feet in area and are located on the same side of the room as the incoming air duct, but at floor level. Steam-heat radiators in some of the rooms supply direct heating in addition to the hot-air system. Three rooms were visited in this school and the chief impression gained by the writer was that these rooms suffer to a considerable extent from overheating. In all the rooms the air seemed stale and a sense of discomfort was experienced during the entire time spent in this school. The results of the observations made in this school are summarized in Table 1. This table presents the average conditions found in the schoolrooms with reference to the temperature and cooling power of the air, the main factors to be considered in ventilation. It is quite obvious that at an average temperature of 76° F. and with the air quite dry (31 per cent relative humidity), a state of affairs exists that is far from being conducive to comfort and health. That the air in these rooms is not favorable to comfort is substantiated by the Kata thermometer observations shown in Table 1. Before discussing the results of the Kata thermometer readings it seems appropriate at this point to deal somewhat briefly with the factors influencing bodily comfort.

TABLE 1.—*Showing average temperature and cooling power of air of classrooms in relation to type of heating*

Name of school	Type of heating	Number of rooms examined	Average temperature, ° F.			Average cooling power		Average cooling due to evaporation	Average air velocity (feet per minute)	Remarks
			Dry bulb	Wet bulb	Per cent relative humidity	Dry kata	Wet kata			
Grant.....	Indirect and direct.	3	76	58	31	3.9	17.8	13.9	19	Room air exhausted through 2 ducts at floor level.
Weightman....	Indirect.....	3	76	58	30	4.2	16.8	12.6	29	Room air exhausted through 6 small outlets at floor level.
Francis Junior High.	Direct and indirect.	2	69	53	31	5.6	22.9	17.3	30	Room air may be exhausted through 1 outlet at floor level.

The wet and dry bulb thermometers fail to give a complete indication of the qualities of the air which affect the bodily comfort of the occupants of a room. Thus, the temperature and humidity of still and moving air may be the same, but the cooling power will be very different in the two cases. A person who may be extremely warm on a hot day in summer can gain some relief by a ride in an automobile or open trolley car.

The bodily comfort of individuals is partly dependent upon the relations between the rates of heat production and heat loss, for if the former is in excess, discomfort is caused by the resulting accumulation of heat. The human body may lose heat by the processes of convection, radiation, and evaporation. Normally, the first two processes are largely responsible for the maintenance

of equilibrium between heat produced and heat lost, but under unfavorable atmospheric conditions the mechanism subserving the last process is frequently brought into play in the form of sweating, whereby a cooling effect is produced by the evaporation of superficial moisture.

The cooling power of the air is conveniently determined by the kata thermometer, a special form of thermometer so designed as to enable the time required for it to fall from one temperature to another to be accurately observed. From the time so required the rate of cooling of the bulb per unit area per second can be calculated by the use of a simple factor (the kata factor depending on the size and shape of the bulb), and this, in turn, gives a direct indication of the cooling power of the surrounding air. By suitable adjustment of conditions the instrument can be made to measure its own rate of cooling (and accordingly the cooling power of the air) when its temperature approximates that of the human body. Under such conditions the rate of cooling of the kata thermometer gives an approximate indication of the rate at which the exposed surface of the human body loses heat. When the instrument is used as a dry bulb it indicates the rate of heat loss due to the processes of radiation and convection (analogous to the state of the body when there is no visible perspiration) and when used as a wet bulb it measures in addition the rate of heat loss due to evaporation (similar to conditions when the body is visibly perspiring.)

The cooling power of the air as measured by the dry kata depends upon (1) the difference in temperature between the thermometer and the surrounding air and (2) the rate of air movement or air velocity. The cooling power of the air as measured by the wet kata is a function not only of the temperature and air velocity but also of the difference between the vapor pressure of the air saturated at body temperature (97.7° F.) and that of the air at the observed temperature.

According to Dr. Leonard Hill, the inventor of the kata thermometer, the minimum cooling powers required for the comfort of those engaged in sedentary occupation are 6 for the dry kata and 18 for the wet.

Examination of Table 1 for cooling power of the air of the three rooms investigated at the Grant School shows that the dry kata cooling power (average 3.9) is far below the standard just quoted. The wet kata readings approach the ideal closely, but this fact is not due to air motion, since the average air velocity in these rooms was only 19 feet per minute. The high wet kata readings are a result of evaporation only, since the air in the room was found to be very dry (31 per cent R. H.), and as stated earlier the wet kata is also a function of the difference between the vapor pressure of the air saturated at body heat (97.7° F.) and that at the air temperature (in this case 76° F.). At this air temperature (76° F.) the dry kata only is the important indicator of bodily comfort.

Although all the rooms visited were found to be too hot, only one room had a few open windows, and these were open from the top. It seems that the pupils prefer to be in a hot, stuffy room rather than be subjected to cold drafts caused by opening the windows. All the rooms were found to be equipped with thermometers, which on checking with a standard instrument showed them all to be several degrees lower than the correct reading. This fact may be one of the reasons why the rooms are maintained at such high temperatures.

The next school visited was the Weightman, which is practically of the same structure as the Grant School, but is heated by the indirect method entirely. Heated air enters each room through a rectangular duct, $2\frac{3}{4}$ square feet in area, located near the entrance door of the room and at floor level. Six long and narrow grilled openings at floor level exhaust some of the room air, the rest finding its way out by natural means through windows and doors. The windows in these rooms are also of the old-fashioned sash type, and of the three rooms visited the first day only one had its windows partly open.

Three rooms were studied in this school, and the same conditions with reference to temperature and cooling power of the air were noted in this case as in that of the Grant School. The room air was found to be hot (76° F.) and dry (30 per cent R. H.), and with a low cooling power (4.2 dry kata). Very little air movement was noted, the average air velocity being 29 feet per minute.

The last school visited was the Francis Junior High, housed in a modern brick structure. This school offers conditions directly in contrast to the first two schools just described. Heating of rooms is obtained by direct radiation and can be supplemented in extremely cold weather by an indirect system,

since provision has been made for blowing heated air through ducts located at ceiling height and for exhausting room air by means of another duct placed at floor level. This system may be used as a means of ventilation during warm weather also, by forcing air through the inlet duct, although window ventilation is the only means then used for maintaining comfortable conditions. The radiators in the rooms of this school are underneath the windows, the latter being of the (Austral) swing type, so arranged that when open they incline at an angle and make a natural deflector.

The two rooms inspected in this school were found to be quite comfortable, the air seemingly fresh and cool. The results of the observations corroborate the subjective feeling created by the air in these rooms, the temperature averaging 69° F. and the dry kata yielding 5.6 as a cooling power, showing that conditions in this school with respect to ventilation approach the ideal very closely. It was noted that one of the rooms visited was aired out by opening all the windows prior to its occupancy by a new class. The teachers in this school resort to this practice frequently, a condition not noted in the first two schools visited. In these latter schools the windows were not opened even when all the pupils were outdoors during the recess period. It is urgently recommended at this time that rooms be aired by opening all windows whenever rooms are not occupied, thus insuring a complete change of air, so necessary for bodily comfort and efficiency.

As a result of the first day's observations it was decided to attempt maintaining more comfortable conditions in one of the rooms found uncomfortable by resorting to window ventilation, a close watch on the thermometer and on the heating system. Accordingly, room 4A-B of the Weightman School was chosen for this experiment, this room being representative of the rooms in this building. Table 2 below presents the results of the experiment conducted in this room on November 20, 1927.

TABLE 2.—Showing variations in temperature and cooling power of air in room 4 A-B, Weightman School

Point of observation	Time of observation	Temperature ° F.			Cooling power		Cooling due to evaporation	Air velocity
		Dry bulb	Wet bulb	Per cent R. H.	Dry kata	Wet kata		
Rear of room.....	10.10 a. m.	77.0	58.0	29	3.8	16.6	12.8	20
Front of room.....	10.15 a. m.	81.0	59.0	24	3.9	16.4	12.5	59
Do.....	10.40 a. m.	75.5	57.0	29	4.7	20.0	15.3	41
Rear of room.....	10.45 a. m.	76.0	56.5	27	5.4	18.7	13.3	74
Do.....	11.30 a. m.	72.0	55.5	33	4.9	17.9	13.0	25
Front of room.....	11.35 a. m.	72.5	55.5	31	5.1	17.5	12.4	33
Do.....	11.42 a. m.	71.0	55.0	33	4.9	17.0	12.1	21
Rear of room.....	11.49 a. m.	70.5	55.0	34	5.2	18.3	13.1	26
Front of room.....	1.30 p. m.	71.0	55.0	33	4.6	17.6	13.0	15
Rear of room.....	1.36 p. m.	71.0	55.0	33	4.6	17.0	12.4	15
Front of room.....	1.45 p. m.	72.0	56.0	34	4.5	17.2	12.7	16

Remarks.—Windows closed. Hot air at temperature of 124° F. entering room through register at floor level. At 10.27 teacher turned heat partly off and opened two rear windows 6 inches from top. At 11.15 windows were closed at top, and one side with two rear windows were opened from bottom. Beaver board deflectors were put in place to avoid drafts. Pupils voted room very comfortable rest of day.

Examination of this table shows that with the windows closed and hot air entering through the duct at a fairly high velocity a temperature of 77° F. was noted at the rear of the room and one of 81° F. at the front. This higher temperature at the front of the room is, no doubt, due to the location of the hot-air duct at this point. The cooling power, as noted by the dry kata, was 3.8 and 3.9, with a slightly higher air velocity at the front of the room than at the rear (59 as to 20 feet per minute), also probably due to the position of the incoming air duct. The conditions noted above as to temperature and cooling power are indeed uncomfortable and conducive to ill health and a lowering of efficiency. (On this latter point Dr. Leonard Hill, the eminent physiologist, states that in a warm room the tissues of the nose and throat are normally

swollen and moist and full of blood. When passing to the cold outdoor air these tissues become compact and dry and their blood vessels contract. In persons habitually exposed to a high room temperature, however, this normal adaptive response fails. The blood vessels always contract but the tissues remain swollen and moist, and such a condition furnishes ideal opportunities for the invasion of the germs of respiratory disease.)

From this observation it is quite obvious that conditions in room 4A-B at the beginning of this study were far from being ideal with respect to comfort. At 10.27, soon after the observations noted above were made, the teacher partly shut off the incoming hot-air supply and opened the two rear windows from the top. As a result of this move the temperature of the room was slightly lowered (76° F.) and the cooling power somewhat increased (4.7 and 5.4). Here again one notes a difference of comfort conditions between the front and rear of the room. Although the dry and wet thermometer readings were practically the same at each end of the room, the kata showed a cooling power of 4.7 at the front, while at the rear the cooling power was 5.4. The air velocity at the two points differed in a like manner, being 41 at the front and 74 at the rear. This difference is obviously due to the draft created by the open windows at the rear of the room and accounts for the more comfortable conditions at that point.

Such a condition as observed when windows are open from the top is also not conducive to comfort, since one-half of the room is still overheated and the other half exposed to chilly drafts. For this reason the windows were closed and beaver-board deflectors were improvised and placed at the bottom of the two rear windows and at one of the side windows. Then the windows were opened about 6 inches from the bottom and again ventilation readings were taken at the front and rear of the room. It is quite apparent from the results indicated in table 2 that this last move created a condition more approaching the ideal than the first attempt. By noon the temperature was lowered to 70.5° F. and the dry kata indicated a cooling power of nearly 5 units. Conditions at the two extremes of the room were nearly the same and the low air velocities indicate absence of drafts. Another interesting improvement was also noted, and that is the increase in relative humidity. Prior to the use of deflectors and windows open from the bottom the average relative humidity was 27 per cent, whereas after the deflectors were installed the relative humidity increased to an average of 33 per cent.

The results of this experiment are also shown graphically in chart 1. The area to the left of the dotted vertical line indicates conditions existing in the room when the first ventilation readings were taken, that between the dotted lines denoting conditions after the teacher attempted to cool the room with whatever means she had at her command, and the area to the right of the dotted line indicating conditions when window ventilation, using deflectors, was resorted to.

In conclusion, it seems appropriate to make certain suggestions that may prove of value in attempting to maintain comfortable conditions in the schoolrooms of the city of Washington. From the data obtained during the survey of the three schools mentioned earlier, it is quite obvious that the schools equipped with indirect heating suffer from overheating. That this condition can be overcome with glass window deflectors was clearly demonstrated by the experiment conducted in the room 4 A-B of the Weightman School. That such procedure is justifiable is amply shown by the conditions noted in the Francis Junior High, where rooms are ventilated by windows constructed so as to deflect air currents, thus insuring fresh air traveling at a very low velocity. In view of these observations and others noted previously, it is recommended that—

(1) All schoolrooms having the old-fashioned sash-type windows be furnished with glass deflectors about 1 foot high placed at the bottom of the windows.

(2) Windows should be opened only from the bottom (during cold weather).

(3) A large thermometer of the inexpensive but fairly accurate type should be located near the teacher's desk, not over 5 feet above the floor. Room air should not be allowed to exceed 70° F.

(4) Whenever rooms are unoccupied, as is the case during recess or noon hour, all windows should be thrown wide open for 5 or 10 minutes in order to air the room thoroughly.

(5) Teachers should be informed as to what constitutes good ventilation and how such a condition may be properly maintained by whatever means at their command.

And, lastly, it may be stated that there are two ways to attain comfortable conditions in a schoolroom—one by some suitable mechanical ventilation system, and the other by window ventilation. The type chosen for schools is largely a matter to be decided by the school authorities, since the amount of money to be expended may govern the type of ventilation chosen. There are numerous systems of mechanical ventilation in vogue, and the type selected

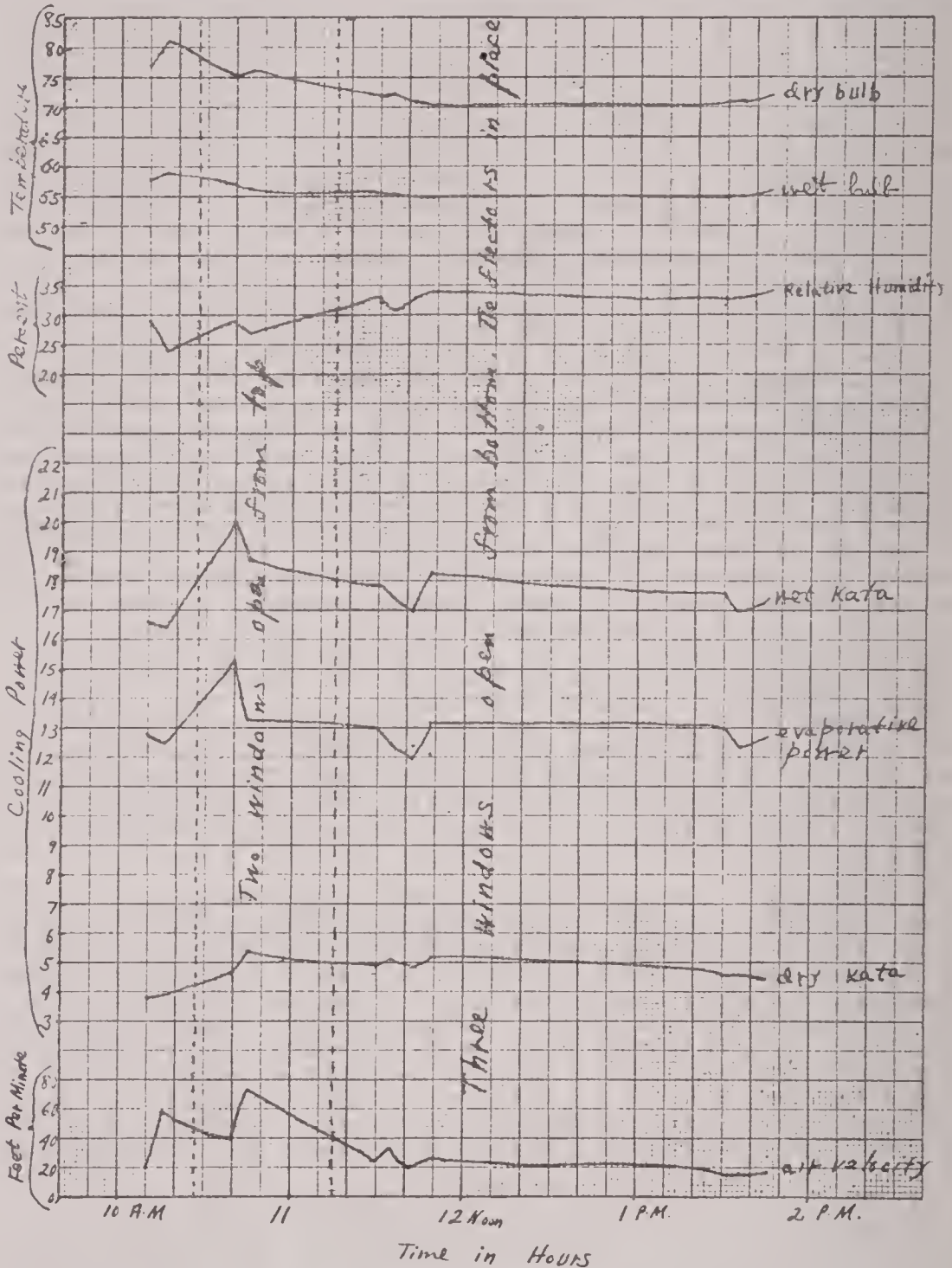


Chart I. Variations in Temperature and Cooling Power of School Room Air

must be left in the hands of appropriating bodies and competent ventilation engineers. In case the natural method of ventilation is selected it may be well to consider the conditions set forth by the New York State Commission on Ventilation as necessary for the success of the window-gravity method of ventilation. These are as follows:

(a) Radiators must be located beneath the windows and extend for the full width of the windows from which the air supply is to be derived. These radiators, because much larger than those customarily installed in ordinary plenum systems, should be either automatically controlled by intermediate acting thermostats or equipped with fractional or modulating hand-controlled valves placed at the top of the supply end of the radiator. Even when automatic control is included it is best to supplement it by the provision of hand control as well; and standard metal radiator shields are desirable to protect the pupils nearest the radiators from excessive heat. It is to be noted that the use of intermediate acting thermostats or modulating hand-controlled valves presupposes the use of a vapor vacuum steam heating system.

(b) Deflecting boards of some satisfactory type should be placed at the bottom of the windows. Devices which include small boxlike openings and devices which involve the use of filtering screens of various types are undesirable. A plain glass deflector 1 foot high is fairly satisfactory, but the best results may be obtained by the use of curved vane deflectors, which secure the most equable distribution of the air. The windows in the use of this method should open from the bottom and not from the top.

(c) In order to avoid certain practical difficulties it is recommended that windows should be so constructed as to open easily from the bottom and that window shades should be firmly attached to the window frame, the best arrangement being that which includes two shades anchored midway between top and bottom, one to be pulled upward and the other downward, these shades being so guided by cords and pulleys as to avoid the shaking of the screens by the incoming air flow.

(d) Exhaust ducts having a total area of not less than 8 square feet for an ordinary schoolroom should be provided on the wall opposite the windows. These exhaust openings should be conveniently dampered so that their area may be adjusted to varying weather conditions. The exhaust ducts should be carried up through the interior of the building so as to avoid chilling, and the tendency to back drafts should be further reduced by placing an aspirating cowl on the opening at the roof and perhaps by placing heating coils in the exhaust duct.

(e) The schoolroom should not be overcrowded. The successful results reported by the New York committee with this method of ventilation have been obtained with a cubic-space allowance of 250 cubic feet per second-grade child (39 children in an ordinary schoolroom) and with a cubic space allowance of 310 cubic feet per sixth-grade child (31 children in an ordinary schoolroom).

(f) A large thermometer with 68° F. clearly indicated should be displayed in a prominent position on the teacher's desk.

DRINKING FOUNTAINS

The next feature to consider is the facilities for drinking water. This plays an important part in the health program of the school child. Hygienists generally agree that the sanitary drinking fountain is the most efficient and economical means for supplying drinking water to large numbers of people. This is especially true in schools, where large groups are drilled to drink during the recess periods. This is where the present standard of one drinking fountain to each 50 children is, in my opinion, inadequate. A sensibly designed fountain need not be expensive, and the strange reluctance, generally speaking, to provide adequate drinking facilities may be overcome.

A battery of at least four fountains in the first floor for boys and four for girls is not an unreasonable demand in addition to two additional fountains on each floor. One fountain to each 25 children is a fair standard. At recess a group of 50 children will now stand in line at a single fountain. By the time the last one drinks his play period (recess) is up.

Of 148 schools only 21 schools have one fountain to each 50 pupils. The remaining schools vary as follows: From one fountain to 51 children to one fountain to 100 children, 95 schools; one fountain to 101 children and over, 32 schools.

The old-type fountain with a bubble of water rising from an opening in the center of a cup-shaped porcelain piece is to be strongly condemned as insanitary. Children drinking rapidly in groups undoubtedly contaminate this type of bubbler and may aid in the spread of infectious diseases, particularly the common cold.

It is not an uncommon observation that teachers refuse to use this type of fountain because it has an unpleasant odor which results from mouth contamination.

The only sanitary type of fountain is the kind where the stream of water comes out at an angle and where it is impossible for the child to place its mouth over the opening from which the water jets. The old insanitary type is gradually being replaced in the District schools, but the majority are of the old type.

TOILETS

The next feature in the health program of the child will be the toilet. In this country the toilet arrangement and lavatory are universally placed in the same room.

The standard for girls' toilets is 1 seat to 15 girls. Sixty-one schools out of 148 meet this standard. The remaining schools vary as follows: From 1 seat to 16 girls to 1 seat to 25 girls, 68 schools; 1 seat to 26 girls and over, 19 schools.

The standard of 1 seat to each 25 boys is fulfilled by 111 of 148 schools. This is a good showing, but there are 7 schools where the proportion is 1 seat to 40 or more boys.

The standard for boys' urinals is 1 urinal to 15 boys. This standard is fulfilled by 65 of 146 schools. The remaining schools vary as follows: From 1 urinal to 16 boys to 1 urinal to 25 boys, 62 schools; 1 urinal to 25 boys and over, 19 schools.

The urinals of all the schools, with the exception of the few modern buildings, are placed in the dark, gloomy basement and are built of slate. This slate eventually absorbs urine and can hardly be kept free of odor.

Special toilet seats should be provided for kindergarten children. Of 128 schools with kindergarten classrooms only 44 have special toilet seats and none has special lavatory arrangements for small children.

LAVATORIES

Lavatories should be clean, convenient, and have an all-year hot-water supply. Washing the hands at the proper time is certainly one of the most important health habits to be taught to the child. This will never be satisfactorily done unless attractive arrangements are made for the child.

Of 150 schools, 31 have constant hot water, and 15 of these are junior high and high schools; 10 have hot water when furnace is used; and 109 have no hot water at any time.

One lavatory to each 25 children is the recognized standard. Only nine schools in the District meet this requirement and six of these are junior high and high schools.

The lack of even fair lavatory facilities is one of the glaring defects of the District schools.

CLOAKROOMS

The cloakroom facilities were studied in 149 buildings, and conditions were satisfactory in this respect. However, there were seven grade-school buildings where individual hooks were not provided. In the grade schools each child should have an individual hook, and these hooks should be at least 12 inches apart. This space is rarely allotted. The reason for this recommended space is for the airing and drying of damp or even wet outer garments.

All cloakrooms should be heated, and yet there are 91 grade-school buildings without heat in the cloakrooms.

FIRE PROTECTION

The problem of fire protection is always a serious one. Several features were considered from this viewpoint, as follows:

1. Fire-alarm system.
2. All doors to open outward. Self-releasing doors at main exits.
3. Narrow corridors.
4. Narrow stairways with dangerous angles.
5. Boxed-in stairways.
6. Fire escapes.

7. Automatic sprinklers in basement.

8. Fire extinguishers.

9. Construction.

Of 129 buildings inspected for fire-alarm system, only 2 were not so equipped.⁴ The classroom doors and exit doors of all school buildings open outward with the exception of only two rooms.

The outside doors of 33 buildings had self-releasing doors.

All corridors were satisfactory.

Forty-nine buildings had boxed-in stairways; that is, the stairways were not clear underneath. Twenty-one other school buildings had part of the stairways boxed in.

Automatic fire sprinklers in the basement were found in only one building. This installation may not be necessary in school buildings but is an extra safeguard found in all modern hospitals.

Fire extinguishers were found in 126 grade-school buildings inspected for this purpose. The numbers ranged from 1 extinguisher in a building to 14 in four buildings.

The construction of a building is important from the viewpoint of fire protection. The modern buildings are well planned and constructed with this purpose in view.

A summary of the dates of construction of the original buildings shows that 87 buildings were erected prior to 1900. Since 1922, 21 schools have been built.

The great majority of schools are two-floor buildings with a basement. The tendency to get away from the gloomy below-ground level basement is thankfully seen in the new buildings.

The most common type of building is the eight-classroom school.

CLASSROOMS

The classroom must be considered as the unit of the school system. It is here that the child spends most of his school time. Therefore the hygienic arrangement of the classroom is of paramount importance.

The fundamental items of a healthful classroom will be reenumerated.

1. Heating.

2. Ventilation.

3. Lighting.

4. Seating.

5. Cleanliness.

6. Appearance.

The regulation of the heating of the classroom has already been considered. It is my opinion that a classroom will never be properly heated and ventilated unless (1) the teacher is instructed in the proper method; (2) has control of the heat in her room; (3) has an accurate thermometer properly placed; (4) has either glass window boards or the austral swing type of windows; (5) a duct for gravity exhaust.

That the old type of hot air heated schoolroom can be comfortably heated and ventilated was definitely demonstrated if window boards are furnished with the sash windows.

The heating of the classroom necessarily depends upon the supply of heat. During the cold weather this is furnished by a central heating plant in each particular building.

The temperature of the room which is recommended as most healthful and comfortable is 68° to 70°.

To determine the efficiency of the heating and ventilation of schoolrooms in the District the temperature readings of 1,212 rooms during January, 1927, were analyzed. The temperature of 60° occurred in 84 rooms in the morning and 48 rooms in the afternoon. The maximum temperatures also show a wide fluctuation, frequently rising over 80°.

Ventilating window boards are present in only about 12 per cent of the classrooms. This is a serious fault which requires attention and would not be impracticable or too expensive to be corrected. The increased efficiency and comfort of the children would well repay the expense incurred.

The old type hot-air furnace should be replaced as rapidly as is expedient.

⁴ Chain Bridge School, four rooms; Conduit Road School, one room.

ILLUMINATION

The illumination of a schoolroom is of great importance. This consists of natural and artificial illumination. Good natural illumination is to be preferred. To get proper natural illumination in a schoolroom there are several things to be considered.

The requirements of school lighting are best summarized by J. W. Walsh,⁵ as follows:

1. No place is fit for use in a schoolroom where diamond type can not be read easily by a normal observer at a distance of half a meter.

2. The darkest desk in any schoolroom should receive not less than 0.5 per cent of the unrestricted illumination from the complete sky hemisphere (i. e., the minimum window efficiency should be at least 0.5 per cent.)

3. The windows should be located in the wall to the left of the pupils, and the glass should be carried to the ceiling and not interrupted by cornices, pillars, or decorations.

4. No desk in a schoolroom should be farther from the window wall than twice the height of the top of the glass above the desk surface.

5. The ceiling should be white. The wall opposite to the windows and the wall behind the children should be lightly colored from 30 inches above the desk level. The wall around or behind blackboards should be somewhat darker than the rest of the room.

6. All furniture, desks, and surfaces in the lower part of the room should be furnished in an unobtrusive color, dark shades (colors) and black being avoided.

7. The area of the window glass should not be less than one-fifth of the floor space in rooms up to 20 feet across and one-fourth of the floor area in wider rooms.

8. Right-hand lighting is deprecated, bilateral lighting is less satisfactory than left lighting, lighting from behind the teacher is usually a source of glare to the children who face the window. Lighting from behind the children is apt to cause glare and discomfort to the teacher.

9. Roof lighting generally provides an abundance of light, but gives a comfortless and imprisoned impression. Internal decoration of a schoolroom should be arranged with a view to good diffusion of light.

The amount of glass area in a room is of vital importance. The minimum is 20 per cent glass area to floor area. Of 1,228 rooms inspected over 65 per cent have less than 20 per cent glass to floor area.

The arrangement of the windows is very important. The consensus of opinion is that the best practical illumination comes with the windows on the left side of the room. Windows in front of the room should not be tolerated. Seventy-seven per cent of the classrooms have windows on the left and rear. Too many rooms have windows on the right, and there are even a few with windows in front.

Classrooms should be so arranged that part of the sky will be visible from every desk. Yet there are 324 rooms in the District where the sky can not be seen from all the desks. This means that good natural illumination in these rooms is virtually impossible.

Window shades are an important adjunct in the control of illumination. The best light for the desks in the far side of the room enters through the upper part of the window. Therefore, no window shade should be hung from the top. The most satisfactory method of hanging shades is to have two shades adjustable from the middle of the window. The shades in about 50 per cent of the classrooms were of this type. There were nine rooms without shades. The method of and purpose of adjusting the shades should be explained to the teachers. They should understand that the purpose of the shades is to control natural illumination and sun glare and not for an orderly appearance of having the shades at the same position in each window, as is now the general practice. The shades should be kept in good condition and renewed when necessary.

COLOR OF WALLS AND CEILING

The color of the walls and ceiling play an important part in good illumination. The walls should be of flat, light color and have no glare. The ceiling should be flat white.

⁵ J. W. Walsh, *Elementary Principles of Lighting*, Chap. IX, 1923.

The important feature to bear in mind is the necessity of repainting. Many schools have had no new paint in 10 years. Dark walls and ceiling absorb the light.

The use of the hot-air furnace will darken the walls and ceiling in less than three years. The importance and need of repainting can not be exaggerated.

BLACKBOARDS

The blackboard arrangement is a troublesome question. The ideal position of the blackboard is across the front wall only. The right side of the room (if the room has ample glass area) can be utilized for blackboard space. The demand for more blackboard area should be limited by common sense as blackboards absorb a great deal of light. The blackboard should be of slate so that it is easily cleaned and has no refractive surface to cause glare.

All the old-style schools in the District are equipped with painted plaster-blackboards. These are not a permanently smooth black surface and should be replaced with slate.

It seems strange that the classrooms of some of the new buildings are very similar to those constructed 50 years ago. The windows are spaced $3\frac{1}{2}$ feet apart and blackboards placed between the windows. The latter is inexcusable.

The size of the room is important for the efficiency of natural illumination. The best type of room is one with a width of 20 to 22 feet and a length of 30 to 32 feet. The ceiling should be at least 12 feet high. If the room is more than 22 feet wide, the desks on the far side from the windows can not receive adequate natural illumination.

Practically all of the rooms have ample height. Many rooms show too much width. The length of the room is not so important, providing there is ample glass area on the left side of the room. The reason for this is apparent. If a considerable part of the glass area is in the rear of a long room, the desks near the right front will be poorly illuminated.

ARTIFICIAL LIGHTING

Artificial lighting is absolutely necessary in this latitude with its many dark days. Electric lighting is the most satisfactory and economical. This is one feature which has been given wide attention in the District schools in recent years.

The lights are well arranged and are so wired that the row near and away from the windows can be lighted separately. There are two schools where the wiring and installation of electric fixtures have been completed for more than a year, but the city current has not yet been brought in.

I may say here that there is not a single classroom in the District which should be used without artificial lighting facilities. The electric lighting is not always adequate where it has been installed. This needs special attention.

DESKS

The desk (this includes the seat) is a very important hygienic feature. The adjustable desk is of little use if the desks are not properly adjusted. It is taken for granted that single desks should be used universally.

The adjusting of desks should receive attention at least twice a year.

The condition of the furniture is very poor in many schools.

Most authorities consider that 30 children in one room should be the limit for one teacher. There are 1,032 grade rooms with over 35 desks. Of this group, 965 rooms have 40 or more desks.

SUMMARY

The desk (this includes the seat) is a very important hygienic feature. The essential features which can be remedied now are:

1. Glass window-board ventilators for all classrooms with sash windows.
2. Reliable thermometers, properly placed in each classroom.
3. The instruction of teachers in the principles of ventilating the rooms.
4. The replacement of worn-out classroom furniture.
5. The proper equipment of windows with shades and instruction in their use.
6. The painting of walls and ceilings of classrooms at more frequent intervals.

7. The furnishing of slate blackboards, and limiting them to the front wall and right wall of the grade rooms.

8. Smooth hardwood floors in all rooms used for kindergartens and first grades.

9. Toilet and lavatory facilities for kindergarten children.

10. Hard surfacing of sufficient area about the school building for restricted play in wet weather.

11. Ample number of drinking fountains.

12. Ample number and satisfactory placing of lavatory facilities.

For future planning there are several important features to be considered:

1. Sufficient playground area to give each pupil the minimum of 50 square feet.

2. Modern heating plants.

3. All new school plans to receive the examination and approval of the chief of the health supervision and medical inspection of schools.

4. The ample provision in school buildings for teachers' rest rooms, medical examination rooms, and children's rest rooms in each building.

5. Special building for the atypical children now housed in makeshift, overcrowded buildings.



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