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Manual of
**ORGANIZATION
AND ADMINISTRATION FOR
HIGH SCHOOLS**

Prepared by

MARK GODMAN,

Public-School Supervisor

1933



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JAMES H. RICHMOND,

Superintendent of Public Instruction

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FOREWORD

This Manual replaces the Monograph for High Schools published in 1927. The chief aim of this publication is to organize a body of information and interpretation which will be useful to the secondary schools of the State.

The development and improvement of secondary schools must be promoted by both state and local authorities. The law charges the State Board of Education with the responsibility of approving high schools. In exercising this duty it is necessary to require some uniformity of practice and to prescribe school procedures necessary to maintain these standards. This the Manual attempts to do.

The small high schools have been kept especially in mind in the preparation of the Manual. These schools are urged to follow the curricula and suggested schedules outlined in the chapter on the Curricula for Small High Schools.

This Manual was prepared and edited by Mark Godman, Public-School Supervisor.

JAMES H. RICHMOND,
State Superintendent of Public Instruction

RESOLUTION OF ADOPTION AND ORDER TO
PRINT—APRIL 18, 1933

“It was moved by Supt. Richmond, seconded by Miss Mahan, that the ‘Manual of Organization and Administration for High Schools’ be and is hereby approved by the State Board of Education, and that, acting under authority granted by Section 4387, Kentucky Statutes, the Chairman of this Board be and is hereby directed to request the State Superintendent of Printing to have five thousand (5,000) copies of this Manual printed in pamphlet form. The motion was put by the Chairman; all voted ‘Aye’, and it was so ordered.”

JAMES H. RICHMOND, *Chairman*,

MISS SARA MAHAN,

B. P. WOOTTON,

Members State Board of Education

CHAPTER I

AIM AND OBJECTIVES OF SECONDARY EDUCATION

One of the most comprehensive statements of the aim of secondary education was made in the report of the Commission of the National Education Association on the Reorganization of Secondary Education:

"Education in a democracy, both within and without the school, should develop in each individual the knowledge, interests, ideals, habits, and powers whereby he will find his place and use that place to shape both himself and society toward ever nobler ends." (*Cardinal Principles of Secondary Education*, U. S. Office of Education, Bulletin, 1918, No. 35, page 9.)

In order to realize this aim, the Commission contended that the following should represent the main objectives of secondary education: (*Cardinal Principles*, page 10.)

1. Health.
2. Command of Fundamental Processes.
3. Worthy Home Membership.
4. Vocation.
5. Civic Education.
6. Worthy Use of Leisure.
7. Ethical Character.

These objectives have guided our thinking concerning the problems of secondary education for almost a decade. It is now believed that the problems of today make it desirable to add another objective, namely:

8. World-Mindedness.

DISCUSSION OF OBJECTIVES*

1. Health—Personal and Public.

Since every other aim of education is dependent for its realization upon good health, the objective of health may properly

*The materials found under this heading are adapted from the Missouri manual on Organization and Administration of Junior and Senior High Schools. 1927.

be placed as the first objective of secondary education. In order to realize this objective a number of things must be done:

- a. The school must lead the public to recognize that health needs of young people are of vital importance to society.
- b. Competent teachers must be secured who can ascertain and meet the needs of individual pupils and inculcate in the entire student body a love for clean sport.
- c. Adequate equipment must be provided in every school for health and physical activities.
- d. The school building must conform to the best standards of hygiene and sanitation.

Some Specific Outcomes That Should Result from an Earnest Endeavor on the Part of the School to Achieve the Objective.

- a. Efficient health habits.
- b. Participation in good sports.
- c. Knowledge of disease prevention.
- d. Community sanitation.
- e. Proper food selection.
- f. Ability to administer first aid.
- g. Correction of common physical defects.
- h. Better bodily posture.
- i. Wearing of proper clothing.
- j. Recognition of moral obligation to be healthy.

2. Command of Fundamental Processes.

During the years spent in the elementary school the child gains a certain command of the tools of learning. It is common knowledge, however, that the large majority of pupils who enter high school are deficient in the use of the tool subjects. One function of the high school, therefore, must be that of giving all of its pupils a better command of such skills as they will use in everyday life.

Some Specific Outcomes That Should Result from an Earnest Endeavor on the Part of the School to Achieve the Objective.

- a. Ability to speak the mother tongue correctly.
- b. Ability to spell correctly.
- c. Ability to read intelligently.
- d. Ability to write legibly.
- e. Ability to perform the common arithmetical operations in a satisfactory manner.
- f. Knowledge of the fundamentals of business practice.
- g. Ability to think clearly.

3. Worthy Home Membership.

The home will always be the first fundamental institution in our civilization. Our schools should, accordingly, contribute in every worthy way to the best home membership and endeavor to make the home the best place on earth. This objective applies to both boys and girls. It should be one function of the social studies to deal with the home as a fundamental social institution and clarify its relations to wider institutions outside.

Some Specific Outcomes That Should Result from an Earnest Endeavor on the Part of the School to Achieve the Objective.

- a. Spirit of cooperation and assumption of responsibility within the home.
- b. Proper attitude toward the home as an institution.
- c. Knowledge of principles of home decoration.
- d. Training in household budget making.
- e. Knowledge of food values.
- f. Training in household management.
- g. Proper attitude toward the institution of marriage and the rearing of children.
- h. Knowledge of the moral, mental and physical qualities for parenthood.
- i. Respect for parental authority.
- j. Training in household arts.
- k. Training in making minor repairs around the home.

4. Vocation.

Since the happiness and prosperity of the individual, as well as our national wealth and greatness, depend upon the vocational efficiency of our citizens, it is imperative that our

high schools relate their subject matter and instruction, at least in a general way, to the training of our youth in qualities fitting them for a good beginning in vocational life. The ideal demands that pupils explore their own capacities and aptitudes to the end that they may select their vocations wisely. The ideal also demands that some definite vocational training be given to all pupils whose formal education will terminate either before the completion of a full high-school course or upon graduation.

Some Specific Outcomes That Should Result from an Earnest Endeavor on the Part of the School to Achieve the Objective.

- a. Exploration of abilities, likes, dislikes, etc.
- b. Proper attitude toward work.
- c. Information concerning a large number of vocations.
- d. Desire for economic independence.
- e. Proper attitude toward manual labor.
- f. Guidance in the selection of a life career.
- g. Specific vocational training for pupils who will not go beyond the high school.

5. Civic Education.

Civic education should develop in the individual those qualities whereby he will act well his part as a member of the neighborhood, town or city, state and nation, and also give him a basis for understanding international relations.

Some Specific Outcomes That Should Result from an Earnest Endeavor on the Part of the School to Achieve the Objective.

- a. Knowledge of citizenship rights, duties and privileges.
- b. Better group membership.
- c. Knowledge of social institutions and their work.
- d. Cooperation in social activities.
- e. Respect for law and order.
- f. Greater interest in civic problems.
- g. Exercise of good judgment in social procedure.
- h. Knowledge of our fundamental laws.
- i. Comprehension of American ideals.

- j. Respect for public opinion.
- k. Appreciation of wise leadership and intelligent followership.
- l. Proper attitude toward governing agencies.
- m. Recognition of the importance of official honesty.
- n. Realization of the value of universal education.
- o. Loyalty to ideals of civic righteousness.
- p. Better understanding of other peoples.

6. Worthy Use of Leisure.

In the past the school has given little conscious thought to this objective. It has so exclusively sought intellectual discipline that it has seldom treated literature, art and music so as to evoke right emotional response and produce positive enjoyment.

Our high schools should set themselves definitely to the task of giving such training as will function in the cultivation of tastes and in setting up such habits of reading and study as will lead to the enjoyment of art, music and literature.

The school has also failed to organize the social activities of young people. Education should equip the individual to secure from his leisure recreation of body, mind, and spirit, and the enrichment and enlargement of his personality.

Some Specific Outcomes That Should Result from an Earnest Endeavor on the Part of the School to Achieve the Objective.

- a. Abundant and diversified reading.
- b. Appreciation of masterpieces of drama, music, and art.
- c. Participation in the social life of the community.
- d. Development and maintenance of one or more avocational activities.
- e. Enjoyment in the field of nature.
- f. Participation in healthful sports.

7. Ethical Character.

In a democratic society, ethical character becomes paramount among the objectives of the secondary school. Among the means for developing ethical character may be mentioned the wise selection of content and methods of instruction in all

subjects of study; the social contacts of pupils with one another and with their teachers; the opportunities offered by the organization and administration of the school for the development on the part of the pupils not only of the sense of personal responsibility and initiative, but also the spirit of service for the principles of true democracy.

Some Specific Outcomes That Should Result from an Earnest Endeavor on the Part of the School to Achieve the Objective.

- a. Moral character.
- b. Spirit of service.
- c. Sense of personal responsibility.
- d. Sense of the brotherhood of man.
- e. Tolerance.
- f. Fairness.
- g. Appreciation of ethical character.
- h. Habits in harmony with highest ideals.
- i. Respect and courtesy for all.
- j. Reverence for the Divine Being.

8. **World-Mindedness.**

All peoples and all nations are now so interdependent that it is no longer possible for any nation or any people to live in isolation. There is at present a distinct need for a type of training that will lead all pupils to appreciate fully the contributions of all nations to the civilization in which we live and to realize the economic interdependence of nations. Such training should make for a greater degree of tolerance on the part of all for the ideas, ideals, institutions, customs and practices of other peoples.

Some Specific Outcomes That Should Result from an Earnest Endeavor on the Part of the School to Achieve the Objective.

- a. A knowledge and appreciation of what other nations have contributed to modern civilization.
- b. The promotion of a spirit of world citizenship.

- c. Promotion of the spirit of universal brotherhood and the decrease of ill-will and hatred.
- d. A more tolerant spirit among nations.
- e. A broader and more open-minded attitude toward world problems.
- f. An understanding of the ideals and aspirations of other nations.
- g. Lessening of the possibilities of war.

CHAPTER II

DEFINITION OF TERMS

1. Four-Year High School.

A four-year high school is defined as that part of the public-school system which has a distinct organization composed of grades nine to twelve, inclusive.

2. Six-Year High School.

A six-year high school is defined as that part of the public-school system which has a distinct organization composed of grades seven to twelve, inclusive.

3. Junior High School.

A junior high school is defined as that part of the public-school system which has a distinct organization composed of grades seven, eight and nine.

4. Senior High School.

A senior high school is defined as that part of the public-school system which has a distinct organization composed of grades ten, eleven and twelve, and which requires graduation from the junior high school for regular entrance.

5. First-Class High School.

A first-class high school is an approved school whose course extends through the twelfth grade.

6. Second-Class High School.

A second-class high school is an approved school whose course extends through the eleventh grade.

7. Third-Class High School.

A third-class high school is an approved school whose course extends through the tenth grade.

8. Unapproved High School.

An unapproved high school is one which does not meet the requirements set up by the State Board of Education for the first, second or third-class high school. The maintenance of an unapproved high school is unauthorized by law.

9. State Accredited High School.

A state accredited high school is either a public or private four-year, six-year, or senior high school that is accredited by the Committee on Accrediting of Secondary Schools of the Association of Kentucky Colleges and Universities.

10. Southern Association.

The Southern Association of Colleges and Secondary Schools is a regional organization of colleges and secondary schools which sets up standards for its members. It operates in eleven southern states extending from Virginia to Texas, and includes Kentucky.

11. Program of Studies.

The program of studies refers to all the high-school subjects offered in a given school without reference to any principle of organizing these subjects into curricula.

12. Curriculum.

A curriculum is a sequence of courses, required and elective, set forth by years or terms, so as to show the requirements for advancement and graduation according to different objectives; as a classical curriculum for admission to the traditional classical college; a college preparatory curriculum for admission to an ordinary arts college; a scientific curriculum when more scientific knowledge and practice than usual are sought in the high-school period; a commercial curriculum when preparation is made for business, etc.

13. Course of Study.

A course of study is defined as the quantity, kind and organization of subject matter of instruction in any secondary-school subject, offered within a definite period of time, and for which credit for graduation is granted.

14. Subject or Subject of Study.

A subject or subject of study is one of the divisions into which knowledge is commonly analyzed, such as biology, physics, French, history. In the cases of mathematics and social studies, it may mean these as a whole, or the word subject may be applied to one of their components—algebra, arithmetic, geome-

try of the one, or history, civil government, sociology, economics of the other. Besides one may either speak of history as a subject, or of ancient history, modern history, American history as different subjects.

15. High-School Unit.

A high-school unit is the credit obtained by a pupil who has successfully completed a prepared subject which he has pursued for five forty-five-minute periods a week throughout a school year. Four units constitute a regular year's work and at least 16 units are required for graduation from a four-year high school. For a unit credit in the sciences, excepting general science, a minimum of 315 minutes a week for a school year is required for class and laboratory work. In typewriting, bookkeeping, mechanical drawing, shop work, home economics and vocational agriculture, a minimum of 450 minutes a week for a school year is required.

16. Lengthened Period.

A lengthened period is one of more than 45 minutes, with the purpose of arranging more directed study. If the periods are lengthened to one hour in the clear, an hour devoted to laboratory work in science will be recognized as meeting the requirements of a double period, provided a standard of laboratory work equivalent to that in the double period is maintained. This also applies to general home economics, shop work, manual training, bookkeeping, typewriting and art.

17. Constants.

Constants are defined as subjects required of all pupils regardless of the curriculum pursued.

18. Curricula Variables.

Curricula variables are defined as those subjects which permit specialization within the curriculum.

19. Free Electives.

Free electives are defined as subjects open to all pupils regardless of the curriculum pursued, and which have as their purpose the satisfying of individual needs.

20. Required Subject.

A required subject is one that must be taken successfully to complete or to advance in a curriculum.

21. Academic Subject.

An academic subject is such a subject as English, foreign language, social science, science, mathematics; which are distinguished from arts and practical subjects, such as music, art, physical education, commercial subjects, woodworking, trade subjects, home economics.

22. Semester.

A semester is defined as one half of the regular school year.

23. Teacher Load.

Teacher load is the amount of work required of the teacher, estimated by the day or week. It may be based (a) on the number of hours of instructional duty, (b) the number of hours of total duty, or (c) the number of pupil hours for which the teacher is responsible, that is, the sums of the numbers of pupils in the sections taught or directed by the teacher.

24. Pupil Load.

The pupil load is defined as the total number of subjects pursued by a given pupil at any one time. It may be interpreted to include also the pupil's non-credit, or extra-curricular work.

25. Marks.

Marks are defined as the qualitative estimates of the pupil's work in courses. They constitute the official record of the pupil.

26. Grade.

The term grade (with the 9th, 10th, etc., attached, as 10th grade) is used to distinguish the school class of high-school pupils rather than freshman, sophomore, junior and senior.

27. Extra-Curricular Activities.

The term extra-curricular activities includes all legitimate activities not provided for in regular classroom work.

28. Alternation.

Alternation is defined as the systematic and regular union of two school subjects, two grades doing the work of one subject while the work of the other subject is omitted. The next year the work omitted is taken up and the first year's work is dropped.

29. Schedule of Recitation.

By schedule of recitation is meant the daily and weekly arrangement of classes designating the time of day, room, frequency of meeting, and the teacher in charge.

30. A Standard Day for Teachers.

"Six hours of actual work in the school room shall constitute a school day, and in no circumstances, shall the daily session, including recess and intermissions, exceed nine hours in length." (Section 3266 Kentucky Statutes.) This section has been interpreted to mean six hours of actual service by the teacher in the performance of her school duties including periods of supervised play and supervised study and excluding intermissions not devoted to supervised play and study.

CHAPTER III

STANDARDS FOR SECONDARY SCHOOLS

1. The Distinction Between Accredited and Approved High Schools.

The distinction between *accredited* and *approved* high schools should be clearly understood. They are two distinct and separate procedures designed to guarantee a standard high school. High schools in this state may be accredited by two agencies; one is the Association of Kentucky Colleges and the other is the Association of Colleges and Secondary Schools of the Southern States. Both public and private high schools may be accredited by one or both of these organizations. A school must be accredited by the Association of Kentucky Colleges, however, before it is eligible for membership in the Southern Association. All high schools that are eligible should seek to be accredited by the Association of Kentucky Colleges. This they should do in order that their graduates may enter the colleges of this State without being required to take entrance examinations.

The procedure of approving high schools is strictly a legal matter that rests entirely with the State Board of Education. It has nothing to do with accrediting except that a school must be approved before it will be considered for accrediting by the Association of Kentucky Colleges. No local board of education can legally spend public money in the employment of teachers or in meeting other expenses of a high school unless it is approved. The fact that a high school is approved does not mean that it is or will be accredited by the Association of Kentucky Colleges.

2. Rules of the Association of Kentucky Colleges Governing the Accrediting of High Schools.

a. *Course of Study.*

CLASS A HIGH SCHOOLS.

- (1) A four-year high school (grades 9-12) must main-

tain an approved four-year program of studies and require at least sixteen units for graduation.

(2) A school organized as a six-year high school (grades 7-12) must maintain an approved six-year program of studies and require at least sixteen units for graduation, all of which must have been earned in grades 9, 10, 11 and 12

(3) A school organized as a three-year high school (grades 10-12) must maintain an approved three-year program of studies and require at least twelve units for graduation, all of which must have been earned in grades 10, 11 and 12.

CLASS B HIGH SCHOOLS. Same as Class A.

b. *Length of Term.*

CLASS A HIGH SCHOOLS.

(1) No school shall be accredited which maintains a school term of fewer than 176 days, exclusive of all vacations and holidays.

CLASS B HIGH SCHOOLS. Same as Class A.

c. *Length of Recitation Periods.*

CLASS A HIGH SCHOOLS.

(1) Recitation periods in credit courses shall be at least forty-five minutes. Unless a period of sixty or more minutes is used, ninety-minute laboratory periods shall be given two days each week for courses in biology, physics and chemistry. Schools organized with periods of less than sixty minutes shall give double periods daily to courses in general home economics, shop work, manual training, bookkeeping, typewriting and art. Courses in vocational agriculture and vocational home economics shall have ninety-minute periods. A sixty-minute period is possible under certain conditions in vocational home economics.

CLASS B HIGH SCHOOLS. Same as Class A.

d. *Pupil Load. Time Required for Graduation.*

CLASS A HIGH SCHOOLS.

(1) A normal pupil load shall be four credit units and

the maximum five. Only pupils having superior records may take the maximum load.

(2) At least one year shall have been spent in an accredited high school and the semester preceding graduation in the school granting the diploma. A student may, however, gain the last unit in a state approved summer school with the understanding that the diploma be withheld until the school in which the credit is made certifies to the unit. It is understood that written permission must be gained from the high-school principal of the school from which the student expects to graduate before credit for this unit may be granted.

CLASS B HIGH SCHOOLS. Same as Class A.

e. *Number of Teachers and Enrollment.*

CLASS A HIGH SCHOOLS.

(1) Four-year high schools (grades 9-12) and three-year senior high schools (grades 10-12) shall employ at least four full-time teachers and have a bona fide enrollment of not fewer than sixty pupils.

(2) Six-year high schools (grades 7-12) shall employ at least five full-time teachers and have a bona fide enrollment of not fewer than seventy-five pupils.

CLASS B HIGH SCHOOLS.

(1) Four-year high schools (grades 9-12) shall employ at least three full-time teachers and have a bona fide enrollment of not fewer than forty-five pupils.

(2) Six-year high schools (grades 7-12) shall employ four full-time teachers and have a bona fide enrollment of not fewer than sixty pupils.

(3) After July 1, 1935, the Accrediting Committee of the Association will discontinue accrediting Class B schools that fail to meet these regulations, except in cases where, due to physical conditions or the operation of law, emergency situations exist.

f. *Qualifications of Teachers.*

CLASS A HIGH SCHOOLS.

(1) All teachers in public high schools shall hold legal high-school certificates.

(2) All principals and teachers, with the possible exception of teachers of trades and industrial subjects, shall be graduates of standard four-year colleges. A teacher not qualified under this regulation and already employed in the high school need not be discharged to make a place for a new teacher with a degree. Such a teacher, however, is expected to show evidence of progress toward a degree. When a teacher without a degree transfers to another school, he shall be considered a new teacher and shall meet the requirements of this regulation.

(3) Every teacher shall be assigned to teach as nearly as possible within the major and minor fields of specialization in collegiate work. Failure to comply with this principle will be regarded as a serious weakness in organization.

CLASS B HIGH SCHOOLS. Same as Class A.

g. *Teacher Load.*

CLASS A HIGH SCHOOLS.

(1) A teacher's load shall not exceed 750 pupil hours a week except in high schools embracing the seventh and eighth grades, where it shall not exceed 800 hours a week; and a class recitation group should not exceed 35 pupils.

(2) Six recitation periods shall be the standard daily load for a teacher. Two periods in laboratory work, including shop, bookkeeping, and typewriting, or two periods of study-room supervision shall be counted as the equivalent of one recitation period.

CLASS B HIGH SCHOOLS. Same as Class A, except that in two-teacher schools that continue to be accredited, one teacher may teach seven periods.

h. *Science Laboratory and Maps.*

CLASS A HIGH SCHOOLS.

(1) The laboratory must be placed in a well lighted, commodious room and tables, cupboards and sufficient apparatus provided for the laboratory work in the sciences offered. (Consult the minimum equipment lists in Chapter VIII of this Manual.)

(2) Schools should be well supplied with visual aids, such as charts, pictures, geographical and historical maps.

CLASS B HIGH SCHOOLS. Same as Class A.

i. *Library.*

CLASS A HIGH SCHOOLS.

(1) Schools with an enrollment of 100 or fewer pupils shall have a minimum of 500 books exclusive of duplicates, government documents and textbooks. These volumes should be selected from a state approved list or from the *Standard Catalog for High-School Libraries*. (H. W. Wilson Company, New York City.) The distribution should be approximately as follows: English (drama, fiction, biography, essays, poetry, travel, current literature)—35%; social studies (history, sociology, economics and government)—25%; science—15%; language—5%; mathematics—2%; general reference—10%; useful and fine arts—8%.

(2) Schools having a greater enrollment shall increase the number of books at the rate of five volumes per pupil enrolled.

(3) An annual appropriation of at least one dollar per pupil should be spent for books, periodicals, etc.

(4) A librarian or teacher-librarian should be employed. (Chapter VII outlines recommended training and service of librarian.)

(5) The library shall be satisfactorily located, shelved, cataloged, and classified according to the Dewey Decimal System or a simplified form of same. Careful, systematic and thorough instruction in the use of the library shall be given and evidence must appear that the library is being used properly.

CLASS B HIGH SCHOOLS. Same as Class A.

j. *Permanent Records and Reports.*

CLASS A HIGH SCHOOLS.

(1) A permanent record for each pupil must be kept for the entire time spent in high school. This record must show the semester grades by subjects, credits given, and attendance for each semester or part of semester attended by each pupil.

These records must be kept on loose-leaf forms or card forms approved by the supervisors.

(2) A school which accepts a pupil from an approved or accredited high school without securing a transcript of credits direct from the former school may be dropped from the accredited list. A complete account of these credits must be entered on the permanent records.

(3) The Annual High-School Report must be made to the State Department of Education on or before November 1 of each year. Failure to comply with this regulation after two notices have been sent shall be cause for dropping a school from the accredited list.

CLASS B HIGH SCHOOLS. Same as Class A.

k. *The Elementary School.*

CLASS A HIGH SCHOOLS.

(1) A high school will not be accredited if it appears that it is being maintained at the expense of the elementary school or system of schools with which it is connected. In such elementary schools a sufficient number of qualified teachers shall be provided, adequate libraries, sufficient maps and other necessary teaching materials shall be supplied and an adequate number of supplementary readers shall be provided. The pupil-teacher ratio should be approximately the same in the elementary and high school. In no case should the ratio in one exceed that in the other by more than fifty per cent. (Consult State Standards for Elementary School on page 30.)

CLASS B HIGH SCHOOLS. Same as Class A.

l. *The Spirit of the School.*

CLASS A HIGH SCHOOLS.

(1) The efficiency of instruction, the general intellectual and moral tone of the school and the attitude of the pupils toward their teachers, toward their work, and toward the life of the school in general, are all matters of prime importance. Pronounced deficiencies in any of these items will be sufficient cause for dropping such a school from the accredited list.

CLASS B HIGH SCHOOLS. Same as Class A.

m. *The School Plant.*

CLASS A HIGH SCHOOLS.

(1) No school will be accredited when, in the opinion of the supervisor, physical conditions of the building, premises, and equipment are such as to endanger the health of pupils and teachers, or to interfere with efficient instruction

CLASS B HIGH SCHOOLS. Same as Class A.

3. **Regulations of the State Board of Education for the Approval of High Schools.** (See next chapter for standards for junior high schools.)

It should be noted at this point that no new high school shall be established that does not conform to approval regulations and that no school shall continue on an unapproved basis after the year of its inspection.

a. *Classification.*

(1) A *First-Class* high school shall maintain and require for graduation a four-year, sixteen-unit curriculum for grades 9-12, or the last three years with a twelve-unit curriculum, prepared or approved by the State Board of Education and adopted by the board controlling the school.

(2) A *Second-Class* high school shall maintain grades 9-11 and provide a twelve-unit curriculum only, with provision for pupils to take the twelfth grade in a first-class high school.

(3) A *Third-Class* high school shall maintain grades 9-10 and provide an eight-unit curriculum only, with provision for the pupils to take the eleventh grade in a first or second-class high school and the twelfth grade in a first-class high school.

(4) Variations or extensions of the above organizations, such as six-year high schools, small three and four-year departmentalized junior high schools, shall maintain curricula prepared or approved by the State Board of Education and meet the above requirements for the grades to which they apply.

b. *Enrollment.*

(1) A *First-Class* high school (grades 9-12 or 10-12) shall have a bona fide enrollment of at least forty pupils. Schools now approved with smaller enrollments shall meet this requirement not later than September 1935.

(2) A *Second-Class* high school (grades 9-11) shall have a bona fide enrollment of at least thirty pupils, and a *Third-Class* high school (grades 9-10) shall have a bona fide enrollment of at least twenty pupils. Schools now approved with smaller enrollments shall meet this requirement not later than September 1934.

(3) Where the seventh and eighth grades are combined with any of these organizations, there shall be an additional enrollment of at least twenty pupils.

c. *Teacher Load.*

(1) A teacher's load shall not exceed 750 pupil hours per week except in high schools embracing the seventh and eighth grades, where it shall not exceed 800 hours per week; and a class recitation group should not exceed 35 pupils. Six recitation periods shall be the standard daily load for a teacher.

d. *Pupil Load.*

(1) A normal pupil load shall be four credit units and the maximum five. Only pupils having superior records may take the maximum load. A pupil must spend at least the last semester in the school in which he graduates.

(2) A pupil may, however, earn his last unit in a state approved summer school if given written permission in advance by his high-school principal, but his diploma shall not be issued until such unit is certified to the principal and entered in the high-school record.

e. *Qualifications of Teachers.*

(1) All teachers shall hold legal high-school certificates.

(2) All principals and teachers, with the possible exception of teachers of trades and industrial subjects, shall be

graduates of standard four-year colleges. A teacher not qualified under this regulation already employed in a high school need not be discharged for a new teacher with a degree. A teacher who transfers to another school shall be considered a new teacher and shall meet this requirement.

(3) Every teacher shall be assigned to teach as nearly as possible within the fields of his major and minor preparation.

f. *Length of Term.*

(1) High schools shall be in session nine months in the school year, 176 days exclusive of holidays.

g. *Recitation Hour.*

(1) Recitation periods in credit courses shall be at least forty-five minutes. Unless a period of sixty or more minutes is used, ninety-minute laboratory periods shall be given two days of each week for courses in biology, physics and chemistry. Schools organized with periods of less than sixty minutes shall give double periods daily to courses in general home economics, shop work, manual training, bookkeeping, typewriting and art. Courses in vocational agriculture and vocational home economics shall have ninety-minute periods daily.

h. *Records and Reports.*

(1) Complete attendance and credit records shall be kept in approved permanent form for all pupils in the school or system of schools, and reports shall be made as required by the Superintendent of Public Instruction. High-school records shall be kept in duplicate, one set in the high-school office and the other in a fireproof safe, which in county and city systems shall be in the office of the superintendent.

(2) Transcripts from other high schools must be obtained directly from the school authorities and not by hand of the pupil.

i. *Library.*

(1) *First-Class* high schools with an enrollment of 100 or fewer pupils shall have a minimum of 500 well selected books, exclusive of government documents and textbooks, selected to

meet the needs for reference, supplementary and recreational reading. Schools having a greater enrollment shall increase the number of books at the rate of five volumes per pupil enrolled.

(2) *All other* high schools shall have at least 300 well selected books, exclusive of government documents and textbooks. The books should be selected from a state approved list or from the *Standard Catalog for High-School Libraries*. (H. W. Wilson Company, New York City.)

(3) An annual appropriation of at least one dollar per pupil should be spent for books, periodicals, etc.

(4) The library shall be satisfactorily located, shelved, cataloged, and classified by a simplified form of the Dewey Decimal System. Careful, systematic and thorough instruction in the use of the library must be given and evidence must appear that the library is being used properly.

(5) It is highly desirable that all teachers have some training in library science. (See Chapter VII of this Manual for training and service of librarian.)

j. *Science Laboratory and Maps.*

(1) The laboratory must have the furniture, apparatus and supplies needed for the science courses taught, and occupy a well lighted and commodious room. (For a list of equipment see Chapter VIII of this Manual.)

(2) Schools shall be supplied with required charts, geographical and historical maps. (See list in Chapter VIII of this Manual.)

k. *The School Plant.*

(1) The school buildings shall have adequate facilities for the school's program of activities. Location, construction, provisions for heat and light, and the condition of laboratories, corridors, water supply, furniture, apparatus and outbuildings shall be consistent with the health and comfort of the pupils and teachers.

l. *Salary Schedule and Budget.*

(1) All expenditures for school equipment and salaries of teachers in public schools shall be made in accordance with

the salary schedule and budget approved by the State Board of Education.

m. *The School Spirit.*

(1) The school shall be characterized by a spirit of cooperation on the part of teachers, pupils and parents. Cleanliness and orderliness shall prevail in the buildings and on the grounds.

n. *The School System.*

(1) The elementary school shall not be neglected in attempting to maintain high-school standards. The twelve grades of school service shall be provided for all children of the district for at least the legal term each year. Library service and library support shall be provided for all grades alike in proportion to their needs. The pupil-teacher ratio should be approximately the same in the elementary and high school. In no system should the ratio in one exceed that in the other by more than fifty per cent. Where the elementary term is shorter than the high-school term the difference shall not be increased, but the term for all elementary pupils shall be extended equal to that for high-school pupils as rapidly as the revenue will permit.

o. *Emergencies.*

(1) Where, due to physical conditions or the operation of law, an emergency situation exists in which for the time being one or more of these standards cannot be fully met, the right is reserved to temper the application of such standards in such emergency situations, but not to lower them in any event below the requirement levels hitherto maintained.

p. *Tenure of Rating.*

(1) Any rating that may be accorded to any school or schools will continue in effect until further action is taken.

q. *Remedies.*

(1) When deficiencies are found wherein these standards are not maintained, it will be the duty of the supervisor to confer with the governing authority of such school or system

of schools and set out a program of remedies consistent with these regulations, and no action against such school or system of schools will be taken until the school authorities shall have had opportunity to consider the remedial program proposed.

4. Standards for Elementary Schools.

The standards prescribed for the approval or accrediting of high schools provide that such approval or accrediting shall be conditioned on the character of the service maintained in the elementary schools with which they are connected. The entire service from the first grade through the twelfth is continuous. It is necessary that local school authorities give the same attention to the elementary grades that they give to the high-school grades and enforce the standards of efficiency as strictly.

a. Buildings, Furniture, Water.

(1) Each building shall be safe and comfortable, with adequate provision for heating all classrooms in the coldest weather. It shall have floor space of at least ten square feet to each pupil in the district or subdistrict. Each classroom shall have four or more windows so placed as to give adequate light throughout the room. All outside doors shall have locks and shall be kept locked when the building is not in use.

(2) The board of education shall furnish each school room with a teacher's desk and chair; a writing desk and a seat with back for each pupil, the height of the seat suited to the size of the child, no seat or desk to accommodate more than two children; and blackboard space of at least fifty square feet.

(3) A water supply approved by the health authorities and adequate for pupils and teachers shall be provided at each school.

b. Library.

(1) General reading facilities shall be available for pupils in all grades, with as many library books available for each elementary pupil as for each high-school pupil.

(2) During the school year each child shall read at least ten books within the range of his reading ability. Provision shall be made by means of local school libraries, or in

county-school systems by a county-wide circulating library service, whereby books classified by grades shall be made available in all schools for the operation of this requirement. The books should be selected from the *Children's Catalog*, published by the H. W. Wilson Company, New York City.

(3) Each school should have a newspaper suitable for use in the school.

c. *Instructional Equipment.*

(1) Supplementary readers shall be provided for each grade, beginning with the first grade. A minimum of two sets shall be provided for each of the first three grades. The circulating plan will combine economy and efficiency.

(2) Small dictionaries shall be available to pupils of grades five to eight. A limited number should be supplied by the school.

(3) Maps shall be provided for the use of the grades that study geography or history. Maps of the county, the state, the United States and of the several continents are essential to good teaching. A large globe should also be provided.

d. *Course of Study.*

(1) The Course of Study prescribed by the State Board of Education shall be followed in all grades. Provision shall be made for health education, directed play, music, and varied extra-curricular activities.

e. *Term and Attendance.*

(1) The term of school should be the same for elementary pupils as for high-school pupils. Where discrimination now exists the school authorities should adopt a policy of correcting the discrimination and give the same term length to all as soon as possible.

(2) It is the duty of each board of education to see that the school attendance law is enforced throughout its jurisdiction.

f. *Teaching Load.*

(1) An average daily attendance of thirty is desirable. A range of fifty per cent from that number should be the limit.

In a school of two or more teachers, the enrollment should be distributed as nearly equal as possible, assigning no more pupils to teachers of primary grades than to teachers of advanced grades.

g. *Teachers and Supervision.*

(1) All teachers must hold certificates in accordance with the law and with the regulations prescribed by the State Board of Education. Regulations should be adopted looking to advancing scholastic requirements to the standard certificate level (two years of college).

(2) The principal of any school should give attention to supervision of grades and schools tributary to his.

5. **Miscellaneous Regulations of the State Board of Education.**

a. *Admission to High School.*

(1) Pupils shall be admitted to high school on the basis of any one of the following evidences of ability to do the work therein:

- (a) On certificate of promotion from the eighth grade in any approved school.
- (b) On successful entrance examination given by the principal of the high school to which the pupil applies for admission.
- (c) On trial, but only when the principal and superintendent are satisfied that such course is advisable.
- (d) When a pupil transfers from one approved school to another, the promotions and credits properly certified from the former school shall be accepted in the latter, but not exceeding eight units from a two-year high school and twelve units from a three-year high school. No credits shall be accepted from unapproved schools, but examinations may be given on courses so certified.

b. *Correspondence and Tutoring.*

(1) High schools are not authorized to give courses by correspondence or credit for work done under private coaches or tutors; but the principal of a high school may permit a student who has failed in a course to take it again by examination provided the student has in the meantime pursued that course under a tutor approved in advance by the principal or superintendent, and for the time required for summer-school courses.

c. *Summer Schools.*

(1) Credit may be given for summer-school work only when the school in which the work was done has been approved.

- (a) No summer school will be approved which does not employ at least three teachers.
- (b) The summer school shall be administered by the regular school authorities and supervised by the principal of the regular school, or by a teacher of the regular school who has been approved by the principal or superintendent.
- (c) The qualifications of the teachers in a summer school shall in all respects be the same as for teachers in the regular session.
- (d) The summer session shall run for at least eight weeks, five days a week, with not less than sixty-minute periods.
- (e) Each course shall be taught for 120 minutes daily.
- (f) Pupils shall be limited to two courses, totaling one unit credit.
- (g) All work required in any course in the regular session (including laboratory work, parallel reading, references, etc.) must be done in summer school.

d. *Buildings and Repairs.*

(1) It is ordered by the State Board of Education that plans and specifications for new public-school buildings and for alterations, additions and repairs of old buildings, shall be sub-

mitted to the Superintendent of Public Instruction for examination and approval before contracts are awarded and construction begun.

e. *Credit in Applied Music.*

Pupils who are receiving systematic instruction in voice, piano, organ, violin, or any band or orchestral instrument should receive credit toward graduation for such study. To receive credit the following conditions must be met:

(1) The parent of the pupil must make application upon blank forms prescribed by the principal or superintendent. He shall report each month the number of hours spent by the pupil in practice. These forms will be furnished the school by the State Department of Education upon request.

(2) The teacher must likewise file an application with the principal or superintendent for the extension of credit provisions to the pupil. He shall state the grade of work for which the pupil is entering. He shall further report each month the number of lessons taken, the length of these lessons, the pupil's progress, the compositions and theory studied, and other information as requested. The Department of Education will supply the school with blanks for this purpose.

(3) The monthly reports of the outside teacher shall be carefully reviewed by the high-school principal, with the assistance of the music instructors of the school and any such music specialists as may be necessary for the formation of a just valuation. The principal shall report this evaluation to the teacher.

(4) The teacher must hold a certificate from an approved or accredited conservatory or college of music. Credentials evidencing these qualifications must be submitted to the Division of Certification of the Department of Education and approved before a pupil may receive high-school credit under the teacher's instruction.

(5) The pupil must be regularly enrolled in high school and must be making passing grades in at least three subjects which entitle him to three units each year.

(6) Two music lessons of at least thirty minutes each week for thirty-six consecutive weeks plus a minimum of six

hours of practice each week for thirty-six consecutive weeks shall be required for one-half unit of credit.

(7) Before being permitted to carry outside work in music for credit, the pupil must have completed at least two years of study in the branch in which he seeks credit.

(8) Not more than one applied music course may be carried for credit in any one year.

(9) The credit for one year's work shall be one-half unit. No more than two units in music may be offered for graduation. Principals must bear in mind, however, that only one unit may be counted toward college entrance.

(10) Semi-annual examinations shall be given by the examiner appointed by the principal or superintendent. In no case shall the outside teacher examine his own pupils.

f. *Observance of Holidays.*

By authority granted it in Section 4394, Kentucky Statutes, the State Board of Education has ordered that schools "may observe four (4) holidays by dismissing for the day, and may observe the remainder of the holidays of that year by having appropriate exercises in the schools."

CHAPTER IV

REORGANIZATION OF THE TWELVE-GRADE SCHOOL SYSTEM

1. The 6-3-3 Plan of Organization.

a. *The Junior High School.*

Most of the schools in Kentucky are organized on the 8-4 basis, i. e., eight years are devoted to elementary education and four years to secondary education.

It has been realized for years that there is a lack of articulation as well as a great waste of time in this type of organization. Some constructive program of reorganization that will overcome these handicaps is demanded. The articulation between the elementary school and high school must be closer. The transition between them must be easier. These results are being accomplished very satisfactorily today in progressive states and communities through employing a new school unit that gives a more natural transition between elementary and secondary education. This unit is called the junior high school. It is designed especially to meet the physical, educational and social needs of pupils in the seventh, eighth and ninth grades.

In schools which use this idea the whole school system is so reorganized that the first six years are devoted to elementary education, while the secondary period is divided into separate three-year junior and three-year senior high schools, or is organized as one six-year high-school unit. This plan of reorganization has ceased to be an experiment; it is an accepted development.

There is a rather decided movement in Kentucky in the direction of reorganization along these lines. Naturally, many systems prefer to retain the traditional organization. Local conditions will and should be the determining factor in this regard.

b. *Functions of the Junior High School.*

The junior high school has certain distinctive functions

that determine its place in a system of schools. According to Dr. Briggs* these are:

- (1) To continue in as far as it may seem wise and possible, and in a gradually lessening degree, common integrating education.
- (2) To ascertain and reasonably to satisfy pupils' important immediate and assured future needs.
- (3) To explore by means of materials in themselves worth while the interests, aptitudes, and capacities of the pupils.
- (4) To reveal to pupils, by materials otherwise justifiable, the possibilities in the major fields of learning.
- (5) To start each pupil on the career which as a result of the exploratory courses, he, the school, and his parents are convinced is most likely to be of profit to him and the investing state.

c. *The Philosophy of the Reorganization Program.***

The chief indictment of the 8-4 system of schools is the lack of articulation between the two units. The following series of charts illustrate the separation claimed in the 8-4 system of schools and the articulation claimed in the 6-3-3 system.

CHART · 1

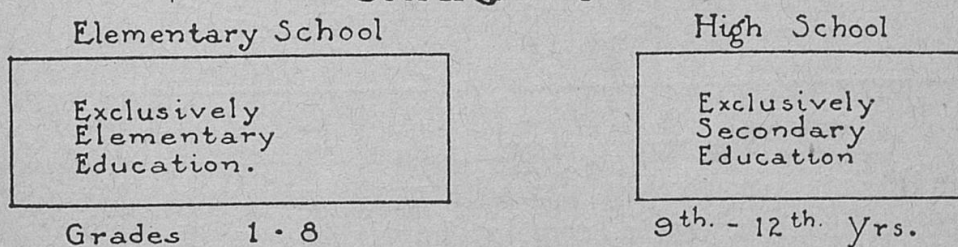


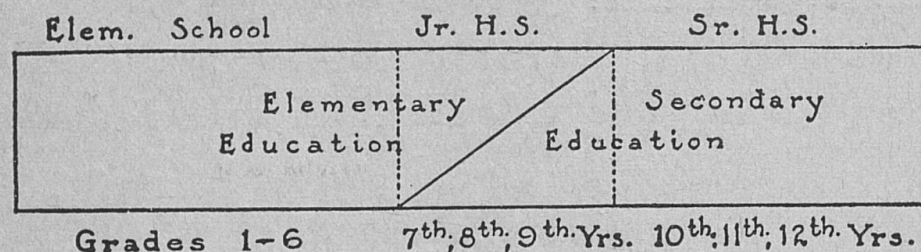
Chart I illustrates the extreme separation of the elementary school and the high school. The lack of articulation between the two schools is apparent.

Chart II provides for a new school unit of gradual transition between elementary and secondary education. It places

*Briggs, T. H. *The Junior High School*.

**The materials and graphic representations found under this heading are adapted from the *Pennsylvania Junior High-School Manual*, 1927.

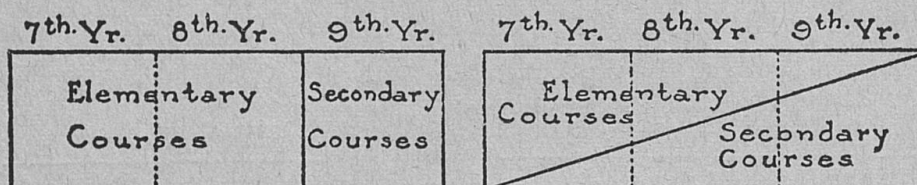
CHART II.



under a new school administration the 7th and 8th years of the former elementary school and the first year of the high school. This unit becomes the intermediate school, or as it is generally designated, the junior high school. It readjusts the twelve years of the school system into an articulated whole.

However, the junior high school is more than a mere re-adjustment of grades. Basically it is a "chemical product, not a physical combination." It began over a decade ago as an administrative problem of a new combination of grades. It has become a fundamental problem of educational reconstruction. The distinction will be evident in the following diagrams:

CHART III.



The first diagram represents a readjustment of grades 7, 8, and 9 into a new school, but with unaltered courses of study. This is merely a physical combination with no purpose to articulate elementary and secondary courses of study. It is not today recognized as a junior high school whose primary purpose is to become an intermediate school of gradual transition between elementary and secondary education.

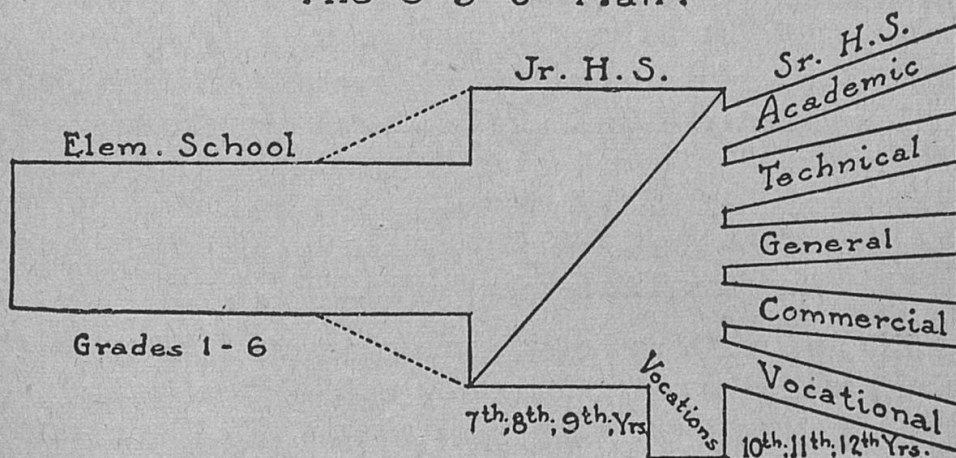
The second diagram shows a basic change in direction of the line of separation between elementary and secondary courses of study. Formerly a vertical line had been drawn to result in a wall of obstruction over which few pupils successfully vaulted.

The diagonal line provides a gradual and natural transition from elementary to secondary courses of study.

One example will illustrate: In mathematics the former practice was to offer exclusive arithmetic in grades 7 and 8 and exclusive algebra in the ninth year. The change from the vertical to the diagonal line makes it possible to continue arithmetic through the three years of the junior high school and simultaneously to articulate it with intuitive or observational geometry and elementary algebra. The result is a chemical product, a new course of study for the junior high school, designated as general mathematics. This new course eliminates even the diagonal line of separation between elementary and secondary mathematics. It is a basic educational reconstruction. It has one and only one justification, which, however, wholly justifies it, i. e., it articulates elementary and secondary mathematics, solely in the interests of early adolescent children who during the transitional period of the junior high school must make the shift from elementary to secondary mathematics, and who can do so more readily through the articulation of arithmetic, intuitive geometry, and elementary algebra, than through the former abrupt transition from exclusive arithmetic to exclusive algebra.

The relation of the function of the three schools in the 6-3-3 plan may be seen in the following chart:

CHART · 4
The 6-3-3 Plan.



There is a single curriculum of common branches in the six years of the elementary school. Its function is to give the tools of education and the command of fundamentals essential to further progress either educationally or vocationally.

There is an enlarged and enriched curriculum in the three years of the junior high school. Its function is to articulate elementary and secondary courses of study; thereby, to help each early adolescent to discover his own peculiar aptitudes by a general survey of the types of differentiated educational curricula ahead of him; to reveal to him the educational possibilities for the training of his aptitudes; and to give him, through its guidance program, a vision of the vocational opportunities in which his aptitudes when discovered and trained may find their proper and useful employment.

There are multiple or differentiated curricula in the senior high school. Their function is to furnish training for the aptitudes, interests, and capacities of pupils previously revealed in the junior high school. The channels of this training are the differentiated curricula—academic, technical, general, commercial and vocational.

The point of view of the elementary school toward its pupils is "en masse," to the end that all may receive a usable knowledge of the common branches and a sympathetic understanding of the social and civic structure of our democratic society.

The point of view of the senior high school is the group, to the end that the pupils of each group may receive specialized training in the curriculum they have chosen.

The point of view of the junior high school is the individual, to the end that each pupil may be selected from the mass and be placed, not blindly and capriciously, but intelligently, in his proper group.

d. *Program of Studies for Junior High Schools.*

No program of studies will serve the needs of all types of schools or of all communities equally well. Certain local adaptations will often be necessary and desirable. The Department desires to encourage local initiative in making any adjustments

which seem to be demanded. Experimentation in reasonable measures will also meet with favor.

The program of studies outlined herein provides for forty-five-minute periods. This is the minimum period that will be recognized. Sixty-minute periods are preferred by the Department as they permit considerable supervised study. If the lengthened period is adopted, time devoted to supervision will vary with the subject and with the character of the lesson in that subject. As a rule about thirty minutes of the sixty-minute period should be devoted to what is known as the recitation proper and the remainder of the time to the assignment of the lesson and direction of study.

It will be noted that the following program provides for home room, guidance and extra-curricular activities. The importance of these features of the program cannot be over-emphasized. The junior high school helps the pupil to make a wise choice of subjects, aids him to discover his real needs and, if possible, gives him an insight into the problems of the future. These activities should give him this guidance.

JUNIOR HIGH-SCHOOL PROGRAM OF STUDIES

Seventh Year	Periods a Wk.	Eighth Year	Periods a Wk.	Ninth Year	Periods a Wk.
English Literature Composition Grammar & Spelling	5	English Literature Composition Grammar & Spelling	5	English Literature Composition	5
Social Studies History (2) Geography (3)	5	Social Studies History (3) Geography (2)	5	Social Studies Social, Economic & Voc. Civics	5
Mathematics New Mathematics (Arith.-Alg.-Geom.)	5	Mathematics New Mathematics (Arith.-Alg.-Geom.)	5	Science Environmental Use and Control	5
Health & Physical Ed.	2	Health & Physical Ed.	2	Health & Physical Ed.	2
Science Environmental Relationships	3	Science Environmental Relationships	3	Activities Clubs (1) Assembly (1) Home Room (1)	3
Study	10	Study	10	Study	10-15
Activities Clubs (1) Assembly (1) Home Room (1)	3	Activities Clubs (1) Assembly (1) Home Room (1)	3	Electives (Pupils select 1 or 2) Jr. H. S. Math. or *Algebra (5) Early European History (5) Foreign Lang. (5) Fine Arts (5) Music Art Home Economics (10) Agriculture (Vocational) (10) Commercial Studies (5) or (10) periods depending on course.)	5-10
Guidance Orientation in } (1) Junior H. S. }	1	Guidance Vocations— General } (2) Survey }	2		
Practical Arts Ind. Arts (Boys) Home Ec. (Girls)	3	Electives (Pupils select 1) Ind. Arts (5) Home Economics (5) Fine Arts (5) Music Art Elementary Agr. (5) Jr. Bus. Train. (5) Gen. Language (5)	5		
Fine Arts Music (1) Art (1)	2				
Library Instruction	1				
No Electives					
Total number 45 Minute Periods a Wk.	40		40		40

*Pupils anticipating college entrance should select this course.

e. *Standardization of Junior High Schools.*

Local school systems have been given considerable freedom in organizing and administering junior high schools. Little attempt has been made to standardize the practices in the different junior high schools. Standardization has been consciously avoided for fear that the movement for reorganization might be blocked prematurely.

It is felt, however, that at the present time, the naming of certain standards will probably help to bring about a desirable degree of uniformity in junior high-school practices and will in no way hinder the progress or stifle the initiative of the local schools. Hence, the following standards will be used by the State Board of Education for the purpose of approving junior high schools:

(1) Standards for Approving Junior High Schools.

(a) Organization.

The seventh, eighth and ninth grades shall be organized as a separate unit of the school system with a separate staff of teachers and administrative officials. A modified plan comprising grades seven and eight may be approved temporarily as a step preparatory to the full adoption of the segregated three-year junior high school. Approval will also be granted the junior high school of a junior-senior organization, comprising grades seven to twelve, when the junior and senior high schools are organized as separate units except that they use the same building, same shops, same library, same assembly room and have one principal.

(b) Number and Qualifications of Teachers.

A minimum of six teachers who devote full time to instruction is recommended.

The instruction shall be departmentalized and the teachers shall be assigned according to their major interests and special academic and professional training relating to the junior high school. All teachers shall hold legal high-school certificates. After September 1, 1934, all principals and teachers, with the possible exception of teachers of trades and industrial subjects, who are employed to teach in a given junior

high school for the first time, must be graduates of four-year standard colleges.

(c) Home Room.

The school shall be organized on a home-room plan with a definite home-room program and a responsible home-room teacher in charge.

(d) Length of Term.

The minimum term in all approved junior high schools shall be thirty-six weeks (176 days).

(e) Length of School Day.

The school day shall be six hours in length exclusive of recesses.

(f) Length of Recitation Period.

The minimum length of the recitation period shall be forty-five minutes. The schedule should provide for at least seven periods a day in addition to the period provided for extra-curricular activities. This will allow for rest and study periods for both teachers and pupils. Schools may organize with periods that are sixty or more minutes in length, provided they are properly supervised. Special attention should be given to the direction of study and a conscious attempt should be made to teach pupils to form proper study habits.

(g) Homogeneous Grouping.

In those schools where numbers permit, there should be homogeneous grouping of pupils.

(h) Extra-Curricular Activities.

An activities program shall be provided with competent advisors in charge. At least three activities periods a week shall be provided in the daily schedule.

(i) Size of Classes and Teaching Load.

The class enrollment for recitation purposes should not

exceed thirty-five pupils, nor should the teaching load of any teacher exceed 175 pupil-hours a day.

(j) Program of Study.

The program of studies shall be adapted to the individual needs of early adolescent pupils, provide exploration in the different fields of work in order to aid pupils in choosing a career suited to their interests, aptitudes, and capacities, and "reveal to the pupils the possibilities in the major fields of learning."

(k) Content of Courses and Methods of Teaching.

The selection and arrangement of the content in the courses of study shall be psychological and the socialized methods of procedure shall be followed.

(l) Guidance.

A definite program of guidance—vocational, educational and social, shall be planned and carried out.

(m) Records and Reports.

Adequate and complete records of the scholarship and attendance of each pupil shall be kept. A fire-proof cabinet, safe, or vault safeguarding these records should be provided. A duplicate of these records shall be kept in the superintendent's office.

(n) Building and Grounds.

Assembly, library, shop and laboratory rooms in addition to classrooms shall be available.

(o) Library.

The library shall be selected especially for junior high-school purposes. There shall be at least five books per pupil, provided there are not fewer than five-hundred volumes. The library shall be classified according to the Dewey Decimal System. Either a full-time, trained librarian or a part-time, trained teacher-librarian, depending upon the size of the school, shall be employed to administer the library.

(p) Laboratory.

Laboratory equipment for the sciences taught shall be provided and adequate provision shall be made for its proper care and use.

(q) Promotions.

Promotions in the junior high school shall be by subjects only.

f. *Standards for Senior High Schools.*

Separate standards have not been adopted by the State Board of Education for this type of schools. Schools of this type are accredited by the Association of Kentucky Colleges, or by the Southern Association of Colleges and Secondary Schools, or by both. The regulations of the State Board of Education for the approval of high schools and of the accrediting agencies for the accrediting of high schools are sufficient standards for these schools.

g. *Senior High-School Program of Studies*

Tenth Year	Periods a Wk.	Eleventh Year	Periods a Wk.	Twelfth Year	Periods a Wk.
English Literature Composition	5	English Literature Composition	5	English Literature Composition	5
Social Studies World History or Mod. European Hist.	5	Social Studies American History	5	Social Studies Problems of Dem. or Adv. Civics $\frac{1}{2}$; Economics $\frac{1}{2}$	5
Physical Education	2	Physical Education	2	or Adv. Civics $\frac{1}{2}$; Sociology $\frac{1}{2}$	
Activities Clubs (1) Assembly (1) Home Room (1)	3	Activities Clubs (1) Assembly (1) Home Room (1)	3	Physical Education	2
Study	5-15	Study	5-15	Activities Clubs (1) Assembly (1) Home Room (1)	3
Electives	10-20	Electives (Pupils select 2)	10-20	Study	5-15
(Pupils select 2)		*Plane Geometry (5) Foreign Langs. (5) Physics or Chemistry (7) Home Econ. (10) Ind. Arts (10) Voc. Agr. (10) Fine Arts Music (5) Art (10) Commercial Studies (5) or (10) de- pending on course)		Electives	10-20
Algebra or Alg. $\frac{1}{2}$; Arith. $\frac{1}{2}$ (5) Foreign Langs. (5) Biology (7) Home Econ. (10) Ind. Arts (10) Voc. Agr. (10) Fine Arts Music (5) Art (10) †High Sch. Geog. (5) Commercial Studies (5) or (10) de- pending on course)				(Pupils select 2)	
				Foreign Langs. (5) Physics or Chemistry (7) Solid Geom. $\frac{1}{2}$; Trigonometry $\frac{1}{2}$ (5) Home Econ. (10) Ind. Arts (10) Voc. Agr. (10) Fine Arts Music (5) Art (10) Commercial Studies (5) or (10) de- pending on course)	
Total number 45 Minute Periods a Wk.	40		40		40

*Pupils anticipating college entrance should select this course.

†This is a general course in geography covering economic, physical and regional geography. Students offering credit in commercial geography should not select this course.

*h. Modifications of the 6-3-3 Plan of Organization.***(1) The Modified 6-3-3 Plan for Small Cities.**

A modified form of the 6-3-3 plan of administration seems advisable in certain of the smaller cities of the state which cannot provide separate buildings and separate principals for their junior and senior high schools. A few cities have adopted this modified plan. This type of school is usually referred to as a junior-senior high school and should not be confused with the six-year high school which will be discussed later.

The junior-senior high school is usually housed in one building but administered as two units. The faculties are separate except that certain special teachers of fine and practical arts, commercial courses, etc., can and do take classes in both units. The junior high school is usually housed on one floor or in one wing of the building and the senior high school is on another floor or another wing of the same building. One principal is provided for both schools. Usually he designates a strong teacher to serve as a vice-principal for the supervision of the junior high school. The two schools use the same auditorium, gymnasium, library, laboratories and shop. This type of organization is more economical than the straight 6-3-3 organization and can, with proper modification of courses and with trained teachers, be made to realize the purposes of the 6-3-3 organization to a remarkable degree.

(2) The 6-6 Plan—(Six-year High School).

The six-year high school is rapidly growing in favor in small fourth class cities, independent graded districts and in county schools that accommodate grades one to twelve.

Some of the advantages of this type of organization are:

- (a) It is economical, since it is administered as one six-year unit, in one building, with one principal and with one faculty.
- (b) It provides for a richer and better articulated curriculum organization for grades 7-12.
- (c) It makes possible better departmentalization.

- (d) It makes more instructional equipment accessible for pupils of the seventh and eighth grades.
- (e) It reduces the number of subjects taught by each teacher. This is especially true in small schools.
- (f) It provides better trained teachers in each subject. By using the same teachers throughout the six years, the range of subjects necessarily taught by each teacher is reduced and a better opportunity is provided the teachers to teach in the fields in which they have made special preparation.
- (g) It recognizes the changes that are taking place in the early adolescent and deals with him as a secondary-school pupil instead of an elementary-school pupil.
- (h) It is an incentive to pupils in the seventh, eighth and ninth grades to continue in school.
- (i) It facilitates guidance and enables early adolescents to have an opportunity to share in an extra-curricular program that is adapted to their age and interests.
- (j) According to accrediting and approval regulations all grades of the six-year high school must be in session for thirty-six weeks. This means a longer school term for pupils in the seventh and eighth grades than is usually provided in eight-grade rural elementary schools.

There are dangers in the 6-6 organization which, being neglected or overlooked, may materially reduce the efficiency of the organization.

The chief danger under this plan lies in a failure on the part of administrators and teachers to observe the distinctive purposes of the junior high school. This distinction implies "an integrated and self-contained curriculum which flows into the completely differentiated program of the last three years." Simply to place the seventh and eighth grades as a unit in the high school under departmental teaching, without modifying

5. PROGRAM OF STUDIES FOR REORGANIZED

Seventh Year	Periods a Wk.	Eighth Year	Periods a Wk.	Ninth Year	Period a Wk.
English Literature Composition Grammar & Spelling	5	English Literature Composition Grammar & Spelling	5	English Literature Composition	5
Social Studies History (2) Geography (3)	5	Social Studies History (3) Geography (2)	5	Social Studies Social, Economic & Voc. Civics	5
Mathematics New Mathematics (Arith.-Alg.-Geom.)	5	Mathematics New Mathematics (Arith.-Alg.-Geom.)	5	Science Environmental Use and Control	5
Health & Physical Ed.	2	Health & Physical Ed.	2	Health & Physical Ed.	2
Science Environmental Relationships	3	Science Environmental Relationships	3	Activities Clubs (1) Assembly (1) Home Room (1)	3
Study	10	Study	10	Study	10-15
Activities Clubs (1) Assembly (1) Home Room (1)	3	Activities Clubs (1) Assembly (1) Home Room (1)	3	Electives (Pupils select 1 or 2) Jr. H. S. Math. or *Algebra (5) Early European History (5) Foreign Lang. (5) Fine Arts (5) Music Art Home Econ. (10) Agriculture (Vocational) (10) Commercial Studies (5) or (10) periods depending on course)	5-10
Guidance Orientation in { (1) Junior H. S. }	1	Guidance Vocations— General Survey } (2)	2		
Practical Arts Ind. Arts (Boys) Home Ec. (Girls)	3	Electives (Pupils select 1) Ind. Arts (5) Home Economics (5) Fine Arts (5) Music Art	5		
Fine Arts Music (1) Art (1)	2				
Library Instruction	1	Elementary Agr. (5) Jr. Bus. Train. (5) Gen. Language (5)			
No electives					
Total number 45 Minute Periods a Wk.	40		40		40

*Pupils anticipating college entrance should select this course.

JUNIOR-SENIOR AND SIX-YEAR HIGH SCHOOLS

Tenth Year	Periods a Wk.	Eleventh Year	Periods a Wk.	Twelfth Year	Periods a Wk.
English Literature Composition	5	English Literature Composition	5	English Literature Composition	5
Social Studies World History or Mod. European Hist.	5	Social Studies American History	5	Social Studies Problems of Dem. or Adv. Civics $\frac{1}{2}$ Economics $\frac{1}{2}$ or Adv. Civics $\frac{1}{2}$; Sociology $\frac{1}{2}$	5
Physical Education	2	Physical Education	2	Physical Education	2
Activities Clubs (1) Assembly (1) Home Room (1)	3	Activities Clubs (1) Assembly (1) Home Room (1)	3	Activities Clubs (1) Assembly (1) Home Room (1)	3
Study	5-15	Study	5-15	Study	5-15
Electives	10-20	Electives	10-20	Electives	10-20
(Pupils select 2)		(Pupils select 2)		(Pupils select 2)	
Algebra or Alg. $\frac{1}{2}$; Arith. $\frac{1}{2}$ (5) Foreign Langs. (5) Biology (7) Home Econ. (10) Ind. Arts (10) Voc. Agr. (10) Fine Arts Music (5) Art (10) †High Sch. Geog. (5) Commercial Studies (5) or (10) de- pending on course)		*Plane Geometry (5) Foreign Langs. (5) Physics or Chemistry (7) Home Econ. (10) Ind. Arts (10) Voc. Agr. (10) Fine Arts Music (5) Art (10) Commercial Studies (5) or (10) de- pending on course)		Foreign Langs. (5) Physics or Chemistry (7) Solid Geom. $\frac{1}{2}$; Trigonometry $\frac{1}{2}$ (5) Home Econ. (10) Ind. Arts (10) Voc. Agr. (10) Fine Arts Music (5) Art (10) Commercial Studies (5) or (10) de- pending on course)	
Total number 45 Minute Periods a Wk.	40		40		40

*Pupils anticipating college entrance should select this course.

†This is a general course in geography covering economic, physical and regional geography. Student offering credit in commercial geography should not select this course.

the work offered in keeping with the purposes of the junior high school, is to have a makeshift rather than a junior high school.

There is also danger under this plan that the methods of government and control of the junior high school will be directed according to the standards and viewpoint of the senior high school. Also in the matter of the extra-curricular program there is danger of no differentiation in these activities in the two schools.

There is no point in minimizing these dangers. They are serious. "They can only be avoided by a thorough understanding on the part of administrators and teachers of the peculiar functions of the junior high school, the psychology of adolescence, and the development of the first three years as a unit with vital relationships with both the elementary school on the one side and the senior high school on the other."*

(3) Standards for Approving Junior, Senior and Six-Year High Schools.

See regulations for approval of high schools in Chapter IV. Also refer to standards for approval of junior high schools in this chapter. Principals of these schools should see to it that the requirements of accrediting agencies are met in all particulars.

(4) The 6-3 and 6-4 Plans.

The first of these plans comprises an elementary school of grades 1-6 and a departmentalized junior high-school organization for grades 7-9. The second plan contemplates a separate unit organization for grades 7-10.

These plans will be found advisable in county schools. The elementary school may be taught by one or more teachers depending upon the enrollment. The reader is referred to the curricula in the next chapter for the organization of the program of studies in these schools. These schools should feed into nearby four-year, three-year senior, or six-year high schools. The equipment, program of studies, administration and instruction in these schools should be such as to prepare pupils to enter without difficulty into their neighboring high schools.

*Ferris, E. N. *Secondary Education in Country and Village*, pp. 168-169. D. Appleton and Company.

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CHAPTER V

CURRICULA FOR SMALL HIGH SCHOOLS

The curricula set forth in this chapter are suggested for high schools with fewer than six teachers. They will meet the needs of a large majority of Kentucky high schools. In high schools having more than five teachers, the needs of such schools are to be met by the addition of new lines of instruction; for example, the introduction of vocational trade and industrial work, music, fine arts and physical education, each calling for a teacher of high special training.

Curricula are outlined for four types of schools: (1) four-year high schools, (2) small three-year, departmentalized junior high schools, (3) small four-year, departmentalized junior high schools, and (4) small six-year high schools.

No curricula are outlined for two-year, three-year or two-teacher four-year high schools. These schools will follow the academic curriculum outlined by years for the three-teacher four-year high schools. It is not recommended that the two-teacher four-year high schools attempt physics, however.

In preparing these curricula it was necessary to consider three problems in connection with each type of school:

1. The curriculum.
2. The subject-matter combinations of each teacher.
3. The daily schedule.

Certain definite principles run through all of the programs:

1. No teacher shall teach more than six classes a day.
2. No teacher shall teach in more than two fields of instruction.
3. The two fields taught by each teacher shall be logically related; e. g., English and foreign language, mathematics and science, English and social studies, home economics and science, etc.
4. Definite teaching jobs shall be set up. In connection

with each curriculum a desirable organization of the school is suggested and the teaching jobs in the school are clearly indicated. In this way assignments of subjects to be taught by each teacher are made specific and, at the same time, the teacher-training institutions of the state are provided with a definite program upon which to base their teacher-training work.

If the above desirable ends are to be attained, it is imperative that the local community, the State Department of Education and the teacher-training institutions cooperate in this program. However, the main responsibility for effecting this policy rests upon the local employing and administrative agencies.

These agencies are asked to do three things:

1. Adopt, in so far as local conditions permit, one of these curricula. When a curriculum is adopted, keep it in force for a period of time sufficient; first, to justify its merit; second, to guarantee good teachers logical and continuous teaching positions; and third, to permit pupils to follow a consistent and connected program throughout their high-school course.
2. In employing new teachers adhere to the policy of securing qualified teachers for the definite teaching jobs set up for them.
3. Gradually reassign the subject-matter fields, so that the experienced teachers will have the desired combinations. This may require further training on the part of some of them.

Important Suggestions and Recommendations.

1. See the chapter on the Reorganization of the Twelve-Grade School System for programs of study for junior high schools, senior high schools and six-year high schools that have sufficient enrollment and faculty to meet the purposes and standards of these organizations.

2. It is not contended that the small junior high schools and six-year high schools, whose curricula are outlined herein, can enjoy all of the advantages of separate junior and senior high-school organizations. They are not staffed or equipped for the degree of differentiation and general breadth of effort that is possible in these separate schools. However, it is possible for

these small organizations to provide many of these advantages, if the teachers are well prepared.

3. English in the seventh and eighth grades includes reading, writing, spelling, composition and grammar.

4. In all curricula, attention is directed to the provision for extra-curricular activities, which includes such work in guidance, teaching of music, fine arts and physical education as the small school can do.

5. The hour for opening school is merely suggestive. The local school authorities can best determine this.

6. High schools which offer two units of only one foreign language should not offer Latin one year and French the next; the language adopted should be continued.

7. Wherever possible all of a particular subject should be taught in the same room. Sufficient supplementary material should be provided. The room devoted to social studies, for example, should be well supplied with maps; the room devoted to English should be supplied with pictures of great writers, etc.

8. Pupils should consult their home-room teachers, principal and parents before electing subjects. This matter requires time and should not be deferred until the opening day of school.

9. Principals should avoid introducing courses which are demanded by only a few pupils. A class of eight takes as much of a teacher's time as a class of twenty-four and is, therefore, three times as expensive. There is the further consideration that placing an additional class in the schedule of a teacher who already has a normal teaching load, tends to weaken her work in all subjects.

10. Limit combinations and alternations of classes to those provided for in the daily schedules that accompany their respective programs of study.

11. Students who expect to count credit in foreign language for college entrance should complete at least two units of a given language. One unit of any language may be counted toward graduation.

12. Students offering credit in problems of democracy toward graduation cannot offer credit in economics, sociology or advanced civics, and vice versa.

13. Students counting credit in world history may not count credits in Early European History or Modern European History, and vice versa.

14. Solid geometry and trigonometry are recommended for the large high schools only.

15. Any subject listed as a unit subject must be completed before any credit will be allowed for that subject. Where one-half units are offered these must be in subjects listed as one-half unit courses.

16. If unit credit is to be allowed for extra-curricular activities, it shall be given in excess of the sixteen required for graduation.

17. It is recommended that all high-school pupils be required to read outside of class each month one carefully chosen book of an attractive and wholesome nature. Books available and acceptable for each year in English should be posted for the guidance of the pupils. Excellent lists from which selections for this individual reading may be made are given in Bulletin 1917, No. 2, of the United States Office of Education on the *Reorganization of English in Secondary Schools*, on pages 49-53 and 76-84 in Division B. The price of this publication is fifteen cents. This bulletin is recommended to teachers of English as a most valuable help in all their work.

18. Definite provision should be made not only to teach the pupils how to study, but to encourage them to do more studying. Teachers and pupils will find excellent suggestions along this line in Kornhauser's *How To Study*, (25c)—University of Chicago Press.

19. Pupils shall be promoted by subjects.

20. The granting of unit credits toward graduation shall be based on achievement in subjects as indicated by class work and examinations combined. The pupil's regular work in class for the semester or year should count at least twice as much as the examination in any given subject. No pupil should be excused from final examinations because of high grades, deportment, or attendance.

21. No pupil should be enrolled in the tenth grade until he

has completed three units; in the eleventh grade until he has completed seven units; and in the twelfth grade until he has completed eleven units.

22. Schools may substitute business training for the last half of tenth grade algebra or advanced arithmetic.

TYPE I A

FOUR-YEAR HIGH SCHOOL

(Three Teachers)

Curriculum

(Academic)

Ninth Year

SUBJECTS	Periods Per Wk.	Units
English I	5	1
Composition		
Literature		
Mathematics I	5	1
Algebra I		
Social Studies I	5	1
Citizenship or Early		
European History		
Science I	5	1
General Science		

Tenth Year

SUBJECTS	Periods Per Wk.	Units
English II	5	1
Composition		
Literature		
Mathematics II	5	1
Algebra II or Alg.		
½ & Arithmetic ½		
Social Studies II	5	1
World History or		
Mod. Europ'n Hist.		
Science II	7	1
Biology		

Eleventh Year

English III	5	1
Composition		
Literature		
Mathematics III	5	1
Plane Geometry		
Social Studies III	5	1
American History		

Twelfth Year

English IV	5	1
Composition		
Literature		
Social Studies IV	5	1
Prob. of Democracy		
or Adv. Civics ½		
and Econ. or Soci-		
ology ½		

Elect One

Science III	7	1
Gen. Agriculture or		
Agri. ½ and		
Physiology ½		
Foreign Language I. 5		1
Latin or Mod. Lang.		

Elect Two

Science IV	7	1
Physics		
Social Studies V	5	1
Com. Geog. or Com.		
Geog. ½ and Phy.		
Geog. ½		
Foreign Language II. 5		1
Latin or Mod. Lang.		

SUGGESTED ORGANIZATION

TEACHER A	Periods Per Wk.	TEACHER B	Periods Per Wk.
Social Studies I	5	English I	5
Social Studies II	5	English II	5
Social Studies III	5	English III	5
Social Studies IV	5	English IV	5
Social Studies V	5	Foreign Lang. I	5
		Foreign Lang. II	5
Total	25	Total	30

TEACHER C	Periods Per Wk.
Science I or II	5-7
Science III or IV	7
Math. I	5
Math. II	5
Math. III	5
Total	27-29

SUGGESTED DAILY SCHEDULE

Time	Teacher A	Teacher B	Teacher C
8:45-9:30		English IV	Mathematics III
9:30-10:15	Social Stu. II	English III	Mathematics I
10:15-10:30	SUPERVISED PLAY		
10:30-11:15	Social Stu. III	For. Lang. II	Science I or II
11:15-12:00	Social Stu. V	For. Lang. I	Laboratory II T.T.
12:00-1:00	NOON		
1:00-1:30	Activities—Music, Art, Assembly, Clubs, Home Room		
1:30-2:15	Social Stu. I	English II	Science III or IV
2:15-3:00			Laboratory M.W.
3:00-3:45	Social Stu. IV	English I	Mathematics II

TYPE I B

FOUR-YEAR HIGH SCHOOL

(Three Teachers)

Curriculum

(Agriculture and Home Economics)

Ninth Year

SUBJECTS	Periods Per Wk.	Units
English I	5	1
Composition		
Literature		
Social Studies I	5	1
Citizenship or Early		
European History		
Mathematics I	5	1
Algebra I		
Agriculture I or II.....	10	1
or		
Home Econ. I or II.....	10	1

Tenth Year

SUBJECTS	Periods Per Wk.	Units
English II	5	1
Composition		
Literature		
Social Studies II	5	1
World History or		
Mod. Europ'n Hist.		
Mathematics II	5	1
Algebra II or Alg.		
½ & Arithmetic ½		
Agriculture I or II.....	10	1
or		
Home Econ. I or II.....	10	1

Eleventh Year

English III	5	1
Composition		
Literature		
Social Studies III.....	5	1
American History		
Mathematics III	5	1
Plane Geometry		

Twelfth Year

English IV	5	1
Composition		
Literature		
Social Studies IV.....	5	1
Prob. of Democracy		
or Adv. Civics ½ &		
Econ. or Soc. ½		

Elect One

Foreign Language I..	5	1
Latin or Mod. Lang.		
Agriculture III or IV..	10	1

Elect Two

Social Studies V	5	1
Com. Geog. or Com.		
Geog. ½ and Phy.		
Geog. ½		
Foreign Language II	5	1
Latin or Mod. Lang.		
Agriculture III or IV..	10	1

SUGGESTED ORGANIZATION

TEACHER A	Periods Per Wk.	TEACHER B	Periods Per Wk.
Math. I	5	Home Econ. I or II.....	10
Math. II or III	5	Soc. Studies I	5
Agriculture I or II	10	Soc. Studies II	5
Agriculture III or IV	10	Soc. Studies III or IV.....	5
		Soc. Studies V	5
Total	30	Total	30

TEACHER C	Periods Per Wk.
English I	5
English II	5
English III	5
English IV	5
Foreign Language I	5
Foreign Language II	5
Total	30

SUGGESTED DAILY SCHEDULE

Time	Teacher A	Teacher B	Teacher C
8:45-9:30		Social Stu. III or IV	English II
9:30-10:15	Math. II or III		English I
10:15-10:30	SUPERVISED PLAY		
10:30-11:15	Agri. I or II	Home Econ. 1 or II*	English IV
11:15-12:00	Agri. I or II	Home Econ. 1 or II*	English III
12:00-1:00	NOON		
1:00-1:30	Activities—Music, Art, Assembly, Clubs, Home Room		
1:30-2:15	Agri. III or IV	Social Studies I	Foreign Lang. II
2:15-3:00	Agri. III or IV	Social Studies II	
3:00-3:45	Math. I	Social Studies V	Foreign Lang. I

*Schools that find it difficult to schedule Home Economics classes so as to avoid duplication of work, should secure schedule from the State Supervisor of Home Economics.

TYPE I C

FOUR-YEAR HIGH SCHOOL

(Four Teachers)

Curriculum
(Academic)**Ninth Year**

SUBJECTS	Periods Per Wk.	Units
English I	5	1
Composition		
Literature		
Social Studies I	5	1
Citizenship or Early European Hist.		
Science I	5	1
General Science		
Mathematics I	5	1
Algebra I		

Tenth Year

SUBJECTS	Periods Per Wk.	Units
English II	5	1
Composition		
Literature		
Social Studies II	5	1
World History or Mod. Europ'n Hist.		
Science II	7	1
Biology		
Mathematics II	5	1
Algebra II or Alg. $\frac{1}{2}$ & Arithmetic $\frac{1}{2}$		

Eleventh Year

English III	5	1
Composition		
Literature		
Soc. Studies III	5	1
American History		
Mathematics III	5	1
Plane Geometry		

Twelfth Year

English IV	5	1
Composition		
Literature		
Social Studies IV	5	1
Prob. of Democracy or Adv. Civics $\frac{1}{2}$ & Econ. or Sociology $\frac{1}{2}$		

Elect One

Foreign Language I....	5	1
Latin or Modern Language		
Science III	7	1
Gen. Agri. or Agri. $\frac{1}{2}$ & Physiology $\frac{1}{2}$		

Elect Two

Foreign Language II..	5	1
Latin or Mod. Lang.		
Science IV	7	1
Physics		
Social Studies V	5	1
Com. Geog. or Com. Geog. $\frac{1}{2}$ and Phys. Geog. $\frac{1}{2}$		

SUGGESTED ORGANIZATION

TEACHER A	Periods Per Wk.	TEACHER B	Periods Per Wk.
Mathematics I	5	Science I	5
Mathematics II	5	Science II	7
Mathematics III	5	Science III	7
		Science IV	7
Total	15	Total	26

TEACHER C	Periods Per Wk.	TEACHER D	Periods Per Wk.
Social Studies I	5	English I	5
Social Studies II	5	English II	5
Social Studies III	5	English III	5
Social Studies IV	5	English IV	5
Social Studies V	5	Foreign Language I	5
		Foreign Language II	5
Total	25	Total	30

SUGGESTED DAILY SCHEDULE

Time	Teacher A	Teacher B	Teacher C	Teacher D
8:45-9:30		Science II	Soc. Stu. III	English I
9:30-10:15		Lab. T.T.	Soc. Stu. IV	For. Lang. I
10:15-10:30	SUPERVISED PLAY			
10:30-11:15	Math. III	Science IV	Soc. Studies I	English II
11:15-12:00		Lab. M. W.		English III
12:00-1:00	NOON			
1:00-1:30	Activities—Music, Art, Assembly, Clubs, Home Room			
1:30-2:15	Math. I	Science III	Soc. Studies II	English IV
2:15-3:00	Math. II	Lab. III T.T.		For. Lang. II
3:00-3:45		Science I	Soc. Studies V	

TYPE I D

FOUR-YEAR HIGH SCHOOL

(Four Teachers)

Curriculum

(Agriculture and Home Economics)

Ninth Year

SUBJECTS	Periods Per Wk.	Units
English I	5	1
Composition		
Literature		
Social Studies I	5	1
Citizenship or Early European Hist.		
Mathematics I	5	1
Algebra I		

Elect One

Science I	5	1
General Science		
Agriculture I	10	1
Home Economics I.....	10	1

Eleventh Year

English III	5	1
Composition		
Literature		
Social Studies III	5	1
American History		
Mathematics III	5	1
Plane Geometry		

Elect One

Foreign Lang. I.....	5	1
Latin or Mod. Lang.		
Agriculture III	10	1

Tenth Year

SUBJECTS	Periods Per Wk.	Units
English II	5	1
Composition		
Literature		
Social Studies II	5	1
World History or Mod. Europ'n Hist.		
Mathematics II	5	1
Algebra II or Alg. $\frac{1}{2}$ & Arithmetic $\frac{1}{2}$		

Elect One

Science II	7	1
Biology		
Agriculture II	10	1
Home Economics II.....	10	1

Twelfth Year

English IV	5	1
Composition		
Literature		
Social Studies IV	5	1
Prob. of Democracy or Adv. Civics $\frac{1}{2}$ & Econ. or Sociology $\frac{1}{2}$		

Elect Two

Social Studies V	5	1
Com. Geog. or Com. Geog. $\frac{1}{2}$ and Phys. Geog. $\frac{1}{2}$		
Foreign Lang. II	5	1
Latin or Mod. Lang.		
Agriculture IV	10	1

*SUGGESTED ORGANIZATION

TEACHER A	Periods Per Wk.	TEACHER B	Periods Per Wk.
Mathematics III	5	English I	5
Science I	5	English II	5
Science II	7	English III	5
		English IV	5
		Foreign Language I	5
		Foreign Language II	5
Total	17	Total	30

TEACHER C	TEACHER D
Mathematics I	Home Econ. I or II.....
Mathematics II	Social Studies I
Agriculture I or II.....	Social Studies II
Agriculture III or IV.....	Social Studies III or IV.....
	Social Studies V
Total	Total

SUGGESTED DAILY SCHEDULE

Time	Teacher A	Teacher B	Teacher C	Teacher D
8:45-9:30		Eng. II	Math. I	Soc. Stu. III or IV
9:30-10:15		Eng. I	Math. II	Soc. Stu. V
10:15-10:30	SUPERVISED PLAY			
10:30-11:15	Math. III		Agri. I or II	Home Econ. I or II†
11:15-12:00		Eng. IV	Agri. I or II	Home Econ. I or II†
12:00-1:00	NOON			
1:00-1:30	Activities—Music, Art, Assembly, Clubs, Home Room			
1:30-2:15	Science II	For. Lang. I	Agri. III or IV	Soc. Stu. I
2:15-3:00	Lab. II M.W.	For. Lang. II	Agri. III or IV	
3:00-3:45	Science I	Eng. III		Soc. Stu. II

*In case Teacher C is employed as principal, Mathematics I and II should be transferred to Teacher A.

†Schools that find it difficult to schedule Home Economics classes so as to avoid duplication of work should secure schedule from State Supervisor of Home Economics.

TYPE I E

FOUR-YEAR HIGH SCHOOL

(Five Teachers)

Curriculum

(Academic)

Ninth Year

SUBJECTS	Periods Per Wk.	Units
English I	5	1
Composition		
Literature		
Social Studies I	5	1
Citizenship or Early		
European History		
Mathematics I	5	1
Algebra I		

Elect One

Science I	5	1
General Science		
Latin I	5	1

Eleventh Year

English III	5	1
Composition		
Literature		
Social Studies III	5	1
American History		
Mathematics III	5	1
Plane Geometry		

Elect One

*Science III	7	1
Chemistry		
Latin III	5	1
Modern Language I....	5	1

Tenth Year

SUBJECTS	Periods Per Wk.	Units
English II	5	1
Composition		
Literature		
Social Studies II	5	1
World History or		
Mod. Europ'n Hist.		
Science II	7	1
Biology		

Elect One

Mathematics II	5	1
Algebra II or Alg.		
½ & Arithmetic ½		
Latin II	5	1

Twelfth Year

English IV	5	1
Composition		
Literature		
Social Studies IV	5	1
Prob. of Democracy		
or Adv. Civics ½ &		
Econ. or Soc. ½		

Elect Two

Science IV	7	1
Physics		
Latin IV	5	1
Modern Language II..	5	1
Social Studies V	5	1
Com. Geog. or Com.		
Geog. ½ and Phys.		
Geog. ½		

*Schools may substitute General Agriculture or General Agriculture and Physiology for Chemistry.

SUGGESTED ORGANIZATION

TEACHER A		Periods Per Wk.	TEACHER B		Periods Per Wk.
Math. IA		5	Eng. II		5
Math. IB		5	Eng. III		5
Math. II		5	Eng. IV		5
Math. III		5	Mod. Lang. I		5
			Mod. Lang. II		5
Total		20	Total		25
TEACHER C			TEACHER D		
Eng. IA		5	Soc. Stu. IA		5
Eng. IB		5	Soc. Stu. IB		5
Latin I		5	Soc. Stu. II		5
Latin II		5	Soc. Stu. III		5
Latin III or IV		5	Soc. Stu. IV		5
			Soc. Stu. V		5
Total		25	Total		30
TEACHER E			Periods Per Wk.		
Science I					5
Science II					7
Science III					7
Science IV					7
Total					26

SUGGESTED DAILY SCHEDULE

Time	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E
8:45-9:30	Math. III	Eng. II	Latin I	Soc. Stu. IV	Science I
9:30-10:15		Mod. Lang. II	Latin II	Soc. Stu. IA	
10:15-10:30	SUPERVISED PLAY				
10:30-11:15	Math. IA	Eng. IV	Latin III or IV	Soc. Stu. II	Science II
11:15-12:00		Mod. Lang. I		Soc. Stu. IB	Lab. T.T.
12:00-1:00	NOON				
1:00-1:30	Activities—Music, Art, Assembly, Clubs, Home Room				
1:30-2:15			Eng. IA	Soc. Stu. V	Science II
2:15-3:00	Math. II		Eng. IB		Lab. III M.W. Lab. IV T.T.
3:00-3:45	Math. IB	Eng. III		Soc. Stu. II	Science IV

TYPE I F

FOUR-YEAR HIGH SCHOOL

(Five Teachers)

Curriculum

(Agriculture and Home Economics)

Ninth Year

SUBJECTS	Periods Per Wk.	Units
English I	5	1
Composition Literature		
Mathematics I	5	1
Algebra I		
Social Studies I	5	1
Citizenship or Early European History		

Elect One

Science I	5	1
General Science		
Home Economics I.....	10	1
Agriculture	10	1

Eleventh Year

English III	5	1
Composition Literature		
Social Studies III	5	1
American History		
Mathematics III	5	1
Plane Geometry		

Elect One

Foreign Lang. I	5	1
Latin or Mod. Lang.		
Agriculture III	10	1
Science III	7	1
Chemistry		

Tenth Year

SUBJECTS	Periods Per Wk.	Units
English II	5	1
Composition Literature		
Social Studies II	5	1
World History or Mod. Europ'n Hist.		
Mathematics II	5	1
Algebra II or Alg. $\frac{1}{2}$ & Arithmetic $\frac{1}{2}$		

Elect One

Science II	7	1
Biology		
Home Economics II.....	10	1
Agriculture II	10	1

Twelfth Year

English IV	5	1
Composition Literature		
Social Studies IV.....	5	1
Prob. of Democracy or Adv. Civics $\frac{1}{2}$ & Econ. or Soc. $\frac{1}{2}$		

Elect Two

Social Studies V	5	1
Com. Geog. or Com. Geog. $\frac{1}{2}$ and Phys. Geog. $\frac{1}{2}$		
Foreign Language II..	5	1
Latin or Mod. Lang.		
Agriculture IV	10	1
Science IV	7	1
Physics		

SUGGESTED ORGANIZATION

TEACHER A	Periods Per Wk.	TEACHER B	Periods Per Wk.
Math. (2 Sec.)	10	Eng. I (2 Sec.)	10
Math. II	5	Eng. III	5
Math. III	5	Eng. IV	5
		For. Lang. I	5
		For. Lang. II	5
Total	20	Total	30
TEACHER C		TEACHER D	
Soc. Stu. III or IV	5	Agri. I or II	10
Soc. Stu. I (2 Sec.)	10	Agri. III or IV	10
Soc. Stu. V	5	Science III or IV	7
Soc. Stu. II	5	Science I	5
Eng. II	5		
Total	30	Total	32
TEACHER E		Periods Per Wk.	
Home Economics I	10		
Home Economics II	10		
Science II	7		
Total	27		

SUGGESTED DAILY SCHEDULE

Time	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E
8:45-9:30		Eng. IA	Soc. Stu. III or IV	Agri. I or II	Home Econ. II
9:30-10:15		Eng. III	Soc. Stu. IA	Agri. I or II	Home Econ. II
10:15-10:30	SUPERVISED PLAY				
10:30-11:15	Math. IB	For. Lang. I	Soc. Stu. V	Agri. III or IV	Science II
11:15-12:00	Math. IA	For. Lang. II		Agri. III or IV	Lab. T.T.
12:00-1:00	NOON				
1:00-1:30	Activities—Music, Art, Assembly, Clubs, Home Room				
1:30-2:15	Math. III	Eng. IV	Eng. II	Science I	
2:15-3:00	Math. II		Soc. Stu. IB	Sci. III or IV	Home Econ. I
3:00-3:45		Eng. IB	Soc. Stu. II	Lab. M.W.	Home Econ. I

TYPE I G

FOUR-YEAR HIGH SCHOOL

(Five Teachers)

Curriculum

(Commercial Education)

Ninth Year

SUBJECTS	Periods Per Wk.	Units
English I	5	1
Composition		
Literature		
Social Studies I	5	1
Citizenship or Early European Hist.		
Science I	5	1
General Science		
Mathematics I	5	1
Algebra I		

Eleventh Year

English III	5	1
Composition		
Literature		
Social Studies III	5	1
American History		

Elect Two

¹ Mathematics III	5	1
Plane Geometry		
² Science III	7	1
Chemistry		
Foreign Language I. 5	1	
Latin or Mod. Lang.		
Com. Education I.....10	1	
Typewriting		
Com. Education II..... 5	1	
Shorthand		

Tenth Year

SUBJECTS	Periods Per Wk.	Units
English II	5	1
Composition		
Literature		
Social Studies II	5	1
World Hist. or Mod. European Hist.		
Science II	7	1
Biology		
*Mathematics II	5	1
Algebra II or Alg. $\frac{1}{2}$ and Arith. $\frac{1}{2}$		

Twelfth Year

English IV	5	1
Composition		
Literature		
Social Studies IV..... 5	1	
Prob. of Democracy or Adv. Civics $\frac{1}{2}$ & Econ. or Soc. $\frac{1}{2}$		

Elect Two

Foreign Language II. 5	1	
Latin or Mod. Lang.		
Science IV	7	1
Physics		
Social Studies V	5	1
Com. Geog. or Com. Geog. $\frac{1}{2}$ & Phys. Geog. $\frac{1}{2}$		
Com. Education III.10	1	
Bookkeeping and Acct.		
Com. Education IV.... 5	1	
Shorthand & Office Practice		

¹ Pupils anticipating college entrance should elect Plane Geometry.² Schools may substitute General Agriculture or General Agriculture and Physiology for Chemistry.

*Schools may elect to teach Business Training for one-half year and Commercial Arithmetic for one-half year.

SUGGESTED ORGANIZATION

TEACHER A	Periods Per Wk.	TEACHER B	Periods Per Wk.
Math. 1 (2 Sec.).....	10	Eng. I (2 Sec.)	10
Math. II	5	Eng. II	5
Math. III	5	Eng. IV	5
		For. Lang. I	5
		For. Lang. II	5
Total	20	Total	30
TEACHER C		TEACHER D	
Soc. Stu. I (2 Sec.).....	10	Science I (2 Sec.)	10
Soc. Stu. II	5	Science II	5
Soc. Stu. III or IV.....	5	Science III or IV.....	7
Soc. Stu. V	5		
Eng. III	5		
Total	30	Total	22
TEACHER E	Periods Per Wk.		
Com. Edu. I	10		
Com. Edu. II	5		
Com. Edu. III	10		
Com. Edu. IV.....	5		
Total	30		

SUGGESTED DAILY SCHEDULE

Time	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E
8:45-9:30	Math. IB		Soc. Stu. IA	Sci. III or IV	Com. Edu. I
9:30-10:15		Eng. IA	Soc. Stu. II	Lab. T.T.	Com. Edu. I
10:15-10:30	SUPERVISED PLAY				
10:30-11:15		Eng. IB	Eng. III	Science II	Com. Edu. III
11:15-12:00	Math III	For. Lang. II		Lab. M.W.	Com. Edu. III
12:00-1:00	NOON				
1:00-1:30	Activities—Music, Art, Assembly, Clubs, Home Room				
1:30-2:15		Eng. II	Soc. Stu. III or IV	Science IB	
2:15-3:00	Math. IA	Eng. IV	Soc. Stu. IB		Com. Edu. II
3:00-3:45	Math. II	For. Lang. I	Soc. Stu. V	Science IA	Com. Edu. IV

TYPE II

THREE-YEAR JUNIOR HIGH SCHOOL (GRADES 7-9)

(Departmentalized Two-Teacher School)

Curriculum**Seventh Year**

SUBJECTS	Periods Per Wk.
English 7	5
Mathematics 7	5
Science 7	5
El. Science (3)	
Health (2)	
Social Studies 7	5
Geography (3)	
History (2)	

Eighth Year

SUBJECTS	Periods Per Wk.
English 8	5
Mathematics 8	5
Science 8	5
*El. Science (3)	
Health (2)	
Social Studies 8	5
Geography (2)	
Hist. & Civics (3)	

Ninth Year

SUBJECTS	Periods Per Wk.	Units
English I	5	1
Composition		
Literature		
Mathematics I	5	1
Algebra I		
Science I	5	1
General Science		
Social Studies I	5	1
Citizenship		

*Elementary Agriculture should be given special consideration in this course.

SUGGESTED ORGANIZATION

TEACHER A	Periods Per Wk.	TEACHER B	Periods Per Wk.
English 7	5	Mathematics 7	5
English 8	5	Mathematics 8	5
English I	5	Mathematics I	5
Social Studies 7	5	Science 7	5
Social Studies 8	5	Science 8	5
Social Studies I	5	Science I	5
Total	30	Total	30

SUGGESTED DAILY SCHEDULE

Time	Teacher A	Teacher B
8:45-9:30	English 7	Mathematics 8
9:30-10:15	English 8	Science I
10:15-10:30	SUPERVISED PLAY	
10:30-11:15	Social Studies I	
11:15-12:00	Social Studies 7	Science 8
12:00-1:00	NOON	
1:00-1:30	Activities—Music, Art, Assembly, Clubs, Home Room	
1:30-2:15	English I	Mathematics 7
2:15-3:00	Social Studies 8	Mathematics I
3:00-3:45		Science 7

TYPE III

FOUR-YEAR JUNIOR HIGH SCHOOL (GRADES 7-10)

(Two Teachers)

Curriculum
(Academic)

Seventh Year

SUBJECTS	Periods Per Wk.	Units
English 7	5	
Mathematics 7	5	
Science 7	5	
El. Science (3)		
Health (2)		
Social Studies 7	5	
Geography (3)		
History (2)		

Eighth Year

SUBJECTS	Periods Per Wk.	Units
English 8	5	
Mathematics 8	5	
Science 8,	5	
*El. Science (3)		
Health (2)		
Social Studies 8	5	
Geography (2)		
Hist. & Civics (3)		

Ninth Year

English I	5	1
Composition		
Literature		
Mathematics I	5	1
Algebra I		
Science I	5	1
General Science		
Social Studies I	5	1
Citizenship		

Tenth Year

English II	5	1
Composition		
Literature		
Mathematics II	5	1
Algebra II or Alg.		
½ and Arith ½		
Science II	7	1
Biology		
Social Studies II	5	1
World History or		
Mod. Europ'n Hist.		

*Elementary Agriculture should be given special consideration in this course.

SUGGESTED ORGANIZATION

TEACHER A	Periods Per Wk.	TEACHER B	Periods Per Wk.
English 7	5	Mathematics 7	5
English 8	5	Mathematics 8	5
English I	5	Mathematics I	5
English II	5	Mathematics II	5
Soc. Studies 7 or 8.....	5	Science 7 or 8	5
Soc. Studies I or II.....	5	Science I or II	5-7
Total	30	Total	30 or 32

SUGGESTED DAILY SCHEDULE

Time	Teacher A	Teacher B
8:45-9:30	English 7	Mathematics 8
9:30-10:15	English 8	Science I or II
10:15-10:30	SUPERVISED PLAY	
10:30-11:15	Social Studies I or II	
11:15-12:00	English II	Science 7 or 8
12:00-1:00	NOON	
1:00-1:30	Activities—Music, Art, Assembly, Clubs, Home Room	
1:30-2:15	English I	Mathematics 7
2:15-3:00	Social Studies 7 or 8	Mathematics I
3:00-3:45		Mathematics II

TYPE IV A

SIX-YEAR HIGH SCHOOL

(Four Teachers)

Curriculum

(Academic)

Seventh Year

SUBJECTS	Periods Per Wk.	Units
English 7	5	
Mathematics 7	5	
Science 7	5	
El. Science (3)		
Health (2)		
Social Studies 7	5	
Geography (3)		
History (2)		

Eighth Year

SUBJECTS	Periods Per Wk.	Units
English 8	5	
Mathematics 8	5	
Science 8	5	
*El. Science (3)		
Health (2)		
Social Studies 8	5	
Geography (2)		
Hist. & Civics (3)		

Ninth Year

English I	5	1
Composition		
Literature		
Mathematics I	5	1
Algebra I		
Science I	5	1
General Science		
Social Studies I	5	1
Citizenship		

Tenth Year

English II	5	1
Composition		
Literature		
Mathematics II	5	1
Algebra II or Alg.		
½ & Arithmetic ½		
Social Studies II	5	1
World Hist. or Mod.		
European Hist.		
Science II	7	1
Biology		

Eleventh Year

English III	5	1
Composition		
Literature		
Social Studies III	5	1
American History		
Mathematics III	5	1
Plane Geometry		
Foreign Lang. I	5	1
Latin or Mod. Lang.		

Twelfth Year

English IV	5	1
Composition		
Literature		
Social Studies IV	5	1
Prob. of Democracy		
Social Studies V	5	1
Com. Geog. or Com.		
Geog. ½ and Phys.		
Geog. ½		
Foreign Lang. II	5	1
Latin or Mod. Lang.		

*Elementary Agriculture should be given special consideration in this course.

SUGGESTED ORGANIZATION

TEACHER A (Principal)	Periods Per Wk.	TEACHER B	Periods Per Wk.
Math. 7	5	Eng. 7	5
Math. 8	5	Eng. I	5
Math. I	5	Eng. II	5
Math. III	5	Eng. III or IV	5
		For. Lang. I	5
		For. Lang. II	5
Total	20	Total	30

TEACHER C	TEACHER D
Soc. Stu. 7	Science 7
Soc. Stu. 8	Science 8
Soc. Stu. I or II	Science I
Soc. Stu. III or IV	Science II
Soc. Stu. V	Math. II
Eng. 8	
Total	Total
30	27

SUGGESTED DAILY SCHEDULE

Time	Teacher A	Teacher B	Teacher C	Teacher D
8:45-9:30		Eng. III or IV	Soc. Stu. I or II	Science 7
9:30-10:15	Math. 8	Eng. II	Soc. Stu. III or IV	
10:15-10:30	SUPERVISED PLAY			
10:30-11:15		Eng. I		Science 8
11:15-12:00	Math. I	Eng. 7	Soc. Stu. 8	Math. II
12:00-1:00	NOON			
1:00-1:30	Activities—Music, Art, Assembly, Clubs, Home Room			
1:30-2:15			Soc. Stu. 7	Science I
2:15-3:00	Math. 7	For. Lang. I	Soc. Stu. V	Lab. T.T.
3:00-3:45	Math. III	For. Lang. II	English 8	Science II

TYPE IV B

SIX-YEAR HIGH SCHOOL

(Four Teachers)

Curriculum

(Agriculture and Home Economics)

Seventh Year

SUBJECTS	Periods Per Wk.	Units
English 7	5	
Mathematics 7	5	
Science 7	5	
El. Science (3)		
Health (2)		
Social Studies 7	5	
Geography (3)		
History (2)		

Ninth Year

English I	5	1
Composition		
Literature		
Mathematics I	5	1
Algebra I		
Social Studies I	5	1
Citizenship or Early		
European History		
Agriculture I	10	1
Home Economics I	10	1

Eleventh Year

English III	5	1
Composition		
Literature		
Social Studies III	5	1
American History		
Mathematics III	5	1
Plane Geometry		

Elect One

Foreign Language I. 5	1
Latin or Mod. Lang.	
Agriculture III	10

Eighth Year

SUBJECTS	Periods Per Wk.	Units
English 8	5	
Mathematics 8	5	
Science 8	5	
*El. Science (3)		
Health (2)		
Social Studies 8	5	
Geography (2)		
Hist. & Civics (3)		

Tenth Year

English II	5	1
Composition		
Literature		
Social Studies II	5	1
World Hist. or Mod.		
European Hist.		
Mathematics II	5	1
Algebra II or Alg.		
$\frac{1}{2}$ & Arith. $\frac{1}{2}$		
Agriculture II	10	1
Home Economics II	10	1

Twelfth Year

English IV	5	1
Composition		
Literature		
Social Studies IV	5	1
Prob. of Dem. or		
Adv. Civics $\frac{1}{2}$ and		
Econ. or Soc. $\frac{1}{2}$		

Elect Two

Social Studies V	5	1
Com. Geog. or Com.		
Geog. $\frac{1}{2}$ and Phy.		
Geog. $\frac{1}{2}$		
Foreign Lang. II	5	1
Latin or Mod. Lang.		
Agriculture IV	10	1

*Elementary Agriculture should be given special consideration in this course.

***SUGGESTED ORGANIZATION**

TEACHER A	Periods Per Wk.	TEACHER B	Periods Per Wk.
Math. I	5	Eng. I	5
Math. II or III	5	Eng. II	5
Soc. Stu. 7 or 8	5	Eng. III or IV	5
Soc. Stu. V	5	Eng. 7 or 8	5
		For. Lang. I	5
		For. Lang. II	5
Total	20	Total	30

TEACHER C	TEACHER D
Agri. I or II	Home Econ. I or II
Agri. III or IV	Soc. Stu. I
Math. 7	Soc. Stu. II
Math. 8	Soc. Stu. III or IV
	Science 7 or 8
Total	Total

SUGGESTED DAILY SCHEDULE

Time	Teacher A	Teacher B	Teacher C	Teacher D
8:45-9:30		Eng. III or IV	Agri. I or II	Home Econ. I or II†
9:30-10:15		Eng. 7 or 8	Agri. I or II	Home Econ. I or II†
10:15-10:30	SUPERVISED PLAY			
10:30-11:15	Math. I	Eng. II	Math. 7	Soc. Stu. III or IV
11:15-12:00	Math. II or III		Math. 8	
12:00-1:00	NOON			
1:00-1:30	Activities—Music, Art, Assembly, Clubs, Home Room			
1:30-2:15	Soc. Stu. 7 or 8	For. Lang. II	Agri. III or IV	Soc. Stu. I
2:15-3:00		For. Lang. I	Agri. III or IV	Soc. Stu. II
3:00-3:45	Soc. Stu. V	Eng. I		Science 7 or 8

*In case Teacher C is employed as principal, Mathematics 7 and 8 should be transferred to Teacher A.

†Schools that find it difficult to schedule Home Economics classes so as to avoid duplication of work should secure schedule from State Supervisor of Home Economics.

SIX-YEAR HIGH SCHOOL

TYPE IV C

(Five Teachers)

Curriculum

(Academic)

Seventh Year

SUBJECTS	Periods Per Wk.	Units
English 7	5	
Mathematics 7	5	
Science 7	5	
El. Science (3)		
Health (2)		
Social Studies 7	5	
Geography (3)		
History (2)		

Ninth Year

English I	5	1
Composition		
Literature		
Mathematics I	5	1
Algebra I		
Social Studies I	5	1
Citizenship or Early		
European Hist.		

Elect One

Science I	5	1
General Science		
Latin I	5	1

Eleventh Year

English III	5	1
Composition		
Literature		
Social Studies III	5	1
American History		
Mathematics III	5	1
Plane Geometry		

Elect One

*Science III	7	1
Chemistry		
Latin III	5	1
Mod. Lang. I	5	1

Eighth Year

SUBJECTS	Periods Per Wk.	Units
English 8	5	
Mathematics 8	5	
Science 8	5	
**El. Science (3)		
Health (2)		
Social Studies 8	5	
Geography (2)		
Hist. & Civics (3)		

Tenth Year

English II	5	1
Composition		
Literature		
Social Studies II	5	1
World Hist. or Mod.		
European History		
Science II	7	1
Biology		

Elect One

Mathematics II	5	1
Alg. II or Alg. $\frac{1}{2}$		
and Arith. $\frac{1}{2}$		
Latin II	5	1

Twelfth Year

English IV	5	1
Composition		
Literature		
Social Studies IV	5	1
Prob. of Dem. or		
Adv. Civics $\frac{1}{2}$ &		
Econ. or Soc. $\frac{1}{2}$		

Elect Two

Social Studies V	5	1
Com. Geog. or Com.		
Geog. $\frac{1}{2}$ and Phys.		
Geog. $\frac{1}{2}$		
Science IV	7	1
Physics		
Latin IV	5	1
Mod. Lang. II	5	1

*Science III may be Gen. Agriculture or Gen. Agri. and Adv. Physiology,

**Elementary Agriculture should be given special consideration in this course.

SUGGESTED ORGANIZATION

TEACHER A		Periods Per Wk.	TEACHER B		Periods Per Wk.
Math. 7		5	Soc. Stu. 7		5
Math. 8		5	Soc. Stu. 8		5
Math. I		5	Soc. Stu. I		5
Math. II		5	Soc. Stu. II		5
Math. III		5	Soc. Stu. III or IV		5
			Soc. Stu. V		5
Total		25	Total		30
TEACHER C			TEACHER D		
Science 7		5	Eng. 7		5
Science 8		5	Eng. 8		5
Science I		5	Eng. I		5
Science II		7	Eng. II		5
Science III or IV		7	Eng. III		5
			Eng. IV		5
Total		29	Total		30
TEACHER E		Periods Per Wk.			
Latin I		5			
Latin II		5			
Latin III or IV		5			
Mod. Lang. I		5			
Mod. Lang. II		5			
Total		25			

SUGGESTED DAILY SCHEDULE

Time	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E
8:45-9:30		Soc. Stu. I	Sci. 7	Eng. III	Mod. Lang. II
9:30-10:15	Math. I	Soc. Stu. III or IV	Sci. 8	Eng. II	
10:15-10:30	SUPERVISED PLAY				
10:30-11:15		Soc. Stu. II	Sci. III or IV	Eng. I	
11:15-12:00	Math. 8		Lab. T.T.	Eng. 7	Latin III or IV
12:00-1:00	NOON				
1:00-1:30	Activities—Music, Art, Assembly, Clubs, Home Room				
1:30-2:15	Math. II	Soc. Stu. 7	Sci. I	Eng. 8	Latin II
2:15-3:00	Math. 7	Soc. Stu. 8	Lab. M.W.	Eng. IV	Mod. Lang. I
3:00-3:45	Math. III	Soc. Stu. V	Sci. II		Latin I

SIX-YEAR HIGH SCHOOL

TYPE IV D

(Five Teachers)

Curriculum

(Agriculture and Home Economics)

Seventh Year

SUBJECTS	Periods Per Wk.	Units
English 7	5	
Mathematics 7	5	
Science 7	5	
El. Science (3)		
Health (2)		
Social Studies 7	5	
Geography (3)		
History (2)		

Ninth Year

English I	5	1
Composition		
Literature		
Mathematics I	5	1
Algebra I		
Social Studies I	5	1
Citizenship or Early		
European History		

Elect One

Science I	5	1
General Science		
Agriculture I	10	
Home Economics I	10	1

Eleventh Year

English III	5	1
Composition		
Literature		
Social Studies III	5	1
American History		
Mathematics III	5	1
Plane Geometry		

Elect One

Foreign Language I	5	1
Latin or Mod. Lang.		
Agriculture III	10	1

Eighth Year

SUBJECTS	Periods Per Wk.	Units
English 8	5	
Mathematics 8	5	
Science 8	5	
*El. Science (3)		
Health (2)		
Social Studies 8	5	
Geography (2)		
Hist. & Civics (3)		

Tenth Year

English II	5	1
Composition		
Literature		
Mathematics II	5	1
Algebra II or Alg.		
½ & Arith. ½		
Social Studies II	5	1
World Hist. or Mod.		
European History		

Elect One

Science II	7	1
Biology		
Agriculture II	10	1
Home Economics II	10	1

Twelfth Year

English IV	5	1
Composition		
Literature		
Social Studies IV	5	1
Prob. of Democracy		
or Adv. Civics ½ &		
Econ. or Sociol. ½		

Elect Two

Social Studies V	5	1
Com. Geog. or Com.		
Geog. ½ and Phys.		
Geog. ½		
Foreign Language II	5	1
Latin or Mod. Lang.		
Agriculture IV	10	1

*Elementary Agriculture should be given special consideration in this course.

***SUGGESTED ORGANIZATION**

TEACHER A		Periods Per Wk.	TEACHER B		Periods Per Wk.
Math. I	5		Eng. 8	5	
Math. II or III	5		Eng. II	5	
Soc. Stu. 7	5		Soc. Stu. I	5	
Soc. Stu. 8	5		Soc. Stu. II	5	
			Soc. Stu. III or IV	5	
			Soc. Stu. V	5	
Total	20		Total	30	
TEACHER C		Periods Per Wk.	TEACHER D		Periods Per Wk.
Eng. 7	5		Agri. I or II	10	
Eng. I	5		Agri. III or IV	10	
Eng. III	5		Math. 7	5	
Eng. IV	5		Math. 8	5	
For. Lang. I	5				
For. Lang. II	5				
Total	30		Total	30	
TEACHER E		Periods Per Wk.			Periods Per Wk.
Home Econ. I or II	10				
Science 7	5				
Science 8	5				
Science I	5				
Science II	7				
Total	32				

SUGGESTED DAILY SCHEDULE

Time	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E
8:45-9:30			Eng. 7	Agri. I or II	Home Econ.† I or II
9:30-10:15		Soc. Stu. III or IV	Eng. IV	Agri. I or II	Home Econ.† I or II
10:15-10:30	SUPERVISED PLAY				
10:30-11:15	Math. II or III	Soc. Stu. V	Eng. I	Math. 8	Science 7
11:15-12:00	Math. I	Eng. II		Math. 7	Science 8
12:00-1:00	NOON				
1:00-1:30	Activities—Music, Art, Assembly, Clubs, Home Room				
1:30-2:15	Soc. Stu. 8	Soc. Stu. II	Eng. III		Science I
2:15-3:00	Soc. Stu. 7	Eng. 8	For. Lang. II	Agri. III or IV	Lab. II
3:00-3:45		Soc. Stu. I	For. Lang. I	Agri. III or IV	Science II

*In case Teacher D is employed as principal, Mathematics 7 and 8 should be transferred to Teacher A.

†Schools that find it difficult to schedule Home Economics classes so as to avoid duplication of work should secure schedule from State Supervisor of Home Economics.

CHAPTER VI

EXTRA-CURRICULAR ACTIVITIES

By the expression "extra-curricular activities" is meant those legitimate activities of the school which are not otherwise provided for in the regular curriculum. Most of these activities are included under the following general headings: school publications, school athletics, social functions, home-room activities, honor societies, clubs, class organizations, pupil participation in government, and such supplementary agencies as the Junior Red Cross, Boy Scouts, Campfire Girls, etc. The number of such activities in a given school will, of course, depend upon the school's attitude toward their creation, the number of pupils enrolled and the number of teachers employed.

Progressive schools realize that these activities are of sufficient importance to entitle them to a regular period in the daily program. Naturally, these activities must be restricted in number in proportion to the limitations of enrollment and teachers available. The following weekly program for the extra-curricular activities period is suggested for the small high schools:

Monday—Home-room meetings (guidance should be emphasized).

Tuesday—Such work in physical education as the small high school can do.

Wednesday—Assembly.

Thursday—Clubs.

Friday—Class meetings, committee meetings, special assemblies and such work in music and art as the small high school can do.

1. Suggestions Relative to the Organization and Direction of Extra-Curricular Activities.

a. Each activity should contribute to one or more of the objectives of secondary education.

b. Avoid emphasizing one kind of activity, such as ath-

letics, debating or dramatics to the neglect of other forms of activities.

c. The principal should have general control of extra-curricular activities and should require that no activity be organized without his approval.

d. All extra-curricular activities sponsored by the high school should be under the supervision of some teacher employed in the school. This does not mean that the services of outside people should not be used, but that the responsibility for sponsoring any activity should be placed on some teacher in the school.

e. Activities should be sufficient in number to provide opportunities for all pupils desiring to participate.

f. Meetings should be held in the school building unless permission is secured to meet elsewhere.

g. The school should limit the number of organizations to which a pupil may belong. This will prevent overburdening the more resourceful pupils with work other than that connected with their regular school studies.

h. All money handled by organizations should be checked by the principal or a central auditing committee. These funds are semi-public funds and the board of education should hold the principal strictly accountable for them.

i. No activity should be organized that requires excessive expenditure on the part of pupils.

j. The school should guarantee absolute democracy as to admissions and requirements for all organizations.

k. Provision should be made for the guidance of pupils in making their selection of activities.

l. Teachers should be employed with the understanding that they are to direct some activity in addition to their regular class work.

m. Membership should be (1) restricted to pupils in good standing; (2) regulated by rules which prevent monopoly of activities by the more able or popular pupils; (3) determined on the basis of the pupil's interest and ability in the work of the organization.

n. The type of organization should be adapted to the

school. It is a mistake for small high schools to undertake an extensive program of extra-curricular activities.

o. Each pupil on those days in which he is not engaged in an activity should report to the study hall.

p. All organization meetings should employ the entire period. This calls for careful planning of the work.

q. The school should attempt to extend the influence of the extra-curricular activities program to the home and community.

2. Some Activities Which the School Should Provide.

It is obvious that not all of the many types of extra-curricular activities can be discussed in this chapter. It is believed that the following should be provided in all high schools: (a) athletics, (b) assembly, (c) home room, (d) club, (e) school paper, (f) dramatics. Large high schools can and should provide for such activities as the student council, band, orchestra, glee club, etc.

a. *Athletics.*

A reasonable amount of athletics should appear in every program of extra-curricular activities. There is real danger, however, that schools will overemphasize this activity. The principal should remember that the school should control its athletics; athletics should not control the school. Principals should read pages 249-262, McKown, *Extra-Curricular Activities*, for valuable suggestions relative to the management of interscholastic athletics.

In arranging interscholastic schedules, it is highly desirable that all games be scheduled to come on Friday or Saturday. Observation convinces one that scholastic standards are seriously affected where games are permitted in the middle of the school week. Not only the members of the team, but the pupils who attend the game are frequently in no condition to do satisfactory work the following day. Principals should take a firm stand in this matter even if it means going contrary to the wishes of the school's best supporters. It is also very desirable that the coach be a member of the teaching staff. If this is the

case, much friction is usually avoided and sports assume their right relation to other school activities.

b. *Assembly.*

The assembly offers the one occasion when the school is conscious of itself as a group. It furnishes a sure index to the quality of the school's life.

(1) Purposes of the Assembly:

- (a) To develop in the pupils initiative, leadership, cooperation and intelligent obedience to authority.
- (b) To create unity and good school spirit in the student body.
- (c) To create proper public opinion.
- (d) To cultivate power of expression before larger groups.
- (e) To foster a spirit of patriotism and appreciation for the best in music, art and literature.
- (f) To work for intelligent social behavior by building up proper habits and attitudes in audience situations.
- (g) To explore and vitalize classroom work through programs that grow out of it.
- (h) To add dignity to service in student organizations by appropriate public recognition of their work through the installation of officers and presentation of insignia.

(2) Types of Material Suitable for Assembly Programs.

Principals should consult Douglas, H. R., *Organization and Administration of Secondary Schools*, pages 255-256, for types of materials suitable for assembly programs.

(3) Suggestions Concerning Assembly Programs.

- (a) The assembly activity should be placed under the general supervision of an assembly committee composed of faculty members and

pupils. This committee should be selected by the principal. It should make out a program for each week that covers at least a month or even a semester in advance.

- (b) Principal and teachers should not dominate assembly programs. The program should feature pupil activity.
- (c) A majority of the assembly programs should grow out of the class or extra-curricular activities and in turn should be made to motivate and enrich them.
- (d) At least a part of each production intended for the assembly that grows out of class or extra-curricular activities should be rehearsed and criticised before being presented. This adds interest in the production as well as motivates and adds interest to the regular class or extra-curricular work.
- (e) Effort should be made to bring the public, especially the parents of pupils into the audience. This might be done through sending written invitations to the parents of the pupils having a part on the program.
- (f) Outside speakers and entertainers should be used when they can contribute to the problems and interests of the school. Protect the school from "exploiters," however.
- (g) The assembly is no place to scold or preach. All unpleasant things should be avoided as much as possible.
- (h) Every assembly program should "move." That is, it should begin on time, move toward a definite goal, and end on time.
- (i) It is suggested that during the assembly period, the pupils be seated in home-room groups under the direction of the home-room teacher.
- (j) Assembly programs should be free to the pupils. Avoid taking up collections.

- (k) Center the responsibility for each program. Be sure that the program is worth while.
- (l) Give the pupils as much responsibility for the program as possible. Planning the program is a valuable part of their training.

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- Priggs, T. H.—Assemblies in Junior High Schools—*Educational Administration and Supervision*, January, 1922.
- Cox, P. W. L.—*Creative School Control*, Chapter IX—J. B. Lippincott and Company.
- Evans—What to Do with the High-School Assembly—*School Review*, April, 1923.
- Foster, C. R.—*Extra-Curricular Activities in High School*, Chapter VI—Johnson Publishing Company.
- Fretwell, E. K.—*Extra-Curricular Activities*, Chapter IX—Houghton Mifflin Company.
- McKown, H. C.—*Extra-Curricular Activities*, Chapter V—The Macmillan Company, 1927.
- Wagner, M. C.—*Assembly Programs*—A. S. Barnes and Company, 1931.

c. Home Room.

The home room is the place where the pupil reports to the teacher at a designated time during the school day, usually the first period in the morning and the first period after lunch. Each week one of the activity periods should be devoted to programs given by the pupils in the home room.

The home room is the logical unit of extra-curricular activities because it affords close, personal contacts. Groups are already organized and of workable size. They contain two required elements—pupils needing guidance and inspiration, and a teacher trained to give both. Probably the best way to organize the home room in a school of average size, is according to classes. In small schools having two teachers, it is better, if at all possible, to combine the first and second years and the third and fourth.

(1) Purposes of the Home Room.

- (a) To provide a "home" for the pupils where intimate associations are made and used for individual and social growth.

- (b) To furnish a unit sufficiently small for the teacher to give vocational, educational and personal guidance.
- (c) To acquaint the pupils with the policies and regulations of the school.
- (d) To provide opportunities to develop the personal qualities of the pupil.
- (e) To form a basis for development of mass opinion.
- (f) To administer all routine matters of the group and the school.

(2) Programs.

Programs and program material may come from a variety of sources. Programs on such topics as good speech, courtesy, thrift, loyalty, contests, drives, etc., may come from a central source and be carried on by all home groups at the same time. Programs on such topics as how to study, leadership, special songs, etc., may be the work for only one home room. Much time and effort must be put upon the preparation of the program. Work must not be done by halves. Those who are to perform must give their best. It is well to plan the home-room programs at least one semester in advance. Some do it for the entire year. Planning in advance gives an opportunity to gather interesting material. It will also give time and opportunity to place in the library such material as may be purchased for use in preparing programs.

Topics may be worked out in considerable detail and the outlines mimeographed. This is very advantageous if several of the home rooms are studying the same topic. Examples may be found in *Extra-Curricular Activities*, by McKown, pages 32-37.

(3) Organization of the Home Room.

The home room provides the pupil with an excellent opportunity "to practice the qualities of the good citizen" and to develop such desirable characteristics as initiative, leadership, cooperation and intelligent obedience to authority. To train pupils in citizenship it is necessary that they be given freedom to share in the organization of their home room.

The pupils should elect their own officers. These officers should be elected for each semester and should consist of a president, vice president, secretary and treasurer. The president should assume formal control of the meeting. The teacher's function is to act as a guide. The secretary records the minutes of the meeting, reports them to the principal, council or whatever higher authority is designated. He finds out what other home rooms are doing and reports to his own home room. The treasurer serves as financial agent for the home room, turning all money collected over to the principal or school treasurer.

Certain committees are needed. Care should be exercised in deciding what committees there shall be and in the selection of the personnel. The following committees may be found of distinct service:

- (a) Program Committee. It is the duty of the program committee to arrange programs for the meetings. The student body of the room will be surveyed to find the interests, abilities and special talent of each member. Assignments will be made in accordance with the findings.
- (b) Scholarship Committee. The objective of the scholarship committee is the raising of the general scholarship of the group. It will find what other groups are doing. It will find weaknesses in its own group and suggest remedies.
- (c) Attendance Committee. The attendance committee takes charge of the routine matters of attendance and makes reports to the teacher. The teacher must carefully supervise the work of this committee. It may also assume the work of a welfare committee; visit the sick, help the needy, and do many things to encourage those in distress.
- (d) Housekeeping Committee. The housekeeping committee encourages respect for the room. Its members do not do the janitor's work, but

in keeping the room tidy and in decorating it, they demonstrate neatness and good house-keeping. This committee discourages the cutting, carving or other mutilation of desks or furniture.

These committees should probably be the standing committees. There will be a need from time to time for special committees to perform special functions; such as, socials, supplies, publicity, etc. When the work of the committee is done, it should be discharged so that its members are then ready for other assignments.

BIBLIOGRAPHY

Good and Crow—*Home-Room Activities*—Professional and Technical Press, 1930.

See bibliography at end of chapter for other references.

d. *Clubs.*

Fretwell, a pioneer thinker in the field of extra-curricular activities, says, "clubs exist in the school to find or follow up an interest in company with others of the same mind." Club life is mainly justified on the side of the leisure objective of education. Wise use of leisure depends on interests—their variety, depth and extent. The variety of worth while club activities which the average high school can provide makes it possible for the school to aid the individual in exploring, deepening and widening the interests which should abide.

Fretwell also contends that "wherever possible, club activities should grow out of the curriculum and return to the curriculum to enrich it." In other words, clubs should help in motivating and enriching the work of the classroom. Wherever possible, a club should be linked up with a course in the school. The Nature Study Club can grow out of the course in biology, the Latin Club out of the work in Latin, the Radio Club out of the work in physics, the Shakespeare Club out of the course in English literature, and the Life-Saving Club out of the work in health and physical education. Under wise leadership and direction the results of the activities of such organizations can

be made to return to the classroom to supplement and enrich the courses out of which they grow.

(1) Organizing a Club Program.

The following is suggested as a desirable procedure for establishing a club program in small high schools:

The principal through interviews discovers the particular club interests of his teachers by having them express their first, second and third club choices. He now prepares a list of the clubs for which he has sponsors. The pupils are provided with this list. The principal in the assembly and the teachers in the home rooms talk to the pupils about initiating a club program in the school and in a general way discuss the purposes and nature of the clubs for which the school has sponsors. The pupils are given a few days to think over this list of clubs before they are asked to make their choice of these activities. One of the home-room periods can be used for club enrollment. This period should be at least sixty minutes in length on the day that the enrolling is done. At this period the home-room teachers give the pupils directions as to where the sponsors of the various clubs are located in the building. The pupils are told that the period has been divided into four sessions; that when the first bell rings they are to go to the room of the sponsor of the club of their first choice; when the second bell rings they are to go to the club of their second choice for the same length of time; then to the club of their third choice, and then to return to their home room for the last session of fifteen minutes. The sponsors, during each of the first three sessions, explain and answer the questions regarding the purposes, the anticipated values, and the general nature of the clubs they are sponsoring. When the pupils return to their home rooms they are asked to write the clubs of their first and second choice and to write their reasons for making their first choice.

Occasions may arise when it is found that more pupils have expressed a preference for a given club than can be accommodated. In such a case, those who have given the best reasons for selecting this club should be enrolled, while the others should go to the club of their second choice. This does create an unfortunate situation for those who must take a club of their second

choice, still in schools with few teachers, this seems the only alternative.

The procedure here outlined, or any similar procedure, should result in the pupils having a fairly intelligent understanding of the interests and purposes that the various clubs in the school are seeking to meet.

(2) Questions Concerning the Administration of Clubs.

(a) *What should be the internal organization of a club?*

If pupils are to be educated in the intelligent selection of leaders and in the obligation of intelligent obedience to authority, they should have a voice in the selection of their own leaders. These selections should not be made until the pupils have had an opportunity to discuss freely and thoroughly the qualities which officers for certain positions should possess. The pupils should feel that they belong to a club that is their "very own." Club meetings should be conducted by the student officers in parliamentary fashion. No officer should be elected until a definite job has been found for him. Have few standing committees. The program committee should, of course, be one of these committees. It is better organization to appoint most of the committees as they are needed and then to discharge them after they have performed their duties.

(b) *Should pupils be required to belong to a club?*

Signing for a club should not be compulsory. It should be the ideal of the school to have every pupil from his own choice, based on his interest, become a member of some club activity.

(c) *What should be the program of a club?*

Club programs should grow out of the interests of the pupils. Each club must make its curriculum as it develops. Throughout the building of the program of a club, the sponsor should keep in mind that "the pupil's point of view must be the starting point. Sponsors must so arrange and guide the situation that the pupils will go from where they are to where they ought to be."

Club programs should have variety and not be too formal.

Social, recreational, humorous, and other types of programs should be interspersed with the regular activities of the club.

The program committee, of which the sponsor is a member, should exercise care and thought in planning and preparing the programs of the club. The fact that clubs should grow out of the spontaneous interests of pupils does not mean that reliance can be placed upon spontaneity to shape the program of the club after its meetings begin. Each program must be planned beforehand in line with the interests of the group. In order to have this preparation and to prevent a club's meetings from degenerating into uninteresting routine, some schools have the meetings of a club two weeks apart. This means that one group of clubs meets at the club period one week and another group of clubs meets at this period the next week.

(d) *Should a limit be placed upon the number of clubs to which a pupil may belong?*

It is doubtless a wise policy to limit pupil participations to two clubs. Exceptions might be made in behalf of those pupils who are high in scholarship and who show a variety of interests.

(e) *How long should a pupil be a member of a particular club?*

When a pupil joins a club it should be with the understanding that he will continue as a member until the end of the semester. This requirement will work for the general good of the club program of the school and will tend to cause the pupil to consider such membership seriously.

(f) *Who should be sponsors?*

Members of the faculty.

(g) *Who should appoint them?*

The principal.

(h) *How many clubs should a teacher be expected to sponsor?*

Not over two clubs should be sponsored by a teacher unless allowance is made in her teaching schedule. It is difficult to conceive of a teacher who would not be genuinely interested in

at least two of the following types of club activities, whose names usually indicate their purpose: Hiking Club, Nature Study Club, Bird Club, Glee Club, Orchestra, Short Story Club, Garden Club, Literary Club, Latin Club, Radio Club, History Club, Home Beautiful Club, Community Beautiful Club, Dramatic Club, Wild Flowers' Club, Canning Club, Art Club, Camera Club, Booklovers' Club, Nursing Club, Travel Club, Star Study Club. The following is an illustration of how the clubs in one five-teacher school have been distributed among the teachers:

Teacher A—Debating Club and Community Beautiful Club.

Teacher B—Guidance Club and Dramatic Club.

Teacher C—Short Story Club and Art Club.

Teacher D—Nature Study Club and Canning Club.

Teacher E—Poultry Club and Travel Club

(i) *For how long a time should sponsors be appointed?*

As long as their interest and enthusiasm in the club and its activities last.

Club life must be a happy life—a life of enjoyment. Sponsors must be interested in and enthusiastic about the activities of the club because interest and enthusiasm are at the heart of successful club life.

The following publications should be in the hands of all club sponsors:

Blackburn, Lula—*Our High-School Clubs*—Macmillan and Company.

McKown, H. C.—*School Clubs*—Macmillan and Company.

Stern, R. B.—*Clubs, Making and Management*—Rand, McNally and Company.

e. *School Paper.*

(1) The Purposes of the School Paper Are:

- (a) To give authentic school news to the school, parents and community.
- (b) To build up the morale of the school.
- (c) To furnish the pupils a motive for writing. The newspaper should be regarded as laboratory work in English.

- (d) To advertise the school in the home, and give the people of the community "more progressive ideas of education and a better understanding of local school needs."

(2) Types of School Papers.

- (a) Mimeographed. Some of our smaller Kentucky high schools have creditable papers of this character.
- (b) Section in local paper. Great care should be exercised with the personal news in these columns, because the newspaper goes into nearly every home.
- (c) Paper published outside of school. This paper would contain only accounts of school activities.
- (d) Published in school.

(3) Suggestions.

- (a) Every high school should have some form of newspaper, if it is nothing more than several pages written in longhand pinned on the bulletin board.
- (b) Advertisements should not be solicited unless the paper has a distinctive advertising value. If advertisements are sold, the customers should not be allowed to regard it as charity.
- (c) The paper should contain wholesome news, free from faculty dominance. Emphasis should be placed on news value.
- (d) The paper should be free from cheap humor.
- (e) A teacher of English is the logical sponsor for this activity.
- (f) The editorial and business staff should be named by the faculty adviser and his choice should be approved by the principal.
- (g) Definite duties should be assigned each staff

worker and he should be held strictly accountable for the performance of these duties.

- (h) The school paper should be regular in its publication—probably biweekly or monthly.

(4) Standards Used in Judging High-School Papers.
(McKown, *Scholastic Editor*, pages 359-360)

- (a) Newsiness.
- (b) Standard of news. Writing of news must be of high standard. It must have clearness and and be readable.
- (c) The size up of the first page.
- (d) Inside pages. These should rank with the front page in quality.
- (e) Editorials and humor column.
- (f) Headlines, makeup.
- (g) General considerations.
- (h) Size. A first-class paper need not necessarily be a large one.

The term "school paper" as used here is broad, purposely including publications which appear twice a week, weekly, or biweekly, and the monthly magazines that are sometimes published in the larger schools. Annuals or yearbooks do not come under this classification, because it is felt that they do not have sufficient educational value to justify the incidental and necessary time and expense. The final issue of the monthly magazine or of the newspaper might appropriately be a "graduation number" containing material pertaining to the outgoing class, together with a group picture and other appropriate cuts. The whole graduation number might be the production of the senior class and be devoted exclusively to the class history and achievements.

The following list of books will provide valuable material and interesting reading for the editor and his staff:

Bleyer, W. G.—*Newspaper Writing and Editing*.

How to Write Special Feature Articles—Houghton Mifflin.

Dibblee, G. B.—*The Newspaper*—Holt.

Given, J. L.—*Making a Newspaper*—Appleton.

Harrington—*Writing for Print*—Heath

Harrington and Frankenburg—*Essentials of Journalism*—Ginn.

Hawkin—*Newspaper Stories*.

Ross, C. G.—*The Writing of News*—Holt.

f. *Dramatics.*

The aim of dramatics is to afford the pupil the benefit derived from participation. Pupils are interested in dramatics. Most of them desire to act. Through dramatics, the adolescent receives a type of training which he especially needs. This type of activity is also especially desirable as a means of bringing parents and people of the community into closer contact with the school.

The common dramatic activities are: (1) plays, (2) pageants, (3) circuses, (4) fairs, (5) puppet shows, (6) pantomimes.

(1) The High-School Play.

(a) The play should be carefully selected:

- 1) Be sure that the play is within the ability of the pupils.
- 2) Do not choose plays with questionable ideals.
- 3) One act plays offer greater educational opportunity than the longer plays.

(b) All pupils should be encouraged to take some part. Double casts should be assigned if possible.

(c) The admission price should be reasonable. Making money is not a valid purpose for dramatics. The production of plays should be kept simple. Long rehearsals should be avoided.

g. *National Honor Society.*

The National Honor Society is the best known organization which takes cognizance of the scholarship of high-school pupils. It has many advantages:

- (1) It has definite, clear-cut standards of scholarship.
- (2) Eligibility of a student is determined by rank rather than by marks.

- (3) It is national and is fostered by the National Association of Secondary-School Principals.

The Department recommends that where possible a chapter of this organization be organized in each high school. To get in touch with the organization write H. V. Church, Cicero, Illinois.

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CHAPTER VII

THE HIGH-SCHOOL LIBRARY

1. Introduction.

It is agreed that a library is one of the principal features of any educational institution and that there is a direct relation between the efficiency of a school and the extent of its library facilities. It is unquestionably the greatest single aid in the way of teaching equipment to be found in the school.

The charge is frequently made that schools are too much circumscribed by the textbook. To overcome this defect in the teaching process one must seek to develop in the pupil a desire to become familiar with the best that has been written in the various fields of knowledge. By being taught to use and respect good books a pupil may procure as varied and valuable information through his own initiative as he can obtain in a classroom when the textbook is his sole instructional inspiration.

It is hoped that as secondary education develops in Kentucky, the high-school library will become the correlating center of school activities. As such, it should be made to contribute directly to the effectiveness of instruction as well as to serve as a medium for providing training in "motivating the life of the pupil outside the classroom."

2. Location, Size and Equipment of the Library.

a. *Location.*

It is usually contended that the high-school library is most satisfactorily located in the central part of the building, near the study hall, but separate from it.

Many high schools cannot provide a separate library room. It is possible for many of these schools to have the library and study hall adjoining and provided with a large opening between, so that the teacher in charge of the study hall may exercise proper supervision of the library. Accessibility of the library to pupils in the study hall is especially desirable. Frequently there is much unused space in the study hall that can be set apart and used for the library.

b. *Size.*

The size of the library quarters is determined by the number of pupils to be accommodated at the tables. The number of tables and chairs should be sufficient to take care of approximately fifteen per cent of the enrollment.

c. *Lighting and Finish.*

The quarters provided for the library must have plenty of light. If artificial lighting is necessary, it should be by means of electric ceiling fixtures of an indirect or semi-direct type. Wall lighting fixtures should be avoided. Table light fixtures are unnecessary. They seriously hamper the free use of the table space and prevent the easy arrangement of tables for various uses to which the quarters should be put.

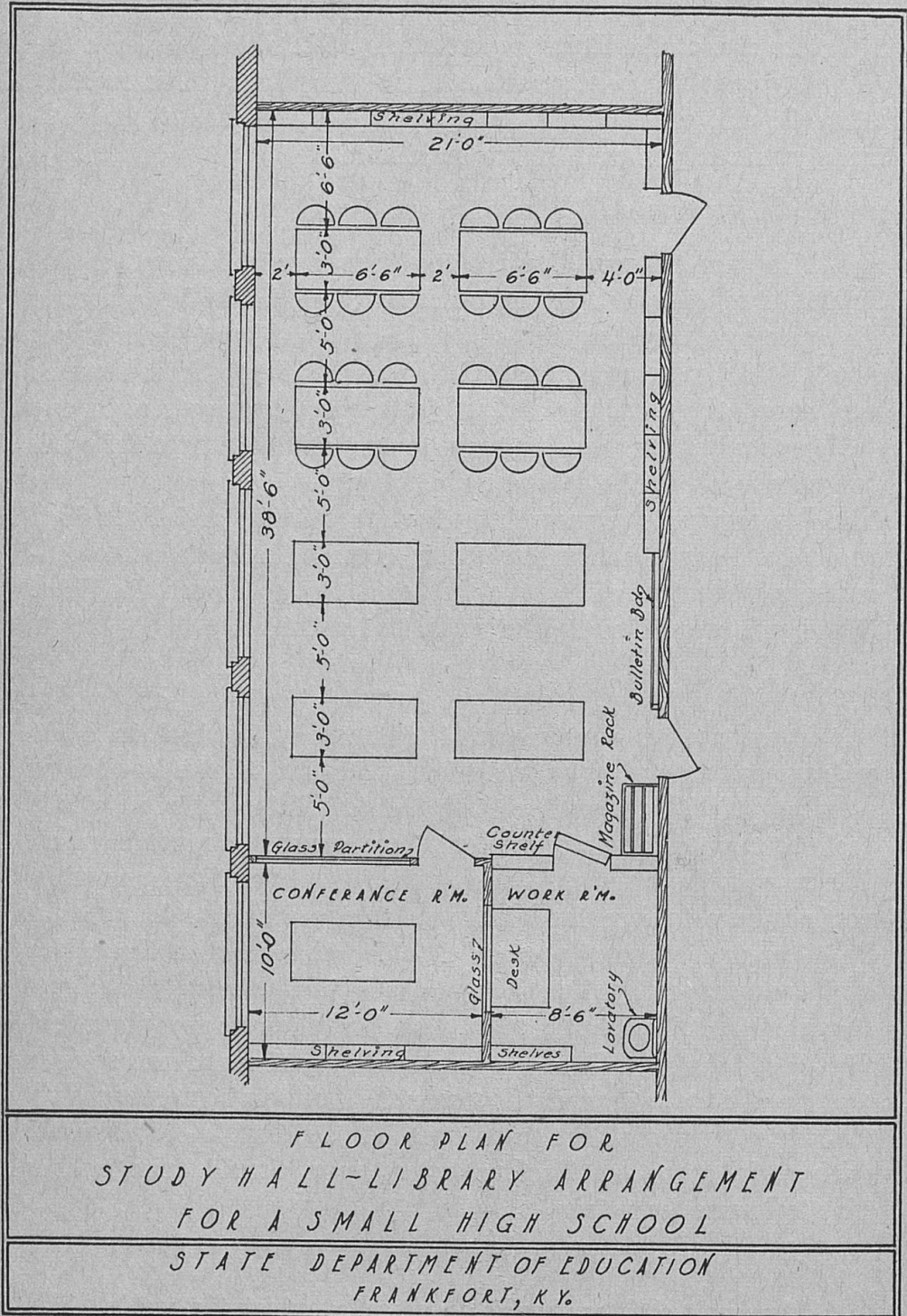
Experience has proved that white ceilings and light buff colored walls are best for the library room. Dark colors in woodwork and trim should be avoided, so as not to absorb the light. Woodwork should be finished with flat varnish.

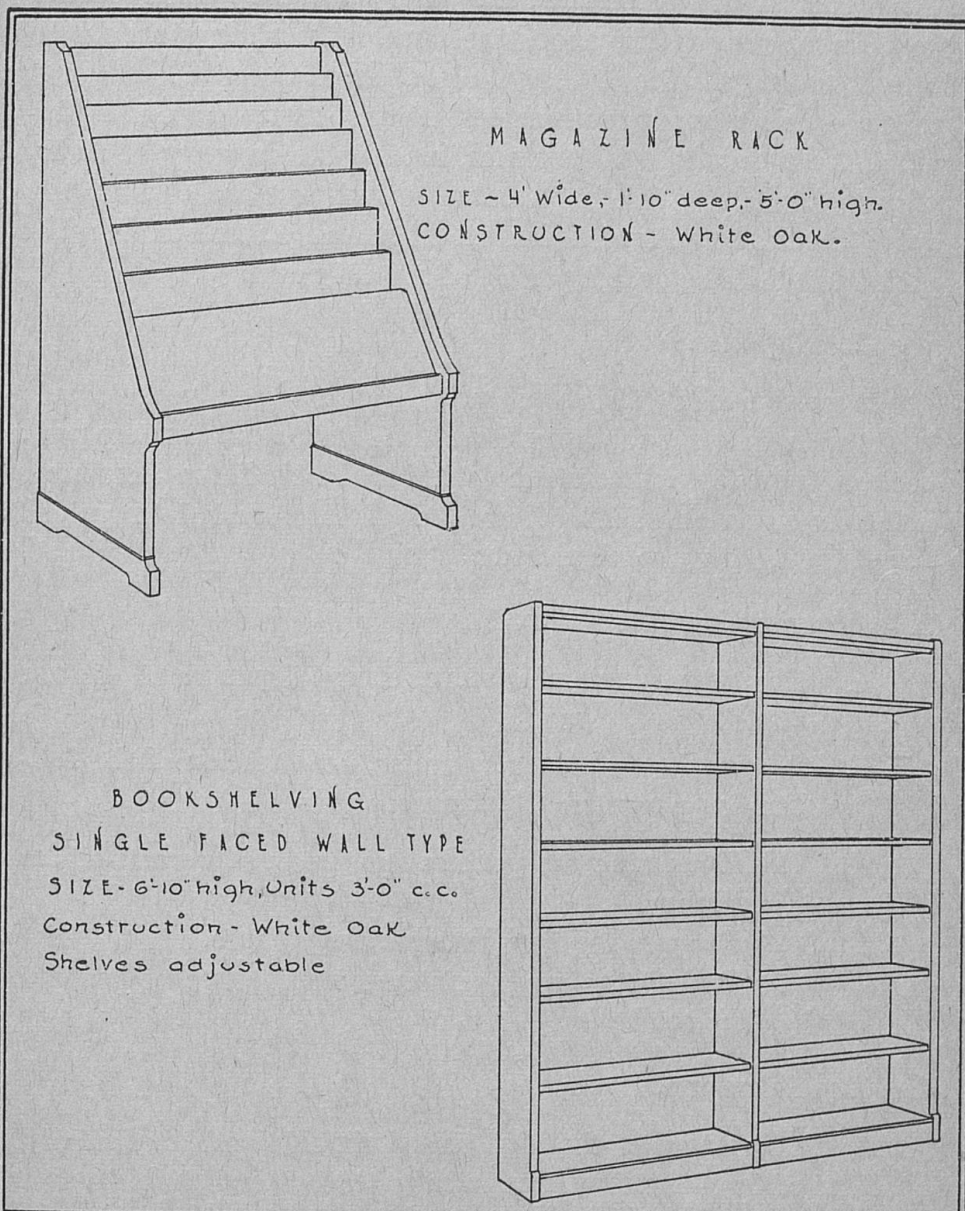
d. *Furnishings.*

Furniture of quarter-sawed white oak, finished in light natural color, is most satisfactory. The light finish has better wearing qualities than the dark finish. Tables, three by five feet, accommodating six students, are generally recommended. The rows of tables should be so placed that the fewest possible readers have to face the windows. A space of five feet should be allowed between the rows of tables and between the tables and the adjacent walls. Light, comfortable chairs, a flat top charging desk for the librarian, desk for reference work, vertical files, dictionary stands, newspaper and magazine shelves, cabinet and stand for the card catalog case and bulletin boards complete the list of essentials in furniture. If the floor is not covered with cork, carpet or linoleum, the chairs should have rubber tips to lessen the noise.

e. *Shelving.*

The book shelves should be placed against the walls. The cases should be made with adjustable shelves, should not be over seven feet high and should accommodate six or seven shelves.

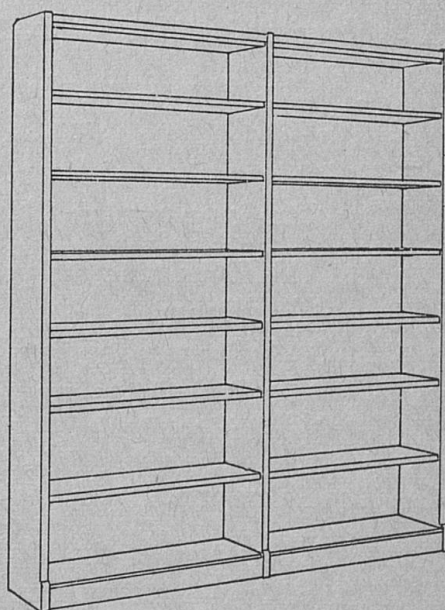




MAGAZINE RACK

SIZE - 4' Wide, 1' 10" deep, 5' 0" high.
CONSTRUCTION - White Oak.

BOOKSHELVING
SINGLE FACED WALL TYPE
SIZE - 6' 10" high, Units 3' 0" c.c.
Construction - White Oak
Shelves adjustable



LIBRARY FURNITURE

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Open shelves are recommended. The stationary shelf should be three or four inches above the floor. The shelves should be three feet long, ten inches high, eight inches deep and one inch thick. One section of ten inch or deeper shelving should be provided for over-sized books. In estimating the capacity of shelving, eight books to the foot should be used as a basis. Shelving space should be provided for the books on hand and for the probable additions over a period of several years.

f. *Supplies.*

Accession shelf list cards with guides, book pockets and book cards, date slips, library stamp and date stamp, stamp pad, book supports, David's white letterine, black India ink, bowl pointed pens, white shellac brush, alphabetic and date guides for charging tray, catalog cards.

3. Organization and Control.

- a. The library should serve every department of the school.
- b. A committee of teachers under the direction of the full-time or part-time librarian should:
 - (1) Determine the policies for the development of the library.
 - (2) Prepare regulations regarding its use.
 - (3) Budget the appropriated funds.
 - (4) Select books.

4. The Librarian.

"The librarian in the high school should combine the good qualities of both the librarian and the teacher and must be able to think clearly and sympathetically in terms of the needs and interests of high-school pupils."

The faculty of a high school should be so selected that one of the teachers will have had some training in library science. In small high schools this teacher should give part-time to the library. She should have at least six weeks' training in an approved library summer school. This teacher should be relieved of some of her regular class work in order that she may super-

vise rather closely the work of the library. She should not be asked to do outside work, such as supervision of the assembly room or coaching. She should train one or more reliable pupils to assist her in order that the library may be open all day.

A full-time librarian, with the professional training of a one-year course in an accredited school for librarians, is the ideal. If college training is essential for the high-school teacher, then college and technical training are essential qualifications for the librarian. The librarian should have a wide knowledge of books, ability to organize material for efficient service and should have had a successful experience in reference work.

A good school librarian :*

- a. Stimulates in boys and girls a desire to read and possess books.
- b. Develops reading tastes and encourages reading for pleasure and profit.
- c. Gives pupils systematic instruction in the use of books and libraries.
- d. Renders intelligent and professional service to teachers and administrators.
- e. Makes the library the center of school activities.
- f. Knows and makes use of public library, state library, and other available library organizations.

The salary of the librarian should be the same as that paid high-school teachers where qualifications are equal.

The amount of service of the librarian should be :

a. A full-time librarian should be provided in schools that have an enrollment of 500 or more pupils. The professional preparation of the librarian should include a four-year college course. The library training should consist of one year of work in an accredited library school.

b. A part-time librarian (who teaches not more than three classes) should be provided in schools that have an enrollment of from 300 to 500 pupils. A minimum of twelve weeks' training in library science is required.

*Adapted from the *Indiana Library Manual for Secondary Schools*. 1929.

c. A part-time librarian (who teaches not more than four classes) should be provided in schools that have an enrollment of from 100 to 300 pupils. A minimum of at least six weeks' training in library science is essential.

d. A part-time librarian (who teaches not more than five classes) should be provided in schools that have an enrollment of less than 100 pupils. A minimum of at least six weeks' training in library science is essential.

5. Training Pupils in the Use of the Library.

Every pupil should be required to use the library intelligently. In order that he may use the library to the best advantage, it is recommended that some time be given to careful, systematic and thorough instruction in the use of the library. It is preferable that the time devoted to this instruction should be taken at the beginning of school or as soon after that time as possible. This may be carried on in various ways: (a) By teachers in the English department giving a certain amount of time to specific instruction in the use of the library; (b) by periods of actual practice in finding information on subjects specifically assigned; and (c) by talks in assembly by the librarian or some one equally conversant with the library.

The following points should be covered with the pupils:

- a. Arrangement of library.
- b. Classification scheme.
- c. Use of card catalog.
- d. Content and use of outstanding reference books.
- e. Care of books.
- f. Physical makeup of books, with emphasis upon such features as index, table of contents, imprint and copyright dates.
- g. Introduction to the best periodicals.
- h. Use of periodical index.

6. Appropriations.

Books cost money. The maintenance of the library should not depend upon incidental sources of money, such as school entertainments and socials. The school board should definitely support the library by annual appropriations.

- a. There should be an annual appropriation of at least one dollar for each pupil enrolled.
- b. This appropriation should be exclusive of sums appropriated for salaries and library furnishings.
- c. Extra appropriations should be made for (1) sets of encyclopedias and unabridged dictionaries, (2) sets of supplementary readers.

7. Book Collections.

See approval and accrediting regulations for the number of books required in various types of high schools.

The book collection should provide for:

- a. Reference books.
- b. Books supplementing all classroom assignments.
- c. Books for general reading.
- d. Magazines.
 - (1) At least 5 periodicals for schools with less than 100 pupils.
 - (2) At least 10 periodicals for 100 to 500 pupils.
 - (3) At least 20 periodicals for 500 or more pupils.
 - (4) The "Reader's Guide to Periodical Literature."
- e. Clippings, bulletins, pictures, posters, etc., should be kept in the library in a vertical file.

Books should be kept in good condition and rebound when needed. The collection should be classified by a simplified scheme of the Dewey Decimal Classification and should be organized with an accession shelf list and an adequate charging system. A card catalog is strongly recommended, but should not be attempted unless the librarian has had a technical course in library cataloging.

The volume entitled *Standard Catalog for High-School Libraries*, edited by Zaidee Brown and published by the H. W. Wilson Company, New York, contains a carefully annotated list. A copy of this valuable guide should be available to and studied by all principals and teachers before contemplated purchases of

books for the high-school library are made. Only authentic reference books are worth procuring.

In choosing reference books it is usually better not to expend funds for extensive sets along certain lines, such as a ten volume set in history, a twenty-four volume set in literature, or complete sets of works of an author. It is usual that only a few volumes of such sets will ever be needed or used by the school. Single volumes or small sets are of more service to schools. This, of course, does not apply to the purchase of a general encyclopedia.

8. Finding Room for the Library in Small Schools.

Inadequate building space for the library in small systems which are over-crowded can be solved in many instances. Take, for example, a four-teacher high school which has available only four classrooms and is confronted with the necessity of scheduling the classes of four different grades, and in addition, providing for a library. If this school were to schedule on the following basis there would be no difficulty arising from lack of space: In room number one, teach the four classes of English and two of foreign language, total six classes; in room number two, teach the three classes of mathematics and four of social studies, total seven classes; in room number three, have recitations and laboratory work for the sciences (equip with tables and chairs or stools, not desks or armchairs); in room number four, have the library and study room (provide standard shelving, tables and chairs, not desks).

9. Library Economy (Libraries, Rules, Administration, Cataloging, Book Lists, etc.)

See *Standard Catalog for High-School Libraries*, published by H. W. Wilson Company, for aids in library economy.

10. Supervisor of Library Service.

The State Department of Education maintains a Division of Library Service. The Supervisor of this Division will gladly furnish expert service in assisting local schools in organizing their libraries, in selecting suitable books and in planning for better library service. This service is free of cost to the schools.

11. Library Supply Houses.

Demco Supply Company, Madison, Wisconsin; Gaylord Brothers, Syracuse, New York; Library Bureau, Rand Kardex Company, 214 West Monroe Street, Chicago, Illinois.

12. Method of Purchase.

Schools may order direct from the publishers or through book sellers. In ordering state author, title and price. If ordering from book dealers, state name of publisher also.

With the exception of a few classes of books, discounts approximating twenty to twenty-five per cent from publisher's prices should be granted to school libraries.

CHAPTER VIII

THE SCIENCE LABORATORY AND OTHER NEEDED EQUIPMENT

1. The Science Laboratory.

Due to the rapid growth of high schools and the difficulty of providing adequate housing facilities for ever increasing enrollments, it is not surprising that the special facilities needed for the teaching of the sciences are often lacking. The chief sciences taught in the high schools of Kentucky are general science, biology, physics and chemistry. Usually one of these sciences is required for graduation. It is the purpose of this section to offer suggestions pertaining to the basic essentials of a laboratory in which these and related subjects are taught. This section is divided into two parts; the first deals with the equipment layout, meaning the more or less stationary and permanent layout; and the second, with apparatus, meaning material which is movable and which must be renewed from time to time.

a. *Equipment.*

(1) The Science Room. The number of rooms required depends upon the size of the school. In the average small high schools in Kentucky all the sciences may be taught in one room which serves as both recitation room and laboratory, provided there is an adjoining room of ample size to be used as a workshop, dark room and storage room. This adjoining room is essential to good science teaching and is a feature often overlooked in schoolhouse planning. The science room should be unilaterally lighted. The orientation of science rooms is not of great importance, but under no circumstances should a room be selected unless sunlight enters some time during the day. For sciences requiring growing plant or animal life, southern exposure is preferable. The room should be at least twenty-one feet wide and long enough to accommodate the desired enrollment. A room twenty-one feet wide and thirty-two feet long

will accommodate twenty-four pupils at a time for laboratory work and thirty or more pupils for recitation purposes when the room is not in use as a laboratory. For each additional four pupils in laboratory class, four feet six inches additional length is necessary.

(2) Laboratory Furniture. The type and location of the furniture needed for the science room should be determined at the time the school building is planned in order that proper provision may be made for the necessary service outlets. Laboratory furniture may be planned by the architect and built into the building by the contractor or it may be purchased from factories specializing in laboratory furniture. The best results occur when school officials, architects and manufacturers of laboratory furniture cooperate to get a laboratory layout well adapted to local needs. Storage shelving and cabinets, germinating beds and other accessories may often be secured more economically if included in the general contract for the building. On the other hand, laboratory tables and chairs, fume hoods, instructors' desks, aquariums, etc., should be purchased from manufacturers who specialize in laboratory furniture and consequently are in a position to furnish a better made and more convenient product.

Experience has shown that ordinary furniture will not stand up under the abuse which laboratory furniture is sure to get, consequently laboratory furniture should be constructed of heavy material and strategic points should be reinforced with steel bolts. The tops of science tables should be treated on the under sides with a paint capable of resisting acid and moisture, and on the upper side with a standard, acid-proof finish which leaves a surface that furnishes a high degree of resistance to heat, acids and alkali. Plumbing fixtures for laboratories should be much harder and stronger than are ordinarily used. Laboratory sinks should be made of a special chemical stoneware or of soapstone.

Every laboratory should have a teacher's demonstration table. This table should be approximately sixty inches long, thirty inches wide and thirty-four inches high. It should contain at least four drawers, a cupboard, a stone sink, a set of metal uprights with cross-bar, and gas, water and electric out-

lets. It is also highly desirable to have an aquarium adjacent to the instructor's desk.

In general, there are two types of student's tables; one type seats two pupils facing in the same direction; the other type seats four pupils in pairs, facing each other. For small high schools in which the laboratory must also serve as a recitation room the smaller tables seating two pupils is to be preferred since it permits proper seating and lighting. Experience has shown that a table sixty inches long, twenty-two inches wide and thirty inches high will adequately accommodate two pupils. Each table should have two and preferably four drawers, a double cupboard, metal uprights with cross-bar, and should be provided with gas and electric outlets. If chemistry is taught, there should be a sink between every two tables, and adequate fume hoods to carry off obnoxious gases. Chairs, rather than stools, are recommended.

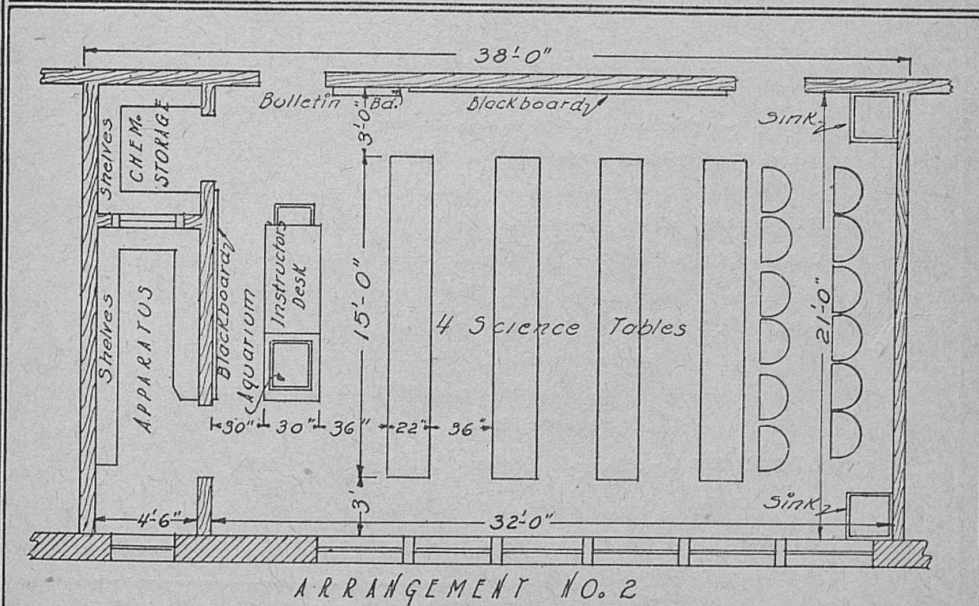
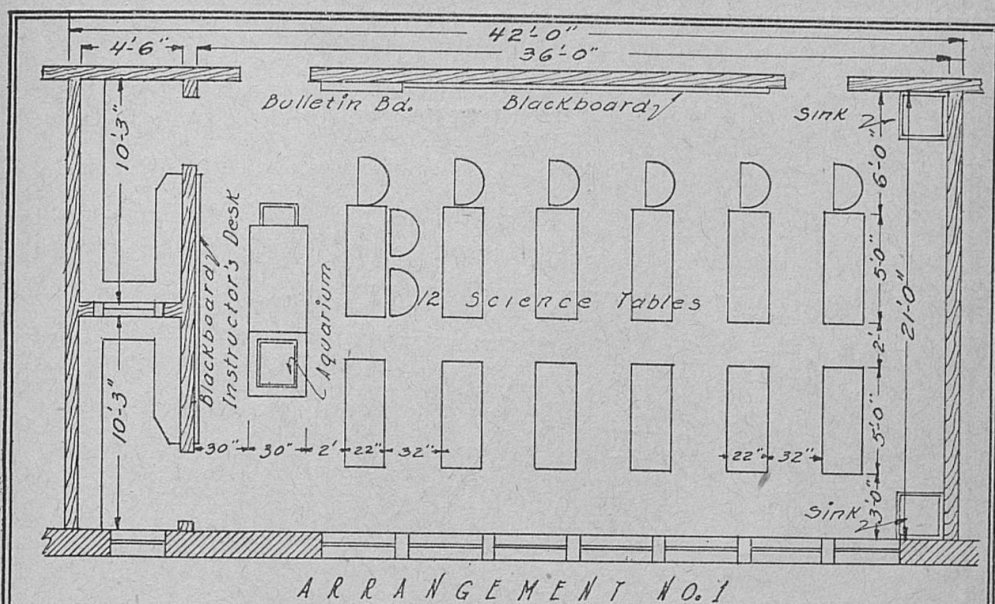
Additional equipment needed varies with the sciences offered. Cupboard storage, germinating beds, sinks and additional shelving, should be provided where needed. The science room windows should be equipped with black shades, boxed in, so that the room may be quickly darkened for the use of projection screen and lantern, or motion pictures.

b. *Laboratory Layout.*

Teachers of science and administrators should carefully study the illustrated laboratory layouts and laboratory furniture which are depicted in the following pages. A brief discussion of each laboratory layout follows:

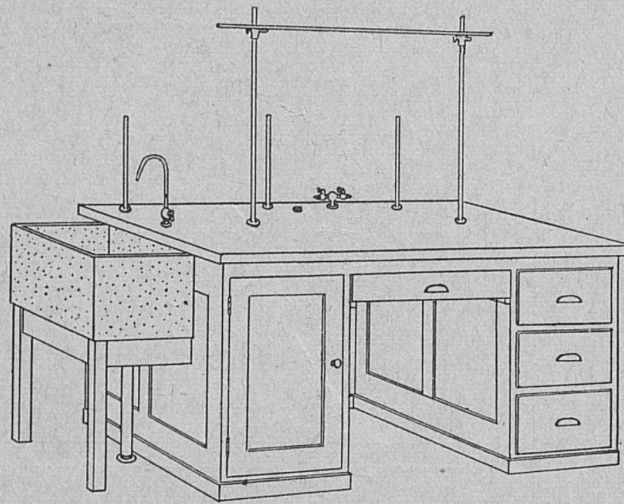
Arrangement Number 1. This shows the floor plan of a laboratory 21 x 36 feet, intended for general science, biology and physics. The room is furnished with 12 students' tables, each designed to accommodate two pupils for laboratory or recitation purposes. The figure also shows suggestive placement of additional armchairs for class recitation. Small rooms at the front of the classroom are for the storage of apparatus and equipment. Separate drawings of the instructor's desk and student's table Number 2, with which this room is furnished, are also shown.

Arrangement Number 2. This arrangement is also intended for general science, biology and physics. In this layout the



COMBINATION SCIENCE LABORATORIES
FOR GEN. SCIENCE, BIOLOGY, PHYSICS, & H. S. RECITATION.
Capacity - 24 Pupils for laboratory
30 Pupils for recitation

STATE DEPARTMENT OF EDUCATION
FRANKFORT, KY.



INSTRUCTOR'S DESK

SIZE ~ 5'-0" Long x 30" Wide x 34" High

DRAWERS ~ 3 @ 13 $\frac{1}{4}$ " Wide x 7 $\frac{3}{8}$ " High x 20 $\frac{3}{4}$ " Deep

1 @ 22 $\frac{1}{2}$ " " x 4 $\frac{1}{4}$ " " x 20" "

CUPBOARD 14 $\frac{3}{4}$ " x 26 $\frac{3}{8}$ " x 24 $\frac{1}{2}$ "

CONSTRUCTION ~ 1 $\frac{1}{8}$ " Birch, finished black acid proof top
Oak Body.

FIXTURES ~ 1 Single Pantry Cock

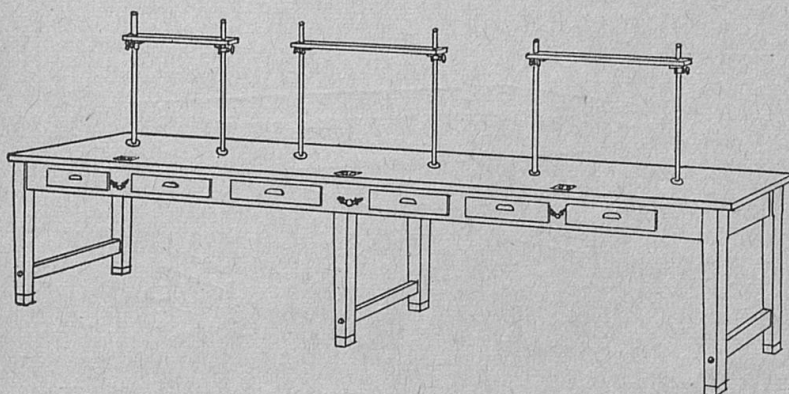
1 Double Gas "

1 Set Metal Uprights With Cross Bar

3 Burette Rods. 1 Elec. Outlet.

STONE SINK ~ 18" Long x 15" Wide x 12 $\frac{3}{4}$ " Deep

LABORATORY FURNITURE
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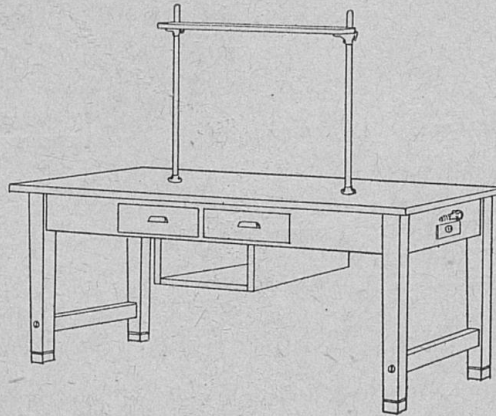
STUDENT'S TABLE NO. 1

SIZE ~ 15'-0" Long x 22" Wide x 30" High

CONSTRUCTION ~ 1-5/8" Birch - Black Acid-Proof Finish Top.
White Oak Body.

FIXTURES ~ 3 Double Gas Cocks
3 " Electrical Outlets
3 Sets Metal Uprights with adjustable wood cross bars.

LABORATORY FURNITURE
STATE DEPARTMENT OF EDUCATION
FRANKFORT, KY.



STUDENT'S TABLE NO. 2

SIZE - Top 5'-0" long x 22" wide x 30" High

CONSTRUCTION-

Top- Birch, Black acid resistant - Alternate pressedwood
Body- White Oak " Pine

FIXTURES- 2 single gas & 2 Electric Outlets, Metal uprights & crossbars

2 DRAWERS

OPEN SHELF 8' x 20" x 20"

LABORATORY FURNITURE
STATE DEPARTMENT OF EDUCATION
FRANKFORT, KY.

room is 21 x 32 feet, and is furnished with four tables, each accommodating six pupils for laboratory work. Additional tablet-armchairs may be placed in this room for class recitation. Separate drawings of the instructor's desk and student's table Number 1, with which this room is furnished, are also shown.

Each of these arrangements may also be used for chemistry work by providing additional sinks. In Arrangement Number 1, the sinks would be placed between every other pair of students' tables. If chemistry is also taught and Arrangement Number 2 is desired, students' tables should be used which provide built-in sinks.

c. *Science Apparatus.*

Apparatus for the laboratories should be ordered during the spring or summer for the opening of school in the fall. An inventory of apparatus and equipment should be prepared and kept up to date by checking not less than once a year. The school budget should make provision for broken or obsolete apparatus and for growth of the laboratory from year to year.

General Science

The list of equipment outlined herein is for small classes. Materials should be added depending on the size of the class. If funds are limited, those items marked with the dagger (†) may be omitted and the minimum required apparatus and supplies will be considerably reduced.

Some of the material outlined herein may be bought locally, but the greater part will have to be secured from a company dealing in laboratory apparatus. If more than one science is taught, it is not necessary to duplicate any of the items which are available for any of the other sciences included in this list, other than duplications for individual or group experiments.

A large number of articles of scientific interest will cheerfully be donated or loaned by stores, telephone offices, garages, car owners and homes. It is desirable, however, that as soon as possible the science laboratory secure equipment of its own instead of borrowing articles from members of the community. There are many charts, maps, samples, etc., that may be had for the asking from the larger industrial firms, the State Uni-

versity and the United States Printing Bureau. A great deal of apparatus may be improvised by an ingenious instructor and his class. Descriptions of improvised apparatus may be found in such books as Woodhull's *Home-Made Apparatus*, (Barnes), Good's *Laboratory Projects in Physics*, (Macmillan), Downing's *Field and Laboratory Guides in Biological and Physical Nature Study*, (University of Chicago Press). *The Monthly Guide for Science Teachers* and its successor *The Science Classroom*, (Popular Science Monthly Publishing Company) have a section each month given to description of apparatus any pupil or teacher can make.

**Apparatus and Supplies—
Required**

(Sufficient for one group of students)

- | | |
|---|---|
| 1 file, triangular, 6". | 1 rubber balloon, small. |
| 1 meter stick, graduated to both mm and $\frac{1}{8}$ ". | 1 calorimeter, drawn polished aluminum, 12.5 cm high, 7 cm dia. |
| 1 wheel and axle, bakelite, diameters of wheels in ratios of 1, 3, 5 and 7. | 1 calorimeter, with cover and stirrer, 14 cm high, 11 cm dia., capacity 250 cc. |
| 2 single pulleys, bakelite, 5 cm in dia. | 1 soft iron bar, rectangular, 9.5 x 2 x 0.6 cm. |
| 2 double pulleys, bakelite, 5 cm in dia. | 1 bar magnet, rectangular, polished steel, 15 x 1.9 x 0.7 cm. |
| †1 rotator, hand form, driving ratio 8 to 1. | 1 horseshoe magnet, 10 cm long. |
| †1 siren disc, 5 rows of holes. | †1 Toepler-Holtz static machine, stationary glass plate, 14" dia. |
| †1 set color discs, 16 discs, in two sizes, with graduated reference discs. | †1 electrophorous, large size, disc 20 cm dia., hard rubber plate on stand, 30 x 30 cm. |
| 1 waterproof block, wood, 7.5 x 7.5 x 3.8 cm. | 1 friction rod, hollow glass, 25 x 1.3 cm. |
| 1 aquarium, battery jar, round, 5" x 7", 2 qt. | 1 friction rod, vulcanite, 25 x 1.3 cm. |
| 1 aquarium, battery jar, round, 6" x 8", 1 gal. | 1 silk pad, 20 x 20 cm. |
| 1 air pump, exhaust and compression. | 1 flannel pad, 20 x 20 cm. |
| 1 bell jar, straight form, knob top, 3 gal. | 1 cat skin, half skin, about 20 x 20 cm. |
| 1 sq. ft. rubber dam. | 1 pkg. pith balls, pkg. of 12, 5 mm dia. |
| 1 sheet parchment, genuine sheepskin, 42 x 45 cm. | 1 electroscope, flask form, with aluminum leaves. |

- 1 Leyden jar, 20 x 10 cm, capacity 1 qt.
- 1 sheet tin foil, sq. ft., for coatings.
- 1 porous cup, 40 x 90 mm.
- 1 tumbler, 75 to 80 mm dia. at top.
- 2 dry cells (dry batteries), standard size, 1.5 volts, 25 amperes on short circuit.
- 1 gravity cell, closed circuit cell, gallon size.
- 1 bell, electric, dia. of bell $2\frac{1}{2}$ ".
- 1 tuning fork, C (256 vibrations), 18.5 cm long.
- 1 tuning fork, G (384 vibrations), 16.5 cm long.
- †2 tuning forks, C, mounted on resonant box.
- 1 lens, double convex, 38 mm dia., 15 cm focus.
- 1 prism, equilateral, 25 x 75 mm.
- 1 lamp, kerosene, 1 cm. wick, with metal chimney.
- 1 colored glass plate, blue, 10 x 10 cm.
- 1 colored glass plate, red, 10 x 10 cm.
- 1 photometer, Bunsen's, including meter stick, supports, gas burner, candle holder, Bunsen box with screen.
- 12 candles, paraffin, twelves.
- †1 laboratory balance, agate bearings, sensibility .05 g, rider weighs 10 g to 0.1 g, complete with support for specific gravity jar.
- 1 balance, Harvard Trip, bakelite pans, agate bearings, beam weighs 10 g to 0.1 g, sensibility 5 cg., capacity 2000 g.
- 3 spring balances, double scale, capacity 64 oz. in 1 oz. div. and 2000 g in 25 g div.
- 1 set weights, metric, in wood block, 1 cg to 100 g, including 1 cg, (2) 2 cg, 5 cg, 1 dg, (2) 2 dg, 5 dg, 1 g, (2) 2 g, 5 g, 10 g, (2) 20 g, (1) 50 g, and (1) 100 g.
- 1 set weights, Universal, with hooks, 10 g to 1 kg, including 10 g, (2) 20 g, 50 g, 100 g, (2) 200 g, 500 g, and 1 kg.
- 1 right angle clamp, with two V openings for 13 mm rods.
- 2 beakers, with lip, capacity 150 cc.
- 2 beakers, with lip, capacity 250 cc.
- 2 beakers, with lip, capacity 600 cc.
- 1 bottle, 16 oz. capacity, wide mouth.
- 3 bottles, 8 oz. capacity, wide mouth.
- 1 bottle, narrow mouth, glass stoppered 5 pt.
- 1 Bunsen burner, new form, with needle valve gas control (If no gas is available specify: 1 alcohol lamp).
- 1 wing top, brass.
- 1 pkg., corks, quality XX, assorted, 1 gross Nos. 0 to 11 $\frac{3}{8}$ " to $1\frac{1}{16}$ " dia.
- 1 pkg., corks, quality XX, assorted, 1 gross, Nos. 12 to 26, $1\frac{1}{8}$ " to 2" dia.
- 1 deflagrating spoon, brass, $\frac{3}{4}$ " cup, 15" handle.
- 2 dishes, evaporating, Coors porcelain, No. 00A, capacity 70 cc.
- 1 pkg. filter paper, 100 sheets 12.5 cm dia.
- 2 flasks, flat bottom, 500 cc capacity.

- | | |
|---|--|
| 1 flask, pyrex, round bottom, 200 cc capacity. | 1x1 lb. aluminum wire, No. 20, 1 lb. spool. |
| 1 funnel, glass, 75 mm dia. | 1 spool copper magnet wire, No. 20, bare, 1 lb. spool. |
| 1 gas generator, Kipp's, 500 cc. capacity. | 1 spool copper magnet wire, No. 18, D. C. C., 1 lb. spool. |
| 1 gauze, iron wire, 20 mesh, 5" x 5". | 1 pkg. picture wire, No. 1, 25 yd. pkg. |
| 1 glass plate, 3" x 3". | 1 spool steel wire, 4 oz. spool, No. 20. |
| 1 lb. glass rod, 6.5 mm dia. | 1 asbestos sheet, 40" x 40", 1/16" thick. |
| 12 glass rods, stirring, 6" x 3/16". | 1 carbon rod, 12" x 1/4". |
| 1 lb. glass tubing, outside dia. 38 mm. | 1 sq. ft. copper sheet, No. 30. |
| 1 rubber stopper, 2-hole, No. 2. | 1 sq. ft. lead sheet, 1/64" thick. |
| 1 rubber stopper, 2-hole, No. 3. | 1 microscope, compound, 2 eye-pieces, 2 objectives, double circular nosepiece, magnifications of 50, 100, 215 and 430 diameters. |
| 1 rubber stopper, 2-hole, No. 5. | 1 magnifier, hand, 2 1/2" diameter. |
| 1 rubber stopper, 2-hole, No. 7. | 1 pkg. blotting paper, absorption, 19" x 24", per pkg. of 24 sheets. |
| 1 rubber stopper, 1-hole, No. 2. | 1 terrestrial globe, on plain stand, 8". |
| 1 rubber stopper, 1-hole, No. 3. | |
| 1 rubber stopper, 1-hole, No. 5. | |
| 1 rubber stopper, 1-hole, No. 7. | |
| 1 rubber stopper, solid, No. 2. | |
| 1 rubber stopper, solid, No. 3. | |
| 1 rubber stopper, solid, No. 5. | |
| 1 rubber stopper, No. 7. | |
| 3 ft. rubber tubing, white, 1/4" dia., 1/16" wall. | |
| 1 stopcock, glass, straight, 4 mm bore. | |
| 1 support, iron, No. 1 base 4" x 6", rod 5/16" x 18". | |
| 12 test tubes, 6 x 3/4". | |
| 2 thermometers, engraved scale, -10° to 110° C., length 12". | |
| 1 thermometer, engraved scale, 10° to 220° F., length 12". | |
| 1 trough, pneumatic, galvanized iron, inclined sides, will nest, 4" x 7" x 10". | |
| 1 chimney, student's lamp. | |
| 1 pkg. splints, 400 in pkg. | |
| 1 sht. sand paper, fine, 10" x 12". | |

Approximate Cost \$260.00

Chemicals—Required

(Sufficient for the entire class)

- *1x1 lb. acid acetic C. P. 99.5% (Glacial).
- *1x6 lb. acid hydrochloric C. P. concentrated.
- *1x7 lb. acid nitrate C. P. concentrated.
- 1x1 lb. acid oxalic pure crystals.
- 1x4 oz. acid pyrogalllic U. S. P. crystals.
- *1x9 lb. acid sulphuric C. P. concentrated.
- 1x1 lb. agar agar shreds.

Chemicals marked () cannot be sent by parcel post.

*1x1 pt. alcohol ethyl denatured 95%.	1x1 lb. manganese dioxide native powder.
1x1 lb. aluminum potassium sulphate technical crystals.	1x1 lb. mercury metal virgin grade.
1x1 lb. ammonium chloride pure white granular.	1x4 oz. peptone dry from meat.
*1x4 lb. ammonium hydroxide C. P. concentrated.	**1x4 oz. phosphorus yellow sticks.
1x1 lb. ammonium sulphate pure white.	1x1 lb. petrolatum yellow.
1x4 oz. aniline dye eosine R, basic.	1x1 lb. potassium bitartrate U. S. P. powder (cream of tartar).
1x4 oz. aniline dye erie congo (congo red).	*1x1 lb. potassium chlorate U. S. P. crystals.
1x2 oz. beef extract.	*1x4 oz. potassium permanganate U. S. P.
*1x1 qt. benzine (petrol ether)	1x1 lb. rock candy.
1x5 lb. calcium carbonate marble chips.	1x1 lb. sodium bicarbonate U. S. P. powder.
1x5 lb. calcium oxide technical lump (quicklime).	1x1 lb. sodium borate U. S. P. crystals (borax).
1x1 lb. calcium phosphate monobasic pure.	1x1 lb. sodium carbonate technical calcined (soda ash).
1x1 lb. calcium sulphate calcined (plaster of paris).	1x1 lb. sodium chloride fine white (common salt).
**1x1 lb. carbon bisulphide pure	*1x1 lb. sodium hydroxide U. S. P. sticks.
1x1 lb. carbon tetrachloride pure	1x4 oz. sodium tungstate C. P.
1x1 lb. charcoal wood powder.	1x1 lb. starch corn.
1x1 lb. copper sulphate technical crystals.	1x1 lb. sucrose pure.
1x1 lb. cotton absorbent.	1x1 lb. sulphur flowers sublimed.
1x1 lb. dextrose pure granular (glucose).	12 vials test paper litmus blue.
*1x1 lb. ether sulphuric U. S. P. (ethyl ether).	12 vials test paper litmus red.
1x1 lb. Fehling's solution A.	1x4 oz. tin chloride (stannic) C. P. crystals.
1x1 lb. Fehling's solution B.	1x4 oz. turmeric powder.
1x1 pt. indigo solution.	1x1 qt. vinegar cider.
1x4 oz. iodine U. S. P. tincture.	1x1 lb. whiting.
1x1 lb. iron sulphide (ferrous) pure sticks.	1x1 lb. zinc metal technical mossy.
1x1 lb. magnesium sulphate U. S. P. crystals (epsom salt).	1x1 lb. zinc sulphate pure crystals.

Approximate Cost \$37.00

Chemicals marked () cannot be sent by parcel post.

Chemicals marked () must be sent by freight only.

Biology

An ideal equipment would provide at least one compound microscope for each two pupils and one dissecting microscope for each pupil in the class. A good grade of compound microscope should be selected. It should be equipped with two eyepieces, a circular double nosepiece and two objectives. With the standard microscope these combinations of lenses will give magnifications of 50, 100, 215 and 430 diameters. The dissecting microscopes should be of the Barnes' design which are supplied by all laboratory supply companies.

So far as possible, living material should be cultured in the laboratory. Aquaria are very easy to maintain and are especially desirable. Much material can be collected locally, grown in the laboratory and preserved in 3 per cent Formaldehyde for winter use. Standard preserved material can be purchased from numerous biological supply companies. It is especially desirable for the instructor to furnish the incentive for student collections, and a small amount of additional apparatus, such as killing bottles, insect mounts, botanical mounts and insect nets, should be provided as samples which the student may use as suggestive models.

The basal adopted text for biology is *New Biology*, by Smallwood, Reveley and Bailey.

Student Apparatus—Required (One set for each student or each group of students working together)	1 bell jar, straight form, knob top, 2 gal. 3 tumblers, 75 to 80 mm dia. at top.
1 tripod magnifier, double lens, wide field. 1 dissecting set, including scalper, forceps, scissors, two dissecting needles and 6" ruler, in leatherette case.	1 balance, Harvard trip, agate bearings, beam weighs 10 g to 0.1 g, sensibility 5 cg. 1 set weights, brass, in wood block, 1 g, to 500 g, including 1 g, (2) 2 g, 5 g, 10 g, (2) 20 g, 50 g, 100 g, (2) 200 g, and 500 g.
Approximate cost \$2.50	
General Laboratory Equipment—Required	1 beaker, with lip, capacity 100 cc. 1 beaker, with lip, capacity 250 cc.
(One set for the class) 2 battery jars, 8" high, 6" dia.	

- 1 beaker, with lip, capacity 600 cc.
- 12 bottles, wide mouth, 4 oz.
- 12 bottles, collecting, shell vial, No. 2, 7 cc.
- 2 brushes, test tube, sponge end.
- 1 clamp, burette.
- 1 fermentation tube, with glass foot, closed tube 140 mm long, open tube 15 mm long.
- 1 pkg. filter paper, 100 sheets, 10 cm dia.
- 1 funnel, glass 200 mm dia.
- 1 pc. gauze, iron wire, 20 mesh, 4" x 4".
- 1 lb. glass tubing, assorted, outside dia. 3/16" to 1/4".
- 1 graduate, cylindrical, graduated up and down, 250 cc by 2 cc.
- 6 jars, Mason, 2 pint size.
- 2 boxes labels, Dennison's, No. 205.
- 1 lamp, alcohol, round, glass, 6 oz. (If gas is available specify: 1 Bunsen burner, new form, with needle valve gas control; 3 ft. rubber tubing, white, 1/4" dia. 1/16" wall.)
- 12 pipettes, with rubber bulbs (medicine droppers).
- 1 rubber stopper, 2-hole, to fit 4 oz. bottle.
- 12 ft. rubber tubing, 3/16" dia. 3/64" wall.
- 1 support, ring stand, with 2 rings.
- 2 supports, test tube, 10 tube.
- 36 test tubes, 6" x 3/4".
- 1 thermometer, engraved scale, -10° to 110° C., length 12".
- 12 watch glasses, Syracuse, outside dia. 65 mm.
- 72 microscopic slides, blank, glass, 25 x 75 mm.
- 1/2 oz. cover glasses, round, No. 2, dia. 18 mm.
- 2 dissecting pans, black wax bottom, for holding dissecting pins, size 7 3/4" x 11 1/4".
- 1 section razor, both sides flat, for making microscopic sections.
- 1 aquarium, aluminum frame, steel bottom, 5 gal. 16 3/4" x 8 1/2" x 10 3/4".
- 3 dishes, petri, double culture dishes 150 mm dia.
- 1 microscope, compound, 2 eye-pieces, 2 objectives, double circular nosepiece, magnifications of 50, 100, 215 and 430 diameters.

Approximate Cost \$128.00

Chemicals—Required

(One set for the class)

- 1x1 lb. acid acetic 36% C. P.
- 1x4 oz. agar agar shreds.
- *1x1 pt. alcohol ethyl denatured 95%.
- 1x4 oz. balsam Canada clear.
- 1x2 oz. beef extract.
- 1x1 lb. cotton absorbent.
- *1x1 lb. ether sulphuric U. S. P. X.
- 1x4 oz. Fehling's solution A.
- 1x4 oz. Fehling's solution B.
- *2x1 lb. formaldehyde 40% U. S. P.
- 1x4 oz. iodine solution in potassium iodide and water.
- 1x1 oz. litmus cubes blue.
- 1x1 oz. oil cedarwood for immersion.
- 1x1 oz. pancreatin U. S. P.
- 1x1 oz. pepsin U. S. P. powder.

Approximate Cost \$8.00

Chemicals marked () cannot be sent by parcel post.

**Additional Desirable Equipment
Not Required**

- 1 dissecting microscope, U-stand, doublet, 25 mm.
- 1 microtome, hand, for use with section razor.
- 1 pkg. insect pins, for mounting insects, size No. 2 (100).
- 1 insect net, seamless, collapsible, 42" handle.
- 1 specimen mount, 4" x 5".
- 1 specimen mount, 8" x 12".
- 1 botanical mount, 5" x 6".
- 1 botanical mount, 8" x 12".
- 1 staining jar, Coplin's.
- 1 set microscopic slides for Botany, set of 15.
- 1 set microscopic slides for Physiology and Histology, set of 15.

- 1 set microscopic slides for Zoology, set of 15.
- 1 life history specimen, codling moth, mounted in cotton in glass front box.
- 1 insect spreading board, adjustable for all size insects, length 13".
- 1 microscope, 2 eyepieces, triple circular nosepieces, 3 objectives one of which is an oil-immersion substage attachment with swingout Abbe condenser.
- 1 set W. and A. K. Johnston's charts, hand mounted, on solid chart head and tripod, set of 12, 30" x 40".

Approximate Cost \$190.00

Physiology

Most of the work in physiology will be classroom work. The minimum required equipment listed below is sufficient for doing all of the most important demonstrations and experiments. If it is desired to have each student or each two students do all or a portion of these, multiples will be necessary. Such items as chemical and glass tubing, etc., are included in quantities sufficient for an entire class.

Minimum Required Equipment

- 1 osmos apparatus, simple form, including jar, clamp and double-ended thistle tube with membrane.
- 1 battery jar, 8" high, 6" dia.
- 1 bell jar, straight form, knob top, capacity 1 gal.
- 1 sq. ft. rubber dam.
- 2 dry cells (dry batteries,) standard size, 1.5 volts, 25 amperes on short circuit.
- 2 beakers, with lip, capacity 250 cc.

- 1 flask, flat bottom, 250 cc capacity.
- 1 lb. glass tubing, outside dia. 6.5 mm.
- 1 rubber stopper, 1-hole, to fit 250 cc flask.
- 12 test tubes, 6 x 3/4".
- 1 thermometer, engraved scale, -10° to 110° C., length 12".
- 1 microscope, compound, 2 eyepieces, 2 objectives, double circular nosepiece, magnifications of 50, 100, 215 and 430 diameters.

½ oz. cover glasses, round, No. 2, dia. 18 mm.	1x1 lb. dextrose pure granular.
1 section razor, both sides flat, for making microscopic sections.	1x1 oz. diastase of malt U. S. P.
1 hypodermic syringe, in leather case, complete with finger rest and 2 needles.	*1x4 oz. ether sulphuric U. S. P. X.
3 sets microscopic slides for Physiology and Histology, set of 25.	*1x1 oz. iodine U. S. P. resublimed.
*1x1 pt. alcohol ethyl denatured 95%.	1x1 oz. pancreatin U. S. P.
	1x1 oz. pepsin U. S. P. powder.
	1x1 lb. potassium bichromate technical crystals.
	1 vial test paper litmus blue.
	1 vial test paper litmus red.
	Approximate Cost \$120.00

Chemicals marked () cannot be sent by parcel post.

Physics

The physics course is the most firmly intrenched and best standardized of all science courses in the high-school curriculum. There are many treatises on the organization and equipping of this course. This work is very thoroughly outlined in the report of the National Education Association Committee on *The Reorganization of Science in Secondary Schools*, which is printed in bulletin form by the Department of Interior, Washington, D. C.

The basal adopted text in this course is *Elementary Principles of Physics*, by Fuller, Brownlee and Baker.

The manual which accompanies this text outlines ninety-three experiments. The authors name forty-one experiments as being those from which to select what they designate as a Fundamental Course. The list below is for a minimum course of thirty-five experiments, all of which are named by the authors in the list for the Fundamental Course. The additional recommended students' laboratory apparatus provides for the additional apparatus for one set of students for all of the remaining fifty-eight experiments.

For classes of not more than twelve students, one set of minimum students' laboratory apparatus will provide for three groups of students of four each and three different experiments will therefore, be conducted in the laboratory at the same time.

Minimum Students' Laboratory Apparatus—Required

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| 1 meter stick, graduated to both mm and $\frac{1}{8}$ ". | 1 air pump, exhaust and compression. |
| 1 rule, metric and English, maple, 12". | 1 air thermometer bulb, 5 cm dia., stem 30 cm long. |
| 12 metric rulers, paper, graduated in mm, 20 cm long. | 1 steam generator (apparatus A), one-piece boiler, no solder, cast brass gauge connections screwed to the boiler. Standard steam boiler water gauge. |
| 1 clamp, knife edge. | 1 conductometer, four rods mounted to show conductivity rate in brass, aluminum, iron and copper. |
| 1 Hooke's Law apparatus, mirror scale, spring and weight holder. | 1 soft iron rod, round, 15 x 1.2 cm. |
| 1 composition-of-force board, circular, all metal, including 3 spring balances. | 2 bar magnets, rectangular, polished steel, 15 x 1.9 x 0.7 cm. |
| 1 wheel and axle, bakelite, diameters of wheels in ratios of 1, 3, 5 and 7. | 1 bar magnet, square, 15 x 1 x 1 cm. |
| 2 pulleys, tackle block, 7.5 cm in dia. | 1 horseshoe magnet, 10 cm long. |
| 1 pulley cord, fish line, 25 yards. | 1 U-magnet, length 14 cm. |
| 1 inclined plane board, 120 cm long, 12.5 cm wide. | 1 pkg. small iron tacks, 1 oz. per pkg. |
| 1 Hall's carriage, frictionless cone bearings, length 17.5 cm. | 1 shaker for filings, size 5 x 7.5 cm. |
| 1 demonstration hydrometer, wood graduated to mm. | 1 compass, 25 mm dia. |
| 1 hydrometer, for heavy liquids, 30 cm long. | 1 compass, small size indicating compass, 10 mm dia. |
| 1 specific gravity bottle, capacity 25 cc. | 1 demonstration students' battery with tumbler, porcelain top, copper, and zinc elements. |
| 1 hydrometer jar, 30 cm high, 5 cm dia., with lip. | 1 zinc element, amalgamated, flat form, 22 x 125 mm. |
| 1 overflow can, nickel plated brass, 12.5 cm high, 7.5 cm dia. | 1 carbon pencil, 6 x 125 mm. |
| 1 water proof wood block, 7 x 4.5 x 4.5 cm. | 1 nickel element, flat form, 19 x 125 mm. |
| 1 water proof block, wood, 7.5 x 7.5 x 3.8 cm. | 1 copper element, with wire attached 25 x 125 mm. |
| 1 battery jar, 5" high, 4" dia. | 1 tumbler, 75 to 80 mm dia. at top. |
| 1 experimental barometer, mercurial, siphon type. | 2 dry cells (dry batteries), |

- standard size, 1.5 volts, 25 amperes on short circuit.
- 2 Daniell cells, quart size.
- 1 Ampere's Rule apparatus, block 15 cm long and 7.5 cm high.
- 1 coil, for induction effects.
- 1 incandescent lamp, carbon filament, 220 volts, 16 candle power, 60 watts.
- 1 battery motor, enclosed, speed 2000 r. p. m., wound for 4 volts and 1.5 amperes.
- 1 Universal motor, A. C. or D. C., 110 volt, 1/25 H. P.
- 1 D'Arsonval galvanometer, sensitivity 9 megohms.
- 1 commutator, knife-switch type.
- 1 bell, electric, dia. of bell $2\frac{1}{2}$ ".
- 1 push button, stamped metal, bronze finish.
- 1 volt-ammeter, bakelite base, D. C., full 5" scale, range 10 volts and 10 amperes, in 0.1 volt div.
- 1 voltmeter, A. C. Jewell, portable laboratory type, bakelite case, dust proof, 3" scale, 35 to 150 volts.
- 1 ammeter, A. C. Jewell, portable laboratory type, bakelite case, dust proof, 3" scale, 0.7 to 3 amperes.
- 1 tuning fork, C' (512 vibrations) 15 cm long.
- 1 resonance tube, simple form on wood base with one rod and piston.
- 1 lens, double convex, 38 mm dia. 15 cm focus.
- 1 index of refraction plate, 7 x 7 cm.
- 1 metal support, with 4 candle holder.
- 1 metal support, with lamp socket.
- 1 photometer, Bunsen's, including meter stick, supports, candle holders, Bunsen box with screen.
- 12 candles, paraffin, twelves.
- 1 optical bench, including meter stick, supports, lens support, screen, screen support and object marker.
- 1 screen, with gauze over aperture.
- 1 standard incandescent lamp, 110 volt, 16 candle power.
- 3 spring balances, double scale, capacity 64 oz. in 1 oz. div. and 2,000 g in 25 g div.
- 1 set weights, white-plated steel, slotted, mounted on compact stand, 10 g to 500 g, including 10 g, (2) 20 g, 50 g, (5) 100 g and 500 g.
- 1 set weights, Universal, with hooks, 10 g to 1 kg. including 10 g, (2) 20 g, 50 g, 100 g, (2) 200 g, 500 g, and 1 kg.
- 3 beakers, with lip, capacity 100 cc.
- 3 beakers, with lip, capacity 250 cc.
- 3 bottles, narrow mouth, for students' tables, 1 oz.
- 1 Bunsen burner, new form, with needle valve gas control (If gas is not available specify: 1 alcohol lamp.)
- 2 clamps, burette.
- 1 clamp, Mohr's, brass, for burettes, $2\frac{3}{4}$ ".
- 1 pkg. filter paper, 100 sheets, 11 cm dia.
- 3 flasks, round bottom, 500 cc capacity.
- 3 flasks, Erlenmeyer, 125 cc capacity.

- 1 funnel, glass, 75 mm dia.
- 1 gauze, iron wire, 20 mesh, 4" x 4".
- 3 glass plates, 2" x 2".
- 1 lb. glass tubing, outside dia. 6 mm.
- 1 hot plate, electric, 110 volt A. C. or D. C., 3 heat switch.
- 12 pipettes, with rubber bulbs (medicine droppers).
- 3 ft. rubber tubing, white, 1/4" dia., 1/16" wall.
- 1 support, iron, No. 1, base 4 x 6", rod 5/16 x 18".
- 1 support, ring stand, with 2 rings.
- 12 test tubes, 6 x 3/4".
- 12 test tubes, 8" x 1".
- 2 thermometers, engraved scale, -10° to 110° C, length 12".
- 1 thermometer, engraved double scale, -10° to 110° C and 10° to 220° F, length 12".
- 1 trough, pneumatic, galvanized iron, inclined sides, will nest, 4"x7"x10".
- 1 watch glass, syracuse, outside dia. 65 mm.
- 1 yd. cheese cloth.
- 1 sheet emery cloth, fine.
- 1 lb. annunciator wire, copper, D. C. C. No. 18.
- 1 spool copper wire, 4 oz. spool, No. 18.
- 1 spool steel wire, 4 oz. spool, No. 18.
- 1x4 oz. acetamide pure crystals.
- 1x4 oz. acid citric U. S. P. crystals.
- *1x1 lb. acid sulphuric C. P. concentrated.

- *1x1 qt. alcohol ethyl denatured 95%.
 - *1x1 lb. ammonium hydroxide technical concentrated.
 - 1x1 lb. ammonium sulphate pure white.
 - 1x1 lb. copper sulphate technical crystals.
 - *1x1 lb. ether sulphuric U. S. P.
 - *1x4 oz. potassium permanganate C. P.
 - 1x1 lb. sodium hyposulphite, pea size crystals.
 - 1x4 oz. nickel ammonium sulphate crystals pure.
- Approximate Cost \$190.00

Additional Recommended Students' Laboratory Apparatus
—Not Required

- 1 anvil, steel face 2 1/4" x 7 1/4", weight 20 lbs.
- 1 friction belt, flat, 25 mm wide, 50 cm long.
- 1 divider, 4 1/2" long.
- 1 file, triangular, 4".
- 1 hammer, claw, handle 10" long, 13 oz.
- 1 measure, liquid, tin, 1 qt. capacity.
- 1 tape measure, 66 ft. long, linen, metric and English 1/2" wide in case.
- 1 protractor, brass, 4 1/2" dia.
- 1 speed indicator.
- 2 prisms, wood, triangular, 5 cm long.
- 1 mirror scale and support polished nickel-plated mirror with etched scale.
- 1 spring and weight holder, 3 cm long.
- 3 balls, 1" dia., turned and drilled, brass.

Chemicals marked () cannot be sent by parcel post.

- 1 ball, 1" dia., iron, turned and drilled.
- 1 ball, 1" dia., hardwood, turned and drilled.
- 4 Stone's tension clamps.
- 2 single pulleys, bakelite, 5 cm in dia.
- 2 double pulleys, bakelite, 5 cm. in dia.
- 1 pulley cord, fish line, 25 yards.
- 1 pulley, for inclined plane, 4 cm in dia.
- 1 metronome.
- 1 pendulum clamp, length 15 cm.
- 1 seconds pendulum, with contact for electric current.
- 1 brake horse-power apparatus, convenient stand and balances for use with any small motor.
- 1 Boyle's Law apparatus, adjustable funnel tube and glass stopcock, improved metal frame mounting.
- 1 lift pump, working model of glass, 37 cm long.
- 1 force pump, working model of glass, 37 cm long.
- 1 battery jar, 8" high 6" dia.
- 1 barometer, mercurial, metric and English scales with vernier, mercury column entirely exposed.
- 1 volume coefficient tube, Charles Law, with mercury index, 45 cm long.
- 1 water trap, glass, 10 cm long.
- 1 linear expansion apparatus, with steam jacket and lever arm pointer.
- 1 ice shaver, 15 cm long.
- 1 calorimeter, drawn polished aluminum, 12.5 cm high, 7 cm dia.
- 1 set magnetic screens, 6 in set, paramagnetic and diamagnetic, each piece 8 x 8 cm.
- 1 stirrup, wire, for holding small magnets, 9 cm long.
- 1 lb. iron filings, in sifter top can.
- 1 friction rod, hollow glass, 25 x 1.3 cm.
- 1 friction rod, vulcanite, 25 x 1.3 cm.
- 1 pkg. pith balls, with silk threads, pkg. of 6.5 mm dia.
- 2 porous cups, 40 x 90 mm.
- 1 copper element, flat form, 22 x 125 mm.
- 1 lead element, flat form, 22 x 125 mm.
- 2 lead strips, 10 x 100 mm, with wire attached.
- 2 lamp-board rheostats, 5 standard receptacles mounted on mahogany-finished base; with binding posts and connecting straps; without lamps.
- 10 incandescent lamps, carbon filament, 6 volts, 4 candle power.
- 1 incandescent lamp, tungsten filament, 110 volts, 25 watt.
- 1 dynamo, 6 volts, 6 amperes.
- 1 battery motor, Porter No. 1. (If 110 volt current is available it is advisable to omit the Porter motor and purchase 1 Universal motor for 110 volt.)
- 1 telegraph key.
- 1 telegraph sounder, standard commercial form, resistance 5 ohms.
- 1 telegraph pony relay, 20 ohms resistance.
- 1 resistance box, total resistance 111 ohms, coils of 0.1,

- 0.2, 0.3, 0.4, 1, 2, 3, 4, 10, 20, 30 and 40.
- 1 wheatstone bridge, slide-wire form, metal frame, bakelite insulation, 1 meter long.
- 1 set resistance coils, set of 8, for use with wheatstone bridge.
- 3 single-contact keys, simple tandem, base 5 x 15 cm.
- 1 connector, double slotted end to hold plates up to $\frac{1}{8}$ " thick.
- 3 binding posts, spring type, brass.
- 1 receptacle, keyless.
- 2 tuning forks, C (256 vibrations) 18.5 cm. long.
- 1 tuning fork, A (426.6 vibrations) 16 cm long.
- 1 tuning fork, G (384 vibrations) 16.5 cm long.
- 1 tuning fork, C' (512 vibrations) 15 cm long.
- 1 vibrograph, for use with tuning fork, base 11.5 x 50 cm.
- 1 tuning fork, with stylus for vibrograph.
- 1 weight hanger, weight 1 kg.
- 1 weight, iron, slotted, 2 kg.
- 2 weights, iron, slotted, 1 kg.
- 1 lens, double convex, 38 mm. dia., 10 cm focus.
- 1 lens, double convex, 38 mm dia., 20 cm focus.
- 1 prism, equilateral, 25 x 75 mm.
- 1 prism, equilateral, 7.5 cm x 9 mm.
- 1 refraction tank, with protractor.
- 1 mirror, plane, 4 x 15 cm.
- 1 rectangular block, 5 x 5 x 10 cm.
- 1 mirror, convex, 40 mm dia., 25 cm focus.
- 1 mirror, concave, 40 mm dia., 25 cm focus.
- 1 light box, for housing any light source, windows and ground glass screens on both sides for photometer work, lens and mirror images.
- 1 screen and support, 30 x 15 cm.
- 1 binocular, bird or nature study glass, wide field with shoulder strap and case.
- 1 balance, Harvard Trip, bakelite pans, agate bearings, beam weighs 10 g to 0.1 g, sensibility 5 cg, capacity 2000 g.
- 2 spring balances, 25 lbs. in 8 oz. div.
- 1 set weights, metric, in wood block, 1 cg to 20 g, including 1 cg, (2) 2 cg, 5 cg, 1 dg, (2) 2 dg, 1 g, (2) 2 g, 5 g, 10 g, and (2) 20 g.
- 1 weight, iron, with ring, 1 lb.
- 1 beaker, with lip capacity 150 cc.
- 1 bottle, wide mouth, 1 oz.
- 1 brush, camel's hair, flat, wooden handle, $\frac{1}{2}$ ".
- 1 wing top, brass.
- 1 calcium chloride tube, U-form, 20 cm long.
- 1 pkg. corks, quality XXXX, assorted, 1 gross Nos. 0 to 11, $\frac{3}{8}$ " to 1 $\frac{1}{16}$ " dia.
- 1 flask, round bottom, 125 cc capacity.
- 1 glass plate, 4" x 4".
- 1 lb. glass tubing, outside dia. 13 mm.
- 1 graduate, cylindrical, graduated up and down, 500 cc by 5 cc.

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| 1 graduate, cylindrical, graduated up and down, 100 cc by 1 cc. | 1 spool German silver resistance wire, No. 22, D. C. C., 4 oz. spool. |
| 1 lb. rubber stoppers, assorted, 1-hole No. 6, 1-hole No. 00 and 2-hole No. 1. | 1 spool piano wire, No. 26, 10' on spool. |
| 12 rubber stoppers, 1-hole, to fit calcium chloride tubes. | 1 sq. ft. lead sheet, 1/32" thick. |
| 3 ft. rubber tubing, white, 3/16" dia., 3/64" wall. | 1 sq. ft. lead sheet, 1/16" thick. |
| 1 tripod, japanned iron, single ring, 5" dia. | 1 box rubber bands, assorted, approx. 650 bands. |
| 12 watch springs, for burning in oxygen. | 1x1 lb. beeswax U. S. P. yellow |
| 1 sht. sand paper, fine, 10" x 12". | 1x1 oz. copper sulphate C. P. anhydrous. |
| 1 lb. sealing wax red, 4 sticks to a lb. | 1x1 lb. graphite, fine flakes. |
| 1x4 oz. brass spring wire, 4 oz. spool, No. 28. | 1x1 lb. lead shot. |
| 1x1 lb. copper magnet wire, No. 18, bare, 1 lb. spool. | 1x1 lb. mercury metal, virgin grade. |
| 1 spool German silver resistance wire, No. 22, 4 oz. spool. | 1x1 lb. paraffin, solid. |
| | 1x1 lb. zinc sulphate pure crystals. |

Approximate Cost \$250.00

Chemistry

The study of chemistry in high schools should not be undertaken in general except in the larger schools where adequate funds are available for competent instruction and adequate equipment. It is better to concentrate the resources of the school upon work in general science, biology and physics until the work in chemistry can be properly handled.

The basal adopted textbook in this course is *A First Book in Chemistry*, by Robert H. Bradbury.

For the laboratory work the author has indicated in the manual what is considered the desirable necessary equipment. The following list is made from the author's list. Those items used by each student or each group of students are separated and listed under the heading, student apparatus. Those items used occasionally by various groups of students are included under the heading, general laboratory apparatus. The additional laboratory apparatus includes the equipment desirable,

but not required and additional desirable teacher's demonstration equipment.

Student Apparatus—Required

(One set for each group of students.)

- 1 file, triangular, 4".
- 2 beakers, with lip, capacity 100 cc.
- 1 blow pipe, brass, plain, 8".
- 4 bottles, wide mouth, 8 oz.
- 1 brush, test tube, plain.
- 1 Bunsen burner, new form with needle valve gas control (If no gas is available specify: 1 alcohol lamp).
- 1 wing top, brass.
- 1 clamp, burette.
- 1 clamp, Stoddard's test tube.
- 1 clamp, Mohr's brass, for burettes, 2¾".
- 1 crucible, Coors porcelain, No. 1, capacity 30 cc.
- 1 crucible cover, Coors porcelain, No. 1. dia. 47 mm.
- 1 deflagrating spoon, iron.
- 1 dish, evaporating, Coors porcelain, No. OOA, capacity 70 cc.
- 1 pkg. filter paper, 100 sheets, 9 cm dia.
- 1 flask, flat bottom, 250 cc capacity.
- 1 flask, Erlenmeyer, 125 cc capacity.
- 1 forceps, steel, 5" long.
- 1 funnel, glass, 75 mm dia.
- 1 funnel tube, thistle top, straight stem 30 cm long.
- 1 gauze, iron wire 20 mesh, 4" x 4".
- 2 glass plates, 6 x 6".
- 1 jar, waste, stoneware, 5-gallon size.
- 1 ring, iron, 3" dia., for ring stand.

- 3 ft. rubber tubing, white, ¼" dia., 1/16" wall.
- 1 support, iron, No. 2, base 5" x 7", rod ⅜" x 20" (1 tripod, japanned iron, single ring, 5" dia.) (optional).
- 1 support, test tube, 10 tube.
- 6 only test tubes, 6 x ¾".
- 1 test tube, Pyrex, 100 x 13 mm.
- 1 triangle, iron wire, 2½" long.
- 1 vial test paper litmus red.
- 1 vial test paper litmus blue.

Approximate Cost \$13.00

General Laboratory Apparatus—Required

(One set for the entire class)

- 1 hammer, claw, handle 10" long, 13 oz.
- 1 meter stick, graduated to both mm and ⅛".
- 12 rules, metric and English, maple 12".
- 1 pliers and nippers, side cutting, 6" long.
- 1 shears, 6" long.
- 1 snips, tinnners', cutting edge 2½".
- 1 hydrometer, for light liquids, 30 cm long.
- 1 hydrometer, for heavy liquids, 30 cm long.
- 1 barometer tube, with mercury cup and pipette.
- 1 barometer, mercurial, metric and English scales with vernier, mercury column entirely exposed.
- 1 safety lamp, Davy's pattern, 25 cm high.
- 2 horseshoe magnets, 7.5 cm. long.
- 1 electrolysis apparatus, after Brownlee and others.

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|---|---|
| 1 box Christmas candles, colored, 24 in box. | 1 box labels, Dennison's No. 201. |
| 1 balance, triple beam, Harvard Trip construction, bakelite pan, agate bearings, capacity 610 grams, sensibility .05 gram. No additional weights needed. | 1 box labels, Dennison's No. 213. |
| 3 hand balances, horn pans. | 1 box labels, Dennison's No. 223. |
| 3 sets weights, metric, in wood block, 1cg to 100 g, including 1cg, (2) 2 cg, 5 cg, 1dg, (2) 2 dg, 5 dg, 1 g, (2) 2 g, 5 g, 10 g, (2) 20 g, 50 g and 100 g. | 1 mortar, porcelain, with pestle, No. 1, capacity 135 cc. |
| 2 bottles, gas, capacity $\frac{1}{2}$ pt. (1 bottle, gas generating, capacity 2 pt. (optional) or 1 gas generator, Kipp's, 500 cc capacity) | 2 pipettes, volumetric, capacity 50 cc. |
| 2 glass plates, blue cobalt, 4 x 4". | 3 ft. platinum wire, No. 28. |
| 24 burettes, Mohr's, capacity 50 cc, graduated to 0.1 cc. | 1 retort, glass, tubulated, capacity 4 oz. |
| 1 chart of the atoms, lithographed in six colors, showing 40 atomic properties, including atomic symbol, atomic weight, atomic number; size 42" x 64". | 2 lbs. rubber stoppers, assorted, No. 0, 1-hole; No. 2, 1-hole; No. 3, solid; No. 3, 1-hole; No. 3, 2-hole; No. 5, 1-hole; No. 5, 2-hole. |
| 1 pkg. corks, quality XX, assorted, 1 gross, Nos. 0 to 11, $\frac{3}{8}$ " to $1\frac{1}{16}$ " dia. | 2 sand baths, iron, 3" dia. |
| 1 dish, lead, 100 mm dia. | 12 test tubes, 8 x 1". |
| 1 qr. filter paper, 48 x 48 cm. | 3 thermometers, engraved scale, -10° to 220° C, length 14". |
| 2 flasks, volumetric, capacity 1000 cc. | 1 watch glass, 2" dia. |
| 1 funnel, separatory, 60 cc capacity. | 6 pkgs. splints, 400 in pkg. |
| 1 lb. glass tubing, outside dia. $\frac{1}{4}$ ". | 5 pkgs. picture wire, No. 1, 25 yd. pkg. |
| 1 lb. glass rod, $\frac{1}{8}$ ". | 1 spool steel wire, 4 oz, spool, No. 20. |
| 2 graduates, cylindrical, graduated up and down, 100 cc to 1 cc. | 1 sht. asbestos paper, 36" x 36". |
| | 12 asbestos sheets, 4" x 4". |
| | 1 box rubber bands, assorted, approximately 250 bands. |

Approximate Cost \$125.00

Chemicals—Required

(One set for the entire class.)

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| 12 charcoal blocks, 4" x 1" x $\frac{3}{4}$ ". |
| *1x1 lb. acid acetic C. P. glacial. |
| 1x1 lb. acid boric U. S. P. crystals. |
| 1x4 oz. acid citric U. S. P. crystals. |
| *1x1 lb. acid formic pure 90%. |

Chemicals marked () cannot be sent by parcel post.

- *1x6 lb. acid hydrochloric C. P. concentrated.
- *1x6 lb. acid nitric C. P. concentrated.
- 1x1 oz. acid pyrogalllic U. S. P. resublimed.
- *1x9 lb. acid sulphuric C. P. concentrated.
- *1x1 gal. alcohol ethyl denatured.
- 1x1 qt. alcohol methyl synthetic absolute.
- 1x1 lb. aluminum metal mossy.
- 1x1 lb. aluminum potassium sulphate crystals, U. S. P.
- 1x1 lb. aluminum sulphate C. P. crystals.
- *1x1 lb. ammonium bichromate C. P.
- 1x1 lb. ammonium carbonate C. P. lumps.
- 1x5 lb. ammonium chloride pure white granular.
- 1x4 lb. ammonium hydroxide C. P. concentrated.
- *1x1 lb. ammonium molybdate C. P. solution in nitric acid.
- *1x1 lb. ammonium nitrate pure granular.
- 1x4 oz. ammonium oxalate C. P.
- 1x1 lb. ammonium sulphate C. P.
- 1x1 oz. aniline dye green malachite.
- 1x1 oz. aniline dye red Congo.
- 1x1 oz. aniline dye red fuchsine acid.
- 1x4 oz. aniline dye intermediate—alizarine paste.
- 1x1 oz. antimonyl potassium tartrate U. S. P.
- 1x4 oz. baking powder (cream of tartar) Royal.
- 1x4 oz. baking powder (phosphate) Rumford.
- 1x4 oz. baking powder (phosphate—sodium aluminum sulphate) Calumet.
- 1x1 lb. barium chloride C. P. granular.
- *1x1 lb. barium nitrate C. P. crystals.
- *1x1 lb. bromine C. P.
- 1x4 oz. cadmium chloride C. P.
- 1x12 oz. calcium hypochloride (bleaching powder)
- *1x4 oz. calcium metal.
- *1x1 lb. calcium carbide technical.
- 1x5 lb. calcium carbonate marble chips.
- 1x5 lb. calcium carbonate U. S. P. precipitated.
- 1x5 lb. calcium chloride pure anhydrous, 4-mesh.
- 1x1 lb. calcium fluoride technical powder.
- 1x5 lb. calcium hydroxide technical.
- 1x4 oz. calcium nitrate C. P.
- *1x5 lb. calcium oxide (technical) lumps.
- 1x1 lb. calcium phosphate monobasic pure.
- 1x1 lb. calcium phosphate tribasic pure.
- 1x5 lb. calcium sulphate calcined (plaster of Paris)
- **1x1 lb. carbon bisulphide pure.
- 1x1 lb. carbon tetrachloride pure.
- 1x1 lb. charcoal animal powder.
- 1x1 lb. charcoal wood lumps.
- 1x1 lb. charcoal wood powder.
- 1x4 oz. chloroform U. S. P.
- 1x1 lb. chromium potassium sulphate pure lumps.

Chemicals marked () cannot be sent by parcel post.
 Chemicals marked () must be sent by freight only.

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| 1x1 oz. cobalt chloride C. P. | 1x1 lb. lead metal pure, silver, free, granular (test lead). |
| 1x4 oz. cobalt nitrate C. P. | 1x1 lb. lead nitrate technical. |
| 1x1 lb. copper metal rivets. | 1x1 lb. lead monoxide yellow (litharge). |
| 1x1 lb. copper metal sheet B & S gauge 30. | 1x4 oz. lead dioxide technical brown. |
| 1x1 lb. copper carbonate basic (cupric) technical green. | 1x1 lb. lead tetraoxide pure red. |
| 1x1 lb. copper oxide (cupric) technical powder. | 1x1 oz. lithium chloride C. P. |
| 1x1 oz. copper oxide (cuprous) C. P. red. | 1x1 oz. litmus cubes blue. |
| 1x1 lb. copper sulphate C. P. crystals. | 4x1 oz. magnesium metal ribbon. |
| 1x5 lb. copper sulphate technical crystals. | 1x4 oz. magnesium oxide U. S. P. light. |
| 1x1 lb. dextrose pure granular. | 1x1 lb. magnesium sulphate U. S. P. crystals. |
| *1x1 lb. ether sulphuric U. S. P. 1 set Fehling's solution tablets. | 1x1 lb. manganese dioxide native powder. |
| *1x1 lb. formaldehyde U. S. P. 40% solution. | 1x4 oz. mercury metal virgin grade. |
| 1x1 lb. hydrogen peroxide U. S. P. 3%. | 1x4 oz. mercury chloride (mercuric) C. P. |
| 1x1 oz. iodine U. S. P. resublimed. | 1x1 oz. mercury iodide (mercuric) C. P. red. |
| 1x1 lb. iron metal filings fine. | 1x1 lb. mercury oxide (mercuric) C. P. red. |
| 1x1 lb. iron metal pure powder 80 mesh. | 1x1 oz. methyl orange indicator dry. |
| 1x1 lb. iron ammonium sulphate (ferric) C. P. | 1x4 oz. mercury nitrate (mercurous) C. P. |
| 1x1 lb. iron ammonium sulphate (ferrous) C. P. | 1x4 oz. methyl salicylate (oil winter green synthetic). |
| 1x1 lb. iron chloride (ferric) C. P. | 1x4 oz. nickel nitrate C. P. |
| 1x1 lb. iron sulphate (ferrous) C. P. crystals. | 1x1 oz. phenolphthalein U. S. P. |
| 1x1 lb. iron sulphide (ferrous) sticks. | *1x4 oz. phosphorous red amorphous. |
| 1x1 lb. kaolin powder (china clay). | 1x1 lb. potassium bichromate technical crystals. |
| *1x1 qt. kerosene. | 1x1 lb. potassium bitartrate U. S. P. powder. |
| 1x1 lb. lead metal foil. | 1x1 lb. potassium bromide U. S. P. granular. |
| 1x1 lb. lead carbonate basic powder. | |

Chemicals marked () cannot be sent by parcel post.

1x1 lb. potassium carbonate pure crystals.
 *1x5 lb. potassium chlorate U. S. P. crystals.
 1x1 lb. potassium chloride pure.
 1x1 lb. potassium chromate pure.
 1x4 oz. potassium cyanide pure granular.
 1x1 lb. potassium hydroxide U. S. P. sticks.
 1x1 oz. potassium iodide U. S. P.
 1x1 lb. potassium nitrate pure.
 1x1 lb. potassium permanganate U. S. P.
 1x1 lb. potassium sulphate pure white.
 1x1 lb. rosin lumps.
 1x1 lb. sand white fine.
 1x4 oz. shellac orange dry.
 1x4 oz. silver nitrate C. P.
 1x1 lb. soap castile bars pure.
 *1x4 oz. sodium metal.
 1x4 oz. sodium acetate C. P. fused crystals.
 1x4 oz. sodium ammonium phosphate C. P.
 1x1 lb. sodium borate U. S. P. crystals.
 *1x1 lb. sodium calcium hydroxide 8 mesh.
 1x1 lb. sodium carbonate C. P. anhydrous.
 1x1 lb. sodium chloride C. P.
 *1x1 lb. sodium hydroxide U. S. P. sticks.
 1x1 lb. sodium hyposulphite pea size crystals.
 *1x1 lb. sodium nitrate pure.
 *1x1 lb. sodium nitrate crystals U. S. P.
 1x1 lb. sodium perborate U. S. P.

1x1 lb. sodium phosphate dibasic C. P.
 1x1 lb. sodium potassium tartrate U. S. P. powder.
 1x1 lb. sodium sulphate C. P. crystals.
 1x4 oz. strontium chloride pure.
 *1x4 oz. strontium nitrate pure
 1x1 lb. sucrose pure.
 1x1 lb. sulphur sublimed flowers.
 1x1 lb. sulphur roll.
 1x4 oz. tin metal pure foil.
 1x4 oz. tin chloride (stannous) C. P.
 1x4 oz. tin oxide (stannic) C. P.
 1x1 oz. Wood's metal sticks.
 2x1 lb. zinc metal technical mossy.
 1x1 lb. zinc metal technical powder.
 1x1 lb. zinc metal sheet 30 gauge.
 1x4 oz. zinc oxide technical dry.
 1x1 lb. zinc sulphate pure crystals.

Approximate Cost \$90.00

Additional Laboratory Apparatus —Not Required

(One set for the entire class.)

1 metric chart, mounted on plain rollers, 25" x 41".
 1 set models of crystals, Bohemian glass, 20 models in set.
 1 Boyle's Law apparatus and air thermometer combined. Boyle's Law set-up can be made an air thermometer by opening a stopcock.
 1 horseshoe magnet, 7.5 cm long.

Chemicals marked () cannot be sent by parcel post.

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| 1 electroscope, flask form, amber insulated. | 1 eudiometer, Bunsen's capacity 50 cc, graduated in 0.1 cc. |
| 1 copper plating outfit, complete. | 1 spinthariscopes, 4 cm high. |
| 1 conductivity tester. | 1 radio-active ore specimen. |
| 1 prism, 60-degree, for spectrometer work, index 1.65. | 1 still, Peerless automatic, 3 gal. capacity. |
| 1 iceland spar, large, double-refracting crystal. | 1 microscope compound, 2 eyepieces, 2 objectives, double circular nosepiece magnifications of 50, 100, 215, and 430 diameters. |
| 1 student's spectrometer, high grade; with Gauss eyepiece; achromatic objectives of 25 mm aperture and 160 mm focal length; collimator provided with adjustable slit 10 mm long, magnalium circle 12.5 cm in dia.; two verniers reading to one minute; without prism. | 1x1 lb. calcite. |
| 1 set weights, metric, brass, in hardwood case, 1 mg to 50 g, including 1 mg, (2) 2 mg, 5 mg, 10 mg, (2) 20 mg, 50 mg, 100 mg, (2) 200 mg, 500 mg, 1 g, (2) 2 g, 5 g, 10 g, (2) 20 g, and 50 g. | 1x1 lb. chalcopyrite. |
| 1 calcium chloride tube, with side neck, 15 cm long. | 1x4 oz. chrysocolla |
| 1 combustion tube, Pyrex, 30 x 1.5 cm. | 1x1 lb. galena. |
| | 1x1 lb. gypsum lump. |
| | 1x1 lb. lignite. |
| | 1x1 lb. magnesite lump. |
| | 1x1 lb. orthoclase. |
| | 1x1 lb. phosphate rock. |
| | 1x1 lb. pyrite. |
| | 1x4 oz. rhodonite. |
| | 1x1 lb. siderite. |
| | 1x1 lb. sphalerite. |
| | *1x1 lb. calcium carbide technical. |
| | 1x1 lb. thermit. |

Approximate Cost \$295.00

Chemicals marked () cannot be sent by parcel post.

Geography (Physical, Economic, Commercial)

As an aid in the teaching of geography there should be a museum which should include the following items: (a) Photography, half-tones, and any attractive pictures, such as those issued by the Bureau of the Federal Government, Washington, D. C., publications of the U. S. Geological Survey, the Department of Agriculture, and the Biological Survey. Weather Bureau reports are sent out by the Department of Agriculture, Washington, D. C. (b) Collections of mineral resources—Kentucky has a great variety of minerals, and a good supply can be collected at slight expense. (c) Advertising materials of all

kinds—materials such as folders, guides and posters may be secured from the various railway systems and bus systems of the country. Chief among the railroads operating in Kentucky are; Illinois Central, Southern, C. & O., and L. & N. Write the following State Departments, Frankfort, Kentucky, for materials suggested: State Highway Commission for map of the highway system, Agriculture Department for various publications of the Department.

Topographical maps should be ordered from the United States Geological Survey, Washington, D. C.

Order from United States Geological Survey, Washington, D. C., the following: (a) A two-sheet wall map of the United States with or without contours; (b) base maps of the United States, 18 x 28 inches, 11 x 16 inches, or 8½ x 12 inches; (c) portfolio of national parks.

The United States Bureau, Washington, D. C., will furnish blank weather maps. The map of the United States issued by the General Land Office, Department of the Interior, Washington, D. C., should by all means be secured.

Every classroom where geography is taught should have physical maps. For a satisfactory list see page 142.

**Minimum Required Equipment
One Set.**

- 1 barometer tube with stop-cock or Boyle's Law tube.
- 1 barometer, mercurial, metric and English scales with vernier, mercury column entirely exposed.
- 1 Mason's hygrometer, wet and dry bulb thermometers and cistern.
- 1 compass, brass case, engine-divided scale, agate bearing, 50 mm dia.
- 1 terrestrial globe, fixed meridian 12".
- 1 pkg. filter paper, 100 sheets 12.5 cm dia.
- 2 funnels, glass, 75 mm dia.
- 1 lamp, alcohol, round, glass, 4 oz.

- 1 support, test tube, 13 tube.
- 36 test tubes, 6" x ⅝".
- 1 thermometer, engraved double scale —10° to 110° C and 10° to 200° F., length 12".
- 100 sht. straw board, size 19" x 26".
- 10 lb. plastine, light brown, pliable modeling material for making demonstration models, 5 lb. packages.
- 1 Washington School Collection of Rocks and Minerals including 20 rocks and 20 minerals all labeled in compact display case.
- 1 lb. mercury metal refiltered.
- 1 lb. acid hydrochloric technical concentrated.

Approximate Cost \$50.00

If funds are available the barograph and thermograph should be provided for experiments in geography and physics. The combined cost of these instruments for school use would be approximately \$60.00.

Equipment For Vocational Courses

Write the Director of Vocational Education, Frankfort, Kentucky, for information and suggestions concerning equipment for respective vocational fields.

2. Equipment for Treatment in Case of Accidents.

Every laboratory should be supplied with the materials necessary for the treatment of cuts and burns. Such wounds when immediately and intelligently treated give little or no trouble, but if left to take care of themselves, infection may occur and serious results may follow. In case of severe wounds the pupil, after the preliminary treatment in the laboratory, should be sent to a physician.

The following materials required for the treatment of wounds should be kept in the laboratory in a tight cabinet or cupboard:

- a. Sterile gauze bandage, plain: 6 rolls, 1 in. x 10 yd; 6 rolls, 2 in x 10 yd.
- b. Adhesive plaster for holding gauze in place: 2 rolls, $\frac{1}{2}$ in. x 10 yd.
- c. Benzine, 1 qt.
- d. Seiler's Solution: $\frac{1}{2}$ gal. (This may be made from tablets purchased from drug store.)
- e. Boric acid solution, prepared by dissolving 20 grams of boric acid in 1000 cc. of water.
- f. Iodine solution—ordinary tincture of iodine. (This may be purchased from drug store.)
- g. Methyl Salicylate (Oil of Wintergreen): 1 lb.
- h. Agnew's Solution, prepared after the following formula:

Tannic acid	2 grams
Borax	2 grams
Glycerin	11 milliliters
Camphorated water	q. s. to make 90 milliliters

i. Cotton seed oil: 1 qt.

The following directions for the treatment of wounds in the laboratory should be posted in a conspicuous place:

a. Cuts from Glass. Remove any dirt or grease from the wound and surrounding skin by washing with gauze saturated with benzine. A rather free bleeding at first will help to prevent infection. Finally, wash the wound with a piece of gauze saturated with an iodine solution and then bandage to prevent contamination.

b. Burns, Any Kind.

(1) If not blistered, or before blister is opened, wash thoroughly with soap and water and dry. Paint immediately with methyl salicylate (oil of wintergreen). When dry, or nearly dry, cover with a piece of gauze soaked in cotton seed oil, or any oil of similar character. Bandage.

(2) If skin is broken, immediately apply gauze saturated with Seiler's solution and then bandage.

c. Burns from Acids. Treat the same as ordinary burns, as directed under Nos. b (1) and (2) above.

d. Burns from Alkalies. Immediately wash the eyes with a large volume of water, then with a solution of boric acid. Finally, drop into the eyes three or four drops of Agnew's solution and then apply to the eyes a small gauze pad saturated with ice water.

Note: For a complete statement covering the treatment of injuries suffered as a result of accidents in the laboratory, see Laboratory Emergency Chart, published by Fisher Scientific Company, Pittsburgh, Pennsylvania. This chart should be placed in every laboratory. It may be secured free of charge.

3. Maps, Charts, Visual Aids, Etc.

All high schools are expected to be supplied with supple-

mentary material necessary for effective class work. This material includes maps, charts, pictures, stereotypes, display exhibits, specimens, clippings, lantern slides, and visual aids. The minimum equipment is indicated below:

a. *Maps.*

Political maps—United States, North America, South America, Europe, Asia, Africa, Australia, World, Kentucky.

Physical maps—United States, North America, South America, Europe, World.

American History—The subjects that should be covered by maps are: discoveries and explorations, territorial claims of nations, colonial products, commerce and industries, Revolutionary war, westward movement, Louisiana purchase, Civil war, United States today.

World History—The subjects that should be covered by maps are: ancient world, ancient oriental empires, ancient Greece, Greek and Phoenician settlements and commerce, ancient Italy, Roman empire, barbarian migrations, crusades, Europe after the Peace of Westphalia, discoveries and colonization, Europe under Napoleon, Europe after the Congress of Vienna, Europe or world in 1914, Europe or world today.

b. *Charts.*

No special charts are required. Schools should have a good chart on physiology and hygiene. Others on various phases of science work are desirable. The following are suggestive: metric system, periodic law, diagram of machines, Greek and Roman life charts, historic pictures, physiology and hygiene, biology and agriculture.

c. *Newspapers.*

Each school should have a daily newspaper.

d. *Visual Education Equipment.*

This field is enlarging so rapidly that it is hardly safe to make more than very general suggestions. The portable stereopticon with projector attachment is a most useful and effective

aid to instruction. These instruments are practical and within the means of many schools. The larger schools should provide motion picture machines.

e. *Illustrative Material.*

Every school should have files for pictures, clippings and similar material that may be used in class work. Much of this material may be assembled by the pupils. It should be cataloged and filed for convenient reference. This is strictly a function of the school library.

CHAPTER IX

THE HIGH-SCHOOL PRINCIPAL AND HIS WORK

Much has been written regarding the various functions and responsibilities of the high-school principal. It is now recognized that these functions are many and various, that the successful principal is not only a skillful classroom teacher, but he is at the same time administrator, supervisor, director of extra-curricular activities and leader of educational thought in his community.

Naturally, the functions and responsibilities of the high-school principal vary widely according to the type and size of the school. In practically all of the smaller high schools the principal has charge of the elementary grades as well as the high school. Teaching is his principal duty in most of them. Even in the small city high school the principal often devotes most of his time to teaching. It is only in the larger city high schools that the principal is almost solely responsible for the high-school work and devotes practically all of his time to administration and supervision.

For a number of years the public-school supervisors of Kentucky have been conducting a series of conferences with the school administrators of the state. One of the chief aims of these conferences has been to study and discuss the various responsibilities of the principalship. This fact taken in connection with the great volume of literature on the subject seems to render it unnecessary in a bulletin of this kind to make more than a brief discussion of these responsibilities.

1. The Position of the Principal in the General Organization.

The suggestions that are made herein regarding the functions of the superintendent and principal will not apply equally well in all schools. This is due to the fact that the schools of the state vary widely in type and size. In the smaller systems there is usually not a fully functioning high-school principal and the superintendent performs many of the duties that would be delegated to the principal in a larger system. In such cases

there should be a definite understanding regarding the limits to which their respective authority and duties reach. In arriving at this understanding, the superintendent should recognize that the principal is entitled to considerable freedom of action and an opportunity to exercise his initiative. Likewise, the principal should recognize that he is subordinate in rank to the superintendent and that in arriving at this understanding he should work with the superintendent instead of the board of education.

a. *Functions Which Belong to the Superintendent.*

The superintendent is the chief executive and the administrative head of the school system. As such he is responsible for the formulation of school policies and for the measuring of the results of such policies. His chief functions are:

- (1) To select the personnel to be recommended for appointment, promotion, transference and discharge.
- (2) In association with the staff, to select all textbooks to be adopted by the board.
- (3) In cooperation with the staff, to make the curriculum and course of study.
- (4) In association with principals and supervisors, to rate teachers in service.
- (5) To prepare a tentative budget for the consideration and approval of the board.
- (6) To administer the budget and associated business affairs.
- (7) To exercise general supervision over instruction.
- (8) To purchase staple supplies and recommend to the board the purchase of the larger items needed.
- (9) To prepare a tentative salary schedule for consideration and approval of the board.

b. *Functions Which Belong to the Principal.*

- (1) Make a daily schedule of recitations for the school.
- (2) Supervise instruction as ability and time will permit.
- (3) Keep all records of attendance and scholarship.

- (4) Inspect building and supervise janitor.
- (5) Handle cases of discipline.
- (6) Direct extra-curricular activities program with the help of teachers and sponsors.
- (7) Direct the counseling and guidance work of the school.
- (8) Conduct faculty meetings.
- (9) In cooperation with teachers and librarian, select library books.
- (10) Direct tests.
- (11) Control school funds and publications.
- (12) Direct the publicity program of the school.

2. Duties of the Principal.

Excluding any part-time teaching which he may or may not do, the principal's duties may be grouped under three captions, namely:

- a. Administrative.
- b. Supervisory.
- c. Extension or social.

(1) Administrative Duties

The high school must be administered efficiently before conditions can be provided and maintained for good instruction. Although the improvement of instruction through effective supervision is the primary function of the principal, still, a successful principal must be first of all an organizer and administrator of ability. The greater his ability along these lines, the more time he will naturally find for instructional assistance.

These duties should be so systematized that they will not require more than 25 per cent of the principal's time. By proper delegation of duties to teachers and other responsible persons, the amount of time required for this work can be reduced materially.

Being the responsible leader of the school, the principal must assume the responsibility for the performance of such administrative duties as the following:

- (a) Making the daily schedule for the school.

This should be worked out and ready to put into effect on the opening day.

- (b) Enforcement of the requirements of the law and the State Board of Education that relate to the operation of his school. The principal should remember that he is an agent of the state and the intermediate unit between the state and those whom he serves directly.
- (c) Enforcement of the rules and regulations of the board of education and the superintendent.
- (d) The oversight of the building, janitor, grounds, furniture, apparatus and supplies.
- (e) The keeping of an adequate system of records and the making of reports.
- (f) The careful checking of tardiness and absence of pupils and teachers.
- (g) Handling cases of discipline.
- (h) The organization of his school so that teachers are not bothered during school hours.
- (i) The oversight of pupils' programs and changes in same.
- (j) The issuing of all special excuses.
- (k) The registration of pupils. This work should be done before the close of school so that the schedule of recitations may be in complete operation and the class rolls may be in the hands of the teachers when school opens in the fall.
- (l) The requisition of supplies.
- (m) Answering school correspondence.
- (n) Controlling school funds and publications.
- (o) Securing substitute teachers, if necessary.
- (p) Directing all phases of attendance work in the school.
- (q) The preparation and submission of reports regarding needed repairs.
- (r) The control and management of all other phases of the school as an organization.

(2) Supervisory Duties.*

The supervision of instruction is the most important and at the same time the most neglected duty of the principal. True, the principal of the small high school must, of necessity, do much teaching, but even this principal can make or find time for more supervision. How can he do it?

- (a) He can postpone many things which he does during school time until after school hours—answering correspondence, for example.
- (b) He can stop doing many things that are unnecessary.
- (c) He can stop doing so much teaching or shift some of it to others or dispose with some of it altogether.
- (d) He can budget his time as he does his income and follow this schedule religiously. Allot a given amount of time to administration, teaching, supervision, etc. This systematizes his activities.
- (e) He can work expeditiously, i. e., speed up the thing that he is doing and get through with it.
- (f) He can delegate many responsibilities to pupils, clerks and teachers. To responsible pupils he can delegate "keeping the office," answering the telephone, recording grades and attendance and even the "keeping of the study hall." Through his home-room teachers he can handle the matter of absence and tardiness, the recording of grades and attendance. To teachers he can delegate the management of the library, study hall, athletics, school publications and clubs. To the janitor he can delegate many duties in connection with the care of the building and grounds.
- (g) He can shift his teaching periods to different

*See Roberts, A. C. and Draper, E. M. *The High-School Principal As Administrator* for a suggestive list of the principal's supervisory duties.

hours during the week and be enabled to observe more teachers at work.

The chief aim of supervision is to improve the instruction in the school. The teaching profession is expected to assume the responsibility for improving instruction while the principal because of his broader professional knowledge and insight is expected to furnish leadership for such improvement. Since this is true, the principal should plan a program of improvement of his teachers and their teaching.

(a) Improvement through professional supervision.

1) Classroom visitations.

a) Suggestions regarding classroom visitations.

- (1) Frequency of visits depends entirely on circumstances. Poorly trained and inexperienced teachers will require more visitations than will the best teachers. Visit good teachers enough to keep them accustomed to it, however.
- (2) Length of visit also depends on circumstances. See the teacher at various types of work. Stay long enough to see a teaching process completed.
- (3) Frequently, if not usually, announce intention to visit.
- (4) Refrain from taking anything but mental notes.
- (5) As principal visits he should be natural and maintain an attitude of friendly interest.
- (6) Ordinarily refrain from participating in the classroom procedure.
- (7) Look for really "vital things, not those that are trivial and have slight bearing upon true teaching."

2) Conferences with teachers.

a) Suggestions regarding conferences.

- (1) A suitable time must be arranged. It should not be held until principal has had time to reflect on items observed in visit. Should be held at a time

when neither the teacher nor the principal is tired or in a disagreeable mood.

- (2) The place should be absolutely private. Possibly the best place is the teacher's classroom. The teacher is more at home there.
- (3) The conference should not be held in the presence of pupils.
- (4) The principal must carefully prepare for the conference. It should not be held until he has something of a serious nature to improve. In planning the conference he should take into consideration the teacher—her age, training, experience, health, timidity and her attitude towards a conference.
- (5) It is well to remember that the success of the conference will depend very largely upon the personal relationship that is established between the teacher and principal. The teacher must believe in the principal's interest and ability to help. He must respect her opinions. "Be impersonal in evaluation and highly personal in helpfulness"—Dr. Briggs.
- (6) Criticize the teaching process and not the teacher.
- (7) Work by suggestions and guiding questions and not by dictation. Do not appeal to authority. Lead teacher through guiding questions to discover solutions to problems she faces. Criticisms should be encouraging, instructive and forward looking. Try to make criticisms lead to self-analysis and self-criticism.

3) Use of strong teachers—demonstration lessons.

- a) The average principal in a small school is limited in experience. He is likely to have under his supervision teachers who are more skillful than he. These are the teachers he should visit most often at the start. He can learn characteristics of good teaching from them.

b) It is well, too, to let the beginning teachers observe the work of the more experienced and better teachers. If substitutes cannot be provided, the principal can well take a teacher's room while she goes to visit a period now and then in another teacher's room. Such visitation should be done with definite aims in mind.

(b) Improvement through individual effort.

- 1) Improvement through summer-school attendance.
- 2) Improvement through correspondence study and organized extension classes.
- 3) Improvement through professional reading. Every Kentucky high-school teacher should read the Kentucky School Journal, the Journal of the National Education Association, at least one good professional book devoted to her field, current magazines, professional books, worth while fiction.
- 4) Improvement through keeping fit.
 - a) Every teacher should observe laws of health with respect to food, rest, sleep and recreation.
 - b) Every teacher should avoid worry and should guard against all diseases.

(c) Improvement through group effort.

- 1) Improvement through teachers' meetings.
 - a) Some suggestions for improvement of meetings.
 - (1) Hold meetings at stated intervals.
 - (2) Begin on time and close on time.
 - (3) Plan a definite program for each meeting and carry it out. The teachers should be responsible for this.
 - (4) Waste no time on routine announcements. Use bulletin board for this purpose.
 - (5) Keep a record of each meeting.
 - (6) Do not make meetings too long. An hour to an hour and a quarter is enough.

(7 Do not permit faultfinding or complaining. This is not the place to spill troubles.

(8 Set the meetings at the first of the week. Tuesday afternoon is a good time. Twice a month is often enough for the meetings.

- 2) Improvement through membership in district, state and national educational associations.

Membership in the various teachers' associations should be taken as a matter of course by all high-school teachers and principals. There is no reason to go into a discussion of the advantages to be gained by such membership; they are apparent to all thoughtful teachers. Every principal should be a member of the National Association of Secondary-School Principals.

- 3) Improvement through school visitations.

- a) Arrangements should be made for every teacher to visit some other system at least once a year.
- b) Teachers may also receive new ideas and inspirations by visiting classes of other teachers in their own system.

- 4) Improvement of the course of study.

The local school should be working constantly on the problem of improving the course of study in the various fields of subject matter. All teachers should cooperate in this work.

(3) Extension or Social Duties.

One of the most important social duties of the principal is that of the direction of the program of extra-curricular activities of the school. The principal is probably judged by the community more by these activities than by any other part of the school's work. The importance of these activities in teaching boys and girls how to live in this complex social life cannot be overemphasized. While the principal should not carry all of the burden of these activities, he is directly responsible for them and should be familiar with their proper organization and supervision. These activities are discussed in Chapter VI.

There is much more to this division of the principal's duties than that of directing the extra-curricular activities of the school. These duties imply an obligation on his part to employ every legitimate means that he can use to gain a closer understanding and cooperation between the school and community. The school belongs to the people who support it. The whole community should feel interested in and responsible for the enterprise. This interest should not be confined to athletics and other extra-curricular activities alone. The principal must realize that it is his job to interpret all phases of the work of the school to the community. The successful principal knows this is true and he deliberately plans to sell his school to his community. He takes the community into his confidence by advising it regarding what the school is undertaking, what it is achieving, what it is needing. He makes systematic use of the newspaper for desirable publicity through interviews and written articles. He serves on committees to promote community interests, throws his building open to community undertakings and gladly assumes responsibility for furthering worthwhile social and civic activities. Through his membership in church, lodge, club and other organizations, he keeps in touch with the community life and through these contacts strives to develop a spirit of mutual friendliness and cooperation between the school and the community which he serves. These things he does because he knows that if there is to be adequate and willing financial support of his school, respect for his educational leadership and increasing community pride in the school, this type of relationship with the public must be established.

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3. The Principal's Office.

Each school should have an office for the principal. In small schools a single room is sufficient. In larger schools a suite of three rooms is desirable—a private office, a large room for clerical work and a waiting room.

More attention should be given to the equipment and care of this feature of the school. It reflects the management of the school and for that reason especially, it should present a neat and orderly appearance.

The following equipment is recommended:

- a. Flat top desk with desk chair.
- b. Filing cabinet for records.
- c. Letter files.
- d. Typewriter and table.
- e. Work table.
- f. Bookcases.
- g. Supply cabinet.
- h. Wardrobe.
- i. Key cabinet.
- j. Bulletin board.
- k. Post office.
- l. Chairs.
- m. Telephone.

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CHAPTER X

MISCELLANEOUS

1. Records and Reports.

Accurate and complete records must be kept in such form as to be conveniently referred to and safely preserved. Former high-school pupils not infrequently find it necessary to look up their scholarship records many years after they leave high school. They have a right to expect that these records have been carefully preserved. The failure of a school to be able to furnish this record is a serious indictment of the administration of the school. Too many Kentucky high schools have not yet realized the importance of a good record system. Each high school should have its records from the date of its foundation.

The purpose of a record of any kind is to enable some one who needs and has a right to know, to find out what he needs to know as easily and quickly as possible.

a. Requisites of a good record system:

- (1) The data must be recorded in such a manner as to be easily interpreted.
- (2) The records should be as compact as possible. Avoid duplication of information.
- (3) The data should be recorded in an orderly fashion so as to be readily found.

It is generally agreed that these requisites are best found in a card system. The cards with the greater stiffness are more readily filed, are more compact and are more susceptible to re-arrangement and transfer from file to file than are paper forms.

b. Records should be kept in such manner that:

- (1) They are accessible to those who desire to use them.
- (2) They are protected from misuse and destruction.
- (3) They are protected from such destructive agencies as fire and water. Fire resistive steel filing

cabinets or fireproof vaults should be installed for the permanent records.

c. Number and kinds of record forms:

The number and kinds of record forms vary according to the size and type of the school. The following is a list of forms that will be used in most of the high schools:

- (1) Registration card (suggested size, 3 x 5). This card should be filled out for each pupil at the time the pupil enters the high school. It should be kept in the file as long as the pupil is in attendance. It should contain all the personal data concerning the pupil.
- (2) Advance enrollment card (suggested size 4 x 6). This card is made out near the close of each semester. It shows the curriculum which the pupil has chosen, the subjects which the pupil is taking at that time, and the subjects which he expects to take the following semester.
- (3) Program card (suggested size, 3 x 5). This card is made out at the opening of each semester. It shows the individual pupil schedule for each day of the week.
- (4) Permanent record card (suggested size, 8½ x 11). This card should contain besides certain personal data the complete attendance and scholarship record of the pupil.

Other forms that will be used in many schools are health record, guidance record, property record, transfer card, etc.

Certain reports must be made from time to time in all well administered schools. Teachers must make reports to parents and pupils, to each other, and to the school authorities. All reports should be accurately and promptly made.

a. The report forms that are most commonly used are:

- (1) Teachers' attendance report. This report is made to the principal once or twice daily. Both the tardiness and absence should be reported.

- (2) Teachers' class report. This report is made to the principal once each month or six weeks' period. The marks given each pupil in each class should be given.
- (3) Report to parents. This report is made to the parents at periodic intervals. It shows the teacher's estimate of the work of the pupil in each subject the pupil is taking.
- (4) Principal's reports. At least annually the principal should report in a detailed manner the facts concerning the work of the school. This material will be used by the superintendent in measuring results and reporting facts to the public, State Department of Education, etc.

b. Reports to the State Department of Education.

Shortly after the beginning of the school year, there will be mailed to each high-school principal copies of the Annual High-School Report. Failure to return these reports after two notices have been sent shall be cause for dropping a school from the accredited or approved list.

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2. Teachers' Marks.

Teachers' marks play an important part in the administration and management of high schools. Since this is true, it is the responsibility of the principal to work out a good marking system and administer it carefully.

a. *Defects in marking system.*

If marks as they are usually given were valid and reliable, that is, if they measured what they are supposed to measure and did so consistently and accurately, there would be no problem here. It is a matter of common knowledge, however, that most of the marks given by teachers do not do this. Because of the varying standards and significance of teachers' marks, both pupils and parents are frequently misled and confused. Most of the marks given by teachers are largely subjective and hence, are not reliable. The following are among the chief defects in present day marking practices:

(1) Lack of agreement as to what to measure.

There seems to be little agreement among educators and teachers as to the trait or traits which a mark should measure. Some argue that the teacher's mark should measure only achievement in the subject concerned. Others argue that the final mark given a pupil in a subject should show the relation of the pupil's achievement to his ability. Others insist that such items as behavior, effort, neatness, industry, honesty, etc., should be taken into account in arriving at the mark that should be given a pupil in the subject concerned.

(2) Teachers try to make too fine distinction in degrees of merit.

This defect is found in the grading of many teachers whether they use the percentage or the letter system. Who can say whether a composition in English deserves a grade of 84 or 85, or even C plus or C minus?

(3) Marks are uniformly too high or too low.

Some teachers are inclined to be exacting and critical, while others are inclined to be lenient and liberal. Some teachers are of the opinion that their teaching is "so good" that every one deserves a high grade. Other teachers think their courses are "so hard" that only a few should receive a high grade and that a large percentage should fail. Sometimes, for political reasons or because of sympathy, there is a tendency to give too many high grades.

b. *Recommended marking system.*

Some degree of standardization in the matter of giving marks is desirable. It is not thought advisable, however, to make any system obligatory or compulsory, overthrowing or confusing many existing records or usages. With the hope that some degree of uniformity in grading will result, the following system is recommended for adoption wherever feasible:

- A—Excellent.
- B—Good.
- C—Average.
- D—Poor.
- F.—Failures.

c. *Definition of above marks.*

- (1) The mark of A should be used to indicate that the pupil is one of the few most excellent pupils. Where a relatively large number of pupils are studying any high-school subject, from three to five per cent should receive the mark of A.
- (2) The mark of B should be used to indicate that the pupil ranks among those who are superior to the medium or average pupils. Twenty to twenty-five per cent of pupils should receive the mark of B.
- (3) The mark of C should be used to indicate that the pupil has done work of medium or average quality. Approximately fifty per cent of pupils should receive the mark of C.
- (4) The mark of D should be used to indicate that the pupil ranks among those who are inferior to the medium or average pupils, but not so inferior as to deserve to fail. Twenty to twenty-five per cent of pupils should receive the mark of D.
- (5) The mark of F should be used to indicate that the pupil has failed to meet the minimum requirements of the course. Under normal conditions not more than three to five per cent of pupils should receive the mark of F.

The basis for the above distribution of marks has been arrived at by experimentation with large groups of pupils and will not apply accurately with all smaller groups. Therefore, the distribution cannot be used arbitrarily. At the end of the semester it should be helpful in making a teacher critical of the accuracy with which she has distributed her marks.

After all, any statistical analyses made of teachers' marks will be a useless venture unless remedial measures are taken early in the year. No teacher should assign a pupil a mark of failure unless she knows all the facts of the case—the pupil's health, home conditions, home preparation, etc. She should be required to report the definite steps which she has taken to help the pupil avert failure.

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3. Public-School Music.

Music is now recognized as a subject worthy of an important place in the educational scheme. Due to its values as an educational, cultural, æsthetic, vocational, emotional and socializing influence, it should receive more recognition in high school than it is accorded.

Music courses should receive credit as other high-school subjects, provided the teacher holds a certificate to teach the subject in high school.

Two units of credit in music may be counted toward high-school graduation. Principals should bear in mind, however, that only one unit may be counted for college entrance.

Credit for participation in orchestra, band, glee club and organized choruses shall be on the basis of extra-curricular activities and if credits are given, they must be in addition to the sixteen necessary for graduation.

The work in public-school music should include theory, har-

mony, history of music and music appreciation. A brief outline of a two-unit program in these courses follows:

a. *Theory.*

COURSE I. (Two periods a week, .4 unit.) Principles of notation, symbols, abbreviations, embellishments, scale building (major and minor), intervals, chords, cadences, measure, tempo, dynamics, forms and signs.

b. *Harmony.*

COURSE II. Harmony I. (Two periods a week, .4 unit. Prerequisite—student must be able to play chords that come up for study.) Primary and secondary triads and dominant sevenths in fundamental and inverted positions; elementary harmonization of simple melodies.

COURSE III. Harmony II. (Three periods a week, .6 unit; same prerequisites as for Course II.) Knowledge of secondary sevenths and inversions, altered chords and chromatic harmony; simple modulations.

c. *Appreciation and History.*

COURSE IV. Music appreciation and history. (Three periods a week, .6 unit.) Correlation of music with general historic movements, folk music in different ages, church music, classic (Bach, Haydn, Beethoven), romantic (Schumann, Mendelssohn, Chopin), American (MacDowell, Parker and others), composers and their music.

In formulating a program of music for secondary schools, administrators and teachers should consult Bulletin No. 49, National Education Commission, *Music in Secondary Schools*, Superintendent of Documents, Washington, D. C., price ten cents.

4. **Health and Physical Education.**

Administratively, the modern school programs of health and physical education include three types of activities: health service, health education and physical education.

a. *Health Service.*

Health service may be thought of as the service which the school renders to conserve or improve the personal and environmental health conditions of children. The program includes the following activities of health protection and promotion:

- (1) Health examination of children by physicians and dentists.
- (2) Follow up program for the correction of remediable defects.
- (3) Clinics.
- (4) Special classes.
- (5) Immunization against certain communicable diseases.
- (6) First aid and safety provision.
- (7) Hygiene and sanitation of the school plant and equipment.
- (8) Hygiene of instruction.
- (9) Health of teachers, janitors and those who come into contact with school children.

b. *Health Education.*

Health education is the sum of experience in school and elsewhere which favorably influences habits, attitudes, and knowledge relating to individual, community, and racial health.*

It is a common practice in health education to utilize situations in the health service and physical education programs which may be articulated effectively.

c. *Physical Education.*

Physical education is the contribution made to the complete education of the individual through psycho-motor activities.

Primarily, physical education has two major objectives:

- (1) To aid in the development of normal robust health.
- (2) To promote desirable social and moral characteristics, since the gymnasium or playground acts as a citizenship laboratory where children react naturally to play activities.

*Definition proposed by Dr. T. D. Wood, Teachers College, Columbia University.

There is no distinct line of demarcation between the activities of this triangular program of health and physical education.

In formulating standards for a program of health and physical education for secondary schools, administrators should consult the Report of the Committee on High-School Curriculum, contained in the *Sixth Yearbook* of the Department of Superintendence, National Education Association, Washington, D. C.

5. Work Books.

During the past few years the work-book idea has come into the learning situation in practically all phases of school work.

Dr. William E. Cole, University of Tennessee, has made a study of the value of work books as teaching devices. He lists points in favor of their use, as well as points against. The points in favor of their use are:

- a. They insure definite assignments.
- b. They provide for organization of work.
- c. They give an opportunity for directed study.
- d. They save time by reducing the amount of dictation.
- e. They furnish a means for remedial and individual instruction.

The following are points of weakness in the work book:

- a. Much of the content of work books is trivial in character.
- b. Many conform poorly to the courses of study.
- c. They are inflexible, if followed slavishly.
- d. They lack organization of information.
- e. The price of many work books is prohibitive to many children.

In selecting work books the teacher should be careful to select such material as will bear directly on the aims and purposes of the courses. Work-book activities should grow out of group discussion in classes. The work book should not be used merely as a means of keeping pupils busy, but should be used as a means of attaining some desired end.

This book may be kept

§ **FOURTEEN DAYS**

A fine of TWO CENTS will be charged
each day the book is kept overtime.

