

COLORADO STATE TEACHERS COLLEGE

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## High School Opportunities in Colorado

(Research Bulletin No. 12)



Department of Educational Research  
Frederick L. Whitney, Director



COLORADO STATE TEACHERS COLLEGE

HIGH SCHOOL OPPORTUNITIES  
IN COLORADO

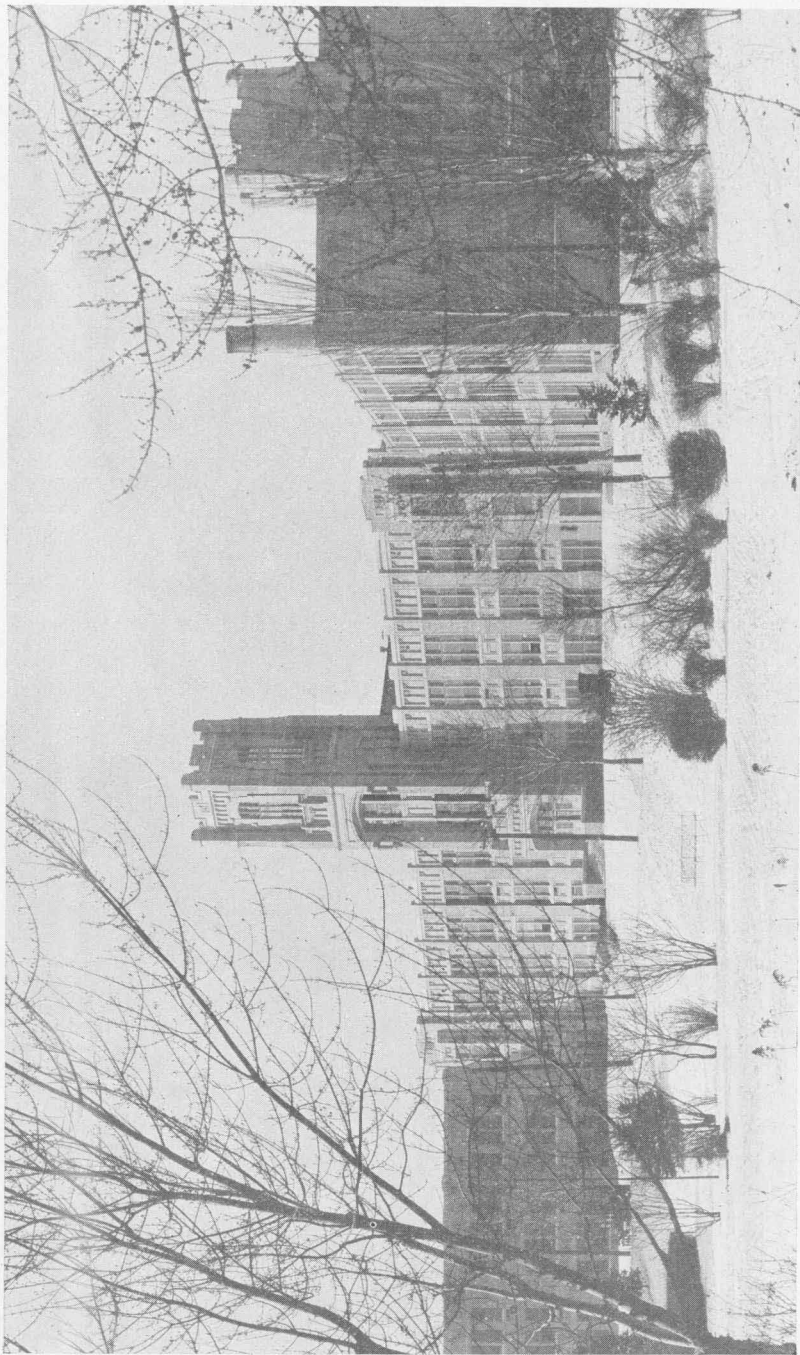
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West High School in Denver, Dr. Harry V. Kepner, Principal, is representative of the best type of secondary school opportunities in Colorado.



## PREFACE

During the month of February, 1926, President George Willard Frasier of Colorado State Teachers College offered the services of the Department of Educational Research of the College for a study of the selective character of high school education in Colorado.

A sum of money became available at that time from sources outside of the funds of the College which for purposes of record was handled under the name of The Colorado Research Foundation. The donors were the Educational Committee of the Supreme Council, Ancient and Accepted Scottish Rite of Freemasonry, acting under the personal direction of Stanley C. Warner, Inspector-General in Colorado. The local committee in charge consisted of Harry V. Kepner, Principal of West High School, Denver, Colorado, and President of the Board of Trustees, Colorado State Teachers College; Jesse H. Newlon, at that time Superintendent of the Denver public school system, and Charles A. Lory, President of the Colorado State Agricultural College.

The Research Committee of Colorado State Teachers College planned the investigation in the large. The personnel of the committee at that time was as follows: Mr. L. W. Boardman, Professor of Literature and English; Doctor H. S. Ganders, Professor of Educational Administration; Doctor J. D. Heilman, Professor of Educational Psychology; Doctor F. C. Jean, Professor of Biology; Doctor E. U. Rugg, Professor of Education; Doctor F. L. Whitney, Director of Educational Research, Chairman. Mr. Boardman was away from the College at the time the details of the study were planned. President Frasier, Mr. H. G. Blue, at that time Principal of the Teachers College High School, and Doctor G. C. Gamble, Professor of Education, met with the Committee and helped materially with the work.

Twelve county school superintendents of Colorado cooperated in the eighth grade study, the testing program, and the age-grade-progress checking undertaken. A group of thirty-five advanced students at Colorado State Teachers Col-

lege took part in the scoring of tests, and the classification and tabulation of material and the typing of results. Miss Jessie L. Thompson, Research Secretary, had charge of this work. Mr. Wilford H. Woody, Research Assistant, conducted the correlation studies in the investigation, which involved the finding of relationships in terms of coefficients of partial and multiple correlation of the seventh order.

The details of the data resulting from this investigation are included in 400 (c.) tables on file in the office of the Department of Educational Research, Colorado State Teachers College. The write-up in extenso covers 731 typed pages and 289 tables.

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## CHAPTER I

### INTRODUCTION

The felt need for an investigation of high school opportunities in the state was rather a vague condition of unrest in the minds of leaders in business and in the schools, often present when a commonwealth is emerging from pioneer conditions. It was not based upon specific knowledge of the situation. This knowledge was desired. At the same time, inadequacies in educational legislation were recognized, in particular with regard to high school tuition; and the fact of disparities in the size of pupil groups in succeeding grades of work was well known. The donors were in particular conscious of the fact that the first year of high school (ninth grade) did not include all children enrolled the year previous. Their specific inquiry was, "What becomes of the eighth grade pupils?" The rapid increase of high school enrollment and expenditures for the country as a whole was known also. It was the desire to determine what part the state was taking in this general condition.

From the viewpoint of the College, it was thought to be desirable, not only to conduct an investigation which would aid in solving the educational problems of the home state, but to make a contribution to the country-wide question of the status of secondary education in terms of a careful checking of the situation in a representative western state.

Three reports of progress in this study have been made to the donors, in May, 1926, in November, 1926, and in January, 1927. In June, 1927, a brief statement of objectives, procedures, and generalizations was furnished to be used with the financial report to the Educational Committee of the Supreme Council.

#### 1. THE FIELD OF INVESTIGATION

As the specific purpose of this undertaking was to make as valuable a contribution as possible to the problems of secondary education in the state with time and money available, it was not practicable to confine the investigation to local conditions in any selected portion of the state nor to any single type of high school organization. On the other hand, restricted funds would not permit a complete checking of all of the 2,003 school districts in the 63 counties of the

state. Further, experience in other surveys shows that returns from carefully chosen portions of an area and population are as representative of the facts in the total situation as a complete sampling would be.

The problem, then, was to select from all counties of the state as many as could be handled in the study and to include all important geographic, industrial, and school organization types. Table I gives the final selection of the field of investi-

TABLE I

COLORADO GEOGRAPHIC, INDUSTRIAL, AND SCHOOL ORGANIZATION TYPES INCLUDED IN THIS INVESTIGATION

County and County Seat	Geographic Type and Industry	Type of High School Organization
1	2	3
1. Baca Springfield	Dry farming	Local Board Control and Union High School
2. Bent Las Animas	Irrigated crop, dry farming	County High School District
3. Boulder Boulder	Fruit, mining, beets, potatoes	Local Board Control
4. Costilla San Acacio	Mining	Local Board Control
5. Delta Delta	Fruit, cattle, mining	Local Board Control
6. Denver Denver	City	County Unit
7. El Paso Colorado Springs	Dry farming, mining	Local Board Control and Union High School
8. Garfield Glenwood Springs	Cattle, mining	County High School and Union High School
9. Las Animas Trinidad	Mining, dry farming	County High School District and Local Units
10. Logan Sterling	Beets, dry farming	County High School District
11. Routt Steamboat Springs	Farming, mining	Local Board Control and Union High School
12. Weld Greeley	Beets, potatoes, dry farming, mining	Local Board Control
13. Yuma Wray	Dry Farming	Union High School District and County High School District



gation. There are a total of thirteen counties. City and town conditions are represented in the city and county of Denver and in such municipalities as Colorado Springs, Trinidad, and smaller communities. All schools in every county are included. Dry and irrigated farming of all kinds, and mining, and grazing, all typical industries of the state, outside of urban situations, are represented. All kinds of high school organization are found in Table I also.

The important details of the school situation in each county included in the survey are given in Table II. Seventy thousand school children are represented in all types of checkings, and approximately 13,000 in the testing program.

TABLE II

THE SAMPLING OF THE COLORADO PUBLIC SCHOOL SITUATION INCLUDED IN THIS INVESTIGATION

County	Districts	Teachers	Average Daily Attendance of Pupils	Schools	Persons of School Age	Sampling	
						Age-Grade-Progress	Tests
1	2	3	4	5	6	7	8
1. Baca	64	116	1658	103	2443	(a)	(a)
2. Bent	38	90	1405	57	2479	845	500
3. Boulder	50	300	6264	69	9662	646	950
4. Costilla	14	39	877	25	3441	(a)	(a)
5. Delta	21	157	3138	37	5259	2270	636
6. Denver	1	1544	43751	1	75953	42702	1100(b)
7. El Paso	38	429	8216	48	12559	6100	2392
8. Garfield	40	127	1793	46	2842	297	450
9. Las Animas	124	402	7645	144	14109	5426	1489
10. Logan	56	235	4022	85	6767	2906	1090
11. Routt	43	127	1619	67	2569	815	321
12. Weld	135	613	12186	162	18605	7725	3118
13. Yuma	112	212	3278	126	4589	1482	832
Total	736	4391	95852	970	161277	71214	12878
Colorado	2003	9233	186166	3396	302516		
Percent	31	48	52	29	53		

a. The testing program was omitted.

b. A selected group

The details of pupil checkings are shown in Table III. Sixteen inquiries were made about the physiological, sociological, economic, parental nativity, psychological, and vocational status of each public school pupil. The first nine

of these are the elements of the Stanford Achievement Test, Advanced Examination, Form A. These give a complete answer to the question, How well is each pupil doing his school

TABLE III

THE DETAILS OF PUPIL CONTACTS ESTABLISHED IN THE STATE HIGH SCHOOL SURVEY OF COLORADO

Information groups	Number of elements	Number of sixth, eighth, ninth, and twelfth grade pupils reached in eleven counties	Number of elements scored and classified
1	2	3	4
1. Paragraph meaning	29	13,000	377,000
2. Sentence meaning	80	13,000	1,040,000
3. Word meaning	85	13,000	1,105,000
4. Arithmetic computation	47	13,000	611,000
5. Arithmetic reasoning	40	13,000	520,000
6. Nature study and science	95	13,000	1,235,000
7. History and literature	95	13,000	1,235,000
8. Language usage	60	13,000	780,000
9. Word dictation	15	13,000	195,000
10. Chapman Scale	12	13,000	156,000
11. Physiological, social, and economic status	14	13,000	182,000
12. Nativity of parents	2	13,000	26,000
13. Character rating	1	13,000	13,000
14. Multi-Mental Scale	100	13,000	1,300,000
15. Age-grade-progress status	10	70,000 (a)	700,000
16. Destination of eighth grade pupils	5	8,000 (b)	40,000
Total	690		9,515,000

a. All pupils in all schools

b. The groups of 1924-25 and 1925-26

tasks? In classifying and reporting the returns on this inquiry the total score (composite score) is given, and the nine tests are grouped as reading, arithmetic, science, and social science, and recorded in terms of educational ages. The Chapman scale<sup>1</sup> (Item 10) gives twelve points of information about the homes of the children included in the study. Table IV reproduces the scale in the form in which it was used by teachers and parents. Fourteen other facts describing the physiological, social, and economic status of pupils were furnished by parents and teachers also. The last

<sup>1</sup> Chapman, J. C. and Sims, V. M. "Quantitative Measurement of Certain Aspects of Socio-economic Status," *Journal of Educational Psychology*, September, 1925

TABLE IV

THE FORM OF THE CHAPMAN HOME STATUS SCALE USED IN THIS STUDY

COLORADO RESEARCH FOUNDATION

To the Teacher:

Please help each child answer the questions. When necessary, check the answers by oral questioning of individual pupils. **Fill out column 2 only.**

Pupil's name..... Grade..... District Number..... Date.....

1	2	3	4	5
Characteristic	Answer	Possession	Non-Possession	Given Score
1. Did your Mother attend high school?		59	43	
2. About how many books are there in your home?		60	43	
3. Do you have a piano in your home?		54	37	
4. How many magazines do you take regularly in your home?		55	39	
5. Do you have a telephone in your home?		55	42	
6. Do you have an auto other than a truck?		58	45	
7. Did your father attend high school?		57	44	
8. Is your house heated by a big furnace in the basement?		54	41	
9. Is English the only language spoken in your home?		54	41	
10. Do you have a Victrola or Edison in your home? (a)		53	43	
11. How many daily papers do you regularly take in your home?		53	47	

a. This means any phonograph

11a. Have you a radio in your home?.....

school census returns were examined to determine the nativity of the father and the mother of each child. Each teacher gave a rough character judgment for each child in terms of his general school attitude and conduct. McCall's Multi-Mental Scale, Elementary School, Form 1, a divination test, was used as a measure of native intelligence. As a measuring tool, the scale is economical of both time and

money and has a high validity. ( $r$  is 0.904 with a criterion consisting of the National Intelligence Test, Scale A, the Binet-Simon Scale, and the Multi-Mental Scale with one seventh weight each.) The age-grade-progress blanks secured from each pupil his name, sex, date of birth, and the grade of progress he had reached in each year of school attendance. A rating of the business of the fathers of the pupils included in the study was made in terms of the Barr Occupation Scale,<sup>2</sup> but the preponderance of a single occupation, that of farming, made the arrays of little value in the correlation calculations. Finally, (Item 16) teachers and parents reported for each eighth grade pupil for two successive school years his name, his district, where he was at the time of checking, what he was doing, his earnings, if he was at work, and the reasons for non-attendance, if out of school. In addition to information bearing directly on the status of pupil groups, each county superintendent made contact either by telephone or by letter with the secretaries of all school boards in his county asking for a report for two successive years of the number of pupils attending high school in outside districts whose tuition was paid by the home board and the total amount of high school tuition paid in that way.

## 2. PROCEDURE AND TECHNIC

The Research Committee of Colorado State Teachers College drew up a tentative plan for the investigation which would provide for the specific inquiry of the donors and for an interpretation of findings on this inquiry from a background of facts about the status of school enrollment in general and racial, psychological, and socio-economic conditions among representative pupil groups in particular. This plan included (1) a checking of the eighth grade groups of the school year 1924-25, (2) an intensive study of sixth, eighth, ninth, and twelfth grade groups as well as the age-grade-progress status of all pupils in representative situations during the school year, 1925-26, and (3) a discovery during the first school months of 1926-27 of all eighth grade pupils of the previous school year in terms of their educational and vocational destination.

The plan as finally accepted by the donors appears in the following outline:

<sup>2</sup> Barr, F. C. *A Scale for Measuring Mental Ability in Vocations and Some of its Applications*. Unpublished Master's Thesis, Leand Stanford Junior University, 1918

A PLAN FOR A STUDY OF OPPORTUNITIES FOR  
SECONDARY EDUCATION IN COLORADO

## A. ULTIMATE PURPOSE

- I. To determine the selective character of secondary education in the state of Colorado
- II. To use the facts revealed in planning for a wider offering of high school privileges for the youth of Colorado
- III. To work toward mandatory legislation affecting equality of high school privileges in Colorado

## B. PROXIMATE PURPOSE

- I. To review other studies of the high school population for comparison with findings in Colorado
- II. To review mandatory and permissive legislation in Colorado affecting universality of high school privileges
- III. To determine the legal basis of free secondary education in other states
- IV. To make a descriptive tabulation of all types of high schools in Colorado
- V. To survey the practice among boards of education in Colorado under the present legislation permitting the payment of the tuition of pupils attending in other districts
- VI. To determine the educational and vocational destination of Colorado public school children completing the elementary school course
- VII. To compare the public elementary and secondary school pupils of Colorado in the following variables:
  1. Racial
    - a. Nativity of parents
    - b. Nationality origin of American born parents
  2. Psychological
    - a. Life age
    - b. Native capacity (general intelligence)
    - c. Character traits (general intelligence)
    - d. School advancement (age-grade-progress-facts)
    - e. Schol achievement (educational age)
  3. Socio-economic
    - a. Occupation of father (Barr scale)
    - b. Home status (Chapman scale)
    - c. Vital statistics
      - (1) Size of family
      - (2) Relative age of children
      - (3) Integrity of family
    - d. Distance from high school
    - e. Density of population
    - f. Religious affiliation
    - g. Physical development

## C. PROCEDURE

- I. An immediate trial of the tentative plan in Weld County. The County Superintendent is interested as a prospective master of Colorado State Teachers College.
- II. In the fall of 1926, a location of every eighth grade pupil of 1925-26 in high schools or in industry
- III. Report and publication—during the summer of 1926, a mimeographed report of progress can be made, and very probably a final report can be published in the winter of 1926

It is thought that the selection of counties for cooperation in the investigation makes the study a state survey of high school opportunities. Every principal variety of economic condition, both rural and urban, is included as well as every type of high school organization and control.

The list of items of procedure finally decided on for use in each county was as follows:

- I. Preliminary investigation
  1. Location of each eighth grade pupil of 1924-25 in school or in industry
    - a. Failures
    - b. Promoted to ninth grade
    - c. Report of total eighth grade enrollment, number examined at the close of the school year, and number failed
- II. Report of payment of high school tuition by boards of education for 1924-25 and 1925-26
  1. Number of pupils involved
  2. Total amounts paid
  3. Pupil unit payments
- III. Study of 1925-26 pupil groups
  1. Age-grade-progress, grades from kindergarten to twelve, inclusive
  2. Socio-economic background data, grades six, eight, nine, and twelve
  3. Character rating, "General School Attitude and Behavior," grades six, eight, nine, and twelve
  4. Physique rating, height-weight ratio, grades six, eight, nine, and twelve
  5. Intelligence, grades six, eight, nine, and twelve
  6. School achievement, grades six, eight, nine, and twelve
- IV. Final study
  1. Location of each eighth grade pupil of 1925-26 in October, 1926, in school or in industry

During the spring and summer of 1926, the material from the field was classified and the facts of achievement and progress reported back to the county superintendents' offices, the eighth grade scores being sent before the close of the school year 1925-26 so that they might become a part of the usual "final examination" data used to determine the future status of eighth grade pupil groups. Care was taken to get accuracy in scoring and in tabulation. Each person applying for work was put through a period of try-out with cross checking for errors, and an individual record of speed and accuracy was kept for each worker. In this manner, raw data were rendered as accurate as possible with the large office force necessary. In the case of that part of the returns used to determine relationships among variables, the technic

of partial and multiple correlation constituted a final method of accuracy which served to refine still further original data. Reliability of material was further established through the inclusiveness of sampling affected.

### 3. BRIEF STATEMENT OF FINDINGS

The returns from the investigation show that at least one fourth of the eighth grade pupils disappear at the eighth-to-ninth grade gap and that this mortality affects first of all the boys. It is found further that in the high school work itself girls are on the whole more successful than boys and that nearly 10 per cent more of them persist into the senior year. Non-attendance and failure seem to result more often from negative character traits than from lack of intelligence or even necessity, but it appears that the drawing power of high school offerings cannot compete with the attraction of closer social and economic objectives. Data on type of home background point to the fact that the secondary school is still undemocratic to a large degree, and the facts about tuition requirements and the furnishing of textbooks and of work for pay justify the indictment that the high school is not an integral part of the free public school system of the state but a higher school whose opportunities only a privileged group can embrace.

When the progress and success of high school pupils are considered, it is found that the actual length of the course is less than four years as but one-half of the freshmen are found in the senior class. Further, high school class work is largely a matter of mass teaching instead of the application of the technic of individual instruction to the needs and abilities of pupils resulting from a business-like organization of personnel work. Perhaps the most serious lack in the curriculum is found in the fact that high school experience does not insure that pupils shall develop normally in terms of those desirable social character traits which are necessary for happy citizenship. A comparison with other states, too, shows that Colorado pupils are on a lower level of achievement in their reaction to the academic curriculum.

When a comparison of the efficiency of high school education in large and in small high schools in urban and in rural communities is made, it is found that attempted high school

work in rural situations and in small towns is on the whole rather futile. Small pupil groups, immature, incompetent teachers, inexperienced leadership, brief faculty tenure, lack of supervision of instruction—all are items of inefficiency which characterize secondary education in the smaller units of administration.



## CHAPTER II

EIGHTH GRADE FAILURES AND HIGH SCHOOL  
ELIGIBLES

It was with a more or less definite consciousness of trouble at the grade-to-high school point and with knowledge of many individual cases of educational deprivation there that the donors of the Colorado Research Foundation asked the question, What becomes of the eighth graders? To get definite answers to this inquiry, the question was analyzed as in Table V, and information obtained about all eighth grade pupils who took the June examinations in 1925 and 1926 in the counties cooperating in the investigation. The two sections of the blank, which was filled in by eighth grade teachers with the aid of children and parents, provides for the two possible contingencies, (I) pupils who failed of promotion to high school and (II) those who did not fail but who dropped out at the close of the eighth grade year.

## 1. THE JUNE EXAMINATIONS

On the whole, and considering the difficulties encountered, the returns from this eighth grade checking were reliable and illuminating. The second reports from county superintendents were not as satisfactory as the first because of their absorption with politics in the 1926 election. (Two cooperating superintendents were defeated at the polls.) The *Preliminary Report* issued in May, 1926, gave in 40 tables complete information about each of 4056 pupils who took the eighth grade examinations in June, 1925. These data are summarized for eleven counties in Table VI.

Out of 4056 eighth grade pupils who were examined, over 350 failed, nearly 9 percent. Out of 3697 pupils who were ready for promotion, over 500 did not attend high school. This constitutes nearly one-fifth of the number who were eligible for higher work but are not taking it. It is a rough measure of the proportion of educational deprivation in the state at the secondary level.

## 2. ELEMENTARY RETARDS

The inquiry about the eighth grade classes asked for information about both the "failures" and those who "passed." on the theory that in both groups would be found many cases of educational deprivation.

TABLE V

INFORMATION ABOUT 1924-25 EIGHTH GRADE CHILDREN (I) WHO WERE NOT PROMOTED FROM EIGHTH GRADE TO HIGH SCHOOL AT THE CLOSE OF THE SCHOOL YEAR, AND (II) WHO WERE PROMOTED BUT ARE NOT NOW IN HIGH SCHOOL

.....  
 District..... County..... Teacher..... Address.....

Name	Where is the pupil now?	What is the pupil doing?	How much is the pupil earning per month?	Give the reasons for the pupil's present non-attendance in eighth grade or in high school.
1	2	3	4	5
(Sample report)				
John Loe	At home	Working for his father	Nothing	His father could not afford other help.
Mary Means	Greeley	Clerking	\$25	She wanted "to earn money."

I. Eighth grade pupils who failed of promotion into high school

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II. Eighth grade pupils who were promoted but are not now in high school

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Footnote d, Table VI, reports the fact that the problem of the retarded eighth grade child in the eleven counties co-operating is first of all a boy problem. The central tendency of proportions of boys and girls shows two-thirds of them to be boys and but one-third girls, and the extremes run as high as 84 percent (Las Animas). In this large southern agricultural county, as large as the state of Connecticut, the public schools are failing to hold for high school education too large a part of all eighth grade boys.

TABLE VI

THE RESULTS OF THE JUNE, 1925, EXAMINATION OF 4056 EIGHTH GRADE CHILDREN IN THE PUBLIC SCHOOLS OF ELEVEN COLORADO COUNTIES

County	Examined	Passed	Failed	Percent of failures (4 ÷ 2)	Passed but not in high school	Percent passing but not in high school (6 ÷ 3)
1	2	3	4	5	6	7
1. Bent	128	124	4	3.1	11	8.9
2. Boulder	314	260	54	17.2	24	9.2
3. Costilla	28	25	3(a)	10.3	0	0.0
4. Delta	240	225	15	6.2	43	19.1
5. Denver	1044(b)	991	53	5.1	14(c)	21.8 (c)
6. El Paso	198	170	28	14.2	39	22.9
7. Las Animas	430	411	19	4.4	77	18.7
8. Logan	331	305	26	7.8	43	14.0
9. Routt	174	163	11	6.3	31	19.0
10. Weld	844	758	86	10.1	152	20.0
11. Yuma	325	265	60	18.6	70	26.3
Total	4056	3697	359(d)	8.9	504	13.3
Approximate median	314	260	26	7.8	39	19.0

- The county superintendent reports (May 20, 1926) that "our three eighth grade students who failed last year have been in school this year and have taken the eighth grade examination and passed."
- This is the figure for all elementary schools. Including the junior high schools, there was a total of 3351 eighth grade pupils.
- These figures are based upon a random sampling of 70 pupils from two typical schools, one an elementary school with grades kindergarten to eighth inclusive, and the other a junior high school.
- Boys, 62.4 percent; girls, 37.6 percent.

It is the judgment of many educators that in such a situation it is the public school that is "failing," not the eighth grade boys and girls. Perhaps we are not ready to interpret our demand for democracy in education to mean 100 percent of high school attendance on the part of all eighth grade children. But, where such an amount of elimination and such discrimination against boy rights as that shown is found, the situation demands the serious consideration of educational, municipal, state, and national leaders, students of the ills attendant upon America's trial of universal education.

In the case of 312 (76 no data) of the pupils who failed of promotion at the close of the school year, the reports were complete as to reasons given for not attending school the next year. (Table VII) Item 1, "Repeating eighth grade," does not belong logically in the table. It is highly significant, however. Thirty-six percent of the membership of eighth grade classes, condemned to another year of identical curricu-

lar experiences, are serving their sentences. Lack of knowledge of what to do and of professional imagination on the part of the school management permits this. Even a short summer school term might prevent many cases of time waste of this sort; but only one pupil is reported as having made good in this way for high school in the fall.

TABLE VII

REASONS FOR THE NON-ATTENDANCE OF 312 COLORADO PUBLIC SCHOOL CHILDREN IN ELEVEN REPRESENTATIVE COUNTIES WHO FAILED IN THE EIGHTH GRADE EXAMINATION IN JUNE, 1925

Rank	Reasons	Frequency	Percent
1	2	3	4
1	Repeating eighth grade	111	35.7
2	No data	76(a)	24.4
3	Lack of ambition	23	7.4
6	Married	11	3.5
6	Needed for family support	11	3.5
6	Overage (reached capacity)	11	3.5
6	Moved	11	3.5
6	Low intelligence	11	3.5
9	Help needed with home work	8	2.7
11	Did not like school	7	2.2
11	Parents not interested	7(b)	2.2
11	Ill health	7	2.2
13	Personal desire for money	6	1.9
14.5	In parochial, private, or business school	3	1.0
14.5	Died	3	1.0
16.5	Reformatory	2	0.6
16.5	School too far	2	0.6
18.5	Could not afford school	1	0.3
18.5	Suspended	1	0.3
	Total	312	100.0

a. The teachers and superintendent were unable to locate these children.

b. One of this number is traveling with parents.

Item two, (Table VII) "No data," is a shameful comment upon administrative inefficiency in the school offices involved. A loss of nearly 25 percent from spring to fall is too many and cannot be explained. It is a severe criticism on the school management in any system when any child disappears from the records. The situation is serious indeed when this is true in the case of an adolescent of thirteen to fifteen in whom the state has already an investment of eight, nine, or ten years of schooling. Elimination at previous grade

points has made the eighth grade children a selected group, possible future leaders in the democracy. Theoretically, the state stands ready to invest further and greater amounts of time and money in the preparation of these citizens for participation in the activities of adult life. Actually, the ledger is closed, the pupil is lost to the "system," or appears later in the records of a welfare organization or a state corrective or penal institution. This is poor business. The state-wide adoption of a system of uniform records and reports, such as is found in Michigan and in two or three other states, would help to make conditions better.

"Lack of ambition" is given most frequently as the reason for non-attendance after failing in the June eighth grade examination. This is the viewpoint of the teachers, no doubt, and as to character traits very probably their judgment is better than that of parents. If the two cases (16.5a) who were sent to the reformatory and the one (18.5b) suspended are added, the total makes just one-fifth of all reasons outside of repeaters and "No data." Character is, of course, the driving force in any situation. Intellect is but a tool whose effective use is determined by such traits as ambition, persistency, honesty, and the like.

Very likely those who are again in the eighth grade illustrate reasons which may be subsumed under both character and intelligence. If other reasons relative to intelligence are sought, "overageness" and "low intelligence" are noticed. These constitute 22 children, a number comparable to the "character" group. The eleven girls who married may, perhaps, be added to the overage group.

Economic reasons are suggested in "Needed for family support," "Help needed with home work," "Personal desire for money," "Could not afford school," and probably "Parents not interested," which may indicate that they are more interested in the earning value of the child than in his educational advancement. Thirty-three cases are found under these headings.

Finally, there is the suggestion in this list of nineteen reasons for dropping at the end of the eighth grade that children and parents have not been fully persuaded of the worthwhileness of upper grade offerings and in a balance of relative values prefer the nearer immediate good rather than the remote and doubtful gains to be secured by persistence into

the high school. The economic reasons given reveal this attitude as well as do "Did not like school," "Parents not interested," and the decision to attend schools outside the public system. It is interesting to note that distance (16.5b) ranks low as a cause of non-attendance.

Closely related to reasons for non-attendance and confirmatory of them are the facts about the actual status of 312 pupils who failed in the eighth grade examinations. These are given in Table VIII. Here, the group of repeaters constitute over one-third of all and those lost from the records over one-fifth. Home work, including "Idle at home," which very probably means earning nothing, accounts for one-fourth.

These checkings of groups of eighth grade failures furnish a picture of educational and economic waste which thinking citizens must consider. Here is a field for educational research worthy of the skill of advanced students of the curriculum. As intimated above, the suggestion for a junior high school organization is as yet untried effectively in the schools included in this investigation. State leaders should investigate its operation elsewhere and exert influence toward its adoption more widely, if they believe there lies therein a reasonable chance of bridging the gap between the elementary and the secondary school.

TABLE VIII

THE PRESENT STATUS OF 312 COLORADO PUBLIC SCHOOL CHILDREN IN ELEVEN REPRESENTATIVE COUNTIES WHO FAILED IN THE EIGHTH GRADE EXAMINATIONS OF JUNE, 1925

Rank	Item	Failures	
		Number	Percent
1	2	3	4
1	Reviewing eighth grade	111	35.5
2	No data	69	22.1
3	Helping with housework or farm work	51	16.3
4	Day laborer	32	10.1
5	Idle at home	28	8.9
6	Moved out of state	7	2.2
7	In parochial, private, or business school	5	1.6
9	Married	2	0.6
9	Reformatory	2	0.6
9	Deceased	2	0.6
12	Mining	1	0.5
12	United States Army	1	0.5
12	Clerking	1	0.5
	Total	312	100.0

## 3. SECONDARY SCHOOL POSSIBILITIES

Unprofessional, routine methods of public school administration and supervision permit many upper grade pupils to shorten their lives by an extra year in grade eight. Failures to fit school offerings to child need and capability result too often in closing the school career of many boys and girls at the eighth-to-ninth grade gap. But more serious than this is the loss from further preparation for citizenship of that group of selected pupils who have done so well in the elementary school that they are thought worthy of promotion to secondary opportunities. These future leaders, amounting in the study reported in this book to nearly 20 percent of all who "passed," should be retained for further contact with worth while high school experiences so that they may be able to function on higher levels of efficiency in the adult community group.

TABLE IX

REASONS FOR THE NON-ATTENDANCE OF 504 COLORADO PUBLIC SCHOOL CHILDREN IN ELEVEN REPRESENTATIVE COUNTIES WHO WERE PROMOTED TO HIGH SCHOOL (JUNE, 1925) BUT ARE NOT NOW ATTENDING

Rank	Reasons	Frequency	Percent
1	2	3	4
1	Help needed with home work or farm work	73	14.5
2	No data	59	11.7
3	Lack of ambition	58	11.5
4	Could not afford school	52	10.3
5	Parents not interested	44	8.7
6	Moved away	35	6.9
7	Personal desire for money	31	6.2
8	Needed for family support	28	5.6
9	Repeating eighth grade	21	4.2
10	Ill health	20	3.9
11	Low intelligence	19	3.7
12	Did not like school	16	3.2
13	Had to support self	14	2.8
14	School too far	12	2.4
15	Overage	8	1.6
16	Married	7	1.4
17.5	In parochial, private, or business school	3	0.6
17.5	Underage	3	0.6
19	Died	1	0.2
	Total	504(a)	100.0

a. Boys, 59.5 percent; girls, 40.5 percent.

And, unless absolute equality of sex comes in the next generation, the preponderance of boys among pupils who are eligible for high school classes but do not enroll makes the whole matter under decision more serious. Footnote a, Table IX shows 60 percent of the total to be boys and 40 percent girls. That this is practically the same distribution as is found among eighth grade failures (63 percent and 37 percent) is significant. Evidently, whatever the factors are which make it impossible for upper grade pupils to fit themselves successfully into the curriculum and which cause those who do succeed to neglect further public school offerings, affect boys more seriously than they do girls. Here, then, is the first lesson in differentiation for curriculum makers and administrators of upper grade work.

For 504 of the eighth grade pupils who were promoted to high school, reasons for non-attendance are available, except that 19 percent (Items 2 and 6) are lost from the public school records. It will be seen that 14 percent (73, item 1) are needed at home; and, if the reasons "Could not afford school," "Parents not interested," "Needed for family support," and "Had to support self" are added, economic causes account for over one-fourth (27 percent) of the cases. No doubt item seven, "Personal desire for money," might be added to this total also, as this attitude most often comes from a stringency in family income.

The facts of character traits are, of course, operative under every item of reasons, but they are specifically stated in "Lack of ambition," which includes 12 percent of all. Low intelligence, mentioned nineteen times, and overageness, eight, are perhaps related. Distance includes twelve pupils. It is impossible to know why 21 are repeating eighth grade, but perhaps distance and underageness (item 17.5b) are involved.

The failure of the high school to advertise its advantages among patrons is indicated in such items as "Parents not interested," "Did not like school," and "In parochial, private, or business school." The public school administration which assumes the "Take-it-or-leave-it" attitude toward the most expensive segment of total offerings is failing to conceive its full duty to the constituency served. School publicity is as necessary as is publicity in any other big business.

The facts of the actual occupation of the group of 504 high school non-attendants are given in Table X. They sup-



TABLE X

THE PRESENT STATUS OF 504 COLORADO PUBLIC SCHOOL CHILDREN IN ELEVEN REPRESENTATIVE COUNTIES WHO WERE PROMOTED AT THE TIME OF THE JUNE, 1925, EXAMINATION BUT WERE NOT IN HIGH SCHOOL IN MARCH, 1926

Rank	Item	Promotions	
		Number	Percent
1	2	3	4
1	Helping with housework or farm work	201	40.0
2	Day laborer	122	24.3
3	Idle at home	51	9.2
4	No data	43	8.6
5	Reviewing eighth grade	29	5.9
6	Moved out of state	28	5.7
7	Mining	12	2.5
8	Clerking	8	1.7
9	Married	5	1.1
10	In parochial, private, or business school	3	0.6
11.5	United States Army	1	0.2
11.5	Deceased	1	0.2
	Total	504	100.0

plement the list of reasons just discussed. Here, 71 out of 504 are lost from the records (item 4 and 6). The rank order listing shows the largest group, 40 percent, to be required for home work. One fourth are working at day labor, and these two items together with items three and seven indicate clearly the pressing need for guidance. It may be that there is a waste of ability in the case of young men and women who have successfully reached the secondary level in the public school system, if they are not aided in placement so that talents may be employed on a possible level of efficiency. On the other hand, it would be a more serious mistake if the upper grade and high school curriculum should result in the white-collar-job attitude exclusively as in the Philippines,<sup>1</sup> and perhaps that is the trouble with the 9 percent who are reported as "Idle at home."

Without dealing with the remaining items of Table X, it may be said that these facts of mortality at the eighth-to-ninth grade gap must give all thinking citizens pause and must cause them to inquire seriously as to just what the matter is. The public schools are obligated to explain the obvious failure

<sup>1</sup> Monroe, Paul and Others. *A Survey of the Educational System of the Philippine Islands*, Bureau of Printing, Manila, 1925

of the "system" at this point in the curriculum. Here is a research problem yet unsolved and worthy of the best ability available.

#### 4. SUMMARY

A listing of facts connected with the giving of the usual final eighth grade examination in eleven Colorado counties shows that on the average nearly 9 percent failed and nearly 20 percent more dropped out of school at the eighth-to-ninth grade gap. A loss of one-fourth is a conservative estimate of high school deprivation in terms of both failures and non-attendants. Two-thirds of these children were boys, and it appears that the problem presented is first of all a boy problem. Over one-third of the pupils who failed are repeating the eighth grade work another year, and failure is reported to be caused chiefly because of negative character traits and not because of low intelligence. Nearly one-fifth are helping with home work, and the next largest group are day laborers. But many are lost from the records of the systems, and their status is not known.

The group of pupils who passed the final examinations successfully (nearly 20 percent) but did not attend high school contained the same proportion of boys and girls as did failures. The majority of these children (40 percent) were helping at home also, and deficiencies of attitude are again found among causes rather than low intelligence. One-fourth have dropped out of school to engage in day labor, many are lost from the records, and many are repeating the eighth grade in spite of the fact that they are eligible for high school attendance.

When the facts of social and economic background and of personality among the four possibilities of destination illustrated are compared, it is found that on the whole such factors as home and physique are rather constant, but that pupils who were promoted are youngest, have conformed more closely to school requirements, and have done best in their school studies.

## CHAPTER III

## THE TYPE OF YOUTH SELECTED FOR HIGH SCHOOL ATTENDANCE

In addition to the facts of elimination at the eighth-to-ninth grade gap reported in the preceding chapter, it is significant to make a checking in response to the inquiry, What type of pupil does the high school select for membership? A tentative answer, for the schools included in this study, can be made in the terms of sex, life age, native intelligence, home background, and like personal and environmental factors.

## 1. SEX

The findings of Chapter II, to the effect that the problem of failure in the eighth grade and of non-attendance in the high school was first of all a boy problem, would suggest that different proportions of boys and girls would be found in grade enrollment and in high school classes. The facts with regard to this for 24,843 children in eight Colorado counties are given in Table XI. When all the pupils in the four grade groups considered are distributed by sex, the division is seen to differ from 50-50 by but 0.4 percent and to be about like the proportions found in grades one and six. But when the sex distributions of grades eight and nine are examined, it is seen that the eighth grade group has a larger percent of boys than does the ninth grade group. In

TABLE XI

THE PROPORTION OF BOYS AND OF GIRLS AMONG 24,843 PUPILS IN GRADE ONE, SIX, EIGHT, AND NINE IN THE PUBLIC SCHOOLS OF EIGHT COLORADO COUNTIES, 1925-26

Grade	Number	Boys		Girls		Percent	
		Boys	Girls	Boys	Girls		
1	2	3	4	5	6		
One	7612	3358	3654	52.0	48.0		
Six	7034	3575	3519	50.4	49.6		
Eight	5738	2835	2903	49.4	50.6		
Nine	4399	2101	2298	47.8	52.2		
Total	24843	12469	12374	50.2	49.8		

fact, while for all four grades there are found 95 fewer girls than boys, in the eighth grade there are found 68 fewer boys and in the ninth grade 197 fewer boys.

One must conclude, then, that there is less than the normal proportion of boys in the first year of secondary work in the eight counties examined. Evidently, there are factors within and without the school which repel and attract. What the causes are which affect this lack of balance in numbers and which deprive a rather large group of the boys of even a year of high school work will appear, perhaps, in the following sections.

## 2. LIFE AGE

When a large group of 24,979 pupils in grades one, six, eight, and nine are examined, one finds the median ages advancing through progressive grades in about the normal increments, one year to the grade. But at the eighth-to-ninth grade interval, while it might be expected that the ninth grade boys group would have a median age of 15.3 years, it seems that they are two-tenths of a year younger, and the girls are one-tenth of a year younger than the expectation. If McCall's<sup>1</sup> estimate of thirteen months as "the average time required for the average pupil to pass from grade to grade" is taken, the obtained age of the boys in grade nine would be 15 years 6 months and that of girls 15 years 4.6 months. This is 4.8 months older than the actual age for boys and 2.2 months older than that for girls. It is found also that, while the extreme range in ages for eighth and ninth grade boys is identical (9 years), for girls it is 8 years and 10 years. Thus, the high school girls' group seems to be scattered more widely, and an examination of the Q's shows that they are grouped more compactly at the middle of the distribution also. This seems to indicate that the high school is selecting boys and girls who are somewhat younger and who are distributed in terms of life age more compactly than in the elementary school. However, when an inquiry is made as to the effect of these facts of life age on school achievement, the conclusion is that there is practically no relationship.

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<sup>1</sup> McCall, W. A., *How to Measure in Education*, The Macmillan Company, 1922

### 3. NATIVE INTELLIGENCE

Data on 1537 pupils in grades eight and nine show the differences in median mental ages to be marked, but perhaps no more than might be expected from a year's growth (0.95 years). However, if Terman's mental grade interval of 12.6 months (1.05 years) be taken, ninth grade pupils should reach a mental age of 14.95 years (based on eighth grade figures) while they actually have an age of 14.85 years. This does not seem to show a selection on the basis of superior mentality. Boys are of distinctly lower mental ability in both grades, as measured by means of the McCall Multi-Mental Scale. The distributions are more compact in the first year of the high school, as the upper range reaches are identical. This seems to show that selection is on the whole in terms of the medium and superior types of mentality. The correlation study made indicates that, in terms of success in school subjects, the levels of intelligence represented are of great importance, as all the expressed relationships are close enough to be positively significant even when the influence of six associated factors are held constant ( $r_{19.245678}$ ). There does not appear to be much difference in the coefficients in eighth and in ninth grades, but the effect of intelligence on achievement in the case of the girls' groups is much greater than in the case of the boys.

### 4. HOME BACKGROUND

In terms of the culture items of the Chapman-Sims scale (Chapter I), Table XII shows a marked difference in the social level of the homes of eighth and of ninth grade boys and an appreciable difference in the case of girls. The type of distribution, however, remains about the same except that certain extremes in the upper ranges for boys and in the lower for girls are cut off. It is found, also, that the high schools are selecting fewer farmer's children by 45 percent than are the elementary schools and that but 40 percent of high school membership comes from farms and centers with less than 500 inhabitants. It appears, too that among groups of 1491 and 9990 families examined there is a difference in size of family amounting to fully one child, the homes of high school pupils being the larger and more often sending

<sup>2</sup> Terman, L. M. *The Intelligence of School Children*, Houghton, Mifflin Company, 1919

TABLE XII

THE HOME STATUS OF 675 EIGHTH AND NINTH GRADE BOYS AND 763 EIGHTH AND NINTH GRADE GIRLS IN FOUR TYPES OF WELD COUNTY, COLORADO, SCHOOLS AS MEASURED BY THE CHAPMAN SCALE, 1925-26

Summary	Eighth Grade		Ninth Grade	
	Boys	Girls	Boys	Girls
1	2	3	4	5
N	388	466	287	297
Q <sub>3</sub>	555.5	558.4	573.1	569.3
Median	532.1	534.1	547.3	541.7
Q <sub>1</sub>	507.7	511.8	526.2	519.7
Q	23.9	23.3	23.5	24.8

oldest children to school. Further, when the nativity and church affiliation of parents is checked, it is found that native stock is preponderant in the homes of high school children by the difference of nearly 15 percent of all, and that church membership is more usual by the difference between 20 and 9 percent.

##### 5. SCHOOL CONDUCT AND ATTITUDE

This study does not have an adequate measure of character traits. However, some indication of levels of cooperation on which school activities were being carried on was obtained by a request that each teacher rate her pupils (on a scale of 1 to 5) in general attitude toward the school and their work and in conformity to the necessities of the situation. This is, of course, a highly subjective rating. Further, a low mark, if the school situation in terms of curricular inadequacy and teacher incompetence was not worthy, might indicate the possession of more desirable character traits on the part of the pupil than would a high rating.

An examination of the relationship between pupil conduct and attitude and school achievement reveals no differences in grades eight and nine. This may be a comment upon the inefficiency of the school and not an indictment of pupils because of undesirable character traits. The facts suggest either (1) that the secondary schools included in the investigation are selecting for membership only those elementary school pupils incapable of further development toward maturity of character or (2) that the school is failing to per-

mit expression of more mature attitudes or growth into them. If the facts of the situation are represented by either suggestion, the high school is under indictment for inefficiency. If the second suggestion is in accord with the truth, sources of leadership for American democracy are in danger.

## 6. SCHOOL ACHIEVEMENT

In the matter of possible success in academic work, Tables XIII and XIV seem to say that the high schools represented in this study are very probably selecting pupils who are more able to achieve on higher levels. The composite scores in Table XIII show a difference in educational age of four months (15-0 and 14-8) between the median for eighth and ninth grade groups, but the latter are three points farther from the norm (item 3) than the former. It is discouraging,

TABLE XIII

THE ACHIEVEMENT OF PUPILS IN THE ELEMENTARY AND THE NINTH GRADES OF NINE COLORADO COUNTIES IN READING, ARITHMETIC, NATURAL SCIENCE, AND SOCIAL SCIENCE (COMPOSITE SCORE ON THE STANFORD ACHIEVEMENT TEST, ADVANCED EXAMINATION, FORM A), 1925-26

Size of Schools	N	Grade six	Grade eight	Grade nine
1	2	3	4	5
1. One, Two, and Three Teacher	1211 (a)	53.7	72.5	73.8
2. Over Three Teacher	9432 (a)	56.5	73.3	77.5
3. United States (b)	9816	59.0	76.0	82.0

a. Grades six, eight, nine, and twelve

b. 9816 pupils "from many parts of the United States," Ruch, G. M., Terman, L. M., and Kelly, T. L., *Stanford Achievement Test, Manual of Directions*, World Book Company, 1926

TABLE XIV

THE MULTIPLE RELATIONSHIP OF SEVEN DETERMINING VARIABLES TO THE CRITERION, (1) SCHOOL ACHIEVEMENT (STANFORD ACHIEVEMENT, ADVANCED EXAMINATION, FORM A) FOR ELEMENTARY AND SECONDARY SCHOOL BOYS AND GIRLS IN WELD COUNTY, COLORADO, 1925-26

Group	Eighth Grade				Ninth Grade			
	Boys		Girls		Boys		Girls	
	R	N	R	N	R	N	R	N
1	2	3	4	5	6	7	8	9
1.2456789	0.546	436	0.705	466	0.627	292	0.613	308

though, to see a greater difference in item three when a large group of pupils outside of Colorado is reported on. On the other hand, this might be an encouraging indication of democracy of high school membership, if so many other data in this chapter did not show like deficiencies. Table XIV shows that the predictive value of seven other factors in the school situation is identical in eighth grade and in ninth grade, if sex is not considered; but that the relationship is higher in high school for boys and lower for girls. This indicates some sex differentiation in selection for high school membership, when school achievement is taken as the criterion.

## 7. SUMMARY

Following the fact finding report of Chapter II, which showed a mortality at the eighth-to-ninth grade gap of nearly 25 percent, tentative generalizations with regard to the group selected for enrollment in the first year of the high school work are possible in this chapter.

a. In addition to the fact that two-thirds of the eighth grade pupils who do not attend high school are boys (Chapter II), it is found that the proportion of boys and girls in grade nine is not normal (boys, 48 percent, and girls, 52 percent). The distribution of 5738 boys and girls in grade eight is 49.4 percent and 50.6 percent.

b. The life age of ninth grade boys and girls is at least 2 months and 1 month respectively younger than the expectation, based on eighth grade ages. Using McCall's "average time estimate of 13 months, boys are nearly 6 months younger and girls over 2 months younger than the expected ages in the first year of high school. But this "youngness" has no more effect on school work than do comparable facts of life age in grade eight.

c. The evidence does not point to a distinct choice of superior mentality for high school membership. But 0.95 years mental age difference is found between eighth and ninth grade groups, while Terman's norm asks for 1.05 years. But the ninth grade distributions for both boys and girls are more compact, and the lower ranges are cut off. Perhaps, on the whole, selection is in terms of medium and upper types of intelligence. Any difference in native ability that does appear in favor of the freshman group, however, is not affecting school achievement there to any greater extent than in the eighth grade group. But marked sex differences appear.



High school girls are using native gifts to a more favorable limit than are high school boys.

d. High school pupils come from homes having more of a cultural background than the homes of eighth grade pupils, but there is a lower relationship there with school achievement. However, the high school work of boys is on the whole affected more by home status than is that of high school girls.

e. The fathers' occupation in the case of pupils in the larger systems having high schools is less often farming by at least 45 percent of the children involved. Nearly 90 percent of the fathers of pupils in the rural schools are engaged in agriculture.

f. The homes of 99.6 percent of the pupils in the smaller, largely elementary schools, are on farms or in communities of less than 500 people, but in the larger systems but 40 percent come from like situations.

g. The enrollment in secondary schools is on the whole from small families in contradistinction from that in the lower grades. A median difference of one child (5.30 and 4.39) is found in groups of 1491 and 9990 families checked.

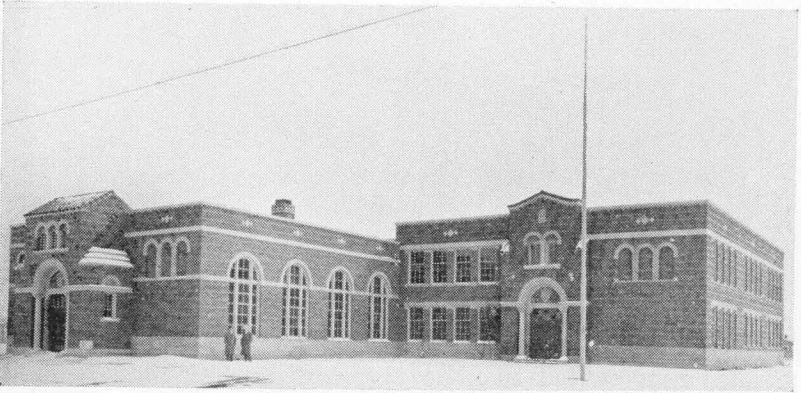
h. Secondary schools enroll more of the oldest children in families represented than do the elementary schools, where they are perhaps kept out of school because of their economic value.

i. High school enrollment is largely in terms of native stock by a difference of 10 percent to 15 percent, but it does not appear that this difference does not represent a similar distribution in the population at large.

j. There are more types of religious belief in the homes of urban high school pupils than in rural homes, and fewer homes unaffiliated with any organized church (rural, 20 percent; urban 8.8 percent). Perhaps the secondary school is selecting pupils first of all from homes benefitting from the cultural and moral values of a "church" tradition and habit of attendance.

k. What evidence is had on character traits points to a possible failure on the part of the secondary school to train for development in desirable attitude and conduct.

l. Freshman high school pupils achieve on a higher level than do eighth grade groups, but the predictive value of seven other factors in the school situation is identical in elementary and in secondary school.



The new high school at Brighton in Adams county, A. J. Foster, Superintendent of Schools, represents the best type of Colorado secondary school small town opportunities. Four hundred pupils are cared for here, and a differentiated four term course above the elementary school is offered. The building is brick and fire proofed. There are steel boilers with automatic feed controlled by the Johnson service. In contrast to deprivation of all social education in isolated, small-group attempts in secondary education, this school has organized extra-class organizations such as debating and glee clubs, an orchestra, a Girl's Reserve, and Hi Y, Commercial, Sewing, and Boys' Farm Clubs. A beautiful auditorium to seat 552 and a gymnasium (48x80) with 450 bleacher capacity help to take care of these activities.

## CHAPTER IV

THE EFFECT OF HIGH SCHOOL EXPERIENCE  
ON YOUTH ENROLLED

Tentative data have been presented in the two preceding chapters in answer to the questions, What type of child disappears at the eighth-to-ninth grade gap? and What type of pupil appears in the entering classes of the high school? Here, partial evidence will be presented on the type of individual who survives at the twelfth grade level in representative secondary schools of a pioneer state.

## 1. SEX

Total survival and sex distribution at ninth and twelfth grade levels are shown in Table XV. But one-half of the total number of freshmen pupils persist into the senior class (column 2), and there are 16 percent more girls than boys found there. (58 percent-42 percent) Further, the proportion of boys in the twelfth grade (column 5) is much lower than in the ninth, while that of girls is larger.

So far as 6626 high school pupils in eight Colorado counties are concerned, it appears that elimination is largely in terms of boys enrolled. Are the schools girls' schools? Are activities outside the school more real, more interesting, and more profitable? Answers must be forthcoming, if the prestige of secondary education is to be maintained. Unless it is decided that higher work in public education is to be offered exclusively to girls, a mortality of nearly 60 percent in

TABLE XV

THE PROPORTION OF BOYS AND OF GIRLS AMONG 6626 PUPILS IN GRADES NINE AND TWELVE IN THE PUBLIC SCHOOLS OF EIGHT COLORADO COUNTIES, 1925-26

Grade	Number	Boys	Girls	Boys	Girls
1	2	3	4	5	6
Nine	4399	2101	2298	47.7	52.3
Twelve	2227	1041	1186	42.2	57.8
Total	6626	3142	3484	47.2	52.8

four years' time and a discrepancy such as shown in columns 5 and 6 of Table XV are not to be explained.

## 2. LIFE AGE

It appeared in Chapter III that the high school, as represented by the data of this study, was selecting youth who were slightly younger than the norm and who were distributed more compactly than in eighth grades contributing to its membership. When median freshman and senior ages are compared in Table XVI in this chapter, similar facts seem to appear, if thirteen months be again taken as the time used for a grade's work. The average median age in grade nine is 15 years 1.8 months, and the expectation for grade twelve would be 18 years 4.8. It is seen, though, that the actual age is but 18 years 1.2 months. It may be that the effect of high school experience is to eliminate older pupils, as there is found in the groups of 4660 and 2529 here examined a discrepancy of 3.6 months between the central tendencies of obtained and actual ages. The Q's in Table XVI are all very similar, the twelfth grade group being slightly more widely scattered (0.85 and 0.95). If the spread were more marked, it might be said that the high school was giving opportunity for the development of characteristic individual abilities, but a difference of but 0.1 Q will not warrant such a generalization. Perhaps it may be said that the high schools here represented are retaining the younger pupils for four years of

TABLE XVI

LIFE AGE DISTRIBUTION IN TERMS OF YEARS OF 7189 BOYS AND GIRLS IN EIGHT COUNTIES OF COLORADO IN GRADES NINE AND TWELVE, 1925-26

Summary	Ninth Grade		Twelfth Grade	
	Boys	Girls	Boys	Girls
1	2	3	4	5
N	2297	2363	1185	1344
Q <sub>3</sub>	16.2	16.0	19.2	18.9
Median	15.1	15.2	18.2	18.0
Q <sub>1</sub>	14.5	14.4	17.3	17.1
Q	0.9	0.8	1.0	0.9

continuous membership, but are failing to provide educational opportunities such that all advancement may be commensurate with individual possibilities.

## 3. NATIVE INTELLIGENCE

The median mental ages (McCall Multi-Mental Scale) of 600 ninth grade and 370 twelfth grade pupils are given in Table XVII. The mean for the freshman groups is 14.85 years, and for the senior class 17.25 years. If it be assumed that Terman's mental growth of 1.05 years to the grade applies at this level also, the figure ought to be 18 years (14.85 + 3.15) for the twelfth grade. This seems to show an elimination of intelligence as a result of three or four years of

TABLE XVII

MENTAL AGE DISTRIBUTION IN TERMS OF MONTHS OF 424 BOYS AND 546 GIRLS IN THE NINTH AND TWELFTH GRADES IN FOUR TYPES OF WELD COUNTY, COLORADO, SCHOOLS, 1925-26

Summary	Ninth Grade		Twelfth Grade	
	Boys	Girls	Boys	Girls
1	2	3	4	5
N	292	308	132	238
Q <sub>3</sub>	16.0	17.1	17.9	18.8
Median	14.6	15.1	17.2	17.3
Q <sub>1</sub>	12.9	14.1	14.6	15.2
Q	1.6	1.5	1.6	1.9

high school experience. The sex differences are significant. Freshman boys are more immature mentally than freshman girls by an appreciable difference, but this is smoothed out in the senior group. It will be noticed also that the distributions for boys are identical in spread at both levels of advancement but that the girls' Q is larger, as they appear more frequently toward the excellent end of the array. In Table XVIII, it will be seen that there is a significant positive relationship between native intelligence and school achievement even when six important related variables are held constant ( $r_{19.245678}$ ). Somewhat larger coefficients are found in the ninth grade than in the senior group, and it may be that as a determiner of levels of school success native intelligence plays a larger part there than in the twelfth grade. But it will be noticed that very similar sex differences in favor of the boys appear also.

TABLE XVIII

THE RELATIONSHIP OF (9) MENTAL AGE TO (1) SCHOOL ACHIEVEMENT (STANFORD ACHIEVEMENT, ADVANCED EXAMINATION, FORM A) FOR FRESHMEN AND SENIOR BOYS AND GIRLS IN WELD COUNTY, COLORADO, 1925-26

Variables	Ninth Grade				Twelfth Grade			
	Boys		Girls		Boys		Girls	
	r	N	r	N	r	N	r	N
1	2	3	4	5	6	7	8	9
19	0.545	292	0.516	308	0.524	209	0.438	239
19.245678	0.473	292	0.540	308	0.497	209	0.377	239

## 4. HOME BACKGROUND

A report on the facts for home status as measured by the Chapman scale (Table XIX) shows a higher social and economic level in grade twelve than in the freshman group. When the figures for 584 and 369 pupils are compared, an advantage of fifteen points appears for the latter. This does not augur well for democracy in the high schools surveyed. However, the study of relationships shows that, so far as school achievement is concerned, type of home does not affect school success to any marked degree. The coefficients of the sixth order ( $r_{14.256789}$ ) are very close to zero. If there are significant facts here, it may be that the home has more effect on school work at the senior level, that there is a closer relationship for boys than for girls, and that the homes of senior pupils are more permanent by a difference of two years of residence (8.7 and 6.71).

TABLE XIX

THE HOME STATUS OF 418 BOYS AND 535 GIRLS IN THE NINTH AND TWELFTH GRADES IN THE OVER THREE TEACHER SCHOOLS OF WELD COUNTY, COLORADO, AS MEASURED BY THE CHAPMAN SCALE, 1925-26

Summary	Ninth Grade		Twelfth Grade	
	Boys	Girls	Boys	Girls
1	2	3	4	5
N	287	297	131	238
$Q_3$	573.1	569.3	584.6	582.1
Median	547.3	541.7	560.5	557.9
$Q_1$	526.2	519.7	533.8	537.3
Q	23.5	24.8	25.4	22.4

## 5. SCHOOL CONDUCT AND ATTITUDE

In the light of the discussion on school attitude and behavior in the preceding chapter, it may be that differences in relationship found in ninth and in twelfth grade groups are highly significant. It is safe to assume that desirable character traits ought to be related more closely to school achievement as growth approaches nearer to maturity, and one would expect a larger coefficient in senior classes than in freshman. However, the reverse proves to be true, as  $r$  for ninth grade is 0.339 and for twelfth grade 0.297. If these figures be interpreted naively, a choice might appear between two horns of a serious dilemma. Can it be that (1) high school curriculum offerings are eliminating those individuals capable of higher development toward maturity of character? Or is it possible that, as was suggested in Chapter III, (2) the type of organization and control in the secondary school does not permit expression of more mature attitudes or growth into them? If caught on either horn, secondary education is sure to be tossed into a limbo of difficulties requiring administrative skill of the highest type for release.

## 6. SCHOOL ACHIEVEMENT

The composite scores of Table XX show a difference in educational age of one year and six months (16-6 and 15-0) between the median for ninth and twelfth grade groups (items 1 and 2). The ninth grade is 6.4 points below the norm (item 3), but no like comparison is possible for grade twelve, unless a continuity norm of 94 be assumed. If this be done, a discrepancy of 5.3 points appears. These two bits of evidence may point to a survival of the more fit (in terms of school achievement) as a result of high school experience. If so, the findings would be in accord with data on high school persistency and elimination found elsewhere in this report. Table XXI shows that the predictive value of seven factors in high school experience is greater in ninth grade (0.620) than in twelfth (0.572), and that the coefficients are rather consistent in terms of sex. Possibly other unmeasured variables cloud the issue, but it may be that high school experience as offered differentiates between groups who attain (in terms of the Stanford Achievement examination) on higher and on lower levels.

TABLE XX

DIFFERENCES IN LEVELS OF SCHOOL ACHIEVEMENT IN TERMS OF THE COMPOSITE SCORE OF THE STANFORD ACHIEVEMENT, ADVANCED EXAMINATION, FORM A, IN FRESHMAN AND IN SENIOR HIGH SCHOOL CLASSES IN NINE COLORADO COUNTIES, 1925-26

Groups	N	Ninth Grade	Twelfth Grade
1	2	3	4
1. One, Two, and Three Teacher	1211 (a)	73.8	87.5
2. Over Three Teacher	9432 (a)	77.5	88.7
3. United States (b)	9816	82.0	94.0 (c)

a. Grades six, eight, nine, and twelve

b. 9816 pupils "from many parts of the United States," Ruch, G. M., Terman, L. M., and Kelley, T. L., *Stanford Achievement Test, Manual of Directions*, World Book Company, 1926

c. An assumed continuity norm

TABLE XXI

RELATION OF THE CRITERION, SCHOOL ACHIEVEMENT, TO ALL OTHER VARIABLES FOR NINTH AND TWELFTH GRADE BOYS AND GIRLS IN WELD COUNTY, 1925-26

Group	Ninth Grade				Twelfth Grade			
	Boys		Girls		Boys		Girls	
	R	N	R	N	R	N	R	N
1	2	3	4	5	6	7	8	9
1.2456789	0.627	292	0.613	308	0.587	209	0.557	239

## 7. SUMMARY

The specific inquiry of this chapter is with regard to differences which appear among groups of ninth grade and twelfth grade pupils when a number of significant variables are examined.

a. But one-half of the freshmen pupils persist into the senior class, and there are 16 percent more girls than boys found there.

b. The effect of high school experience is to eliminate older pupils, as a discrepancy of 3.6 months is found between obtained and actual ages in grade twelve. But it appears that curricular offerings do not take care adequately of individual possibilities.

c. That the high school loses its more intelligent pupils in the ninth-to-twelfth grade interval is shown by the dis-



crepancy of 0.75 years between obtained and actual mental ages, and native intelligence plays a larger part in determining school achievement in the freshman than in the senior group.

d. Senior pupils come from homes on a higher cultural and economic level than do freshman pupils. But this fact does not affect school achievement materially at either stage of advancement, although there is a slightly closer relationship in the twelfth grade.

e. That the high school loses pupils coming from the more impermanent homes is shown by the fact that length of residence in the homes of seniors is two years longer than in the case of freshmen. But there is a like unexplained sex difference which clouds the issue, and length of home residence does not seem to have any appreciable effect on school achievement at either level of advancement.

f. The high school fails to provide curriculum offerings which will insure that pupils shall develop normally in terms of desirable social character traits.

g. The educational age of Colorado twelfth grade pupils is 1 year and 6 months higher than that of the ninth grade group, but both are five or six points (composite score) below the normal achievement of youth in other states. Seven factors in the high school situation have a higher predictive value in ninth grade than in twelfth grade.

## CHAPTER V

## AGE-GRADE-PROGRESS IN THE HIGH SCHOOL

The facts reported in this chapter have to do with differences found in the relationship of life age, grade location, and school progress in the secondary grades of four sizes of administrative unit present in the counties included in the investigation. (1) Denver county and city is illustrative of the large city situation, 300,000 population (c.). (2) Colorado Springs is taken as the small city, 30,000 population. (3) The upper four grades in systems with more than three teacher schools found in seven counties form a third illustrative group. (4) Finally, a small and scattered group of pupils found in grades nine, ten, eleven, and twelve of the one, two, and three teacher schools of four counties is examined as the strictly rural unorganized secondary group.

## 1. LIFE AGE AND GRADE LOCATION

The facts of retardation, acceleration, and normal classification of the pupils in these schools of four sizes is shown in Table XXII. The Denver figures are for 6155 pupils in the senior high schools. This figure does not include 2109 children enrolled in the ninth grades of Denver junior high schools, and it is interesting to know that the age-grade figures for these ninth grade junior high school pupils are 22.5 percent acceleration, 46.7 percent normalcy, and 30.8 percent retardation. In the Denver senior high schools, the figures for 740 ninth grade pupils are 19.7 percent acceleration, 36.6 percent normalcy, and 43.7 percent retardation. Evidently, the junior high schools have a highly selected enrollment in this grade, but a contrary situation appears when the entire junior high school group of 7614 pupils in grades seven, eight, and nine (20.4, 44.5, and 35.1 percent) is compared with all senior high school pupils (27.0, 40.4, and 32.6 percent).

The facts for 1089 Colorado Springs pupils are found in item four. Practically half of the high school group is

TABLE XXII

LIFE AGE AND GRADE LOCATION IN THE NINTH, TENTH, ELEVENTH, AND TWELFTH GRADES OF FOUR TYPES OF ADMINISTRATIVE UNITS IN COLORADO COMPARED WITH LIKE DATA ELSEWHERE, 1925-26

System	Percent Underage	Percent Normal	Percent Overage
1	2	3	4
1. Seattle, Washington (a)	18.5	36.1	45.4
2. Boston, Massachusetts (b)	21.7	44.2	31.1
3. Denver, Colorado	27.0	40.4	32.6
4. Colorado Springs, Colorado	1.8	50.5	47.7
5. Farm pupils (10,000 in six states) (c)	29.0	54.0	17.0
6. Non-farm pupils (8492 in six states) (c)	27.0	56.0	17.0
7. Colorado larger systems	2.6	49.9	47.5
8. Colorado one, two, and three teacher schools	5.8	46.5	47.7

- a. Ayer, F. C., "Progress of Pupils," Chapter VII, *Studies of Administrative Research*, Seattle, Washington, Public Schools, Department of Research, 1924
- b. Kallom, A. W., *Report on Age and Progress of Pupils in the Boston Public Schools*, School Document No. 12, Boston Public Schools, 1925.
- c. Windes, E. E., *High School Education of the Farm Population in Selected States*, Bureau of Education Bulletin (1925), No. 6

found to be normal and half retarded, while but nineteen out of 1089 are younger than the normal age in the grades in which they are found.

Nearly 5,000 high school pupils were found in the larger systems of Colorado counties outside of Denver, and their age-grade status appears in item seven. This is seen to be, as in Colorado Springs, nearly fifty-fifty as to normalcy and retardation with a very small group (124 out of 4,787) accelerated.

It was thought to be worth while to isolate for examination all pupils found in grades nine, ten, eleven, and twelve in the strictly rural schools with one, two, and three teachers.

This was done for four cooperating counties, and the age-grade status of the group of 159 discovered is shown in item eight. The facts for this group are significant, although it is so small. The upper grade pupils here included are found in the usual situation, scattered in small numbers (one or two to a half dozen, perhaps) where secondary work is attempted in one to three room isolated rural schools.

These facts for four sizes of administrative unit are compared with typical situations in items one, two, five, and six. At first glance, a perfect correlation does not seem to appear in the eight items of the table between age-grade status and size of system. However, if items five and six are disregarded, it will help to clear up the table; and in the author's judgment the figures given by Windes are in doubt, as he does not report the details of their derivation. This leaves a comparison between the facts for three large systems (items 1, 2, and 3) and for Colorado outside of Denver (items 4, 7, and 8) more possible, and it is seen that the larger units have a smaller amount of overageness and a much larger percent of acceleration.

In defense of the one room school, it has been said that the small enrollment furnishes an ideal situation for an application of the technic of individual instruction. The answer, so far as normal advancement by grade units is concerned, is that this opportunity is not recognized by teachers in charge. The small underage percents in Table XXII show this for the situations studied in this investigation. It would seem that the findings of this section are confirmatory of other checkings in systems of similar sizes and that it may be said that one of the sure causes of deprivation of adequate opportunities for high school education is found in lack of organization of systems into larger units of administration.

## 2. PROGRESS AND GRADE LOCATION

A more significant checking in relation to grade location for the secondary segment of administrative units of different sizes in Colorado, that of time used to reach a given grade level, is found in summary form in Table XXIII.

TABLE XXIII

GRADE PROGRESS AS RELATED TO SIZE OF ADMINISTRATIVE UNIT IN THE CASE OF SECONDARY EDUCATION IN COLORADO, 1925-26

Rate of Progress	Denver (a)		Colorado Springs		Colorado over three teacher schools		Colorado one, two, and three teacher schools	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1	2	3	4	5	6	7	8	9
1. Over three years rapid	3	0.7	0	0.0	4			
2. Three years rapid	10	2.3	3	0.2	28	0.4		
3. Two years rapid	35	8.3	39	2.7	135	2.7		
4. One year rapid	101	24.1	219	16.2	709	16.4		
5. Normal progress	236	56.3	784	57.6	2490	53.9	19	19.0
6. One year slow	30	7.1	268	19.8	985	21.2	44	44.0
7. Two years slow	3	0.7	37	2.8	205	4.3	22	22.0
8. Three years slow	1	0.5	8	0.5	50	1.0	11	11.0
9. Over three years slow	0	0.0	2	0.2	8	0.1	2	2.0
Total	419	100.0	1360	100.0	4614	100.0	100	100.0
Percent Rapid	149	35.5	261	18.5	876	19.1	19	19.0
Percent Normal	236	56.3	784	57.6	2490	53.9	44	44.0
Percent Slow	34	8.2	315	23.9	1248	27.0	37	37.0

a. A four year high school in a typical location

It will be seen that there is a marked relationship between size of system and rate of progress, positive for normal and rapid, and negative for slow.

When the ratio of progress to time used is figured, the results for the same situations appear as in Table XXIV. The extremes of difference are found in items one and four, column five, where it is seen that Denver is saving a half school year in the twelve year course and that in the smallest Colorado schools where secondary work is attempted a half year extra is required to complete twelve years of work.

It is interesting to compare grade-progress and efficiency figures derived from the data of the Illinois survey and from a recent Boston report (items 5 and 6). The graduates of 22 Illinois high schools used from three to six years to complete the four year course, a median of 4.3 years. In the Boston high schools nearly all (92 percent) of the pupils made normal progress. This gives the former a median index of efficiency of 0.93, and the latter an index of 0.96.

The checking in all grades of the public school system shows a distinct relationship between size of administrative unit and the grade location and school progress of public school pupils. Negative conditions of retardation and of slow progress were not found in such large amounts and proportions in the larger systems as in the smaller. The case is not so clear, though, when the last four years of work are considered as a unit. In fact, except for extremes of size, the expressions of amount for grade placement as related to life age and school entrance show infrequent discrepancies. Two explanations appear. It may be that the secondary school has arranged its curriculum to fit the needs and capabilities of youth perfectly. Or it may be that the child who might appear in percentages of retardation and among the lagging group has fallen by the wayside before he is able to influence efficiency figures such as these. However this may be for secondary education at large, it is certain that the latter view must be taken of the high school situation in the pioneer state of Colorado. The lessening figures of this chapter, as grade groups have been examined on higher and higher levels, have presented the facts of elimination, and Chapter II above has reported on the amount of mortality at the eighth-to-ninth grade gap. Further, Chapters III and IV have shown not only the process of selection operating at the point of entrance to secondary work but the constant sifting of the misfit throughout the four-year course and in particular in the first year.

It seems apparent to the writer, in the light of this difficulty analysis, that the next most outstanding need is an attack through professionally directed secondary research on curriculum offerings in this segment of the public school system and study by administrators and supervisors of problems connected with its effective application. The high school is not efficient unless it provides for the steady advancement of all youth asking for its privileges and opportunities. There is an obligation to provide worth while, happy activities for all levels of capacity and of ultimate destination present in the pupil group.

TABLE XXIV

THE EFFICIENCY OF FOUR SIZES OF ADMINISTRATIVE UNITS IN COLORADO IN TERMS OF THE GRADE PROGRESS OF THAT PART OF THE PUPIL POPULATION FOUND IN THE SECONDARY SCHOOLS AND ON THE BASIS OF TOTAL SCHOOL EXPERIENCE COMPARED WITH LIKE FACTS IN TWO OTHER SITUATIONS, 1925-26

Unit	Number of Pupils	Progress	Rate	Twelve Years	Index (12 ÷ column 5)
1	2	3	4	5	6
1. Denver (a)	419	1.040	0.960	11.52	1.04
2. Colorado Springs	1360	0.994	1.004	12.05	0.99
3. Colorado over three teacher systems	4614	1.010	0.989	11.87	1.01
4. Colorado one, two, and three teacher schools	100	0.961	1.040	12.48	0.96
5. Twenty-two Illinois high schools (b)				4.30(d)	0.93(d)
6. Boston High School (c)	21052	0.955	1.046	4.18(d)	0.96(d)

a. A representative four year high school

b. Coffman, L. D., *Illinois School Survey; A cooperative Investigation of School Conditions and Efficiency Initiated and Conducted by the Teachers of Illinois in the Interest of all the Children of all the People*, Illinois State Teachers' Association, 1917

c. Kallom, A. W., *Report on Age and Progress of Pupils in the Boston Public Schools*, School Document No. 12, Boston Public Schools, 1925

d. Four years of secondary work

### 3. SUMMARY

A checking of age-grade data for 70,734 pupils in all grades in ten Colorado counties reveals 50 percent of retardation, if the urban situation in the Denver system be omitted from the calculation, and practically no differences among schools of different sizes. To include Denver's pupil population lowers the figures from 49 percent to 25 percent for over three teacher schools and decreases state over-ageness to 27 percent. These figures correspond very well with like facts elsewhere, but a recent report for Boston shows a much larger accelerated group than Denver has.

When grade-progress facts are obtained for the four types of schools studied (outside of Denver), it is found that for all of them there is a lag such that nearly an extra three-fourths of a school year must be used to complete the elementary course of eight years and that the one teacher schools must extend the time used by nearly thirty days more than is

necessary in the urban schools. This situation is far below an ideal condition such as that reported for Seattle elementary schools where the index of efficiency is above unity (1.012) while in the Colorado schools it is below (0.917).

Examination of grade status with reference to life age and progress for 35,531 boys and 35,203 girls in separate groups shows sex differences amounting to 5 percent more retardation among boys, but a greater proportion of girls accelerated and normally placed. A similar relationship to progress is indicated by the fact that boys require three-fourths of a school year more to complete the elementary course and a half-year more for twelve years of work.

Four sizes of administrative unit were examined with reference to facts of age-grade-progress, a large city system, a small city, schools with more than three teachers, and the smallest isolated situations. It was found that age-grade status is closely related to size of unit, the larger systems having the lesser amounts of retardation. The same relationship was found also for grade-progress. The larger the system the greater proportion of the pupil population was found making normal and rapid progress, and the smaller the number who were found lagging behind. The check on time used to complete a year's school work showed a similar situation, from Denver where less than the allotted school year is needed to the smallest schools where three-fourths of a year's extra time would be required to do eight years of work. The indices of efficiency were 1.008 and 0.916.

The final section of this chapter shows that the same relationship of age-grade-progress to size of administrative unit does not obtain when the high school alone is considered. Whether secondary work is undertaken in the largest systems or in the one room rural school, differences of retardation and of time used do not appear so surely as when all grades, one to twelve, are included. A tentative conclusion is that mortality along the way has eliminated the retard and that the high school is taking care of a highly selected group.

It will be noted that this summary of the checking of the status of public school pupils with relation to their advancement includes the Colorado and comparative facts for all grades as well as those for the high school as given in the preceding paragraph. This gives a more inclusive idea of the complete situation.



## CHAPTER VI

## FREE HIGH SCHOOL PRIVILEGES

The modern movement for the extension of universal secondary school privileges without regard to parental residence is a logical development of educational opportunities beyond the elementary level. From the time of Benjamin Franklin's *Proposals Relating to the Education of Youth in Pennsylvania* which resulted in the first academy<sup>1</sup> (1749), through the history of the high school beginning with the English High School of Boston (1821), the offerings of our middle schools have become wider year by year. The decision by the Supreme Court of Michigan of the Kalamazoo high school case added secondary education to our public school curriculum on a legal basis. Since that time the tendency has been toward uninterrupted schooling from the first grade to twelfth all under charge of public taxation. The state of Colorado has taken her part in this general movement.<sup>3</sup>

Toward the latter part of this period of development, two distinctive tendencies have appeared, (1) the establishment of larger units of control, (2) the offering of free high school tuition without regard to district boundaries.

## 1. TUITION FOR OUTSIDE HIGH SCHOOL ATTENDANCE

As a background for the facts in Colorado, a checking was made of recent statutes in 48 states which revealed the present status of the law on the matter of the payment of tuition for high school attendance away from the home district. At least seven types of situations are found.

a. In eighteen states, it is said definitely either that districts "must" pay the tuition or that the schools are "free."

b. In ten states, tuition is provided for either by a larger unit of administration or by a special county levy, although in one state the county high school board makes a "nominal charge."

c. In seven states, there is mandatory legislation, but the amount of tuition per pupil for the school month and

<sup>1</sup> Edmunds, F. S., *History of the Central High School of Philadelphia*, J. B. Lippincott Company, 1902 "A Number of the Poorer Sort" were to be prepared "to teach children Reading, Writing, Arithmetic, and the Grammar of their Mother Tongue."

<sup>2</sup> 30 Michigan and *Report of the Superintendent of Public Instruction of Michigan*, 1874

<sup>3</sup> Hale, H. M., Gove, A., Shattuck, J. C., Editors, *Education in Colorado, 1861-1885*, State Teachers' Association of Colorado, 1886

year is set or limited. The limits are from \$2.50 to \$12 per month, and it is probable that even the largest amount is below the actual per capita total high school costs. In one state the upper limit is set as "the amount of school tax paid by parent."

d. In three states, the payment of tuition is a matter of bargaining between district boards interested, or depends upon a vote of the district or a majority petition of voters.

e. In eight states, state aid is provided for the payment of tuition in whole or in part.

f. In one state, the district "charges" tuition not to exceed \$2.00 per school week.

g. In one state, tuition is charged but there is no definite payment provision.

It is seen, then, that definite mandatory legislation is found in a total of at least 25 states, that ten others have rather tentative provisions for a payment of all or part of the high school tuition, and that in ten states the county unit takes care of all or the greater part of any possible tuition charge. Two states have legislation which provides for a district vote or petition to effect the payment of tuition; and in one state, Colorado, permissive legislation makes it a matter of agreement between district boards.

Legislation on the payment of high school tuition began in Colorado in 1908 with Subdivision 15 of Section 5925 R. S.<sup>4</sup> This was amended by Chapter 202, Laws of 1909 and by Chapter 142, Laws of 1913. Both laws were attempts to make provision for the attendance of pupils of one district in the high school of another district with a mandate for the payment of tuition by the home district. This was to hold when the school house in the adjoining district was more accessible, but it provided that the board might refuse to admit pupils because of insufficient room. This act of 1913 amended the 1909 Session Laws, which had made it compulsory on the board of one district to permit a pupil of another district to attend school in whichever school was more accessible and made it compulsory on the directors of the pupil's district to pay a reasonable tuition.

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<sup>4</sup> Letters from W. R. Kely, County Attorney of Weld County, and J. C. Vivian, Assistant to the Attorney General of Colorado

The Act of 1909, and that of 1913 by analogy, was held to be unconstitutional by the state Supreme Court. The decision is in 60th Colorado Supreme Court Reports (Case 8376) and is the case of School District No. 16 in Adams County vs. Union High School No. One in Adams County. The Court said:

"We think the law is invalid when tested by the provisions of Section 15 of Art. IX of our organic law. The section is as follows: 'The general assembly shall, by law, provide for organization of school districts of convenient size, in each of which shall be established a board of education, to consist of three or more directors to be elected by the qualified electors of the district. Said directors shall have control of instruction in the public schools of their respective districts.' Here is a constitutional mandate that instruction in the public schools of every school district shall be under the control of the directors thereof. Nevertheless, the general assembly, by this attempted legislation, seeks to divest the directors of district, wherein there is no high school, of control of instruction therein, beyond a certain attainment and invest such control in the pupils residing therein or in the board of directors of an adjoining district. The legislature, in providing for the education of the pupils of a given district in the schools of another district, and imposing the cost thereof upon the former, clearly interfered with the control of instruction in such district. No discretion is left in the board of directors of the district wherein there is no high school as to the character of high school instruction the pupils thereof shall receive at the cost of the district. There can be no difference in principle between what is attempted by the legislation in question, and an effort of the general assembly to cause schools to be established and maintained, in whole or in part, at the cost of particular districts, and invest the management thereof in boards of directors of other districts."

To meet this fact of unconstitutionality by leaving the matter of attendance and tuition to the discretion of the boards of directors of the school districts interested, the Act of 1919 was passed. (Subdivision 15th of 8333, Compiled Laws of Colorado, 1921.) This is as follows:

"Whenever a pupil resident in one district desires to attend high school or any other school in another school district of any character, whether in another county or not, either because of convenience or of lack of either high school or other school provisions in the district in which such pupil is resident or for any other proper reason whatsoever which shall appear sufficient to both the board of directors of the district wherein such pupil is resident and of the district in which such pupil desires to attend school; the said boards

of directors shall have authority to make arrangements therefor by agreement, including arrangements for reasonable compensation from the funds of the district in which such pupil is resident, to be paid to the district in which such pupil desires to attend and any such arrangement so made shall be enforceable at law."

It is clear from this statement of the present law that the payment of any tuition whatever is a matter of option and of any arrangement possible to be made between districts concerned.

It would be the first judgment of any citizen reading this statement that permissive legislation such as this would be sufficient to meet any needs which might arise, that the fact of the presence of public spirited men on district school boards would insure a broad minded attitude toward the desirability of universal high school privileges in the state on the part of any group of directors to whom such needs might become known.

The facts are that it is not possible to be so optimistic about this. Table XXV reports an intensive checking of the actual attitude of 582 boards of directors in eleven representative counties. These counties are representative in that they include every important geographic, industrial, economic, and social situation, and every type of high school organization in the state. They constitute a good sampling. The total shows that in 93 percent of the districts only 50 to 60 percent of the boards are paying any tuition, and while the total sums paid look large they reduce to but \$55 to \$60 per pupil per year. This is probably below the actual cost of educational privileges received (Table XXVI).

In addition to these facts on the status of free high school privileges in eleven selected situations, reports were received from 54 out of the total of 63 county superintendents of Colorado on the general condition with regard to secondary school offerings in their counties. It appeared that over three-fourths of the school districts in the state were without high schools and that in 16 percent of these districts the boards of education paid no tuition at all for attendance in high schools outside the district. This made a total of nearly 13 percent of all districts in the state in which high school tuition was not taken care of in the case of outside attendance. A distribution of these returns among classes of dis-

TABLE XXV

THE PRACTICE OF BOARDS OF EDUCATION IN 582 DISTRICTS (93 PERCENT OF ALL DISTRICTS) IN ELEVEN COUNTIES OF THE STATE OF COLORADO IN THE PAYMENT OF HIGH SCHOOL TUITION OF PUPILS WHO ATTENDED OUTSIDE THEIR OWN DISTRICT, 1924-26

County	Total Number of Districts	Number of Districts Reporting	Number of Districts Paying Tuition				Number of Tuition Pupils		Total Tuition Paid	
			1924-25		1925-26		1924-25	1925-26	1924-25	1925-26
			Yes	No	Yes	No				
1	2	3	4	5	6	7	8	9	10	11
1. Baca	65	65	26	39	26	39	(a)	(a)	(a)	(a)
2. Boulder	53	52	30	22	30	22	149	127	\$8,526.75	\$7,044.25
3. Costilla	14	14	(b)	14	(b)	14	95	96	6,170.75	6,843.00
4. Delta	21	21	12	9	13	8	(c)	(c)	2,706.25	3,106.25
5. Denver	1	1	(c)	1	(c)	1	50	57	3,683.50	4,582.00
6. El Paso	38	13	11	2	11	2	(d)	(d)	16,449.14	18,312.72
7. Las Animas	88	88	88	(d)	88	(d)	64	75		
8. Logan	56	56	56	(e)	56	(e)	351	393		
9. Routt	43	43	20	23	22	21	(f)	(f)		
10. Weld	135	117	64	53	60	57				
11. Yuma	112	112	112	(f)	112	(f)				
Total	626	582	419	163	418	164	709	748	\$37,536.39	\$39,888.22

a. According to a statement by E. C. Denney, former county superintendent, about 40 percent of the boards of education are willing to pay the tuition of high school pupils who attend outside their home districts.  
 b. "The attitude of the boards of education in Costilla county in the matter of payment of the tuition of eighth grade graduates in other districts than their own is objection." No tuition was paid either year in question.  
 c. The county, city, and school districts of Denver are coextensive.  
 d. "We have no districts in this county who are paying tuition of eighth grade graduates attending high school in districts outside their own. Las Animas county was organized into a County High School District some five years ago, and all students who cannot attend one of the county high school units has his or her tuition paid to any other high school by the County High School District."  
 e. "In this county we have thirteen high schools all under the administration of the Logan County High School Committee. There are no tuition charges. I happen to know that no school districts in this county are paying tuition for high school pupils attending schools outside the county since we have no tuition charges for our own high school students."  
 f. Yuma has a county high school system with a Union High School at Yuma city. There is no tuition problem.

tricts showed that actual refusal to pay tuition was confined to directors in the third class districts only. However, it is found that there are twenty out of 71 of the second class districts without any high school privileges at all.

When these items of negation are multiplied by the figures for state area and for total pupil enrollment in the public schools, tentative figures of most alarming size are

TABLE XXVI

THE PROPORTION OF DISTRICTS IN TEN COUNTIES OF THE STATE OF COLORADO THAT PAY THE TUITION OF PUPILS WHO ATTENDED OUTSIDE THEIR OWN DISTRICTS AND THE ANNUAL AMOUNT PAID PER PUPIL, 1924-26

County	Percent of Districts Reporting that Pay Tuition		Average Amount Paid per Pupil	
	1924-25	1925-26	1924-25	1925-26
1	2	3	4	5
1. Baca	40.0 (a)	40.0 (a)		
2. Boulder	57.8	57.5	\$57.74	\$55.46
3. Costilla	00.0	00.0	0.00	0.00
4. Delta	57.1	61.9	64.94	71.28
5. El Paso	84.6	84.6	54.12	54.49
6. Las Animas	100.0	100.0		
7. Logan	100.0	100.0		
8. Routt	46.5	51.9	57.55	61.08
9. Weld	54.7	51.2	46.86	46.59
10. Yuma	100.0	100.0		
Approximate				

<sup>N</sup>According to a statement by E. C. Denney, former county superintendent, about 40 percent of the boards of education are willing to pay the tuition of high school pupils who attend outside their home districts.

<sup>a</sup>According to a statement by E. C. Denney, former county superintendent, about 40 percent of the boards of education are willing to pay the tuition of high school pupils who attend outside their home districts.

obtained on deprivation of high school privileges in the state. The details of these will not be given here, but in bulk they furnish additional evidence on the futility of the present permissive legislation on the matter of the payment of outside high school tuition. One cannot regard the situation with complacency, assuming that when directors see need for district aid they will provide for it.

## 2. THE ABILITY TO OFFER FREE HIGH SCHOOL TUITION

The large fact that appears is that a part of Colorado's youth, too large a group, is deprived of opportunities for further public school education beyond the elementary school because local boards will not pay their high school tuition wherever secondary class work may be obtained. The natural inquiry is as to why this is possible at a time when and in a state where the high school is in general favor and has been

accepted as a logical and necessary continuation of primary education. Complete evidence is not available in answer to this question, but it is possible to prove that economic necessity outside of the home is not the reason and that it is not because the public schools are discriminated against in the distribution of public taxes.

A detailed examination of economic conditions in the 24 counties of the state in which the 231 boards of education were found who refused to provide for high school tuition for outside attendance revealed facts as given in column two of Table XXVII. When these are compared item by item with like data in the remaining counties (column 3) and in all 63 counties of the state (column 4), no valid reason is found in the realm of necessity for a refusal to take care of outside tuition costs in cases where aid is needed. In fact, money figures like items six and eight seem to say that the public school system as a whole is in distinct favor in these 24 counties; and item nine shows no discrepancy which ought to affect high school privileges. It must be that causes outside

TABLE XXVII

THE ECONOMIC CONDITIONS IN THE 24 COLORADO COUNTIES IN WHICH 231 BOARDS OF DIRECTORS WERE REPORTED AS REFUSING TO PAY OUTSIDE HIGH SCHOOL TUITION, 1926

Item	Median for 24 Counties	Median for 39 other Counties	Median for the State
1	2	3	4
1. Percent of cultivated area (a)	7.2	7.0	5.9
2. Median acres capable of irrigation (b)	32,956	32,430	34,623
3. Rank in valuation of all crops (a)	26.5	31.5	30.5
4. Rank in total assessed valuation (a)	27.0	33.5	31.5
5. Percent of state assessed valuation (a)	1.05	0.70	0.85
6. Taxes assessed per capita (a)	\$43.06	\$41.20	\$40.05
7. Percent school revenue is of total county tax (a)	46.3	50.8	48.2
8. Median per capita cost of education based on enrollment (a)	\$93.60	\$89.91	\$93.50
9. Median per capita cost of education based on total receipts and total population (a)	\$25.91	\$27.37	\$26.09

a. Ingram, T. R., *Yearbook of the State of Colorado*, Colorado State Board of Immigration, 1926

b. *United States Census Reports*, 1920

of economic conditions are responsible for the situation revealed in the section above. The 24 counties under criticism are as able and do provide for the elementary schools on a level comparable to that found in the entire state, but secondary education is not fully a part of the free public school system.

It is interesting and significant in this connection to note the place Colorado has in a comparison with country-wide conditions in educational ability and achievement (Table XXVIII). The percents of items one and two reveal no peculiar basic deficiency in state economic wealth, and the remarkable proportionate increase in total costs shown in item ten is but what would be expected in the rapid development of a state emerging from pioneer conditions. Further, the rank figures in items three to nine inclusive are all above and close to the upper quartile position, and those in items eleven, twelve, and thirteen indicate no condition of illiteracy or of

TABLE XXVIII

THE POSSIBILITIES FOR PUBLIC EDUCATION IN COLORADO COMPARED WITH ALL STATES, 1925-26

Item	Colorado	United States
1	2	3
1. Percent that average total income is of wealth (a)	23.6	23.9
2. Percent that average current income is of wealth (a)	21.3	21.8
3. Rank in ability to support education (a)	21	
4. Rank in total income per child (a)	13	
5. Rank current income per child (a)	17	
6. Rank in total amount expended per child (b)	12	
7. Rank in average salaries paid (b)	22	
8. Rank in cost excluding salaries (b)	14	
9. Rank in assessed valuation of school property (c)	26	
10. Percent of increases for 42 years in total school costs (a)	4799.9	1902.3
11. Rank in percent of illiteracy (d)	27	
12. Rank in circulation of popular magazines (e)	7	
13. Rank in circulation of magazines of opinion (e)	13	

a. Norton, J. K., *The Ability of the States to Support Education*, Research Bulletin of the National Education Association, Vol. IV, Nos. 1 and 2, 1926

b. *Supplement to American School Board Journal*, December, 1924

c. *Statistics of State School Systems*, United States Bureau of Education, Bulletin 1924, No. 31

d. *United States Census Reports*, 1920

e. *Bulletin of the Elementary School Principals*, Vol. III, No. 2, 1924



lack of general intelligence such as is found in many states which are retarded in educational development.

### 3. A DESIRABLE AND POSSIBLE HIGH SCHOOL TUITION LAW

It has been seen that the mandatory laws of 1909 and 1913 have been held to be unconstitutional by the Colorado Supreme Court. The provision cited is Section 15 of Article IX:

The general assembly shall, by law, provide for organization of school districts of convenient size, in each of which shall be established a board of education, to consist of three or more directors to be elected by the qualified electors of the district. Said directors *shall have control of instruction in the public schools of the respective districts.*

The opinion held is that, when a pupil attends in a district outside that of the residence of his parents, the home board of directors loses control of the type of instruction which shall be offered him. For this reason, boards of directors cannot be *compelled* to provide for attendance of eligibles in neighboring high schools when no secondary school privileges are offered at home, and the present law goes no farther than to give boards "authority to make arrangements." This opinion disregards a preceding section of the constitution in which every child between the ages of six and twenty-one years is guaranteed a "free common school education." Evidently the high school is held to be not a part of but an addition to the public common school system of the state.

For comparison with this situation a typical statute on high school tuition is quoted here, that in New Hampshire:

Any district not maintaining a high school or school of corresponding grade shall pay for the tuition of any child who with parents or guardian resides in said district and who attends high school or academy in another district in this state, and the parent or guardian of such child shall notify the school board of the district in which he resides of the high school or academy which he has determined to attend; provided, however, except as in section 21, that no district shall be liable for tuition of a child in any school, in excess of the average cost per child of instruction for the regularly employed teachers of that school or of all the public high schools of the state, and the cost of textbooks, supplies and apparatus during the school year preceding, and in senior high school work only. (Public Laws, Art. 120, Section 19, 1925)

The article of the New Hampshire constitution on education says:

Knowledge and learning generally diffused through a community being essential to the preservation of a free government, and spreading the opportunities and advantages of education through the various parts of the country being highly conducive to promote this end, it shall be the duty of the legislators and magistrates, in all future periods of this government, to cherish the interest of literature and the sciences, and all seminaries and public schools; to encourage private and public institutions, rewards, and immunities for the promotion of agriculture, arts, sciences, commerce, trades, manufactures, and natural history of the country; to countenance and inculcate the principles of humanity and general benevolence, public and private charity, industry and economy, honesty and punctuality, sincerity, sobriety, and all social affections and generous sentiments, among the people; provided, nevertheless, that no money raised by taxation shall ever be granted or applied for the use of the schools or institutions of any religious sect or denomination. (Article 82)

It is seen that this contains no provision for the location of the control of the public school in the local district. It assumes that public education is a state matter, and that larger units of control will secure to local districts better schools.

The contrast of the situations in Colorado and in New Hampshire is striking. Colorado can make plans for improvements in school organization, but cannot compel anything which will infringe on the power of local boards. Consolidated, county, and union high school districts take care of the matter of high school tuition within their own territories, but all of the 24 counties where deprivation of high school opportunities has been found do not have them and cannot be compelled so to organize.

Competent legal advice discourages any attempt to frame a law which would be fully mandatory. It has been thought that provision to take care of specific cases of deprivation might be made. For example, when an eighth grade graduate wishes to attend the secondary school in another district and the boards of directors cannot agree as to attendance or tuition, could not the county superintendent act as

arbitrator and the county commissioners take care of the tuition amount? Or, might it not be possible to provide for appeal to the State Superintendent's office upon failure of the school boards directly interested to agree upon the tuition? But such laws could not be anything but permissive. If made mandatory, they might interfere with the right of control of the home district.

It seems to be the final conclusion that anything short of a radical change in the organic law of the state cannot insure to every prospective high school child a right to attend school free of charge.

It is well known among state educational leaders that there are other archaic situations in the state educational system of Colorado which need study and revision. The procedure in a number of other states, where like deficiencies have been corrected, has consisted first of all of the initiation of a movement for a complete state educational survey by the research and the legislative committees of the state teachers' association. This has shown the need and has secured the interest and financial cooperation of the legislature. The survey has been conducted, as a rule, by outside agencies, usually the office of the United States Commissioner of Education or one of the large educational foundations.

#### 4. SUMMARY

a. The legal requirements in 48 states in the matter of the payment of high school tuition for attendance outside the home district are as follows:

(1) In eighteen states, districts must pay the tuition, or the schools are said to be "free."

(2) In ten states, tuition is provided for either by a larger unit of administration or by a special county levy, although in one state the county high school board makes a "nominal charge."

(3) In seven states, there is mandatory legislation, but the amount of tuition per pupil for the school month and year is set or limited. The limits are from \$2.50 to \$12 per month, and it is probable that even the largest amount is below the actual per capita total high school costs. In one state the upper limit is set as "the amount of school tax paid by parent."

(4) In three states, the payment of tuition is a matter of bargaining between district boards interested (Colorado), or depends upon a vote of the district or upon a majority petition of voters.

(5) In eight states, state aid is provided for the payment of tuition in whole or in part.

(6) In one state, the district "charges" tuition not to exceed \$2.00 per school week.

(7) In one state, tuition is charged, but there is no definite payment provision.

b. Definite mandatory legislation is found in a total of at least 25 states, ten others have rather tentative provisions for a payment of all or part of the high school tuition, and in ten states the county unit takes care of all or the greater part of any possible tuition charge.

c. Two states have legislation which provides for a district vote or petition to effect the payment of tuition, and in one state (Colorado) permissive legislation makes it a matter of agreement between district boards.

d. The Colorado state laws of 1909 made it compulsory on the board of directors of one district to permit a pupil of another district to attend school in the more accessible district and compelled the home district to pay a reasonable tuition.

e. The Colorado law of 1913 provided that the board of directors might refuse to admit outside pupils because of insufficient room.

f. Both laws have been held to be unconstitutional by the State Supreme Court of Colorado on the ground that there is a constitutional mandate that instruction in the public schools in every school district shall be under the control of the directors thereof. To provide for the education of the children of a given district in the schools of another district, imposing the cost upon the former, was held to be an interference with the control of instruction, as no discretion was left in the board where there was no high school as to the character of instruction pupils would receive at their cost.

g. The present law in Colorado is that of 1919 which leaves the matter of attendance and tuition to the boards of

directors of the school districts interested. It is a matter of bargaining between boards.

h. It is not possible to leave this matter to an arrangement between boards of directors with an assurance that no Colorado child who is eligible for high school membership will be deprived of it.

i. In the case of 93 percent of 582 district boards in eleven representative Colorado counties, only 50 to 60 percent are paying any high school tuition for outside attendance. The average amount paid is but \$55 to \$60 per pupil per school year.

j. Returns from 54 out of 63 counties gave tentative facts like the following on high school opportunities in Colorado:

(1) Number of districts without high schools—  
1437

(2) Proportion of districts without high schools  
—78.3 percent

(3) Number of districts without high schools  
in which boards do not pay outside tuition—231

(4) Proportion of districts without high schools  
in which boards do not pay outside tuition—16.0  
percent

(5) Proportion of all districts in the state  
where high school tuition is not paid in the case of  
outside attendance—12.5 percent

k. Refusal to pay outside high school tuition is confined to boards of directors in third class districts.

l. Tentative statements like the following may be made on high school deprivation in Colorado in terms of pupils:

(1) Approximate number of pupils without  
high school privileges—122,000

(2) Approximate proportion of pupils without  
high school privileges—50 percent

(3) Approximate number of pupils without dis-  
trict aid for needed high school tuition—24,000

(4) Approximate proportion of pupils without  
district aid for needed high school tuition—19 per-  
cent

(5) Approximate proportion of all pupils without district aid for needed high school tuition—10 percent

m. Tentative statements like the following may be made on high school deprivation in Colorado in terms of area:

(1) Approximate area without high schools—47,000 square miles

(2) Approximate proportion of entire state without high schools—50 percent

(3) Approximate area without district aid for high school tuition—10,000 square miles

(4) Approximate proportion of area without high school and without aid for needed high school tuition—20 percent

(5) Approximate proportion of the entire state without aid for needed high school tuition—10 percent

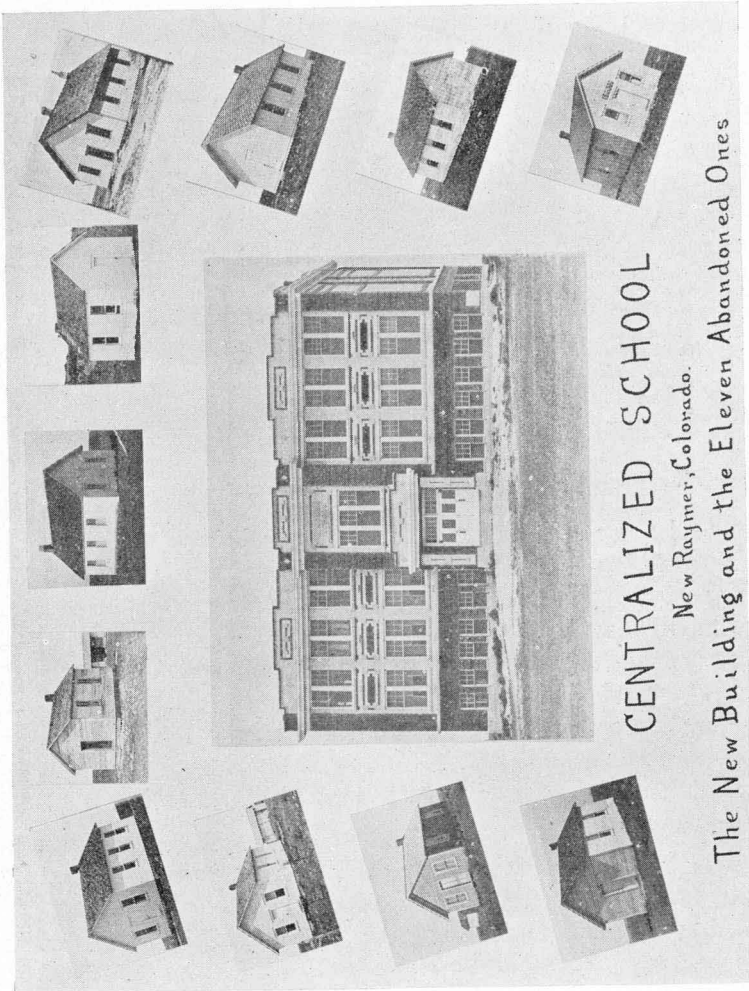
n. The economic conditions in the 24 Colorado counties in which 231 boards of directors were reported as refusing to pay outside high school tuition reveal no basic reasons for deprivation of high school privileges when comparison is made with the situation in the 39 other counties and in the entire state.

o. Colorado's educational ability and achievement is comparable to conditions found in a country-wide checking.

p. A majority of the states have definite mandatory laws in the matter of high school tuition. That of New Hampshire is typical of these.

r. Colorado's laws are permissive only, and it is the opinion of competent legal advice that it is useless to attempt to frame a statement which will have in it any compulsory feature, as the constitution places the central authority squarely with local boards of directors.

s. Nothing short of a constitutional amendment can take care of the deprivation of high school opportunities found in Colorado. Any such attempt should be the culminating feature of a long-time, serious study of the educational system of the state resulting in a state-wide survey by outside educational leaders.



## CENTRALIZED SCHOOL

New Raymer, Colorado.

The New Building and the Eleven Abandoned Ones

The New Raymer Consolidated School, Weld county, illustrates the desirability of a larger unit of administration in the secondary school. Before consolidation, high school work was attempted for a total of six pupils in these small schools. Now, 54 pupils are in high school classes, the school is a four year state accredited high school, teaching has been improved, and personal supervision is possible.

## CHAPTER VII

## LARGE AND SMALL HIGH SCHOOLS IN URBAN AND IN RURAL SYSTEMS

The material presented thus far on opportunities for high school education in Colorado suggests (1) that the problem of child loss at the eighth-to-ninth grade gap is far from solution, (2) that selection of youth for high school membership is undemocratic and largely on the basis of chance, (3) that the high school curriculum fails to fit pupil needs and capabilities, (4) that there is waste of pupil and teacher time and of all facilities which the high school offers because of slow progress through the four year course, (5) and that the high school is not an integral part of the free common school system of the state in any real and inclusive sense. It remains to make as careful a survey as possible, with data available, of different levels of educational efficiency found among larger and smaller units of high school organization found in typical city and country situations.

## 1. HIGH SCHOOL FACTS

The background of fact for secondary education in Colorado is indicated in part by the figures of Table XXIX. This table deals with organizations having the name of high school, but later in this section account will be taken also of attempted secondary school work in grades above the eighth in relatively unorganized small school situations. The most significant figures here are those for total high school and grade enrollment. It is seen that over one-fifth (22.3 percent) of the public school pupils in the state are in high school.

Further evidence on enrollment in high school grades is found in the next three tables. In Table XXX, it is seen that in ten representative counties the sixth grade group is 94 percent of beginning pupils, but that the entering high school group is but 62 percent and the twelfth grade but one-third of the first grade group. This distribution is confirmed in Table XXXI which reports by grades the 7877 cases used in a comparison of school efficiency in first and third class districts. It is seen that but three-fourths of the eighth grade children enter high school and but one-half of those entering reach the twelfth grade.



TABLE XXIX

SEX DISTRIBUTION OF PUPILS AND HOLDING POWER OF COUNTY HIGH SCHOOLS AND OF ALL OTHER COLORADO SECONDARY SCHOOLS, 1926 (a)

Type of High School	Total	Number		Percent	
		Boys	Girls	Boys	Girls
1	2	3	4	5	6
1. Junior and senior high schools (including union high schools)					
a. Enrollment	50720	24191	26529	47.7	52.3
b. Graduated	6002	2566	3436	42.8	57.2
c. Percent graduated	11.8	10.6	12.9		
2. County high schools (including 50 branches)					
a. Enrollment	5034	2337	2697	46.5	53.5
b. Graduated	801	339	462	42.4	57.6
c. Percent graduated	15.8	14.5	17.1		
Total high school enrollment	55,754	26,528	29,226	47.6	52.4
Total grade school enrollment (b)	194,333				
Total	250,087				

a. Bradford, Mary C. C., *Twenty-Fifth Biennial Report of the State Superintendent of Public Instruction, Colorado, 1925-26*

b. Including 13,210 in night schools

TABLE XXX

THE ENROLLMENT OF 27,844 PUBLIC SCHOOL PUPILS IN GRADES ONE, SIX, EIGHT, NINE, AND TWELVE IN TEN COLORADO COUNTIES, 1925-26

Grade	Boys	Girls	Total	Relation-ship to Grade One	Percent
1	2	3	4	5	6
One	4004	3581	7585		27.2
Six	3539	3600	7139	94.1	25.6
Eight	2885	2982	5867	77.4	21.1
Ninth	2299	2426	4725	62.3	17.0
Twelve	1184	1344	2528	33.3	9.1
Total	13,911	13,933	27,844		100.0

Two more groups of facts (Tables XXXII and XXXIII) add to the introductory summary of high school conditions in Colorado. Out of a total of 280 high schools in the state, 82 are members of the North Central Association of Colleges and Secondary Schools and include 47 percent of the total secondary school enrollment. And it is seen (Table XXXIII) that the senior high schools are first of all girls' schools with

TABLE XXXI

SAMPLING FIGURES FROM GRADES SIX, EIGHT, NINE, AND TWELVE IN A STUDY OF RELATIVE SCHOOL EFFICIENCY IN THE FIRST CLASS AND THIRD CLASS DISTRICTS OF TEN COLORADO COUNTIES, 1925-26 (a)

Grade	Sampling			Percent reaching the higher grade		
	First Class	Third Class	Total	First Class	Third Class	Total
1	2	3	4	5	6	7
Six	1308	1562	2870			
Eight	1186	1126	2312	90.7	72.1	80.6
Nine	1105	640	1745	93.2	56.8	75.5
Twelve	701	249	950	63.4	38.9	54.4

a. Hadley, H. H., *Size of Educational Unit and School Efficiency in Colorado*, Unpublished Master's Thesis, Colorado State Teachers College, 1927

TABLE XXXII

A COMPARISON OF ALL COLORADO HIGH SCHOOLS WITH 82 SUCH SCHOOLS IN THE NORTH CENTRAL ASSOCIATION OF COLLEGES AND SECONDARY SCHOOLS, 1926

Item	All Secondary Schools (a)	82 Secondary Schools in the North Central Association (b)
1	2	3
1. Total enrollment	55,754	26,313
2. Number of graduates	6,803	4,855
3. Percent graduated	12.2	18.4
4. Length of school year (weeks)	36.2 (mean)	36.23 (median)
5. Salary (average)		
a. Men	\$1,690	\$1,856
b. Women	\$1,300	\$1,601

a. Bradford, Mary C. C., *Twenty-Fifth Biennial Report of the State Superintendent of Public Instruction, Colorado, 1925-26*

b. Childs, H. G., "Proceedings of the Commission on Secondary Schools," *North Central Association Quarterly*, June, 1926

TABLE XXXIII

SEX DISTRIBUTION IN THE SENIOR AND JUNIOR HIGH SCHOOLS OF COLORADO COMPARED WITH THAT FOR ALL CHILDREN OF SCHOOL AGE, 1926 (a)

Type of High School	Number		Total Percent	
	Boys	Girls	Boys	Girls
1	2	3	4	5
1. Children of school age (6-21 years)	152,638	149,145	50.6	49.4
2. Senior high school	16,190	18,590	46.6 (b)	53.4 (b)
3. Junior high school	10,333	10,636	49.4 (c)	50.6 (c)
4. Senior high school graduates	2,566	3,436	42.8	57.2

- a. Bradford, Mary C. C., *Twenty-Fifth Biennial Report of the State Superintendent of Public Instruction, Colorado, 1925-26*
- b. Boys, 44.1 and girls, 55.9; Phillips, F. M., *Statistics of Public High Schools, 1921-22*, Bureau of Education (1924), No. 7.
- c. Phillips' study; boys, 48.1 and girls, 51.9

respect to both enrollment (item 2) and percentage of graduates (item 4), and Phillips' figures (notes b and c) confirm this statement.

## 2. HIGH SCHOOL OPPORTUNITIES AND SIZE OF UNIT

The specific inquiry of this section has to do with possible differences in the value of secondary school offerings in larger and in smaller school situations. The tables just presented offer interesting evidence on this question. In Table XXXII, it may be understood that the 82 North Central schools are larger than the remaining high schools of the state. They have an average of 321 pupils while the others have but 105, and it is seen that although there is no significant difference in the length of the school year the larger schools graduate a larger percentage of the enrollment and employ teachers worthy of better salaries. In Table XXXI, the assumption is that the secondary work in first class districts represents larger organizations than in third class districts, and it is seen that a much larger portion of the eighth grade group enters high school in first class districts (93 percent) than in third class districts (57 percent) while nearly twice as many reach the twelfth grade (63 percent and

39 percent). Further, it is seen in Table XXIX that the county high schools (item 2) are superior in respect to the proportion of total enrollment graduated (16 percent as compared with 12 percent). It is assumed that each county high school with its branches constitutes a unit of organization, and they are found to be larger than other high schools in the state.<sup>1</sup> (Average enrollment in eight county high schools, 420; in 74 other high schools, 308.)

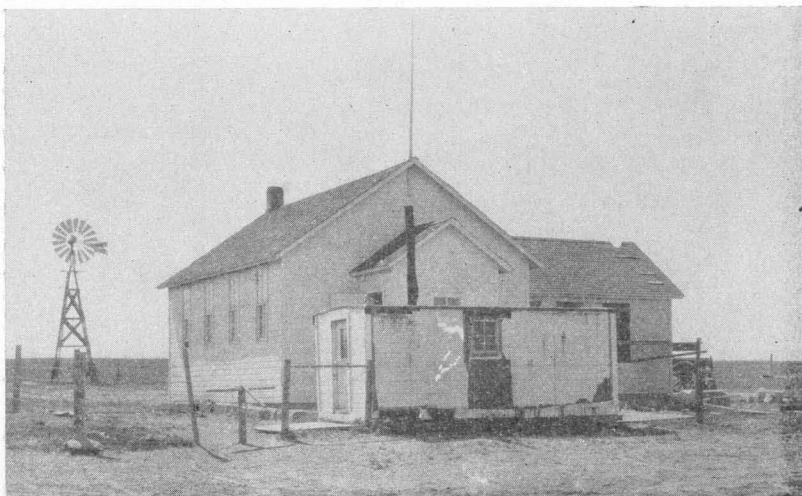
One other item of evidence on the status of secondary school work in Colorado has been discussed in Chapter VI, Section 1. There it was said that, in a checking including 1817 school districts (90.7 percent of all), 231 not only had no high schools but the district boards refused to pay the tuition of pupils attending high school in other districts. The significant thing for the present chapter is the fact that these 231 districts were all in the third class where units of school organization are probably smallest of all in terms of pupil enrollment and teaching staff. Sixty percent of the boards of education reported that they provided for this tuition, but these were all found in first and second class districts. Twenty out of 71 second class districts were without high schools.

It is apparent that on four counts at least educational opportunity on the secondary level correlates with size of unit of organization in Colorado. (1) The North Central high schools are found to graduate larger groups and to pay better salaries to teachers. (2) In first class districts more eighth grade pupils enter high school and reach the senior class. (3) The county high schools graduate a larger percent of their enrollment than do smaller organizations. (4) Deprivation of high school privileges because of inability to pay tuition is confined to the small schools in third class districts. It would seem that no further evidence would be needed, if a sincere attitude be taken toward the relative value of high school work in smaller and in larger educational units. None of the facts discovered point to the superiority of the former.

### 3. SPECIFIC EFFICIENCY FACTORS

In an investigation of factors which affect educational efficiency in a large Colorado county of 135 districts (Weld

<sup>1</sup> Childs, H. G. "Proceedings of the Commission on Secondary Schools," *North Central Association Quarterly*, June, 1926



This two-room school, located in the dry farming country in northern Colorado, illustrates an effort by the addition of a wing to the original cubicle to take care of a total of 27 pupils including eight above the elementary school. Here, four years of high school work are attempted without adequate equipment in books and apparatus, without expert, well-prepared teaching, with no frequent supervision, and with a total lack of that social education possible where the pupil group is large.

The 16x6x6 shack in front of the school building is the teacherage for the district. Here, three persons live, the two teachers, a Mother and her daughter, as well as the little sister. The cut of the interior shows that most of the floor space is taken by the stove, the table, and the bed. There are two small windows. The tar paper will possibly be renewed before winter.

county), it was found that each of the seven variables there studied has a relative effect upon the educational advancement of school children as indicated by its rank and expression of amount in Table XXXIV. The mentality of the pupil is of first importance in determining his educational age, that is the level of achievement he has reached in his school subjects as

TABLE XXXIV

THE RELATIVE VALUE OF SEVEN INDEPENDENT VARIABLES AS DETERMINING THE CRITERION, ACHIEVEMENT IN TERMS OF EDUCATIONAL AGE, IN THE UPPER GRADE AND HIGH SCHOOL WORK OF WELD COUNTY, COLORADO, 1925-26

Factor	Boys		Girls		Total Rank
	Weight	Rank	Weight	Rank	
1	2	3	4	5	6
1. Mental age	110	1	6.4	1	1
2. Life age	64	2	3.2	2	2
3. Length of school training	19	4	1.6	3	3
4. School status	27	3	0.1	7	4.5
5. Physique index	8	6	1.0	4.5	4.5
6. Distance from school	11	5	0.2	6	6
7. Permanence of residence	1	7	1.0	4.5	7

compared with the average achievement of many other pupils of the same life age. Second in value come chronological age and third the length of school training, while the type of home he comes from (social status), and three other factors are next in rank and of far less importance. A number of these seven items of information will be used in contrasting school efficiency in secondary work done in larger and in smaller units of organization.

From a recent master's study at Colorado State Teachers' College,<sup>2</sup> at least seven items of contrast have appeared in the checking of differences among high school groups found in first class and in third class districts. These are collected in Table XXXV. It is seen that the first class districts enroll pupils who are farther advanced in their school work (item 1, column 2), but that it may be that they do not make the total gain in achievement that third class pupils do. This may be explained by the greater mental age in

<sup>2</sup> Hadley, H. H., *Size of Educational Unit and School Efficiency in Colorado*, Unpublished Master's Thesis, Colorado State Teachers College, 1927

the latter situation (item 2, column 4), but the pupils of first class districts seem to be distinctly superior in terms of I. Q. (item 3). No contrasts in life age appear; but the home background in first class districts is much more cultural and on a higher economic level, as well as nearer the school buildings.

TABLE XXXV

DIFFERENCES FOUND IN SEVEN ITEMS OF INFORMATION ABOUT HIGH SCHOOL PUPILS IN FIRST AND THIRD CLASS DISTRICTS OF COLORADO, 1925-26 (a)

Item	First Class		Third Class	
	Ninth Grade	Twelfth Grade	Ninth Grade	Twelfth Grade
1	2	3	4	5
1. Educational age (b)	15-4	16-4	14-11	16-4
2. Mental age (months)	159.0	190.0	177.4	198.1
3. I. Q.	99.4	102.8	90.6	89.6
4. Life age (years and months)	15-3	18-3	15-6	18-3
5. Home status (Chapman score)	551.3	563.9	533.3	544.1
6. Distance from school (miles)	1.2	1.0	3.1	2.1
7. Permanence of residence (years)	8.3	10.6	8.3	10.1

- a. Hadley, H. H., *Size of Educational Unit and School Efficiency in Colorado*. Unpublished Master's Thesis, Colorado State Teachers College, 1927
- b. When size of educational unit is considered in terms of number of teachers in the corps, the educational age in the ninth and twelfth grades of the largest schools is found to be 15 - 3 and 16 - 7, while in the smallest schools it is but 14 - 8 and 16 - 5

Another type of evidence, which may be taken from a group of case studies made in connection with the checking of the destination of eighth grade pupils (Chapter II), has to do with sources of membership in the freshman classes of high schools in first and in third class districts. The detailed data cannot be given here, but they illustrate the type of youth prevented from embracing secondary school opportunities because of artificial barriers set up in the usual June county superintendent's examinations. On the whole, it was found that the candidates for high school enrollment examined

when found in first class districts come from a higher type of home background, are somewhat younger in life age, and have made a better school record. And it is sure that, given a modern secondary curriculum and skillful teaching aided by adequate supervision, a number of these cases would have done excellent high school work had they been enrolled in freshman classes. A distinct loss to future American leadership results from a situation such as this.

More conclusive evidence on the superiority of secondary school conditions in larger school units is found in Tables XXXVI, XXXVII, XXXVIII. Here, school situations of four sizes are examined, and it is seen that items of excellence appear more often in the larger. Table XXXVI reports the age-grade facts in grades nine, ten, eleven, and twelve for Denver, Colorado Springs, and the larger and smaller schools outside of Denver. The contrast in overageness (column 5) and in underageness (column 3) in Denver and in smaller school organizations is striking. The largest system has discovered a comparatively large group of superior pupils for acceleration while other situations have not. Denver's retarded group is smaller than in other systems examined also.

Efficiency of secondary school work in terms of rate of progress of pupils is reported in Tables XXXVII and XXXVIII. It is apparent that there is almost perfect correlation between normal progress and size of school situation, and the contrast between Denver and outside districts in the size of rapid and slow groups (columns 3 and 5) is striking. Evidently, high school pupils in the smaller schools must use more time to conquer curricular requirements than is necessary in the larger schools. Table XXXVIII gives expressions of amount for these time differences. In Denver, less than a year is needed to do a year's high school work (column 4), and in smaller systems the figures come nearer to a full year and more. These contrasts are accentuated when a total of 12 years of school experience is considered. Denver, on the basis of a ten month school year, has 4.8 months to spare, while the smallest schools (item 4) are an identical fraction (0.48) behind, but the school year is but 9.04 months long there.





This one room school, located in the dry land region of northern Colorado, is representative of small, isolated situations where secondary school work is attempted. Twelve pupils attend, four of whom are in high school classes in grades nine and ten. Usually in such schools the teacher is a one or two year graduate of a teachers college, and inadequately prepared by personality and experience to take charge of high school work. It happens that this school is the extreme exception, as the teacher is a college graduate with fourteen years of successful experience. Two of her high school pupils are to continue their secondary work in the nearest town next year. A skillful application of the technic of individual instruction has insured their success in the remaining years of their high school experience.

But in all such small schools, in addition to negative items of educational opportunity usually present resulting from poor teaching, lack of apparatus, books, and the like, the small group of youth compelled to take high school tuition there if anywhere are deprived of all of the advantages of preparation for happy and successful future citizenship which are offered by the social contacts and extra-class activities of the larger unit of administration located in an urban center.

TABLE XXXVI

DIFFERENCES IN THE LIFE AGE AND GRADE LOCATION OF 12,190 COLORADO PUBLIC SCHOOL CHILDREN DOING SECONDARY WORK IN GRADES NINE, TEN, ELEVEN, AND TWELVE IN FOUR SIZES OF SCHOOL UNIT, 1925-26

Size of School Unit	Number of Pupils	Percent		
		Underage	Normal	Overage
1	2	3	4	5
1. Denver	6155	27.0	40.4	32.6
2. Colorado Springs	1089	1.8	50.5	47.7
3. Over three teacher schools in seven counties outside of Denver	4787	2.6	49.9	47.5
4. One, two, and three teacher schools in four counties	159	5.8	46.5	47.7

TABLE XXXVII

DIFFERENCES IN THE RATE OF GRADE PROGRESS OF 6493 COLORADO PUBLIC SCHOOL CHILDREN DOING SECONDARY WORK IN GRADES NINE, TEN, ELEVEN, AND TWELVE IN FOUR SIZES OF SCHOOL UNIT, 1925-26

Unit	Number of Pupils	Percent		
		Rapid	Normal	Slow
1	2	3	4	5
1. Denver	419 (a)	35.5	56.3	8.2
2. Colorado Springs	1360	18.5	57.6	53.9
3. Over three teacher schools in seven counties outside of Denver	4614	19.1	53.9	27.0
4. One, two, and three teacher schools in four counties	100	19.0	44.0	37.0

a. A four year high school in a typical urban location

TABLE XXXVIII

DIFFERENCES IN THE EFFICIENCY OF THE SECONDARY WORK  
IN FOUR SIZES OF SCHOOL UNIT IN COLORADO, 6493 PUPILS  
IN GRADES NINE, TEN, ELEVEN, AND TWELVE, 1925-26

Unit	Number of Pupils	Number of years of progress made in one school year	Number of years used to make one year of school progress	Number of years used to make twelve years of school progress	Index of Efficiency (12 ÷ column 5)
1	2	3	4	5	6
1. Denver	419 (a)	1.040	0.960	11.52	1.04
2. Colorado Springs	1360	0.994	1.004	12.05	0.99
3. Over three teacher schools in seven counties outside of Denver	4614	1.010	0.989	11.87	1.01
4. One, two, and three teacher schools in four counties	100	0.961	1.040	12.48	0.96

a. A four year high school in a typical urban location

High school conditions are clearly better when found in larger units of administration. The indices of efficiency in column 6, Table XXXVIII, express very inadequately the contrasts found. The whole situation is worth a more extensive and intensive investigation than has been possible in the study reported in this bulletin. No claim is made for finality of findings. Here is a problem for the next student in the secondary field. However, it is believed that the argument for larger units of administrative control here presented cannot be disregarded as of no value by the thoughtful student of this problem. The total area and the size of pupil groups used must supplement roughness of original data and inadequacies in technic. The burden of proof lies with any conservative clientele which will attempt to argue for a maintenance of the present status quo.

#### 4. SUMMARY

This chapter has presented a total of fifteen to twenty groups of facts of rather high objectivity which show high school work as carried on in more strictly urban and larger systems to be on a better level of efficiency than when attempted in smaller and in rural situations.

It seems to be in accord with the trend of thought represented in the studies reported to conclude that the larger unit of administration in secondary school education gives opportunities for the application of efficient principles of curriculum making, supervision, and teaching which are not to be found among smaller high schools. Centralization of pupil groups, then, should be the objective. But, at the same time, as in elementary education, professional attention should be directed to the improvement of opportunities for secondary work in isolated situations where distance and economic necessity retain small groups of youth who cannot get into personal touch with the larger high schools.

In a state such as Colorado, the educational frontiers, as represented by extremely scattered distribution of population, will not be obliterated for some time. It will not be professional or scientific to assume that nothing can be done for these groups in the meantime. A study of the possibilities of individual instruction and of experience in similar situations<sup>3</sup> will suggest lines of endeavor for further research in this field. Knowledge of the details of perhaps the most successful modern attempt to educate for efficient leadership in secondary education<sup>4</sup> will help to clear up ultimate objectives and will furnish tentative items of procedure.

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<sup>3</sup> Robinson, T. H. (Editor), "Educating a Scanty Population Scattered Over Enormous Area" (Western Australia) *School Life*, May, 1927

<sup>4</sup> Hart, J. K., *Light from the North*, Henry Holt and Company, 1927

## CHAPTER VIII

## TENTATIVE CONCLUSIONS

Over 70,000 public school pupils of Colorado have been included in the study reported in this bulletin, and nearly 13,000 of these have been subjected to the analysis of standard and fact-finding tests. Sixteen inquiries have been made about the physiological, sociological, economic, parental nativity, psychological, and vocational status of each child, a total of 690 facts for each individual. A force of over 35 workers have assembled, scored, and tabulated this material, amounting finally to 9,515,000 separate elements. The data have been organized and interpreted by the Department of Educational Research, Colorado State Teachers College.

Instead of attempting to give in any detail complete summaries of the content of the preceding chapters, the most important data revealed by the investigation will be put into the form of tentative generalizations with brief comment on each. It is recognized that these general statements are of different value and that the body of the findings support them in varying degrees. They are given more with the purpose of stimulating thought than as even approximations to absolute truth. Further, they are based in some cases on material not given in detail in this bulletin but included in the basic data on file in the Department of Educational Research, Colorado State Teachers College.

## 1. THE SELECTION OF PUPILS FOR HIGH SCHOOL ATTENDANCE

a. A LOSS OF ONE-FOURTH OF THE EIGHTH GRADE PUPILS IS A CONSERVATIVE ESTIMATE OF HIGH SCHOOL DEPRIVATION AT THE EIGHTH-TO-NINTH GRADE GAP.

A listing of the facts connected with the usual final eighth grade examination given by county superintendents shows that on the average 9 percent fail and 20 percent more drop out before entering high school. Both the elementary and the high school are under indictment here. Are candidates for high school privileges well prepared? Do high school offerings have adequate drawing power because of their worth whileness?

b. THE PROBLEM OF EDUCATIONAL DEPRIVATION AT THE EIGHTH-TO-NINTH GRADE LEVEL IS FIRST OF ALL A BOY PROBLEM.

It is found that over two-thirds of failures and non-attendants are boys. Further, a comparative count of boys and girls in eighth grade and in ninth grade shows the distribution of sex to be 50-50 in the former, but in the first year of high school boys constitute but 48 percent of all and girls 52 percent. If we are to look to the high school, the "people's college," for a preparation of future leaders for our democracy, will it be safe to discriminate in terms of sex, when enrollment figures are decided on?

c. THE HIGH SCHOOL IS PRIMARILY A GIRLS' SCHOOL.

Not only are more boys than girls failing to enter high school, but on the whole the girls react more favorably to the opportunities offered in high school attendance. In the checking of the relationship of mentality to success in school work, it is found that high school girls are using their native gifts of intelligence to a more favorable limit than are the boys. Further, 8 percent more of the girls are able to and do remain in school into the fourth or senior year. Can it be that the curriculum of the high school is distinctly unpalatable to boys, or is elimination a matter of the superior attraction of real outside life issues? The high school is on trial here before a jury of American youth. It would appear that there is danger of a verdict of "guilty."

d. THE PROBLEM OF FAILURE AND NON-ATTENDANCE IN HIGH SCHOOL IS MORE ONE OF CHARACTER EDUCATION THAN OF LACK OF INTELLIGENCE OR OF ECONOMIC DIFFICULTY.

The checking shows that over one-third of the pupils who failed to pass the eighth grade examination are repeating the eighth grade work another year. Further, failure is reported to be caused chiefly because of negative personality traits and not because of low intelligence. It appears, too, that but one-fifth of the pupils who failed are helping with the work at home, and a smaller group still are employed as day laborers. But, shameful to say, many are lost entirely from the records of the school and from the memory of all school officers. Their status is not known.

e. THE DRAWING POWER OF PRESENT HIGH SCHOOL OFFERINGS CANNOT COMPETE WITH THE ATTRACTION OF CLOSER SOCIAL AND ECONOMIC OBJECTIVES.

It is surprising to find that nearly 20 percent of those who were successful in the high school entrance examination did not attend. The largest group of these youth (40 percent) were found helping with home house work or on the farm. One-fourth were engaged in day labor. Nearly 10 percent were reported to be idle at home. Why a good sized group (6 percent) are reviewing eighth grade work is hard to explain. Again, many (the fourth group in rank) are lost entirely from school memory and records.

The reasons given for non-attendance are again to be listed as deficiencies of attitude (lack of ambition, dislike for school, and so forth) and not low intelligence; but a strong desire for an immediate improvement of economic status is shown in many cases. Evidently, the high school has not as yet sold itself to the youth of the state and their parents. Is the trouble to be found in poor publicity or in lack of merit in the high school curriculum itself?

f. THE PERSONALITY OF THE PUPIL IS THE PRIME FACTOR IN A DETERMINATION OF HIS ADVANCEMENT INTO HIGH SCHOOL WORK.

Case studies among (1) high school eligibles, (2) eighth grade repeaters, (3) eighth grade eliminates, and (4) eighth grade pupils who were accepted for high school membership "on condition" show that the type of social and economic background found in the home has very little effect upon their enrollment in high school classes when compared with more intimate personality facts. On the whole, it is found that those pupils are promoted who are youngest, have conformed most closely to all school requirements (are not non-conformists), and have done best in their school studies. This seems to be a good showing for democracy of selection when future leaders are chosen for further education.

**g. THE GROUP OF YOUTH ENTERING HIGH SCHOOL CONSISTS OF MORE OF THE YOUNGER PUPILS THAN OF THE OLDER.**

Based on eighth grade ages, it is found that the life age of ninth grade pupils is younger than the expectation. If the standard estimate of 13 months be used as the average time required to pass from grade to grade, ninth grade boys are nearly six months younger and ninth grade girls over two months younger than the expected ages in the first year of the high school. Why are the more mature individuals not found taking advantage of this higher schooling provided? The study shows that this "youngness" has no more effect on the quality of school work in grade nine than it does in grade eight. It cannot be, then, that the older pupils are failing. Evidently, some interest more gripping than those offered by the high school is attracting toward outside activities.

**h. IT CANNOT BE SAID THAT ONLY THOSE INDIVIDUALS WHO ARE SUPERIOR MENTALLY ARE CHOSEN FOR HIGH SCHOOL ATTENDANCE.**

The evidence of the investigation does not point to a distinct choice of superior intelligence for membership in the secondary school. The standard expectation of increases in mental age for each grade covered is 1.05 years, but the figures show increase between eighth to ninth grades of but 0.95 years. But it is found that, in the distribution of mental scores for ninth grade youth, the lower figures are cut off as compared with the eighth grade distribution; and it may be that on the whole selection for high school attendance is to some extent in terms of medium and upper types of intelligence.

**i. THE HIGH SCHOOL IS STILL UNDEMOCRATIC TO LARGE DEGREE.**

When the type of home both eighth grade and ninth grade pupils come from is examined, it is found that high school pupils come from homes having more of the modern conveniences and luxuries and with more evidence of culture than do elementary school pupils, and the same difference in favor of senior pupils is discovered when ninth and twelfth grade groups are considered. On the whole, pupils in the larger school systems where high schools are always found come less often from farm homes by a difference of at least



45 percent, and 90 percent of the fathers of pupils in the rural schools where high school privileges are less universal are engaged in agriculture. Further, high school enrollment seems to be largely in terms of native stock by a difference of 10 to 15 percent and from homes more often affiliated with the organized church. However, on the whole, high school membership seems to be representative of social and economic groups found in the entire population in many communities, but this does not appear to be so true in Colorado as in certain other states.

This study does not aim to discuss the moot question of complete democracy in secondary school education. There is involved the double inquiry, *should* we have it and *could* we have it. If we should, can we afford it? However this may be, the fact of a wider selection from the total population for high school attendance is becoming more of a problem year by year. But more serious than the matter of finance is that of the curriculum, and expert professional leadership cannot do much effectively there until all concerned can agree upon desirable ultimate objectives. The fact is that secondary education has not made the advancement in these respects that is found in elementary education, and in Colorado the situation is that to be expected in a typical pioneer state. The high school is still aristocratic here, but inefficient even on that level.

#### j. A DISTINCT TYPE OF HOME BACKGROUND IS REPRESENTED IN HIGH SCHOOL ATTENDANCE.

Not only are high school pupils as a rule from homes on a distinctly higher economic and cultural level, but certain other minor but perhaps significant differences are found also. They come from smaller homes than do elementary pupils by a difference of one child. They are more often the oldest child in the family. More often (by a small percent) the father is deceased, and the family has moved more frequently. The home is nearer school by a difference of 1.5 miles also. Here is further evidence of the lack of equality of opportunity in secondary education.

k. THE HIGH SCHOOL IS NOT A PART OF THE FREE PUBLIC SCHOOL SYSTEM OF THE STATE.

The whole attitude of the community, as represented by the board of education, is to nullify whatever legal status the high school has attained as an integral part of a free common school system in the 53 years since the Supreme Court of Michigan (Kalamazoo case) gave it such. It is found, even in the matter of free textbooks, that there is more universal provision in the elementary schools. And, when pupils must attend away from home, but nineteen out of 6500 pupils were found to be provided with board and room, while but 2.3 percent were given work for pay so that they might be self-supporting in part.

Further, while a nation-wide checking shows at least 25 states requiring the local district to pay high school tuition when pupils must go away from home to get secondary school privileges, ten other states having tentative provisions for taking care of all or a part of it, and ten more with universal county units, Colorado has simply a permissive law which makes it a matter of agreement between district boards. Detailed returns from 93 percent of 582 such boards in eleven representative counties indicate that this cannot with safety be left to the judgment of the boards with assurance that no pupil who is eligible for high school membership will be deprived of it. Only 50 to 60 percent of these boards were reported as paying any high school tuition at all for outside attendance, and these expended but an average of \$55 to \$60 per pupil per school year. Returns from 54 of the 63 counties of the state show also that (1) at least three-fourths of the districts are without high schools, (2) 16 percent of the boards in such districts do not pay any outside high school tuition, (3) the boards in 13 percent of all districts in the state do not pay outside high school tuition; and (4) this refusal is confined to boards of directors in third class districts only.

**l. FAILURE TO MAKE THE HIGH SCHOOL AN INTEGRAL PART OF THE FREE PUBLIC SCHOOL SYSTEM OF THE STATE RESULTS FROM LACK OF VISION, NOT FROM ECONOMIC NECESSITY.**

The 231 boards of directors who are reported as refusing to pay outside high school tuition are found in 24 Colorado counties. A checking of crop, valuation, tax, and school expenditure facts in these counties, in comparison with like data in the 39 other counties and in all 63 counties in the state, shows that they are as able to take care of high school education as are counties where boards take a more liberal and broader minded attitude.

Further, when Colorado's educational ability and achievement is compared with country-wide conditions, no reason appears why the facts of deprivation of high school opportunities should attain such a bad eminence.

**m. THE HIGH SCHOOL CANNOT BECOME A TRUE PART OF FREE PUBLIC EDUCATION IN COLORADO WITHOUT A CHANGE IN THE ORGANIC LAW OF THE STATE.**

It was undoubtedly the intent of the framers of the state constitution that the free public school system should include the secondary school. One of the sections of this instrument guarantees to every individual between the ages of six and 21 years a "free common school education." But later legislation nullified this provision on the theory that the local directors should "have control of instruction in the public schools of their respective districts" and that if they were compelled by mandatory legislation to provide for the attendance of high school eligibles in neighboring high schools when no such privileges were offered at home they would lose control of their instruction. Bargaining between boards, provided for in the present permissive law, evidently does not take care of the matter. An amendment to the state constitution is necessary. This should be the culminating result of long time study on the part of state research agencies together with competent aid from outside professional leaders and should provide for the fundamental difficulty in the state educational organization, lack of competent leadership in a state unit of administration.

## 2. THE PROGRESS AND SUCCESS OF HIGH SCHOOL PUPILS.

### a. THE ACTUAL LENGTH OF THE HIGH SCHOOL COURSE IS LESS THAN FOUR YEARS.

The figures of the survey show that but one-half of the freshman pupils persist into the senior class. If it be desirable to select for final graduation certain types of youth only, there are fairer, more business like and scientific methods than by the process of elimination during progress.

### b. HIGH SCHOOL CLASS WORK IS "MASS EDUCATION," NOT IN TERMS OF THE NEEDS AND ABILITY OF THE INDIVIDUAL PUPIL.

It has been noted above that a disregard of sex differences tends to eliminate many of the boys during progress from freshman to senior work. It is found as well that the older pupils drop out, as the senior classes are 3.6 months younger than the obtained ages, if normal increase in life age be considered. The fact that the spread of life age is not much wider in senior than it is in freshman classes seems to point toward a neglect of extremes of individual personality also.

The figures seem to show, also, that the high school loses many of its more intelligent pupils in the ninth-to-twelfth grade interval, as there is a discrepancy of 0.75 years between obtained and actual mental ages. It is found too that senior pupils are not using what native intelligence they have to the limit that freshman groups are.

It would seem that, if anywhere in the public school course, the technic of individual instruction ought to be found in secondary work where one chief purpose is the discovery of attitudes and trends and the development of skills and knowledges pertinent to possibilities in the personality of each future citizen.

### c. HIGH SCHOOL EXPERIENCE SELECTS A DISTINCT TYPE OF HOME BACKGROUND FOR SENIOR CLASS MEMBERSHIP.

It has been noted above that, on the whole, twelfth grade pupils are from homes on a higher social and economic level than the homes of freshman groups. It is found also that senior homes are more permanent, as parents do not move so often, and that they are nearer school by one-fourth of a mile.

d. THE HIGH SCHOOL FAILS TO PROVIDE CURRICULUM OFFERINGS WHICH WILL INSURE THAT PUPILS SHALL DEVELOP NORMALLY IN TERMS OF DESIRABLE SOCIAL CHARACTER TRAITS.

The relationship between school achievement and school attitude and behavior is found to be lower in senior than in freshman classes. On the whole, there is higher achievement in school class work. There ought to be development in character traits also in terms of broader outlooks and a new attitude toward school and school associates, appearing as greater self-control and higher altruism approaching maturity. But it must be admitted that in the history of school management on the secondary level, plans for pupil self-government, and like movements which have tried to put into actual operation the theory that adolescence is no longer childhood but almost manhood, have on the whole been a series of futile attempts to cause high school groups to function on a school level commensurate with their life age. It is only very recently and only in the most advanced and most skilfully organized systems that, largely in so-called extra-curricular activities, high school pupils are living up to their true possibilities in social attitude and school conduct.

e. THE ACHIEVEMENT OF HIGH SCHOOL PUPILS IN COLORADO IS ON A LOWER LEVEL THAN IN OTHER STATES.

A growth in educational age from fifteen years in the ninth grade to 16 years 6 months in the twelfth is found (Stanford Achievement Test). This points again to a survival of the more fit only, but average scores earned in both groups are distinctly below those of 10,000 pupils in high schools elsewhere. While this is not a conclusive measurement of true criteria for high school efficiency, it is an indication that the high schools of the state are not excelling even in the administration of the academic curriculum which they offer.

f. PUPIL SUCCESS IN HIGH SCHOOL IS DEPENDENT MOST OF ALL UPON MENTALITY.

In this investigation, this is found to be more often true for boys than for girls, and more often in ninth grade than in twelfth. When seven factors affecting high school work (mental age, life age, home background, length of total school attendance, distance of home from school, physical develop-

ment, permanence of home residence) are studied to determine their relative importance, mentality and chronological age are found to be preeminent as determining levels of achievement reached by both boys and girls. A study of causes proves mental age to be more potent and shows that home status, while influencing to some degree the school achievement of high school boys, apparently has no effect in the case of the girls.

However, the study seems to show that very probably all of the more important factors which might influence the school success of high school pupils are not included in the seven used. Most important of all, perhaps, are factors which furnish the motive power of effective teacher and pupil effort, those which we speak of as character traits. Intelligence, after all, is but a tool. How it shall be used in any realm of activity is determined by such personal qualities as persistence, honesty, unselfishness, and like desirable attitudes. It is not too much to say that the most effective organization of the high school, as of all other stages of advancement in the public school system, awaits successful research which will furnish measurements here so that true expressions of amount in such character items may appear as an important part of the information at hand when studies are undertaken in the field of the secondary school.

**g. HIGH SCHOOL TRAINING FAILS TO INCREASE THE RATE OF PROGRESS OF PUPILS WHEN FRESHMAN AND SENIOR GROUPS ARE CONSIDERED.**

The survey shows that the retardation in all high school classes is very similar and that no appreciable improvement occurs toward the close of the course. Both freshman and senior pupils use more than an extra half year in reaching the stage of advancement at which they are found. Is the fault to be found in the high school curriculum? Or may it be that mortality along the way has been in terms of individuals who would be able to "speed up."

**h. HIGH SCHOOL ADMINISTRATION IS OBLIGATED TO USE MORE BUSINESS-LIKE METHODS IN PERSONNEL WORK WITH PUPILS ENROLLED.**

First of all, if high school membership is to be selective, a surer method of choice than the clumsy "final examination" at the close of elementary attendance must be used. Further, many future leaders will be saved for four full years of more

valuable training, if guidance into and through high school courses be organized on a basis of individual personnel contact. The study did not discover any high school faculty using such methods to any valuable degree. A method of analysis, prediction, and guidance is suggested and described in detail in the final report which, if adopted, ought to raise the efficiency of high school work so that more pupils will be able to progress happily on their own level of ability.

### 3. THE EFFICIENCY OF LARGE AND SMALL SCHOOLS

#### a. SMALL, ISOLATED SCHOOLS IN AMERICA ARE FOUND AS A RULE TO BE INEFFICIENT.

A careful search among investigations of problems found in the public schools in small town and rural situations (the latter including 188,000 one room schools) reveals the fact that the preponderance of evidence for efficiency is in favor of larger units of organization in urban centers.

#### b. ATTEMPTED HIGH SCHOOL WORK IN THE SMALLER, ISOLATED AMERICAN SCHOOLS IS INEFFICIENT.

The above conclusion ("a") is true in particular of the small high school. Nearly all attempts to continue the public school progress of small groups of youth on to the secondary level have and are proving to be futile. Even in a very few cases, where the use of the technic of individual instruction seems to have solved the problem so far as mastery of subject matter is concerned, there is always lacking the other and more important phase of secondary education, training in the theory and practice of the social sciences. Actual large group contact in classroom and extra-curricular activities is necessary for adequate preparation of young citizens for the larger group life of adulthood.

#### c. SMALL SCHOOLS IN COLORADO ARE NOT EFFICIENT.

An analysis of nearly two dozen separate groups of facts found in all grades of the large and small public school situations in Colorado shows nearly 90 percent of them giving concrete evidence favoring the larger school unit. Two apparent exceptions are found in the fact (1) that more rural school and village pupils in the districts reporting are furnished with free textbooks and (2) that a closer relationship is

found there between the school attitude and conduct of children and their success in school work. The former fact very probably shows the influence of the county superintendent in certain counties where his office is rather well organized and furnishes an excellent argument for the county unit of public school organization. The latter fact, if significant at all, reveals the possibility of individual instruction where the personal contact of pupil and teacher makes certain an efficient mastery of the basic habits dealt with in the elementary school and needed by every citizen in a democracy.

Until the frontier in public school education is obliterated in Colorado, as it is in a few of the eastern states where the population is no longer sparse, the problem of the isolated one room school will exist. It seems, then, that so far as the rural elementary school is concerned the purpose of effort ought to be not only (1) consolidation and centralization but (2) the immediate improvement of one room rural school education by the adoption of the methods of individual instruction carried on under as expert supervision as can be provided by state, county, and district authorities.

#### d. ATTEMPTED HIGH SCHOOL WORK IN RURAL SITUATIONS AND IN THE SMALL TOWNS OF COLORADO IS FUTILE.

An analysis of a total of fifteen to twenty groups of facts in representative urban and large system situations as compared with rural and small schools in Colorado invariably reveals better secondary opportunities for groups enrolled in the former. Attempts in particular to permit single pupils or very small groups to advance into high school subject matter in one room schools are found to be a waste of time because many one room rural teachers are not competent high school tutors and because the social life of the large high school is always lacking. Further, the small town high school is as a rule inefficient. Too often competent leadership is lacking and teaching is on the trial-and-error level. Brief tenure and lack of forethought often shortens the school year by a week or more of fumbling and lost time in the fall. Lack of experience and immaturity on the part of the faculty deprives pupils of even that level of moral and character education which the certain control of strong personalities would furnish. Lack of amalgamation into a larger unit of administration makes impossible expert professional supervision. All



of the data of the present investigation point toward organization of the secondary work of the state into large units of administration and supervision in order that the inequalities of educational opportunity for secondary education found may be corrected.

