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A STUDY OF DISTINGUISHED HIGH-SCHOOL PUPILS IN IOWA

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CONTENTS.

A STUDY OF DISTINGUISHED HIGH-SCHOOL PUPILS IN IOWA.

PURPOSE OF THE STUDY.

When systems of compulsory education were put into operation in the several States it was soon discovered that the subnormal child presented a serious problem. So long as children were free to come to school when they desired, and so long as teachers were not compelled to give attention to all classes of children under their instruction, backward and subnormal children, after three or four years of attendance at school without much achievement on their part, dropped out. Usually their departure from school was regarded with much rejoicing on the part of teachers and school authorities. This was an easy solution of the problem. There seemed to be no serious objection from anyone that such children should be turned loose upon the public without training, or even the rudiments of education.

With compulsory education, however, the State demanded that these children, too, should remain in school and receive training. The laggard then became a tremendous problem, both from the standpoint of the individual teacher and that of the administrator. Much attention has been given to the solution of this problem. Administrators and teachers have worked out many devices by which such individuals have been cared for in the public schools of the cities and towns, and large appropriations have been made to cover such expense throughout the country.

Educational and psychological tests have been devised by which we can now measure with some degree of accuracy the intelligence of such children, and we have adapted the teaching process in our schools to their individual needs. Special schools have been established in connection with the public schools, in which each laggard can be given individual instruction, so that his education can proceed according to the diagnosis of his mental and physical condition. We have learned that such children can never be trained to the grade of efficiency which we expect of medium children. They are restricted to an education in the simplest elements of learning, unaccompanied by any of the intricacies and complexities involved in teaching the average child. The feeble-minded child remains feeble-minded, although he may be taught to perform simple tasks, to read, to write, to do creditable manual work, and to make

many simple adjustments demanded by society. He never reaches mediocrity, and can never be trusted to perform fully the duties of citizenship.

Many scientific studies have been made upon laggards. Much time and energy have been expended in investigations intended to throw light upon the problem of delinquency, backwardness, feeble-mindedness, and all other phases of subnormality. We now have an extensive literature upon this interesting phase of human nature. There is no doubt that such study and investigation has enabled us as educators to understand the laggard and to adapt his education to his special needs, in a manner that never could have been done without this sort of research. This technical and illuminating research marks an epoch in educational achievement.

In view of these facts, it is pertinent that at present there is an awakening interest in the superior child in our public schools. Within the past few years several investigators have devoted themselves to a study of some phases of precocity and acceleration and of attainment by certain types of excellent students in our schools. Colleges and universities have for many years tried to stimulate their best students to high endeavor by electing them to Phi Beta Kappa, Sigma Xi, and other honorary societies. Prizes and awards for high scholarship are now offered in many high schools and higher institutions of learning. Society is beginning to realize that we need to select and train our best brains for the arduous duties of leadership. Democracy without great and wise leaders will fail. Quasi leadership by those who do not understand the fundamentals of our Republic can result only in anarchy. We need intellectual leadership also. Few people really think, and many people can not think. Superior intelligence should be a prerequisite to leadership in our educational institutions, our industrial concerns, our business interests, and in discharging the functions of government.

There is no single class of individuals in society more interested in intellectual development and achievement than the true teacher. He looks upon his pupils as a potentiality, a possibility for noteworthy accomplishment. He is interested in the learning process of his pupil—how he remembers, what he remembers, how he reasons, how he reacts to the varying stimuli of the school, the home, and the community. The daily adaptability of his student to his teaching is the one cue to his own success as an instructor. The successful teacher projects his student far into the future—10, 20 years, half a century, and tries to place him in the mosaic of life at that period. The true teacher is interested in the actual daily achievement of his pupil for its own sake. He studies that achievement with discrimination, for by it he must help the pupil work out his destiny. Such a teacher goes below the surface of results and analyzes the methods by which his student

achieves. It is not surprising, therefore, that the superintendents and principals of the high schools in the State of Iowa welcomed the present study of their students who have distinguished themselves in their educational work thus far. It is gratifying to note that their cooperation has been most cordial and many of them have expressed much interest in the published results.

This study has been undertaken for the purpose of throwing light upon the technique of achievement which these superior students have shown in their high-school work. They have been asked to fill out, under the direction of the principals and superintendents, an elaborate questionnaire pertaining to every phase of their activities and intellectual pursuits. This has been done in the hope that some fundamental principles may be established which may be of service to the profession of teaching, especially in discovering such students and stimulating them to their highest effort. If the study shall arouse interest among the high-school teachers of the State in the superior child, and stimulate them to become especially interested in this group, not only in directing their high-school course, but in guiding them on to higher institutions of learning, in order that from this group the true leaders in intellectual, civic, and moral affairs may be developed for the State, we shall be repaid for our efforts.

EXTENT OF THE STUDY.

The study is fairly representative of the high-school population of the State of Iowa. The undertaking of such a study is always confronted with certain difficulties. In the first place, the high schools that responded to our requests vary in size from schoools in which there are 3 or 4 teachers to those in which there are as many as 100. It is evidently much easier for a student to gain distinction in a small school than in a large one, and it is very probable that some of the students regarded as "exceptional" in the smaller schools would have received no honors in the larger schools. Another difficulty is that of equating grades from the different schools. As yet we have no standard system of marking in our institutions of learning, either in the secondary schools or in the higher institutions. It thus becomes difficult to evaluate these students, because we have no assurance that we are measuring the same thing, or that we are using the same standard with which to measure. However, upon examination of the data secured it is to be observed that several significant things are common to all the individuals in the group. And it is evident that the study of such a large group, where many common results are to be found, must have considerable educational value.

It is certainly of great importance for us to know some of the underlying principles of habit and study among pupils in high school who are able to surpass their classmates in learning. At present much

stress is being placed upon the exceptional high-school athlete. Colleges and universities have been known to use strong influence to bring to their ranks high-school students who show distinction in athletics; but so far as we know, no definite plan has been inaugurated whereby the expenses of brilliant students may be paid for a term of years while in preparation for intellectual leadership. This, however, might result in greater returns to the State than a large body of runners, jumpers, or football players.

Our study includes 316 students, a fairly representative group in which it is possible to see many varying circumstances among the individuals studied. The group has been selected by careful judgment on the part of the high-school teachers of the State. Blanks were mailed to all four-year high schools in the State. Each superintendent or principal was instructed to select from his senior class the student who, because of intellectual ability, easily excelled all other students. Blank I was to be filled out by the principal or some one delegated by him. Blank II was to be filled out by the student without any assistance from others, thus assuring the student's own judgment in all answers. More than 300 schools replied to the questionnaire. Several principals returned the blanks explaining that they had no one pupil in the senior class who stood out as an exceptional pupil. Three hundred and fifteen schools furnished 316 exceptional pupils, one school reporting a tie for the exceptional place, in which case blanks were furnished for both students. Three hundred and ten of the schools reporting had a total enrollment of 40,301, or an average of 130 pupils per school. The total enrollment for the senior classes of 307 schools was 6,159, or an average of 20 per class. Of this number, 5,925 were practically sure of being graduated, thus making an average graduating class of 19.3. Every pupil in the group, then, stands at the head of a list of 19 who have made their way through a four-year high-school course. The group, therefore, is representative of a very superior class of students.

The following blank forms were used:

BLANK I.

(To be filled by the principal or some one delegated by him.)

Town or city.....Date.....Name of your high school.....
.....Total enrollment for the year.....
Total enrollment of senior class.....Probable number to graduate .....
Name of senior whose grades appear below.....
Relative rank of the senior in class, as first, second, or third .....
Average grade of entire senior class for first semester.....

AVERAGE GRADES IN SUBJECTS BELOW HIGH SCHOOL.

Reading.....	History.....	Language.....	Sewing..... .....
Writing.....	Civics.....	Grammar.....	Music..... .....
Spelling.....	Physiology.....	Geography.....	Manual training... .....
Arithmetic.....	Hygiene.....	Cooking.....	Physical training... .....

AVERAGE RATINGS IN SUBJECTS IN HIGH SCHOOL.

	Freshman year	Sophomore year	Junior year	Senior year
Composition and rhetoric				
Classics				
Grammar				
History of American literature				
History of English literature				
Public speaking				
Latin				
French				
German				
Ancient history				
Medieval and modern history				
English history				
United States history				
Civics				
Economics				
Sociology				
Algebra				
Plane geometry				
Solid geometry				
Agriculture				
Biology				
Botany				
Chemistry				
General science				
Geology				
Physics				
Physiography				
Zoology				
Arithmetic				
Bookkeeping				
Commercial geography				
Commercial law				
Drawing				
Cooking				
Sewing				
Manual training				
Rural education				
Pedagogy				
Methods				
Stenography and typewriting				

ADDITIONAL INFORMATION.

Home conditions of this student: Excellent.....Good.....Fair.....Poor....

Social standing of parents: Excellent.....Good.....Fair.....Poor.....

Financial status of parents as nearly as you can estimate.....

.....

Education of parents: Common school.....High School.....College.....

Interest of parents in education: Excellent.....Good.....Fair.....Poor.....

.....

BLANK II.

(To be filled out by student.)

You have been selected by your instructors as one of the best students in your class. You are thus honored in an achievement of which you may well be proud. We are making a careful study of the boys and girls of Iowa who have gained distinction in their high-school course, and are asking you to answer a few questions concerning yourself, in order that we may know more fully how you have achieved your present success. Will you kindly fill out the blanks below with great care?

Full name.....Home address.....

Name of high school.....

Birthplace.....Date of birth.....

Nationality of parents.....Occupation of parents.....

Do you live in town or country?.....

Number of brothers.....Sisters.....Your place in the list.....
What is your height?.....weight?....color of hair?.....color of eyes?.....state of health?.....
To what extent have you engaged in athletics?.....
.....
What records have you made?.....
.....
What year did you enter the elementary grades?.....What grade did you enter?....
Were you taught before entering school?.....Did you skip any grades?.....Which?
.....What prompted you to go to high school?.....
.....
What year did you enter high school?.....How many years have you spent in order to graduate?.....Do you have some particular aptitude or accomplishment aside from what you have gained from this school, such as music, art, etc.?.. .....To what extent have you developed this talent and in what way did your bring about its development?.....
.....
Have you spent time in any kind of work outside of your school work?.....
How much time per day did you devote to this work?.....
Did you receive pay for this outside work?.....How much?.....
.....
What advantages outside of the home and school have you had, such as travel, libraries, museums, churches, theaters, etc.?.....
.....
Do you expect to enter college or university?.....Where?.....
Do you have a profession or vocation in mind?.....What?.....
What led you to select your chosen profession or vocation?.....
.....
Are you a member of a church?.....Name of church.....
When did you unite with the church?.....What led you to unite with the church?.....
What active work in the church have you done?.....
.....
How long have you been an attendant at Sunday School?.....What work have you done in the Sunday school?.....How much time have you given to this work?.....Do you belong to any social organizations aside from these connected with the church?.....How much time do you give to these organizations?.....
Did you have vocational education or vocational guidance in the high school?....
.....
.....

METHODS OF STUDY.

1. Do you have a definite time for study at home each day?.....When?.....
Do you have a separate room for study?.....
2. Do you study in a room where other people are talking?.....Does this bother you?.....Are those lessons studied at home your hardest or easiest?.....
Would you rather study at home or in school?.....
3. Do you as a rule study with someone else?.....
4. Do you as a rule get help in studying your lessons from your parents?.....
Teachers?.....Friends?.....State as nearly as you can the average amount of help you receive each day.....
.....

Do you practice helping other pupils with their lessons?.....How much time do you spend on the average each day in helping other pupils?.....

.....

5. How long do you study at a time?.....Do you regularly follow a plan of distributing your time spent on one subject over more than one period?..... Do you have a specified time for the study of each subject?.....Name subject and at what time you study it.....

.....

6. How long, as a rule, do you spend on each lesson in the subjects you are carrying? Give name of study and time spent on each in space below.....

.....

.....

7. Do you usually read the assignment once, twice, or three times?..... Do you go over the assignment thoroughly and in detail the first time you read it? .....Do you first read the assignment rapidly as a whole and then go over it later slowly and get the details?.....Do you outline the assignment in writing?.....Do you underscore the most important points in the text?.....Do you pick out what you regard as the important features of the assignment mentally?.....Do you write out notes on your lessons at random?.....Do you frame any possible questions that might arise in the recitation?.....Do you delight in free class discussions?.....

8. Do you read your lessons aloud?.....Do you say your lessons to someone?..... Do you close your book and repeat your lesson to your self?.....Do you try to think out your lesson mentally just before going to class?.....

9. Do you review earlier lessons when not asked to do so by the respective teachers? .....

10. In preparing for tests or examinations, do you read the entire text over carefully? .....or simply study the outline of the text?.....Is it your custom to prepare for an examination in one day or night?.....or do you extend the time over several days or nights? Explain fully.....

.....

.....

11. Mention any other plans that you may have used for study or to prepare for an examination and to what extent.....

.....

.....

12. State briefly what you think to be the reason for your attainment of high rank in scholarship.....

.....

LESSONS TO BE DRAWN FROM THE COMMON-SCHOOL RATINGS.

The ratings were all good. It was difficult to obtain a complete record of their common-school work, yet the records are complete enough to be regarded as quite significant. A large number of the group had taken their work in the district schools or small town schools. Thus, the high schools reporting them were not in a position to give the common-school records. Several of the ratings for the common-school subjects are taken from the record made upon the examination taken under the county superintendent for the common-school diploma. In all probability these ratings were more difficult to make than the ratings granted by their respective eighth-grade teachers.

TABLE 1.—*Distribution of common-school ratings by minimums, medians, and maximums.*

Subjects.	Boys.				Girls.				Both.			
	Number.	Ratings.			Number.	Ratings.			Number.	Ratings.		
		Minimum.	Median.	Maximum.		Minimum.	Median.	Maximum.		Minimum.	Median.	Maximum.
Reading	55	74	93	97	113	71	93	99	168	71	93	99
Writing	53	70	88	95	110	70	90	97	163	70	93	99
Spelling	52	80	93	98	111	70	95	100	163	70	95	100
Arithmetic	51	80	94	100	115	75	94	100	166	75	94	100
History	52	75	93	98	115	70	92	100	167	70	93	100
Civics	46	84	92	98	115	70	92	100	147	72	92	100
Physiology	48	80	92	98	100	70	94	99	148	70	93	99
Hygiene	21	85	90	98	51	78	93	99	72	78	91	99
Grammar	43	70	92	98	101	75	93	99	144	70	93	99
Language	42	70	92	97	78	80	94	98	120	70	94	98
Geography	50	80	93	99	102	70	92	100	152	70	93	100
Manual training	24	76	90	96	4	89	90	100	28	89	90	100
Music	28	71	90	98	81	70	93	100	109	70	91	100
Drawing	3	85	94	95	2	89	92	94	5	85	94	95
Cooking	1	85	85	85	43	80	92	98	44	80	92	93
Sewing	1	85	85	85	49	78	92	98	50	78	92	98
Agriculture	1	98	98	98	7	76	90	98	8	76	92	98
Physical training	4	85	90	94	7	85	92	98	11	85	92	98

It is to be observed from Table 1 that the median ratings for the common-school subjects do not vary greatly. The lowest median for boys and girls together falls at 90 and the highest at 95. It is to be noted that for the boys the median is 94 in two subjects, while the girls reach 94 in three subjects and reach 95 in one. Both boys and girls reach 93 in four subjects. The boys have four subjects with a median at 92 while the girls have seven. The boys drop to 90 in four subjects, while the girls drop to the same median in three subjects. The boys fall to 88 in one subject while the girls reached their minimum at 90. The boys show a median at 85 where only one rating is reported. This rating should be disregarded. From these medians it appears that the girls as a group are somewhat superior to the boys in their ability to master the subject matter for the eight grades. It is usually conceded that girls do better work in grammar and reading, and that the boys do better work in arithmetic. According to this table the girls have held their own with the boys in arithmetic. However, the boys show themselves one point better in history.

These pupils not only survived the grammar school, but were eminently successful in their first year of high school. Table 2 shows but little variation from Table 1. The lowest and highest medians are the same as in the common-school record. The girls continue to lead in the standard of work. The 95 median is reached in three subjects by the girls, while the boys did not reach it in any subject. However, the boys have four subjects at 94, as against three for the girls. Both stand three and three at the 93 median. The boys fall to 92 in five subjects, while the girls fall to the same in four subjects. The girls

have one subject at 91. The boys drop to 90 in two subjects, while the girls drop to the same in only one subject. It is to be noted that the girls are still up with the boys in mathematics, while in history they have made considerable gain. In general science the boys are two points ahead. It is interesting to note that the five girls who took manual training were able to reach the median made by the boys in that subject.

ACHIEVEMENT BY GRADES IN THE HIGH SCHOOL.

TABLE 2.—*Distribution of high-school ratings for the freshman year by minimums, medians, and maximums.*

Subjects.	Boys.				Girls.				Both.			
	Number.	Ratings.			Number.	Ratings.			Number.	Ratings.		
		Minimum.	Median.	Maximum.		Minimum.	Median.	Maximum.		Minimum.	Median.	Maximum.
Composition and rhetoric	90	80	92	98	205	77	93	98	295	77	93	98
Classics	12	85	90	92	35	84	93	98	47	84	91	98
Latin	37	75	93	98	101	77	94	98	138	75	94	98
Algebra	82	79	94	99	187	65	94	98	269	65	94	99
General science	51	82	94	98	115	78	92	98	166	78	92	98
Agriculture	20	83	92	99	45	72	92	98	65	72	92	99
Manual training	46	75	90	98	5	87	90	98	51	75	90	98
Domestic science					122	76	92	98	122	76	92	98
Ancient history	32	82	92	98	62	80	98	98	94	80	93	98
Physiology	5	90	92	97	8	85	91	96	13	85	91	97
Botany	8	88	93	97	16	80	95	98	24	80	94	98
Commercial geography	7	88	92	96	12	82	93	97	19	82	92	97
Physiography	16	86	94	97	23	78	95	98	39	78	95	98
Civics	4	92	93	98	6	85	92	95	10	85	92	98
French	6	84	94	94	1	94	94	94	7	84	94	94

TABLE 3.—*Distribution of high-school ratings for the sophomore year by minimums, medians, and maximums.*

Subjects.	Boys.				Girls.				Both.			
	Number.	Ratings.			Number.	Ratings.			Number.	Ratings.		
		Minimum.	Median.	Maximum.		Minimum.	Median.	Maximum.		Minimum.	Median.	Maximum.
Composition and rhetoric	73	78	92	98	159	78	94	99	232	78	93	99
Classics	24	85	92	97	52	87	95	98	76	85	92	98
Latin	40	65	92	98	98	75	94	99	138	75	93	99
Algebra	7	75	90	96	26	84	95	99	33	755	93	99
Plane geometry	78	77	94	99	137	81	94	100	215	77	94	100
Ancient history	39	80	95	98	108	77	94	98	147	77	94	98
Modern history	35	84	93	98	65	79	94	98	100	79	93	98
United States history	4	80	91	95	6	80	91	97	10	80	91	97
Civics	4	90	92	94	10	80	94	99	14	80	93	99
Economics	3	92	95	98	3	90	94	98	6	92	95	98
General science	7	88	94	97	19	75	94	100	26	75	94	100
Physiography	6	87	93	94	7	90	93	95	13	87	93	95
Physiology					7	83	94	98	7	83	94	98
Botany					7	87	94	97	7	87	94	97
Biology	3	92	94	96	3	90	93	98	6	90	93	98
Agriculture	27	85	91	97	36	77	94	99	63	97	93	99
Manual training	13	80	90	93	7	83	90	92	20	80	90	93
Domestic science					47	85	92	97	47	85	92	97
Commercial geography	15	80	91	96	19	87	92	98	34	80	91	98
Bookkeeping	5	85	94	98	13	80	91	98	18	80	93	98
Business arithmetic	5	84	93	95	5	92	94	98	10	84	94	98
Commercial law	3	92	95	97	3	84	87	92	6	84	90	97
Grammar	3	84	90	96	5	85	93	97	8	85	93	97
History of American literature	4	92	95	96	9	85	93	97	13	85	94	97
History of English literature	3	92	93	94	5	92	93	95	8	92	93	95
Public speaking	2	93	95	97	6	75	90	96	8	75	92	97
French	5	82	91	94	5	94	95	96	10	82	93	96

Table 3 shows but little change in the standing when compared with previous records. While the boys have reached the 95 median in 5 subjects, as against 3 for the girls, the girls more than make up the loss by reaching the 94 median in 12 subjects, while the boys reach it in only 5. Again the girls offer 5 at 93, while the boys offer only 4. The boys drop to 91 in 4 subjects, while the girls drop to the same in only 2, and both stand at 90 with 2 subjects each. The girls drop to 87 in 1 subject where only 3 ratings are reported. Thus the girls continue their lead in scholarship, though the difference is not marked. The boys stand 1 point ahead of the girls in ancient history, but the girls are ahead 1 point in modern history.

TABLE 4.—*Distribution of high-school ratings for the junior year by minimums, medians, and maximums.*

Subjects.	Boys.				Girls.				Both.			
	Number.	Ratings.			Number.	Ratings.			Number.	Ratings.		
		Minimum.	Median.	Maximum.		Minimum.	Median.	Maximum.		Minimum.	Median.	Maximum.
Composition and rhetoric	12	82	91	95	37	82	95	98	49	82	94	98
Classics	5	90	94	98	17	85	94	97	22	85	94	98
Latin	25	73	93	98	72	80	94	99	97	79	94	99
French	3	92	95	95	23	90	94	97	26	90	94	97
Algebra	44	79	94	99	77	75	95	99	121	75	95	99
Plane geometry	9	91	95	98	28	80	93	98	37	80	93	98
Solid geometry	11	90	92	98	13	87	92	98	24	87	92	98
Arithmetic	44	75	93	97	35	74	95	99	129	74	95	99
Modern history	35	84	93	99	74	79	94	98	109	79	94	99
English history	3	90	94	98	7	91	96	98	10	90	96	98
United States history	44	85	93	98	90	77	94	99	134	77	94	99
Civics	38	82	93	98	76	79	95	98	114	79	94	98
Economics	25	82	91	96	49	65	94	99	74	65	93	99
Sociology	12	89	94	96	13	86	95	98	25	86	95	98
General science	3	90	92	95	5	80	96	99	8	80	96	99
Physiography	7	86	95	98	24	82	95	98	31	82	95	98
Physiology	7	89	92	97	30	88	93	99	37	88	93	99
Biology	5	82	91	98	6	88	94	95	11	82	93	98
Physics	6	90	95	97	13	84	94	97	19	84	94	97
Chemistry	3	87	90	97	2	91	93	95	5	87	91	98
Agriculture	14	85	93	98	27	86	93	97	41	85	93	98
Manual training	17	84	94	98	1	96	96	96	18	84	94	98
Domestic science	1	90	90	90	37	78	94	98	38	78	94	98
Commercial law	14	78	92	97	20	85	94	96	34	78	93	97
Stenography	5	76	95	96	12	85	95	97	17	76	95	98
Bookkeeping	17	83	93	97	30	87	94	98	47	83	94	98
Grammar	10	85	90	98	12	88	93	99	22	85	92	99
Public speaking	2	90	90	90	10	90	93	96	12	90	93	96
Psychology	1	96	96	96	8	90	94	97	9	90	94	97
History of American literature	38	84	94	96	69	85	94	99	107	84	94	99
History of English literature	37	76	92	98	99	83	94	100	136	78	94	100

Table 4 reveals no striking variation from the former record. The boys have reached the 96 median in 1 subject where only 1 rating is reported, while the girls have reached the same median in 3 subjects and more than 1 rating was reported for 2 of the subjects. The girls make the 95 median in 7 subjects, as against 5 for the boys. The boys have only 6 subjects at 94, while the girls have 14. The girls drop to 92 in 1 subject, while the boys fall to the same in 5 subjects as well as to 91 in 3 subjects and 90 in 4. Thus, the girls show a slight gain over the boys in the junior year.

TABLE 5.—*Distribution of high-school ratings for the senior year by minimums, medians, and maximums.*

Subjects.	Boys.				Girls.				Both.			
	Number.	Ratings.			Number.	Ratings.			Number.	Ratings.		
		Minimum.	Median.	Maximum.		Minimum.	Median.	Maximum.		Minimum.	Median.	Maximum.
Composition and rhetoric	66	87	94	98	9	84	95	98	15	84	94	98
Classics	4	83	91	97	9	88	94	98	15	83	92	98
Latin	16	85	91	97	41	84	94	98	57	84	93	98
French	3	91	92	93	16	90	95	98	19	90	94	98
Algebra	9	85	92	97	16	90	94	99	25	85	92	99
Arithmetic	14	78	95	98	29	87	94	99	43	78	94	99
Modern history	1	90	90	90	8	94	95	98	9	90	93	98
Ancient history	4	96	97	98	6	87	94	99	10	87	95	99
United States history	38	87	94	97	87	82	94	99	125	82	94	99
Civics	27	72	94	97	65	86	95	98	92	72	95	98
Economics	49	84	93	98	99	82	95	98	148	82	94	98
Sociology	21	85	92	97	53	85	95	99	74	85	93	99
Solid geometry	10	90	94	95	2	90	93	96	12	90	94	96
General science					4	81	93	98	4	81	93	98
Physiography	4	94	95	96					4	94	95	96
Physiology	6	78	88	96	5	92	94	97	11	78	90	97
Botany	4	90	93	95	2	90	95	99	6	90	94	99
Biology	3	91	92	95	10	90	93	99	13	90	93	99
Physics	76	83	94	99	177	75	93	98	253	75	93	99
Chemistry	3	85	91	95	4	89	95	97	7	85	93	97
Agriculture	5	93	94	95	19	85	95	98	24	85	94	98
Manual training	6	89	92	93	2	88	90	92	8	88	91	93
Domestic science					18	88	94	98	18	88	94	98
Drawing	4	87	92	95	1	95	95	95	5	87	93	95
Commercial law	11	88	92	95	15	81	92	98	26	81	92	98
Commercial geography	8	88	94	96	18	85	95	97	26	85	95	97
Shorthand	2	94	94	95	10	85	94	98	12	85	94	98
Bookkeeping	7	92	93	96	14	90	94	99	21	90	94	96
Grammar	18	87	94	98	31	87	94	93	49	87	94	98
Public speaking	4	92	95	97	13	87	93	95	6	92	94	97
Psychology	2	93	95	97	4	92	93	95	6	92	94	97
Pedagogy	5	90	93	95	24	92	94	97	29	90	93	97
Methods					13	90	94	98	13	90	94	98
History of American literature	25	88	93	97	86	85	94	99	111	85	94	99

Table 5 indicates that the girls are still in the lead in scholarship. The boys have reached a median of 97 in ancient history where only 4 ratings are reported. The girls reach 95 in 11 subjects, while the boys reach it in only 4 subjects. The boys have only 9 subjects at 94, while the girls have 14. At 93 the girls have 6 against 5 for the boys. The boys drop to 92 in 7 subjects, while the girls make a similar drop in only 1. The boys have 3 subjects at 91 and the girls have only 1. Both have 1 each at 90, which is the minimum for the girls, while the boys drop to 88 in 1 subject. The boys forge ahead of the girls 1 point in arithmetic. The girls stand only 1 point below the boys in physics. This record for the girls is quite significant for them as a group, since there is a general complaint among high-school girls that physics is a difficult subject. Some high-school teachers have even advocated a simpler course in physics for girls than has ordinarily been given in the average high school. The girls in this group certainly do not require a simpler course in physics.

TABLE 6.—*Average ratings for the entire high-school course by minimums, medians, and maximums.*

Subjects	Boys.				Girls.				Both.			
	Number.	Ratings.			Number.	Ratings.			Number.	Ratings.		
		Minimum.	Median.	Maximum.		Minimum.	Median.	Maximum.		Minimum.	Median.	Maximum.
Composition and rhetoric	89	82	92	98	214	78	93	98	303	78	93	98
Classics	28	86	91	97	79	78	93	98	107	78	92	98
Grammar	27	85	94	98	45	85	94	99	72	85	94	99
History of American literature	75	85	93	97	142	84	94	99	214	84	93	99
History of English literature	68	84	93	99	142	82	94	100	210	82	94	100
Latin	60	75	92	98	165	80	93	98	225	75	93	98
French	10	84	92	95	29	90	93	98	39	84	93	98
Spanish	2	89	90	91	3	95	95	97	5	89	92	97
Algebra	88	79	93	99	206	77	94	99	294	77	94	99
Plane geometry	88	77	93	99	198	76	94	100	286	76	94	100
Solid geometry	25	84	94	98	13	90	92	97	38	84	93	98
Arithmetic	58	75	94	99	117	74	94	99	176	74	94	99
Ancient history	61	80	93	98	140	80	94	99	201	80	93	99
Modern history	73	84	93	99	147	74	94	98	220	79	94	99
English history	13	80	93	95	15	80	95	98	28	80	94	98
United States history	87	85	93	98	175	71	94	99	262	71	94	99
Civics	71	77	93	99	165	79	93	99	236	77	93	99
Economics	78	82	93	98	155	82	93	99	232	82	93	99
Sociology	33	85	93	97	66	85	94	98	99	85	94	99
General science	64	82	93	98	141	78	93	99	205	78	93	99
Physiology	14	86	92	97	39	80	93	99	52	80	93	99
Physiography	28	84	94	98	27	80	94	98	55	80	94	98
Botany	15	82	93	98	28	80	93	99	43	80	93	99
Biology	9	83	92	95	18	93	93	98	27	83	93	98
Physics	80	83	94	99	183	75	93	98	203	75	93	98
Chemistry	5	85	90	98	6	85	93	97	11	85	92	98
Agriculture	51	85	93	99	103	72	93	99	159	72	93	99
Manual training	62	80	91	98	11	90	92	97	73	80	91	98
Domestic science					129	76	93	99	129	76	93	99
Drawing	4	87	92	95	1	95	95	95	5	87	93	95
Commercial law	30	75	94	97	37	85	94	98	67	75	94	98
Commercial geography	28	86	92	97	62	82	93	98	90	82	92	98
Shorthand	2	94	94	95	10	85	94	98	12	85	94	98
Bookkeeping	32	83	94	99	59	80	94	98	91	80	94	99
Psychology	9	78	91	97	13	88	93	96	22	78	93	97
Education	3	94	94	95	20	84	95	97	32	84	95	97
Methods					18	90	94	98	18	90	94	98
Stenography	6	76	95	95	17	76	95	100	23	76	95	100

An examination of Table 6 reveals the fact that the girls as a whole have made a better record than the boys. The girls have reached the 95 median in 5 subjects, while the boys have reached it in 1. The girls have a record of 15 subjects at 94 and the boys only 9. Again, at 93 the girls have 18 subjects and the boys 14. The girls drop to 92 in 2 subjects, which is their lowest median, while the boys drop to the same in 7 subjects and as low as 91 in 3 subjects and 90 in 2. The table brings out the fact that the group is made up of students who achieve with approximately equal facility, and are remarkably well balanced in the various subjects studied. The median score for all girls in all subjects is approximately 94 and for all boys in all subjects is 93.

TABLE 7.—*Average ratings for the entire senior class for the various schools represented.*

Average rating:	Schools.	Average rating:	Schools.	Average rating:	Schools.
95	2	89	18	83	17
94	2	88	24	82	3
93	1	87	26	81	1
92	9	86	29	80	6
91	9	85	34	78	2
90	14	84	17	77	1

In Table 7 there is a median of 86 for the various schools. All the schools having an average of 90 or above for their senior classes were among the smaller schools represented in the study. It is probable that the smaller number in their respective classes permitted more individual attention on the part of instructors. Thus, the entire standing of the senior class was raised above that of schools where larger numbers were enrolled. A comparative survey of the efficiency of the large high school and the small high school would be timely just now.

TABLE 8.—*Rank of pupils in scholarship in their respective classes.*

Ranks.	Boys.	Girls.	Both.
First	73	194	267
Second	11	10	21
Third	6	6	12
Fourth	1	1	2
Not stated	5	9	14
Total	96	220	316

First rank in scholarship was assigned to 267 pupils by the principals of the various schools from which they were reported. One of those who occupies a second place was given second rank because there was a tie for first place on the part of two pupils whose records were sent in from the same school. The remaining 32 were in the main assigned to a lower rank because the reporting principal made the selection on the basis of the entire four-year record. Thus, pupils who were holding a high record in the senior class in some cases were rejected because they had poor records in the earlier part of their course.

HOME ENVIRONMENT.

One of the first institutions to be developed was the family. It has, in most instances, formed the basis for the various social institutions which have existed. It is evident that the family is the fundamental factor in the general welfare of the individual. The tendency in recent years is to lay great stress upon favorable home conditions for the education of youth. It is through the home that the child learns a language, and develops his moral and ethical standards of life. It has justly been maintained that a large percentage of delinquency and backwardness among school children is a result of unfavorable home conditions. Studies of the inmates of our penal

and reform institutions reveal the fact that a large number of these inmates began their downward career because of bad home conditions. If home conditions are bad, the lowering of moral standards is inevitable.

If we account for the delinquency of youth very largely by poor home conditions, it is only natural to conclude, on the other hand, that right conditions in the home will constitute the greatest formative factor in the training of the individual. The influence which is received in the home is reflected in every undertaking in which the individual finds himself engaged. In the home the great ideals are first formed. The first conception of religion is learned at the mother's knee, and the first ideals of social and political life are set forth within the home. The customs of the home create the first impressions of honesty and integrity, truth, politeness, good manners, and clean ways of living. The great ideals which will dominate a life and give stamina to character are gathered from a good home more than from all other sources. The church has always said: "Give me the child the first seven years, and the world may have him the rest of his life." So, give the child a good home in the early formative years of his life, and his character will shape accordingly. If the highest degree of efficiency is to be attained in the education of youth, it is evident that we need the best home conditions. Good home life forms the very foundation of our American life, and our Nation will rise only in accord with its good homes.

In the study of this group of exceptional pupils it was deemed essential to know something of the home conditions of students who had been able to excel their classmates in obtaining a high grade of scholarship. The following tables will show conclusively that the group as a whole has had the advantage of splendid home conditions, a kind of home life that has played no little part in making it possible for them to carry their school work under the most favorable conditions.

TABLE 9.—*General home conditions.*

Rank.	Boys.	Girls.	Both.
Rank E	40	100	140
Rank G	40	88	128
Rank F	11	17	28
Rank P	2	7	9
Not stated	3	8	11
Total	96	220	316

Homes in rank E are those where all the very best factors of home life can be found. Rank G are homes that are considerably above the average. Rank F are homes that fall within the average class of homes. Rank P are those which fall below the average. From

Table 9 it is to be observed that home influence for the group is excellent, and it seems probable that it has had considerable effect upon their work. Almost 85 per cent of the group come from homes of a superior type. Less than 3 per cent come from homes that are distinctly inferior.

TABLE 10.—*Social conditions of parents.*

Rank.	Boys.	Girls.	Both.
Rank E	41	91	131
Rank G	43	97	140
Rank F	8	17	25
Rank P	1	6	7
Not stated	3	10	13
Total	96	220	316

Rank E are parents who are the foremost social [1] leaders in their respective communities. Rank G are persons who are above the average in their social activities. Rank F are persons who are medium in their social interests. Rank P represents persons who take no part worth mentioning in social life. Almost 86 per cent of the parents are social leaders, and doubtless have made their influence felt in an educational way. About 12 per cent are medium in their social activities, while only about 2 per cent can be regarded as indifferent toward the social betterment of the community.

The fact that the parents are progressive in social lines has doubtless had a stimulating effect upon the group as a whole. The pupils have been brought up to understand that social activities are necessary for a progressive life

TABLE 11.—*Financial condition of parents.*

Ranks.	Boys.	Girls.	Both.
Rank E	8	24	32
Rank G	25	79	104
Rank F	25	81	106
Rank P	22	19	41
Not stated	4	17	21
Total	96	220	316

Rank E are parents who may be spoken of as being independently wealthy. Rank G are persons who are well-to-do in business or receive independent incomes or salaries and are quite above the average. Rank F are persons who are in good average financial condition. Rank P are persons who are quite limited in a financial way and have considerable struggle in order to make ends meet. In a very few cases they might be classed as extremely poor. It is to be observed from the table that 10 per cent have had the advantage of all that

[1] Social is here used in the broadest sense as meaning interest in group achievement and development.

wealth could furnish, while 32.9 per cent stand quite well above the average, and 37.3 per cent stand at average. Thus 80 per cent have had the advantage of being reared under such conditions as to keep them from knowing what it means to struggle against poverty. They have doubtless always had all their physical wants supplied. It is well known that poverty interferes greatly with the best work in education. Pupils who are poorly fed and scantily clothed are never in condition to do the best school work, and before they have completed a school course many of these lose interest in education and drop out of school.

TABLE 12.—*Interest of parents in education.*

Ranks.	Boys.	Girls.	Both.
Rank E	74	126	200
Rank G	13	59	72
Rank F	7	21	28
Rank P		6	6
Not stated	2	8	10
Total	96	220	316

According to the reports made by the various principals, the parents of this group are almost all interested in education; and only a very small number are reported as having no interest in the training of their children. Even the majority of those who have less than a common-school education were very much interested in seeing that their children obtained an education. Rank E are persons who have the highest possible interest in the education of their children. Rank G are persons who are considered very active in educational affairs. Rank F are those who are average in educational interests, while rank P are those who take but very little if any interest in education. Only a few were mentioned as being opposed to having their children go beyond a high-school education. Encouragement and home stimulation mean much to a child. There are periods of discouragement in educational work common to the lives of all children. If there is no interest on the part of the parents of the child in such a crisis, there is little chance of his passing safely over it. He prefers to leave school, giving up all thought of further education. The parents of this group have taken exceptional interest in the education of their children, and this has no doubt been a strong factor in assisting them to remain in school.

TABLE 13.—*Education of parents.*

Education.	Boys.	Girls.	Both.
Common School	49	138	187
High school	29	41	64
College	15	21	36
Not stated	9	20	29
Total	96	220	316

Of the parents, 11.7 per cent are college graduates and 20 2 per cent have graduated from high school. Only a few cases are mentioned where the education might have been less than common-school graduation. Illiteracy is almost absent among the parents of this group. Parents who have learned the value of an education will doubtless stimulate their boys and girls to greater activity in scholastic work. The parental training which is practically assured from such a group of parents is in all probability such that it is conducive to a high grade of school work. It represents a type of influences which easily stimulates the student to surpass his classmates in competitive educational work.

TABLE 14.—*City and country residence.*

Residence.	Boys.	Girls.	Both.
Town	35	60	95
Country	57	160	217
Not stated	4		4
Total	96	220	316

Almost 60 per cent of the boys live in the country, while 40 per cent live in town; of the girls more than 54 per cent live in the country. However, it is to be noted that by far the greater number of those who report town residence are from small towns, where they have had the full advantage of country life. Almost 50 per cent of the boys who reported a country residence were boys who had graduated from rural schools and then entered a town or city high school. It is well to call attention to the fact that these country boys on the whole could not have had the training which is offered in the grades of our town and city schools; yet the city pupils with their superior grade training were not able to surpass them in scholarship in the high school. The samo is true for about 45 per cent of the girls coming from the rural schools. This would indicate that there is a slight falling off on the part of the country girls as compared with the country boys. The girls appear to be more easily influenced by an undue amount of social activity, while the boys were not so easily distracted.

According to Hall,[1] country pupils are prone to inattention, but are far more independent and able to take care of themselves than the city pupils. This is suggestive that country life is more effective in shaping ideals and character than city life.

Table 14 is decidedly an indication that superior students in the State of Iowa as a whole come from the country homes where they have had the advantages of both town or city and country life.

[1] Hall, G. Stanley. Youth, Its Education, Regimen, and Hygiene, p. 215.

TABLE 15.—*Nativity.*

Place of birth.	Boys.	Girls.	Both.
Iowa	84	195	279
Illinois	1	5	6
Missouri	3	4	7
Ohio	1	1	2
Minnesota	1	3	4
South Dakota	2	5	7
Indiana	1	2	3
Nebraska	2	1	3
Oklahoma	.....	1	1
New York	.....	1	1
Not stated	1	2	3
Total	96	220	316

The above table indicates, as might be expected, that the greater number of the students of this group are natives of Iowa. The settled life is always more conducive to good work in school. The child who has moved from place to place is always at a disadvantage because of changing school conditions. The task of readjustment to new school surroundings causes an arrest of the child's progress, and doubtless in many cases has been a large factor in causing him to be completely discouraged and to drop from the school course.

TABLE 16.—*Occupation of parents.*

Occupations.	Boys.	Girls.	Both.	Occupations.	Boys.	Girls.	Both.
Farmer	39	133	172	Janitor	2	1	3
Merchant	7	11	18	County supervisor	.....	3	3
Minister	10	3	13	Real estate agent	1	2	3
Carpenter	1	10	11	Barber	2	.....	2
Day laborer	2	8	10	Restaurant keeper	1	1	2
Lawyer	2	7	9	School superintendent	.....	2	2
Physician	4	4	8	Civil engineer	.....	2	2
Salesman	3	5	8	Laundress	1	.....	1
Mechanic	2	5	7	Postmaster	1	.....	1
Baker	1	4	5	Printer	.....	2	2
Railroad work	2	2	4	Undertaker	.....	1	1
Mail carrier	2	2	4	Not stated	7	7	14
Druggist	2	2	4	Total	96	220	316
Blacksmith	2	2	4				
Manufacturer	2	1	3				

The distribution of the occupations in Table 16 is probably not very significant. There is absence of a leisure class. The idle rich are not represented as parents of distinguished high school students in Iowa. Every occupation represented is essential to modern community life, and the majority represent productive enterprises which create and conserve wealth rather than speculate upon it. Although we do not have all the data necessary to prove it, probably the occupations shown in this table are about proportionate to such occupations in the total population.

TABLE 17.—*Size of family. Number of boys and girls having brothers and sisters.*

	Boys.	Girls.	Both.
Number of brothers and sisters.			
No brother or sister	9	21	30
One	18	28	46
Two	16	42	58
Three	15	39	54
Four	13	25	38
Five	8	23	31
Six	9	25	34
Eight	4	3	7
Nine	1	3	4
Eleven		1	1
Thirteen	1		1
Number of sisters.			
No sister	26	52	78
One	32	70	102
Two	14	43	57
Three	14	29	43
Four	3	13	16
Five	3	5	8
Six	1	3	4
Number of brothers.			
No brother	27	55	82
One	22	56	78
Two	23	35	58
Three	17	31	48
Four	4	15	19
Five	5	9	14
Six		4	4
Seven	1		1

According to Table 17 there were 9 boys and 21 girls who had no brother or sister; 18 boys and 28 girls had one brother or sister; 16 boys and 42 girls had two brothers or sisters, etc.

With few exceptions the families which these students represent are small. The average for the entire group is not quite 4.2 per family. The very fact that families are small may account in some measure in determining the advancement of the pupils, since the parents could easily devote more time to each child in his school work. Yet it is not wise to lay too much stress upon this point. In large families it quite often happens that the younger children have a decided advantage. The older children are familiar with the school and its work and teach the younger brothers and sisters.

TABLE 18—*Position of pupils in the family.*

Position.	Boys.	Girls.	Both.
First-born	36	68	104
Second-born	16	45	61
Third-born	18	27	45
Fourth-born	13	24	37
Fifth-born	4	16	20
Sixth-born	3	13	16
Seventh-born	1	4	5
Eighth-born	2	3	5
Ninth-born		1	1
Tenth-born	1	2	3
Twelfth-born	1	1	2

Almost 54 per cent of these students occupy first or second place in their respective families. More than 33 per cent stand in the position of first-born, while about 67 per cent take some other position in the list. There is a common idea that first-born children are superior to those who are born later in the family. The table does nor bear out this idea. It is to be noted from Table 17 that 9 boys and 21 girls are the only children in their respective families. When we consider the large number of homes in which there is only one child it is evident that being an only child in a family is not necessarily an advantage in achieving success in school. Where there is more than one child in a family there may be competition among the children which stimulates them to do better work.

TABLE 19.—*Nationality of parents.*

Nationality.	Boys.		Girls.		Both.	
	Fathers.	Mothers.	Fathers.	Mothers.	Fathers.	Mothers.
American	57	52	123	123	109	185
English	8	7	18	5	36	12
German	9	9	20	14	29	23
Scotch-Irish	4	6	11	13	15	19
Norwegian	6	3	9	8	15	11
Swedish	3	5	8	5	11	10
Irish	2	3	7	10	9	13
Danish	3	3	3	6	6	9
Dutch		1	6	7	6	8
Scotch		1		4		5
Bohemian			3	4	3	4
Welsh				2		2
Scandinavian			1	2	1	2
Swiss		2	1		1	2
Jew	1	1			1	1
Canadian	2				3	

More than 60 per cent of these distinguished pupils are of American descent. Sixteen other nationalities are represented, among which the English, Irish, and Germans make up the larger part. The table must not be interpreted to mean that purebred American youth succeed better in the high schools of Iowa than children of foreign parentage. The table shows that there are more American parents sending children to Iowa high schools, and it is probable that these numbers are fairly representative of the total population of the State.

PHYSICAL CONDITIONS.

It is not to be concluded from this study that the physical traits tabulated have any distinct correlation with distinguished mental traits. The tables are given as facts which came from the data secured, and may be interpreted in various ways, or not at all. It is probable that size and weight within the limits shown in these data have little effect on intellectual ability. The maximum height for the entire group is 6 feet 2 inches, and the minimum height is 4

feet 10 inches. The median is 5 feet 5 inches. In an unpublished study of a similar group in Indiana the maximum height was 6 feet 1 inch, the minimum was the same as our present group, and also the median was the same. For the boys of the present group the maximum is 6 feet 2 inches, the minimum is 4 feet 10 inches, and the median 5 feet 9 inches; in the Indiana group the maximum height was 6 feet 1 inch, the minimum 5 feet 1 inch, and the median 5 feet 8 inches. For the girls the maximum is 5 feet 10 inches, the minimum 4 feet 11 inches, and the median 5 feet 4 inches. The Indiana study gives the girls a maximum of 5 feet 11 inches, a minimum of 4 feet 10 inches, and a median of 5 feet 4 inches.

By making comparison with Boas[3] and Smedley[4] we note that the norm for 18-year old boys is 5 feet 7.5 inches. Thus our group of boys is about 0.5 inch above the average. The norm for the girls is 5 feet 2.76 inches. Our group of girls, then, is 1.24 inches above the average.

Whipple states that children of purely American descent are taller than those of foreign descent. It is possible, since 60 per cent of the present group are American, that this may account in part for the higher norm. First-born children are taller than later born, according to Boas. Of this group 104 are first-born. Again, children of the nonlaboring classes are somewhat taller than those of the laboring classes. The parents of these pupils may be classed in part with the professional class.

The minimum weight of the entire group is 91 pounds, while in the Indiana study previously mentioned, the minimum was 80 pounds. The maximum weight is 230 pounds as against 175 in the Indiana group. The median weight is 125 pounds, while the median was 128 pounds for the Indiana group. The minimum weight for the boys is 91 pounds as against 101 pounds for the Indiana group. The maximum is 230 pounds for the boys as against 175 pounds for the Indiana group, and the median is 144 as against 140 for the latter. The minimum for the girls is 91, while it was 80 for the Indiana group. The present median for the girls is 121, while it is 120 in the former study.

Naturally we should expect a general correlation between weight and height. An excess above the norms of weight given by Boas and Smedley is found to exist in this group, as was found in height. The same reasons for the excess apply in both cases.

[3] Boas, The Growth of American Children. Report, U. S. Commiss. of Educ., 1896–97, ii, 1555.
[4] Smedley. Report, U. S. Commiss. of Educ., 1902, i, 1095.

According to Whipple[5] the correlation between weight and mental ability or precocity is found to be positive by some investigators, negative by others, and indifferent by still others. He says:

Porter asserts very positively that "precocious children are heavier and dull children are lighter than the mean child of the same age," and draws a further practical conclusion that "no child whose weight is below the average for its age should be permitted to enter a school grade beyond the average of its age, except after such physical examination as shall make it probable that the child's strength be equal to the strain." Porter's conclusion is confirmed by Smedley at Chicago, and, so far as his limited data suffice, by De Busk.[6] On the basis of the teacher's estimate of mental ability, Gilbert,[7] however, finds no constant relation between weight and such ability, save that from 10 to 14 years the dull children are much heavier than the bright, while West,[8] who used a similar basis, finds a negative correlation throughout.

Welton [9] says that researches on normal children give no grounds for expecting any connection between the size of the body and the power of mind. As far as we know history will bear out the fact that many of the great men of the past have been men of small stature, while just as many have been of large stature. The old aphorism "a sound mind in a sound body" is more true than "a big mind in a big body."

TABLE 20.—*Distribution of height.*

Height.	Boys.	Girls.	Both.	Height.	Boys.	Girls.	Both.
6 feet 2 inches	1	.....	1	5 feet 4 inches	3	41	44
6 feet 1 inch	2	.....	2	5 feet 3 inches	.....	35	35
6 feet	7	.....	7	5 feet 2 inches	1	18	19
5 feet 11 inches	13	.....	13	5 feet 1 inch	2	15	17
5 feet 10 inches	20	3	23	5 feet	1	11	12
5 feet 9 inches	10	5	15	4 feet 11 inches	.....	2	2
5 feet 8 inches	10	12	22	4 feet 10 inches	1	.....	1
5 feet 7 inches	5	20	25				
5 feet 6 inches	13	31	44	Total	96	220	316
5 feet 5 inches	7	27	34				

[5] Whipple, G. M. Manual of Mental and Physical Tests (simpler process), Vol. I, pp. 73-78.

[6] De Busk, Burchard W. The vital index in development.

[7] Gilbert, J. A. Researches on mental and physical development of school children. Yale Psy. Lab. 1894.

[8] West, G. Observation in the relation of physical development to intellectual ability made on school children of Toronto. Science, 1896, vol. 4, pp. 156-9.

[9] Welton, J. The Psychology of Education. p. 59.

TABLE 21.—*Distribution of weight.*

Weight (pounds).	Boys.	Girls.	Both.	Weight (pounds).	Boys.	Girls.	Both.
230	1		1	126	3	6	9
199		1	1	125	9	13	22
196		1	1	124	1	5	6
175		1	1	123		6	6
170	1	2	3	122	3	7	10
168	1		1	121		7	7
163	2	1	3	120	1	10	11
160	3	2	5	119	1	3	4
158	4		4	118		13	13
157	1		1	117		6	6
156	1		1	116		5	5
155	2	2	4	115		7	7
154	2	1	3	114		2	2
153	1		1	112	1	6	7
152	2		2	111		1	1
150	3	4	7	110		13	13
148	2		2	109		1	1
147	3		3	108	1	5	6
146	2	1	3	107		3	3
145	9	7	16	106		1	1
143	1		1	105		5	5
141		1	1	104		3	3
140	11	4	15	103		5	5
139	1	2	3	102		1	1
138		1	1	100		9	9
137	3	3	6	99		2	2
136	4	1	5	98		2	2
135	4	4	8	97	1	2	3
134		1	1	94		1	1
132		2	2	93		1	1
131		3	3	92		2	2
130	5	8	13	91	1	1	2
129	1	2	3	Not stated	3	2	4
128		6	6	Total	96	220	316
127	1	3	4				

TABLE 22.—*Physical defects.*

Defects.	Boys.	Girls.	Both.
None	88	192	280
Poor eyes	4	20	24
Curved spine	1	2	3
Weak heart	1	3	4
Defective teeth		3	3
Rupture	1		1
Defective knee	1		1
Total	96	220	316

TABLE 23.—*State of health.*

Health.	Boys	Girls.	Both
Excellent	13	33	46
Good	75	173	248
Fair	5	7	12
Frail		1	1
Not stated	3	6	9
Total	96	220	316

From a careful study of the tables dealing with the physical characteristics of this special group of distinguished students it is evident that in the main they have not labored under physical handicaps. There is only one case reported in which the student has apparently suffered from poor health and physical infirmities of a nature which

were sufficient to interfere with the school course. High-school work in America is strenuous and good health is absolutely essential to the best results in mastering work assigned. With this group the conditions of health and physical fitness are in a high degree favorable to the student's doing a superior grade of intellectual work.

Teachers should take into consideration that bodily health and vigor are positive correlations with mental alertness and strength. A healthy body is essential in education, both as a means and an end. Thorndike [10] says that health is better than strength or grace, and that the action of the heart and circulatory system, the lungs, the digestive and other organs is far more important than the action of voluntary muscles of the legs, arms, and chest.

Because of the correlation between mental and physical activity, a strong body with properly functioning vital parts is essential to the best mental work. There may be exceptions, but on the whole mental vigor can not exist without physical vigor. The student who expects to excel in mental capacity must look to the development of his physical body and to the maintenance of health.

Thorndike [11] sums up his discussion on health as follows:

> Good teaching treats health as of importance comparable with intellectual progress. Good teaching takes account of bodily conditions of pupils and cooperation with parents and public authorities for their improvement.
>
> The teacher should first know these bodily conditions in the case of each pupil; second, do what is appropriate to remedy them; and third, allow for them in arrangements for teaching and in estimates of pupils.

TABLE 24.—*Athletics.*

Athletics.	Boys.	Girls.	Both.	Athletics.	Boys.	Girls.	Both.
None	12	53	65	Folk dancing		2	2
Very little	5	11	16	Hikes		3	3
Baseball	44	2	46	Gymnasium		15	15
Basketball	63	119	182	Volley ball		2	2
Football	24		24	Horseback riding		2	2
Track	31	7	38	Rowing		3	3
Tennis	7	17	24	Skating		1	1
Swimming	3	8	11				

No special records in athletics were reported. The above table indicates that as a group their participation in athletics has been nominal. It is claimed by some that athletics stimulate better class work, improve the health of the students, and develop a wholesome school spirit. This may be true, but with a special group, such as we have here, it would seem that athletics have had no part in raising the standard of their school work.

[10] Thorndike, E. L. The Principles of Teaching. Ch. II. [11] Op. cit.

SCHOOL HISTORY OF THE GROUP.

TABLE 25.— *Year of birth.*

Year of birth.	Boys.	Girls.	Both.	Age.
1899	1	2	3	23
1900	.....	2	2	22
1901	1	4	5	21
1902	8	6	14	20
1903	17	43	60	19
1904	34	82	116	18
1905	25	67	92	17
1906	7	8	15	16
1907	1	.....	1	15

At the time of graduation, 116 pupils were 18 years of age, thus having finished the 12 years of both the common and high school work within the 12 years allotted for the work. Ninety-two finished the work in 11 years, 15 in 10 years, and 1 in 9 years. Eighty-four were not permitted to finish the work within the prescribed time. For various reasons these entered late, or were out on account of sickness of a temporary nature or other misfortune. Their excellent school work may be accounted for as a result of greater maturity, or seriousness in effort, due to greater age, or it may be due to greater alertness and better mentality. Our data do not throw any light upon this question. But the fact remains that they belong to that group of high-school seniors in the State of Iowa who distinguished themselves in the educational work assigned them.

TABLE 26.— *Year entering the grades.*

Year.	Boys.	Girls.	Both.	Year.	Boys.	Girls.	Both.
1904	.....	1	1	1909	19	47	66
1905	1	.....	1	1910	36	99	135
1906	1	.....	1	1911	22	43	65
1907	2	6	8	1912	5	8	13
1908	9	6	15	1913	1	1	2

Table 27 indicates that approximately 44 per cent have spent 12 years to complete both the common and high school courses, while figured on the data in Table 26 it is 38½ per cent. Table 27 indicates that about 23 per cent finished in less than the required time from the date when they entered the grades; Table 26 shows that about 30 per cent finished in less than the required time from the date of birth.

TABLE 27.—*Grade entered.*

Grade.	Boys.	Girls.	Both	Grade.	Boys.	Girls.	Both.
Kindergarten	3	14	17	Fourth grade	.....	1	1
First grade	83	194	277	Not stated	5	8	13
Second grade	4	3	7				
Third grade	1	.....	1	Total	96	220	316

Of the entire group, 277 entered the first grade as their initial work for the school course. This larger number should be expected, since many had their first work in rural schools or small town schools, of which the majority are not prepared to give primary or kindergarten work. Those entering a later grade were able to do so either because they had been taught at home or had attended a parochial school before entering the public school.

TABLE 28.—*Taught before entering school.*

Before entering.	Boys.	Girls.	Both.
Yes	26	58	84
No	68	158	226
Not given	2	4	6
Total	96	220	316

Table 29 indicates that 27 per cent of the boys have received instruction before entering the grades and about 26.3 per cent of the girls.

TABLE 29.—*Grades skipped.*

Grade.	Boys.	Girls.	Both.	Grade.	Boys.	Girls.	Both.
First	6	9	15	Four B		1	1
One A	1	1	2	Fifth	6	6	12
One B		2	2	Five A		2	2
Second	10	16	26	Sixth	3	2	5
Two A	1	2	3	Six A		2	2
Two B	4	2	6	Six B	1	2	3
Third	5	7	12	Seventh	4	8	12
Three A	1	1	2	Seven A	2	3	5
Three B	1	1	2	Eight	2	2	4
Fourth	4	6	10	Eight B		2	2
Four A	1		1				

More than 54 per cent of the boys and 35 per cent of the girls were able to skip grades or parts of grades during their course. According to Inglis,[12] between 55 and 60 per cent of the pupils in our public schools are of normal age with reference to their classification by grades; one-third or a few more are below the grade where they might be expected to be according to their age, and less than 5 per cent are in classes beyond those of children of their age. In the light of these figures, and in view of the fact that almost 75 per cent of the exceptional group entered the grades without any previous teaching, the ability to skip a grade and still maintain high scholastic standing becomes especially significant.

It is to be observed from Table 30 that the skipping of grades does not occur in any particular grade. However, there is a slight variation in the second grade. It would appear from the table that those pupils have apparently forged gradually ahead of their mates and at

[12] Inglis, Alexander, Principles of Secondary Education, Chap. IV.

different periods have so far surpassed them that promotion was necessary.

TABLE 30.— *Year entering the high school.*

Year entered.	Boys.	Girls.	Both.
1915		2	2
1916		1	1
1917	8	13	21
1918	81	183	264
1919	6	16	22
1920		1	1
Not given	1	4	5
Total	96	220	316

Eighty-three per cent of the group entered high school in 1918. Those entering before that time were compelled to drop out on account of sickness or other misfortune. Twenty-two per cent of the number did not enter until 1919, and one not until 1920.

TABLE 31.— *Time spent in high school.*

Time in high school.	Boys.	Girls.	Both.
5 years	2	1	3
4½ years	1	1	2
4 years	86	203	289
3½ years	2	1	3
3 years	3	8	11
2 years		3	3
Not given	2	3	5
Total	96	220	316

From the foregoing table it is to be noted that 3 finished the entire course in 3½ years and 11 completed the work in three years. Three girls are reported as having finished the four years' work in two years. Two hundred and eighty-nine finished the work in the usual four years.

TABLE 32.— *Accomplishments outside of school work.*

	Boys.	Girls.	Both.
Music	31	115	146
Drawing	6	3	8
Dramatic arts	6	16	22
None	59	86	145
Total	96	220	316

It is rather remarkable that a little more than 46 per cent report music as a special accomplishment. This work in the main has been accomplished by home lessons and home practice. Music carries with it the power of shaping ideals, which are conducive to stimulating the ambitions. Although this may have been a minor factor in helping the group to do better work, we are not justified in giving

music any important place as a responsible factor in enabling pupils to do better work. The accomplishment in music is simply an indication that these children are versatile and can succeed fairly well in different lines. They have larger interests, broader social and intellectual connections, because they have larger and better native capacities. Some have believed that musical ability is an indication of exceptional mental powers, but the data from this group give little evidence of that sort.

The other items mentioned are common to such a small number that they do not warrant any special mention. In general the group seems to be an all-round group of exceptionally good students, and their abilities do not seem to be specialized in any direction to the exclusion of other activities and interests.

TABLE 33.—*Pay for outside work.*

		Boys.	Girls.	Both.
Work outside	Yes	74	127	201
	No	22	93	115
Pay for work	Yes	44	54	98
	No	30	73	103

Time spent each day on outside work by the boys:	Hours.
Maximum	5½
Median	2½
Minimum	½
Time spent each day on outside work by the girls:	
Maximum	3
Median	1½
Minimum	½

More than 36 per cent have not been required to do any outside work and have thus been free to give all their attention to school work. Yet it is interesting to know that about 64 per cent have given considerable time to work outside of their regular school course, and 31 per cent of the group have engaged in work of a remunerative nature, and still have been able to excel.

TABLE 34.—*Outside advantages.*

Advantages.	Boys.	Girls.	Both.
Libraries	44	83	127
Museums	14	22	36
Churches	67	137	204
Theaters	35	58	93
Travel	27	77	104

Table 34 indicates that outside advantages have been good, with churches, libraries, travel, and theaters furnishing advantages to the larger number. As in the case of special accomplishments, however,

it may be assumed that the exceptional student takes advantage of special opportunities chiefly because he is exceptional. A more detailed study of these advantages should be made in order to show their value as educational factors.

TABLE 35.—*Vocational work and guidance.*

Vocational work.	Boys.	Girls.	Both.
None	56	116	172
Simply answered "Yes"	8	30	38
Manual training (alone)	13	.....	13
Manual training and agriculture	4	.....	4
Smith-Hughes agriculture	3	.....	3
Agriculture (alone)	.....	2	2
Commercial	1	1	2
Commercial and manual training	1	.....	1
Vocational education	2	13	15
Home economics and agriculture	.....	3	3
Home economics	.....	20	20
Home economics and manual training	.....	1	1
Home economics, manual training, and commercial	.....	1	1
Home economics and vocational education	.....	1	1
Home economics, agriculture, and vocational education	.....	1	1
Home economics, agriculture, and manual training	.....	1	1
Not given	10	30	40
Total	96	220	316

About 40 per cent have had vocational work offered in the high school. This is a rather small number when we take into consideration the fact that much emphasis has been placed upon the vocational work in the high schools of Iowa during the last few years. About 60 per cent of this group have not been attracted by the vocational work offered in our high schools. However, when we take into consideration that more than one-half of the entire group entered high school because of a desire for a higher general education, it is not at all surprising that the percentage taking vocational work is rather low.

TABLE 36.—*Reasons for entering high school.*

Reasons.	Boys.	Girls.	Both.
Desire for an education	41	121	162
To prepare for college	9	4	13
To make a success	12	27	39
Custom	8	26	34
Love for school	6	10	16
Influence of parents	13	23	36
For a diploma	.....	3	3
To be able to make money	1	.....	1
Influence of brother or sister	3	.....	3
Influence of teachers	.....	3	3
Not stated	96	3	6
Total	.....	220	316

It is quite evident from Table 36 that ambition for an education or desire for mental development is the leading factor in causing these students to take the high-school course. They have of their own volition made the choice to pursue their studies toward a higher education.

SELECTION OF A LIFE WORK.

Every young person faces with more or less seriousness the question of a life work. In former years the question was very simple and did not demand a great deal of consideration. At present it has become a very serious problem.

It is evident that whatever the occupation chosen, the individual must be prepared to meet the demand of that occupation. Competition grows stronger every year, and the demand of the business world for efficient workers is growing continually stronger. The time is here when the inefficiently trained worker does not count for much in comparison with the worker who is trained for the most efficient service. Among the masses there has been for the last few years a tendency toward industrial training, and every day we see examples of what the times are demanding in the way of highest skill in industry.

Schools are everywhere meeting the demands as rapidly as possible, and there is no longer serious lack of educational opportunities. The vital point is the choice that the individual makes. It is not the relative importance of any of the occupations, but rather the question as to which of these professions the natural abilities of the individual fit him for. The misfit is the individual who has made the wrong choice. Many boys who would have been good farmers have been made into poor lawyers or ineffective clergymen. Until recently almost any fanciful advice of a friend or relative might be responsible for a life choice. At present we are on the verge of a vocational guidance era, such as will enable the majority of young people to find their right calling.

In reference to the following table, it is to be noted that 140 have selected the profession of teaching. This is probably a natural choice for those who undoubtedly found more than ordinary pleasure in scholastic work. We should expect those who have been leaders in scholastic work to have a desire to lead others into the intellectual life. Perhaps no other profession offers a greater opportunity for efficiency in social service than that of teaching, and it is significant that such a large percentage of this group of exceptional students have selected teaching as their profession.

The other professions are well represented except that of the ministry. The church has doubtless been a great factor in the uplift of society, and now society demands that the church be under direction of the most capable leaders. Very little influence of a religious nature, however, emanates from the public school, because the church and the school are separated in our country by constitutional authority.

TABLE 37.—*Occupations selected.*

Occupations.	Boys.	Girls.	Both.	Occupations.	Boys.	Girls.	Both.
Teaching	7	133	140	Accounting	1	1	2
Music	2	6	8	Animal husbandry	2	.....	2
Law	7	1	8	Dentistry	1	.....	1
Electrical engineering	8	.....	8	Undertaking	1	.....	1
Stenography	1	7	8	Christian service	1	.....	1
Nursing	.....	9	9	Mercantile business	1	.....	1
Medicine	5	2	7	Mechanical engineering	1	.....	1
Journalism	2	5	7	Finance	1	.....	1
Engineering	6	.....	6	Commerce	.....	1	1
Chemistry	6	.....	6	Writing	.....	1	1
Civil engineering	4	1	5	Poultry business	.....	1	1
Banking	5	.....	5	Library work	.....	1	1
Farming	5	.....	5	Secretarial work	.....	2	2
Business	.....	4	4	Undecided	29	40	69
Dramatic art	.....	3	3				
Decorator	.....	2	2	Total	96	220	316

Of the group 143 believe they will like the work of the profession chosen. This reason is more frequently given by the girls than the boys. Financial gain does not seem to figure in the choice made by the girls, but is more prominent with the boys. It is very doubtful whether the vocational work of the high school has had much to do with the choice made. It is evident that we need courses to teach high-school students just what are the advantages and disadvantages of various trades, businesses, and professions. They would then choose more wisely. Certainly the following table does not indicate that these exceptional youth choose a life work because they have special talents and aptitudes for it.

TABLE 38.—*Reasons for choice made.*

Reasons.	Boys.	Girls.	Both.	Reasons.	Boys.	Girls.	Both.
Believe they will like it	38	105	143	Useful to self	.....	2	2
Believe they have special talent for it	5	14	19	Experience	4	5	9
Influence of parents or others	4	12	16	Not stated	37	72	109
Financial gain	8	10	18	Total	96	220	316

TABLE 39.—*Time given to Sunday-school work.*

Time given.	Boys.	Girls.	Both.	Time given.	Boys.	Girls.	Both.
No time given	19	7	26	Regular Sunday-school time	2	.....	2
1 hour per week	8	29	37	Some	7	15	22
2 hours per week	1	21	22	One and one-half hours	1	5	6
3 hours per week	1	5	6	Two and one-half hours	.....	3	3
4 hours per week	.....	3	3	Most of Sunday	.....	1	1
5 hours per week	.....	2	2	1 evening per week	1	1	2
6 hours per week	.....	2	2	2 days per week	.....	3	3
One-half hour per week	4	3	7	Not stated	40	114	154
20 minutes per week	1	.....	1				
40 minutes per week	1	1	2	Total	96	220	316
45 minutes per week	1	1	2				

SOCIAL ACTIVITIES ASIDE FROM HIGH-SCHOOL WORK.

In former years the school afforded the most important social functions in the community. In the rural places and smaller towns the schoolhouses were places of gatherings for various purposes. However, in recent years, there has been a sad neglect in the matter of properly uniting the school and community interests. Betts [12] in making a summary of the social process says that it is made up of all the varied experiences of men as they work and play together, including all the manifold activities constituting the social institutions. This social process is man's creation as well as his opportunity. The school has been said to be both an expression of social consciousness and intellectual consciousness.

More than 43 per cent of this group have given time to outside activities or social affairs. They have not been contented with those which were afforded by the general school plan. The girls show less interest than the boys, for about 50 per cent of the girls are engaged in outside activities as against 65 per cent of the boys. Several indicated in their replies to the questionnaire that they were not inclined to engage in any social activities other than those afforded by the school. Some have expressed the opinion that if they were to do their work well, they had no time for outside organizations.

TABLE 10.—*Other organizations.*

Organization.	Boys.	Girls.	Both.	Organization.	Boys.	Girls.	Both.
None	33	102	135	American Legion Auxiliary	.....	1	1
Young Women's Christian Association	.....	12	12	Boy Scouts	7	.....	7
Young Men's Christian Association	9	.....	9	I. D. K. D. Y	.....	1	1
Modern Woodmen	4	.....	4	Spanish Club	.....	1	1
Royal Neighbor	.....	1	1	Bap. Y. P. Union	.....	1	1
Eastern Star	.....	1	1	Rebecca Lodge	.....	1	1
Epworth League	3	2	5	Dramatic Club	.....	1	1
Christian Endeavor	3	4	7	Music Club	.....	1	1
Camp Fire Girls	.....	14	14	Literary Society	2	.....	2
Orchestra	.....	1	1	De Malay	4	.....	4
R. S. A	.....	.....	1	Bard	1	.....	1
Gospel Team	1	.....	1	Not stated	27	75	102
Daily Jewish School	1	.....	1	Total	96	220	316
Community Club	1	1	1				

COLLEGE PLANS.

Only 16 from the entire group state that they will not attend college. Over 60 per cent have already decided upon the institution they will attend, the State schools of Iowa being preferred by those who have made their choice.

[12] Betts, G. H. Social Principles of Education, p. 129.

The following table gives the complete list of institutions the students will attend:

TABLE 41.—*Institutions the students will attend.*

Institutions.	Boys.	Girls.	Both.	Institutions.	Boys.	Girls.	Both.
Iowa State University	16	36	52	Cincinnati University		1	1
Iowa State Teachers College	3	48	51	Pella College		1	1
Iowa State Agricultural College	19	6	25	Missoula (Ontario)		1	1
Simpson College	5	5	10	Gregg (Chicago)		1	1
Coe College		4	7	Denison University		1	1
Cornell College		4	6	U. S. Military Academy	1		1
Drake University	1	4	5	Creighton College	1		1
Grinnell College	2	3	5	Morningside College	1		1
Des Moines University		2	2	Parsons College	1		1
Buena Vista College	1	1	2	Iowa Wesleyan	1		1
St. Olaf College	2		2	Monmouth College	1		1
Olwein		1	1	Rock Island	1		1
Leland Stanford University		1	1	Notre Dame	1		1
Penn College		1	1	Nebraska Wesleyan	1		1
California University		1	1	George Washington University	1		1
Spencer		1	1	Upper Iowa	1		1
Marshalltown		1	1	Undecided and those not going	31	95	126
University of Chicago		1	1	Total	96	220	316

STUDY METHODS.

One of the most valuable things for any student to learn is how to study. Study plans are generally neglected in our schools. It is too often the case that the teacher does the thinking for the student. A better plan is to lead the student into the subject in such a way that he does his own thinking and is able to economize his time in the mastery of the subject.

TABLE 42.—*Definite time for study.*

Definite time.	Boys.	Girls.	Both.
Yes	42	107	149
No	50	105	155
Sometimes		1	1
Not stated	4	7	11
Total	96	220	316

From the table above we learn that almost 47 per cent have a definite time for study. The girls show a somewhat higher record for a definite time for study, standing higher than 48 per cent, while the boys are a little less than 44. We are not justified in concluding that a definite study period has had much to do in raising the standard of scholarship for our exceptional group. They seem to have succeeded in spite of irregularity in the study period.

TABLE 43.—*Time when studying is done.*

Time of study.	Boys.	Girls.	Both.
Morning and afternoon		4	4
Afternoon and night		3	3
Morning and night		4	4
Morning		10	16
Evening	6	81	115
Afternoon	34		1
No definite time	1	105	155
Not stated	50	13	18
	5		
Total	96	220	316

Table 43 indicates that the general tendency of the group is to study evenings. This is to be expected with the average student, as the most available time free from outside disturbing influences.

TABLE 44.—*Study in room where others are talking.*

Study where disturbed.	Boys.	Girls.	Both.
Yes	56	132	188
No	23	55	78
Sometimes	14	21	35
Not stated	3	12	15
Total	96	220	316

Seventy per cent study in rooms where others are talking. For the average person proper attention can not be secured when there is confusion and distraction. The fact that these exceptional students have been able to master work in the midst of confusion is an indication either that they have a high degree of concentrative power, or that the tasks assigned were not difficult enough to require long continued and undisturbed effort.

TABLE 45.—*Does talking annoy?*

Talking annoys.	Boys.	Girls.	Both.
No	51	102	153
Yes	17	47	64
Somewhat	16	45	61
Not stated	12	26	38
Total	96	220	316

In the table relative to being disturbed by talking almost 40 per cent claim to be disturbed.

TABLE 46.—*Separate room for study.*

Separate study room.	Boys.	Girls.	Both.
No	74	167	241
Yes	11	42	53
Sometimes	2	4	6
Not stated	9	7	16
Total	96	220	316

According to Table 46 more than 73 per cent of the group do not have a separate study room.

TABLE 47.—*Lessons studied at home.*

Study at home.	Boys.	Girls.	Both.
Hardest	54	126	180
Easiest	14	43	57
Either place	9	13	22
Both home and school		9	9
Not stated	19	29	48
Total	96	220	316

Of the entire group 57 per cent choose to study the hardest lessons at home.

TABLE 48.—*Preference for home or school study.*

Preferences.	Boys.	Girls.	Both.
Home	12	61	73
School	72	141	212
No preference	8	11	19
Not stated	5	7	12
Total	96	220	316

Sixty-seven per cent report a preference for study at school. It is not at all improbable that the social surroundings of the school will in some measure account for this tendency in each case. The atmosphere of the school is such that the student will find it easier to concentrate upon his lessons than in the average home, where various interests within the home are sources of distraction.

TABLE 49.—*Study with some one else.*

Study with another.	Boys.	Girls.	Both.
No	92	207	299
Yes		4	4
Sometimes	2	6	8
Not stated	2	3	5
Total	96	220	316

Almost 95 per cent report that they prepare their lessons alone. They appear to be quite dependent upon their own ability to perform the task of lesson preparation. However, we can not conclude that their having excelled in their studies is due to this fact, because in a similar investigation carried on in 1917 by Professor Clement [1] of all high-school students in several large cities of Illinois 91 per cent prepared their lessons alone.

TABLE 50.—*Help received from parents.*

Help from parents.	Boys.	Girls.	Both.
No	84	207	291
Yes	1	2	3
Not stated	11	11	22
Total	96	220	316

Scarcely any help is received from parents on lesson preparation. Some parents may spend considerable time in assisting their children to prepare their daily lessons, but this probably applies more definitely to poor students who need help than to good ones.

TABLE 51.—*Help received from friends.*

Help from friends.	Boys.	Girls.	Both.
No	76	194	270
Yes	3	5	8
Some	4	8	12
Not stated	13	13	26
Total	96	220	316

A little more than 6 per cent report that they have received some help from friends. This percentage was expected to be very small when so few reported as having studied their lessons with someone else.

TABLE 52.—*Help received from teachers.*

Help from teachers.	Boys.	Girls.	Both.
No	59	161	220
Yes	9	27	36
Some	17	23	40
Not stated	11	9	20
Total	96	220	316

According to the foregoing tables these students do not receive very much outside help from parents and friends. However, a little more than 30 per cent of them receive more or less help from their teachers. It appears, however, that with this exceptional group

[1] Clement, J. A. The Illinois School Survey, 1917.

outside help had little to do with making them stand above their fellows. They have worked independently and without much assistance.

From the answers received to the question as to the amount of help received, it is safe to assume that the time given to help from teachers is so small that its effect upon their scholarship is negligible. The tables are conclusive evidence that this group is made up of pupils who are sufficiently able to do independently the tasks which the school assigns them.

TABLE 53.—*Number of minutes spent on each subject.*

Subjects.	By boys.							By girls.						
	20	30	40	45	60	90	Median.	20	30	40	45	60	90	Median.
Physics	2	15	25	17	12	4	40	5	15	23	50	44	25	45
English	1	7	17	12	4	1	40	14	20	21	35	10	4	40
History	1	6	9	5	4	1	40	2	7	21	19	12	5	45
Civics	1	6	11	8	6	1	40	5	8	19	22	9	5	45
Sociology	2	4	3	3	1	....	40	4	6	6	7	3	....	40
Botany	1	1	1	2	1	....	45	1	1	1	3	1	....	45
Geometry	3	1	3	1	....	1	40	3	1	....	4	2	....	40
Economics	2	3	1	1	1	....	40	6	11	10	5	2	4	40
Bookkeeping	....	....	1	....	....	3	90	....	....	....	....	....	4	90
Domestic science	....	....	....	....	....	....	....	....	3	2	1	1	2	40
Commercial law	1	2	3	7	....	....	45	2	3	7	9	3	....	45
Literature	1	3	10	2	2	....	40	2	6	13	8	5	2	40
French	....	1	1	....	....	....	40	4	4	5	....	....	1	30
Arithmetic	1	3	2	....	1	1	40	....	2	3	10	2	5	45
Grammar	3	....	4	2	....	....	40	2	1	2	5	1	5	45
Agriculture	....	....	1	1	....	....	45	3	2	2	2	3	1	45
Geography	....	3	2	1	....	....	40	1	1	1	3	5	1	45
Stenography	....	....	....	....	....	2	90	2	1	....	2	1	2	45
Latin	1	2	3	1	2	5	45	2	5	5	10	15	9	60
Methods	....	....	1	1	....	....	45	1	8	2	6	3	3	45
Psychology	....	2	1	2	2	....	40	2	2	1	2	1	1	40
Spelling	1	....	....	....	....	....	20	....	....	1	2	....	....	45
Public speaking	....	2	....	2	....	....	40	....	5	1	1	....	....	30
Physiology	....	1	1	1	1	2	45	....	3	....	4	....	1	45
Hygiene	....	....	....	1	....	....	45	....	1	....	....	....	....	30
Chemistry	....	1	....	1	....	....	40	....	....	....	1	1	....	45
Algebra	....	....	....	2	1	1	45	1	1	1	1	2	3	60
Final median	....	....	....	....	....	....	40	....	....	....	....	....	....	45

According to Table 53, there were 2 boys who usually spent 20 minutes in preparing a physics lesson, 15 boys who spent 30 minutes, 25 boys who spent 40 minutes, 17 boys who spent 45 minutes, etc. The median number of minutes spent by the boys was 40.

The question concerning the time spent on each subject was not very fully answered. However, the limited data received indicate that the boys as a group spend a little less time in lesson preparation than the girls. It would appear that the time spent on each lesson falls quite well within the regular study periods at school.

TABLE 54.—*Time spent per day in home study.*

Time.	Boys.	Girls.	Both.
¼ hour	8	24	32
½ hour	40	76	116
1 hour	16	40	56
1½ hours	14	18	32
2 hours	2	20	22
2½ hours	3	3	6
3 hours	2	.....	2
Indefinite	5	7	12

From the foregoing table we note that home study is quite limited. An average of about one school study period constitutes the amount of home study.

TABLE 55.—*Time to prepare for examinations.*

Time.	Boys.	Girls.	Both.
Do not review	28	65	93
Review outline	15	10	25
Sometimes	2	12	14
4 days to a week	7	20	27
2 to 3 days	8	12	20
1 day or night	32	73	105
Not stated	.....	4	4
Total	92	196	288

More than 29 per cent do not review at all. Almost 35 per cent do their reviewing in one day or evening, and not quite 15 per cent use a longer time. It would appear from this table that the group are able to assimilate their work in the regular study and that extended reviews are not needed to prepare for examinations. They apparently get clear ideas as the facts are presented in class and remember them without much repetition. They evidently have a very high degree of retentive power.

TABLE 56.—*Review when not asked to do so.*

Review.	Boys.	Girls.	Both.
Yes	42	117	159
No	19	49	68
Sometimes	33	49	82
Not stated	2	5	7
Total	96	220	316

Table 56 reveals the fact that almost 50 per cent of the group make a practice of reviewing former lessons when not asked to do so by their teachers, and 25 per cent more make such reviews sometimes. It is evident that voluntary reviews may have been a very important factor in giving the exceptional group their superior place.

TABLE 57.—*Write notes at random on lessons.*

Notes written.	Boys.	Girls.	Both.
Yes	4	56	60
No	84	153	237
Sometimes	8	11	19
Total	96	220	316

Nineteen per cent usually make notes at random upon their lessons and 6 per cent more use this method sometimes. From Professor Clement's study [15] previously referred to there seems to be a tendency for the average student to use the random note-taking method more than those of our exceptional group. It is probable that the exceptional group takes more accurate and extensive notes.

TABLE 58.—*Underscore important points in text.*

Points underscored.	Boys.	Girls.	Both.
Yes	24	118	142
No	61	83	144
Sometimes	11	19	30
Total	96	220	316

More than 45 per cent of the group usually underscore the most important points in the textbook, and nearly 10 per cent more make use of the method sometimes. This method can not be said to have aided the special group in any particular way to achieve their present success.

TABLE 59.—*Outline the lessons in writing.*

Lesson outlined.	Boys.	Girls.	Both.
Yes	5	46	51
No	79	126	205
Sometimes	12	48	60
Total	96	220	316

TABLE 60.—*Read the assignment in detail the first time.*

Assignment read in detail.	Boys.	Girls.	Both.
Yes	46	116	162
No	44	100	144
Not stated	6	4	10
Total	96	220	316

[15] Clement, J. A. Illinois School Survey, 1917.

Almost 83 per cent read the assignment carefully the first time they go over it. This method may be significant, inasmuch as there is a tendency for students to hurry over their lessons without fully comprehending the meaning. Yet the following table shows that 58 per cent read their lesson rapidly as a whole the first time they go over it.

TABLE 61.—*Read the assignment rapidly as a whole.*

Assignment read rapidly.	Boys.	Girls.	Both.
Yes	44	107	151
No	40	96	136
Not stated	12	17	29
Total	96	220	316

TABLE 62.—*Number of times the assignment is read.*

Times read.	Boys.	Girls.	Both.
1 time	32	68	100
2 times	55	126	181
3 times	7	15	22
Not stated	2	11	13
Total	96	220	316

Almost 32 per cent find it necessary to read the lesson only one time, while 57 per cent read it twice. The fact that lessons are learned with so little study is an indication of a superior grade of retentive power.

TABLE 63.—*Pick out the important points mentally.*

Important points noted.	Boys.	Girls.	Both.
Yes	90	183	273
No	6	30	36
Sometimes	.....	7	7
Total	96	220	316

Eighty-six per cent select the most important points mentally while making lesson preparation and 2 per cent use this method part of the time. This is undoubtedly a fruitful method of lesson preparation.

TABLE 64.—*Distribution of time when studying.*

Time distributed.	Boys.	Girls.	Both.
Yes	28	59	87
No	63	137	200
Not stated	5	24	29
Total	96	220	316

Less than 28 per cent of the group make a practice of distributing the time for their lessons. The usual practice is to study the lesson until it is finished.

TABLE 65.—*Study the entire lesson at one sitting.*

Lesson at one sitting.	Boys.	Girls.	Both.
Yes	56	103	159
Usually	20	52	72
No	16	53	69
Not stated	4	12	16
Total	96	220	316

The above table indicates the same plan as shown in Table 64. Several of those who reported stated that they did not do all their studying at one sitting on account of other matters interfering with their carrying out such a plan.

TABLE 66.—*Definite time for each subject.*

Definite time.	Boys.	Girls.	Both.
Yes	70	148	218
No	21	56	77
Not stated	5	16	21
Total	96	220	316

Almost 69 per cent of the group observe a definite time for lesson preparation. Regular study habits are always conducive to good school work. From the explanations given by many in answer to the question, it would appear that these definite periods run in succession, corresponding with the recitation during the day, and probably have no great significance in relation to the attainments of the group.

TABLE 67.—*Frame possible questions which may arise in class.*

Possible question framed.	Boys.	Girls.	Both.
Yes	58	138	196
No	29	63	92
Sometimes	9	19	28
Total	96	220	316

Sixty-two per cent go to class already prepared to answer any possible questions which may be asked by the teacher upon the lesson. This doubtless has been an important factor in their study methods. This group seems to have shown intelligence in weighing important topics in the text to be considered in the recitation.

TABLE 68.—*Study outline of text in review.*

Study outline.	Boys.	Girls.	Both.
Yes	80	177	257
No	5	14	19
Sometimes	2	2	4
Not stated	9	27	36
Total	96	220	316

Eighty-seven per cent study the outline of the text for review. This method may have considerable part in enabling them to do a high grade of work. It has enabled them to make a more accurate analysis of the whole course of study and sum up the larger facts to be remembered.

TABLE 69.—*Read all of the text in review.*

Read all of text.	Boys.	Girls.	Both.
Yes	5	14	19
No	88	192	280
Sometimes	1	4	5
Not stated	2	10	12
Total	96	220	316

Only about 6 per cent report the reading of the entire text in review for examination. It is very doubtful if such a method would be of much value while preparing for an examination, since the mind is more or less taken up with the details and fails to grasp and hold general principles.

TABLE 70.—*Go over the lesson mentally just before going to class.*

Study before class.	Boys.	Girls.	Both.
Yes	49	154	203
No	35	43	78
Sometimes	5	12	17
Not stated	7	11	18
Total	96	220	316

Sixty-four per cent go over their lessons mentally just before going to class. The boys and the girls make different uses of this method. The boys stand at 56 per cent, while the girls stand at 75 per cent. This appears to be an excellent method of fixing in memory the important facts of the lesson.

Only about 23 per cent use the method of repeating the lesson to themselves.

TABLE 71.—*Repeat lesson to self.*

Repeated to self.	Boys.	Girls.	Both.
No	73	124	197
Yes	8	65	73
Sometimes	11	19	30
Not stated	4	12	16
Total	96	220	316

TABLE 72.—*Recite the lesson to some one.*

Recite the lessons.	Boys.	Girls.	Both.
No	94	209	303
Yes		6	6
Sometimes		2	2
Not stated	2	3	5
Total	96	220	316

TABLE 73.—*Study lessons aloud.*

Study aloud.	Boys.	Girls.	Both.
No	91	195	286
Yes	2	11	13
Sometimes	1	10	11
Not stated	2	4	6
Total	96	220	316

The method of reciting the lesson to some one is used but little.

Only about 4 per cent read their lesson aloud. For this exceptional group, auditory effects do not seem to be very vital in fixing in memory facts to be learned.

TABLE 74.—*Delight in class discussions.*

Class discussions.	Boys.	Girls.	Both.
Yes	83	191	274
No	4	12	16
Sometimes	4	5	9
Not stated	5	12	17
Total	96	220	316

More than 86 per cent of the group delight in class discussions. It is quite probable that active discussion has been a strong factor in enabling them to reach their high rank.

TABLE 75.—*Other plans mentioned.*

Other plans	Boys.	Girls.	Both.
Review daily	8	6	14
Review notes and outline	10	52	62
Correlate facts mentally	1	3	4
No definite plan	.....	3	3
Review emphasized and underlined parts	.....	8	8
Underline important parts reviewed	6	2	8
Class reviews only	7	15	22
Memorize important parts	1	2	3
Good night's sleep before examination	.....	1	1
Mark important parts	2	4	6
Read entire book	.....	1	1
Depend upon daily work	3	23	26
Spend a night on each subject	.....	2	2
Mental review without text	.....	1	1
Study outside references	.....	3	3
Study outline and form possible questions	5	10	15

The data in the above table do not bring out any strikingly new methods of study or review. A large number made no reply to this question.

TABLE 76.—*The student's own opinion as to why he gained distinction.*

Cause of distinction.	Boys.	Girls.	Both.
Hard work	27	43	70
Good teachers	3	8	11
Concentration on work	16	27	43
Native ability	21	37	58
Ambition and desire for education	6	27	33
Regular habits	11	42	53
Interest and enjoyment	1	18	19
Pride	2	1	3
Not stated	9	17	26
Total	96	220	316

It is interesting that more than 18 per cent account for their superiority through heredity and almost the same per cent account for it through regular habits. Doubtless each of these factors has been very vital in making it possible for the pupils to achieve.

EDUCATIONAL ASPECTS.

For the group as a whole we may conclude that strong native ability is the dominant factor which is responsible for their success. Norsworthy and Whitley [16] maintain that the majority of children who are advanced in school work are taller and heavier than the average for their age, and that such children will maintain and finish their course earlier than the usual age, and will by no means be found occupying the lower stations of life. They state that at least 90 per cent of precocious children owe their powers to hereditary endowment, while a few gain distinction by extra time given by teachers and parents or others.

[16] Norsworthy and Whitley. Psychology of Childhood, p. 329.

The home conditions of this group have been far above the average. The parents have been active and progressive in their respective professions and callings. This activity in connection with their keen interest in the education of their children has doubtless been responsible for the students' taking an unusual interest in gaining an education. Many of them have had advantages of country influences which are claimed to be conducive to the development of high moral and intellectual standards.

These pupils have an inherent desire to learn. Their ambitions and life plans all show a much higher standard than those of the average student. Almost all of the group will continue their intellectual pursuits in college or university, while a large percentage are looking forward to this training with a definite profession in mind.

Study methods have been of little avail in helping them to learn. They have excellent native powers of concentration and possess clear minds, which have enabled them to grasp ideas and hold them. A few methods which have apparently been helpful to them may be mentioned. A very large per cent of them have made it a point to review previous lessons, even when not asked to do so by the teacher. Going over points mentally and in particular, just before going to class is common to 62 per cent of them. Sixty-two per cent plan and formulate questions which might arise in the recitation and 81 per cent review the outline of the text when preparing for an examination. However, their achievement has been due chiefly to fine qualities of mind and special capabilities to perform the high-school tasks assigned them without much reference to special methods of study or teachers' devices.

It is evident that exceptional ability must rest upon some psychological basis, and if discovered early in an individual's career much may be done to direct and control his educational work in a scientific manner. Angell [17] believes that all the more conspicuous forms of exceptional ability have a high degree of internal association, which is a good form of mental activity, and would account in part for the psychological basis of genius.

Professor O'Shea [18] makes the following statement after a study of precocity:

> It requires a higher intellectual ability to understand and react toward human beings than to solve problems in arithmetic. Is not the child wasting time doing these things? One can take his time to do problems; they will not change, but proper reactions to parents, brothers and sisters, etc., are ever varying. One who has pets knows how to deal with them appropriately to their main distinguishing traits and he will modify his actions toward them. This form of learning is much more wonderful than learning language.

[17] Angell, J. R. Psychology, p. 213.

[18] O'Shea, M. V. Popular Misconceptions Concerning Precocity in Children. Science, 1911, vol. 34, pp. 666–674.

The mind of the prodigy is stimulated in unusual instead of usual lines, often to the exclusion of ordinary things. In general these prodigies are inferior to usual children in understanding generalities and especially in inventive ability with regard to natural environment.

Not books but realities should constitute the earliest nourishment of the mind.

The real teacher is the one who helps the child to understand what he sees about him.

According to Titchener,[19] when we go beyond our particular interests or field, we accept what other people tell us, and after we have advanced beyond early manhood, we are largely slaves of the brain habits which were formed in early youth. Our tendencies then may be spoken of as a number of tributaries, and the train of habitual ideas becomes greatly reinforced by associates; we get talent; but when active thought continues into mature life, we have genius.

James [20] maintains that, instead of attention being responsible for genius as some believe, genius is responsible for the great attention shown by exceptional characters. He makes the following statement:

It is probable that genius tends actually to prevent a man from acquiring habits of voluntary attention, and that moderate intellectual endowments are the soil in which we may best expect, here as elsewhere, the virtues of the will, strictly so called, to thrive. But, whether the attention comes by grace of genius or by dint of will, the longer one does attend to a topic the more mastery of it one has. And the faculty of voluntarily bringing back a wandering attention over and over again is the very root of judgment, character, and will. No one is *compos sui* if he have it not. An education which should improve this faculty would be the education par excellence. But it is easier to define this ideal than to give practical directions for bringing it about. The only general pedagogical maximum bearing on attention is that the more interest the child has in advance in the subject, the better he will attend. Induce him therefore in such a way as to knit each new thing on to some acquisition already there; and if possible awaken curiosity, so that the new thing shall seem to come as an answer, or part of an answer, to a question preexisting in the mind.

Hirsch [21] says—

Rapid development in an individual does not furnish any indication of later mental powers. Nor does it hold that precocious children will always develop great mental ability or slow ones remain slow. The most important thing is the uniform development of all the psychic factors. Neither does mental degeneracy imply that there is only a small degree of general development, but mental degeneracy rather consists of a defective mental element which gives the outward appearance of an unbalanced individual. Some seem to think that exceptional ability is an unrelated development; we admit that in some cases this may be true. However, the true type of exceptional ability would evidently be the individual in whom the correct proportion of the impulses of the inhibiting intellect (an equilibrium between understanding and the feeling) is the thing that should be sought for by the teacher. If any child is found to be unbalanced in any line of his mental life, the real aim of the teacher should be to assist in bringing about the proper equilibrium.

[19] Titchener, E. B. A Primer of Psychology, p. 218
[20] James, Wm. Psychology, pp. 227 and 327.
[21] Hirsch, W. Genius and Degeneration, p. 330.

The above statements appear to be mere opinion, apparently not based upon scientific evidence. The newer theories of mental development and growth place more stress upon a rather constant intelligence quotient from early age to 15 or 16 years of age at least. Professor Terman,[22] one of our best recognized workers in this field, has the following to say:

> Just as mental age indicates the school grade in which a child normally belongs at a given time, so the intelligence quotient is the basis for prediction in regard to the child's later mental development. The possibility for prediction comes from the fact that the intelligence quotient has been found in the large majority of cases to remain fairly constant, at least for the ages between 3 or 4 and 14 or 15. For illustration, we will take the case of a 4-year-old child who is found to have a mental age of 5 years, and whose intelligence quotient is therefore 125. The probability is that this child will continue to have a mental age of not far from 25 per cent above his chronological age, with the consequences which may be expressed as follows:

Chronological age.	Probable mental age.	Probable school ability.
4 years.	5 years.	Upper kindergarten.
6 years.	7½ years.	Second school grade.
8 years.	10 years.	High fourth grade.
10 years.	12½ years.	Low seventh grade.
12 years.	15 years.	First year high school.

Scott[23] maintains that potential geniuses exist in large numbers and that the reason for their nondevelopment is that we fail to discover them. The instincts arise only in the presence of certain conditions which give the proper kind of stimulus. After they have responded to the proper stimulus, thus, it would seem that much can be accomplished in the way of adjusting environment so as to awaken the instincts.

Many believe that the accomplishment of any person depends almost entirely upon the training and education which has been given from without, and that any child, regardless of what its heredity may be, if trained in the proper way from early infancy will develop into an exceptional individual. It is true that if no suitable environmental conditions or training should be given a child there would be no opportunity for him to develop, since mental action must remain dormant if not surrounded by some external stimuli. On the other hand, it is just as true that the mentally deficient child can not be developed into mediocrity, even though he be placed in the best of environment and subjected to the most skillful instruction. The relative value of heredity and environment becomes a complex problem for educators. While it is true that degeneracy runs in some families, and exceptional ability runs in other families, yet the

[22] Terman, L. M. The Intelligence of School Children, p. 9.
[23] Scott, W. D. Increasing Human Efficiency in Business, p. 191.

child who is born in the degenerate family is subjected to poor environment, while the child who is born into the family of exceptional ability evidently has a much better environmental atmosphere.

In considering the above-mentioned problems, it is safe to say that we should not expect the mediocre child to become distinguished, even though given the best of training. In the animal world it is easily observed that animals of each species are born with certain limitations which in a large measure will govern the life they live. It may be said of the child of exceptional ability that he is in a certain sense relatively independent of the instruction which the school can give him. But he needs wise direction. His native energy puts drive into his work, but he needs some one to help him see his own destiny and shape his energies toward achievement of that destiny. The teacher should assist only in so far as it is necessary to enable him to make his own self-discovery. It is evident that some superior children receive but little benefit from the school because the school fails to assist them in making their self-discovery. The best work is always accomplished by any child when he becomes the real discoverer of himself in the task he is doing. Nor must he be satisfied alone by mere discovery in his task, but must find the expression of his discovery in doing the thing.

There are parents and teachers who believe that the more we put into the life of the child at an early age, the more will be given out from his life at a later time. On the other hand, there are those who see great danger in the pouring-in process. It is safer to produce growth from within. However, in the light of facts gained from the present study, and the literature from various authors writing on exceptional children, we are led to conclude that their training has for its fundamental basis the adequate stimulation of that fine hereditary mechanism, of the sense organs, the nervous system, the brain, and the musculature up to their full reactive possibilities, so that the whole becomes a well coordinated and controlled organism, the highest need of modern society. The same principles hold for all children, of course, but especially for those who are the natural intellectual leaders, and who are by natural endowment gifted with powers and possibilities above mediocrity. No efforts should be spared by the State to expand a policy for the education of her highly endowed youth. The State needs youth of character, moral virtues, intelligence, and adequate training for every field of citizenship, and it is inconceivable that we should longer delay the matter of integrating our efforts for the highest training of the State's superior children.

A PROGRAM FOR THE PROPER TRAINING OF SUPERIOR HIGH-SCHOOL STUDENTS IN IOWA.

Our study of these exceptional students in the high schools of Iowa suggests many things. Probably the most important question is, "Are the high schools of Iowa, as organized at present, meeting the full needs of superior students?" The investigation shows that not many of the group have worked very hard to attain their present high standing. It was not necessary. The course of study is planned and administered and taught for the large middle group of all students that enter the high school. It is fair to assume that many individuals in this group have two or three times the mental ability of the group for which the course was provided. Under such conditions they did not put forth superior effort to attain their present high rank. Many of them could have taken much more difficult work, or could have easily mastered two or three times as much. This means that many in this group have suffered retardation. If they have not given their maximum effort in reaching their present attainments, the school is in a measure responsible for what they have not accomplished.

There is a popular belief that exceptionally brilliant students never amount to much in life. While recent investigations show that this is not true, it is true that many such students absolutely fail. The reason for their failure may be that the school presented such easy tasks for them that no continuous and concerted effort was required, and instead of receiving discipline and forming correct habits these pupils were establishing habits of loafing, indifference, idleness, and even viciousness. Such a student fails in life because he has not been properly and adequately stimulated in his whole school experience, extending possibly from the kindergarten to the university. His failure is due to the poor training he received. Indeed, it is quite possible that many of this group of distinguished pupils in the high schools of Iowa, in their later achievements, may disappoint their teachers who have rated them so high. If so, the explanation may lie in the fact that the high school failed to establish deep and fundamental interests and ambitions; it failed in furnishing adequate material for intellectual habit formation and supreme effort. Much of the procedure of high school was taken lightly, and made no deep and lasting impressions.

States, municipalities, and philanthropists have shown readiness to establish institutions for all sorts of subnormals and dependents, but we are now cognizant of a greater need, viz, that institutions should be erected and schools maintained for the complete education and training of the superior individuals of the race. Heretofore, individuals with superior endowment have not presented a serious problem, because as such they have been certain to rank high in their achievements, even in defiance of the training they have received in

our traditional schools. But if the present theory be true, namely, that the superior child is actually retarded by being made to conform to mediocrity, then we are certainly, by our system, wasting our best material for leadership in a republic.

What are we going to do about it? Several suggestions seem apropos of the present situation.

First. No more important educational work could be improvised than that which will give teachers information upon the mental abilities of the children they are to teach. Children of superior ability should be discovered and studied in the junior high school, and even in the lower grades. Mental and educational scales are now sufficiently perfected as instruments of precision to give us accurate diagnoses of all students before they enter the senior high school. This should be done. The junior high school should provide opportunity for educational psychologists to study and analyze the mental abilities of all students. This study should have diagnostic value for each child. By means of these tests the children should be classified, and a mental and educational chart should be made for each child which would be helpful to teachers in giving the proper instruction. With such a survey of mental abilities of the children in the junior high school, the superior ones could readily be discovered and diagnosed, and could be placed in the senior high school—the teachers and the administration fully apprised of their capabilities and powers. This instruction could then be adjusted to their abilities and interests.

Second. High-school principals and teachers should constantly keep in mind the fact that high-school students present very large individual differences in mental abilities. These differences show a range in most tests thus-far given from one to five points, at least, and in some instances a much greater range. This means that some students have five times as much mathematical ability as others; some students can learn history five times as well as others; some students can do manual-training work five times as well as others. With such facts as these constantly in mind, it is inconceivable that high-school faculties should fail to make the necessary adjustments in curriculum and teaching to permit each student to work up to his highest capacity. If real achievement is made to depend upon native interests and powers, and if student adaptations are made to conform to these interests and powers, then the superior students in high school will be properly cared for. But if he is hampered by association with mediocrity, and if his course is not broadened and deepened to meet intellectual abilities and desires, he is doomed to a type of retardation that is well-nigh impossible to counteract in later educational work. No matter what his college life may be, or how excellent his graduate work, he has sustained a loss in his secondary training that can never be replaced.

Third. High-school principals and teachers in Iowa should ask for a state-wide survey of their schools early in each academic year. This survey might very well be undertaken by the cooperation of departments of education and psychology from the institutions of higher learning in Iowa. It should consist of two or three standardized intelligence tests, and educational tests covering the whole curriculum of study. The high-school teacher having accurate knowledge of the mental status of his pupil as a result of the survey of the general intelligence of all students in the school, and also knowing the position of his pupil on the scale of educational achievement, is certainly in a position to carry out the teaching process more scientifically than can ever be expected of the teacher without this information.

The high schools of Iowa are especially fortunate in having many experts in the institutions of higher learning who could conduct such a survey every year and return the data to the schools within a short time after the opening of the academic year. No greater advance in educational procedure could be devised than such a survey at the beginning of each year. This step would place Iowa in the very foremost rank of all the secondary-school systems in the country. It is certainly to be hoped that the high-school teachers of the State at the next meeting of their State organization may take the necessary steps to put into operation this annual survey.

One of the important results of the survey would be the discovery of the superior child. He is certain to make his appearance in the result of the intelligence tests. At once he is recognized for his mental status and for his educational achievement. The survey of each year would form a check on the survey of the preceding year, and would show the advance or falling off of individual pupils. By the time the student has reached his senior year in high school, his mental status would be definitely established in comparison with his mates, and in comparison with all high-school students in the State.

The advantages that a survey of this sort would have over the present study are obvious. Some of our difficulties have already been enumerated. We have no accurate standards, having been compelled to use the grades rendered by the teachers in the high schools, and their estimates as to the general ability of the students. We recognize the fundamental difference between mere opinion as expressed in school grades and the more accurate results to be obtained from the many forms of standardized tests now in use. No doubt with standardized tests some of our exceptional students from small high schools would have found a position too low to be mentioned among the distinguished high-school students of the whole State, but the advantages of such a study are obvious in

finding the exact mental traits and educational work of every high school in the State.

Fourth. It is a striking fact that a large percentage of the exceptional students in the State of Iowa have decided during their high-school career what is to be their life work. Apparently without much instruction in this important matter these intelligent children have determined for themselves the business or profession they expect to follow. It is probable that in many instances they have made mistakes. It is inconceivable that they should be able to decide intelligently in all cases, when little opportunity has been given them to have direct information in regard to the many lines of work open to individuals of ability equal to theirs. It appears that they have not looked far enough into the future, and have not made large enough plans. Their decisions may have been made as the result of trivial circumstances, and certainly not as the result of careful investigation of all conditions surrounding the different fields.

The writers of this monograph feel that it is time for the high schools of Iowa to offer elementary courses in vocational and professional guidance. These courses should be offered preferably in the junior and senior years, and should deal with the actual conditions of preparing for and achieving success in business, the trades, the crafts, and professions. Since a large percentage of our population is engaged in some business pursuit, it should be the duty of the high school to give all youth information on the larger phases of the business activity of the world. It must not be understood that we wish to recommend youth to decide the life work at this period, but that they should be given information which will help them to decide intelligently at a later period, if not during the high-school career. Certainly these courses might deal with some such problems as the following:

(*a*) What training is necessary in order to succeed in each of the leading crafts, trades, businesses, and professions.

(*b*) Where can such training be obtained, and what will be the cost?

(*c*) What kinds of positions and duties are involved in the several activities?

(*d*) What are the conditions of work in the important businesses and professions and trades?

(*e*) How do salaries range?

(*f*) What are the ultimate opportunities to which beginning positions in the many different fields may lead?

(*g*) What are the special personal qualifications desirable in certain lines of life activity?

(*h*) What advantages are offered by the different lines to the man or woman who prepares for the work by training in the higher institutions of learning?

These are only a few of the many topics that might be considered in such a course of study. The course might be presented in the form of a survey—a local, a county, or even a State survey. Can teachers of Iowa imagine a more interesting and profitable course than would be provided by stimulating youth to make a survey of future possibilities for themselves? It is true there are few text-books, but many books have been written which bear upon the problem directly, and the current magazines are teeming with the richest material of the sort indicated. It may very well be assumed that youth, especially the exceptional youth of the State, after taking such a course, would show much greater intelligence in selecting the life work.

Fifth. It is certainly of interest to the high-school teachers that at the present time there are many experiments being carried on in American high schools designed to work out a satisfactory program of training for the very exceptional student. Schools are recognizing the individual differences to which we have referred and devising methods which will certainly help in the solution of the difficult problem that the superior student presents in the traditional high school.

W. H. Hughes,[24] in the School Review for January, 1920, gives a report of plans now being worked out in Riverview Union High School, Antioch, Calif., which should be of interest to all secondary teachers. He says:

> This year put into operation a combination scheme providing for individual differences in capacities and interests, and at the same time crediting toward graduation in proportion to the individual achievement. * * * Careful enumeration of the characteristics of excellent work entitles the student to the A grade which carries with it 1.1 units credit; general statement of the extra credit of work which the student of superior ability, interest, initiative, and application may do along the lines of his special interests in satisfaction of extra requirements for the AA grade which entitles him to 1.2 credit; special encouragement and direction for the student of extraordinary ability, interest, application, and achievement in doing an original piece of work related to the subject for which he may be entitled to 1.3 credits.

A recent report by L. R. Lyman,[25] of the School of Education, University of Chicago, on the Ben Blewett Junior High School, St. Louis, shows that an effort is made there to meet the needs of students of superior ability. This effort in the junior high school is especially commendable and conforms to the previous recommendations made in this study. With our present standards and scales for measurement of educational and intellectual ability, all students in junior high schools should be carefully studied and their educational fitness determined by the time they reach the senior high school. Professor Lyman says, concerning the Ben Blewett Junior High School:

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[24] Hughes, W. H. Sch. Rev., vol. 28, p. 12, Jan., 1920.

[25] Lyman, R. L. Study of Ben Blewett Junior High School of St. Louis, Sch. Rev. vol. 28, p. 2, Jan. 1920.

An essential feature of the organization of the student body attempts to meet the primary purpose for which a junior high school exists, namely, the grouping of pupils according to their varying capacities and interests. Differing intellectual abilities are cared for by what is known as an "A, B, C grouping," varying educational preferences and vocational aptitudes by "x, y, z groupings," and varying interests by "m, n, o grouping." Of these the intellectual classification is tentatively determined in the early part of the seventh grade by means of the opinion of the elementary principals checked up by intelligence tests. The classification is modified later by the judgment of the pupil's advisers as the work of the first quarter advances. * * * The school is carefully organized to provide for saving of time on the part of the pupils of marked ability. The A groups accomplish in two years as much as, or more than, the C groups in three. In every subject there is a certain minimum which all must cover; an A class, or an AB class, not only covers the minimum more rapidly, but it also extends the work into supplementary projects. For example, all eight-year classes in general science are expected to accomplish as a minimum all of the projects set forth in the class textbook.

The above indicates very satisfactorily what is actually done in a few of our most progressive high schools in America. In a democracy we must meet this very vital problem. Each child is entitled to his full development, whether he be barely able to meet the minimum requirement of the high school or whether he be one of the most brilliant students entering the high school in a series of years. Both must be given their full expressional powers. The full development of both is essential to any well-ordered system in a democracy. The following suggestions may be helpful to high-school principals in working out a satisfactory program for exceptional students.

(*a*) The school and the city libraries should be utilized to the fullest in developing the larger activity of the exceptional student. Current discussions in the best magazines, scientific articles, recent novels having an educational and social value, studies in civic and hygienic welfare, racial improvement, political and social discussions, and other topics appealing to the interests and ambitions of the student should be used to round out his school life in a fruitful manner. The high-school teacher's ingenuity is challenged in bringing his student into relations with the highest thought of the present time, as well as the past. The library is the instrument by which this may be done.

(*b*) If it seems desirable in the high school to give extra credit for extra work, the project plan of directing and stimulating study seems especially appropriate. We mean by a project a larger unit of study. In fact a project may be large enough to consume the extra time of a good student a whole semester. It would seem that there are few high schools in the State of Iowa that could not provide adequate facilities for the study of projects for exceptional students who have time and inclination for such study.

(*c*) Certainly, in addition to the above suggestions, high school teachers and administrators should make adequate provisions for

exceptional students in the general progress of the school. If a child has two or three times the ability of the average child, certainly in making out his individual program he should be encouraged not only to enlarge his course, but to intensify it and strengthen it by more extensive investigations in lines in which he is interested. It is inconceivable that this matter should be longer overlooked by high-school teachers and those in charge of the administration of the secondary students of Iowa. This seems indeed to be one of the most practical solutions of the problem of the exceptional child. Give him all the work that he can assimilate, and intensify his efforts until he is working up to his full capacity.

The State needs fine leadership just now. The politician, the demagogue, the quack, and the quasi leader have had their day. We now want real leaders to tell us what is best for our complex life. These are to be found in the future natural leaders of society, the distinguished high-school students of the State. The high-school teachers of the State have a serious responsibility in directing and training for such leadership.

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