

A STATISTICAL STUDY OF INTELLIGENCE  
IN THE COLORED HIGH SCHOOLS OF INDIANA

by

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## I. INTRODUCTION

1. Statement of the Problem. This study will deal with the intelligence of pupils in the colored high schools of Indiana. Efforts now being made to secure more efficient learning and better achievement on the part of high school pupils are certain to result in a more scientific study of intelligence in high schools throughout the country as a basis for proper classification of pupils with the idea of eliminating waste in instruction.<sup>1</sup>

Since a dual educational system for colored and white pupils is provided in a large number of states, it is important that statistical studies of intelligence be conducted in colored high schools as well as high schools established solely for white children.

The problem of this study is to analyze the intelligence of pupils in the colored high schools of Indiana as measured by their performance on Terman's Group Test of Mental Ability, Form A. This major problem has been divided into three minor problems. These problems may be stated as follows:

1. From the performance of the subjects of this study on Terman's Group Test of Mental Ability, Form A, what differences are evident in the levels of intelligence between the A and B.

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<sup>1</sup>C. W. Odell, Educational Measurement in High School. New York: The Century Company, 1930. p. 502.

pupils, ninth to twelfth grades, inclusive, in the colored high schools of Indiana?

2. From the performance of the subjects of this study on this test, to what extent have the pupils of the A and B grades in the colored high schools of Indiana, ninth to twelfth grades, inclusive, been properly classified and sectioned according to their intelligence?

3. From the performance of the subjects of this study on this test, what are the evidences of racial and individual differences among the colored high school pupils of Indiana?

This information will be useful to educators interested in the study of intelligence of colored high school pupils, as well as be of service to administrators of the colored high schools of the State.

The interest of leading educators throughout the country and in Indiana in the problem of intelligence of colored high school pupils seems to justify a study of the problem. Examples of this interest are shown in letters received from Dr. Rudolph Pintner of Columbia University, Dr. Walter S. Monroe of the University of Illinois, Dr. Frank N. Freeman of Chicago University, Dr. H. H. Remmers of Purdue University and others.<sup>2</sup>

In a letter, Professor Homer L. Humke of Evansville College makes the following statement: "The undertaking seems to be a very commendable one and I think it one which has lots of possibilities for service to the colored schools of Indiana."<sup>3</sup>

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<sup>2</sup>Appendix, Letters from Leading Educators, pp. 93-99.

<sup>3</sup>Appendix, Letter from Professor Homer L. Humke, p. 93.

The department of Public Instruction of Indiana has also shown an interest in the study. This interest is manifested in a statement made in a letter by J. W. Bosse, Director of Educational Reference, of the State Department of Public Instruction. He writes: "Any further information which we might have on file will be cheerfully furnished you and we trust that when you have completed your findings that we may embody at least a part of it in the files of the Department."<sup>4</sup>

2. Procedure and Technique. The procedure and technique used in this study are the ones most commonly employed by those who deal with scores, I Q's, mental ages and chronological ages in large numbers. In practically every instance, statistical methods employed by H. E. Garrett in his book entitled "Statistics in Psychology and Education" are used.

The data were collected, classified, analyzed and interpreted.

a. The Data of the Study. The data to be used in this study are the point scores made by 690 pupils in eleven of the colored high schools of Indiana, when given Terman's Group Test of Mental Ability, Form A; Chronological ages of the subjects of the study; mental ages of these pupils based upon their point scores; and their I Q's.

b. Subjects of the Study. Six hundred and ninety pupils from every class, ninth to twelfth grades, inclusive, in eleven of the twelve colored high schools of the state were selected

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<sup>4</sup> Appendix, Letter from J. W. Bosse, Director of Educational Reference of the State Department of Public Instruction, p. 94.

as subjects for this study. The principal of each school used in this study selected the pupils in his school who were given the test. Various methods were employed by the principals in making the selections of the pupils to whom the test was given. In some cases, the names opposite the odd numbers on the class roll were selected until the required number of pupils were obtained. In another case, the names opposite the even numbers on the class roll were selected until the required number of pupils were obtained. Similar methods for selecting the subjects of this study were used by the other principals which practically assures the subjects of this study as being a random selection. A complete record of the number of pupils taking the test in each of the eleven colored high schools will be found in Table I.

c. Collection of the Data. The tests were administered to the pupils by the principal or some teacher who had had training or previous experience in testing. The tests were returned without being scored.

d. Classification of Data. When the tests were returned, they were carefully scored and checked. The chronological ages were recorded from the tests and the mental age equivalents in terms of the Stanford-Binet Scale were noted.<sup>5</sup> The I Q for each pupil was calculated. Each pupil's score, chronological age, mental age, and I Q were placed upon individual data cards. Frequency distributions of the point scores and

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<sup>5</sup>Terman Group Test of Mental Ability, Manual of Directions, p. 10.

I Q's for each A and B grade, ninth to twelfth, inclusive, were made. Tables were constructed showing the calculation of the common measures of central tendency and variability of the distributions. Frequency polygons and histograms were drawn based upon the distributions of the scores and I Q's, respectively. Frequency distributions for the chronological and mental ages of each A and B grade, ninth to twelfth, inclusive, were also made. Chronological and Mental, Age, Grade, Score, Distribution Tables were also constructed. Histograms were made showing a comparison between the chronological and mental ages for the pupils of each A and B grade, ninth to twelfth, inclusive. A table showing the percentile scores by grade, ninth to twelfth grades, inclusive, of the subjects of this study as compared with the norms was made.



TABLE I

SHOWING THE NUMBER OF PUPILS  
 TAKING TERMAN'S GROUP TEST OF MENTAL ABILITY,  
 FORM A, IN EACH A AND B GRADE, NINTH TO TWELFTH  
 GRADES, INCLUSIVE, IN ELEVEN COLORED HIGH SCHOOLS OF INDIANA

SCHOOL	9B	9A	10B	10A	11B	11A	12B	12A
Lincoln (Evansville)	33	46	32	33	25	29	4	42
East Pulaski (Gary)	20	14	16	20	17	10	9	10
Crispus Attucks (Indianapolis)		2	1	3	8	7	12	10
Lincoln (Princeton)			1	10		15		4
Broadway (Madison)	2	6		3		1		
Taylor (Jeffersonville)		3	5	6	2	2		3
Booker T. Washington (Mt. Vernon)	3	5		4		9		
Sumner (Rockport)	2	2	5	1				
Booker T. Washington (Terre Haute)	2	2				1	1	1
Dunbar (Vincennes)	1	2		5		1	1	1
Roosevelt (Gary)	16	19	29	22	29	10	26	24
Total Cases By Grades	79	101	89	107	81	85	53	95
Combined Totals	180		196		166		148	
Total Cases	690							

II. DIFFERENCES IN THE LEVELS OF INTELLIGENCE BETWEEN THE A AND B GRADES, NINTH TO TWELFTH GRADES, INCLUSIVE, IN THE COLORED HIGH SCHOOLS OF INDIANA

1. The Problem. The problem of this chapter may be stated as follows: From the performance of the subjects of this study on Terman's Group Test of Mental Ability, Form A, what differences are evident in the levels of intelligence between the A and B pupils, ninth to twelfth grades, inclusive, in the colored high schools of Indiana?

2. Significant Differences Between the Average Performances of the Subjects of this Study in the A and B Grades on the Test. The problem to be treated here may be stated in the following question: Are there significant differences between the average performances of the pupils of the A grades on this test and the average performances of the pupils of the B grades, ninth to twelfth grades, inclusive?

The ratio between the difference of the averages of the A grades and the averages of the B grades and the probable error of this difference is a measure of the significance and is designated as the significant ratio. The significant ratio is expressed by the formula:

$$\frac{M_1 - M_2}{\sqrt{(PE_{M_1})^2 + (PE_{M_2})^2}} = \frac{DIFF_M}{PE_{diff}}$$

Garrett gives a table for determining the chances of a true difference greater than zero when this ratio has been calculated. Garrett<sup>1</sup> also points out that in order to be sure the difference of the obtained averages is really significant, it is necessary for the ratio to be 4. Such a condition would insure complete reliability.

Assuming that the performance indicated by the average is the typical performance of each grade, Tables II and III show that there are no significant differences between the average performances of the pupils of the B grades and the pupils of the A grades on the test used in this study. The differences in each instance are probably due to sampling.

3. Variation of the Scores Between the A and B Grades Made by the Subjects of the Study. The problem here may be stated as follows: How do the variations of the scores made by the A and B grades, ninth to twelfth grades, inclusive, compare with each other?

The variation of each A and B grade may be measured by the standard deviation, the quartile deviation, and the range.

Table IV shows that the 9B grade has a greater variation than the 9A grade. Table IV also shows that in all other instances the A grades have a greater variation than the B grades. Figures 1 to 8 inclusive, show that the scores of the A grades have wider ranges than the scores of the B grades.

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<sup>1</sup>H. E. Garrett, Statistics in Psychology and Education. New York: Longman, Green and Company, 1926. p. 133.

TABLE II  
SIGNIFICANCE OF THE DIFFERENCES IN  
MEANS OF THE B AND A SCORES,\* 9B TO 12A, INCLUSIVE

Scores	Mean $\pm$ P E (av)	P E (diff.)	Differ- ence in Means	Signif- icant Ratio	Chances in 100 True Dif- ference Is Significant
9B	82.63 $\pm$ 2.221	2.96	1.37	.463	62.2
9A	81.26 $\pm$ 1.952				
10B	84.83 $\pm$ 1.82	2.67	9.28	3.48	99
10A	94.11 $\pm$ 1.96				
11B	93.12 $\pm$ 2.205	3.40	5.09	1.5	84
11A	98.21 $\pm$ 2.580				
12B	114.97 $\pm$ 2.98	3.28	6.26	1.64	86
12A	108.71 $\pm$ 2.46				

\*Terman Group Test of Mental Ability, Grades 7-12, Form A.

For example, Table II is to be read as follows: The chances are even that the obtained averages of 82.63 and 81.26 for the point scores of the 9B and 9A grades, respectively, do not differ from the true averages of the 9B and 9A point scores by more than  $\pm 2.221$  and  $\pm 1.952$ , respectively. The chances are even that the obtained difference for the point scores of 1.37 for the 9B and 9A grades does not diverge from the true difference by more than 2.96. The significant ratio of .463 for the point scores of the 9B and 9A grades is in favor of the 9B grade. It is not significant and there are 62.2 chances in 100 that the true difference is greater than zero.

TABLE III  
SIGNIFICANCE OF THE DIFFERENCES IN MEANS  
OF THE I Q'S\* OF THE B AND A GRADES, 9B TO 12A, INCLUSIVE

I Q'S	Mean $\pm$ P E (av)	P E (diff.)	Differ- ence in Means	Signif- icant Ratio	Chances in 100 True Dif- ference Is Significant
9B	93.83 $\pm$ .975	1.26	2.47	1.96	91
9A	91.36 $\pm$ .801				
10B	88.64 $\pm$ .736	.98	2.35	2.40	95
10A	90.995 $\pm$ .640				
11B	89.54 $\pm$ .773	1.12	.55	.49	62
11A	90.09 $\pm$ .808				
12B	94.44 $\pm$ .906	1.22	2.26	1.85	89
12A	92.18 $\pm$ .822				

\*Terman Group Test of Mental Ability, Grades 7-12, Form A.

For example, Table III is to be read as follows: The chances are even that the obtained averages of 93.83 and 91.36 for the I Q's of the 9B and 9A grades, respectively, do not differ from the true averages of the 9B and 9A I Q's by more than  $\pm$  .975 and  $\pm$  .801, respectively. The chances are even that the obtained difference for the I Q's of 2.47 for the 9B and 9A grades does not diverge from the true difference by more than 1.26. The significant ratio of 1.96 for the I Q's for the 9B and 9A grades is in favor of the 9B grade. It is not significant and there are 91 chances in 100 that the true difference is greater than zero.

TABLE IV

SUMMARY OF CALCULATIONS MADE FROM SCORES\* BY GRADES, 9B TO 12A, INCLUSIVE

Grade	Mean $\pm$ P E (av)	Median	Standard Deviation	Quartile Deviation	Reliability of Difference Between Means	Significant Ratio
9B	82.63 $\pm$ 2.221	81.08	29.26	24.25	2.96	.463
9A	81.26 $\pm$ 1.95	79.92	29.09	20.05		
10B	84.83 $\pm$ 1.82	82.5	25.50	18.48	2.67	3.48
10A	94.11 $\pm$ 1.96	90.65	29.99	21.83		
11B	93.12 $\pm$ 2.21	94.25	29.42	25.08	3.40	1.5
11A	98.21 $\pm$ 2.58	100.15	35.26	24.26		
12B	114.97 $\pm$ 2.98	113.75	32.12	21.97	3.82	1.64
12A	103.71 $\pm$ 2.46	104.53	35.56	26.99		

\*Terman Group Test of Mental Ability, For Grades, 7-12, Form A.

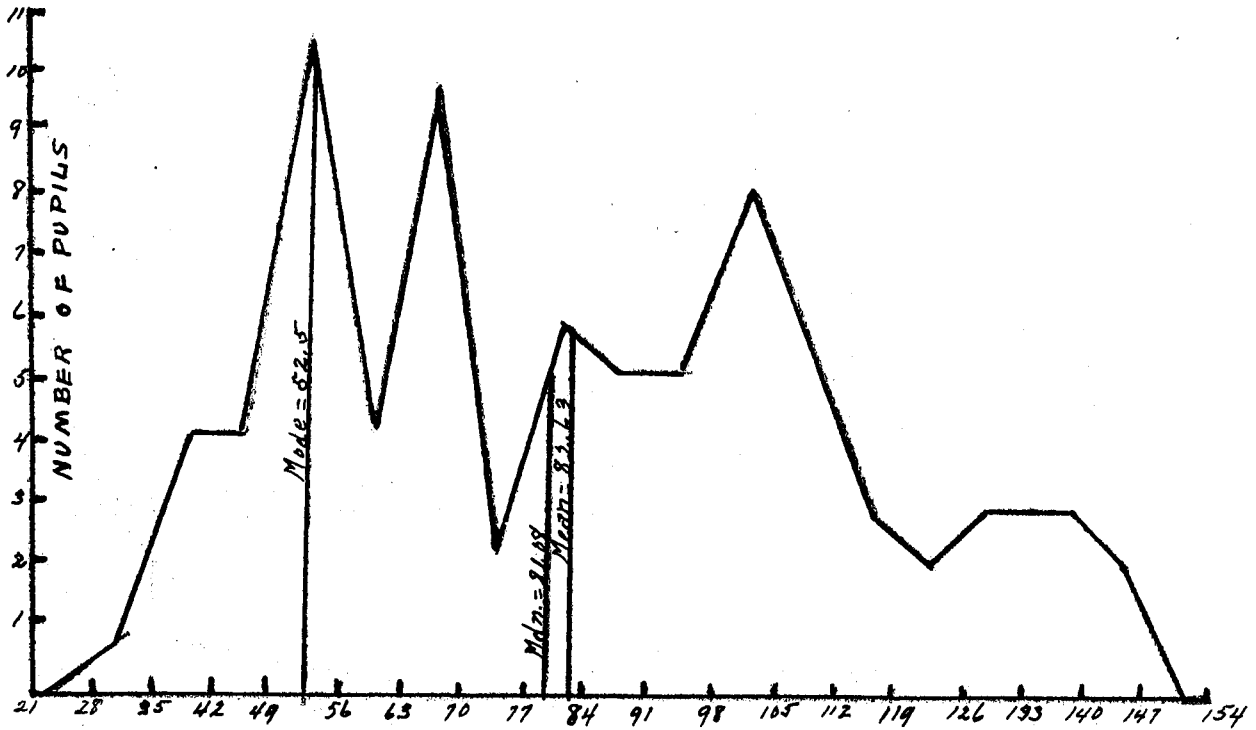


Figure 1

Frequency Polygon Representing  
the Distribution of Scores for  
Pupils of Grade 9B, Table XIII

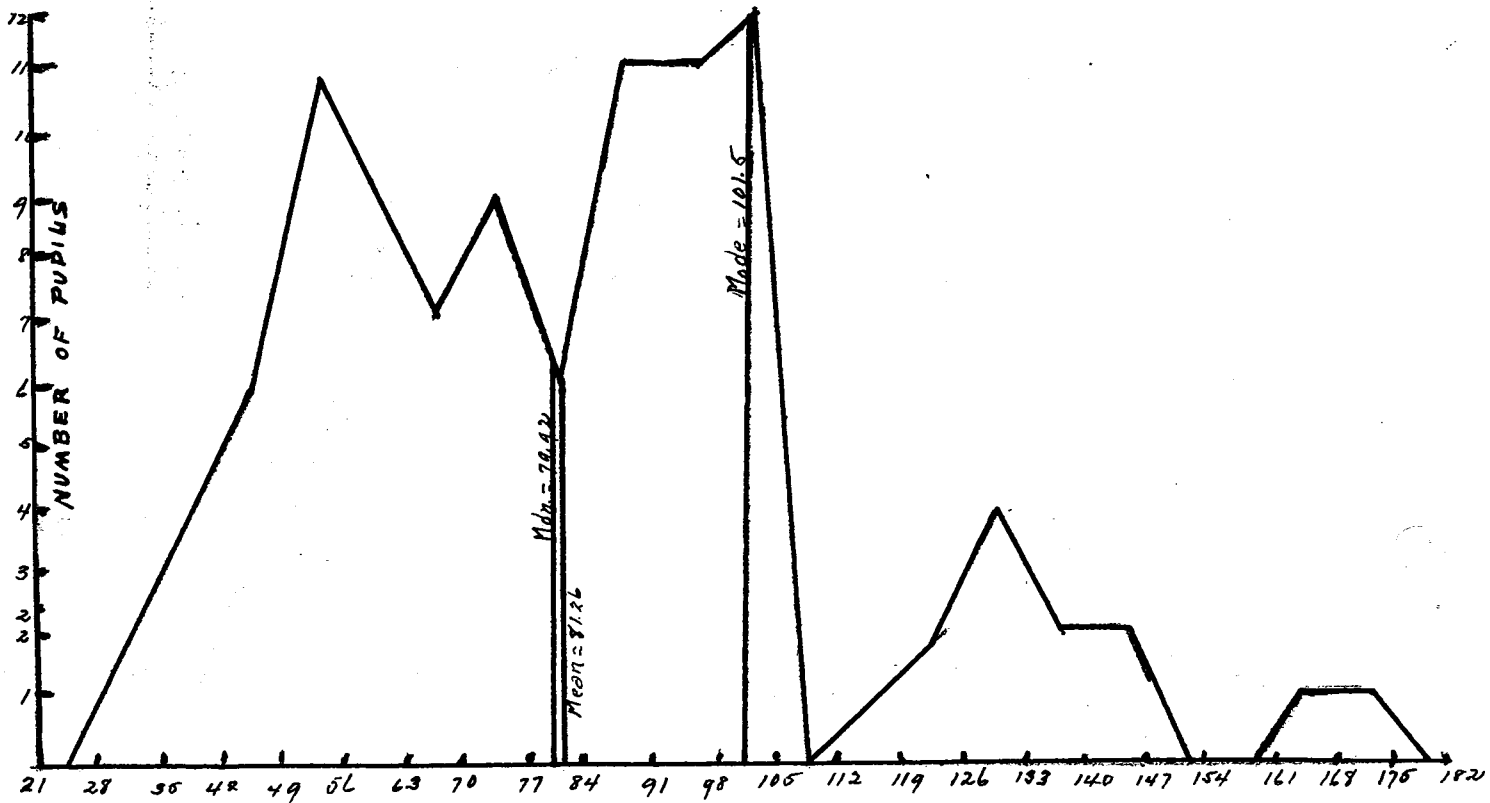


Figure 2

Frequency Polygon Representing  
the Distribution of Scores for  
Pupils of Grade 9A, Table XIV



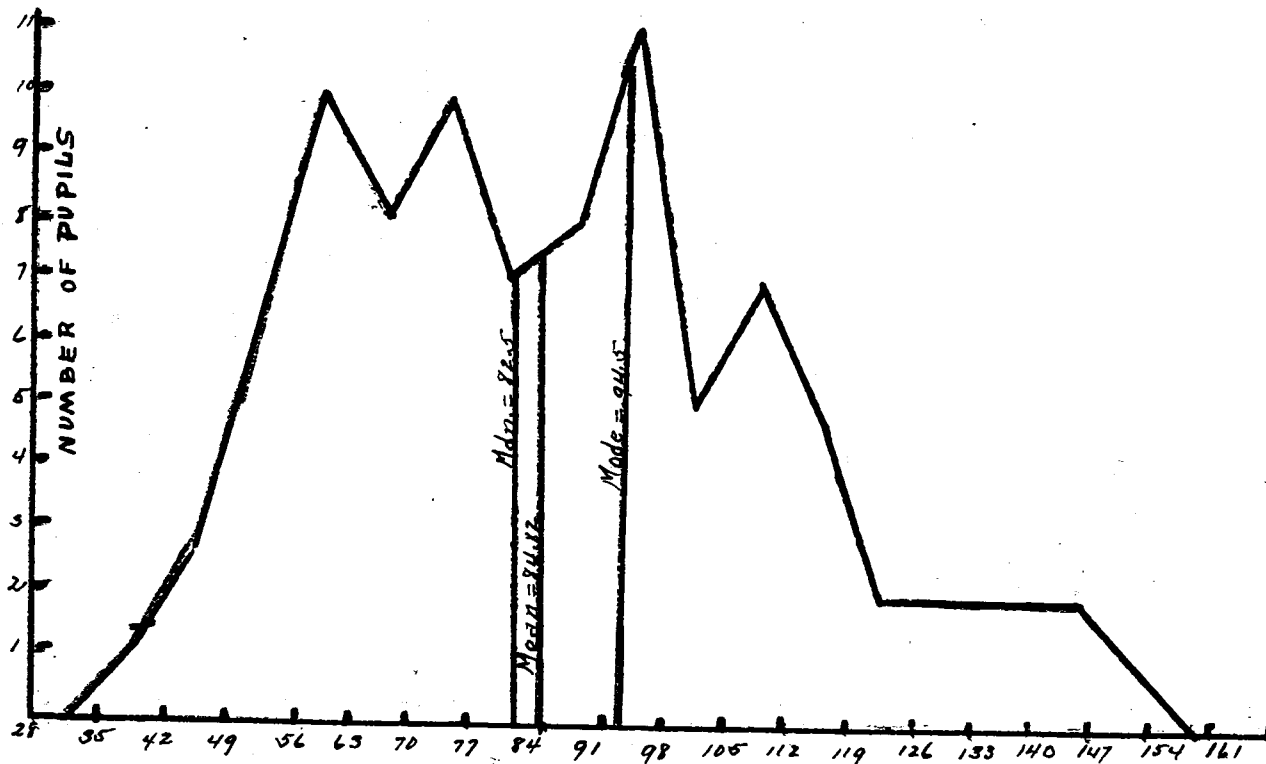


Figure 3

Frequency Polygon Representing  
the Distribution of Scores for  
Pupils of Grade 10B, Table XV

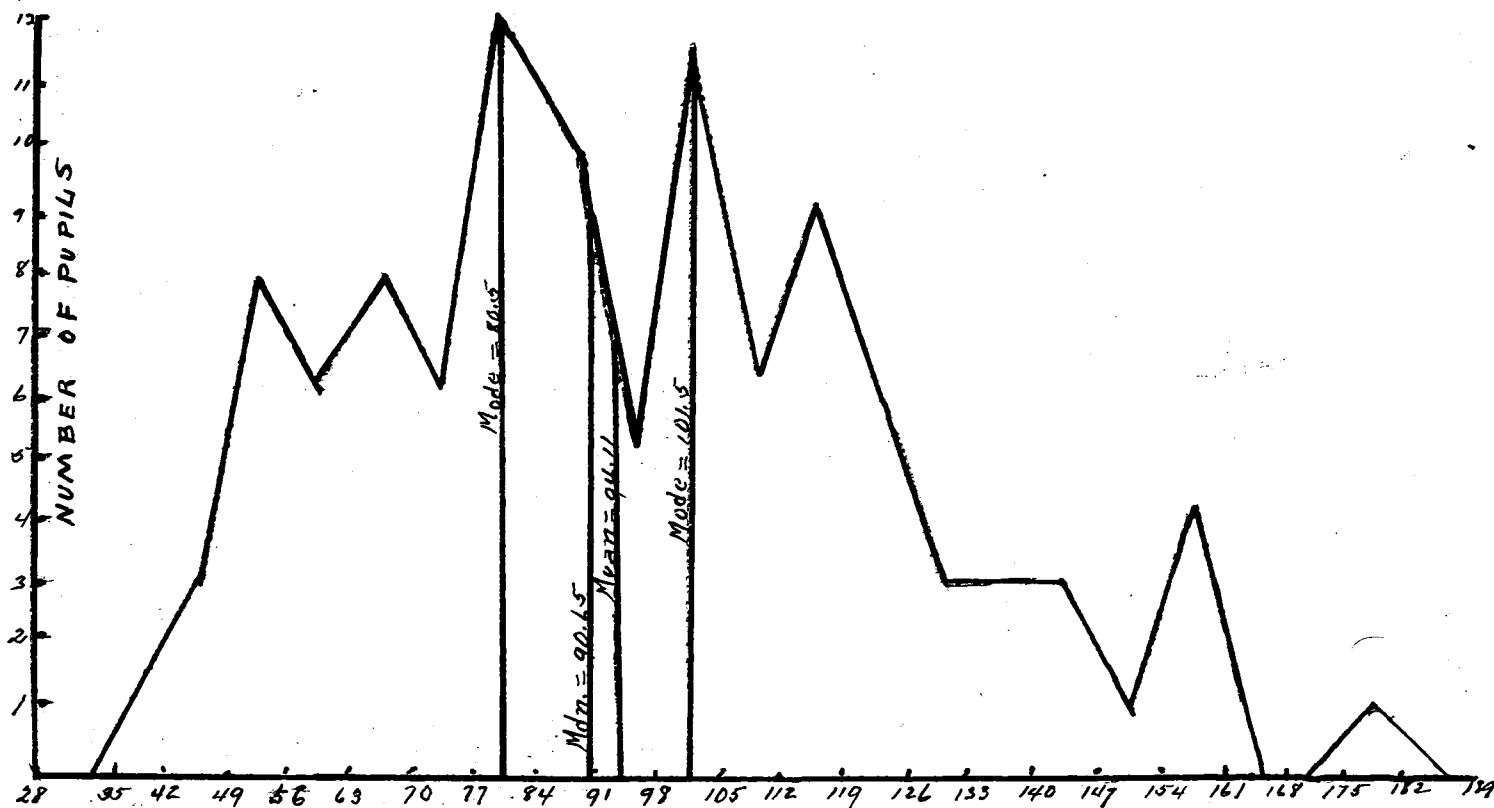


Figure 4

Frequency Polygon Representing  
the Distribution of Scores for  
Pupils of Grade 10A, Table XVI

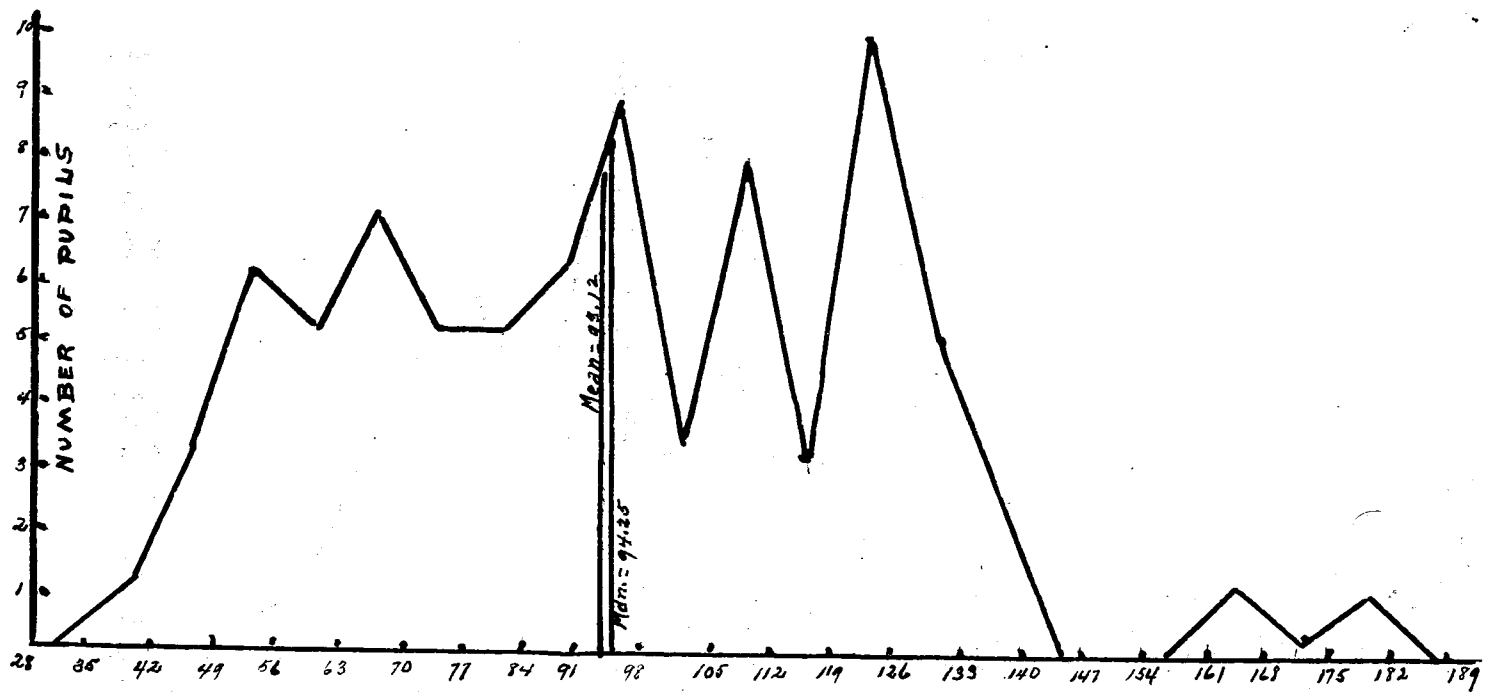


Figure 5

Frequency Polygon Representing  
the Distribution of Scores for  
Pupils of Grade 11B, Table XVII

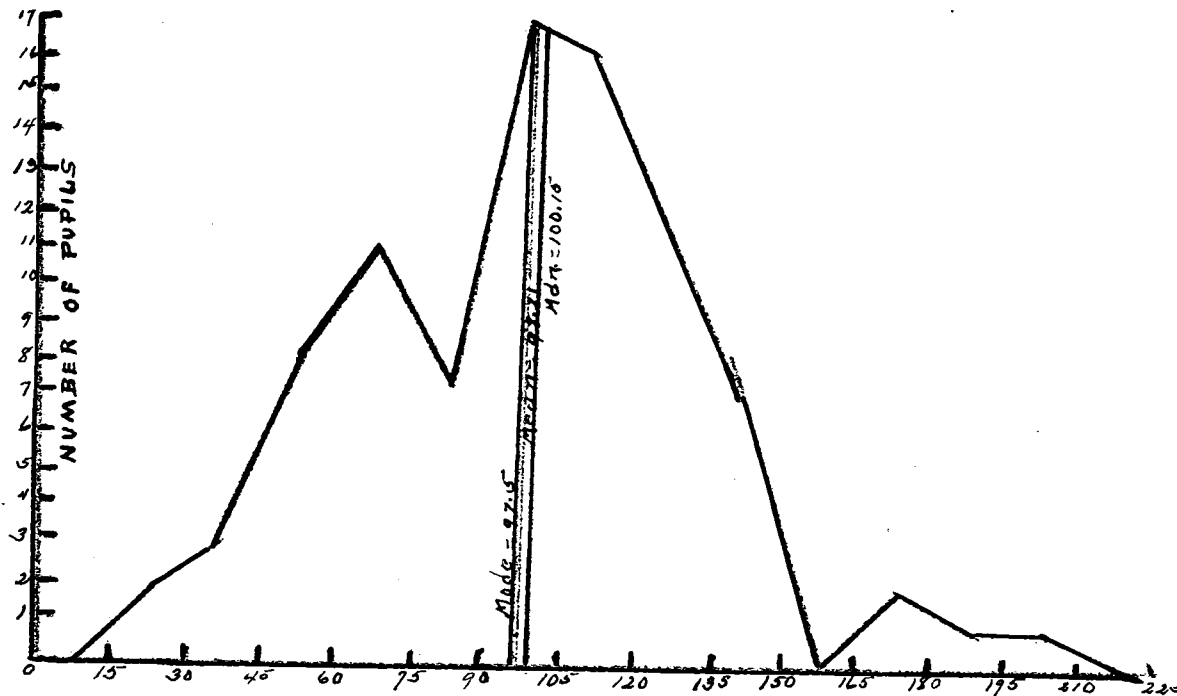


Figure 6

Frequency Polygon Representing  
the Distribution of Scores for  
Pupils of Grade 11A, Table XVIII

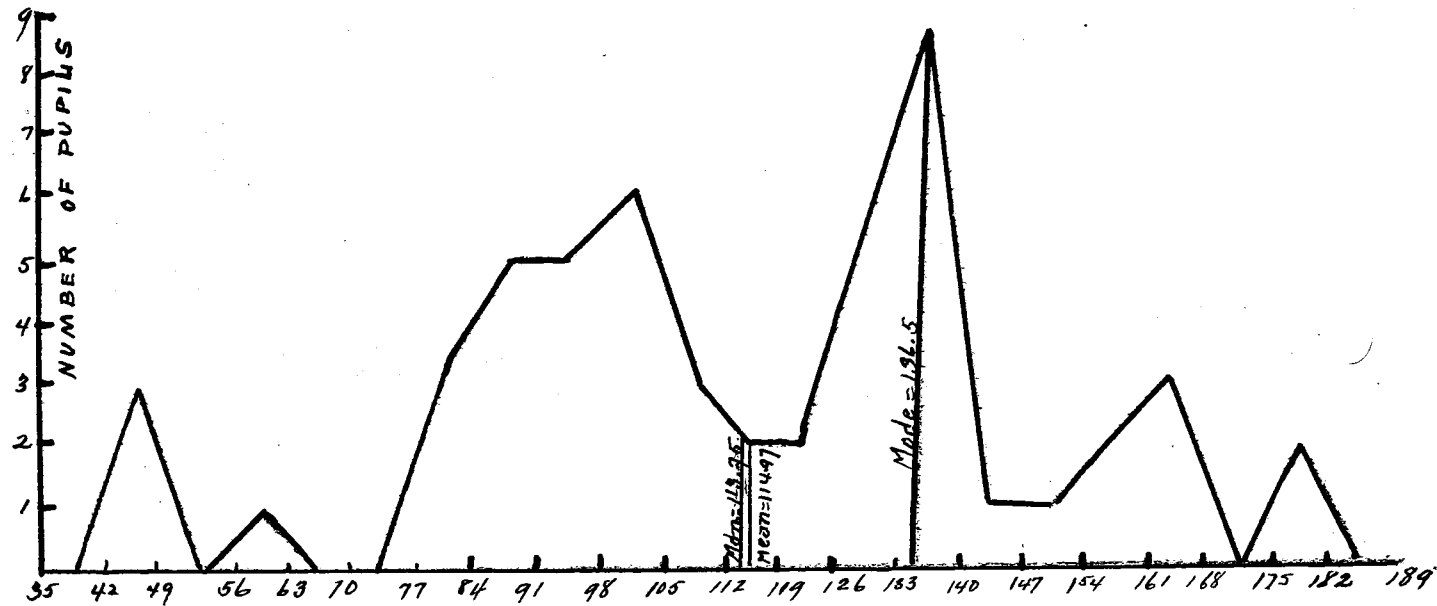


Figure 7

Frequency Polygon Representing  
the Distribution of Scores for  
Pupils of Grade 12B, Table XIX

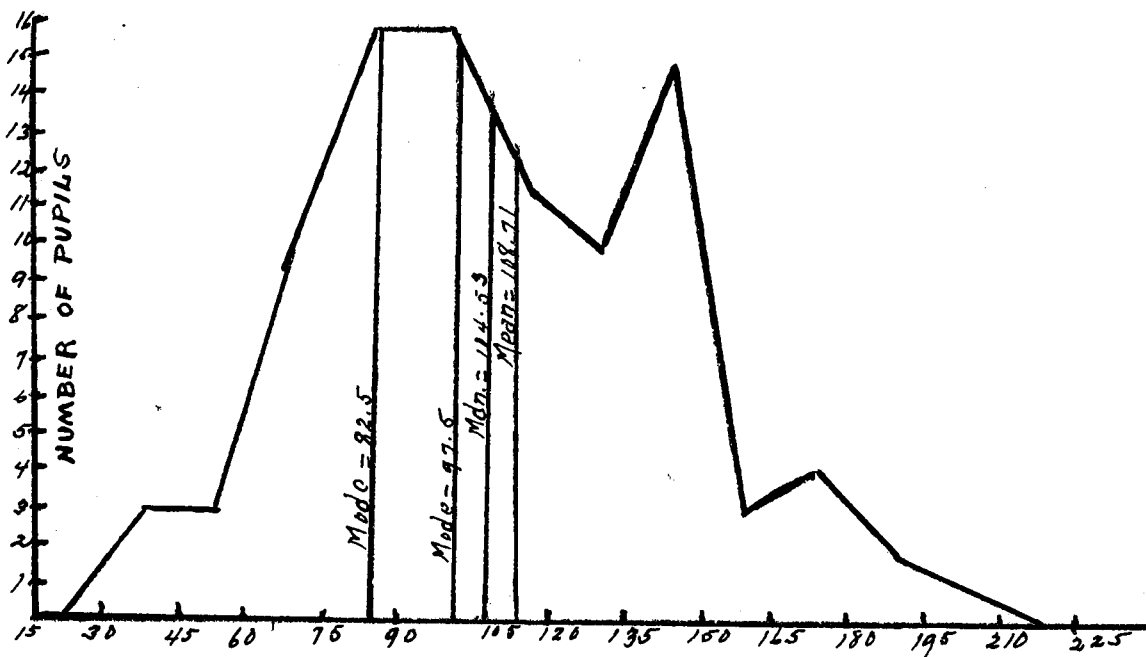


Figure 8

Frequency Polygon Representing  
the Distribution of Scores for  
Pupils of Grade 12A, Table XX

4. Reliability of the Average Scores Made by the A and B Grades by the Subjects of this Study. To what extent do the scores made by the pupils of the A and B grades of the study show that these pupils represent all the colored pupils in the A and B grades, ninth to twelfth grades, inclusive, in the colored high schools of Indiana?

The reliability of an average depends upon the selection of a fairly representative sample from the larger group of the subjects which are being studied. The reliability of an average may be measured in terms of the P E of the average. As the P E of the average decreases, the reliability of the average increases.

Table IV also shows that the averages of the 10B and 11B grades are more reliable than the averages of the 10A grade and 12A grade, respectively.

Table IV also shows that the averages of the 9A grade and 12A grade are more reliable than the averages of the 9B and 12B grades, respectively.

In general, Table IV shows that the averages of both the A and B grades are fairly reliable and indicate that the subjects of this study are a fair representation of all the pupils in the colored high schools of Indiana.

5. Variation of the I Q's Between the A and B Grades of the Subjects of this Study. How do the I Q's of the pupils of the B grades vary as compared with the I Q's of the pupils of the A grades of this study? This variation may be measured by the standard deviation, the quartile deviation, and the range of the I Q's of each A and B grade. Table V shows that the I Q's

TABLE V

SUMMARY OF CALCULATIONS MADE FROM I Q'S\* OF PUPILS IN GRADES 9B TO 12A, INCLUSIVE

Grade	Mean $\pm$ P E (av)	Median	Standard Deviation	Quartile Deviation	Reliability of Difference Between Means	Significant Ratio
9B	93.83 $\pm$ .975	92.25	12.85	9.34	1.26	1.96
9A	91.36 $\pm$ .801	89.64	11.94	8.29		
10B	88.64 $\pm$ .736	86.63	10.29	7.81	.98	2.40
10A	90.99 $\pm$ .640	90.5	9.82	6.49		
11B	89.54 $\pm$ .773	88.35	10.32	7.01	1.12	.49
11A	90.09 $\pm$ .808	91.56	11.05	7.28		
12B	94.44 $\pm$ .906	93.86	9.78	6.34	1.22	1.85
12A	92.18 $\pm$ .822	92.19	11.87	8.63		

\*Terman Group Test of Mental Ability, For Grades, 7-12, Form A.



of the pupils in the 9B and 10B grades have a larger standard deviation and are slightly more widely scattered than the pupils of the 9A and 10A grades, respectively. The 11A and 12A grades have a larger standard deviation and consequently variation or a greater scatter than the 11B grade and the 12B grade, respectively, as shown by Table IV. Figures 9 to 16, inclusive, show that the I Q's for the subjects of this study in the A grades have wider ranges in practically every instance, than the B grades.

6. Summary. The data for this chapter seem to justify the following statements.

a. The difference between the averages of the scores of the 9B and 9A grades is in favor of the 9B grade.

b. The differences between the averages of the scores of the 12B and 12A grades is in favor of the 12B grade.

c. The difference between the averages of the I Q's of the 9B grade and of the 9A grade is in favor of the 9B grade.

d. The difference between the averages of the I Q's of the 12B grade and the 12A grade is in favor of the I Q's of the 12B grade.

e. There are no significant differences between the average performances of the pupils of the A and B grades on Terman's Group Test of Mental Ability for the subjects of this study.

f. There is a large variation of the scores for each A and B grade for the subjects of this study.

g. The average scores of both the A and B grades are fairly reliable and indicate that the subjects of the study are a fair representation of all the pupils in the A and B grades,

ninth to twelfth, inclusive, of the colored high schools of Indiana.

h. The variation of the I Q's for the A and B grades for the subjects of this study show that the I Q's are widely scattered for each A and B grade. The I Q's of the A grades are slightly more varied than those of the B grades.

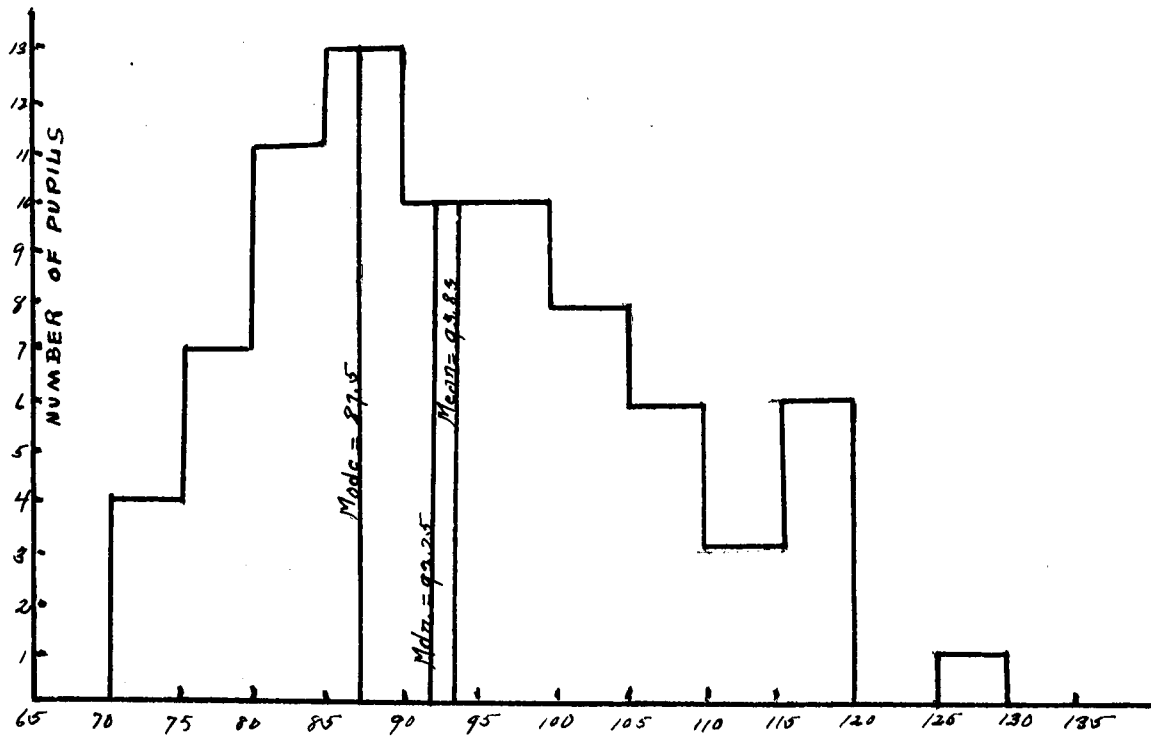


Figure 9

Histogram Representing the  
Distribution of I Q's for Pu-  
pils of Grade 9B, Table XXI

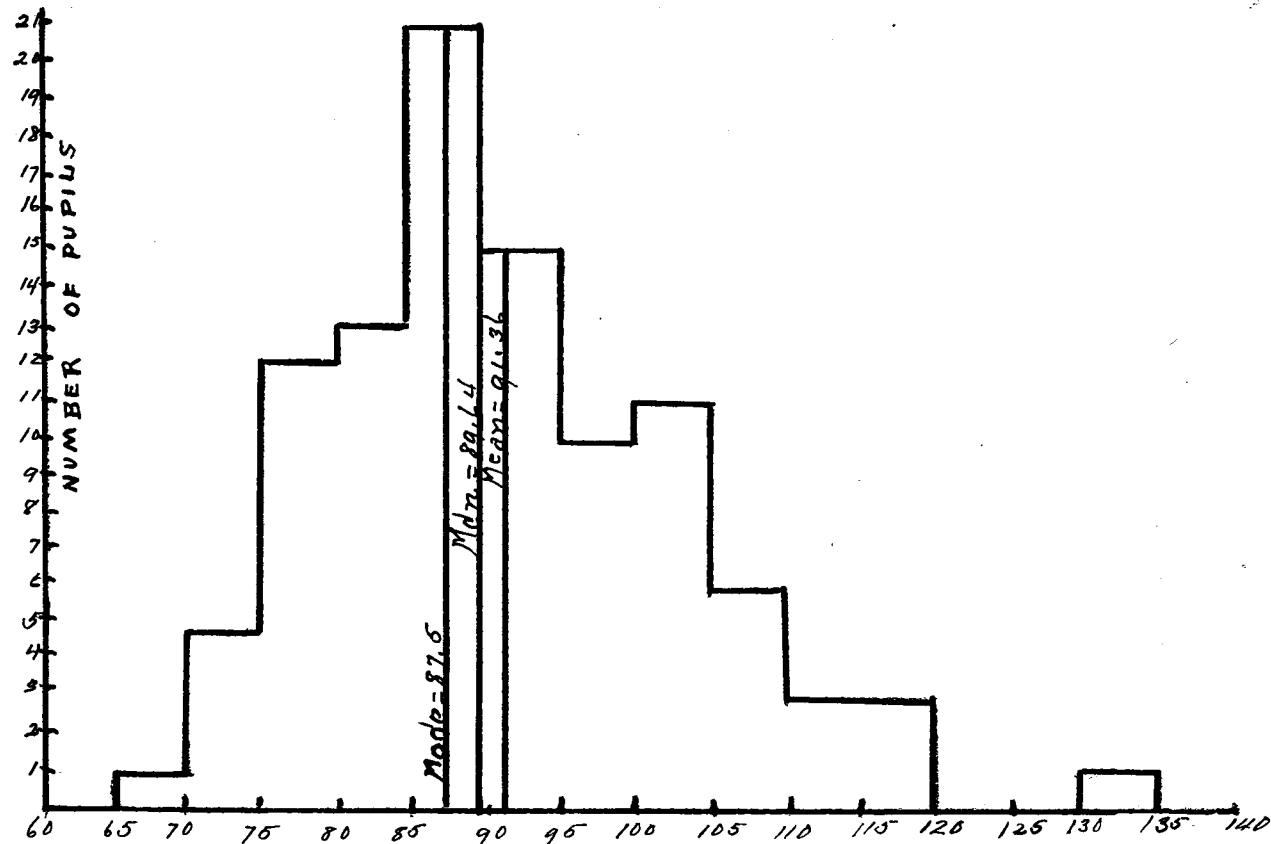


Figure 10

Histogram Representing the  
Distribution of I Q's for Pu-  
pils of Grade 9A, Table XXII

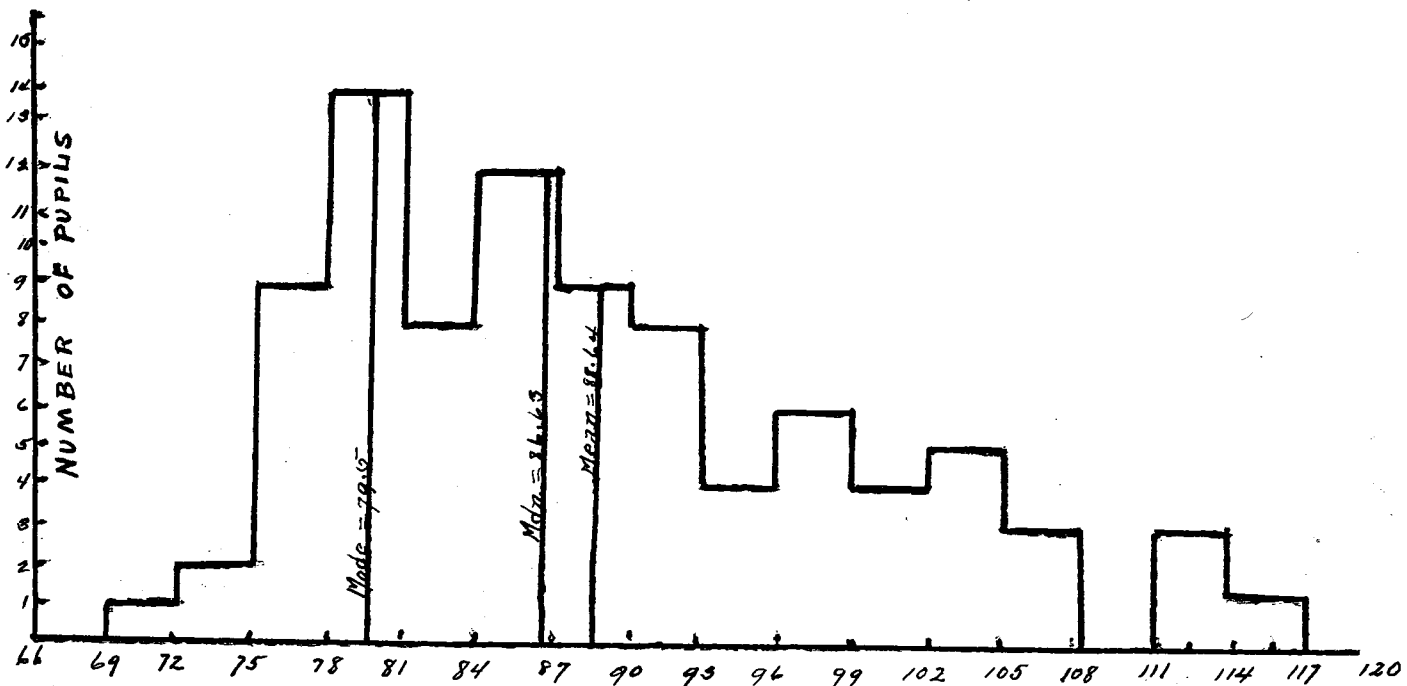


Figure 11

Histogram Representing the  
Distribution of I Q's for Pu-  
pils of Grade 10B, Table XXIII

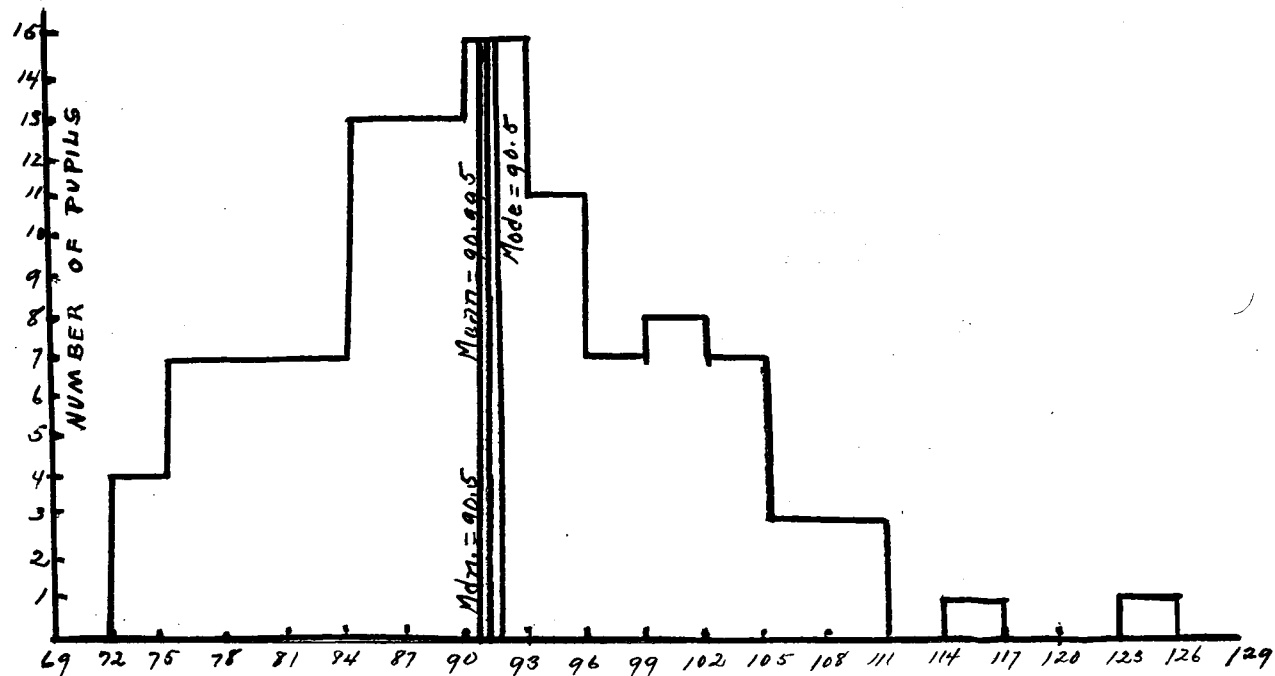


Figure 12

Histogram Representing the  
Distribution of I Q's for Pu-  
pils of Grade 10A, Table XXIV

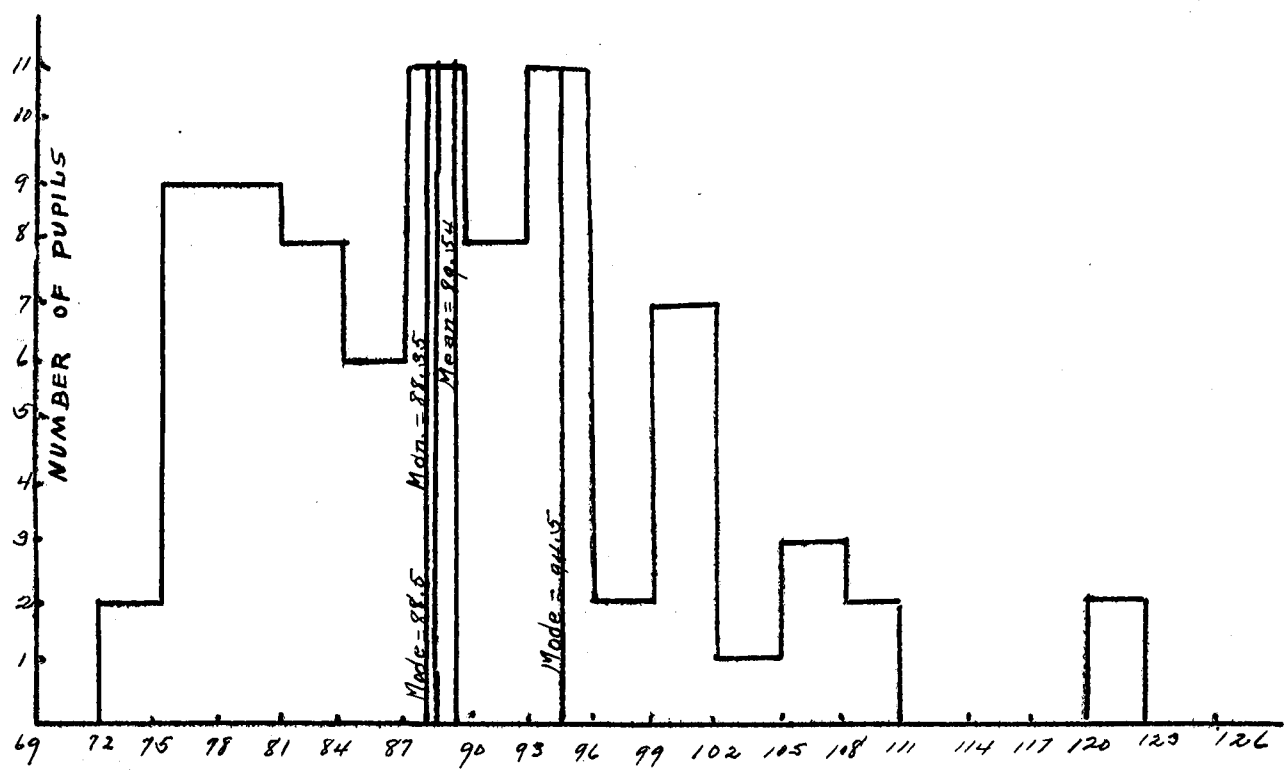


Figure 13

Histogram Representing the Distribution of I Q's for Pupils of Grade 11B, Table XXV

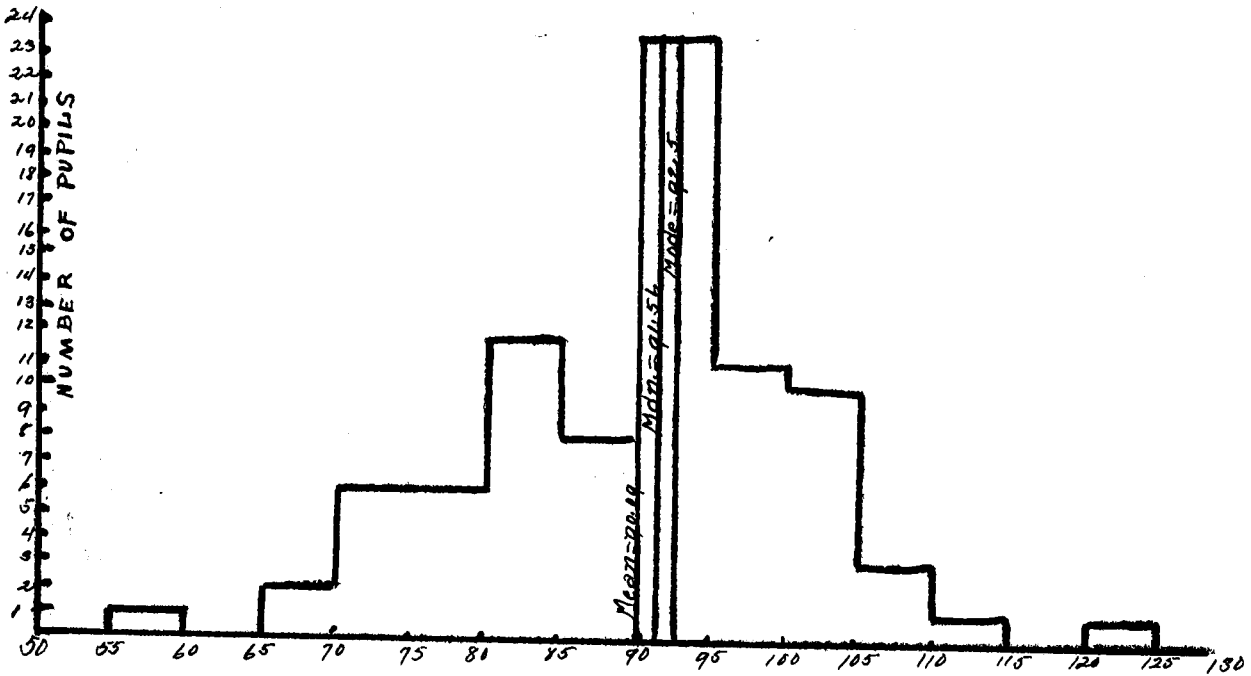


Figure 14

Histogram Representing the Distribution of I Q's for Pupils of Grade 11A, Table XXVI



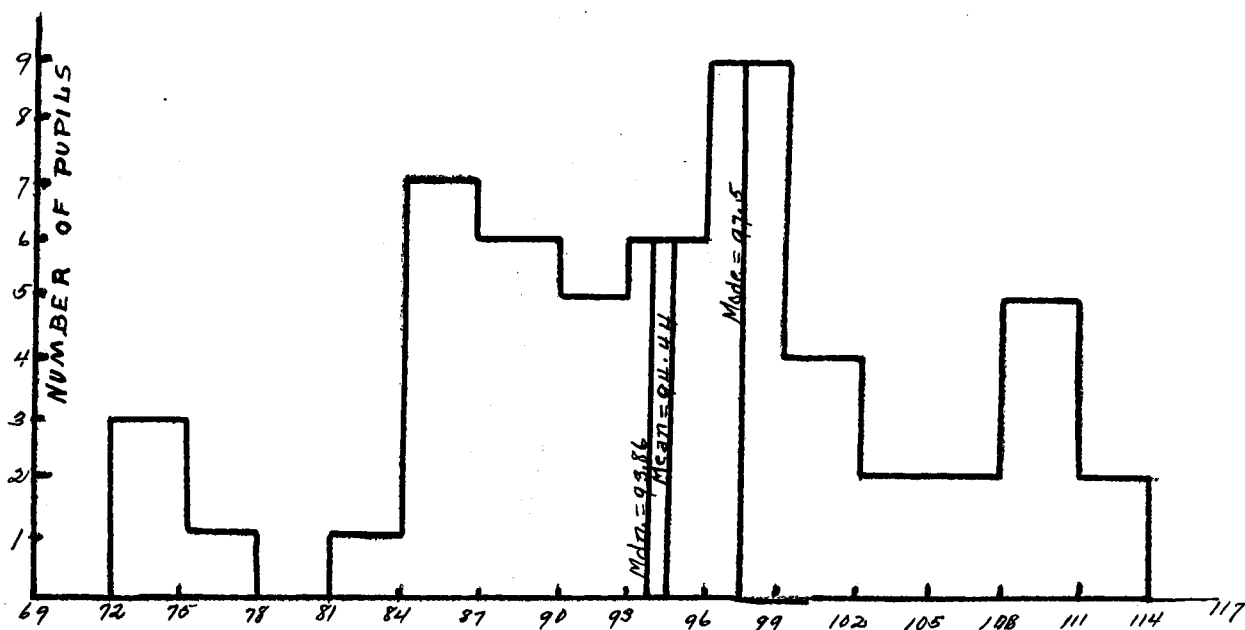


Figure 15

Histogram Representing the  
Distribution of I Q's for Pu-  
pils of Grade 12B, Table XXVII

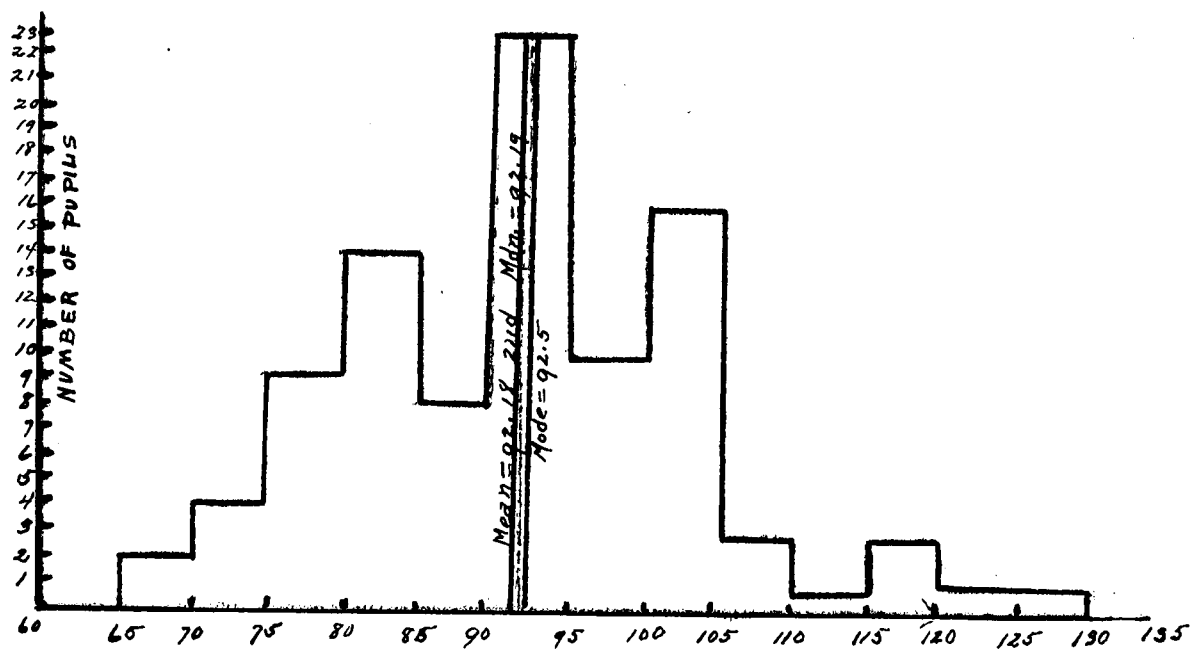


Figure 16

Histogram Representing the Distribution of  
I Q's for Pupils of Grade 12A, Table XXVIII

### III. GROUPING ACCORDING TO INTELLIGENCE IN THE COLORED HIGH SCHOOLS OF INDIANA

1. The Problem. From the performance of the subjects of this study on this test, to what extent have the pupils of the A and B grades in the colored high schools of Indiana, ninth to twelfth grades, inclusive, been properly classified and sectioned according to their intelligence? The problems of grading children according to their capacity to learn and sectioning them according to their degree of brightness have been discussed pro and con during recent years by leading educators.

Dr. L. M. Terman<sup>1</sup> may be considered the leader of those who favor homogeneous grouping and Dr. W. C. Bagley,<sup>2</sup> the leader of the group opposing it.

Nevertheless, the reports of recent studies reveal that there is a close relation between mental age and quality of school work.<sup>3</sup>

It appears then that the mental age may be used as a basis for determining the proper grade for a pupil.

Recent investigators have also revealed that the I Q may

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<sup>1</sup>Walter Scott Monroe, James Clarence DeVoss and Frederick James Kelley, Educational Tests and Measurements. Boston: Houghton Mifflin Company, 1924. p. 438.

<sup>2</sup>W. C. Bagley, Determinism in Education. Baltimore: Warrick and York, 1925. p. 194.

<sup>3</sup>C. W. Odell, Educational Measurement in High School. New York: The Century Company, 1930. Pp. 502-519.

be used as a basis for further classification.<sup>4</sup>

The technique of the problem of homogeneous grouping in this study is based upon the assumption that the findings referred to above are valid.

2. Grading According to Mental Ages. To what extent have the subjects of this study been graded according to their mental ages? Figures 17 to 24 show that in each A and B grade of this study, a large percentage of the pupils are below normal mental age; ranging from 62 to 95 per cent. On an average, there are more pupils of this study in each A and B grade above normal mental age than there are of normal mental age. The percentages of pupils of each A and B grade of normal and above normal mental ages are extremely low.

3. Sectioning According to I Q. To what extent have the subjects of this study been properly sectioned according to their I Q's? Figures 25 to 32 show that the pupils of this study in each A and B grade having normal I Q's range from 35 to 62 per cent; those having above normal I Q's range from 1 to 13 per cent; and those pupils having below normal I Q's range from 39 to 63 per cent.

4. Summary. The data submitted in this chapter seem to substantiate the following statement:

a. There is evidently a great need for reclassifying and sectioning the subjects of this study for each A and B grade into more homogeneous groups.

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<sup>4</sup>Rudolph Pintner, Intelligence Testing Methods and Results. New York: Henry Holt and Company, 1931. p.268.

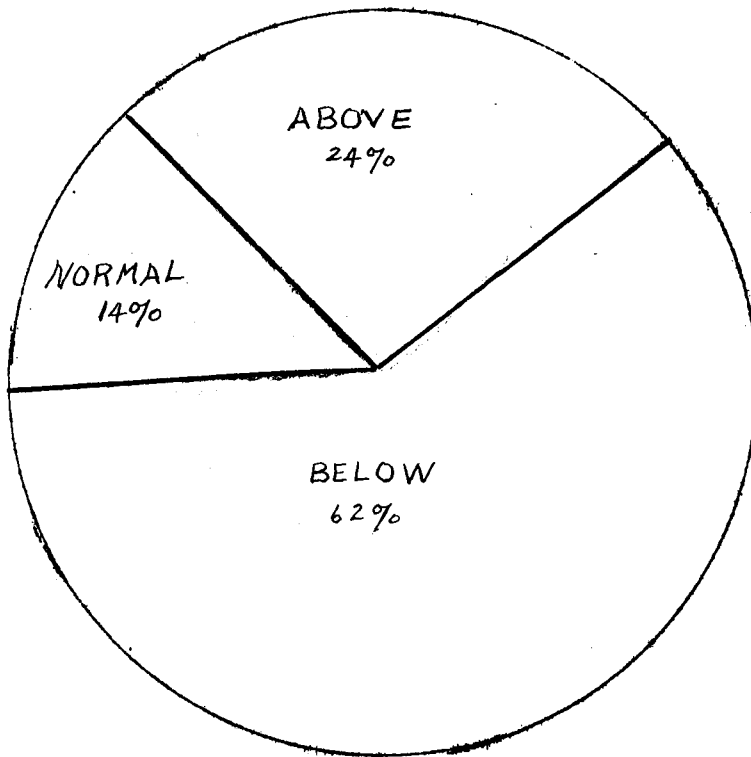


Figure 17

Sector diagram showing the per cent of pupils of normal mental age, above normal mental age and below normal mental age for the 9B grade

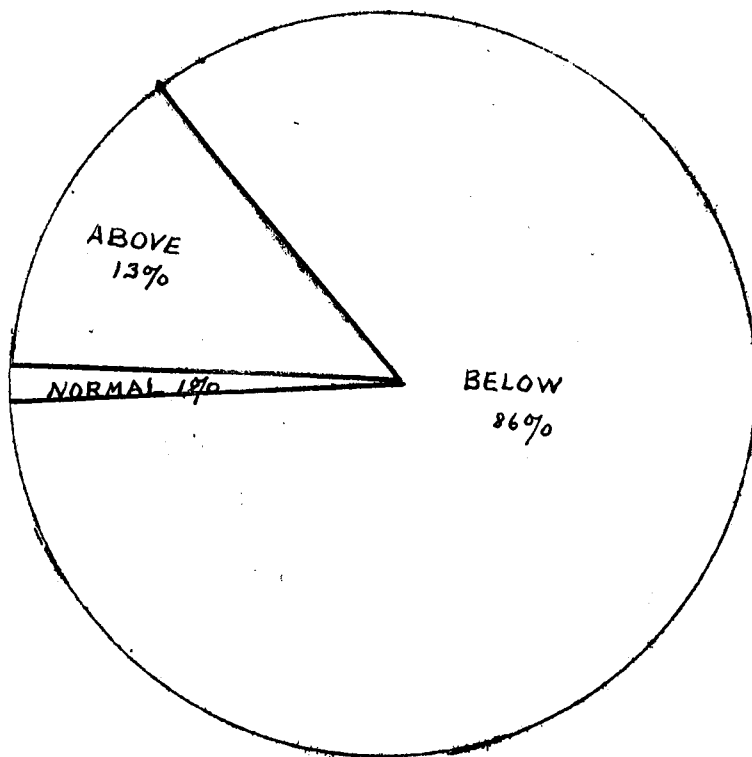


Figure 18

Sector diagram showing the per cent of pupils of normal mental age, above normal mental age and below normal mental age for the 9A grade

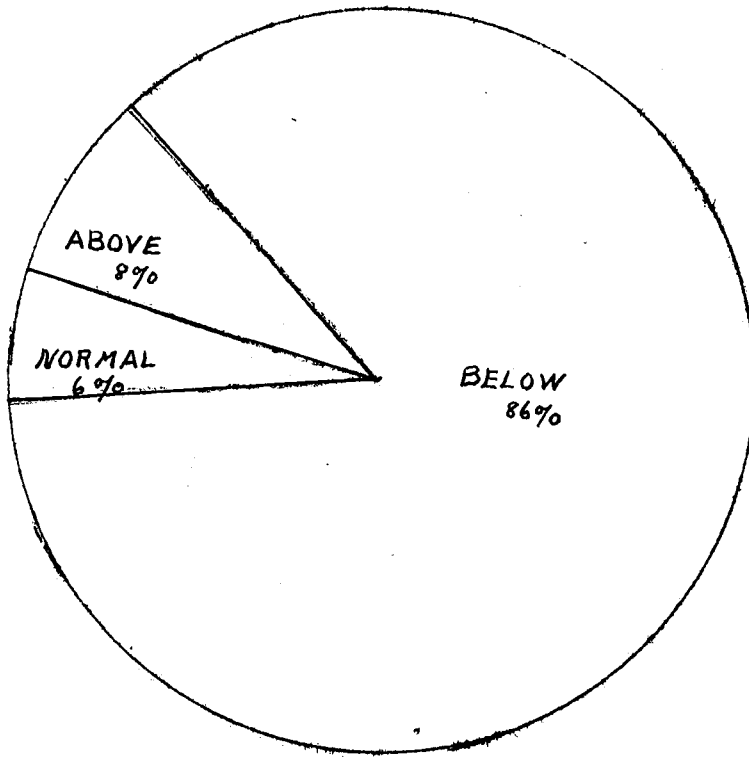


Figure 19

Sector diagram showing the per cent of pupils of normal mental age, above normal mental age and below normal mental age for the 10B grade

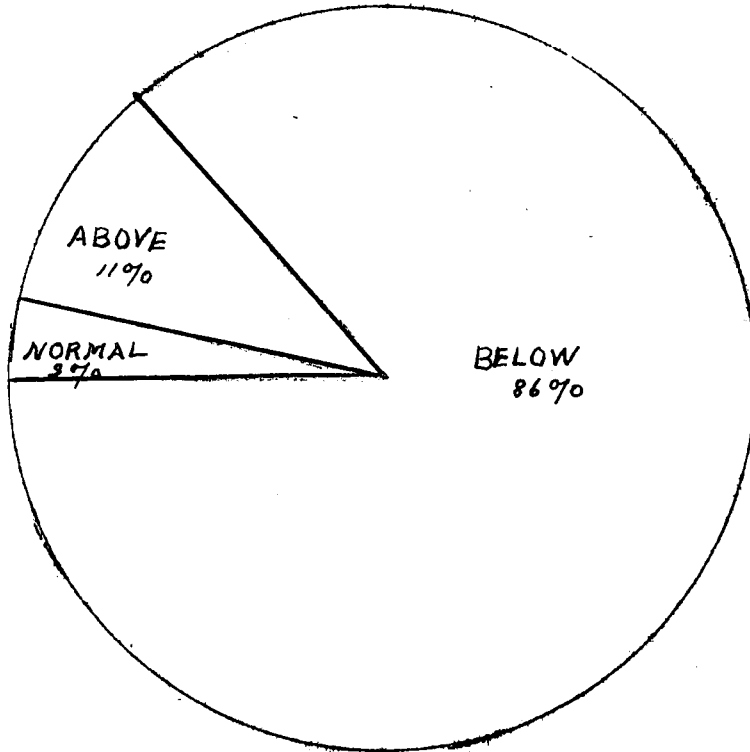


Figure 20

Sector diagram showing the per cent of pupils of normal mental age, above normal mental age and below normal mental age for the 10A grade



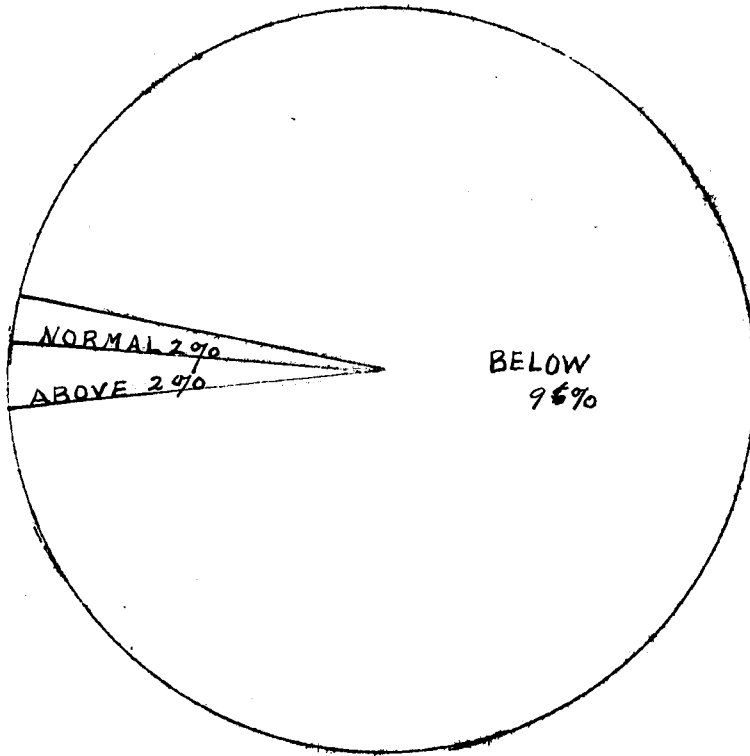


Figure 21

Sector diagram showing the per cent of pupils of normal mental age, above normal mental age and below normal mental age for the 11B grade

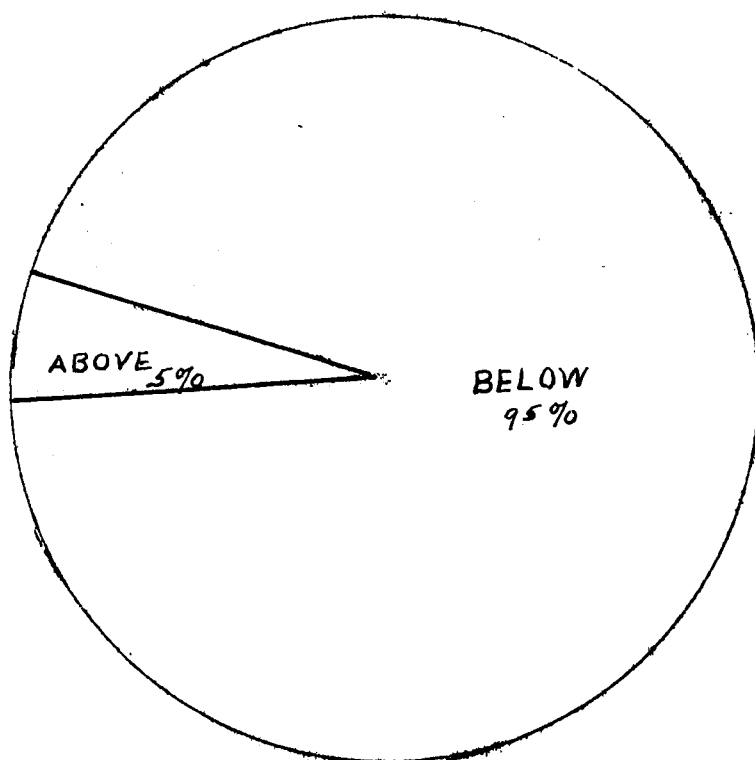


Figure 22

Sector diagram showing the per cent of pupils of normal mental age, above normal mental age and below normal mental age for the 11A grade

There are no pupils in the 11A grade of normal mental age.

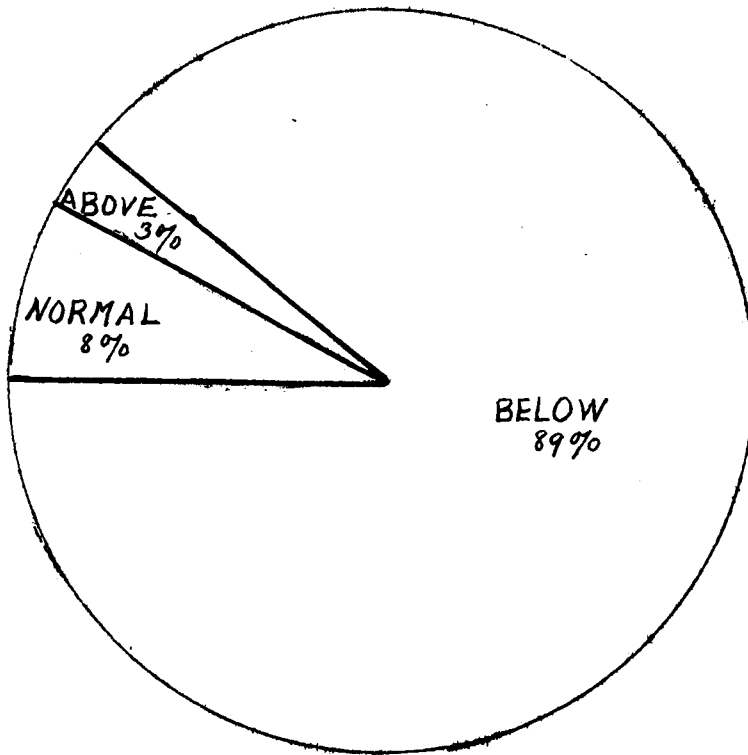


Figure 23

Sector diagram showing the per cent of pupils of normal mental age, above normal mental age and below normal mental age for the 12B grade

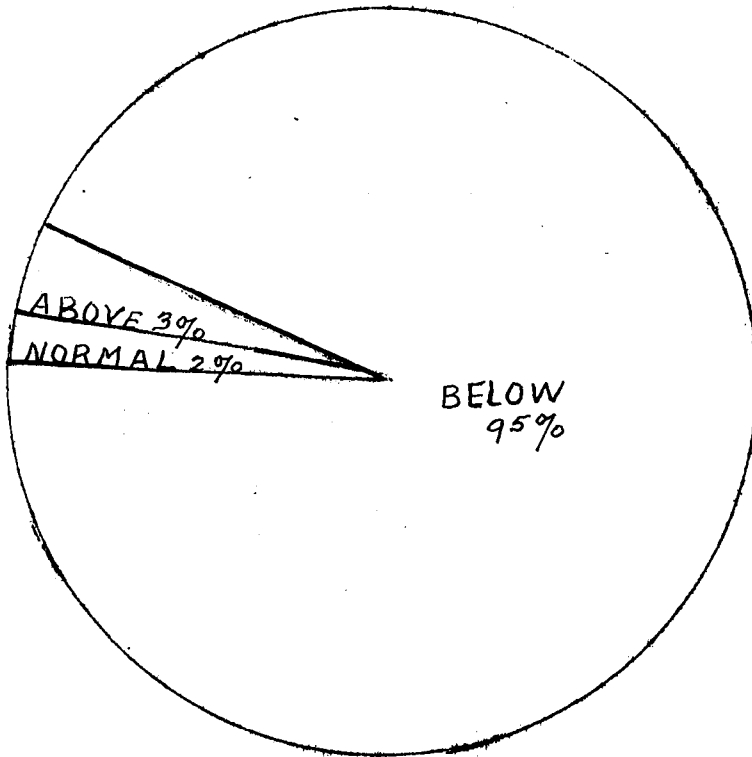


Figure 24

Sector diagram showing the per cent of pupils of normal mental age, above normal mental age and below normal mental age for the 12A grade

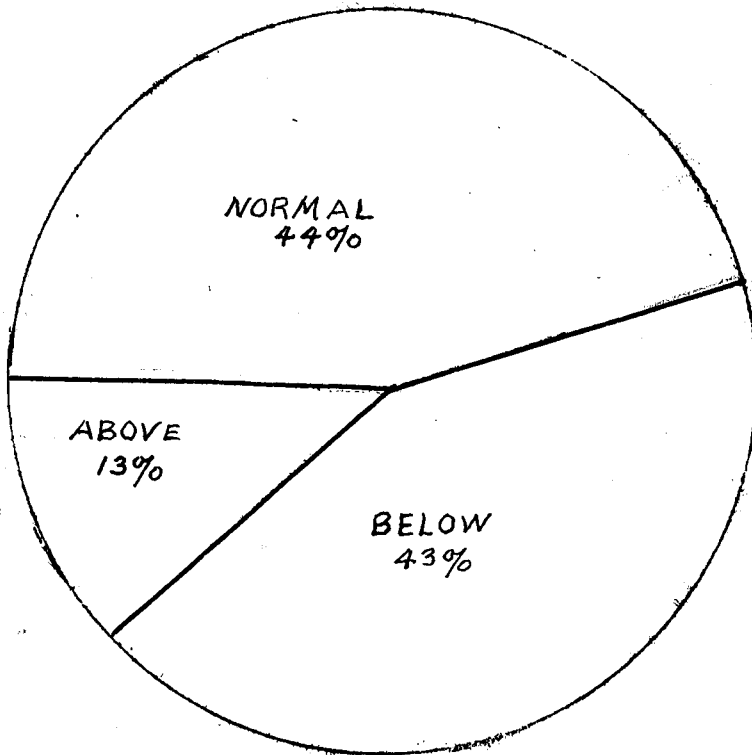


Figure 25

Sector diagram showing the per cent of pupils of normal I Q's, above normal I Q's, and below normal I Q's for the 9B grade

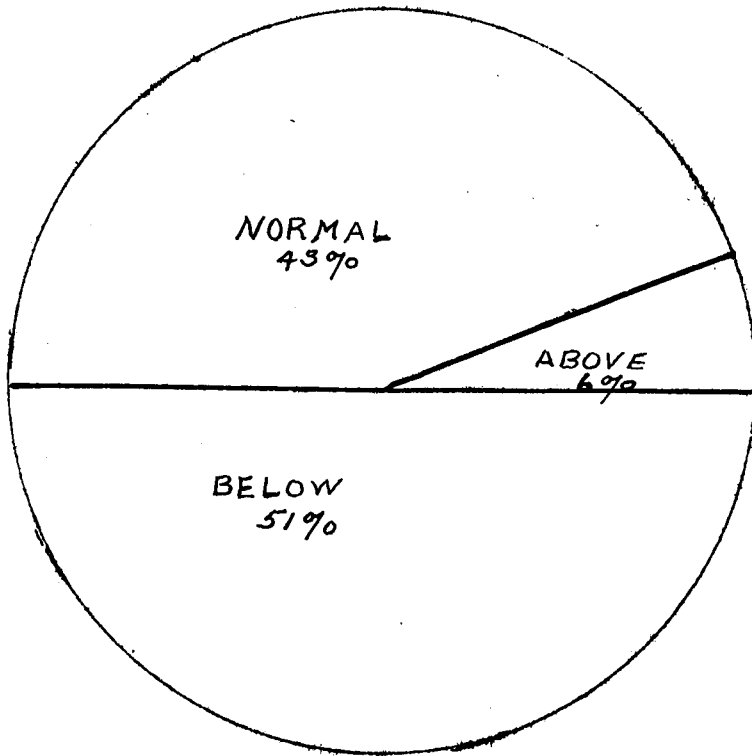


Figure 26

Sector diagram showing the per cent of pupils of normal I Q's, above normal I Q's, and below normal I Q's for the 9A grade

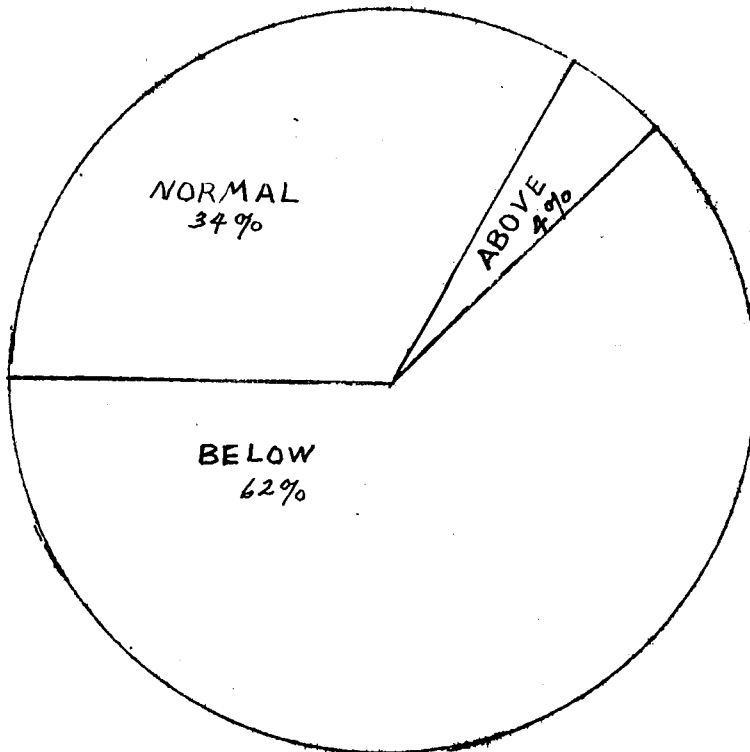


Figure 27

Sector diagram showing the per cent of pupils of normal I Q's, above normal I Q's, and below normal I Q's for the 10B grade

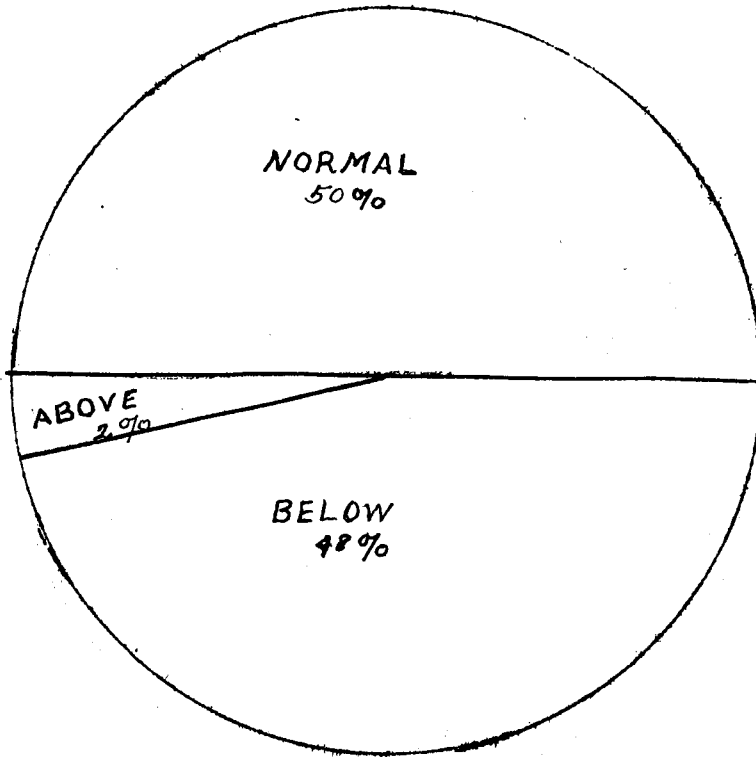


Figure 28

Sector diagram showing the per cent of pupils of normal I Q's, above normal I Q's, and below normal I Q's for the 10A grade



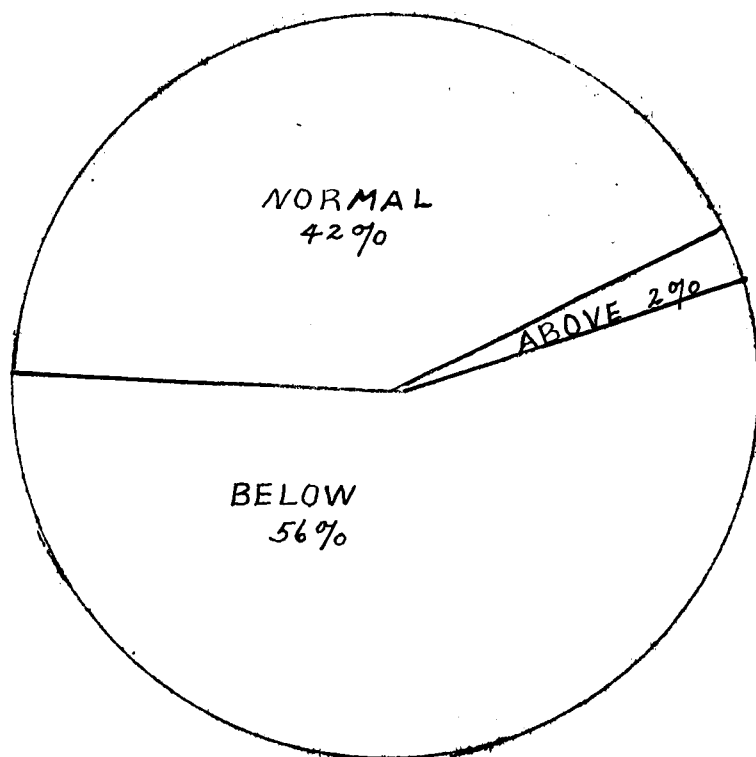


Figure 29

Sector diagram showing the per cent of pupils of normal I Q's, above normal I Q's, and below normal I Q's for the 11B grade

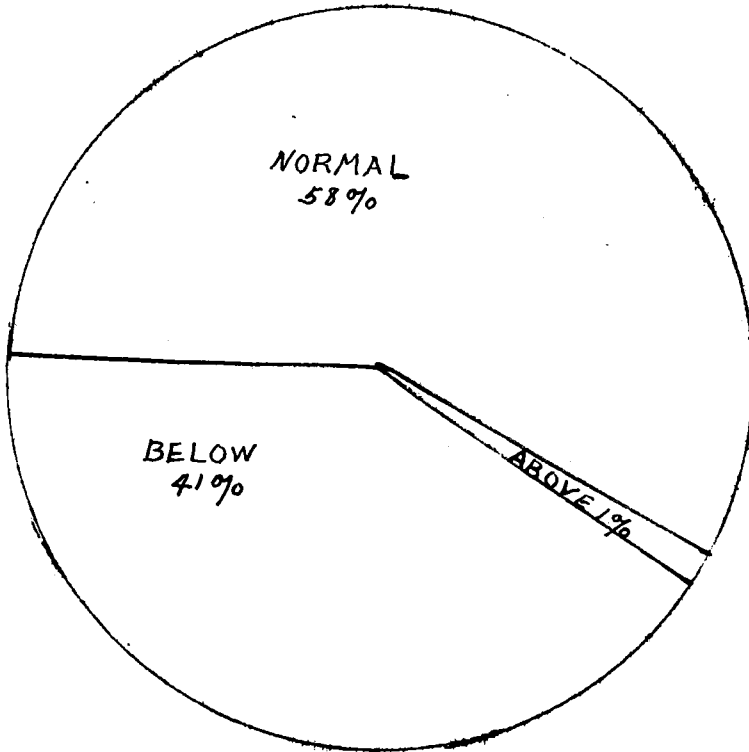


Figure 30

Sector diagram showing the per cent of pupils of normal I Q's, above normal I Q's, and below normal I Q's for the 11A grade

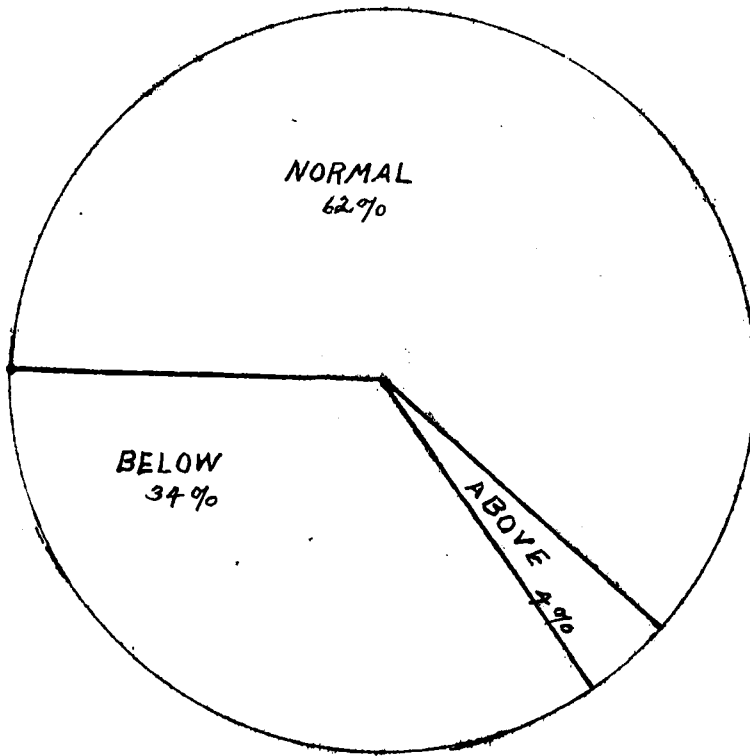


Figure 31

Sector diagram showing the per cent of pupils of normal I Q's, above normal I Q's, and below normal I Q's for the 12B grade

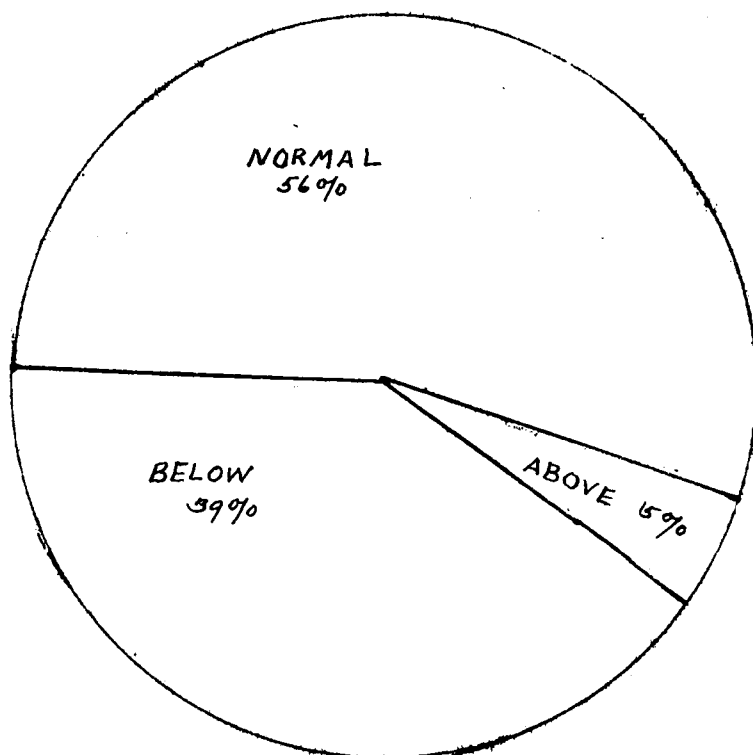


Figure 32

Sector diagram showing the percent of pupils of normal I Q's, above normal I Q's, and below normal I Q's for the 12A grade

#### IV. EVIDENCES OF RACIAL AND INDIVIDUAL DIFFERENCES AMONG THE COLORED HIGH SCHOOL PUPILS IN INDIANA

1. The Problem. The problem of this chapter may be stated: From the performance of the subjects of this study on this test, what are the evidences of racial and individual differences among the colored high school pupils in Indiana?

It is extremely doubtful whether the data presented by this study gives any evidences of racial differences.<sup>1</sup>

Grade norms for Terman's Group Test of Mental Ability, Form A, were made several years ago<sup>2</sup> when the caliber of high school students was much above the caliber of those of today.

The fact that the norms are chiefly from city schools is another reason which might operate to the disadvantage of the colored pupils of this study.

The subjects of this study represent a selective group of colored boys and girls and this also would operate against making any sweeping generalization.<sup>3</sup>

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<sup>1</sup>Letter from Dr. H. H. Remmers, Appendix, p. 95.

<sup>2</sup>Manual of Directions, Terman's Group Test of Mental Ability, Form A, p. 9.

<sup>3</sup>Letter from Dr. Walter Monroe, Appendix, p. 97.

In spite of these handicaps, a comparison of the percentile scores of each grade, ninth to twelfth, inclusive, made by the subjects of this study with the percentile grade norms of Terman's Group Test of Mental Ability, Form A, might be worthy of consideration.

There is considerable evidence of individual differences presented by the data for this chapter.

2. Comparison of the Performance of the Pupils of this Study on the Test with the Norms. What are the differences between the performance of the subjects of this study on this test and the performance of white pupils on this test? Table VI shows that a larger percentage of the subjects of this study made scores lower than the norms for each grade, ninth to twelfth grades, inclusive, than those who made scores exceeding the norms. Table VI also shows that approximately 20 per cent of the pupils of this study exceeded the median (norm) of the ninth grade; approximately 14 per cent exceeded the median (norm) of the tenth grade; approximately 9 per cent exceeded the median (norm) of the eleventh grade; and approximately 11 per cent exceeded the median (norm) of the twelfth grade. This is evidence of considerable overlapping. The quantitative difference is in favor of the norms.

3. Individual Differences as Shown by the Percentile Scores. What individual differences are shown by the percentile scores of the subjects of this study? Table VI shows that there is much evidence of individual differences among the pupils of this study.

SHOWING THE PERCENTILE SCORES\* OF 690 COLORED PUPILS IN ELEVEN COLORED  
HIGH SCHOOLS OF INDIANA, GRADES NINTH TO TWELFTH, INCLUSIVE, COMPARED WITH THE NORMS

Grade.....	9	Norm	10	Norm	11	Norm	12	Norm
Upper								
Quartile								
1 per cent equal or exceed.....	162	181	155	194	185	203	191	207
2½ per cent equal or exceed....	143	172	154	185	172	196	179	200
5 per cent equal or exceed.....	135	164	143	177	146	189	171	194
10 per cent equal or exceed....	126	151	129	166	135	189	156	185
15 per cent equal or exceed....	111	142	120	159	128	174	147	179
20 per cent equal or exceed....	104	135	114	152	123	168	141	174
25 per cent equal or exceed....	100	128	109	147	119	163	135	169
30 per cent equal or exceed....	90	123	103	141	114	158	130	165
40 per cent equal or exceed....	82	113	95	131	106	147	118	156
Median								
50 per cent equal or exceed....	81	104	87	122	98	138	108	147
60 per cent equal or exceed....	70	95	80	113	90	128	98	138
70 per cent equal or exceed....	62	86	72	103	76	118	90	128
Lower								
Quartile								
75 per cent equal or exceed....	57	81	67	98	70	112	87	122
80 per cent equal or exceed....	54	76	63	92	65	105	82	115
85 per cent equal or exceed....	51	71	59	87	59	99	76	109
90 per cent equal or exceed....	47	73	54	79	53	90	67	100
95 per cent equal or exceed....	40	53	50	67	47	77	54	86
97½ per cent equal or exceed...	35	44	45	58	38	66	44	74
99 per cent equal or exceed....	32	35	35	48	28	55	39	63
Number of cases for each grade.....	180	10,881	196	6,730	166	4,206	148	4,886

\*Terman Group Test of Mental Ability, Grades 7-12, Form A.

TABLE VII  
 DISTRIBUTION OF CHRONOLOGICAL AGES FOR  
 THE SUBJECTS OF THIS STUDY, 9B GRADE to 12A GRADE, INCLUSIVE

Chronological Ages	9B	9A	10B	10A	11B	11A	12B	12A
20-20 $\frac{1}{2}$						2	1	2
19 $\frac{1}{2}$ -20		1				1	2	2
19-19 $\frac{1}{2}$	1			1	2		2	8
18 $\frac{1}{2}$ -19		1	1	2	3	4	5	9
18-18 $\frac{1}{2}$		3	2	2	5	9	8	17
17 $\frac{1}{2}$ -18	1	4	6	10	12	6	7	13
17-17 $\frac{1}{2}$	1	2	7	7	10	10	5	15
16 $\frac{1}{2}$ -17	1	3	9	8	11	16	5	11
16-16 $\frac{1}{2}$	10	8	13	18	11	18	10	9
15 $\frac{1}{2}$ -16	9	10	15	24	11	5	4	4
15-15 $\frac{1}{2}$	9	20	13	15	6	7	2	3
14 $\frac{1}{2}$ -15	9	13	11	13	6	3	2	2
14-14 $\frac{1}{2}$	16	15	9	5	4	3		
13 $\frac{1}{2}$ -14	11	12	1	2		1		
13-13 $\frac{1}{2}$	4	6	1					
12 $\frac{1}{2}$ -13	5	1	1					
12-12 $\frac{1}{2}$	1	2						
11 $\frac{1}{2}$ -12	1							
NUMBER	79	101	89	107	81	85	53	95



TABLE VIII  
DISTRIBUTION OF MENTAL AGES FOR THE  
SUBJECTS OF THIS STUDY, 9B GRADE to 12A GRADE, INCLUSIVE

Mental Ages	9B	9A	10B	10A	11B	11A	12B	12A
19-19 $\frac{1}{2}$						1		
18 $\frac{1}{2}$ -19								2
18-18 $\frac{1}{2}$				1				1
17 $\frac{1}{2}$ -18		1			1	1	2	2
17-17 $\frac{1}{2}$		1			1	2	4	2
16 $\frac{1}{2}$ -17			2	4			2	3
16-16 $\frac{1}{2}$	5	3	4	7	2	6	5	16
15 $\frac{1}{2}$ -15	4	5	1	3	10	5	11	6
15-15 $\frac{1}{2}$	3	3	5	13	8	10	2	7
14 $\frac{1}{2}$ -15	7	1	10	9	9	12	4	10
14-14 $\frac{1}{2}$	11	17	11	11	6	14	9	9
13 $\frac{1}{2}$ -14	8	13	11	14	12	4	6	14
13-13 $\frac{1}{2}$	5	11	10	15	7	6	4	8
12 $\frac{1}{2}$ -13	15	20	17	15	12	11		11
12-12 $\frac{1}{2}$	13	14	15	11	9	5	1	1
11 $\frac{1}{2}$ -12	5	6	3	3	4	4	3	2
11-11 $\frac{1}{2}$	3	6		1		2		1
10 $\frac{1}{2}$ -11						1		
10-10 $\frac{1}{2}$						1		
<b>NUMBER</b>	<b>79</b>	<b>101</b>	<b>89</b>	<b>107</b>	<b>81</b>	<b>85</b>	<b>53</b>	<b>95</b>

TABLE IX

CHRONOLOGICAL - AGE - GRADE - SCORE\* - DISTRIBUTION, NINTH TO TENTH GRADES, INCLUSIVE

	AGE YRS + MO.	LOWEST SCORE	0-	10-	20-	30-	40-	50-	60-	70-	80-	90-	100-	110-	120-	130-	140-	150-	160-	170-	180-	190-	200-	210-	HIGHEST SCORE	MEDIAN SCORE	TOTAL						
			9	19	29	39	49	59	69	79	89	99	109	119	129	139	149	159	169	179	189	199	209	219									
NORM 104 9th YEAR	11-6 <sup>to</sup> 12-5	82 48					1				1		1												109	103	95	76	2	2			
	12-6 <sup>to</sup> 13-5	65 42					1		1	1	2		2	1	2						1				128	174	100	85	9	7			
	13-6 <sup>to</sup> 14-5	41 43					4	4	6	2	2	2	3	2	3	1	1								141	133	68	80	27	27			
	14-6 <sup>to</sup> 15-5	36 34				2	3	4	5	3	3	5	2	3	1	3	2	1	2			1			138	167	100	65	18	33			
	15-6 <sup>to</sup> 16-5	32 34				1	3	4	3	2	2	1	4	2	2			1								145	101	62	57	19	18		
	16-6 <sup>to</sup> 17-5	88 85									1	1	1		1											93	126	90	99	2	5		
	17-6 <sup>to</sup> 18-5	66 52					2	1	1	2	1	1														66	98		72	1	4		
	18-6 <sup>to</sup> 19-5	98 53					1		1			1														98	73		63	1	2		
	19-6 <sup>to</sup> 20-5																																
	TOTAL						9	15	27	22	17	21	21	19	7	11	5	4		1	1										79	101	
NORM 122 10th YEAR	12-6 <sup>to</sup> 13-5	82									1		1													100		91		2			
	13-6 <sup>to</sup> 14-5	63 72						1		3	2	1	1	3		1	1									149	145	108	104	10	7		
	14-6 <sup>to</sup> 15-5	40 38				1	2	3	3	3	2	2	2	4	1	1	1					1				145	181	74	89	24	28		
	15-6 <sup>to</sup> 16-5	54 46					2	4	7	4	4	4	3	7	4	2	3	1	1							131	154	78	89	28	42		
	16-6 <sup>to</sup> 17-5	47 42					1	3	1	4	2	3	1	2	4	1	1									144	154	75	101	16	15		
	17-6 <sup>to</sup> 18-5	43 43					1	3	1	3	1	2	1	1		1	1									96	156	63	80	8	12		
	18-6 <sup>to</sup> 19-5	105 99											1	1												105	157	108	104	1	3		
	19-6 <sup>to</sup> 20-5																																
20-6 <sup>to</sup> 21-5																																	
TOTAL						1	8	22	24	27	22	21	22	20	9	8	7	4				1									89	107	

\*Terman Group Test of Mental Ability, Grades 7-12, Form A.  
 The scores for the B grades are indicated in black ink.  
 The scores for the A grades are indicated in red ink.

TABLE X

CHRONOLOGICAL - AGE - GRADE - SCORE\* - DISTRIBUTION, ELEVENTH TO TWELFTH GRADES, INCLUSIVE

NORM	YEAR	NORM	AGE	Lowest	AGE																				HIGHEST	MEDIAN	TOTAL								
					YRS. & MO.	SCORE	9	19	29	39	49	59	69	79	89	99	109	119	129	139	149	159	169	179				189	199	209	219	SCORE	SCORE		
138	11 <sup>TH</sup> YEAR	NORM	AGE 16-17	13-6 <sup>20</sup> 14-5	51	56																					130	102	121	64	4	3			
				14-6 <sup>20</sup> 15-5	47	52					2		1	1	2	1	5	1	4										175	132	120	103	12	11	
				15-6 <sup>20</sup> 16-5	52	43					1	2	3	2	3	4	3	4	3	2	4	1							133	208	94	110	23	23	
				16-6 <sup>20</sup> 17-5	46	45					1	1	4	2	3	4	2	2	1	1	3	1							138	169	89	100	21	27	
				17-6 <sup>20</sup> 18-5	41	26			1	2		1	2	2	1	3	1	2	2	3	2	1							137	120	100	82	16	14	
				18-6 <sup>20</sup> 19-5	50	15			1			3		1	3			1											108	73	56	75	5	4	
				19-6 <sup>20</sup> 20-5		49						1									1									124		86		2	
				20-6 <sup>20</sup> 21-5		111															1									111		111		1	
				21-6 <sup>20</sup> 22-5																															
				TOTAL						1	1	2	8	14	16	14	11	16	25	19	18	13	2		3	2								81	85
147	12 <sup>TH</sup> YEAR	NORM	AGE 17-18	14-6 <sup>20</sup> 15-5	100	68								1												163	181	132	153	4	4				
				15-6 <sup>20</sup> 16-5	86	67					1		2	1	2	3	1	2	3	3	1	2	1					177	147	131	126	14	14		
				16-6 <sup>20</sup> 17-5	49	54					1	1	2	1	4	2	1	1	2	2	5	2	2					150	196	103	135	10	23		
				17-6 <sup>20</sup> 18-5	44	30					1	1	2	3	4	5	7	4	3	1	3	2	2		1			175	194	110	90	15	33		
				18-6 <sup>20</sup> 19-5	89	43						1		1	2	2	7	1	2	2		1						160	152	126	104	7	18		
				19-6 <sup>20</sup> 20-5	48	68					1		1				1											114	92	81	80	2	2		
				20-6 <sup>20</sup> 21-5	84	94									1		1											84	94	84	94	1	1		
				21-6 <sup>20</sup> 22-5																															
				22-6 <sup>20</sup> 23-5																															
				TOTAL							1	5	4	8	6	19	13	18	15	7	23	11	5	6	4	1	2							53	95

\*Terman Group Test of Mental Ability, Grades 7-12, Form A.  
 The scores for the B grades are indicated in black ink.  
 The scores for the A grades are indicated in red ink.

TABLE XI

MENTAL - AGE - GRADE - SCORE\* - DISTRIBUTION, NINTH TO TENTH GRADES, INCLUSIVE

NORM 104	9th YEAR	AGE YRS.+MO.	LOWEST SCORE	NORMAL AGE 14-15																	HIGHEST SCORE	MEDIAN SCORE	TOTAL													
				0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120-129	130-139	140-149	150-159	160-169				170-179	180-189	190-199	200									
		10-6 <sup>20</sup> 11-5	32 34				3 6																		37	39	36	35	3	6						
		11-6 <sup>20</sup> 12-5	41 42				7 7	11 12																		51	57	51	51	18	19					
		12-6 <sup>20</sup> 13-5	60 49				1	4	13 9	4 12	3 5															82	84	67	71	20	31					
		13-6 <sup>20</sup> 14-5	79 84								5 8	6 14	7 9														103	104	95	95	19	31				
		14-6 <sup>20</sup> 15-5	105 103								3 1	6 1	1 2														123	124	111	120	10	4				
		15-6 <sup>20</sup> 16-5	125 126										4 4	3 2	2 2													145	142	136	131	9	8			
		16-6 <sup>20</sup> 17-5	167															1									167	167			1					
		17-6 <sup>20</sup> 18-5	174																								174	174			1					
		TOTAL					9	15	27	22	17	21	20	20	7	11	5	4			1	1										79	101			
NORM 122	10th YEAR	NORMAL AGE 15-16	10-6 <sup>20</sup> 11-5	38			1																				38	38			1					
			11-6 <sup>20</sup> 12-5	40 42				4 4	13 9		1																		75	57	53	52	18	13		
			12-6 <sup>20</sup> 13-5	60 60						12 12	12 14	3 4																	82	82	72	72	27	30		
			13-6 <sup>20</sup> 14-5	86 84								6 7	12 11	4 8																103	104	93	93	22	26	
			14-6 <sup>20</sup> 15-5	87 104								2		5 6	7 10	1 6														121	124	110	115	15	22	
			15-6 <sup>20</sup> 16-5	127 127												1 1	3 5	2 4													145	147	136	135	6	10
			16-6 <sup>20</sup> 17-5	149 154																		4									149	157	149	155	1	4
			17-6 <sup>20</sup> 18-5	181																											181	181			1	
		18-6 <sup>20</sup> 19-5																																		
		TOTAL					1	8	22	24	27	22	23	23	19	9	8	7	4														89	107		

\*Terman Group Test of Mental Ability, Grades 7-12, Form A.  
 The scores for the B grades are indicated in black ink.  
 The scores for the A grades are indicated in red ink.

TABLE XII

MENTAL - AGE - GRADE - SCORE\* - DISTRIBUTION, ELEVENTH TO TWELFTH GRADES, INCLUSIVE

NORM	YEAR	NORMAL AGE	AGE	LOWEST	0-	10-	20-	30-	40-	50-	60-	70-	80-	90-	100-	110-	120-	130-	140-	150-	160-	170-	180-	190-	200-	210-	HIGHEST	MEDIAN	TOTAL								
			YRS.+MO.	SCORE	9	19	29	39	49	59	69	79	89	99	109	119	129	139	149	159	169	179	189	199	209	219	SCORE	SCORE									
NORM 138	11th YEAR	NORMAL AGE 16-17	9-6 <sup>10</sup> 10-5	15		1																					15	15	1								
			10-6 <sup>10</sup> 11-5	26			1	2																					38	31	3						
			11-6 <sup>20</sup> 12-5	41	43					4	4																		58	58	51	53	13	9			
			12-6 <sup>20</sup> 13-5	60	62							7	6	4																83	83	70	73	19	17		
			13-6 <sup>20</sup> 14-5	86	88									4	11	3														104	103	93	100	18	18		
			14-6 <sup>20</sup> 15-5	105	105											5	8	4												124	124	112	113	17	22		
			15-6 <sup>20</sup> 16-5	124	126												4	12	6											138	145	127	136	12	11		
			16-6 <sup>20</sup> 17-5	166	168																			1						166	169	166	168	1	2		
			17-6 <sup>20</sup> 18-5	175	174																									175	174	175	174	1	1		
			18-6 <sup>20</sup> 19-5	208																										208	208				1		
		TOTAL			1	1	2	8	14	16	14	11	16	24	20	18	13	2	1	2	2					1									81	85	
NORM 147	12th YEAR	NORMAL AGE 17-18	10-6 <sup>20</sup> 11-5	30			1																				30	30				1					
			11-6 <sup>20</sup> 12-5	44	41				3	1																			56	57	47	43	4	3			
			12-6 <sup>20</sup> 13-5	78	58					2	8	5	3																84	83	82	68	4	19			
			13-6 <sup>20</sup> 14-5	86	84								4	7	4															104	102	96	92	15	23		
			14-6 <sup>20</sup> 15-5	106	103										2	4	3													119	124	112	115	6	17		
			15-6 <sup>20</sup> 16-5	125	129												2	8	3											145	147	137	137	16	22		
			16-6 <sup>20</sup> 17-5	150	151														2	13	1									165	168	165	159	6	5		
			17-6 <sup>20</sup> 18-5	175	170																									177	181	176	171	2	3		
			18-6 <sup>20</sup> 19-5	194																										196	195				2		
					TOTAL					1	5	4	8	6	20	14	19	12	7	23	11	5	6	4	1	2											

\*Terman Group Test of Mental Ability, Grades 7-12, Form A.  
 The scores for the B grades are indicated in black ink.  
 The scores for the A grades are indicated in red ink.

d. The wide range of the chronological ages in each grade give evidence of marked individual differences.

e. The wide range of the mental ages for each A and B grade shows that there are individual differences.

f. The wide range of the I Q's of the subjects of this study gives evidence of marked individual differences.

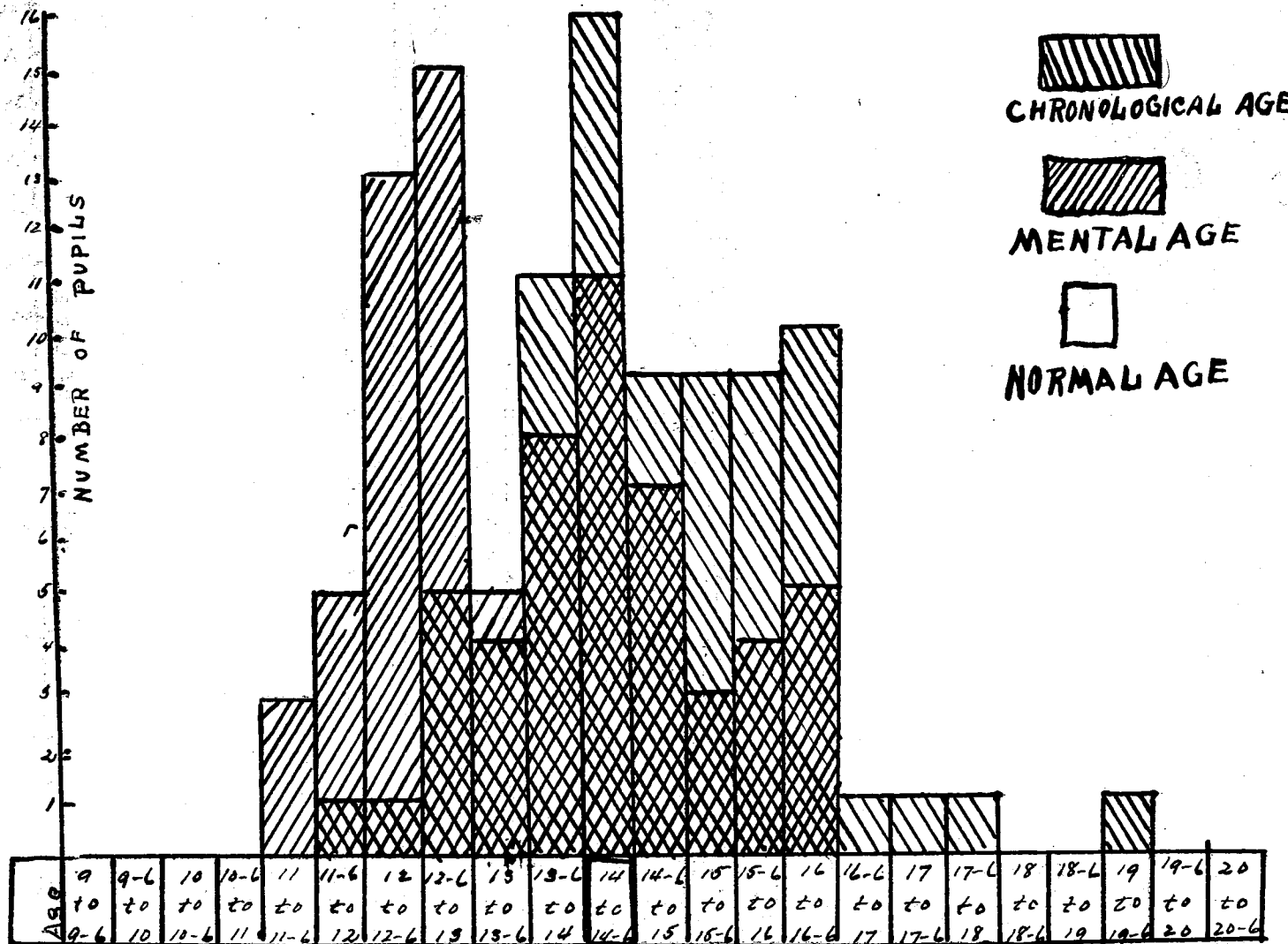
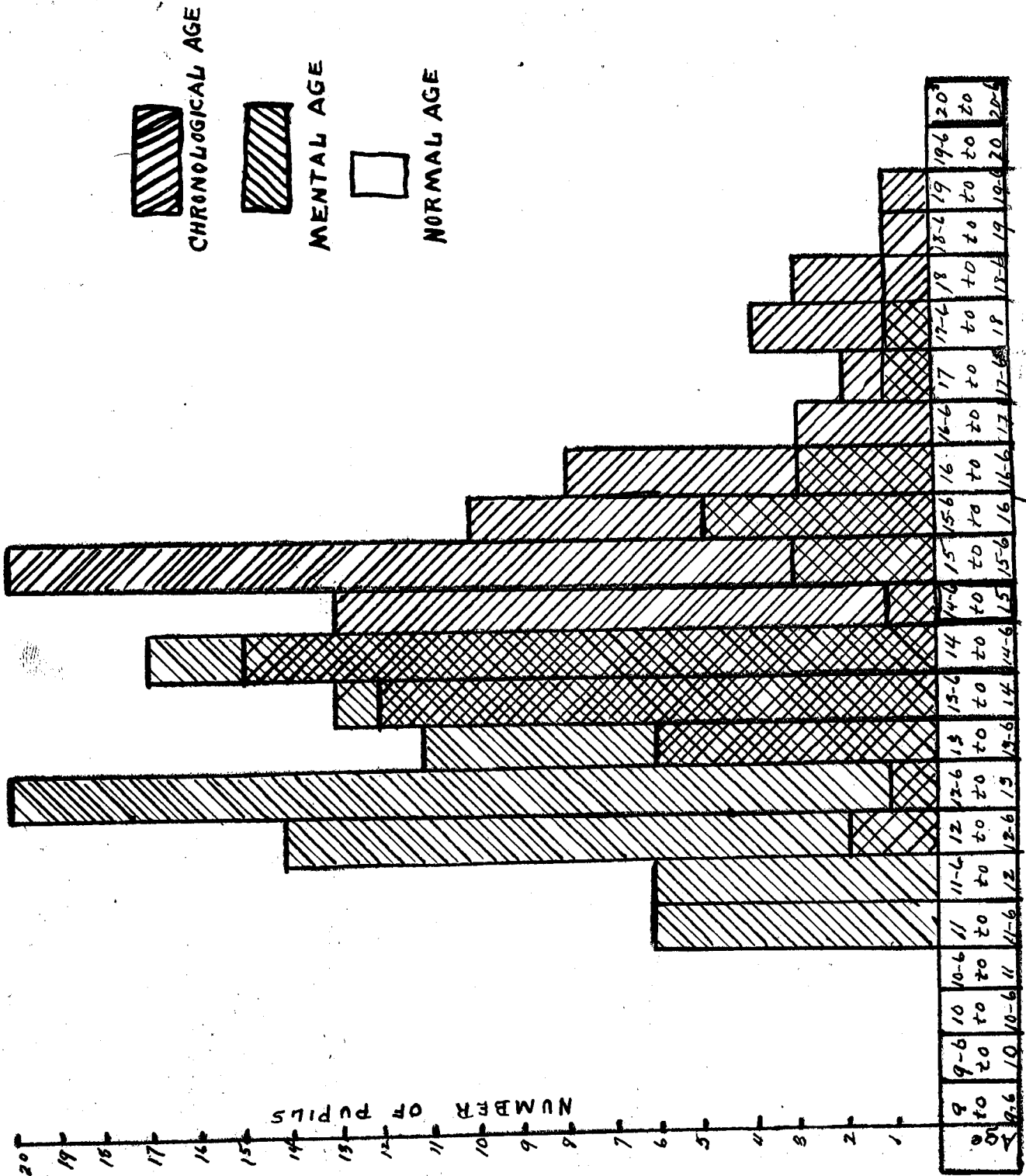


Figure 33

Chronological and Mental Age Compared for Pupils of Grade 9B, Table VII and Table VIII



**Figure 34**  
**Chronological and Mental Age Compared for Pupils of Grade 9A, Table VII and Table VIII**



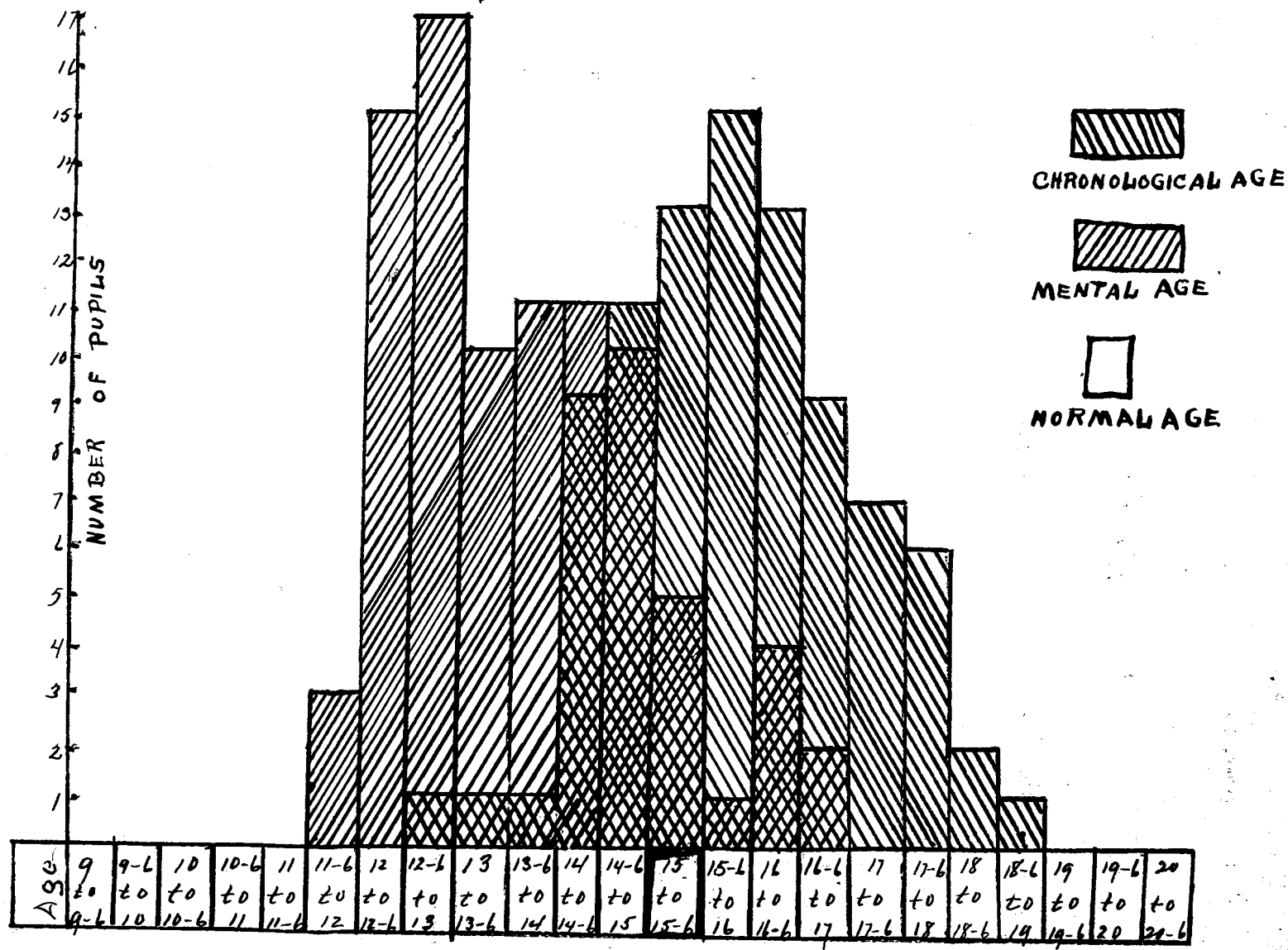


Figure 35

Chronological and Mental Age Compared for Pupils of Grade 10B, Table VII and Table VIII

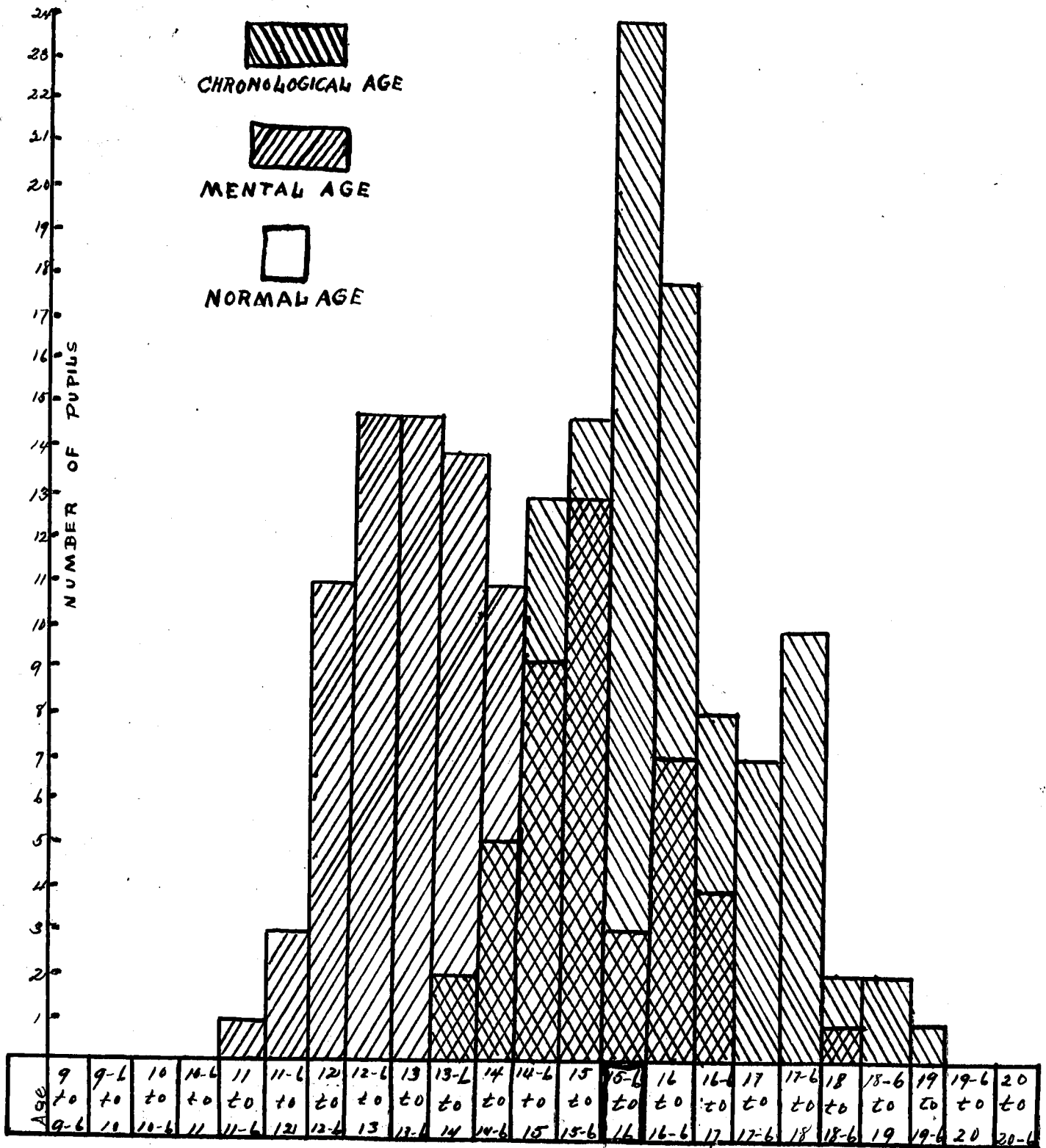


Figure 36

Chronological and Mental Age Compared for Pupils of Grade 10A, Table VII and Table VIII

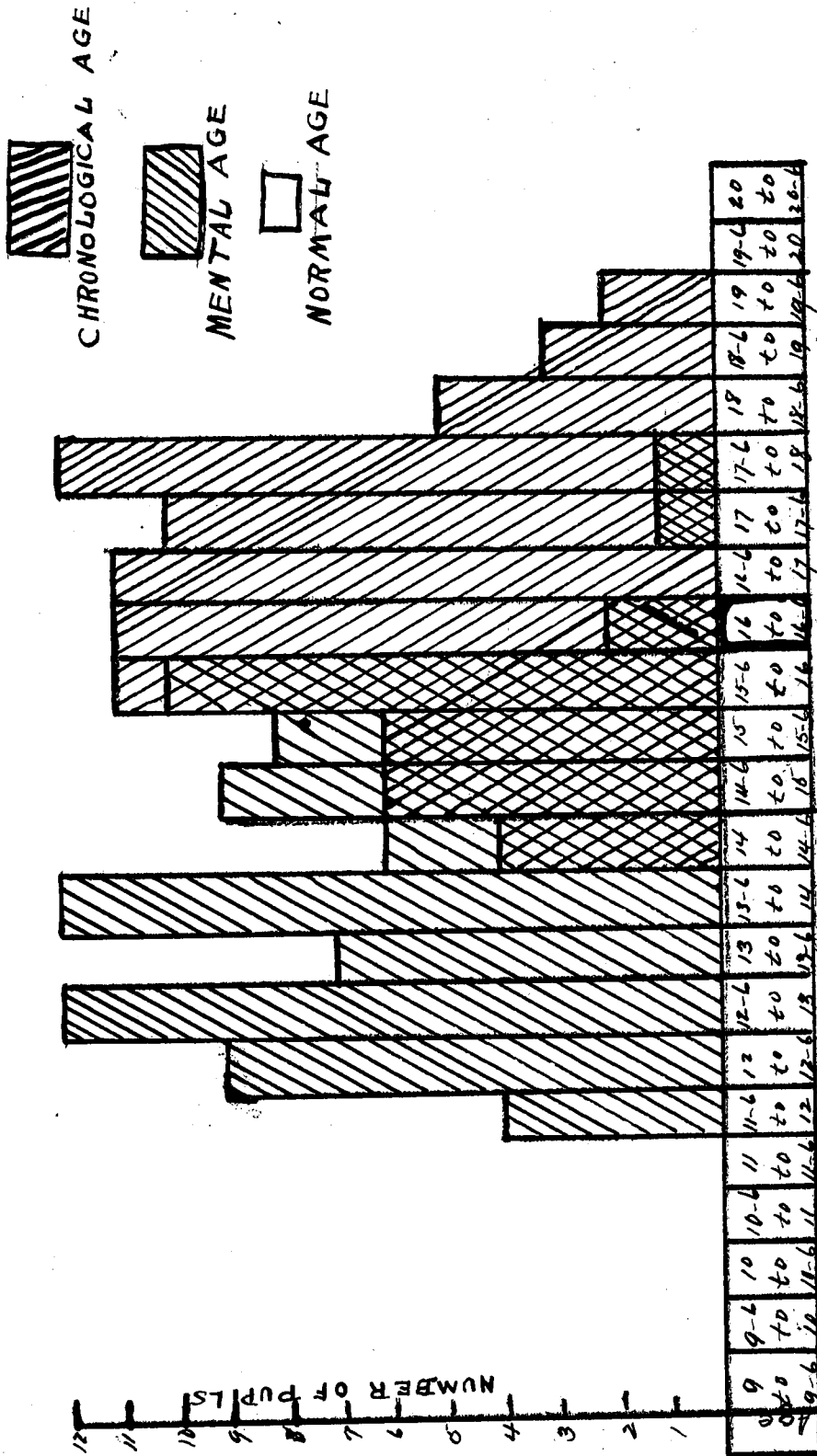


Figure 37

Chronological and Mental Age Compared For Pupils of Grade II E, Table VII and Table VIII

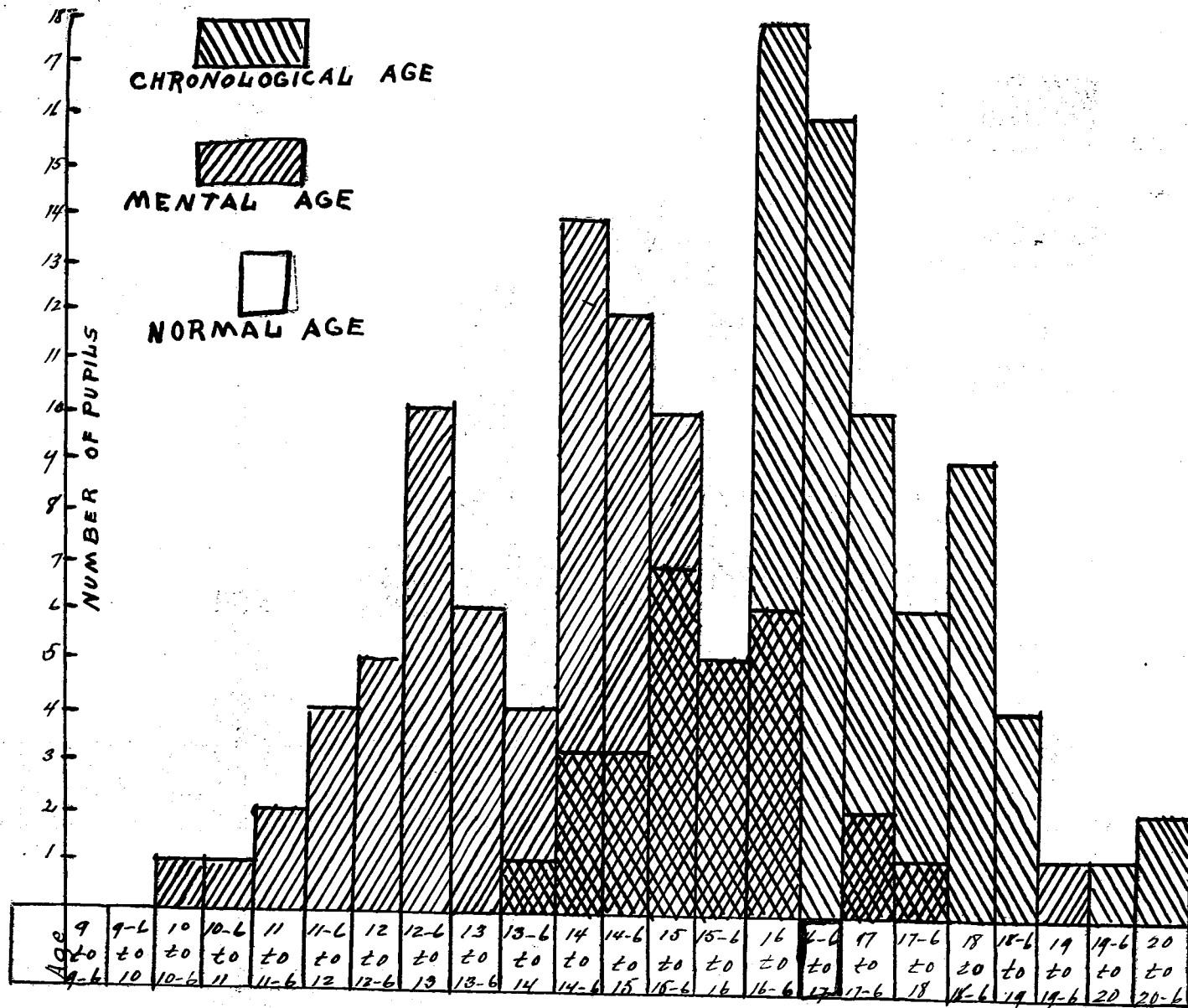


Figure 38

Chronological and Mental Age Compared for Pupils of Grade 11A, Table VII and Table VIII.

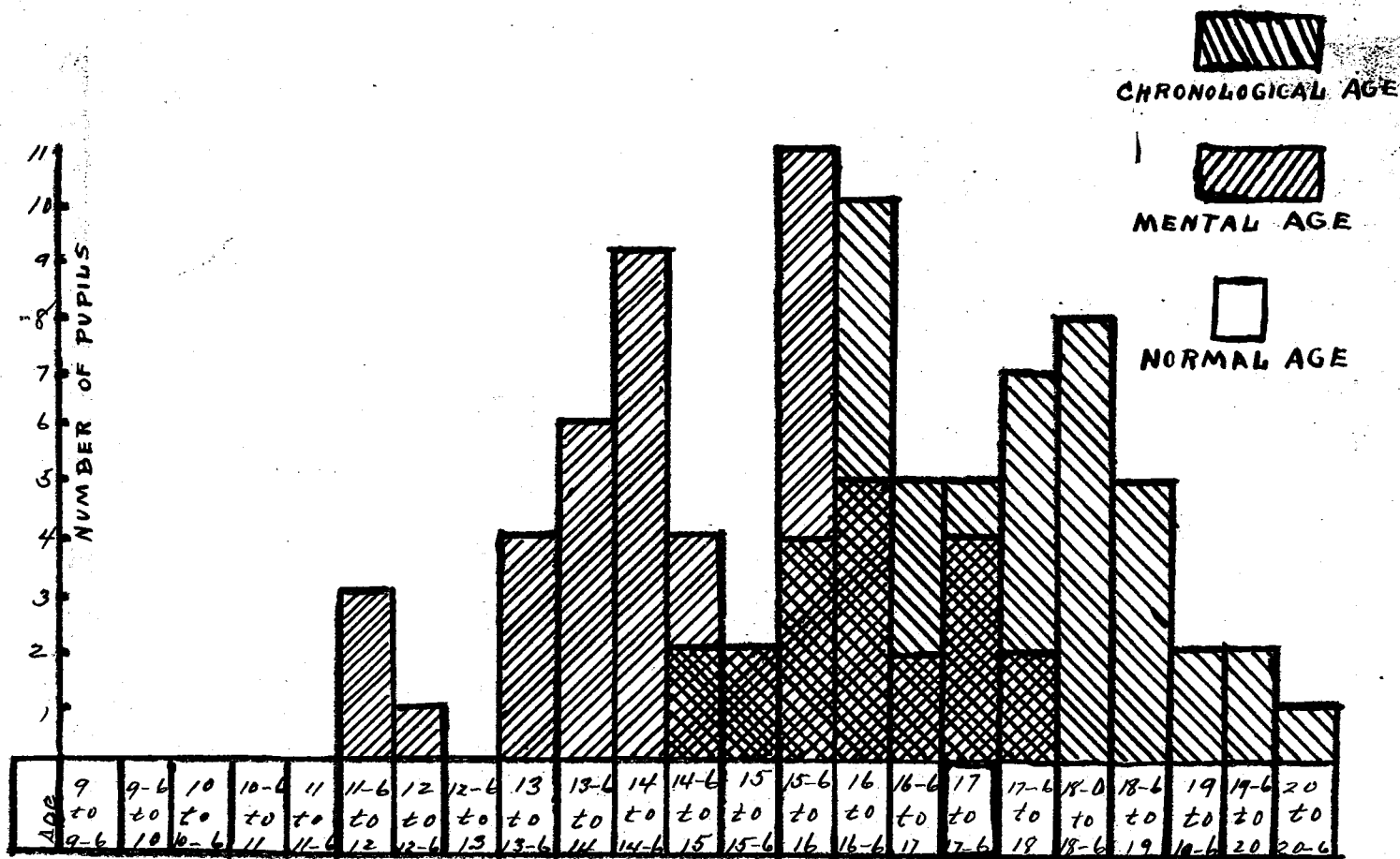


Figure 39

Chronological and Mental Age Compared For Pupils of Grade 12B, Table VII and Table VIII

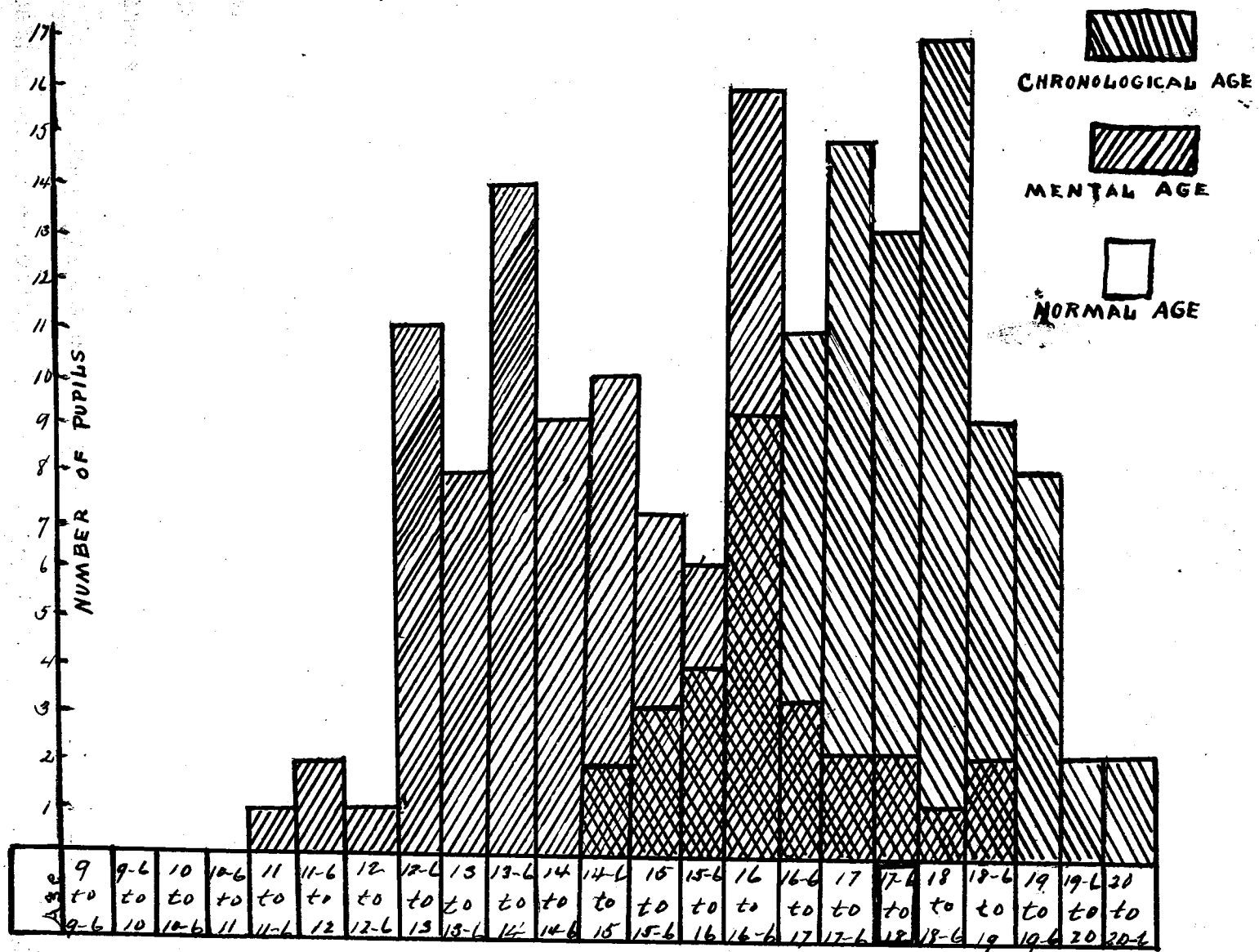


Figure 40

Chronological and Mental Age Compared for Pupils of Grade 12A, Table VII and Table VIII

## V. CONCLUSIONS

The data presented in this study seem to justify the following conclusions:

1. Conclusions based on the data showing the levels of intelligence between the A and B grades, ninth to twelfth grades, inclusive, in the colored high schools of Indiana:

a. The average level of intelligence of the pupils of the 9B grade is slightly higher than the average level of intelligence for the pupils of the 9A grade.

b. The average level of intelligence for the pupils of the 10B grade is lower than the average level of intelligence for the pupils of the 10A grade.

c. The average level of intelligence of the pupils of the 11B grade is lower than the average level of intelligence for the pupils of the 11A grade.

d. The average level of intelligence for the pupils of the 12B grade is slightly higher than the average level of intelligence for the pupils of the 12A grade.

e. Although there are differences in the average levels of intelligence between the A and B grades for the pupils of this study, there are no significant differences between these average levels of intelligence.

2. Conclusions based on the data showing the classification and sectioning of the pupils of this study:

a. There is evidently a great need for reclassifying the subjects of this study in each A and B grade into more nearly homogeneous groups.

b. Wherever the size of the class justifies it, the pupils of this study should be sectioned into more homogeneous groups.

3. Conclusions based on the data showing evidences of racial and individual differences:

a. There is probably some evidence of a quantitative difference in intelligence existing between the races when the scores for the subjects of this study are compared with the norms, but there is practically no evidence of a qualitative difference of intelligence existing between the races compared.

b. The wide range of the scores, chronological ages, mental ages and the I Q's for the subjects of this study for each A and B grade gives evidence of marked individual differences.



## VI. APPENDIX

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TABLE XIII

ILLUSTRATING THE CALCULATION OF THE AVERAGE, MEDIAN,  
 $P.E_{(av)}$ , S D, AND Q FROM THE TERMAN TEST SCORES OF 79 9B PUPILS

SCORES	MIDPOINT	F	D	F x D	F x D <sup>2</sup>
140-146	143.5	2	9	18	162
133-139	136.5	3	8	24	192
126-132	129.5	3	7	21	147
119-125	122.5	2	6	12	72
112-118	115.5	3	5	15	75
105-111	108.5	6	4	24	96
98-104	101.5	8	3	24	72
91-97	94.5	5	2	10	20
84-90	87.5	5	1	5 153	5
77-83	80.5	6	0		
70-76	73.5	2	-1	-2	2
63-69	66.5	10	-2	-20	40
56-62	59.5	4	-3	-12	36
49-55	52.5	11	-4	-44	176
42-48	45.5	4	-5	-20	100
35-41	38.5	4	-6	-24	144
28-34	31.5	1	-7	-7 -129	49
		<u>N. 79</u>			<u>T. 1388</u>

Mean-82.63  $\pm$  2.221  
 Median-81.08  
 Mode-52.5  
 Standard Deviation-29.26  
 Quartile Deviation-24.25

TABLE XIV

ILLUSTRATION THE CALCULATION OF THE AVERAGE, MEDIAN,  
 $P E_{(av)}$ , S D, AND Q FROM THE TERMAN TEST SCORES OF 101 9A PUPILS

SCORES	MIDPOINT	F	D	F x D	F x D <sup>2</sup>
168-174	171.5	1	10	10	100
161-167	164.5	1	9	9	81
154-160	157.5	0	8	0	0
147-153	150.5	0	7	0	0
140-146	143.5	2	6	12	72
133-139	136.5	2	5	10	50
126-132	129.5	4	4	16	64
119-125	122.5	2	3	6	18
112-118	115.5	1	2	2	4
105-111	108.5	0	1	0	0
98-104	101.5	12	0	0	0
91-97	94.5	11	-1	-11	11
84-90	87.5	11	-2	-22	44
77-83	80.5	6	-3	-18	54
70-76	73.5	9	-4	-36	144
63-69	66.5	7	-5	-35	175
56-62	59.5	9	-6	-54	324
49-55	52.5	11	-7	-77	539
42-48	45.5	6	-8	-48	384
35-41	38.5	4	-9	-36	324
28-34	31.5	2	-10	-20	200
		<u>N.101</u>		<u>-357</u>	<u>T.2588</u>

Mean-81.26 ± 1.952  
 Median-79.92  
 Mode-101.5  
 Standard Deviation-29.09  
 Quartile Deviation-20.05



TABLE XV

ILLUSTRATING THE CALCULATION OF THE AVERAGE, MEDIAN,  
 $P E_{(av)}$ , S D, AND Q FROM THE TERMAN TEST SCORES OF 89 10B PUPILS

SCORES	MIDPOINT	F	D	F x D	F x D <sup>2</sup>
147-153	150.5	1	8	8	64
140-146	143.5	2	7	14	98
133-139	136.5	2	6	12	72
126-132	129.5	2	5	10	50
119-125	122.5	2	4	8	32
112-118	115.5	4	3	12	36
105-111	108.5	7	2	14	28
98-104	101.5	4	1	4	4
91-97	94.5	11	0		
84-90	87.5	8	-1	-8	8
77-83	80.5	7	-2	-14	28
70-76	73.5	10	-3	-30	90
63-69	66.5	8	-4	-32	128
56-62	59.5	10	-5	-50	250
49-55	52.5	7	-6	-42	252
42-48	45.5	3	-7	-21	147
35-41	38.5	1	-8	-8	64
		<u>N.89</u>		<u>-205</u>	<u>T.1351</u>

Mean-84.83 ± 1.823  
 Median-82.5  
 Mode-94.5  
 Standard Deviation-25.50  
 Quartile Deviation-18.48

TABLE XVI

ILLUSTRATING THE CALCULATION OF THE AVERAGE, MEDIAN,  
 $P E_{(av)}$ , S D, AND Q FROM THE TERMAN TEST SCORES OF 107 10A PUPILS

SCORES	MIDPOINT	F	D	F x D	F x D <sup>2</sup>
175-181	178.5	1	11	11	121
168-174	171.5	0	10	0	0
161-167	164.5	0	9	0	0
154-160	157.5	4	8	32	256
147-153	150.5	1	7	7	49
140-146	143.5	3	6	18	108
133-139	136.5	3	5	15	75
126-132	129.5	3	4	12	48
119-125	122.5	6	3	18	54
112-118	115.5	9	2	18	36
105-111	108.5	6	1	6	6
98-104	101.5	12	0	0	0
91-97	94.5	5	-1	-5	5
84-90	87.5	10	-2	-20	40
77-83	80.5	12	-3	-36	108
70-76	73.5	6	-4	-24	96
63-69	66.5	8	-5	-40	200
56-62	59.5	6	-6	-36	216
49-55	52.5	8	-7	-56	392
42-48	45.5	3	-8	-24	192
35-41	38.5	1	-9	-9	81
		<u>N. 107</u>		<u>-250</u>	<u>T. 2083</u>

Mean-94.11  $\pm$  1.96

Median-90.65

Mode-101.5

Standard Deviation-29.99

Quartile Deviation-21.83

TABLE XVII

ILLUSTRATING THE CALCULATION OF THE AVERAGE, MEDIAN,  
 $P E_{(av)}$ , S D, AND Q FROM THE TERMAN TEST SCORES OF 81 11B PUPILS

SCORES	MIDPOINT	F	D	F x D	F x D <sup>2</sup>
175-181	178.5	1	12	12	144
168-174	171.5	0	11	0	0
161-167	164.5	1	10	10	100
154-160	157.5	0	9	0	0
147-153	150.5	0	8	0	0
140-146	143.5	0	7	0	0
133-139	136.5	3	6	18	108
126-132	129.5	5	5	25	125
119-125	122.5	10	4	40	160
112-118	115.5	3	3	9	27
105-111	108.5	8	2	16	32
98-104	101.5	3	1	3	3
91-97	94.5	9	0	0	0
84-90	87.5	6	-1	-6	6
77-83	80.5	5	-2	-10	20
70-76	73.5	5	-3	-15	45
63-69	66.5	7	-4	-28	112
56-62	59.5	5	-5	-25	125
49-55	52.5	6	-6	-36	216
42-48	45.5	3	-7	-21	147
35-41	38.5	1	-8	-8	64
		<u>N.81</u>		-149	<u>T.1434</u>

Mean-93.12 ± 2.205

Median-94.25

Mode-122.5

Standard Deviation-29.42

Quartile Deviation-25.08

TABLE XVIII

ILLUSTRATING THE CALCULATION OF THE AVERAGE, MEDIAN,  
 $P E_{(av)}$ , S D, AND Q FROM THE TERMAN TEST SCORES OF 85 IIA PUPILS

SCORES	MIDPOINT	F	D	F x D	F x D <sup>2</sup>
195-209	202.5	1	7	7	49
180-194	187.5	1	6	6	36
165-179	172.5	2	5	10	50
150-146	157.5	0	4	0	0
135-149	142.5	6	3	18	54
120-134	127.5	11	2	22	44
105-119	112.5	16	1	16	16
90-104	97.5	17	0	0	0
75-89	82.5	7	-1	-7	7
60-74	67.5	11	-2	-22	44
45-59	52.5	8	-3	-24	72
30-44	37.5	3	-4	-12	48
15-29	22.5	2	-5	-10	50
		<u>N.85</u>			<u>T.470</u>

Mean-98.21 ± 2.580

Median-100.15

Mode-97.5

Standard Deviation-35.26

Quartile Deviation-24.26

TABLE XIX

ILLUSTRATION THE CALCULATION OF THE AVERAGE, MEDIAN,  
 $P E_{(av)}$ , S D, AND Q FROM THE TERMAN TEST SCORES OF 53 12B PUPILS

SCORES	MIDPOINT	F	D	F x D	F x D <sup>2</sup>
175-181	178.5	2	11	22	242
168-174	171.5	0	10	0	0
161-167	164.5	3	9	27	243
154-160	157.5	2	8	16	128
147-153	150.5	1	7	7	49
140-146	143.5	1	6	6	36
133-139	136.5	9	5	45	225
126-132	129.5	5	4	20	80
119-125	122.5	2	3	6	18
112-118	115.5	2	2	4	8
105-111	108.5	3	1	3	3
98-104	101.5	6	0	0	0
91-97	94.5	5	-1	-5	5
84-90	87.5	5	-2	-10	20
77-83	80.5	3	-3	-9	27
70-76	73.5	0	-4	-0	0
63-69	66.5	0	-5	-0	0
56-62	59.5	1	-6	-6	36
49-55	52.5	0	-7	-0	0
42-48	45.5	3	-8	-24	192
		<u>N.53</u>		<u>-54</u>	<u>T.1312</u>

Mean-114.97  $\pm$  2.98

Median-113.75

Mode-136.5

Standard Deviation-32.12

Quartile Deviation-21.97

TABLE XX

ILLUSTRATING THE CALCULATION OF THE AVERAGE, MEDIAN,  
 $P E_{(av)}$ , S D, AND Q FROM THE TERMAN TEST SCORES OF 95 12A PUPILS

SCORES	MIDPOINT	F	D	F x D	F x D <sup>2</sup>
195-209	202.5	1	7	7	49
180-194	187.5	2	6	12	72
165-179	172.5	4	5	20	100
150-164	157.5	3	4	12	48
135-149	142.5	15	3	45	135
120-134	127.5	10	2	20	40
105-119	112.5	12	1	12	12
90-104	97.5	16	0	0	0
75-89	82.5	16	-1	-16	16
60-74	67.5	10	-2	-20	40
45-59	52.5	3	-3	-9	27
30-44	37.5	3	-4	-12	48
		N. 95			T. 587

Mean-108.71  $\pm$  2.461

Median-104.53

Mode-82.5

Mode-97.5

Standard Deviation-35.56

Quartile Deviation-26.99

TABLE XXI

ILLUSTRATING THE CALCULATION OF THE AVERAGE, MEDIAN,  
 $P E_{(av)}$ , S D , AND Q FROM THE I Q'S OF 79 9B GRADE PUPILS

SCORES	MIDPOINT	F	D	F x D	F x D <sup>2</sup>
125-129	127.5	1	8	8	64
120-125	122.5	0	7	0	0
115-119	117.5	6	6	36	216
110-114	112.5	3	5	15	75
105-109	107.5	6	4	24	96
100-104	102.5	8	3	24	72
95-99	97.5	10	2	20	40
90-94	92.5	10	1	10	10
85-89	87.5	13	0		
80-84	82.5	11	-1	-11	11
75-79	77.5	7	-2	-14	28
70-74	72.5	4	-3	-12	36
		<u>N.79</u>			<u>T.648</u>

Mean-93.83 ± .975

Median-92.25

Mode-87.5

Standard Deviation-12.85

Quartile Deviation- 9.34

TABLE XXII

TO ILLUSTRATE THE CALCULATION OF THE AVERAGE,  
 MEDIAN,  $P E_{(av)}$ , S D, AND Q FROM THE I Q'S OF 101 9A GRADE PUPILS

SCORES	MIDPOINT	F	D	F x D	F x D <sup>2</sup>
130-134	132.5	1	8	8	64
125-129	127.5	0	7	0	0
120-124	122.5	0	6	0	0
115-119	117.5	3	5	15	75
110-114	112.5	3	4	12	48
105-109	107.5	6	3	18	54
100-104	102.5	11	2	22	44
95-99	97.5	10	1	10	10
90-94	92.5	15	0		
85-89	87.5	21	-1	-21	21
80-84	82.5	13	-2	-26	52
75-79	77.5	12	-3	-36	108
70-74	72.5	5	-4	-20	80
65-69	67.5	1	-5	-5	25
		<u>N. 101</u>			<u>T. 581</u>

Mean-91.36  $\pm$  .801

Median-89.64

Mode-87.5

Standard Deviation-11.94

Quartile Deviation- 8.29



TABLE XXIII

TO ILLUSTRATE THE CALCULATION OF THE AVERAGE,  
 MEDIAN,  $P E_{(av)}$ , S D, AND Q FROM THE I Q'S OF 89 10B GRADE PUPILS

SCORES	MIDPOINT	F	D	F x D	F x D <sup>2</sup>
114-116	115.5	1	9	9	81
111-113	112.5	3	8	24	192
108-110	109.5	0	7	0	0
105-107	106.5	3	6	18	108
102-104	103.5	5	5	25	125
99-101	100.5	4	4	16	64
96-98	97.5	6	3	18	54
93-95	94.5	4	2	8	16
90-92	91.5	8	1	8 126	8
87-89	88.5	9	0	0	0
84-86	85.5	12	-1	-12	12
81-83	82.5	8	-2	-16	32
78-80	79.5	14	-3	-42	126
75-77	76.5	9	-4	-36	144
72-74	73.5	2	-5	-10	50
69-71	70.5	1	-6	-6 -122	36
		<u>T. 89</u>			<u>T. 1048</u>

Mean-88.64  $\pm$  .736

Median-86.63

Mode-79.5

Standard Deviation-10.29

Quartile Deviation- 7.81

TABLE XXIV

TO ILLUSTRATE THE CALCULATION OF THE AVERAGE,  
 MEDIAN,  $P E_{(av)}$ , S D, AND Q FROM THE I Q'S OF 107 10A GRADE PUPILS

SCORES	MIDPOINT	F	D	F x D	F x D <sup>2</sup>
123-125	124.5	1	11	11	121
120-122	121.5	0	10	0	0
117-119	118.5	0	9	0	0
114-116	115.5	1	8	8	64
111-113	112.5	0	7	0	0
108-110	109.5	3	6	18	108
105-107	106.5	3	5	15	75
102-104	103.5	7	4	28	112
99-101	100.5	8	3	24	72
96-98	97.5	7	2	14	28
93-95	94.5	11	1	11	11
90-92	91.5	15	0	0	0
87-89	88.5	13	-1	-13	13
84-86	85.5	13	-2	-26	52
81-83	82.5	7	-3	-21	63
78-80	79.5	7	-4	-28	112
75-77	76.5	7	-5	-35	175
72-74	73.5	4	-6	-24	144
		<u>N.107</u>		<u>T. 129</u>	<u>1150</u>

Mean-90.995 ± .640

Median-90.5

Mode-91.5

Standard Deviation-9.82

Quartile Deviation-6.49

TABLE XXV

TO ILLUSTRATE THE CALCULATION OF THE AVERAGE,  
 MEDIAN,  $P E_{(av)}$ , S D, AND Q FROM THE I Q'S OF 81 11B GRADE PUPILS

SCORES	MIDPOINT	F	D	F x D	F x D <sup>2</sup>
120-122	121.5	2	9	18	162
117-119	118.5	0	8	0	0
114-116	115.5	0	7	0	0
111-113	112.5	0	6	0	0
108-110	109.5	2	5	10	50
105-107	106.5	3	4	12	48
102-104	103.5	1	3	3	9
99-101	100.5	7	2	14	28
96-98	97.5	2	1	2	2
93-95	94.5	11	0	0	0
90-92	91.5	8	-1	-8	8
87-89	88.5	11	-2	-22	44
84-86	85.5	6	-3	-18	54
81-83	82.5	8	-4	-32	128
78-80	79.5	9	-5	-45	225
75-77	76.5	9	-6	-54	324
72-74	73.5	2	-7	-14	98
		<u>N.81</u>		<u>-193</u>	<u>T.1180</u>

Mean-89.54  $\pm$  .773

Median-88.35

Mode-94.5

Mode-88.5

Standard Deviation-10.32

Quartile Deviation- 7.01

TABLE XXVI

TO ILLUSTRATE THE CALCULATION OF THE AVERAGE,  
 MEDIAN,  $P E_{(av)}$ , S D, AND Q FROM THE I Q'S OF 85 11A GRADE PUPILS

SCORES	MIDPOINT	F	D	F x D	F x D <sup>2</sup>
120-124	122.5	1	6	6	36
115-119	117.5	0	5	0	0
110-114	112.5	1	4	4	16
105-109	107.5	3	3	9	27
100-104	102.5	10	2	20	40
95-99	97.5	11	1	11	11
90-94	92.5	24	0	0	0
85-89	87.5	8	-1	-8	8
80-84	82.5	12	-2	-24	48
75-79	77.5	6	-3	-18	54
70-74	72.5	6	-4	-24	96
65-69	67.5	2	-5	-10	50
60-64	62.5	0	-6	-0	0
55-59	57.5	1	-7	-7	49
		N. 85			T. 435

Mean-90.09 ± .808

Median-91.56

Mode-92.5

Standard Deviation-11.05

Quartile Deviation- 7.28

TABLE XXVII

TO ILLUSTRATE THE CALCULATION OF THE AVERAGE,  
 MEDIAN,  $P E_{(av)}$ , S D, AND Q FROM THE I Q'S OF 53 12B GRADE PUPILS

SCORES	MIDPOINT	F	D	F x D	F x D <sup>2</sup>
111-113	112.5	2	6	12	72
108-110	109.5	5	5	25	125
105-107	106.5	2	4	8	32
102-104	103.5	2	3	6	18
99-101	100.5	4	2	8	16
96-98	97.5	9	1	9	9
93-95	94.5	6	0	0	0
90-92	91.5	5	-1	-5	5
87-89	88.5	6	-2	-12	24
84-86	85.5	7	-3	-21	63
81-83	82.5	1	-4	-4	16
78-80	79.5	0	-5	-0	0
75-77	76.5	1	-6	-6	36
72-74	73.5	3	-7	-21	147
		<u>N. 53</u>		<u>-69</u>	<u>T. 563</u>

Mean-94.44  $\pm$  .906

Median-93.86

Mode-97.5

Standard Deviation-9.78

Quartile Deviation-6.34

TABLE XXVIII

TO ILLUSTRATE THE CALCULATION OF THE AVERAGE,  
 MEDIAN, P E<sub>(av)</sub>, S D, AND Q FROM THE I Q'S OF 95 12A GRADE PUPILS

SCORES	MIDPOINT	F	D	F x D	F x D <sup>2</sup>
125-129	127.5	1	7	7	49
120-124	122.5	1	6	6	36
115-119	117.5	3	5	15	75
110-114	112.5	1	4	4	16
105-109	107.5	3	3	9	27
100-104	102.5	16	2	32	64
95-99	97.5	10	1	10	10
90-94	92.5	23	0	0	0
85-89	87.5	8	-1	-8	8
80-84	82.5	14	-2	-28	56
75-79	77.5	9	-3	-27	81
70-74	72.5	4	-4	-16	64
65-69	67.5	2	-5	-10	50
		<u>N.95</u>			<u>T.536</u>

Mean-92.18 ± .822

Median-92.19

Mode-92.5

Standard Deviation-11.87

Quartile Deviation- 8.63

EVANSVILLE COLLEGE  
Evansville, Indiana

Department of  
Education and Psychology

March 16, 1932

Mr. Charles E. Rochelle,  
Lincoln High School  
Lincoln Avenue  
Evansville, Indiana

My dear Mr. Rochelle:

I hope my delay in answering your recent letter relative to your thesis has not caused you any annoyance. The undertaking seems to be a very commendable one and I think it one which has lots of possibilities for service to the colored schools of Indiana. I am sorry that I can not give you any real help in this matter. You have chosen a big task. If you intend any individual testing of intelligence you will undoubtedly need some help. I have some doubts as to the final reliability of many of our intelligence tests. Your study has raised in my mind two questions. First, are the norms for our intelligence tests applicable to colored pupils; second, are the tests themselves adapted wholly to the experiences of colored children?

It might help you to secure copies of comparable studies made in other schools. I must confess that I am unable to give you any specific references at this point. However, the recent list on research studies published by the Office of Education, Washington, D. C., by Illinois University, Yale University, and the Library Digest might prove of interest. I happen to have several copies of this material which I would be glad to lend you if you want it. I would be very glad to know of your study when you have completed it.

Yours truly,

(Signed) Homer L. Humke

Homer L. Humke  
Head of Department  
Education and Psychology

HLH/d

State of Indiana  
DEPARTMENT OF PUBLIC INSTRUCTION  
Administration Division  
George C. Cole, Superintendent  
J. Wm. Bosse, Director of Educational Reference  
Indianapolis

Feb. 2nd, 1932.

Mr. Charles E. Rochelle,  
Lincoln High School,  
Evansville, Indiana.

Dear Mr. Rochelle:-

I am quite interested in your prospective study of intelligence in the colored high schools in Indiana. I have hurriedly looked over your outline and feel that if you get the answers to the points mentioned, you will have a very dependable result. I would be pleased to hear further from you as the work progresses.

The United States Department of the Interior through the Office of Education is making a survey of secondary education for Negroes. It is termed Project W under the National Survey of Secondary Education and is under the direction of Ambrose Caliver. This project is to be unique in that it stresses status. The facts regarding negro education have never been assembled on a national scale. As far as possible, emphasis will be laid upon outstanding and noteworthy practices. A general check list of organization, school population, administration, supervision, curriculum, teachers and teaching problems, housing, and equipment will be made. Outstanding negro high schools will be visited for special study.

In addition to the above, the Department of the Interior has a bulletin, No. 17, 1931, which is a Bibliography of the Education of the Negro. I think this will be very valuable to you since it will enable you to select such studies as will fit in with your work. I note that no study of Indiana is included in the list.

The State Department of Public Instruction in Texas has just published a bulletin, No. 294, outlining the negro education in that state.

Under the auspices of the Association for the Study of Negro Life and History, a special Negro History Week beginning Feb. 7th is being urged as a national celebration. I am enclosing a copy of the pamphlet which came to this office.

Any further information which we might have on file will be cheerfully furnished you and we trust that when you have completed your findings that we may embody at least a part of it in the files of the Department.

Thanking you very cordially for bringing this to my attention and assuring you of my best wishes for unlimited success, I am,

Very truly yours,

(Signed) J. W. Bosse

J. W. Bosse  
Director of Educational Reference

JWB:F



PURDUE UNIVERSITY  
LaFayette, Indiana  
Division of Educational Reference

February 4, 1932.

Mr. Charles E. Rochelle,  
Manager, Lincoln High School  
Athletic Association,  
Evansville, Indiana.

My dear Mr. Rochelle:

I have your letter asking for suggestions concerning your proposed study of intelligence in the colored schools of Indiana.

Under your heading of the problem, I should like to make the following comments.

1. That the concept of intelligence quotient and mental age have recently been very much discussed in the literature. Experimental evidence concerning the modified ability of the I. Q. would need to be summarized and interpreted.

2. It is extremely doubtful that racial differences in mental ability can be established with scales and measuring instruments now available. See, Daniel, Robert P. "Basic Consideration for Valid Interpretation of Experimental Studies Pertaining to Racial Differences," J. Educ. Psych., January, 1932, pp. 15-27. This reference contains references to other literature to which you would need to become familiar.

3. On the question of homogeneously grouping, again you will find a wealth of material, the general trend of which will not be easy to interpret. See, for example, a bulletin of the Bureau of Educational Research of the University of Illinois entitled "Ten Years of Educational Research."

The study which you have outlined would doubtless be considered practical apart from the theoretical aspects upon which I have commented. I should be considerably interested in knowing the results of your study.

Sincerely yours,

(Signed) H. H. Remmers

H. H. Remmers  
Director

HHR:NEB

TEACHERS COLLEGE  
Columbia University  
New York

February 6, 1932

Mr. Charles E. Rochelle  
Lincoln High School Athletic Association  
Evansville, Indiana

My dear Mr. Rochelle:

Your letter has been handed to me for reply. It seems to me that the plan of your dissertation is well conceived. I think the questions which you raise are very interesting and I should be very glad to see your findings. I have tried to gather the pertinent bibliography on the subject of General Intelligence Among Colored Students in Chapter 20 of my book INTELLIGENCE TESTING, revised edition. My references to this topic which have appeared since may be found in my summaries on intelligence testing which appear every now and again in the Psychological Bulletin.

Yours very sincerely,

(Signed) R. Pintner

RP.AD

UNIVERSITY OF ILLINOIS  
College of Education  
Urbana

Bureau of Educational Research  
Office of Director

February 2, 1932

Mr. Charles E. Rochelle  
Lincoln High School Athletic Assoc.  
Evansville, Indiana

Dear Mr. Rochelle:

I am not familiar with the literature on the topic you mention in your recent letter. I am reasonably certain that the general intelligence of negro children has not been studied at all extensively. Some attention has been given to the matter in certain state surveys where a considerable proportion of negro children were involved. I believe the problem is worthy of further study. It will be, however, somewhat difficult to generalize from the data you collect because you probably cannot ascertain the extent to which the children tested are representative of the colored race in general. At the high school level a large proportion of the colored children have dropped out of school and it seems reasonable to expect that this elimination has resulted in a higher degree of selection than in the case of white children.

Very truly yours,

(Signed) Walter S. Monroe

Walter S. Monroe,  
Director

NC 149

THE UNIVERSITY OF CHICAGO  
The Department of Education

March 9, 1932

Mr. C. E. Rochelle  
Lincoln High School Athletic Ass'n.  
Evansville, Indiana

My dear Mr. Rochelle:

Your letter was referred to me. You will find the literature on racial differences referred to in the revised edition of the book by R. Pintner entitled, Intelligence Tests.

In his chapter on racial differences, he will refer you to other more detailed summaries of investigation in this field.

Your problem is a complicated one and it is a question how far you will be able to interpret the results so as to bear upon this problem.

Very truly yours,

(Signed) Frank N. Freeman

FNF:dp

Frank N. Freeman

State of Indiana  
BALL STATE TEACHERS COLLEGE  
Muncie

February 12, 1932

Mr. Charles E. Rochelle  
Lincoln High School  
Evansville, Indiana

My dear Mr. Rochelle:

We have your inquiry relative to our opinion of your thesis outline in your work as graduate student at Indiana State Teachers College at Terre Haute. There would appear to be an ethical question involved in undertaking to make any comments or criticisms on your thesis outline. If your committee and advisers at Terre Haute should recommend that you consult us, the matter would, of course be in a different light. We should be very reluctant to seem to be supplanting them in our advice to you.

Relative to your bibliography, I should suggest that through the library at Indiana State Teachers College, you can secure from the Library of Congress an exhaustive and satisfactory bibliography suited to your purposes. As for your problem, we might say that the validity of your study depends upon the validity of the Terman Group Test. The same is true as to its reliability. Grade norms for that test were found many years ago when, perhaps, brighter students were in high school than on the average now are there. That fact may make a comparison of the present colored students with these norms result in a disadvantage to the colored student. Perhaps there is already enough evidence to show that intelligence norms, so-called, are in part affected by home environment. Will not this factor operate unfavorably to the negro?

If you desire further suggestions from our men, I am sure you can secure them with the consent of your committee.

Yours very truly,  
(Signed) Ralph Noyer  
Ralph Noyer  
Dean of the College,  
Executive Officer of  
the Graduate Council

Ediphoned  
RN;EB