The Selection and Development of Superior Children

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Contents

THE SELECTION AND DEVELOPMENT OF SUPERIOR CHILDREN

Introduction

The rise of every system of universal public education has compelled the development of a system of grading and grouping shereby relatively large numbers of children of approximately the same pedagogical status may be handled in a single class; some such arrangement would seem to be inevitable if economy of time and money is to be secure. No one conversant with the situation, however, will contend that the pupils of a given grade in our ordinary public school classes are alike or even very similar to one another in range of information, in susceptibility to training, or in general intelligence. On the contrary, every one will admit that a considerable inequality exists in these respects, so that, while we gain by our system of grade grouping in one way, we lose by the same system in another way.

One of the most significant of modern tendencies in educational administration is revealed in the attempts which are being made to adjust the subject matter and methods of the school to the varying needs and capabilities of the children whom it is the purpose of the school to serve. Instead of holding to a rigid scheme of graduation, adjusted to the theoretical average or normal child, to which all children must be made to conform, many of those who are in charge of public school systems are coming to see the advisability of making a

more flexible arrangement and a more careful adjustment to the varying aptitudes and capacities of the members of the school population. In other words, there is going on something which has been termed the "psychologizing of school organization" as well as school instruction.

While it is true that changes are being made in our educational scheme, which has been organized to fit the average normal child, the movement to better adjust the school to the individual child, as well as to the needs of society, defecient, defective, and subnormal children are given first place, and little or almost nothing has been done to investigate, psychologically or in any other manner, the possession of superior mental endowment by certain children. As a result of the interest aroused in the education of children of inferior ability, there has developed a distinct pedagogy of subnormal children; into the details of which it is unnecessary to go.

Our problem concerns the children at the other end of the intellectual scale. There is a decided need for the conservation, the selection, and the development of superior children. While it cannot be denied that differentiation of instruction of those at the lower end of the scale of mental ability has proven advantageous, yet, to bring about a proper balance, provision should be made for children with superior mental powers. That superior children have a chance is important to the individual, to society, and besides so far as the

public school system is concerned is important economically. The lock step method of advancing children is costly in both time and money. Holmes says, "The discovery and fostering of superiority and the setting it to work in the interest of society should be one of the main aims of education in a republic".*

Studies such as Ayers' pointed out the loss occasioned by retardation. The superior pupils present an aspect of the whole problem of retardation. Dr. T. G. Bonser says that perhaps the worst type of retardation in the schools is withholding appropriate promotion from those pupils who are the most gifted, therefore of the most significance as social capital. Studies made in recent years go to show that at least ten per cent. of the school population is able to do from two to four times as much work as is done by the average pupil. It is more than possible that the pupil of average attainments would, on account of unusual zeal, be permitted to profit by the same system of organization that provides for the superior pupil. It is important in every respect that some means be provided for the care of this large class of gifted children.

Although the arguments for special provision for gifted children are coming more and more to be recognized as valid, and notwithstanding the general and growing interest

*Holmes, W.H. Promotion classes for Gifted Pupils. J. of Educ., 75:1912, 375-379

in the education of the superior child, we have in the pedagogy of very bright children a field as yet practically untouched. The following paragraph is quoted from the Report of the United States Commissioner of Education for 1915.

"The public is becoming interested in the supernormal child; the press is eager for information concerning this type of child; and the school is rapidly becoming aware that it has neglected this problem. Rapid advancement classes are held for these children in certain cities, in others extra work is given them in regular classes. But as yet few cities have had the courage to develop a program exactly fitted to their needs, nor have the psychological clinics said much regarding tests to discover the supernormal."*

Impetus has been given to the individual work of city school superintendents by certain psychologists who have given much attention to exceptional children, of which those with superior ability have received a small share. Some of the more important contributions have been made by H.H. Goddard*, L.M. Terman*, W. Stern*, and G.M. Whipple*to whom we owe the term gifted. It is within this neglected field of pedagogy of gifted children that this study aims to make its contribution.

*Report of the United States Commissioner of Education 1915, Vol. 1, p 40.

*Goddard, H.H., Two Thousand Normal Children Measured by the Binet Measuring Scale of Intelligence. Ped. Sem., 18:1911, 232-259.

*Terman, L.M. The Intelligence of School Children. Boston 1919

Since it is evident that differences of ability exist, the next question is can these superior pupils be discovered. I think there is no doubt but that we can do this. It is not best, if avoidable, to rely on one or two methods only. In fact, I believe that all should be employed until more reliable tests are available, or until we have proved beyond the possibility of a doubt that the tests can be always depended upon. Pedagogical progress was the sole criteria in the past, and grades and teacher's estimates was the basis of selection of superior pupils without consideration of the distribution of ages within the group. From this fact much of the work that has been done, such as special rooms, elastic promotion, and the like, is unscientific, and in which the element of chance plays a large part. Often the pupil who has nothing but industry and zeal to commend him, or who is chronologically several years older than the average age of the class is called the intellectual superior. At present, I believe, we should use standard physical and mental tests, the pedagogical record, and ancestry. No single one whould be regarded as conclusive evidence of either ability or defect. There is much additional material needed for intelligent educational guidance of the individual and this should be collected by the adviser. Hall-Quest in Supervised Study, pages 55-57, has a comprehensive but by no means final list of what this information may be.

Chapter 1

Flexible Advancement Plans

It is easier to prove that individual differences should be provided for, and that gifted children should be given a chance than it is to provide for the differences. Many efforts have been made in various localities toward the solution of the problem of making school promotions fit different intellectual levels - ungraded classes, special classes, more rapid promotion through special coaching, and through systems of flexible grading, methods of dividing grades into groups according to intellectual ability and progressing at different rates, special rooms, and in some cases special buildings for selected pupils.

The different provisions for flexible grading which have been or are now in vogue, reports of special rooms or classes, methods of selection and results, have been so well described by others as to render unnecessary a lengthy or detailed discussion of them here. However, for their historical value and as a means of orientation a resume of some of the plans is indespensible. Too, it is from the pioneer work of these first methods that interest has been aroused in special provision for superior pupils.

It is to Dr. W. T. Harris, Superintendent of the St. Louis Schools from 1867 to 1880 and United States Commissioner of Education from 1889 to 1906, that credit is due for the first comprehensive plan to provide for pupils of superior

Intelligence through the introduction of flexibility into the classification of the graded school. In his reports of 1874 the plan is given in considerable detail. His scheme is based upon a short interval plan of promotion, at least in the lower grades. The report of 1874 may be summarized as follows: Pupils differ widely in ability; unless held to maximum work, bright pupils acquire habits of carelessness; the attendence of bright pupils is more regular than of others; by promoting every ten weeks, the upper grades will not be depleted by withdrawals; rapid promotion lends encouragement to all pupils.

A plan very similar to the one given above is known as the Elizabeth Plan, Elizabeth, New Jersey, which was advocated by Superintendent W. J. Shearer. The plan consists in grouping together in separate rooms those pupils who are of about equal ability and attainments. Each grade is then divided into three or four parts, each section being allowed to do as much work as it can and to advance as rapidly as possible. As soon as pupils show they are capable of doing the work of advanced sections, they are promoted without examinations.

*Shearer, W.J. The grading of Schools, 1898.

*Holmes, W.H. The St. Louis Plan. J. of Educ. Apr. 4, 1912, p.380.

*Holmes, W.H. School Organization and the Individual Child, 1912.

*Van Sickle, J.H., Witmer, L., and Ayers, L. P. Provisions for Exceptional Children in Public Schools. United States Bureau of Education, Bulletin 1911, No. 14, p.39

A plan quite similar in nature to the Elizabeth Plan is the Santa Barbara Concentric Plan. In this plan children of each grade are divided into three groups so that each grade has an A, B, and C section. The sections do the work of the grades concentrically. So far as the fundamental principles are concerned, the work for each section is the same, but the B pupils do more extensive work than the C pupils and the A more than the B pupils. When the pupils of any grade are ready for the work of the next grade, they are transferred to the C section of the grade, while there may be constant transfer from to section to section within the grade.

One of the most widely known plans and the one oftenest described in text books on school administration is the Cambridge Double Track Plan, which was evolved and in use for some time in Cambridge Massachusetts, but has been replaced by a some what different plan. It was applied to the last six years of a nine year course of study. Running parallel to the regular six year course was a shorter course by which bright pupils might finish the work in four years. These four sections were called the A, B, C, and D grades. All the pupils of the fourth grade begin the work of the grade together, but as soon as possible were separated into a slow and fast division, the slow division being the regular fourth grade and the fast division

*Burk, Caroline F. Promotion of Bright and Slow Pupils. Ed. Review, 19: 1900, p. 296-302.

Holmes, W.H. School Organization and the Individual Child, 1912.

the A grade. The fast division did the work of the fourth grade and about half the fifth in one year. A point of contact between the groups is found at the beginning of the seventh grade when transferrence may be made from one group to the other.

The new Cambridge plan was adopted in 1910 in which the basal course is eight years, each year with the exception of the eight being divided into three grades or parts. The last year comprises only two grades which makes a total of twenty-three grades. The regular course is paralleled by one which covers the same subject matter in six years, the work being divided into seventeen grades. The work assigned to each grade is about a fourth more than in the regular course. Transfers may be made from one course to the other at any time with little loss to the pupil.

The Le Mars, Iowa plan is very similar to the old Cambridge plan except that the Le Mars plan is applied to nine grades instead of only the last six grades. The courses are made out covering the same amount of ground but varying in the time required to do the work; one requiring six years, the other nine years. The courses run parallel and are so articulated that they come together at different points along the line, allowing for a transfer of pupils without loss of time. Thus the points of contact are the beginning of the fourth and seventh grades. A pupil may complete the course in six, seven, eight,

*Holmes, W.H. School Organization and the Individual Child, 1912

or nine years.

In certain of the larger cities there has been in use for several years the Group System or Large School Plan. The plan may be carried out in one of two ways, which are designated the Constant Group and the Shifting Group. In the Constant Group the membership remains fixed for a definite period, and promotion from group to group occurs only at stated times. In each class there are usually two or three groups, and divisions in nearly all the subjects of the course of study are made. A pupil may pass to a higher group in one or more subjects at a time. In the Shifting Group the teacher may have as many divisions in a subject as she deems advisable and in as many subjects as she chooses. The pupils need not be grouped in all subjects, nor is the membership of a group constant. Rapid promotion through the grades is not the main aim of the shifting group.

A plan devised by Superintendent P. W. Search, Pueblo, Colorado, known as the Pueblo Plan, is given quite completely in his book of 1901; An Ideal School. The Teachers assign work, give assistance, and require recitations according to the needs of the child. The children are occasionally grouped, but whether a child is included in a group depends on his ability, the best pupils being excused from recitations but held responsible for the work of the whole class. No means are employed to tell whether the best pupils are superior mentally or whether

*McDonald, R.A.F. Adjustment of School Organization to Various Population Groups. Teachers College, Columbia University, Contributions to Education, No. 75

they owe the exemption from recitation mainly to effort.

In adition to the flexible grading plans that have been discussed, we find among other arrangements that makes special provision for gifted children special classes, which have been definitely established for the particular purpose of meeting the need of children of marked ability. It is seen that a number of plans have developed a close approximation to the separate class. In 1900 Rapid Advancement classes were organized in one of the New York City schools which concerned themselves exclusively with bright pupils. The special class is allowed to do a year and a half's work in one year. About two per cent. of the pupils in the elementary grades are chosen for the special class.

The first really definite provision for the acceleration of capable pupils in separate classes originated at Worcester, Massachusetts in September, 1901, when preparatory schools were opened for the purpose of helping the able child. The pupils are selected from the different schools of the city and gathered at convenient centers to receive instruction from teachers of more than ordinary ability. The pupils are selected from the eight and nineth grades - the seventh was formally included -, and in addition to the regular work of the grammar frades, work is given in English, French, German, and Latin. After two years work in these preparatory schools the pupils enter without having slighted his grade work.

*Worcester, Massachusetts, School Reports. 1902

Through the efforts of Superintendent J.H. Van Sickle, Baltimore, Maryland, special classes were organized known as "preparatory centers" which were quite similar to the Worcester preparatory schools. There are three such centers now all organized on the departmental plan. In the selection of the pupils, a circular is sent from the superintendent's office to each elementary school principle, asking that the sixth grade teachers make out a card for each pupil, showing attendence, studiousness, application, ability, and the likelihood of success in the work of the preparatory center. From these cards selections are made. A letter is then sent to the parents of the pupils selected that the arrangements may be understood by them. The regular studies of the grades are continued, but Latin, German, or French are offered as additional studies of high school grade, together with advanced work in English. The credit received in the preparatory center, enables the pupils to graduate from the high school in three years.

In 1914 opportunity classes for accelerated pupils were formed at Louisville, Kentucky, which made it possible for gifted pupils to accomplish two years work in one year. In 1917 there was two special classes for bright pupils, but which differed from each other in organization and purpose. One class composed of forty pupils of grades 4A and 4B were gathered from the several schools of the city and remained in the class but half a year. The aim of this class was to gain half a year in the elementary course, by covering the year's work in one

semester. The pupils were then returned to their own school to take up the work of the next higher grade. Many of the pupils of this class were chronologically retarded but were not classed as dull.

The other class, known as the opportunity class, was located and the Louisville Normal School, and contained twenty pupils, evenly divided between the sexes. In this class more careful selection was made in that each candidate considered was tested with the Stanford Revision of the Binet-Simon Scale, and no pupil with an I. Q. less than 120 was accepted. The aim in this room was not to gain time but to furnish an abundance of cultural material and to give a greatly enriched course. German was taught in addition to the regular subjects of the fourth grade.

Many plans similar in most details have been tried by different cities. Many provied ungraded or mixed rooms in which the misfits of the school system are gathered. As a rule three types of pupils are found in these rooms: (1) exceptionally strong pupils who are trying to gain time in the course; (2) pupils who are making up work due to any cause; and (3) pupils who are dull or slow in any or all studies. The instruction in these rooms is individual and approximates the Batavia Plan.

*Henry, T. S. Classroom Problems in the Education of Gifted Children. The Nineteenth Year Book, 1920

*Race, Henrietta. A Study of a Class of Children of Superior Intelligence. J. of Ed. Psych., 9: Feb. 1919, p. 91-98

The problem in this study is to select pupils of superior mental ability; to discover whether there is a high relationship existing between mental and physical development; and to suggest a plan for the fullest development of superior ability in an ordinary school organization.

The information on which this study is based was gathered from the following sources: (1) Mental and physical tests given by the writer to pupils of grades seven to twelve of the Eugene public schools; (2) the teachers and parents of the selected pupils; (3) their school records; and (4) from general and special literature.

In using the term superior child the Wunderkind and pathological child are excluded from the discussion. The "freak" cannot be properly cared for in the public schools and should be excluded. Reference in this discussion is to the normal child of superior ability: normal being used to denote that there is nearly a perfect correlation of superior abilities. With this definition in mind one notes that the superior child is more nearly normal than the average child. It is the child of general and superior abilities that is here meant.

Chapter 11

Method of Selection and Results

In the selection of pupils for special study of superior intelligence or for special advantages in school organization, it is unsafe, unsatisfactory, and unscientific to rely on pedagogical grades or estimate of teachers as the sole criteria. The unreliability of this method was met by Whipple in the selection of pupils for the special experimental room at Urbana, Illinois, and by Terman in the selection of gifted children in the schools of California.

In order to avoid this difficulty, and to make the selection of the pupils included in this study as scientifically as possible, it was determined to make a uniform test the basis of selection. Following this plan a group test was given to the seventh and eighth grades of the Gary school, to the seventh and eighth grades of the Junior High School, and to the four grades of the Eugene High School. The distribution of the pupils tested is given by ages and grades on the following page.

The median and model grade is the nineth; the median age falls in the fifteenth year; and the model age is sixteen. The median and model ages for each grade is shown in the following table.

*Whipple, G.M., Classes for Gifted Children, 1919. 151pp.
Terman, L.M., The Intelligence of School Children, Boston 1919.

Age grade distribution of 776 students of the Eugene public schools.

Age	Grade	7	8	9	10	11	12	Total
11		11	2					13
12		43	9	5				57
13		38	38	17	2			95
14		28	40	56	14	1		139
15		7	19	53	37	8		124
16		4	9	33	44	40	12	141
17				14	20	36	20	91
18			1	7	8	19	33	68
19				2	4	6	18	30
20				1	1	4	5	11
21					1		2	3
22						1	2	3
23				1				1
Total		131	118	189	131	115	92	776

Median age for each grade:

Grade	7	8	9	10	11	12
Age	13	14	15	16	17	18

Model age for each grade:

Grade	7	8	9	10	11	12
Age	12	14	14	16	16	18

No classification of pupils by sex or buildings attended is given in the age grade distribution.

As a basis of selection the Alpha group test was given to all the pupils represented in the table of age grade distribution. In the High School and the Junior High School, the students assemble in roll rooms, from twenty to one hundred students in each room. Owing to this arrangement, the teachers were asked to assist in giving the test. Some days before the tests were made, the writer met with the teachers, gave each of them a printed copy of directions for giving the test, and instructed them carefully in the procedure. The tests were given to all the students of the high school at the same hour in the morning, and were collected immediately after the completion of the test. At the Junior High School, assistance in giving the test was rendered by two teachers, each having a division of the seventh grade. No assistance was given in testing the pupils of the Gary school.

After scoring the tests, the results were arranged in age order as indicated in the table previously referred to

and ten per cent. in whole number of the highest grades in each age group were selected for further testing. The range of ages and grades is shown in the following table.

Age	Grade 7	8	9	10	11	12	Total
11	2						2
12		1	1				2
13	2	2	2	2			8
14		1	4	3			8
15			3	3	3		9
16				3	4	2	9
17					2	7	9
18						1	1
19					1	1	2
20				1			1
Total	4	4	10	12	10	11	51

All ages over twenty were omitted, but as there was only seven cases the number is of little significance. The range of scores in the seventy-five cases selected from the Alpha test is from 110 to 195 out of a possible score of 212. The median score for the cases represented is 152.

As a check on the Alpha test, and as a second elimination test, seventy-one of the seventy-five cases represented in the above table were retested by the Otis group intelligence test. Five cases were rejected on the basis of this test because of poor showing in comparison with the Alpha test. The range of scores for the students taking the Otis test is from 135 to

211, out of a possible score of 230. The median score is 172.

The sixty-six cases remaining from the two elimination tests, were sent questionaires asking for information concerning their personal and family history, and with the exception of three cases were given the Stanford Revision of the Binet-simon Intelligence Test. Of the three cases, one did not wish to be included in the study, and two were not examined because of insufficient time before the closing of school. The Stanford tests were given by students of the University who were especially trained by Dr. DeBusk for this kind of work. Nine of the remaining cases were rejected because of low Intelligence Quotients, and four were rejected because the questionaires were not returned. This study, then, will consist of fifty-one cases, twenty-eight of whom are girls, and twenty-three boys. The age and grade range for each group is represented below.

Girls:

Age	Grade 7	8	9	10	11	12	Total
11	2						2
12		1	1				2
13	1	2	1	2			6
14			2	1			3
15			1		2		3
16				1	1	1	3
17					2	5	7
18						1	1
19							
20				1			1
Total	3	3	5	5	5	7	28

Boys:

Age	Grade 7	8	9	10	11	12	Total
13	1		1				2
14		1	2	2			5
15			2	3	1		6
16				2	3	1	6
17						2	2
18							
19					1	1	2
Total	1	2	5	7	5	4	23

The median age for the girls is in the fifteenth year; the average age, months included, is 15.2 years. The median age for boys is also in the fifteenth year, while the average age, months included, is 15.95 years. The tenth grade is the median for each group.

In range, the score for the girls in the Alpha test is from 110 to 172, the median being 150. The average is 147. The range of scores for the boys in the Alpha test is from 125 to 195, the median being 154, and the average score 155.4. The highest possible score obtainable in the Alpha test is 212.

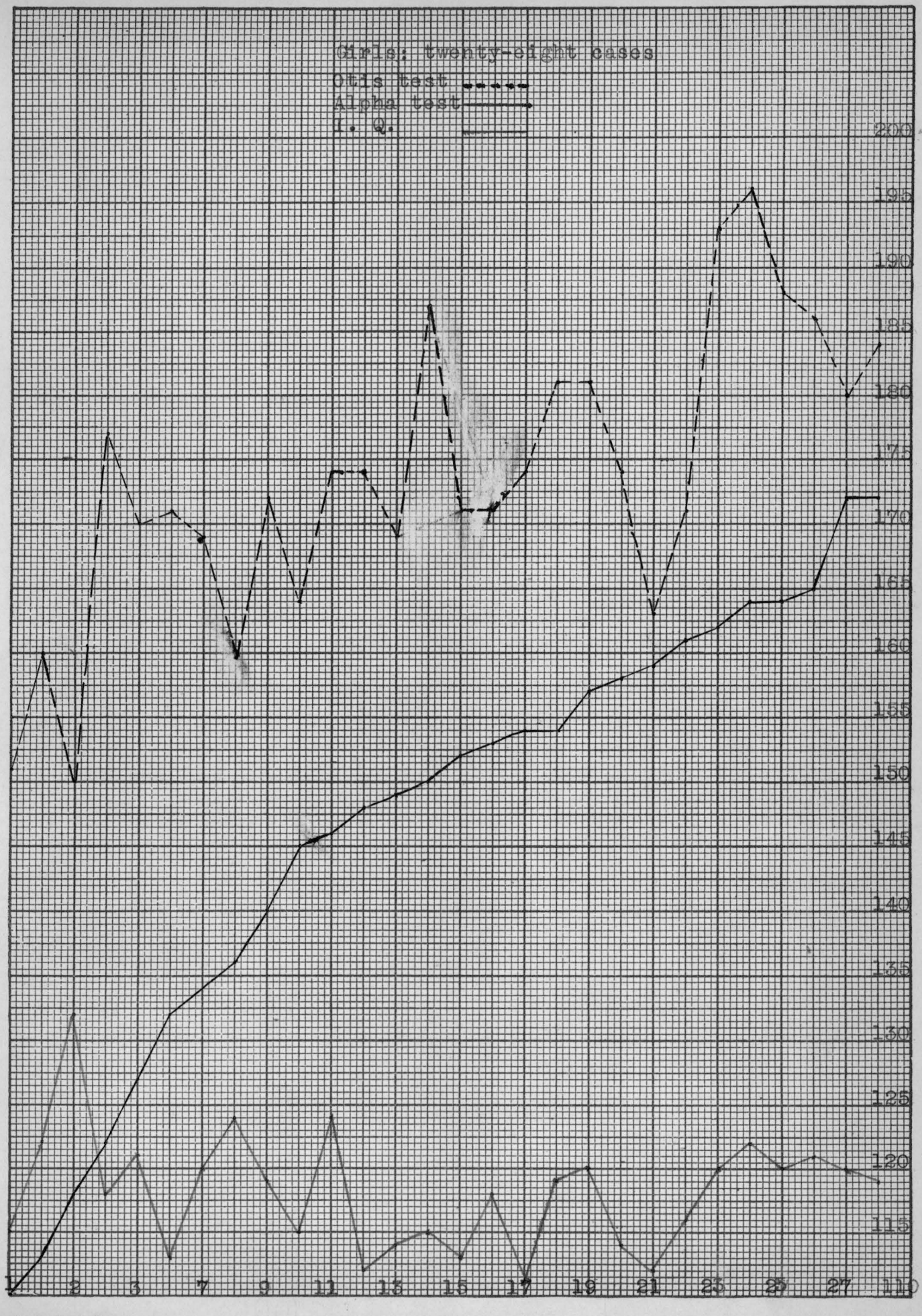
In the Otis test, the range of scores is very much higher than in the Alpha test. The score for the girls extends from 150 to 196; the median is 172; and the average 173.5. The range of scores for boys extends from 156 to 211; the median is 176; and the average score is 176.3. The highest score obtainable in the Otis test is 230. The median gain for each group is the same, twenty-two points.

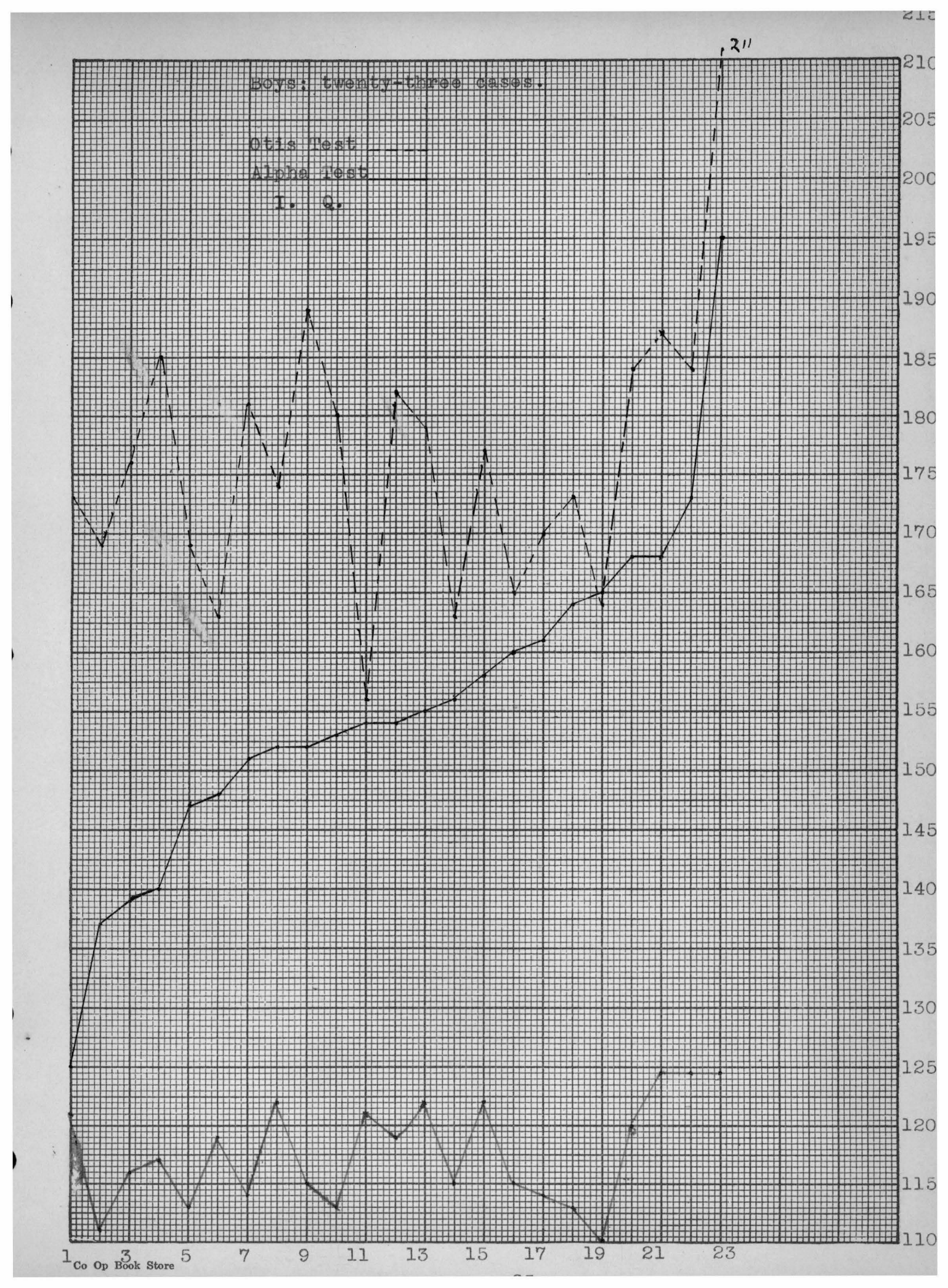
No comparative tables are available of the tests that were given. While the Alpha test was given to a large number of soldiers, it was used mainly as a basis of classification and to indicate those to whom a more careful individual test should be given. Too, the results from the army examinations are of an unselected group, while the group represented here has been selected through several years of school work. More recent studies that have been made, using the Alpha test for diagnostic purposes, classify the results by letter and not by range or median score. The Otis test has not been standardized nor norms worked out, and was used in this study only as a check on the Alpha test.

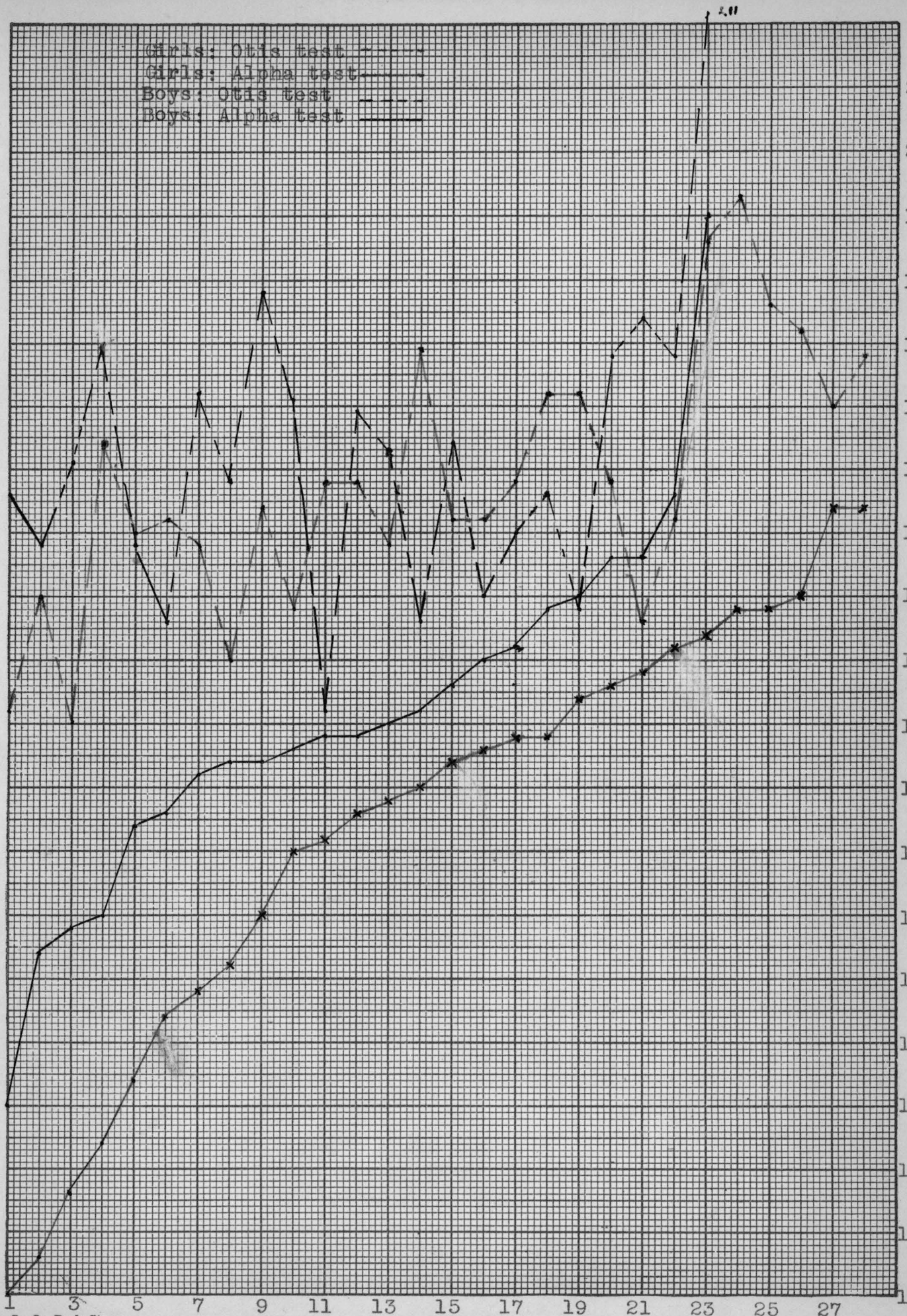
The Stanford Revision has been widely used, the testing in the main having been confined to children under fourteen years of age, and being a very reliable indication of ability for the younger children. In the study of H. H. Caldwell of college students, neither Intelligence Quotients nor mental ages were given; but the results were confined to correlations with other tests, teacher's estimates of intelligence, and pedagogical standing.

Graphs are included in this study showing the Intelligence Quotient, the Alpha score, and the Otis score for both boys and girls, and a comparative graph of boys and girls showing the Alpha and Otis scores. In both the Alpha

*Caldwell, H.H. Adult Tests of the Stanford Revision Applied to College Students. J. of Ed. Psych. Dec. 1919, 477-487.







and Otis tests, the boys have the higher score, excelling the girls in arithmetical reasoning, number completion test, and range of information. A much higher range of scores is shown by both boys and girls in the Otis than in the Alpha test. Some of the factors that may account in part for the higher standing is learning, greater effort, a higher possible score, and perhaps easier material in some of the tests. Comparative graphs are not given of the Intelligence Quotients because the standing of the two groups is so nearly equal. In Intelligence Quotient, the girls exceed the boys by about two points, no doubt due to the larger number of girls of a relatively young age.

The Intelligence Quoitients do not run as high or show as wide a range of scores as the other tests. This is due very largely to the limited range of the test for the older students. Besides the test does not show as high an Intelligence Quotient for an older student showing exactly the same mental acceleration as it does for a younger one. As an example: A child six years of age chronologically with a mental age of nineyyears will have an Intelligence Quotient of 150; while a student sixteen years of age with a mental age of nineteen will have an Intelligence Quotient of only 118. In each case the difference between chronological and mental age is three years.

Evidently in evaluating the returns from the Stanford Revision tests of older students, consideration must be given

to mental acceleration as shown by the mental age as well as to the Intelligence Quotient. In any case where a student is as much as sixteen years of age and has successfully passed every test (nineteen years six months mental age) the highest possible Intelligence Quotient that he can make is only 122. Quoting from a study made by Helen Hubbert Caldwell of college students, "The Intelligence Quotients for adults have less meaning than those for children, and there should be some means of denoting higher adult I. Q's."

In the report of Dr. Theodore S. Henry of the special room for gifted children at Urbana, Illinois, he states, "Children with an Intelligence Quotient of 115 or more should be given special opportunity." However, as shown above, an Intelligence Quotient of 115 for children of the age usually found in the fifth and sixth grades is not the same as when applied to older students. Therefore, in this study of upper grade and high school students, an Intelligence Quotient of 110 has been taken as the lower limit.

The range of the Intelligence Quotients for girls is from 1111 to 132, and for boys from 110 to 122. The median score for girls is 119 and the average 118; the median score for boys is 117, and the average 117.3.

However, more startling results are shown when the comparison is made between the chronological and mental ages, which is made between the chronological and mental ages, which is the true basis for evaluating the intelligence of

*Helen Hubbart Caldwell, Adult Tests of the Stanford Revision Applied to College Students. J. of Ed. Psych. Dec. 1919, p. 477-487

Henry, T.S., Classroom Problems in the Education of Gifted Children. Bloomington, Illinois, 1920

Below is given a table showing the chronological age, mental age, Intelligence Quotient, score in Alpha test, and the score in the Otis test for each individual.

Girls

Chronological age	Mental age	I.Q.	Alpha Test	Otis Test
11-7	13-4	115	110	151
11-9	15-7	132	118	150
12-6	15-9	122	113	160
12-11	15-5	119	140	172
13-8	16-7	121	127	170
13-9	16-6	120	134	169
13-9	17-2	124	146	174
13-10	16-4	118	122	177
13-11	15-8	112	148	174
13-11	17-7	124	136	160
14-10	17-11	121	165	186
14-11	17-2	115	145	164
14-11	16-11	113	132	171
15-5	17-2	111	154	174
15-6	17-3	115	150	187
15-10	18	114	158	174
16	17-1	112	159	163
16-1	19-1	120	172	180
16-8	18-6	119	154	181
17	19-3	120	164	188
17-1	19	120	162	193
17-2	18-4	114	149	168
17-10	19	120	157	181
17-10	18-6	116	161	171
17-11	18-7	118	153	171
17-11	18-2	113	152	171
18	19-6	122	164	196
20-4	19	119	172	184

Boys:

Chronological age	Mental age	I. Q.	Alpha Test	Otis Test
13-8	16-8	121	154	156
13-10	16-9	121	125	173
14-3	17-7	122	155	179
14-9	16-9	113	153	180
14-9	16-4	116	139	176
14-10	17-3	117	140	185
14-11	18	120	168	184
15-4	17-7	114	161	170
15-5	17-3	115	160-	165
15-5	17-2	111	137	169
15-6	18-2	119	148	163
15-8	18	116	152	189
15-11	18-2	114	151	181
16-3	18-1	113	147	169
16-5	19	119	154	182
16-7	18-6	115	156	163
16-8	19-6	122	173	184
16-9	19-6	122	195	211
17-1	17-6	110	165	164
17-8	19-6	122	152	174
17-9	19-5	121	168	187
19-3	18-1	113	164	173
19-6	19-6	122	158	177

older students. The range in chronological ages for girls is from eleven years seven months to twenty years four months, the median falling in the fifteenth year and the average being 15.2 years. The range in mental ages is from 13-1 to 19-6; the median is 17-6, the average being the same. The range of chronological ages for the boys is from 13-6 to 19-6, the median being 15-6 and the average 15.95 years. The mental age range is from 16-4 to 19-6, the median and average being eighteen years. It is seen that the mental acceleration either from median or average age is over two years for the entire group. While the Intelligence Quotient shown by a mental acceleration of two years at this age is very low, it would mean an Intelligence Quotient of 150 for a child four years of age with the same acceleration.

Taking the above factors into consideration we may assume that acceleration shown by mental age would be a fairer basis than the Intelligence Quotient for judging the intelligence of older students. Too, if the Alpha test, which was used only as a basis of selection, was translated into Intelligence Quotients, a much higher degree of acceleration would be found than that given by the Stanford Revision. In the table of equivalent scores given in the army manual, an Alpha score of 135 to 212 is equivalent to a mental age of from eighteen to nineteen and one half years, and those attaining this score are classified as near genius or genius type. Likewise, an Alpha score of 105 to 134 is equivalent to a mental age of sixteen and one half to seventeen and one half years, and those attaining a score in this range are classified very superior intelligence.

In the fifty-one cases given here, only eight fall below a score of 135 in the Alpha test, and all of the cases are above a score of 105. On this basis all of the cases should rank as very superior intelligence.

From the questionaire information was gathered as to whether evidence of superiority had been noticed by the parents, age when it was first manifested, favorite subject, special interest, and future or life aim. The teachers rated the students as to intelligence and social standing, using the terms very superior, superior, averaged, and inferior to denote intelligence. In conduct the students were rated as excellent, good,and fair. From the school records, the pedagogical standing was obtained for the first semester of this year.

In reply to whether evidence of superiority had been noticed, forty-three answered affirmatively and eight negatively. In the cases reported the age at which superiority was first evident ranged from one to ten years, the majority of cases being from three to five years.

The choice of subjects shows a wide range of interests though clustering most around mathematics and English, with science and history close seconds. Strangely enough mathematics is not disliked by the girls, being next to English and second from the top in their choice of subjects for both boys and girl s is given.

Subjects	Boys	Girls	Total
Mathematics	9	4	13
Science	4	2	6
History	3	3	6
English	4	7	11
Language	1	3	4
Art		2	2
Music		3	3
Dramatics	1	1	2
Commercial	1	1	2
Domestic Sci. Art		2	2
Total			51

No statement was obtained as to a progessional or vocational aim in the case of the girls, which is not so surprising. With the boys the reverse is true, and in practically every case a life aim had been selected entailing college training of a strictly professional or technical nature. Many of the cases expressed an intention of entering the University of Oregon as soon as they had finished high school, while some had decided on eastern institutions. The life aim of the twenty-three boys follows: Doctor 2; artist 1; lawyer 3; commerce 5; engineering 5; farmer 1; teacher 2; writer 2; architecture 1. It is seen that the life aim is quite consistent and in strict accordance with the intellectual level.

The standing as rated by the teachers in intelligence and conduct is: very superior intelligence 17; superior 25; and

average 8. In conduct they were rated as excellent 25; good 22; and fair in 4 cases. As the pedagogical markings are not given in figures the exact standing cannot be given. Of the 180 grades obtained from the high school, representing forty-three students, no mark was below grade "B" - 80 to 84 per cent. The grades range as follows: A plus grade 34 cases; A grade 55 cases; B plus 63 subjects; and B grade in 27 subjects. The equivalent markings are: A plus 95-100; A 90-94; B plus 85-89; and B grade 80-84. Of the eight cases from the junior high school, six received blue cards which indicates A and A plus work and exempts the student from final examinations. It is seen that this group of students stand high in school work.

In summarizing, we find every evidence of mental superiority in the group represented in this study. Our basis of judging mental superiority in this instance being; (1) mental tests, both group and individual; (2) reports of parents; (3) reports of teachers; (4) high pedagogical standing; and (5) the interests and life aim of the individual students.

Chapter 111

Physical Development

Following the suggestion of Dr. DeBusk, the writer undertook to secure a number of the more fundamental physical measurements for the purpose of ascertaining the degree of relationahip between the accelerated pupils and physical development. Studies such as that of Dr. B. W. DeBusk, F. W. Smedley, W. T. Porter and others, show that there is a very close relationship between height, weight, and vital index and mental development. This is contrary to a frequently expressed popular belief that precocious children are anemic, poorly developed, and of nervous instability. This is probably an outgrowth of the tendency to keep the physically unfit in school or to push them into sedentary positions, while those possessing brawn, and often brains as well, assume the more arduous tasks. The work of Gilbert would indicate that there is not a constant, and if any thing a negative relationship between mental and physical development. Whether his conclusions are reliable or not is a question as his classification was based on teacher's estimates and grade position of pupils.

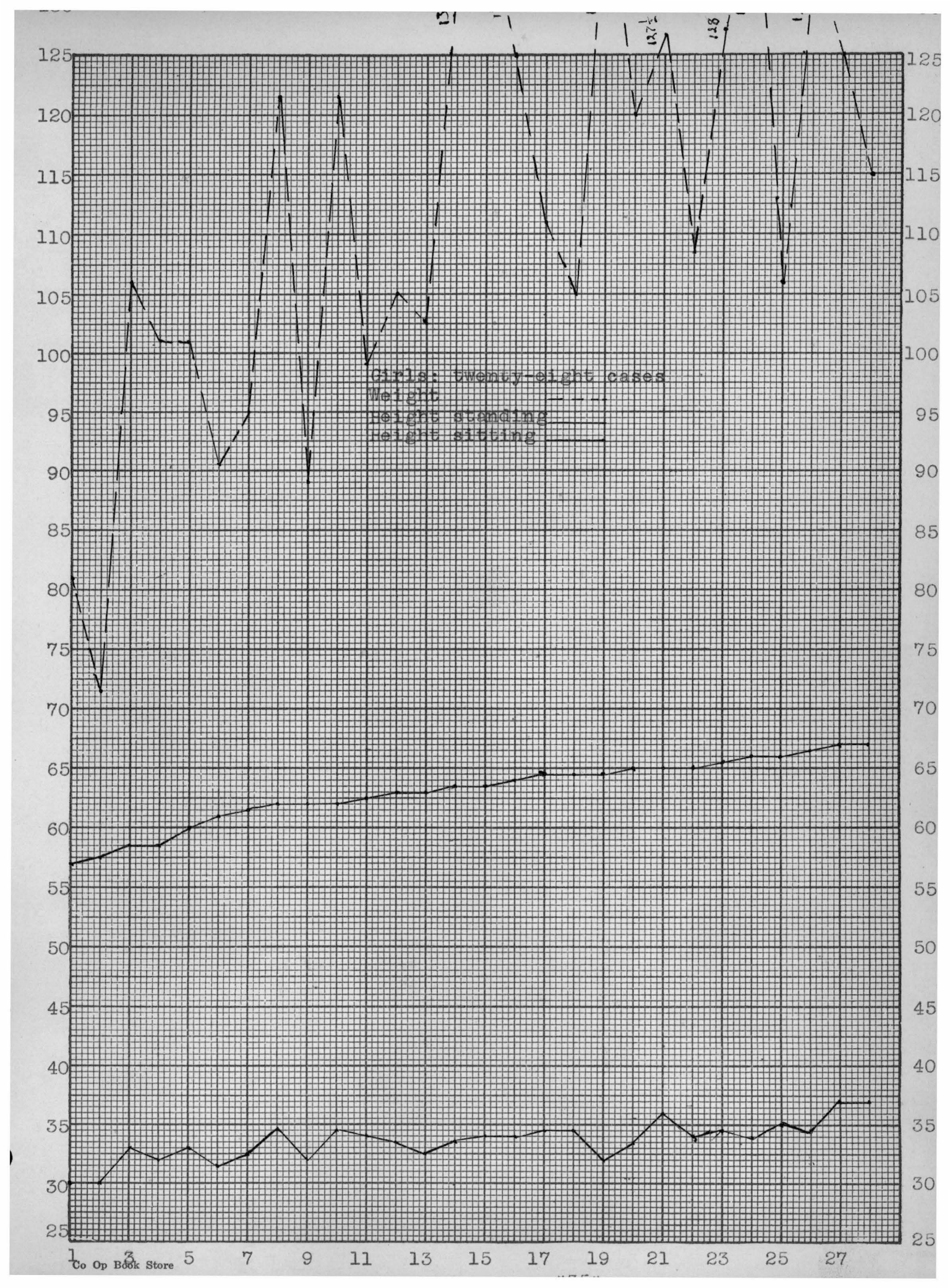
In this study, measurements were made of the sixty-three students given the Stanford test, but only those appearing in the section on mental ability are included in the discussion of physical development. From the range of ages, it is seen that this group of students are in the adolescence period, the stage of greatest acceleration in growth, but this does not invalidate the conclusions concerning physical development

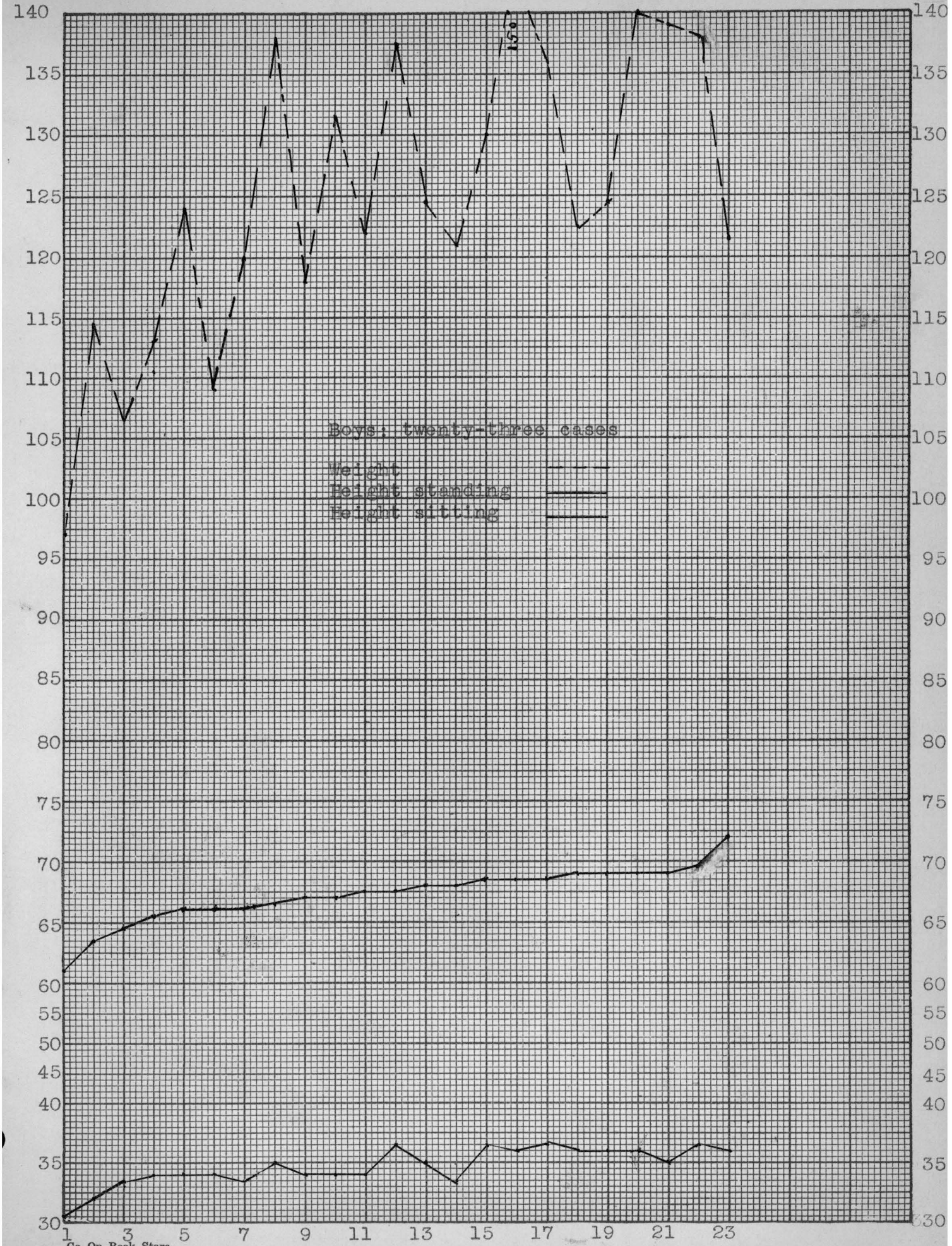
when taken in comparison with other groups of children of the same ages.

In judging the physical development, measurements were taken of the standing and sitting height, and weight, using an ordinary clinical stadiometer and scales, lung capacity, using a wet spirometer, and normal chest circumferance. From these measurements, ratios were worked out between standing height and weight, sitting and standing height, and between weight and lugn capacity, the latter ration being the vital index. The writer was assisted in mak ng the physical measurements by Miss Conklin, physical director of the Eugene schools, and Mrs. Bowen, instructor in Physical education at the Eugene High School, the measurements of all the girls being made by them. In addition to the physical measurements, information as to the condition of health and disease history was obtained directly from the students and from questionaires sent to the parents.

One of the surprising results of the measurements was the exceedingly large number of tall slender students. However, it is to be remembered that this group of students is in the period of growth acceleration, and that the growth of one part is at the expense of other parts. Hall states that in growth acceleration, height precedes weight. We may assume, then, that in the majority of cases the students are near the upper

*Hall, G. Stanley., Adolescence, Chapter 2.



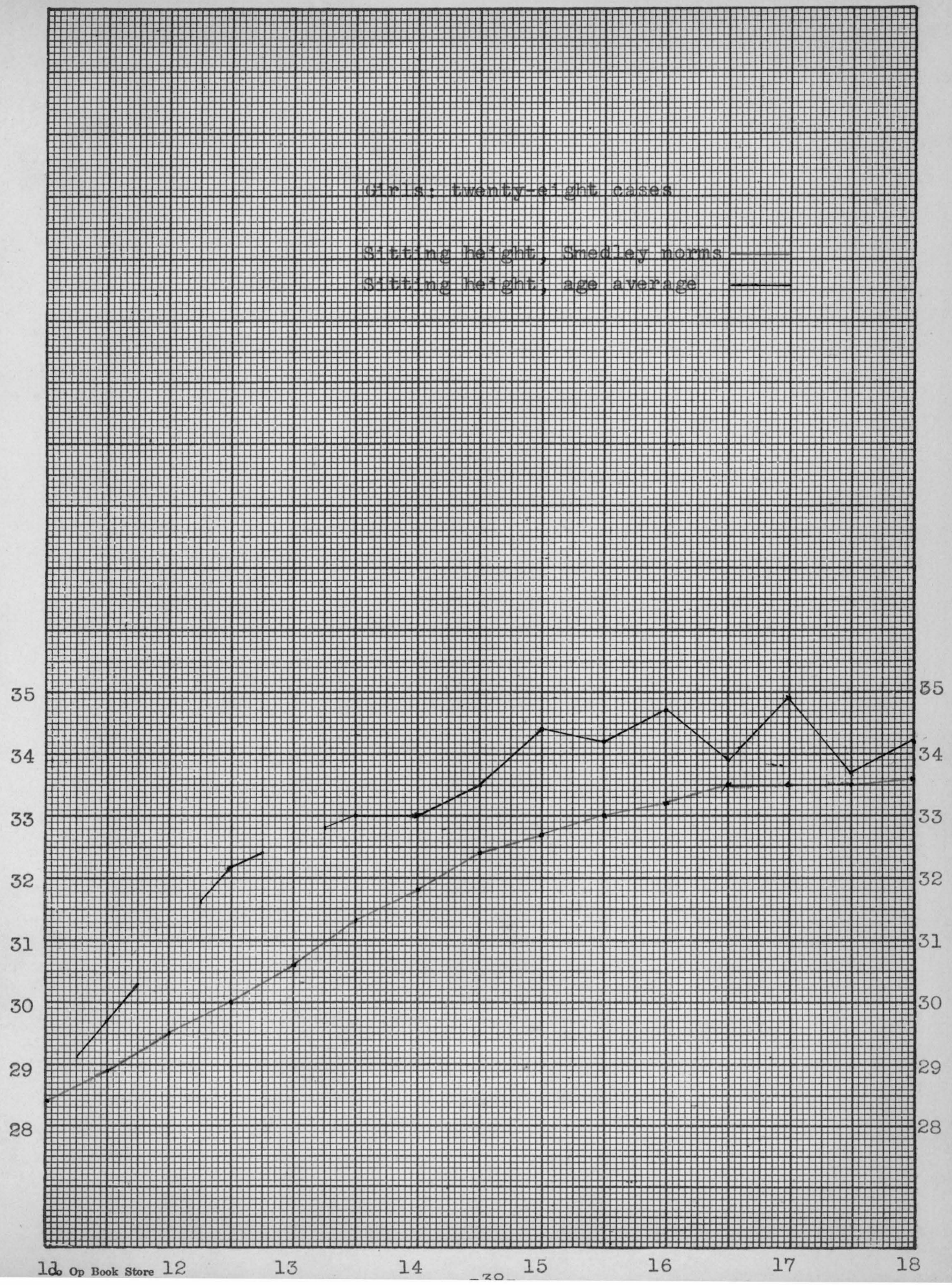


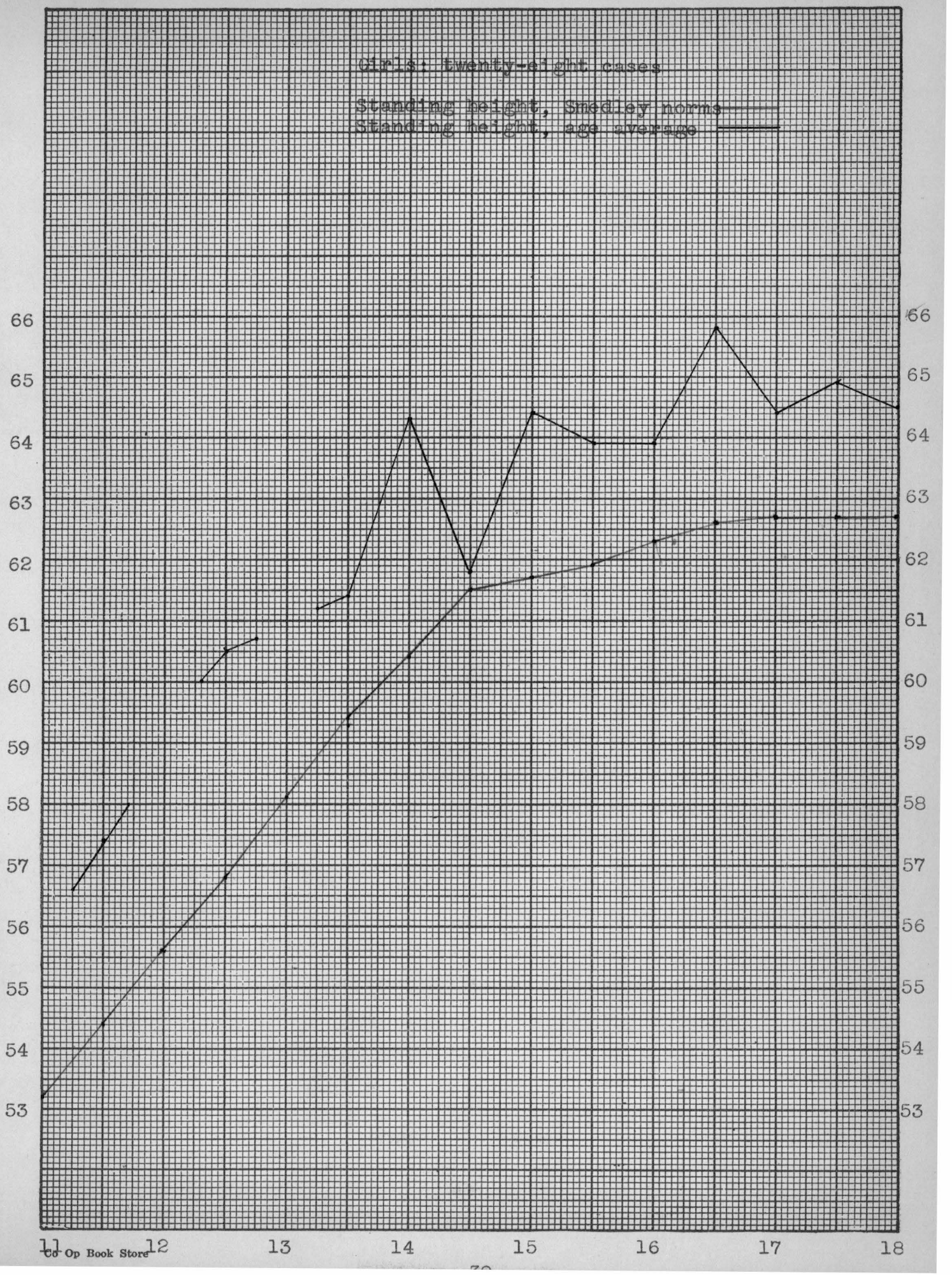
limit of their growth in height. For comparative purposes, a graph is given showing the Smedley norms for height, based on the anthropometric measurements of the fifty-one cases included in this study. With the exception of one age, the sitting height of this group of children is greater than the Smedley norms. In the one age which fell below the norm, only one case, a boy, is represented, and he has not struck, from all appearances, the period of most rapid growth acceleration. In the comparative graph of standing height, the cases in this study exceed the Smedley norms for both boys and girls. No comparative graph is given of the boys and girls in height, but a table of all the measurements is given on a separate sheet. No comparaisons are made between the ratios of sitting and standing height and weight and standing height.

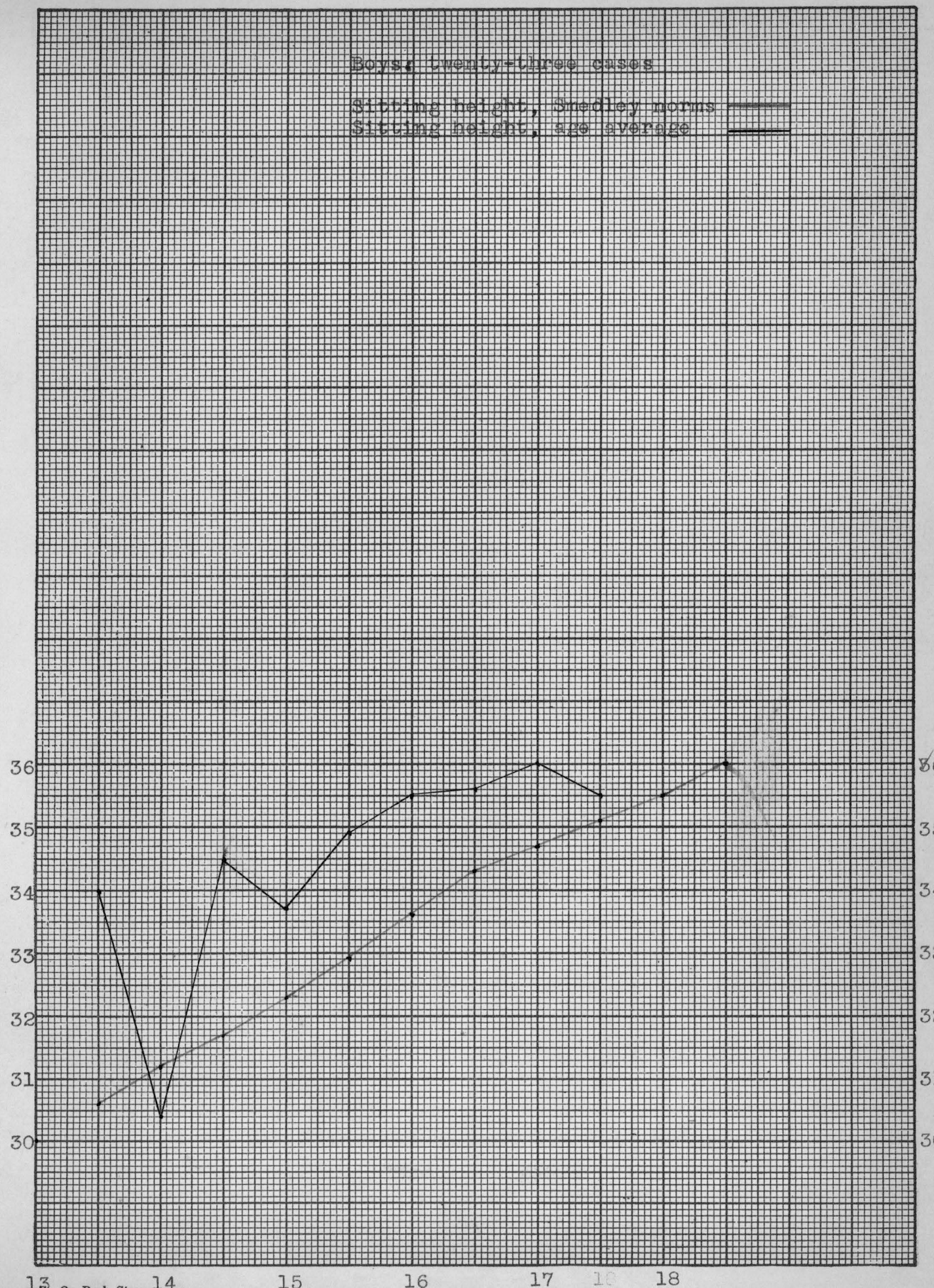
The standing height of the girls range from 57.4 to 67 inches. The median is 64.2 and the average 63.1 inches. In sitting height, the range is from 28.9 to 36.6 inches, the median beign 33.4 inches. The ration of sitting height to standing height is from 1.77 to 1.96 inches. The median and average is 1.87 inches.

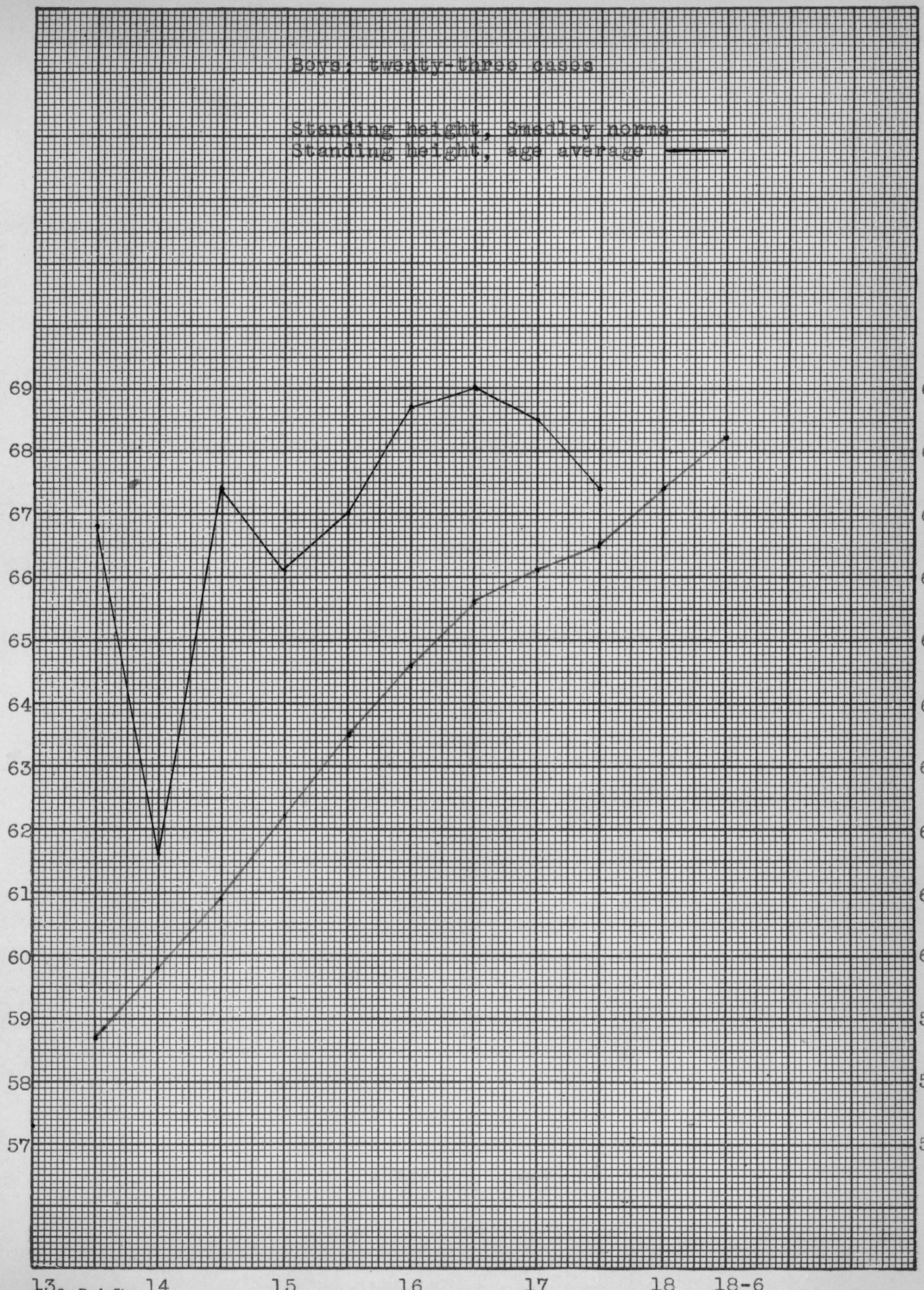
For the boys, the standing height is from 61.5 to 71.7 inches, the median and average being 67 inches. The sitting height is from 30.4 to 36,5, with the median and average 34.5 inches. The ratio of sitting to standing height is from 1.63 to 2.02 inches, the median being 1.92 inches.

In weight, the cases represented here exceed the









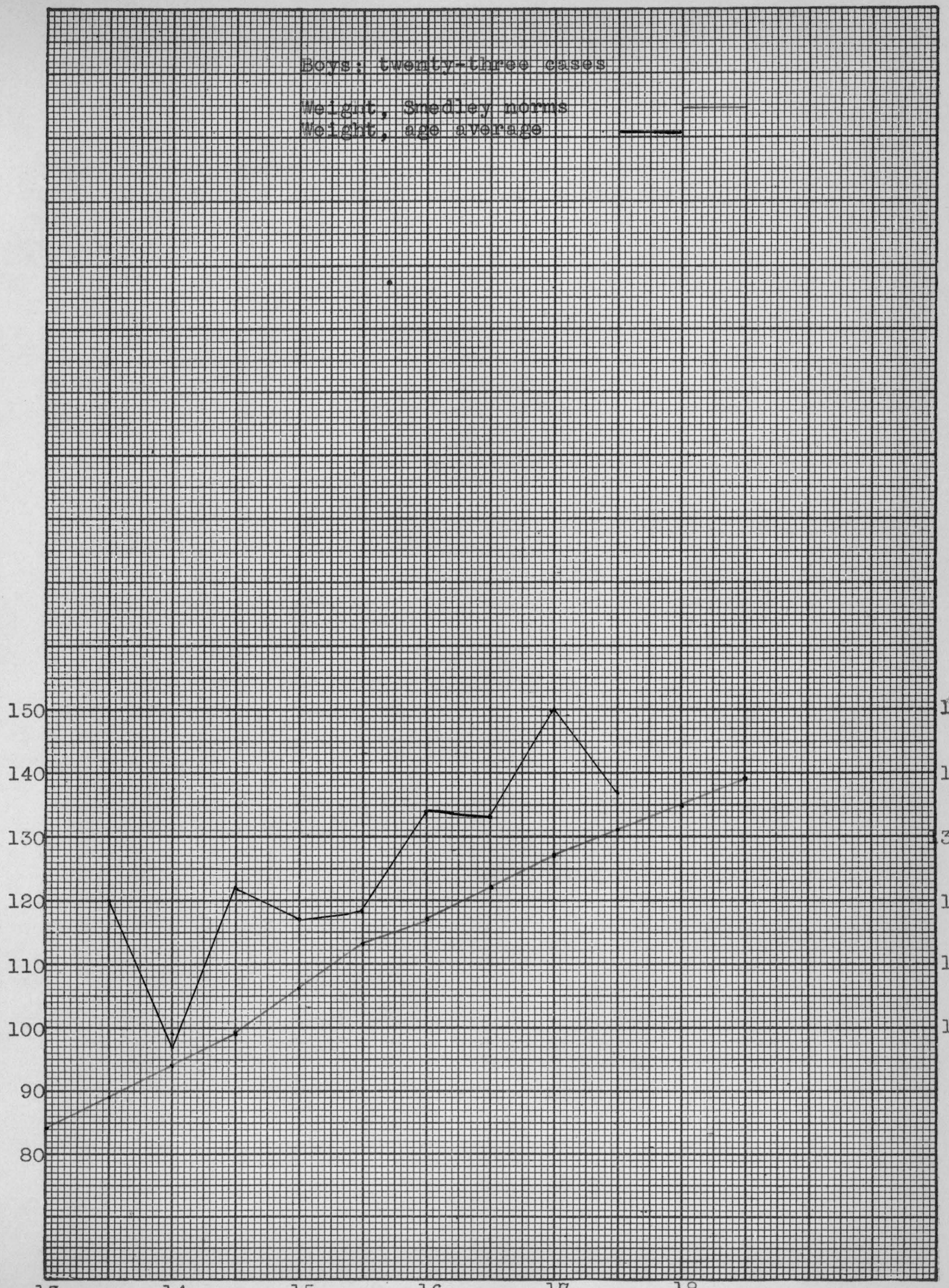
In the following table the individual measurements of sitting and standing height, weight, lung capacity and vital index are given.

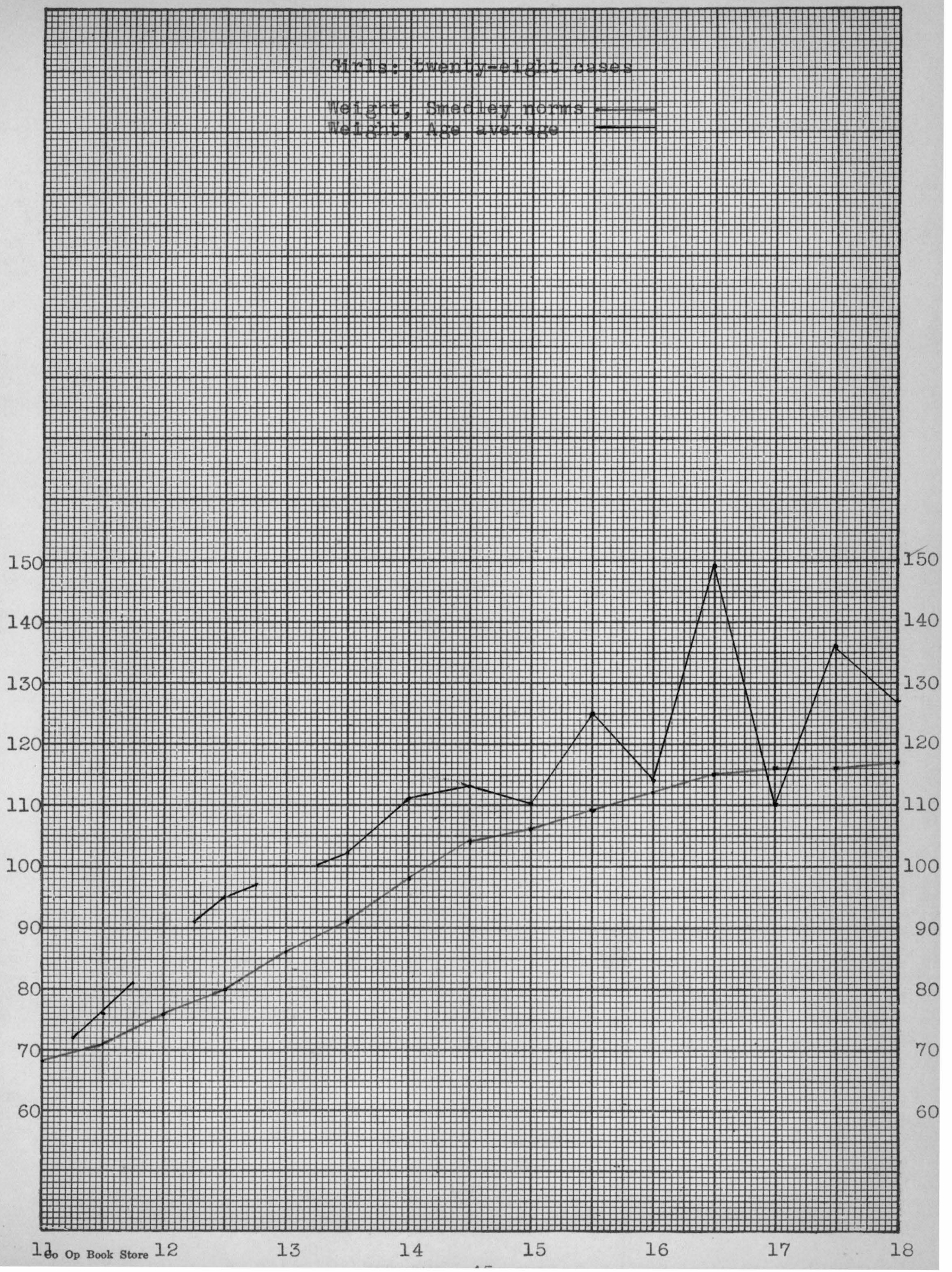
Girls

Standing height	Sitting height	Weight	Lung capacity	Vital index	Chest Circumferance
57.4	29.6	81	106	20.8	24
57.5	29.8	71.5	125	28.8	23
58.5	33	106	150	22.56	28
58.7	32.3	101	128	10.16	26
60.4	33	101	140	22.08	29
61.3	31.6	90.5	128	22.72	26
61.5	32.9	95	140	23.52	29
62	34.6	121.5	180	23.84	31.5
62.3	34	121	160	21.12	31.5
62.3	32.2	89	150	27.2	24
62.7	33.7	99	174	28.16	30
63.3	32.6	105	128	19.52	28
63.3	33.5	105	165	24.96	31.5
63.6	33.5	134.5	168	20	31
63.7	33.9	136	160	18.72	31.5
64.2	34.3	124.5	170	21.92	31
64.3	33	111	165	23.84	30
64.4	34.4	105.25	150	22.88	30
64.4	32.7	137.75	192	22.24	34.5
64.9	35.8	127.5	185	23.36	31.5
64.9	33.4	119.5	150	20.16	32.25
65.3	34.3	108.5	144	21.28	30
65.5	34.4	128	178	22.4	34
65.8	33.9	149	170	18.24	33.5
65.9	34.9	106	150	22.56	31.5
66.6	34.3	133	190	22.88	32
66.9	36.6	123.25	170	22.08	31
67	34.5	115.25	145	20	31.5

Boys

Standing height	Sitting height	Weight	Lung capacity	Vital index	Chest Circumferance
61.5	30.4	97	161	23.56	28
63.4	32	114.5	170	24	30
64.5	33.5	106.5	180	27.2	29
65.4	33.9	113.25	204	28.8	31.5
65.8	34	124	220	28.32	31.5
66	33.7	109	224	33.12	31.5
66.2	33.5	120	234	31.2	29
66.3	34.6	137.75	236	27.36	35
66.5	34.1	131.5	201	24.48	33
66.5	34	118	210	28.48	31
66.9	34	122	218	28.8	30
67	36.5	137.5	254	29.6	35
67.4	33.5	121	201	26.72	30.5
67.6	35.5	124.5	220	28.32	33
68.2	36.5	129.75	234	28.8	31.5
68.5	36.5	136	284	33.44	34
68.5	36	149.5	250	26.56	34.5
68.6	36	122.25	200	26.24	31
69	35.6	124.5	240	31.24	33
69	35.7	140.5	284	32.48	35
69.1	34.5	138.75	230	25.68	32.5
69.4	36.4	138.25	260	20.08	34
71.7	36.1	121.75	224	29.6	31

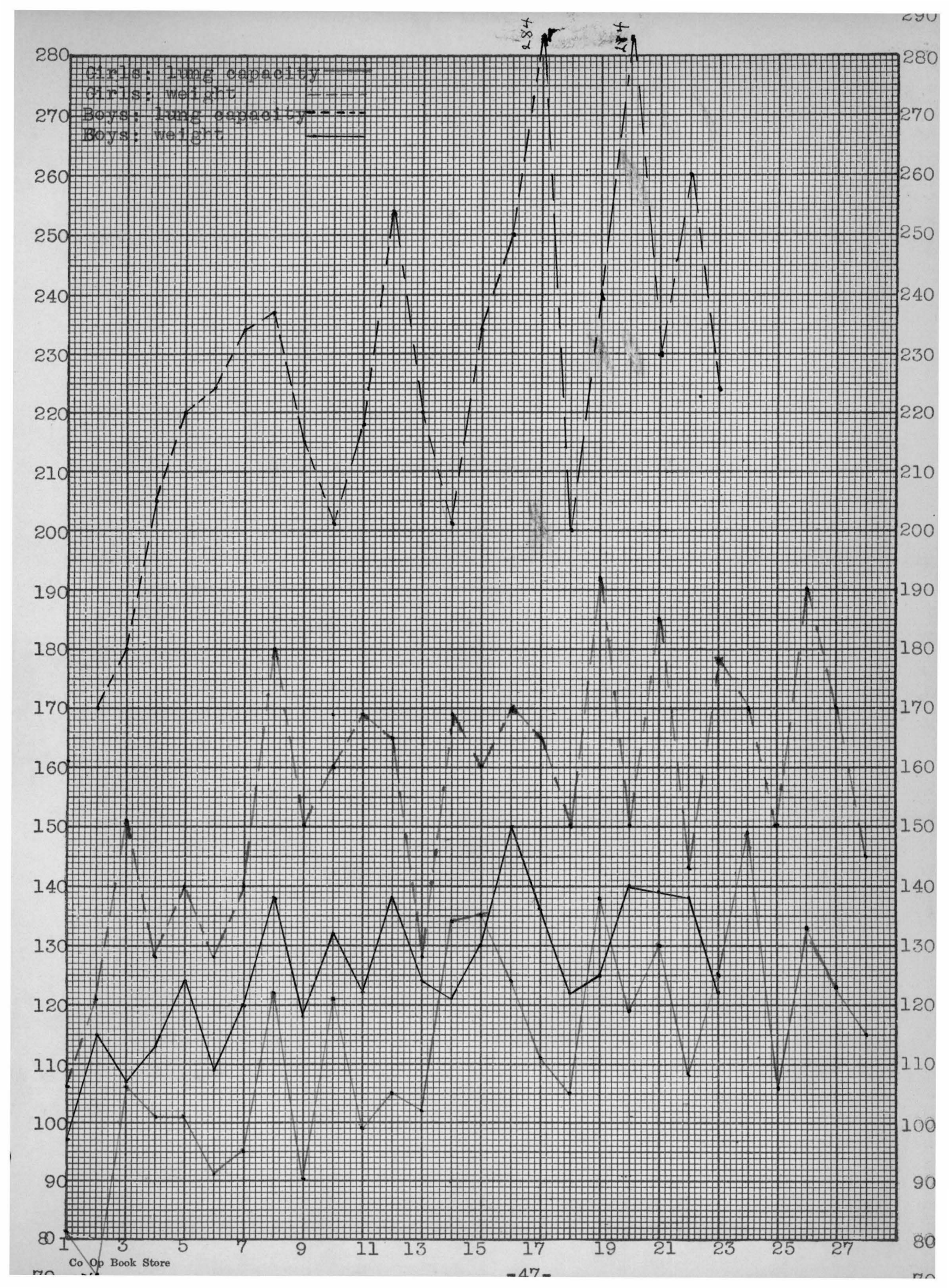


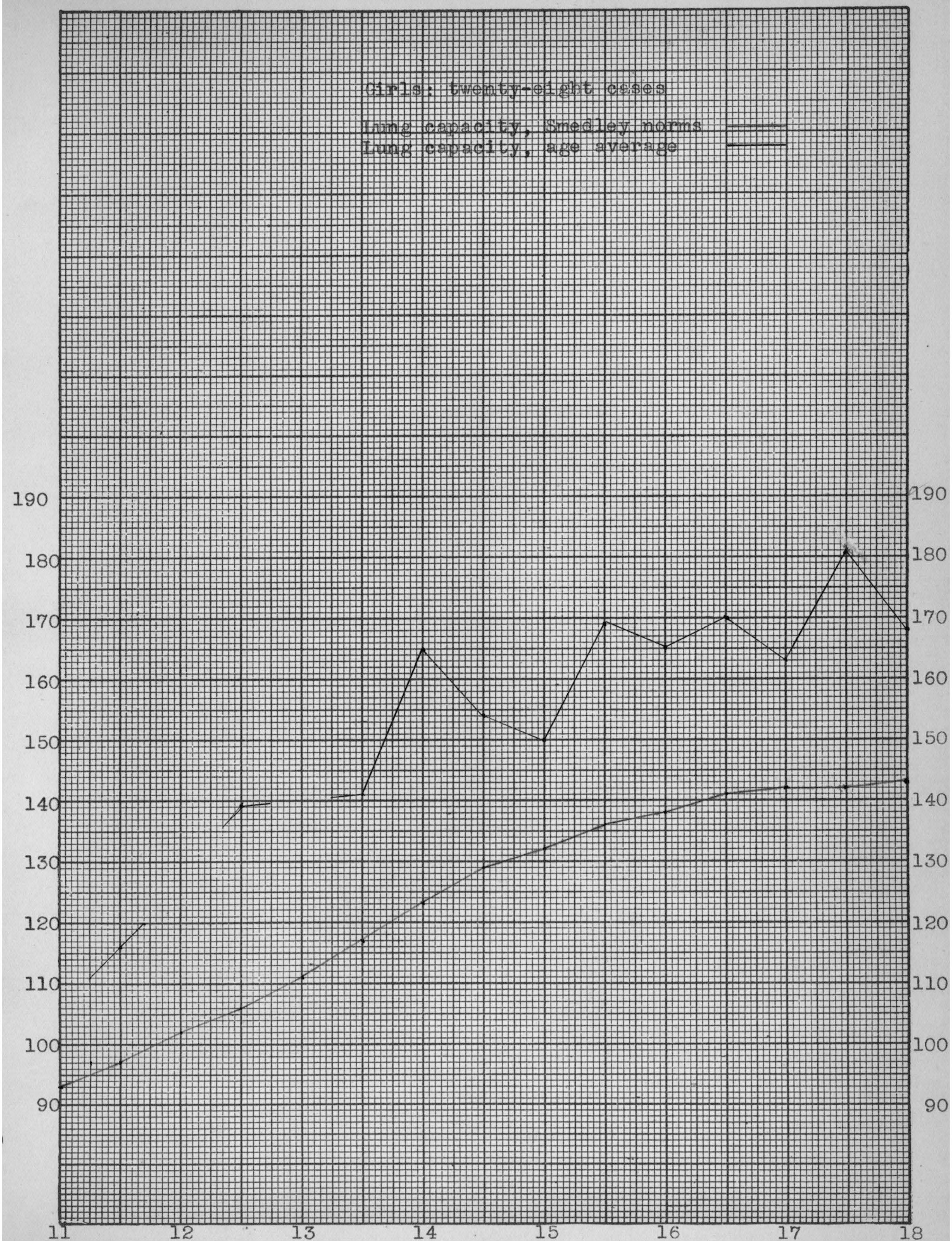


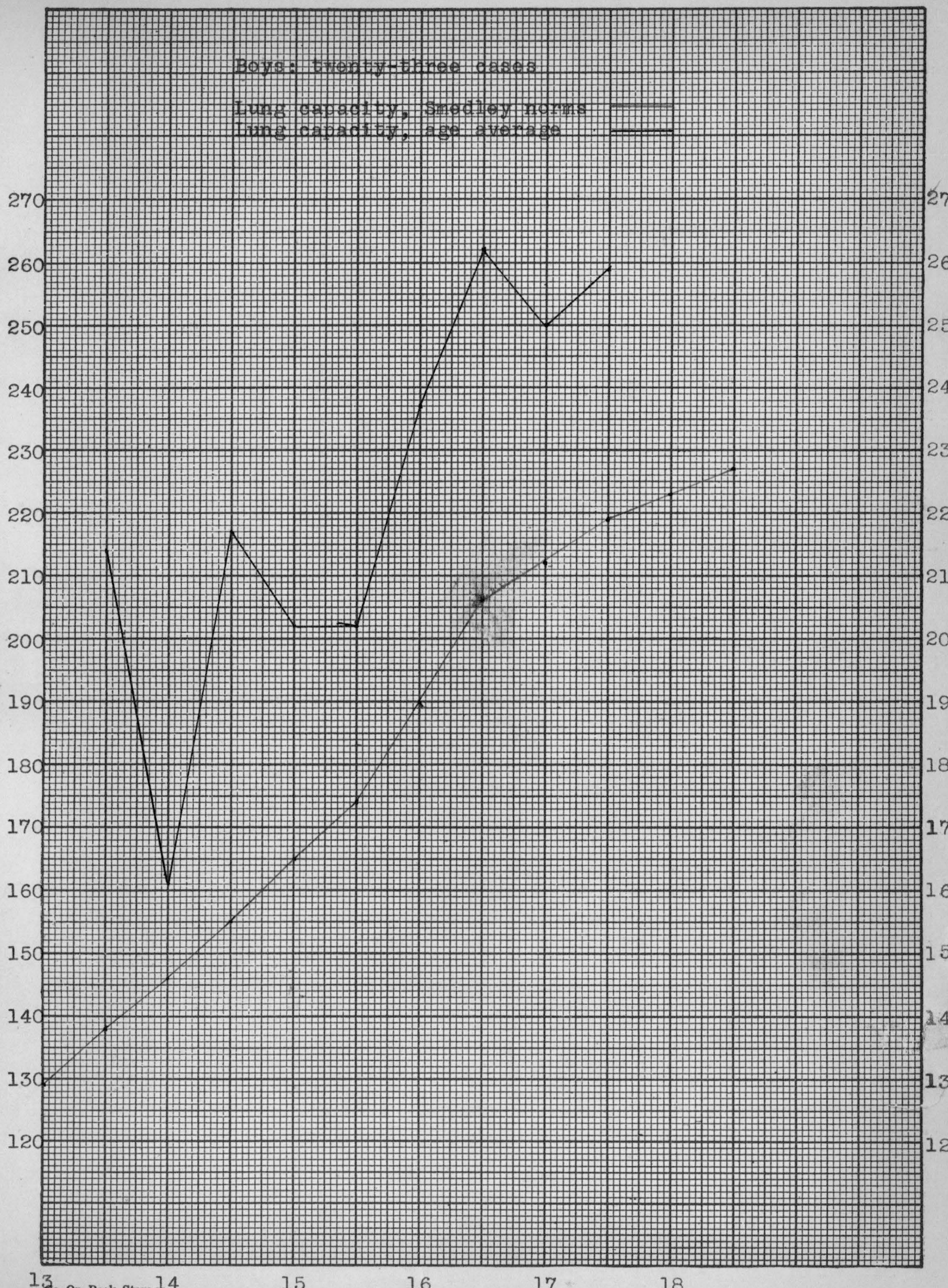
Smedley norms - a comparative graph showing the norms and the age average is given - with the exception of one age in the group of girls. In this one case, the girl has an exceptionallyvhigh lung capacity and vital index, and is active and energetic. Under these circumstances, it is felt that the one case will not invalidate the conclusions. In the comparative graph of boys and girls, it is seen that the boys are slightly heavier. This graph was made on the individual instead of the age average.

The range of weight for girls is from 75.5 to 149 pounds. The median is 111 and the average 112.5 pounds. The ratio of standing height to weight is from 1.22 to 2.13 pounds to each inch in height. The median is 1.73 pounds. The weight for the boys is from 97 to 149.5 pounds. The median is 124 and the average 125 pounds. The ratio of weight to height is from 1.57 to 2.18 pounds to each inch in height. The median is 1.84 pounds.

In lung capacity, graphs are given showing the age average standing of this group with the Smedley norms. In this instance, the norms are far excelled by both boys and girls. In the graph, comparing the boys and girls, the boys exceed the girls at every point. In taking the lung capacity a wet spirometer was used. The cases were tested individually, but a number of trials were given and the highest register recorded. In the majority of cases the students were familiar with the





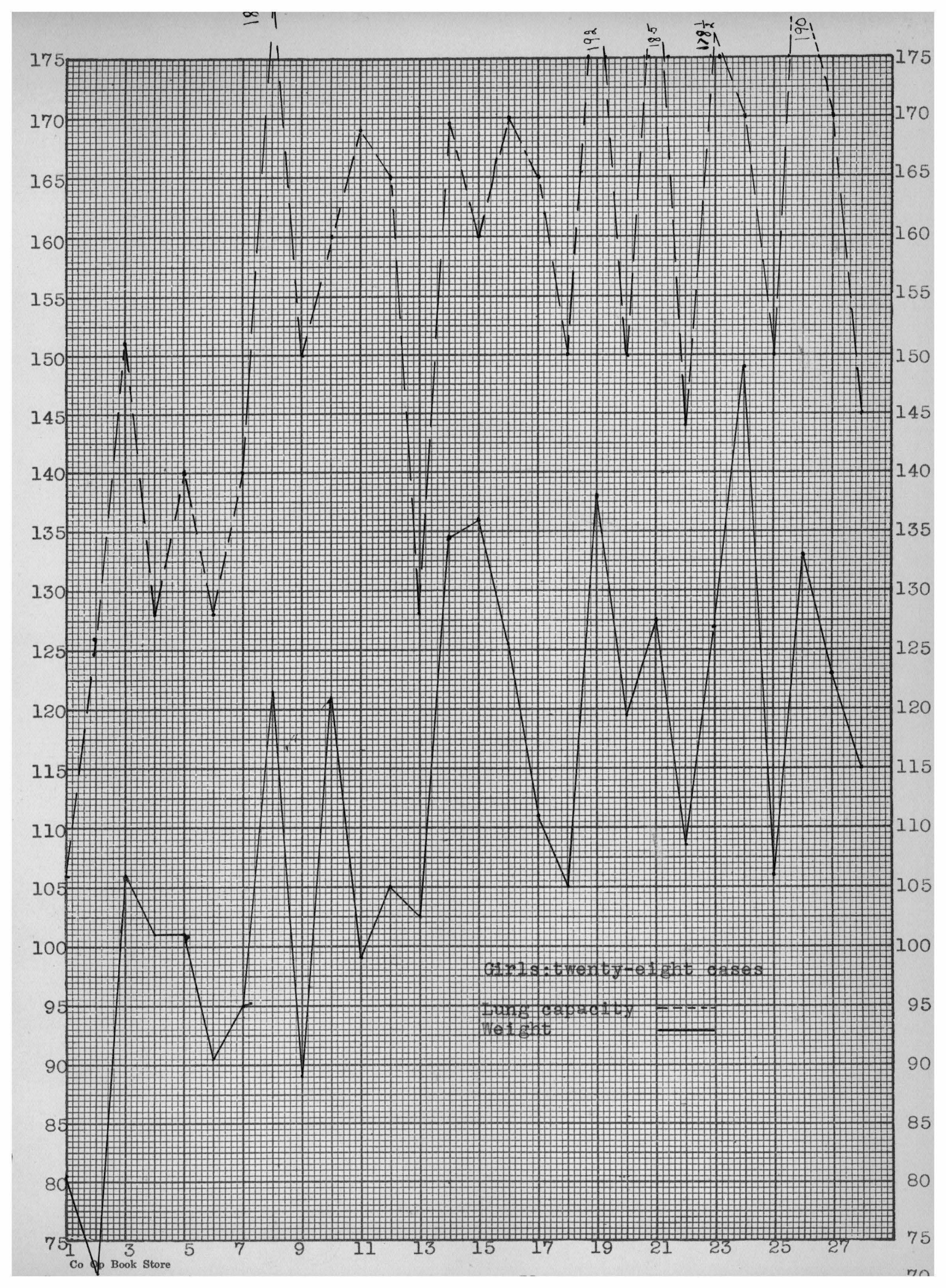


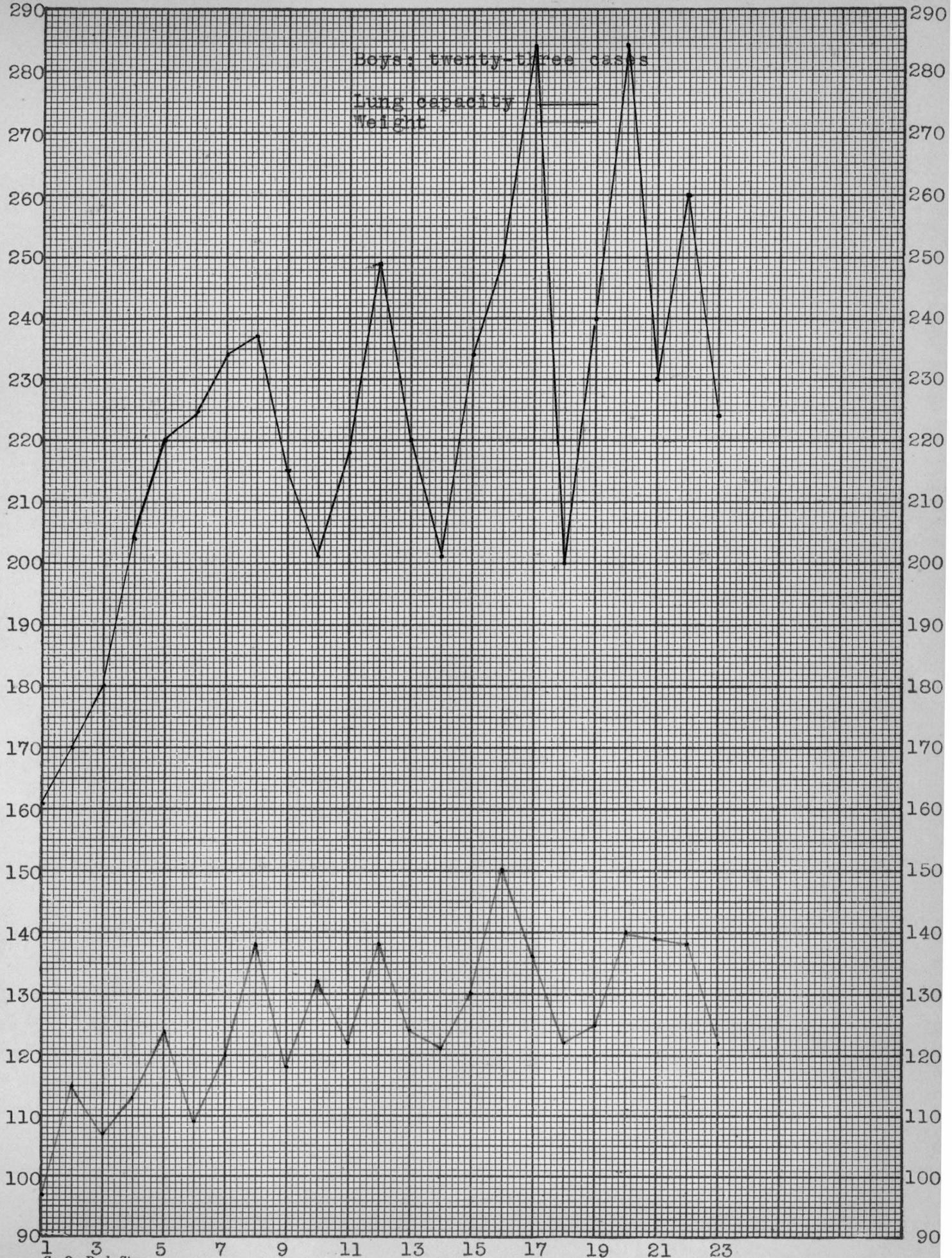
spirometer from having been tested at previous times.

The range in lung capacity for girls is from 106 to 192 cubic inches, the median being 160 and the average 156 cubic inches. The range for boys is from 161 to 284 cubic inches, the median and average being 224 cubic inches.

No comparative graphs are given in the measurement of vital index, the relation between weight and lung capacity. In the tables given by Dr. DeBusk, the ages fall below the majority of ages in this study. In the report of Smedley, no ratio between weight and lung capacity is given, the lung capacity being termed vital index by him. The vital index may be considered as a fair measure of endurance and energy. The individual with the higher vital index being able to do a greater amount of work and in being able to work for longer periods. This is on account of the greater ease of oxygenation and elimination of waste products of metabolism. Too, Dr. DeBusk found that the children with the higher indices were physiologically more mature for their age and with a higher mentality than those with lower vital indices. Minor differences in the vital indices reported by Dr. DeBusk and those shown in this study, can be explained, it is believed, on the basis of differences in age. The vital indices of normal young children show but a slight difference, about three cubic centimeters, between boys and girls of the same age. The writer

*DeBusk, B.W. The Vital Index in Development, University of Oregon reprint from the Ped. Sem. Mar. 1717, vol 24, p. 1-18





found an average difference of nearly six cubic centimeters. This is no doubt due in part to the active life and rapid chest development at the adolescence of boys, and in part to the less active life in comparison with previous years and to radical changes in the dress of the girl.

In range of vital capacity, the girls extend from 18.24 to 28.8 cubic centimeters. The median being 22.4 cubic centimeters. In range the boys extend from 23.56 to 33.4 cubic centimeters. The median and average is the same 28.4 cubic centimeters.

No reliable evidence has been given as to the relation of chest measurement to lung capacity or vital index. They are included in this study and may be taken for what they are worth. For girls the chest measurement is from 23 to 34.5 inches, the median and average being 31 inches. For boys the chest measurement is from 29 to 36.5 inches. The median is 31.5 and the average 32.1 inches.

Information concerning the physical development secured by questionaire included age of walking, talking, state of health, nervous condition, whether active or quiet, neutrition and disease history.

The range of ages for talking is from six to twenty-four months, with the median age falling in the twelfth month. For walking the range is from nine to eighteen months, the median age being twelve and one-half months. Forty-three reported the children in good health, seven in fair health and poor in only one case. Thirty-nine cases showed no evidences of nervous-

ness, nervousness was reported positively in four cases, and in eight cases as rather nervous. In thirty-eight cases activity and fondness for play;while thirteen parents reported their children as quiet and studious. No reliable method was taken for judging neutrition, but it may be assumed to be good as only four cases was reported in reverse. However, as these cases corresponded with relative lightness in weight, it is quite possible that poor neutrition was confused with extreme slenderness. In the disease history, the record is as follows: Mumps, 18 cases; whooping cough, 35 cases; measles, 40 cases; scarlet fever, 8 cases; chicken pox, 24 cases; typhoid, 1 case; diptheria, 2 cases; and spinal meningitus, 1 case. Light attacks of influenza was reported by a number of students. In two cases tonsils had been removed,and adenoids in one case. No examination was made of teeth, tonsils, or other minor defects.

From the comparative graphs, and from the record of physical development obtained from measurements and questionaire, it is safe to conclude that the cases represented in this study show a high physical development than the average, and that precocity is not accompanied by inferior physical development or nervous instability.

Chapter IV

Case Studies

No. 1. Ruben Y. Indications of superior intelligence at three years of age. Interested in arithmetical problems at five years.

Age 17-8; mental age 19-6; I.Q. 122; fourth year in high school Score in Alpha test 152; Otis test 174. Received an A grade in all pedagogical records examined Is reported as quiet and studious, but shows evidences of leadership in school work and activities. He is expecially interested in debating and mathematics. It is his intention of becoming a civil engineer. He shows remarkable physical development, and has been singularly free from all so called children's diseases.

His father is a janitor, but has had some training in the University; his mother was a teacher before her marriage. Both parents are interested in music. His grandfather was a physician. He is rated as very superior intelligence and superior social standing by his teachers.

No. 2. Grace C. Indicated evidence of superior intelligence at two years of age in interest in books, which is still the dominant interest.

Age 18; mental age 19-6; fourth year in high school Score in Alpha test 164; in Otis test 196. Received A and A plus grades in pedagogical standing.

She is reported as active and fond of play, and to show very pronounced evidence of leadership. Her attitude toward school and home work is excellent. Her health is excellent with no indications of nervousness. She has a very high lung capacity with a vital index of 23.36 cubic centimeters, and her special interest in school is language and science. She is fair complexioned and has an attractive, pleasing personality. She is rated as superior social standing and very superior intelligence by the teachers.

The parents have only a grade school education, but seem to have improved their limited opportunity. The father is a mechanic.

No. 3. Galin J. Is underrated by his parents with the exception of the statement that he has always been a great reader. Age 16-5; mental age 19; I.Q. 119; second year in high school. Score in Alpha test 154; in the Otis test 182. Received B plus and A grades in school work.

He is active and fond of athletics but is not a member of the school athletic teams. He is well developed physically although in the period of rapid growth in height. The ratio of lung capacity to weight is 30.08 cubic centimeters. His health is reported good, but is slightly nervous. His special interest is mathematics, and his aim is to be an electrical engineer. His father is a public school teacher, and has a college education; his mother has a high school education.

No. 4. Alta S. Was the leader of her class through the grade school and responded readily to instruction.

Age 15-6; mental age 17-3; I.Q.115; third year in high school. Score in alpha test 150; in the Otis test 187. Received B plus and A grades in school work, and is rated very superior in intelligence by her teachers.

She is very active and fond of games, and is especially interested in aesthetic dancing. She is dark complexioned, pretty, and vivacious. She is a leader and is dominated by a desire to excell in all her undertakings. In physical development she is above the average. Her weight is 128 pounds; lung capacity, 178 cubic inches; and ratio to weight of 22.4 cubic centimeters.

Her father is a physician, a college graduate, and her mother is a high school graduate. Her social standing is very superior. The father was a major in the medical department during the war.

No. 5. Harold L. Early indications of precocity at two years in interest in mechanical apparatus which has continued in school work.

Age 16-3; mental age, 18-1; I.Q. 113; third year in high school. Score in Alpha test, 147; in Otis test, 169. Is rated as superior in intelligence.

Harold is a native of Oregon. Fair complexioned, a fine

looking boy; a good talker and a pleasing personality. He is expecially interested in mathematics and science and any form of mechanical work. He has had many of the ordinary ills of childhood, but seems to be well developed now, showing a ratio between weight and lung capacity of 28.32 cubic centimeters. He is active but not particularly fond of play, finding his amusement in mechanical construction. He shows tendencies of leadership among his companions.

Harold's father is dead. Was both merchant and farmer during his life time. His mother was a teacher and a normal school graduate.

No. 6. Wilma S. High general ability. Is deeply interested in social and religious work.

Age 17-10; mental age, 18-6; I. Q. 116; fourth year in high school. Score in Alpha test, 161; Otis test, 171. B plus grades in school work.

Her parents are uneducated, but are good reliable community folk. Her father is a locomotive engineer and is interested in any mechanical device. The mother is descended from a long line of ministers, the religious training showing in Wilma in interest and leadership in church work. In school her interest is in educational subjects and mathematics. She is a graduate of the teacher's training class and has secured a position in a rural school for the coming year.

No. 7. Thomas W. All-round ability. Self confident and determined. Morally superior. Age, 19-3; mental age, 18-1; I.Q., 113; fourth year in high school Score in Alpha tes, 164; in Otis test, 173. Grade of B plus in school work.

Thomas was a member of the 65th field artillery, having joined the army at the age of sixteen, and served for many months with his unit in France. He was relatively free from early infectious diseases until the additional exposure of army life. He is now physically well developed, a sturdy, manly looking lad. He is a leader in school work and activities, and a member of the football team. He is interested in mathematics, science, and engineering, and intends to take some form of engineering as a profession. The members of his family are well educated and industrious, many of them being graduates of the University and now holding responsible positions. Quoting from his mother, "Ability is what counts in this family."

No. 8. Ivorita W. Early indications of superiority shown in fondness for reading. Age, 13-8; mental age, 16-7; I.Q., 121; grade, 7A in Junior High School. Score in Alpha test, 127; in Otis test, 170. Blue card which exempts her from examinations. Ivorita is in good health, but shos evidences of nervousness. Her weight is 106 pounds, lung capacity 150 cubic inches,

with a ratio of 22.58 cubic centimeters. She is the only child and has spent much of her time with older people. Is quiet and cares little for play, and shows no evidence of leadership. Some of her inactivity as well as her nervousness may be due to the fact that she has a goitre, not pronounced. Her special interest is in reading and sewing, especially the latter in which she excells. Her father is a printer of fair education; her mother is a graduate of a high school. W. G. Thomas, lawyer and judge, is an uncle of her mother.

No. 9. Morrison M. Early indications of precocity shown in a very retentive memory.

Age, 14-11; mental age, 18; I.Q., 120; second year in high schoo. Score in Alpha test, 168; in Otis test, 184. A grade of B plus in school work.

Morrison is a wholesome, good looking, dark complexioned boy. Active and fond of play, but shows no special tendencies of leadership. He is interested in athletics, but is not a member of the school teams. He was reading easy books at the age of four years, and reciting poems from memory at the age of two and a half years. The parents are well educated, both being normal school graduates. The father is very fond of playing the violin, and all the family show talent in music.

No. 10. Helen B. Ready acquisition of knowledge in response to instruction. Is not a good mixer in school life. Age, 14-10; mental age, 17-11; I.Q. 121; first year in high school. Score from Alpha test, 165; Otis test, 185. Helen is quiet and cares little for play, and shows no tendencies of leadership nor desire to take an active part in the out of school activities. Her parents report her health to be good though she is slightly nervous. Her physical development is fair, but not better than the average. Her father is a farmer, has a common school education, and is interested in farm life. Her mother was a teacher before her marriage.

No. 11. Herbert J. Marked interest in school work which has continued. Age, 15-4; mental age, 17-7; I.Q., 114; first year high school. Score in Alpha test, 161; Otis test, 170. Rated as superior intelligence and average social standing by his teachers.

Herbert is very well develpped for his age with a ratio of 33.12 cubic centimeters between height and weight. He is active and fond of play, but is not a member of the school athletic teams. His favorite subject and main interest is in history, while his professional aim is the law. His father is a farmer and has moved from place to place frequently, retarding Herbert in his school

work. Herbert's mother has been a teacher; is a graduate of a high school and has done some college work. Her special interest now is teaching. Members of both sides of the family are United States Senators, while his grandfather has been circuit judge in New York state.

No. 12. Alta T. Early evidences of superiority at the age of three years in dramatization of stories read to her. This has continued in interest in dramatics. Age, 17; mental age, 19-3; I.Q., 120; senior in high school. Score in Alpha test, 164; in Otis test, 188. Alta is rated as very superior in intelligence, and social standing by her teachers.

Alta is an attractive, energetic girl, slightly under weight, but with an exceptionally high lung capacity. Her ratio between weight and lung capacity is 28.16 cubic centimeters. She is active and shows leadership in work or play, and is much interested in outdoor sports and games. Her special interest is music and dramatics, and her favorite subject is English. Her aim is to be a writer or journalist. She began reading at the age of four years and by the time she was five years old had read the books taught in the first and second grade. Alta's father is a miner and farmer; his wife a bookkeeper before her marriage. While not having the opportunity of securing a good education themselves, it is their aim to give Alta every advantage possible.

No. 13. Ronald B. Exceptional heredity. Evidences of superiority at two years of age.

Age, 16-8; mental age, 19-6; I.Q., 122; second year in high school. Score in Alpha test, 173; in Otis Test, 184; grade of A in school work. He is rated as very superior in social standing and intelligence.

Ronald is active and fond of play and is dark complexioned, and makes a good appearance. In form he is tall and slender; height, sixty-nine inches, weight, 124.5, and lung capacity of 240 cubic inches. His interest now is in making statistical tables and in studying statistics and mathematics. He plays the piano well and is quite an exceptional singer. Both his father and mother have degrees from the University, and both have been teachers, his father being in the profession yet. The interest of both parents is in education and social work. Ronald's uncle was an Oregon Supreme Judge.

No. 14. Mildred H. Underestimated by parents even though being very successful in school work.

Age, 13-10; mental age, 16-4; I.Q., 118; grade, 8B in Junior High School. Score in Alpha test, 122; in Otis test, 177. Exempted from examinations because of superior work. Mildred is a fair complexioned, good looking little girl; lively and full of fun. She is exceptionally well developed for her age: weight, 101 pounds; lung capacity, 140 cubic inches; and ratio between weight and lung capacity, 22.08 cubic centimeters. Her interest

seems to be centered in music and reading, being termed a book worm by her father. Her father is a business man of more than ordinary ability, a high school graduate. her mother has a common school education, and is much interested in music.

No. 15. James P. High general ability. Age, 17-9; mental age, 19-5; I.Q., 122; senior in high school. Score in Alpha test, 168; in otis test, 187. Grade B plus in school work; is rated superior intelligence by his teachers. James is especially interested in dramatics and athletics, and is a member of the dramatic club and the basketball team. His favorite subject is English, and his life aim is in the commercial field. It is his intention to take his college work at the University, Majoring in Commerce. In class and school activities he is a leader, and does not lack initiative. He is a good looking, dark complexioned boy, and has a most pleasing personality. His uncle is a college president and professor of mathematics.

No. 16. Helen E. A girl of very superior intelligence and marked talent in art and music.

Age, 17-2; mental age, 18-4; I.Q., 114; senior in high school. Score in Alpha test, 149; in Otis test, 168. Receives a grade of A plus in school work, and is rated very superior in intelligence and social standing by her teachers.

Evidence of superiority was shown at a very early age in her desire to draw, in which she showed ability even then. Her interest in drawing, painting and music has continued through the years and has been supplemented by her interest in aesthetic dancing, in which she is reported to be both apt and graceful. Helen is a beautiful brown-eyed, curly-haired girl, and is a favorite with her school mates. She is in good health and is well develope, and shows no signs of nervousness. Her weight is 123 pounds,; lung capacity is 22.08 cubic centimeters. Her mother has had very good educational advantages, being the daughter of a college professor. Helen's father is a machinest and has only an ordinary education.

Chapter V

Social and Economic Condition

To what extent may superiority in children be explained by data concerning the parents:- race, occupation, with its corolary, economic standing, school education, special interest, and social characteristics? Are these superior types from good homes or from poor homes?

Studies that have been made on this problem tend to prove a correlation between home conditions and the intelligence level of the children, those from good homes being higher in the scale as a rule than those from poorer families. It is by no means an assured fact that higher intelligence is a result of better environmental conditions, but the latter results from the exercise or because of the possession of superior mental qualities in the parents which are transmitted to the children. Briefly summarized, the studies in this field are as follows:

1. Joseph and Raleigh Weintrob, 1912, Study of 70 cases in New York City schools using Binet-Simon test. Found mentality of wealthiest class highest.

2. Yerkes and Anderson. Test of 468 children by point scale. Found mental level 30 per cent. higher in the group of those living under better social and economic conditions.

3. Yerkes and Bridges, 108 cases examined by the point scale. Concluded that there is a positive correlation amounting to 30 per cent. of the total between sociological status and intellectual performance.

4. Terman reported on 492 cases in his book "The Measure-

ment of intelligence" using his revision of the Binet scale, the social groups being determined by the estimate of teachers, found the children from the highest group seven points above the median for all, and the lowest seven points below the median for the whole group.

5. Bridges and Coler studied 301 children testing with the point scale. Found a high correlation between the occupation of parents and the mental standing of children.

6. Kornhauser, 1918 used 1,000 children selected on a basis of pedagogical standing. The percentage of advanced children was higher in the case of those from good homes than from the inferior.

7. Margaret Beard in a study of retardation in the Minneapolis schools found that there are approximately twice as many cases of retardation from poor homes as from the superior.

8. Ruth Montgomery studied 250 cases in Eugene, Oregon, using the Stanford Revision test. The daily wage of parents was the basis of dividing the groups. She found a high positive correlation between economic standing of parents and intelligence of children.

The first question with which we are concerned is that of race. The Survey, September 1917, reports a large prevalence of feeble mindedness among the foreign born. Oregon has approximately 65 per cent. of its population of native stock - the remainder being:foreign born, 15 per cent.; and children of the foreign born, 20 per cent. The nativity of the parents of the fifty-one cases of superior children here given is as follows:

	Boys		Girls		
Nativity	Father	Mother	Father	Mother	Total
United States	20	16	16	18	70
England		1	4	3	8
Scotland	1	3	4	2	10
Ireland	1	2		2	5
Germany			3	2	5
Sweden				1	1
Hebrew		1			1
French	1				1
Swiss			1		1
Totals	23	23	28	28	102

The results show that 70 per cent. of the children are descended from native stock - one parent or both being born in this country - 88 per cent. are of Anglo-Saxon descent. Either one or both parents of all the children studied are Anglo-Saxon:- American, English, or Scotch.

The occupation of the parents are among the best indexes to home environment of the subjects. The occupations of the mothers are those prior to marriage. A table showing the occupations of the parents is given on the following page.

	Boys		Girls		
Occupations	Fathers	Mothers	Fathers	Mothers	Total
Medicine			1		1
Law	1				1
Teaching	3	10	3	2	18
Bookkeeping		1	1	2	4
Stenography		2		3	5
Telegraphy	1				1
Salesmanship	2		1		3
Farming	5		8		13
Merchant	4	2	3	3	17
Clerical	6	2	6	3	17
Mechanics	1		4		5
Student		2		4	6
Housekeeping	4			10	14
Music	1			1	2
Art	1			1	2
Millinery				2	2
Common labor			1		1
Totals	23	23	28	28	102

In the case of the mothers we note the significant thing is that their occupations prior to marriage required a considerable degree of skill - arguing the possession of a high order of intelligence.

It is the occupation of the fathers that is of the

most significance. We find that eight belong to the professions, 22 to the skilled trades, 7 are of the merchant class, 13 are engaged in agriculture, and only one is a common laborer.

There is another point that throws some light upon the economic status and foresight of the families. It is the holding of life insurance and lodge membership. Of the fifty-one men, thirty carry protection, and twenty-nine are affiliated with fraternal organizations. We note those not so protected belong for the most part to the agricultural group where land tenure itself denotes present and future economic security. Twelve of the mothers carry life insurance and fourteen are lodge members.

The intellectual level of the parents is brought out in their schooling, which also ranks high as herewith indicated:

	Boys		Girls		
School	Father	Mother	Father	Mother	Total
Grammar	5	7	10	10	32
High School	5	5	11	10	31
Business College	3	1	2	5	11
Normal	2	5	0	3	10
College	8	5	5	0	18
Total	23	23	28	28	102

These figures show that 25 per cent. of the parents have a normal school or college education, and over 50 per cent. are high school graduates or better.

Other data supplement this, namely, that of chief interests, vocational and avocational, of the parents. A wide range is represented, and many are decidedly intellectual and indicative of culture:

	Boys		Girls		
Interest	Father	Mother	Father	Mother	Total
History			3		3
Literature	4	5	6	4	19
Sports	2		2		4
Civic pursuits	3	3	4	4	14
Music	3	3	1	5	12
Home-making		5		7	12
Farming	4		4		8
Art				4	4
Mechanic arts	3		1		4
Nature	3	1			4
Education		5			5
None given	1	1	8	4	14
Total	23	23	28	28	102

Since the social instinct is a prime requisite of success and an indication of conduct, an attempt was made to discover membership in associations of a religious and fraternal

character. The answers give the following data:

	Boys		Girls		
	Father	Mother	Father	Mother	Total
Church members	14	20	12	17	63
Lodge members	13	7	16	7	43

Per cent. members of a church, 61.7; members of a lodge, 42.1. As there are many who belong to church who do not belong to lodge, and vice versa, we find that one member of each family is affiliated with either the church or a fraternal society, and that no family but has either the father or mother as a member of the church.

Summarizing the results of the data given herewith, we find that the environmental and native inheritance of the selected group is excellent, the parents belonging to a superior group (1) economically, (2) intellectually, (3) socially, and (4) racially.

Chapter VI

Provisions for Superior Children in the Public Schools

It has been brought out that approximately ten per cent. of the school population of the seventh to twelfth grades of the Eugene schools are superior. It is not too much of a conjecture to say this condition is fairly representative of schools of the country. Further, but few of these students are accelerated on a basis of their chronological age; nearly all are retarded on a basis of their mental age. The practical application of the information available leads to a problem of school administration, a problem of educational efficiency and justice. For it is easier to prove that individual differences should be provided for, and that gifted children should be given a chance than it is to provide for the differences. Nevertheless many methods have been devised and more or less successfully administered. There are two general means of meeting the problem: by providing for the gifted by dealing directly with the individual alone, and by methods of grouping. Of the latter there are at least two methods: the shifting and the constant group plans.

There is no modification of the individual plan but what shows decided resemblance to the old type of school organization where the teacher called the children up one at a time and "heard them say their lessons". Thus every modification of the plan has some of the inherent faults of the old

time school. There are three fairly distinct types of individual instruction: The Pueblo, the Batavia, and the method which employs the unassigned teacher. None of these are used to reach the gifted child only, but are employed with all children.

The Pueblo plan is discussed in chapter one, page 10, and will not be restated here. However, as a means of providing for gifted children, the scheme is expensive, unsatisfactory, and unsuited to ordinary public school conditions. The Batiavia plan supplements class instruction with individual help and supervision. It is the parent of the much vaunted "supervised study" plan of today. As in the Pueblo plan no advantage so far as completion of the course in less time is given. More attention is given to helping the backward to keep up than in helping the gifted to advance. It is inadequate in providing for the superior pupil.

The unassigned teacher is a modification of the Batavia plan. She meets with backward pupils, and in some schools helps direct the work of the better students in order that they may do more extensive work. They do not gain extra credit however, and should extra credit be given the adoption of the plan on a wide scale would not be warranted on account of expense and because better methods are available.

Under the group system, the first differentiations to be noted are in respect to whether the work done is extensive or intensive. In the first instance, the plan is

merely for the gifted pupils to be assigned more work, either by individual assignments, all pupils being grouped together, or by having the superior pupils in a separate class where they are given a more extensive cours. The idea involved is worked out by having a minimum and a maximum course of study. It is quite a popular idea, but seems unfair to the gifted pupils unless additional credit is given for the work. It would be possible to make the maximum course one and a half or twice as extensive as the minimum, and give corresponding credit for its completion. That is, while the average class received one credit for a year's work in, say English, the superior class would do twice as much work on the same subject, and receive two credits. Instead of applying this within subjects, it is sometimes illustrated by permitting pupils to take more subjects than the average. The ordinary child may be allowed a maximum of four subjects a year, while the extra-ordinary may take six. I repeat, however, that if this plan is followed the gifted child should not be required to gain more credits for graduation than the average, but should be permitted to profit by his superiority.

Some teachers use the intensive plan; that is, they insist upon the gifted child doing better work than the average. A grade of seventy-five regarded as satisfactory for the average child would be called poor for the superior child. Here again additional credit should be given for superior work. If it is determined that seventy-five is the average

rank, the child who makes ninety is entitled to 1.2 times the credit given to the poorer student. It seems that neither of these methods alone does justice to the superior pupil, as he will not only carry more work but will make better grades than the average.

It is rather hard to evaluate the shifting group plan on account of the variety of schemes in use, and the lack of trial in many different schools under different conditions. By supplementing it with individual work such as the unassigned teacher can do, and by supervising study better results will be secured than it gives at present.

Under the constant group plan a selection of the gifted pupils is made and those of approximately of the same age and attainment are put in the same class or classes of the same rank. The regular course of study is take n up and completed as rapidly as possible. There is no reason for assuming that pupils are rushed through the work since they merely labor at the maximum of their capacity or near it. At least there has been no tendency to overdo. This plan works very successfully in large schools, but is quite out of the question in schools having less than 3,000 pupils in the whole enrollment, which makes special rooms or opportunity schools for the gifted children possible. It is recommended for large cities, but even in large cities individual work as in the Batavia plan, through supervised study, or the unassignedd teacher should also be used. Opportunity schools are possible

in large centers of population, but the big problem is to make every school, urban and rural, an opportunity school. Following are suggested a few tentative plans by which this may be accomplished in the upper six grades of the schools operating under the six-six or six-three-three plan, using the pupils selected in this study and the Eugene schools as examples. For the lower grades a combination of the shifting group and the individual plans is recommended until more experience has been gained.

Referring to the grade table again we find the following conditions confronting us:

	Junior High School			Senior High School		
Grades	7	8	9	10	11	12
Number of pupils	4	4	10	12	10	11
Totals		18			33	

The question is how to provide for a normal rate of progress for eighteen junior high school pupils and thirty-three senior high school pupils, the general principles being applicaple to other schools. Three plans are presented as worthy of consideration with those that have been given.

Plan 1

In this plan, a drawing illustrating the arrangement is given on the following page, the special assignments, projects, etc., would in the last two years be taken from the tenth year, insuring the completion of the whole course in

Plan I

Grade	Social Science	English	Science	Math.	Arts	Physical Tr. and Vocations
7	Class with average pupils. Progress at normal rate.	Class with average pupils. Special assignments with extra credit.	Projects. Extra credit.			May divide time with other subjects or carry additional subjects.
8						
9	Squares stand for year's work					
10						
11						
12	5 credits			$2\frac{1}{2}$		
		$7\frac{1}{2}$	$7\frac{1}{2}$		$3\frac{1}{2}$	$7\frac{1}{2}$

five years. Vocations could be substituted for science, mathematics, or English at any time or for any entire course, the social sciences furnishing the core or common element throughout, the social science core being not merely a matter of learning but of association - the socializing opportunity of the complete school experience. No special teachers are required by this plan, and the school entails no extra expense. The complete course may be finished in four years by narrowing the offerings to produce a more symmetrical development, and to furnish a richer experience - more satisfying to the many-sided interests of the student.

Plan II

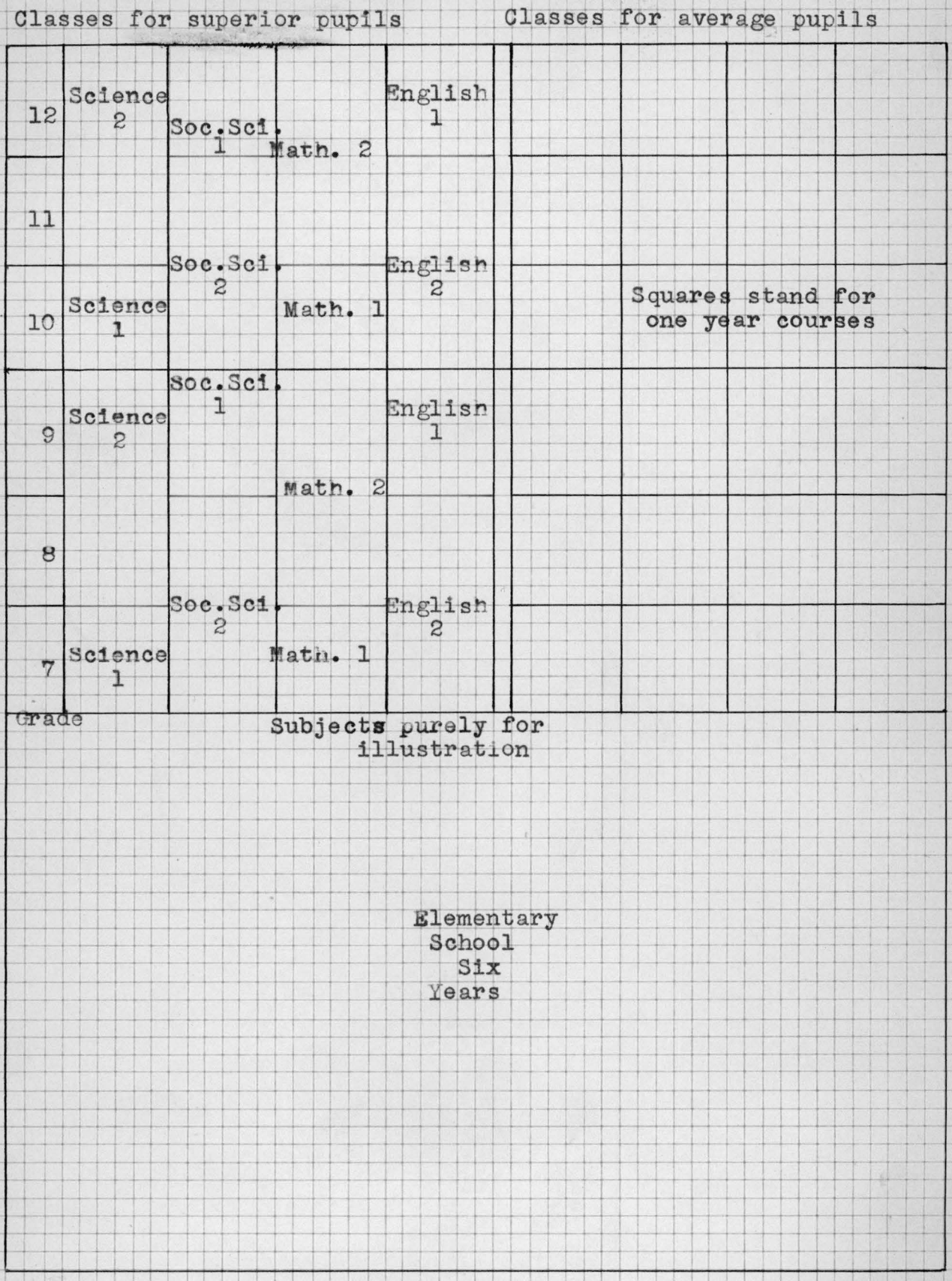
A group rather than grade organization, the superior students being put together. This plan would involve a special teacher for the junior high school and one for the senior high school. The groups would meet at intervals to report progress, cooperate in solving problems, and to receive suggestions. The idea here is a combination of the theory of Dr. Charles Merriam and the project method now in vogue. The organization of subject matter would be based on projects; facts would be mastered as they were needed to meet real life situations. Either four or five years should be given to the completion of the course, depending upon the number of subjects offered. If opportunity for vocational work is at hand, and for music and

art the five year organization should be required. This differs from plan 1 in providing special teachers for the gifted pupils, and in making a new organization of subject matter and method. Only through use of the project plan can two teachers direct the work for these two classes - junior and senior groups. In some subjects, two or even three grades might be combined, and the groups would not have recitations daily in the same subjects. The function of the teacher would be that of a leader in a seminar, rather than that of one who hears recitations. The mastery of only those things needed in the solution of the problems of importance would tend to eliminate much cumbersome and useless material now taught. Work in the vocational lines, and in music and art are matters of individual instruction almost entirely, irrespective of the ability of the students.

Plan III

This is a group plan in which inferior and superior students work together in certain subjects every year, while in other subjects the gifted do two year's work in one year. Combine advantageous elements of the individual plans. In schools having an enrollment sufficient to justify or necessitate a division of classes, there would be no additional classes required since the superior could be grouped together and the average or normal put in separate groups. The work would be finished in two thirds the usual time by this method. In the same year, two year's work would be done in two subjects,

Plan III


Classes for superior pupils
Classes for average pupils
12
11
10
9
8
7
Science 2
Science 1
Science 2
Science 1
Soc.Sci. 1
Soc.Sci. 2
Soc.Sci. 1
Soc.Sci. 2
Math. 2
Math. 1
Math. 2
Math. 1
English 1
English 2
English 1
English 2
Squares stand for one year courses
Grade
Subjects purely for illustration
Elementary School Six Years

and one year's work in two others. This would mean six credits a year. Concentration should be on closely related subjects; science and mathematics one year, and perhaps history and English another. Pupils could be shifted from one group to another at the end of each wuarter. Another advantage of this plan is that the average pupil, who often, according to Hall-Quest is good in one subject, could also be allowed to take one of the concentrated courses each year instead of two, and thereby finish the work in five years. Average pupils without special ability would require six years to finish the course while poor students might take a year longer. This course might be planned so that inferior pupils would in time be allowed to complete the course. Those that could not reasonably be expected to finish the regular course say in one year more than the time required by the average would not be permitted to enroll in the regular courses at all, but would be given special work.

This scheme seems to have a good psychological basis, as well as being adaptable to varying conditions. From the economic and administrative points of view it has several things to commend it.

In order to carry out this plan for providing for gifted pupils there will be necessary a slight increase in the teaching force, but this increase will be more than offset by the saving effected by the individual whether he be average

or gifted. The best plan therefore provides that every child shall have an opportunity to progress as rapidly as he is able. In the case of the superior student this would guarantee that he reaches the period when best productive work is done with an equipment and training that would enable him to do intelligent and thoughtful work. The discovery and fostering of this class of students should be one of the main aims of education in a republic.

Chapter VII

Conclusion

The correlation between the group and the individual mental tests is so high that it would seem that in selecting the superior group the easier method might be used alone with certainty. The limitation in the case of the group tests so far devised is their inadaptability to lower grades; of the individual tests in their low range for older students. The Otis tests are inferior to the army Alpha on account of lack of adequate norms and extreme length of test. It has no specific advantages. The new national tests would seem to meet every need of a group standard that could be quickly and conveniently administered to select the upper ten per cent. of pupils. However, should there be any marked divergences observable, or uncertainty, the individual test should be given as a final criteria, and also to supply diagnostic data.

The physical tests cannot be dispensed with. It is conceivable that a pupil of erratic temperament and a deviate from normal in ordinary conduct might make a satisfactory showing in both group and individual mental tests. This abnormality would likely be detected in the physical examination;- being manifested in nervousness or other signs of instability and weakness. The relation between lung capacity and weight seems to afford the necessary index to physical capacity. These measures coupled with the teachers' estimates or pedagogical record reduce to a minimum the dangers of over crowding by including a zealous student with a superior group in the belief

that this student is of more than normal capacity. The correlation between the mentality, vital index, and of these with the pedagogical standing is invariably high.

There is need of a single term to express the capcity of the individual for work, or of what might be called the efficiency index. Such a value would enable one to rate students conveniently for purposes of adapting tasks to their relative abilities. Such a term might be discovered or formulated as existing between mental age and vital index.

The data on precocity clearly indicates its early appearance, and justifies the statement often made that superiority should be early recognized and given a chance for development.

On the economic and social side we find a verification of previous conclusions; namely, that the children from the best homes are those with the superior inheritance and opportunity.

The pedagogical problem is to give the superior students the opportunity to progress through school at what is to them a normal rate. Two systems are presented on which there is abundant experience:- the individual and the group. Local conditions would largely determine which of these two and which special division of either is most desirable. The tendency seems to be in the direction of a combination of individual and mass instruction.

The number of pupils of distinctly higher ability ranges around ten per cent. of the total. Both the number and

the quality of the talent is sufficient to warrant that special methods be adopted to discover it and foster its development.

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