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A STUDY OF THE GRADES OF FRESHMEN
AT THE UNIVERSITY OF MASSACHUSETTS

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A STUDY OF THE GRADES OF FRESHMEN
AT THE UNIVERSITY OF MASSACHUSETTS

BY

HALL GERALD BUZZELL

A problem submitted in partial fulfillment
of the requirements for the Master of
Science Degree

University of Massachusetts

1950

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CHAPTER I
INTRODUCTION

CHAPTER I

INTRODUCTION

The acceptance or rejection of over a million applicants for admission into our Colleges and Universities is one of the gravest problems of our present day education program. Our Colleges can take only a limited number of these applicants and upon their choice rests the education of the nation.

Present Day Enrollments -- With the end of World War Two, college enrollment in the United States increased greatly.

Colleges all over the country expanded their facilities in order to accommodate the veteran student. In 1939 there were about 1,400,000 students in colleges and in 1948 there were 2,408,249 students enrolled in colleges in the United States.⁽¹⁾ This increase in enrollment has put a great strain on the educational system of this country.

Admissions and Withdrawals in Our Colleges -- Ruth Strang wrote in 1934 that each year American colleges admit one third of a million students. Of the number, approximately sixty-five percent leave the institution without graduating. Mortality (withdrawal from college)

(1) Collier's Yearbook, - (1948 and 1949)

is usually higher among men although there are marked institutional differences.⁽²⁾ The greatest mortality is found in the expected order: freshmen, sophomores, juniors and seniors. The type of institution influences mortality. Colleges with high selective standards of selection and orientation average fifty percent or higher.

Order of Mortality -- Colleges of arts and sciences within universities show highest gross mortality. However in net mortality the colleges rank as follows: Home Economics, Commerce, Agriculture, Liberal Arts and Sciences, Engineering, Education and Law.

Causes for Leaving -- A major cause of leaving college before graduation is failure to do satisfactory work. It is also generally recognized that many students tend to be misfits in the college they have entered. These facts indicate the need for a study of the admission policies of colleges and universities and for research directed toward identifying the items of information on which admission should be based.

Procedures for Determining Admission -- In most colleges procedures for determining admission involve using one or more of the following types of data for the identification of students supposedly able or likely

(2) Strang, Ruth - Personal Development and Guidance in College and Secondary School. p. 341.

to maintain an acceptable level of achievement.(3)

1. High School Diploma
2. High School Transcript
3. High School Subject Certificates
4. Rank in High School Class
5. College Entrance Examination
6. Examination by Institution
7. Intelligence or Aptitude Tests
8. Principal's Recommendation
9. Personal Interview

History of College Entrance Requirements -- Until about 1870 each American college selected its own students primarily by examinations in subjects and according to local standards. Since there were no general standards as to what constituted a college, there could be no general standards or procedures for admission. In 1871 the inspecting and accrediting of high schools by universities was first undertaken.(4) The year 1892 saw the first co-operative setting of standards between colleges and secondary schools. By 1915 the so-called Carnegie Unit, based on semester hours of study under standard conditions, had become generally used by those colleges which admitted students on the basis of secondary school work. For other institutions the College Entrance Examination Board provided

(3) Kurani, H. A. - Selecting the College Student in America. p. 124.

(4) Duffus, R. L. - Democracy Enters College. p. 244.

a means of uniformity.⁽⁵⁾ By 1919 most Eastern institutions were admitting students on the basis of the College Board Examination rather than preparatory school certificates.

After 1919 some institutions administered intelligence tests as a means of guidance or of determining the admission of students not presenting appropriate certificates or units.

In 1926 the College Board adopted "scholastic - aptitude tests" as supplementary instruments. In recent years, admission procedures have been expanded to include the inspection of the students' social and economic background, personal characteristics, and educational and vocational plans. Comprehensive achievement tests in various subjects have been used at the time of admission for selecting students in curriculums and subjects.

Admission Standards -- Admission standards are increasingly being defined in terms of specific knowledge and skill and specific traits directly measured instead of time spent under standard conditions in a secondary school.

There is still, however, much variation among institutions in regard to the basis of admission. About sixty-three percent require a complete transcript of high school credits.⁽⁶⁾ About twenty-three percent of the colleges

(5) The Work of the College Entrance Examination Board. p. 300.

(6) Monroe, Walter S. Ed. - Encyclopedia of Educational Research. p. 252.

admit students on the basis of the high school diploma. Many of the colleges have now done away with the College Entrance Examination as a method of entrance.

As long as the aims and standards of the different colleges and even curriculums within colleges differ so widely, it is impossible to determine general admission criteria. Each institution must do its own research to determine its own admission standards.

With the magnitude of this admissions problem in mind, one can only hope to do his part in trying to determine the validity of his own institution's admission standards.

Methods of Verifying the Problem -- By reviewing the achievements of students in the University of Massachusetts and comparing their records with the standards of admissions that were used, it is hoped that the admissions officers will be helped in their choice of possible candidates, and that the great waste of human effort will be lessened by fewer students dropping out of this institution and by better grades being obtained for those who are admitted.

CHAPTER II

REVIEW OF PAST STUDIES ON THE PREDICTION
OF SUCCESS IN COLLEGE MATHEMATICS.

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Prediction of College Success -- There has been much work done by educators all over this country with the one goal in view: that of predicting success in college. Each of these educators tries to find a formula for keeping the failure from ever getting into college. He wants the thousands of failures in college replaced by students who will make a success in college, and he hopes to make this replacement before the failure even enters college.

As can be seen by college records, these educators have failed to find such a formula. All that they have succeeded in doing is to cut down the failures to some extent, and to bring their findings to the eyes of the public. This chapter will review the findings of some of these educators. As will be seen from this review not all of the results agree.

Overall Prediction -- In the study made by Ruth Byrons⁽¹⁾ in 1935, one finds a correlation of .459 between the intelligence test scores and college freshman grades. Her study was based on 250 students registered in the

(1) Byrons, Ruth and Hennon, V.A.C. - "Long Range Prediction of College Achievement" School and Society XLI (June 29, 1935). pp. 877-880.

University of Wisconsin. Ruth Byrons comes to the rather definite conclusion that lack of ability can be determined in a high school student.

A study by Rosenfeld⁽²⁾ in 1938 made on 200 students that attended both the Detroit elementary schools and Wayne University shows a correlation of .46 between the Advanced Intelligence Test and success as measured by the honor point averages in Wayne University.

Crawford and Burnham⁽³⁾, in 1932, found a correlation of .47 between College Entrance Board Examination grades and average college freshman grades, while a correlation of .57 was found between average high school grades and average college freshman grades. This reveals that the high school grades are much better for prediction than the College Entrance Examination. Their study was made on 3,277 Yale students.

In 1935 Ficken⁽⁴⁾ found that high school grades were the best method of predicting success in college. His study concerned the relative value of the Minnesota College Aptitude test and average high school grades. He

(2) Rosenfeld, M.A. and Nemzak, C.L. "Long Range Prediction of College Marks" School and Society XLVII (January 22, 1938). pp. 127-128.

(3) Crawford, A.B. and Burnham, P.S. "Entrance Examinations and College Achievement" School and Society XXXVI (September 10, 1932). pp. 344-352, 378-384.

(4) Ficken, C.E. "Predicting Achievement in the Liberal Arts Colleges" School and Society XLII (October 12, 1935). pp. 518-520.

found correlations of from .55 to .68 between average high school grades and grades obtained in the freshman year at college.

Minzner⁽⁵⁾ in 1940 devotes an entire chapter of his Master's Thesis to a review of the studies made by educators on the correlation of different criteria with college success. He comes to no definite conclusions in this chapter but he does review the findings of most of the educators that did this type of work up to 1940.

Not as much work has been done on success in the specific subjects as in the overall field of college success, but the results of these works will be put down in this chapter. Minzner in 1940 devotes several pages to a review of the studies of educators before 1940 on the prediction of success in specific subjects in college. This study will try not to duplicate Minzner's findings.

In 1945 Leonard⁽⁶⁾ found the following correlations. Average correlation between general mental tests and college success in English is .38 and in Mathematics .36. Average correlation between general achievement tests and college success in English is .42 and in mathematics .45.

(5) Minzner, Raymond A. - "Prediction of Grades in College Physics." Master's Thesis, 1941. Massachusetts State College.

(6) Leonard, J. Paul - "College Entrance Requirements, Can We Face the Evidence On?" School Review (June, 1945). pp. 327-335.

Leonard then states, "There is obviously little relationship between general college success and scores on achievement tests, mental tests, aptitude tests".

Keller⁽⁷⁾ states that other attempts have been made to discover the relationship between scores on tests in special subjects in High School and success in these same subjects in College. Such correlations as the following are typical: in English .64; and in Mathematics .61.

In a study at the University of Oregon, C. F. Kossack⁽⁸⁾ states that of the different factors he considered for determining a student's possible success in a first course in college mathematics, the two most important factors were the student's grade on a placement test, and his high school mathematics score. He found that the score on a psychological test, the scholastic high school rank, and the number of years since graduation were not important.

Scott⁽⁹⁾ found in 1941 that the number of mathematics courses taken in high school had a slight significance in predicting probable success in college mathematics.

(7) Keller, M.W. and Jonah, H.F.S. "Measures for Predicting Success in a First Course in College Mathematics". The Mathematics Teacher. XLI (December, 1948). p. 350.

(8) Kossack, C.F. "Mathematics Placement at the University of Oregon". The American Mathematical Monthly. XLIX (April, 1942). pp. 234-237.

(9) Scott, W.M. and Gill, J.P. "A Prediction of Pupil Success in College Algebra". The Mathematics Teacher. XXXIV, (April, 1941). pp. 357-359.

From a study of about 900 engineering students, Irick⁽¹⁰⁾ concluded that the score on the mathematics placement or training test was the best single factor for predicting a student's success in a first course in college mathematics. High school grades and rank in the high school graduating classes were next in predictive value.

Douglass and Michaelson⁽¹¹⁾ found that the average mark in high school mathematics had a definite correlation with the average college mark in every field. The data also indicated that, in the prediction of success in elementary college mathematics, the average high school grade in mathematics and the average high school mark in all subjects are of approximately equal merit.

Summary -- This chapter shows that there has been much work done on the prediction of success in college. Some of the studies do not agree and some of them coincide almost perfectly. As the subject in each study is the human being, this disagreement is only to be expected. It is very encouraging to find that every study shows that high school grades are one of the best methods of predicting success in college.

(10) Irick, P.E. "A Study of Factors Related to Engineering Mathematics at Purdue University". Master's Thesis, 1945. Purdue University.

(11) Douglass, H.R. and Michaelson, J.H. "The Relation of High School Mathematics to College Marks and of the Other Factors to College Marks in Mathematics". School Review. XLIV (October 1936). pp. 615-619.

The following pages of this study will be devoted to the predictive values of high school grades, and entrance tests in the University of Massachusetts. The results will be compared with past studies and a conclusion will be at least suggested.

CHAPTER III

STATEMENT OF PROBLEM AND OUTLINE OF PROCEDURE.

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Statement of Problem -- This problem is primarily a study of the methods used in selecting students for entrance into the University of Massachusetts. It does not criticize or condone the methods of acceptance. It merely compares the methods with the results obtained by the students of the class of 1951 in the University of Massachusetts.

Subjects and Materials -- The class of 1951 was selected for the study, as it is the first class since the war that is not predominantly veterans. The class was first divided up into three groups, veterans, transfers, and those students direct from high school. The veterans and transfers had to be eliminated to a great degree, as their high school records were not available.

This problem is the study of the records of about three hundred and fifty students from the class of 1951 at the University of Massachusetts. It does not include about fifty students whose high school records were not available.

General Procedure -- All of the material had to come from the records' office and this necessitated a set of cards on which to write each student's high school and college records. The appendix contains a replica of one of these cards.

A separate card was made out for each student, and as many of the blanks on the card were filled in as was possible from the University's records.

It is unfortunate that the records at the University of Massachusetts do not give the student's high school average in all subjects. Other studies reveal that the high school average gives a higher correlation with college grades than any other criterion.

After these cards were complete, several scatter diagrams were made from the cards. This problem pictures these scatter diagrams and tries to explain in a logical way the importance of each.

CHAPTER IV
ORGANIZATION OF DATA

CHAPTER IV

ORGANIZATION OF DATA

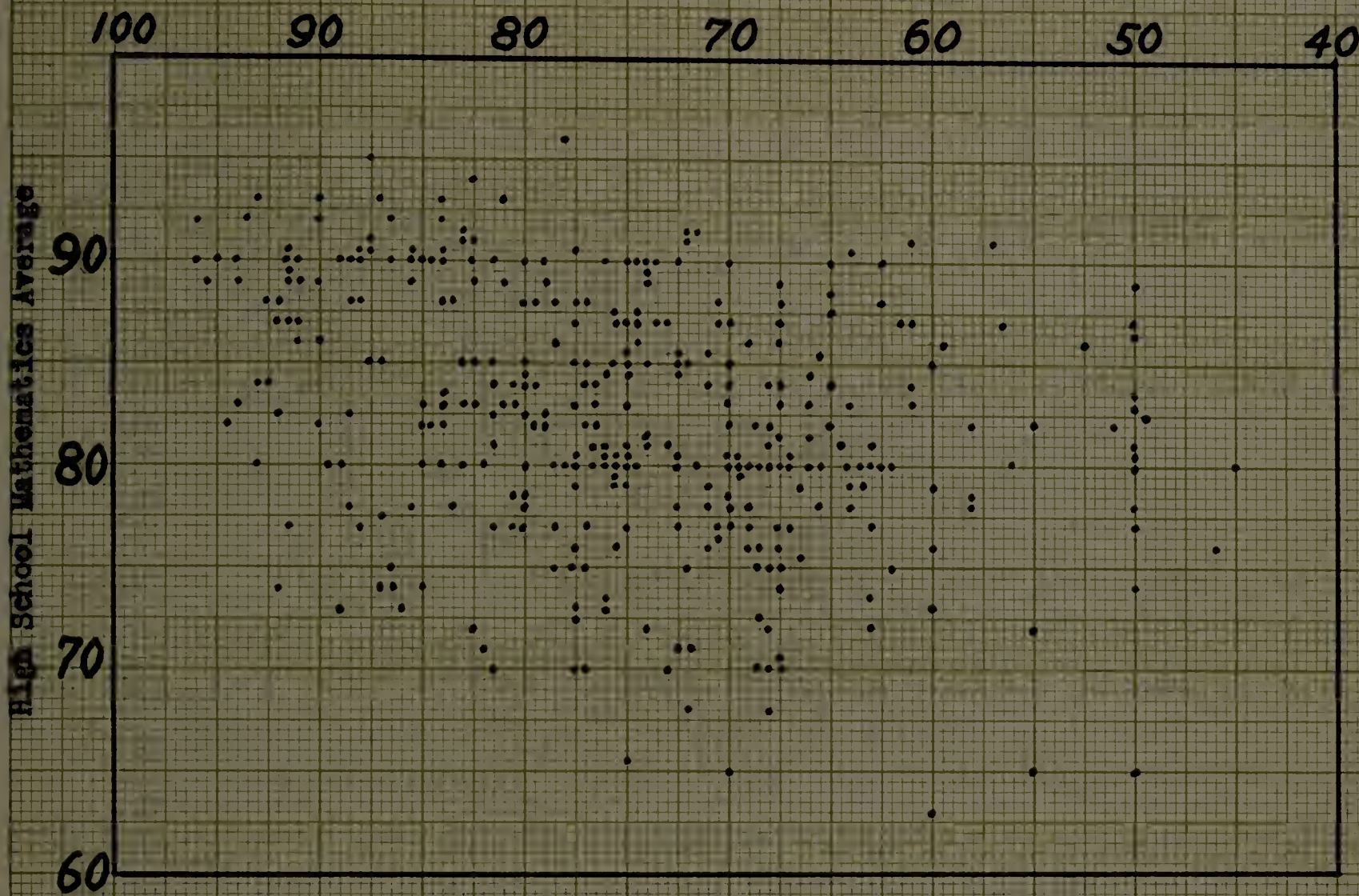
This chapter is a presentation of the facts found in the examination of the dean's records at the University of Massachusetts. It is a record of the scholastic achievement of the students in the class of 1951 at the University of Massachusetts.

The Comparison of High School Averages and College Averages in Mathematics -- The most common method of selecting students for college is by their high school average. This is one of the methods used in the University of Massachusetts. On page 15 there is a scatter diagram, No. I, made from the class of 1951 at the University of Massachusetts. It plots the high school mathematics average of each student against his first-year mathematics average in college.

Results of Study -- Scatter diagram No. I shows a correlation of .46 between high school and college averages in mathematics. This correlation is not very high, yet a study of the scatter diagram reveals many very interesting facts.

Record of Students Whose High School Averages were 90 or Above -- In the class of 1951 there were fifty-seven students who received a 90 or better average in high school mathematics. Of these fifty-seven students, eleven received an average of 90 or above in mathematics

First Year Mathematics Average



$$r = .4589$$

SCATTER DIAGRAM I. This Scatter Diagram Is Made Up Of The High School Mathematics Averages And The First Year College Averages In Mathematics.

in college while only two failed the course. There were twenty-six who received grades in the eighties, fourteen in the seventies and four in the sixties. This shows that only 3.5% of the students that were in the above group failed and that 19.3% maintained a 90 average in college. Even more revealing is the fact that from this group 89.5% received a grade of at least 70% and 96.5% completed the mathematics requirements. These students certainly would appear to be good risks so far as college mathematics is concerned.

Records of Students Whose High School Averages were in the Sixties -- In the class of 1951 there were only seven students that had high school mathematics averages in the sixties. Of this group none received a grade of better than 80 in college mathematics. Three were in the seventies, two were in the sixties and two failed the course. This reveals that 35% of this group failed to meet the minimum college requirement in mathematics.

Overall Picture in the Study of High School Averages -- This scatter diagram shows that 7.7% of the students that begin mathematics in the University of Massachusetts fail to pass the mathematics requirements in the first year. It shows that those students who received a 90 average in high school mathematics have a much better chance of passing college mathematics than does a student who barely passed mathematics in high school.

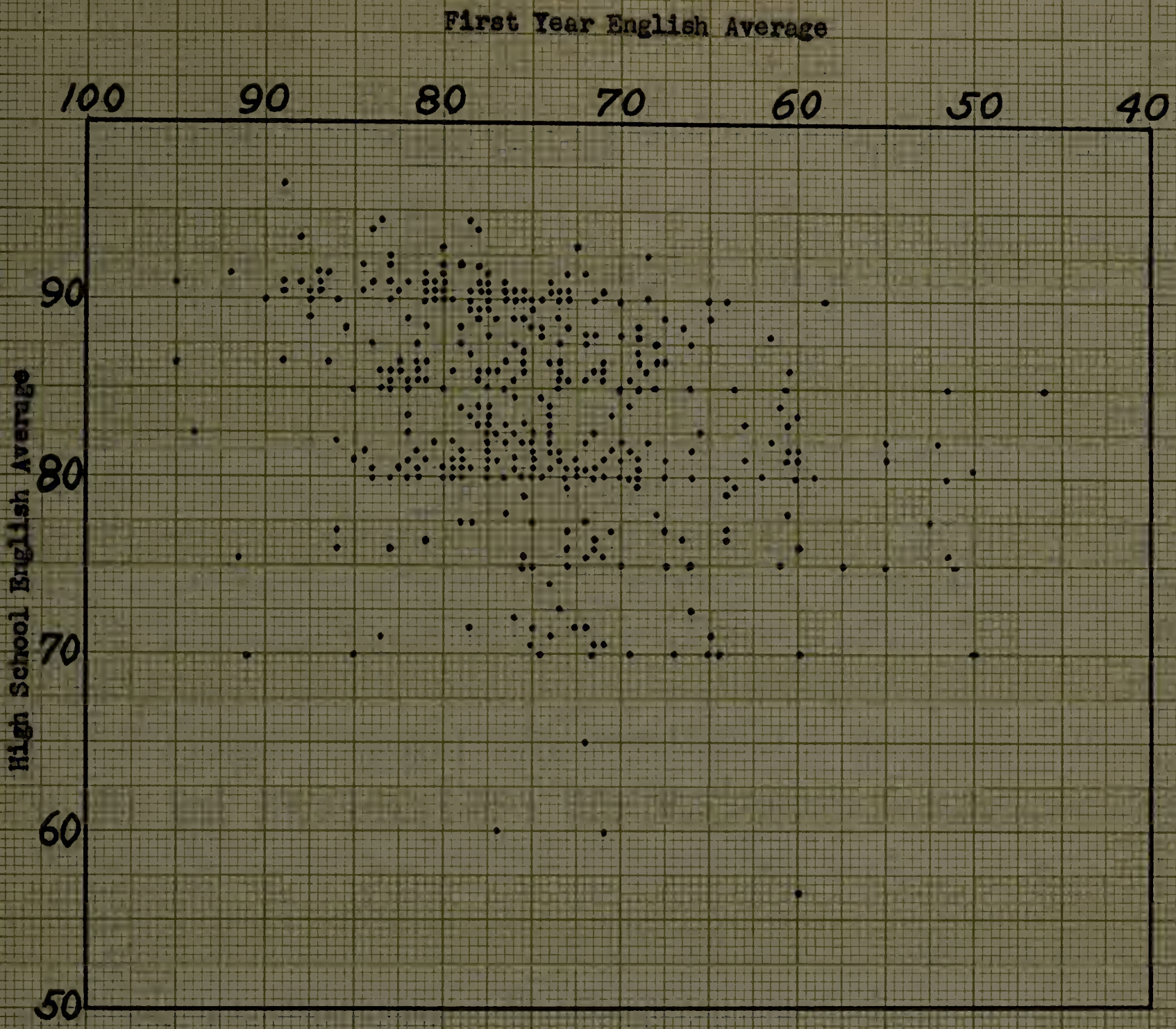
This scatter diagram also shows that of the 33 students that received 90 in college mathematics, 33% were from the 90 high school group, 61% were from the 80 high school average group, 6% were from the 70 high school average group and not a single student from the 60 high school average group was above 90%.

It would seem from these results that the better a student is in high school mathematics, the better he will be in college mathematics. As is seen from the scatter diagram, there are many exceptions, but as a general rule it will be more true than not. It also seems fair to suggest that no student whose grade is below 70 in high school mathematics should be admitted into the University of Massachusetts unless other qualifications are found which out-weigh the probability of little success in Freshman Mathematics.

The Comparison of High School Averages and College Averages in English -- Scatter Diagram No. II plots the high school English average of each student against his first-year English average in college.

Results of Study -- Scatter Diagram No. II shows a correlation of .28 between high school and college averages in English. This is a rather low correlation, yet a closer examination of the scatter diagram reveals some interesting facts.

Records of Students Whose High School Averages were 90 or Above -- In the class of 1951 there were 78



$$r = .2847$$

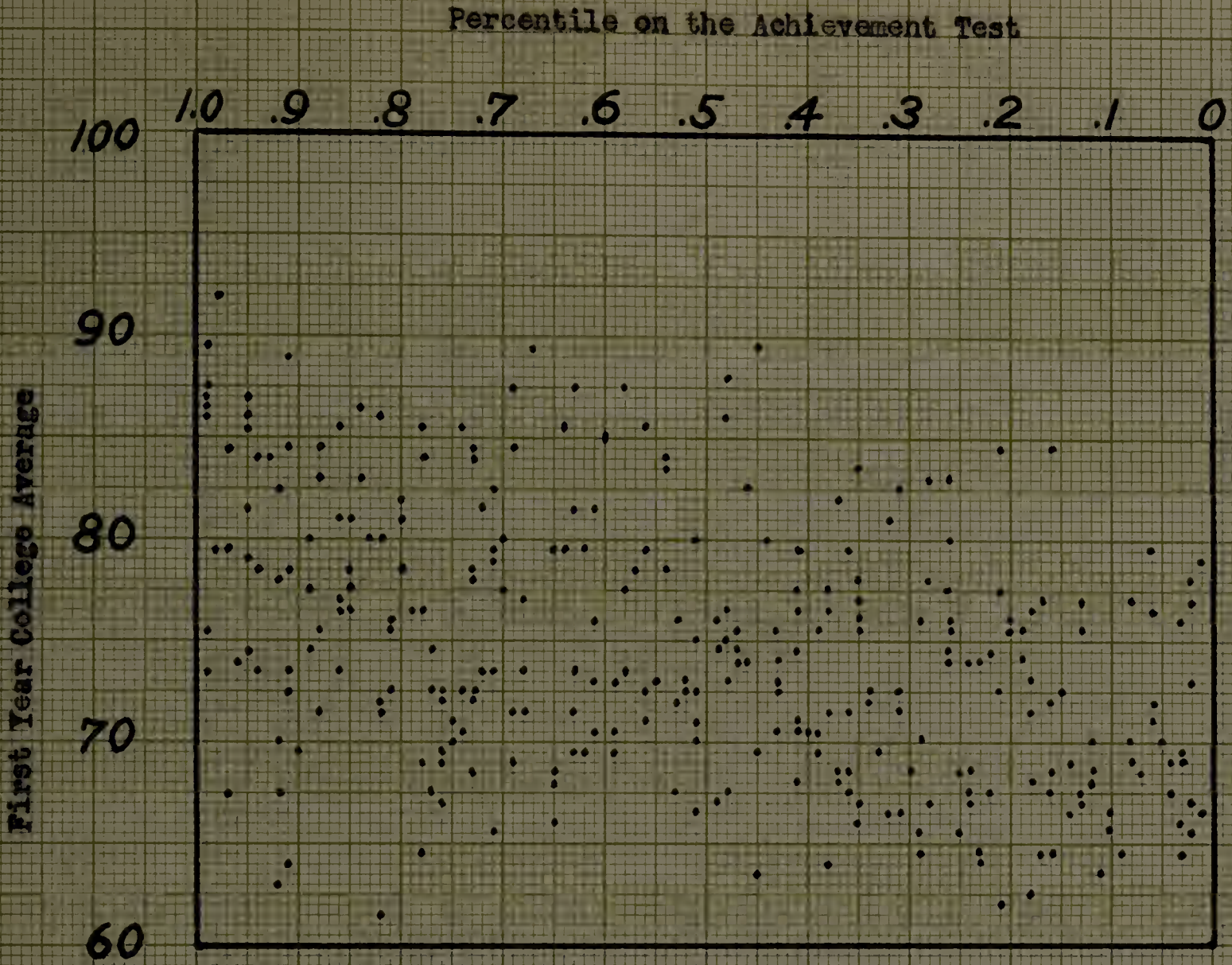
SCATTER DIAGRAM II. This Scatter Diagram Is Made Up Of The High School English Averages And The First Year College Averages In English.

students who received a 90 or better average in high school English. From this group three received a 90 average in college English while only one failed. Twenty-seven received an 80 average, thirty-three received a 70 average and four received a 60 average. This reveals that from the group 3.8% received a grade of 90, 47.5% received a grade of 80, 42.2% received a grade of 70, 5.2% received a grade of 60, while only 1.3% failed.

Records of Students Whose High School Averages were Below 70 -- In this group there were only four students. None of these students received a grade of better than 80%, yet all of them passed the freshman English requirements. Seventy-five percent of this group were in the 70 range and 25% were in the 60 range.

Overall Picture -- This comparison of high school averages and college averages in English reveals the need of another criterion for the selection of students. High school grades in English should not be used to any great extent in the selection of entering students at the University.

A Comparison of First Year Averages vs. Grades on the Achievement Tests -- A very popular means of admission into some colleges is the college achievement test. Scatter Diagram No. III plots the first year average of



$$r = .3708$$

SCATTER DIAGRAM III. This Scatter Diagram Is Made Up Of The First Year College Averages And The Students Percentiles On The Achievement Test.

students in the class of 1951 against the grades that these same students received in an achievement test given by the University of Massachusetts upon admittance into the school.

Results of Study -- Scatter Diagram No. III shows a correlation of .37 between the achievement test and grade of students in their first year of college. As can be seen from the scatter diagram there is a slight trend for those pupils who did well on the achievement test to do well in college, but there are so many exceptions that there can be little use for this particular achievement test.

Average Grades Within the Different Percentiles -- The average grade in the separate percentiles is shown by the red line on scatter diagram No. III. As can be seen from the scatter diagram, the highest averages are in the upper 20 percentile while the lowest ones are in the lower 20 percentile. This average is at a high of 77% in the 8th and 9th percentile and at a low of 70.5% in the 1st percentile.

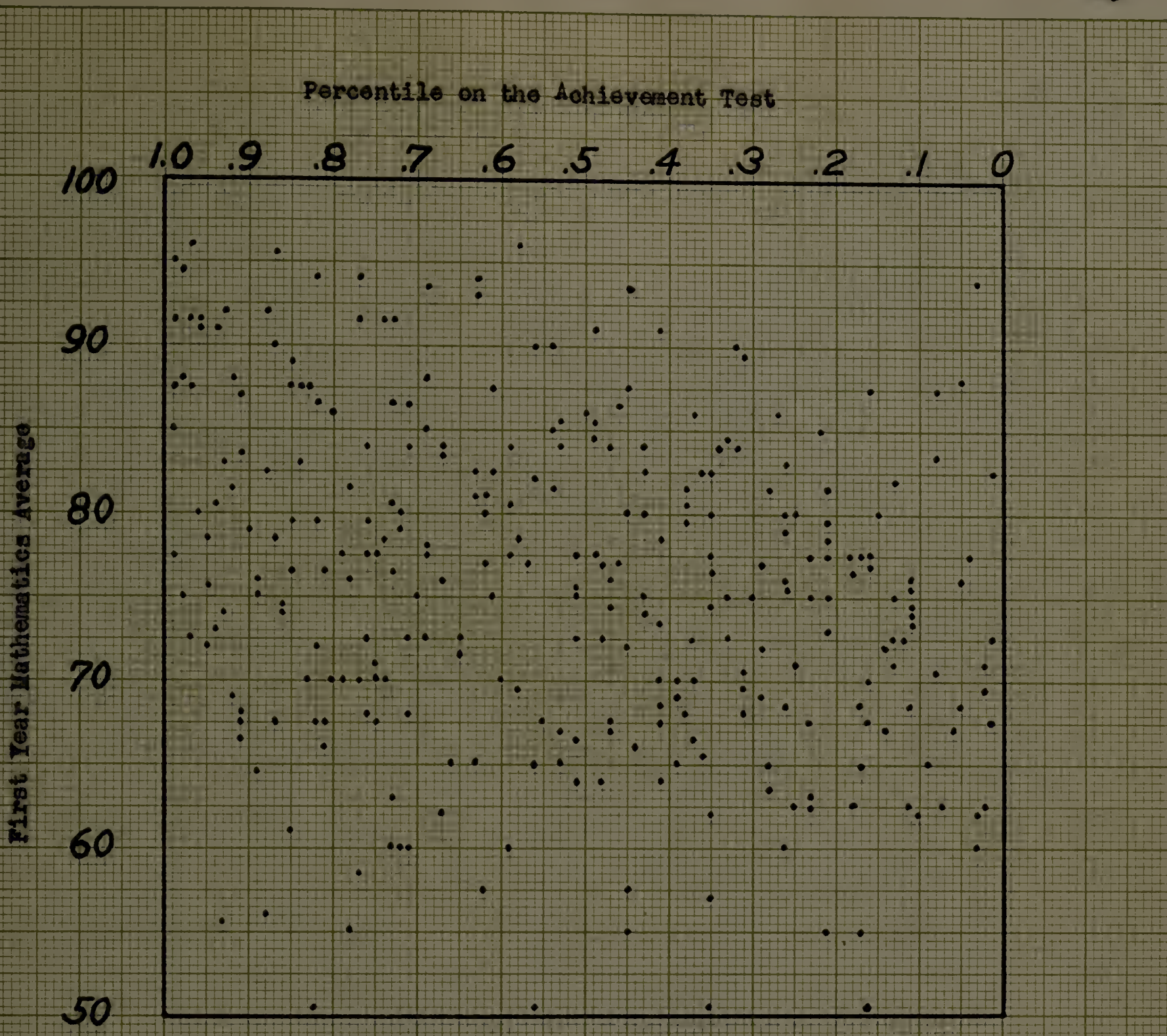
Overall Picture of the Achievement Test as a Means of forecasting First Year College Averages -- It is readily seen from Scatter Diagram No. III that if the achievement test could be given to all students applying for admission into college and could be used as a method of admission, that the students would be admitted who would tend to do better work in the University.

A Comparison of First Year Mathematics Averages vs. Grades on the Achievement Tests -- Scatter Diagram No. III reveals that the achievement test is of little use in forecasting a student's freshman average. This fact alone should not lead one to throw out the test as useless. A closer examination may show the test to be a good measure for testing students in certain subjects. The first course that was examined was the freshman mathematics course. The achievement test percentiles were plotted against the mathematics averages of the different students from the class of 1951 at the University of Massachusetts.

Results of Study -- Scatter Diagram No. IV shows a correlation of .214 between the achievement test percentiles and a student's grades in mathematics.

Overall Picture of Scatter Diagram No. IV -- This scatter diagram shows a slight trend for the better students to do well in the achievement test, yet the exceptions are so numerous as to prohibit any extensive use of the scatter diagram.

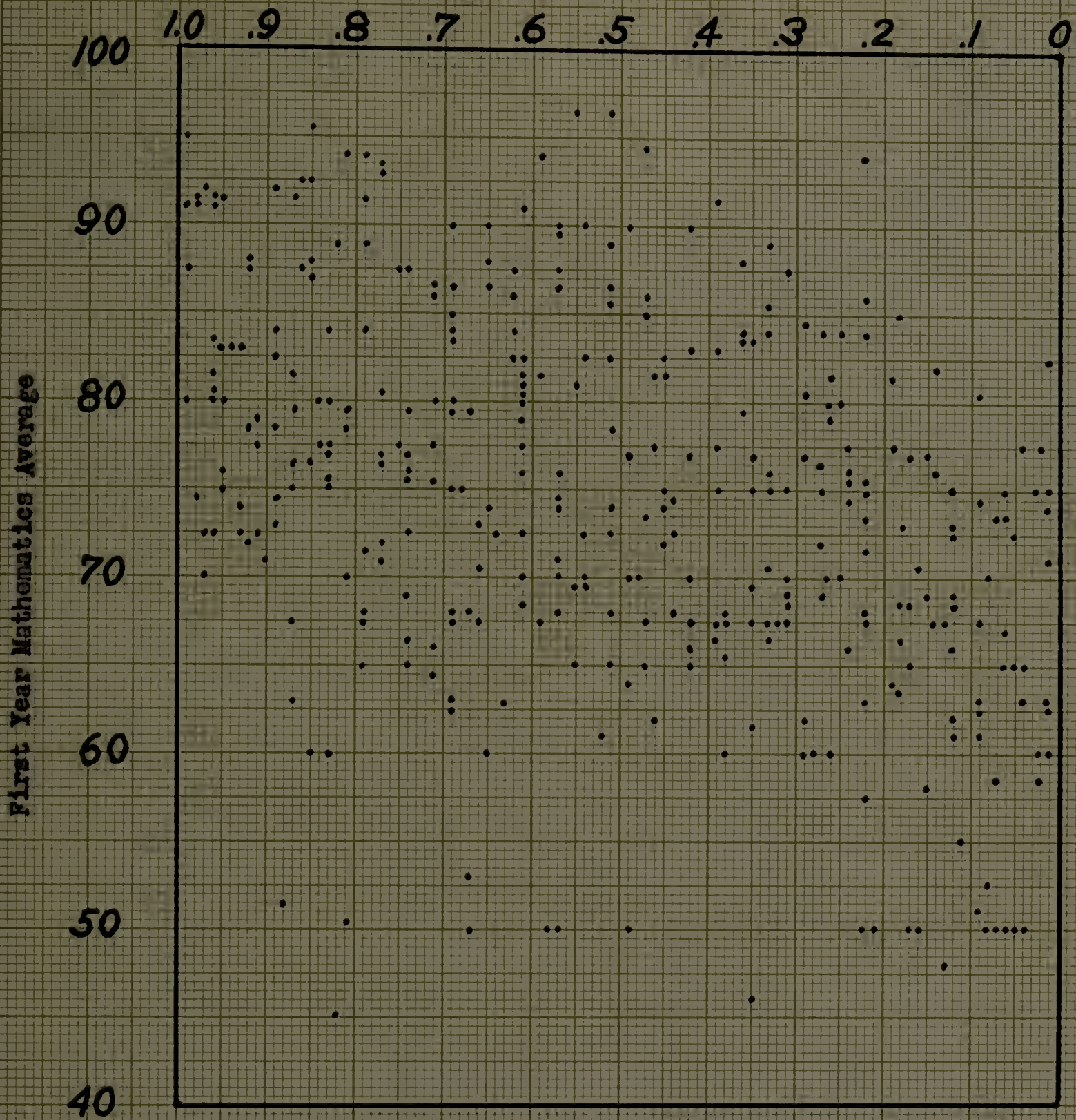
A Comparison of the Numerical Part of the Achievement Test and First Year Mathematics Averages -- A closer examination of the achievement test reveals that it is made up of two parts. The two parts are composed of a verbal section and a numerical section. Scatter Diagram No. V plots the percentiles received in numerical part of the achievement test against the math-



$r = .214$

SCATTER DIAGRAM IV. This Scatter Diagram Is Made Up Of The First Year Mathematics Averages And The Students' Percentiles On The Achievement Test.

Percentile on the Numerical Section
of the Achievement Test



$r = .3869$

SCATTER DIAGRAM V. This Scatter Diagram
Is Made Up Of The First Year Mathematics
Averages And The Students' Percentiles
On The Numerical Section Of The Achievement
Test.

ematics averages of the different students from the class of 1951 in the University of Massachusetts.

Results of Study -- Scatter Diagram No. V shows a correlation of .39 between the numerical part of the achievement test and the college mathematics grades. This correlation is rather low and would seem to be of little use. A closer look at the scatter diagram will nevertheless reveal that not a single student in the upper ten percentile received a grade of less than seventy percent in mathematics in his first year in college.

Comparison of the Upper and Lower Ten Percentile -- In the upper ten percentile, one finds about 24% of the students above 90 in their college mathematics, about 34% in the eighties and 42% in the seventy range. In the lowest percentile one finds 5% of the students in the 80 bracket, 34% in the 70 bracket, 37% in the 60 bracket and about 24% in the group that failed the course.

Overall Picture of Scatter Diagram No. V -- This scatter diagram shows a decided trend for those students who do well in the numerical section of the achievement test to do well in college mathematics. As one sees from the scatter diagram, there are still many fliers on the chart. It shows that this section of the achievement test may be used as an aid for choosing students for

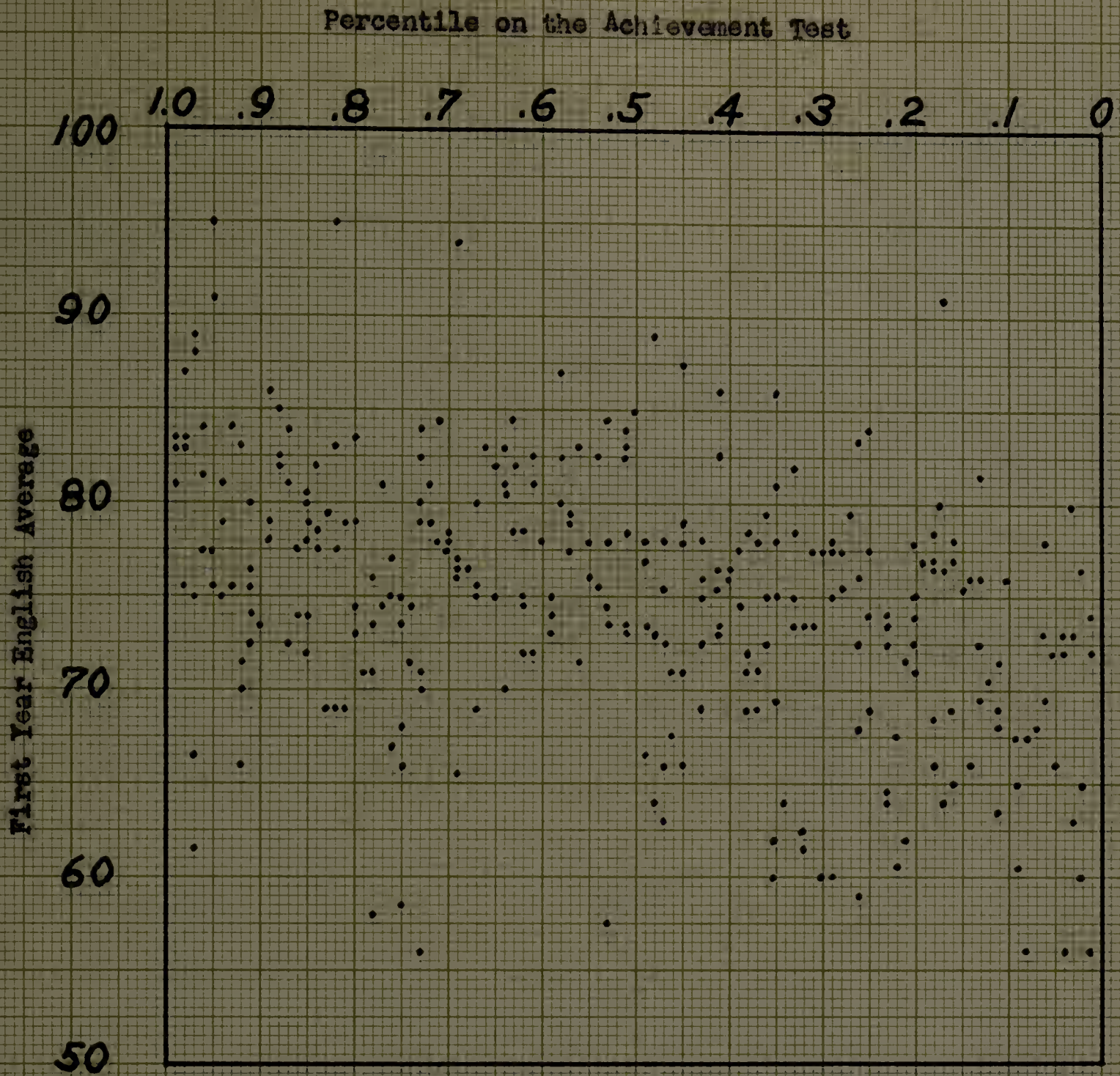
college, yet it must not be used as the only means of acceptance.

A Comparison of the Achievement Test and First Year English Averages -- Scatter Diagram No. VI plots the results on the achievement test against the first year English grades of all the students in the class of 1951 at the University of Massachusetts.

Results of Study -- Scatter Diagram No. VI shows a correlation of .43 between the achievement test and the college English grades. Although this correlation is not too high it is high enough to be of some use. A look at the scatter diagram reveals that there is a decided trend for the better results on the achievement test to do better in English. There are some fliers in this diagram but they are to be expected.

Records of Students of the Upper and Lower Ten Percentile -- In the upper ten percentile one finds that the class average is 78.7% while in the lower ten percentile it is only 68.0%. One also finds that in the upper ten percentile 6% of the students received grades of above 90, 41% received 80, 44% received 70, 9% received 60 and no students failed the course. In the lower ten percentile one finds no students above 90, only 4% of the students received 80, 39% received 70, 44% received 60 and 13% failed the course.

Overall Picture of Scatter Diagram No. VI -- Scatter Diagram No. VI shows a very decided trend for the better



$$r = .4347$$

SCATTER DIAGRAM VI. This Scatter Diagram Is Made Up Of The First Year English Averages And The Students' Percentiles On The Achievement Test.

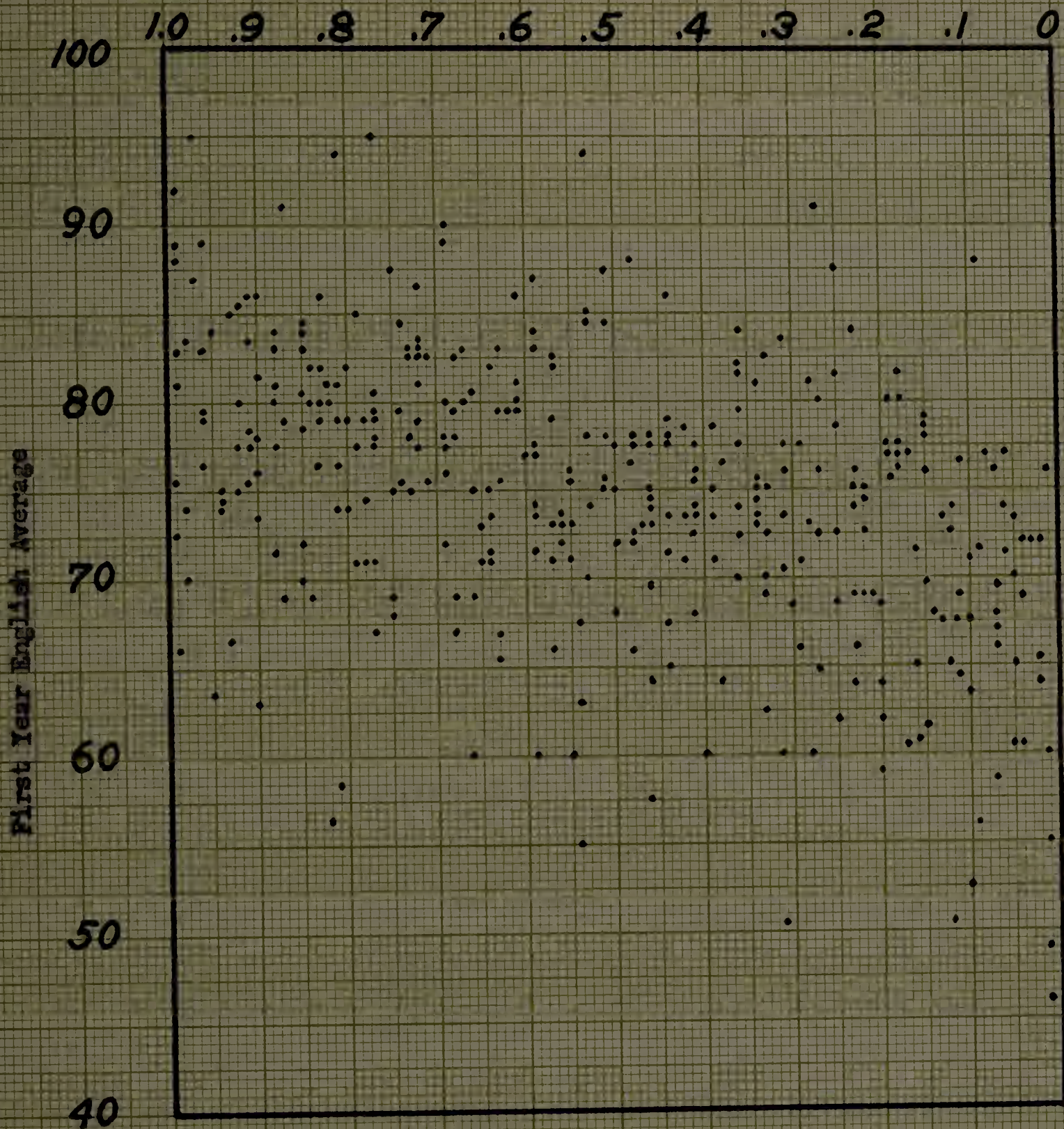
students on the achievement test to do better in college English. There are several fliers in the chart but not enough to discredit the chart. This scatter diagram reveals a method of choosing the better students for English. It is not fool-proof, yet it is a good barometer for picking out the better English students.

A Comparison of the Verbal Part of the Achievement Test and the First Year English Averages -- Scatter Diagram No. VII plots the percentiles received in the verbal part of the achievement test against the English averages of the different students from the class of 1951 in the University of Massachusetts.

Results of Study -- Scatter Diagram No. VII shows a correlation of .49 between the verbal part of the achievement test and the college English grades. Although this is not as high as one could hope for, it is by far the best correlation found thus far in this problem. In this chart one sees that the better results on the verbal section of the achievement test do point to the better students in college English. There are a few fliers but they are the exception rather than the rule.

Records of Students of the Upper and Lower Ten Percentile -- In the upper ten percentile 5% of the students received a grade of above 90 in college English while no person from this group failed to attain a passing grade of 60. Forty percent of the students from

Percentile on the Verbal Section
of the Achievement Test



$r = .4850$

SCATTER DIAGRAM VII. This Scatter Diagram Is Made Up Of The First Year English Averages And The Students' Percentiles On The Verbal Section Of The Achievement Test.

this group attained an 80 average, 45% attained a 70 average and 10% attained a 60 average. In the lower ten percentile one finds that no person attained a 90 average in English, 3.5% of the students had grades of 80, 41.5% grades of 70, 38% grades of 60 and 17% of this group failed the course.

Overall Picture of Scatter Diagram No. VII --

Scatter Diagram No. VII shows a very decided trend for the better students on the verbal section of the achievement test to do better in college English. This is by far the best means found in this problem for forecasting the future English work of a student in the University of Massachusetts. There are still some fliers in the chart, yet there will be some fliers as long as human achievements are studied.

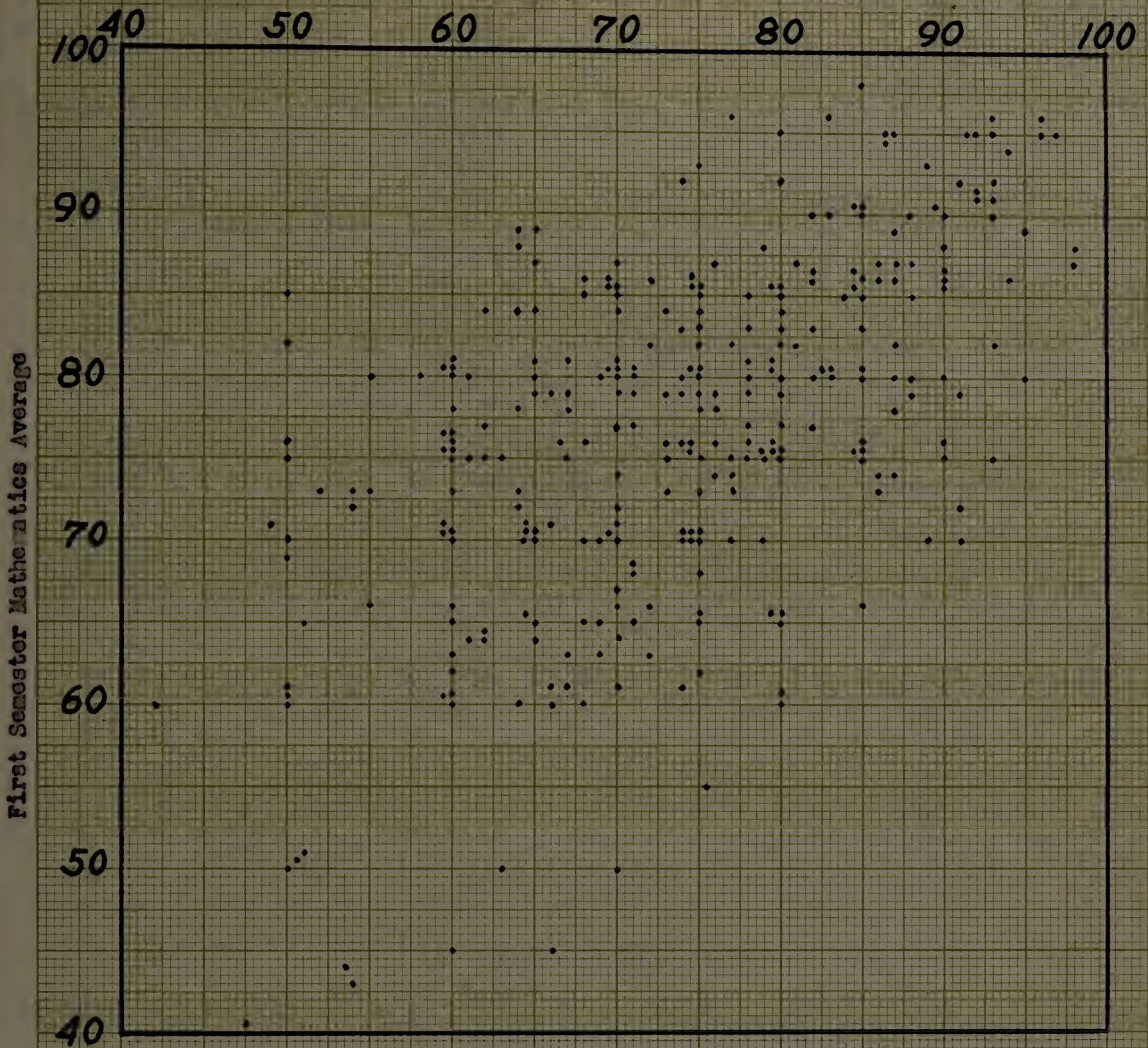
A Comparison of the First Semester and Second Semester Grades in Mathematics -- Scatter Diagram

No. VIII plots the first semester mathematics grade in college against the second semester grade. As is to be expected it does follow a definite pattern.

Results of Study -- Scatter Diagram No. VIII shows a correlation of .49 between the first and second semester grades in mathematics. This correlation is not as high as one might wish for, but does follow a definite pattern.

Overall Picture of Scatter Diagram No. VIII -- A closer examination of the scatter diagram reveals that

Second Semester Mathematics Average



$r = .4915$

SCATTER DIAGRAM VIII. This Scatter Diagram Is Made Up Of The First Semester And Second Semester Mathematics Averages.

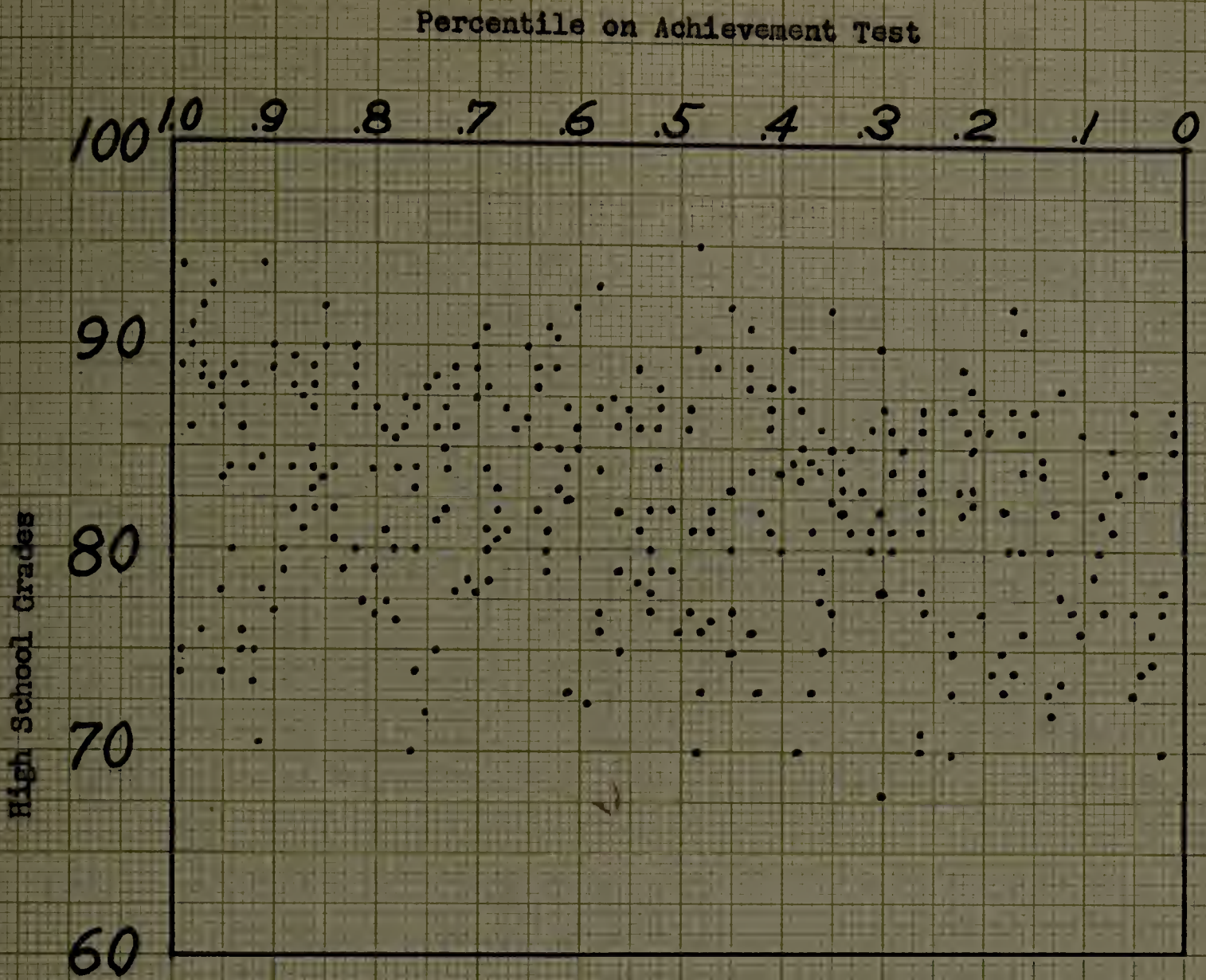
there are many student that do not do as well the second semester as the first. This is probably due to the fact that the first course in mathematics at the University of Massachusetts is a review of high school mathematics, while the second semester does contain many new and foreign concepts in mathematics.

A Comparison of the Achievement Test and High School Averages -- Scatter Diagram No. IX plots the percentiles received on the achievement test against the high school averages of the different students from the class of 1951 in the University of Massachusetts.

Results of Study -- Scatter Diagram No. IX shows a correlation of .23 between the achievement test and high school grades. This is a rather low correlation and would seem to be of little or no use.

Overall Picture of Scatter Diagram No. IX -- A possible explanation for the low correlation between high school grades and the achievement test at the University of Massachusetts may be that the two criteria do not test the same thing. If this is the case then a multiple correlation will reveal it.

A Multiple Correlation of College Mathematics vs. High School Grades and the Achievement Tests -- A review of this study shows a correlation of .46 between college mathematics and high school grades: a correlation of .21 between college mathematics and the achieve-



$$r = .2325$$

SCATTER DIAGRAM IX. This Scatter Diagram Is Made Up Of The High School Averages And The Percentiles On The Achievement Test.

ment test, and .23 between high school grades and the achievement test. These results suggest a multiple correlation.

Results of Study -- A multiple correlation of college mathematics vs. high school grades and the achievement test reveals a correlation of .54. This correlation is much better than any other found in this study. It reveals that both the achievement test and high school grades should be used to select entering students at the University of Massachusetts. It shows that even though the separate methods of selection are not too accurate, when used together they make up, to some degree, each other's deficiencies.

Overall Picture -- This study can only show that a combination of high school grades and rank on the achievement test should be used as a means of acceptance or rejection into the University of Massachusetts. It reveals that each method of selection is testing a different capacity of the student. Together these methods of selection should tend to increase the caliber of the entering students at the University of Massachusetts.

CHAPTER V

RESTATEMENT OF PROBLEM, CONCLUSIONS, AND LIMITATIONS.

CHAPTER V

RESTATEMENT OF PROBLEM, CONCLUSIONS, AND LIMITATIONS

Statement of Problem -- This problem is a study of the methods used in selecting students for entrance into the University of Massachusetts. It compares the methods of selection with the resulting records of these students in college. It attempts to correlate these comparisons and tries to decide the validity of the methods of selection. It compares the results of the achievement tests that all entering freshmen are required to take. It correlates the results of these tests with the student's freshman records.

All of these correlations taken together are shown below:

CORRELATIONS

- (1) High School Averages in Mathematics
- (2) High School Averages in English
- (3) Percentiles on Achievement Test
- (4) Percentiles on the Numerical Section of the Achievement test.
- (5) Percentiles on the Verbal Section of the Achievement Test
- (6) High School Averages in Mathematics and English
- (7) First Year Grades in College Mathematics
- (8) First Year Grades in College English
- (9) First Year College Averages

- (10) First Semester Grades in College Mathematics
- (11) Second Semester Grades in College Mathematics

$$r_{1.7} = .46$$

$$r_{4.7} = .39$$

$$r_{2.8} = .28$$

$$r_{3.8} = .43$$

$$r_{9.3} = .37$$

$$r_{5.8} = .49$$

$$r_{3.7} = .21$$

$$r_{10.11} = .49$$

$$r_{3.6} = .23$$

$$r_{7.63} = .54$$

Conclusions -- The conclusions formulated from this problem are as follows:

The correlation between high school mathematics and college mathematics is .46.

The correlation between high school English and college English is .28.

The correlation between first year averages and grades on the achievement test is .37.

The correlation between college mathematics and grades on the achievement test is .21.

The correlation between college mathematics and grades on the numerical part of the achievement test is .39.

The correlation between college English and grades on the achievement test is .43.

The correlation between college English and grades

on the verbal part of the achievement test is .49.

The correlation between first and second semester grades in college mathematics is .49.

The correlation between the achievement test and high school grades is .23.

The multiple correlation of college mathematics vs. high school grades and the achievement test is .54.

The problem reveals that none of the methods of selection at the University of Massachusetts have a high enough correlation to warrant their use as the only method for acceptance or rejection of a candidate.

Many students in the class of 1951 at the University of Massachusetts did well in college even though their high school grades in English and Mathematics were poor. This would indicate that other qualifications of a student may overcome a deficiency in English and Mathematics.

Many students in the class of 1951 at the University of Massachusetts did well in college even though they were in a low percentile on the achievement test. This indicates that a low grade on the achievement test may be overcome by a student, and therefore the achievement test must not be used as the only method of acceptance or rejection of a candidate.

The high school record is a good method of selecting students for entrance into the University of Massa-

APPENDICES

APPENDICES

The following is a facsimile of one of the cards used to record the data found in the records of the University of Massachusetts:

Name _____ Age _____ Sex _____

High School _____ Prep School _____

Math.		Physics	
Plane Geometry	_____	in High School	_____
Algebra 1	_____	in College	_____
Algebra 2	_____		
Solid Geometry	_____	Chemistry	
Trigonometry	_____	in High School	_____
Review Math.	_____	in College	_____

	College - Math.	English	
Math.	_____	in High School	
Math.	_____	in College	
Math.	_____		
Math.	_____	Aptitude Test	_____
High School Average	_____	Entrance Exam	_____

Remarks: _____ First Semester Average _____

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