A STUDY OF THE MOTIVATION OF SOCIAL CIVICS THROUGH INTER-GROUP CONTESTS

by

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ACKNOWLEDGMENT

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V.W.H.
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INTRODUCTION

One of the most common weaknesses in our educational system has been the failure to secure adequate interest on the part of the students to the subjects presented. Teachers apparently spend years learning the psychology relevant to the principles of learning and then fail to make any direct application of these to their methods of teaching. One is likely to wonder if we are not still working on the antiquated and obsolete theory that the mind is best improved by disciplining it on material which is dull, difficult and of no practical value.

The problem of interest plays such an important part in education because success in all teaching involves the arousing of sufficient interest to motivate study, that is to get a pupil to reasoning and thinking about some topic or problem. Unfortunately the values or advantages of many phases of school work are not readily apparent to the learner. This is partly due to the fact that the material is found in an unnatural and academic setting and partially to the fact that the ultimate value is so distant that the pupil is unable to see its importance.

Interest is of two distinct types, intrinsic and extrinsic. Intrinsic interest is found in the content of the subject matter itself while extrinsic interests do not have such a direct appeal but depend on such drives as pride, rivalry, group spirit, desire for approval, desire for reward and the fear of punishment.
It is the purpose of this study to deal with the problem of motivation through extrinsic interests. Many experiments have been conducted in this field but practically all of them have been conducted in the artificial setting of the laboratory or the experimental school. Undoubtedly the unnaturalness of the setting has done much to change the results of the experiments. In former studies, moreover, the experimenters have confined the motivating stimulus, so far as possible, to one particular element such as knowledge of results or praise, in order that that element might be analyzed and measured as accurately as possible. It has been the purpose in this study to make the motivation as natural as possible, to do away with any technique which would make it seem artificial or in the nature of an experiment to the students and to make it an integral part of the class procedure. It has also been our purpose to use as many motivating devices as seemed to lend themselves naturally to the experiment. No attempt has been made to isolate any of the specific factors of motivation but instead the writer has tried to study the sum total of those things which lend themselves to real, stimulating contests. It was then attempted to determine just how the students were affected by the motivating factors, both individually and as groups, and why they were so affected.

If through this study the writer has been able to find a method of motivation which is effective and which lends itself naturally to classroom procedure; if the contest has resulted in making interest in the classroom more dynamic, the credit must be
given to them, who through their studies and experiments have fur-
nished many of the ideas which have been used here and to the co-
operation of friends, students and teachers.
CHAPTER XI
A Preliminary Experiment

This study grew out of an experiment conducted by the writer in the same school during the previous year. Coming into the school at the middle of the year it seemed to him that there was not as much interest and life in several of the classes as seemed desirable, due, undoubtedly, to the confusion which often accompanies a change of teachers at the middle of the year. It happened that there were two Social Civics classes of practically the same size and from the standpoint of teachers' marks they were also of very equal ability. The idea of a contest based on the work done in the course was suggested by the apparent rivalry between members of the two groups and so a plan for a ten weeks' contest with tentative rules was formulated and presented to the two classes, which were then asked for criticisms and suggestions. Both groups were very enthusiastic about the proposal and the vote in favor of the contest was practically unanimous. The suggestion was made by one of the students that the losers should entertain the victors at a picnic and this idea also met with much favor in both groups.

The following plans for the contest were agreed upon.

(1) Objective tests of the true and false, multiple choice and matching types were given once a week. Both classes were given identically the same tests. The arithmetic mean for each division was found and was counted as that many points in the contest.
One other factor counted. One day each week was given to special reports. A general subject was suggested for study but except for this the matter of giving a report was left to the initiative of each student. Failure of any student to give a report counted one point against the total number of points of his group. No attempt, however, was made to evaluate the report as far as the contest was concerned.

The results of the tests were made public on the same day that the tests were given and the total results were kept before the students throughout the contest. The grades of each class arranged in order of rank were placed on the blackboard and the median and quartile grades were labelled. This gave each student the opportunity to see just where he stood in the class and those who were in the lower quartile were encouraged to make every effort to cut down the range of grades in their division as much as possible. No attempt was made at an objective measurement of results but there seemed to be an immediate increase in interest and effort in both classes and this increase continued throughout the contest. Improvement was particularly noticeable in students who had been doing rather poor or mediocre work. Very good students made a slight improvement as did the very poor but on the whole the contest seemed to have had the greatest motivating influence on the average student. At the close of the contest the students were asked to write briefly just what they thought of it. In all but two cases out of the sixty-two that took part they agreed that it had made
the study of Social Civics seem much more interesting than it had before and that they had thoroughly enjoyed it. One of the most pleasing features of the contest was the sportsmanship of the two contesting groups. During the contest rivalry was intense but there was very little if any ill feeling and at the picnic following there was no inclination on the part of the victors to "rub it in" on the other side.

Because school contests are being quite generally frowned upon and because of the subjectivity of the first experiment the writer decided to carry out a similar experiment the following year with an attempt at a more objective measurement of results. In order to do this a study of the opinions of the leading psychologists on the subject of interest and attention was made and this was supplemented with a survey of the experiments which had been conducted in this and related fields.
CHAPTER III

A Survey of the Field

The problem of the proper motivation of the student seems to be as old as education and in practically every period of history rivalry has played a more or less important part as a motivating device. It seems probable, that in the prehistoric life of man, education consisted to a great extent of rivalry with the other members of the family or tribe. James Dreever in his "Greek Education" in speaking of school contests says, "These contests of course were characteristic of Greek life from early times." They included not only athletic and music contests but also contests in 'grammata'. In Sparta, whose schools used the most rigid disciplinary measures that the history of education has ever known and which had an amazingly efficient system of state control, the boys were divided into bands each having their own leader elected by the group, and these bands in turn were organized into divisions. This organization had a twofold purpose, (1) to produce a certain definite type of character and (2) to utilize emulation and competition to the full.¹ In the Roman schools rivalry was again used very effectively.

During the latter part of the middle ages and the early period of modern history there developed in Europe a

¹ James Dreever, "Greek Education".
very effective system of education which made its influence felt over the entire world, the Jesuit Schools. That their teachers were remarkably efficient is born out by the statements of historians. Bancroft says, "Their colleges became the best schools in the world."; William Rodig, "They are the finest and most dexterous teachers and know how to accommodate themselves to the natural gifts of every pupil."; A.M. Jordan, "Their schools were models in method and discipline." These statements are subjective and may seem to be somewhat extravagant but they are borne out by the fact that Protestants consistently withdrew their children from the gymnasium to confine them to the care of the Jesuit teachers, and by the outstanding success of their students in the actual competition of life. Perhaps one of the greatest of the reasons for the success of the Jesuit schools is to be found in their very clever motivating devices. The classes were divided into two groups of about equal ability and the teachers very skillfully played one group against the other. Each individual also had another of about equal ability and skill as his own particular rival. Badges of honor and prizes of various sorts were given to the winners from time to time and especially at the end of the year. The danger of jealousy and selfishness to which this type of motivation is open was almost entirely avoided by the adroit methods of the teachers.¹

¹ Schwickerath, Robert. "Jesuit Education".
This brief survey of early education shows clearly the value of rivalry and emulation in the schools of the earlier periods. Undoubtedly that type of motivation was effective; it did stimulate the students, and it did prepare them for life. These schools existed however at a time when warfare was common and when rivalry was more necessary for successful living than cooperation. The question remains, then, are rivalry and emulation as motivating devices desirable in our schools today? A perusal of the views of leading educators reveals a considerable divergence of opinion on this point.

Before taking up a discussion of the recent experiments conducted in the field of motivation it seems best to give a few of the more commonly accepted definitions of interest and several scales for evaluating class room procedure, which may prove of value in weighing the results of the experiments studied.

H.H. Horne, in his work "Philosophy of Education", says, "Interest is a pleasurable activity of the self. Interest in education is not ease, it is engrossing occupation; it is not play, it is attractive and compelling work; it is not pursuing the line of least resistance, it is discovering the line of greatest attraction. The true opposite of interest is not hard work but drudgery, not solid acquisition but wearying monotony. Interest is the oil which lubricates the wheels of class-room machinery."1

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Thorndike has contributed the following critical evaluation of the important factors involved in improvement in any learning process. The seven factors named are:

1. Interest in work.
2. Interest in improvement.
3. Significance of the work.
4. The problem attitude.
5. Attentiveness.
6. The absence of irrelevant emotional excitement.
7. The absence of worry.

The first five, according to Thorndike, have been proved by experimental and scientific data and are generally accepted but the last two are open to question. All the facts concerning the relation of emotional excitement to improvement seem to be explained best by supposing that the interest in the functions, exercise and improvement, is the active force, emotional excitement being indirectly of value if it produces interest, and of value as a symbol if it is produced by interest. Emotional excitement probably does not produce effective interest so often as has been supposed, the dynamic power of each emotion over behaviour being able to exist without the crude inner excitements, when without emotion the interest is less tiring and distracting and so more efficient. Thorndike believes that much the same thing is true of worry and that other things being equal, tension or worry simply wastes energy and distracts the mind, offering so much additional friction to overcome.

One of the chief causes of the inability to do good school work is the lack of the power of concentration. The learner should

be encouraged to assume an interest. Interest always has an object. The activity of the pupil is seeking an outlet, is directed at some object. Often it is misdirected! An object not interesting in itself may become interesting by becoming associated with an object in which an interest already exists. The two associated objects grow as it were, together; the interesting portion sheds its quality over the whole and thus things not interesting in their own right borrow an interest which becomes as real and strong as that of any native interesting subject.

From all these facts there emerges a very simple program for the teacher to follow in keeping the interest of the child. Begin with the line of his native interests and offer him objects which have some immediate connection with them. Next, step by step connect with these first objects and experiences the later objects and ideas which you wish to instill. Associate the new with the old in some natural and telling way so that interest being shed from point to point finally suffuses the entire system of objects of thought. The teacher whose illustrations abound with points of connection between the child's earlier experiences and the new features of the lesson will be interesting and successful. The teacher who is unable to find and demonstrate such connections will be tiresome and unpopular. All of us have had the experience of being aroused to interest in a previously tiresome talk by hearing the speaker mention some fact with which we are familiar. We all know that such an incidence results in increasing our confidence in the teacher and our respect for his judgment.
According to William James an adult's interests are largely if not wholly artificial. Things which in their original would be repulsive to the individual become interesting because they are linked up with such extremely important things as one's personal fortune, family life and general social responsibilities.\(^1\) Quoting from John Dewey, "Interest is normal and reliance upon it educationally legitimate in the degree in which the activity in question involves growth or development. Interest is illegitimately used in the degree in which it is either a symptom or cause of arrested development in activity." H.E. Bennet gives us a very good chart for the classification of tendencies which because of its length will be placed in the appendix.\(^2\)

Keeping the above definitions and outlines in mind we shall now consider some of the experiments and methods that have been used in the laboratory and experimental schools.

Jordan, in his chapter on Interest,\(^3\) comments on the remarkable success that he had in using a spelling down contest as a motivating factor in the learning of Latin forms. We can all testify to the enthusiasm with which students view short matches of this kind whether in spelling, ciphering or other subjects which lend themselves readily to the same method. The main trouble with contests of this type is that they furnish a motive for the bright students but fail to help the slower ones who of course need it the worst. Many schools offer prizes for the best students but this practice is not very satis-

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2. Bennet, H.E. School Efficiency, pages 250-263.
3. Jordan, A.M. Educational Psychology, Chapter IV.
factory in that it only furnishes an incentive for the best students, and Jordan regards it as actually pernicious, listing it as one of the common causes of failure in school.

F.H. Allport made a study of the value of working with the group compared to working alone and found that while students worked in a group that there was a decided increase in the amount of work done but that there was usually a decrease in quality and that the work was likely to reflect the attitude of the group rather than the result of original thought. He found also that there was a wide range of individual difference in this experiment and that some students actually did less work in the group than when working alone, this seeming to be due to the inhibiting effect of emotional excitement.¹

George F. Arps conducted an experiment to determine the comparative value of work without knowledge of results and work with the knowledge of results.² This experiment was carried on with the use of a Bergstron Ergograph. The results showed a decided advantage in favor of work with the knowledge of results. Other experiments on the same problem have been carried on by E.L. Thorndike and with substantially the same results as found by Arps.³

A very interesting experiment was carried out by L.E. Cash, in which he studied the effect of an inter-class efficiency contest in a small high school of about seventy-five students. The students were informed that school work would be made a game, and that a cup

2. Arps, G.F., Work Without Knowledge of Results versus Work With Knowledge of Results, Psychological Monographs Vol. 28, No. 3.
would be given to the class which was ahead at the end of the year. In giving points in this contest the various activities of the school were evaluated. Points were given for attendance, scholarship, deportment, extra-curricular activities, school assemblies and school finances. A very great improvement was noticed in school assemblies and there was also a worthwhile improvement in most of the other factors. Both the students and the teachers considered the contest a success and they planned to make it a permanent part of the school program. It would seem that this might be a mistake, however, as the novelty and spontaneity which undoubtedly accounts to some extent for the success of the contest would be lost by so doing.  

Elizabeth Burloch made a study of the effect of praise and reproof as an incentive in school work. She divided the class into four equated groups. One group was used as a control group and was taught in a separate room. The other three groups were taught in one room. Each day the praised group was called up before the class and praised for ten minutes, then the reproved group was called before the class and reproved for the same length of time. Nothing whatever was said to the ignored group. The first day both the praised and reproved groups made a decided and about equal improvement but after that the praised group continued to improve rapidly while the reproved group improved less rapidly and the ignored group least of all. All three groups, however, showed a greater improvement than the control.

The experiment seemed to prove that praise and reproof have about equal value at first, that continued praise is more valuable as an incentive than continued reproof, and that either one was superior to no comment at all. Girls were found to be very susceptible to praise, while reproof seemed to be detrimental. Quite a large number of boys were more susceptible to reproof than praise. One of the most important features of the experiment was the large range of individual differences that was found which showed the necessity for adapting the method to the individual if it was to be effective in gaining the best result.\(^1\) A similar experiment on the effect of encouragement and discouragement on performance was carried on by Georgina Strickland Gates and Louise Q. Rissland. They found a slight difference in favor of encouragement, which substantiates the results of Hurloch's experiment. In addition they found the correlation between ability and improvement which proved to be negative.\(^2\) Gilchrist made a similar experiment with fifty college students and with about the same results as shown in the two preceding experiments.\(^3\)

"The Use of Group Rivalry as an Incentive" is the subject of another experiment conducted by Elizabeth Hurloch. In this experiment she attempted to measure the effect of rivalry in one-hundred-fifty-five subjects from grades IV and VI. She found that those


stimulated by the incentive of group rivalry made a gain of forty-one percent more than the control group in the amount of work completed. When accuracy was added as an incentive in the experiment the subjects in the groups in which rivalry was used as an incentive made a gain of eight percent more than the control group in accuracy. The experiment also showed that girls made a somewhat greater gain than boys and that inferior students gained decidedly more than superior students. It also indicated that initial defeat was very costly and that the ones who made a poor start never overcame the lead of the more fortunate ones.¹

Joseph Peterson conducted an experiment on the affect of attitude on immediate and delayed reproduction. He used as his experimental groups two classes of college students of about equal ability. Two lists of twenty words of equal difficulty were used. The first group was told to copy the first list of words without being told what it was for. When they had copied them they were asked to cover the list and reproduce as many of the words as possible. They were then given the second list and told to copy it but this time they were to make an effort to remember as many as possible because they would be asked to reproduce them and that their rank in class would be given. This also introduced the element of competition. The same procedure was used with the second group except the order in which the lists were given was changed to rotate out

any chance difference in the difficulty of the lists. Forty-eight hours after the first experiment the subjects were asked to reproduce as many of the forty words as they were able to remember. The results showed that a definite aim brought about an average improvement of about twenty-three percent in the case of immediate reproduction and of about fifty percent in the case of delayed reproduction. Although the groups were rather small in number indicating the existence of a rather high P.E., the large difference found was decidedly significant of the importance of securing a proper attitude toward the work and of making the aim definite.1

Whittemore studied the influence of competition on performance, using as his experimental group, four Radcliffe women and eight Harvard men. He found that there was a definite gain in the quantity of work done under the stimulus of competition but that there was a loss in quality. A critical study of the experiment shows that the chief emphasis had been placed on speed. It would seem possible, at least, that if the greater emphasis had been placed on accuracy or quality there might have been a reversal in the results.2

Perhaps the most complete and best controlled experiment in this field was conducted by Julius B. Maller, who studied the

comparative strength of two kinds of stimuli:

A. Self motivation, appealing to the desire for personal gain, and,

B. Group motivation, appealing to the desire for group gain.

Maller's work is based on two hypotheses, (1) that all voluntary work is to some extent motivated, and (2) that from the aspect of behaviour, motives differ from each other in a quantitative manner, that is in the efficiency of performance which they produce. Accepting these two hypotheses as true, we need not attempt to distinguish between motivated and unmotivated work but may concentrate upon the characteristics inherent in the different forms and degrees of motivation which are produced by different incentives.

Motivation, according to Maller, may be measured by the law of physics that force is equal to work divided by distance. In measuring the relative force of competition and cooperation, he was interested in two things, (1) the intensity of the response evoked by each motive acting independent of the other, and (2) the resulting act when the two are thrown into conflict. The technique and results are too long and detailed to be given here but a careful study of this experiment should prove very helpful to any one interested in the problem of motivation.1

Triplett in several early studies found that subjects did distinctly better work under the stimulus of a pace-maker of actual competition than when working alone.2 C.C. Ross in a study

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1. Maller, Julius B., "An Experimental Study in Motivation".
of several types of motivation, drew the following conclusion, "The addition of only one motivating factor is sufficient to give the motivated group a distinct advantage."\(^1\)

In the above experiments the following motivating factors have been measured and have been found to be of definite importance:

1. Personal rivalry  
2. Group rivalry  
3. Prizes  
4. Knowledge of results  
5. Praise  
6. Reproof  
7. The goal  
8. Pace making

These facts are not peculiar to school situations but are common to every day life. The well planned contest makes use of practically all of these factors. Taking part in a contest does not mean play, it means adjustment to an important and common life situation. Almost every business makes use of contests to stimulate its employees. We have sales contests of all sorts, window trimming contests, new idea contests, endurance contests, contests in speed of production and in quality of production. Victory or a good showing in such a contest usually results in reward in the form of a fat bonus check, often it means promotion. The individual who has learned to adjust himself efficiently to the emotional conditions surrounding a contest and to profit by them, who is stimulated by the contest to greater and more productive effort is the one who is most likely to be successful in our highly competitive world.

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CHAPTER IV

The Specific Problem

This experiment has not attempted to measure the specific factors in motivation. The studies which have been discussed in the preceding chapter have dealt with that phase satisfactorily. Its purpose is to study the whole contest situation, to discover, if possible, just how different students react to it and why they react the way they do. It has attempted to answer the following questions.

1. What relationship exists between the individuals improvement during the contest and his I. Q.?

2. What relationship exists between the individual's improvement in the contest and teachers' marks?

3. Do boys gain more or less than girls?

4. How are exceptional or problem cases affected?

5. What relationship exists between improvement during the contest and a school citizenship rating?

6. What relationship exists between individual improvement in the contest and success on the preliminary tests?
CHAPTER V

Procedure

The pupils who took part in this contest were the members of the three divisions of the Social Civics class in the high school at Augusta, Kansas. All but two of them were Juniors. Of these two, one was a Senior and one a Sophomore. The divisions were of about equal ability on the basis of the teacher's mark in Social Civics and the I. Q. This was an average group with one exception; since this class had entered junior high school it has acquired a reputation for lack of cooperation. Class meetings had been remarkable largely for the quarrels which took place and for the inability of the members to reach an agreement on any subject no matter how commonplace. In the first division there were twelve girls and seventeen boys, in the second division, fifteen girls and three boys, and in the third division ten girls and eleven boys.

The text used was Social Civics by Munro and Ozanne. All of the pupils had been in the writer's class during the first semester. It was the custom of the teacher to plot the distribution of the scores of the weekly quizzes on the blackboard, which gave the students an opportunity to compare their work with the others in the class and also to compare the standing of their division with the other two divisions. This resulted in a considerable amount of competition between the classes. This was stimulated by the teacher and the result was that the second division challenged the other two to a contest. The writer had hoped to use one class as a con-
trol group but it was apparent that such a thing would be impossible in a high school of this size (360) as the third class would consider itself in the contest whether officially recognized or not. This attempt at control had to be abandoned and it was necessary to be contented with the assumption that the tests used in the contest and the material covered by the classes during this period were of equal difficulty with the work which immediately preceded and followed it. A subjective estimate of this work would indicate that this was the case. The proposal of a contest was made to the other two divisions and was received by most of the pupils with a great deal of enthusiasm. Both classes voted to accept the challenge with only a few dissenting votes, strangely enough these came from some of the better students who perhaps felt that they were doing their best at the time and thought that the burden of dragging some of the more careless members through a contest would be too great a task. Each group selected two of its members to serve on a committee to make the rules for the contest.

The rules-

1. The contest was to last for six weeks.

2. Points in the contest were to be based on the average number of errors made by each division on the weekly quizzes. The class having the lowest number of points at the end of the contest would of course be the winner. The same tests were to be given to all.

3. Fair play and sportsmanship were to be emphasized -
A. If it was decided that any division had used unfair means it was to be disqualified.

B. If any student was discovered cheating one point was to be added to the total of his division.

4. The order of administration of the tests was to be rotated. That is the test which was given the first week was given to group -A- first, group -B- second and group -C- third. The same order was used for the second week. The tests for the third and fourth weeks were given to group -B- first, group -C- second and group -A- third; while the tests for the fifth and sixth weeks were given to group -C- first, group -A- second and group -B- third. This was done to offset any possibility of information being passed from one group to another.

5. The contest was to be followed by the annual Civics Club picnic for which the winners would be assessed fifteen cents, the second place class twenty-five cents, and the losers thirty-five cents. (The usual assessment for the picnic was twenty-five cents.)

6. The losing class was also to do all of the work for the picnic, as getting the food, preparing it, and cleaning up after the rest had left.

These plans were presented and were accepted without much dissention by all three groups.

The following methods were used for making the results
impressive and for keeping the pupils constantly stimulated by the atmosphere of the contest.

After each test the grades were tabulated on the front board in the following manner. In order to make the work of each group distinct the tabulations were made in colors.

Chart I

A Distribution of the Scores of the Three Divisions with the Percentage of one Contest Point that Each Score is Above or Below the Median for that Division.

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</table>

Average 5.41  Average 4.39  Average 5.48

This chart gave the distribution for each class for that test, the median score of each group, the average, and the percent of one point in the contest that any score was above or below the average. It gave each student a chance to see just how his group compared with the other groups on any one test, how he compared
with the other members of his group and how he compared with the whole class. It made it easy to place special emphasis on the fact that the extremely low grades had a very definite effect upon the standing of the pupils division in this contest, and that because of this the ones who had been doing rather poor work before the start of the contest had the best opportunity to raise the average. Each one was encouraged to keep track and to determine to what amount he had been responsible for raising or lowering the standard of his division. C. G. in the -A- division brought the average of his group down one and one-third points or over half of the difference between his group and the winners at the end of the contest. In -C- division D. S. and W. S. were each responsible for bringing up the average of their division one point.

Slogans for the contest were kept on the front board. Most of these were suggested by the students and a new one was put up every day. A few samples follow.

Victory without honor is defeat!!

"To the victor belongs the spoils,"
And, to the toiler belongs the victory.

"He who laughs last, laughs best,"
But, he who finishes last feeds the rest.

The total results were kept on a large blackboard chart about six feet by four feet in dimensions. This chart gave the average number of mistakes of each division on each test and the total average number of each for the whole contest. As in the case of the first chart these standings were put on in colors using red
red for -A-, green for -B-, and yellow for -C-. ¹

The school citizenship rating of the pupils was found by having five of the teachers who had them in class make a subjective rating of them. The teachers were asked to rank each one from one to nine, ranking the best in the class one and the worst one nine, on the basis of the pupils attitude toward other classmates, his attitude toward the school including all school activities, and his attitude toward the faculty. The ratings of the five judges were added and the total was used as the pupil's school citizenship rating. ²

In order to determine what gain or loss had been made during the contest, six preliminary tests were given. These tests were made in exactly the same manner as the tests which were used in the contest and were administered in the same manner except the motivating factor of the contest was omitted. As the same material had been taught the year before it was believed that a fair estimate of the relative difficulty of the work during the six preliminary tests and during the contest might be found by comparing the percentage of mistakes made by the class of the preceding year during these two periods. This was done and it was found that the average percent of mistakes for the preliminary period was twenty-five and for the contest period twenty-two. This would indicate that the work during the second period was somewhat easier. This could have very easily

¹ See Table Appendix.
² See Table Appendix.
been due to the fact that on the previous year the teacher had been new to the students at the beginning of the second semester and that undoubtedly the practice effect of taking his tests had something to do with the increase in efficiency. Taking these things into consideration it seems safe to say that if any difference in the difficulty of the work during the two periods existed it was very slight.

The pupil's I. Q., the average of the teachers' marks, his school citizenship rating and his gain or loss in the contest were tabulated in Table II and most of the correlations and conclusions have been drawn from these data.
## Chart II

The Student's Initials, Intelligence Quotient, Teachers' Mark, School Citizenship Rating and Gain or Loss in the Contest.

<table>
<thead>
<tr>
<th>S. I.</th>
<th>I. Q.</th>
<th>T. M.</th>
<th>S. C. R.</th>
<th>I. C.</th>
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<td>A. Y.</td>
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<td>15</td>
<td>17</td>
</tr>
</tbody>
</table>

S. I. signifies the initials of the students; I. Q. their intelligence quotients; T. M. the teacher's mark; S. C. R. the school citizenship rating; and I. C. the improvement in the contest.
No I. Q. was available for one student who had just transferred from another school, and one dropped out of school before the contest was completed so that no I. C. score was available for him.
CHAPTER VI

Presentation and Analysis of the Results

In order to determine what relationship existed between intelligence and gain or loss during the contest the correlation between the pupil’s gain or loss and his I. Q. was found. The Terman Group Test of Mental Ability was used as a basis for determining the I. Q. The Otis Correlation Chart was used for deriving the correlation. r was found to be .023 with the P. E. r .08. A study of the scattergram compiled from the I. Q. and the pupil’s gain or loss (Chart III) reveals that the two students in the highest I. Q. step interval made a good improvement during the contest, however of the five in the next step interval (115 - 119) only one showed any improvement at all, and that a small one while the other four were among the thirteen who showed a loss. In the lowest step-interval (60 - 84) are found the fourth greatest loss and the greatest gain with a range of thirty-eight points out of a possible forty-five between the two. The scattering of the scores about the central portion of the scattergram indicates fairly definitely that there is no significant relationship between these two factors.

The correlation was next found between the pupil’s gain or loss in the contest and the average of the teachers’ marks. This proved to be r -.22 with the P. E. r .077. This correlation is too small to be significant, especially when the P. E. is so large proportionally. The scattergram, Chart IV, seems to indicate that
### Chart III

**Correlation Between Improvement During Contest and I.Q.'s.**

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<thead>
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<th>1-</th>
<th>4-</th>
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<th>19-</th>
<th>22-</th>
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Total: 67

\[ r = 0.023 \pm 0.08 \]
### CHART IV

**CORRELATION BETWEEN IMPROVEMENT IN CONTEST AND TEACHERS' MARK**

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<th>-6</th>
<th>-3</th>
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\[ r = -0.22 \pm 0.077. \]
there is some relationship between the two criteria and that the
tendency is toward a greater motivation for the slower students than
for those who receive the better grades.

A study of the same criteria arranged according to decile
rank of teachers' marks shows the relationship suggested above more
clearly than the correlation chart. In making this chart, gain or
loss in the contest was arbitrarily divided into seven divisions.
Any gain of over sixteen points was considered a very large gain,
a gain from six to ten points an average gain, and a gain from one
to five points a small gain. Any loss from one to five points was
considered a small loss, any loss from six to ten a large loss and
any loss from eleven to fifteen points a very large loss.

Of the sixty-nine students who took part in the contest,
twenty-four or thirty-five percent made a very large gain; nine or
thirteen percent made a large gain; seven or ten percent made an
average gain; sixteen or twenty-three percent made a small gain.
Nine or thirteen percent showed a small loss, two or three percent
showed a large loss, and two or three percent showed a very large
loss. In the upper ten percent no pupil had a very large gain,
only one a large gain, one an average gain, two small gains, and
three small losses. Twenty-three percent of the total number of
losses were in this group, which was apparently the least affected
by the contest. Only one other decile failed to show a pupil in
the very large gain column. In the ninth decile five students
showed a gain and two a loss. Of these two, one, a girl who showed
a large loss undoubtedly was affected by the fact that her younger
sister became ill and died during the contest.
Chart V

A Comparison of the Teachers' Marks by Deciles with Gain or Loss in the Contest

<table>
<thead>
<tr>
<th>Decile Rank on basis of Teachers' Mark</th>
<th>Gain Over</th>
<th>15</th>
<th>15-11</th>
<th>10-6</th>
<th>5-1</th>
<th>1-5</th>
<th>6-10</th>
<th>11-15</th>
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<td>2</td>
<td>:</td>
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<tr>
<td>9th decile</td>
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<td>2</td>
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<td>3</td>
<td>:</td>
<td></td>
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<td>1</td>
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<td>5th decile</td>
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<td>3</td>
<td>:</td>
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<td>1</td>
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<td>16</td>
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<tr>
<td><strong>Percent</strong></td>
<td>34</td>
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<td>24</td>
<td>13</td>
<td>3</td>
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</table>

This chart shows the distribution of gain or loss in the contest based on the decile rank of the teachers' marks.
In the upper fifty percent only five or seven percent made a very large gain, while in the lower fifty percent nineteen or twenty-eight percent made a gain of more than fifteen points, and every one of the lower five deciles showed at least two pupils who made very large gains. In contrast to this, eight of the upper fifty percent showed a loss while only five in the lower fifty percent showed a loss, and two of these cases which fell in the first decile were strictly problem cases who took an antagonistic attitude toward the contest from the first. On the whole this chart would seem to indicate that the better students were stimulated only slightly by the contest, while the average and poorer pupils were decidedly influenced by it.

A comparison of the effect of the contest on boys and girls shows that the thirty-one boys made a total gain of three hundred sixty points or an average gain of 11.63 points per pupil, while the thirty-seven girls made a gain of two hundred seventy-five points or an average gain of only 7.433 points per pupil. Of the twelve who showed a loss nine were girls, while on the other hand the four greatest gains were made by boys. It was thought that the seeming superiority of the boys might have been due to the fact that the girls had done much better on the six preliminary tests giving the boys room for a great deal of improvement before they would reach the same degree of efficiency as the girls. The total number of mistakes made by each group on the six preliminary tests was found and also the average number of mistakes per boy and per girl.
On the preliminary tests the girls had an average of 31.65 mistakes for the six tests, while the boys had an average of 41.92 mistakes, making a total of 11.27 mistakes advantage in favor of the girls. During the contest the average total number of mistakes per boy was 30.29, while the average total number for each girl was only 24.22 so that the girls still had an advantage of 6.07 points. This would seem to more than offset the advantage of 4.2 points greater average improvement which was made by the boys under the stimulus of the contest and does not contradict experiments made by Hurloch and others which showed that girls made a slightly better record than boys when under the motivating influence of group rivalry.

By far the greatest majority seemed to enjoy the contest, and did all that they could not only to improve their own work but also to encourage some of the slower members of their group and to stimulate them to greater effort. There were several students, however, who were either indifferent or actually antagonistic toward the contest and who undoubtedly affected the outcome to a very considerable extent. One of these, C. G., a boy in the -A- group had an I. Q. of 110, a teachers’ mark of 77 and a school citizenship rating of forty which was three points lower than any other rating given in the class. This boy was crippled, and being unable to take part in many of the activities which interest the normal boy, he developed a defense mechanism of extreme indifference to anything which received the sanction of the group. During the contest he refused to hand in one paper although he knew that his failure to do so would hurt
his division's standing materially. Immediately following the con-
test there was a general slump of the work of all three groups for
several weeks, C. G. took this occasion to show the rest of the
class that he could have made good grades if he had wished to do so
and did his best work of the year. Another boy in the same group,
H. M., had an I. Q. of 109, a teachers' mark of 75, and a school
citizenship rating of 19, who seemed to pride himself on getting
by with as little work as possible and who made a practice of doing
failing work in most of his subjects until the finals and then
making one of the best grades in the class missed twenty-two out of
the first twenty-five questions and then made one of the best grades
in the class on the next one. This kept up throughout the contest
with the result that the members of the class who were taking the
contest seriously and were doing their best were thoroughly dis-
gusted. Division C lost more from the attitude of two of its
members than can be measured in actual points. One of these was
a girl with an I. Q. of 102, teachers' mark of 75 and school citizen-
ship rating of thirty-seven, the second lowest rating given to any
member of the three divisions. This girl seemed to have an insa-
tiable desire to be constantly in the spotlight and usually ac-
complished this by doing things which were contrary to the usually
accepted forms of behavior. She seemed to be indifferent to the
contest at all times and handed in a blank paper the first day be-
cause as she told me later, she was "mad" at several of the girls
in the class. This was followed by a failure of one of the boys,
who also was more or less of an outlaw from the group, to hand in his paper on the following week. These two successive failures discouraged the group greatly.

It was believed that since the contest was between groups rather than individuals that one's performance in the contest would be affected to a measurable degree by his attitude toward the school in general but particularly toward the other students, his teachers and toward the various activities of the school. Since there seemed to be no objective method of finding this, it was decided to use the rating of five teachers who had either had the students in class or who were well acquainted with them through the direction of activities in which the pupils had taken part. The ratings of the five teachers were added, and the resultant score was called the school citizenship rating of the pupil. This rating was then correlated with the pupil's gain or loss in the contest with the rather surprising result of $r = .14$ with the $P \text{. E.}_r .065$. This was not large enough to be significant, but when a positive correlation had been expected it led to the question of what factors had entered in to the teachers' school citizenship ratings. Since a similarly small correlation, $r = .22$, was found between gain or loss in the contest and teachers' marks, it was decided to find the correlation between the teachers' marks and the teachers' citizenship rating. This gave a correlation of $.705$ with the $P \text{. E.}_r .04$ and indicated that the teachers had been very greatly influenced by the pupil's grade in making out his citizenship rating although they had not been asked to take this into consideration.
In order to find what correlation existed between the score in the six preliminary tests and gain or loss in the contest, the total number of mistakes made by each pupil on the six tests was found and correlated with his gain or loss. This gave $r = .66$ with the $P < .04$. This indicated that there was a definite relationship between the two and that the greater the number of mistakes that one had made before the contest the greater the improvement that could be expected of him. This had been indicated previously by the comparison of the work of the girls and boys and by the small negative correlations found between the teachers' mark and gain or loss as well as the school citizenship rating and gain or loss.
CHAPTER VII

Conclusions and Summary

From the data presented the following conclusions may be drawn -

1. That there is practically no relationship between intelligence and the extent to which an individual is affected by the stimuli found in this type of contest is shown by $r = 0.023$ between the pupil's I. Q. and his gain or loss in the contest.

2. The relationship between gain or loss in the contest and the teachers' mark is negative but $r = -0.22$ is so small as to be of very little significance except to show that one cannot expect the better student to make the greater gain.

3. The boys' gain in the contest was 1.56 times as great as the girls' but this seems to have been due to the fact that the girls had been doing work very much superior to that of the boys before the contest started. In fact, in spite of the greater improvement of the boys, the girls were still doing superior work at the close of the contest. If there is any great sex difference in reaction to this type of motivation it was not shown here.

4. Pupils who had been considered problem cases before the contest continued as such. In practically every case their attitude toward the contest was either indifferent
or antagonistic. Two of them showed a loss and the other two only a very slight gain. This might be explained by the fact that their lack of adjustment consisted almost entirely of an assumed indifference to the opinions of the group.

5. The correlation between the pupil's school citizenship rating and his gain or loss in the contest was -0.14. This can be explained to a very great degree by the significant correlation 0.705 between the school citizenship rating and the teachers' mark, which would seem to indicate that the student's grades had played a very large part in the rating assigned to him by the teachers.

6. The correlation between gain or loss in the contest and the number of mistakes made in the six preliminary tests was 0.66. This may be considered the most significant relationship found. One would conclude from this fact that the ones who were doing mediocre work were highly motivated by the contest but that it failed to have much effect on those who were doing a superior type of work beforehand. It increased the efficiency of the careless or lazy student but did very little for the industrious.

The contest as a motivating device does increase the interest in classroom work and for a time at least seems to make the work more pleasant and inviting. This in itself should be worth while.
It brings about an increase of efficiency which can be measured objectively by performance in tests. There is a great degree of individual difference in the response to the contest situation, the range being from a loss of fourteen points to a gain of thirty one points. Eighty-one percent showed some gain during the contest. Intelligence does not seem to have affected the pupil's reaction to any appreciable extent as one may find pupils with high I. Q.'s in both the gain and loss columns and the same thing is true of those in the lower deciles.

The contest may be used effectively as a motivating device when needed. It is not a cure-all for all evils, and it must have the support of practically the entire class to be successful. It must be handled with a great deal of skill and tact by the teacher and will result in harmful prejudices and jealousies if this is not done. It certainly is not merely an easy and lazy way of artificially holding the pupil's interest. Perhaps its best feature is that it motivates to the greatest extent, those who need it the most, a thing which is not true of the common practice of giving awards to the best in the group, and that it gives the pupil a very definite idea of how he compares with the other members of his class.
### Chart VI

**Correlation Between School Citizenship Rating and Teachers' Marks**

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\[ r = -0.705 \pm 0.04 \]
## CHART VII

**CORRELATION BETWEEN GAIN IN CONTEST AND SCORE ON PRE-TEST**

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APPENDIX
Chart IX
Bennet's Classification of Motives

INDIVIDUALISTIC OR SELF-SEEKING TENDENCIES

1. Virility—aspiration to 'be a man', to be big or superior; and its counterpart, femininity—to be attractive, admired, and womanly; self-esteem.

2. Obedience and submission to guidance and protection, changing, especially at adolescence, to self-reliance and independence.

3. Self-assertion, combativeness, insistence on "rights".

4. Greed, acquisitiveness, ownership.

5. Pride, envy, and jealousy.

6. Partiality for one's own—as one's parents, family, friends and possessions.

SOCIAL OR GROUP-SERVING TENDENCIES

1. Fear of disapproval of others.

2. Desire for the approval of others, especially of one's peers.

3. Cooperative impulse, seeking mutual welfare.

4. Spirit of service, complete unselfishness.

TENDENCIES WHICH MOTIVATE SCHOOL WORK DIRECTLY

1. Love of mental activity; of sensory experiences, imagery, of rational and emotional processes of every kind.

   a. Interest in any situation which appeals to one as a problem of significance; curiosity, experimentation, puzzle-solving.
b. Interest in the new, unusual, vivid, striking.
c. Interest in human beings—their doings, history, customs, emotions—and in personified things.
d. Tendencies to organize ideas, form concepts, classify, systematize.
e. Love of emotional excitement, whether occasion be joyous, exalting, sad, horrible.

2. Love of Physical activity

a. Play, dramatizations, impersonations, etc.
b. Constructiveness, love of achievement, attainment, accomplishment, overcoming difficulties.
c. Restlessness, organic need for much bodily movement, physical energy, vigor.

3† Tendency to **imitate** certain observed or suggested movements, expressions, thought processes and emotional attitudes.

b. Tendency to **repeat** acts and experiences which are agreeable.

AESTHETIC, ETHICAL AND RELIGIOUS

1. Love of beauty, harmony, rhythm, rhyme, etc.
2. Moral impulses, love of doing right, conscience.
3. Admiration for moral qualities in others.
4. Reverence, worship, religious aspiration and exaltation (3)
Keeping the above definitions and outlines in mind we shall now consider some of the experiments and methods that have been used in the laboratory and the field, with particular attention being given to the results.
### Chart X

#### The Number of Mistakes Made During the Preliminary Tests and the Contest

**Division A**

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<th>Score on Preliminary Tests</th>
<th>Total:</th>
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**Totals**

|               | 1098 | 802 | 296 |

**Total Number in A Division**

- Number of Boys: 29
- Number of Girls: 17
- Average Number of Mistakes per Pupil on 6 Preliminary Tests: 27.862
- Average Number of Mistakes per Pupil on 6 Contest Tests: 27.655

**Average Gain per Pupil in Contest over Preliminary Tests**

- Average Gain per Pupil in Contest over Preliminary Tests: 10.207

This Division was Second in the Contest
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<td>M.S.</td>
<td>7 6 8 8 9 8</td>
<td>46</td>
<td>6 10 6 5 7 7</td>
<td>41</td>
<td>5</td>
</tr>
<tr>
<td>F.S.</td>
<td>9 8 5 7 5 9</td>
<td>43</td>
<td>13 5 2 6 6 6</td>
<td>38</td>
<td>5</td>
</tr>
<tr>
<td>L.S.</td>
<td>10 5 6 8 10 4</td>
<td>43</td>
<td>1 7 5 1 5 4</td>
<td>23</td>
<td>20</td>
</tr>
<tr>
<td>A.Y.</td>
<td>9 2 2 2 6 6</td>
<td>27</td>
<td>2 2 3 1 0 2</td>
<td>10</td>
<td>17</td>
</tr>
</tbody>
</table>

**Totals**

<table>
<thead>
<tr>
<th>Total Number in B Division</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Boys</td>
<td>3</td>
</tr>
<tr>
<td>Number of Girls</td>
<td>15</td>
</tr>
<tr>
<td>Average No. of Mistakes per Pupil on Six Preliminary Tests</td>
<td>33.667</td>
</tr>
<tr>
<td>Average No. of Mistakes per Pupil on Six Contest Tests</td>
<td>24.611</td>
</tr>
<tr>
<td>Average Gain per Pupil in Contest Over Preliminary Tests</td>
<td>9.056</td>
</tr>
</tbody>
</table>

This is the Division which Won the Contest.
### Chart X (Continued)

#### Division -C-

<table>
<thead>
<tr>
<th>S. I.</th>
<th>Score on P. T.</th>
<th>T. S.</th>
<th>Score in Contest</th>
<th>T. S.</th>
<th>G.</th>
</tr>
</thead>
<tbody>
<tr>
<td>T. A.</td>
<td>5 9 5 4 8 8</td>
<td>39 4 11 7 13 7</td>
<td>8</td>
<td>40</td>
<td>-1</td>
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<tr>
<td>R. B.</td>
<td>9 5 5 1 10 6</td>
<td>35 1 10 5 9 6</td>
<td>6</td>
<td>37</td>
<td>-1</td>
</tr>
<tr>
<td>G. B.</td>
<td>13 8 3 9 9 9</td>
<td>51 3 6 7 8 10</td>
<td>5</td>
<td>39</td>
<td>12</td>
</tr>
<tr>
<td>H. D.</td>
<td>10 10 5 1 10 10</td>
<td>40 0 25 6 10 9 10</td>
<td>60</td>
<td>-14</td>
<td></td>
</tr>
<tr>
<td>E. D.</td>
<td>8 10 4 2 8 9</td>
<td>41 0 4 2 9 4 4</td>
<td>4</td>
<td>23</td>
<td>18</td>
</tr>
<tr>
<td>M. D.</td>
<td>3 7 2 2 13 9</td>
<td>36 1 3 4 4 3 4</td>
<td>4</td>
<td>19</td>
<td>17</td>
</tr>
<tr>
<td>W. C.</td>
<td>10 8 4 2 12 9</td>
<td>46 4 9 5 8 7 6</td>
<td>6</td>
<td>39</td>
<td>7</td>
</tr>
<tr>
<td>W. H.</td>
<td>2 5 6 5 15 7</td>
<td>40 10 7 8 3 7 7</td>
<td>7</td>
<td>42</td>
<td>-2</td>
</tr>
<tr>
<td>H. H.</td>
<td>7 3 3 3 11 6</td>
<td>33 2 3 1 4 5 4</td>
<td>4</td>
<td>19</td>
<td>14</td>
</tr>
<tr>
<td>L. H.</td>
<td>3 5 3 6 6 5</td>
<td>28 3 4 4 9 9 6</td>
<td>6</td>
<td>35</td>
<td>-7</td>
</tr>
<tr>
<td>V. J.</td>
<td>5 5 0 1 11 2</td>
<td>24 2 1 5 5 4 4</td>
<td>4</td>
<td>22</td>
<td>2</td>
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<tr>
<td>E. Mc.</td>
<td>10 12 2 6 11 8</td>
<td>49 10 6 3 6 11 7</td>
<td>7</td>
<td>43</td>
<td>6</td>
</tr>
<tr>
<td>H. M.</td>
<td>8 4 3 2 6 4</td>
<td>27 5 3 3 2 6 4</td>
<td>4</td>
<td>23</td>
<td>4</td>
</tr>
<tr>
<td>F. M.</td>
<td>15 5 6 5 4 8</td>
<td>43 5 3 3 4 6 5</td>
<td>5</td>
<td>28</td>
<td>17</td>
</tr>
<tr>
<td>J. P.</td>
<td>6 6 5 10 10 5</td>
<td>42 2 1 2 5 5 4</td>
<td>4</td>
<td>19</td>
<td>23</td>
</tr>
<tr>
<td>E. P.</td>
<td>5 3 1 1 7 2</td>
<td>19 1 1 4 5 3 3</td>
<td>3</td>
<td>17</td>
<td>2</td>
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<tr>
<td>D. S.</td>
<td>1 4 2 1 3 5</td>
<td>16 0 0 1 0 1 3</td>
<td>3</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>W. S.</td>
<td>1 3 0 0 7 3</td>
<td>14 0 1 0 2 1 2</td>
<td>2</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>M. T.</td>
<td>4 3 3 7 5 9</td>
<td>31 3 2 1 2 3 3</td>
<td>3</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>F. W.</td>
<td>20 4 5 3 10 9</td>
<td>51 3 4 5 5 3 6</td>
<td>6</td>
<td>25</td>
<td>25</td>
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<tr>
<td>T. W.</td>
<td>10 7 5 13 12 8</td>
<td>55 0 5 7 10 5 9</td>
<td>9</td>
<td>35</td>
<td>19</td>
</tr>
</tbody>
</table>

| Totals | 767 | 590 | 163 |

Total number in -C- division: 21
Number of boys: 11
Number of girls: 10

Ave. number of mistakes per pupil on six preliminary tests: 36.524

Ave. Number of mistakes per pupil on six contest tests: 28.095

Ave. gain per pupil in contest: 8.429

This division was last.
## Chart XI

### School Citizenship Rating Chart

<table>
<thead>
<tr>
<th>Pupils' Name</th>
<th>Teachers' Ratings</th>
<th>S. C. R. Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>T. A.</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>A. B.</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>B. B.</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
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<td>4</td>
<td>2</td>
</tr>
<tr>
<td>L. B.</td>
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<td>3</td>
</tr>
<tr>
<td>E. B.</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>W. B.</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>C. B.</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>W. D.</td>
<td>4</td>
<td>4</td>
</tr>
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<td>M. B.</td>
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<td>1</td>
</tr>
<tr>
<td>C. B.</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>L. B.</td>
<td>2</td>
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</tr>
<tr>
<td>A. B.</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>R. B.</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>G. B.</td>
<td>4</td>
<td>3</td>
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<tr>
<td>W. C.</td>
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<tr>
<td>R. C.</td>
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<td>R. C.</td>
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<td>L. E.</td>
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<td>E. G.</td>
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<td>C. G.</td>
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<td>M. H.</td>
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<td>B. J.</td>
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<td>V. J.</td>
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<td>N. J.</td>
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<td>R. L.</td>
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<td>F. L.</td>
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<td>G. M.</td>
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<td>H. M.</td>
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<tr>
<td>H. M.</td>
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<td>D. M.</td>
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<td>F. M.</td>
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<td>A. P.</td>
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<td>J. P.</td>
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<td>A. Y.</td>
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A discussion of the nature of interest, one of the best.


Subjects twenty-seven boys (thirteen years), nineteen boys (twelve years), nineteen girls (twelve years). Suggest a situation out of the total environment and conditions to which a subject is exposed. No correlation exists between suggestibility and general factors of intelligence.

One-hundred-fifty-five subjects from grades IV and VI. Gain of forty-one percent over the control group. Girls somewhat superior to boys. Inferior students gained decidedly more than superior students. Initial defeat proved very costly.


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Suggestibility exists in all children to a greater or less extent. It can be controlled by the wise teacher. It is not as pronounced as is often supposed.


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Experiment on Sophomore college students indicated that ability to reproduce work is very much greater when it is studied with the knowledge that they will be required to reproduce it.


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An attempt to study the attitudes of two-hundred-forty boys and girls toward the various social activities of the school. (Questionnaire method)


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This study indicates a decided advantage to be gained from competition and pace making, at least with regard to physical reactions.


Stages of attention.


What we are interested in and why. Importance of obstacles or difficulties. Necessity of an obtainable goal.

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