AN EXPERIMENT TO DETERMINE THE EFFICIENCY
OF INSTRUCTION IN HOW TO STUDY

by

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Master of Arts.

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[Signature]
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Head or Chairman of Dept.

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The writer hereby expresses his sincere appreciation of the helpful suggestions of Dean E. A. Schwegler, and of the thoughtful and constructive criticism of Dr. J. W. Twente.

He is also deeply indebted to Miss Frances J. Stewart who administered and scored the tests and assisted in giving the instruction in "How to Study"; to Mrs. Dessa Fankin Renfrew, who assisted in giving the study instruction; and to Nancy Fowler, a student in the Hutchinson High School, who mimeographed all the material.
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CHAPTER I

Status of the Problem

Guy M. Whipple in the introduction to his little booklet entitled "How To Study" says: "Efficiency is the watchword of modern industrial life. The school, after all, is a sort of brain factory. Its material is found in the subject matter of the various studies and in the mental operations of its students. Studying is the method by which subject matter is converted into ideas that shall be effective in the subsequent life of the students and by which at the same time the mental capacities of the students shall be drilled and trained. It is safe to say that failure to guide and direct study is the weak point in the whole educational machine. There is more than a fanciful analogy in the parallel between scientific management in modern industry and control of the technique of study in the modern school. The elimination of "waste motion" in the factory must be paralleled by the elimination of "waste motion" in the school. The chief source of this waste lies in the process of studying." ¹

R. E. Carter, commenting on the situation, says: "Of course, there are many who do not appreciate the need of

¹ Whipple, Guy M., How to Study Effectively.
calling to the pupil's attention the advantages of economical study habits. There are more who do appreciate the need of doing something in this direction, but who have dealt with the problem in only a superficial manner. They have given the pupil the rules for study at the beginning of the course, but they have failed to follow up a good start with systematic teaching.¹

The writer is among those who "appreciate the need of doing something in this direction." The number of failures in any one school year, or the number of pupils retarded in school work because of failure suggests this need. We do not know how much of this failure is due to poor methods of study; neither do we know how much more efficient work might be done by those who do not fail if they should study with greater efficiency.

All will agree that it is the chief function of the school to teach proper methods and habits of study. But the method by which best to secure these habits and attitudes has not yet been clearly set forth. Whipple², Kornhauser³, Sandwick⁴, and others have formulated some rather definite rules and suggestions for the use of students with the hope that they would be of material assistance in forming proper study habits.

3. Kornhauser, Arthur K., How to Study
The specific question of this study is:—Will the study of such rules and suggestions as are given by the above mentioned authors result in improved methods of study as shown by improvement in school work?

In order to determine whether such instruction would be worth while, the writer carried out an experiment in the Hutchinson High School. The method of conducting the experiment, the data, and the results are explained in the following chapters.
CHAPTER II

Related Literature

That the problem of the improvement of the study habits of students is important is evidenced by the considerable number of experiments in this field reported in the various Educational magazines. The attempts all aim at the same objective, but differ as to methods. A few of the most important experiments are here mentioned and briefly summarized.

H. A. Cunningham,1 at that time Professor of Methods of Teaching in the Sciences of the Oread High School of the University of Kansas, organized a class which continued for one semester, in which he attempted to improve the study habits of those enrolled therein. He gave diagnostic tests to determine the weaknesses of the individuals and gave suggestions to the students as to the best methods of overcoming these weaknesses. He used diagrams and charts to indicate each pupil's improvement. During study periods they were given drills in sustained attention. They were watched carefully and profiles of their periods of attention and inattention were made on the Chicago Sustained Application Profile Sheet. He set up for the stud-

ont's guidance and acquisition certain skills and abilities in methods and habits of study.

The progress made by the students and their improvement in study habits indicated that they profited greatly by the instruction.

Miss Ethel M. Fish\(^1\) of Manchester, Connecticut reports a method which she used successfully. She developed with her pupils a "How to Study" outline. From the pupils' own experience, under her direction, they discovered better methods of study, and from these experiences completed their outline. The success of her plan is evidenced by the fact that not only she but other teachers observed improvements as shown by better preparation of lessons.

Mrs. Edyth Salveson\(^2\) conducted an experiment in the Junior High School of Lawrence, Kansas to determine the value of a check sheet in the correction of errors in written composition. She used the equivalent groups method, using the check sheet with the experimental group to point out the errors made. The experiment continued one semester. A number of standard tests were given to check the results. Little difference was shown between the two groups. She concludes that the method is not valuable for

group instructions, but suggests its possible value for remedial work with individual students.

A method most nearly resembling the method employed in this study is that of J. B. Edmonson\(^1\) of the University of Michigan, Secretary of the committee on accredited schools, and C. L. Goodrich, Deputy State Superintendent of Public Instruction. They formulated a set of rules and suggestions for study, printed them on sheets of such size that they could be pasted in the back of books and distributed one hundred fifty thousand copies to high schools of Michigan. They accompanied these with a letter of instructions including, among many others, the following suggestions:

1. Teachers should explain the meaning of terms in the study helps and make clear the meaning of complete statements.

2. Teachers should make such frequent references to the study helps that students will be caused to become thoroughly familiar with them.

3. Teachers should illustrate the application of certain of the rules of study to specific assignments.

4. Teachers should require pupils to analyze their own study habits in terms of the rules.

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That the authors had abundant faith in the efficacy of their plan, and expected results, is shown by the following quotation from the final paragraph of their letter to the principals:—"We are planning to make a careful inquiry through our next year's inspection concerning the attention given to training pupils in the habits of study. We hope to find that all schools have some definite results to give us."

Many other studies similar to those already mentioned have been made in an effort to improve the study habits of students. Reference to these is made in the bibliography appended to this thesis.
CHAPTER III

The Problem — Method of Procedure and Source of Data

The experiment of Edmanson and Goodrich in distributing the State Wide Study Helps; Whipple's Manual on How to Study Effectively; Sandwick's, How to Study and What to Study; Kornhauser's, How to Study; and others of the same type, suggest that the problem of improving one's method of study consists in forming an hierarchy of study habits. If this be true, what is the best method of establishing these habits? Can it be done by the simple expedient of acquainting the student with the suggestions of such experts as those mentioned above, expecting the knowledge of how best to form these habits to result in their being formed?

It was to test out the latter suggestions that the experiment described herein was planned.

Subjects

The subjects of the experiment were four sections of Sophomore English students, taught by the same teacher. This gave for the experiment one hundred nineteen students, approximately one third of the Sophomore class. By limiting the subjects to the students of one teacher we were able to avoid the variable caused by the difference in methods, or

difference in efficiency of teaching, if the pupils of more than one teacher were involved. It was felt that the elimination of this variable would more than compensate for the decreased number of subjects.

Method

The Equivalent Groups Method was used. Soon after the opening of the fall semester, the students involved in the study were given the Otis Group Intelligence tests. On the basis of the indices of brightness thus obtained the students were divided into two equated groups, and all given form I of the following Standardized diagnostic English tests:

- Capitalization\(^1\) S. L. Pressy and E. L. Bowers
- Punctuation S. L. Pressy and Helen Ruhlen
- Grammar F. R. Conklin and S. L. Pressy

After the initial tests were given a comparison of the test scores of the control group (hereafter referred to as E. F.\(_1\)) and the experimental group (hereafter referred to as E. F.\(_2\)) showed that, on the basis of initial ability in these test elements, the two groups were as nearly equated as could be hoped for. No changes were made therefore in the original groupings.

\(^1\) Copies of these tests may be found in the appendix.
The test scores of the two groups were compared by comparing the range, \( g_3 \), \( M_1 \), and \( g_1 \) of the scores in each of the test elements. This comparison is given in Table I.

After the initial tests were given, the students of the experimental groups were given definite instructions in methods of study and the formation of proper study habits. This instruction was given once a week for twenty-six weeks. It was given during an activity period during which no regular classes were in session.
**TABLE I**

Range $a_1$, $a_2$, and $c_3$, For Each of The Test Elements—Both Groups

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This table compares E.F. 1 and E.F. 2 on the basis of scores made on I. T. to further check the equating of the groups.
Materials for Study

The material used for instructional purposes was taken from Whipple's "How to Study Effectively"; Sandwick's "How to Study and What to Study"; and Kornhauser's "How to Study". It aimed to stress the importance of forming definite, helpful habits of study and gave some suggestions on methods of study as given by the authors of the manuals used. It included such topics as the necessity of keeping one's self in good physical condition; treatment of physical defects, as defective eyesight, etc.; attention to external conditions of work, as light, temperature, etc.; formation of a place-study habit; formation of a time-study habit; concentration of attention while studying; need of proper emotional attitude; and some suggestions on methods of study, as, methods of review, methods of increasing one's reading ability, methods of outlining work, etc.

The material was mimeographed and a copy placed in the hands of each student in the experimental group. This was studied and discussed, and students were urged to make application of these suggestions in the preparation of their lessons. Both teachers giving the instructions had copies of each of the three manuals used. A copy of the material used is found in the appendix.

Final Test

At the end of the experimental period, which was early in April, all students were given form two of the initial tests. The scores were tabulated and the gains computed for each of the test elements. These scores are given in Tables II and III.
CHAPTER IV

Presentation and Interpretation of Data

As was explained in Chapter III, all students concerned in this study were given the Otis Group Intelligence tests and the groups were equated on the basis of the indices of brightness thus obtained. The I. B's of the control group are shown in column two of Tables II and III, arranged in descending order. These tables also give the score made by each pupil on the initial and final test of each test element, and the excess of the latter over the former.

Tables IV and V give similar data for the experimental group.

Tables VI and VII show the distribution of the gains of the scores on F. T. over scores on I. T., and compares E. F. 1 with E. F. 2 by comparing M., S. D. M., Dif., and S. D. Dif. of the two groups in each of the four test elements. Tables VIII, IX, X, and XI summarize the data of Tables VI and VII.

Observations

It will be noted that while one hundred-nineteen students were involved in the study at the beginning, there was some loss by the time the study was completed. This loss was due to three things.
1. Withdrawal from school.

2. Failure in English for first semester and consequent transfer from the group.

3. Transfer to another English teacher because of the exigency of the daily schedule.

The loss was greatest in the experimental group, there being forty-four left in the group at the close of the study, and fifty-two in the control group.

It will be noted also that some students lack a score on either the initial or final form of some test elements. This was due to their absence on the day the test was given.
### TABLE II

Control Group — Capitalization and Punctuation  
Index of Brightness, Score on Initial Test,  
Final Test and Gain on Each of the  
Above Test Elements

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*Perfect scores.*
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Control Group - Grammar and Composition
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*Perfect Scores.*
TABLE IV

Experimental Group - Capitalization and Punctuation

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*Perfect scores.*
### TABLE VI

Frequency Distribution of Gains, Comparison of Medians, Standard Deviations, Standard Deviations of Median, Difference and Standard Deviation of the Difference for E. F.1 and E. F.2

<table>
<thead>
<tr>
<th>Capitalization</th>
<th>Punctuation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>E. F.1</strong></td>
<td><strong>E. F.2</strong></td>
</tr>
<tr>
<td>G. F. G. F.</td>
<td>G. F. G. F.</td>
</tr>
<tr>
<td>15  1</td>
<td>13  1</td>
</tr>
<tr>
<td>10  3</td>
<td>12  0</td>
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<tr>
<td>9   2</td>
<td>11  1</td>
</tr>
<tr>
<td>3   1</td>
<td>10  1</td>
</tr>
<tr>
<td>7   1</td>
<td>9   2</td>
</tr>
<tr>
<td>6   0</td>
<td>8   1</td>
</tr>
<tr>
<td>5   6</td>
<td>7   2</td>
</tr>
<tr>
<td>4   2</td>
<td>6   4</td>
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<td>5   5</td>
</tr>
<tr>
<td>2   7</td>
<td>4   2</td>
</tr>
<tr>
<td>1   5</td>
<td>3   4</td>
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<tr>
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<tr>
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<td>1   6</td>
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<td>0   3</td>
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<tr>
<td>-6  2</td>
<td>-1  4</td>
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N = 48  43  N = 52  42
M = 3.02  3.69  4.85  5.04
S.D. = 3.54  3.43  3.39  3.91
S.D.H. = .51  .52  .47  .60
Diff. = .87  .73  .19  .76
Diff. = .92  .92  .92  .35
S.D. Diff. =
TABLE VII

Showing Frequency Distribution of Gains, Comparison of Medians, Standard Deviations, Standard Deviations of Median, Difference, and Standard Deviation of Difference for E. F.1 and E. F.2

<table>
<thead>
<tr>
<th>Grammar</th>
<th>Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. F.1</td>
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</tr>
<tr>
<td>G.</td>
<td>F.</td>
</tr>
<tr>
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<tr>
<td>17</td>
<td>1</td>
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<td>-1</td>
<td>0</td>
</tr>
<tr>
<td>-2</td>
<td>1</td>
</tr>
</tbody>
</table>

\[ N = 51 \quad 44 \quad 52 \quad 45 \]
\[ M = 7.61 \quad 7.34 \quad 3.19 \quad 2.39 \]
\[ S.D. = 4.69 \quad 4.74 \quad 3.61 \quad 3.38 \]
\[ S.D. E. = .65 \quad .71 \quad .50 \quad .51 \]
\[ Diff. = .17 \quad .3 \quad \]
\[ S.D. Diff. = .96 \quad .71 \quad \]
\[ \text{Diff.} = .18 \quad .42 \]

S.D. Diff.
TABLE VIII

Summary of Table VI - Capitalization

<table>
<thead>
<tr>
<th></th>
<th>S. F. 1</th>
<th>S. F. 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>3.02</td>
<td>3.69</td>
</tr>
<tr>
<td>S. D.</td>
<td>3.54</td>
<td>3.43</td>
</tr>
<tr>
<td>S. D. M.</td>
<td>.51</td>
<td>.52</td>
</tr>
<tr>
<td>Diff.</td>
<td></td>
<td>.67</td>
</tr>
<tr>
<td>S. D. Diff.</td>
<td></td>
<td>.73</td>
</tr>
<tr>
<td>Diff.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S. D. Diff.</td>
<td></td>
<td>.92</td>
</tr>
</tbody>
</table>

The ratio of difference to the S. D. Diff. .92, indicates that the chances are 92 in 100 that there will always be a positive difference in favor of S. F. 2 if capitalization tests are given to the two groups under similar conditions. This is 32 in 100 more than more chance would allow.
TABLE IX

Summary of Table VI - Punctuation

<table>
<thead>
<tr>
<th></th>
<th>S. F. 1</th>
<th>E. F. 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>4.85</td>
<td>5.04</td>
</tr>
<tr>
<td>S. D.</td>
<td>3.39</td>
<td>3.91</td>
</tr>
<tr>
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<td>.60</td>
</tr>
<tr>
<td>Diff.</td>
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<td>.19</td>
</tr>
<tr>
<td>S. D. Diff.</td>
<td></td>
<td>.76</td>
</tr>
<tr>
<td>Diff.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S. D. Diff.</td>
<td></td>
<td>.25</td>
</tr>
</tbody>
</table>

The ratio of Diff. to S. D. Diff. equals .25, indicates that the chances are 60 in 100 that there will always be a positive difference in favor of S. F. 2 if similar punctuation tests are given the two groups under similar conditions. This is only 10 in 100 more than mere chance would allow.
TABLE X

Summary of Table VII - Grammar

<table>
<thead>
<tr>
<th></th>
<th>E. F.₁</th>
<th>E. F.₂</th>
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</thead>
<tbody>
<tr>
<td>M</td>
<td>7.51</td>
<td>7.34</td>
</tr>
<tr>
<td>S. D.</td>
<td>4.69</td>
<td>4.74</td>
</tr>
<tr>
<td>S. D. M.</td>
<td>.65</td>
<td>.71</td>
</tr>
<tr>
<td>Diff.</td>
<td>.17</td>
<td></td>
</tr>
<tr>
<td>S. D. Diff.</td>
<td>.96</td>
<td></td>
</tr>
<tr>
<td>Diff.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S. D. Diff.</td>
<td>.18</td>
<td></td>
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</tbody>
</table>

This ratio of Diff. to S. D. Diff. equals 18, indicates that the chances are 57 in 100 that there will always be positive difference in favor of E. F.₁ if similar grammar tests are given the two groups under similar conditions. This is only 7 in 100 more than mere chance would allow.
TABLE XI

Summary of Table VII - Composition

<table>
<thead>
<tr>
<th></th>
<th>$F_{-1}$</th>
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</thead>
<tbody>
<tr>
<td>H</td>
<td>3.19</td>
<td>2.89</td>
</tr>
<tr>
<td>S. D.</td>
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<td>3.38</td>
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<td>S. B. H.</td>
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<td>0.51</td>
</tr>
<tr>
<td>Diff.</td>
<td>0.3</td>
<td></td>
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<tr>
<td>S. D. Diff.</td>
<td>0.71</td>
<td></td>
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<tr>
<td>Diff.</td>
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</table>

The ratio of Diff. to S. D. Diff. equals 42, indicates that the chances are 66 in 100 that there will always be a positive difference in favor of $F_{-1}$ if similar composition tests are given to the two groups under similar conditions. This is 16 chances in 100 more than mere chance would allow.
Comparison of Gains in Punctuation
Red line represents gains by E.T.2
Black line represents gains by E.T.7
Red line represents gates by F. P. Z.
Black line represents gates by P. F. 1.
Comparison of gates made in Grenier.

Page 36.
CHAPTER V

Summary and Conclusions

Summary

One hundred nineteen Sophomore English students were divided into equated groups. The equating was done on the basis of indices of brightness on Otis Group Intelligence Tests. This was verified by comparing the scores of the two groups on the initial tests.

The experimental group was given instruction in methods of study and suggestions concerning the formation of proper study habits. This was done once a week for a period of twenty-six weeks.

Final tests were given at the close of the experiment period, and the gains of the two groups compared. The tests used were Standardized English Tests.

Conclusions

The data presented indicates that on the tests in grammar and composition the gains of the control group exceeded the gains of the experimental group; while on the tests in Capitalization and Punctuation the gains of the Experimental Group exceeded the gains of the Control Group, the gains being slight in each case. One is forced to conclude, therefore, that instruction in how to study, as given in this ex-
periment, does not function in producing better school work. This conclusion is justified on the basis of the data. It may be that some benefits have accrued to those receiving the instruction which are not detected by the measures used in the study.
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BIBLIOGRAPHY

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APPENDIX

The appendix contains a copy of each test used in the experiment, and a copy of the study-instruction material. This material, as explained in the body of the thesis, was taken from Shipple's "How to Study Effectively", Sandwick's "How to Study and What to Study", and Kornhauser's "How to Study".

THE PRINCIPLES OF EFFECTIVE STUDY

I. Know That Your Work is Worth Doing

No great and enduring work will ever be done when the heart is not in it. The harder the work the more clearly true is the statement. It is true of study; and study for young minds is hard work. There must be interest of some sort in study, as in everything else, or it cannot be continued by rational human beings. The will cannot focus attention upon any subject that lacks interest for more than a few seconds at a time; and forced attention requires too great expenditure of energy. School work must of necessity be hard for the normal young mind. Every subject of instruction is to him a new field of thought. Later in life, when knowledge has been acquired along many different lines, the acquired knowledge develops centres of interest that attract and hold the attention; but the youth, seeing no such relations, knows little or nothing about the subject matter to which he begins to devote his time and hence launches himself into the new work with great effort.

In order to make a hearty effort you must think of all the good reasons for study that you can find, and must control all inclination toward idleness or pleasure. A great deal depends upon your emotional tone. The right emotional tone is a happy-earnest feeling toward your work. You will attain this in proportion as you respect and value your studies.

Fortunately it requires only a little serious thought to make the average young man or woman realize the importance of study. So apparent is the advantage of education that even the uneducated can realize it; and often the cry goes up from those who come to their senses too late, "Oh, why did I not devote more time to study at an age when I had the leisure for it!"

Take a little time to think what study will do for you. It will make possible to you the highest, happiest life, fullest in understanding and in rich human experiences. With study, your interests, now so narrow, will widen in every direction. All that surrounds you, both near and far,—the world of nature, the earth, plants and animals, the past, the present, yes, even the future,—will be filled with significance; and you will become alive to a thousand things to which now you are dead. What interest has a child in the tombs of the Pharoahs, in the atomic theory, or in Mendel's law? "Not to have studied," said Cicero two thousand years ago, "is to remain always a child."
Power, position, reputation, and honor are all within the grasp of the diligent student. This is as true today as it was when Solomon wrote a thousand years before Christ, "Happy is the man that findeth wisdom and the man that getteth understanding... Length of days is in her right hand, in her left hand riches and honor."

If there are any who are unwilling to work for their own selfish advancement, they should consider the increased power for service to others which such self-advancement gives. Those students whose pride is not self-centered must still rejoice to see how grade marks, symbolizing their scholastic success in competition with other young people, gladden the hearts of those at home. Father's and mother's eyes brighten, and brothers and sisters are glad because the student of the family has won distinction. Young and old instinctively know that industry and intelligence are indications of good stock in which they, too, have a share; and all are in consequence heartened and cheered. "There will be a strong man in the family," parents say, "when years of weak old age are upon us."

The most unselfish can see in study an opportunity to serve their country. We delight to honor courage, but it is questionable whether the most distinguished services of our country's generals are to be compared with the services of her scholars. History is very clear on this—that the nations that have attained preeminence in many lines of industry have done so as the result of scholarship. If America is to hold her place even in industry, she must have scholars and scientists of a thoroughgoing stamp to lead the way to discovery and invention.

It is no small thing to make a reputation for ability among one's classmates. In most instances there will never again be such opportunity to acquire so easily a reputation for ability, intelligence, and industry. Where could one find a better chance to show his worth before so many? These classmates of today will be the men and women of tomorrow; and what they say of you can make or mar your success in the days to come. If with good scholarship go bigness of heart and unselfish devotion to common interests, you will have many eager helpers all along your upward path—old schoolmates and college friends who have recognized your worth.

It is of no less importance to make a good record in the eyes of your instructors. Especially when you first start in business life, employers will inquire what your school record is. The more important the position to which
you aspire and the more trust to be placed in you, the more will your record be searched. On the following page is a form that I have filled out scores of times for young men seeking positions of responsibility. Notice how much stress is upon their school record.

II. Have Confidence That You Can Do It

Not only must you gain the full consent of your mind to the proposition your work as a student is worth doing,—you must also have confidence that you can do it. Remember: the right emotional tone is one of happy-earnest confidence. If you know that your work is worth doing you cannot dislike it. If you know that you can do it, you can not despair of it. Enormous energy has to be spent in studying what one dislikes or despairs of acquiring. Displeasure displeases and exhausts. The brow contracts, the shoulders draw together, the corners of the mouth drop down, the whole form stoops, the hands close, and the arms bend into a more or less defensive attitude. In that position the body is on guard, as it were; shut up, so far as may be, to outside influence. The mind follows the body. In such a condition of mind and body, learning is almost impossible.

But the right emotional tone of happy-earnest confidence smooths out the wrinkles in the brow, lifts the corners of the mouth, opens the chest to deep breathing and strong heart action. The whole body becomes receptive. The mind is then alert and ready to receive suggestion and stimulation.

How the question is, how may we acquire this confidence? Lincoln sustained himself in the years of self-directed study with the belief, "What man has done before, man can do again." It is a sustaining thought for you. Generations of students have mastered this mathematics, this Latin, this physics, over which you sigh. Others in a thousand schools are mastering these studies today. Perhaps in your class are others far less equipped than you with energy and endurance to bear the stress of mental work. What all these have done and are doing successfully you can do.

Not only should the thought of others encourage you, but the place that you have already reached in education should prove to you that you are no defective. Have you won that place by sheer force of industry? Then so much the greater must be your deserved self-reliance. Hard-won suc-
cess breeds over the best and sturdiest confidence. The
race is not always to the swift. Remember that Grant was a
mediocre student and Wellington slow to learn. Perhaps the
persistency which slow minds must develop to hold a place in
school more than makes up for the lack of brilliance and
quickness of intellect.

III. Have Fixed Hours for Study and
Plunge in When the Hour Comes

Nothing can be more helpful to the student than to set
certain definite hours for the preparation of definite stu-
dies. If hours are fixed, habit steps in and makes it easy
to begin the task at the appointed time. In fact, if the
habit is kept up long enough, study will be easier, when the
study hour comes, than anything else. On the other hand, the
student who has no fixed program of study outside of class
wastes every day an enormous amount of time and energy
getting himself launched in his work, and he always risks
being inadequately prepared. This statement is true of all
students, and especially of the young, who still find mental
work irksome.

William James says, "There is no more miserable human
being than one in whom nothing is habitual but indecision,
and for whom the lighting of every cigar, the drinking of
every cup, the time of rising and going to bed every day,
and the beginning of every bit of work, are subjects of ex-
press volitional deliberation. Full half the time of such a
man goes to the deciding, or regretting, of matters which
ought to be so ingrained in him as practically not to exist
for his consciousness at all. If there be such daily du-
ties not yet ingrained in any one of my readers, let him be-
gin this very hour to set the matter right."

Did you ever note the effect of fixed habits upon your
own life? For seven months I rose every morning at 4:30.
At the end of that time, the necessity for early rising
having passed, I endeavored to sleep till six o'clock, but
found I could not sleep after the accustomed hour for ris-
ing. It took me weeks to acquire the new habit. A friend
of mine, while in college, was forced for nearly two months
to prepare all his college work after 9:00 P.M. He retired
at two o'clock and arose at 6:30. When it again became
possible for him to work by day, he not only found study
difficult, but was unable to go to sleep before two in the
morning. He had to break away from his college work alto-
tgether for a time, in order to acquire again a normal habit
of sleep.
There are students who are in the habit of retiring at no fixed hour. If some excitement attracts, they are up late. If the evening is dull, they retire early. They go to bed whenever they get sleepy. As a result, they find it almost impossible to do any effective studying in the evening. They are handicapped by somnolence at an hour when their best evening work should be done. If such students, by whatever possible means, fix the habit of retiring at ten or ten-thirty every night, they will find evening hours an excellent time for quiet study. Persistent habit will soon break the early sleepiness. Nine hours of sleep are enough for boys and girls in high school; eight, for college students.

It is the curse of irregular hours that nature can never be relied upon to hold a man's mind efficient when efficiency is wanted. The young man who is out at night until one or two o'clock, and goes to bed the next night at eight-thirty or nine to make up his sleep, can never succeed as a student. He can never be sure that sleepiness will not overtake him early on the third night as well.

Of course all know what slaves bad habits make of those who get accustomed to lying, using slang or profanity, tobacco or liquor, etc. But did you ever realize that industry is a habit and idleness as well? Many a student passes among teachers and classmates as a person of weak mentality when he is really only a habitual loafer. It has been my good fortune to create a crisis in the lives of some of these, as a result of which they broke the habit of idleness and launched the habit of industry. In such cases I have seen a record of failures cease and give way to the highest marks in the school. Habits are either cruel masters or powerful allies, according as men carelessly yield to vicious ones or thoughtfully accustom themselves to those which are helpful. The loafer is not happier than the industrious man; he may be an idler simply because he has become carelessly fixed in that bad habit, and is quite unconscious that he is indulging in one of the seven deadly sins.

The first thing that you as a student should do is to habituate yourself to fixed hours of study. Have definite hours for definite work and don't let the hour go by unemployed. In the course of a few weeks you can scarcely do anything but study when the hour comes. Haphazard students, who study a lesson one day at one hour and another day at another, frequently fail to study at all. For them it is just as hard to settle down to work at the last as it was at the first. The work gets no easier; they are always behind-hand, hurried, and worried by unfinished work.
The following rules for study are suggested by Prof. Guy B. Shippie of the University of Michigan:

1. Keep yourself in good physical condition.

Your mental efficiency depends on the efficiency of your central nervous system. This system suffers like any other part of your body from inadequate exercise, insufficient sleep, ill-digested food, or confinement in ill-ventilated rooms.

Sleep. More students sleep too little than sleep too much. From the averages of the six best authorities we may recommend the following duration of sleep:

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<th>Age</th>
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<td>17</td>
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Exercise. Remember that exercise, particularly in the form of outdoor recreation and games, is valuable not merely for requiring strength, and skill, but also for stimulating the digestive, circulatory, and excretory systems of the body to the more active supplying of nutrition and removal of waste products. Further, that exercise carried on under pleasant auspices affords a useful antidote for mental weariness and monotony.

2. Attend to, remove or treat physical defects that often handicap mental activity, such as defective eyesight, defective hearing, defective teeth, adenoids, obstructed nasal breathing.

Vision: Thirty per cent of school children have defective vision. In high school and college the percentage is larger. Consult a competent oculist if you have difficulty in seeing clearly objects at a distance (like writing on the blackboard) or if you experience, eye aches, switching of the eyelids, inflamed lids, headache, nervous irritability, nervous dyspepsia and similar symptoms of eye-strain, after use of the eyes at close range, even though you see the printed page quite clearly.

Defective teeth seriously affect the work of students, because (a) the mastication of food is inadequate; (b) the neglected cavities afford a breeding ground for scores of varieties of bacteria (including the germs of serious infectious diseases, like diphtheria and tuberculosis); (c) the pus which develops often finds its way into the blood and alimentary canal and thus pours into the body millions of noxious germs and produces general bodily ailments, like intestinal catarrh, anemia, lowered vitality and other general disturbances which appear to be in no way connected with
the local disturbances in the teeth; (d) the pain of tooth-
ache acts directly to distract attention and indirectly to
induce various reflex nervous irritations. When we consider
that one or more defective teeth are found in 90 per cent
of school children, the total loss of efficiency in school
work attributable to this single cause is truly startling.

Adenoids are enlargements of spongy tissue in the upper
part of the throat just where the nasal passages open into
it. They are found in some ten per cent of school children,
particularly of children from 3—16 years of age. They in-
terfere with breathing, clog the Eustachian tube and thus in-
duce hardness of hearing, mouth-breathing, snoring, project-
ing teeth, stunted bodily growth and imperfect development
of the bones of the nose and jaw. In some persons they
cause a peculiar sort of mental sluggishness, or stupidity,
with inability to control and direct attention for long to a
difficult mental task. They can be removed by a relatively
simple operation and with marvelously beneficial results to
both mind and body.

3. See that external conditions of work—light, tempera-
ture, humidity, clothing, chair, desk, etc., are favorable
to study.

A quiet place for work that shall be reasonable free
from interruption and from distracting conversation is great-
ly to be desired. Too many students have to do their home
work under conditions that are far from ideal. Study, at
least when it is begun, demands active attention. In order
to get attention upon work, it must be withdrawn from other
matters. Every happening in the room in which you are work-
ing makes a claim for your attention. A portion of the en-
ergy you exert in attending to your work has to be expend-
ed to shut out these distracting claims. Clearly, then, if
you can work in a room in which these outside appeals are
reduced to the minimum, you will gain that more energy to
devote to your tasks.

As you get older, your capacity to direct all your en-
ergies upon your mental work, even against distraction,
ought to increase. A profound philosopher in the midst of
his meditations would never notice the little noises and
movements that immediately distract the attention of the
kindergarten child. However, the difference between the
child and the philosopher is largely one of degree—of how
much gunpowder, as some one has expressed it, would have to
be exploded under his chair to wreck his train of thought.
This getting used to distractions is a good thing to acquire,
but still there are usually enough of them without deliber-
ately placing yourself in conditions that will increase
their number.
Light should never shine directly into your eyes. Don't face a window or brightly lighted wall. Don't let an artificial light hang in the immediate range of your eyes unless they are protected by an eye-shade or by a suitable shade on the lamp. Nor should the illumination be so directed as to be reflected directly from paper or books into your eyes. The direction of illumination should be predominantly from above and for desk work from a point to the front of, and to the left of, your body, in order that shadows shall not be cast on your work by your head or by your hand (in right-handed persons). For reading, when the book is held in the hands, the light may be places above and somewhat behind, whether on the right or left is then indifferent. An ideal illumination for desk work at night may be secured by a single small electric lamp (perhaps 8 candle-power) under an opaque reflector, arranged to flood the desk with light, but to be itself invisible to your eye. The cutting off of illumination from the remainder of the room is restful and assists, by lessening distractions, in concentrating attention upon the work before you.

A temperature between 65 and 68 degrees is conceded to be favorable to most workers. Beyond 70 degrees, particularly under artificial heating, flushing of the face, headache and other signs of discomfort are apt to appear. This discomfort is usually more a consequence of low humidity than of high temperature. In the winter, therefore, any sort of device that will add moisture to the air (evaporation from pans of water over furnace or on steam or hot-water radiators, etc.) will lessen the dryness of the indoor air (often exceeding that of the desert of Sahara) and comfort and skin and mucous membranes of the body. Recent experimental studies show also that the keeping of air in motion by fans will remove the discomfort felt in ill-ventilated rooms to an extent not usually dreamed of.

Tight clothing, particularly tight neckwear, interferes with mental work directly by its discomfort and indirectly by impeding respiration and circulation. A tight collar checks the flow of venous blood from the head and tends toward flushing the face and increasing blood pressure in the eyes and the brain.

The study desk and chairs should be of a height to fit your needs. Too low a desk encourages stoopshoilders, a contracted chest and a congested head. Too high a desk is uncomfortable for your arms and brings the work too near your eyes. A little experimenting, especially with the height of the chair relative to the desk, will often make a wonderful difference in the comfort with which study can proceed.
The equipment of your desk should be such as to bring the various tools of study conveniently before you. Have these 'tools' of study (pencils, erasers, rulers, pen and ink, blotters, dictionaries, drawing sets, pads of paper and the like) in good condition and so placed as to be at hand when wanted, but out of the way when not wanted. High school and college students who can afford ought to buy a typewriter, have a simple stand for it, and do as much of their work as possible upon it. A rack that will hold heavy books, like dictionaries used in translation work, at a reading angle of 45 degrees is another useful desk device.

4. Form a place-study habit.

Have a particular place—a particular desk, a particular chair—at which you study. Do your studying there unless special conditions warrant doing it elsewhere. At least, don't permit yourself to do anything but work at this particular place. Don't ever leaf or read novels or newspapers in the chair dedicated to study. This advice may strike you as a bit far-fetched. By no means. Once get this place-study habit formed and you have only to take your place to start up the studying attitude.

5. Form a time-study habit.

When school work follows a regular schedule there can be discovered a natural schedule for studying. For most persons there is a real advantage in doing mental work by schedule, in setting aside given periods for study and in following this schedule rather closely. For one thing, you are not likely then to get behind in your work. And again, a tendency appears to be developed in the nervous system of turning to mental work at times ingrained by habit.

Whether this time-study habit should be more specific, so that a particular subject is studied at a given day and hour (geometry, daily at 11; Latin, Monday, Wednesday and Friday at 8 p. m.) is open to question. I doubt that the nervous system can be trained to habits of working with particular subjects at particular hours. However, many students are convinced that such a plan is valuable because of the advantages of pursuing daily work methodically, of laying out a program and sticking to it.

Whether, again, different people are by nature so constituted as in general to do mental work best at different portions of the day, so that A is a "morning worker," B an "afternoon worker," C an "evening worker," is also open to question. Habit would appear to play a considerable role here. I think that most evening workers could become morn-
ing workers if they had to. Several of the writer's friends think they do creative and constructive work better late in the evening and 'hack' work better in the day time. By preference they would write and essay at night and revise it in the morning.

6. When possible prepare the advance assignments in a given subject directly after the day's recitation in it.

This is a special case under Rule 5: "Form a time-study habit." The reasons for it are these: (a) The mind is 'set' or 'tuned up' for the particular subject; there is a special fitness for work in physiology or history or whatever the work may have been, and this 'swing' should be utilized. (b) The assignment for the work to follow is fresh in mind. (c) The study of a given topic by an interval—probably twenty-three hours or more. As is explained below (Rule 25) two impressions of a given material are more effective for permanent memory when separated by an interval. It follows that the transposed order—study x, then at once recite x, which is so much favored by students on account of the benefit of 'recency'—cannot be recommended for the best permanent results.

7. Begin work promptly.

Observation of high-school students shows that even when they know that only a short period is available for studying a given lesson, nearly one is slow to start. Some of them take ten or fifteen minutes to go through the motions of getting started. Here is a woeful waste of time. Get before yourself the idea of a quick 'get-away.' Reduce your starting time from minutes to seconds. One help to this is to:

8. Take on the attitude of attention.

Get your materials laid out before you. Take your pen or pencil. Sit up straight. Open your book. Carry out all the 'motions' of getting to work. If you have drilled yourself well, this will be enough to start you to work. The beginning is often the hardest point; once begun, you can keep on without much effort.

9. Work intensely while you work: Concentrate.

You are not likely to remember what you deal with half-heartedly. Vivid impressions are most lasting. Ideas flow most rapidly when you work 'at white heat.' Put as much 'steam' into your work as into your play. Don't dawdle. When E. B. Andrews was President of Brown University he used
one phrase in his Chapel prayers that might well voice the attitude of all good students: "Help us to apply ourselves with unremitting assiduity." Note, too, that this means be attentive in class as well as in your home work.

10. But don't let intense application become fluster or worry.

You can be intent without being anxious, earnest without being flustered. There is a kind of hurry that "defeats its own end." In especial, don't worry because you can't keep pace with the best student in your class. No two of us are alike. Do your best and admit your limitations if others learn faster, recite more readily and secure higher marks.

11. Do your work with the intent to learn and to remember.

Laboratory experiments with memorizing under different conditions show very clearly that one of the most important conditions of good memory is the taking of the attitude of 'intent to remember' when the materials to be learned are presented. Closely allied with this is the attitude of 'confidence' in one's ability to remember what one is learning. An illustration may be seen in the following incident. I once had occasion to read aloud a list of words to a student enough times so that he could recite them correctly. I repeated the process with a second and with a third student. I then discovered to my astonishment that I was unable to recite the list by heart myself. Here not only the most sharable, but also the psychologically correct explanation, is that I never intended to learn the list myself. I had repeated it mechanically and not in the memorizing attitude.

12. Seek a motive or, better, several motives.

Some school subjects are intrinsically interesting. You would rather study them than not. Without urging you find them interesting. But other subjects, or even the favored subjects under certain conditions, are not intrinsically interesting. If attention is given to them, it is because a motive or incentive is found that can be attached to them. Among the most obvious incentives are recognition of the value of the subject to you in the future, anxiety not to fail in anything you undertake, longing to be a credit to your parents, resolve to 'get your money's worth' out of your investment in schooling, ambition to beat your classmate, to beat your own previous record, to maintain a
good reputation, competition for grades, prizes, honors, sense of duty, love of the approval of teachers, parents and friends, necessity of graduating to get a better start in life, fear of various penalties, etc. But motives are mixed, some are remote, others immediate. Some of them are felt to be higher and worthier than others. The fundamental point is that to do your best work, you need strong incentive. Skillful teachers know how to develop and appeal to many motives, but you can help yourself by deliberately seeking for motives for your own work. Moreover, many a task begun under artificial compulsion comes in time to be itself directly attractive.

13. Get rid of the idea that you are working for the teacher.

The teacher’s real function is to supply the materials, guide your application and test your performance, not for the teacher’s sake, but for your sake. Remember that you are really working for yourself when your are studying.

IV. Begin by Recalling What You Already Know

Value of the “appercceptive mass.”

New ideas and facts are not easily grasped unless there are already present in the mind other facts which are more or less related to the new. We cannot readily assimilate that which has no bearing upon what we already know. In fact, the mind can with difficulty give attention to thought material which is wholly novel; for it can get no grip on that which does not relate to our present stock of knowledge. It is one of the advantages of a liberal education that the expanding mind comes to have some knowledge and interest in every direction. Such expansion of knowledge and extension of interest act to strengthen the attention and add still further to the interest. Attention is stronger in the adult than in the young; in the learned than in the ignorant. The more we know, the more easily can we acquire more knowledge.

Recalling the previous lesson

However slender your stock of knowledge may be, you should use of what you have in acquiring more. You can easily begin by recalling what you have learned before on the subject or lesson in hand. For instance, in history, first go back to the previous lesson and recall what you studied and what was brought out in class. You will begin
to wonder how certain events are to turn out. Curiosity will become active. You will get a purpose for going further, a live interest. The purpose will make further reading far more effective, as well as easier and more pleasant.

Recalling ideas related to the lesson topic

It is well to look at the general topics of the new lesson and then recall whether you have ever learned anything from any source whatever, in school or out, about these topics. In the light of the previous lesson and of what you have learned elsewhere, imagine the general content of the new material for study; think what it will be about; in the history lesson, think what events will result from what you already know. Now read to satisfy your mind.

Value of this method.

This method of work is not fanciful nor merely theoretical. Some of the greatest minds among the most eminent statesmen and scholars have practiced it. John Morley, Daniel Webster, Lord Strafford, and Noah Porter are examples. They had a way of recalling the related old before reading the new—a way which the known principles of psychology now approve, a way which must result in increased interest and attention. It strengthens the memory; for it makes recall of the new material quicker and more certain. It fastens the new thought to thoughts which you can already recall, and gives to it almost as great ease of recurrence. If you can recall A, and B is associated in your mind with A, then you can recall B also.

Relate the new to the old.

Nothing in the mind exists unrelated. Whatever is there has been introduced by something else that will always be associated with it in thought. The mind tends to recall the one thing when it recalls the other. Facts that have the greatest number of associations are the most readily recalled. Those that are most isolated are most difficult to remember. Memory demands the association of ideas.

Controlling the stream of consciousness

It is not for the sake of memory alone that you should recall what you have previously learned before undertaking to read or study further on the same subject. Efforts to recall will help to give command of yourself, of your inner life, or stream of consciousness. Often other and more interesting ideas will rise and take the place of
that which you wish to study of hold before your mind. Thoughts of other things will come between you and the difficult reading you wish to do. In such cases little reliance can be placed upon the will. Voluntary attention, as has been said, gives control for only a few seconds at a time and at the cost of exhausting effort. You become disgusted with work done so painfully, and are likely to lose confidence in yourself. But when such a period of recalling, such a warming-up process as has been described above, precedes the reading, then the mind can be held more attentively fixed upon the work in hand. There is a gain in mental control.

V. First Study the Lesson as a Whole

then go back to Difficulties

Useful knowledge is related.

Much time may be gained in the preparation of a lesson if it is first studied as a whole. Knowledge does not exist as separate units. Facts cannot be regarded as so many distinct pebbles that may be dropped into the mind one at a time. The jewels of thought are not solitaires; they may be likened, rather, to a string of pearls. You cannot attempt to store them in your mind, one by one, without losing many and destroying the beauty and significance of all.

It is more easily remembered if the relations are seen.

Observe the workings of your own mind. Notice how, when you think of one thing, another idea which is in some way related to it comes presently into your mind. If the relationship is clear when the facts are studied, they will be easily remembered. Each fact will help you to remember the others related to it. Constants, similarities, relations of cause and effect, of nearness in place and time—these are the more usual relations that connect one idea with another. The thought will be more easily remembered if the assignment is studied as a whole rather than by parts; for only so can the connecting relations be seen.

Examples of this.

Thus the government and the social life of Athens become clearer and more easily remembered by contrasting them with those of Sparta. The flora and fauna of any region are more easily grasped by comparison with those of other regions that have similar climatic conditions. The American Revolution becomes far more significant and its details easier to recall, if we know its causes and results as well as the
chain of events that brought it to a conclusion. The historical events that preceded and attended a literary period give meaning to that period. In earth study, the gorge and the waterfall can be easily understood when other effects of erosion are studied at the same time. Examples of the benefits of association of ideas by first studying the whole may be multiplied in every school subject. The re-collection of one of these associated ideas will bring to mind the other related facts and all will gain in clearness by the association.

Learning sentence by sentence difficult and unprofitable.

To study without understanding is to learn words, not thoughts. When the relations are seen, the thought is understood. Every one has seen young children poring over a sentence and then repeating it word by word, over and over again, to memorize it. This is an exceedingly long and laborious way of acquiring knowledge. It takes very much longer to learn by repeating sentences than it does by repeating the whole assignment. And when the assignment has been memorized sentence by sentence, there is very great danger that it will not be in the least understood; in which case the learning is worse than useless.

In the light of the whole values are seen.

Furthermore, learning sentence by sentence takes no account of the unequal values of sentences. Some sentences have the thought of a whole paragraph packed into them. Others are merely transitional or introductory, and serve only as sign posts to point the thought on toward the really significant thing which is coming in a later sentence. Some sentences merely repeat in other words or sum up what was said in the previous sentence or sentences. In the light of the whole, the inequality of values is clearly seen; and then the mind hurries over the unimportant and dwells on that which is truly significant.

When the whole has once been read, a second reading becomes full of meaning. The thought plays over and around each sentence as you read, bringing light from the whole lesson with which to illumine and explain each part. You read between the lines, reflecting as you read upon the similarities and contrasts and upon the relations of cause and effect. All this work adds to the interest and gives power of attention, which "is the mother of memory."
VI. Use Multiple Imagery in Study

How to learn to concentrate.

Teachers often advise pupils to learn concentration. By this they mean that you should learn to hold your attention on the work in hand, not allowing the mind to wander. In hard, dry reading concentration is difficult. You see the words; but most of the time you are really thinking of something else. It will help you to bridge the difficulty if you use other forms of studying besides that of merely seeing,—other sense organs besides those of sight. At home you might read the passage aloud. Moreover, you will always be helped by writing an outline or paraphrase of the passage.

"The stream of consciousness"

All during waking hours there passes through the mind a stream of consciousness. The thought runs on from one related thing to another in endless succession. Many thought images are rejected at once by the will, while others are chosen for further consideration. Especially recurrent in the stream of consciousness are thoughts of those things that interest us. Interesting thoughts come back again and again, while the uninteresting can scarcely get attention. Sometimes in the stream is a strain of music, a popular song; sometimes pictures of things seen; and sometimes mere feelings. Often one is conscious of a succession of spoken words heard within him. All these are called thought images or mental imagery, whether they repeat things perceived by eye and ear, or things felt.

It tends to flow in independent channels in hard reading.

Now this stream of consciousness goes on when you study. If you have a body of knowledge or experience related to that about which you are reading, the stream will play about the author's thought, expanding, explaining, testing, or illustrating it; in this way, of course, you are greatly aided in understanding what you study. So we insist that you begin your study by recalling what you have already learned. But very often with young students there is no body of knowledge already present in the mind to flow along as directed by the reading; and when such knowledge is lacking there is great likelihood that consciousness will flow in independent channels and completely shut out the author. Thus other thoughts, more insistent and backed by a vigorous memory, may rise and come between you and your work. In that case it is far easier to hold attention on the text when you pronounce the words aloud.
Mental imagery, auditory, visual, and motor

There is another reason for reading aloud: you can remember better what you read. The stream of consciousness described above will be recognized as the activity of memory. It is clear from what has been said that there is a memory for sounds. This may come to predominate in some minds, especially in that of the actor, clergymen, or public speaker, much of whose consciousness is likely to be haunted by the memory of spoken words. The musician's mind, by the same token, will be haunted by the sound of tunes. The builder, artist, architect, or engineer may find that his stream of consciousness is largely made up of things seen. While all who speak or sing or use their hands with skill will have in sensations from the muscles of throat, fingers, etc., a motor reflex, which is the memory of things done. This last form of memory, called motor imagery, is quite as important as any of the others; though it may act more automatically, so that we are as a result less conscious of it. Consider how the pianist memorizes the execution of long and difficult compositions. Memory acts so powerfully that he remembers and repeats difficult fingering without conscious effort. Not less wonderful is the memory of tensions in the vocal chords acquired by trained singers.

Studying aloud gives multiple imagery.

By studying aloud you can make use of the motor memory, while at the same time you are making channels for the subject matter to connect with the visual and the auditory memory-tracts. A few words of explanation may be necessary here. Certain areas or tracts on the outer surface of the brain are centers for impulses from certain external organs. Different areas receive and send out special sense or motor impulses. Thus there is an center that connects with organs of sight, another with organs of hearing, and there is a third center for motor and touch impulses.

VII. Practice Recall as you Study; and in Drill Work Repeat at Increasing Intervals

Recall of previous lesson

You have seen the value of recalling what was learned at the previous recitation and elsewhere on the topic assigned, before you begin the study of the topic or assignment. This recall was for two purposes, (1) to use this material as hooks on which to fasten the new knowledge, and (2) to allow the mind to create a purpose for study through
curiosity and natural interest, so that the attention will be stronger.

Recall during study.

From time to time during the process of study there should be brief periods of recall at which the material you have just read is quickly reviewed. The purpose of such a period is also two-fold: in the first place, it enables you to test the efficiency of your attention during the reading, by asking whether you are really getting the thought; and in the second place, it helps you make what you study available for future use by fixing it more securely in the memory.

This gives understanding and concentration

There is no better way to find out whether words are being seen without their thought content, or meaning, than by pausing from time to time to recall the thought. No effort should be made to recall the exact wording. Instead, a conscious effort should be made to frame the author's thought without regard to his words. Such a test is searching and calls for vigor and intellect. It will be found wearisome, especially at first, to those who have never practiced it. But be assured there is no other method half so valuable in acquiring the power of concentration, which is the key to successful scholarship.

Frequent waste and time in study without recall.

How many a student in high school and in college thinks he is studying when really he is only reading words! He comes to a quiz in philosophy or in political economy only to find that the hours he has spent in reading have availed him nothing. He cannot even remember the words, while of course he had never really reached the thought back of the words. The habit of stopping to recall may seem at first wasteful, but in the end it is by far the quickest way to learn. It is safe to say that when it is acquired early in a high school or college course, it saves much of the student's time. If persisted in there comes at last such power of concentration that in a single reading the trained mind learns more than the untrained learns in half a dozen readings.

Especially valuable in hard reading.

There are or should be limitations to the use of the method of frequent recall. It need not be used at all in easy reading; as, for example, English literature. It is the
reading of unfamiliar, abstract, abstruse thought that needs frequent testing. And bear in mind, also, that pauses should occur only at divisions of thought. The more difficult the thought, the more frequent the pauses must be, but the paragraph ending will usually mark the place for recalling and recasting in the mind the difficult thought in the paragraph.

So much for the method of frequent recall in difficult reading as a means of testing the efficiency of attention. Another reason for this practice is to make the thought more available for future use by fixing it more firmly in the memory.

Value of right memorizing

Of late years there has been a good deal said and written against what is called "mere memorizing." I take it, however, that the quarrel is not really with memorizing as such, but with the method of memorizing. It is the habit of memorizing mere words without mastering the meaning back of them that educators decry when they speak of "mere memorizing." They insist upon learning to understand rather than to remember. Yet to understand anything is the best and surest way of remembering it; nor is any truth of so little value to the student as to be best forgotten.

Where drill is needed

A considerable part of the work done in high school and college is of a sort that demands learning by heart. Of course this process is most necessary in earlier education. Memory drill alone can adequately fix the multiplication table, the rules and forms of English grammar, and the spelling of difficult words. The foreign language courses of high school and college make a like appeal for memory drill. Even in a course like geometry, which is supposed to train the reasoning powers almost exclusively, if the theorems, axioms, and postulates are not memorized, the attack on new work is weakened. Memory brings up the ammunition without which new problems will not succeed to attack. It has been justly said, "Memory is the purveyor of reason." It furnishes the materials of thought here and everywhere.

In drill work repeat at increasing intervals

Thus a knowledge of the best methods of fixing needed facts in the memory will always be valuable to the student. For drill work, repetition as well as recall will be found necessary. In memorizing or other drill work, repeat at in-
creasing intervals. For instance, suppose you wish to master the spelling of a new and difficult word: you will not learn it so thoroughly by spelling it aloud or writing it ten consecutive times as you will be repeating the spelling say twice in the morning, twice in the afternoon, twice on the morrow, twice on the fourth day, and twice on the tenth day. The law applies to other pure memory processes, such as learning a poem or the vocabulary of a foreign language. Frequent short sittings are much more effective for drill than one long one; and if these short sittings are repeated at increasing intervals, the retention of the matter studied will be far more sure and enduring.

**Reason for increase of intervals.**

Each repetition at a given time occurs with less interest and attention, and in consequence with weakened effect upon the mind. But after an interval the effect of a repetition will again be heightened. Fatigue and ennui are both fatal to efficient study. To avoid these in drill work, have frequent short sittings rather than a single long one, and repeat at increasing intervals. Out of all proportion to the time required for such reviews is the value received. And nearly every subject has some principles of such prime importance as to warrant fixing them in the mind by drill.

**Summary**

To test the efficiency of your reading and to compel the right attention in difficult passages, pause from time to time at the natural pauses of thought and recall what you have just read and to see if you are getting the thought. This will also help to fix in mind what you are reading.

In drill work make frequent short sittings and repeat at increasing intervals.
OTIS GROUP INTELLIGENCE SCALE
Devised by ARTHUR S. OTIS
Edition 1920

ADVANCED EXAMINATION: FORM B

Examination Number ........ Name ..................................................
(First name, initial, and last name)

Age last birthday ........ years. Birthday. .................................
(Tell in figures) (Month, day)

School .................................. Grade .........................

City .................................. Date ......................... 19...
(Month, day, year)

(Do not write below this line.)

Remarks or Further Data

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TEST 1

Following Directions

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Sample problem. Write the fifth letter of the alphabet. ....................... ( E )

Begin here:

1. Do you understand that each letter is to be a capital made like printing and put in the parenthesis after the problem? If so, write P in the parenthesis ..........

2. Will you remember not to ask any questions during the examination? If so, write N ........................ ( ) 1

3. Will you remember not to look toward the paper of any other pupil during the examination? If so, write R .....

4. Will you remember not to turn over your booklet or any page of it at any time unless you are told to? If so, write T, if not, write N ..........

5. Write the letter A .................................. ( ) 5

6. Write the seventh letter of the alphabet .................................. ( ) 6

7. Write the same letter that you were told to write in the fifth problem .......... ( ) 7

8. Write the letter which follows the fourth letter of the alphabet ................ ( ) 8

9. Write the letter which the letter M follows in the alphabet .................... ( ) 9

10. If L comes after S in the alphabet, write L; if not, write S .................. ( ) 10

11. Suppose all the odd numbered letters in the alphabet (that is, the 1st, 3d, 5th, etc.) were crossed out. The fourth letter left, not crossed out, would be what letter? ( ) 11

12. Write the letter which follows the letter which comes next after C in the alphabet. ( ) 12

13. If G and H appear together in the alphabet, write H, unless S and Y also appear together in the alphabet, in which case write S instead ....... ( ) 13

14. Write the letter which is the third letter to the right of the letter which is midway between M and Q .......................... ( ) 14

15. Suppose that the first and second letters of the alphabet were interchanged, also the third and fourth, the fifth and sixth, etc. Write the letter which would then be the 15th letter in the alphabet .......................... ( ) 15

16. A certain letter is the second letter to the right of another letter. This other letter is the fifth letter to the left of R. What is the “certain letter” first mentioned? ( ) 16

17. A certain letter is the fourth letter to the left of another letter. This other letter is midway between two other letters. One of these last two letters is next after F in the alphabet and the other is just before L in the alphabet. What is the “certain letter” first mentioned? .................. ( ) 17

18. If the letters in the word SO appear in the same order that they do in the alphabet and if the same is true of the letters in the word BY, write the letter Z. But if this is true of only one of these words, write the last letter of that word .......... ( ) 18

19. Find a certain letter which, in this sentence, appears a second time nearest the beginning. Write it, using a capital .................... ( ) 19

20. Find the two letters in the word SYRUP which have just as many letters between them in the word as in the alphabet. Write the one of these two letters that comes first in the alphabet ...................... ( ) 20

Score ..................
TEST 2

Opposites

Samples:
- up ............ (short, down, small, low, young)
- hot ............ (warm, ice, dark, cold, fire)

DIRECTIONS. Look at the first word on each line, think what word means exactly the opposite of it, find that word among the five words in parenthesis on that line and draw a line under it.

Begin here:

1. north ......... (pole, south, west, east, equator)  
2. no ............. (right, sure, yes, nothing, maybe)  
3. bottom ......... (top, side, cover, middle, over)  
4. after ......... (early, now, soon, follow, before)  
5. easy ......... (long, quick, slow, difficult, common)  
6. enemy ......... (fight, neighbor, friend, stranger, foe)  
7. fail ......... (pail, try, good, succeed, win)  
8. strong ......... (man, weak, small, short, thin)  
9. pretty ......... (good, ugly, bad, crooked, nice)  
10. obey ......... (order, officer, command, lead, soldier)  
11. sorrow ......... (sickness, health, good, joy, pride)  
12. contract ....... (small, shrink, expand, stay, explode)  
13. truth ........ (tell, no, liar, ignorance, falsehood)  
14. hate ........ (enemy, fear, love, friend, joy)  
15. accept ........ (receive, percept, deny, reject, spend)  
16. economical ..... (cheap, stingy, extravagant, value, rich)  
17. destroy ......... (abolish, change, continue, restore, alter)  
18. never ......... (often, sometimes, occasionally, always, frequently)  
19. treacherous ..... (friendly, brave, wise, cowardly, loyal)  
20. honor ......... (glory, shame, cowardice, fear, defeat)  
21. constant ....... (always, fickle, stationary, seldom, movable)  
22. hope ......... (faith, misery, sorrow, despair, hate)  
23. because ........ (although, cause, maybe, since, therefore)  
24. but ......... (and, nevertheless, whether, even, never)  
25. if ............. (however, unless, also, therefore, and)  

Score .............
TEST 3

Disarranged Sentences

Men money for work.............................. (true false)

Samples: Uphill rivers flow all.............................. (true false)
ocean waves the has.............................. (true false)

Directions. The words on each line below make one sentence if put in order. If the sentence the words would make is true, underline the word true at the side of the page. If the sentence they would make is false, underline the word false.

Begin here:
1. give milk cows.............................. (true false) 1
2. sun night the shines at.............................. (true false) 2
3. cannons loud make noise a.............................. (true false) 3
4. months warmest are summer the.............................. (true false) 4
5. of cups all made are cotton.............................. (true false) 5
6. pens for used are writing ink and.............................. (true false) 6
7. are and apples long thin.............................. (true false) 7
8. wood eat and good to are coal.............................. (true false) 8
9. months there twelve year are a in.............................. (true false) 9
10. made chairs wood are of usually.............................. (true false) 10
11. tails have all short very monkeys.............................. (true false) 11
12. people are many candy of fond.............................. (true false) 12
13. and cows from honey come bread.............................. (true false) 13
14. comes sky salt down the from.............................. (true false) 14
15. earth and are the close moon very together.............................. (true false) 15
16. water cork on float will and wood.............................. (true false) 16
17. safer are at when lighted night streets.............................. (true false) 17
18. run than some can boys faster others.............................. (true false) 18
19. boots for used and are shoes food.............................. (true false) 19
20. very the is a ground after rain dry.............................. (true false) 20
21. get grow they as children shorter older.............................. (true false) 21
22. and keep feathers the warm fur animals.............................. (true false) 22
23. wind when the the all blows fall trees.............................. (true false) 23
24. bushes trees roots have and their ground the in.............................. (true false) 24
25. instruments typewriters musical are telephones and.............................. (true false) 25

Right...........Wrong.............Score.............
TEST 4

Proverbs

DIRECTIONS. Read each proverb, find the statement that explains it, and put the number of that statement in the parenthesis before the proverb.

Proverbs (Group 1)

( ) The early bird catches the worm.

( ) Don't cross a bridge till you get to it.

( ) Don't cry over spilt milk.

( ) Birds of a feather flock together.

( ) Don't judge a book by its cover.

( ) Paddle your own canoe.

( ) A watched pot never boils.

( ) Cut your coat according to the cloth.

( ) Empty vessels make the most sound.

( ) Figs do not grow on thistles.

Statements to Explain Proverbs in Group 1

1. It is foolish to worry about things we can't help.
2. People seek the company of those who are like them.
3. If you would succeed, be on time.
4. Depend on yourself.
5. Impatience makes the time seem longer.
6. Don't worry over troubles before they come.
7. Good does not come from evil.
8. There is no one so wise that he is not sometimes a fool.
9. Don't believe everything you hear.
10. External appearances may be deceiving.
11. Those who are the most boastful are the least important.
12. Make your plans to fit the possibilities.

Proverbs (Group 2)

( ) The burnt child dreads the fire.

( ) Rome was not built in a day.

( ) He who is in the mud likes to pull another into it.

( ) Plants oft removed never thrive.

( ) Great ships require deep waters.

( ) When the cat is away the mice will play.

( ) Half a loaf is better than none.

( ) The proof of the pudding is in the eating.

( ) A mill does not grind with water that has passed by.

( ) Every path has its puddle.

Statements to Explain Proverbs in Group 2

1. Time is required to produce anything of value.
2. Failure follows frequent change of plan.
3. If we can't have all we want, we should take what we can get.
4. Unhappy experiences teach us to be careful.
5. We should take advantage of opportunities as they come.
6. When authority is absent, evil flourishes.
7. We desire most that which we do not have.
8. A thing must be tried before we know its value.
9. Every occupation involves some work that is not pleasant.
10. Those in disgrace always want to disgrace others.
11. What has been done can be done again.
12. Important work can be done only by able men.

Score: ..............
TEST 5

Arithmetic

DIRECTIONS. Place the answer to each problem in the parenthesis after the problem. Do any figuring you wish on the margin of the page.

1. If a boy had 15 cents and earned 10 cents, how much money did he have then? ................................................................. ( ) cents 1
2. At 3 cents each, how much will 12 pencils cost? ......................................................... ( ) cents 2
3. If a man had $25 and spent $15, how much money did he have left? ................ ( ) dollars 3
4. At 4 cents each, how many pencils can be bought for 36 cents? ................ ( ) pencils 4
5. A boy spent 30 cents and then earned 40 cents. How much more money did he have than at first? ......................................................... ( ) cents 5
6. How far can a train go in 6 hours at the rate of 30 miles per hour? ........ ( ) miles 6
7. How long will it take a glacier to move 2000 feet at the rate of 200 feet a year? ................................................................. ( ) years 7
8. If 2½ yards of cloth cost 30 cents, what will 10 yards cost? ( ) cents 8
9. If 3 pencils cost 5 cents, how many pencils can be bought for 50 cents? ( ) pencils 9
10. If a man walks west from his home 8 blocks and then walks east 3 blocks, how far is he from his home? ................................................................. ( ) blocks 10
11. If a boy can run at the rate of 6 feet in ½ of a second, how far can he run in 10 seconds? ................................................................. ( ) feet 11
12. A ship has provisions enough to last a crew of 15 men 40 days. How long would they last a crew of 30 men? ......................................................... ( ) days 12
13. One schoolroom has 8 rows of seats with 8 seats in each row, and another schoolroom has 7 rows of seats with 9 seats in each row. How many more seats does one room have than the other? ......................................................... ( ) seats 13
14. If 10 boxes full of apples weigh 400 pounds, and each box when empty weighs 4 pounds, how much do all the apples weigh? ......................................................... ( ) pounds 14
15. If Town X is 15 miles south of Town Y, and Town Y is 30 miles south of Town Z, how far is Town X from Town Z? ......................................................... ( ) miles 15
16. If a strip of cloth 24 inches long will shrink to 22 inches when washed, how long will a 36-inch strip be after shrinking? ......................................................... ( ) inches 16
17. If Frank can ride a bicycle 30 feet while George runs 20 feet, how far can Frank ride while George runs 30 feet? ......................................................... ( ) feet 17
18. A hotel serves a mixture of 2 parts cream and 3 parts milk. How many pints of cream will it take to make 15 pints of the mixture? ......................................................... ( ) pints 18
19. If 4½ yards of cloth cost 90 cents, what will 2½ yards cost? ......................................................... ( ) cents 19
20. If a wire 20 inches long is to be cut so that one piece is ¾ as long as the other piece, how long must the shortest piece be? ......................................................... ( ) inches 20

Score .................
Directions. Each problem asks a question that is answered by a number. Write the answer to each problem in the parenthesis after the statement of the problem.

Sample problem:

Look at Fig. I. What number is in the circle but not in the rectangle? .............. (1)

1. What number in Fig. I is in the rectangle but not in the circle? ............... (1) 1
2. What number in Fig. I is in both the rectangle and the circle? ............... (2) 2
3. Look at Fig. II (at the right). What number is in the rectangle but not in the circle nor in the triangle? ................ (3) 3
4. What number in Fig. II is in the rectangle and in the triangle but not in the circle? (4) 4
(The remaining questions all refer to Fig. II.)
5. What number is in the circle and in the rectangle and in the triangle? .......... (5) 5
6. What is the smallest number that is in the triangle but not in the circle nor in the rectangle? .................................. (6) 6
7. What is the largest number that is in the circle but not in the triangle nor in the rectangle? .................................. (7) 7
8. Write the number that is in the lowest space that is in the triangle and in the circle but not in the rectangle ................................ (8) 8
9. Find the geometrical figure (circle, triangle, or rectangle) that has the least number of spaces in it. Write that number of spaces .................. (9) 9
10. How many spaces are there each of which is in all three geometric figures? .... (10) 10
11. How many spaces are there each of which is in one and only one geometric figure? (11) 11
12. How many spaces are there each of which is in two and only two geometric figures? (12) 12
13. We may say that space 12 is like space 3 because they are both in the circle and triangle but not in the rectangle. Any space is like another which is in exactly the same geometrical figures. Write the number of the space which is like space 6 ................................ (13) 13
14. Write the number of the space which is like space 1 ................................ (14) 14
15. How many other spaces are there like space 9? .................................. (15) 15
16. There is no other space like space 5, so we may call space 5 unique (yüneek). Any space is unique which has no other space like it. Examine spaces 8, 9, 10, 11, 12, and 13 in order until you find another unique space. Write its number .................. (16) 16
17. How many unique spaces are there in Fig. II? .................................. (17) 17
18. What is the greatest number of unique spaces which it is possible to make by overlapping a circle, triangle, and rectangle? (You may draw any figures you wish on the margin of this page) ............................................. (18) 18
19. Also what is the least number of unique spaces possible? .......................... (19) 19
20. What is the greatest number of spaces which it is possible to make by overlapping a circle, triangle, and rectangle? ................................ (20) 20

Score .................
TEST 7

Analogies

\[
\begin{align*}
\text{finger} : \text{hand} & - \text{toe} : (\ ?) \ldots \text{foot, knee, arm, shoe, nail}  \\
\text{clothes} : \text{man} & - \text{fur} : (\ ?) \ldots \text{coat, animal, hair, skin, cloth}  \\
\text{tall} : \text{short} & - \text{fat} : (\ ?) \ldots \text{man, wide, thin, boy, heavy}
\end{align*}
\]

Samples:

- clothes: man — fur: ( ? ) — coat, animal, hair, skin, cloth
- tall: short — fat: ( ? ) — man, wide, thin, boy, heavy
- finger: hand — toe: ( ? ) — foot, knee, arm, shoe, nail

DIRECTIONS. The first sample means: Finger is to hand as toe is to what? Underline the word on each line that should go in the parenthesis in place of the question mark.

Begin here:

1. foot: man — hoof: ( ? ) — leg, dog, horse, boy, shoe  
2. John: boy — Mary: ( ? ) — Bessie, James, son, girl, mother  
3. book: author — statue: ( ? ) — sculptor, marble, model, magazine, man  
4. boy: man — ( ? ) — sheep — wool, lamb, goat, shepherd, dog  
5. wood: table — ( ? ) — knife — cutting, chair, fork, steel handle  
6. elbow: arm — ( ? ) — leg — foot, knee, stocking, toe, heel  
7. uncle: aunt — son: ( ? ) — brother, daughter, sister, father, girl  
8. clock: time — thermometer: ( ? ) — watch, warm, bulb, mercury, temperature  
9. electric light: candle — automobile: ( ? ) — carriage, electricity, tire, speed, glow  
10. pitcher: milk — ( ? ) — flowers — stem, leaves, water, vase, roots  
11. order: confusion — ( ? ) — war — guns, peace, powder, thunder, army  
12. ice: water — water: ( ? ) — land, steam, cold, river, thirst  
13. moon: earth — earth: ( ? ) — Mars, sun, clouds, stars, universe  
14. food: body — ( ? ) — engine — wheels, fuel, smoke, motion, fire  
15. wire: electricity: ( ? ) — gas — flame, spark, hot, pipe, stove  
17. telephone system: city — ( ? ) — body — arteries, nerves, arms, clothes, skeleton  
19. oil: toil — ( ? ) — hate — love, work, boil, ate, hat  
20. sewing machine: needle — typewriter: ( ? ) — pin, cloth, ink, pen, page  
21. beautiful: appearance — sweet: ( ? ) — taste, beauty, sour, ugly, nice  
22. sorrow: misfortune — joy: ( ? ) — grief, happiness, hatred, success, pride  
23. fear: anticipation — regret: ( ? ) — memory, hope, sorrow, hate, forget  
24. physics: motion — ( ? ) — blood — temperature, body, veins, physiology, geography  

Score: ............
TEST 8

Similarities Test

hat, collar, glove ............... hand, cane, head, shoe, house

Samples: rose, daisy, violet ................. bush, red, plant, bed, pansy
desk, bed, chair ................... book, table, floor, pencil, coat

DIRECTIONS. Find the way in which the first three things on a line are alike. Then look at the five other things on the same line and draw a line under the one that is most like the first three.

Begin here:
1. blue, yellow, black ....................... sky, red, ocean, dark, flower .............. 1
2. plum, apricot, apple ....................... tree, seed, peach, juice, ripe .............. 2
3. cup, plate, saucer ......................... fork, table, eat, bowl, spoon .............. 3
4. horse, pigeon, cricket ..................... stall, saddle, eat, goat, chirp .............. 4
5. boat, horse, train ......................... sail, row, motorcycle, move, track .............. 5
6. fall, walk, turn ................................ down, stand, street, around, ride .............. 6
7. shave, chop, whittle ....................... razor, beard, knife, shear, wood .............. 7
8. stocking, flag, sail ............................ shoe, ship, staff, towel, wash .............. 8
9. circle, triangle, square ................. round, draw, ellipse, cube, lines .............. 9
10. Roy, boy, toy ............................... name, play, girl, doll, joy .............. 10
11. large, red, good ............................ heavy, size, color, apple, very .............. 11
12. speech, messenger, telephone .......... street, mail, send, pole, hurry .............. 12
13. smuggle, steal, bribe ................... mean, take, beg, lie, bad .............. 13
14. pride, fear, sorrow ....................... habit, love, memory, life, thought .............. 14
15. loyal, brave, sympathetic .............. generous, rich, wise, strong, well .............. 15

(Go on with problems 16, 17, 18, 19, and 20, in exactly the same way.)

Sample:

Score .................
DIRECTIONS. For each numbered blank in the story, choose the best word of the three in the list having the same number as the blank. Underline the word you choose. You may write these words in the blank spaces if you wish, but only the underlining counts. Do nothing about the blanks that are not numbered.

The Wonderful Little Bag


"I have [21] to you," the [22] said and went on. At once the feeble old man began to grow smaller and smaller until he [23] man beg dwarf vanished.


Have you heard this story before? 

Score
TEST 10

Memory

DIRECTIONS. Read each question and if the right answer, according to the story, is yes, draw a line under the word yes. If the right answer is no, draw a line under the word no. But if you do not know the right answer, because the story didn't say, draw a line under the words didn't say.

Samples:

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Didn't Say</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was the story about two shepherds?</td>
<td>yes</td>
<td>no</td>
<td>didn't say</td>
</tr>
<tr>
<td>Were they both honest?</td>
<td>yes</td>
<td>no</td>
<td>didn't say</td>
</tr>
<tr>
<td>Were they brothers?</td>
<td>yes</td>
<td>no</td>
<td>didn't say</td>
</tr>
</tbody>
</table>

Begin here:

1. Did the first shepherd have a large flock of sheep?                    | yes | no | didn't say |
2. Did his sheep have fine white wool?                                    | yes | no | didn't say |
3. Did he have a shepherd's staff?                                        | yes | no | didn't say |
4. Did he have a dog to tend his sheep?                                  | yes | no | didn't say |
5. Were there any lambs in the flock?                                    | yes | no | didn't say |
6. Did he go to sleep one day under a tree?                               | yes | no | didn't say |
7. Did he sleep until late in the afternoon?                             | yes | no | didn't say |
8. When he awoke did he see his sheep far in the distance?                | yes | no | didn't say |
9. Did he follow their tracks all the rest of the day trying to find them? | yes | no | didn't say |
10. Did he sit down when night came and weep over the loss of his sheep?  | yes | no | didn't say |
11. Did Mercury come up and say to him, “Why do you weep, my good shepherd?” | yes | no | didn't say |
12. Did the shepherd say, “Someone has stolen my sheep”?                  | yes | no | didn't say |
13. Did Mercury then lead the shepherd to some sheep that were feeding in a forest? | yes | no | didn't say |
14. Did the first sheep they found have silver fleece?                    | yes | no | didn't say |
15. Did the shepherd wish he had the sheep with the silver fleece?        | yes | no | didn't say |
16. Did they come next to the sheep that belonged to the shepherd?        | yes | no | didn't say |
17. When they found the shepherd’s sheep, did Mercury say, “Are these your sheep”? | yes | no | didn’t say |
18. Did Mercury give the shepherd two flocks of sheep?                    | yes | no | didn’t say |
19. Did the shepherd thank Mercury?                                       | yes | no | didn’t say |
20. Did the shepherd tell his wife the story of how Mercury had given him some sheep with gold and silver fleece? | yes | no | didn’t say |
21. When he told the other shepherd his story, did the other shepherd immediately resolve to try to get some sheep with gold and silver fleece? | yes | no | didn’t say |
22. Did he tie up his dog, take his sheep to pasture, go to sleep, and let his sheep stray away? | yes | no | didn’t say |
23. When he awoke did he hunt for his sheep?                              | yes | no | didn’t say |
24. Did Mercury hear him sob and come up and ask him the same question he had asked the first shepherd? | yes | no | didn’t say |
25. Did the shepherd say, “I have lost my sheep with gold and silver fleece”? | yes | no | didn’t say |
26. Did Mercury lead this shepherd to the same pasture to which he had led the first shepherd? | yes | no | didn’t say |
27. When the shepherd saw the sheep with the silver fleece, did he exclaim, “Ah, these are my sheep; I know them every one”? | yes | no | didn’t say |
28. Did Mercury say, “You are a dishonest man. These are not your sheep. Now I will take away your own sheep”? | yes | no | didn’t say |
29. Did the shepherd beg Mercury to forgive him?                          | yes | no | didn’t say |
30. Did the shepherd ever find his sheep?                                 | yes | no | didn’t say |

Have you heard this story before?                                        | yes | no |  

Score: .............
DIAGNOSTIC TESTS IN ENGLISH COMPOSITION:
(D) SENTENCE STRUCTURE

Name................................................................. Age.........................

Grade................................................................. School............................

City or town....................................................... State............................. Date.............................

Directions—Read Carefully!

Notice the four statements below:

☐ He finished school last June. Since that time he has done nothing.
☐ We spent the afternoon in the park; it is very pleasant there.
☒ John had a position in a store. Which he left.
☐ He found a dollar bill which some one had dropped in the aisle.

One of the four—"John had a position in a store. Which he left"—includes something which is not a good sentence. A cross has been put before this line, to show that it is wrong.

On the following pages there are other groups, each of four statements. And in each group one statement is not well expressed—has in it something which is not a good sentence. You are to find the wrong line in each group and put a cross in the square before it, just as there is a cross before "John had a position in a store. Which he left" in the group above. If you are not certain which line has the poor sentence, mark the one which seems to you least satisfactory; be sure to mark one, and only one, statement in every group. Remember also to mark in the square; do not put any cross half way between two lines. Any doubtful marks will be counted against you.

As soon as you are told to do so, turn to the next page and begin at once. Be sure you finish all three pages; do not stop at the bottom of the first or second page. Work rapidly.

DO NOT OPEN THE BLANK UNTIL YOU ARE TOLD TO DO SO. AS SOON AS THE WORD IS GIVEN BEGIN AT ONCE!

Devised by F. R. Conkling
and S. L. Pressey

Department of Psychology
Ohio State University
1. □ His favorite sports are swimming and fishing.
□ He had two pets. A dog and a cat.
□ He has failed in two subjects, geography and history.
□ She broke two dishes. One was a cup, the other a plate.

2. □ He was fortunate in having a good teacher.
□ She was much frightened. Something was stirring in the bushes.
□ We were startled. By having a tire blow out.
□ Some days he works hard, while on other days he does nothing.

3. □ While in New York she spent most of her time shopping.
□ He was a very short man, hardly more than five feet tall.
□ When he did answer he could not be understood.
□ When a mere child, she was certainly no more than ten.

4. □ The invention of the telephone, which made communication easy.
□ The discovery of America changed the history of the world.
□ He was very persistent; this brought him success.
□ Carnegie, who died recently, was a great public benefactor.

5. □ On the way home Mary and I stopped to see Mrs. Smith, my former music teacher, who lives in a queer old house near the village.
□ There is a deep pool in the river near our camp; last summer my brother tried to swim across the pool, and was nearly drowned.
□ I ran upstairs to see what was the matter. Just then Bob rushed out of the room and knocked me down.
□ In falling I grabbed Tom my cousin, who was there, and he fell too, and being heavy broke the chair, and it was an heirloom of mother's.

6. □ Our car broke down, and left us stranded in the country.
□ The lights went out and the play began.
□ Tom lives near me and last night his house burned.
□ In Jane's desk, which is near mine, some candy was hidden.

7. □ Your letter came today, it was good to hear from you.
□ The storm was severe; all trains were delayed.
□ John returned today. We were certainly glad to see him.
□ We are much pleased to have your order, which reached us today.

8. □ Knowing the play would be interesting, I bought a ticket.
□ James came over and so we decided to go, and so started.
□ Since Harry was ill we returned home, and called a doctor.
□ The day was clear; accordingly we bought a lunch, and started.

Do not stop; GO ON TO THE NEXT PAGE!
9. She still has a fear of water, although she has tried to overcome it.
   - This old fisherman supplies fish to all the restaurants.
   - I like doctors, and so chose it as my profession.
   - Your milkman supplies us also.

10. The mad dog bit the horse and caused its death.
    - She failed to see a doctor last week; this neglect she now regrets.
    - He disturbed the wasps, which became angry and stung him.
    - At camp the boys become acquainted, which often grow into friendships.

11. Here is our new house, which we like very much.
    - This is Carter's old home, who was born here in 1890.
    - This book belonged to my grandfather, who was a doctor.
    - History was Henry's favorite subject; he neglected his other work.

12. As John went past his room he spoke to him.
    - Henry spoke to the old man, and was very kind to him.
    - Jim followed the boy up-town, and saw him enter the drug store.
    - When Mary called to see Helen she found that the poor girl was crying.

13. When he fired the gun he frightened the horse.
    - Coming over the hill one sees the chapel tower.
    - Half hidden among the trees, the house was not easily found.
    - Reaching out for the paddle, the canoe turned over.

14. As I came out of the house a fire engine passed.
    - Having taken our seats the usher gave us programs.
    - Having paid the bill we gave our bags to the porter.
    - The work being completed, the foreman paid off the men.

15. He is ill as a result of the accident.
    - His wealth is due to his hard work.
    - He is still weak, caused by influenza.
    - His expulsion was caused by his thieving.

16. While still weak from his illness he insisted upon working.
    - When six years old his father died.
    - When we were children our parents seemed very old.
    - While we were eating our lunch the train started.

Do not stop; GO ON TO THE NEXT PAGE!
17. □ His hands, which are long and thin, are always in motion.
□ The boat, held by a single cable, swung out into the stream.
□ The boy was always laughing, and was noted for his wit.
□ Her eyes sparkle continuously, separated by a short little nose.

18. □ A man in overalls rushed out and stopped the horse.
□ He saw the train rolling slowly out of the station.
□ Standing on this bridge one may see many boats.
□ Nearby sat a man playing poker with a red necktie.

19. □ The natives obtained their food from the river which was fish.
□ He turned and ran when the policeman appeared.
□ He dropped in the mud the book which he was carrying.
□ The dishes which we ordered came in a wooden box.

20. □ The jeweler not only repaired the watch, but also cleaned it.
□ He has decided to buy either a closed car or a roadster.
□ She not only cleaned the kitchen, but also the parlor.
□ He discussed the matter with both Jones and Smith.

21. □ Do you know where that man is at?
□ Take that book off the table!
□ While in Chicago he met an old friend.
□ Where is John going?

22. □ The boy who broke the window was arrested.
□ My father he fell and sprained his ankle.
□ Then the thief turned and ran.
□ For a moment I could hardly think what to say.

23. □ When I was younger I was very fond of swimming.
□ This is the store which was robbed last night.
□ Smith, when a boy, was always in mischief.
□ He was a student was very careless about his work.

24. □ The finish of this car is superior to that of any other car made.
□ Noises can be heard through this wall as well as through a door.
□ Hers was a voice which audiences were certain to be captivated.
□ On one crossing the engine stalled.

GO BACK OVER YOUR WORK AND BE CERTAIN YOU HAVE MADE NO MISTAKES.
DIAGNOSTIC TESTS IN ENGLISH COMPOSITION:
(C) GRAMMAR

Name................................................................. Age..............................

Grade or Class........................................ School........................................

City........................................ State........................................ Date......................

Directions—Read Carefully!

Notice the four statements below:

☐ They were here.
☒ We was going.
☐ Where were you yesterday?
☐ It was time to go.

One of these four sentences—"We was going"—contains something which is not good English; the sentence should read "We were going." A cross has been put before this sentence, to show that it is wrong.

On the following pages there are some more groups of four sentences. And in each group one sentence, and only one, is incorrect—contains something which is not good English. You are to find the wrong sentence in each group and put a cross in the square before it, just as there is a cross before "We was going" in the group above. If you are not certain which sentence is incorrect mark the one which seems to you least satisfactory; be sure to mark one, and only one, sentence in every group. Remember also to mark in the square; do not put a cross half way between two sentences. Any doubtful marks will be counted against you.

As soon as you are told to do so, open the blank and begin at once. Be sure you finish all three pages; do not stop at the bottom of the first or second pages. Work rapidly.

DO NOT OPEN THE BLANK UNTIL YOU ARE TOLD TO DO SO. AS SOON AS THE WORD IS GIVEN BEGIN AT ONCE!

Devised by F. R. Conkling  
and S. L. Pressey

Department of Psychology  
The Ohio State University
1. □ Were you notified of the change?
    □ Why doesn't that letter come?
    □ It don't seem possible.
    □ Smith was here yesterday.

2. □ Swimming, boating, and fishing is great fun.
    □ A Ford is economical because first cost and up-keep are low.
    □ How are Mrs. Smith and Dorothy?

3. □ There is no excuse for these delays.
    □ There is too many people in this room.
    □ Along the bank there were large trees.
    □ Between Fanny and Helen there have been no secrets.

4. □ Immigrants who have no money are not allowed to enter.
    □ All pupils who failed this examination are to do extra work.
    □ Coal which dealers ordered months ago is not yet delivered.
    □ Things that Ruth thought essential for her comfort was lacking.

5. □ Lee, with all his soldiers, was forced to surrender.
    □ Tom and Dick were here.
    □ The proprietor, together with all his clerks, was arrested.
    □ Several bystanders, as well as the thief, was injured.

6. □ The bright colors of the picture appeal to him.
    □ The first one of the runners was just rounding the bend.
    □ The box of pens have disappeared.
    □ The consumption of soft drinks is steadily increasing.

7. □ Will someone lend me his pencil?
    □ Everybody did their best.
    □ Each girl must have her own work to do.
    □ All the girls want their report cards returned.

8. □ Either of the candidates will make themselves popular with the voters.
    □ Neither Fred nor John knew his lesson.
    □ Both John and Henry have their cars here.
    □ No boy or girl should be disrespectful to his or her parents.

9. □ No one cares to be so peculiar that people laugh at him.
    □ Many people in the audience said that they could not hear the speaker.
    □ If anybody makes a motion to resist, arrest him at once.
    □ If one tries they can succeed.

10. □ A fireman must be brave, for he is often in great danger.
    □ The student becomes nervous, and as a result he fails.
    □ If a person cannot swim they should not go out in a canoe.
    □ If boys once begin smoking it is hard to break them of the habit.

Do not stop; GO ON TO THE NEXT PAGE!
11. The time seemed to pass very swiftly.
   She folded, sealed, and mailed the letter.
   He ask me the way to the station.
   We have used that sewing machine for years.

12. He almost drowned while trying to swim across the river.
    John clumb the tree to the limb where the kitten was.
    The police dragged the river for the body.
    At recess we attacked the snow fort.

13. I saw Harold at school this morning.
    Mary did all the things that you wished to have done.
    Arthur came over to see you yesterday.
    He run until he was out of breath.

14. Our heater bursted and flooded the cellar.
    She heard all that you said.
    The path led to the top of the hill.
    The corn grew fast during the hot spell.

15. He had drunk all the lemonade.
    Mother has given Harry a watch for his birthday.
    Helen was born on Christmas day.
    I have never ridden over worse roads.

16. You should have seen the fireworks yesterday.
    He might of been injured severely.
    He ought to have gone home with you.
    He must have gone by another road.

17. I set the basket there last night.
    She sat down in the big chair.
    Mother likes to sit by the window and read.
    He had set down in another man's seat.

18. Mother lay down on the couch to rest.
    Mary has laid here, resting, since dinner.
    Tom laid his book on the wet table.
    Lie down on the bed while you are waiting for the doctor.

    The sick girl left the class.
    The teacher let me go early.
    The police left the thief escape.

20. John asked if he might go home.
    Can you speak French?
    Can I go if I will promise to return early?
    May I go fishing this afternoon?

Do not stop; GO ON TO THE NEXT PAGE!
21. ☐ There is the man whom you wished to see.
☐ There home is not far from here.
☐ They’re planning to spend this winter in Florida.
☐ There’s the car the Smiths thought was theirs.

22. ☐ Two of our friends are going with us.
☐ We hope to hear from you soon regarding this bill.
☐ Helen takes everything to seriously.
☐ Return the book to me when you finish reading it.

23. ☐ It will be an hour before we can go.
☐ John’s hat and coat are new.
☐ An old man fell on the slippery pavement.
☐ Mary has a pencil and a apple on her desk.

24. ☐ She is very good to her mother.
☐ All things considered, she did well.
☐ I can swim as good as John.
☐ He had a cold, but is now well again.

25. ☐ He looked quickly about the room.
☐ She is very careful and exact.
☐ The leader looked very imposing.
☐ He spoke very distinct.

26. ☐ The work was done miserably poorly.
☐ Was he injured very serious?
☐ That canned fish tastes bad.
☐ That statement is surely wrong.

27. ☐ Whom did they say was hurt?
☐ Whom did they suspect?
☐ Who do you suppose it was?
☐ Whom did they take him to be?

28. ☐ Father sent Walter and I to the store.
☐ Both Arthur and I went.
☐ They asked either John or me to go.
☐ It was he who knocked.

29. ☐ Does that apply to us girls?
☐ We mothers are all coming.
☐ He found us girls at the candy store.
☐ They asked we boys to help them.

30. ☐ All the family will be there except you and me.
☐ I am as much to blame as he.
☐ The stranger sat down between Mary and I.
☐ I like him better than her.

When you have finished, GO BACK OVER YOUR WORK AND BE SURE YOU HAVE MADE NO MISTAKES!
DIAGNOSTIC TESTS IN ENGLISH COMPOSITION (b) PUNCTUATION
Devised by S. L. Pressey and Helen Ruhlen

NAME: ___________________________ AGE: ___________________________
GRADE OR CLASS: _______________ SCHOOL: __________________________

CITY: ___________________ STATE: ___________ DATE: ___________

DIRECTIONS—READ CAREFULLY! The sentences below lack all punctuation marks—
except the period at the end of each sentence. You are to supply all further punctuation,
changing periods to exclamation points or interrogation marks where necessary. In most of
the sentences MORE THAN ONE mark is needed; be sure you put in ALL the marks that
should be used. In a few sentences no further punctuation is required; do not put in
marks where they are not needed. Make all your marks clear and plain; any doubtful
marks will be counted against you. Work rapidly.

1. He ordered salt sugar flour and eggs.
2. His office is at 231 Beacon Street Boston Massachusetts.
3. John thinks the money was stolen the others believe it was lost.
4. J P Morgan and E H Harriman were men of great ability.
5. It's strange that you haven't seen him.
6. He said This is the house.
7. He was a big fat blond man.
8. The armistice was signed November 11 1918.
9. He has the desk mat and table however the rug and fan were delayed.
10. Miss Martin came with Mr and Mrs Jones and Dr Smith.
11. He won't believe I've done it.
12. Here she said is the bill.
13. He was we believe in the insurance business.
14. The telephone rang violently but no one answered.
15. Johnny ran away you know how he does and hid in the barn.
16. What time is it.
17. John's kite fell at the lady's feet.
18. He said that it was time to start.
19. We sent the goods yesterday in accordance with your telegram.
20. We asked Jones the manager of the concern about the bill.
21. The list begins as follows Jones Smith Peters Jenkins.
22. He asked to what party you belonged.
23. Boys and men's clothes are sold here.
24. The choir sang Rock of Ages.
25. Ever since he has disliked hunting.
26. Mary who is prompt will go in place of the girl who is late.
27. The train leaves at 10 30 in the morning.
28. Quick Come What a sight.
29. The cat with its nose scratched is theirs.
30. Telegraphers call a poor operator a ham op.

WHEN YOU HAVE FINISHED GO BACK OVER YOUR WORK AND BE SURE
YOU HAVE MADE NO MISTAKES.

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A PROPOSED PROGRAM FOR TRAINING PUPILS IN EFFICIENT HABITS OF STUDY

Summary by J. B. Edmenson, University of Michigan.

Step 1. At the beginning of a semester or a month the principal or a teacher should give a talk on the importance of acquiring efficient habits of study. (For suggestions concerning points to be emphasized see Lyman, "The Mind at Work" - Scott Foresman Pub. Co.)

Step 2. On or before the time of the assembly talk to pupils, the principal should discuss with the teachers the problem of training in habits of study. (For suggestions concerning points to be emphasized see Lyman, "The Mind at Work.")

Step 3. A list of specific study helps should be prepared by a committee of teachers and adopted by the teaching staff. (The Chicago or Michigan Study Helps may be used. The Chicago Study Helps may be secured from the School of Education Bookstore, University of Chicago. The Michigan Study Helps may be secured through the Michigan Education Company, Lansing, Michigan.)

Step 4. Printed copies of the study helps should be distributed to the pupils through their classroom teachers and the pupils directed to paste a copy in each of their textbooks.

Step 5. A copy of the study helps should be printed in the local newspaper with some explanation of the intended use of the helps.

Step 6. Every teacher should take at least ten minutes of each recitation for the first two weeks to teach the pupils how to apply the different study suggestions to their subjects.

Step 7. A teacher should call on the pupils to illustrate the application of certain of the rules of study to specific lessons. In turn the teachers should from time to time show how certain of the rules of study may be applied to advantage in particular subjects.

Step 8. The teachers should be directed at the end of the first six weeks to report at a faculty meeting on such questions as the following:

1. Do you find that the pupils are following the suggestions in the list of study helps? If not, why not?
2. Do you find that pupils prepare their work in a more economical way than last semester?
3. Is there a better spirit of study in the session rooms (or study halls)?
4. Do you as a teacher find yourself more interested in problems of training pupils in habits of study?

Note: Teachers should be encouraged to read books in the field of study. Whipple, "How to Study Effectively" (Public School Publishing Co. Bloomington, Ill.) - Sandwich, "How to Study" (D. C. Heath) - Lyman, "The Mind at Work" (Scott Foresman Co.)
STUDY HELPS FOR HIGH SCHOOL STUDENTS

Arranged by Inspector J. B. Edmonson, University of Michigan, and Assistant Superintendent C. L. Goodrich, Department of Public Instruction

1. Be certain that you prepare the correct assignment in scope, content, and form. Consider such questions as: What readings, problems, experiments, or topics were assigned? Was part or all of the preparation to be written? What dangers, difficulties, or important points were emphasized by the teacher in making the assignment? Which of these study helps did the teacher urge students to follow?

2. Have a study program. Budget your time so as to have a definite time and a definite place to prepare each lesson. (The teacher will explain how to make a study program card.)

3. Have proper study conditions and needed materials—a quiet room not too warm, plenty of light at your left, a straight chair, a table, the necessary dictionaries, rulers, pencils, and other materials.

4. Make careful preparation of advanced assignment as soon as possible after a class, but allow time in your study program for review of essential points before going to class.

5. Do your studying with vigor and determination. Work while you work. When actually tired, change your work, take exercise, or go to sleep. One must be rested in order to study effectively.

6. Learn to do two kinds of reading. Read rapidly when seeking to find major points or to make a survey of a lesson. Read cautiously and critically such material as problems, directions, explanations, and any material that must be interpreted or mastered. Never read rapidly when you should read cautiously. Acquire the habit of analyzing confusing statements. To test the efficiency of your reading and to guard against "skimming" or "day dreaming," pause at the end of paragraphs or natural units and seek to recall the gist of what you have read.

7. Avoid acquiring the habit of half mastery. In committing material to memory learn it as a whole. Do not learn piece-meal. Keep going over the material until you have it letter perfect. In learning rules, forms, poems, dates, vocabularies, etc., it is helpful to repeat them aloud especially if you are expected to give them orally in class. (The teachers will explain the mistake of memorizing material that should be analyzed and understood.)

8. Hunt for key words, phrases, or sentences; and master the full meaning of these. Write them on a slip of paper for later review.

9. Work independently. Ask for help only after you have exhausted your own resources. Cultivate self-reliance, determination, and independence in work. Pride yourself on your ability to get your lesson done.

10. Frame questions to test your preparation of a lesson and use these questions to measure your preparation before going to class.

11. Attempt to answer to yourself every question that is asked in class and thus review, test, and drill yourself on essential facts. (Teachers will seek to conduct their classes so as to stimulate you to do this.)

12. Strive to excel. Do not be contented to "get by." Convince yourself of the genuine value of doing your best work in each of your studies. Be honest in all work. Be able to answer such a question as: Why is the subject worth studying? (Your teachers will seek to emphasize the invaluable character of the information or training in each study.)