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THE UNIVERSITY OF MINNESOTA

GRADUATE SCHOOL

Report

of

Committee on Thesis

The undersigned, acting as a Committee of the Graduate School, have read the accompanying thesis submitted by Beatrice Annie Hunter for the degree of Master of Arts.

They approve it as a thesis meeting the requirements of the Graduate School of the University of Minnesota, and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts.

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THE UNIVERSITY OF MINNESOTA

GRADUATE SCHOOL

Report

of

Committee on Examination

This is to certify that we the undersigned, as a committee of the Graduate School, have given Beatrice Annie Hunter final oral examination for the degree of Master of Arts . We recommend that the degree of Master of Arts be conferred upon the candidate.

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Psychological Tests - diagnosis for  
Fitness in a Type Study of Salesmanship



A Thesis submitted to the  
Faculty of the Graduate School of the  
University of Minnesota

by

Beatrice Annie Hunter

In partial fulfillment of the  
requirements for the degree of  
Master of Arts

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Table of Contents

Chapter	Page
Introduction Need of Considering Fitness in any vocation.	6
<b>I Survey of the Fields .</b>	<b>6</b>
1. Present Situation in Department Store Selling.	6
2. Suggestions for Remedial Future.	11
3. Applied Psychology in Other Industries.	18
4. Advantages of Psychological Tests in Determining Fitness in Salesmanship.	19
<b>II Problem and Method Stated.</b>	
1. Out line of the Problem.	23
2. Method pursued,	23
3. Groups Tested.	24
4. Preliminary Testing.	25
5. Results from Preliminary Testing.	28
6. Final Testing.	29
7. Objective Standard .	39
8. Schedule of Tests and Date given.	41
<b>III Data Obtained during the Investigation.</b>	<b>42</b>
1. Tabulation of Traits. --- Table VI---	43
2. Tabulation of Scores from the Tests -- TableVII	54
3. Division into Quartiles --- Table VIII---	61
4. Deductions from Table VIII	66
6. Correlation of Companion Tests --- Table IX--	69
7. Average and Standard Deviation of the Single and the Combined Tests ---- TableX ---	71
8. Deductions from Table X	72
9. Average, S. D. , Number of Cases, and Sum of the Squares of the deviations-- TableXI --	75

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Index contin.	Page
10. Tabulation of Scores Transmuted into terms of S. D. --- Table XII ---	77
11. Deductions from Table XII.	84
12. Scores of 5 Intelligence Tests and the Traits scored by Supervisors transmuted into the average of the sum of the fractions of S. D. Table XIII--	86
13. Deductions from Table XIII	87
14. Graphs of Median Retention for Each Test with the Total Traits. Tables XIV- a to o incl.	89
13. Per cent of Retention in certain Tests. --- Table XV ---	107
16. Judgments of Two Supervisors on the same six saleswomen--- Table XVI --	108
17. Deductions from Tables XV and XVI	111
18. Range for Whole Test, Upper 50%, and Lower 50%; Median for Upper 50%, and Lower 50%; Twenty- five percentile for Upper 50%, and for Lower 50%; Seventy-five percentile for Upper 50% and for Lower 50%. --- Table XVII---	114
19. Conclusions based on the statistical calculation of the original data.	115
 Appendix	 118
Bibliography	146

## INTRODUCTION

Let us consider briefly why a man should fit in his occupation. In this age of specialization, man is but a small unit in the large social organization. It is the duty of every member of this society to seek some occupation which will be advantageous to the social body and to himself. The normal course of fulfilling this obligation is for the youth to choose a vocation early in life and enter upon the work as soon as he is fitted for that type of occupation. This choice and entrance into a definite line of work should be the result of deliberation and not the result of impulsive choice. His future success and later life depend upon this choice. Formerly, it was assumed that any one should fit into any industry and "make good," if he had the "right stuff in him." This old opinion is fast disappearing, however, and it is realized that more than a mere desire to fulfill a certain position is required. Fitness plays an important role in success. In the world struggle today the generals and civil administrators are chosen to serve in such positions because they are fitted for them. Similarly, in the more ordinary courses of life, the successful men are those who fit.

There are two kinds of fitness, both necessarily combined to attain efficiency: (1) An innate aptitude for a type of work and (2) an acquired ability for such work. The first divides again into two types of innate aptitude by which man is fitted to

deal with men and the problems of men. This type of work calls for men who have inherited such qualities from their ancestors. For instance, it is noticeable that youths from ministerial families have become teachers, professors, ministers, doctors, lawyers, and such other positions where social contact takes place. Those who desire to deal with things will turn to the mechanical trades and industrial life. They are interested in engineering, electricity, carpentry and many other trades of this sort where they have a chance to analyze, repair, construct or study the inanimate objects.

(2) Acquired ability: Training strengthens, disciplines and directs original aptitudes into specialized efficiency. It is the youth who knows what end he is seeking that is interested and gains the most from his courses. It sometimes happens that a youth has followed the advice of another person who did not understand the boy's abilities, and consequently the youth is trying to acquire ability in a vocation for which he has no native aptitude or interests to build upon. Interest plays an important part in the success of man and interest cannot be present unless the individual feels satisfied and "his heart is in the work."

It may be desirable to consider some reasons why fitness is necessary. There is an economical or social reason, and a psychological or individual reason.

(1) The economical need for fitness.

There are some occupations which set specific restrictions as to the preparation necessary for those who apply. Such occupations pay better wages and, consequently, obtain trained, skilled men who are ready for the work. On the other

hand, other occupations make no specific restrictions, but rely on the unskilled youths to carry on the work at lower wages and promise them no future, except in rare instances. A few of these, however, attempt to train the new employees in the hope of making efficient workmen who are more valuable to the firm and less liable to shift. This is a new consideration, however, and points out an advanced step in industrial education which is preparing for a time when fitness will be considered in every vocation.

Since the better paid vocations open to the members of society are calling for fitness, it is necessary that people be prepared for these occupations. The positions which are open to the unskilled youths are often called "blind alley" occupations because they allow the youth to enter blindly, thinking that the future will take care of itself and that he has a real chance for success. Later, this same youth is pushed from such a position as soon as younger workers come from the grades. Then such men are sent out in the prime of life, discouraged, unskilled burdens on society who cannot meet their own economic needs nor offer any "uplift" to the social sphere.

These occupations must have workers, of course, but trained workers would be advantageous to the industry and society in the long run, if circumstances forced requirements for compulsory fitness upon such workers. It is not economy to waste these youths who might become capable of being successful workers if a few years compulsory training were exacted. Vocational guidance is aiding in solving this problem when it brings the youth face to face with the requirements and conditions in his vocation. On the



other hand, while vocational guidance points out what the fitness should be, it does not determine what the fitness is. The fitness for the occupation is merely determined by the applicants' own introspections.

(2) Psychological or Individual need for fitness:

There is a psychological need for fitness coming into recognition as the field of applied psychology is entering industrial life. It is instinctive in man to care for himself and be interested in whatever pertains to his welfare. Analyses have indicated that interest improves his chance for success, for then he feels his work to be worth doing. The problem seems to be to consider man's instincts whenever dealing with him. The man will consider fitness when he knows it will benefit him. The employer will consider fitness when it will benefit him. The public will want fitted or skilled workers because they will benefit from such service. Therefore, it is necessary from a psychological point of view to consider what centers around an individual and his interests. The youth must see that his future is concerned with his present preparation for a vocation. For instance, Albert Brown has completed one year at Art School when he is obliged to earn his own living. He wants to be an advertising man. He thinks he can draw attractive advertisements which will catch the public eye temporarily, and as far as he knows that is all that is necessary. Now, an advertising man needs more than an eye for artistic arrangements which will "catch the public eye." He must arouse the public to interest in the article and not amuse them. He

must be a good business man, a good psychologist, who will be able to affect interest and influence opinion. He must be interested in details and analyses. Albert Brown is temperamental, undependable and dislikes detailed work and business complications. He is more fitted for the life of the illustrator or artist than for the life of an advertising man. He should know this in the beginning.

The youth has a right to know what is expected and the employer to what degree the requirements can be fulfilled.

In short, the man who is fitted for his position and is successful is:

1. Following his original aptitudes to some degree, and has acquired the abilities necessary in his vocation.

2. He is interested in his work.

3. He understands his own tendencies, <sup>and</sup> desires, and heeds them.

4. He understands the psychology of the other man, - that is, the egoistic, individual instincts and the specific direction that these instincts take.

## SURVEY OF THE FIELDS

### CHAPTER I.

Two surveys will be made in order to cover, as briefly as possible, the two phases of this investigation which are to be interlinked. The first is to be a survey of the present conditions in department store salesmanship, and the second is the survey of psychological arguments and endeavours being made to determine capabilities and fitness in salesmanship.

#### 1. Department store salesmanship:

##### (1) Preparation and requirements.

In this vocation a large number of employees enter who have had no previous experience in business life of any sort. It is a result of a lack of set standards for entering requirements. The only stable specification is due to law, namely in regard to employment of youths who are under fourteen or sixteen years of age, or those who have not completed the eighth grade of grammar school. In other regards, the positions are open to all who care to apply when vacancies occur. One necessary standard might be suggested, that is, some standard by which a minimum limit for intelligence and acquired knowledge possessed on the part of the employee. The public will suffer, if feeble-minded and mentally deficient individuals are allowed to enter. The department store does not expect every employee to stand, intellectually, in the upper quartile of society. However, it is necessary that responsible selling positions or executive work be carried on by individuals whose mentality and ability are known. Let us examine the duties of a department store sales-

person before trying to judge whether feeble-minded people should be barred from this vocation and whether the mentally deficient could be employed under proper supervision.

(2) Duties.

The department store salesman must know the system of sales checks of his store, namely, the C. O. D., charged to one address and sent to another, the transfer, the O. K. for irregular transactions, and the cash and charge systems especially.

The department store salesman should, moreover, study his merchandise; should know the kind and variety of his goods; their quality and value, their position on the shelves or in the department and what is on reserve order. He must be able to answer the customer's questions as to grade, quality, style, finish, duration, popularity, size, quantity and different makes and trades. What a relief it is to find a salesperson who knows these factors and is willing to trouble about them! To the shopper it seems to be the exception, yet it ought to be the rule.

(3) Chance for preparation for fitness after entering.

The introduction of vocational training or educational departments into department stores shows that the employer is recognizing the need of trained and efficient workers. He is endeavouring to get fitness by training those individuals whom he hires. When workers are trained they will shift less and

<sup>1</sup> O'Leary, Department Store Occupations, p. 60

will afford more skilled and more stable workers to industry.<sup>2</sup>

The aim of this industrial training given in the training school within the vocation is to increase efficiency, which brings its own reward.<sup>3</sup>

(4) Chance for promotion or increased wages:

The greatest number of opportunities for promotion is in the selling force. The executive positions are held by both men and women. Pay is not a matter of luck or subject to the whim of the executive, but is a result of close study of costs and adjustments of expenses. The store is divided into sections having overhead charges. Each department meets its own expenses of selling. The allowance for salaries is reckoned from the amount of department sales. Each person is assigned a total which his weekly sales should reach. All of this gives a definite responsibility to the salesperson.

The two following tables will show the line of promotions followed by men and women in floor positions:

← indicate where worker may go to another department instead of following normal line of promotion.

→ arrow into main line occupations other than previous job from which workers may enter.

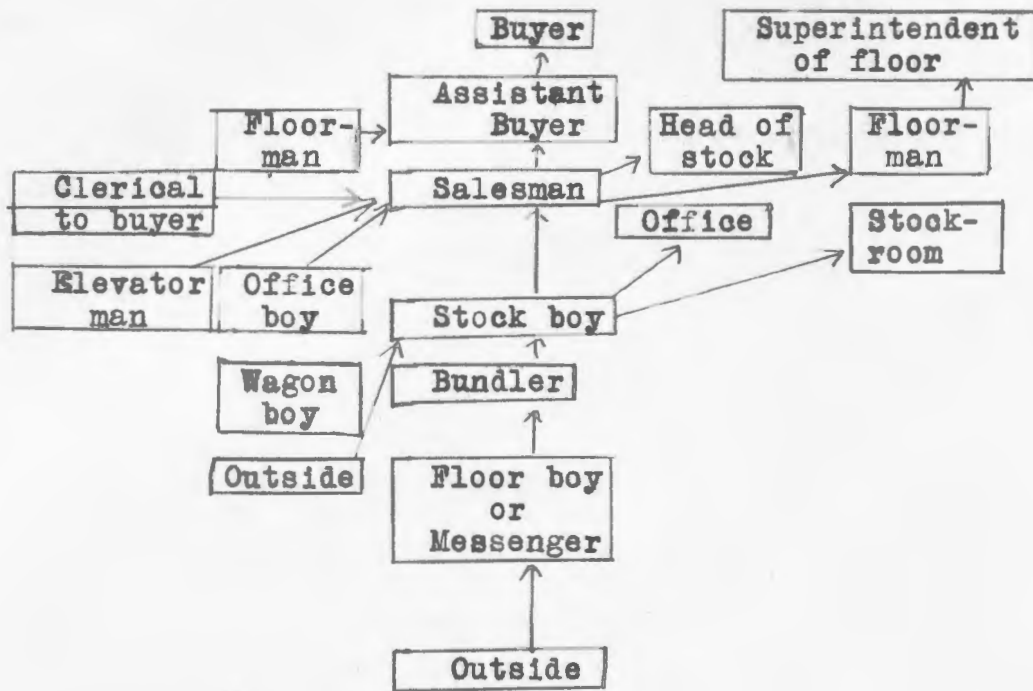
↑ indicates the common line of promotion.

<sup>2</sup> O'Leary, Department Store Occupations, p.84.

<sup>3</sup> O'Leary, Department Store Occupations, p.18.

Table I.

Line of promotion among men in floor positions.



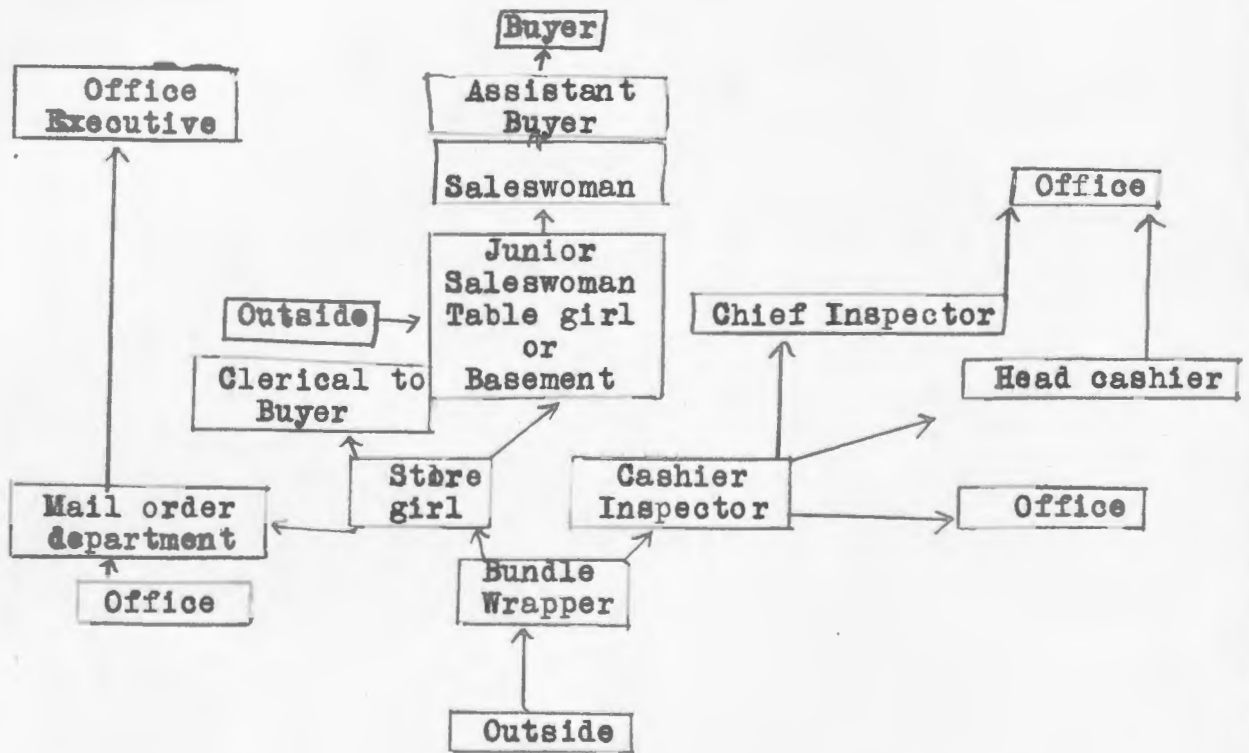
Wages of men.

Under \$18	\$18-\$25	\$25 and over	
59 %	22 %	19 %	Salesmen in stores
66 %	16 %	18 %	Clerical workers in stores

<sup>4</sup> O'Leary, Department Store Occupations, p. 59.

Table II.

The following table from O'Leary will show the line of promotion followed among women in floor positions:



<sup>5</sup> O'Leary, Department Store Occupations, p. 59.

## 2. Present conditions, formal duties.

From this brief review of the present conditions in department store selling, we see that it is existing on a formal basis. The art of selling is developed by the superior sales-people who have probably a natural gift for this vocation and with a keen insight into human nature. This is not to be credited to any systematic training course given within the vocation in most cases, although a few stores are working along new lines in an effort to give such training, but this credit must be given to the salesman himself. In the case of the department store in which this investigation was pursued, it is true that all training and required duties are carried on in a somewhat formal or academic manner. In the education department, for instance, courses are offered in English, Arithmetic, Spelling and Textiles. While these courses are valuable, the experiment has proved that the wide variety of ability and weaknesses are not being satisfactorily met when such individual differences are treated in one and the same manner. The courses offered are valuable to these students in training them to a higher level of knowledge and skill, but they are insufficient in their methods to provide real enthusiasm or a new outlook on their work which does much toward gaining business efficiency. Let us consider what advantages applied psychology would have in changing this mechanical situation into a live, efficient system.

## 3. Remedial future through applied psychology. Advantages.

There are some important keys to success in salesmanship. It



seems absurd and puzzling when one considers how many department store salesmen consider the individual to be a customer of the present moment and not for a future customer. If a salesman would consider how many more regular customers the department store has than many speciality stores, he would realize that he has a chance to obtain "regular customers." For instance, if Mr. A., the salesman, had Mr. B., the customer, approach and state his intention to "just look," Mr. A. would be safe in presuming that Mr. B. was seeking something in this line of goods which he really needed. This man may be safely considered a prospective customer who pursues at least vaguely what he wants. If Mr. A. is a shrewd salesman, he needs no more clue to let him know that he has a chance for a good sale, to show his ability and test himself, and prove that his house can suit Mr. B. Instead of considering him a person to be passed by, Mr. A. will know that this man will buy if convinced. Indeed such a man will be apt to buy more readily if a salesman proves that he is doing his best to find what Mr. B. wants. He thus wins Mr. B. for the present and probably for future sales.

While experience is a good teacher in all lines of work, it is possible to provide the salesman with sign posts and warnings which will make his experience more valuable to him. One man who has been a successful salesman for many years and who is now an employer of salesmen said recently, "A salesman ought to have a line of action planned for various situations which he may expect to meet, so that he will not be taken unawares." Even a few

methods of attack clearly in mind may provide important clues if an emergency arises.

The salesman should realize these varied types but he must remember that each type has one characteristic in common, namely the interest in whatever pertains to his welfare. This makes it the more necessary to understand this underlying self interest. Some men and women buy because the article is useful. They pride themselves on buying only durable, useful articles. They are often willing to pay a higher price when they are convinced that the article is useful. To such a customer, it is important to use arguments or suggestions which will convince them of this utility. In this type are found those who will purchase an article because their friends have found it useful; those who have determined to buy before entering the department store; those who have deliberated upon the purchase but want confirmation of their opinions; those who want the article because it has been suggested that it will be advantageous to persons in their positions.

He must realize the type who considers the style and the momentary popularity of a suit, for instance. Among these he will find those whom he must tell that such an article is just the style of the day and find a suit to suit her vanities, taste and complexion; those whom he must convince that style is there though price is low; those who are willing to pay highly for exclusive but modern style; those who want a suit just like Mrs. A's. and Mrs. B's. Some of these need arguments brought forth as to the combination of style, durability and quality, others mere suggestions as to style and price and durability.

These are but a few examples as to the need and ability for salesmen understanding types, individual differences in types and tastes, sometimes from personal appearance, sometimes from first remarks made.

Finally, by analysis, the salesman is ready to solve the problem. He does so by choosing an appropriate method of attack. There are two methods to be used in selling, either argument or suggestion. If the customer proves to be a man who deliberates before buying, definite, logical reasons must be given in order to aid him in a decision to buy. As soon as the man has settled the question in his own mind, deliberation has ceased. The process he has followed before reaching the decision may be stated in the following steps: (1) idea (2) value of articles (3) relative values (4) chooses one and executes idea.

It is necessary for the salesman to recognize these mental processes, so that he may apply his indirect arguments in a clear distinct fashion and appeal to the judgments of the man himself. In this manner, the customer's habit of deliberation is followed and more easily convinced. The man is more clearly convinced when he thinks he has reached his own decision than when he is bossed. Walter Dill Scott says, "The science of psychology makes clear to the superintendent and to the salesman the factors involved in the act of deliberation."<sup>6</sup> It is one thing to know

<sup>6</sup> W. D. Scott, Psychology of Advertising and Salesmanship.

what arguments to use, but quite another thing to know when to use them.

The second method of selling is by suggestion. Scott says that the modern man is a creature of suggestion and that the man who depends on suggestions is a man of impulsive nature. He is governed by the law of will: "Every idea of an action will result in that action unless hindered by an impeding idea or physical impediment." Such a man tends to make no criticisms and no comparisons, but he responds immediately to suggestion. For instance, a woman is going to buy a new refrigerator. She goes to the hardware department of the store and meets an efficient salesperson. Mrs. A. has decided that she will buy a large size refrigerator similar to her former one which was satisfactory and served her needs "for years." The salesman has a new refrigerator, passed as the most modern, most satisfactory and sanitary refrigerator they have ever carried. It is smaller, it does not hold as much ice, it can be kept in the kitchen without much loss from heat, it is white enamel inside, it is filled with side shelves and room which is undreamt of at first sight, but it costs a third more than the older kind and is smaller for the money. Now, Mr. A. being a good salesman wants to sell the modern chest because (1) the house wants to increase the demand (2) this is a larger sale (3) the customer will be more satisfied in the end. He realizes that he is justified in trying to get Mrs. B. to buy this one, and that it will need good safe arguments to

to have her do so, yet he must allow Mrs. B. to make her own decisions from his leading arguments. He must show that the new chest holds less ice, but wastes less ice and gives the same results because there is economy of room throughout. He must show the finish inside and out, affording sanitary and economical advantages. He must show that room is saved and the chest is more convenient for reaching and handling. He must show these things in such a manner that the advantages more than outweigh the greater cost. Mrs. B. feels that the salesman has her interest at heart for he knows the points that a woman herself considers. She has the very same judgments about it and - "She'll take it."

Suggestion must be used sparingly unless the customer is regular so that the salesman understands her very well. He will then know on what basis Mrs. A. judges his articles and may give suggestions that since it is Mrs. A. he would suggest this style or that durable article.

Suggestion should not be used, therefore, unless the salesman knows the status of his customer. He will have learned whether durability, style or price is most important in the shopping decisions of his customer. Then, and only then, is he safe in playing the part of the man who knows that "Mrs. A. has such excellent judgment as to the quality of goods, that she will take this while this piece is left. He is convinced that these goods will suit her purpose without question for durability really counts in the long run." Or, he may have Mr. A. enter the book department and may appeal to his pride in collecting first editions. He may just suggest that a rival collector would like this book probably,

but he knows it would suit the type of books Mr. B. is collecting.

On the other hand, suggestion may prove successful in off-hand selling, but it is over-done to such an extent when facts are desired by the new customers that it is better to try to satisfy by giving the facts than by suggestions merely. The customer will soon say that she knows the facts .

It may be concluded with a direct quotation from H. L. Hollingworth, "the salesman can best profit from psychology by familiarizing himself in an expert way with the original and acquired tendencies of human beings, the mechanisms of conduct, thought and feeling, the range of individual differences in interest values, motives and temperament, the general lore and doctrine and expressions, emotion, belief and reflection, and especially with the laws of cogent reasoning, the fallacies of argument, the instructive promptings underlying such factors as suggestion, resistance, conflict and decision."<sup>7</sup>

Now that we have reviewed in detail the present situations and remedies which are suggested from a psychological point of view, it is fitting to consider what problems of this sort other investigators have solved by means of mental tests. There are two sorts of psychological tests in vocational guidance. The first aims to select people for positions. "These vary from the simplest sensory tests to complicated evaluation of complex mental operations."<sup>8</sup>

<sup>7</sup> Applied Psychology. H. L. Hollingworth, p. 246-247.

<sup>8</sup> Psychological Tests in U. S. by Leon P. Ayres.

The simplest of such tests are those for vision, hearing and color discrimination given to all recruits in the army, navy and marine corps. Similar tests are given to railroad employees. In all of these cases the tests have for their object merely the detection and rejection of unfit applicants.

There are at least three industries in which the applicants who are best fitted to do the work are selected by means of psychological tests. The first is a series of tests in reaction-time to select girls who are to inspect for flaws the steel balls used in ball bearings. The second is a series of tests requiring about ten minutes to be given to street-car motormen to select those least liable to accident. The third, is a series of tests used to select telephone operators.

Other tests have been devised to test a subject's ability in a certain type of work and also successfully separate the fit from the unfit candidates. Such tests are being devised for stenography, typewriting, chauffeurs, ability of a singer.

Other psychological tests have for their purpose the selecting of positions for persons. In this work, Dr. McMillian in Chicago, and Mrs. Wooley in Chicago are doing hopeful investigations. It has been concluded by Mr. Ayres that "the inevitable conclusion remains that in vocational guidance the greatest field of immediate development for psychological tests is in choosing persons for positions rather than in selecting positions for persons!"

<sup>9</sup> Psychological Tests in Vocational Guidance by Leonard P. Ayres. Printed in April, 1913; reprinted in September, 1916.

From such more or less scientific investigations the value of psychological tests in determining fitness have been indicated. Before suggesting any series of tests to meet the problems found in the present department store situations, for testing applicants, it is necessary to know what degree of mental intelligence is necessary for selling positions, and what specific aptitudes can be detected by means of tests. When these two factors are determined, some organized plan of testing can be offered by which new applicants can be judged for initial fitness and experienced employees for fitness for better positions or placement.

Salesmanship fitness has been investigated already by various psychologists. The experiments which Walter Dill Scott has made in this field are widely known. As one critic says of them: "They were a series of tests made by corporations representing the most important development in sales management in the past dozen years." It was assumed in this investigation that there was a high positive correlation between such mental tests and success in this definite type of work. In one of his experiments Scott tested thirty efficiency experts employed in a large industrial concern in New England. Ten psychological tests were used. The combined tests correlated with the judgments of the firm with a coefficient of .87.



In Hollingworth's "Applied Psychology" we find the following description of an experiment with tests carried on in salesmanship: "Fifty salesmen engaged in selling all manner of commodities, in all manner of ways, ranging in age from twenty to fifty years, and of course having had varying amounts of experience were examined by means of three sets of selected mental tests. In the case of the individual, his present salary was divided by the number of years of selling that had enabled him to attain that salary. This measure of success as a salesman is admittedly a rough one, but no more satisfactory measure could be devised for comparing the members of so heterogeneous a group.

"The mental tests, although their administration required only thirty-five minutes, are seen to divide the salesman in a fairly reliable way into groups of superior, good, fair and poor earning power, and to this extent seem to be of genuine value in differentiating the members of the group on the basis of proficiency in selling."<sup>10</sup>

The individuals were then arranged in four groups in the case of each of the sets of tests, according to the score attained, giving groups which might be designated as superior, good, fair, poor. Then the average salary per year of experience was computed for each of these groups. The results were:

<sup>10</sup> H. L. Hollingworth, Applied Psychology, p. 200

Table III.<sup>11</sup>

Comparison of ability in tests with ability in salesmanship.

Test Series	Score	Salary per year of experience	P.E.	Number of individuals
.....				
Series I	Over	\$765	11	11
Tests for	500	968	15	15
judgment,	400-500	934	19	19
comprehension,	250-400	612	5	5
etc.	Under 250			
Series II	Over 230	1085	8	8
Tests for	215-230	845	9	9
Perception,	200-215	829	21	21
discrimination.	Under 200	674	12	12
Series III				
Tests for	Over 40	256	10	10
general	30-40	108	19	19
intelli-	20-30	113	17	17
gence	Under 20	106	4	4
.....				

<sup>11</sup>

H. L. Hollingworth, Applied Psychology, p. 201.

It is obvious that tests of this type are of great use to an employer in selecting the applicants who are best fitted for his type of vocation, and also "in eliminating from among candidates for work those who are hopelessly mentally deficient." In the words of Thorndike: "There is an excellent reason to believe that it is literally true that the result of two hour tests properly chosen from those already tested gives a better diagnosis of an educated adult's general intellectual ability than the results of judgments of two watchers or friends who have observed him in an ordinary course of life each for a thousand hours."<sup>12</sup>

It is obvious that it is advantageous to both the employer and the employee to ascertain to what degree fitness is possessed. It must be realized that the day for training every new employee in the same manner is impracticable. There should be some means and standard by which to measure the fitness of the applicant, or the fitness of the experienced clerk for a higher position. Such knowledge could be used advantageously in the placement of salesmen so that their special abilities could be used to the best advantage. If this is the need, the problem is to find a means of solution. It is for this purpose that the following investigation was pursued. It is not to give a finished solution, but to try to detect the possibility of such an understanding for remedial work in view of the present situation, by means of a series of tests.

<sup>12</sup> H. L. Hollingworth, Vocational Psychology, p. 211.

## CHAPTER II.

### Problem:

The purpose of this investigation is to show:

1. The abilities of the Junior Group in the Educational Department of Dayton Company, Minneapolis, in certain mental tests.

2. The selling abilities of these salespersons as judged by their supervisors on the basis of Whitehead's list of positive traits<sup>1</sup> as a tentative standard<sup>2</sup>.

3. The relation between the results from the tests and the scores of the supervisors.

### Method:

If the results of a psychological investigation are to be reliable and to furnish evidence in favor of an argument or theory, much depends upon choosing an accurate method of procedure. In this experiment the Method of the Vocational Psychograph seems most suitable, as this method proceeds by attempting to discover the essential abilities and capacities which a given sort of performance demands, by the use of mental tests adapted to this purpose. The Vocational Psychograph aims

<sup>1</sup> A list of 41 positive traits which seem essential in salesmanship are given in Mr. Whitehead's lectures on Business Efficiency, Section 2, page 1. (Published by Mr. H. Whitehead, Brockton, Massachusetts. 1916.) Although many of these traits overlap, this is not necessarily a weakness provided the factor common to the overlapping is an important one to salesmanship. This is really a system of weighting common occurring factors.

<sup>2</sup> A sample copy of the standard used and the directions for scoring may be seen in the Appendix, p.118-120.

that the results obtained would be given to the company for their information and use.

The preliminary groups were tested during the months of January. This examination of about two hundred cases gave a basis for revising and selecting the tests for the junior group. In this experiment it was discovered that some of the tests were too short, some were not graded according to difficulty, as had been intended, and some were unsatisfactory. The revision of the four tests used and the addition of a large number of other tests were the outcome.

#### IV. Preliminary testing:<sup>3</sup>

Four tests were used in the preliminary testing, namely:

Directions, Addition, Analogies and Problems:

1. The Directions Tests<sup>4</sup> was a combination of the "Following Instructions Test"<sup>5</sup> from the Woodworth-Wells Association Test and the last three sections from the direction test used by Mr. Harlan<sup>6</sup> in his investigation. The complete test used was arranged so that the first twelve steps were of equal difficulty according to the scoring on Woodworth-Wells basis and were, there-

<sup>3</sup> Before the preliminary group at Dayton's was examined, a group of ten University students was examined with these tests to afford a tentative standard. Only time basis was considered.

<sup>4</sup> A sample copy of this test may be seen in the Appendix, p. 124, Test No. 4.

<sup>5</sup> This test may be found in the Appendix of Vocational Psychology by H.L. Hallingworth, page 296. (D. Appleton Co. 1917.)

<sup>6</sup> This test may be found in Mr. Harlan's thesis for the Ph.D. degree at University of Minnesota, 1918. Part of this test was used with his permission.

fore, scored one credit each, but the remaining steps which were taken from Mr. Harlan's test were found from preliminary analyses to be more difficult when given ten individuals on a basis of median time, that is, required more time for reading, deliberation and answering. Therefore, the directions for number checking received two credits if correct, or one credit if four out of five were correct; and the next direction calling for underlining of the words which had the letter t with an i on one side and an e on the other, received three credits if four words were underlined, two credits if three out of four, and one credit if two out of four were underlined; and the last instruction was divided into two parts, each more difficult than any former instruction, and the second part more difficult than the first half. For the first half three credits were given if correct, and for the last half five credits if correct. The time limit was set for three minutes. The total possible credits to be made on this test would be twenty-five.

2. The Addition Test<sup>7</sup> was composed of examples selected from the Moody Arithmetic Scales<sup>8</sup>. The thirteen selected seemed to be the type of addition examples to be used in department store calculations. The time allowed was eight minutes for completing the set. On the basis of median time, the time

<sup>7</sup> A sample of this test may be seen in the Appendix, p.121, Test No. 1.

<sup>8</sup> Copies of the examples were found in Mental and Social Measurements by Monroe, Devass and Kelley, pp. 27 and 28. (Houghton, Mifflin Co., N.Y. 1917.)

obtained from the group of ten, the first eight examples, if correct, were given one credit each. This was because the median time required was one-half the amount required for the rest of the examples. On the same basis, the rest received two credits each, if correct. Thus the total credits received for a perfect paper were eighteen.

3. The Analogies Test<sup>9</sup> was composed of fifteen sets of words, having three words per set, chosen from the Woodworth Wells Mixed Relations Test<sup>10</sup>. This test gives a set of three words, the second of which bears a relation to the first. The individual tested is required to supply a fourth word which will have the same relation to the third word as the second has to the first. Ten individuals were tested in the Mental Test Class in order to determine the difficulty and the time necessary for completion of each line of analogies. Upon this basis of analysis, it was assumed that the sets were of equal difficulty. Therefore, in scoring it was decided that it was a fair basis if the number correct were recorded as the total score. The time limit was set for five minutes. The total credits received for a perfect paper totals fifteen.

4. The Problems Test<sup>11</sup> consisted of ten problems of which numbers 1, 4, 5 and 9 were made by the writer and deal with

<sup>9</sup> A sample of this test may be seen in the Appendix, p. 122, Test No. 2.

<sup>10</sup> This test was taken from the copy found in the Appendix of Vocational Psychology by H.L. Hollingworth, p. 298. (D. Appleton Co., New York, 1917.)

<sup>11</sup> A copy of this test appears in the Appendix, p. 139, Test No. 16.

problems similar to those necessarily solved in department store salesmanship; while numbers 2, 3, 6, 7 and 8 were selected from the Reasoning Test.<sup>12</sup> The problems were arranged in the order of difficulty on the basis of the median of the time required for the completion of each problem when given to ten University students. The time limit was ten minutes. Credit was given for the total number correct.

In giving the tests, a few simple explanations and directions were given for the whole series of tests. Specific directions for each test were printed at the top. In general these directions were read aloud by the experimenter before the class was allowed to turn over the papers. In the case of the Analogies Test more minute explanations were necessary. Samples were given orally by the experimenter in an effort to make the individuals understand the method of attack before they began on the test.

#### V. Results from Preliminary Testing:

After correcting, recording and calculating the results from the preliminary testing the following conclusions were reached:

##### 1. For the Addition Test:

(1) It was concluded that this test was not long enough to give a fair estimate of the individual's ability to

<sup>12</sup> A copy of this test will be found in Monroe, Devoss and Kelley, p. 36. (Houghton, Mifflin Co., New York. 1917.)



add these types of examples. A greater number of examples and several examples of the same type would have been better. For instance, the addition of a column of five three digit numbers similar to the following: 1.50, 2.63, 4.16, 6.32 and 1.49, might be completed with one error. Here inaccuracy and inability to add a column of five three digit numbers could not be distinguished unless other examples of this same type were performed.

(2) The time limit, eight minutes, had been set for the completion of the test. It was concluded that better results would be gained if time limits were set for the examples of each type, thus allowing each individual to do as many examples as he could in the given time. Therefore, in the final set, a time limit was set for each type of examples, which would allow on the average of three of the group to finish in the given time.

Upon this discovery of the weak points, two similar Mechanical Arithmetic Tests<sup>13</sup> were substituted for the preliminary addition test. This test contains four rows of addition examples. Each row contains a specific type of addition, of which there are eight examples. A definite time limit is set for each succeeding row increasing as the difficulty of the rows increases. The following are the time limits set for the first four rows respectively:

<sup>13</sup> This test may be seen in the Appendix, p.127, Test No.6

<sup>13</sup> This test may be seen in the Appendix, p.130, Test No.9.

row 1	---	45 seconds
row 2	---	50 seconds
row 3	---	60 seconds
row 4	---	2 minutes

The remainder of this mechanical arithmetic test contained five rows of five types of multiplication used in calculation in department store selling. Each row had eight examples. The time limit was set for each row according to the time necessary for the three brightest to complete the row, and the time increased as the rows increased in difficulty. The time limits for these five rows of multiplication, or as numbered on the test rows 5-9 inclusive, are:

row 5	---	45 seconds
row 6	---	1 minute
row 7	---	1 minute, 30 seconds
row 8	---	1 minute, 45 seconds
row 9	---	50 seconds

In giving this test the papers were distributed with the blank side of the paper up. No one began until the signal was given. It was clearly pointed out that each one must begin row two, for instance, when the signal "stop row one and begin row two" was given. It was also shown that each row must be figured during the time allotted for that particular row. No difficulty was encountered in giving the test. A definite number of seconds was allowed for each row, as designated on the sample copy.

2. For the Directions Test:

The Directions Test of the preliminary set, or

Test A,<sup>14</sup> was left intact for the final group testing, but a second directions test, or Directions Test B,<sup>15</sup> was made in order to suit the department store in which the experiment was carried on. This latter test is an informational direction test. It was an endeavour to make a directions test which would combine the same type of directions to be followed as in Test A and the type of work used in the mechanical processes of the sales-check system. In order to gain first hand information on this topic, the author was trained in the system of checks and rules as any new employee would be. With this information, Test B was completed.

Twenty-five credits are received for a perfect paper in Directions Test B. These credits are scored on the following basis: The first sixteen instructions to be followed deal with the common check system which is part of the daily routine, while the last four instructions to be followed are based on special instructions followed less frequently; so the first sixteen are assumed to be of equal difficulty and receive one credit each, if correct, while the last three receive two credits each, being twice as difficult as any of the former, and the last instruction three credits because it is still more difficult than any of the former instructions followed. The time limit

<sup>14</sup> A sample of this test appears in the Appendix, p. 124.  
Test No. 4.

<sup>15</sup> A sample of this test appears in the Appendix, p. 128.  
Test No. 7.

for each Directions Test was three minutes. No specific directions were necessary and only the usual directions, "Get ready," "Begin," and "Stop" were given.

3. For the Analogies Test:

(1) It was concluded that fifteen sets of words were not enough to provide a fair basis for assuming that the individual selected the fourth word as a result of having observed the existing relationship. Some of the words in the preliminary test proved to be so easy that the correct word was found by association of terms. More sets of analogies would determine which of the two methods were used.

(2) The tasks were not arranged in the order of difficulty because it was discovered that a large per cent of the tested groups omitted or failed in analogies in the center of the center, although the first sets and the last sets were easy enough to be given correctly.

Upon this discovery of the weakness of the test, the final analogies test<sup>16</sup> was made in order to use to advantage the above conclusions in improving the test. In this final test, forty sets of words are used for analogies. After the test was completed by selecting the best analogies of the preliminary test and adding new analogies which seemed better, some basis for arranging the sets in order of difficulty was sought. The following is the method used as the basis: This test was given

<sup>16</sup> A copy of this test appears in the Appendix, p.129, Test No. 8.

to ten University students and records were kept of the seconds required for the completion of each analogy. The median of the ten time records was taken and the analogies were arranged on the basis of this median. The total time necessary for the completion of the test was reckoned from the sum of these forty medians. Thus, the time limit was set at eight minutes for the whole test, and the order arranged according to increasing time necessary for the completion of the analogies. Specific explanations and examples were given before the test was begun. The number correct was the basis for scoring.

A second Analogies Test, or Test A, was used in this experiment. This test was composed by Mr. Miller of the University High School, Minneapolis.<sup>17</sup>

4. The Problems Test A<sup>18</sup> used in the preliminary group test was again used for the final group work. The second test, Test B,<sup>19</sup> was devised from the point of view of problems which would be calculated in department store selling. The problems are ten in number and were arranged on the basis of the median time taken for ten individuals to solve the problem. The time limit for each problems test was set at fifteen minutes.

<sup>17</sup> A copy of this test appears in the Appendix, p.125, Test No.5.

<sup>18</sup> A sample copy of this test may be seen in the Appendix, p.139, Test. No. 16.

<sup>19</sup> A sample copy of this test may be seen in the Appendix, p.141, Test No. 18.

The number of correct answers was recorded in scoring.

The following tables will show the tests which were used in the final testing, the source of the test, the number of examples, the time allowed, the purpose of the test, and the method of scoring. Table IV.

Test	Source of Test	Number of examples	Time allowed	Purpose	Scoring
Trabue L and M Language Completion Test	Marion Trabue	L = M =	5 min. 5 min.	Ability to complete sentences successfully. Relation to language ability	According to definite standards. Scoring key- 2=perfect, 1=fair, 0=poor
20					21
Written Analogies (Miller)A (Hunter)B	Miller Hunter	40 40	8 min. 8 min.	Ability to seek out relations. Alertness	1 point for each one correct.
22					23
Oral Analogies B and C	Von Wagenen	50 50	5 seconds for each word	Alertness. Attention. See relations. Meet new situations	1 point for each one correct
24					
Directions A and B	Woodworth- Wells B Hunter	22 22	3 min. 3 min.	Knowledge of what is read. Follow written directions. Do what is told to do.	1 point for each except last three which were scored two each.
25					26
Arithmetic Problems A and B	Woodworth- Wells B Hunter	10 10	15 min. 15 min.	Reasoning power Ability to figure problems in work	1 point for each correct answer.
27					28

27, 28 See page 33, section 4.

Table IV-cont.

Test	Source of Test	Number of examples	Time allowed	Purpose	Scoring
Spelling A B	From Ayres' list	60 60	Time necessary for quick pronunciation	Knowledge of how to spell ordinary words	Total number correct
29					30
Learning Test	Von Wagenen	3 pages of letters	15 min.	Influence of memory and practice	No. of figures transcribed by key in a minute. <sup>32</sup>
31					
Reading Test	Thomas	6	25 min.	Ability to read and re-produce what is read by answering questions	According to given key.
33					34
Vocabulary Hunter Test		40	5 min.	Knowledge of common vocabulary	1 point for each correct.
35					36

<sup>20</sup> The Trabue Language Completion Tests Scales L and M were devised by Trabue for the general measurement of language ability. Each scale consists of sentences from which one or more words have been omitted. The omission is indicated by a blank. The pupil tested is to write in the missing words. The relative difficulty of the sentences has been carefully determined and they have been arranged in order of difficulty. A sample of L may be seen in the Appendix, p.138, Test No.15. A sample of M appears in the Appendix, p.123, Test No.3.

<sup>21</sup> These tests are scored on the basis of a scoring key for the Trabue Language completion tests L and M published in the edition of Language Completion Scales of Teachers' College, Columbia University, Contribution to Education 77. (Published by Teachers' College, Columbia University, New York City. 1916.) According to this scale, the general scheme for scoring is as follows:

Score of two if:

Each sentence is completed with perfect choice of words in key. (Errors in spelling, capitalization and punctuation do not affect the score.)

Score of one if:

Only slight imperfection in the complete sentence.

Score of zero if:

The sense of the sentence or the grammatical construction is badly distorted.

<sup>22</sup> Written Analogies A. A description of the test in detail may be found in Chapter II, p.32.

Written Analogies B. A description of the test in detail may be found in Chapter II, p.33. A sample of the test appears in the Appendix, p.125, Test No.5.

<sup>23</sup> The method of scoring these tests is given in detail in Chapter II, p.33.

<sup>24</sup> Two Oral Analogies Tests were used in this experiment. These analogies tests were made by Professor Von Wagenen of the Education Department of the University of Minnesota. Each test consists of fifty sets of analogies. These sets are to be read orally by the experimenter at the rate of five seconds for each set that is, allowing one half second between each word and four seconds for the written response. Two sets, namely C and D, were proved to be equal in difficulty in an experiment carried on by Professor Von Wagenen which is now in a work to be published soon. In scoring, the number of correct answers was recorded. A copy of the words used in these tests may be found in the Appendix, p.131, Test No. 11.

<sup>24</sup> Test B, Appendix, p. 134, Test No. 12.



<sup>25</sup> Direction Tests A and B are described in Chapter II, p. A sample of Test A appears in the Appendix, p.124, Test No. 4. A sample of Test B appears in the Appendix, p.128, Test No. 7.

<sup>26</sup> The scoring for both Directions Tests is explained in detail in Chapter II, p. 31.

<sup>27</sup> Two Spelling Tests were given to the Junior group. Each test contained sixty words from Ayres' Measuring Scale for Ability in Spelling. The number correct in the list was the score recorded.

<sup>30</sup>(1) A copy of the Measuring Scale published by Russel Sage Foundation, New York City, may be seen in the Appendix, p. 144.

(2) A list of the specific words given in the tests for this experiment may be seen in the Appendix, p.136, Test No. 13; Test B, p.144.

Several Learning Tests composed by Professor Von Wagenen of the University of Minnesota were used in this investigation. These learning tests are composed of sheets containing twenty rows of twenty letters each. At the top of the paper there is a key in which the eight letters used throughout the test are given with a specific numeral for each letter. The person tested must place the proper numeral given in the key for letter N, for instance, beneath the letter N wherever he finds it on the page and the number for C beneath C when he finds it on the page. Minute explanations are given by the experimenter which may be summarized as follows:

The individual tested must begin with row 1 and take every letter in order as he finds it and place beneath it the number given under that letter in the key. This is to be done as quickly as possible as he proceeds from one letter to the other. Time is kept by means of a stop-watch. "Mark" is called out at intervals of one minute, at which time the individual is to make a stroke thus after the last letter transcribed, but proceed without stopping. This will be carried on for ten minutes and at the end of that time the signal "Stop" is given. At the signal the individual draws a straight line through the next few letters which he would have proceeded to.

The Long Learning Tests were given thus for thirty minutes with rest intervals between ten minute periods. The Short Learning Tests were given only for periods of fifteen minutes. A sample of these tests may be seen in the Appendix, p.140 Test No. 17.

<sup>32</sup> The tests were scored by counting the number of figures written in one minute divisions. In recording the marks the average of the 3, 4, 5, 6, 7 minutes taken as the total score to  
were

be recorded. All the ten minute periods were treated thus.

In the investigation a long learning and a short learning test were given one week, with another long learning and a short learning test the following week. The tests given thus were correlated and the average of that ten minute period which gave the highest r was used in the final calculation of the experiment. The highest r was obtained for the average of the 40-55 minute period, or for the 45-50 minute period.

<sup>33</sup> The Thomas Reading Test was also given in this experiment. This test consisted of six paragraphs to test the reading ability and comprehension of the individuals. This was determined by the answers to questions given below each paragraph. A copy of this test appears in the Appendix, p.143 Test No. 22.

<sup>34</sup> A key is furnished by Professor Thomas of the University of Minnesota. In scoring each correct answer equals one point and the sum of these points gives the total score.

<sup>35</sup> A vocabulary test was given to this group. This test included forty words which named some trait or quality, most of which these persons were to be judged upon. It was an endeavour to know whether they were intelligent enough to understand the meaning of such qualities, whether they possessed them or not. Three words were given in the parenthesis after each word, one of which the salesperson should underline to show that that word explained the given word as he understood it. One word out of the three was correct. A copy of this test appears in the Appendix, p.142 Test No. 19.

The number of words correctly underlined was totaled as the score for this test.

An objective standard for measuring the qualities of each salesperson was formed so that the men and women who supervised the individuals and who were presumed to have an intimate knowledge of their selling ability could give an accurate judgment on a uniform scale. Each one in the Junior group was scored on this basis. The blanks to be filled out were given to the department heads to be considered carefully for a few weeks and to be passed in before the conclusion of the testing.

The Junior group of the Educational Department of the Dayton Company meets regularly in two divisions, one at 8:30 and the second at 9:30, on Wednesday and Thursday mornings each week. These periods were given over to the author by the manager to do whatsoever testing it seemed necessary. To make the best possible use of the time, it seemed best to divide the total number of tests into groups, having companion tests given the following week, if possible. The Junior group consisted of seventy-two salespeople, but a great number of absences occurred some weeks, partly on account of rush business and partly because illness caused many absences the last few weeks of the testing. In the first few sets, make-ups were given as much as possible in order to get the records for all the individuals.

In giving the tests a general explanation was given as to what the experiment was for, and why they should try to do their best. The general directions were as follows:

"The tests are going to show you how well you can perform these tasks and show us how well you do these simple tests. Every minute is going to count in these exercises, so lose no time in following instructions. You must work fast and accurately in order to finish the test. Give strict attention to your own work, for your work is what we want. Be sure to obey every direction. When these papers are given to you, place the blank side up until told to turn the paper."

The sets of tests were clipped together so that each individual was given a complete set without waste of time; when the sets were given out, the following directions were given:

"Each one now has a set of tests to be tried out one by one. Do not turn to the next test, although you have finished one, until the signal is given. Do not do anything until you are told to do so. Be careful to turn but one sheet at a time. As soon as you have finished a test, sit at attention "thus" with your pencil poised in the air. When time is called by the word "stop," cease working immediately and do not make even one more mark on your paper. Now for every test three signals will be given: (1) "Get ready," which will mean taking the corner of the finished test between your thumb and finger, thus, in preparation for turning to the next test. At the signal (2) "Begin," which will mean to turn to the next test and work as fast as you can, but accurately; then the last signal (3) "Stop," which means to stop immediately."

This form of introductory explanation was needed only the first few times. The group was willing to work and liked the tests, so no trouble was encountered in that respect. The

schedule of the work accomplished and the sets used in their respective order from week to week may be seen from the following table:

Table V.

Date	Group	Test Series
March 7, 1918	Junior	Trabue M Directions A Miller's Analogy Test Mechanical Arithmetic Test
March 13, 1918	Junior	Directions B (Hunter) Written Analogies (Hunter) Mechanical Arithmetic (Hunter)
March 14, 1918	Junior	Oral Analogies Number Completion A Spelling A Number Completion B
March 20, 1918	Junior	Trabue L Arithmetic Problems A
March 21, 1918	Junior	Long Learning Test A
March 27, 1918	Junior	Short Learning Test (15) Arithmetic Problems B Vocabulary Test A
March 28, 1918	Junior	Long Learning Test B
April 3, 1918	Junior	Spelling Test B
April 4, 1918	Junior	Reading Test (Thomas) Short Learning Test

These tests may be seen in the Appendix in the order given above.

CHAPTER III.

This chapter contains the data obtained during the investigation at the Dayton Company, Minneapolis, Minnesota, and the deductions drawn from statistical calculations of these data.

The following table contains the original scores given by the supervisors to the salespeople in the Junior Class. Full description of the method of scoring and the points of view taken when scoring the traits are given in the Appendix, p.118.

Table VI.

Case I Health II Personality  
Num- a Refine- b Self- c Court- d Sta- e Tact f Truth-  
ber ment control esy bility fulness

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Case Number	I Health	II Personality	a Refinement	b Self-control	c Courtesy	d Stability	e Tact	f Truthfulness
1	3	3	3	3	3	3	3	3
2	3	3	3	3	3	3	3	3
3	3	3	3	3	3	3	2	3
4	3	3	3	3	3	3	2	3
5	2	3	3	3	3	3	3	3
6	3	3	3	3	3	3	3	3
7	3	3	3	3	3	3	2	3
8	3	3	3	3	3	3	3	3
9	3	3	3	3	3	3	2	3
10	3	3	3	3	3	3	2	3
11	3	2	2	2	3	3	3	3
12	3	3	3	3	3	3	3	3
13	2	2	2	2	3	3	3	3
14	3	3	2	2	3	3	3	3
15	3	3	3	3	3	3	2	3
16	3	3	2	2	3	2	2	3
17	3	3	3	3	3	3	3	3
18	2	3	2	2	2	3	2	3
19	3	3	2	2	3	3	2	3
20	3	3	3	3	3	3	2	3
21	3	3	3	3	3	3	2	3
22	3	3	3	3	3	3	2	3
23	2	3	2	2	3	3	3	3
24	3	3	3	3	3	3	2	3
25	3	3	3	3	3	3	2	3
26	2	3	3	3	3	2	2	3
27	2	3	2	2	2	3	2	3
28	2	2	3	3	3	2	2	3
29	3	3	3	3	3	3	2	3
30	3	3	3	3	3	2	2	3
31	3	3	3	3	3	2	2	3
32	3	2	2	2	2	3	1	3
33	1	3	3	3	3	2	2	3
34	2	3	2	2	3	2	2	3
35	2	3	1	2	3	2	2	3
36	3	3	2	2	3	2	2	3
37	3	2	2	2	3	2	2	3
38	1	3	2	2	2	3	0	3
39	3	2	2	2	3	3	2	3
40	2	3	2	2	3	3	2	2
41	3	3	2	2	3	2	2	3
42	2	3	2	2	3	2	3	2
43	3	2	2	2	2	2	2	3
44	2	3	3	3	3	3	2	3
45	2	3	1	2	3	2	2	3
46	2	3	2	3	3	2	2	3
47	3	3	3	3	3	2	2	3



Table VI-cont.

Case I Health	II Personality						f Truth-
Num-ber	a Refine-ment	b Self-control	c Court-esy	d Sta-bility	e Tact	f Truth-fulness	

48	2	3	3	3	3	2	3
49	2	3	2	3	2	3	3
50	2	3	2	3	2	2	3
51	3	3	3	3	2	2	3
52	2	2	2	2	2	2	3
53	3	2	3	3	3	2	3
54	2	3	3	3	3	2	2
55	2	3	3	2	2	3	3
56	3	2	2	3	2	2	3
57	3	2	2	3	2	2	3
58	2	3	2	3	3	2	3
59	3	3	3	3	2	2	3
60	3	2	2	3	2	2	2
61	3	3	3	3	1	1	3
62	3	3	2	3	1	2	2
63	3	1	3	2	2	3	3
64	3	3	2	3	2	2	3
65	2	1	2	3	2	2	2
66	1	2	2	3	2	2	3
67	2	3	2	2	2	2	3
68	2	2	2	2	3	1	3
69	2	2	1	3	1	2	3
70	2	3	2	3	2	2	3
71	2	3	2	3	2	1	3
72	3	3	2	2	0	1	0

Table VI-cont.

Case Num- ber	g Dependa- bility	h Cheer- fulness	i Activ- ity	j Orig- inality	k ability to meet customers	l Person- al appear- ance	TOTAL
1	3	3	3	2	3	3	35
2	3	3	3	2	2	2	35
3	2	3	3	3	2	3	33
4	3	3	3	2	2	3	33
5	3	3	3	2	2	3	34
6	3	3	3	2	-	3	32
7	2	3	3	2	2	3	32
8	2	3	2	2	3	3	33
9	3	3	2	2	-	3	30
10	3	3	3	2	-	3	31
11	3	3	3	2	-	2	29
12	3	3	3	2	-	3	32
13	3	3	3	2	3	2	32
14	2	2	3	2	2	2	30
15	3	3	3	2	-	3	31
16	3	3	2	2	2	3	30
17	3	2	2	2	-	3	30
18	3	3	3	2	2	3	31
19	3	3	2	2	-	3	29
20	3	2	2	2	-	3	29
21	2	3	2	3	2	3	32
22	2	3	2	2	2	3	31
23	3	2	3	2	2	3	32
24	3	3	3	2	2	3	33
25	3	3	2	2	2	3	32
26	3	3	2	2	-	3	29
27	3	2	2	2	2	2	28
28	3	2	3	2	-	3	28
29	2	2	2	2	2	3	30
30	2	3	2	2	2	3	30
31	2	3	2	2	2	3	30
32	3	3	3	3	-	3	28
33	3	2	2	2	-	3	28
34	3	3	2	1	-	3	27
35	3	3	3	2	-	3	28
36	3	2	2	2	2	3	29
37	3	3	3	2	-	2	27
38	3	2	2	2	-	3	25
39	2	3	3	1	2	3	29
40	2	3	3	2	2	3	27
41	3	2	3	2	-	2	28
42	2	3	3	2	-	3	28
43	3	3	3	2	-	2	26
44	2	2	2	1	1	2	27
45	2	3	2	2	-	3	28
46	2	2	2	2	-	3	26
47	3	3	2	2	2	3	31

Table VI-cont.

Case Num- ber	g Dependa- bility	h Cheer- fulness	iActiv- ity	j Orig- inality	k Ability to meet customers	l Person- al appear- ance	TOTAL
48	2	2	2	1	1	3	28
49	2	3	2	2	3	3	31
50	2	2	2	2	-	3	26
51	2	3	1	1	2	3	28
52	2	3	3	2	2	2	27
53	3	2	1	1	2	2	27
54	2	2	2	1	2	2	27
55	3	1	2	1	2	3	28
56	2	3	2	1	2	1	25
57	2	2	2	1	-	1	22
58	2	2	2	3	3	3	31
59	3	3	0	2	-	3	27
60	2	2	2	2	2	2	27
61	3	2	2	3	1	3	28
62	1	3	3	2	2	3	27
63	1	3	3	1	3	1	26
64	2	3	2	1	1	2	26
65	2	3	3	2	-	2	24
66	1	3	2	1	2	3	26
67	2	2	2	1	1	2	24
68	2	3	2	0	2	0	22
69	2	3	1	1	-	1	20
70	1	2	1	1	2	3	25
71	1	2	1	0	1	3	22
72	1	1	0	0	0	0	10

Table VII-cont.

Case Number	III Business Duties			TOTAL
	a Alertness	b Faithfulness to work	c Knowledge of duties	

1	3	3	3	9
2	3	3	3	9
3	3	3	3	9
4	3	3	3	9
5	3	3	3	9
6	3	3	3	9
7	3	3	3	9
8	3	3	3	9
9	3	3	3	9
10	3	3	3	9
11	3	3	3	9
12	3	3	3	9
13	3	3	3	9
14	3	3	3	9
15	3	3	3	9
16	3	3	3	9
17	2	3	3	8
18	2	3	3	8
19	2	3	3	8
20	2	3	3	8
21	2	3	3	8
22	2	3	3	8
23	2	3	2	7
24	2	3	2	7
25	2	3	3	8
26	3	3	3	9
27	2	3	3	8
28	3	3	3	9
29	2	3	3	8
30	2	3	3	8
31	2	3	3	8
32	3	3	3	9
33	3	3	3	9
34	3	3	3	9
35	3	3	3	9
36	2	3	3	8
37	3	3	3	9
38	3	3	3	9
39	3	3	3	9
40	3	3	3	9
41	2	3	3	8
42	3	3	3	9
43	3	3	2	8
44	3	3	2	8
45	3	3	3	9
46	2	3	3	8
47	2	3	3	8

Table VI-cont.

Case Num- ber	III, Business Duties a Alertness	b Faithfulness to work	c Knowledge of duties	TOTAL
48	2	3	2	7
49	2	2	2	6
50	3	3	3	9
51	2	3	2	7
52	2	3	2	7
53	2	3	2	7
54	2	3	3	8
55	1	2	2	5
56	2	3	3	8
57	3	3	3	9
58	2	2	2	6
59	2	2	2	6
60	2	2	3	7
61	1	3	3	7
62	3	2	2	7
63	3	2	3	8
64	2	2	2	6
65	3	2	2	7
66	2	2	2	6
67	2	3	2	7
68	2	3	3	8
69	2	2	3	7
70	1	2	1	4
71	1	1	1	3
72	2	0	1	3

Table VI-cont.

Case IV Co-operation  
Num- a Loyalty to b Obedience c Responsi- d Punctu- TOTAL  
ber employers and bility ality  
fellow workers

Case Number	IV Co-operation a Loyalty to employers and fellow workers	b Obedience	c Responsi- bility	d Punctu- ality	TOTAL
1	3	3	3	2	11
2	3	3	3	3	12
3	3	3	3	3	12
4	3	3	3	3	12
5	3	3	3	3	12
6	3	3	3	3	12
7	3	3	3	3	12
8	3	2	2	3	10
9	3	3	3	3	12
10	3	3	3	3	12
11	3	3	2	3	11
12	3	3	2	3	12
13	3	3	3	3	11
14	3	3	2	3	11
15	3	3	2	3	11
16	3	3	3	3	12
17	3	3	2	3	11
18	3	3	3	3	12
19	3	3	3	3	12
20	3	3	2	3	11
21	3	3	3	3	12
22	3	3	2	3	11
23	3	3	2	3	11
24	3	3	2	3	11
25	3	3	2	3	11
26	3	3	2	3	11
27	3	3	2	3	11
28	3	3	2	3	11
29	3	3	2	3	11
30	3	3	2	3	12
31	3	3	3	3	12
32	3	3	3	3	12
33	3	3	3	3	12
34	3	3	3	2	10
35	3	3	3	3	12
36	3	3	3	2	10
37	3	3	3	3	12
38	3	3	2	3	11
39	3	3	2	2	10
40	3	3	2	2	10
41	3	3	2	0	8
42	3	3	2	3	11
43	3	3	2	2	10
44	3	3	2	2	10
45	3	3	2	3	12
46	3	3	2	3	10
47	3	3	2	2	10

Table VI-cont.

Case Number	IV Co-operation a Loyalty to employers and fellow workers	b Obedience	c Responsi- bility	d Punctu- ality	TOTAL
48	3	3	2	2	10
49	3	3	2	2	10
50	3	3	2	3	11
51	3	3	2	3	11
52	3	3	2	3	11
53	2	3	2	3	10
54	2	3	2	3	10
55	3	3	2	3	11
56	3	3	2	3	11
57	3	3	2	3	11
58	2	2	2	2	8
59	2	3	2	3	10
60	2	3	2	2	9
61	3	3	1	3	10
62	2	2	2	2	8
63	1	2	2	2	7
64	3	3	2	2	10
65	3	3	2	2	10
66	2	3	2	2	9
67	2	3	2	2	9
68	2	2	2	2	8
69	3	3	2	1	9
70	3	3	1	1	8
71	2	2	1	1	6
72	0	2	0	3	5

Table VI-cont.

Case V Economy of Time

Num- ber	a Efficiency	b Compet- ency	c Care- fulness	d Accura- cy	e In- dustry	TOTAL	TOTAL -----
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1	3	3	3	3	3	15	73
2	3	3	3	3	3	15	72
3	3	3	3	3	3	15	72
4	3	3	3	3	3	15	72
5	3	2	3	3	3	14	71
6	3	3	3	3	3	15	71
7	3	3	3	3	3	15	71
8	3	3	3	3	3	15	70
9	3	3	3	3	3	15	69
10	3	2	3	3	3	14	69
11	3	3	3	3	3	15	68
12	2	2	3	3	3	13	68
13	2	2	2	3	3	12	68
14	3	3	3	3	3	15	68
15	3	2	3	3	3	14	68
16	2	3	3	3	3	14	67
17	3	2	3	3	3	14	67
18	3	3	3	3	3	15	67
19	3	2	3	3	3	14	67
20	2	3	3	3	3	14	66
21	2	2	2	3	3	12	66
22	2	2	2	3	3	12	66
23	2	2	2	3	3	12	65
24	2	2	2	2	3	11	65
25	2	3	2	2	3	12	65
26	2	2	2	3	3	13	64
27	3	2	2	3	3	14	64
28	3	2	2	3	3	14	64
29	2	2	2	3	3	12	64
30	2	2	2	2	3	12	64
31	2	2	2	2	3	11	64
32	2	3	2	2	3	12	64
33	3	2	3	3	3	14	63
34	2	2	3	3	3	13	63
35	3	2	3	3	3	14	62
36	2	2	2	2	2	10	62
37	2	2	3	3	3	13	62
38	3	3	2	3	3	15	62
39	2	2	2	2	3	11	62
40	2	2	2	3	2	12	61
41	2	2	2	3	2	12	61
42	3	2	3	3	3	14	61
43	2	3	3	3	3	13	60
44	2	3	3	3	3	13	60
45	2	2	2	2	3	11	60
46	2	3	2	2	3	12	60
47	2	2	2	2	3	11	59



Table VI-cont.  
Case V Economy of Time

Num- ber	a Efficiency	b Compet- ency	c Care- fulness	d Accura- cy	e In- dustry	TOTAL	TOTAL -----
48	2	3	2	2	3	12	59
49	2	2	2	2	2	10	59
50	2	3	2	2	2	11	59
51	2	2	2	2	2	10	59
52	3	3	2	2	2	11	58
53	1	2	2	3	2	11	58
54	2	2	2	2	3	11	58
55	3	3	2	2	2	12	58
56	2	2	2	2	2	10	57
57	2	3	2	2	3	12	57
58	2	2	2	2	2	10	57
59	2	2	2	2	2	10	56
60	2	2	2	2	2	10	56
61	1	2	2	2	2	8	55
62	2	2	2	2	2	10	55
63	2	2	2	1	3	10	54
64	2	2	2	2	2	10	54
65	2	2	2	3	2	11	54
66	2	2	2	2	2	10	52
67	2	2	2	2	2	10	52
68	2	2	2	2	3	11	51
69	1	3	1	1	1	7	45
70	1	3	1	1	0	6	45
71	1	2	1	1	1	6	39
72	0	0	0	0	2	2	23

The data in Table VII are obtained from the scores of the tests given to the Junior Class of the Educational Department of Dayton Company, Minneapolis. These scores are the results of the tests scheduled in Chapter II, page It will be noted that the number of cases varies in the tests and that this experiment was carried over a number of weeks, and each week a great number of absences occur, so that the number of cases varies from test to test. In so far as possible make-up periods were given in such tests as it seemed possible for the results to have equal validity with the tests given at the first periods.

Table VII. Tabulation of Scores

Case Number	Trabue			Written Analogies			Oral Analogies			Directions		
	L	M	Both	A	B	Both	A	B	Both	A	B	Both
1	11	11	22	11	26	37	41	38	79	15	25	37
2	2	6	8	15	29	44	24	32	56	9	23	32
3	7	7	14	26	27	53	40	39	79	10	18	28
4	12	10	22	31	24	55	42	44	86	22	16	38
5	10	4	14	12	17	29	32	29	61	14	16	30
6	12	9	21	22	a	a	44	44	88	23	23	46
7	9	0	9	9	26	35	36	39	75	15	23	38
8	9	2	11	5	23	28	35	36	71	9	16	25
9	10	7	17	13	31	44	41	46	87	21	23	44
10	9	3	12	32	29	61	46	43	89	20	25	45
11	4	6	10	14	7	21	25	27	52	17	17	34
12	10	9	19	34	22	56	41	40	81	24	17	41
13	4	4	8	9	7	16	34	41	75	10	20	30
14	4	5	9	5	17	22	28	36	64	7	22	29
15	8	5	13	24	29	53	47	39	86	23	22	45
16	8	7	15	3	29	32	46	47	93	17	18	35
17	7	5	12	15	10	22	31	25	56	13	16	29
18	5	2	7	4	11	15	26	27	53	11	20	31
19	8	5	13	26	34	60	43	39	82	11	19	30
20	6	9	15	37	22	59	40	41	81	25	20	45
21	9	6	15	27	35	62	38	41	79	11	18	29
22	3	4	7	8	18	26	31	27	58	7	22	29
23	7	4	11	24	32	56	35	37	72	10	19	29
24	9	8	17	18	34	52	39	37	76	12	19	31
25	8	10	18	16	15	31	0	8	8	23	18	41
26	10	6	16	31	37	68	47	46	93	24	24	48
27	11	9	20	28	36	64	49	45	94	25	19	44
28	10	5	15	29	13	44	a	a	a	10	16	26
29	6	2	8	2	7	9	13	6	19	5	19	24
30	10	5	15	3	32	35	41	44	85	1	22	23
31	5	14	19	18	24	42	31	36	67	4	22	26
32	6	11	17	29	23	52	45	39	84	20	20	40
33	9	6	15	15	33	48	37	40	77	15	18	33
34	2	6	8	32	30	62	36	35	71	23	20	53
35	8	5	13	4	19	23	38	40	78	19	20	39
36	0	2	2	0	13	13	38	26	64	7	14	21
37	6	4	10	3	22	25	36	36	72	14	23	37
38	5	5	10	2	15	17	34	35	69	17	18	35
39	4	a	a	a	6	a	49	34	83	12	21	33
40	4	4	8	17	37	54	38	37	75	16	23	39
41	7	7	14	8	22	30	34	31	65	11	19	30
42	a	3	a	1	2	3	43	46	89	7	21	28
43	7	7	14	21	28	49	45	44	89	19	25	34
44	8	2	10	2	18	20	31	32	63	19	19	38
45	8	6	14	7	16	23	44	36	80	12	22	34
46	5	5	10	19	35	54	a	a	a	11	23	34
47	10	8	18	32	34	66	40	47	87	15	25	40

Table VII-cont.

Case Number	Trabue			Written Analogies			Oral Analogies			Directions		
	L	M	Both	A	B	Both	A	B	Both	A	B	Both
48	2	2	4	18	28	46	32	38	70	7	18	25
49	12	10	22	18	35	53	42	42	84	23	24	47
50	5	8	13	11	30	41	43	44	87	15	20	35
51	8	6	14	3	22	25	30	32	62	14	21	35
52	6	11	17	11	20	31	38	36	74	23	23	46
53	9	9	18	34	31	65	43	40	83	25	3	28
54	10	1	11	5	17	22	33	35	68	9	15	24
55	12	10	22	18	35	53	42	42	84	23	24	47
56	11	8	19	34	29	63	48	44	92	15	25	40
57	6	2	8	8	16	24	43	39	82	10	25	35
58	9	8	17	4	22	26	34	30	64	13	22	35
59	6	6	12	9	13	22	49	46	95	21	20	41
60	6	5	11	15	21	36	40	40	80	12	18	30
61	8	8	16	22	34	56	40	37	77	11	21	32
62	7	7	14	33	36	69	45	45	90	25	24	49
63	6	10	16	1	11	12	40	31	71	0	20	20
64	11	9	20	24	37	61	46	47	73	18	25	43
65	3	6	9	24	9	33	a	34	a	13	16	29
66	7	7	14	12	18	30	27	24	51	9	19	28
67	5	2	7	8	36	44	43	35	78	10	22	32
68	8	2	10	0	16	16	42	28	70	8	7	15
69	6	11	17	34	37	71	48	46	94	23	23	46
70	9	3	12	19	31	50	39	38	77	9	18	27
71	a	3	a	7	20	27	30	25	55	11	20	31
72	5	0	5	5	9	14	16	24	40	3	17	20

Table VII-cont.

Case Number	Arithmetic Problems			Number Completion			Spelling			Mechanical Arithmetic		
	A	B	Both	A	B	Both	A	B	Both	A	B	Both
1	4	2	6	21	19	40	57	58	115	54	45	99
2	6	3	9	19	16	35	37	33	70	50	40	90
3	4	3	7	23	24	47	56	59	115	43	42	85
4	4	4	8	21	23	44	59	a	a	50	57	107
5	2	2	4	9	7	16	56	59	115	31	20	51
6	a	1	a	18	23	41	60	a	a	42	39	81
7	3	5	8	9	17	26	49	a	a	56	44	100
8	3	2	5	a	a	a	a	59	a	40	39	79
9	4	4	8	18	23	41	59	58	117	35	25	60
10	6	6	12	16	23	39	42	47	89	33	38	71
11	3	1	4	13	12	25	55	57	112	34	36	70
12	3	1	4	19	24	43	60	a	a	27	37	64
13	5	3	8	12	17	29	53	56	109	35	24	59
14	6	4	10	22	20	42	52	55	107	51	40	91
15	4	5	9	23	24	47	57	54	111	41	32	73
16	5	2	7	17	21	38	56	52	108	35	34	69
17	4	3	7	7	13	20	54	57	111	45	49	94
18	3	3	6	9	12	21	42	38	80	53	32	85
19	4	3	7	24	24	48	55	55	110	44	40	84
20	a	3	a	23	22	45	59	59	118	34	57	91
21	6	5	11	25	25	50	59	59	118	53	35	88
22	4	2	6	10	14	24	32	35	67	35	29	64
23	a	5	a	22	21	43	52	55	107	44	31	75
24	5	3	8	14	22	36	59	60	119	34	31	65
25	7	3	10	23	19	42	50	a	a	15	33	48
26	a	8	a	24	22	46	58	59	117	60	49	109
27	5	4	9	22	23	45	50	52	102	41	38	79
28	4	2	6	a	a	a	a	a	a	34	29	63
29	a	3	a	2	11	13	37	53	90	30	10	40
30	5	5	10	25	20	45	59	57	116	15	30	45
31	3	3	6	12	11	23	28	30	58	39	32	71
32	5	2	7	12	23	35	53	54	107	26	26	52
33	4	4	8	10	13	23	44	a	a	26	20	46
34	3	1	4	22	15	37	59	59	118	22	53	75
35	4	2	6	13	12	25	55	58	113	39	17	56
36	3	2	5	10	13	23	46	a	a	44	42	86
37	0	4	4	12	20	32	57	59	116	35	29	67
38	a	3	a	16	6	22	33	40	73	38	31	69
39	5	2	7	12	16	28	42	44	86	25	a	a
40	3	2	5	20	20	40	52	54	106	42	33	75
41	1	2	3	10	4	14	47	47	94	19	21	40
42	a	2	a	14	21	35	55	52	107	32	34	66
43	6	2	8	16	22	38	59	58	117	50	46	96
44	3	2	5	0	6	6	51	58	109	44	21	65
45	4	1	5	12	16	28	42	a	a	42	28	70
46	4	3	7	23	26	49	35	34	69	32	20	52
47	7	6	13	18	22	40	48	50	98	30	29	59

Tabel VII-cont.

Case Number	Arithmetic Problems			Number Completion			Spelling			Mechanical Arithmetic		
	A	B	Both	A	B	Both	A	B	Both	A	B	Both
48	4	3	7	24	14	38	45	51	96	40	28	68
49	3	3	6	15	18	33	55	60	115	48	43	91
50	a	3	a	14	25	39	52	a	a	24	21	45
51	4	3	7	12	11	23	57	58	115	46	36	82
52	6	2	8	12	13	25	44	37	81	24	33	57
53	5	6	11	24	24	48	56	a	a	36	52	88
54	4	2	6	0	5	5	44	48	92	30	26	56
55	3	3	6	15	18	33	55	60	115	48	43	91
56	5	7	12	16	24	40	53	a	a	35	36	71
57	4	3	7	14	12	26	58	58	116	53	46	99
58	2	3	5	19	19	38	45	47	92	27	19	46
59	2	4	6	16	20	36	58	58	116	25	15	40
60	4	3	7	11	14	25	42	a	a	38	35	73
61	5	0	5	13	20	33	40	54	94	32	32	64
62	3	4	7	13	12	25	55	60	115	50	44	94
63	0	3	3	10	14	24	59	59	118	33	52	85
64	4	2	6	15	23	38	58	a	a	46	19	65
65	2	2	4	12	a	a	46	54	100	31	41	72
66	5	3	8	22	22	44	59	a	a	34	44	78
67	4	3	7	23	23	46	43	54	97	56	47	103
68	6	2	8	19	19	38	22	29	51	43	36	79
69	6	5	11	24	24	48	59	58	117	42	44	86
70	5	4	9	21	20	41	22	25	47	38	24	62
71	a	a	a	14	13	27	24	39	63	27	17	44
72	1	1	2	3	9	12	48	48	96	32	34	66

Table VII-cont.

Case Num- ber	Learning			Vocabulary Test	Reading	Traits (Total)
	A	B	Both	A	A	
1	74	74	148	34	9	73
2	70	a	a	18	a	72
3	44	46	90	20	8	72
4	77	a	a	27	a	72
5	54	45	99	25	8	71
6	a	a	a	a	a	71
7	54	47	101	20	12	71
8	74	64	138	26	7	70
9	64	53	117	28	9	69
10	58	61	119	26	7	69
11	44	35	79	25	10	68
12	a	a	a	a	a	68
13	75	65	140	17	2	68
14	35	43	78	25	4	68
15	71	64	135	29	7	68
16	39	43	82	22	6	67
17	61	48	109	16	0	67
18	41	50	91	19	2	67
19	45	47	92	27	6	67
20	44	a	a	23	7	66
21	78	73	151	28	a	66
22	46	48	94	14	0	66
23	a	35	a	a	3	65
24	51	47	98	20	7	65
25	56	51	107	22	6	65
26	61	59	120	26	9	64
27	51	65	116	30	7	64
28	38	38	76	14	4	64
29	42	48	90	20	a	64
30	75	66	141	29	6	64
31	58	a	a	20	9	64
32	56	72	128	29	5	64
33	43	a	a	21	a	63
34	48	38	86	25	11	63
35	59	46	105	21	3	63
36	a	a	a	a	0	62
37	a	a	a	22	10	62
38	54	44	98	15	3	62
39	37	38	75	19	4	62
40	64	45	109	21	2	61
41	43	41	84	31	6	61
42	a	a	a	a	0	61
43	67	47	114	32	4	60
44	46	49	95	13	4	60
45	44	a	a	22	a	60
46	a	a	a	23	7	60
47	52	44	96	28	9	60

Table VII-cont.

Case Num- ber	Learning			Vocabulary Test	Reading	Traits (Total)
	A	B	Both	A	A	
48	41	46	87	20	a	59
49	65	63	128	a	5	59
50	a	a	a	a	a	59
51	44	40	84	a	5	59
52	52	36	88	29	9	58
53	45	a	a	27	a	58
54	44	30	74	21	5	58
55	65	63	128	17	a	58
56	60	a	a	34	a	57
57	73	76	149	20	5	57
58	54	45	99	23	11	57
59	45	a	a	26	8	56
60	46	52	98	15	5	56
61	45	a	a	12	a	55
62	71	72	143	31	8	55
63	a	a	a	26	5	54
64	60	55	115	33	10	54
65	59	a	a	15	a	54
66	54	33	87	22	a	52
67	63	43	106	17	11	52
68	75	75	150	27	11	51
69	45	a	a	34	a	45
70	49	42	91	11	4	45
71	a	a	a	27	a	39
72	a	a	a	16	0	23



The following table has been worked out to show the relative standing of each subject in each test and in the combination of traits.

a = those cases in the first quarter of the group

b = those cases in the second quarter of the group

c = those cases in the third quarter of the group

d = those cases in the lower quarter of the group

Table VIII.

Division into Quartiles

Case Number	Trabue	Written Analogies	Oral Analogies	Directions	Arithmetic Problems	Number Completion	Spelling
1	a	c	b	b	cd	b	ab
2	d	b	d	c	a	b	d
3	bc	b	b	d	bc	a	ab
4	a	ab	a	b	ab	a	-
5	bc	c	d	c	bc	a	ab
6	a	-	a	a	-	b	-
7	d	c	c	b	ab	c	-
8	c	c	c	d	d	-	-
9	ab	b	a	a	ab	b	a
10	c	a	a	a	a	b	d
11	cd	d	d	b	d	cd	b
12	a	a	b	a	d	a	-
13	d	d	c	c	ab	c	b
14	d	d	d	cd	a	b	c
15	c	b	a	a	a	a	b
16	b	c	a	b	bc	b	b
17	c	cd	d	cd	bc	d	b
18	d	d	d	c	cd	d	d
19	c	a	b	c	bc	a	b
20	b	a	b	a	-	a	a
21	b	a	b	cd	a	a	a
22	d	c	d	cd	cd	d	-
23	c	a	c	cd	a	a	c
24	ab	a	c	c	ab	c	a
25	a	c	d	a	a	b	-
26	b	a	a	a	-	a	a
27	a	a	a	a	a	a	c
28	b	b	-	d	cd	-	-
29	d	d	d	d	-	d	d
30	b	c	a	d	a	a	d
31	a	a	c	d	cd	d	d
32	ab	c	b	a	bc	c	e
33	b	b	b	c	ab	d	-
34	d	a	c	a	d	b	a
35	c	d	b	b	cd	cd	b
36	d	d	d	d	d	d	-
37	cd	cd	c	b	d	c	a
38	cd	d	c	b	-	d	d
39	-	-	b	c	bc	c	d
40	d	b	c	b	d	b	c
41	bc	c	d	c	d	d	c
42	-	d	a	d	-	c	c
43	bc	b	a	b	ab	b	a
44	cd	d	d	b	d	d	b
45	bc	d	b	b	d	c	-
46	cd	b	-	b	bc	a	d
47	a	a	a	a	a	b	c

Table VIII-cont.

Case Number	Trabue Analogies	Written Analogies	Oral Analogies	Directions	Arithmetic Problems	Number Completion	Spelling
48	d	b	c	d	bc	b	c
49	a	a	b	a	cd	c	ab
50	c	b	a	b	-	b	-
51	bc	cd	d	b	bc	d	ab
52	ab	c	c	a	ab	cd	d
53	a	a	c	d	a	a	-
54	-	d	c	d	cd	d	cd
55	a	b	b	a	cd	c	ab
56	a	a	a	a	a	b	-
57	d	d	b	b	bc	c	a
58	ab	c	d	b	d	b	cd
59	c	d	a	a	cd	c	a
60	c	b	b	c	bc	cd	-
61	b	a	b	c	d	c	c
62	bc	a	a	a	bc	cd	ab
63	b	a	c	d	d	d	a
64	a	a	c	b	cd	b	-
65	d	c	-	cd	d	-	c
66	bc	c	d	d	ab	a	-
67	d	b	b	c	bc	a	cd
68	cd	d	c	d	ab	b	d
69	ab	a	a	a	a	a	a
70	c	b	b	cd	a	b	d
71	-	c	d	c	-	c	d
72	d	d	d	d	d	d	c

Table VIII-cont.

Case Number	Mechanical Arithmetic	Learning	Vocabulary Test	Reading	Traits (Total)
1	a	a	a	ab	a
2	a	-	d	-	a
3	a	c	c	b	a
4	a	-	b	-	a
5	d	bc	b	b	a
6	b	-	-	-	a
7	a	b	c	a	a
8	b	a	b	b	a
9	c	b	a	ab	a
10	bc	b	b	b	a
11	c	d	b	a	a
12	c	-	-	-	a
13	cd	a	d	d	a
14	a	d	b	cd	a
15	b	a	a	b	a
16	c	a	c	bc	ab
17	a	b	d	d	ab
18	b	c	d	d	ab
19	b	c	b	bc	ab
20	a	-	bc	b	b
21	a	a	a	-	b
22	c	c	d	d	b
23	b	-	-	d	b
24	c	d	c	b	b
25	d	c	c	bc	b
26	a	ab	b	ab	b
27	b	b	a	b	b
28	c	d	d	cd	b
29	d	c	c	-	b
30	d	a	a	bc	b
31	bc	a	c	ab	b
32	d	a	a	c	b
33	d	a	c	-	b
34	b	a	b	a	b
35	d	b	c	d	b
36	ab	-	-	d	bc
37	c	c	c	a	bc
38	c	c	d	d	c
39	-	a	d	d	c
40	b	a	c	bc	c
41	d	a	a	d	c
42	c	b	a	d	c
43	a	c	a	cd	c
44	c	c	c	-	c
45	c	c	bc	b	c
46	d	c	a	ab	c
47	cd	c	a		

Table VIII-cont.

Case Num- ber	Mechanical Arithmetic	Learning	Vocabulary Test	Reading	Traits (Total)
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48	c	d	c	c	c
49	a	a	-	c	c
50	d	-	-	-	c
51	b	d	a	-	c
52	d	cd	a	ab	cd
53	a	-	b	-	cd
54	d	d	c	c	cd
55	a	a	d	-	cd
56	bc	-	a	-	d
57	a	a	c	c	d
58	d	bc	bc	a	d
59	d	-	b	b	d
60	b	c	d	c	d
61	a	-	d	-	d
62	a	a	a	b	d
63	b	b	b	c	d
64	cb	b	a	a	d
65	bb	-	d	-	d
66	ba	b	c	a	d
67	a	a	d	a	d
68	b	a	b	a	d
69	ab	-	a	-	d
70	cd	c	d	cd	d
71	dc	-	c	a	d
72	c	-	a	-	d

Table VII places the cases into quartiles of retention, named for convenience by the letters a-b-c-d to indicate the first, second, third and fourth quartiles respectively. The combinations ab, bc, or cd indicate that such cases are on the border-line of median cases and belong in either quartile, that is, for instance, if the combination is ab, the cases may belong to the lower part of the first quartile or the upper part of the second quartile.

From this Table VII it is concluded that there is a much closer tendency for all the tests to place the individual in the same quartile, than there is for the judgments of the supervisors and the tests to place the cases in the same quartile.

For instance, there are many cases which stand in the quartiles above the median of the group in the tests, who have been placed in the lowest quartiles in the traits. Some of these cases have been explained in detail by the supervisors as cases where the salesperson is very high in intelligence and ability, but whose interest or attention is diverted from the work. Cases 62, 64 and 54 are examples of this type.

On the other hand, we find case 14, to stand in the fourth quartile in Trabue Tests, Written Analogies and Learning, and Oral Analogies, in cd in the Direction Tests and in Reading, but in a quartile in Arithmetic Problems, in b quartile in Number Completion Tests, c in Spelling, a in Mechanical Arithmetic and in the a quartile in traits. In short, she stands in the d quartile

In four tests, cd in two tests, a in two tests, b in two tests and c in one test. In the store she is succeeding in the toy department.

Two assumptions may be made in this case: first, that she is a salesperson who will succeed in selling through her pleasing personality, willingness to try to please the customer; second, she is a salesperson who is not able to face new situations where she would be obliged to act on her own responsibility. Therefore, it seems to be one explanation for her present success.

The following table is derived from the original scores in Table by the use of the revised form of the Pearson Products moments formula, as given in Thorndike. This formula is as follows:  $r = \frac{\sum xy - nd_1d_2}{n \sigma_1 \sigma_2}$  or  $r = \frac{\sum xy - nd_1d_2}{n \sqrt{\frac{\sum x^2 - d_1^2}{n}} \sqrt{\frac{\sum y^2 - d_2^2}{n}}}$

In this formula  $\sum xy$  is the sum of the products of deviations for test A and deviations of test B, minus the deviations of test A times the deviations of test B, divided by the number of cases times the standard deviation of test A, times the standard deviation of test B. This is the best method of correlation to use when the experiment includes fifty cases or more, if the data is accurate.

Table IX.  
Correlation between Companion Tests.

Tests	r
Trabue Language-Completion L and M	.26
Written Analogies A and B	.58
Oral Analogies C and D	.75
Number Completion A and B	.68
Mechanical Arithmetic A and B	.52
Learning Test A and B	.86
Spelling A and B	.65



By the use of Brown's formula  $r_2 = \frac{nr}{1 + (n-1)r}$  one may determine how much longer the test would have to be to get a good correction. It is one method of finding out how to improve the test. For instance, in the case of two written analogies tests the correlation between them was .58. We may use Brown's formula to determine how much longer the test should have been to get a higher correlation. If we should try to double the length of the test, we can foretell about what correlation can be expected as follows:  $n$  will equal 2 (two tests),  $r$  will equal the first correlation between the analogies tests or .58. Then,  $r_2 = \frac{2(.58)}{1 + (2-1)(.58)} = .72$

Now, we may see that by doubling the original length of the test the correlation would be raised from .58 to .72. If the original length were made three times as long, the correlation would be as follows:  $r_3 = \frac{3(.58)}{1 + (3-1)(.58)} = .81$

The following table contains the obtained average and standard deviation of the single and combined tests. These data are derived from the original scores. The method used in this calculation is described in detail on page 74.

Table X.

	Obtained Average	Standard Deviation
Trabue L	7.5	2.6
M	6.01	2.6
Both	12.94 <sup>±</sup> 1.36	4.36
Written A	15.8	10.6
Analogyes B	23.7	9.2
Both	38.94 <sup>±</sup> 1.43	17.83
Oral A	37.5	8.03
Analogyes B	38	7.5
Both	73.3 <sup>±</sup> 1.37	16.59
Directions A	14.5	6.21
B	19.9	3.8
Both	48.62 <sup>±</sup> 1.62	7.68
Arithmetic A	3.81	1.26
Problems B	2.9	1.5
Both	7.12 <sup>±</sup> 2.07	2.4
Number A	17.85	5.6
Completion B	15.6	6.3
Both	33.51 <sup>±</sup> 1.91	11.
Spelling A	51.44	9.6
B	51.9	8.5
Both	98.52 <sup>±</sup> 1.85	20.36
Mechanical A	33.6	10.6
Arithmetic B	37.4	9.64
Both	71.66 <sup>±</sup> 1.39	17.28
Learning A	53.8	9.9
B	51.8	12.
Both	105.48 <sup>±</sup> 1.85	22.82
Vocabulary Test A	54.	11.3
Reading A	6.02	3.36

Table X.

"Nothing short of the entire distribution table is a complete measure of a variable fact, but two features of such distribution are of special importance: first, the central tendency or typical performance or amount about which central measures cluster, if there is such; second, the variability or dispersion of the separate measures around their central tendency."--

It must be noted that the average is not necessarily the individual's typical performance, but that the average is the measure of central tendency in most common use and represents the typical measure of the set only when there is but one typical measure and when the set of measures are symmetrically disposed about it. --

The mean square deviation suffices to summarize the variability of the separate measures about their tendency.--

Thus, in this table we have two sets of facts for each set of tests given. There is for each test the measure which indicates the central tendency, and there are the figures representing the variability from this central tendency. For instance, it may be seen in Table X that the central tendency in the Trabue Test

H. L. Thorndike, p. 36

H. L. Thorndike, p. 37

H. L. Thorndike, p. 39

L is 7.5, in Trabue Test M is 6.01. and for the combined Trabue Tests  $12.94 \pm .36$ . In Trabue L the variability from this central tendency, 7.5, is 2.6; in Trabue M the variability from the central tendency, 6.01, is 2.6; in the combined Trabue Tests the variability from the central tendency,  $12.94 \pm .36$ , is 4.36. Those tests which have the least variability from the central tendency are : Arithmetic Problems, Reading, and the Trabue Tests.

This table will serve as a means of comparing the central tendency of this Junior Group in this series of tests with another group when given the same tests.

The following tables contain the average, standard deviation and number of the single tests and combined companion tests. These computations were figured in the following manner:

(1) For the obtained average:

The guess average for the test was found. After the deviations from the G. A. were recorded and the sum of the plus and minus differences recorded, this sum was divided by the number of cases in the test for the deviation from its true average. This d, or deviation from true average, was added or subtracted from the true average, as the case demanded, from calculating whether the G. A. had been too high or too low.

(2) For Standard Deviation:

Sum of the squares of the deviations from G. A. were calculated and divided by the number of cases. From this result, the deviation of the G. A. from the true average squared was subtracted. The square root of this result gives the standard deviation. The formula stands as follows:  $\sqrt{\frac{\sum f^2}{n} - d^2}$

(3)  $\sum f^2$  stands for the sum of the squares of the deviations from the G. A., as described in (2).

Table XI.

S i n g l e T e s t s

Tests	Tra- bue L	Tra- bue M	Analo- gies (Miller)	Analo- gies (Hunter)	Oral Analo- gies B	Oral Analo- gies C	Reading (Thomas)
Obtained average	7.5	.01	15.8	23.7	37.5	38	6.02
Sum of devia- tions squared	.611	.475	8204	6756	4739	.4032	547
Sigma	.2.6	.2.6	10.6	9.2	8.03	7.5	3.36
Number of cases	68	68	69	69	67	67	54

S i n g l e T e s t s

	Arith- metic Prob- lems A	Arith- metic Prob- lems B	Number Comple- tion A	Number Comple- tion B	Spelling A	Spelling B
Obtained average	3.89	2.9	17.85	15.61	51.44	51.9
Sum of devia- tions squared	117	218	2661	2651	6505	4340
Sigma	1.26	1.5	5.6	6.3	9.6	8.5
Number of cases	49	61	67	67	68	57

Table XI-cont.

Single Tests

	Mechanical Arithmetic A	Mechanical Arithmetic B	Learning Test A	Learning Test B	Vocabulary Test A	Directions Test A	Directions Test B
Obtained average	33.6	37.4	53.8	51.8	54	14.25	69.9
Sum of deviations squared	8218	7023	10935	7137	8816	3241	1022
Sigma	10.6	9.64	9.9	12	11.3	6.58	3.8
Number of cases	71	71	63	49	63	67	69

Combined Tests

	True Anal-ogies	Written Anal-ogies	Oral Anal-ogies	Arithmetic Problems	Number Com-ple-tion	Spelling	Mechanical Arithmetic	Learning Test
Obtained average	12.94 + .356±	38.94 + 1.43±	73.3 + 1.37±	7.12 + .207±	33.51 + .906±	98.52 + 1.85±	71.66 + 1.39±	105.48 + 1.85±
Sum of deviations squared	1334	21701	1838	407	8511	22524	208.99	27557
Sigma	4.36	17.83	16.59	2.4	11	20.36	17.28	22.82
Number of cases	68	69	67	61	67	55	70	50



This table contains the scores transmuted into terms of the standard deviation.

The data contained in this table are derived from the original scores in Table VII by dividing each score by the standard deviation for the test or combined tests where two similar tests were combined. Since these scores are reduced to the same basis, namely, the variability of the group, they may be directly compared.

Table XII.

Case Number	Trabue	Written Analogies	Oral Analogies	Arith-metic Problems	Number Comple-tion	Spelling	Mechan-ical Arithme-tic
1	2.08	- .66	.32	- .51	- 1.95	.809	1.58
2	- 1.13	- .28	- 1.04	.74	.41	- 1.40	1.06
3	.24	- .66	.32	- .09	.32	.81	.77
4	2.08	.90	.76	.33	.59	----	1.64
5	.24	- .56	- 1.28	- .09	- .05	.81	- 1.20
6	1.85	----	.88	---	- 1.85	---	.54
7	.47	- .22	.10	.33	.41	---	.37
8	- .44	- .95	.13	- .93	----	---	- .56
9	.95	.28	.82	.33	.68	.91	- .68
10	- .22	1.23	.94	1.99	.50	- .47	- .00
11	- .67	- 1.00	- 1.28	1.99	1.04	.66	- 1.00
12	1.39	.95	.43	- 1.34	.23	---	- .44
13	- 1.13	- 1.23	.40	.33	.40	.51	- .73
14	- .90	- .95	- .56	- .09	1.41	.41	.71
15	.01	.79	.76	.74	1.23	- .76	.01
16	.47	- .38	1.18	- .09	.41	.46	- .37
17	- .22	- .78	- 1.04	---	.41	.61	- 1.29
18	- 1.36	- 1.34	- 1.16	- 1.76	- .41	- .91	- 1.83
19	.01	1.18	.52	- .09	1.14	.56	- .15
20	.70	1.11	.43	---	- 1.59	.91	1.11
21	.47	1.27	.32	- 1.58	- .68	.90	- .38
22	- .22	- .73	- .92	- .51	.59	-1.55	- .17
23	- .44	.95	.08	----	.95	.41	.19
24	1.16	- .45	- 3.33	1.16	.772	---	- 1.37
25	.95	1.21	.16	.33	- .50	2.01	.01
26	.70	1.63	1.18	---	.23	.91	2.16
27	- 2.05	1.41	1.24	.74	1.05	.17	.42
28	.47	- 1.40	---	.51	----	----	- .50
29	- 1.13	- 1.68	- 3.27	----	- 2.50	- .41	- 1.83
30	.47	- .22	.70	1.16	.68	.86	.19
31	1.16	.17	- 1.28	- .51	1.14	-1.99	.95
32	.95	- .38	.62	- .09	1.50	.41	.42
33	1.47	.51	.22	.74	- .96	---	- 1.48
34	- 1.13	1.27	.13	- 1.34	.14	.91	.19
35	.01	- .33	.28	- .50	.14	.71	1.11
36	- 2.51	- 1.45	- .56	- .93	1.64	---	.95
37	- .67	- .79	- .08	- 1.34	.14	.86	- 1.48
38	- .67	- 1.23	- .26	---	- 1.05	- 1.40	1.23
39	----	---	.58	- .09	- .50	- 1.60	---
40	- 1.13	.84	.10	- .93	.59	.38	.19
41	.24	- .50	- .50	- 1.76	- .96	- .22	- 1.14
42	---	- 2.01	.94	---	- 1.77	- 1.45	- 1.13
43	.24	.56	.94	.33	.41	.91	1.40
44	- .67	- 1.06	- .62	- .93	.59	.51	- .96
45	.24	- .89	.40	- .93	- .96	---	- 1.00
46	- .67	.84	---	.09	.14	- 1.45	- .44
47	1.16	1.57	.82	2.41	1.64	- .03	- .74

Table XII-cont.

Case Number	Trabue	Written Analogies	Oral Analogies	Arithmetic Problems	Number Completion	Spelling	Mechanical Arithmetic
48	- 2.05	.36	- .19	.09	.86	- .12	- .21
49	.47	.22	---	- .51	---	- .76	- 1.43
50	.01	.11	.82	---	.50	---	1.54
51	.24	- .78	- .68	- .09	- .96	.81	.60
52	.95	- .45	.64	.33	- .77	- .71	- .85
53	1.16	1.46	.04	1.99	- 2.59	- .32	.95
54	- .44	- .95	- .34	- .51	1.23	---	- .90
55	2.08	1.79	.64	- .51	- .05	.81	1.12
56	- 1.13	- .84	.52	.09	- .68	.86	1.58
57	1.39	1.34	1.12	1.99	- 1.05	---	- .00
58	.93	.73	- .56	- .93	- .77	- .22	- 1.48
59	- .22	- .95	1.30	- .51	.23	.86	- 1.83
60	- .84	- .16	.40	---	- .77	- 1.74	.08
61	.70	.95	.22	- .93	- .85	- .22	- .44
62	.24	1.69	1.00	- .51	- .77	.81	1.29
63	.70	- 1.51	- .13	- 1.76	1.23	.91	.77
64	1.62	.23	1.18	- .09	.59	---	- .38
65	- .90	- .33	---	.33	---	- .08	.02
66	.95	.24	- .50	.33	- 1.23	---	- .00
67	- 1.36	.28	.28	- .09	1.14	.81	1.87
68	- .67	- 1.23	- .19	.33	- .68	- 2.33	.42
69	.95	1.80	1.24	1.58	1.32	.91	.07
70	- .22	.62	.22	.74	- 1.14	- 2.53	- .02
71	---	.66	- 1.10	---	- .59	---	.11
72	- 1.82	- 1.39	- 2.00	- 2.18	.86	- .12	- .33

Table XII-cont.

Case Num- ber	Traits 1 Personality	2 Knowledge of Business	3 Co-opera- tion	4 Economy of Time	5 Total
1	1.78	.86	.31	1.22	1.46
2	1.24	.86	.99	1.22	1.34
3	1.24	.86	.99	1.22	1.34
4	1.24	.86	.99	1.22	1.34
5	1.51	.86	.99	.81	1.21
6	.97	.86	.99	1.22	1.21
7	.97	.86	.99	1.22	1.21
8	1.24	.86	-.36	1.22	1.09
9	.44	.86	.99	1.22	.97
10	.70	.86	.99	.81	.97
11	.17	.86	.99	1.22	.84
12	.97	.86	.31	.41	.84
13	.97	.86	.99	.00	.84
14	.44	.86	.31	1.22	.84
15	.70	.86	.31	.81	.84
16	.44	.86	.31	.81	.72
17	.44	.13	.99	.81	.72
18	.70	.13	.31	1.22	.72
19	.17	.86	.99	.81	.72
20	.17	.13	.99	.81	.59
21	.97	.13	.31	.00	.59
22	.70	.13	.99	.00	.59
23	.97	.13	.31	.00	.46
24	1.24	-.59	.31	-.41	.46
25	.97	-.59	.31	.00	.46
26	.17	.86	.31	.41	.34
27	-.10	.13	.31	.81	.34
28	-.10	.86	.31	.81	.34
29	.44	.13	.31	.00	.34
30	.44	.13	.31	.00	.34
31	.44	.13	.99	-.41	.34
32	-.10	.86	.99	.00	.34
33	-.10	.86	.99	.81	.22
34	-.37	.86	.99	.41	.22
35	-.10	.86	-.36	.81	.22
36	.17	.13	.99	-.81	.09
37	-.37	.86	-.36	.41	.09
38	-.91	.86	.99	1.22	.09
39	.17	.13	.31	-.41	.09
40	.17	-.59	-.36	.00	-.03
41	-.10	.13	-.36	.00	-.03
42	-.10	.86	-1.70	.81	-.03
43	-.64	.13	.31	.00	-.15
44	-.37	.13	-.36	.41	-.15
45	-.10	.86	-.36	.41	-.15
46	-.64	.13	.99	.00	-.15
47	.70	-1.31	-.36	-.81	-.15

Table XII-cont.

Case Num- ber	Learning	Vocabulary Test	Reading Test	Directions Test A (W.W.)	Directions Test B (Hunter)
48	- .33	- 1.05	- .3	- .49	- .52
49	---	- .68	---	- .49	.52
50	.02	1.36	- .3	.87	.003
51	- .77	1.20	.89	- .80	.26
52	---	.89	---	- .80	.76
53	---	.42	- .3	- 1.1	- 4.42
54	- .42	- .53	.87	- .49	- 1.3
55	.94	.57	---	- 1.1	1.04
56	1.91	.42	- .3	.72	1.3
57	- .28	- 1.78	---	- .04	1.3
58	- .28	- 1.14	1.3	- 1.1	.52
59	---	1.67	.59	- .49	.003
60	---	.89	- .3	.42	- .52
61	---	.57	---	- .34	.26
62	.99	1.31	.59	1.33	1.04
63	---	- .37	- .3	- .80	.003
64	.42	- .53	1.18	- .34	1.3
65	---	- 1.31	---	.49	- 1.04
66	- .81	.42	---	1.64	- .26
67	---	.42	1.3	1.33	.52
68	1.95	- .53	1.3	- .04	- 3.38
69	---	---	---	.65	.78
70	---	- .68	- .6	.11	- .25
71	1.64	---	---	---	.003
72	---	- .53	- 1.79	- .19	- .78

Table XII-cont.

Case Num- ber	Learning	Vocabulary Test	Reading Test	Directions Test A (W.W.)	Directions Test B (Hunter)
1	1.73	---	.89	1.33	1.3
2	-.85	.57	---	1.01	.37
3	-1.38	1.03	.59	.72	-.52
4	---	---	---	---	-1.04
5	---	1.67	.59	1.33	-1.04
6	---	.73	---	1.01	.26
7	-.20	-1.14	1.78	.27	.78
8	-.63	1.20	---	1.33	-1.04
9	.51	.73	.29	.11	.78
10	.59	-1.47	.87	1.64	1.3
11	-1.16	---	.29	-.65	.78
12	---	.10	1.18	.87	.78
13	1.15	1.67	---	-.65	.003
14	-.59	-.21	-1.2	-.95	.52
15	---	-1.31	-.6	-.80	.52
16	1.03	-1.00	.29	1.33	-.52
17	.15	1.52	-.006	-.65	-1.04
18	.99	-.53	-1.79	-.80	.003
19	-.33	-.37	-1.2	-2.16	-.26
20	---	---	.006	1.64	.003
21	-.63	.42	.29	-.49	-.52
22	---	---	---	.11	-.26
23	---	-.21	-1.79	-.04	-.26
24	.16	-.37	-.9	---	-.52
25	-.33	.89	.29	.12	-.26
26	.64	-.21	-.006	.11	1.04
27	.46	-.37	.89	-1.1	-.26
28	-.29	1.05	.29	1.33	-1.04
29	-.68	-1.62	-.6	1.18	-.26
30	1.56	.57	---	-.34	.52
31	1.99	-.53	-.006	2.01	.52
32	1.43	-.68	.89	-.65	.003
33	.07	-.21	-.3	-.34	-.52
34	-.68	-.84	1.3	.42	.003
35	-1.20	-1.47	-.9	-1.71	.003
36	---	.53	-1.79	1.48	-1.56
37	-.02	.05	1.18	-.19	.78
38	-1.34	.10	-.89	-.04	-.52
39	1.29	.57	-.6	-1.1	.26
40	.34	.42	-1.19	-.65	.78
41	.99	.73	-.006	.57	-.26
42	-1.91	.42	-1.79	.42	.26
43	.37	1.36	-.6	-.19	1.3
44	-.50	.10	-.6	1.18	-.26
45	---	---	---	.11	.52
46	-.50	1.94	.29	.80	.76
47	-.81	.05	---	-1.56	1.3

Table XII-cont.

Case Number	Traits	1	2	3	4	5
	Personality	Knowledge of Business	Co-operation	Economy of Time	Total	
48	- .10	- .59	- .36	.00	- .28	
49	.70	- 1.31	- .36	- .81	- .28	
50	- .64	.86	.31	- .41	- .28	
51	- .10	- .59	.31	- .81	- .28	
52	- .37	- .59	.31	- .41	- .40	
53	- .37	- .59	- .36	- .41	- .40	
54	▼ .37	.13	- .36	- .41	- .40	
55	- .10	- 2.04	.31	.00	.40	
56	- .91	.13	.31	- .81	- .53	
57	1.69	.86	.31	.00	- .53	
58	.70	- 1.31	- 1.70	- .81	- .53	
59	- .37	- 1.31	.36	- .81	- .65	
60	- .37	- .59	- 1.03	- .81	- .65	
61	- .10	- .59	- .30	- 1.63	- .78	
62	- .37	- .59	- 1.70	- .81	- .78	
63	- .64	.13	- 2.37	- .81	- .90	
64	- .64	- 1.31	- .36	- .81	- .90	
65	- 1.18	- .59	- .36	- .41	- .90	
66	- .64	- 1.31	- 1.03	.00	- 1.15	
67	- 1.18	- .59	- 1.03	- .81	- 1.15	
68	- 1.69	.13	- 1.70	- .41	- 1.27	
69	- 2.25	- .59	- 1.03	- 2.03	- 2.02	
70	- .91	- 2.76	- 1.70	- 2.44	- 2.02	
71	- 1.69	- 3.47	- 3.05	- 2.44	- 2.76	
72	- 4.94	- 3.49	- 3.72	- 4.07	- 4.75	

Table XII is so arranged that the standing of case 1 may be compared in one test with any other case in that test, or so that the standing of case one in the Trabue Test may be compared with the standing of this case in any other test. For instance, if case 1 stands 2.08 above the central tendency of her group in the Trabue Test, this case may be compared with all the other cases in this test until it is seen that no other case obtains a higher score in this test, although two other cases gain the same score. Since case 1 stands 2.08 in the Trabue Test, it is desirable to compare her standing in other language tests. From these comparisons may be made. Taking case 1 as an example in this type too, it will be seen that she stands .81 above the average in the spelling test, and .32 in the Oral Analogies Test, both of which bear some relation to language ability. On the other hand, case 1 stands -.51, or below her group in the Arithmetic Problems Test. This test may be compared to others as above described. Thus, this table provides a means for detailed comparisons of tests with tests and cases with other cases.

These fractional parts of S. D. are also comparable with the standing in the traits. The cases are arranged in order of the rank received on the judgments of the supervisors. Therefore, in summary, this table shows:

1. Those cases which stand above the median in the traits do not stand above the median in every test. No single test has every individual in the upper 50 o/o of the test who stands in the upper 50 o/o in the traits; and no single test has every case in the lower 50 o/o in the traits which is in the lower 50 o/o of the traits. In other words, every test contains some cases which stand above in



the test and below in traits, and some cases which are below in the test yet above in the traits. It might be assumed that those tests which place the greater number in the same quartile as the judgments of the supervisors have placed them have more vocational significance than the other tests.

The following table contains the average of the sum of the fractions of sigma of five intelligence tests named below.

- (1) Trabue L and M; (2) Number Completion A and B;
- (3) Oral Analogies C and D; (4) The Thomas Reading Test;
- (5) Direction Test A.

Table XIII.

In column 2 this table lists the average of the sum of the fractions of sigma in the traits as scored by the supervisors.

	1	2		1	2
1	.26	1.46	36	-.86	.09
2	-.51	1.34	37	.11	.09
3	.16	1.34	38	-.49	.09
4	1.15	1.34	39	-.22	.09
5	-.11	1.21	40	-.27	-.03
6	.55	1.21	41	-.39	-.03
7	.57	1.21	42	-.74	-.03
8	.46	1.09	43	-.34	-.15
9	.75	.97	44	-.12	-.15
10	.22	.97	45	-.15	-.15
11	-.004	.84	46	-.18	-.15
12	.94	.84	47	.92	-.15
13	-.2	.84	48	-.62	-.28
14	-.47	.84	49	-.21	-.28
15	.55	.84	50	.13	-.28
16	.55	.72	51	-.35	-.28
17	-.21	.72	52	.49	-.40
18	1.04	.72	53	.06	-.40
19	-.014	.72	54	-.13	-.40
20	.24	.59	55	1.	-.40
21	-.02	.59	56	.004	-.53
22	-.41	.59	57	.32	-.53
23	-.03	.46	58	.15	-.53
24	-.40	.46	59	.58	-.65
25	.11	.46	60	-.29	-.65
26	.72	.34	61	.11	-.78
27	.55	.34	62	.54	-.78
28	.04	.34	63	.13	-.90
29	1.7	.34	64	1.03	-.90
30	.03	.34	65	-.36	-.90
31	-.11	.34	66	-.40	-1.15
32	.97	.34	67	.14	-1.15
33	.31	.22	68	-.24	-1.27
34	.30	.22	69	1.21	-2.02
35	.05	.22	70	-.42	-2.02
			71	-.33	-2.76
			72	-1.83	-4.75

XIII

The data of Table / indicates that out of seventy-two cases, the first thirty-nine are ranked as above the central tendency of the group as scored on the basis of the traits. Of these thirty-nine cases, however, eighteen, or 47 o/o if the number, fall below the central tendency of the group in the five combined intelligence tests.

It should be noticed that the measures of the five intelligence tests in Table / are comparable, having been reduced in each case to fractions of the standard deviation by the method described on page 74 and for both the traits and the five tests the average of the fraction of the S. D. was taken.

XIII

In the traits in Table / thirty-three fall below the central tendency of the group. From these thirty-three cases, fourteen, or 42 o/o, of these cases are above the central tendency of the group in the five intelligence tests.

XIII

This indicates that the judgments are unreliable if intelligence plays any part in selling, or it indicates that intelligence is a minor element in efficiency in department store salesmanship.

The following tables, Numbers XIV, a to o inclusive, contain the plotted median retention for each test with the total traits, and the sub-totals of traits with the total traits. In each table the total scores for the traits are used as a scale for the ordinate, and for the abscissa, the test scores. The graphs are intersected by the median of the traits and the median of the test. This method offers a quick way to figure correlations.

The table will be read thus, taking the Trabue Table for an example: Those cases good in the test, or with scores above the median of the group in the Trabue Test which is 14.18 and above the median in traits which is 63.75 will be found in the upper left hand quarter of the table; those cases good in the tests or above the median 14.18 and below the median (63.75) in traits will be in the upper right hand quarter; those cases poor in the tests or below the median (14.18) in the tests and above the median (63.75) in the traits will be in the lower left hand quarter; and those cases poor in tests or below the median (14.18) and below the median in traits (63.75) will be in the lower right hand quarter.



Written Analogs	T r a i t s										
	75	70	65	60	55	50	45	40	35	30	25
17				1							
16		1				1					
15		1									
14											
13				1							
12					1						
11											
10											
9		1									
8											
7											
6											
5											
4											
3				1							
2											
1											
0											

Number of cases - 70



Oral Traits  
 Analogs 75....70....65....60....55....50....45....40....35....30....25.

- 42
- 41
- 40
- 39
- 38
- 37
- 36
- 35
- 34
- 33
- 32
- 31
- 30
- 29
- 28
- 27
- 26
- 25
- 24
- 23
- 22
- 21
- 20
- 19
- 18
- 17
- 16
- 15
- 14
- 13
- 12
- 11
- 10
- 9
- 8
- 7
- 6
- 5
- 4
- 3
- 2
- 1
- 0

1

1

Number of cases - 67



Direc- tions	T r a i t s										
	75....	70....	65....	60....	55....	50....	45....	40....	35....	30....	25..
55											
54											
53				1							
52											
51											
50											
49						1					
48				1							
47					1						
46	1				1			1			
45		1	11								
44		1		1							
43											
42											
41			1	1			1				
40							11				
39				1	1						
38	11				1				1		
37	1				1						
36											
35			2		1	112					
34			1		3						
33				11							
32	1							1			
31			1	1		1	1			1	
30	1		11		1		1				
29			1121					1			
28	1				11			1			
27										1	
26				2							
25	1				1						
24				1		1					
23				1							
22											
21				1							1
20							1				
19											
18											
17											
16											
15								1			

Number of cases - 72



Mechanical Arithmetic	T r a i t s										
	75	70	65	60	55	50	45	40	35	30	25
59		1				1					
58						1					
57						1					
56			1				1				
55											
54					1						
53											
52			1	1							
51	1										
50											
49											
48		1									
47											
46			1		1						
45			1		1						
44									1		
43											
42											
41						1					
40			1	1							

Number of cases - 70



Learn- ing	75....	70....	65....	60....	55....	50....	45....	40....	35....	30....	25....
98			1			1					
97											
96						1					
95					1						
94			2								
93											
92			1								
91			1					1			
90	1			1							
89											
88						1					
87					1		1				
86				1							
85					1	1					
84				1	1						
83											
82			1								
81											
80											
79			1								
78			1								
77											
76				1							
75				1	1						
74											
73											
72											
71											
70											
69											
68					1						

Number of cases - 49

T r a i t s

Spell-	75	70	65	60	55	50	45	40	35	30	25
120											
119			11								
118			1	1		1					
117		1		1	1				1		
116				1	1		1				
115	111					1	1				
114											
113				1							
112					1						
111			11								
110			11								
109			1		1						
108			1								
107		1	1	1							
106					1						
105											
104											
103											
102				1							
101											
100						1					
99											
98					1						
97								1			
96					1						
95											
94					1		1				
93											
92						11					
91											
90				1							
89		1									
88											
87											
86				1		1					
85											
84						1					
83											
82											
81											
80			1								
79											
78											
77											
76											
75											
74											
73			1		1						
72											
71											
70		1									
69						1					
68											
67				1							

Spell- ing	75....	70....	65....	60....	55....	50....	45....	40....	35....	30....	25....
66											
65											
64											
63										1	
62											
61											
60											
59											
58			1								
57											
56											
55											
54											
53											
52											
51						1					
50											
49											
48											
47								1			

Number of cases - 55

Vocab- ulary	T r a i t s										
	75.....	70.....	65.....	60.....	55.....	50.....	45.....	40.....	35.....	30.....	25.....
35											
34	1				1			1			
33											
32				1		1					
31				1		1					
30				1							
29			11	2		2					
28			1 1			1					
27	1					1		1			
26		1 1		1		1	1		1		
25		1	2		1						
24											
23			1		1	1					
22			1 1		1 1						
21				2 1		1					
20	11		1 2			1 1					
19		1		1							
18	1										
17		1				1		1			
16			1								1
15				1		1 1					
14			1 1								
13				1							
12						1					
11								1			
10											

Number of cases - 59



Reading	Traits										
	75	70	65	60	55	50	45	40	35	30	25
15											
14											
13											
12	1										
11				1	1				11		
10				1	1						
9	1	1	2	1	2						
8	11							1 1			
7		111	11	1	1						
6			1 1 1	1	1						
5				1		1211			1		
4		1	1	1	2					1	
3			1	11							
2		11		1							
1											
0		11		1		1					1

Number of cases - 54.

Number Comple- tion	T r a i t s										
	75....	70....	65....	60....	55....	50....	45....	40....	35....	30....	25....
50			1								
49				1							
48		1			1			1			
47	11			1							
46			1			1					
45			1	1							
44	1						1				
43		1									
42			2	1							
41		1							1		
40	1				1	1					
39		1									
38			1		1	2	2	1	1		
37				1							
36			1				1				
35	1			1	1						
34											
33						1	1				
32				1							
31											
30											
29		1									
28					1						
27				1			1			1	
26	1						1				
25		1				1	11				
24			1						1		
23				1	1		2				
22											
21		2									
20		1									
19											
18											
17											
16	1										
15											
14				1							
13			1								
12											
11											
10											
9											
8											
7											
6					1						
5						1					
4											
3											
2											
1											
0											

Number of cases - 69

Arith-  
metic  
Prob-  
lems

T r a i t s

	75	70	65	60	55	50	45	40	35	30	25
15											
14											
13						1					
12		1				1					
11			1			1				1	
10			1	1	1						
9		1	1	1						1	
8		11	11	1	11	1	11		11		
7		1	2		1	1	11	11	1		
6	1		11	2		12	1	1			
5		1			11	2	1	1			
4			2		11					1	
3					1			1			
2											
1											
0											

Number of cases - 60







The following table contains the per cent of retention in the tests listed below. To derive the per cent of retention, the sum of cases which were high in both tests and traits, or low in both, was found. This sum divided by the total number of cases gives the per cent of retention.

Table XV	Number	+ + and - - cases	per cent retention
Trabue L and M	68	34	50 o/o
Written Analogies A and B	69	35	51 o/o
Oral Analogies C and D	67	35	52 o/o
Directions A and B	72	35	49 o/o
Arithmetic Problems A and B	60	40	66 o/o
Number Completion A and B	69	39	55 o/o
Spelling A and B	57	35	61 o/o
Learning Tests A and B	49	29	58 o/o
Mechanical Arithmetic A and B	70	40	57 o/o
Vocabulary Test A	59	31	52 o/o
Reading Test A	54	31	57 o/o

In view of the very low median retention the correlations will range close around zero. Since each judge evaluates only a few individuals and the degrees of judgment vary from judge to judge, this very low correlation is what one would expect to find. The following table discloses a few interesting facts concerning an accidental discovery as to the wide variation which exists when two capable judges, equally competent to judge as far as observation, contact and knowledge of business transacted by six salespeople, attempt to judge the same people. The returns from scored traits of one supervisor were not returned during the specified time, so the assistant supervisor, who deals with the same people, scored them on the basis of her judgment. A few hours later, the supervisor sent his scores in and these were used in the final calculations. While not assuming these few cases to give valid basis

for general conclusions, it may be seen what risks are faced when personal opinion is allowed to judge in weighty matters, or perhaps affords a basis for investigating how thoroughly the supervisor understands his salesmen. The following table shows the judgments of Mr. B. and Mrs. W. on the same saleswomen, the difference in totals scored and the correlation between the two sets of scores. This correlation was derived from the Spearman footrule: (Mental and Social Measurements, Thorndike, p.169.)

Table XVI

Case	Mr. B.	Mrs. W.	Case	Mr. B.	Mrs. W.
Miss L	I	3	Miss O	I	3
		3			3
		3			3
		2			3
		3			2
		2			3
		3			3
		3			2
		3			3
		2			2
		3			3
	--	--		--	--
	33	20		32	35
II		3	II	2	3
		2			3
		2			-
		--			8
	9	7			
III		2	III	3	2
		2			3
		2			2
		2			3
		--			--
	12	8		11	10
IV		3	IV	2	3
		3			3
		3			3
		3			3
		3			2
		--		--	
	15	14		12	15
	69	49		63	69



Table XVI-cont.

$$R = 1 - \frac{6 \sum J}{n^2 - 1}$$

Case Miss W	Mr. B.	Mrs. W.	Case Miss S	Mr. B.	Mrs. W.
I	2 2 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	3 3 3 2 2 2 3 3 2 2 3 2 2 2 3 3 3 3	I	3 3 3 3 2 3 2 2 3 2 2 2 3 3 3 3 3 3 3	3 3 2 2 2 2 2 1 2 2 2 2 3 2 2 2 2 2 2
	<u>25</u>	<u>32</u>		<u>31</u>	<u>26</u>
II	2 2 3 -	3 3 3 -	II	3 3 3 -	2 3 3 -
	7	9		9	8
III	2 3 2 2 2	3 3 3 3 3	III	3 3 2 3 -	3 3 3 3 -
	<u>9</u>	<u>12</u>		<u>11</u>	<u>12</u>
IV	2 2 2 2 2	2 2 2 2 2	IV	2 2 2 3 3	3 2 2 2 2
	<u>10</u>	<u>10</u>		<u>12</u>	<u>11</u>
	51	63		64	49

Table XVI-cont.

Case	Mr. B.	Mrs. W.	Case	Mr. B.	Mrs. W.
Miss K			Miss G		
I	3	3	I	3	3
	3	3		3	3
	3	3		3	3
	3	3		3	3
	2	2		2	3
	3	3		3	3
	2	3		2	2
	2	2		3	2
	2	2		3	2
	2	2		2	2
	2	2		2	2
	2	2		2	2
	3	3		3	3
	1	1		1	1
	30	32		33	33
II	2	2	II	3	2
	3	3		3	3
	3	3		3	3
	8	8		9	8
III	3	3	III	3	3
	3	3		3	3
	3	3		3	3
	3	3		3	3
	1	1		1	1
	11	12		12	11
IV	2	2		3	2
	2	2		3	2
	2	2		3	3
	2	2		3	3
	3	2		3	3
	1	1		1	1
	12	10		15	13
	61	62		69	65
Miss L.		2		6	=
Miss G.		1.5		5.5	=
Miss S.		1.5		2	=
Miss O.		3		5.5	=
Miss K.		4		1	+
Miss W.		5		4	=
		6		3	=
					+
					-----
					+7

R = .20  
r = .309

From Tables XV and XVI it is indicated that the following tests bear the best retention with the judgments of the supervisors. These tests are ranked below in the order of the retention.

1. Arithmetic Problems
2. Spelling Tests
3. Learning Tests
4. Mechanical Arithmetic Tests
5. Reading Tests
6. Number Completion Test
7. Oral Analogies
8. Vocabulary Test
9. Written Analogies
10. Trabue Tests
11. Directions Tests.

On the whole the relative sizes of the median retentions indicate that the more mechanical tests,- spelling, arithmetic problems, learning and mechanical arithmetic tests,- rather than the intelligence tests, show the closest relationship to the judgments of the supervisors.

The following table contains the range of the test for the whole group, the range in the tests for the upper 50 o/o in the traits, the range in the tests for the lower 50 o/o in the traits, the median for the whole test, the median in the test of the upper 50 o/o in the traits, the median in the test of the lower 50 o/o in the traits, the twenty-five percentile in the test for the upper 50 o/o in traits, the twenty-five percentile in the test for the lower 50 o/o in the traits, the seventy-five percentile in the tests for the upper 50 o/o in the traits, and the seventy-five percentile in the tests for the lower 50 o/o in the traits.

These data were derived in the following manner from the original scores:

(1) The range of the total test was derived by taking the highest score made in the test and the lowest score made in the test. The range of the upper 50 o/o was derived by taking as the two extremes the case standing highest in the test in the group above the median of the traits, and the case standing lowest in that group. The range for the lower 50 o/o was derived by taking as the two extremes the case standing highest in the test in the group below the median of the traits, and the case standing lowest in that group.

(2) The median.

The median of the whole group was determined by dividing the total number of cases by two. The median for the upper 50 o/o was determined by finding the number of cases in the test above the median in traits, and dividing this number by two.

The median for the lower 50 o/o was determined by finding the number of cases in the test but below the median in traits, and dividing this number by two.

(3) The twenty-five percentile for the upper 50 o/o was computed by finding the number of cases which constituted one-fourth of the sum of the total number of cases in the upper 50 o/o in the tests. For instance, if the number of cases in the upper 50 o/o was twenty-four, it would be determined at what point the sixth case would fall, when counting from the bottom. The twenty-five percentile for the lower 50 o/o was calculated in a similar manner, taking the cases within that group, of course.

(4) The seventy-five percentile for the upper 50 o/o was determined by finding the number of cases in the upper 50 o/o and taking three-fourths of this number. Then, beginning with the highest score in the test and above the median in the traits, the number of scores was counted to the point at which three-fourths of the cases terminated. The seventy-five percentile for the lower 50 o/o, or those cases below the median in the traits, was determined in a similar manner for that group.

Table XVII	Trabue	Written	Oral	Arithmetic	Directions	Vocabu- lary
.....	.....	gies.....	gies.....	.....	.....	.....
Range for test	2-22	3-71	8-95	2-13	15-53	11-35
Range for upper 50 o/o	7-22	9-68	8-94	4-12	23-48	14-35
Range for lower 50 o/o	2-22	3-71	40-95	2-13	15-53	11-35
Median for upper 50 o/o	10.75	42.	79.33	8.1	32.50	25.17
Median for lower 50 o/o	14.98	37.	75.	6.86	34.33	22.5
25 percentile for upper 50 o/o	12.5	8.25	61.50	6.54	41.38	28.38
25 percentile for lower 50 o/o	10.56	24.	68.	5.	29.	17.75
75 percentile for upper 50 o/o	17.12	56.75	86.25	9.58	41.38	28.38
75 percentile for lower 50 o/o	16.38	54.38	73.	14.	39.	27.75

	Number Completion	Spelling	Learning	Reading	Mechanical Arithmetic
Range for test	5-50	47-119	68-151	0-12	40-109
Range for upper 50 o/o	13-50	58-119	76-151	0-12	40-109
Range for lower 50 o/o	5-49	47-118	68-150	0-11	40-103
Median for upper 50 o/o	39.	110.50	101.	7.25	75.
Median for lower 50 o/o	33.75	97.5	98.	5.75	69.
25 percentile for upper 50 o/o	25.	80.5	91.50	4.63	63.
25 percentile for lower 50 o/o	25.8	86.63	87.	4.31	56.75
75 percentile for upper 50 o/o	45.	115.8	128.50	8.87	91.
75 percentile for lower 50 o/o	38.96	115.36	115.	9.58	82.50

## CONCLUSIONS

1. There is a much closer relationship between the tests in placing the cases in the same quartile than there is between the tests and the judgments of the supervisors on the same cases, in placing the cases in the same quartile. If the judgments are reliable measurements of the efficiency of the clerks, then a high degree of intelligence as measured by the tests is apparently not as essential, but a minor element in department store salesmanship. In all probability this is not true, however. A much more detailed investigation would probably indicate that the judgments of the supervisors could not be depended upon. It might also be found that in the selling of some articles, candy or notions for instance, a very low degree of intelligence might be sufficient for efficient salesmanship. On the other hand, it might be very questionable whether or not a customer would return a second time if such a person were in charge of selling ready made suits.

This leads to the conclusion that a series of such tests given to applicants for positions would serve as an aid in deciding where the employee could be placed for the best mutual advantage to employer and employee. Such tests would also serve to detect any cases too low in intelligence to be safely employed

Tests of intelligence alone do not fit the situation. Evidence for this statement may be seen on page .

In so far as this group is a fair sampling of a department store sales force, a high degree of intelligence, as indicated by the tests used, is not the chief factor in selling.

3. The more mechanical tests, namely, the arithmetic problems, spelling, learning, and mechanical arithmetic test, have the highest per cent of retention (explained on page 107) as shown in table XV, page 107. On the other hand, the five intelligence tests, namely, Trabue, Number Completion, Oral Analogies, Reading, and Direction Tests indicate no relationship between these tests and the judgments of the supervisors. This is given in detail on page 87.

4. It should be noted that this was a specialized group which is receiving training in the educational department. A more differentiated group might have provided more basis for detecting the value of the tests. Some of the tests are perhaps slightly more suitable for selecting the cases nearer to the scoring given on the basis of traits. This may be entirely due to the fact that the judgments are not very reliable (page 110) and the differences between the tests are small.

5. The judgments of the supervisors vary in judging the same individuals as shown on page 108ff. This indicates that even with a tentative standard, personal opinion has had too much influence in scoring the traits.

6. The tests do detect weaknesses of the employees. For instance, in case 21, we see that the individual stands in the upper quartile in the language tests, but in the lower quartile in the arithmetic tests. Now this salesperson needs drill in these very subjects for these are important items in her floor duties. It is indicated by these tests that it would be advantageous to the firm and salesperson if case 21 were given specific drill in these



failing subjects and less than the usual drill in the language subjects in the training school.

The tests also indicate wide variabilities in the seventy-two cases in this Junior Group. It seems unsuitable to train these individuals in the same manner, by the same methods, and in the same subjects for two hours per week. If, however, the weaknesses detected by these tests could be classified so that groups could be formed as nearly alike in abilities and weaknesses as possible, more satisfactory results, more interest aroused in the work, and increased efficiency could be obtained. It has been discovered in this group that every individual was interested to know how he or she stood in the tests given to the group. Interest and enthusiasm increased weekly on the part of the salespersons and many wishes were expressed for the continuance of the tests.

It is to be concluded that the present basis of determining aptitudes and placement by personal opinion is unreliable. The executives themselves do not agree as to the ability or efficiency of the employees. This alone is sufficient to indicate the unsatisfactory condition which will continue until standards of some sort are set for measurement. It might be that psychological tests would provide remedies, but it must not be considered that this investigation aims to suggest the tests to be used as finally satisfactory remedies. However, the tests have served the purpose of revealing a need for standards of measurement in this type of work.

-----Directions -----

Much depends on personal qualities and characteristics in a vocation such as salesmanship. These traits cannot be accurately evaluated by any one who has not observed the individuals for weeks at a time, Such judgments should be made carefully and accurately, and of course impartially. To obtain data of this kind in this investigation, it is necessary to rely on the cooperation of the heads of the various departments. The following scheme for checking the qualities is suggested in order that the same system may be followed by each one.

The first thing to do is to take the list of names assigned and make another on the following basis:

Rank each person on the list as to his all-around success as a salesperson. This means that the individual in your department who is the most valuable as a salesperson will be at the top of your list as Number 1; the next most valuable to the department will rank as 2 etc. with the poorest salesperson at the end of the list.

If 2 or more seem equally valuable give them the same rank in the list as: Mary Jones 3  
Sarah Brown 3

In the checking of the personal traits, we will combine them under 5 main divisions with various subdivisions to show the traits included under the main division. These traits are deemed necessary to a successful salesperson. Individual differences must be considered, so the plan allows for marking the degree of the trait which the individual seems to possess. To distinguish the degrees, let us assume that in every case:

- GOOD will receive the credit of 3
- FAIR " " " " " 2
- POOR " " " " " 1
- LACKING " " " " " 0

Below, consider each subdivision given, assigning one of the three credits in the manner described above. For instance, if the individual possesses (a) refinement to a high degree place 3 on the line reserved for the credit; if only to a fair degree 2; if poor or lacking in this trait 1 or 0.

For the large divisions add the credits given to the traits in the subdivisions, and the total will be the score for that division.

Turn to the following sheets for the divisions.

A HEALTH Total \_\_\_\_\_

B PERSONALITY Total \_\_\_\_\_

(a) refinement -- (free from all that is vulgar, coarse etc.) \_\_\_\_\_

(b) self-control --- (self-command or self-restraint) \_\_\_\_\_

(c) courtesy --- (kindly politeness, not artificial) \_\_\_\_\_

(d) stability --- (firmness or steadiness of character) \_\_\_\_\_

(e) tact --- (ability to say and do the right thing) \_\_\_\_\_

(f) truthfulness --- (conformity to facts; care in promises) \_\_\_\_\_

(g) dependability --- (so reliable that word and opinion are valuable) \_\_\_\_\_

(h) cheerfulness -- (state of moderate joy or cordial willingness) \_\_\_\_\_

(i) activity --- (exercise of energy) \_\_\_\_\_

(j) originality --- (ability to produce new thoughts, ideas etc.) \_\_\_\_\_

(k) ability to meet customers --- (understanding of character) \_\_\_\_\_

(l) personal appearance --- (neatness, simple elegance) \_\_\_\_\_

C KNOWLEDGE OF BUSINESS AND DEPARTMENTAL DUTIES Total \_\_\_\_\_

(a) alertness \_\_\_\_\_

(b) faithfulness to work \_\_\_\_\_

(c) knowledge of duties \_\_\_\_\_

D COOPERATION

Total \_\_\_\_\_

(a) loyalty to employers, and fellow workers \_\_\_\_\_

(b) obedience ---  
(proper submission to authority) \_\_\_\_\_

(c) responsibility ---  
(recognition of individual worth) \_\_\_\_\_

(d) punctuality ----  
(exact keeping of appointments etc.) \_\_\_\_\_

E ECONOMY OF TIME

Total \_\_\_\_\_

(a) efficiency --- \_\_\_\_\_

(b) competency ---  
(necessary mental, moral, and physical ability to  
accomplish definite results) \_\_\_\_\_

(c) carefulness ---  
(exactness, solicitude, watchfulness) \_\_\_\_\_

(d) accuracy ---  
(in all details and work) \_\_\_\_\_

(e) industry ---  
(steady application to regular duties) \_\_\_\_\_

Submitted by \_\_\_\_\_

Department \_\_\_\_\_

Date \_\_\_\_\_

Number checked \_\_\_\_\_

Get the correct answers as quickly as you can.

2	54	43	199	2563	.75	12.50	8.00
4	37	1	194	11387	1.25	16.75	5.75
3	--	2	295	4954	.49	15.25	2.53
-		13	156	2065	----	-----	4.16
		--	---	-----			.94
							6.32
							----

547  
 197  
 685  
 678  
 456  
 393  
 525  
 240  
 252  
 ---

$\frac{3}{8} \frac{5}{8} \frac{7}{8} \frac{8}{8} =$

12  $\frac{1}{2}$   
 62  $\frac{1}{4}$   
 12  $\frac{1}{2}$   
 37  $\frac{1}{4}$   
 ---

2 ft. 6 in.  
 3 ft. 5 in.  
 4 ft. 9 in.  
 -----

.49  
 .28  
 .63  
 .95  
 1.69  
 .22  
 .53  
 .36  
 1.01  
 .56  
 .88  
 .75  
 .56  
 1.10  
 .18  
 .56  
 -----

In each of the lines below, the first two words have a certain relation. Notice this relation and draw a line under the one word in the parenthesis which has that particular relation to the third word. Begin with No. 1 and mark as many sets as you can before time is called.

## Examples:

sky : blue :: grass : (short, ~~grass~~, brown)  
 skirt : woman :: trousers : (suit, hat, boy)  
 spoon : soup :: fork : (plate, dinner, meat)  
 -----

1. Monday : Tuesday :: April : (March, May, June)
2. bird : sings :: dog : (drinks, barks, walks)
3. hour : minute :: minute : (hour, watch, second)
4. cloud; rain :: sun : (bright, warm, clear)
5. dog : puppy :: cat : (mouse, kitten, fur)
6. little : less :: much; (most, more, great)
7. swim : water :: fly : (wings, air, airplane)
8. pan : tin :: table : ( round, polished, wood)
9. oyster : shell :: banana : (fruit, peel, yellow)
10. he : him :: she : (her, it, hers)
11. horse : colt :: cow : ( horns, calf, milk)
12. nose : face :: toe : (nail, foot, arm)
13. hat : head :: glove : ( hand, kid, colored)
14. ship : captain :: army : ( general, captain, obey)
15. England; London :: France : ( Marseilles, Paris, Madrid)

Write only one word on each blank  
Time Limit: Five minutes

NAME \_\_\_\_\_

TRABUE  
LANGUAGE SCALE M

67. One can not foretell \_\_\_\_\_ will happen in the \_\_\_\_\_ .
59. The dog \_\_\_\_\_ a useful \_\_\_\_\_ because \_\_\_\_\_ his  
intelligence and faithfulness.
95. Many people \_\_\_\_\_ their health because \_\_\_\_\_ do not  
\_\_\_\_\_ the \_\_\_\_\_ of hygiene.
79. Nothing can \_\_\_\_\_ one's happiness \_\_\_\_\_ effectively than a  
guilty \_\_\_\_\_ .
45. To \_\_\_\_\_ many things \_\_\_\_\_ ever finishing any of them  
\_\_\_\_\_ a \_\_\_\_\_ habit.
91. The \_\_\_\_\_ seems \_\_\_\_\_ and dreary \_\_\_\_\_ a  
discouraged \_\_\_\_\_ .
55. \_\_\_\_\_ that are \_\_\_\_\_ to one by an \_\_\_\_\_ friend should  
be pardoned \_\_\_\_\_ readily than injuries done by one \_\_\_\_\_  
is not angry.
88. It is \_\_\_\_\_ that a full-grown man should \_\_\_\_\_ a ghost  
\_\_\_\_\_ he is \_\_\_\_\_ .

Do what it says to do !

With your pencil make a dot over any one of these letters, F G H I J .  
 AND A COMMA after the longest of these words: BOY MOTHER GIRL. Then,  
 if Christmas comes in March, make a cross eight here, \_\_\_\_\_, but if  
 not, pass along to the next question, and tell where the sun rises \_\_\_\_\_  
 If you believe that Edison discovered America, cross out what you just  
 wrote, but if it was someone else, put in a number to complete this  
 sentence: " A horse had \_\_\_\_\_ feet." Write "yes" no matter whether  
 China is in Africa or not \_\_\_\_\_; and then give a wrong answer to  
 this question: How many days are there in a week? \_\_\_\_\_ Write  
 any letter except G after this comma. and then write "no" if two  
 times five are ten. \_\_\_\_\_ Now if Tuesday comes after Monday,  
 make two crosses here \_\_\_\_\_; but if not, make a circle here \_\_\_\_\_ or  
 else make a square here. \_\_\_\_\_

In these two lines of numbers draw a line under ever 5 that comes just  
 before an 8:

2 5 8 6 3 7 9 5 8 2 1 5 1 3 6 4 5 8 1 0

7 3 5 1 6 2 9 3 5 8 7 1 3 2 5 8 1 3 5 2

Look at these words : light, white, bright, spite, pitecus, city, cited  
 Whenever in these words you see the letter t with an i on one side of  
 it and an e on the other, draw a line under all three.

A list of words is given below. One of them is needed to complete the  
 thought in the following sentence: The road became muddy when the  
 snow \_\_\_\_\_. Do not put the missing word in the blank space left  
 in the sentence, but put a cross below the word in the list which is  
 next above the word needed in the sentence.

water  
 is  
 melted  
 snow



## ANALOGIES TEST

READ THE DIRECTIONS AND DO JUST WHAT THEY TELL YOU TO DO.

In each of the lines below, one pair of words has a certain relation. Notice that relation and then draw a line under the one of the four words in the parenthesis which has that particular relation with the other word not in the parenthesis. Begin with No. 1 and mark as many sets as you can before time is called. Do not waste any time.

SAMPLES ( SKY : BLUE :: GRASS : (grow, green, cut, dead)  
 ( FISH : SWIM :: (man, boat, flower, tree) : WALK  
 ( (hour, week, long, day) : NIGHT :: WHITE : BLACK  
 ( TOE : (knee, foot, arm, nail) :: FINGER : HAND

1. FIRST : LAST :: BEGINNING : (commence, end, one, first) 1.
2. GOOD : BAD :: (high, long, boy, thin) : SHORT 2.
3. BOOT : (strap, heel, leather, foot) :: GLOVE : HAND 3.
4. SEEING : (things, mouth, eyes, far) :: HEARING : EARS 4.
5. SKIRTS : GIRLS :: TROUSERS : (pants, boys, shoes, long) 5.
6. FLYING : BIRDS :: SWIMMING : (water, fish, sport, balloons) 6.
7. PRINCE : PRINCESS :: (king, president, country, man) : QUEEN 7.
8. SAILOR : NAVY :: (war, officer, land, soldier) : ARMY 8.
9. (arm, foot, toe, finger) : LEG :: HAND : ARM 9.
10. BOY : GIRL :: (dress, hat, he, little) : SHE 10.
11. (Japanese, Tokio, island, Asia) : JAPAN :: CHINESE : CHINA 11.
12. SMALL : (little, child, large, short) :: BOY : MAN 12.
13. (snow, cold, ice, skating) : WINTER :: BATHING : SUMMER 13.
14. BREAD : (loaf, white, flour, cut) :: CANDY : SUGAR 14.
15. MOON : SUN :: (shine, heat, night, man) : DAY 15.
16. TABLE : WOOD :: WINDOW-PANE :: (house, glass, room, iron) 16.
17. (John, James, boy, girl) : JIMMIE :: WILLIAM : WILLIE 17.
18. TEARS : SORROW :: (weep, fun, cry, laughter) : JOY 18.
19. (eat, food, tea, taste) : HUNGER :: WATER : THIRST 19.
20. AX : (handle, sharp, cut, wood) :: SCISSORS : CLOTH 20.

- 21. MOWING : HAY :: REAPING : (grain, horse, machine, cut) 21.
- 22. (trunk, circus, large, ride) : ELEPHANT :: HAND : MAN 22.
- 23. MOON : (light, night, star, earth) :: EARTH : SUN 23.
- 24. D : (alphabet, letter, F? C) :: I : K 24.
- a5. (liquid, hard, iron, boat) : SOLID :: WATER : ICE 25.
- 26. BANISH : SPANISH :: DANGLE : (German, Spangle, Spain, language) 26.
- 27. FLOAT : SINK :: CORK : (float, light, heavy, lead) 27.
- 28. GULF : OCEAN :: (cape, bay, land, lake) : CONTINENT 28.
- 29. BALLOONS : (float, air, explode, large) :: CORKS : WATER 29.
- 30. (midnight, day, dinner, sun) : NOON :: NIGHT : DAY 30.
- 31. BICYCLE : TRICYCLE :: TWO WHEELS : (wagon, motorcycle, three wheels, cart) 31.
- 32. SIX : NINE :: (eight, dozen, ten, fifteen) : TWELVE 32.
- 33. RIVERS : (boats, lakes, ocean, Amazon) :: FRESH WATER : SALT WATER 23.
- 34. (light, burn, electric, oil) : LAMP :: TALLOW : CANDLE 34.
- 35. INFANTRY : CAVALRY :: WALKING : (running, horses, army, riding) 35.
- 36. TODAY : TOMORROW :: (day-before-yesterday, tonight, yesterday, sun) : TODAY 36.
- 37. FOREMAN : (boss, employer, workman, work) :: CAPTAIN : PRIVATE 37.
- 38. KING : EMPEROR :: KINGDOM : (province, country, ruler, empire) 38.
- 39. YARD STICK : SPACE :: (minutes, hour, clock, measure) : TIME 39.
- 40. (plenty, abundant, wealth, money) : ABUNDANCE :: WISE : WISDOM 40.

Write your name here \_\_\_\_\_

Date of your birth. Month \_\_\_\_\_ Day \_\_\_\_\_ Yr. \_\_\_\_\_ Age \_\_\_\_\_ Yrs \_\_\_\_\_ Mo. \_\_\_\_\_

Year in Elementary School (underscore) 5th, 6th, 7th, 8th

Year in high school (underscore) 1st 2nd 3rd 4th

Time \_\_\_\_\_ minutes \_\_\_\_\_ seconds. Score \_\_\_\_\_ Rank \_\_\_\_\_

(1)	.68 2.30 <u>.56</u>	9.75 .69 <u>.59</u>	2.69 .85 <u>.65</u>	.49 .58 <u>8.70</u>	.95 1.48 <u>.29</u>	1.07 .24 <u>.43</u>	.31 .67 <u>1.83</u>	.72 1.85 <u>.22</u>
(2)	12.35 13.50 <u>72.50</u>	15.75 18.50 <u>26.50</u>	20.25 15.75 <u>19.50</u>	12.50 18.75 <u>16.25</u>	30.25 13.75 <u>9.50</u>	14.50 13.75 <u>11.50</u>	12.50 10.25 <u>18.80</u>	16.25 11.50 <u>14.75</u>
(3)	7.00 3.33 6.14 8.08 <u>.57</u>	4.14 5.23 8.09 3.11 <u>9.42</u>	1.63 2.50 4.97 3.98 <u>2.62</u>	3.69 7.73 .21 2.89 <u>1.12</u>	2.98 5.74 .60 8.50 <u>4.36</u>	1.98 3.49 5.00 6.50 <u>.74</u>	9.50 2.43 4.30 6.71 <u>.44</u>	8.35 5.49 2.50 6.86 <u>1.19</u>
(4)	.35 .58 .72 .83 .72 1.23 .49 .28 <u>.63</u>	.95 1.69 .22 .33 .36 1.01 .56 .88 <u>.79</u>	.56 2.10 .18 .56 .67 .55 .37 .24 <u>1.98</u>	.24 7.70 2.50 .45 .20 .58 .39 .32 <u>.73</u>	.18 .13 1.29 .47 .63 2.45 .72 .74 <u>.91</u>	.17 .21 .42 .63 1.85 .62 .47 .27 <u>.39</u>	.23 .12 1.15 1.33 .53 .14 .25 .43 <u>.81</u>	.77 .82 2.55 .19 .36 .57 .28 .49 <u>1.21</u>
(5)	2.53 <u>9</u>	4.16 <u>3</u>	6.32 <u>4</u>	7.74 <u>7</u>	3.25 <u>9</u>	4.85 <u>8</u>		
(6)	4.95 <u>47</u>	6.34 <u>24</u>	2.35 <u>56</u>	7.75 <u>39</u>	5.22 <u>75</u>	3.45 <u>66</u>		
(7)	.65 <u>3 2/3</u>	.79 <u>4 3/8</u>	.95 <u>8 1/2</u>	2.50 <u>7 1/4</u>	1.35 <u>5 3/4</u>	1.75 <u>6 1/2</u>		
(8)	2.50 <u>5 1/8</u>	1.10 <u>4 3/4</u>	1.49 <u>5 1/2</u>	1.85 <u>8 2/3</u>	1.19 <u>6 1/4</u>	3.50 <u>7 1/3</u>		
(9)	.59 <u>1/2</u>	.79 <u>2/3</u>	.95 <u>3/8</u>	2.25 <u>1/4</u>	3.50 <u>1/3</u>	.69 <u>3/4</u>		

With your pencil make a dot over the following numbers which, if combined, will make your own store number: 0123456789; and then put a comma after the word Dayton if this is March, but a cross here if it is some other month. \_\_\_\_\_. If you believe that a cash sale should go on a yellow slip, make a cross here \_\_\_\_\_, but if not pass along to the next question and tell what a "voucher" is:

If you have an envelope index in the cash sales book, put in the word to complete this sentence: "I am in the \_\_\_\_\_ department." If you have a card index in a charge sales book write "no" here \_\_\_\_\_. Draw a line through the words which denote the kind of sales to be placed on white sales slips: C.O.D., lay-by, cash, transfer, mail order, even exchange. Now if you hand a delivery slip to the cashier in a C.O.D. sale make two crosses here \_\_\_\_\_; if you give it to the customer make a circle here \_\_\_\_\_. When entering the cash of a partpaid C.O.D. sale on the envelope, if you put in the amount of the whole sale under "amount of sale", write "yes" here \_\_\_\_\_; if you enter only the amount deposited leave this blank \_\_\_\_\_. If the regular cashier receives lay-by checks write "March" here \_\_\_\_\_. If you make out a white check for the cash on a mail order sale, put the letters "M.O." here \_\_\_\_\_.

If you should give the cashier the money and merchandise before giving her your check make ten commas here.

In a charge sale, Mrs. A- shows her coin. If it is sufficient for charging merchandise write your first name here: \_\_\_\_\_ If further investigation is necessary, write name of your cashier here: \_\_\_\_\_

Mrs. Brown has an "enclosed parcel" to be delivered. If it is correct to give the extra parcel to the cashier with the merchandise you have just sold without doing anything more about it, write "yes" here \_\_\_\_\_.

In each of the lines below, the first words have a certain relation. Notice this relation and draw a line under the one word in the parenthesis which has that particular relation to the third word. Begin with number one and mark as many sets as you can before time is called

## Examples:

sky : blue :: grass : (short, green, brown)  
 skirt : woman :: trousers : (suit, hat, boy)  
 spoon : soup :: fork : (plate, dinner, meat)

1. hat : head :: glove : (hand, kid, colored, foot)
2. eat : food :: drink : (thirsty, water, swallow, satisfied)
3. skate : winter :: tennis : (courts, summer, exercise, ball)
4. walk : land :: swim : (ducks, men, fine, water)
5. pan : tin :: table : (round, polish, wood, iron)
6. hour : minute :: minute : (hour, watch, day, second)
7. ship : captain :: army : (general, captain, obey, private)
8. trust : friend :: fear : (cold, punishment, enemy, dogs)
9. moon : night :: sun : (warmth, day, clear, shine)
10. hand : man :: fins : (fish, turtle, crocodile, wings)
11. blond : brunette :: light : (yellow, brown, colored, dark)
12. whole : part :: body : (man, arm, warmth, feeling)
13. swim : water :: fly : (wings, bird, air, aeroplane)
14. bird : sings :: dog : (drinks, barks, walks, eats)
15. kid : glove :: leather : (table, wood, foot, shoe)
16. nest : birds :: home : (house, comfort, children, bird-house)
17. mutton : sheep :: veal : (calf, lamb, pig, cow)
18. poem : poet :: play : (singer, playwright, actor, reader)
19. chauffeur : automobile :: aviator : (air, aeroplane, submarine, flies)
20. holly : Christmas :: lily : (white, Thanksgiving, flower, Easter)
21. he : him :: she : (her, it, hers, woman)
22. England : London :: France : (Marseilles, Madrid, Paris, city)
23. Macbeth : Shakespeare :: Ivanhoe : (Scott, novel, Emerson, Lowell)
24. tears : sorrow :: laughter : (comedy, joy, woe, sadness)
25. oyster : shell :: banana : (food, fruit, yellow, peel)
26. house : people :: barn : (animals, hay, wagon, book)
27. greed : miser :: generosity : (capitalist, philanthropist, financier, employer)
28. citizen : savage :: christian : (protestant, catholic, heather, minister)
29. Marconi : wireless :: Bell : (phonograph, telephone, steam engine, automobile)
30. teeth : chewing :: tongue : (tasting, coated, red, sweet)
31. apples : trees :: peanuts : (bushes, trees, shrubs, vines)
32. pearls : oysters :: diamonds : (sea, rivers, mines, factory)
33. candy : sugar :: bread : (water, hunger, flour, baking)
34. lead : pencil :: ink : (writing, copying, paper, pen)
35. Cluny : lace :: Marquissette : (net, cotton, silk, satin)
36. cub : bear :: baby : (childhood, woman, dog, shield)
37. silk : satin :: wool : (muslin, goods, serge, dresses)
38. spruce : tree :: anemone : (shrub, plant, tree, flower)
39. tea : China :: spice : (France, India, cloves, Japan)
40. prunes : plums :: raisins : (figs, grapes, oranges, seeds)

(1)	.75	.47	2.98	.53	.71	2.29	3.43	.64
	1.23	.19	.85	1.31	.18	.65	.15	.51
	<u>.48</u>	<u>2.34</u>	<u>.69</u>	<u>.46</u>	<u>2.35</u>	<u>.22</u>	<u>.37</u>	<u>1.72</u>

(2)	12.50	14.75	24.50	15.25	14.50	26.25	65.75	27.00
	16.75	19.25	19.75	14.25	39.75	11.50	37.50	15.00
	<u>15.25</u>	<u>13.25</u>	<u>23.25</u>	<u>13.75</u>	<u>22.50</u>	<u>39.25</u>	<u>42.25</u>	<u>19.00</u>

(3)	8.00	7.74	2.10	1.48	.19	6.92	2.96	1.79
	2.53	5.11	.13	4.81	2.19	1.48	1.34	1.59
	4.16	6.49	7.17	.19	9.50	7.27	9.00	.64
	.94	4.36	3.24	3.42	1.48	.69	.89	1.13
	<u>6.32</u>	<u>.57</u>	<u>5.30</u>	<u>9.20</u>	<u>1.79</u>	<u>2.39</u>	<u>1.68</u>	<u>2.80</u>

(4)	22.98	10.53	1.01	.54	.25	.72	.22	.54
	2.04	.49	.56	.37	1.13	1.25	.94	.75
	1.75	.28	.88	.43	.49	.49	.63	1.19
	.50	.63	1.75	.12	.21	8.21	.26	.97
	.39	.95	.56	.69	.63	.72	2.80	.84
	4.45	1.69	1.13	1.99	.87	.53	.25	.68
	.30	.22	.18	.84	.54	.25	1.34	6.45
	.65	.33	.56	2.56	.65	.16	.98	.39
	<u>.75</u>	<u>.36</u>			<u>3.43</u>		<u>.19</u>	<u>.52</u>

(5)	6.75	4.32	7.42	3.28	5.53	8.23
	<u>7</u>	<u>4</u>	<u>9</u>	<u>5</u>	<u>8</u>	<u>8</u>

(6)	3.46	5.54	9.75	2.98	1.85	3.58
	<u>27</u>	<u>36</u>	<u>83</u>	<u>22</u>	<u>47</u>	<u>82</u>

(7)	.43	.69	.35	1.25	1.35	1.85
	<u>2 1/2</u>	<u>6 5/8</u>	<u>4 1/4</u>	<u>5 1/3</u>	<u>11 2/3</u>	<u>9 1/2</u>

(8)	1.25	1.35	2.89	2.50	1.95	1.65
	<u>2 3/4</u>	<u>6 2/3</u>	<u>4 3/8</u>	<u>3 1/3</u>	<u>5 1/2</u>	<u>4 3/4</u>

(9)	1.25	.50	.69	.89	1.19	2.50
	<u>1/2</u>	<u>2/3</u>	<u>1/4 yd,</u>	<u>1/8</u>	<u>1/3</u>	<u>3/8</u>

## Mixed relations C

Directions: Give at the rate of 5 sec. each---1/2 second between each word and 4 seconds for the written response.

1	light	day	dark
2	birds	fly	fish
3	chalk	white	carbon
4	sun	shines	wind
5	summer	hot	winter
6	cats	scratch	bees
7	emerald	green	ruby
8	water	drink	air
9	father	son	mother
10	hat	head	shoe
11	chair	wood	stove
12	fast	fastest	great
13	cup	saucer	knife
14	man	husband	woman
15	write	stories	draw
16	lamp	oil	stove
17	daily	newspaper	monthly
18	hair	black	eyes
19	food	eat	books
20	clothes	tear	dishes
21	air	birds	water
22	barn	hay	library
23	month	week	day
24	far	near	there
25	July	month	Friday

26	opaque	wood	transparent
27	thermometer	temperature	clock
28	potato	vegetable	veal
29	light	dark	dry
30	sight	blind	hearing
31	city	mayor	state
32	slipper	shoe	cap
33	present	known	future
34	work	problems	play
35	water	glass	coffee
36	factory	workman	store
37	fat	heavy	thin
38	bread	flour	candy
39	live	die	life
40	after	before	earlier
41	sparrow	bird	mosquito
42	picture	frame	field
43	happy	laugh	sad
44	ounce	pound	inch
45	mail	write	telephone
46	complex	difficult	simple
47	linen	cool	wool
48	victory	defeat	success
49	cheap	many	costly
50	pencil	write	broom



## Mixed relations D

1	work	day	sleep
2	vinegar	sour	sugar
3	rain	summer	snow
4	year	month	week
5	iron	heavy	aluminum
6	rose	bush	oak
7	country	road	city
8	eat	food	wear
9	horn	blow	bell
10	high	low	near
11	water	liquid	ice
12	stove	heat	lamp
13	snow	sleds	ice
14	rugs	floor	pictures
15	Boston	city	Kentucky
16	silver	tarnishes	iron
17	hard	soft	rough
18	triangle	three	square
19	delicious	taste	fragrant
20	number	figures	word
21	see	colors	hear
22	box	wood	bottle
23	fruit	basket	water
24	front	back	top
25	foot	ankle	hand

26	raise	lower	open
27	much	more	good
28	foot	leg	hand
29	sugar	bowl	milk
30	navy	sailors	army
31	river	Hudson	mountain
32	coal	black	gold
33	hair	goat	wool
34	grain	wheat	fruit
35	leg	knee	arm
36	park	play	school
37	baker	bread	bees
38	wall	paper	floor
39	people	house	birds
40	sit	sat	fly
41	bright	colors	loud
42	park	gate	house
43	man	legs	carriage
44	lilac	shrub	fern
45	violet	odor	red
46	under	over	down
47	kettle	utensil	chair
48	fire	warms	ice
49	fork	tine	knife
50	April	March	Tuesday

Test No.12.

Name \_\_\_\_\_ Number Completion Test Grade \_\_\_\_\_ Age \_\_\_\_\_

School \_\_\_\_\_ ( 5 A )

In the lines below each number is gotten in a certain way from the numbers coming before it. Study out what this way is in each line, and then write in the space left for it the number that should come next. The first two lines are already filled in as they should be.

	( 10	12	14	16	18	<u>20</u>
Samples	( 10	11	13	14	16	<u>17</u>

1.	5	10	15	20	25	_____
2.	21	24	27	30	33	_____
3.	10	9	8	7	6	_____
4.	6	12	18	24	30	_____
5.	27	29	31	33	35	_____
6.	20	19	18	17	16	_____
7.	43	46	49	52	55	_____
8.	32	30	28	26	24	_____
9.	6	16	26	36	46	_____
10.	9	18	27	36	45	_____
11.	43	40	37	34	31	_____
12.	27	25	23	21	19	_____
13.	7	8	8	9	9	_____
14.	50	52	55	57	60	_____
15.	5	6	8	11	15	_____
16.	7	8	18	19	29	_____
17.	20	21	24	25	28	_____
18.	31	33	34	36	37	_____
19.	5	6	8	11	15	_____
20.	5	7	12	14	19	_____
21.	2	6	8	12	14	_____
22.	11	14	15	18	19	_____
23.	30	25	22	17	14	_____
24.	10	14	19	23	28	_____
25.	30	33	39	48	60	_____

## Sixty words selected from sets S, T, U, V and W of Ayres

- |                |                   |                  |
|----------------|-------------------|------------------|
| 1. often       | 21. organize      | 41. application  |
| 2. motion      | 22. official      | 42. scene        |
| 3. improvement | 23. estimate      | 43. develop      |
| 4. total       | 24. invitation    | 44. issue        |
| 5. arrive      | 25. impossible    | 45. suggest      |
| 6. assist      | 26. associate     | 46. senate       |
| 7. examination | 27. various       | 47. respectfully |
| 8. affair      | 28. entitle       | 48. unfortunate  |
| 9. neither     | 29. national      | 49. elaborate    |
| 10. marriage   | 30. business      | 50. necessary    |
| 11. serious    | 31. minute        | 51. discussion   |
| 12. condition  | 32. absence       | 52. reference    |
| 13. opinion    | 33. Wednesday     | 53. experience   |
| 14. system     | 34. celebration   | 54. secretary    |
| 15. piece      | 35. meant         | 55. career       |
| 16. witness    | 36. consideration | 56. organization |
| 17. therefore  | 37. assure        | 57. appreciate   |
| 18. pleasant   | 38. occupy        | 58. athletic     |
| 19. guess      | 39. foreign       | 59. practical    |
| 20. argument   | 40. responsible   | 60. separate     |

Test 5 B

1.	18	15	12	9	6	_____
2.	42	52	62	72	82	_____
3.	30	35	40	45	50	_____
4.	40	35	30	25	20	_____
5.	62	61	60	59	58	_____
6.	47	48	49	50	51	_____
7.	5	9	13	17	21	_____
8.	22	19	16	13	10	_____
9.	11	13	15	17	19	_____
10.	51	49	47	45	43	_____
11.	9	15	21	27	33	_____
12.	14	15	15	16	16	_____
13.	42	43	46	47	50	_____
14.	50	52	53	55	56	_____
15.	3	12	21	30	39	_____
16.	22	25	26	29	30	_____
17.	8	10	15	17	22	_____
18.	4	6	10	12	16	_____
19.	10	11	13	16	20	_____
20.	12	14	17	19	22	_____
21.	9	10	12	15	19	_____
22.	25	26	36	37	49	_____
23.	27	22	19	14	11	_____
24.	32	36	41	45	60	_____
25.	3	6	12	21	33	_____

Write only one word on each blank  
Time Limit: Five minutes

NAME \_\_\_\_\_

## TRABUE

## LANGUAGE SCALE I

60. Children \_\_\_\_\_ are rude \_\_\_\_\_ not easily win friends
66. Plenty \_\_\_\_\_ exercise and \_\_\_\_\_ air \_\_\_\_\_ healthy  
\_\_\_\_\_ and girls.
70. In \_\_\_\_\_ to maintain \_\_\_\_\_ health, one should have  
nourishing \_\_\_\_\_.
65. \_\_\_\_\_ happiness can not be \_\_\_\_\_ with money.
32. One's \_\_\_\_\_ do \_\_\_\_\_ always express his thoughts.
92. To \_\_\_\_\_ to wait, after having \_\_\_\_\_ to go \_\_\_\_\_,  
\_\_\_\_\_ very annoying.
78. It is sometimes \_\_\_\_\_ to \_\_\_\_\_ between two \_\_\_\_\_  
of action.
97. One can \_\_\_\_\_ do his \_\_\_\_\_ at one \_\_\_\_\_ while  
\_\_\_\_\_ of another.

Solve these problems as quickly as you can. Be careful to get the right answers. Write it in the blank spaces at the right of the problem.

1. Mrs. A- purchases the following articles: one pair of hemmed cotton sheets at \$2. each, and one pair of hemmed cotton pillow-cases at \$1.75 each. How much change will she receive from a ten-dollar bill? \_\_\_\_\_
2. A girl spent  $\frac{1}{8}$  of her money for car fare, and three times as much for clothes. Half of what she had left was 80 cents. How much money did she have at first? \_\_\_\_\_
3. If you buy 7 apples at 2 cents each and a book for 55 cents, how much change should you receive from a two-dollar bill? \_\_\_\_\_
4. The five largest department stores in Cleveland employ 5,800 people in the following departmental distribution: office force 661, delivery force 383, marking and stockrooms 209, other miscellaneous occupations 1,859. What number are in the selling force? \_\_\_\_\_
5. If  $3\frac{1}{2}$  yards of imported taffeta cost \$7.53, how much will 5 yards cost? \_\_\_\_\_
6. Two girls received \$2.10 for making button-holes. One makes 42, the other 28. How shall they divide the money? \_\_\_\_\_
7. Mr. Brown paid  $\frac{1}{3}$  of the cost of a building; Mr. J- received \$500. more annual rent than Mr. B-. How much did each receive? \_\_\_\_\_
8. A family pays \$25. a month for a non-heated flat and uses 5 tons of coal at \$11. per ton during the winter. If they moved into a steam-heated flat at \$30. a month, would they increase their expenses for the year, or not, and how much? \_\_\_\_\_
9. A dressmaker sought imported shantung by the piece at \$24.50. There were 20 yards in the piece. If she had bought by the yard, it would have cost her \$1.35. How much did she save by buying by the piece? \_\_\_\_\_
10. A farmer has a herd of 12 dairy cows that average 22 pounds each of milk per day. The milk contains 3.8 of butter fat, and butter fat is worth 28 cents per pound. What is the daily income from the herd? \_\_\_\_\_

Key— P W A H S Y D Z  
 3 7 5 9 2 8 6 4

1. W D P A Z H S Y D W S P Y A H Z A D W S
2. Y P H Z S P Z D H A Y W Z P S D Y H A W
3. A H D P Y Z S Y W P S Z A W D H A W S Z
4. Y P H D Z S A W P Y D H W P Z D Y A H S
5. Z Y D A S P W H A D W S P Z Y H Z D A Y
6. S H W P D S Y P W Z A H S W H A P Y D Z
7. H Y P W S Z A D S H P Y A D Z P W D Y W
8. Z H A Z P A H S Y W D S W Y A H P Z S D
9. A Z P S W D Y H P Y Z W H A S D Z W D A
10. P S H Y Z S A W H P Y D S Z D Y A H W P
11. D Y A H P W S Z A H W Y P D Z S H D P A
12. Z S W Z Y P W Y D S H A Y W A H S Z D P
13. W A S Y Z D P H Z A D Y P H W S Z H P S
14. Y D A W Y P W Z A H S D A Y Z H S P W D
15. Z A P S D Y H P W D Y W Z A H S P Z S H
16. W Y A D Z W D S A H P Y D S Z Y H W A P
17. A D W S Y Z H P W A Z S Y D P H P D W H
18. Z Y S A H Y W Z P D A H S P W D S Y Z A
19. W H Z D A S Y P S Y H A P W D Z A W P S
20. Y Z D H S Z A W Y D P H Z S H W P Y A D

LEARNING TEST A-1

Name \_\_\_\_\_ School \_\_\_\_\_ Class \_\_\_\_\_ Age \_\_\_\_\_

Yr. Mo.



Solve these problems as quickly as you can.

1. If you buy a pair of kid gloves at \$2.50, 2 pairs of hose at 50 cents a pair, and 6 handkerchiefs at 25 cents each, how much change will you receive from a 10 dollar bill?
2. A woman returns a pair of shoes for which she had paid 5.85. She wants to buy 5 yards of goods that costs \$1.35 a yard. On the exchange will she owe the house or the house owe her? How much?
3. If a boy has 25 cents with which to buy 2 five cent tablets and lead pencils at the rate of 2 for five cents, how many lead pencils can he buy?
4. Mrs. A- bought 5 yards of georgette at \$1.80 a yard, Mrs. B- bought 5 yards of georgette for \$7.50 at another store. If the quality of the goods was the same, which one made the better bargain and how much better?
5. The co. buys crockery at \$7. per hundred pieces. The price is fixed to allow a breakage loss of five pieces out of each 100, and still net a profit of \$2.50 for each 100 pieces purchases. What is the sales price of each piece?
6. If an experienced clerk in a certain department can on the average wait on 60 customers a day and a new clerk only 45, how much wages can the company pay the new clerk and still pay her at the same rate for the work done as they pay the experienced clerk who receives \$1.80 per day?
7. A piece of goods containing 36 yards cost the co. \$7.20. From this piece 33 yards are sold at 25 cents. At what price per yard can the remnant be sold and still net the company a profit of \$1.50 on the whole piece?
8. If a buyer bought a large lot of 50 house dresses at \$49. and desire to make the selling price at such a point that the company will net 10% after allowing 3% discount at a sale, what will this selling price have to be??
9. The company sells 12 shirt waists at \$2.75 a piece making a profit of 62 1/2 cents each. Near the close of the season they still have 8 on hand. To what price can they be reduced and allow the firm a profit of \$6.50 on the entire lot?
10. The company purchases 120 boys' suits for \$480 for the season. 80 are sold at \$5.50 each. After the first reduction, 20 more are sold at a price which nets the company 50 cents on each suit sold. To what price can the rest be reduced and still net the company a profit of \$1. on each suit purchases at the beginning of the season?

1. refined--( not coarse, well bred, happy)
2. courteous--(rude, polite, bold)
3. steady--(fickle, clever, stable)
4. tactful--(considerate, careless, diplomatic)
5. truthful--(sincere, honest, villain)
6. dependable---(inaccurate, trustworthy, inconstant)
7. active ---(actor, energetic, witty)
8. original ---(willful, capable, determined)
9. alert ---(nimble, lazy, wide awake)
10. faithful ---(watchful, constant, careless)
11. duty ---(obligation, proper conduct, business)
12. cooperation--(socialism, joint action, coordination)
13. obedient ---(independent, dominating, willing to submit to authority)
14. loyal ---(faithful, willing, wise)
15. responsible--(liable, accountable, trustworthy)
16. punctual ---(prompt, tardy, slow)
17. efficient ---(active, unsuccessful, wasteful)
18. capable ---(skillful, efficient, ready)
19. careful ---(painful, heedful, cautious)
20. accurate ---(precise, exact, thoughtful)
21. prominent ---(projecting, conspicuous, notable)
22. discreet ---(prudent, careless, dependent)
23. explicit ---(exact, absolute, conditional)
24. authority ---(command, rightful power, popular opinion)
25. ambitious ---(eager to get ahead, satisfied, complaining)
26. hygienic ---(unsanitary, unhealthful, pertaining to health)
27. welfare ---(good health, joyfulness, sadness)
28. optimism ---(witty, grouch, to look on bright side of life)
29. earnest ---(zealous, indifferent, enthusiastic)
30. aggressive---(powerful, up-to-date, progressive)
31. successful---(influential, prosperous, wealthy)
32. artistic ---(appreciative, of beauty, good taste, painter)
33. masterful ---(arrogant, overbearing, insolent)
34. patient ---(forbearing, sweet, meek)
35. nervous ---(peevish, excitable, anxious)
36. serious ---(earnest, studious, thoughtful)
37. irritable ---(easily angered, sickly, capable)
38. benevolent---(kindly, selfish, greedy)
39. reputation---(good name, separation, repudiation)
40. career ---(life, general course of action, past)

Key— N 7 U 5 C 9 R 2 L 6 G 3 K 8 E 4

- 1. L U K R E C G N R C L G E U K N L R N C
- 2. K E U G N R C L K G U E K R U L E C G N
- 3. N G L K C E R U N L R G U K E C U G R L
- 4. C E N R K U G L K E N C L E C G N U K R
- 5. L C K G N R U E R K U E N C G L R E G K
- 6. N U C K U G L C N L E R L G U K N C R E
- 7. G E U L R K N E C K R G U C L R K L L C
- 8. U G E N C E R L U G K N R L U N K C G E
- 9. R U N L E K G C E R L C N U K G U E N G
- 10. L K C R L N E G R C K U E C U L N R G K
- 11. N C G K E U R L G E U R C K L N C K L U
- 12. R N E G U K E C R G N L G E C L U R N K
- 13. E K R U C N L G K U L R C N E G C N U G
- 14. K R L E G R K L C N U E K L U N E R G C
- 15. E K C L R N G C U E N L U R K G C K R E
- 16. N L U G N R E L G K U C R G N U K E L C
- 17. L K N C R G U E K C N U G E L R L C R K
- 18. G N U R E U N L C K E G K U C L R G N E
- 19. N C E K U R G R L N C L U E K G L E C K
- 20. U G R N C G K U R L E N G L C K R N U E

LEARNING TEST B-1

Name..... School..... Class..... Age.....  
Yr. Mo.

## Sixty words selected from sets S, T, U, V and W of Ayres

- |                            |                 |                  |
|----------------------------|-----------------|------------------|
| 1. stopped                 | 21. accident    | 41. finally      |
| 2. theater                 | 22. accept      | 42. circumstance |
| 3. century                 | 23. concern     | 43. material     |
| 4. mention                 | 24. automobile  | 44. mere         |
| 5. simply                  | 25. decide      | 45. receive      |
| 6. difference              | 26. political   | 46. agreement    |
| 7. particular              | 27. recent      | 47. majority     |
| 8. local                   | 28. refer       | 48. citizen      |
| 9. further                 | 29. ought       | 49. divide       |
| 10. doubt                  | 30. conference  | 50. testimony    |
| 11. government             | 31. really      | 51. arrangement  |
| 12. believe                | 32. folks       | 52. evidence     |
| 13. possible               | 33. earliest    | 53. session      |
| 14. certain                | 34. distinguish | 54. association  |
| 15. investigate            | 35. colonies    | 55. height       |
| 16. too(meaning too much). | 36. relief      | 56. emergency    |
| 17. circular               | 37. probably    | 57. sincerely    |
| 18. volume                 | 38. expense     | 58. extreme      |
| 19. summon                 | 39. beginning   | 59. proceed      |
| 20. victim                 | 40. difficulty  | 60. character    |

TEST I

READ THE GENERAL DIRECTIONS BEFORE YOU DO ANYTHING ELSE

GENERAL DIRECTIONS

1. Do what the printed instructions tell you to do.
2. Do not ask the examiner any questions about the test.
3. Do not ask any other person who is taking the test any questions or watch any one to see what he or she does.
4. The following pages contain a series of paragraphs with questions. You are to read the paragraphs and write answers to the questions.
5. All questions are to be answered from the paragraphs.
6. Make answers brief and definite.
7. Write the date here:.....
8. Write your name here:.....
9. Write your age here:.....years.....months
10. Do not skip pages. Answer the questions in order.
11. Turn the page and do what it says to do.

*Read this paragraph and then write answers to questions 1, 2, 3, and 4. All questions must be answered from the paragraph.*

All this was said apart. Perhaps a germ of love was springing in their hearts, so pure that it might blossom in Paradise, since it could not be matured on earth; for women worship such gentle dignity as his; and the proud, contemplative, yet kindly soul is oftenest captivated by simplicity like hers. But while they spoke softly, and he was watching the happy sadness, the lightsome shadows, the shy yearnings of a maiden's nature, the wind through the Notch took a deeper and drearier sound. It seemed, as the fanciful stranger said, like the choral strain of the spirits of the blast, who in old Indian times had their dwelling among these mountains, and made their heights and recesses a sacred region. There was a wail along the road, as if a funeral were passing. To chase away the gloom, the family threw pine branches on their fire, till the dry leaves crackled and the flame arose, discovering once again a scene of peace and humble happiness. The light hovered about them fondly, and carressed them all. There were the little faces of the children, peeping from their bed apart, and here the father's frame of strength, the mother's subdued and careful mien, the high-browed youth, the budding girl, and the good old grandma, still knitting in the warmest place. The aged woman looked up from her task, and, with fingers ever busy, was the next to speak.

#### QUESTIONS

1. In what country did the event described in this paragraph occur?...

.....

2. Name three characteristics of the stranger.....

.....

3. Give three words descriptive of the home in which the stranger stopped .....

.....

4. How many persons were there in this home on this night?.....

.....

Read this paragraph and then write answers to questions 1, 2, 3, 4, and 5. All questions must be answered from the paragraph.

The speech of Judge Hoar was perfect, and to that handful of people, who heartily applauded it. When a good man rises in the cold and malicious assembly, you think, "Well, it would be more prudent to be silent. Why not rest on a good past? Nobody doubts your talent and power; and, for the present business, we know all about it, and are tired of being pushed into patriotism by people who stay at home." But he, taking no counsel of past things, but only of the inspiration of his today's feelings, surprises them with his tidings, his better knowledge, his larger view, his steady gaze at the new and future event, whereof they had not thought, and they are interested like so many children, and carried off out of all recollection of their malignant nonsense, and he gains his victory by prophecy, where they expected repetition. He knew beforehand that they were looking behind, and that he was looking ahead, and therefore it was wise to speak. What a godsend are these people to a town! and the Judge, what a faculty!—he is put together like a Waltham watch, or like a locomotive just finished from the Tredegar Works.

QUESTIONS

1. On what occasion do you think Judge Hoar made the speech mentioned in this paragraph?.....  
.....
2. Why did Judge Hoar decide to speak?.....  
.....
3. What attitude had the crowd toward the speaker at the beginning of his speech?.....  
.....
4. What is the author's estimate of the speaker?.....  
.....
5. How did the speech affect the audience?.....  
.....

Read this paragraph and then write answers to questions 1, 2, 3, 4, and 5. All questions must be answered from the paragraph.

The particular objection that I have to the undergraduate forming his course of study on his future profession is this—that from start to finish, from the time he enters the university until he finishes his career, his thought will be centered upon particular interests. He will be immersed in the things that touch his profit and loss, and a man is not free to think inside that territory. If his bread and butter is going to be affected, if he is always thinking in the terms of his own profession, he is not thinking for the nation. He is thinking for himself, and whether he be conscious of it or not, he can never throw these trammels off. He will only think as a doctor, or a lawyer, or a banker. He will not be free in the world of knowledge and in the circle of interests which make up the great citizenship of the country. It is necessary that the spirit of scholarship should be a detached, disinterested spirit, not immersed in a particular interest. That is the function of scholarship in a country like ours, to supply, not heat, but light, to suffuse things with the calm radiance of reason, to see to it that men do not act hastily, but that they act considerately, that they obey the truth whether they know it or not. The fault of our age is the fault of hasty action, of premature judgments, of a preference for ill-considered action over no action at all. Men who insist upon standing still and doing a little thinking before they do any acting are called reactionaries. They want actually to react to a state in which they can be allowed to think. They want for a little while to withdraw from the turmoil of party controversy and see where they stand before they commit themselves and their country to action from which it may not be possible to withdraw.

#### QUESTIONS

1. What is the function of scholarship in a democracy?.....  
.....
2. In what sense is the word "reactionaries" used?.....  
.....
3. What is the writer's objection to a pre-professional college course?  
.....
4. What is the spirit of scholarship?.....  
.....
5. What inhibits a man's freedom to think?.....  
.....



IV

Read this paragraph and then write answers to questions 1, 2, 3, 4, and 5. All questions must be answered from the paragraph.

No picture, then, and no history, can present us with the whole truth; but those are the best pictures and the best histories which exhibit such parts of the truth as most nearly produce the effect of the whole. He who is deficient in the art of selection may, by showing nothing but the truth, produce all the effect of the grossest falsehood. It perpetually happens that one writer tells less truth than another, merely because he tells more truths. In the imitative arts we constantly see this. There are lines in the human face, and objects in landscape, which stand in such relations to each other, that they ought either to be all introduced into a painting together or all omitted together. A sketch into which none of them enters may be excellent; but, if some are given and others left out, though there are more points of likeness, there is less likeness. An outline scrawled with a pen, which seizes the marked features of a countenance, will give a much stronger idea of it than a bad painting in oils. Yet the worst painting in oils that ever hung at Somerset House resembles the original in many more particulars. A bust in white marble may give an excellent idea of a blooming face. Color the lips and cheeks of the bust, leaving the hair and eyes unaltered, and the similarity, instead of being more striking, will be less so.

QUESTIONS

1. How may the historian or artist without showing an untruth be untrue? .....
2. What determines whether details should be included or omitted in historical writing or in a painting?.....
3. What is the test of excellence of a picture or a history?.....
4. In what way may an outline sketch be better than a painting?.....
5. What is the distinction made between "truth" and truths?.....

Read this paragraph and then write answers to questions 1, 2, 3, 4, and 5. All questions must be answered from the paragraph.

We do not come into the world each ticketed off by any outward mark for our special destination. There *may perhaps be some minds of such marked individuality* as to betray it at a very early period of life: *there may be even infant prodigies*, in whom the future poet or artist, the coming orator or statesman, can be discerned ere he has well left the nursery; but I fear that such fore-castings are in general due only to *partial or parental observations*, or to the *biographer's tendency to read back the success of subsequent life into the incidents of childhood*. To an impartial observer, so far as mental characteristics go, all babies are very much alike. The inarticulate vocal manifestations of the future poet or musician are no more melodious than those of his tuneless brother. The incipient divine or philosopher does not foreshadow his career in a premature air of thoughtful gravity impressed on his countenance. Even when we come to the stage at which education begins—a few rare instances of precocity excepted—individual aptitude is only very slightly discernible. It is not till a later, in the case of those of the best minds a much later period—viz., when the schoolboy stage is past, and that of student life has considerably advanced—that a youth can be said to be possessed of the materials by which the choice of a career can be wisely determined; in other words, of *that knowledge of the various branches of human thought*, and *that experimental knowledge of himself and of the direction and limits of his powers*, by which he becomes capable of such a decision as to his future destiny.

#### QUESTIONS

1. To what two causes does the writer attribute the tendency to discern special aptitudes in children?.....  
.....
2. What exceptions does he make to the general rule that "all babies are very much alike"?.....  
.....
3. What is necessary to a wise choice of a career?.....  
.....
4. Why should those with the best minds choose their vocations later than those of mediocre ability?.....  
.....
5. In not to exceed ten words, express the main thought of this paragraph .....  
.....

VI

Read this paragraph and then write answers to questions 1, 2, 3, 4, and 5. All questions must be answered from the paragraph.

The one word for the one thing, the one thought, amid the multitude of words, terms, that might just do: the problem of style was there!—the unique word, phrase, sentence, paragraph, essay, or song, absolutely proper to the single mental presentation or vision within. In that perfect justice, over and above the many contingent and removable beauties with which beautiful style may charm us, but which it can exist without, independent of them yet dexterously availing itself of them, omnipresent in good word, in function at every point, from single epithets to the rhythm of a whole book, lay the specific, indispensable, very intellectual, beauty of literature, the possibility of which constitutes it a fine art.

One seems to detect the influence of a philosophic idea there, the idea of a natural economy, of some pre-existent adaptation, between a relative, somewhere in the world of thought, and its correlative, somewhere in the world of language—both alike, rather, somewhere in the mind of the artist, desiderative, expectant, inventive—meeting each other with the readiness of “soul and body reunited,” in Blake’s rapturous design; and, in fact, Flaubert was fond of giving his theory philosophical expression.

“There are no beautiful thoughts,” he would say, “without beautiful forms, and conversely. As it is impossible to extract from a physical body the qualities which really constitute it—colour, extension, and the like—without reducing it to a hollow abstraction, in a word, without destroying it; just so it is impossible to detach the form from the idea, for the idea only exists by virtue of the form.”

QUESTIONS

1. What, according to the author, gives to literature its beauty?.....  
.....
2. What is the relation between the intellectual and the contingent beauties of literature?.....  
.....
3. What two things has the author in mind when he says “both alike”?  
.....
4. In not to exceed five words write a title for the above passage.....  
.....
5. To what does the phrase “that perfect justice” refer?.....  
.....

Do not turn this paper over until the Examiner gives the signal.

1. Write the name of your school here:.....
2. Write the date here:.....
3. Put a cross in the square after the name of the class to which you belong:

Freshman	{	First semester	<input type="checkbox"/>
		Second semester	<input type="checkbox"/>
Sophomore	{	First semester	<input type="checkbox"/>
		Second semester	<input type="checkbox"/>
Junior	{	First semester	<input type="checkbox"/>
		Second semester	<input type="checkbox"/>
Senior	{	First semester	<input type="checkbox"/>
		Second semester	<input type="checkbox"/>

When the examiner gives the signal, turn the test over to page 1 and DO WHAT IT SAYS TO DO.

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