VOCATIONAL GUIDANCE

A Thesis

Submitted to the Department of Education and the Graduate Council of McMaster University as part of the requirements for the degree of Master of Arts.

by

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PREFACE.

The writer's interest in Vocational Guidance extends back over several years. It was especially stimulated in the summer of 1930, when, in company with about twenty-five other teachers, he attended the first Vocational Guidance course in Canada, at the Ontario Training College for Technical Teachers, Hamilton. The interest thus aroused has never abated, and, in view of the almost total lack of knowledge concerning Vocational Guidance, even in academic circles, it was felt that an essay on the subject would be timely, and would be of most value if it gave an exposition, first, of the problems of Vocational Guidance, and, second, of some of the means now in use, or at least available for the solution of those problems. This plan has been followed, and a chapter added in which suggestions applicable to Ontario are made. It is easy to criticise, but it is difficult to make constructive suggestions without inviting unfavourable comment, or even ridicule. It is hoped that these suggestions will be accepted as they are offered, in a spirit of sincere desire to see our Ontario School System the equal of any, in its service to our boys and girls.

Although few acknowledgements are made in the text, the writer is quite conscious of his debt to a large number of teachers and others whose discussion of the subject, both in print and in private conversation, has been of considerable help. He is especially grateful to Mr. F. P. Gavin, Principal of the Ontario Training College, for giving him access to books and materials not elsewhere available in Canada, and to officials of the Departments of Education in Detroit, Pittsburgh and Baltimore, for their prompt and courteous response to his letters asking for information.

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CHAPTER I

The Field of Vocational Guidance.

S.1. Historical.

From the earliest times men have distinguished between grades of ability and of fitness for various occupations. But most of these distinctions have been very obvious, or based on quite unscientific grounds. Plato, in his Republic, shows the earliest realization of the importance of such individual differences. Each of us, he says, in virtue of his special endowments and aptitudes, has a specific vocation; there is some special contribution which he, and no other, can make effectively to the life of a rational society. The ideal of life is to discharge this vocation "to the height and with a single mind". The need for vocational guidance has never been better stated.

Obviously, then, Vocational Guidance resolves itself into an attempt, first, to determine in some detail the peculiar endowments and capacities of each individual, secondly, to study how best these abilities may be employed by society, and thirdly, by education to prepare the individual to perform his function most efficiently.

While the philosophy underlying Vocational Guidance has thus been assented to for over twenty centuries, the practical application of the idea has been very crude until recently. In ancient Greece, the rough classification

of the people into statesmen, soldiers, traders and slaves was made chiefly on the basis of birth, and Europe until lately showed little improvement in this regard. Not only was a child born into a caste, but often he was expected to follow the identical trade of his father. True, the Church, during the Middle Ages, did the Western world a service by selecting bright boys, of whatever social origin, and giving them the advantages of higher education. But true vocational guidance did not exist, since only the most obviously outstanding boys had a chance to break with tradition.

The spread of popular education in the Nineteenth Century opened many doors previously closed to the common people, although it still remained true that only the children of the well-to-do had complete opportunity to be educated to the fullest extent of which they were capable; and during the past thirty years, especially in the larger cities of the United States, the establishment of free high schools, together with the development of secondary schools of vocational type, have made vocational guidance, in the widest sense, at least a possibility.

S.2. The Relation of Vocational Guidance to the Schools.

If Vocational Guidance is to function efficiently, it is important that its primary duties, namely, taking stock of the individual, and preparing him for useful life, should be performed as early as possible. The logical place for

this is in the schools, and fortunately, means are now at hand, thanks to Binet, Terman, and a host of others, which make it possible, quite early in life, to determine such things as the intellectual level that an individual will attain, and the types of work which he will find most congenial. This phase will be dealt with in Chapter III.

S.3. The Scope of Vocational Guidance.

Let us see, then, what will make up the work of Vocational Guidance under present day conditions. The following functions would seem to be required of a satisfactory system:

1. Minute study of each child's capacities and talents.
2. Survey of industry and commerce to determine society's needs.
3. Advice to the child based on these studies and the taking into consideration his economic status and other possible obstacles.
4. Placement service.

The careful carrying out of this four-fold program is the object of Vocational Guidance.

CHAPTER II

Studying the needs of Society.

S. 1. The Multiplicity of Occupations.

The national census lists something like a thousand different occupations, each with its special requirements, and the trend is towards even greater specialization. A list of occupations published by the United States bureau of Census contains the names of 20,000 separate jobs, and a more practical list by Rutherford B. Platt, (Putnam, New York, 1933,) gives no less than 3500. Well might the guidance Counsellor look on these lists with dismay, when asked to advise a boy as to choice of a calling. But the outlook is not so dark. As Terman pointed out, fifteen years ago:

> " for all we know Law, Medicine, Engineering, Teaching and the Ministry make about equal demands upon general intelligence. Perhaps carpentry, masonry, plumbing, blacksmithing etc. require about the same amount of intelligence as dozens of other skilled trades." (Intelligence of School Children, Chapter XII.)

Such investigations as have since been made tend to bear out this estimate, and the implication, namely, that there are different levels of ability corresponding to groups of occupations, is one of the assumptions on which Vocational Guidance rests. So the Counsellor's task is enormously simplified. Instead of a thousand occupations, he can deal with a number of groups of

occupations, and having decided on the group suitable to a child's abilities, he can intelligently discuss individual occupations in the light of local conditions, attractiveness, personal qualities required, and economic considerations. The problem does not become simple, but at least it becomes possible of solution.

Probably the most satisfactory grouping is as follows:

(i) The Professions
(ii) Executive positions
(iii) Commercial and Nursing
(iv) Skilled Labour
(v) Semi-skilled Labour
(vi) Unskilled Labour
(vii) Domestic

S. 2. The Time-lag.

Complicating the problem is the fact that vocations are chosen months or years before the candidate enters the world of competition, and during this time conditions often change very greatly. It therefore becomes one of the chief duties of the counsellor to study trends in industry, especially the relation between the growth or decline of an industry or profession and the numbers entering it yearly.

S. 3. The Beginning of Specialized Training.

Although the work of the world is done by people of so many different kinds and degrees of training, there are

good reasons for wanting everyone, so far as possible, to have a certain minimum of general education so that all will have some common ground. After all, earning a living is only a part of living. The question then arises, how much common training should there be, and how soon should specialized training begin.

In Ontario, all tax-supported schools of whatever type must give the elements of a general education. The problem then, of how early to specialize in a given vocational course is not so serious, since only part-time (about 50%) will be devoted to vocational training. The reason behind this policy is that schooling is considered to be more than a preparation for earning a living, and should also prepare for leisure and citizenship. But in other countries there are frequently found "trade-schools" which concentrate very narrowly on vocational preparation. In such cases the counsellor has much greater responsibility than with us.

In Hamilton, pupils are allowed to specialize after passing the High School Entrance examination, or on attaining the school-leaving age of sixteen. At present the choices open are:

(a) at the Collegiate Institutes,
  (i) University Matriculation (several choices)
  (ii) Normal School Entrance " "

(b) at the High Schools of Commerce
  (i) General Business Course
  (ii) Secretarial Course
  (iii) Special One Year Course.

(c) at the Technical Schools,

(i) Matriculation (science option)

(ii) Some 15 courses in practical trades.

(iii) Many special courses to suit individuals.

(iv) Special apprenticeship courses in Building Trades.

(d) at the Art School. (part of Hamilton Technical Institute.)

(i) General Art Course.

(ii) Commercial Art.

(iii) Individual Instruction.

S. 4. Surveys of Occupations.

On account of the multiplicity of occupations and the time-lag already referred to, it is usually felt that it is too much to ask individual counsellors to make themselves thoroughly familiar with the state of industry and commerce. Consequently in a number of the more progressive cities, Pittsburgh and Detroit for example, surveys have been made of a number of the callings in which fairly large numbers are employed, and detailed information put in the hands of the counsellors. The two cities mentioned embody this information in booklets, but usually a card system is recommended as more economical. A complete record would convey the following information:

Job Card.

1. Job-name (and explanation if necessary)
2. Number employed in city.
3. Average time spent at job.
4. Number required each year.
5. Names of employers.
6. Wages (a) at beginning (b) at stated periods
7. Opportunity for advancement.
8. Educational Standards (a) required (b) recommended
9. Hours of work and other condition.

A Card System embodying this information soon accumulates, and a set covering several hundred occupations requires only a moderate sized drawer in the counsellor's desk. The booklets are more suitable for distribution to parents and teachers. At present there are available in Pittsburg alone, some thirty-two of these booklets, a list of which , together with a specimen copy will be found in the Appendix.

The weakest part of all Vocational Guidance programs is the lack of information regarding those qualities, more or less capable of objective measurement, which are required for a given occupation. How much intelligence and how much manipulative skill is required of a physician, for instance? Or of a motor mechanic? Much remains to be done in this field by the testing of adults who are admittedly successful in their several occupations. The only extensive testing of adults so far carried out has been the American Army examination in 1917-18, and since this examination was conducted by means of group intelligence tests, then in their infancy, many

criticisms have been offered of the use made of the results by Vocational Guidance Counsellors.

A wonderful opportunity exists for some Government, School System, or Research Foundation to make a thorough survey of this subject, with the tools now available for the task, many of which are mentioned in Chapter III.

CHAPTER III

Studying the Child.

S. 1. Preliminary Remarks.

Vocational Guidance is not a science. Like Medicine it is an art, based on certain facts and certain assumptions. The true Vocational Counsellor, like a true Physician, will never allow machine methods to supersede enlightened common sense, but at the same time will make use of every known device to increase the accuracy of his knowledge. This chapter is devoted to some of the tools, many of them little used, which may be employed to provide the accurate knowledge on which diagnosis and treatment may be based.

We have seen that one of the crying needs of Vocational Guidance is accurate knowledge of human qualifications needed for individual occupations; no less important, though fortunately much nearer realization, is a method of scientifically appraising the human material, the child who will presently be engaging in one of these occupations.

S. 2. Assumptions on which Vocational Guidance is based.

The measurement of the qualifications of the child, a sort of human inventory, is based on the following assumptions. Although received with practical unanimity by psychologists, they are not yet capable of scientific proof, but are used as hypotheses in science are used,

until later investigations shall bring about greater accuracy and refinement.

(i) Human capacities can be measured.

No one questions that skills can be measured, but that capacities, latent or only partially developed, can be measured, is not easily demonstrated. Terman, in his early book, "The Measurement of Intelligence", states the case in the field of Intelligence Testing. The broadening of the hypothesis to include such capacities as mechanical aptitude, for instance, seems reasonable to vocational counsellors, but is not so generally assented to.

(ii) Measurement made in childhood can be used to predict final capacities.

That is, the child's capacity in relation to that of his fellows of the same age will continue constant throughout life. This is the fundamental reason for the testing program recommended here. Terman demonstrated its truth, also, in his second great book, "The Intelligence of School Children", (chapter IX), at least in respect to general intelligence.

S. 3. Estimates of Capacities.

Until objective tests are more generally admitted to do what they aim to do, and also to supplement them and serve as a check, it will be wise to continue the recording of estimates of pupils' capacities and characteristics.

The logical person to make such an estimate is the teacher. Two important considerations must be kept in mind, however. In the first place, only the average of several opinions should be used, to avoid any danger of prejudice; and in the second place, only a rough classification should be attempted. A percentage scale, for instance, is ridiculous, in estimating, let us say, dependability. Most workers agree, however, on the possibility of grading pupils into five groups, on almost any trait or ability. It is customary to call these grades A.B.C.D. and E., corresponding to very high, higher than average, average, lower than average, and very low. A chart for assisting in grading certain qualities has been arranged by the writer, in which descriptive words or phrases are set opposite each letter to assist the teacher in arriving at a standardized rating. (See Appendix VIII for specimen)

S. 4. Character Records.

In our study of the child it is desirable that a cumulative record be kept, and added to each year, which will grade him, as suggested immediately above, on certain fundamental traits of character. Such traits are integrity, punctuality, leadership, ability to co-operate, etc.

S. 5. Health Records.

Every child is entitled to a detailed health chart to

be recorded by a physician and used as a basis for corrective exercises, etc., but for vocational guidance purposes, a five-fold classification, made by the physician, will be sufficient in all but exceptional cases.

S. 6. Short History of Modern Tests.

The modern test, as used in the measurement of human capacities and skills, arose from two main sources, viz; the clinical interview of the physician charged with distinguishing between normal and subnormal children, and the written group examination common in the schools of the latter half of the Nineteenth century. To some extent tests have retained the peculiar marks of their origin, for we still have the two distinct types of test,--the interview and the group examination. The progress that has been made has consisted of standardizing questions and answers, eliminating also, as far as possible, those which depend on the personal opinion of the examiner. In technical language, the effort has been towards a higher degree of Standardization, validity, and objectivity.

The work of Galton on the subject of testing individuals to determine the degree to which certain physical and mental qualities were inherited, and the examinations of Cattell, a pupil of Wundt, which appeared in 1890 (Mind, 1890, Vol. 15) are the earliest attempts to study scientifically and measure individual differences resulting from inherited mental equipment as opposed to learned activities.

But the greatest progress was made in the epoch-making work of Binet, a Paris physician, who sought a method of distinguishing between normal and weak-minded children. He made the great discovery during the decade 1895-1905, that there is a relation between the mental ability of children, and their ability to answer certain questions regarding untaught activities. Thus, he found that at a certain age children became conscious of such things as their sex, the time of day, (morning or afternoon) the day of the week, the absurdity of ridiculous statements, etc. He tried out many simple tests, and using them on normal children of all ages, soon found that there seemed an age, in each case, at which the particular test proved quite easy to a majority of his little patients. In 1911 he published his revised list of tests, with each one assigned to a year, and a method of using the new "measuring scale" to determine the "Mental Age" of any child, that is the place in the scale attained by average normal children of a certain age. Binet did not live to perfect his instrument, but his work proved the greatest acquisition in the history of the measurement of human abilities. Other workers, (Goddard, Kuhlmann, Terman, in the United States, Bobertag in Germany, for example) translated or modified the tests and used them extensively. To-day, certain of these revisions are accepted as satisfactory measuring rods in the law-courts as well as in the schools of many countries, and they are used as criteria in judging the validity of

other tests which purport to measure the same kind of ability.

When the United States entered the Great War, in 1917, it was decided to give a mental test to the conscripted men to assist in organizing the army, selecting officers, and eliminating misfits. A group of American psychologists, using an examination by Arthur S. Otis as a foundation, made up a test which could be administered to several hundred men at once, and scored in a few minutes. For those unable to read, or write, other tests were given, including a modification of the Binet scale. The result of this large-scale examination (about 1,700,000 men were tested) was an increased interest in mental tests, and a wide-spread acceptance of their validity. Since the war, tests have appeared by the score, not only for measuring intelligence but for many other purposes. A list of those most useful in Vocational Guidance is given in Appendix I.

S. 7. Classification of Tests.

A. As to Method of Administering.

Two general types are found, as already mentioned. In the one the examiner interviews the child (or adult) privately, asking questions and recording the answers. This is the Binet type. In the other, printed sheets are distributed to a group who write the examination in much the same way as an ordinary school test, and later the papers

are collected and scored by the examiner. This is the Otis type. The former requires more training on the part of the examiner and is more expensive but more reliable. The latter sacrifices validity to some extent for economy, but is very valuable in class and school surveys, etc., although, in individual cases it is not to be compared with the Binet type, especially where an important decision depends on the result.

In the opinion of the writer, after the administration of both types of test to a considerable number of children and adults, a safe compromise can be effected in testing children, by adopting the following rules:

(a) All pupils should be tested for intelligence at least three times, at intervals of months or years (if group tests are used) and the results averaged.

(b) All pupils with very low scores (I.Q.) should be given an individual (Binet) test by a qualified psychologist.

By this method the economy of paper tests is retained with a close approximation to ideal accuracy.

B. As to Method of Recording Results.

Two types of test are found under this classification also,--first, the age-scale or Binet type, in which the examinee is rated as having equaled normal children of a certain age, in years and months, and second, the point-scale, in which each test is considered worth so many points

or marks and the examination is marked like a school test. The former is easy to understand but often misleading when applied to adults; the latter permits of finer discrimination, since gradations of value can be given to answers of various degrees of completeness, and the examiner is not forced to decide whether the child, in a doubtful case, should get "all or none" of the score. Point-scales are usually accompanied by a table of values for translating the score into Mental Age, for those who wish to obtain this result.

C. As to Purpose.

(i) Mental Ability or Intelligence Tests.

Scores of tests exist which purport to measure general intelligence, some of them excellent indeed. A number of the best known and most widely used tests are included in Appendix I, together with certain information concerning them. These tests have been found to be most dependable when given to children between the ages of eight and fourteen, for the following reasons:

(a) They examine the child's knowledge of things which he has not been taught, but which are, so to speak, common knowledge; consequently they are not fairly applicable after children leave school or specialize in different fields.

(b) Younger children frequently respond unfavorably and so there is introduced a personal factor which influences results, but within the ages mentioned children take tests as a matter of course, especially if they are examined in their regular school room.

(c) The intelligence of exceptionally bright children is very difficult to assess in terms of average abilities, as these are usually considered to cease developing during adolescence and very bright children at ten or twelve have already reached the maximum attainable by "average" adults. All age-score tests, therefore, tend to underestimate the abilities of exceptional children unless the latter are quite young. Certain of the point-scale tests overcome the difficulty by an artificially constructed "norm", which is misleading unless its method of derivation is understood. (See Appendix II for specimen copies of well known point-scale group tests.)

(ii) Achievement Tests.

Growing out of ordinary school examinations, these tests offer an excellent measure of a child's actual knowledge in any given subject and by means of a comparison with the "norms" of average classes or ages a ratio can be derived (the A.Q.), which tells the degree to which he is overtaught or undertaught, as compared with the average of his grade. Such ratios, from the viewpoint of Vocational Guidance, are chiefly valuable as indicating interests.

(iii) Mechanical Aptitude Tests.

Next to intelligence tests, these are the most discussed of the new-type tests. Opinion is divided among psychologists, some of whom regard mechanical aptitude as a distinct kind of intelligence, while others look upon it as merely a phase of general intelligence modified by

interest. Without taking sides, it is safe to say that the tests have merit, but that their results should not be accepted in any final or absolute way, the examiner being satisfied to group children into the five classes previously referred to. This is satisfactory for Guidance in the light of our present lack of knowledge of the requirements of various occupations. The earlier tests for Mechanical Aptitude consisted of devices to be assembled by the examinee, but later tests of the paper type have proven reasonably good and much more economical. (See Appendix III for specimen copies of two such tests.)

(iv) Manual Dexterity Tests.

The writer has very little first-hand knowledge of these tests. They involve such simple operations as needle-threading, telegraph key-tapping, etc., and are considered to be useful not so much in determining fitness for certain occupations as, in a negative way, showing lack of fitness, where such exists.

(v) Speed Tests.

These exist in various subjects, especially Arithmetic and Typewriting. The feature is a large number of approximately equal test elements, the object being to ascertain the speed at which operations can be performed.

(vi) Power Tests.

Power tests consist of test elements of increasing

difficulty, to ascertain the highest (most complex) level at which the examinee can work successfully. Intelligence tests are of course power tests.

(vii) Character Analysis Tests.

Several attempts have been made to render character reports independent of personal opinion. One of the most ingenious, for instance, tests a child's honesty by having him indicate titles of books he has read. Some of the titles are fictitious, and after he has finished he is given a corrected list, and left alone with an opportunity to alter his examination. But a carbon copy has recorded his first statement, and his willingness to cheat can be checked. Whether such tests will ever displace the rating of teachers is doubtful, and they are scarcely necessary in any case except where the counsellor is attempting to assist a child whose antecedents are unknown. (See Appendix IV for a specimen copy of an interesting test of this type.)

(viii) Trade Tests.

When a man states that he is, let us say, a toolmaker, his statement can be very quickly checked by means of a simple test which asks him questions regarding the trade. The examiner need know nothing about it, as he has a "key" of correct answers. The trade test is chiefly of use in industry to enable an employer to avoid expensive trials of inefficient labour.

(ix) Special Ability Tests.

Tests are now available by which any teacher or Counsellor can determine whether or not a child has capacity for such things as music or drawing, even though the child has had absolutely no instruction, and even when the examiner is without talent himself.

(x) Diagnostic Tests.

Of use chiefly to teachers, these give the child a series of tests on each phase of a given subject so that the instructor may determine which need to be retaught. They are not used to any extent in Guidance.

(xi) Prognostic Tests.

These tests are designed to do in half an hour what trial courses do in several weeks. A child's ability to progress in Algebra, Physics, Latin, etc., can be measured and failures avoided. They are chiefly of use to the counsellor in checking his own opinion before making a recommendation for secondary education.

(xii) Instructional Tests.

Designed to test achievement in a certain field of a school subject, these tests are of use to the teacher in determining how well each division of the subject has been learned. In Guidance work they are of use chiefly in testing a new comer from another school system. There is no need to wait weeks or months. A direct comparison

of his achievement with that of an average class can be obtained in an hour.

S. 8. Publishers of Tests.

Although new-type tests have been printed literally in millions, the most dependable and most used are published by a small group of publishers, whose catalogs give fairly good descriptions of the types mentioned above. Sample copies of most tests may be obtained by teachers for from ten to fifty cents. Following are the chief publishers:

(i) World Book Co., Yonkers-on-Hudson, New York.

(ii) Public School Publishing Co., Bloomington, Ill.

(iii) Bureau of Publications, Teachers' College, Columbia University.

(iv) C. H. Stoelting Co., Chicago, Illinois.

(v) J. B. Lippincott Co., New York.

S. 9. Forms, Cost, etc.

(I) Forms.

Most of the tests referred to in this essay are "paper" tests; that is, they are printed examinations to be filled in by such simple operations as underlining words or writing a letter or figure in answer to a question; the object being to make the mechanical work of writing and scoring as simple and quick as possible. They are usually put up in packages of twenty-five together with a manual of directions for the

examiner. Many of the tests are published with two or more "forms" which may be used interchangeably, so that examinees do not profit by experience when tested a second time.

(II) Cost.

The cost varies from about one cent to a dollar per test, but the usual cost is from three to five cents for each booklet. Tests such as the Binet Examination or the Stenquist Mechanical Aptitude Test require considerable material, but of course, it can be used many times. Generally speaking, individual tests cost the time of an expert examiner for an hour or more, but group tests can be conducted by teachers in their regular school periods, at a cost of less than ten cents per pupil per test. More detailed information is given in Appendix I.

(III) Time Required.

Nearly all the popular tests require from thirty to forty minutes for administering. Most of them can be scored in two or three minutes each. Thus a class of forty pupils can be tested, their papers scored, and the results recorded and arranged in tabular or graphic form in about three hours, the time usually required for merely writing a school examination.

S. 10. Value of Tests.

So long as Vocational counsel is given, the responsibility for encouraging a child in a given direction or

discouraging him in another, will be the counsellor's. Tests should be used to give him information, to supplement his opinion or the opinion of teachers, and to discover aptitudes or interests which ordinarily would not be found out in the class room.

But the great value of the tests mentioned here is that most of them can be given in regular class periods in the elementary schools, and marked by the teacher, so that the counsellor, whose time is limited, may receive a card which tells him a great deal about the child when he first interviews him. The result is that from the first contact with his client he has something to "work on", and is not forced to spend several hours in merely getting acquainted with the child's equipment.

There is another phase of this question of the value of tests, which is frequently overlooked or misunderstood. While tests do show approximately the relative ability of a child, the extent to which his ability exceeds the minimum considered to be necessary for a given occupation, does not in any sense indicate the probable degree of success. A boy, for instance,whose mechanical ability is enormously superior to the standard required will not necessarily be more successful than another of more moderate capacity. The test merely classes both as capable of doing the work, and other qualities must be considered before a prediction of any validity can be made. Most of the so-called failures in counselling are no doubt the result of hasty conclusions

which left out of consideration such important factors as strength of purpose, social attractiveness of the individual, financial resources, etc.

CHAPTER IV

Advising the Child.

S. 1. Introductory Remarks

We now come to the practical side of Vocational Guidance. Just how is it carried on? A survey of a number of large cities shows that there are almost as many types of guidance service as there are cities, and so far as the writer has been able to study smaller municipalities, there would seem to be practically no vocational guidance whatever. Some of the methods or devices in use will be described in section 6 below.

S. 2. Educational Guidance

It is necessary to appreciate the fact that guidance in the elementary schools is almost entirely educational direction. Most of the pupils will go on to secondary schools, and consequently it is sufficient for the elementary school counsellor (usually the principal) to divide his pupils into three or four main classes, e.g., (a) those intended for the professions, (b) those intended for commerce, and (c) those best fitted for industrial occupations. His hardest task is not so much to decide which group will best serve the pupil's needs, as to persuade parents who have already made an unwise choice, to reconsider. At present, for instance, when approximately 90% of our workers are engaged in industry and commerce, it would seem wise to

encourage only about 10% to prepare for the professions. Nevertheless educational advisors are fighting an uphill battle to discourage parents from sending their children to the collegiates where only a few will profit, and direct them rather to the Commercial and Technical Schools.

S. 3. Economic Obstacles.

No matter how conscientious the counsellor may be there will be times when he simply cannot advise the occupational training which would be best for his young client, because family finances preclude any possibility of carrying out the plan. In such cases he must make a second recommendation, perhaps much inferior. Until governments decide to do something to assist gifted children to continue their training, counsellors can only encourage them to do their best to keep up their studies at evening classes, or to work and save sufficient to return to school later on. It is interesting to notice that the British School system leads the way in the solution of this difficulty by its provision of "free places".

S. 4. Placement.

The placing of graduates in remunerative occupations is an important part of the counsellor's work, and the one which brings him into closest contact with employers and parents. So important is it that there is danger that it will overshadow the other phases of the work, and danger

also, that in times of business depression, such as the present, vocational guidance may languish because placement is so difficult. The attitude expressed by "What's the use?" is very easy to acquire. Nevertheless placements are made even in times of severe depression. In 1933 the Hamilton office of the Employment Service of Canada filled some 8000 jobs. The director has announced his willingness to co-operate with the school principals in placing young graduates, but so far little has been done about it.

The usual method of carrying on the placement service is to appoint a teacher for the duty and allow him certain hours free from classes for the purpose of (a) reviewing card records of pupils nearing the school-leaving age, (b) visiting and otherwise studying local industries and offices to learn their needs, and (c) interviewing pupils. A number of Canadian High Schools adopt this method, but the time devoted to Vocational Guidance is rarely more than three hours a week. Obviously, its success depends on the attitude of employers. When the latter can be persuaded to telephone the nearest High School when an opening occurs, and accept pupils recommended by the vocational counsellor, placement will become a much easier task.

In the past, moreover, employers have given undue weight to academic certificates such as that of Matriculation, even when the positions could better be filled by pupils with commercial or technical training. In other words

Matriculation has been looked on as a certificate of graduation from secondary school instead of as one of entrance to University. The result has been that large numbers have gone to the academic high schools who could not profit by the language and mathematics courses, with resulting failure and disappointment, not to mention waste of time. This year the Hamilton Board of Education has begun the practice of granting a school-leaving certificate which will be much more satisfactory for employment purposes, as it will give academic standing, special qualifications, and character record. It is hoped that employers will soon come to look on this certificate as a more reliable guide than any purely academic standard.

S. 5. Follow-up.

Where vocational guidance counsellors have time, and this is ordinarily true only in a few American cities, a policy of following up recommendations is carried on. The counsellor inquires regarding former placements, to see how well his pupils have measured up. This work can be carried on in connection with the revision of the "Job Cards" described in Chapter II, Section 4, when such becomes necessary owing to change in wage rates, hours of work, etc. Baltimore has a fairly effective and very economical method by means of questionnaires sent out to former pupils who have been placed, as well as to their employers. Occasionally replacements are made as a result

of dissatisfaction on the part of either the child or the firm.

In addition to helping to evaluate earlier vocational counsel, the "follow-up" often brings to the knowledge of the school authorities data on types of training which are not provided in the school system, but which are needed for pupils to fit into the vocational opportunities in the locality.

Two extensive "follow-up" studies have been published recently, the one in England (F. M. Earle--Methods in Choosing a Career--Harrop & Co., London) and the other in the United States (Irving Lorge--The Chimera of Vocational Guidance, Teachers College Record, February 1934)

In the English study Mr. Earle compares the results of Vocational Guidance with the aid of scientific intelligence and aptitude tests and the character study on the one hand, with the results of allowing pupils to pass through the schools in the ordinary way. His findings favour the more thorough form of Vocational Guidance, especially as regards length of tenure in jobs obtained through counsellors. When we consider that the ordinary method in England entails a considerable amount of vocational help and advice, this result is all the more pleasing to convinced advocates of Vocational Guidance. His follow-up work extended over an average period of about three years.

The American experiment was conducted under the dir-

ection of Professor Thorndike, and attempted to find the predictive value of tests of intelligence, mechanical adroitness and clerical ability given at age 14 for success at ages 18 to 20 and 20 to 22. Twenty-five hundred boys and girls in New York City were studied. Mr. Lorge, who reports the study, is very pessimistic as to the value of the tests used in predicting vocational success. But what he really proves is that the degree of success in a vocation is not predictable from relative proficiency in the tests. His finding , while somewhat discouraging to Guidance enthusiasts, does not invalidate the tests, but rather the extravagant optimism of some users of them. This point has already been made in the present thesis. (See Chapter III, Section 10, Value of Tests.)

These studies furnish the strongest argument for follow-up work, since, if the counsellor does his full duty in this respect, his experience will teach him to take into consideration every single factor that may influence success, and not to depend on any simple device, no matter how excellent.

S. 6. Methods in Use. A. Educational Guidance.

This branch of the work is carried on chiefly in elementary schools. It consists, essentially, as already explained, in advising as to choice of a secondary school course. For this purpose it is sufficient, first to determine the occupational group (professional, Commercial, skilled labour, etc.) for which a child is best fitted, and secondly to acquaint him with the attractions of various

occupations suitable to his ability, persistence, and economic resources, in order to stimulate him to make a definite choice which will not cause disappointment. He must be encouraged to be ambitious enough to strive to qualify for something worth while and yet not encouraged beyond his capabilities. Let us see some of the methods employed to accomplish these two objects.

(i) Talks by business men.

Frequently, in Hamilton schools, local business men are asked to address assembled pupils. Not a few of such talks serve to fire the ambition of certain pupils. The weaknesses of the method are, (a) that the whole school is addressed, and many pupils are too young to profit, and (b) that outsiders generally lack the ability to make their message completely intelligible to children.

(ii) Talks by Teachers and Principals.

Teachers are advised to take opportunities in lessons on Geography, Literature, etc., to do something towards familiarizing pupils with the relative attractiveness of various occupations, the qualifications required, and other information regarding them in such a way as to encourage a lively interest in the subject. Most teachers are none too familiar with these matters themselves, but a definite program of co-ordinating vocational instruction with school subjects in each grade is sometimes adopted, and teachers furnished with helpful materials.

(iii) Visits to Factories, Dairies, Offices, etc.

As part of the work in Geography, several Principals use this device to interest pupils in various occupations. Conditions of work, in particular, cannot be better taught.

(iv) Lessons on Individual Occupations.

With the aid of material prepared by a central office, teachers occasionally give lessons on such occupations as nursing, office work, etc.

(v) Booklets on Various Occupations.

Several cities issue booklets setting forth facts regarding individual occupations. It is too expensive to give these out indiscriminately, but they serve excellently to provide teachers with material for method (iv) above. In this connection, it is worth noting that pamphlets prepared in one city are usually suitable, with slight modifications, for use over a wide area. (See appendices VI and VII)

(vi) Tests.

In order to classify pupils in occupational groups tests are now available which make this task relatively simple. (See chapter III) They are, however, very little used in Ontario, and when they are used it is almost always at the teachers' own expense. The result is that guidance in this Province consists almost entirely of instruction regarding possible choices of occupation.

(vii) Teachers' Estimate of Ability.

Vocational Guidance still has to depend largely on this method for classification of pupils, which naturally is very rough indeed.

(viii) Trial Courses.

Beginning in the last year of public school life, (formerly in Hamilton, it began a year earlier) a course in manual training or domestic science provides, besides its primary purpose, an opportunity to judge a pupil's mechanical ability. In the Technical Schools, this "pre-vocational" period included, in addition to woodwork, such manual work as tinsmithing, motor-mechanics, printing, drawing and machine shop practice.

S. 6. Methods in Use. (continued)

(b) Vocational Guidance Proper.

(viii) Trial Courses. (continued)

This topic under Educational Guidance, above, leads directly to the problem of actual selection of an occupation. In some Junior High Schools in the United States, trial courses have been instituted in languages and other academic subjects as well as in the work of the shops. Usually an intensive course of from one to three months is given, followed by a test to eliminate those who have not done satisfactorily. The trial course is without question the fairest method of finding the occupational group to which a pupil belongs,

but is very expensive.

(ix) Prognostic Tests.

Tests are now available in each branch of mathematics, several languages, and in mechanical ability, by which, in an hour or two, testing several dozen at a time, an expert examiner can determine in advance just about what each pupil would be able to do in the particular subject tested. Prejudice, of course, delays the adoption of these tests, but if they are used only with the intention of encouraging the best to continue, and are not used to bar any compulsorily from further study along a certain line, they should more than justify their use.

(x) Intelligence Tests.

No other single factor is so important in worldly success as intelligence. Some occupations require mechanical ability, some require moral qualities, but all require intelligence. If this were not so we should do the job by machinery. But while the knowledge of a child's intelligence is extremely important, it is a fact that it becomes most important to a counsellor just at a time when it is rather difficult to obtain. For reasons explained in Chapter III, intelligence test results are most reliable when obtained before the age of fourteen. It is therefore desirable that intelligence testing, while not indispensable in the elementary school, should nevertheless be done there, and the results

recorded for future use. This brings us to the next very important device.

(xi) The Cumulative Record Card.

It is increasingly felt that a pupil should come to a secondary school accompanied by a complete record of his attainments, character, health, intelligence, etc., while in the elementary school. Such records are now kept in many schools, but are not usually passed on to the higher institution. The American Council on Education, Washington, D.C., have designed a Cumulative Record Card for this purpose, and are endeavoring to have it adopted generally. The Carnegie Foundation for the Advancement of Teaching is also sponsoring the use of this card. (See Appendix IX for a specimen card) It is an important part of the equipment of High School Counsellors in Pittsburgh, for example.

(xii) Vocations Clubs.

Such clubs within the school have for their aims:

(a) the stimulation and encouragement of interest in further education,

(b) the learning of many different ways in which people earn their livings, and,

(c) the stressing of the social point of view, and of the importance of those qualities of character which contribute towards true success.

(xiii) Plays and Pageants.

Many plays and pageants suitable for stimulating interest in Guidance are available. (See "A Source Book for Vocational Guidance" by Edna Watson. The Baltimore School System uses and recommends "The Pageant of the Workers", by Watson, and the following dramatizations sponsored by the National Advisory Council on Radio in Education, 60, East 42nd Street, New York City:

(a) Choosing a Job in 1732. (Based on Benjamin Franklin seeking his first job.)

(b) Choosing a Job in 1932. (How the boy or girl of today finds a job.)

(c) What Kind of a Boy is Bill? (A study of the personal qualities of a young man.)

(d) Tom, Dick and Harry on the Job. (Illustrates how to study and select a particular job.)

(e) Planning Your Life Work. (Two dramatizations of Vocational Guidance interviews with young people and their parents.)

(f) At the Crossroads of Education. (Counsellor discussing opportunities for training with a group of young people.)

(g) The Family Steps Out. (Members of a family group making plans for leisure hours.)

(xiv) Vocational Guidance Committees.

Where guidance is carried on at all, there is usually a committee appointed by the Board of Education. In Hamilton there is a general committee, with a smaller committee in

each school. The latter usually consists of the Principal and two or three teachers who are interested enough in the subject to devote spare time to it. The committee carry on certain of the methods outlined above, as best they can, subject to limitations of time and money. Probably as time goes on, most, if not all of these devices will be made use of. At present, however, there is probably no place in the world where all of them are in operation to any extent.

S. 7. The Degree of Compulsion.

How far should the schools go in assisting the child to choose an occupation? There are two practical answers to the question today. The first consists of ignoring the obligation and simply providing the child with the usual schools, allowing him to sink or swim. This was the general attitude until the last decade, and is still the attitude of most school systems. The second is the one now embodied in several plans, including that of Hamilton. It consists of presenting the pupil with certain facts about the commoner occupations, and hoping that he will make a satisfying choice.

While no one in Canada will subscribe to the idea of regimentation, or dictation to the child, it would seem tothe present writer that some greater measure of control might be exercised. For, by means of methods outlined above, those in authority can now determine what, in a general way, is best for the child, and, if their work has been thoroughly done, can safely exert considerable pressure, first, as to choice of a secondary school, and secondly, as to particular courses open to the individual.

CHAPTER V.

A Suggested Plan for Ontario.

S. 1. Introduction.

The pages which follow set forth a number of suggestions for the improvement of guidance activities in Ontario. The main object is to point towards a comprehensive scheme, which, without in any way detracting from the effectiveness of such guidance as already exists, would in fact increase its value, and provide a means of bringing backward municipalities up to the level of effectiveness of the best organized school systems in America.

Two features will be apparent, viz., first, the emphasis on standardized tests and records as indispensable aids to successful guidance, and second , the loading of all the expensive machinery of the guidance program on the administrative unit best able to bear it - the Province. Only a provincial or national organization could provide for the rapid dissemination of good ideas, and the necessary economy in carrying out the surveys suggested.

S. 2. Regarding Provincial Organization

Vocational Guidance is of sufficient importance to merit the appointment of a Director, to rank with the Directors of Technical and Professional Education, and report directly to the Deputy-Minister. Perhaps, as a beginning, one of the present Directors could assume

the duties, but the program applies to every school in the Province, and such a compromise could only be temporary. His duties would be:

(a) To plan, first, a testing program to be carried out as a regular part of the work of each school, and secondly, a survey of occupations throughout the Province.

(b) To appoint expert Counsellors with the rank of Inspectors to visit individual schools and supervise the Vocational Guidance program. These inspectors would co-operate with the school counsellors, advise them, suggest methods, etc.

(c) To recommend to the Minister such legislation as might be necessary from time to time, with regard to grants to school systems to encourage the adoption of the program in each locality, and other matters of administration.

(d) To provide for the training of Vocational Guidance Counsellors.

(e) To appoint an Advisory Vocational Guidance Committee made up of interested persons in different parts of the Province to assist in getting the movement started, to collect and collate information, especially as regards occupations, and to stimulate and maintain local interest in the work. The Committee should also work out means of co-operating with the Employment Exchanges.

(f) To maintain a Research Department under the direction of a qualified Educational Psychologist to examine and evaluate available tests, etc., and to devise new ones suitable for use in Ontario, and generally, to put

into the hands of counsellors and inspectors all the material of a technical nature which they may require.

(g) To publish booklets and other helpful material for the use of counsellors in the schools.

S. 3. Regarding Municipal Organization.

The municipal plan will necessarily be adapted to the size of the school system.

A. In Cities.

(i) A committee should be formed to co-ordinate the work of the various schools, gather occupational information, etc.

(ii) A placement office should be maintained to place children leaving school, follow up their after careers, and co-operate with the Employment Agencies.

(iii) Counsellors should be appointed in every school to supervise or conduct the testing program, and give Educational and Vocational Guidance. In the elememtary schools particularly, the counsellor should study and report on accelerated and retarded pupils, reasons for failure, etc. He will, in co-operation with the Principal, arrange for speakers to visit the school and for pupils to visit offices and plants in the vicinity, and will encourage Vocations Clubs and other devices to stimulate interest.

In elementary, Continuation and Smaller High Schools

the counsellor has to co-operate with the Principal in so many ways, and their work with respect to failures, promotions, etc., overlaps to such an extent, that it is desirable that the Principal should also be the Counsellor. To bring this about it would be wise, for a few years, to offer special grants to schools whose Principals are qualified Vocational Guidance Counsellors, and later to make the possession of a Vocational Guidance Certificate one of the qualifications for a Principalship.

In Handicraft, Technical, Commercial and Intermediate Schools there should be a qualified counsellor for each sex, usually a teacher whose time-table allows one or two half-days per week for this work, according to the number of pupils. He will have complete charge of the testing program and will direct a plan of occupational lessons, auditorium lectures, visits to plants, etc., along the lines referred to in Chapter IV, in co-operation with the Principal. To avoid friction, it would be best to have this plan approved at the beginning of each school year, with definite periods assigned to the vocational guidance work, so that there will be no interference with the time-table. In the new Junior High Schools, vocational guidance is extremely important; indeed the whole idea of this type of school is largely one of trial courses accompanied by some degree of instruction in general education.

B. In Towns, Villages and Rural Areas.

In the smaller communities the work could be carried on by the school Principals in their own schools, the Principals forming a local committee together with a few interested citizens, to bring about co-operation between employers and counsellors.

S. 4. Qualifications of Counsellors.

(i) General

The present qualifications for a Vocational Guidance Certificate in Ontario are:

(a) a Teachers' Certificate

(b) Five years' successful teaching experience

(c) a ten weeks' course of study in Sociology, Economics, Educational Measurement, Placement, etc.

The requirements compare favourably with those of other school systems. It would be wise, however, to demand some practical experience in industrial or commercial pursuits. The surest way to make a failure of Vocational Guidance is to put the work in the hands of men who will attempt to do everything from an office desk in a purely academic or routine way. The need for comprehensive records of many types and the value of tests and character ratings have been stressed in these pages, but it has also been pointed out that records such as these exist only to assist the practical wisdom of the counsellor, and to make his time more productive. Ontario would do well to learn

from Baltimore, and demand a certain amount of business experience (for instance, during vacation) as one of the qualifications for counsellor.

(ii) In Collegiates and High Schools.

Present requirements are probably satisfactory for counsellors in senior High Schools, since their work will ultimately consist almost entirely of educational direction for those already preparing for the professions.

(iii) In Vocational and Junior High Schools.

In this group it is desirable that qualifications should be raised as soon as the supply approaches the demand. The present standard for admission to the course for the certificate, followed by at least three summer courses, together with at least one year's experience in the commercial world, are suggested as a minimum to put the Ontario system on a par with that of Pennsylvania, for instance.

(iv) In Elementary Schools.

Here the present standards are satisfactory. There is a tendency to regard vocational guidance as unnecessary in the elementary schools, but it should not be forgotten that approximately 30% of its pupils leave it to enter directly into industrial and commercial pursuits. With the new intermediate schools established, elementary schools will carry pupils only as far as the sixth grade,

and the popular belief will then be nearer the truth.

S. 5. The Testing Program.

Until a provincial vocational guidance program is definitely adopted and a better scheme devised, the following recommendations are offered:

(i) Each pupil should be tested for intelligence at least three times in the elementary schools, by means of standard group tests. These would come usually at the kindergarten or primary stage, to assist principals in classifying pupils into slow, average and fast groups, at grade 5, and again about a year before the child leaves the school. For purposes of Vocational Guidance the average of these three tests would be considered the intelligence score (I.Q.) of the child. The tests recommended are, respectively, the Rhode Island, the Illinois Examination, and the Otis group. All pupils who tested low should be given an individual Binet test. The Herring revision is recommended, as cheap, easily learned, and requiring a minimum of material and time.

(ii) Standard Achievement Tests should be given from time to time, at least once a year, to get an objective measurement of the pupils' knowledge of each subject. The Otis Classification Test, and the New Stanford and the New York Achievement Tests are recommended until Standard Tests are available for Ontario.

(iii) Mechanical Aptitude tests may be given in grades six, seven or eight with satisfactory results. A few weeks before a pupil leaves elementary school will be soon enough. The tests recommended are Detroit and Stenquist. A five-fold classification is all that should be attempted for the present.

(iv) Prognostic Tests, etc., should be given at the discretion of the inspector and the counsellor.

S. 6. The Follow-up System.

A definite system of "follow-up" is strongly urged in both Educational and Vocational Guidance. The record of failures, whether in higher schools or in industry, with an analysis of their causes will assist the counsellor more than all the books and courses in the world. Such data should be sent to the provincial committee for study, and should result in bulletins of helpful advice to counsellors. (In England, during the experiment discussed in Chapter IV, Mr. Earle found many amusing and unsatisfactory responses. Counsellors will have to learn to demand real reasons for dismissal, quitting or lack of promotion, rather than such reasons as "slack," "business poor", "didn't like the place", which are very common when the questionnaire method is used.) When "follow-up" is properly carried out, and its lessons learned, Vocational Guidance will be nearing its goal, which is the placing of every child in a socially useful and

personally satisfying occupation, one, that is, suited to his peculiar abilities and the community's needs.

Finis.

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Occupations, The Vocational Guidance Magazine, (New York)

(superseding The Vocational Guidance Magazine)

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(i) Teachers College Record,(Columbia University)

(ii) British Journal of Educational Research. (Cambridge University Press)

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APPENDIX I

Data concerning a number of tests recommended for use in Vocational Guidance.

	Name and Type	Ind. or Group	$ per 100	Minutes to give	Minutes to score	Designed for grades	# Note	Remarks
	Intelligence							
1	Stanford Revision of Binet-Simon	I		40-90	10	All	A	Require Special training.
2	Herring Revision of Binet-Simon	I		15-75	10	All	A	Simple to administer.
3	Rhode Island	G	2.00	15	1	K-P	C	All pictures.
4	Illinois General	G	2.00	20	2	3-8	C	
5	Otis Group	G	5.00	60	3	All	A	One of the best.
6	Otis Self-Administering	G	3.20	30	1	4-12	A	Easiest to give and score.
7	National	G	5.20	60	4	3-8	B	
8	Terman	G	5.40	60	10	7-12	B	
9	Thorndike	G	75.00	180	30	Coll	B	Annual forms.
	Mech. Aptitude.							
10	Stenquist (Assem.)	I		60	10	7-12	C	
11	Stenquist (Paper)	G	5.50	50	5	7-12	A	
12	Detroit	G	3.00	35	3	6-12	B	Boys' and Girls'.
	Vocational Guidance							
13	Thurstone (for Eng. Coll.)	G	20.00	150	10	H. S. Coll	A	5 separate parts.

\# A- Writer has taken or administered test, or both.
B- " " studied test from sample copy and manual.
C- " " " " " published descriptions.

NATIONAL INTELLIGENCE TESTS

SCALE B — FORM 1

Prepared under the auspices of the National Research Council by M. E. Haggerty, L. M. Terman, E. L. Thorndike, G. M. Whipple, and R. M. Yerkes

Name ..... Grade ..... Boy or girl .....
First name Last name

Date of birth ..... Age .....
Month Day Year Years Months

Birthplace of parents ..... Race .....
Father Mother

Name of teacher .....

Name of school .....

Name of city .....

Date of examination .....

TEST	RIGHTS	METHOD	SCORE
1		$\times 2 =$	
2		$=$	
3		$-(\ \ \text{Wrongs}\ \ ) =$	
4		$=$	
5		$-(\ \ \text{Wrongs}\ \ ) =$	
TOTAL SCORE (Sum of scores of five tests)			

Published by World Book Company, Yonkers-on-Hudson, New York, and 2126 Prairie Avenue, Chicago
 NIT: B-20

Exercise 1

Do this work in arithmetic as quickly as you can without making mistakes. Try each example as you come to it. Look carefully at each one to see what you are to do.

Begin here

(1) Add

$$\begin{array}{r} 4 \\ 2 \\ \hline \end{array}$$

(2) Multiply

$4 \times 5 =$

(3) Add

$$\begin{array}{r} 32 \\ 25 \\ 19 \\ \hline \end{array}$$

(4) Subtract

$$\begin{array}{r} 13 \\ 5 \\ \hline \end{array}$$

(5) Divide

$11 \div 3 =$

(6) Multiply

$$\begin{array}{r} 5073 \\ 9 \\ \hline \end{array}$$

(7) Divide

$37\overline{)14282}$

(8) Subtract

$\frac{6}{7} - \frac{4}{5} =$

(9) Divide

$\frac{3}{4} \div 5 =$

(10) Multiply

$$\begin{array}{r} 358\frac{1}{3} \\ 26 \\ \hline \end{array}$$

Scale B. Form 1

Test 1

Do this work in arithmetic as quickly as you can without making mistakes. Try each example as you come to it. Look carefully at each one to see what you are to do.

Begin here

(1) Add

1
5

(2) Multiply

$2 \times 3 =$

(3) Subtract

5
2

(4) Divide

$2\overline{)8}$

(5) Add

19
3

(6) Multiply

26
3

(7) Add

24
27
15

(8) Subtract

16
7

(9) Divide

$13 \div 4 =$

(10) Multiply

6084
7

(11) Subtract

37344
14853

(12) Divide

$380 \div 7 =$

(13) Add

\$ 80.41
1.00
10.20
.04
203.00
3022.02

(14) Divide

$48\overline{)1536}$

(15) Subtract

$126.16 - 23.88 =$

(16) Add

$\frac{5}{6} + \frac{3}{12} =$

(17) Divide

$\frac{2}{3} \div 4 =$

(18) Multiply

$249\frac{3}{4}$
25

(19) Add

1 hr. 35 min.
47 min.
2 hr. 10 min.

(20)

$12\frac{1}{2}\%$ of 160 =

(21) Multiply

63 lb. 8 oz.
6

(22) Subtract

8.3 − 3.00072 =

Exercise 2

SAMPLES { Sheep eat mostly nuts grass fruits bread
The number of cents in a dime is 2 5 10 25

In each sentence draw a line under the one word that makes the sentence true.

Begin here

1 The number of days in a week is 5 6 7 12 1
2 The kitten is the young of the dog cat lion sheep 2
3 The day before Thursday is Wednesday Tuesday Friday Monday . 3
4 Cheese comes from butter plants eggs milk 4
5 Leather comes from cotton wool skins bark 5

6 An animal that moves very slowly is the snail squirrel rabbit deer 6
7 The elm is a kind of bush flower vine tree 7
8 Soap is made from sugars fats pears lemons 8
9 Easter comes in fall winter spring summer 9
10 Figs grow on a bush stalk tree vine 10

11 America was discovered by Drake Hudson Columbus Raleigh 11
12 Glass is made of sand gravel clay mica 12
13 The highest price per pound is usually paid for flour sugar coffee salt 13
14 Pearls are obtained from mines elephants reefs oysters 14
15 The tadpole is the young of the fish frog lizard crayfish 15

16 Cypress is a kind of machine food fabric tree 16

Scale B. Form 1

Test 2

In each sentence draw a line under the one word that makes the sentence true, as shown in the samples.

SAMPLES
Sheep eat mostly nuts grass fruits bread
The number of cents in a dime is 2 5 10 25

Begin here

1 The day before Sunday is Friday Monday Saturday Thursday 1
2 Ripe strawberries are black green blue red 2
3 Raisins are dried cranberries currants gooseberries grapes 3
4 The axle is a part of a bed ax chair wagon 4
5 Most spiders spin webs to catch birds fish flies snakes 5

6 A net is used in playing croquet football golf tennis 6
7 The buffalo looks most like a cow deer sheep wolf 7
8 New Year's Day is April 1 December 1 January 1 July 1 8
9 "Hiawatha" was written by Cooper Longfellow Poe Whittier 9
10 A country that fought on Germany's side was Greece Holland Roumania Turkey 10

11 Diamonds are obtained from mines oysters reefs whales 11
12 An animal with a painful sting is the cricket hornet locust salamander 12
13 The month before October is August December November September 13
14 A guitar is played with bow fingers mouth sticks 14
15 The highest price per bushel is usually paid for corn oats turnips wheat ... 15

16 The incubator is useful in raising cattle chickens corn cotton 16
17 Boston is in Connecticut Maine Massachusetts Rhode Island 17
18 A state famous for oranges is Alabama California Louisiana Texas 18
19 The number of weeks in a month is about 2 4 6 8 19
20 Cambric is a cloth color dance food 20

21 A duet is sung by one two four six 21
22 The Arabian is a kind of cow goat horse sheep 22
23 Sirloin is a cut of beef mutton pork veal 23
24 Massachusetts was settled by the Huguenots Moors Pilgrims Quakers ... 24
25 A canteen is a kind of cannon cup flask musket 25

26 Of parsnips we eat the flower leaf root stem 26
27 Turquoise is usually blue green red yellow 27
28 A peck is a fourth of a barrel bushel gallon keg 28
29 Turpentine comes from hides ore petroleum trees 29
30 A man known for his strength was Abel David Samson Solomon 30

31 A lake that touches Ohio is Erie Huron Ontario Superior 31
32 James A. Garfield was a poet inventor president writer 32
33 The loom is used for carding sewing spinning weaving 33
34 Among Robin Hood's men was Allan Breck Natty Bumpo Galahad Friar Tuck 34
35 General Lee surrendered at Appomattox in 1812 1886 1865 1832 35

36 One of the first locomotives was made by Fulton Morse Stephenson Whitney 36
37 The aorta is a blood vessel bone muscle nerve 37
38 "The Secret Garden" tells about Colin Joan of Arc Rebecca William Tell 38
39 The humerus is a bone gland muscle nerve 39
40 A meter is nearest in length to the inch foot yard rod 40

Exercise 3

SAMPLES { Can cows eat? ..... Yes No
Do stones swim? ..... Yes No

Read each question and draw a line under the right answer.

Begin here	1	Do flowers bloom?	Yes	No
	2	Are apples good to eat?	Yes	No
	3	Are some houses built of stone?	Yes	No
	4	Is the sky ever gray?	Yes	No
	5	Has our flag green stars?	Yes	No
	6	Do trees ever grow on moist land?	Yes	No
	7	Are newspapers printed in churches?	Yes	No
	8	Is stealing a proper pastime?	Yes	No
	9	Are steeples commonly found in barrels?	Yes	No
	10	Is furniture usually visible?	Yes	No
	11	Is a memorable publication often trivial?	Yes	No
	12	Is a dromedary a curious implement?	Yes	No
	13	May a reprimand cause poignant distress?	Yes	No
	14	Are veracious statements frequently inconsistent?	Yes	No
	15	Can acrimonious criticism be censorious?	Yes	No

Scale B. Form 1

Test 3

Draw a line under the right answer to each question. Do as many as you can.

SAMPLES { Can cows eat? ..... Yes No
Do stones swim? ..... Yes No

Begin here
1 Have you a name? ..... Yes No
2 Do apples have seeds? ..... Yes No
3 Are all birds blue? ..... Yes No
4 Are books useful? ..... Yes No
5 Is it always morning? ..... Yes No

6 Do bears have legs? ..... Yes No
7 Do daisies bloom in meadows? ..... Yes No
8 Does ice make water warmer? ..... Yes No
9 Does a dollar have eyes? ..... Yes No
10 Is red a color? ..... Yes No

11 Are shawls made of brass? ..... Yes No
12 Do children like pain? ..... Yes No
13 Are handkerchiefs ever found useful? ..... Yes No
14 Are avenues found in large cities? ..... Yes No
15 Is a fish ever covered with scales? ..... Yes No

16 Do some kitchens have cupboards? ..... Yes No
17 Can you carry water in a sieve? ..... Yes No
18 Do "herring" and "hereditary" mean the same? Yes No
19 Do ducks like corn? ..... Yes No
20 Are accurate reports ever worth while? ..... Yes No

21 Is medicine ever purchased by a physician? ..... Yes No
22 Should a sentinel be trustworthy? ..... Yes No
23 Do we desire serious trouble? ..... Yes No
24 Do builders construct bridges? ..... Yes No
25 Does money necessarily bring happiness? ..... Yes No

26 Would you trust people who have malicious designs? .... Yes No
27 Is it an outrage to insult a well-behaved tourist? ..... Yes No
28 Are chandeliers found inside stately mansions? ..... Yes No
29 Is a traitor one who never betrays confidence? ..... Yes No
30 Can all teachers ascertain with correctness the chemical properties of food? ..... Yes No

31 Are measurements used in astronomy? ..... Yes No
32 Does a conscientious commander mourn the loss of his men? .. Yes No
33 Are "synthesis" and "analysis" synonyms? ..... Yes No
34 Do disastrous consequences sometimes succeed defiance of authority? ..... Yes No
35 Does manual labor always terminate in cerebral hemorrhages? Yes No

36 Is alliteration a form of pentameter? ..... Yes No
37 Is a penurious man averse to a policy of hoarding money? ..... Yes No
38 Do those evincing modesty and virtue behave in an indecorous manner? ..... Yes No
39 Is the cessation of belligerency ever desirable? ..... Yes No
40 Is a natatorium a place for swimming? ..... Yes No

Exercise 4

SAMPLES

shoe — foot ——— hat — coat nose see head
sky — blue ——— grass — grows summer green tall
bird — sing ——— dog — tail bark walk kennel
bird — fly ——— dog — tail bark walk kennel
dress — cloth ——— hat — head wear band straw

Read carefully the first three words in each line. Then read the last four and draw a line under the right one.

Begin here

1	baby — cries ———	cat — mews hole little dog	1
2	dog — hair ———	fish — cat water scales pole	2
3	chew — teeth ———	smell — sweet strong odor nose	3
4	book — paper ———	dress — worn cloth fruit tree	4
5	sailor — ship ———	preacher — pray church preach read..	5
6	go — come ———	sell — leave papers money buy	6
7	ball — hand ———	football — play game field foot	7
8	paddle — canoe ———	sail — ocean boat wind steam	8
9	city — houses ———	forest — trees dark country birds	9
10	hat — brim ———	house — high sun porch chair	10
11	reward — hero ———	punish — God whip pain traitor.....	11
12	100 — 90 ———	10 — 6 7 8 9.....	12

Test 4

Read carefully the first three words in each line. Then read the last four and draw a line under the right one.

SAMPLES	shoe — foot	———	hat — coat nose see head
	sky — blue	———	grass — grows summer green tall
	bird — sing	———	dog — tail bark walk kennel
	bird — fly	———	dog — tail bark walk kennel
	dress — cloth	———	hat — head wear band straw

Begin here

1	finger — hand	———	toe — box foot doll coat	1
2	cannon — shoots	———	bell — rings door metal maid	2
3	sweet — sugar	———	sour — sweet cake vinegar man	3
4	handle — hammer	———	knob — key room shut door	4
5	suitcase — clothing	———	purse — purchase money string stolen	5
6	Wednesday — day	———	July — August hot month year	6
7	clothes — man	———	fur — dress warm soft animal	7
8	razor — beard	———	saw — cloth tool wood sharp	8
9	feather — float	———	rock — ages hill sink break	9
10	packing — pack	———	lifting — lifter lift lifted lifts	10
11	pan — tin	———	table — chair wood legs dishes	11
12	strength — boldness	———	weakness — woman run cry timidity	12
13	fish — salmon	———	bird — robin sing nest bushes	13
14	violin — bow	———	drum — loud parade stick march	14
15	man — Adam	———	woman — girl Eve dress female	15
16	12 — 36	———	8 — 24 88 16 48	16
17	above — below	———	top — spin bottom surface side	17
18	second — minute	———	minute — time week day hour	18
19	June — May	———	August — July March October November	19
20	establish — begin	———	abolish — end slavery wrong abolition	20
21	food — costly	———	air — breathe gas free oxygen	21
22	success — joy	———	failure — sadness luck fail work	22
23	quarrel — enemy	———	agree — friend disagree agreeable foe	23
24	hinge — door	———	joint — bone fasten stiff open	24
25	devil — angel	———	bad — mean disobedient defamed good	25
26	dead — lifeless	———	danger — peril accident wreck run	26
27	floor — ceiling	———	ground — earth sky dirt grass	27
28	water — fish	———	air — nose man blame breathe	28
29	snake — adder	———	dog — black bark cat spaniel	29
30	person — crowd	———	one — all many few large	30
31	$\frac{5}{2}$ — 10	———	1 — 2 4 6 8	31
32	almost — entirely	———	rarely — ever often never seldom	32

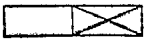
Exercise 5

If the two things in a pair are the same, write S on the dotted line between them. If they are different, write D on the dotted line between them. Do each one as you come to it.

Begin here 273 273

3861 3854

Roland R. C. ..... Rollan R. C.

 ..... 

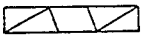
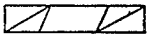
2579 2397

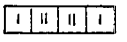
38657 38657

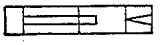
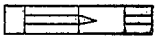
926745 926145

Rapen J. D. ..... Rapon J. O.

Palteser F. ..... Palteser F.

 ..... 

 ..... 

 ..... 

468225 468235

920379 923079

5218861 5218861

3238734 3328734

21059876 21059876

Singleton O. J. ..... Singleton O. J.

Siegel P. D. ..... Seigel P. D.

Richards W. E. ..... Richards W. E.

Test 5

If the two things in a pair are the same, write S. If they are different, write D. Do each one as you come to it.

Begin here 561 560

493 493

5172 5172

9432 9342

19037 19037

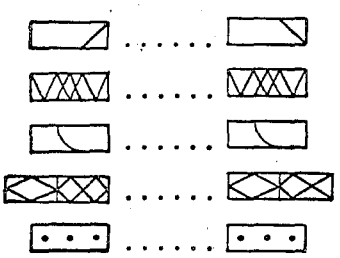
Capline J. F. ..... Caplein J. F.

Carlson B. O. ..... Carlson B. O.

Abbott J. V. ..... Abbett J. V.

Barnum O. L. ..... Barman O. L.

Beakes E. W. ..... Beakes E. W.



70090 71090

276431 267431

5307251 5307257

23544636 23445636

57216472 57216472

Basler A. H. ..... Basler A. H.

Aspinwall G. ..... Aspinwald G.

Armand J. P. ..... Armand J. P.

Castleman F. ..... Castleman F.

Barsk C. P. ..... Barks C. P.

☞ Go to the other column at the top of the page and do as many as you can.

40246586 40246586

875012534 975012534

388132902 388123902

742138694 742138694

8566607362 8656607362

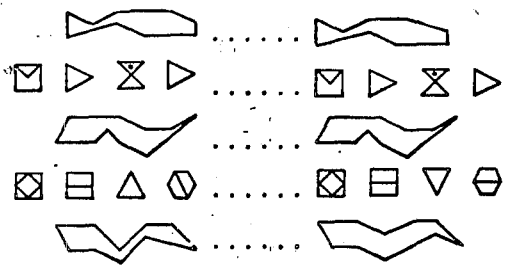
3371089340 3371089344

2986751243 2986751243

7649266315 7649366215

5144667210 5144667210

4046169289 4046169289



Anderson L. B. ..... Andersen L. B.

Johnson G. W. ..... Johston G. W.

Reynolds F. J. ..... Reynolds F. J.

Saunders D. E. ..... Saunders D. E.

Whittaker S. P. ..... Whithaker S. P.

280587204 380587204

479124079 479124079

7949623615 7949623615

3652881365 3562881365

9655834821 9655834821

NATIONAL INTELLIGENCE TESTS

SCALE A — FORM 1

Prepared under the auspices of the National Research Council by M. E. Haggerty, L. M. Terman, E. L. Thorndike, G. M. Whipple, and R. M. Yerkes

---

Name..... *Grade*.....*Boy or girl*.....
First name Last name

Date of birth..... *Age*.....
Month Day Year Years Months

Birthplace of parents..... *Race*.....
Father Mother

Name of teacher.....

Name of school.....

Name of city.....

Date of examination.....

Test	*Rights*	*Method*	*Score*
1		$\times 2 =$	
2		$\times 2 =$	
3		$=$	
4		$-\left(\frac{Wrongs}{\quad}\right) =$	
5		$\times 3/10 =$	
Total Score (Sum of scores of five tests)			

Published by World Book Company, Yonkers-on-Hudson, New York, and 2126 Prairie Avenue, Chicago
 NIT: A 1-32

Exercise 1

Find all the answers as quickly as you can.
Write the answers on the dotted lines.
Use the sides or bottom of the page to figure on.

Begin here

1 How many cents are six cents and five cents? *Answer*.....

2 A girl earned 75 cents and spent 43 cents. How much did she have left? *Answer*.....

3 How many nickels make a dollar? *Answer*.....

4 How many square inches are there in a card 7 inches long by 6 inches wide? *Answer*.....

5 How long will it take a man to walk 19 miles at the rate of 4 miles an hour while walking if he makes two stops of an average length of 15 minutes each? *Answer*.....

6 On December 20 the sun rises at 7:22 and sets at 4:48. How much less of the day is daylight than dark? *Answer*.....

Test 1

Find all the answers as quickly as you can.
Write the answers on the dotted lines.
Use the sides or bottom of the page to figure on.

Begin here

1 Five cents make 1 nickel. How many nickels make a dime? *Answer* .....

2 John paid 5 dollars for a watch and 3 dollars for a chain. How many dollars did he pay for the watch and chain? *Answer* .....

3 Nell is 13 years old. Mary is 9 years old. How much younger is Mary than Nell? *Answer* .....

4 One quart of ice cream is enough for 5 persons. How many quarts of ice cream are needed for 25 persons? *Answer* .....

5 John's grandmother is 86 years old. If she lives, in how many years will she be 100 years old? *Answer* .....

6 If a man gets $2.50 a day, what will he be paid for six days' work? *Answer* .....

7 How many inches are there in a foot and a half? *Answer* .....

8 What is the cost of 12 cakes at 6 for 5 cents? *Answer* .....

9 The uniforms for a baseball team of nine boys cost $2.50 each. The shoes cost $2 a pair. What was the total cost of uniforms and shoes for the nine? *Answer* .....

10 A train that usually arrives at half-past ten was 17 minutes late. When did it arrive? *Answer* .....

11 At 10¢ a yard, what is the cost of a piece of ribbon $10\frac{1}{2}$ ft. long? *Answer* .....

12 A man earns $6 a day half the time, $4.50 a day one fourth of the time, and nothing on the remaining days for a total period of 40 days. What did he earn in all in the 40 days? *Answer* .....

13 What per cent of $800 is 4% of $1000? *Answer* .....

14 If 60 men need 1500 lb. flour per month, what is needed per man per day, counting a month as 30 days? *Answer* .....

15 A car goes at the rate of a mile a minute. A truck goes 20 miles an hour. How many times as far will the car go as the truck in 10 seconds? *Answer* .....

16 The area of the base (inside measure) of a cylindrical tank is 90 square feet. How tall must it be to hold 100 cubic yards? *Answer* .....

Exercise 2

SAMPLES { Sugar.....sweet.
.....sing.

Write on each dotted line one word to make the sentence sound sensible and right.

Begin here

1 The apple is .....

2 Fish swim ..... the water.

3 Boys ..... girls like to ..... ball.

4 Fire is hot, but ice is .....

5 The child will ..... his hand if ..... plays with that knife.

6 The ..... sets ..... night and ..... in the morning.

7 We ..... if we would.

8 Time ..... sometimes worth more ..... money.

9 Hard work ..... men .....

10 History is an ..... of ..... that took place in the .....

78

Test 2

Write on each dotted line one word to make the sentence sound sensible and right.

SAMPLES { Sugar....*is*....sweet.
Birds....sing.

Begin here

1 The dog.....black.

2 An airplane is able to.....a great distance in a short time.

3 Mother is.....doughnuts.

4 There are seven.....in the rainbow.

5 Rain.....snow fall from the clouds.

6 We love liberty.....the United States.

7 Twenty-five cents make one.....of a dollar.

8 Bananas grow in.....climates.

9 He tried to.....his ball among the bushes.

10 Jack came to.....me mow the lawn.

11 Trees are.....than bushes.

12 Winter is.....in the North and short in the.....

13 The man.....aids his fellows will.....his reward.

14 A.....is made up.....an engine and coaches.

15 You should never go.....a crowd when.....have a cold.

16 Several.....have gone by since the end of the greatest..... in history.

17 Labor unions.....the right to.....for higher wages.

18 The visitor.....the child.....name.

19 Poverty cannot.....down a man.....is intelligent and .....hard.

20 .....should prevail in churches and libraries.

Exercise 3

SAMPLES
- man (body cane head shoes teeth)
- dog (blanket chain collar legs nose)
- house (cellar paint room servants walls)

In each row draw a line under each of the two words that tell what the thing always has.

Begin here
1. table (books cloth dishes legs top)
2. apple (basket redness seeds skin sweetness)
3. shoe (button foot sole toe tongue)
4. showers (clouds lightning rain thunder wind)
5. scissors (cloth cutting edge metal paper)
6. travel (automobile journey moving train visit)
7. teeth (dentist enamel pain pulp toothbrush)
8. idiocy (crime foolishness poverty stupidity tuberculosis)

Test 3

In each row draw a line under each of the two words that tell what the thing always has.

SAMPLES
- man (body cane head shoes teeth)
- dog (blanket chain collar legs nose)
- house (cellar paint room servants walls)

Begin here
1 elephant (circus ears hay keeper trunk)
2 mouse (back cat eyes cheese trap)
3 hoe (blade digging garden handle rust)
4 iron (coldness polish rust strength weight)

5 barn (hayloft horses roof sheep walls)
6 stream (banks fish fisherman mud water)
7 penny (brightness copper date dirt Indian)
8 bureau (brush drawers mirror scarf top)

9 city (automobiles buildings crowds streets street cars)
10 cube (corners drawing size stone wood)
11 ring (diameter diamond monogram roundness seal)
12 diphtheria (convalescence eruption fever germs medicine)

13 lake (fish salt sand shore water)
14 division (classroom dividend divisor paper pencil)
15 gasoline (automobile can explosion liquid odor)
16 gladness (cheerfulness excitement joy laughter smiling)

17 crowd (closeness danger dust excitement number)
18 parade (automobiles flags horses people route)
19 reading (book eyes picture printing words)
20 cough (ache danger irritation noise sneezing)

21 love (affection attachment display kisses sweetheart)
22 jungle (tigers hunters path thickets vegetation)
23 king (crown kingdom prince scepter subjects)
24 fiction (falsehood hero imagination impossibility invention)

Exercise 4

SAMPLES
cold . . D . . hot
big . . . . . large
best . . . . . worst

If the two words mean the same, write S on the dotted line between them.
If they are as different as can be, write D between them.

Begin here
1 yes . . . . . no
2 son . . . . . daughter
3 light . . . . . bright
4 crawl . . . . . creep
5 wet . . . . . dry

6 lift . . . . . raise
7 tall . . . . . short
8 die . . . . . live
9 nay . . . . . no
10 rough . . . . . smooth

11 hill . . . . . valley
12 genuine . . . . . real
13 useless . . . . . useful
14 center . . . . . rim
15 brief . . . . . short

16 tease . . . . . plague
17 liquid . . . . . solid
18 crafty . . . . . tricky
19 elevate . . . . . raise
20 astonish . . . . . surprise

Test 4

If they mean the same, write S between them.
If they are as different as can be, write D between them.

SAMPLES
cold..D..hot
big..S..large
best..D..worst

Begin here

	1	new	old	21	continue	cease
	2	still	noisy	22	go	leave
	3	fall	drop	23	coarse	crude
	4	up	down	24	bondage	slavery
	5	wrong	right	25	either	neither
	6	liberty	freedom	26	refuse	decline
	7	raise	lower	27	abrupt	sudden
	8	sharp	dull	28	kindle	quench
	9	hit	strike	29	delve	dig
	10	alike	different	30	extreme	moderate
	11	calm	stormy	31	admire	esteem
	12	take	give	32	legend	myth
	13	broad	wide	33	agreement	harmony
	14	distant	near	34	frank	candid
	15	ascend	descend	35	transient	permanent
	16	awkward	clumsy	36	expect	anticipate
	17	masculine	feminine	37	coy	bold
	18	courage	bravery	38	eminent	obscure
	19	rough	uneven	39	censure	approve
	20	build	construct	40	bliss	ecstasy

☞ Go to the other column at the top of the page and do as many as you can.

Exercise 5

ake under each drawing the number you find under that drawing in the key. Do each one you come to it.

KEY

△	□	∞	+	Σ	⊿	⊕	⊟	◇
1	2	3	4	5	6	7	8	9

egin here

▷	△	+	⊿	□	⊕	+	△	Σ	◇	□	∞	⊿	⊟	+	◇	⊿	∞	⊟	□
3	1	4																	

▽	△	⊟	Σ	⊕	□	◇	∞	⊿	+	◇	∞	△	□	Σ	⊟	Σ	△	+	⊕

Test 5

Make under each drawing the number you find under that drawing in the key. Do each one as you come to it.

Begin here

APPENDIX III- A

e.....

last birthday (Tell in figures).....years. Birthday.....

e.....School.....

.....State.....

miner.....Date .....192....

Exercise	Score
1	
2	
3	
4	
5	
6	
Total	
T-Score	

STENQUIST MECHANICAL APTITUDE TESTS

By J. L. STENQUIST

Director of Research, Baltimore, Maryland

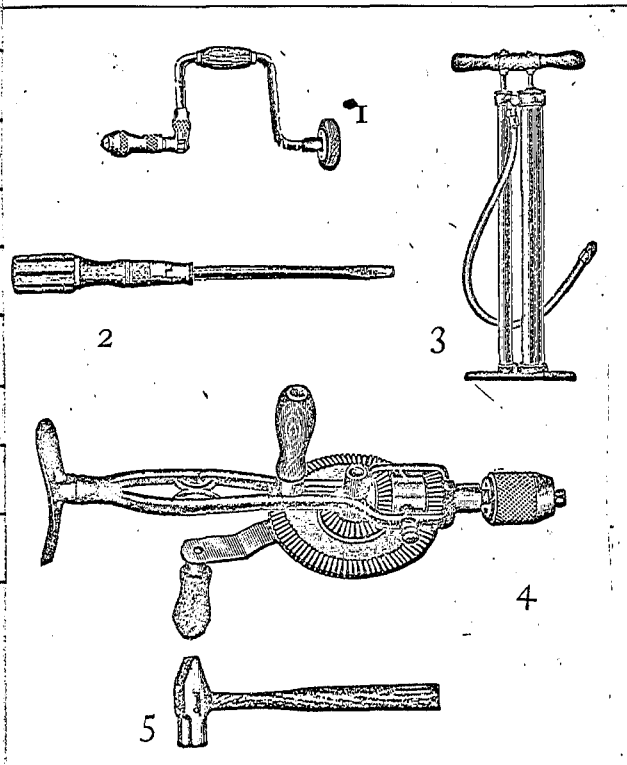
TEST I

DIRECTIONS

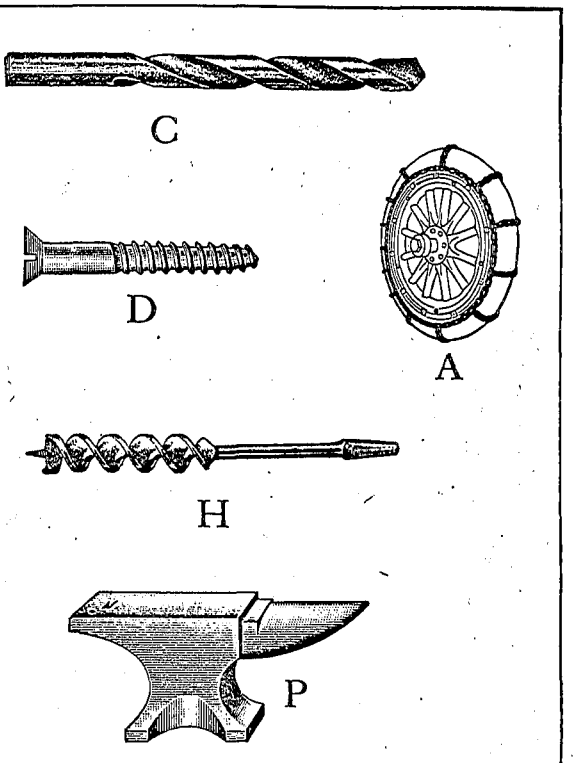
ok at the pictures below. Each thing in Part 1 belongs with, is used with, or is a part of one particular ng in Part 2. Thus, No. 1 in Part 1 belongs with Letter H in Part 2; so H is written beside 1 in list of answers. No. 2 belongs with Letter D; so D is written beside 2 in the list of answers. No. 3 ngs with Letter A; so A is written beside 3 in the list of answers. No. 4 belongs with Letter C; so s written beside 4 in the list of answers. No. 5 belongs with Letter P; so P is written beside 5 in list of answers. Do the same for all the exercises in this booklet. If you are not sure, guess. Try all hem. Write *some* letter beside each number.

SAMPLE EXERCISE

PART 1



PART 2



1 2 3 4 5

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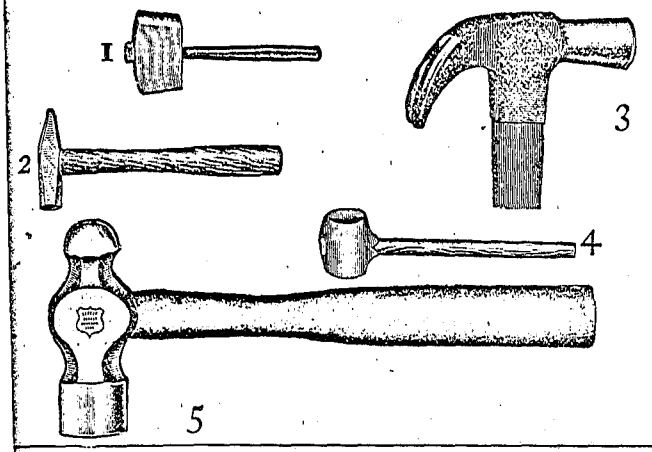
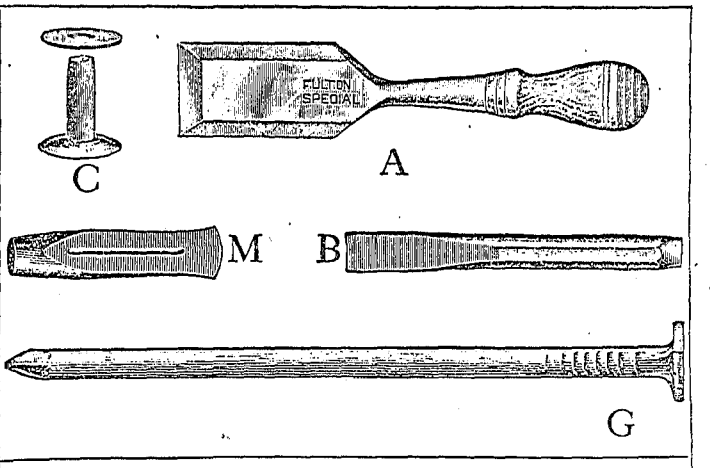
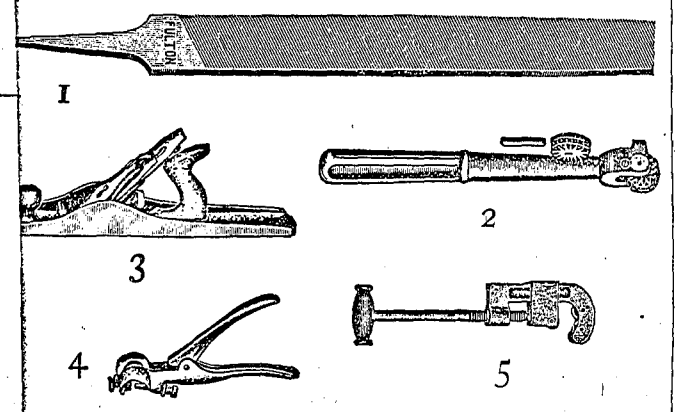
EXERCISE 6

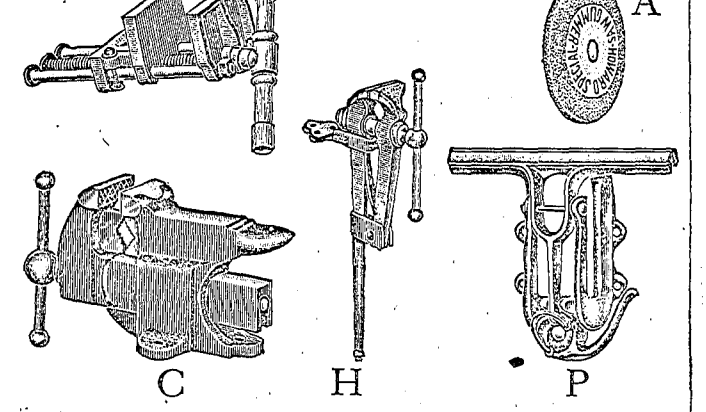
PART 1 PART 2





1 2 3 4 5





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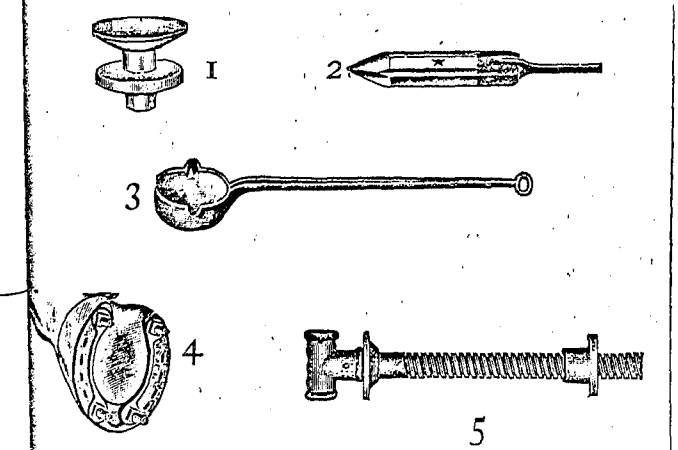

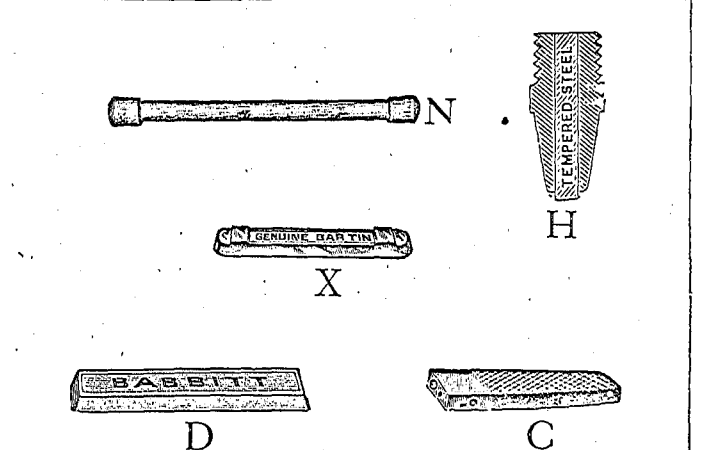

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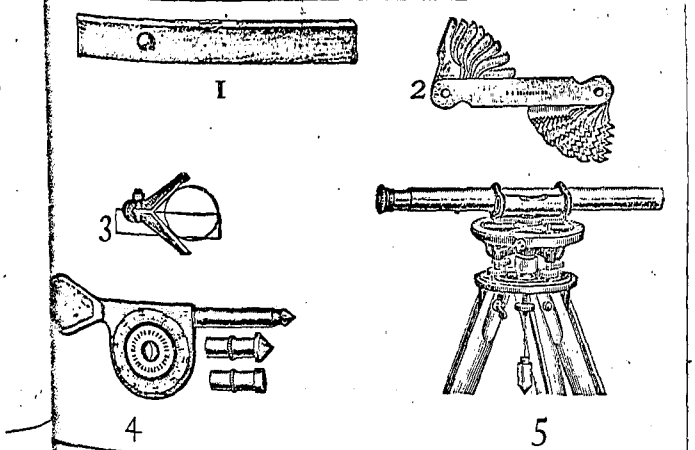

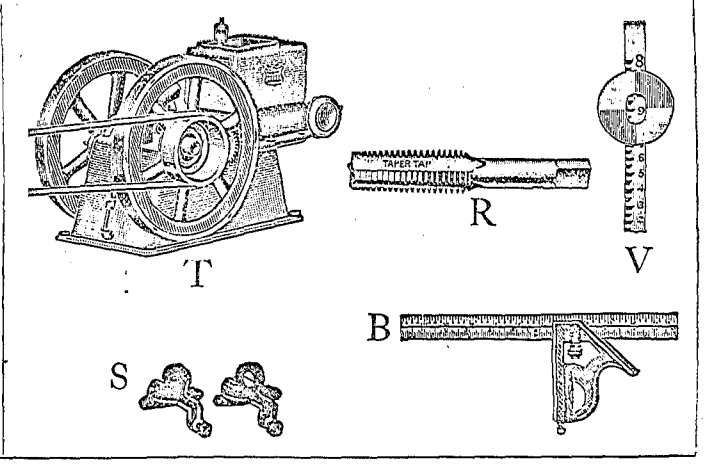

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EXERCISE 1

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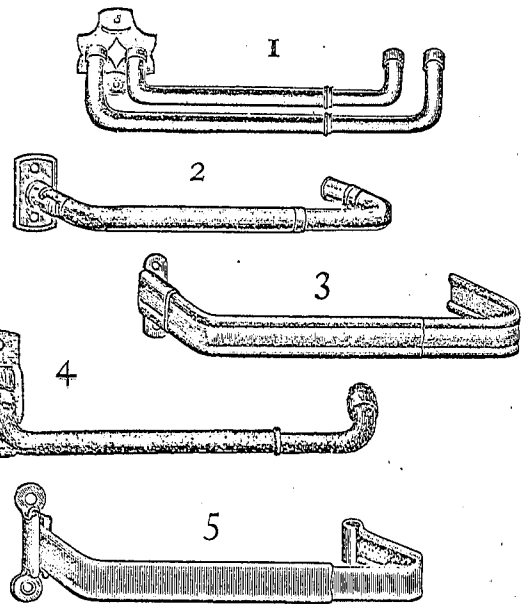

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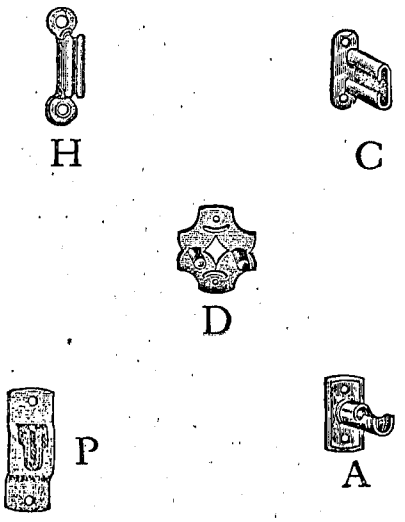

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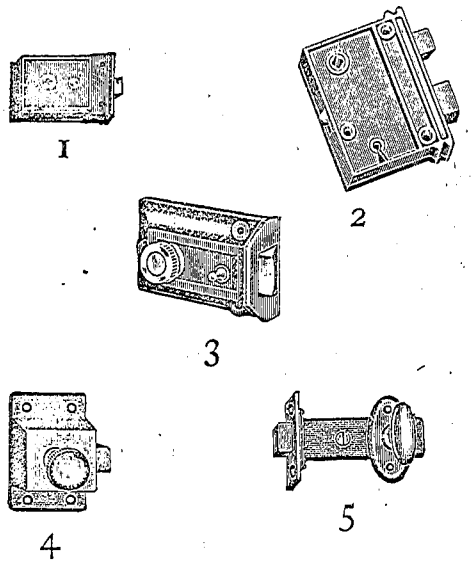

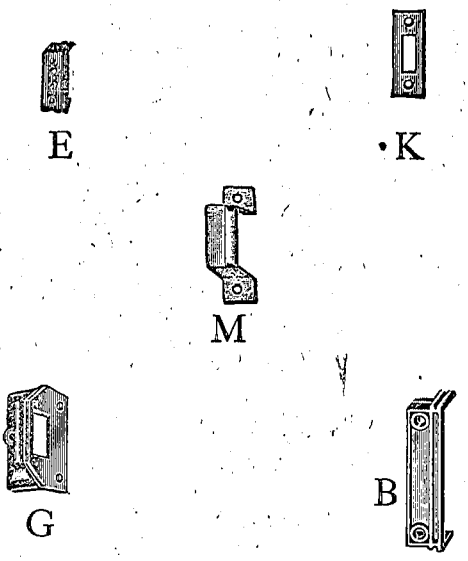

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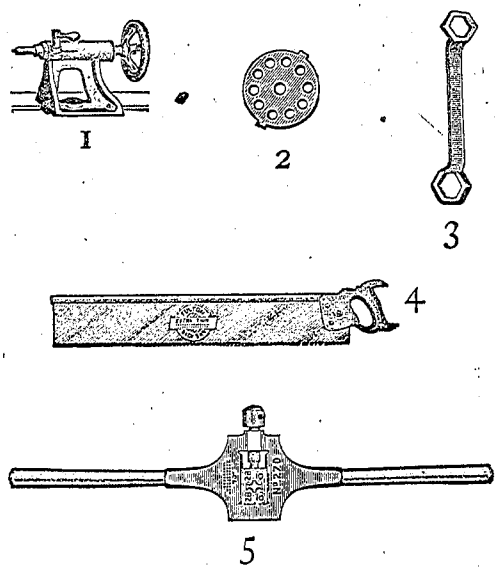

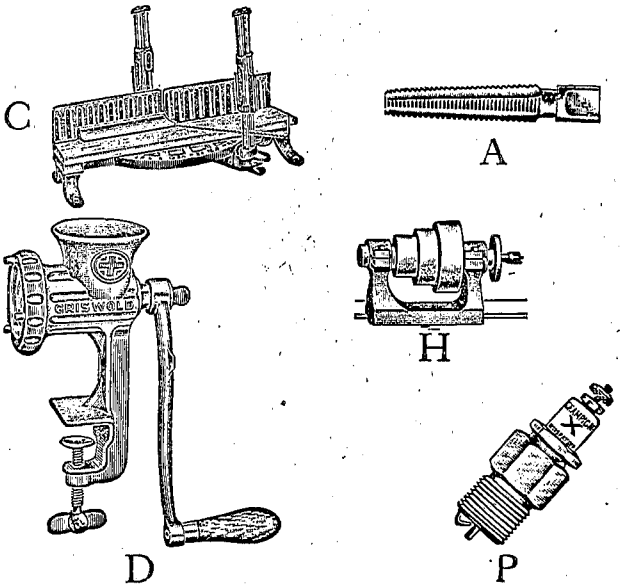

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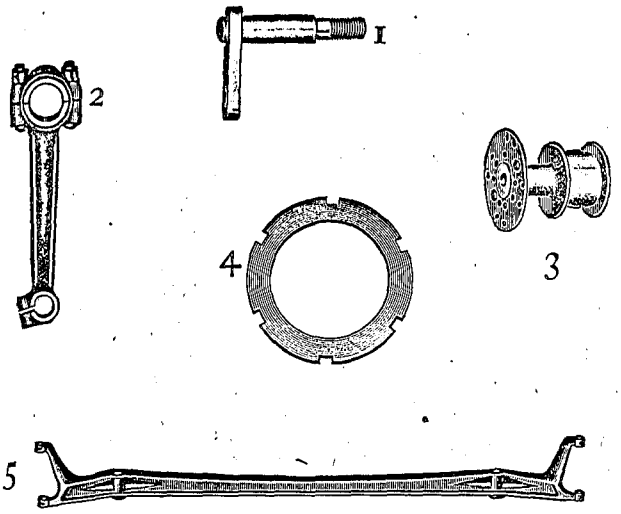
EXERCISE 5

PART 1



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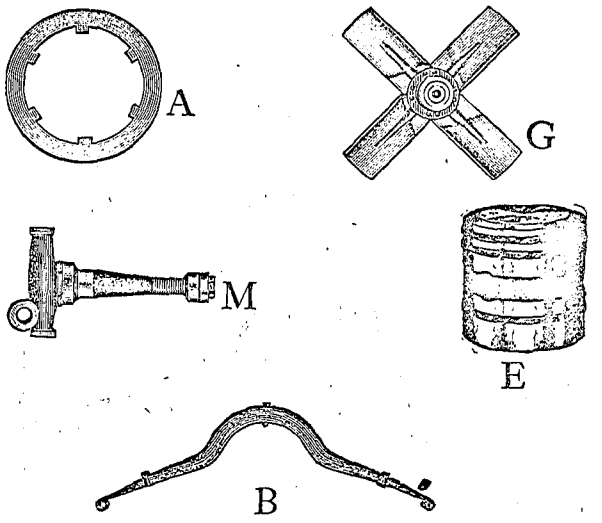

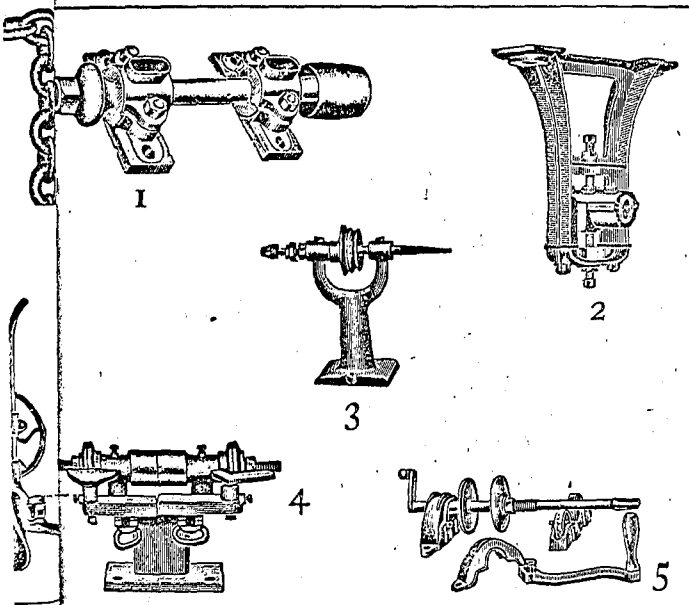

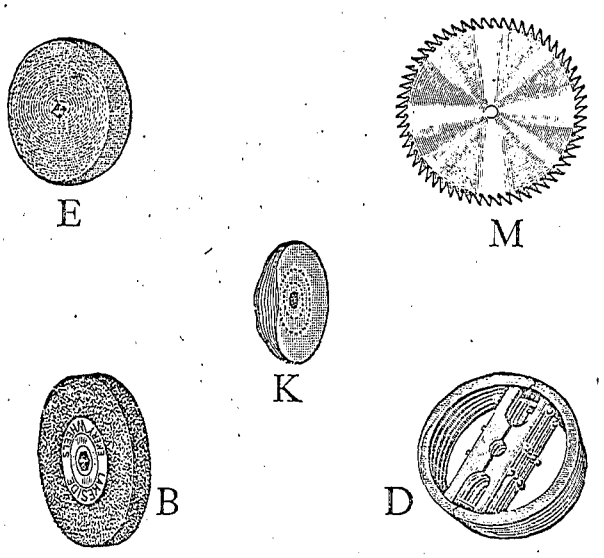

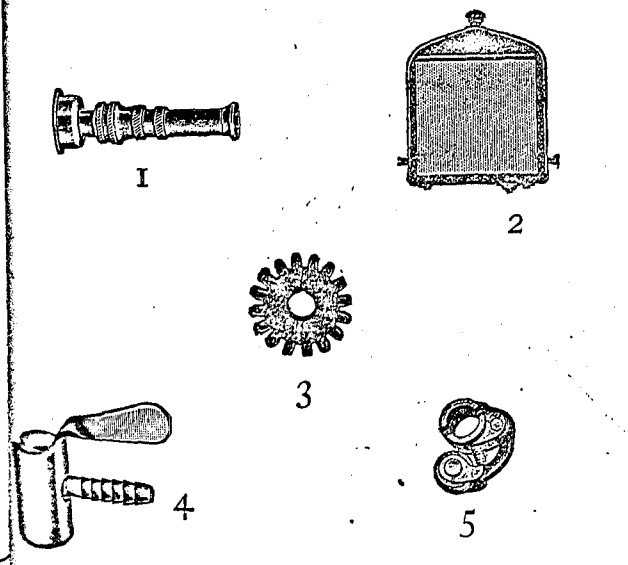

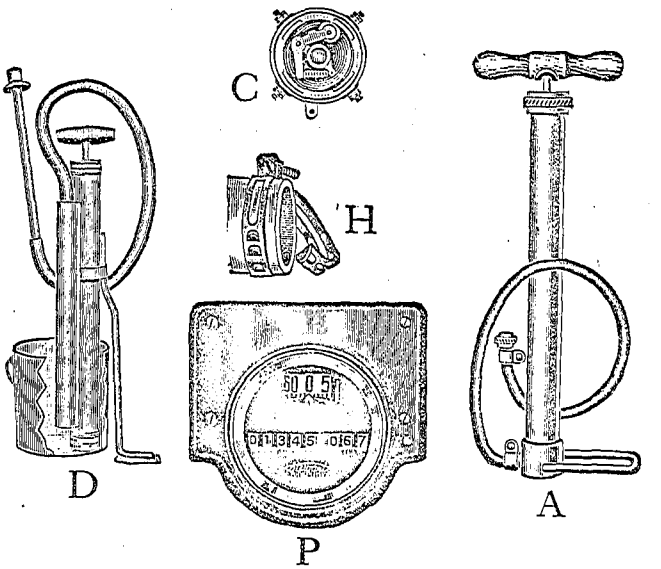

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EXERCISE 2

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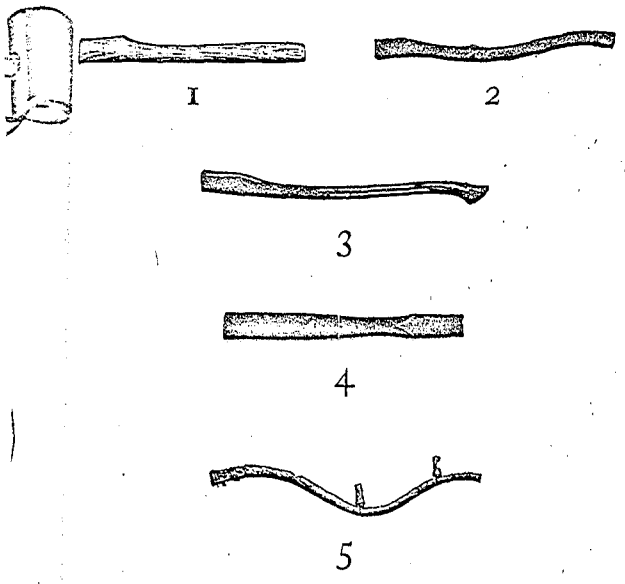

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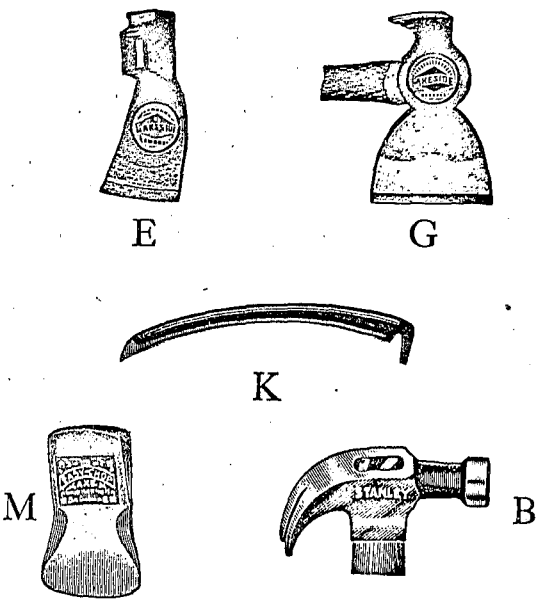

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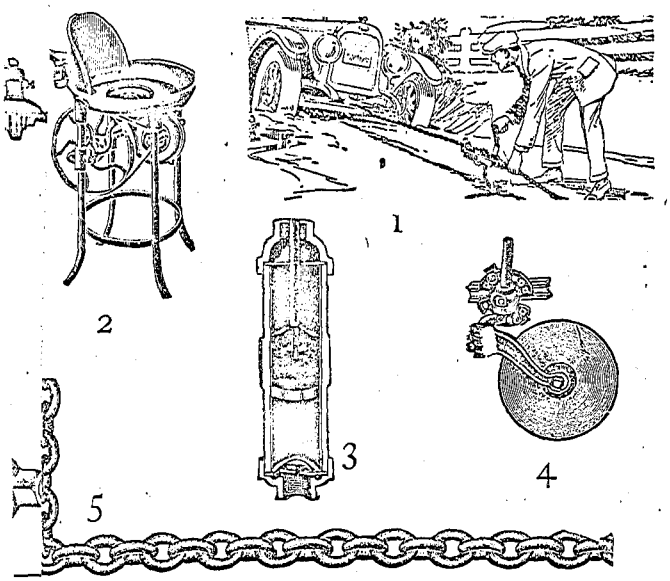

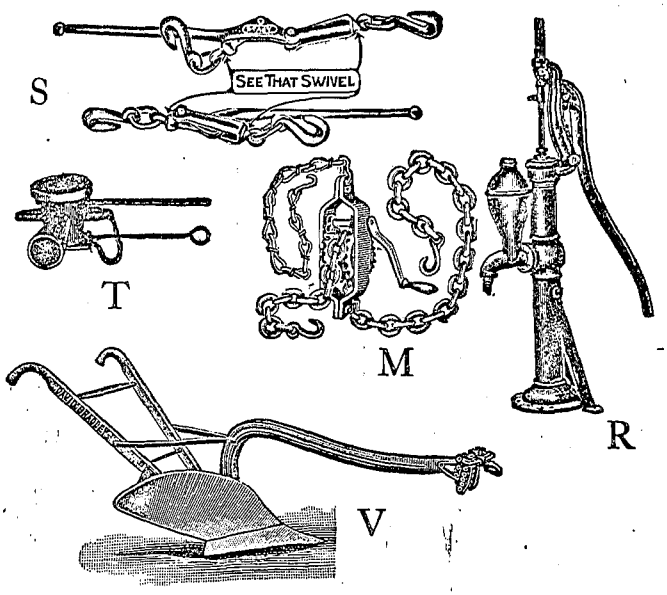

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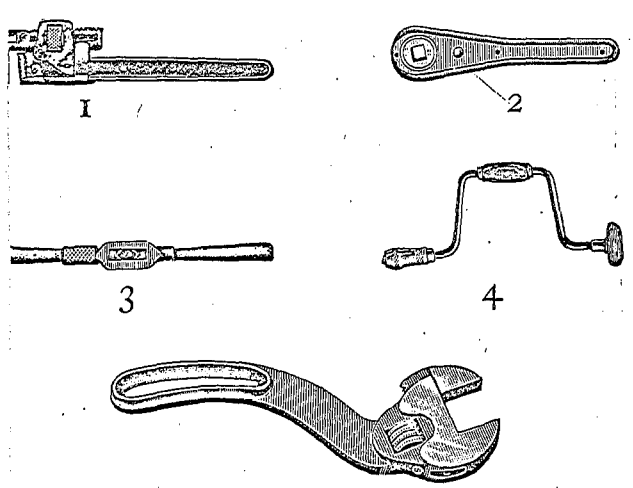

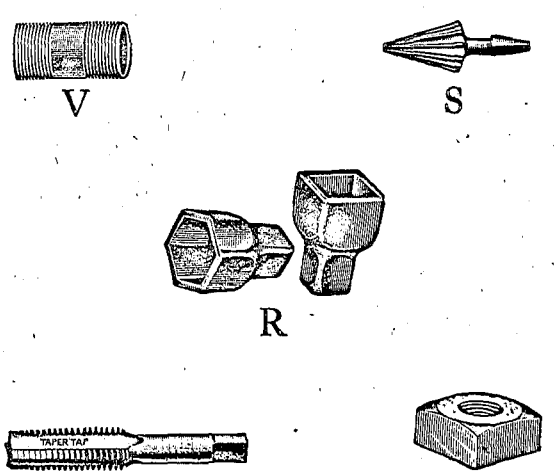

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EXERCISE 4

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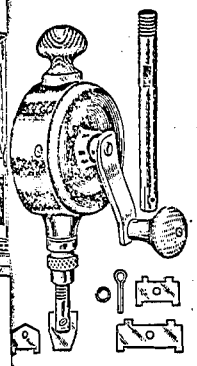
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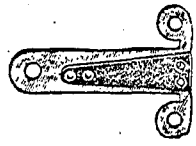
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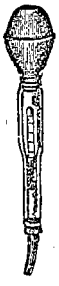
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PART 2

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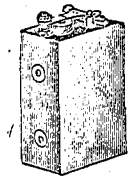
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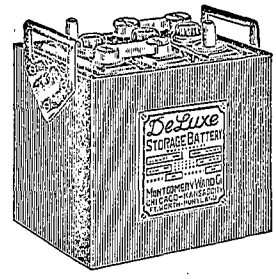

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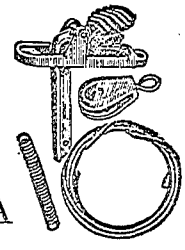
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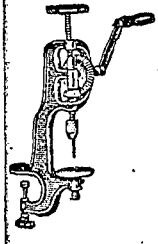


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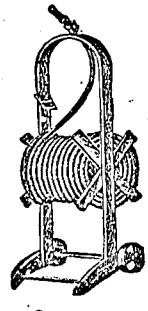
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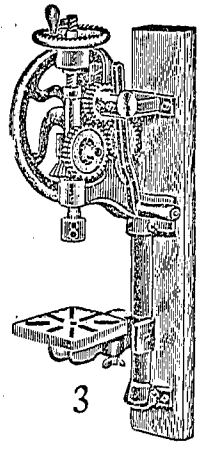
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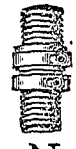
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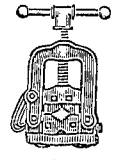
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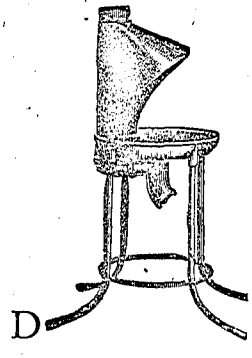
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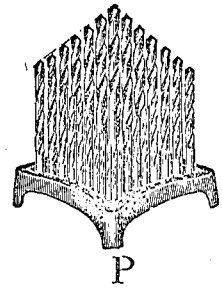
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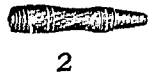
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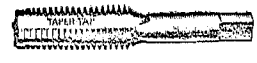

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EXERCISE 3

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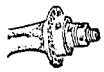

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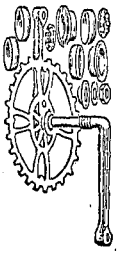

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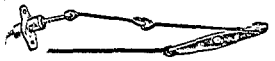

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PART 2

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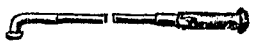

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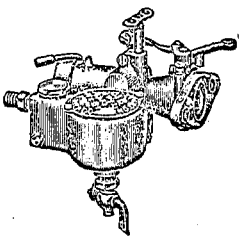

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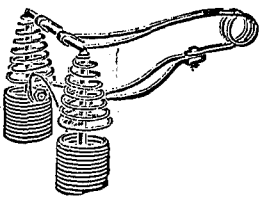

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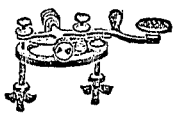

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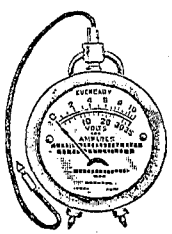

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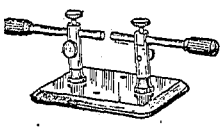

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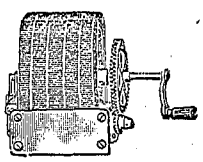

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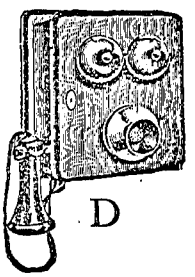

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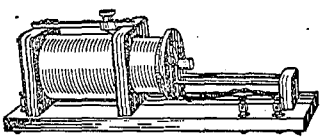

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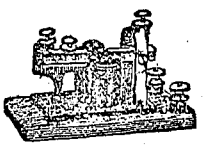

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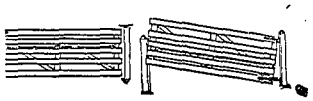

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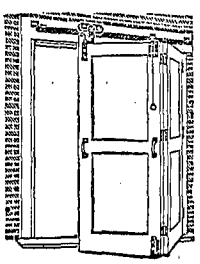

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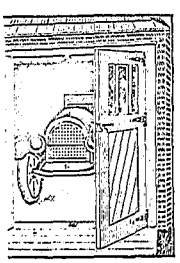

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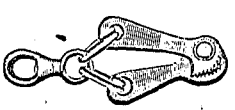

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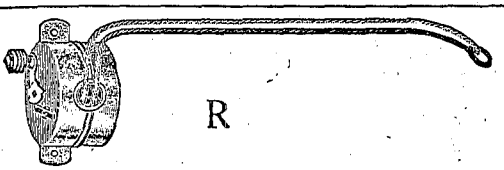

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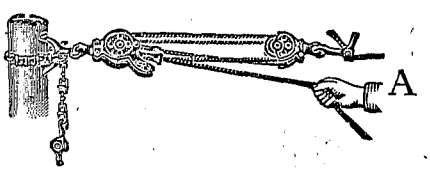

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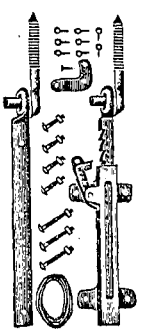

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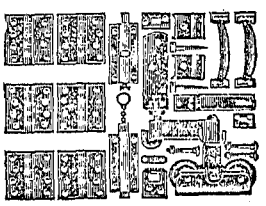

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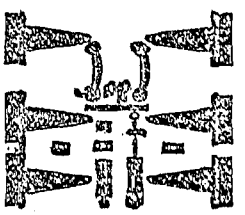

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Girls
liminary Edition)

Published by the
Public School Publishing Co.
Bloomington, Illinois

Printed in U. S. A.

Rating.....

DETROIT MECHANICAL APTITUDES EXAMINATION FOR GIRLS

No.	Score
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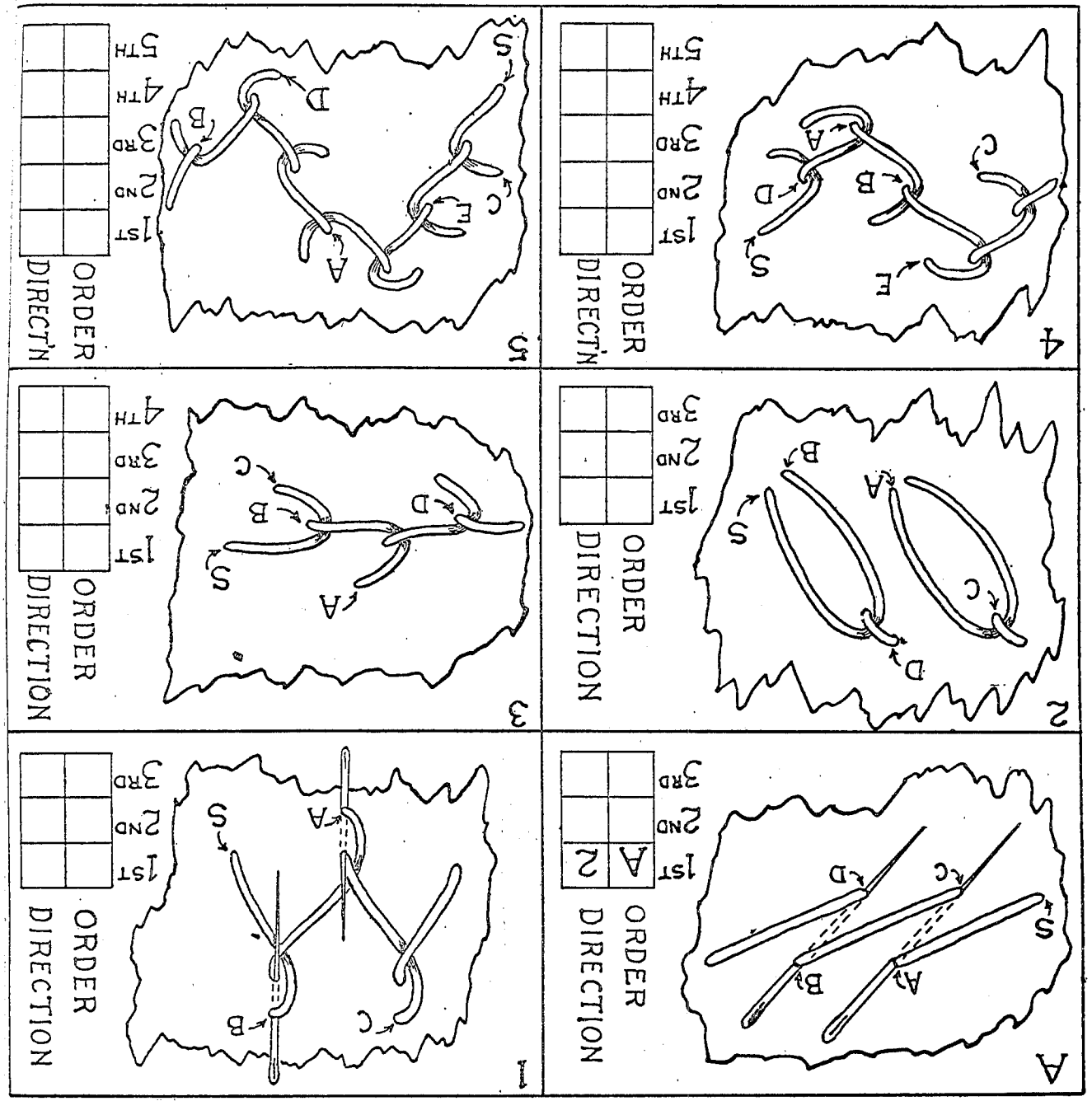

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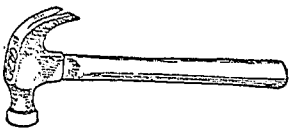
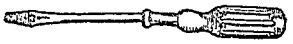
A 

B 

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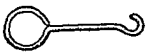
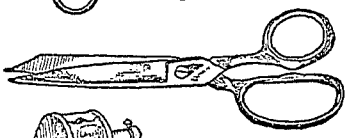
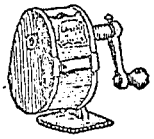
5 

6 

7 

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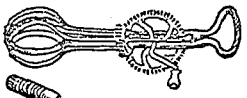
9 

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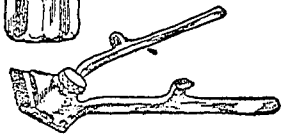
16 

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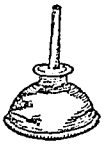
18 

19 

( ) ATOMIZER
( ) BUTCHER'S CLEAVER
( ) BUTTER KNIFE
( ) BUTTON HOLE SCISSORS
( ) BUTTON HOOK

( ) CAN OPENER
( ) CLIPPERS
( ) COFFEE PERCOLATOR
( ) CROCHET HOOK
( ) DOUBLE BOILER

( ) EGG BEATER
( ) ELECTRIC BELL
( ) ELECTRIC BULB
( ) ELECTRIC PLUG
( ) EMERY WHEEL

( ) FAUCET
( ) FILE
( ) GRAVY LADLE
( ) HAMMER
( ) ICE CREAM FREEZER

( ) MONKEY WRENCH
( ) NEEDLE
( ) OIL CAN
( ) PAINT BRUSH
( ) PAINT SPRAYER

( ) PENCIL SHARPENER
( ) PICKLE FORK
( ) PLIERS
( ) POTATO RICER
( ) SALAD FORK

( ) SCREW DRIVER
( ) SHEARS
( ) SLAW CUTTER
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( ) SPOON

( ) STEAM VALVE
( ) STOCKING DARNER
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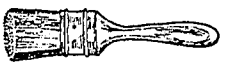
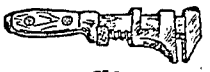
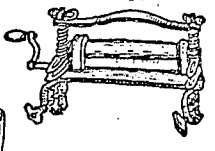
( ) THIMBLE
( ) TROWEL

( ) WAFFLE IRON
( ) WRINGER

20 

21 

22 

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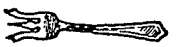
26 

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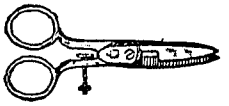
28 

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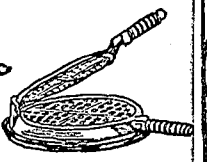
30 

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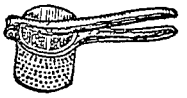
33 

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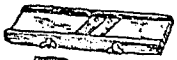
38 

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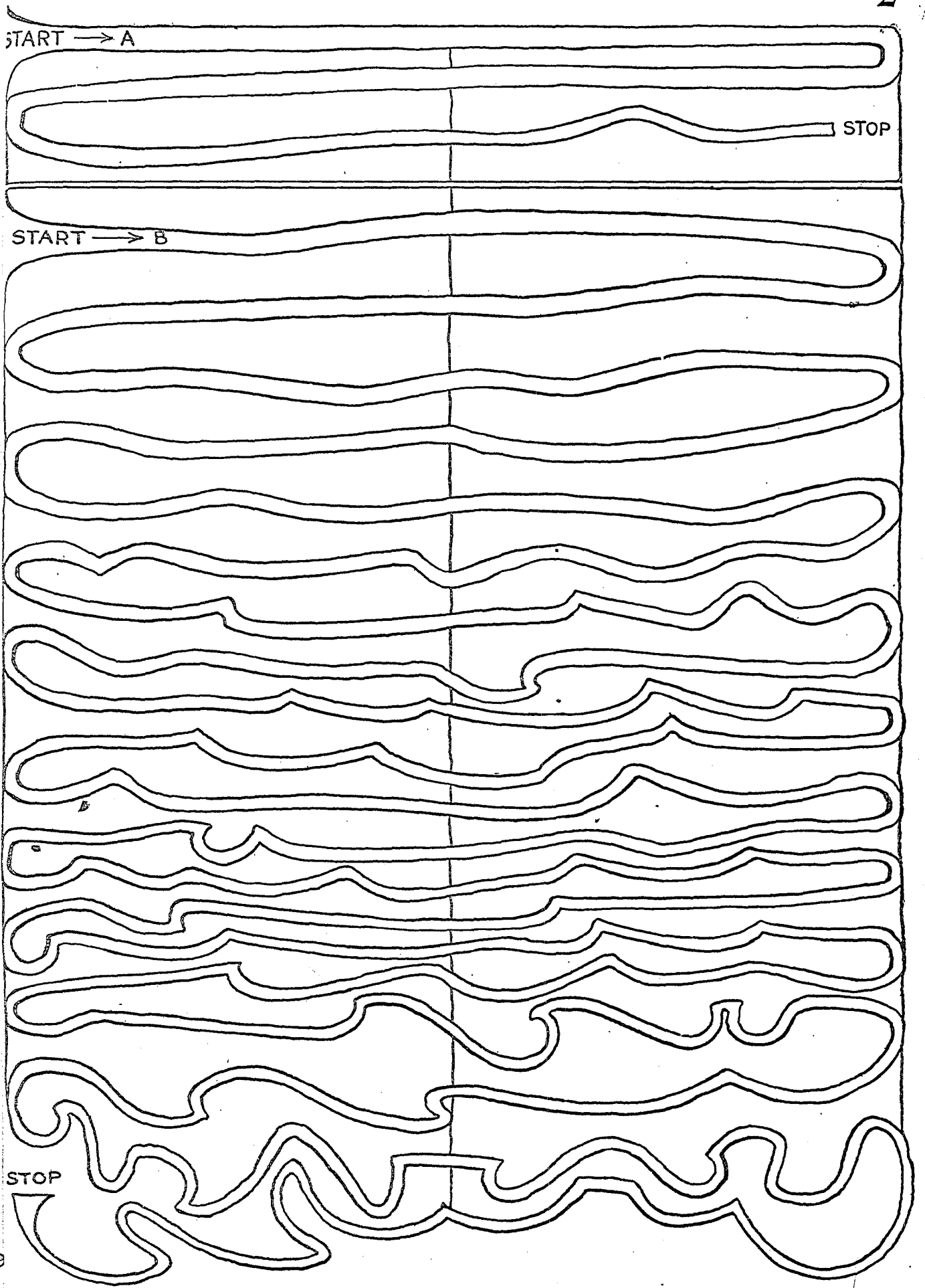
START

STOP

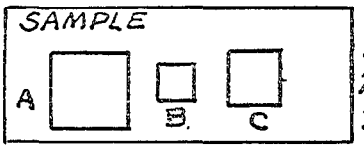
Go on to the last column.

Score .....



Score.....

SAMPLE



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1-BIGGEST---( )
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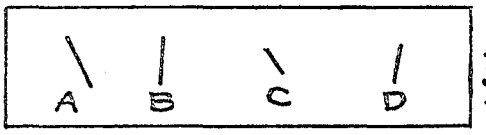

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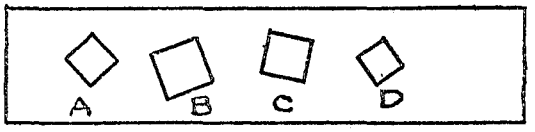

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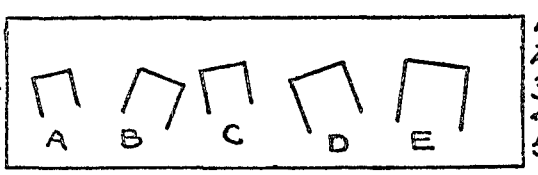

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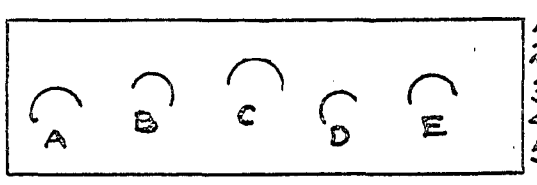

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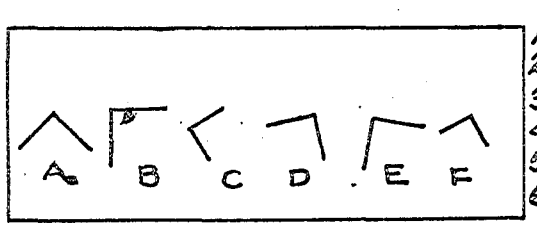

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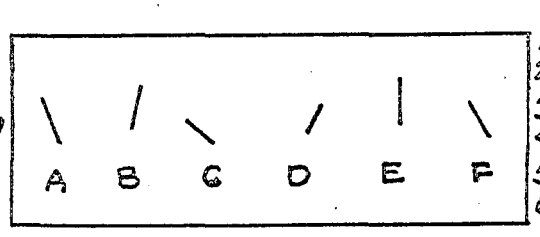

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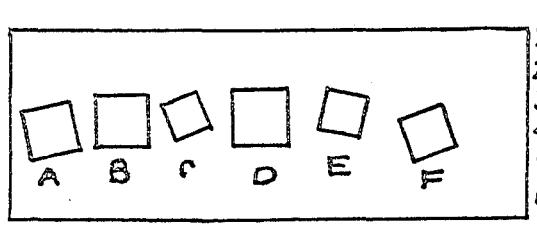

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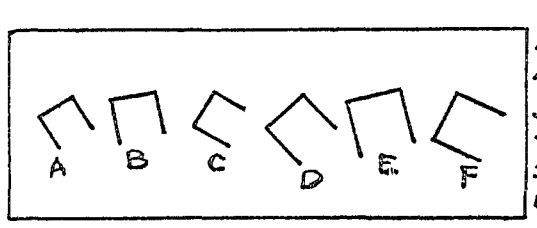

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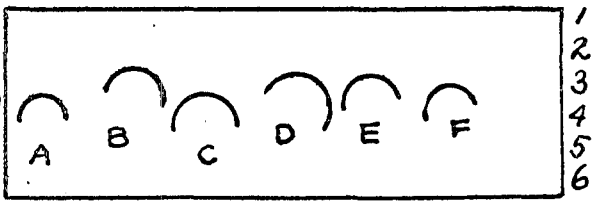

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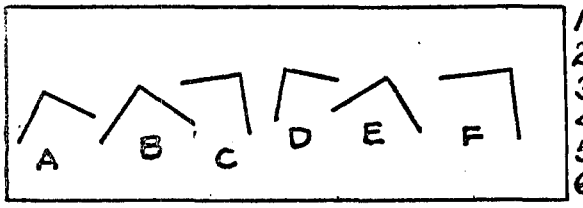

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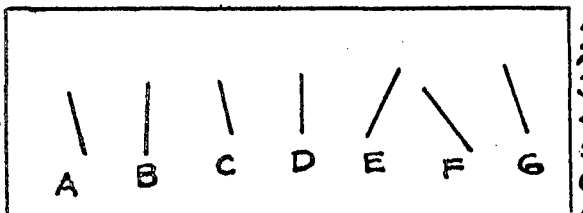

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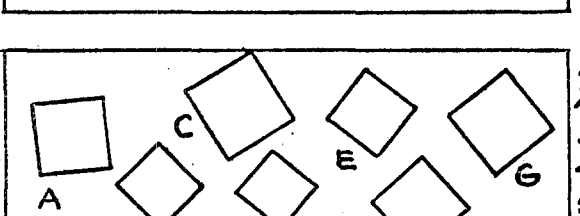

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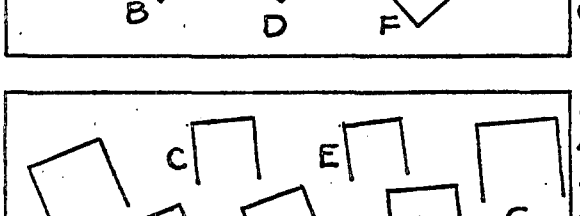

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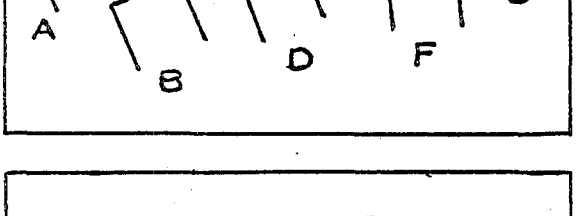

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16

Go on to the next column.

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A jack-knife will cut	1 gold	2 iron	3 steel	4 wood	( )
Bacon is a kind of	1 beef	2 mutton	3 pork	4 veal	( )
Bread consists chiefly of	1 baking powder	2 flour	3 soda	4 yeast	( )
Postum is a kind of	1 drink	2 meat	3 soup	4 vegetable	( )
The warmest cloth is	1 calico	2 cotton	3 silk	4 wool	( )
Sausage is made from	1 mutton	2 pork	3 rabbit	4 venison	( )
Gingham is used for	1 dresses	2 gloves	3 sheets	4 table cloths	( )
Bread should be cut on a surface of	1 aluminum	2 glass	3 porcelain	4 wood	( )
Natural linen is	1 blue	2 cream	3 red	4 green	( )
The chief ingredient of omelette is	1 bacon	2 eggs	3 flour	4 ham	( )
The faintest light usually comes from a	1 candle	2 electric bulb	3 gas light	4 oil lamp	( )
A buffer is used to	1 grind	2 polish	3 roughen	4 smooth	( )
To thin paint we use	1 alcohol	2 gasoline	3 kerosene	4 turpentine	( )
A seam is made with a	1 back stitch	2 gathering stitch	3 hem stitch	4 running stitch	( )
Solder will stick best to	1 glass	2 lead	3 leather	4 wood	( )
The bobbin sets in the	1 lock	2 needle	3 shuttle	4 slide	( )
To clean a drain pipe we use	1 oil	2 lye	3 sand	4 soap	( )
To change a tire we must have an	1 air pump	2 hammer	3 jack	4 screw driver	( )
The strongest thread is	1 basting	2 cotton	3 linen	4 silk	( )
A window is best cleaned with a	1 brush	2 chamois	3 cloth	4 sponge	( )
Glass is usually cut with a	1 chisel	2 file	3 scissors	4 wheel	( )
Glue is most effective with	1 brick	2 leather	3 metal	4 wood	( )
A fuse is used for	1 economy	2 efficiency	3 safety	4 speed	( )
A spark plug is in the	1 commutator	2 cylinder head	3 manifold	4 piston	( )
A dark blue dress may be dyed	1 black	2 green	3 orange	4 red	( )
For fine hemstitching we use a	1 No. 5 needle	2 No. 8 needle	3 No. 3 needle	4 No. 7 needle	( )
To paint enamel we must use a	1 hard brush	2 soft brush	3 stiff brush	4 wire brush	( )
A carburetor	1 explodes gas	2 measures gas	3 mixes air and gas	4 times spark	( )
Bread is best cut with a	1 round edge	2 scalloped edge	3 saw edge	4 straight edge	( )
To weld means to	1 fuse together	2 glue	3 harden	4 melt	( )
The number of wires in an ordinary light socket is	1 five	2 one	3 three	4 two	( )
To put out a burning motor we use	1 chemical	2 gas	3 oil	4 water	( )
Brads are a kind of	1 nail	2 rivet	3 screw	4 wire	( )
A rivet is used for	1 appearance	2 smoothness	3 elasticity	4 strength	( )
Cluny is a kind of	1 dress	2 embroidery	3 hose	4 lace	( )
An electric doorbell requires	1 current	2 fuse	3 plug	4 switch	( )

Score.....

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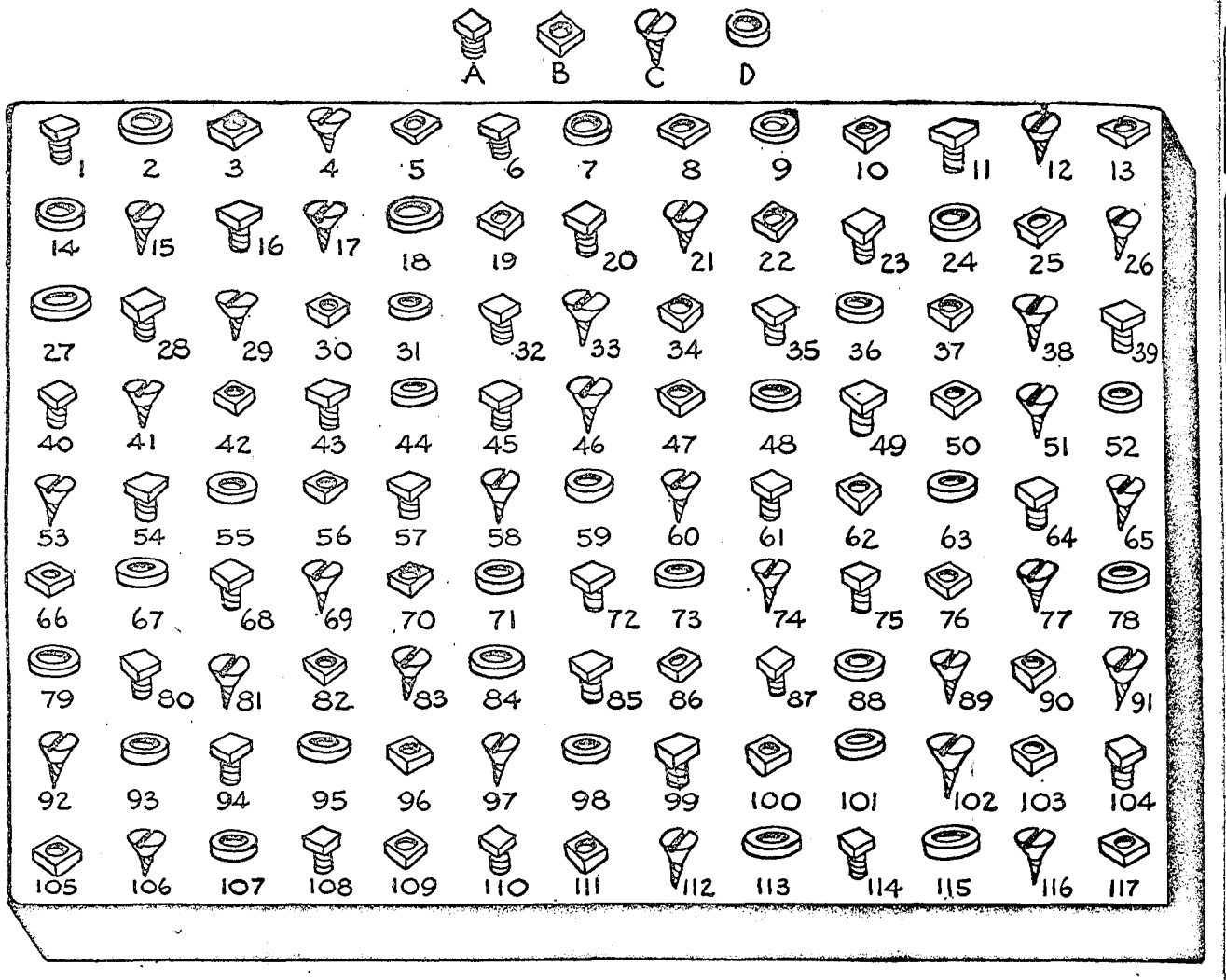
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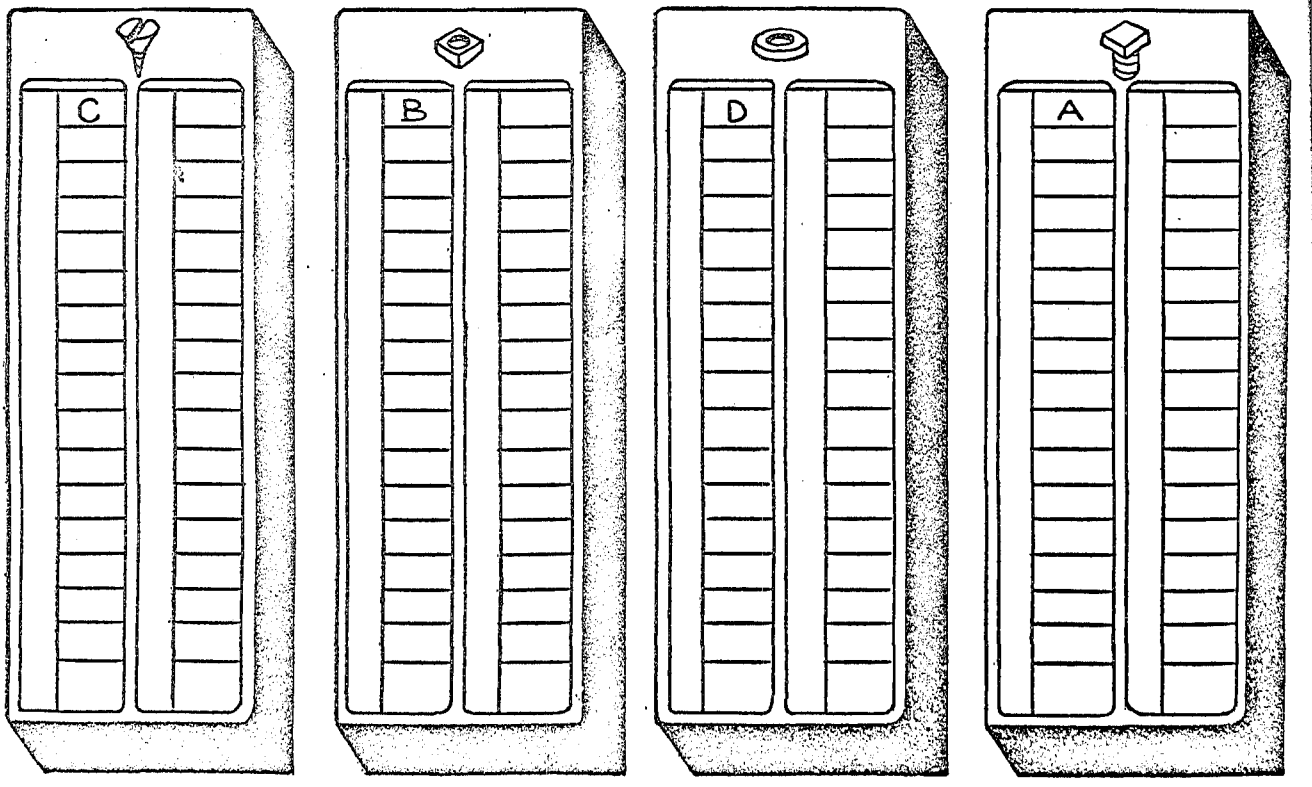
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Score..... ÷ 3 = ...

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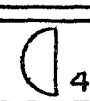
1							
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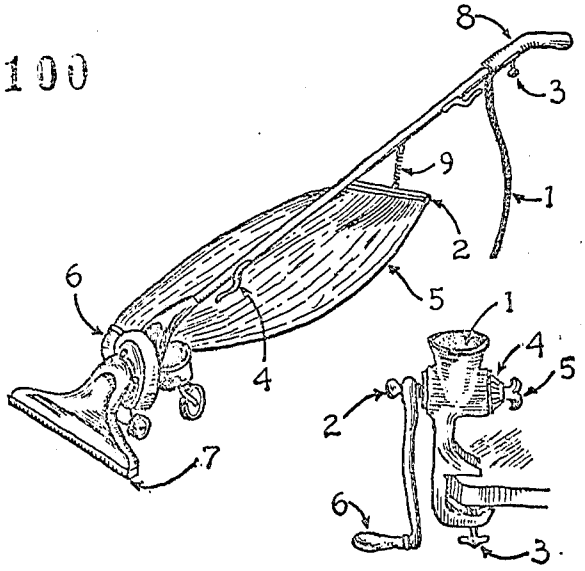
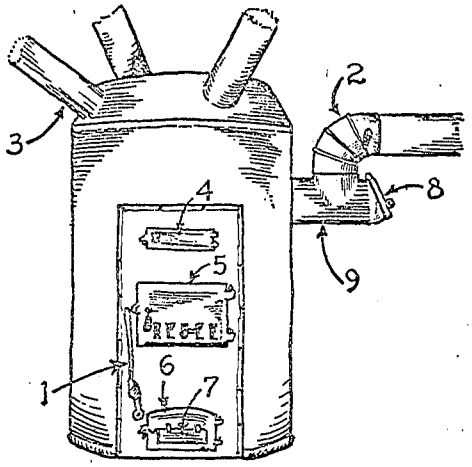
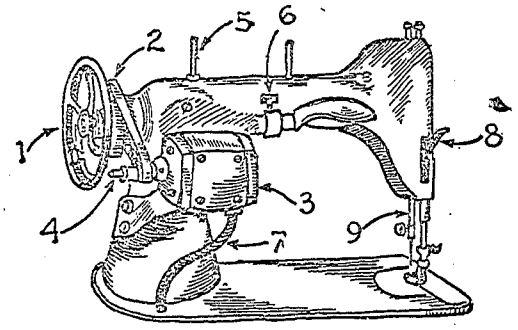
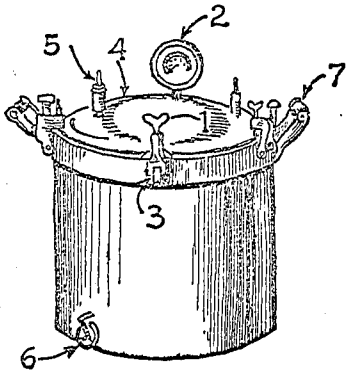








1 HOLDS DIRT ( )
2 HAND GRIP ( )
3 HOLDS CORD ( )
4 SUSPENDS BAG ( )
5 ELECTRIC SWITCH ( )
6 SUCKS DIRT ( )
7 EXHAUSTS DIRT ( )
8 CONDUCTS ELECTRICITY ( )
9 HOLDS BAG SHUT ( )

10 RECEIVES FOOD ( )
11 FASTENS GRINDER ( )
12 HAND GRIP ( )
13 GRINDS FOOD ( )
14 FASTENS HANDLE ( )
15 FASTENS BLADES ( )

16 FEED DOOR ( )
17 MOVES GRATES ( )
18 ASH-PIT DOOR ( )
19 PROVIDES DRAFT ( )
20 CONDUCTS HEAT ( )
21 CHECKS DRAFT ( )
22 ELBOW ( )
23 OPENS TO AIR CHAMBER ( )
24 SMOKE VENT ( )

25 HOLDS SPOOL ( )
26 ELECTRIC MOTOR ( )
27 LIGHT SWITCH ( )
28 TRANSMITS POWER ( )
29 HAND CONTROL ( )
30 CONDUCTS ELECTRICITY ( )
31 FOOT LIFT ( )
32 MOTOR SHAFT ( )
33 NEEDLE BAR ( )

34 PRESSURE GAUGE ( )
35 HAND GRIP ( )
36 SAFETY VALVE ( )
37 COVER CLAMP ( )
38 CLAMP PIVOT ( )
39 HOLDS COOKER DOWN ( )
40 COVER ( )

Score .....

APPENDIX IV

Examiner H. J. Jackson No. 10

..... Occupation..... Age.....

ess ..... Education.....

....

VNEY INDIVIDUAL WILL-TEMPERAMENT TES

Devised by JUNE E. DOWNEY, PH.D.
Professor of Psychology, University of Wyoming

WORLD BOOK COMPANY : PUBLISHERS
Yonkers - on - Hudson, New York

TEST

ach trial is timed separately. Always wait for the signal.

Check the trait in each pair which more nearly describes you. If you wish to do so you may grade yoursel on each trait in a pair instead of checking only one trait.

Examples: Sociable [✓] [ ] Unsociable or Clumsy [20] [80] Graceful

Careful	[ ]	[ ]	Careless	Good memory	[ ]	[ ]	Forgetful
Cautious	[ ]	[ ]	Daring	Self-confident	[ ]	[ ]	Self-distrustful
Ambitious	[ ]	[ ]	Unambitious	Hasty	[ ]	[ ]	Deliberate
Punctual	[ ]	[ ]	Tardy	Orderly	[ ]	[ ]	Disorderly
Accurate	[ ]	[ ]	Inaccurate	Cheerful	[ ]	[ ]	Gloomy
Industrious	[ ]	[ ]	Lazy	Patient	[ ]	[ ]	Impatient
Vain	[ ]	[ ]	Modest	Quick	[ ]	[ ]	Slow
Impulsive	[ ]	[ ]	Inhibited	Aggressive	[ ]	[ ]	Not aggressive
Enthusiastic	[ ]	[ ]	Indifferent	Suggestible	[ ]	[ ]	Not suggestible
Obstinate	[ ]	[ ]	Yielding	Extravagant	[ ]	[ ]	Thrifty
Inferior intelligence	[ ]	[ ]	Superior intelligence	Superior character	[ ]	[ ]	Inferior character

Write your name as directed below. Wait for the signal for each trial.

1 *Usual style and speed. 2 trials*

Time [ ]

Time [ ]

2 *As rapidly as possible. 2 trials*

Time [ ]

Time [ ]

Write your name *as slowly as possible. 2 trials*

Time [ ]

Time [ ]

V Choosing mental test.

V Write on the line below as quickly as possible the phrase "United States of America." Get it all on the and write as rapidly as you can. *Remember, both speed and not running beyond the line count. 1 trial*

Time

102

VI Writing of phrase. In the space below, write the phrase "United States of America" as directed. Wa the signal for each trial.

1 *Usual style and speed. 2 trials*

Time

Time

2 *As rapidly as possible. 2 trials*

Time

Time

II Write the phrase "United States of America" *as slowly as possible. 3 trials*

Time

Time

Time

II Write the phrase "United States of America" *in a disguised hand.* Change your writing as much as po *You need not hurry.*

1

Time

2

Time

3 Imitate Model A, writing *as rapidly as possible. 1 trial*

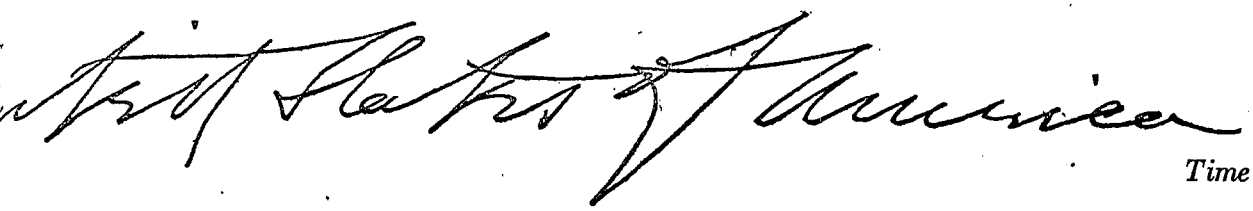
United States of America

A

Time

py the handwriting below as directed.

py Model A *as exactly as possible,* taking all the time you wish. *1 trial*



Time ☐

py Model B *as well as you can.* Choose your own speed. *1 trial*

B

Time ☐

rite your name in the spaces below as directed.

Eyes closed, usual style and speed. 1 trial

Time ☐

While counting rapidly by 3's, eyes open. 1 trial

Time ☐

While counting rapidly by 3's, eyes closed. 1 trial

Time ☐

Beginning at 7th tap of pencil, eyes closed, counting rapidly by 2's. 1 trial

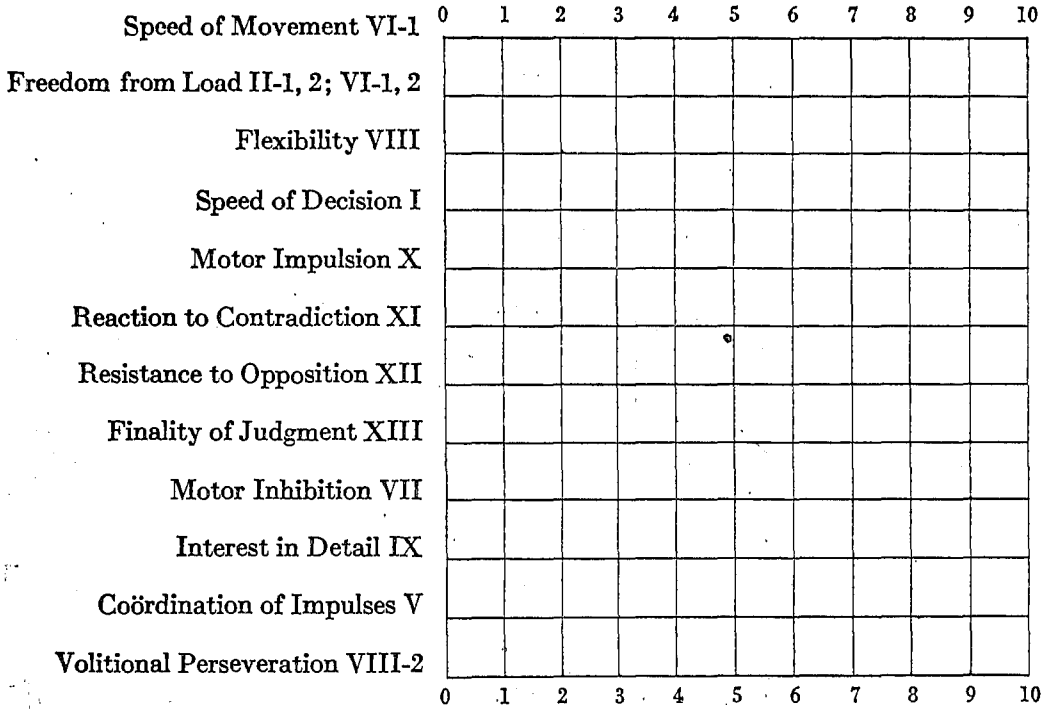
Time ☐

ental test.

ite your name *at usual speed, eyes closed. Use a pencil. 2 trials*

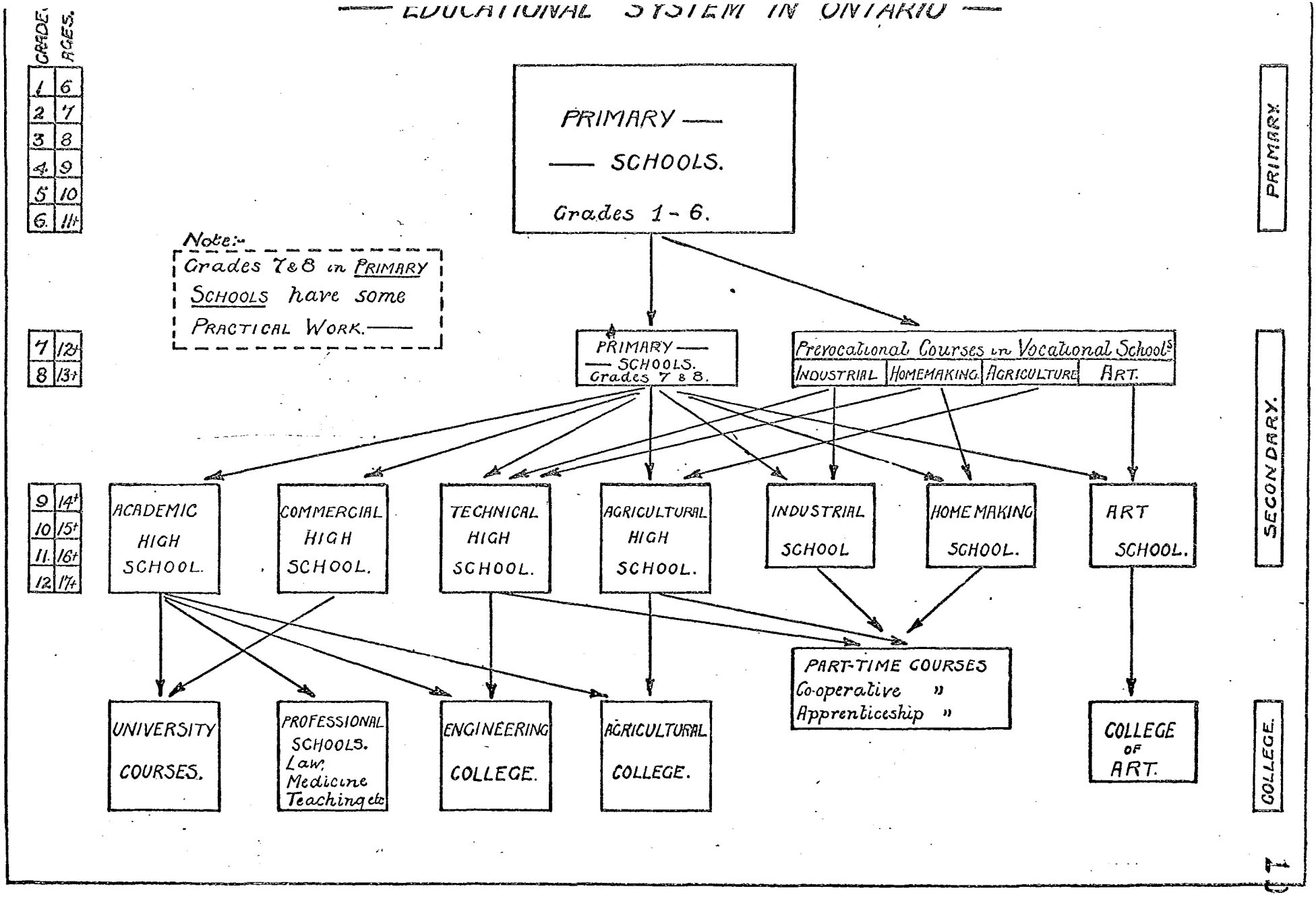
lake any changes you care to in checking Test I. *Use a pencil.*

Name_____ No._____



Use the space below for practice.

— EDUCATIONAL SYSTEM IN ONTARIO —



APPENDIX VI- A.

List of Occupational Booklets Available.

The Detroit Public Schools, Department of Guidance and Placement, issue the following mimeographed bulletins at 5 cents each postpaid:

1 Private Trade Schools in Detroit.
2 Materials Needed by Detroit Counsellors.
3 Index of Detroit Materials Relating to Occupations.
4 Messenger Service in Detroit.
5 Special Material for Pre-College Guidance (out of stock)
6 Counting College Costs
7 Theatre Usher in Detroit.
8 Story of How a Halftone is Made.
9 Dental Hygienists and Dentists' Assistants.
10 Clerk in the Retail Grocery Store.
11 Linotype Operator in Detroit.
12 Chain Store Opportunities for High School Girls in School.
13 Radio Announcing
14 Undertaker
15 Physio-Therapist
16 Nursing
17 Accountant's Place in Business.
18 Not "Job" Hunting.
19 Report for Year Ending June 30, 1933.

APPENDIX VI- B.

List of Occupational Booklets Available.

The Pittsburgh Public Schools, Department of Vocational Guidance print monographs as follows, at 65 cents for the set or 5 cents each postpaid.(See specimen copy, Appendix VII):-

1 Machinist
2 Draftsman
3 Pattern Maker
4 Sheet Metal Worker
5 Printer
6 Structural Steel Worker
7 Stationary Engineer
8 Stenographer
9 Salesperson
10 Office Clerk
11 Painter
12 Baker
13 Barber
14 Messenger
15 Graduate Nurse
16 Paper Hanger
17 Social Worker
18 Teacher
19 Manicurist
20 Dentist
21 Railway Operator
22 Art Designer
23 Advertising Agency
24 Department Store Advertising
25 Radio Advertising
26 Manufacturing Confectioner
27 Domestic Service
28 Accountant
29 Librarian
30 Moulding Trade
31 Sign Painter
32 Bill Poster

APPENDIX VII

OCCUPATIONAL STUDIES
MONOGRAPH SERIES NUMBER 31

SIGN PAINTER

1929

PITTSBURGH PUBLIC SCHOOLS
WILLIAM M. DAVIDSON, SUPERINTENDENT

1

' pupils

III

lesty

sterling

superior

dependable

weak

doubtful

VI

guage & Manners

cultured

educated

average

unpolished

crude

er's ratings

atings at least,

e teachers in

commended.

requirement

E none can be similarly rated.

Acknowledgment

The first series of Occupational Studies, numbers one to fourteen, was prepared under the direction of the Pittsburgh Personnel Association in cooperation with members of the Department of Vocational Guidance.

A second series of Studies, of which this study is one, is being prepared solely by members of the Department of Vocational Guidance although the outline of the first series is being used.

THE SIGN PAINTER

Definition

If you have noticed the painted bulletins on top of buildings and along streets, highways, and railroads, you have a pretty good idea of the sort of work the sign painter does. On surfaces of sheet metal, wood, brick, or cement, he enlarges the sketch prepared for him by an artist.

A Typical Day's Work

Sign painters work from eight until four o'clock. Two men always work together—a skilled painter and a helper. All materials necessary for a job are prepared at the plant, put into a padlocked box for them, and taken with them in a truck to the place where they are to work. Here they open their boxes and take out their hanging swings, block and tackle, or scaffold, and make ready to work. They mix their paint and paint the spaces assigned to them in accordance with a small sketch prepared for them by an artist. They spend from one to three full days on each job.

Duties of Workers

Apprentice—The apprentice is a person learning the trade. He cleans the brushes, takes care of equipment, and by watching the painters learns how the work is done.

Helper—At the end of a year, the apprentice becomes a helper. In this capacity he works under the direction of a skilled painter until he shows capability and a desire to accept responsibility.

Journeyman—Then he becomes a journeyman, or a skilled painter.

E none can be similarly rated.

Combination Painter—A combination painter is one who can do lettering and paint pictures.

Inspector—An inspector is an experienced painter who is observant enough to see the mistakes of others, and tactful enough to make the painters feel that in telling them of their mistakes, he is helping them rather than finding fault.

Foreman—A foreman is a journeyman who is responsible for the work of a crew of sign painters.

Paint Superintendent—The paint superintendent is a painter who has advanced to this position because of his ability to manage men and to analyze the value of various locations for advertising different products. He studies the problems of advertisers and plans painted bulletins to meet their individual needs. He has the number of pedestrians and automobiles, or railroad passengers that pass in a day counted and classified so that the salesman and the advertiser can compare values in selecting locations for displays. He has estimates prepared of the yearly expenditures necessary to reach the entire population of a city. He sees that the advertiser gets absolute reproduction of the advertisement chosen, and the exact number of paintings and repaintings specified in his contract. He can advance to the position of branch manager of an outdoor advertising plant, if he is properly equipped. A high school education is desirable.

Qualifications

The sign painter must be an imitative artist as well as a practical painter. He must be skillfull at enlarging small sketches into the proper proportions for the wall spaces, bulletins, or bill boards assiged to him. In many plants the painter makes his own sketches and thus has an opportunity to do creative work.

He needs a knowledge of color. The artist who originated the design for the sign may have experimented and obtain unusual tones that the paint manufacturer does not produce. For this reason the sign painter must be able to mix and match colors out on the job.

The sign painter's work is more exacting than that of the bill poster. It requires greater accuracy and initiative. He must remember the copy so that he need not look at his sketch for every letter. He must correct, on his own time, any mistakes he makes

A sign painter needs a high school education. He must be sixteen years of age. The loss of a eye or a finger or two would not prevent him from performing his duties satisfactorily.

Wages

A sign painter is paid union wages, which are, at present, as follows:

Apprentice	$18-24	A Week
Helper	$10	" day
Journeyman	$15	" "
Combination Painter	$15	" "
Foreman	$13	" "
Inspector	$15	" "
Paint Superintendent	$75-100	" Week

Opportunities For Employment in Pittsburgh

The following chart shows the number of sign painters employed in the four largest outdoor advertising plants in Pittsburgh. Besides these, there are thirty-one smaller companies, so that the total number of sign painters employed here is about 125.

Sign Painters

Plant	Painters	Foreman	Inspectors	Paint Superintendents
A	24-50	17	2	2
B	4-8	0	0	1
C	5-6	0	0	0
D	1	0	0	0
Total	34-65	17	2	3

Disadvantages

The sign painter is paid by the day, and the amount of work that he does depends upon the condition of the weather. He cannot paint over frost or dampness of any kind. On the average, he works about two-thirds of the time. He is not paid for vacations, holidays, or any time that he does not work. He must work overtime when there is a rush job that requires night work.

Advantages

The sign painter is paid while he is learning the trade. He is not subject to the disadvantages of the ordinary painter who works indoors. There is an under supply of sign painters. As a part of an out-door advertising organization, he has opportunities for advancement that the ordinary painter does not enjoy. If he has at least a high school education, executive ability, and a real interest in the business that will lead him to start at the bottom and learn it from every angle, he may advance to the position of plant manager.

Bibliography

Books

TITLE	AUTHOR	PUBLISHER	ADDRESS
"The Art of Sign Painting"		Fred J. Drake Company	1002 S. Michigan Ave. Chicago, Illinois
"Manual of the Outdoor Advertising Association of America"		Available upon request through Outdoor Advertising Association	307 S. Green St. Chicago, Illinois
"Sign Painting and Bulletin Art"	F. H. Atkinson	The Poster	307 S. Green St. Chicago, Illinois

Trade Journal

"Painter and Decorator"	Clarence E. Swick		Painters and Decorators Building, Lafayette, Indiana

E none

APPENDIX VIII

Guide in Rating Character, etc., of pupils on a 5-point scale.

I	II	III
Mechanical Aptitude	Personal Appearance	Honesty
A clever	A attractive	A sterling
B capable	B pleasing	B superior
C handy	C ordinary	C dependable
D doubtful	D colorless	D weak
E awkward	E unattractive	E doubtful

IV	V	VI
Executive Ability	Strength of Purpose	Language & Manners
A able to lead	A very persistent	A cultured
B able to plan	B determined	B educated
C co-operates	C steady	C average
D good follower	D vacillating	D unpolished
E doubtful	E weak	E crude

VII	VIII
Financial Resources	Using this method teacher's ratings usually agree. Three ratings at least, preferably by successive teachers in successive years are recommended. Any personal quality or requirement can be similarly rated.
A ample	
B satisfactory	
C doubtful	
D very limited	
E none	

STUDENTS ADDRESSES H = HOME S = SCHOOL T = TELEPHONE																													
54							H-526 Grand Ave. T-3-5126				H-526 Grand Ave. T-3-5126			H-526 Grand Ave. T-3-5126				H-526 Grand Ave. T-3-5126			H-526 Grand Ave. T-3-5126			H-526 Grand Ave. T-3-5126					
PERSONALITY RATINGS	+2										Initiative							Initiative Responsibility									Initiative Responsibility		
56	+1						Initiative				Responsibility							Charm Personality Appearance									Charm Personality Appearance		
57	0						Responsibility Charm Personality Appearance				Charm Personality Appearance																			
58	-1																												
59	-2																												

PERSONALITY MEASUREMENTS

60 NAMES OF TESTS USED

	NAME	HEALTH	RELIGION	DECEASED DATE	PLACE OF BIRTH	ARRIVED IN U.S. DATE	EDUCATION DEGREE AND KIND	OCCUPATIONS	ADDRESSES
61	FATHER Asa	Good			Penna.		High School	Store Keeper	526 Grand Ave.
62	MOTHER Agnes	Good			Penna.		Elem. School	Housewife	
63	STEP PARENT								
64	GUARDIAN								

	BOYS IN FAMILY A	AGE 1931	LIVING AT HOME	SCHOOLING	OCCUPATION	GIRLS IN FAMILY B	AGE	LIVING AT HOME	SCHOOLING	OCCUPATION
65		28		College	Machinist					
		26		College	Salesman					
		24		College	Naval Officer					
		20								

C LANGUAGE SPOKEN IN THE HOME — BEFORE 10: English — AFTER 10: English

D TYPE OF HOME COMMUNITY — BEFORE 10: City — AFTER 10: City

E IF PARENT SEPARATED

Notes

66 YEAR	1925	1926	1927	1928	1929	1930	193
67 AGE	11	12	13	14	15	16	17

The section of the Record devoted to Notes corresponds chronologically with the arrangement on the face of the card. Exact details as to tests, scores, and percentiles appear here together with the longer notes.

Acad. Int.	F	
Manual Int.	E	
Read Comp.	E	
Oral Exp.	E	
Writ. Exp.	E	
Conscientiousness	E	
Responsibility	E	
Daily Prep.	E	
Prompt	G	
Careful	G	
Industrious	G	
Firm	G	
Cheerful	G	
Openminded	G	
Sociable	G	

1928: Opportunity was offered for new students to take achievement tests at opening of school. Margaret applied for the test in Anc. Hist, although she had never taken a course in it. She said she became interested in the subject when she read "Julius Caesar" and "Mark Antony"

1929: At close of Year Science teacher gave a list of interesting general references. Margaret read: "Charles Darwin" "Science Remaking the World" "How We Travel" "Heroes of Science" "Children's Stories" of Great Scientists

See test result in October

1930: The Latin teacher suggest that anyone interested mig try learning French. One or two students began in March outside of school. Margar met her Latin teacher once a week in a fre period for hel in pronunciati and worked very faithfully duri Summer about 2 hrs a day. S Was able to en 2nd Fr. in fall.

	1925	1926	1927	1928	1929	1930	193
				Score Ptl.	Score Ptl.	Score Ptl.	Score Ptl.
		Ntnl. Int. 171 99		Jr. Anc. H. 76-90	R.P.G. Sci. 83-98	C.R.B. Fr. 176-93	
		St. Read. 232 96					
		St. Dict. 115 96					
		St. Lang. 104 89					
		St. Lit. 110 99		Score Ptl.	Score Ptl.	Score Ptl.	
		St. Hist. 116 99		C.R.B. Alg. 45 98	C.R.B.P.G. 52-94	C.R.B. Fr. 144 90	
		St. Geog. 121 99		W. Lat. 180 99			
		St. Phys. 96 –					
		St. Arith. 226 96					
		St. Ach. 112.5 98					
				Score Ptl.	Score Ptl.	Score Ptl.	Score Ptl.
			Otis S.A. 64 99	R.P.G. Sci. 56 90	R.P.G. Sci. 90 99	R.P.G. Sci. 75 94	
			St. Ach. 115.1 96	C.R.B. Alg. 45 99	C.R.B.P.G. 56 97	C.R.B. Fr. 208 96	
			St. Read. 236 99	C.R.B. Eng. 225 99	C.R.B. Eng. 227 99	A.C. Trig. 59 99	
			St. Dict. 113 89	W. Lat. 183 99	W. Lat. 195 99	W. Lat. 197 99	
			St. Lang. 131 99			C.R.B. Eng. 238 99	
			St. Hist. 124 99				
			St. Lit. 122 99				
			St. Geog. 107 84				
			St. Phys. 101 –				
			St. Arith. 227 93				
			Cr. Eng. 160 100				
			C.R.B. Alg. 36 98				
			A.W. Civ. 128 100				
			Jr. Lat. 75 100				
		Score Ptl.					
		Otis S.A. 66 99					
		St. Ach. 92.8 99					
		St. Read. 246 99					
		St. Arith. 234 99					
		St. Sci. 74 98					
		St. Hist. 84 99					
		St. Lang. 87 99					
		St. Dict. 88 99					
		Jr. Am. H. 89 92					

APPENDIX IX

STUDY OF THE RELATIONS OF SECONDARY AND HIGHER EDUCATION IN PENNSYLVANIA

Recording Achievement

The Study of the Relations of Secondary and Higher Education in Pennsylvania was begun in 1928 on ıe initiative of the Joint Education Commission appointed by the Association of College Presidents and ıe State Department of Public Instruction. The main purpose of the enquiry is, by means of cumulative ɔjective measurements of an individual's attainments and progress, to establish a sound basis for edu-ıtional guidance through whatever institutions he may attend, and into an economic employment that is ıited to his abilities.

A feature indispensable for a program of adequate measurement is a record that is accurate, comrehensive, and significant. The Study has developed such a record, and with the results of three years' esting available, is now in a position to lay provisional results before the colleges. It should be ade clear that the value of a thorough objective testing procedure and a careful record is not confined ɔ pupils who are going to college. It is of equal, if not greater, importance in directing those who ave little capacity for academic subjects but who are possibly gifted in other ways. The reason that ıe Study's present use of the record is confined to a college group now in high school is that the proect originated in the problem of school-college requirements. The procedure can be most conveniently llustrated by applying it at this point.

The Graphic Cumulative Record

An appreciation of the educational significance of the Pennsylvania Study in its emphasis on "learnTENG" pupils depends largely on a thorough understanding of the cumulative record employed and of the S-rocedure for which it was devised. Both should be carefully studied. They are as scientific in char-cter as circumstances will permit and are unusual in many respects; their advantages become apparent nly after repeated use when the reader is fully accustomed to the symbols and the meaning of their elationships.

Some who have inspected the graphic cumulative record have found it "too complicated." This impression is due not only to the fact that the terms are unfamiliar but also to the fact that the record S ARE VE DA alls for much information that most institutions now treat casually or ignore altogether. Any one who studies case histories as completely worked out on this record and then goes back to the current forms will usually realize at once how meagre and untrustworthy our present information is in most cases. The real question before us is not one of adapting a record to existing data but rather of improving the data is required by an adequate record. In other words the record is not a bookkeeping convenience but an indispensable educational instrument; those who are merely looking for an improved record system would do well not to adopt it.

It should be noted further that good draftsmanship is a point of cardinal importance. Unless it attracts those who ought to use it, a record loses much of its practical value. Crooked lines, irregular and careless entries, and poor lettering will soon make any record repellent. The ordinary list of grades suffers least from this cause, and therefore seems less "complicated." When well drawn, however, the graph and its supporting facts have proved to be by far the most trustworthy and revealing form in which an educational story can be told. If kept clear and accurate, the compact form of the record makes its use a pleasure.

Description of the record The Graphic Cumulative Record consists essentially of a rectangular field designed to display graphically the relative positions of a pupil's achievement scores and ratings over a period of years on a scale that corresponds roughly to their actual distributions (see percentile scale of half-sigma intervals in the left margin). To facilitate the simultaneous use of teachers' percentage or letter grades a scale of approximate equivalents in these terms is added.

Heavy vertical lines separate the calendar years and represent January 1; divisions for the quarters follow, and the months are indicated in line 5. Any point on the chart has, therefore, both a qualitative and a chronological value without further identification. School attendance is represented by a solid line, vacations by dotted lines. Teachers' ratings and all subjective examination marks are indicated by open circles - ○; scores in objective, standardized tests, by solid circles - ●.

In the lower half of the card personal facts of importance are correlated with the chronological arrangement of the chart above.

Advantages of the record The outstanding advantages of this record and of the procedure that it involves are two;

(a) It displays a graphic sequence of symbols covering a period of years which enables the reader to appreciate at a glance both the quality, the amount, and the consistency of a pupil's intellectual progress.

(b) It provides in a variety of fields not only the teachers' ratings of the pupil (open circles ○) but also standardized test scores (solid circles ●) that are free from the subjective uncertainties of the teacher and that disclose in strictly comparable terms the relative achievement of this pupil in comparison with hundreds of others of the same age all over the country.

Sample history The following sample record should be examined with minute care. It is a true history, except in minor particulars, as far as June, 1928. From that point, known facts from other cases are introduced to illustrate a complete record which would serve as the final basis for admission to college.

The size of card has been reduced for convenience. The actual dimensions of the record are 11½x17½; those of the reproduction 9x14

Case of Margaret Elinor Crawford

The record covers the school life of this child from the age of eleven to seventeen (line 4)* begin in the second half of the sixth grade (line 3) which she entered in February (line 5), 1925 (line 2), at Howard Elementary School (line 26).

The marks given by Margaret's teachers in earlier years are summarized on the left of the score fra Her spelling is rated A, music and drawing, C, and all other subjects, B (cols. 1-2). A glance at her re as a whole shows that her teachers consider her a remarkably able pupil. Except for a C in writing at t end of the second semester, 1925 (col. 4), there are no marks below B during the entire six years and A r ings are frequent. Her standard test scores are heavily concentrated in the highest part of the card an general run higher than the teachers' ratings. There is none below the 83rd percentile; eight only are low the 93rd percentile, and thirty-six are at or above the 98th percentile. This means that in the lat subjects, more than 98% of the children of like age taking these tests scored below Margaret.

Details of the standard test scores are to be found on the reverse side of the card. For the sake clarity these are much abbreviated on the chart. In May, 1925, 1926, and 1928, and in March of 1927, Margaret tested consistently in the 99th percentile in intelligence. The other tests of these years con of the Stanford Achievement tests - a group of ten tests in various subjects each having a separate score in addition to the score for the group. The latter is recorded as the "Stanford Achievement" score, ("Stanford Ach."). In Margaret's case the sections of the test spread slightly downward after the first year due t the increasing selection of the group on which the test is standardized and possibly also to the fact th the pupil is not doing her best because of constant association with inferior pupils. Since 1925 she ha been ready for 10th grade work although compelled to sit through the 7th, 8th, and 9th grades and to wor their pace. Tests in new material in May, 1928, (col. 16) - Cross English test, Brown-Woody Civics, Jun Latin, and C.R.B. Algebra - place her in the 98th and 99th percentiles. These percentiles are based only the local groups and are therefore indicated by crossed open circles - ⊕ .

In the senior high school Margaret tests about equally well in all types of work. She took general science throughout the junior and senior years, and in May, 1929, took a special test prepared for colle freshmen and scored in the 91st percentile. Her interest in science led her to do a large amount of sup mentary reading that summer, and when she returned in October she repeated the test and raised her score the 98th percentile (col. 22). This score she raised still higher in May, 1930 (col. 24). Thereafter s dropped science, but a year later, in 1931, she could still test to the 94th percentile in that subject (col. 28).

Latin was begun in the fall of 1927 and the Junior Latin test the following May showed Margaret at t head of the local group (col. 16), although the teacher gave her an A-. That this local score was a rea achievement is shown by the standardized tests of 1929, 1930, and 1931 - in all of which she gained the percentile (cols. 19, 20, 24, and 28). In her junior year her Latin teacher suggested that she begin Fr by herself and gave her some preliminary lessons on the pronunciation. Margaret worked on grammar and e reading during that summer and in the fall took the Columbia Research Bureau French test, scoring in the percentile. On the strength of this performance she entered second year French and repeated the test tw during the school year, each time with noticeable improvement (cols. 26, 27, and 28).

It should be noted that in the latter part of the senior year Margaret had the opportunity in every field of her secondary study to demonstrate her attainment by means of comprehensive objective examinatio Through constant use as a part of her education these tests had become a matter of routine, and had grad given her the attitude that knowledge, once acquired, was to be retained and deliberately improved for per- manent use - not crammed for recitation and a term credit and then forgotten. It is apparent, too, that school had given her encouragement in independent work by testing it and recording her achievement. Her special work in general science and in French have already been described. At the beginning of her first year in senior high school she applied for a test in ancient history in which she had long been interest though she had taken little of it in school; the result in this test showed the same high quality as her other work (col. 18).

The personal history that parallels Margaret's intellectual development furnishes important items. Under notable accomplishments (line 31) are a prize essay in 1925, the reading of Barrie complete when twelve years of age, and, when thirteen, the reading and reviewing of all Shakespeare's historical plays ing a summer vacation. She was an active club girl, occasionally an executive (line 35). In her early vocational choices (line 47) teaching, medicine and law rotate. She finally decides on teaching, then on college teaching, then on teaching of Latin and French.

Data on the back of the card indicate that Margaret comes from a normal American family in which the parents are without higher education (lines 61, 62). She has four brothers, three of whom have been to college (line 65). Her personality ratings can only be regarded as vaguely suggestive. Judgments on th point are equivocal since they lack definition of the behavior on which they are based.

Altogether Margaret's picture is that of a remarkably capable, steady, and independent mind develop admirably with an excellent background. She is undoubtedly a college risk of the first class.

*Note: The lines of the Record are numbered on the extreme left and the columns in line 5.

STUDY OF THE RELATIONS OF SECONDARY AND HIGHER EDUCATION IN PENNSYLVANIA

TO THE BOYS AND GIRLS IN THE SPECIAL CLASSES OF THE PENNSYLVANIA STUDY

Since September, 1928, you have been members of a group of pupils in what is called the Pennsylvania Study. You have had your achievement in school constantly tested and recorded on a special record designed to show where your chief interests lie, and to discover the subjects in which you consistently do the best work. Many of you will go to college. The record that you have made will be sent in advance to the college of your choice in order that you may be advised as to the college work that will best fit your needs and also that the college may determine whether a pupil with such a school record as yours will be likely to find in that college studies by which he can profit.

We desire, therefore, to have you know just how your record is kept in order that you may better understand your own abilities and that you may make the wisest efforts to secure a genuine education - one that really suits your powers and one that will endure because you got it yourself.

As an example of such a record, we should like to describe to you, step by step, the complete record of Margaret Crawford on the accompanying card. It is a reduced copy but is otherwise precisely the same as the one that you are gradually building up.

The only difficult part of the record, but the most important part, is at the top, where black and white dots form a sort of gridiron show Margaret's school marks and test scores during the six years that she was in the secondary school. The white dots show how well Margaret's teachers thought she did what they asked her to do, and the black dots show how well she did in tests made by competent outside authorities and previously given to a great many pupils in various cities so that we know when a pupil gets a score that is really "average," and when he gets a score that is really high or low; that is, the tests have been "standardized", and, no matter where they are given, if they are used as intended, the same score means the same thing, which cannot be true of teachers' marks, however good the teachers are, because their judgments are simply their personal opinions and their standards vary.

At the left of the gridiron you will notice two scales running from line 6 down to line 15. One is for "grades" and one for "percentiles." The scale of "grades" has letter-grades, A, B, etc., or percentage grades, 80, 90, etc. Margaret's teachers used the letter-grades. Thus at the end of the sixth grade (line 3) in June, 1925, (column 4, line 5) they marked her C in writing but A in spelling and language.

The scale of percentiles is much more interesting because it has a more definite and trustworthy meaning. You will observe that the 50th percentile is opposite the heavy black line exactly in the center. Any black dot on that line means that 50% of all the pupils who took the test when it was "standardized" received scores below that score. Margaret's scores were all much above that point. In May, 1926, she took the Stanford Achievement Test consisting of six parts and a composite score for all, which is labelled "St. Ach." In all these parts, except Science, she received scores such that 99% of all the original scores were below hers; that is, she was in the 99th percentile. In Science she was in the 98th percentile and in Junior American History she was in the 92nd. Her actual scores and percentile numbers are on the back of the card at the proper date line, under Notes.

Now that we understand the record let us see whether it helps us, or perhaps a college admissions officer who examines it, to understand Margaret Crawford.

Back in the elementary school (columns 1, 2) Margaret was not rated especially high; she received A in spelling only. Indeed, most of her teachers, even in high school, do not mark her quite as high as her test scores indicate. Evidently she has a better knowledge of her subjects than she reveals in class. Certain other things that we shall see in the record show that she is an independent student and thinker.

In each of the first four years Margaret took what is called a test of mental ability. Her scores in every case were in the 99th percentile (INT on the record). This undoubtedly proves that Margaret has very unusual mental ability, but the test is not a perfect test. There are many pupils who do exceedingly well in achievement tests in subject matter, but who can secure only comparatively low scores in these mental tests. The test on which you can depend is not one of this sort but rather one that tests your knowledge of a subject that you have studied.

Most of you took the Stanford Achievement Test at least three times in one form or another. So did Margaret - in May, 1926; in March, 1927; and in May, 1928. Her scores spread out and dropped a little the second time, and still more the third, when she touched the 84th percentile in geography. That was partly because the groups of pupils who originally took the test got better as they went on since the less capable ones dropped out; so Margaret had harder work to keep on top.

During the last four years in high school Margaret studied Latin, mathematics, English, and some form of history, taking frequent tests in all of which she earned high scores. Since her chief interests were in other subjects, she took no physics, chemistry, or biology. She did, however, take a course in general science in her sophomore year, for which her teacher gave her B (cols. 19, 20) and she got a score in the 90th percentile on the General Science Test that May (col. 20). When her science course closed in June the teacher guessed that some of the pupils would like to read further during the summer and gave out a list of interesting books (See list under Notes). Margaret read all of these and reviewed them carefully. When she returned to school in September she asked the science teacher if she could take the General Science Test again and did so, pushing her score on a second form of the test to the 98th percentile. A year and a half later, just before she graduated, she took the test again in yet another form and found she was still able to make the 94th percentile. Thus, although her main interest was in literature, she secured a broad and extremely useful view of scientific processes and problems that will always serve her. She has a large technical vocabulary and enjoys adding to it.

This ability to do independent study was a marked characteristic of this girl, and the school of course helped her at every point by giving her tests to show her just what she had done. In line 31, you will note that one summer she read all of Shakespeare's historical plays including "Julius Caesar" and "Antony and Cleopatra" which aroused her curiosity concerning other characters in Greek and Roman history. She read a good deal in this field, especially in biography. When she told her teacher about it on returning to school, the teacher realized that Margaret had covered much ground and suggested that she take a comprehensive test in ancient history. This she did with the result indicated in column 18 - a score in Junior Ancient History in the 90th percentile.

You have seen that Margaret's test scores in Latin were, for the amount of study she had done, consistently at the top of the group. In order not to overburden her, her parents had been unwilling to have her begin a second foreign language, but late in her junior year she discussed the matter with her Latin teacher who thought she would have no difficulty in learning French largely by herself. He met her for a short time each week until she had a fair knowledge of the pronunciation, and saw no more of her until fall. Margaret was one of those persons who enjoys the freedom of studying by herself and when she got into French, she found it highly entertaining because of the preparation that Latin had given her. She worked at it all summer and in the fall applied to the French department for a test to find out where she stood. Her first score was in the 83rd percentile, on the

strength of which she was admitted at once to second-year French. Two later tests showed a steady gain (cols. 27, 28).

As a result of this analysis, our college admissions officer has secured a pretty clear notion as to what sort of mind Margaret has. Not only is she keen and alert in taking in new ideas, but she is steady and dependable in the way she thinks them over and finds out what they mean. She does independent work well and can be trusted to review and keep what she learns. The lower part of the record shows that she was not a "grind" but was a rather vigorous club girl, with many social and athletic activities. She thinks over carefully what she wishes to do in life (line 47) and works out her plans in accordance with her chief interests and abilities. In short, she has made good use of her school opportunities and is likely to do the same in college. We know, and the college knows, all those important facts about Margaret because we have here an accurate record, not of a single examination at the end of her high school course, but of a whole series of what are really thorough examinations although to her they have been simply interesting mental games taken over a long period and showing just how steadily and consistently she worked. This is the sort of information that the college finds most useful in advising her.

In illustrating the nature of your record and the manner in which it is constructed, we have used the actual record of a student who did remarkably fine work and whose abilities were unusual in practically every field. Only a few of you could expect to make a record like this. Some pupils are bright in ways that do not show in such tests as we now have. Other pupils make excellent scores in some subjects which they find easy and attractive but have great difficulty in reaching even the average in subjects that do not appeal to them. The main value of the record is that, so far as our present tests go, it helps to show a person what sort of a mind he has, where his difficulties lie, and where his chief abilities are to be found. You may know this already in a general way but it will be of help both to you and to your teachers if you have trustworthy evidence over a number of years.

Your teacher will be glad to talk over your record with you at any time and to show you where you stand. Certain things in connection with it deserve special emphasis in relation to your work during the next two and a half years.

1. First as to your point of view. You will see that all "credits" and "units" have disappeared. The colleges to which you are going have agreed that they are more interested in what you know and can do, than they are in the time you have spent in school or in class. If you show that you actually have the knowledge and can use it, that is the important thing which will determine your real success whether in college or in life. Hence all the work in your classes will be done with a long view ahead, and not simply to get a mark for a credit on a few weeks' lessons and then forget. Your teachers may still give you "marks" as friendly judgments on how you are getting along, but that is all they mean. Everything that is important in your subjects will be turning up again and again in your class work and in your tests through to the very end of the senior year. You will observe that in Margaret's last month of school she took comprehensive tests in Latin, English, social studies, French and general science. All of these went back over the four or six years of her high school work. In mathematics she was examined only in trigonometry but in your cases we shall extend that to all the mathematics you will have had. Through these constant routine reviews your ideas will keep getting clearer and more definitely fixed so that you can use them freely. The things that you know, you will know well and can be sure of when you study further, either in college or by yourself.

2. Next as to the tests. The most satisfactory measures of your knowledge will be found in the tests - the black-dot scores on your record. Your teachers cannot be expected to know exactly what you have learned because you ought to learn many, if not most, of the things you know, outside of class. The tests that you will take are long ladders of questions reaching from the very simple to very difficult ones, and covering a large field of knowledge in one examination. They are not to be dreaded; any person who likes to think likes to take these tests and take them repeatedly. They are of great use in self-knowledge, just as a foot rule is of use to a carpenter in discovering how high a door is. The kinds of tests we shall have are such that, if you knew enough, you could climb up directly into the freshman or sophomore year in college, and some of you may do that very soon in some subjects of which you are especially fond. Several of you have already done better in the English test than the average college freshman in Pennsylvania. The chief value of the tests is that they give us a definite indication of what we know and of what we are still ignorant, so that we may acquire a sound basis of knowledge, with which to do the thinking that gives us our education. Education itself is nothing but realizing clearly the connections between important items of knowledge which we call ideas; that is, thinking out their meanings.

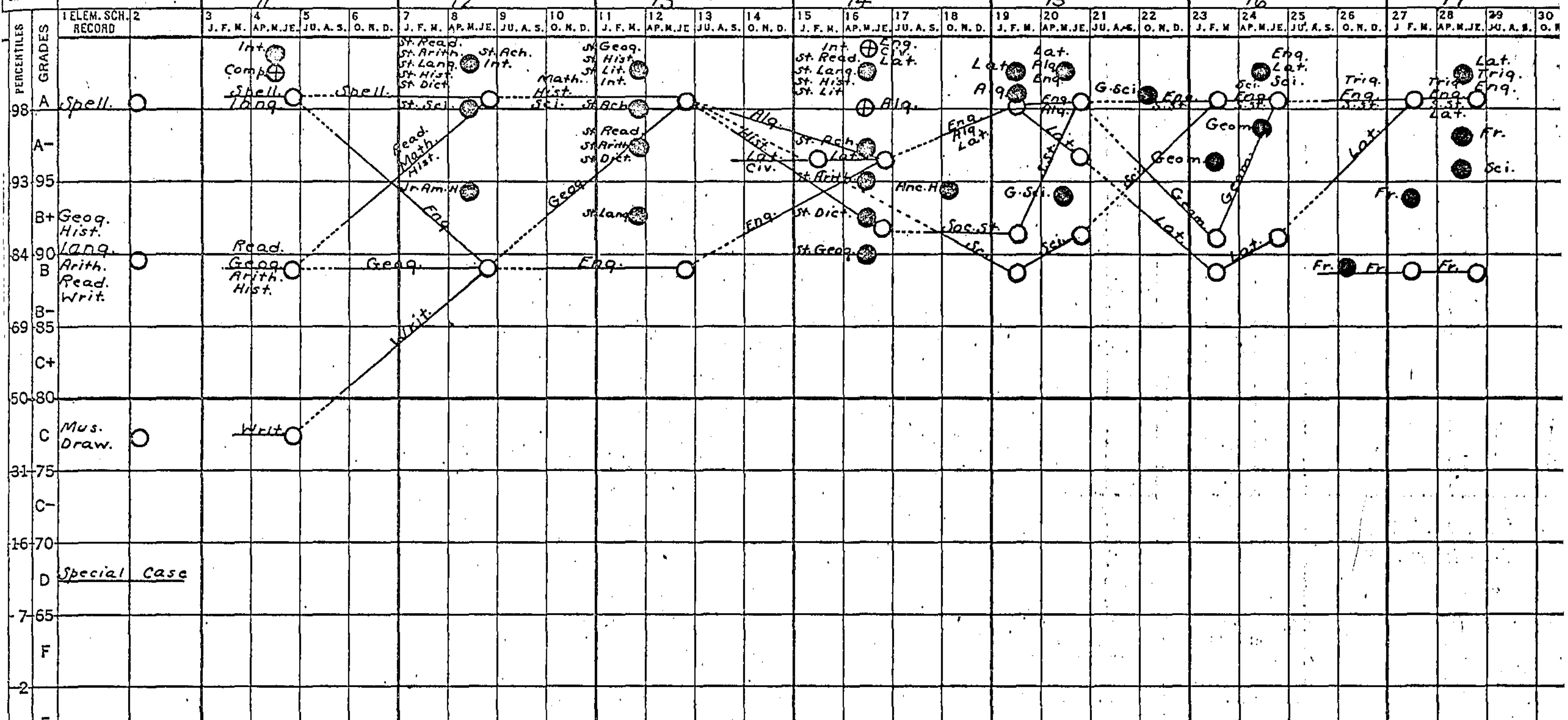
We shall have many kinds of tests because none are perfect, and the more we have the surer we are of an accurate measure. Besides, the more tests we have, the more freedom we have to study widely in different parts of a subject that interests us, without the feeling that we may be wasting time in not sticking closely to the curriculum on which we are to be tested. If the test shows that, through your own reading, you have acquired a good general knowledge of the subject, you can be excused from class and can study independently wherever you are most interested, provided you do it wisely and under the teacher's supervision. The school will be glad to test out any such work, whether done in school time or at your leisure in vacations. The results will, of course, go into your record along with your scores on work done in class.

Aside from its importance in your education, what has just been said about independent work is important for another reason. The best colleges care less about pupils who merely get good marks than they do about minds that show ability and initiative in studying, by themselves and for their own sake, things that are worth while. That is why Margaret Crawford would be particularly acceptable at any college. She seizes intellectual opportunities, and that sort of person is in great demand. The colleges have good reason for this choice because they have learned from long experience that this type of student is the one that serves the world best in the long run. Study merely for the sake of getting credits, diplomas, and degrees is of little value; the profitable uses of an education may be expected only from those who seize and appreciate knowledge for its own sake and for what they can accomplish with it.

APPENDIX IX

LAST NAME	FIRST NAME	MIDDLE NAME	RELIGION	DATE AND PLACE OF BIRTH	SEX	COLOR
Crawford	Margaret	Elinor		4-27-14 Penna.	M F W C	

	1925	1926	1927	1928	1929	1930	1931
ACHIEVED / ATTENDED	6 7	7 8	8 9	9 10	10 11	11 12	12
MENTAL	I.Q. = 137	I.Q. = 126	I.Q. = 135	I.Q. = 132			
CHRON.	11	12	13	14	15	16	17



	ELEM. SCH. RECORD	1925	1926	1927	1928	1929	1930	1931
	Comp. 98-99	Read B	Read. A	Cook. B	Dram. A			
		Writ. C	Writ. B	Bus. A				
16		Spell. A	Spell. A	Sci. A	Civ. A-	Sci. B B+	Sci. A A	2nd Fr. B B
17		Arith. B	Math. A	Math. A	Alg. A-	Alg. A A	Geom B+ A	Trig. A A
18		Lang. A	Eng. B	Eng. B	Eng. A-	Eng. A A	Eng. A A	Eng. A A
19		Draw. C	Draw. B	Draw. B	Draw. B+	Soc. St. B+ A	Soc. St. A A	Soc. St. A A
20		Mus. B	Mus. B	Mus. B	Mus. A-	Lat. A A-	Lat. B B+	Lat. A A
21		P. Ed. B	P. Ed. B	P. Ed. B	P. Ed. B+			
22		Geog. B	Geog. B	Geog. A	Lat. A-			
23		Hist. B	Hist. A	Hist. A	Hist. B+			
			Sew. C		Sew. B+			
24 DISCIPLINE								
25 COUNSELORS								

PHOTO

	1925	1926	1927	1928	1929	1930	1931
ES AND TYPES F SCHOOLS	Howard El.	Howard El.	Stone Jr. H.S.	Stone Jr. H.S.	Franklin Sr. H.S.	Franklin Sr. H.S.	Franklin Sr. H.S.
SONS FOR LEAVING							
BER OF DAYS ABSENT	0	0					

R	1925	1926	1927	1928	1929	1930	1931
	11	12	13	14	15	16	17
NOTABLE ACCOMPLISHMENTS UNUSUAL EXPERIENCES		Won Prize in Essay Contest	Read all of Barrie during summer and gave report at Sch. assembly	Read all of Shakespeare's historical plays during summer. Reviewed each play.		See notes	See notes
BS, OFFICES			Nature Dramatic		Latin Dramatic	Science Latin	French Latin
EXTRA-CURRICULUM EXPERIENCES — ATHLETIC			Basketball	Swimming	Swimming	Hiking	Hiking
HOURS A WEEK			1	3	1	2	2
NON-ATHLETIC			Debating team ass't. stage mgr. Dramatic ass'n.		Latin Club Dramatic	Science Club Dramatic Latin Club	French Play Historical Pageant
HOURS A WEEK			3-6		3	4	6
IONAL ENCES — TYPE AND DURATION							
WEEKLY PAY							
HOURS A WEEK							
ORT OF SELF DEPENDENTS		Sch. Bank Savings		Savings			
NS AND LARSHIPS							
CONDITIONS URS OF STUDY A WEEK		Good S=3 H=6		Good S=3 H=9	Good 10-15	Good 10-15	Good 10-15
MMER IENCES		Bible Sch. New England Camp	Phila. Bible School	Bible Sch. Camp	Camp	Camp	Camp Motor trip through New England
ATIONAL ANS			H.S. College-Med.		College	College	College
ATIONAL ESTIONS							
IONAL AND ESSIONAL FERENCES		Teacher Lawyer Doctor	Doctor Lawyer Teacher	Lawyer Teacher Doctor	Teacher	College teacher	Teacher of Latin and French
ESTS RTED		Sewing Writing Reading Swim.	Dramatics Writing Swimming	Reading Swimming Hiking	Reading Dramatics Swimming	Reading Dramatics Swimming	Reading Dramatics Swimming
SICAL ILITIES							
H		Ht. = 54" Wt. = 68 lbs.	Tonsilectomy Good	Ht. = 60" Wt. = 90 lbs.	Good	Good	Good
AL HEALTH					Sound Cheerful	Objective cheerful	Excellent Steady
AL ADJUSTMENTS AND CONDITIONS				Wholesome family life			
UTING TIME RS A WEEK		Walk 1 hr.	Walk	Walk 2 hrs.	Walk	Walk	Walk