READING DISABILITY

A STUDY OF READING DISABILITY

by

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CONTENTS

INTRODUCTION

With the development of psychological tests by which an individual's ability may, within limits, be measured, numerous problems have come to light, problems which were previously not fully recognized. Prior to this time children who were unable to learn to read were classified as dull or even feebleminded and no real attempt was made to help them overcome their difficulty. Later it was found that many who possessed average or superior intelligence were quite unable to learn to read in spite of any amount of instruction of the ordinary type. This was a startling fact which, when realized, opened up a new field for investigation.

The importance of being able to read is more fully realized when one considers that almost all of the knowledge which the human race has accumulated is set down in books. A certain amount of information is transmitted orally from person to person, but the greater part is acquired through reading, and the individual who cannot read is gravely handicapped.

When we scrutinize the school situation we find that practically all schools contain children who are very backward in reading, or have not learned to read at all. Records of achievement and school progress show that thousands of children fail each year to make the progress in reading which their ability warrants. Fortunately many attempts have been made to understand and cope with the various problems which center around

reading, and the literature dealing with the subject has grown by leaps and bounds in the past twenty or thirty years. During the last half of the nineteenth century and the first five years of the twentieth century, France and Germany produced the leading work. More accurate experimental methods came into being and after 1905 by far the greater part was carried on in England and the United States. At the present time there are few progressive school systems and psychological research centers which are not making some study of one or more reading problems.

Two major questions arise when one is dealing with reading problems, namely: (1) What causes reading disability? (2) What remedial work will enable an individual, possessing this type of disability, learn to read? This thesis will deal largely with the former question but will treat the second in a specific instance. The first chapter will present the main types of theories which have been advanced, by investigators to explain the cause of reading disability. These will be contrasted and compared but their critical evaluation will be included in a later part of the work. Chapters two and three will be devoted to the study of a young boy of between eight and nine years of age who was referred to the writer because of his marked difficulty in learning to read. A discussion of the causes of the difficulty as well as an outline of the follow-up remedial work, carried on by the writer, will be considered in Chapter three. Chapter four or the last Chapter is devoted to

a critical study of the theories presented in Chapter one and to the conclusions which were arrived at by the writer.

CHAPTER I.

THE CAUSE OF READING DISABILITY

In order to deal adequately with a child who has a reading disability, the cause of the difficulty must be determined before a program of remedial work can be outlined. Diagnosis followed by treatment is the logical sequence. Several of the explanations of reading disability contain statements which conflict with modern psychological conceptions and yet they are of interest for there may be certain elements of truth embodied within them. The main types of explanation that have been advanced from time to time will be outlined in this chapter, regardless of whether or not the writer approves of them.

As early as 1877 Kussmaul recognized the condition of visual aphasia which may develop in individuals who have been able to read fluently but who are deprived of this power. He called it congenital word-blindness and stated that it manifested itself, not in inability to see letters, words or figures, but in ability to recognize and interpret them.

A case was reported by J. Hinshelwood in 1894 which illustrates what was thought to occur when aphasia developed. A man, whose occupation until his 59th year was to teach French and German, found himself unable to read any words from the printed page. He immediately consulted an oculist. The latter

reported that the man could read figures but did not recognize letters, in spite of the fact that they were in very large print. It has been recorded that the patient recommenced his study of reading, worked diligently for a period of six months and at the end of that time was able to recognize a few words. Eight years later he could still recognize figures but could not interpret letters or words.

During the nineteenth century investigators for the most part considered that inability to learn to read was a symptom of general deficiency and in 1885 Berham designated such cases as Haldidiote (partial imbeciles). Finally it became evident that an individual having average or superior intelligence might have marked difficulty in learning to read and when this was discovered it fostered new interest in the whole question.

In 1896 Morgan (164) reported a boy of 14 years of age who could multiply three-place numbers in Arithmetic and do simple problems in Algebra. He was not thought to be intellectually inferior to other boys of his age but could read very few words and write almost nothing from dictation. The author of the report ascribed the difficulty to some congenital defect in the cortical centre for the visual memory of words and letters.

When a reading problem is encountered, the most natural query to make is "What sensory defect is causing the

difficulty?" The earliest tendency was to refer children presenting difficulty in learning to read to an Ophthalmologist in order to determine whether or not a visual defect were present. Hinshelwood, an English Ophthalmologist made an intensive study of such cases. (107, 108, 109, 110). He found that some individuals were quite unable to learn to read in spite of any amount of ordinary instruction, while others exhibited difficulty in learning but finally were able to overcome their inability. It was to the former group that he applied the term "congenitally word-blind".

During his early experience Hinshelwood had come into contact with a number of individuals who had developed aphasia so that he was very familiar with this acquired condition. He explained it as being due to the injury or disease of the localized area of the brain which is the seat of visual memories of letters and words. To quote from one of his publications:

"It has been the endeavor of the author to show that letter-word- and mind-blindness in all the varieties met with in clinical experience can be intelligently explained by regarding them as disorders of visual memory, produced by lesions affecting more or less completely a definite area of the cerebral cortex, in which are preserved these past visual impressions arranged in definite and ordered groups". (109).

When Hinshelwood encountered persons who were quite unable to learn to read, in spite of adequate intelligence, and the ordinary amount of instruction in reading, he concluded

that the cause of this condition must be somewhat similar to the cause of aphasia. His theory concerning congenital word-blindness grew out of his conception of acquired word-blindness.

In his early publications he described four case studies.[x] The first was an eleven year old boy who had a good auditory memory and recognized pictures previously shown to him but was unable to read words, letters or figures. The second, was an intelligent ten year old boy who could not read words but was able to recognize letters and numbers. The third was a ten year old girl who had good auditory memory, could do Arithmetic problems of addition, subtraction and multiplication, could spell and write words from dictation, but was able to read at only the first Standard level. The fourth was a seven year old boy who had been at school for three years but found it difficult to recognize the letters of the alphabet and could not read. He was able to spell orally, could recognize the first twenty figures and was thought to be a bright boy.

As a result of the above studies Hinshelwood concluded that if a child has adequate intelligence and normal vision, and yet presents a reading problem, he or she must be congenitally word-blind. He thought of congenital word-blindness as being due to the underdevelopment of the supra-marginal and angular gyri, a localized area of the brain in which are deposited the visual memories of letters and words.

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x 110 and, Hinshelwood, James, Congenital Word Blindness, Ophthalmic Review, 1902.

One would be led to the conclusion that a theory of this kind would allow for little hope of the congenitally word-blind individual ever learning to read, but some of Hinshelwood's most severe cases did improve slightly. This he explained in the following manner: For the right handed individual, it is the supra marginal and angular gyri of the left cerebral hemisphere which functions when reading takes place. When this area has not developed, inability to read is present. But when after great difficulty some learning does take place, it is the supra-marginal and angular gyri of the right hemisphere which has taken over the function.

A number of other investigators have developed theories that are similar to that of Hinshelwood. (65,66) J.H. Fisher told of a young girl who had been trying to learn to read for two school terms but had experienced no success. Her disability was associated with an innate defect of visual memory of figures and musical notes. Fisher stated that the girl was congenitally word blind and explained that the condition was due to an underdevelopment of the angular and supra-marginal gyri. Thus far his explanation agreed with that of Hinshelwood but a later statement included a qualification which is not found in Hinshelwood's work, namely, that the underdevelopment of the visual word center is due to a slight cerebral haemorrhage at birth. To quote: "I desire to make the suggestion that cases of congenital word-blindness may be found to range themselves into two groups. (1) A group in which there is a failure of the visual memory center for words in the left angular and

supra-marginal gyri to develop. (2) A group in which the same center may have been injured by a very limited meningeal hemorrhage during the stress of parturition". (66)

McCready (151, 152, 153), like Hischelwood, Fisher and numerous others, made use of the term "congenital word-blindness". He stated that if a child possessed normal vision, was intelligent and of school age and was not backward in his school subjects, other than reading, there should be no hesitancy in attributing the trouble to congenital word-blindness. He, like Fisher, took into consideration the fact that cerebral haemorrhages occur frequently in the newly born and added, as causes, defective intra-uterine development, injuries at birth, acute infections, disease in infancy and defective post-natal development.

Hinshelwood, Fisher and McCready have assumed that a pre-formed cerebral center is responsible for the visual memory of letters and words and have stated that the under development of this area is the cause of reading disability. A second group of investigators have developed theories of quite a different nature. They claim that reading disability is due to the physiological incapacitation of the visual centers for words. Ranschburg who is probably their chief exponent has set down his explanation in a book of three hundred pages, written about disorders of reading and writing in childhood (200). Essentially his position was that the visual center for words is undersupplied with oxygen and thus with energy. He believed that there is an inherited "vaso-motor hypoplasia of the capillaries". So many elements are acting

at one and the same time in the word center that a great deal of energy is needed and in reading disability cases the supply of blood is not great enough to produce the amount of energy required to carry on the function of the visual centers for words.

Pritchard, a London physician, described a boy who was word-blind during intermittent periods (199). When examined he was not able to name more than four letters of the alphabet correctly but those who knew him stated that at times he could read quite clearly and well. In referring to inability to learn to read, Pritchard stated that the visual word center was normal in structure but that there was some defect at the synapses. A quotation from his work will make his position clear:

"The whole character of the condition appears to be allied to neurasthenia or psychoasthenia and it seems as if, while the constituent neurotic elements of his visual word center were normal in structure, there is some defect at the synapses, which links up these neurones with the processes of cells in closely allied nerve centers". (199).

A. Ley termed congenital alexia or agraphia as "psychogenetic disorders but based on a retarded myelinization of certain pathways of association". [x] Warburg (251) stressed

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x The original article "Evolution favorable d'un cas d'alexie congenitale avec persistance de l'agraphie" by A. Ley, J. de Neurol. et de Psychiat., 1929, Vo. 29, pages 582-584, was not available to the writer so that this quotation was taken from "Interferences in Reading" by Joseph Jastak, Psychol. Bull., Vol. 31, No. 4, page 257.

the fact that the youngest children in families of two or more often present reading disability and he ascribed it to a physiological exhaustion of the nervous system. Wawrik (252) considered inability to read due to the fact that the excitability of the nervous tissue has been diminished and its functional plasticity decreased.

A distinctly different type of theory has been developed by Dr. Orton. In May, 1925 he read a report before the 51st Annual Meeting of the American Neurological Association at Washington, D.C., the title being "Word-Blindness in School Children" (175). An experimental clinic had been held by a group of members of the Iowa State Psychopathic Hospital Staff and it was found that among the one hundred and twenty-five school children referred, were fifteen who were retarded in reading. It was with these cases that the report dealt. Dr. Orton noted that certain tendencies seemed to be evident in this group and felt that explanations, previously employed in describing causes of reading disability were not satisfactory. He drew up several tentative conclusions and asked for funds to continue his research. A grant was given by the Division of Studies of the Rockefeller Foundation and Dr. Orton, with a group of research assistants, continued his study between June, 1926 and October, 1927. The results of these investigations have been published in subsequent articles (176-185) to be found chiefly in medical journals.

Dr. Orton criticized the earlier writers who tended to draw a distinction between those who could not learn to read, in spite of an excessive amount of the usual training and those

who after marked difficulty did acquire that ability. He considered that there was a gradation from very severe to milder cases rather than two separate groups. The term "congenital word blindness" he believed did not adequately describe the reading disability group. He preferred to substitute the word "strephosymbolia" which means "twist symbol" and which could, he felt, be applied to the whole group. The term refers to the confusion in the orientation of words and letters, which Dr. Orton claimed to be an important characteristic of the reading disability group.

In his writings Dr. Orton draws our attention to the two halves of the brain. Structurally both are the same, apart from their antitropic relationship, but their functional relationship, in various types of reaction, differs. In some cases the two halves word together, causing fusion and resulting in one impression. In other instances each appears to function unilaterally, while in still others each operates entirely apart from the other.

Dr. Orton claimed that there are three distinct types of visual cortical mechanisms, each with its corresponding functional level. The first he designated the "visual perceptive" and located the approximate area in which it is situated. In consciousness it consists of an awareness of the external sensory impression. In visual perception the messages from each hemisphere apparently fuse, causing one impression rather than two. Dr. Orton called the second type the "visual recognitive" and charted out its probable extent in the cortex. The function of this area includes the "recognition of meaning of objects seen, but not that of symbols". Here again the two hemispheres are said to work in unison. The third, the "visual associative level" was not plotted

out with as great precision for Dr. Orton was uncertain of its boundaries. He stated that it was not to be thought of as confining itself to visual association for it was very likely that association related to the other sensory areas occurred here also. Its function in the visual field includes the association of the printed symbol or word with its meaning. Unilateral destruction of the associative area of the dominant hemisphere alone, provided the two areas previously mentioned regain intact, may result in awareness and recognition of the object seen, but the meaning can no longer be associated with the word or symbol. But if unilateral destruction occurs in the non-dominant hemisphere, there is no observable effect. Therefore at this level the mental impressions do not fuse but each hemisphere operates apart from the other.

Dr. Orton claimed that when the individual looks at a word and associates meaning with it, both sides of the brain are irradiated and there is a resulting mnemonic record in the associative level of each hemisphere. This record he called an "engram" and concluded that, because one hemisphere is the antitrope of the other, the engram of the non-dominant hemisphere would be the mirrored counterpart of that in the dominant. In learning to read one gradually forms the habit of using only the engrams of the dominant hemisphere and those of the non-dominant one remain inactive. When this habit is totally or partially lacking there are found to be frequent reversals and a resulting confusion in the recognition of such words as "was" and "saw", "on" and "no". The following quotation summarizes briefly

his theory:

"In skeleton, then, my theory of the obstacle to the acquisition of reading in children of normal intelligence which results in the varying grades of reading disability is the failure to establish the physiological habit of working exclusively from the engrams of one hemisphere. As a result, there is incomplete elision of one set of antitropic engrams, and there results confusion as to direction of reading which serves as an impediment to facilitate associative linkeage with the auditory engrams, which, during the learning years at least, carry the meaning". (177)

In noting similarities and differences between the theories presented by Hinshelwood, Ranschburg and Orton, it is found that the first two postulated a localized visual center which functions when reading takes place. Orton indicated that there were three levels of cortical elaboration, namely the perceptive, recognitive and associative, and considered that the associative level was responsible for reading and writing. Hinshelwood stated that reading disability was due to the under-development of the visual center for words while Ranschburg thought it was caused by the physiological incapacitation of a specified cortical area. Orton on the other hand claimed that the difficulty lay in the non-establishment of the dominance of either the right or left side of the cortex, resulting in confusion in the orientation of words and letters.

Dearborn has ventured still a further explanation of

reading disability. (50) In 1924 when summarizing his findings up to date, he made note of certain outstanding tendencies among the children whom he had studied. At least one third of the number were left-handed and there was found to be a frequent reversing of the forms of letters, as in reading "dig" for "big" or "pig", and a reversing of their sequence as in reading "was" for "saw", "no" for "on". Tachistoscopic experiments indicated some tendency to tackle a word from the end rather than from the beginning and in some instances there was noted partial or complete mirror writing. Dearborn felt that these errors were a result of the interference of sinistrad[x] tendencies of hand and eye, with the learning of the dextrad movements and sequences required in our reading and writing.

In stating his theory more clearly one can do no better than to quote a statement which he made.

"In reading and writing (in our language) the movements of the hand and eye are dextrad. It is this sequence from left to right which has to be followed to build up the correct visual and kinesthetic images and words. This is the natural and easiest movement of the right hand - away from the center of the body. Left handed and left eyed children have a preference for the other direction, i.e., sinistrad. The opposite or dextrad direction is so awkward for them that at the

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x Dearborn termed "sinistrad" movements those made from the center of the body towards the left and "dextrad" those from the center of the body towards the right.

start they appear to "push" the pencil in writing. Some of them even write a mirrored hand, and in reading confuse the reversible letters "b" and "d", etc., or reverse the sequence of letters, as in reading "god" for "dog" or "on" for "no". Difficulties in reading may develop on this basis alone, but they are usually more obvious, since in the letter reversals and mirror writing they are more readily checked by the teacher. When lateral dominance has not been established, the trouble is more insidious and subtle, and not so easily detected. There is uncertainty about the correct sequence of letters in words because of conflicting tendencies of hand and eye. The result is that faulty word images with letters interchanged are stored up in the mind which later make the prompt and precise recognition of words difficult or almost impossible." (50)

The way in which difficulty may arise can be shown by referring to a left-handed child learning to write the word "cat". Dearborn discussed this particular case in his article "Special Disability in Learning to Read and Write". [x] If the child "got the feel" of the movement made by his right handed teacher, he would start as she did, from the center of the body and move outwards. He, being left-handed, would move outwards towards the left, and write the word in mirror form. There would result a conflict of kinaesthetic visual stimuli and imagery. According to Dearborn conflicting dextrad or

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x An address at the 11th Annual Conference on Educational Measurements, held in Indiana University, April 18 and 19, 1924. Published by the School of Education of Indiana University in 1925.

sinistrad tendencies, or other factors as small visual memory span for letters, auditory difficulty, instability, flightiness of interest, lack of initiative, may serve as initial handicaps in learning to read. The individual possessing any of them is more apt to develop a reading disability for he must exert extra effort and application in order to learn to read.

Hincks (111) agreed with Dearborn's interpretation in regard to left-handedness and the resulting difficulties, while Frank (71), Fildes (63,64) and Reichardt (204) took somewhat the same stand. The latter's writings were not available but according to one reviewer he believed that "differences in temporal and kinetic qualities of neural impulses determine success or failure in reading. According to this motor hypothesis the levosymbolic reader is not a defective but a different reader". x

In some respects Dearborn's theory is similar to that of Orton. Orton implied that reversals of individual letters and the tendency to sinistrad reading of whole words or parts of words is apparently characteristic of all reading disability cases. Dearborn found among the children of his study a frequent tendency to reverse letters and also words but did not say that it was characteristic of all such children. His explanation of the cause of uncertainty of the temporal sequence of words and letters also differed from Orton. Orton believed it to be due to lack

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x Jastak, Joseph, Interferences in Reading. Psychological Bulletin, April, 1934, Vol. 31, No. 4.

of unilateral dominance resulting in incomplete elision of one set of antitropic engrams and consequent confusion in orientation, while Dearborn considered that left handedness was a conspicuous trait of a large number of children having reading disability, and that confusion in orientation was a result of the interference of sinistrad tendencies of hand and eye, with the learning of the dextrad movements and sequences required in reading and writing. If lateral dominance were not established he felt that confusion would also result, but that the trouble would be more insidious and subtle. He stated that factors such as small visual memory span for letters or auditory difficulty, as well as conflicting dextrad and sinistrad tendencies, were initial handicaps and caused the individual possessing them difficulty over and above that which was ordinarily encountered in learning to read.

Dr. Gates emphasized the fact that poor reading techniques act as a cause of the disability. He considered that an individual might possess a reading disability not because of some pathological defect or underdevelopment of a localized area of the cortex, but because that individual had not acquired the necessary reading techniques. This might result from one of two factors, namely a failure to develop certain skills and techniques or from the acquisition of impeding ones. He pointed out that the fluent reader reads with such speed and so little effort that to him reading is a very simple process. Actually it is much more complex than one would imagine. Many bodily mechanisms must work together in a highly coordinated fashion and a deficiency

in any one is apt to disturb the whole process of learning to read.

When examining an individual presenting a severe reading disability, Dr. Gates attempted to reveal any special weaknesses that there might be in the fundamental capacities and functions upon which reading depends. He developed a number of tests to be used for this purpose and a general outline of his program of diagnosis will be given below. [x]

I. General intelligence; non-reading tests.

II. Visual functions.
   1. Appraising the efficiency of the visual apparatus.
   2. Appraising efficiency in visual perception.
   3. Visual analysis and recognition.
   4. Visual apprehension and memory span.

III. Auditory functions.
   1. Tests of auditory acuity.
   2. Tests of auditory discrimination.
   3. Auditory apprehension and memory span.

IV. Motor functions.
   1. Eye-muscle control.
   2. General motor control - control of limbs, hands, fingers.
   3. Motor control of speech.
   4. Handedness.

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x 74, page 248. Dr. Gates is working on a revision of this book and is extending his diagnostic procedure. His study has not yet been published, but the "Record Book for Reading Diagnosis" was procurable and is included in Appendix D.

V. Associative learning: capacity and technique.

1. Visual - visual association.

2. Auditory - visual association.

VI. Nervous and emotional stability, (74).

Marion Monroe, the Research Psychologist for the Institute for Juvenile Research and Behaviour, Research Fund, Chicago, made a study of 415 children who had reading defects varying from mild retardation to extreme disability, and of 101 children in an average American school population. (161). Like Dr. Gates she approached the causes of reading disability through a consideration of factors found in the child's constitutional organization and in his environment. She stated: "Learning to read is a complex process which may be facilitated or impeded by a variety of conditions both within or without the individual". x

One chapter of Miss Monroe's book dealing with the above mentioned study was devoted to a discussion of factors associated with reading disability. They were as follows:

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x 161, page 79.

Causative Factors in Reading Disabilities [x]

1. Difficulties related to the visual aspects of reading

   1. Lack of clear-cut retinal images, due to defects in the refractive mechanisms of the eye, may impede progress in reading.

   2. Lack of precision in discrimination of complex visual patterns may impede progress in reading. The difficulty in discrimination of patterns in some cases may be associated with hemianopsia, or with injury to optic tracts or cortex. The difficulty in other cases may be due to poor acuity of the peripheral retina so that the child must bring small parts of the pattern into foveal vision. The difficulty in still other cases may be due, not to sensory defects, but to difficulties in correlating the visual impressions with language through functional, rather than organic deviations.

   3. Lack of precision in discrimination of the spatial orientation of patterns may impede progress in reading. Space perception is usually developed through motor reactions to objects, by looking at, reaching for, or manipulation of the objects in positions up, down, right, left, near, far, etc. A confusion in the directional movements of the hands, or of the hand and eye, may result in confusion of the right or left positions of patterns.

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x 161, page 105.

II. Difficulties related to the auditory aspects of reading

1. Lack of auditory acuity due to partial deafness may impede progress in reading.

2. Lack of precision in the discrimination of speech sounds may impede progress in reading. The difficulty in discrimination may be due to a defect in the auditory mechanism for some ranges of pitches and sound qualities. The difficulty is often associated with articulatory speech defects. The articulatory speech defect may result from the lack of precision in auditory discrimination, or if no sensory defect is present, may cause the lack of discrimination. In cases of articulatory defects, the words as presented to a child by himself and by others are different in auditory pattern and yet arouse a common meaning. The two diverse auditory patterns may become so closely associated in the common response as to be inseparable in discrimination.

3. Lack of precision in the discrimination of the temporal sequence of sounds may impede progress in reading. The difficulty in discrimination of sequence of sounds may result from inability to discriminate the separate sounds of the pattern. The child who cannot tell the difference between the separate sounds of the word cannot very well distinguish which sound comes first. The difficulty may be due to poor retention of auditory patterns so that the patterns cannot be held in mind long enough for temporal analysis.

III. Difficulties related to the motor aspects of reading

1. Lack of precision in the motor control of the eyes may impede progress in reading. Children who cannot direct the eyes accurately to the printed words and maintain the motor adjustment for a period of time usually have difficulty in attending to the visual symbols with sufficient persistence to form the necessary associations.

2. Lack of precision in the motor control of speech may impede progress in reading. Articulatory speech defects due to cleft palate, partial paralysis, clumsy movements of the speech-motor mechanism, or failure to establish proper motor habits of speech offer an impediment to precise auditory discrimination of speech sounds, and to the formation of speech-reading associations. Stuttering also presents an impediment to reading either as a disruption of motor speech or in association with other motor functions affecting reading.

3. Lack of precision in directional motor responses may impede progress in reading. Left-handed or left-eyed children, whose most facile direction of movement is toward the left rather than toward the right, have to make a motor adjustment which is opposite in direction from that of right-handed or right-eyed children. In trying to imitate the motor patterns set by social

custom, left-handed or left-eyed children may become confused in directional responses. Children whose hand-and-eye preferences are mixed may also develop confusion in direction. In those cases in which the directional motor responses are inconsistent, difficulties in discrimination of spatial orientation of patterns may result.

IV. Difficulties related to the conceptual aspects of reading

1. Lack of vocabulary may impede progress in reading. Children who have not acquired the verbal symbols which are to be associated with the visual symbols are often delayed in progress in reading.

2. Lack of facility in the organizations of language may impede progress in reading. Verbal responses are organized and manipulated in many ways. Sometimes the relationships are simple, such as subject-predicate, adjective-noun, etc. Sometimes the relationships are complex, such as sentences containing dependent clauses, metaphors, contrasts, etc. Some individuals may manipulate a small vocabulary in complex organizations of meanings. Other individuals may manipulate a larger vocabulary in very simple organizations of meanings. Children whose facility in the organizations of language is limited may become confused in reading even though they possess adequate vocabularies.

V. Difficulties related to methodological aspects of reading

1. Overstress of speed of reading may develop habits which impede progress in reading.
2. Overstress of some methods of word-recognition may develop habits which impede progress in reading.

VI. Difficulties related to environmental aspects of reading

1. Among the environmental factors which impede progress in reading may be mentioned the following: foreign language, illiterate parents, truancy and poor school attendance, frequent moves from school to school, number of siblings or ordinal position of child among the siblings, etc.

VII. Difficulties related to emotional aspects of reading

1. Among the personality and emotional factors which may impede progress in reading may be mentioned the following: attentional instability; resistance to reading; fear, timidity, embarrassment; withdrawal, etc. In some cases the emotional factors may be due to constitutional instability or poor habit-training. In other cases the emotional factors may result directly from the failure to learn to read due to other reasons, and then in turn aggravate the disability.

. Dr. Gates and Dr. Monroe opened up a new approach to the problem of reading disability when they considered that it might be the result of numerous causes. In diagnosing a reading disability case, they attempt to find whether or not there were any weaknesses in the fundamental capacities and functions upon which reading depends and took into account any environmental factors which might have contributed to the difficulty. They required the individual to read certain selections and then analyzed the errors made. Training designed to overcome the particular difficulty was provided in the remedial work which was carried on at regular intervals after the examination.

The five main types of explanation of reading disability have been reported and they will now be reviewed briefly. Hinshelwood and his followers believed that reading disability was due to the underdevelopment of the supra-marginal and angular gyri, a localized area of the brain in which are deposited the visual memories of letters and words. Ranschburg also postulated/ that a pre-formed center was responsible for reading but considered reading disability due to its physiological incapacitation. Dr. Orton claimed that the inability resulted from a failure to establish the physiological habit of working exclusively from the engrams of one hemisphere, while Dearborn considered that left-handedness was a conspicuous trait of a large number of children having reading disability and that confusion in the orientation of words and letters was due to the interference of sinistrad tendencies of the hand and eye with the learning of

the dextrad movements and sequences required in reading and writing. When diagnosing a case of reading disability Dr. Gates and Dr. Monroe attempted to find any weaknesses in the fundamental capacities and functions upon which reading depends and took into account environmental as well as constitutional factors.

CHAPTER 2.

CASE STUDY

During the past three years the writer has had contact from time to time with thirty or more children who have presented problems of reading disability. Their ages have varied from eight to sixteen or seventeen years, and their disabilities from mild to severe. An outline of the study of one of these is to be included in this work. The present chapter is to deal with the examination of the child's difficulty as well as a discussion of factors which, it would seem, have caused the disability.

During the month of April, 1934, R was referred to the writer because of his inability to learn to read. He had always experienced difficulty with reading and it now seemed that he would not be promoted with the other children of his school class unless his reading improved considerably before the end of the term. It was decided that an attempt should be made to find the cause and extent of the difficulty and to carry out a remedial program.

R is the member of a family of four, there being only two siblings. His home is in the best residential district of the city and there is plenty of open space for outdoor play. The family have ample means and live in a fairly large house, which is tastefully and expensively furnished. English is the

language spoken by all members of the household.

B, the older boy, was born on June 17, 1923. He has had no serious illnesses and has always been sturdy and healthy. At the time of the writer's first contact with the family, he was 10 years, 10 months of age and completing Grade V at school. He obtained a high standard in every subject and had never experienced difficulty with his schoolwork. It was said that his ability would warrant his being promoted one grade ahead of the rest of the class.

R, the younger boy, was born on September 1st, 1925 and so is 2 years, 2 months younger than his brother. His early development was normal, but he has had a large number of illnesses. Shortly after his first birthday he had a severe attack of asthma. Similar although less serious attacks have occurred at intervals throughout his life, but the time between each has increased from three or four months to one year. Now they are accompanied by croup. At three years of age he had scarlet fever.

When R was 6 years old he commenced school in kindergarten. His attendance was irregular however for he contracted pneumonia, and was very seriously ill. He remained out of school from November of that year until the end of the session. Shortly after his seventh birthday R entered Grade I. Until Christmas time he was at home practically six out of seven school days, measles and later croup being responsible for this absence, but he attended school fairly regularly from the middle of January

until the end of the term. He seemed to have no difficulty with the arithmetic of his grade, and practically always obtained good marks. From the first, however, it was evident that he was finding difficulty in learning to read. During the last two months of his attendance in Grade I he returned to school in the afternoons for extra coaching by his class teacher. At the end of the school session, to the parents' great surprise, he passed from his grade with good marks in all subjects. (One wonders how R received a pass mark, for when he entered Grade II he was quite unable to cope with the reading.

The following September, when just 8 years of age, R entered Grade II and his attendance was more regular during this session. He was absent for only one long period of four or five weeks, when he contracted croup and asthma. From the beginning of the term he had great difficulty with the reading, and after the Christmas vacation the services of an outside teacher were procured, so that he might receive help. Tuition at this time was carried on for a period of two months but with little apparent effect.

R is an energetic child preferring active games to more quiet ones. He plays well with friends of his own age but tends to dominate children younger than himself. When he entered school he was mischievous and at times caused considerable disturbance in the classroom. In Grade I he was frequently sent into the cloakroom or outside of the classroom on account of his behaviour and in Grade II it was said that so far as behaviour

was concerned he was the third worst boy in the class. In the home R is not considered difficult to handle.

Until the age of about 7½ years he had a speech defect which is said to have consisted chiefly of "baby talk" and a lisp on the "s" and "k" sounds. It was present when he entered school but gradually disappeared after that time. Now he speaks clearly and very seldom resorts to baby talk. During a frequent contact with him, over a period of several months, the writer heard only one incorrect pronunciation, namely a persistent substitution of "f" for "th" in the word "birthday".

About a month before the writer's first contact with the family R was taken to an eye specialist. He had complained that he could not see well and the parents felt that defective vision might be causing the difficulty in reading. At the preliminary examination R did not read the printed material shown to him, leading the specialist to believe that he was unable to do so. On a further and more thorough examination, however, it was found that there was no defect. The specialist reported that the boy evidently desired greatly to have glasses, but that his vision was normal in every respect, and that there was no need for them.

Examination:

It was decided that before attempting to determine the extent of R's reading difficulty it would be necessary to have some indication of his ability to deal with school work, in order to determine what progress in reading he should normally

have made. Accordingly R was given several general intelligence tests and the scores obtained on these will be given below.

During the month of March, 1934, a Stanford Binet examination (231) was administered to R by a member of the Psychology Department at McGill University and the I.Q. rating was 97. On the same day he was given a Porteous Maze test. (196) Each problem up to and including that for year eleven was completed by R on the first trial without error, but beyond this point the directions for administering the test were not closely followed by the examiner. When an error was made, R was allowed to return to the point of entrance to the wrong passage and to complete the maze correctly before beginning the next trial. The total mental age on this test was at least eleven years and is a high score for R's chronological age at the time was 8 years and 6 months.

The following April 20th R was given an Otis Primary Group Intelligence Test [x] by the writer. The resulting scores are shown in the table below:

Table I.

Otis Group Intelligence Scale

	Score
Test I	- 7
Test II	- 11
Test III	- 8
Test IV	- (5) ?
Test V	- 4
Test VI	- 5
Test VII	- (4) ?
Test VIII	- 9
Total	- 53

x Vide Appendix A

A question mark has been placed after the score for tests 4 and 7 for in each instance the directions for the test were repeated by the examiner when R complained that he did not understand what he was to do. A repetition of the directions is not really allowed and may have raised the scores. If the ratings obtained on each of these tests are altogether omitted the total score is 44. This is equivalent to a mental age of 8 years, 9 months and an I.Q. of 101.[x] On the other hand, if all tests are included the total score is 53, corresponding to a mental age of 9 years, 6 months and an I.Q. of 108.

A further general intelligence test was not given until February 22, 1935, when the Stanford Binet test was repeated. It was felt that there would be very little practice effect as almost a year had elapsed since it had previously been given. The mental age on this occasion was 9 years, 7 months, and the resulting I.Q. 101. (The basal age was 8 years and the scatter from 8 to 11 years, inc. Giving the date, getting change, forming sentences and finding rhymes were all passed at year 9, while arranging weights and reversing digits were failed at this level. At year 10, the vocabulary test, the absurdities, the drawings, and the naming of words were all passed and at year 12 the ball and field test was performed in the manner required but all other tests were failed).

In summarizing the results of these tests, then, we find that R has average general abstract intelligence. The I.Q.'s

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x Chronological age 8 years and 8 months.

obtained at various times ranged from 97 to 108 and for our purposes we have considered the median I.Q. 101 to be the true one.

The next step in examining R was to give him a battery of reading tests in order to determine his general level of achievement in reading. The Gates reading tests for the primary grades,[x] each one measuring a different phase of reading ability, were used for this purpose. The first one is the "Word Recognition Test" and to quote the author's own words, measures "the degree to which a pupil can identify with reasonable accuracy representative primary words".[xx] The second is called the "Phrase and Sentence Reading" Test and "measures ability to read verbal units of increasing complexity and difficulty".[xxx] It is so arranged that the examinee must grasp the meaning of the whole of each phrase or sentence in order to find the right answer. The third test is called "Paragraph Reading" and it "measures ability to read thought units with full and exact understanding. To get only a word or a phrase here and there, or to get a whole sentence or two, is insufficient. The pupil must understand the whole passage as a unit. To comprehend the whole passage in a loose, unorganized, less than fully integrated and less than completely clear form, will also be insufficient. The pupil must grasp clearly and exactly the total thought to execute the directions successfully.[xxxx]

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x Vide Appendix B
xx 74, page 46
xxx 74, page 46
xxxx 74, page 51

In table II will be found the scores which R obtained on each of these tests, along with the corresponding reading grade and age level. A mean rating was computed from all three scores and included at the end of the table.

Table II
Gates Primary Reading Tests

Administered to R on April 17/34

Type I. Word Recognition

Total score - 24
Reading grade level - 2.3
Reading age level - 7 yrs., 7 mos.

Type II. Word, Phrase and Sentence Reading

Total score - 16
Reading grade level - 2.15
Reading age level 7 yrs., 6 mos.

Type III. Paragraph Reading

Reading grade level - 1.8
Reading age level - 7 yrs., 1 mo.

Mean Reading grade - 2.08

Mean Reading age - 7 yrs., 4.6 mos.

Some interesting facts were brought to light, in examining these test results. At the time that they were administered, R was 8 years, 8 months of age. According to the intelligence test results, his mental age then would be 8 years, 10 months. If R were a normal reader we would expect to find that his reading age would be equivalent to his mental age. But the reading tests indicate that it is 1 year and 5.4 months behind this level. It is generally conceded that a child has a reading

disability if his reading achievement falls a year or more below his mental age.

The reader has by now learned a little of R's background and up to this point the chapter has dealt with certain necessary initial findings, including an estimate of R's ability to deal with academic work and his level of achievement in reading. The extent of his reading disability was discussed in a general way and the remainder of the chapter will deal with a further examination and a discussion of factors which seem to have caused the reading disability will be considered.

Visual Factors:

As stated before some investigators have considered that visual defects interfere with learning to read. There is a small incidence of certain types of reading defect among reading disability cases, yet it would seem that in certain individual cases, visual defects of one type or another may contribute to the disability.

It will be remembered that R was taken to an eye-specialist because of complaints which he made about his eyes and that he was found to have normal vision. Included in the writer's examination were three tests of visual perception devised by Dr. Gates to measure visual perception of small items, somewhat similar to words. The scores obtained by R are included below. [x]

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x Vide Gates Reading Diagnosis Tests, pages 9-1, Appendix D.

Table III.

Visual Perception Test - Figures

Total score - 14
Age rating - 8.3 yrs.
Grade rating - 2.8 yrs.

Visual Perception Digits

Total score 27
Age rating 7.8 yrs.
Grade rating 2.3

Visual Perception - Selection of Figures

Total score - 14
Age rating - 10.0
Grade rating - 4.2

The rating on the first two tests is much lower than that on the third but does not seem to indicate any defect of visual perception. R was able to obtain a high score on the last test and one would think that certain factors must have interfered in the first two tests, causing the results to be too low. As it happened after the first test was begun R asked a number of questions and apparently had not thoroughly understood what was to be done. The directions for Test A2 were understood and the test was performed without error but slowly. In summary then it may be said that R had normal visual acuity and there was no evidence of poor visual perception or defects such as myopia or hyperopia.

Auditory Factors:

There did not appear to be any auditory difficulty associated with R's reading disability. Formal tests of auditory acuity were not used in the diagnosis, but it was noted that R

had no difficulty in hearing words whispered by the examiner. R was given Dr. Monroe's test of auditory discrimination, a test in which a number of pairs of words are spoken aloud by the examiner and the examinee is required to tell whether the two are the same or different. The list of words comprising the test will be given below.

Table IV.[x]

Auditory Word Discrimination Test

tim.....	tim	bit	bet
tap	tip	ocean	ocean
send	sand	pound	pond
rain	rain	hunts	huts
bud	but	buttercup.....	cupperbut
out	out	chin	shin
shall.....	shall	wonderful	wonderful
butterfly....	flutterby	cashing	catching
dime	dine	swing	sling
glad.....	glad	trot	trot

A normal performance is indicated by 0-2 errors and yet R made a perfect score.

Dr. Monroe's sound blending test was also used to determine whether or not any difficulty in the blending of sounds was present. Each word of the test is divided up into separate parts which the examiner articulates pausing between each. The examinee is asked to tell what the word is. The list of words contained in the test is as follows:

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x 161, page 199.

Table V. [x]

Sound Blending Test

Test Words

sh - oe	r - u - n	b - a - b - ie - s
m - e	t - r - ai - n	m - a - k - i - ng
g - o	l - i - tt - le	s - e - c - r - e - t
c - a - n	b - r - ow - n	m - y - s - e - l - f
t - o - p	p - a - r - t - y	g - o - l - d - e - n

R completed the test with only one error, "secret" being called "circuit". His score was 14 points, and according to the norms the interquartile range of unselected school children in Grade V is 13-10 points.

Motor Factors.

Certain workers in the field of reading disability have associated poor motor control with reading disability but there did not seem to be a deficiency of this type in R. Movements of limbs were not clumsy or incoordinated and motor control of the eyes was apparently normal. There was no indication of a frequent løosing of the place on the page when reading or of the skipping of an unusually large number of words.

Irregular school attendance.

It is the writer's belief that the long absences from school played an important part in creating R's reading disability. During the period of kindergarten and the first half of grade one, R was scarcely at school at all. In the meantime the other children of his class were being instructed in the initial

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x 161, page 200.

stages of reading and when R returned to school he must have been in a maze of difficulty. He was not familiar with the reading vocabulary and techniques which act as a foundation of more advanced work, and modern mass methods of education permit of very little time for individual attention and help by the teacher. He had to struggle along as well as he could.

Handedness:

Some investigators of reading problems have indicated that left-handedness is associated with a tendency to reverse letters and words while others have concluded that mixed handedness and eyedness cause reversal errors.

R.is considered by those who know him to be right-handed. His parents could recall no early attempts on his part to use the left hand in preference to the right. Other members of the immediate family are right-handed and as far as could be determined only one relative, a sister of R's mother, is left-handed. A fairly complete set of tests of handedness and eyedness were given at the two separate sittings. The results were as follows:

Table VI.

May, 1934

Handedness:		Eyedness:
Batting - right		Looking through hole in paper - left
Cutting "		
Throwing "	x	Paper test - left
Winding "		
Writing "		Aiming with gun - right

See footnote next page.

Table VI (Cont'd)

March, 1935

Batting - right		Looking through hole in paper - left
Cutting "		
Throwing "	x	Paper test - left
Eating with spoon or fork - right		Placing finger in line with object-
Writing - right		left.
Threading needle - right		

R then seemed to be right-handed but left-eyed. Also a fairly strong tendency to attack words from the wrong end and to reverse single letters was noted. There had been a consistent difficulty in distinguishing between words as "was" and "saw" and letters as p, d, b. Words were frequently spelled out in the wrong order, e.g., felt was spelled l-e-f-t. Occasionally numbers were written backwards, e.g., during one of the remedial lessons R was numbering a series of twenty sentences and wrote the numbers 16, 17, 18, 19, as 61, 71, 81, 91. He seemed quite unconscious of the error.

Poor vocabulary, lack of facility in the organizations of language.

In giving a list of causes of reading disability, Dr. Marion Monroe made the following statements:

"Lack of vocabulary may impede progress in reading"..... "Lack of facility in the organizations of language may impede progress in reading". [xx]

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x In this test a sheet of paper, having a hole in the center, was held by R and another crumpled piece placed on the floor, by the examiner. R was required to look through the hole at the paper on the floor, and the examiner covered each of his eyes in turn to determine whether he was using the left or right one in sighting.

xx 161, page 108.

There was no evidence that either of these difficulties were present in R. He had a fairly large speaking vocabulary. On the Stanford Binet examination, given when he was 9 years, 6 months of age, he was able to define thirty-one words, the norm for the average 10 year old child being thirty. No definite scale for measuring R's facility in language organization was available but he gives the impression of being quite normal in this regard.

Reading Techniques.

R lacked many of the necessary reading skills and had acquired quite a number of impeding ones. He read hurriedly and in a halting fashion, omitting some words or phrases and frequently substituting others which seemed to fit into the context. He pointed to each word as he read it, and in silent reading always articulated. If the material did not contain too many difficult words, R gained the general meaning of what was read, and could relate the story afterwards. When attacking an unfamiliar word he invariably sounded out each letter in a spelling fashion and had not learned the use of phonetic, phonogram combinations, etc.

Speech Defect

It was noted in the last chapter that when R started to school there was a non-organic speech defect which consisted chiefly in baby-talk, and a lisp on the "s" and "k" sounds. It seems conceivable that this speech difficulty served as a slight handicap in the early stages of learning to read.

Certain words, as pronounced by the teacher and by other members of the class would differ from the pronunciation of the same word by R. When those words had to be associated with their written group of symbols, there would be come confusion. However, the speech defect was not a serious one and probably did not cause any very severe difficulty.

Dislike for Reading:

There was also present a marked dislike for reading which did not manifest itself to any great extent, until the remedial work was commenced. At the initial lessons numerous attempts were made by R to avoid having to read. They ranged from flat refusals to attempts at distracting the teacher's attention from the reading lesson. It would seem that the dislike may have been a result rather than a cause of the reading disability. Constant inability to read and obtain satisfaction from reading might, one would think, foster a distaste for all reading materials.

Summary:

Certain factors then have been found associated with R's reading disability and they were briefly the following:

1. Irregular school attendance
2. Right-handedness accompanied by left-eyedness and a tendency to make reversal errors.
3. Poor reading techniques
4. A speech defect at the time when R entered school
5. A marked dislike for reading.

CHAPTER 3.

CASE STUDY (CONTINUED)

The possible causes of R's reading disability having been explored, the questions arose - how are we going to aid this child to overcome his disability? - What should be our remedial approach?

A definite plan was laid down and included the following aims:

(1) To arouse a real interest in reading and a keen desire to learn to read well.

(2) To establish good reading habits and skills and to promote good techniques of independent word recognition.

(3) To build up the habit of reading from the left to the right of the page, with fewer regressive eye-movements and to eliminate pointing to each word read.

(4) To teach R to read silently without articulating.

(5) To replace oral reading of a jerky monotonous type with smooth, expressive reading.

As there was evidently no organic weakness causing R's reading disability, it was planned to make use of one of the best series of readers as basic material upon which to work, and to supplement it with other books. The Elson Readers (95) were chosen because, (1) they contain stories that are of interest to children, (2) they are based upon scientific study

and provide for the learning of good habits of word recognition and the necessary means of comprehension and interpretation of material read, (3) they contain a varied type of reading material, (4) the vocabulary found in them is carefully controlled in regard to the quantity, distribution, repetition and quality of the words.

Due to the fact that R had a very small reading vocabulary and had not learned many of the necessary basic reading skills, it was deemed advisable to commence at the Pre-Primer or lowest level and to advance as rapidly as possible but not so rapidly that R would not be thoroughly familiar with the material that was to be learned.

It was realized that most satisfactory progress would probably result if two lessons were given daily rather than one or two weekly, and if these occurred in the morning rather than in the afternoon. However, the writer could devote only two lesson periods a week to the child and they had to be given late in the afternoon for they would otherwise have conflicted with his school work. They were at first carried on for an hour period, but it was found that R became fatigued and restless towards the end of the time and as a result they were shortened to forty-five minutes.

During the early part of each lesson some time was usually devoted to building up interest in a story that was to be read. Frequently this was accomplished through encouraging

R to tell any of his experiences that were related to the topic and the writer supplied extra information, clarifying facts which if not known would make the story less intelligible and interesting to R. Before the actual reading of the story took place, provision was also made for the recognition and understanding of new words, phrases or sentences which were to be introduced into the story. A sample of the introductory material is as follows:

On May fourth the story to be taken up was called, "The Little House".[x] In the reader it is illustrated with attractive pictures but only the context can be reproduced here.

THE LITTLE HOUSE

Father said, "Come, Dick.
Come, Jane."

"Where?" said Dick.
"Where?" said Jane.
"You will see" said father.
"You will see."

Dick and Jane saw something.
They saw a little house.
"Oh, Father!" they said.
"What is in the house?"

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x 95, Pre-Primer, page 31.

Father laughed.
"Look and see," he said.
"Look in the house.
You will find something."

"I will find it", said Jane.
"I will find it," said Dick.

They saw a big rabbit.
"Look, look!" said Dick.
"It is a rabbit.
What a pretty rabbit!"

Jane saw something.
She said, "Oh, Dick!
This is a mother rabbit.
See the baby rabbits."

Dick said, "One, two, three.
Three pretty little rabbits!
Thank you, Father.
Thank you!"

Jane said, "Come here.
Come, Mother Rabbit.
Come, pretty rabbits.
Here is some dinner."

"Look!" said Dick.
"Here they come.
Jump! Jump! Jump!
Here they come to dinner."

Before examining the pictures that illustrate the story R was asked whether or not he had ever been given a surprise, whereupon he related at length that he was expecting a bicycle at his next birthday and told how he was going to learn to ride it. The writer then added that the Father in the story had a surprise for Dick and Jane. They were anxious to know what it was, but Father said - "You will see".[x] A slip of paper having on it the printed words "You will see" was shown and read to R. In order that he would become more familiar with the new words he was asked to read the following paragraph, containing contrasting but similar phrase expressions:

You will see
Dick will see
Jane will see
You will see
You will see something.

The writer continued with the fact that soon the children did see some thing and the phrase "They saw something" was introduced and followed by R's reading of the passage below:

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x Vide 96, Pre-Primer and Primer, page 124.

Jane saw something.

Dick saw something

They saw something little

They saw a little house.

R was asked what he thought the little house was for and his interest having been aroused to the extent that he had opened the book and looked at the pictures illustrating the story, he guessed "a rabbit". The typewritten words "one big rabbit" and "a pretty rabbit" were shown to him and he was told what they said. The introduction continued in this fashion until R had become familiar with all of the new words that were to be found in the story. It was not until this had been accomplished that smooth silent or oral reading could be expected.

A further illustration of the introductory material is taken from a lesson given during the study of the Primer material. The Elson Primer is divided into five sections, each one containing from four to six stories, the first section being called "Pets". [x] When it was introduced R told of a dog that had been hurt by an automobile and died as a result of the accident. The conversation drifted to squirrels and R was intensely interested to know where they built their nests, what the nests were made of, etc. It was explained that the new book contained an index and in it one could find the name and page of the first story. It

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x Vide 95, Primer, page 6 and 96, Primer, page 155.

was found and as it contained no words unfamiliar to R, further preliminary study was not necessary and it was read immediately.

If any particular word difficulties were noted during the reading of the lesson, practice in using them was provided for, following the reading of the story or at the next lesson, and as well, exercises containing the new words introduced in the reading were taken up at this time. A few sample exercises will be given.

Difficulty in distinguishing between the words - said, sad; tree, three; run, ran; what, hat - was noted at various stages of the Pre-Primer work. Exercises were provided which required close scrutiny of the differences between the words in order that the right one would be chosen. An exercise for the words - said, sad - required that R underline (a) with a red pencil all the words "said" and (b) with a black pencil all the words "sad" appearing in a certain typewritten story. An exercise for the words "tree" and "three" was as follows:

Exercise

tree three

One two -

The baby ran to the -

We do not have dinner at -

Come to the -

I see a -

One, two, -

R was asked to write in each blank space either of the two words appearing at the top.

Further practice with the words - tree, three - was given at a later lesson when it was found that difficulty in distinguishing between the two still persisted. R was asked to draw a tree on each of several small pieces of paper and to make a figure 3 on several others. He was then required to paste a drawing over each word "tree" and "three" occurring in a typewritten story.

Yet another type of exercise consisted of cutting out phrases appearing at the end of a paragraph and pasting each one in the correct blank space, e.g.? [x]

Exercise

_____ said Father.

_____ see Baby.

_____ said Mother.

_____ is not here.

_____ said Baby.

_____ said Dick.

_____ Baby.

_____ said Jane

_____ Baby

Where is Baby Oh oh I see Baby

Here is Look look I can not See see Oh

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x "Teacher's Guidebook for the Elson Basic Readers, Pre-Primer and Primer". Page 87.

At times R was asked to find certain phrases in his book, read aloud by the examiner, e.g., the writer said "Can you find where it says 'they ran to mother.' 'Who are they?' We read about the race, who do you think won it? The one who touched mother first said 'Here I am!' Where in the story does it say that?"

Practice in distinguishing between the words "errand", "earnest", "earn", was given in the following way. R was asked to fill in the blanks with the appropriate word.

Exercise

errands, earnest, earn

The girl will run --

The boy is an ----worker

Can Bob ---- some money?

---- may be a boy's name

We read a story called "The ---- boy".

The exercise below also required a close scrutiny of words:

Exercise

This is a -------- dog.
big bug

The elephant can play a ----------
trick truck

He can ---------- in the yard
dig dug

The bee says ----------
him hum

He saw a ----------on the wall
bug big

I like to ride in a ----------
trick truck

The truck did not hit ---------- hum him

There is a hole where he ---------- dig dug in the garden.

A further type of exercise was used to draw attention to the content of a paragraph. R was asked to read the following story, and then to make a picture to illustrate it.

Exercise

The girl walked down the street
She had a brown coat and brown shoes
Her little dog went along with her
He had a funny hat on his head [x]

Exercise [xx]

A bluejay is	_____	
An apple is	_____	1. an animal
A drum is	_____	
A coat is	_____	
A cat is	_____	2. something to put on
A wagon is	_____	
Breakfast is	_____	
A crow is	_____	3. something to eat
An elephant is	_____	
A hat is	_____	
A goat is	_____	4. a bird

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x 96, Book One
xx Ibid., page 124.

A pie is _____

A bear is _____

A gum-drop is _____ 5. a toy

Shoes are _____

The Elson Readers are provided with a series of Word-Books containing two, three or perhaps more exercises that can be used for supplementary practice. Two of these have been reproduced in Appendix E.

In chapter two it was mentioned that when trying to read an unfamiliar word R invariably sounded out each letter in a spelling fashion and had not learned many of the techniques that are of value in independent word recognition. From time to time during the remedial work, provision was made for the establishment of better habits of analysis.

An attempt was made during the study of the pre-primer work to build up a sight vocabulary of about seventy words and to create appropriate habits of visual analysis. At this early stage, emphasis was placed upon the distinguishing of one word from another through differences in general form, unusual characteristics, and similarities and differences in words. Two samples of the exercises used are given below. The first was designed to draw attention to words that begin alike and the second to focus attention upon distinguishing characteristics of words.

Exercise

"Here is a game that will be fun to play. I will tell you a word. You may think of another word that begins the same way and tell it to me. Here are two words that begin the same. (Find and fun). Now you tell me one that begins like "find" and "fun". Tell me one that begins like "mother" and "mew"."

This method was continued with other words whose initial consonants could be readily recognized by the position of the vocal organs. No attempt was made to isolate the initial consonant from the rest of the word, nor was visual presentation made at this time. [x]

Exercise [xx]

R was required to circle all the words in the column that were the same as the word at the top.

Run	See	dinner	can
run	see		can
dinner	and	Father	come
come	see	Mother	run
run	Come	dinner	can
Father	See	see	Can
run	Mother	Run	see
Dick	run	dinner	Mother
Run	dinner	Jane	Baby
Jane	can	Can	Father
Baby	see	dinner	can

x This exercise is taken directly from 96, Pre-Primer, page 129.
xx 96, Pre-Primer, page 74.

While doing the work of the Primer material, further steps towards the independent recognition of words were taken. A study of the initial consonant sounds was made by finding words having the same initial sound by making lists of words beginning with the same sound and by drawing attention to lip movements. Phonograms such as "ay" were taught by showing words that contained the same element and asking R to find the like portions, e.g., "ay" in "say", "may". The initial letter then could be interchanged with other consonant sounds to form new words. Occasionally words that rhymed were found as "pay", "hay", "lay", or elements were added to familiar words, as when "fast" was changed to "faster", "slow" to "slower", "black" to "blacker", etc. Included in the study of the Book One material was training in the perception of words having the long and short vowel sounds, words having the initial sounds "st", "gr", "bl", "fl", etc., words containing the phonograms "sh", "oo", "ck", "ow", "ee", "or", "ight", "wh", "ch", "ow" and the endings "ing", "ed", "est", and so on.

When teaching word perception techniques the fact was always kept in mind that the aim was not to have R recognize word elements in isolation, but to enable him to recognize new words quickly and accurately so that he could grasp the meaning of what he read. The system of extracting elements from words and teaching them as separate units was definitely avoided.

A remedial lesson, then, usually included an introductory period during which an attempt was made to arouse

interest in the story to be taken up and new words or phrases were introduced, before the story was read. Then followed supplementary practice with the new words and phrases, and with others that were causing difficulty and provision was made for the learning of adequate methods of independent word analysis.

R had a marked tendency to articulate when attempting to read silently. This was recognized to be a habit which would slow up his speed of silent reading and therefore an impeding factor to later reading achievement. There was quite a bit of difficulty at the outset in having R read any words silently without articulating. He claimed that he could not. However, he was asked to watch the writer while she read silently and after observing for a few minutes remarked "Oh your eyes move!" R was encouraged to attempt to read one or two lines, keeping his mouth closed, and his tongue still, and gradually he was able to increase the amount of material read in this fashion. If allowed to, he would readily revert back to his old practice.

It had also been noted that when reading orally R tended to read in a halting fashion, stopping between words when no stop was indicated and repeating words in an attempt to gain the meaning of an unfamiliar one that had been encountered. It was believed that this disjointed reading was due to the continual attempt at school to read material that was too difficult for him. The reading of a great deal of material containing a minimum of unfamiliar words, it was thought would promote

smooth reading and less tendency to repeat words. When a story was to be read R was required to read it silently before reading it orally. If there was any indication of jerky reading he was asked to stop and re-read the passage silently asking the writer how to pronounce any words which were causing difficulty.

There was also some confusion in the left-right orientation of words and R was prone to reverse words as "was" and "saw" as well as letters such as d and b. Also in exploring a new word he tended to see the middle or last part of it before the first. Special attempts were made to direct R's attention to the beginning of a word. One type of exercise used for this purpose consisted of a series of words, R being asked to underline all of the ones that began with the same sound. Dr. Monroe's sound tracing method [x] was used to some extent, when reversible words and letters were typewritten on heavy paper, a thin paper placed on top, and the letters or words traced out by R.

A definite attempt to do away with the habit of pointing to each word as it was read, was also made. R learned this very quickly. The writer felt that the reading of much material containing familiar words did away with the necessity of keeping the place with the finger and that this along with the requirement that he read without pointing, apparently helped to establish the habit desired.

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x Monroe, M., Suggestions for Remedial Instruction in Reading. Dept. of Public Welfare, Printed by Authority of State of Illinois.

It was interesting to observe a growth of interest in reading as the remedial lessons progressed. At first a definite dislike for reading was evident. R tended to slump down in his chair during the lesson, and remarks such as "I cant read it", "Aw, you read it", "I dont want to read it" were frequent. When supplementary material was left with him to be read between lesson days, many excuses were made for his not having read them - he had forgotten, he had too many other lessons, etc. Satisfaction obtained from achievement in reading was later evident. On one occasion when it was pointed out by the writer that he had completed a certain number of stories and was doing very well, R proudly told his mother what had been said. At another time the writer showed R a list of names of books which it was thought would interest him, and incidentally which contained very few words unfamiliar to him. It was suggested that he might choose one or two and his mother would be consulted to see if they might be ordered for him. Two were carefully chosen by R, and his mother's consent obtained. At the next lesson he eagerly came in from play to see whether or not the new books had arrived. They had. He was overjoyed to find that they were printed in smaller type than his readers and were also divided up into chapters. He commenced to read immediately. At the end of the lesson he announced to his brother that he had a new book and had read such and such a number of pages. The brother remarked "Oh, is that all!" R seemed disappointed for a moment but then replied "Oh, Miss - has some books that you couldn't read!" At the following

lesson it was found that R had read fifty or sixty pages of his story.

The remedial lessons were initiated on April 17, 1934 and continued until the end of June of that year. They were recommenced at the beginning of October and continued until the beginning of April, 1935. The plan was to have two lessons weekly and with a few exceptions this was carried out. A list of the number given each month has been included below:

April, 1934	3 lessons
May, 1934	6 lessons
June, 1934	9 lessons
October, 1934	9 lessons
November, 1934	8 lessons
December, 1934	4 lessons
January, 1935	8 lessons
February, 1935	7 lessons
March, 1935	8 lessons
April, 1935	2 lessons

In order to check R's progress, reading and vocabulary tests were given from time to time throughout the period of remedial training. The manual for the Elson Readers contains vocabulary tests [x] and these were used at regular intervals. If R obtained many errors the material which they

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x A sample vocabulary test has been included in Appendix F.

covered was reviewed before continuing. Reading tests were also given at various times and the ratings obtained by R are included in the table below:

Table VII

Gates Reading Tests for Primary Grades[x]

Administered April 17, 1934 - R's chronological age 8 yrs., 8 mos.

Type I - Word Recognition - reading grade 2.3
reading age 7 yrs., 7 mos.

Type II - Word, Phrase and Sentence Reading - reading grade 2.15
reading age 7 yrs., 6 mos.

Type III - Paragraph Reading - reading grade 1.8
reading age 7 yrs., 1 mo.

Average reading grade 2.08

Average reading age 7 yrs., 4.6 mos.

Administered June 22, 1934 - R's chronological age 8 yrs., 10 mos.

Type I - Word Recognition - reading grade 2.6
reading age 8 yrs., o mos.

Type II - Sentence Reading - reading grade 2.35
reading age 7 yrs., 7.5 mos.

Type III - Paragraph Reading - reading grade 2.5
reading age 7 yrs., 10 mos.

Average reading grade 2.48

Average reading age 7 yrs., 10 mos.

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x Vide Appendix B.

Administered January 9, 1935. - R's chronological age 9 yrs. 4 mos.

Form 2.

Type I - Word Recognition - Reading grade 3.0
reading age 8 yrs., 6 mos.

Type II - Sentence Reading - Reading grade 3.0
Reading age 8 yrs., 6 mos.

Type III - Paragraph Reading - Reading grade 3.35
reading age 8 yrs. 9½ mos.

Average reading grade 3.117

Average reading age 8 yrs., 7.1 mos.

Gates Reading Tests for Grades 3-8 [x]

Administered March 25-29, 1935 - R's chronological age 9 yrs. 7 mos.

Type A - Reading to Appreciate General Significance - reading grade 3.2
reading age 8 yrs. 8 mos.

Type B - Reading to Predict the Outcome of Given Events - reading grade 3.9
reading age 9 yrs. 6 mos.

Type C - Reading to Understand Precise Directions - reading grade 3.5
reading age 9.0 yrs.

Type D - Reading to Note Details - reading grade 3.33
reading age 8 yrs. 9.3 mos.

Average reading grade 3.5

Average reading age 9 yrs. 0 mos.

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x Vide Appendix C.

The first group of tests was administered at the initial examination, before the remedial work was begun, while the second was given during the fifteenth remedial lesson period. Forms I of the Gates Primary Reading Tests were used in each instance, so that there was a slight practice effect and the actual progress during these lessons was somewhat less than 4/10 or 2/5 of a grade, indicated by the results. When the third group was given Forms 2 of the Gates Primary Reading Tests were employed and it was found that the grade level was 3.117, an improvement of .537 of a grade. During the month of March, at the end of the remedial training period, the Gates Reading Tests for Grades 3-8 indicated a reading grade level of 3.5 or a reading age level of 9 years, 0 months. The improvement over the remedial training period, then, was 1.42 reading grades or 1 year and 7.6 reading months.

The original aim was to continue with the remedial work until R's reading level was equivalent to his mental age level, whereas the group of tests given at the end of the remedial training period indicated that his mental age was six months above his reading age. However, due to the pressure of other work, the writer found it necessary to discontinue the training and as R was no longer experiencing difficulty with the reading of his school grade, this subject no longer presented a serious problem. He had shown a marked improvement in spelling during this time although he had received no extra training in that subject. The improvement may or may not have been a

result of the progress in reading, but it is an interesting fact nevertheless.

While in grade two the second time, R had been required to repeat the arithmetical procedures with which he was already familiar, and due to the grade placement system prevalent in our public schools, was not taught the more difficult work with which he could readily have coped. He was "marking time" in the learning of arithmetic because of his difficulty with reading and when the reading improved he was under a handicap in arithmetic for he had not been taught the work of the next grade. If the school had allowed R to take up grade three arithmetic, this particular difficulty would not have arisen. As it was, in order that R might progress in all subjects as rapidly as his ability indicated that he should, it would be necessary that he be given tuition to supplement his school work or that he be placed in an ungraded school where he could progress in all subjects as rapidly as his ability indicated that he should. The latter plan was adopted and steps were taken towards having him placed in such a school at the beginning of the next session.

CHAPTER 4.

A DISCUSSION OF THE CAUSE OF READING DISABILITY WITH CONCLUSIONS

Jastak has stated: "There is perhaps no physical disease and no mental condition that has not been blamed at one time or another for difficulties in reading just because it was associated with such difficulties". [x] In chapter one of this work, the main explanations of the cause of reading disability were outlined and it is found that they differ in many ways and yet certain of them contain similarities.

The first two groups of explanations that were mentioned, namely those supported by Hinshelwood and Ranschburg along with their respective followers, were based upon the assumption that a localized area of the cerebrum is responsible for reading. Hinshelwood held that it was the underdevelopment of this area which caused inability to learn to read, while Ranschburg believed the difficulty to be due to its physiological incapacitation. If it could be proved that a localized area of the cerebrum is not responsible for reading these theories would be undermined.

At the time when Hinshelwood was writing it was thought that images and words were stored up in certain cerebral areas and that their recognition depended upon their revival by visual stimulation. His theory was consistent with the contemporary conception but later investigation brought about a change

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x 119, page 256.

of ideas.

In 1914 Monokow (159) made a critical summary of material published to date and indicated that the cortex as a whole, rather than localized areas, is the seat of intellectual functions. He emphasized the fact that the condition of aphasia does not continue over an indefinite period unless there is also present a widely spread cortical degeneration. Some years later Tilney and Riley (237) outlined the neurological data that had been published and found no cases of congenital reading defects which could be authentically ascribed to localized lesions or defects.

L.G. Fildes (63) published the results of an experimental study related to the topic under discussion. The subjects that he worked with were twenty-six in number, and their ages ranged from nine to sixteen years. Each was selected because of his marked difficulty in learning to read. The Stanford Binet test was administered and the ratings fell into the following groups:

I,Q. 111	One subject
I.Q. 82-88	four subjects
I.Q. 70-79	eight subjects
I.Q. 50-69	thirteen subjects.

The problems with which the study dealt were: "Is inability to learn to read or the loss of the power of reading due to specific or to general defect? If the former, does the defect show itself only in reading or does there appear to be any general lowering

of visual power?" (63) Twelve tests of three different types were devised measuring: "(1) Rapid and easy visual discrimination of forms together with the ability to retain these without undue repetition; (2) rapid and easy discrimination of sounds; (3) the possibility of establishing rapidly an association between a given form and a given sound." (63) If there were a localized visual word center, as has been suggested by Hinshelwood and others, one would expect that defects would be strictly localized but in the above experiment this was not the case. The subjects were found to have difficulty with material other than words.

In summarizing our findings it may be said that an attempt has not been made to deal with all of the material that bears upon the statement that a localized area of the brain is responsible for reading. Only two or three studies have been mentioned to give some indication of the change of opinion since that time. Psychologists no longer support theories which are based upon an assumption of pre-formed centers and it would seem that the explanations of reading disability which were advanced by Hinshelwood and Ranschburg and their respective associates, can no longer be maintained.

The explanation of the cause of reading disability, presented by Dr. Orton and Dr. Bearborn, are a contradiction in one respect. The former implies that left-handedness is one of the main impeding factors in learning to read, while the latter leads to the expectation that lack of dominance of either the

right or left side of the brain would cause the greatest difficulty in learning to read.

Dearborn indicated that about one-third of his reading disability cases had been left - handed at one time or another but other studies do not lead one to believe that such a large percentage of these children are left-handed. Dr. Gates analyzed two hundred and fifty reading disability cases [x] and concluded that only nine percent of these had at some time preferred the left hand. Also when examining two hundred and fifteen Clinic Reading Cases, one hundred and fifty five Special Reading Cases, forty four Defective Reading Cases and one hundred and one Controls, Dr. Marion Monroe found that the percentage of left-handed children was twelve, nine, ten and eleven for each respective group (161), indicating that the Reading Disability Cases and Controls contained approximately the same percentage of left-handed children. Margaret Ladd (128) examined three hundred and fifteen school children and concluded that the worst and best readers had among their numbers practically the same incidence of left-handedness.

Dearborn's cases, for some reason or other, must have included an exceptionally high proportion of left-handed children. Other studies found in the literature indicate a comparatively small incidence of left-handedness among reading disability cases.

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x 77, page 12.

Left-handedness, then, is not apparently a distinguishing characteristic of reading disability cases. However it does not follow that Dearborn's explanation of the way in which sinistrad tendencies of the hand and eye tend to interfere with the learning of dextrad movements and sequences required in reading and writing, is entirely invalid. It would seem that this may be true of some individual cases although not of thirty-three and one-third percent, as Dearborn would have us believe.

Dr. Orton advanced the statement that lack of dominance of either the right or left side of the brain, is an outstanding cause of reading disability, but before attempting to arrive at any definite conclusion, for or against his explanation, the experimental findings of others should be considered. In one study Dr. Gates[x] compared forty eight Non-Defect with forty eight Reading-Defect cases of the same age, in regard to handedness. The dominant hand of each member was determined by finding which hand each used in writing, throwing and reaching. The percentages of those not favoring the same hand in two or three of these tests were thirty one and twenty seven for the reading-defect and non-defect group respectively, indicating that lack of dominance of either the right or left hand does not distinguish one group from the other, the slight differences being unreliable.

If we adhere to Parson's (188) contention that eye-dominance indicates brain dominance then it would follow from Dr.

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x 77, page 11.

Orton's hypothesis that lack of dominance of either the right or left eye would be the greatest source of difficulty. In Dr. Marion Monroe's study of the four hundred and fifteen children mentioned before (161), tests of eyedness were used, and it was found that nine percent of the controls, and seven, six and four percent of each respective Reading Defect Group were "mixed". If Dr. Orton's hypothesis is valid one would expect that mixed eyedness would be an outstanding characteristic of the Reading Defect Groups, however, Reading Defect Cases contain fewer children having mixed eye dominance than either of the other two groups. It is interesting to note that Dr. Marion Monroe found a statistically significant larger number of "mixed dextrals" (right-handed-left-eyed children) among reading defect cases than among controls. The percentages were as follows: Controls (numbering one hundred and one) twenty one percent, Clinic reading cases (numbering two hundred and fifteen) thirty five percent, Special reading cases (numbering one hundred and fifty five) thirty five percent, Defective reading cases (numbering forty eight) forty eight percent. [x] There were few "mixed sinistrals" (left-handed-right-eyed children) among the cases studied, the percentages being six, three, three and two for the Controls and three Reading Defect Groups respectively.[xx]

In summarizing our findings concerning unstable unilateral dominance, it is found that in Dr. Gates' study lack of dominance of the right or left hand did not distinguish

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x 161, page 85.

Reading Defect cases from Non-Defect Cases. Dr. Monroe's investigation revealed a smaller number of children presenting mixed eyedness among the Reading Defect Groups than among the Controls but a larger number of right-handed-left-eyed children with a Reading Disability.

A certain amount of contradiction is involved in these findings. Neither of the studies supported the contention that mixed handedness or mixed eyedness distinguished reading defect groups from Non-Defect Groups, but Dr. Monroe found a large number of right-handed-left-eyed children among cases of Reading Disability. Apparently the dominance of the left hand and eye indicates dominance of the right side of the cerebrum and vice versa, so the fact that right handedness accompanied by left-eyedness was found to differentiate the reading defect cases from the controls, would indicate lack of complete unilateral dominance among these subjects.

As has been stated, Dr. Orton contended that lack of unilateral dominance seemed to be characteristic of all reading disability cases but the few experimental findings that have been examined in this thesis would not support such a sweeping statement. Perhaps it might be said that in certain individual cases mixed dominance does accompany reading disability and may contribute to it.

Dr. Orton's theory can be attacked from another angle. He made the statement that the tendency to reverse individual letters as well as the sinistrad reading of letter groups

or whole words seem to characterize all reading disability cases (175) and his theory of unstable unilateral dominance was advanced to explain why this tendency existed among children who found it extremely difficult to learn to read. Inquiries as to the relationship of reversal errors to mixed cerebral dominance have been made by Mintz (157), Gates (77), Bennett (77) and others, but their conclusions are opposed to Dr. Orton's contention.

In his study Alexander Mintz attempted to discover whether:

"(1) Confusion of letters differing in right-left orientation are related to reversals of the order of letters (as would follow from Orton's theory) and to other types of confusion between similar forms differing in orientation.

(2) Individuals who might be suspected of unstable unilateral cerebral dominance (the ambidextrous, the impartial eyed, left-eyed-right-handers) tend to be poor readers and are especially prone to right-left reversals." (157)

The subjects of the experiment were one hundred boys from the school of Letchworth Village and the main results were given briefly and will be quoted from the report.

"(1) Reversals of order of letters appears to be equally unrelated to all of the different confusions of letters differing in orientation including the right-left

reversals, on the other hand the latter seem to be interrelated.

(2) Children with indications of instability of unilateral cerebral dominance do not seem to be more prone to either order reversal errors or right-left reversals of letters than other children of the same reading level." (157)

An interesting experiment of somewhat the same type was undertaken by A.I. Gates and C.C. Bennett (77). They made a study of all of the pupils from Public School No 43, Manhattan, giving them reading and related tests. A group of twenty-six pupils obtaining the largest number of reversal or semi-reversal errors in an especially prepared test were selected from among these and termed the "Reversal Group". They were compared in a number of respects with a "Non-Reversal" group consisting of pupils who made no reversal or semi-reversal errors on the above mentioned test. As far as possible each member of the second group was "matched" with one of the Reversal group in regard to reading grade and intelligence quotient. The Reversal group revealed 0% and the Non-reversal group 4% cases of mixed eyedness. To quote from their conclusions: "..... it may be said that pupils showing maximum reversal tendencies do not exceed those showing minimum tendencies in lack of hand dominance; reading defect cases show no greater frequency of lack of hand dominance than representative readers, and pupils lacking clear-cut hand dominance to not differ from those having clearer dominance". [x]

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x 77, page 11.

As far as the writer has been able to determine, any experiments found in the literature attempting to discover whether or not there is any relationship between a tendency to reverse letters and words, and mixed cerebral dominance seem to reveal very little association between the two.

Dr. Orton's theory contained a further statement which is quite out of harmony with modern psychological conceptions. He claimed that when meaning is associated with a word there is a resulting mnemonic record or "engram" in the associative level of each hemisphere, the one in the non-dominant being the mirrored counterpart of that in the dominant. The recognition of a word was also ascribed to the union of three distinct mental entities, namely "sensation", "objective memory", and "association". Theories of this type are being criticized by Lashley (129) and others.

Dr. Orton's explanation of reading disability has been criticized by the writer from three angles. Firstly, he made the statement that the tendency to reverse individual letters as well as the sinistrad reading of letter groups or whole words is characteristic of all reading disability cases, and in fact his whole theory of unstable unilateral dominance was developed to explain this phenomenon. It was found that experimental studies carried on by Mintz, Gates, Bennett, and others revealed very little association between the two. Secondly, Dr. Orton contended that lack of unilateral dominance apparently accompanies all reading disability. In other experimental studies reviewed

in this work, it was found that mixed dominance did not distinguish poor readers from good readers and therefore could not be said to be a major cause of reading disability, although in individual cases it might contribute to the difficulty. Thirdly, his statements concerning "engrams" and the fact that the recognition of a word is due to the union of three distinct mental entities are of the type that at present are being very severely criticized by numerous psychologists.

Dr. Gates and Dr. Monroe have considered that certain constitutional and environmental factors may have interfered with the process of learning to read. In regard to visual defects Dr. Gates included tests of visual acuity and perception in his diagnostic program, while Dr. Monroe listed lack of clear-cut retinal images, lack of precision in discrimination of complex visual patterns and lack of precision in discrimination of the spatial orientation of patterns in her outline of factors that may impede progress in reading.

Evidence for and against the fact that visual defects contribute to reading disability is to be found. Hollingworth (113-114) stated that impairment of the eye may prevent an intelligent child from learning to read, and she listed myopia, hyperopia, astigmatism, cataract, muscle-weakness, diplopia, and anamolies of the retina as visual defects which are most likely to interfere with learning and mechanics of reading. As far as the writer can determine, the author presented no experimental data to prove her point.

Ophthalmologists such as Hinshelwood (107), Stephenson (222, 223),Bruner (29) and Claiborne (37, 38), claimed that if defects of vision are present in persons with reading disability, they are coincident and of very little importance as causes of the disability. In an article called "Special Disability in Spelling" (154), Dr. Orton stated that in most cases children who are retarded in reading are found to have normal visual acuity and discrimination and in fact many of them have far keener vision than normal readers.

Dr. Monroe (161) examined over five hundred children, four hundred and fifteen possessing reading defects and one hundred and one being from the average school population, and found that lack of visual acuity did not distinguish the reading defect group from the controls. In the case of a few children studied, inadequate visual acuity seemed to be a contributing cause to the reading defect but it was not found to be a highly frequent cause.

A further study was carried on at the Institute for Juvenile Research, Chicago, when Anderson and Kelly (2) examined two hundred children, one hundred of whom were "normal readers" and the remainder were reading defect cases. Each group had similar chronological ages, mental ages and intelligence quotients. It was found that seventy seven percent of the reading defect groups and seventy three percent of the normal readers had visual acuity above eight-tenths vision in both eyes.

The German writers, Marum (148), Molitor (158),and Wawrik (252) reported that non-readers have either an equal or superior degree of visual perception as compared with normal readers.

It has been noted that some investigators consider that visual defects interfere with learning to read while others do not. The bulk of experimental data would seem to indicate that poor visual acuity, poor visual perception and refractory errors do not distinguish non-readers from readers, but this does not prove that in certain individual cases, visual defects of one type or another may not contribute to reading disability. In regard to other types of visual defect, such as myopia, hyperopia, astigmatism, etc. and their relationship to reading disability, very little experimental work has been carried out and the data is meagre. Factors such as muscular balance, binocular vision, peripheral acuity or extent of visual fields, as one writer has suggested (161), if quantitatively measured might prove important in the study of reading disability.

Auditory factors such as poor auditory acuity, lack of precision in the discrimination of speech sounds, inadequate auditory apprehension and memory span, have all been associated with reading disability at one time or another. Aside from the fact that tests of auditory acuity have been used by both Dr. Gates and Dr. Monroe in their study of reading disability cases, poor auditory acuity does not seem to have been considered a cause of reading disability. Writers such as White and Poull (259) report that non-readers have a higher degree of auditory

acuity than normal readers. Dr. Monroe (161) found that only two percent of her reading defect cases were rated as defective in hearing on the whispered-voice and watch ticking tests.

Poor auditory discrimination has been more frequently associated with reading disability than inadequate auditory acuity but very little actual experimental work has centered around the problem of their interrelation. Dr. Monroe has published certain findings derived from a study of thirty two unselected first-grade children and thirty two young non-readers, a random sampling of the young reading defect cases at the Institute for Juvenile Research. (161) The auditory word discrimination test used, consisted of a series of twenty pairs of words, some being the same and others being different. The examinee was required to indicate whether each pair read aloud by the examiner was the same or different. In spite of the fact that the group of "readers" had lower chronological and mental ages than the "non-readers, they made fewer errors in the auditory word-discrimination test. A table giving the findings is included below:

TABLE VIII. [x]

Auditory Word-Discrimination Test and Visual-Auditory Learning Test

Test	Controls; Unselected First-Grade Children		Reading-Defect Cases; Sampling of Young Non-Readers		Difference between Means Divided by Its Standard Error
	Mean C.A., 6-9 Mean M.A., 7-4 Mean I.Q.,109 N = 32		Mean C.A., 8-5 Mean M.A., 8-4 Mean I.Q.,99 N = 32		
	Mean	σ	Mean	σ	
Number of errors in auditory word discrimination..	1.51	1.11	4.58	2.94	5.49

Dr. Gates (74) included tests of auditory memory span in his diagnostic program and as far as could be determined he is the only one who does so. He has devised tests of memory span for digits, letters and nonsense syllables and administered them to a large number of children of all levels of reading skill but concluded that only in very few cases do these tests yield illuminating results. He stated that occasionally they indicate one among many weaknesses which lead to reading disability.

x 161, page 94.

In this chapter the writer has considered only a few of the factors listed by Dr. Gates and Dr. Monroe, as possible impediments in learning to read. An attempt has not been made to deal with them all. Several have been considered in order to make it clear that the factors listed may or may not contribute to the reading difficulty in question. This becomes evident when it is found that in experimental studies such factors as visual acuity do not distinguish groups of Non-Readers from Normal-Readers. Both Dr. Monroe and Dr. Gates were evidently attempting to list all of the things that are associated with reading disability but let it be pointed out that because a certain thing is associated with another, it does not necessarily follow that the first acts as a cause of the second. Likewise because certain weaknesses are associated with reading disability it does not necessarily follow that each acts as a cause of the disability. It seems that a great deal more study and experimentation is needed in order to determine which constitutional and environmental factors really act as causes of reading disability.

In this chapter the main explanations of reading disability which have been advanced from time to time have been discussed. It has been stated that the first two groups of theories mentioned in Chapter one of this thesis, namely those supported by Hinshelwood and Ranschburg, can no longer be upheld if one considers that a localized area of the brain is not responsible for reading.

It seems that a smaller number of reading disability cases are left-handed than Dearborn's statements would lead one to believe, but that his explanation of the way in which sinistrad tendencies of the hand and eye interfere with the learning of dextrad movements and sequences required in reading may apply to some left-handed children. Dr. Orton's hypothesis was attacked from three angles. His conception of engrams was entirely his own and is of the type that is being seriously criticized by modern psychologists. His statement that a tendency to reverse words, letters, etc., is characteristic of all reading disability cases was found to be incorrect and his explanation that the cause of these reversals is due to lack of unilateral dominance was criticized on the grounds that the tendency is not associated with lack of unilateral dominance. Dr. Gates and Dr. Monroe apparently attempted to list all of the constitutional and environmental factors which they believed might be associated with reading disability but, as has been stated, it does not necessarily follow that because a child who has a reading disability is, let us say, left-handed, that left-handedness has acted as a cause of the disability. As far as it can, at the present time, be determined, this may or may not be so. Further work will have to be done before it is definitely known which factors are likely to act as causes and which are not.

It would seem that the most sensible approach to the problem of reading disability is through an examination of all the fundamental capacities upon which reading depends and through a study of any environmental factors which might have contributed

to the difficulty. Reading takes place through the function of certain parts of the human organism and if there is a weakness in one of these, the individual in the early stages of learning to read may experience difficulty. He has to exert effort over and above that which is necessary for the other children of his group. He may even be in such difficulty that it is not possible for him to learn to read unless his inability is recognized by the instructor and the necessary help given.

In the case study of R, presented in this thesis, an attempt was made to find any weaknesses of capacities upon which reading depends and any environmental factors which might have contributed to the disability, in order that an effective remedial approach could be taken. The method used in diagnosing R's reading disability was consistent with the writer's conception of the causes of reading disability and the follow-up remedial work program was based on the findings.

In concluding this thesis, the following summary is made. Chapter one dealt with the main types of explanation of reading disability which were to be found in the literature upon the subject. In Chapter two a study was made of a young boy who had a reading disability. It was found to be due to irregular school attendance, poor reading techniques, a marked dislike for reading, an early speech defect, and the fact that he was right-handed but left-eyed. Chapter three was concerned with the

remedial work carried on over a period of several months. The method of approach to the problem was outlined and the results of the remedial training included. The last chapter consisted of a criticism of the explanations of reading disability which had been presented in the first Chapter, and also of a statement of the writer's conclusions in regard to the causes of reading disability.

Before closing a study, such as this one, the writer feels that the suggestion should be made that teachers of reading be alert to discover any difficulties which a pupil may have during the early stages of learning to read. If she is unable to deal with the problem, consultation with an expert in the field would save a lot of waste effort on the part of both herself and the pupil. It would enable the latter to learn the initial work before he had lagged so far behind the remainder of his school class that it might require weeks or even months to bring him up to the level of attainment which should be expected of him. So many children are found to be held back in their school work because of inability to learn to read that these facts should be given serious consideration.

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APPENDUM

APPENDIX A.

OTIS GROUP INTELLIGENCE SCALE

Devised by ARTHUR S. OTIS

PRIMARY EXAMINATION: FORM A

My name is.....

My birthday is.....

On my last birthday I was ..... years old.

I am in the ..... grade.

The name of my school is.....

The name of this city is.....

The date today is.....

(Do not write below this line.)

Remarks or Further Data

1.....

2.....

3.....

4.....

5.....

6.....

7.....

8.....

9.....

10.....

11.....

12.....

13.....

14.....

15.....

TEST	SCORE
1	
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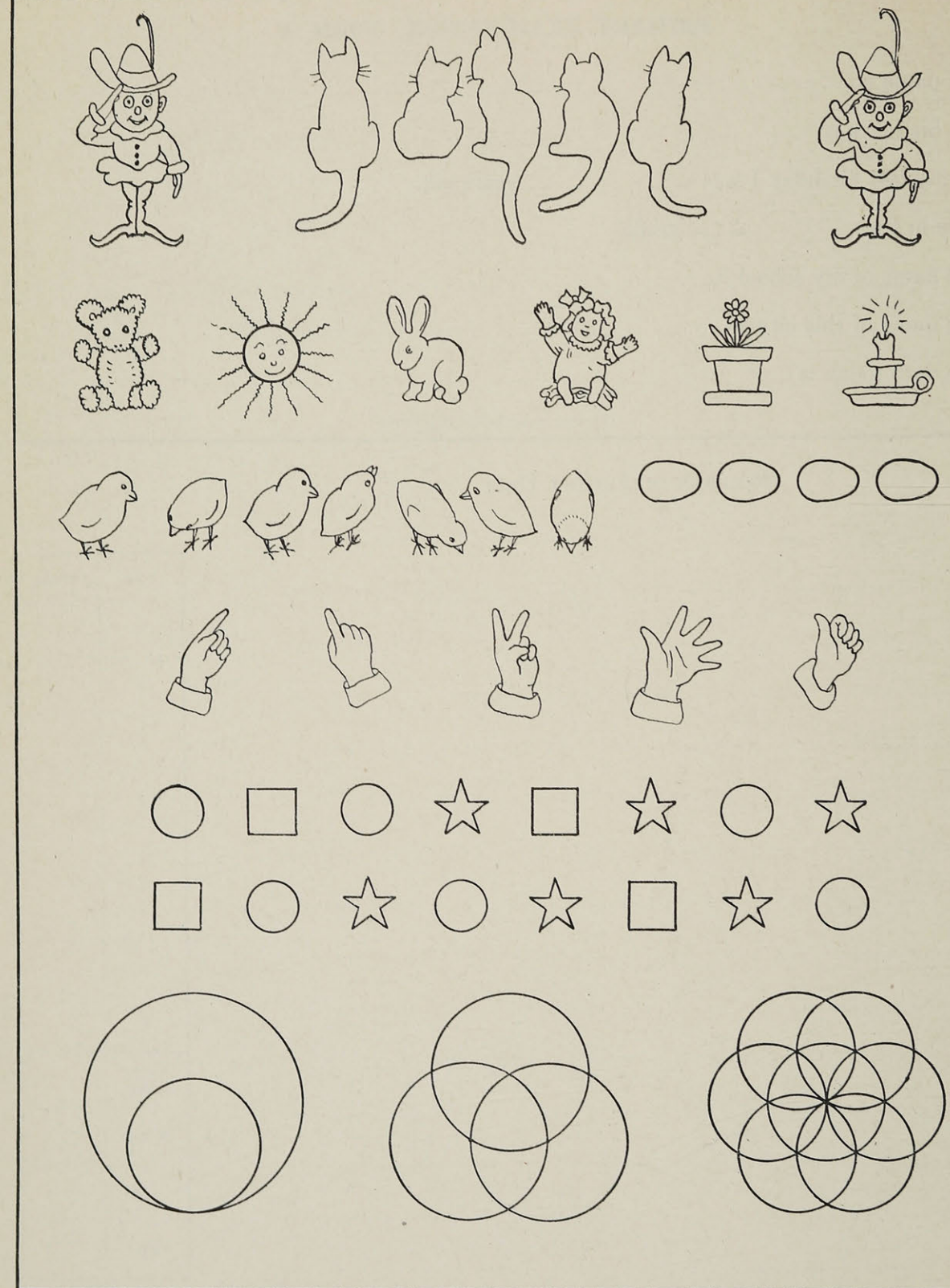

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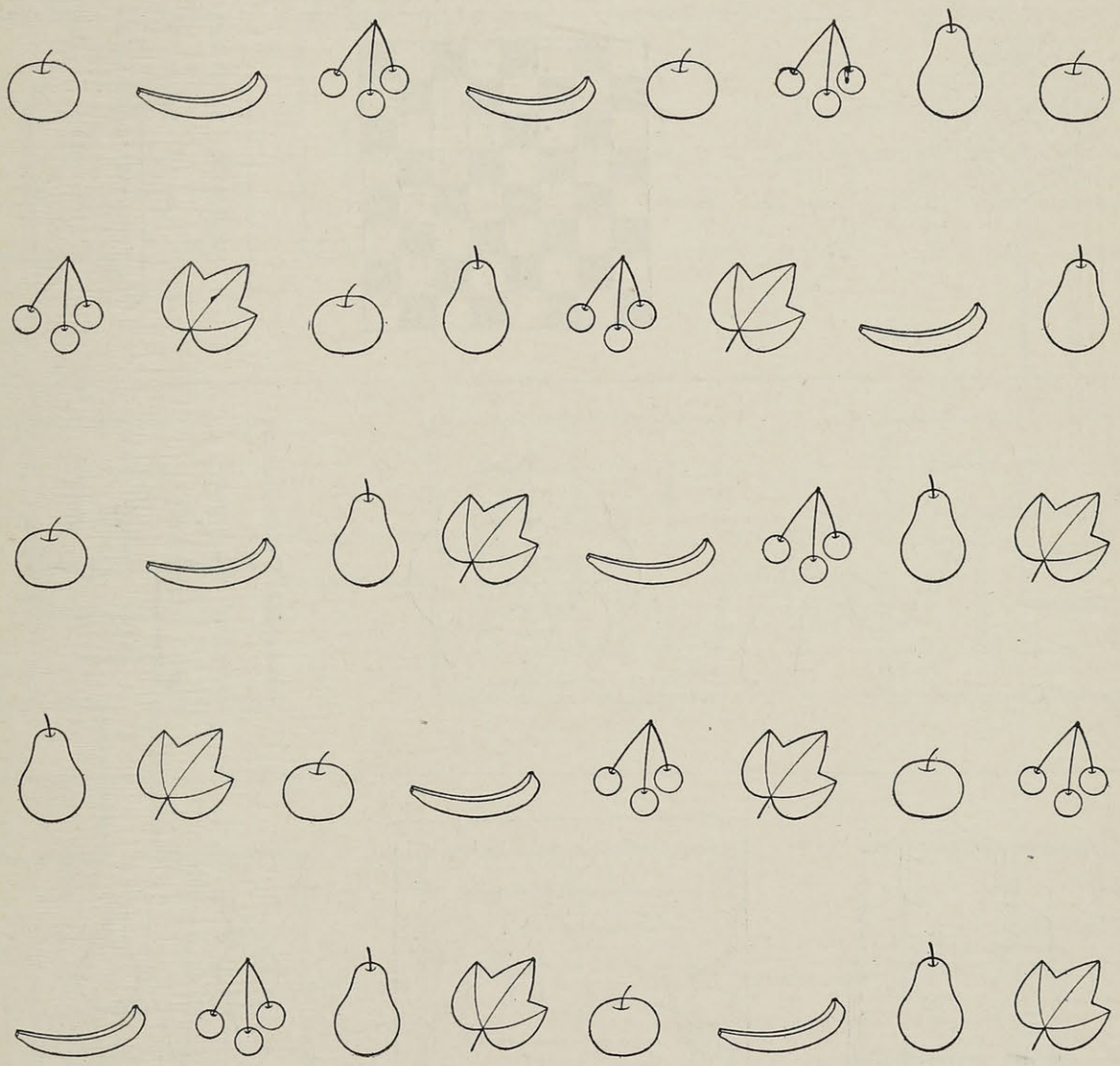

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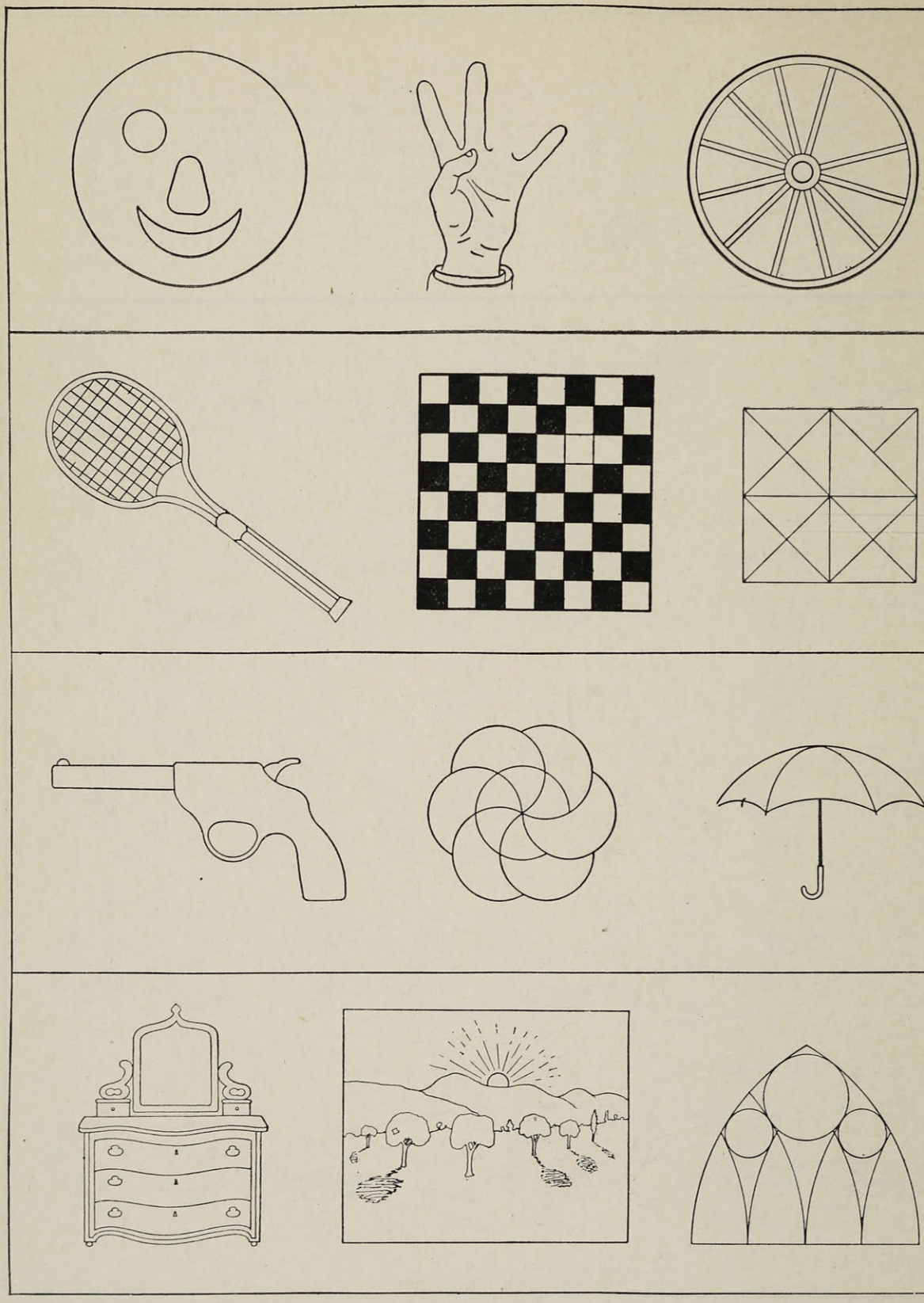

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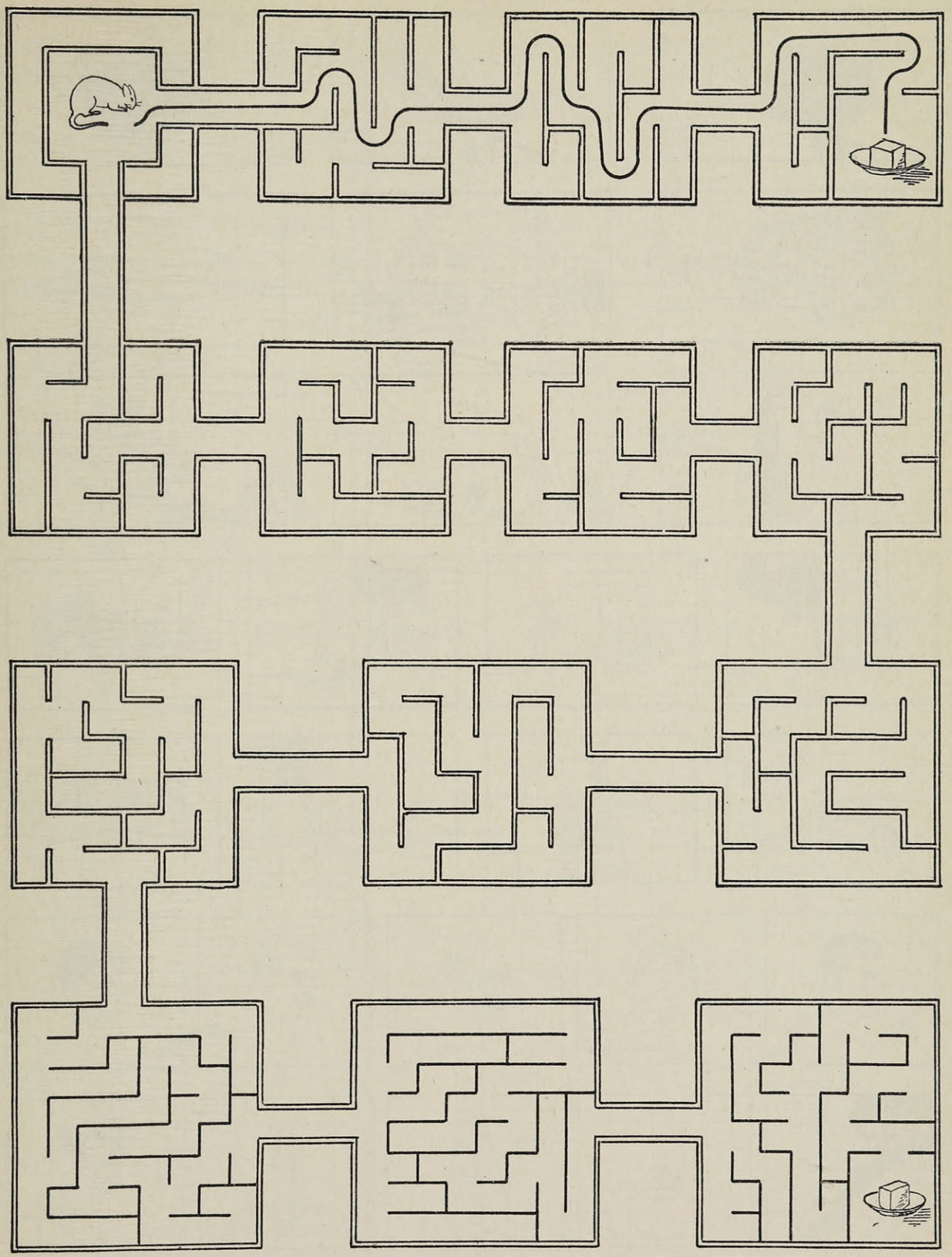

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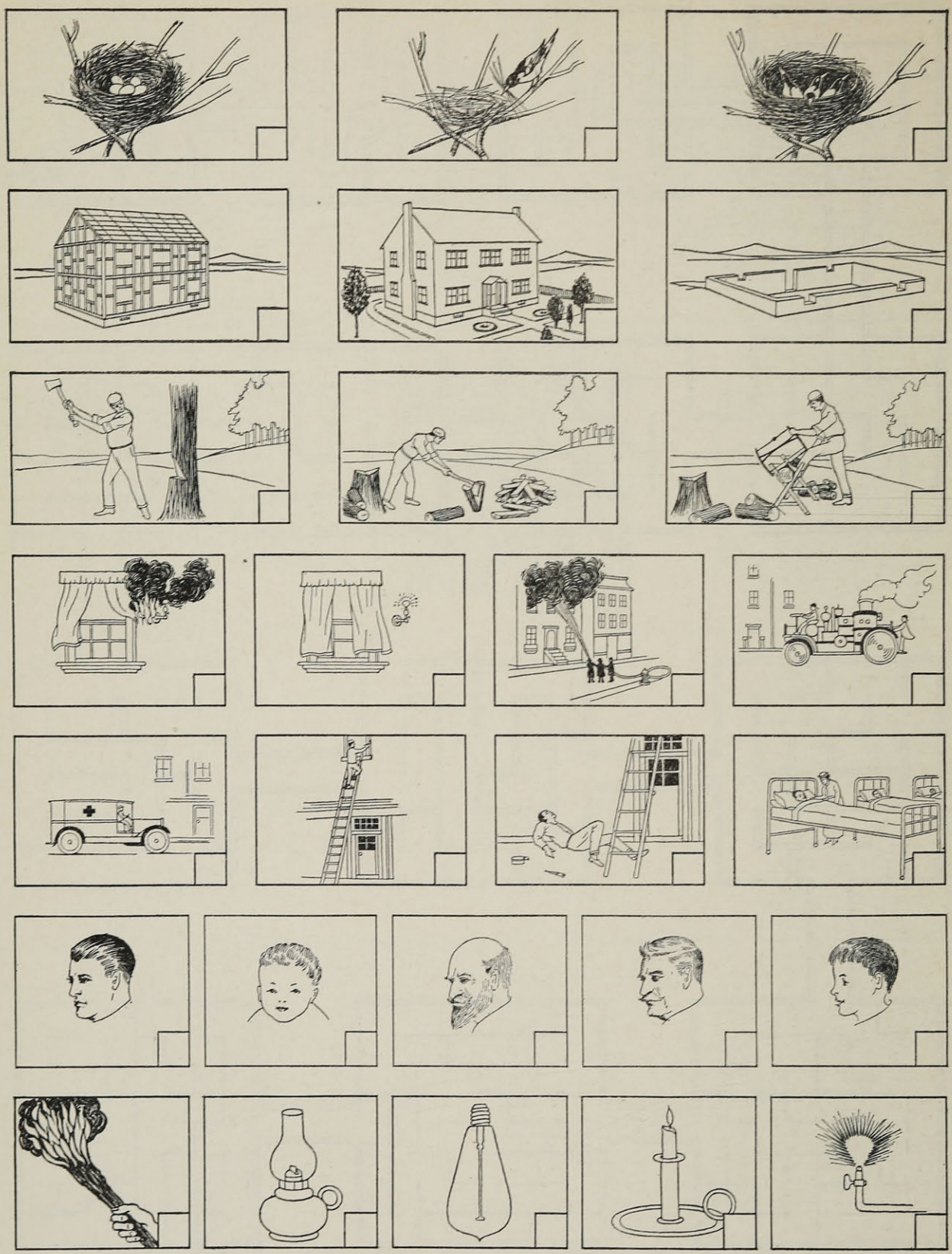

Score. . . . . .

Score.....

A s o	K 1 2 3
B s o	L 1 2 3
C s o	M 1 2 3
D s o	N 1 2 3
E s o	O 1 2 3
F s o	P 1 2 3
G s o	Q 1 2 3
H s o	R 1 2 3
I s o	S 1 2 3
J s o	T 1 2 3

Score . . . . . *Score* . . . . . .

APPENDIX B.

GATES PRIMARY READING TEST

Type 1. Word Recognition

Grades 1 and 2 **FORM 1**

Write your name here . . . . . .

When is your birthday? . . . . . How old are you? . . . . . .

Date . . . . . School . . . . . Grade . . . . . .

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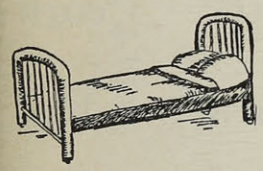

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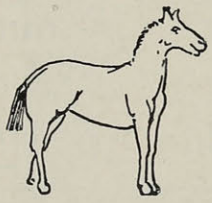

horse play

hose house

To the Examiner. 1. Prepare large drawings of above exercises on blackboard or paper. (Pictures from magazines may be used in place of drawings.) 2. See that each child has pencil. 3. Distribute papers. 4. Have children fill in blanks at top of this page (with your help). 5. This front page should be up when signal to begin is given. 6. These examples are to be very fully shown and explained to pupils. Instructions to children: "I want you to look at the first picture. Next to it there are some words. One of the words goes with the picture. You are to draw a ring around that one word that tells about the picture. Put your finger on the word that belongs with the picture. Now watch what I am going to do. [Examiner, chalk in hand, points to words on blackboard which are in the first block in any order.] Shall I draw a ring around this one? This one? [until correct one is reached and ring is drawn around this correct word.] That is right. The four words are 'did,' 'egg,' 'dog,' and 'two.' We have drawn a ring about the word 'dog' because the picture is of a dog. This word tells us the most about the picture. Now you look at your own paper, look at the picture, find the right word and with your pencil draw a ring around it. Do it. [Correct errors.] [Pause.] [Same procedure for other three pictures and words on front practice page.] **Do not open your books until I tell you to.** Now I am going to show what we are to do next. On the inside of the book are some more pictures and words. [Examiner holds up copy of the test showing the inner pages.] You are to do the first one, then the next one below it, etc. [Examiner points down first column, then second, etc., and also demonstrates order on all three pages.] As soon as you have drawn a ring around the one word for one picture, go right ahead and do the next one. Now remember, first you are to look at the picture, then at the words next to the picture, then find the one word that goes best with the picture and make a ring around that one word. Make a ring around one word only for each picture. Do you understand? All right. Open your books and BEGIN. Go ahead." 7. Inspect the work of each child; see that each works from top to bottom of columns and that each follows the pages in order. Urge children individually to try the examples in order but *do not tell them the answers.* Discourage dawdling over difficult problems; tell them to try the next. Watch for children who make rings indiscriminately and tell them to make only one ring for each picture. 8. The signal STOP is given at the end of **15 minutes.** Collect papers immediately. 9. The score is the number of exercises marked correctly minus one-third the number incorrect. If more than one word in an exercise is marked, that exercise is scored as incorrect. For further details see the Manual of Directions.

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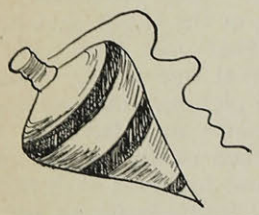

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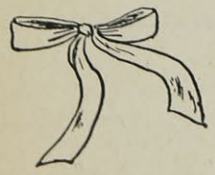

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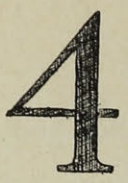

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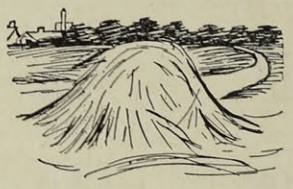

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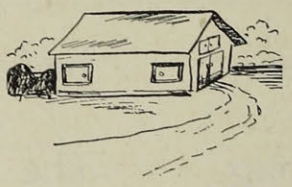

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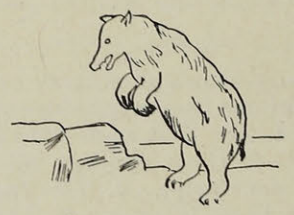

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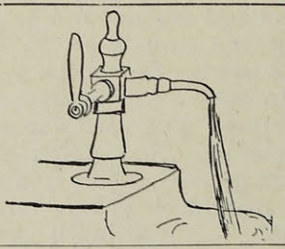

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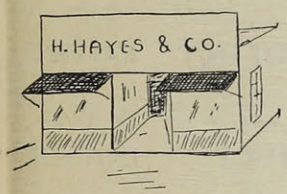

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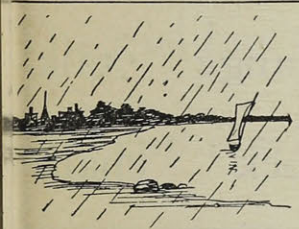

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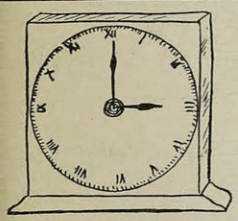

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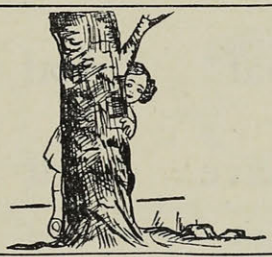

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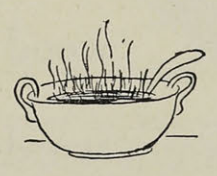

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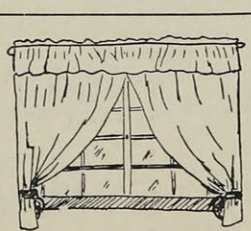

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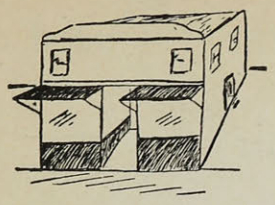

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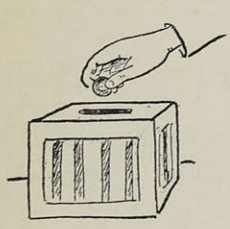

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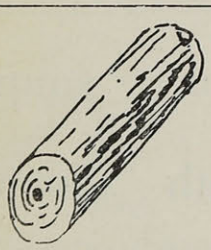

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smile smell

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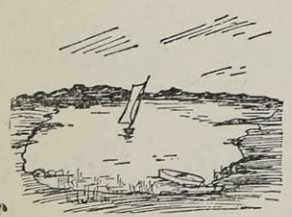
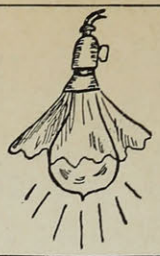


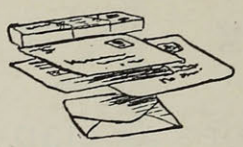
lake take

like last



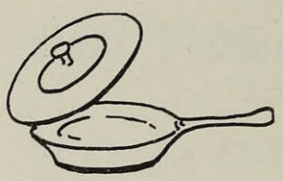
light lost

fight lifts



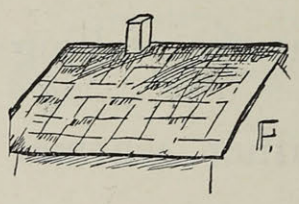
mile maid

mail nail



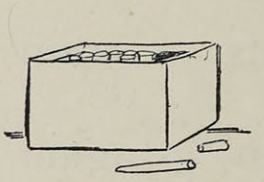
corner cover

river cocoa



took roof

room root



change talk

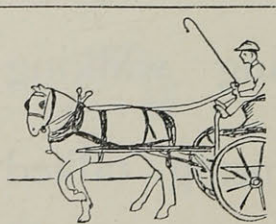
cluck chalk

lies lady

lily only

rock cock

cook colt



drive dirty

live divide

GATES PRIMARY READING TEST

Type 2. Sentence Reading

Grades 1 and 2 **FORM 1**

Write your name here . . . . . .

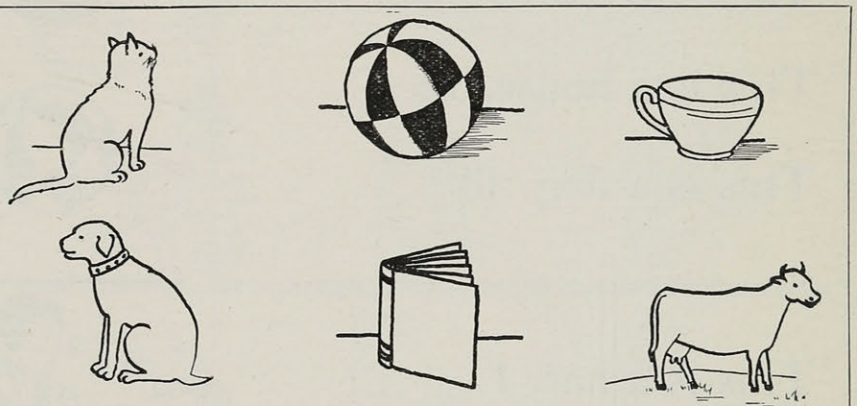
When is your birthday? . . . . . How old are you? . . . . . .

Date . . . . . School . . . . . Grade . . . . . .

This is a cat. I

This is a book. II

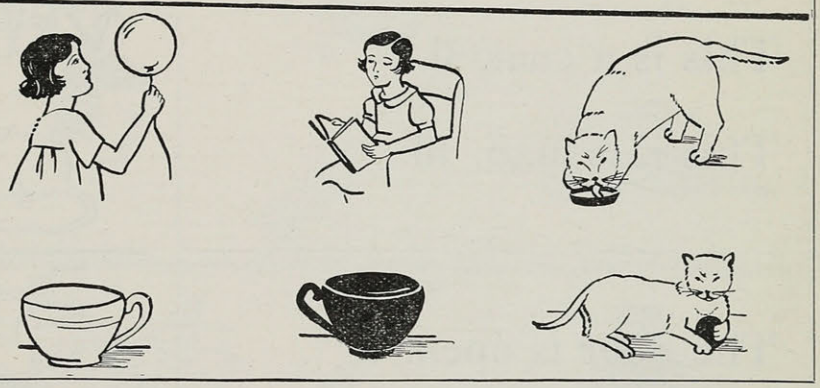
This is a cup. III



The girl has a book. I

The cup is white. II

The cat has a ball. III



To the Examiner: 1. Prepare large drawings of above exercises on blackboard or paper. (Pictures from magazines may be used in place of drawings.) 2. Distribute tests and pencils and have children fill in the blanks at the top of this page. Help them if necessary. 3. Call children's attention to the exercises above on this page. 4. Give instructions similar to the following: "Look at the first sentence. Read it. What does it say? Now, look at the pictures. Which one tells the same thing (or story) as the sentence? Does this one?" (Continue until the right picture is found.) "Now, notice the line at the end of this sentence. How many are there? One. That is right. Now draw one line on the picture to show that it tells about this sentence. Make it like this." (Examiner makes a large single line on the picture on the board.) "Now, draw a line on the picture on your paper. Now, read the second sentence. Do you see the lines at the end of this sentence? How many are there? Two. That is right. Now, find the picture which tells the same story as this sentence, and draw two lines on it." (Examiner demonstrates on board.) "Now, read the third sentence. How many lines do you find at the end of this sentence? Three is right. Now, find the right picture and draw three lines on it." (Demonstrate.) Repeat the directions with the second exercise. "It is very important to see how many lines follow each sentence and to draw the same number on the right picture. Be very careful about this! Now, turn over the first page. Here are some more pictures and sentences. I want you to read these sentences and mark the pictures just as we did before. Be sure to mark the picture with one line if the sentence is followed by one; with two lines, if the sentence is followed by two; and with three lines, if the sentence is followed by three. As soon as you finish one sentence, go on to the next. I want you to do as many as you can before I say 'Stop.' If one sentence is too hard for you, don't spend too much time on it, but go on to the next one. Do you understand? All right! BEGIN." 5. Inspect the work of each child; give individual instructions when needed. Discourage long delays over difficult problems; tell the pupil to try the next. Watch for failures to mark the pictures according to instructions. 6. Say "Stop" at the end of **15 minutes.** Collect papers immediately. Children who failed to follow directions should be retested under supervision. 7. **The score is: Number of exercises (i.e. pictures) correctly marked.**

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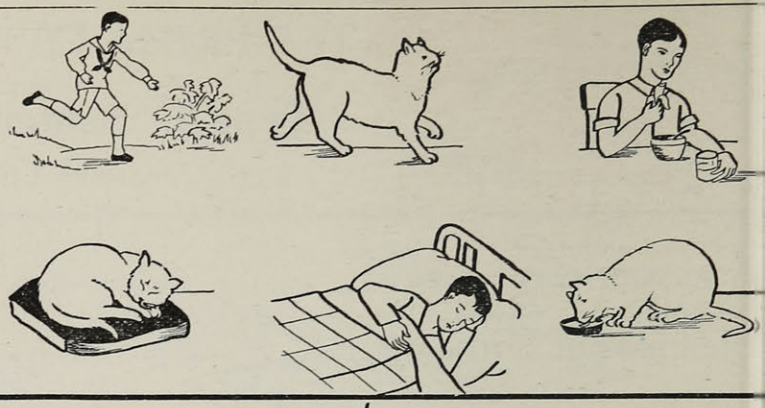
The boy runs. I

The cat runs. II

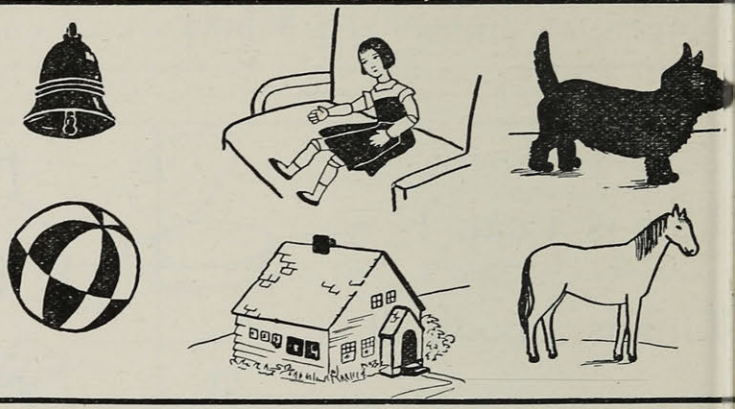
The boy eats. III



This is a ball. I

This is a house. II

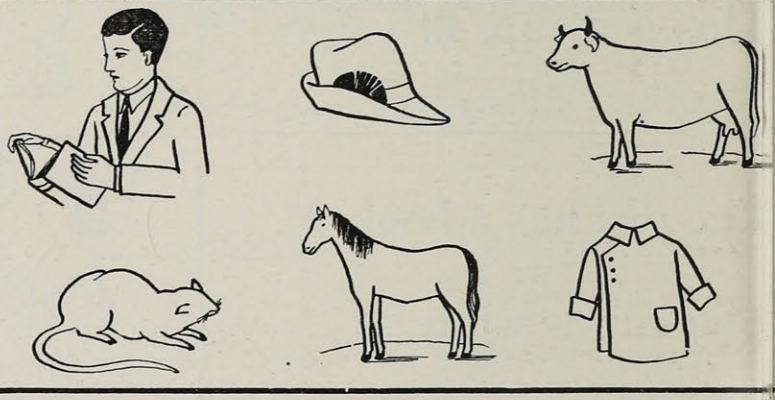
This is a dog. III



This is a hat. I

This is a coat. II

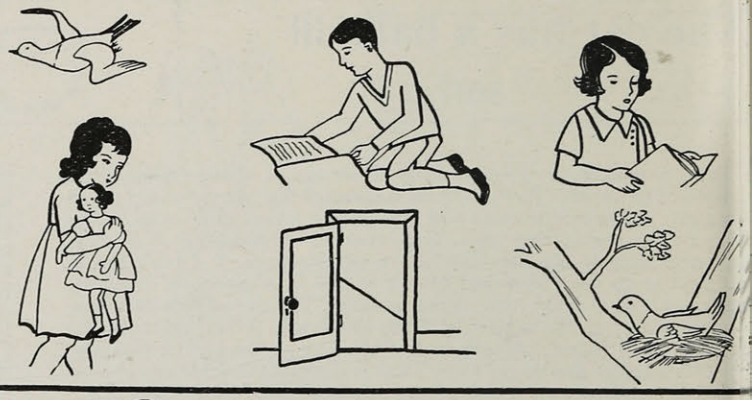
This is a man. III



The door is open. I

The child has a doll. II

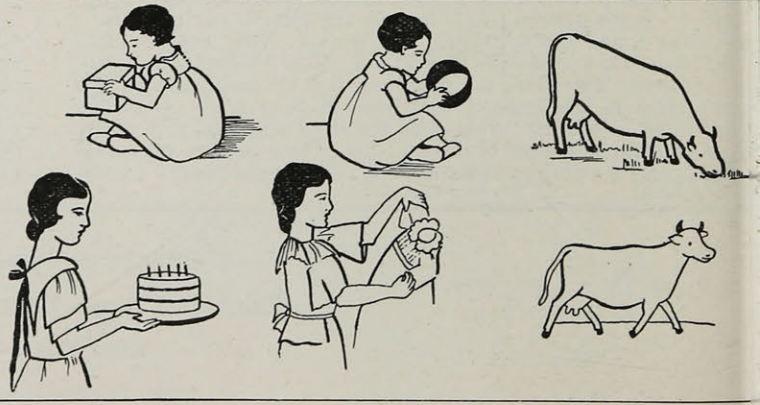
The bird is flying. III



The baby has a box. I

The cow is eating. II

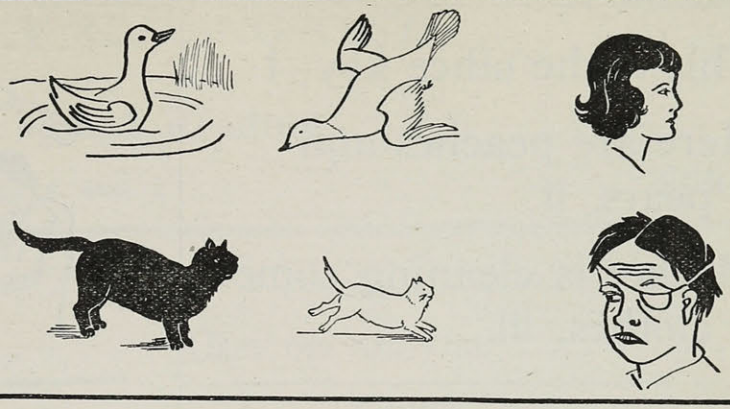
The woman has a dress. III



The duck likes the water. I

The kitten is white. II

The face is pretty. III



Mother is writing a letter. I

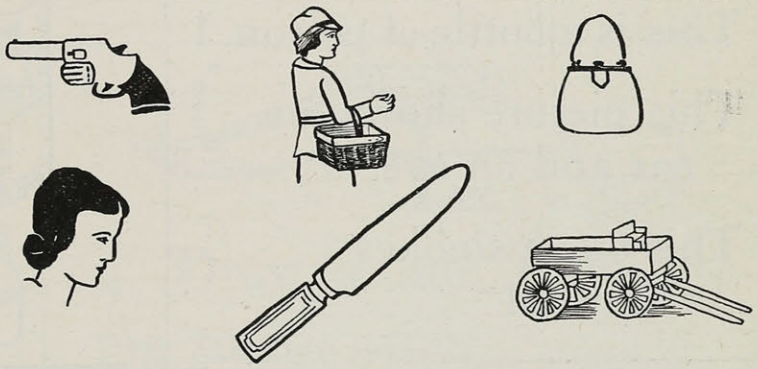
This mouse is little. II

The snow is falling. III

The woman has a basket. I

This is a picture of a knife. II

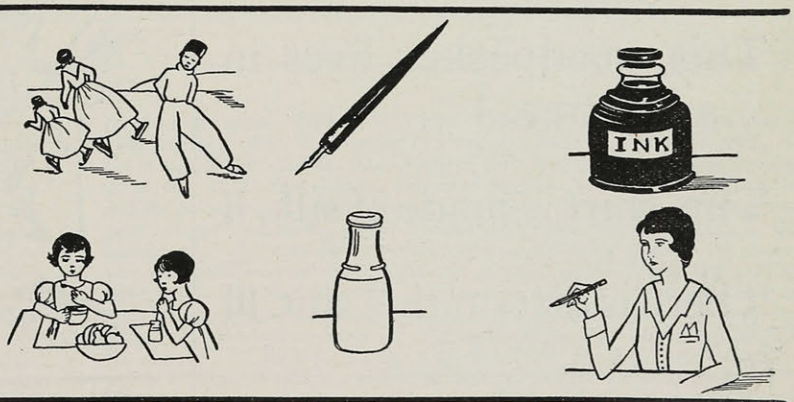
This is a picture of a wagon. III



The teacher has a pencil. I

The children like to skate. II

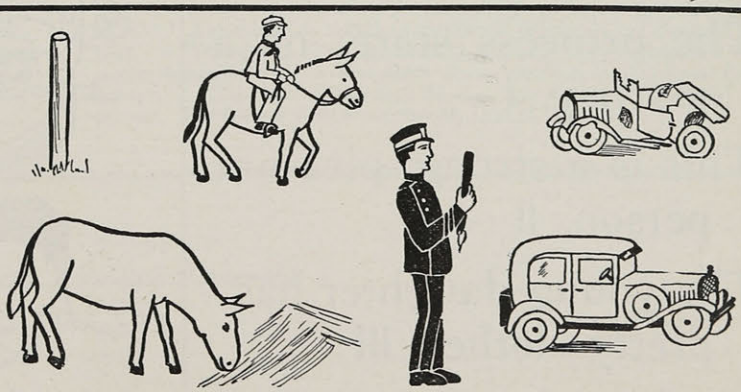
This bottle is full of ink. III



Here is a tall policeman. I

This donkey has some hay. II

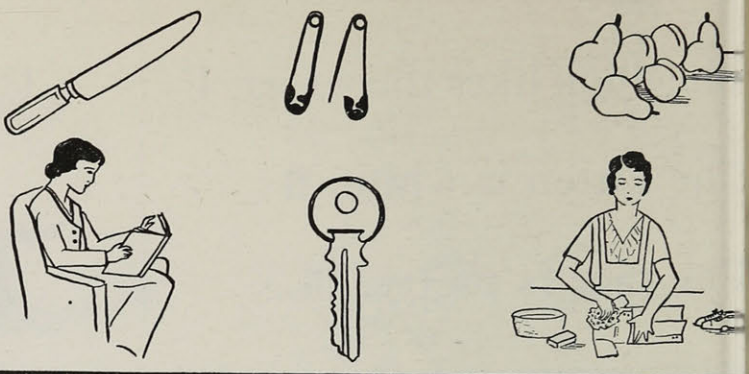
This automobile is new. III



This is the office key. I

Here are peaches and pears. II

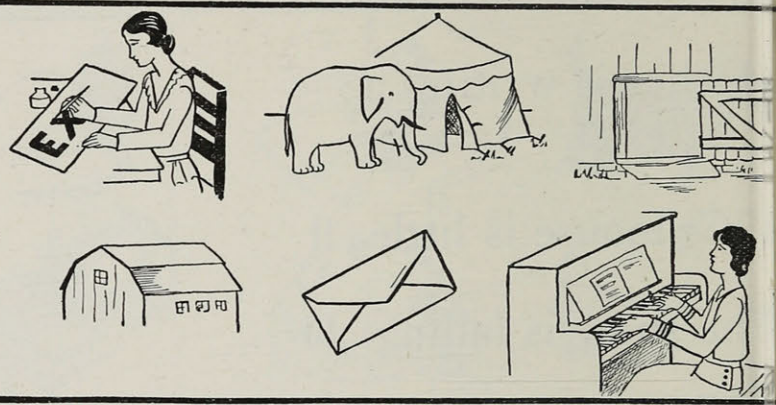
Mother is cleaning some clothes. III



This is the roof of a barn. I

The teacher makes a sign. II

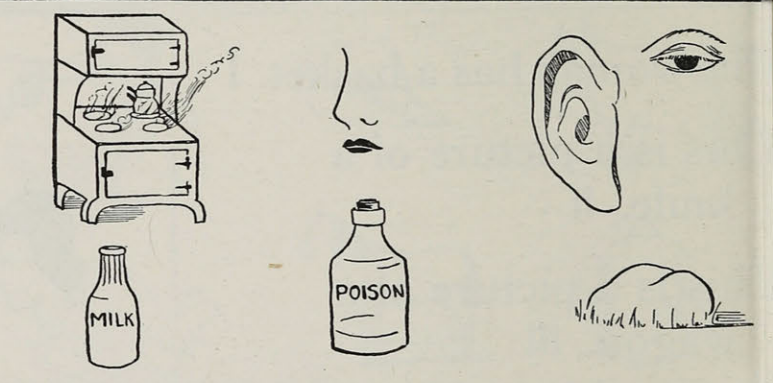
The elephant stands near a tent. III



This is a bottle of poison. I

This picture shows an ear and an eye. II

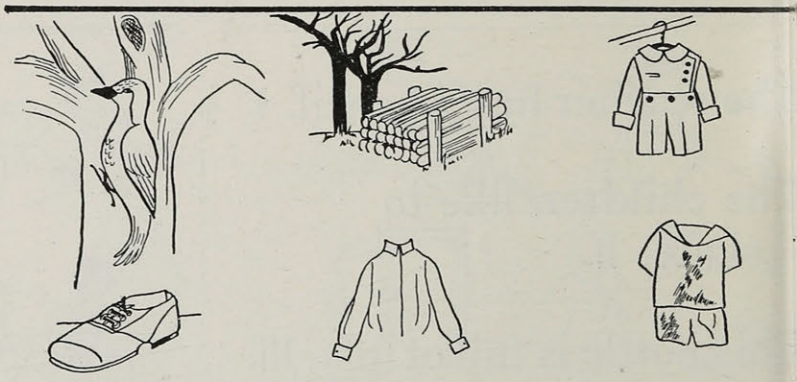
This stove smokes badly. III



This woodpecker lives in a big tree. I

This shirt is made of silk. II

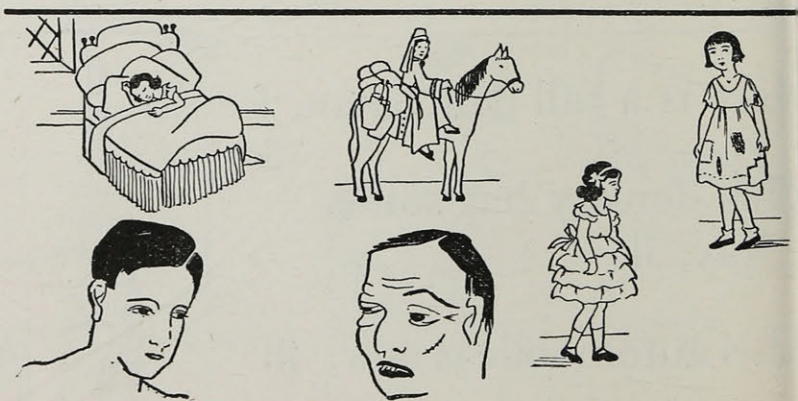
There is dirt on this suit. III



The princess starts on a journey. I

This is a strong, pleasant person. II

The young daughter has pretty clothes. III



GATES PRIMARY READING TEST

Type 3. Paragraph Reading

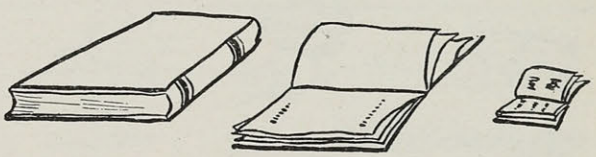
Grades 1 and 2 **FORM 1**

rite your name here . . . . . .

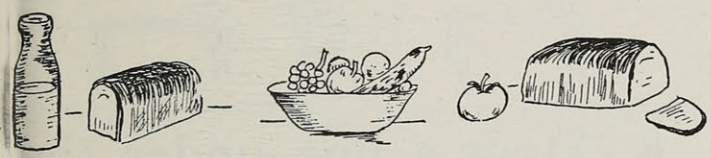
hen is your birthday? . . . . . How old are you? . . . . . .

ıte . . . . . School . . . . . Grade . . . . . .

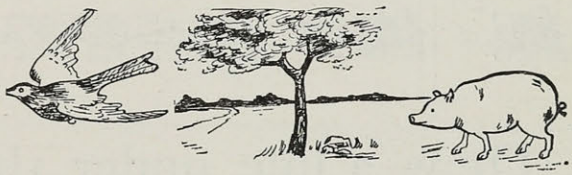
1. Put an X on the ball.



3. Draw a line under the little book.



2. Put an X on the milk bottle.



4. Draw a line from the pig to the tree.

he Examiner. 1. Prepare large drawings of above exercises on black-d or paper. (Pictures from magazines may be used in place of drawings.) e that each child has a pencil. 3. Distribute papers. 4. Have children fill anks at top of this page (with your help). 5. This front page should be when signal to begin is given. 6. These samples are to be very fully vn and explained to pupils. Instructions to children: "We are going to how well you can read. Do you see the pictures, and the stories below pictures on the front page of your little book? (*) Everyone look at the story and picture. Read the story to yourself. [Examiner points with r to story on his own copy.] [Pause.] What does it say to do? [Have l read the story aloud to the class.] That is right. Now read the story ourself while I read it aloud. [Examiner reads *slowly* and clearly while lren watch their own papers.] Now watch what I am going to do. ıminer makes mark called for on board with chalk.] Read to yourself n what it says under the first picture. Then take your pencil and make mark on your paper as I did on the board. Do it. [Examiner or teacher ıld go among children and help them correct errors made on this practice .] Everyone look at the second story and picture. [Refer to (*) above, g same procedure for remainder of samples on practice page. Be sure to read in correct order: 1, 2, 3, etc.] **Do not open your books until I tell you to.** Now I am going to show you what we are to do next. On the inside of the book are some more pictures and stories. [Examiner holds up a copy of the test showing the inner pages.] You are to do No. 1 [Examiner points to it on his own copy], then go on and do No. 2, then do the next one, and the next one, etc. [Examiner points down first column, then second, etc., and also demonstrates order on all three pages.] As soon as you have finished one story, you must go right ahead and do the next one right below it. Now remember, first, you are to read the story below the picture; then you are to take your pencil and do *exactly* what the story tells you to do. Do you understand? All right. Open your books and BEGIN. Go ahead." 7. Inspect the work of each child; see that each works from top to bottom of columns and that each follows the pages in order. Urge the children individually to try the examples in order but *do not tell them the answers*. Discourage dawdling over difficult problems; tell them to try the next. 8. The signal STOP is given at the end of **20 minutes.** Collect papers immediately. 9. The score is the number of directions followed correctly. The mark made *must be* that specified in "the story" to be correct. For further details see the Manual of Directions.

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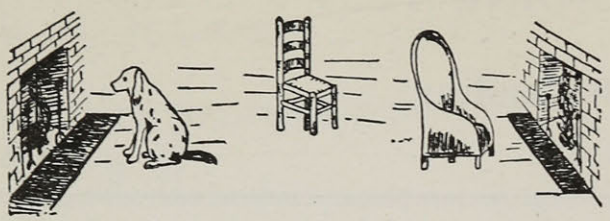
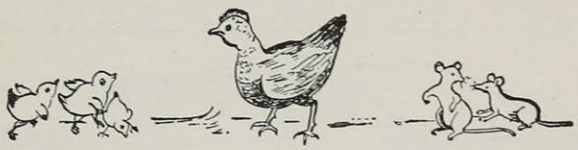


1. Put an X on the dog.

6. Draw a line under the cat that is running.



2. Put an X on the hen.

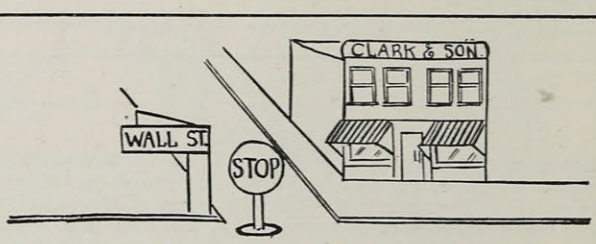
7. Put an X on one of the rats.

3. Draw a line under the long train.

8. Draw a line under the table the cat sits on.

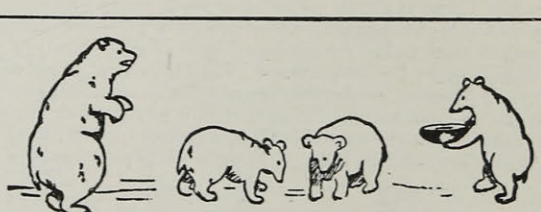
2 3 2

4. Put an X on the big two.

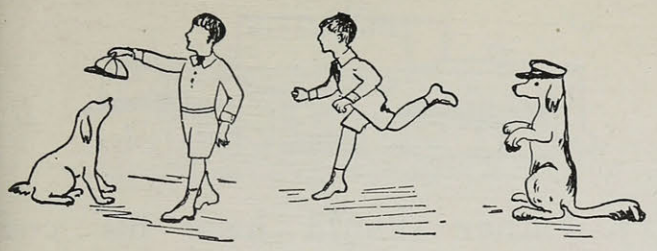


9. Put an X on the name of the street.

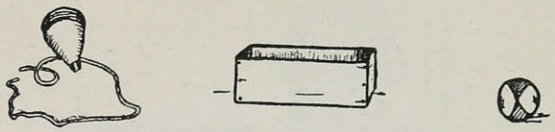
5. Draw a line under the white goat.



10. Draw a line under the fat bear with the dish.

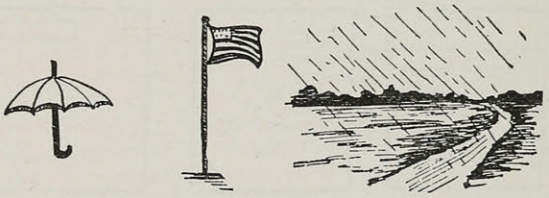


11. Put an X on the boy who is holding his cap over the dog's head.

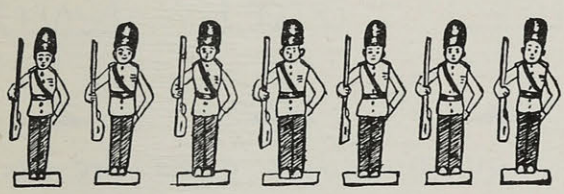


15. The mother told the boy to put his ball in the box. Draw a line from the ball to the box.

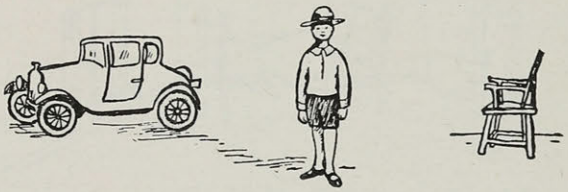
12. One of these three things can tell you the time. Draw a line under it.



16. What would a little child go under if it rained? Put an X on the place where the little child would go.



13. Here are seven little soldiers. Draw a line under the feet of four of these soldiers.

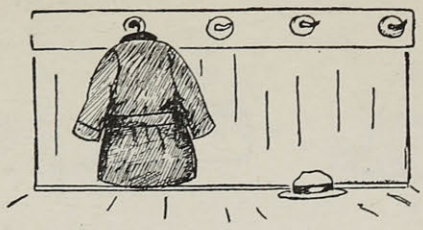


17. A mother told her boy to jump into the car and stay there. Draw a line from the boy to the car.

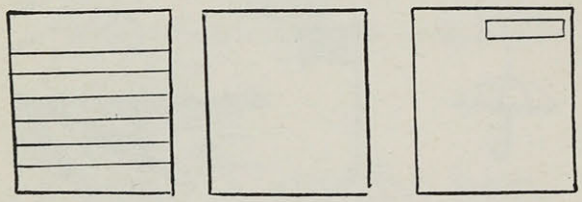
cat cat cat

14. Here are three ways of writing "cat." Draw a line under the one you think is poor writing.

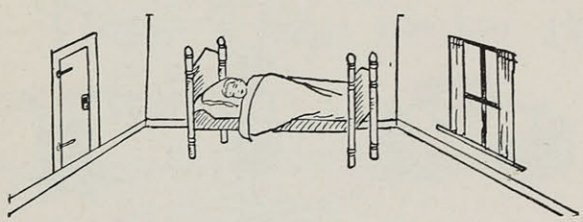
18. Three children are playing a game. They are playing in the sun. Draw a line from one of these children to the ball on the ground.



19. "Put your hat next to the coat," said Mother to the boy. Draw a line from the hat to a hook on the wall where the hat may be hung.

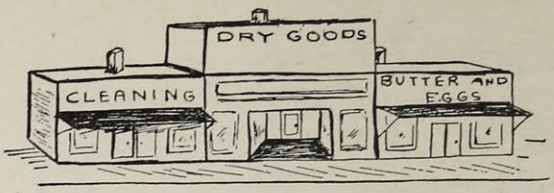


20. A boy was told to write his name on the first line of the paper. Look for the place where his name should be, and put an X on it.

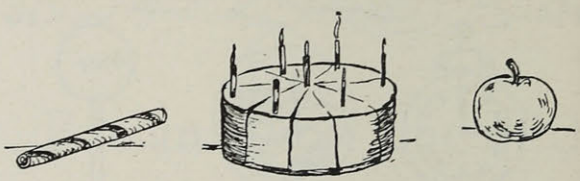


21. Here is a bed in a room. A child sleeps in the bed. The window is closed. It should be open. Put an X on what should be open.

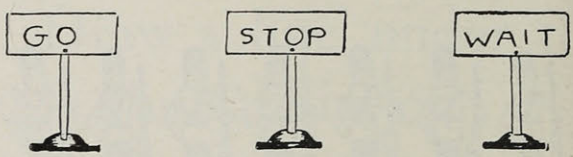
22. The children are playing a game. They hold hands and make a ring. The child who is "it" is out of the ring. Draw a line under the child who is "it."



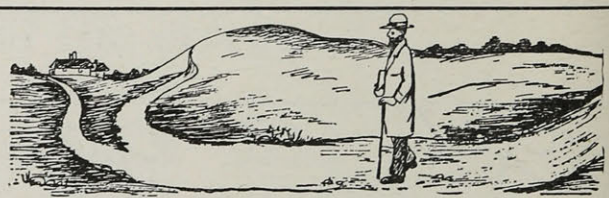
23. Father should have his coat cleaned. He dropped some butter on it when he was eating. Make an X on the store to which he would go to have his coat cleaned.



24. A boy had five cents. He went to buy some candy. On the way to the store he saw some big apples. He got an apple. Draw a line under the thing the boy got with his money.



25. You must not cross the street when you see the word, "Stop." You may cross the street when you see the word, "Go." Make an X on the word that tells you it is time to cross the street.



26. "Which road shall I take?" asked the man. "Take the road that goes by the house," said a boy. "Do not take the road that runs up the hill." Draw a line showing which road the man was told to take.

APPENDIX C.

GATES SILENT READING TEST

Type A. Reading to Appreciate the General Significance

Grades 3–8 **FORM 1**

Write your name here. . . . . .

How old are you?. . When is your birthday? . . . . .

School. . . Grade. . .Date. . . . . .

This is to be a reading test. You are to read a number of paragraphs. Below each paragraph are five words. One of the words tells how some one described in the paragraph felt—whether sad or happy, etc. You should draw a line under that one—and only one—word to show that you understand just how the person described in the paragraph did feel. Now let us try a sample before we begin the real test. Read the following paragraph and then draw a line under the word which you think tells best how the person felt.

> Once upon a time a young fairy went down to the river to swim. She jumped in with a splash. She put out her hands and tried hard to swim. Something seemed to be dragging her down. Oh, it was her wings! She had forgotten to take them off. Fairy wings become heavy when they are wet. She cried for help as loudly as she could.
>
> Draw a line under the word which tells how the fairy felt.
>
> cross angry weary afraid joyful

On the following pages are more paragraphs just like this one. When the signal "Begin" is given you should turn the page, read the first paragraph and underline the word which tells best how the person felt, just as you did above. When you finish the first go on with the second and so on until the signal "Stop" is given. The purpose of the test is to see how many paragraphs you can read and mark correctly in a short time. Don't waste any time. Don't look at anyone's paper.

Do Not Turn the Page Until You Are Told to Begin

To the Examiner. 1. See that each child has a pencil. 2. Distribute the papers. 3. Have the children fill in the blanks on this page. 4. Read the directions aloud. After the pupils have tried the test paragraph on this page tell them how you would do it. Explain the directions with great care and make clear the reason why one answer is the best. In grades 3 and 4 repeat the directions and explanations. 5. Show the children the order of the paragraphs on all three pages by holding up a copy of the test. Ask them to read in this order. 6. This front page should be up when the signal "Begin" is given. 7. **Say "Stop" at the end of exactly six minutes.** 8. Collect papers immediately. 9. Score according to directions given in the folder of directions.

BUREAU OF PUBLICATIONS
Teachers College, Columbia University
NEW YORK CITY

1. "Put on your coat, Betty," called her mother. "We are nearly ready to start." Betty flew up the stairs as fast as she could and put on her things, her heart beating wildly. This was to be her first trip to the big city! She had always longed to visit it. Soon she was ready and ran downstairs calling, "Oh, mother, I can hardly wait to see it!"

Draw a line under the word which best tells how Betty felt.

sad afraid angry naughty excited

2. It was a cold, gray, winter afternoon at the ocean. Not a ship was to be seen. A single gull flew about in the windy sky. On the beach a little boy stood. He had no playmate, not even a dog to keep him company. He wondered as he stood there if anyone in the whole wide world wanted a playmate more than he.

Draw a line under the word that best tells how the little boy felt.

cross lonesome weary joyful afraid

3. It was raining and Mary stood with her face pressed against the windowpane sobbing and crying. Now and then her mother tried to comfort her but without success. Even Fido, her puppy, seemed to look at her sadly as if to show how sorry he felt. It was Mary's seventh birthday and the rain had ruined the plans for a wonderful birthday picnic.

Draw a line under the word which best describes how Mary felt.

happy angry sad joyful naughty

4. With an anxious look in her brown eyes, Jane hurried to the telephone. "Central, will you give me Dr. Brown's office, please?" she said. Then, after a pause—"Is this you, Dr. Brown? Well, the puppy dragged doll baby from her bed and chewed her until she's torn to pieces. I'm afraid there won't be a chance to save her if you don't come at once."

Draw a line under the word that best tells how Jane felt.

weary naughty happy worried lonesome

5. Jack awoke with a start and listened. Yes, there it was again, a sharp, loud knock on the window. The house was dark and still. His mother and father were asleep downstairs. Again, the knock. Trembling with fear he tried to call out. His voice caught in his throat and no sound came. His heart seemed to stop beating.

Draw a line under the word which best tells how Jack felt.

gay frightened angry tired lonesome

6. With a shrill cry he threw himself against the closet door and beat upon it with his tiny fists. There was no answer from the room on the other side, and he soon stopped. For a few moments he was quiet, then he suddenly began to kick the door with his heels. At the same time he cried and screamed with all the power in his little lungs.

Draw a line under the word that best tells how the boy felt.

sad angry playful happy satisfied

7. With a happy shout, Jimmy opened the door and ran to where his mother was sewing. "It's coming, mother, it's coming," he said, jumping up and down with joy and clapping his little hands together. "What is coming, dear?" asked his mother. "Spring," answered Jimmy. "I know because I just saw the first robin red-breast."

Draw a line under the word that best tells how Jimmy felt.

naughty tired sorry unhappy joyful

8. Carefully Sue parted the leaves and looked down into the nest. Six baby robins greeted her with shrill cries for food. "John," she called down to her playmate below, "guess what I've found. A nest of baby robins! What fun we'll have putting food out for them. Oh, I can hardly wait until they are old enough to leave the nest."

Draw a line under the word that tells best how Sue felt.

happy frightened angry worried sad

9. The boy stood still. He could not move. He saw something in the shadows on the other side of the tree. He heard the leaves rustle as if the foot of an animal were walking softly across them. Suddenly the boy's heart stopped beating. There stood a huge black bear in front of him, looking at him with cruel brown eyes.

Draw a line under the word which tells how the boy felt.

sad happy lonely afraid angry

10. The dog ran to greet the man coming up the path. He wagged his tail joyously and barked with short, excited barks. The man leaned down and patted the dog on the head. Then he rolled up the paper that was under his arm and gave it to the dog. The dog ran with it up the path toward the house, his tail wagging all the time.

Draw a line under the word which tells how the little dog felt.

sad afraid lonely weary happy

11. Chang Lo sat with his head on his hands. All day he had been locked up in the bamboo garden to think of his sins. For that morning he had put on his red coat instead of his blue coat. The saucy birds and the sleepy turtles had not come near him. His little sister had not even looked over the wall. Even the butterflies had forgotten the garden.

Draw a line under the word which best tells how Chang Lo felt.

excited glad lonesome joyful happy

12. Jan did not mind darkness or thunder. But the wooden shoes! Every night they walked into his room, stopped by his bed and then walked out. What could they mean —those shoes without feet in them? One had a deep new cut across it. The shadows the shoes cast, if they were shadows, were red and glowing like the eyes of an angry cat.

Draw a line under the word which best tells how Jan felt.

sad weary afraid joyful lonesome

13. The white cat had sat on the velvet car seat all day. She had let the fussy people pet and scold and brush her. Now she wanted something different. She ran under a rose bush and tore a rose bud to bits. She rolled in the dust. Seeing a hoptoad she hit him with her paw and sent him hopping. Then she chased her tail till she was dizzy.

Draw a line under the word which best tells how the white cat felt.

lonely afraid sad homesick playful

14. The old Teddy Bear fell from the high shelf. His head met the floor with a bang. Jane jumped from her chair and caught up Teddy in her arms. She saw that he had had a bad tumble. The sawdust was coming out of his head. There was sawdust all over his little brown coat. Jane hugged him close to her. "Oh Teddy, I'm so sorry!" she cried.

Draw a line under the word which best tells how Jane felt.

angry playful naughty joyful sad

15. Olga watched the children playing on the doorsteps. They spoke a language she did not know. The roar of trains and autos made her dizzy. She thought of the quiet rocky hills where the new grass was like green fire. She could see the six white goats. She could see the dear old pine board house. She wondered if it was evening in Sweden, too.

Draw a line under the word which best tells how Olga felt.

homesick playful angry afraid joyful

16. Dick, the canary bird, has been singing all day. When the children were running around the house before school he sang. Then Mother ran the sewing machine, and he sang to that. When the children came home to lunch he sang again. Now every one has gone out. The house is still. The poor little bird only goes "Peep, peep" to himself.

Draw a line under the word which best tells how the canary bird feels now.

happy angry playful lonesome naughty

17. The mother sat down with a sigh. It was the first time she had sat down that day. She had risen early in the morning. After breakfast she had cleaned the whole house. After lunch she had picked several pails of berries. When the children had come home they had helped her can the berries. Now dinner was over, and a chair was very welcome.

Draw a line under the word which best tells how the mother felt.

weary joyful homesick angry lonesome

18. Baby Jim sat down on the grass and pulled his shoes and stockings off his fat little legs. He got up and ran around. He shouted with joy. Soon his mother came out of the doorway. "Oh, Baby Jim, what are you doing?" she called. "Put them on again at once. I am sure you will cut your feet on some glass if you don't."

Draw a line under the word which best tells how the baby felt.

joyful cross homesick sad worried

19. Mary and Helen were walking through the woods. They were picking some pretty flowers when suddenly an old witch came in front of them. She had a large black stick in her hand. "What do you mean by coming into my forest?" she cried. She hit the end of her stick on the ground and shook her fist at the two girls.

Draw a line under the word which best tells how the old witch felt.

sad naughty joyful angry happy

20. They were going to the country. Tom and Betty could hardly wait. Tom had his baseball bat in his hand and Betty had her doll in her arms. They were so eager for the car to come. At last it was there in front of the door. The whole family went down the steps and got in. Betty waved good-bye to a friend. They were off for the country!

Draw a line under the word that best tells how Tom and Betty felt.

sad cross excited weary lonesome

21. George was playing cowboy. He put an old pillow on the stair rail for a saddle. For reins he tied two ropes to the stairpost. He put on his cowboy hat and stuck a knife through his belt. Then with his gun on his shoulder he got on the horse and away he rode! Every once in a while he would give a shout and then seem to ride faster.

Draw a line under the word which tells best how George felt.

sad weary joyful homesick cross

22. Tom and Jim had played together all summer long. They had gone swimming and fishing together. Where one went you would always be sure of finding the other. Now it was the end of the summer and they had to part. Tom lived in the North and Jim lived in the South. They said good-bye to each other and turned slowly away.

Draw a line under the word that best tells how Tom and Jim feel now.

angry playful happy cross sad

23. It was early in the morning. The boy was sleeping soundly. Suddenly a bell rang out. It was the alarm clock. The boy woke up and looked at it. It was only five o'clock in the morning! The clock had rung two hours too soon. The boy took up a shoe from the floor and threw it at the clock. Then he turned over and went to sleep again.

Draw a line under the word which best tells how the boy felt.

homesick happy joyful cross afraid

24. The boys of William Street did not like the fruit man on the corner. They did everything they could to make him unhappy. Today he had just fixed all his oranges in nice, neat rows. He went indoors for a minute. The boys crept up and tumbled all his oranges into a box. He came running out. He shook his fist at the boys and shouted loudly.

Draw a line under the word which best tells how the fruit man felt.

sad angry joyful happy playful

GATES SILENT READING TEST

Type B. Reading to Predict the Outcome of Given Events

Grades 3–8 **FORM 1**

Write your name here.

How old are you? . When is your birthday?

School. . . Grade. .Date.

This is to be a reading test. You are to read a number of paragraphs. Below each paragraph are four sentences. Each sentence tells what is most likely to follow after the happenings that are described in the paragraph. You should draw a line under one—and only one—of these sentences to show that you can tell what will probably happen next. Now let us try a sample before we begin the real test. Read this paragraph and then draw a line under the one sentence which you think tells what will happen next.

> The grocery man had a black cat. He loved his cat very much. One day a lady brought a big bulldog into the store. The grocer's cat raised his back and said "Meow! Psst!" to the bulldog. Of course, the dog did not like that, so he growled loudly. Before the grocery man or the lady knew what was happening, the bulldog had sprung upon the cat.
>
> They let the fight go on
> The cat slept on
> The lady took her bird away
> The grocery man saved his cat

On the following pages are more paragraphs just like this one. When the signal "Begin" is given you should turn the page, read the first paragraph and underline the sentence which tells best what is coming next, just as you did above. When you finish the first go on with the second and so on until the signal "Stop" is given. The purpose of this test is to see how many paragraphs you can read and mark correctly in a short time. Don't waste any time. Don't look at anyone's paper.

Do Not Turn the Page Until You Are Told to Begin

To the Examiner. 1. See that each child has a pencil. 2. Distribute the papers. 3. Have the children fill in the blanks on this page. 4. Read the directions aloud. After the pupils have tried the test paragraph on this page tell them how you do it. Explain the directions with great care, stressing the fact that they are to mark the line which tells what is most likely to happen next. Give reasons why the line you marked in the sample tells what is most likely to happen next. In grades 3 and 4 repeat all directions and explanations. 5. Show the children the order of the paragraphs on all three pages by holding up a copy of the test. Ask them to read in this order. 6. This front page should be up when the signal "Begin" is given. 7. **Say "Stop" at the end of exactly eight minutes.** 8. Collect papers immediately. 9. Score according to directions given in the folder of directions.

BUREAU OF PUBLICATIONS
Teachers College, Columbia University
NEW YORK CITY

1. Little Betty liked to have long rides on her sled. She was too little to go by herself so her father played horse and pulled her along. One day Betty's father was pulling her along a very bumpy road. He was looking straight ahead, when suddenly he felt that the sled was very light. He looked back. Betty had fallen off the sled!

Betty's father ran away
Betty's father put her on the sled
Betty stayed there all day
Betty put her father on the sled

2. Tom jumped up on the cow's broad back. "Get up, Bossy!" he shouted. The cow did get up and so quickly Tom almost fell off her back. Then she started off. Bump, bump went Tom. "Whoa," he cried for he did not like the ride. But the cow would not stop. As they reached the pasture, Tom was thrown to the ground.

Tom rode back on the horse
He said, "Old Bossy, I'll not ride you again"
Tom gave the good cow some hay
Tom jumped down from the cow's back

3. A young girl was walking in a desert. She was singing softly to herself. She was thinking how beautiful the desert was. She had never been in a place like that before. She walked on and on with a book under her arm. Suddenly she saw something move beside a low bush. Only five feet away from her was a huge rattlesnake, ready to strike.

The rattlesnake went to sleep
The girl kept on singing
She sat down beside the bush
She ran away as fast as she could

4. A great crowd was watching the fireworks on the Fourth of July. From the Roman candles came bright balls of fire. They burst into lights of all colors. The sky-rockets shot high into the air. As they burst, the people said, "Ah," and clapped their hands loudly. Finally there was a green light which spelled the words "GOOD NIGHT!"

There were a great many more fireworks
The people were all killed
The people went home
They said they did not like the fireworks

5. Merry-Legs was a very tiny pony. He was no bigger than a large dog. One day the children went down to the barn with some sugar lumps. Merry-Legs came right up to Jimmy, who was holding one out. Before Jimmy knew what had happened, Merry-Legs was standing on his hind feet and his front feet were on Jimmy's shoulders.

Merry-Legs gave the sugar to the dog
Jimmy ate the sugar
Jimmy gave the sugar to Merry-Legs
Merry-Legs ate Jimmy

6. All the children in the third grade were going to the park to see the goldfish. There were hundreds of goldfish in a square pond. When they reached the pond, they found one fish lying on the bank. It was trying hard to get back into the pond. The poor, poor thing!! It looked as if it would not be able to breathe much longer.

They took a long trip to the country
The Third Grade had a spelling contest
They threw the little fish back into the pond
They threw ten goldfish into the water

7. Mary took the kitten out to see the fireflies. She wanted to see what the kitten would do when she saw the little flies that shone so brightly. The kitten did not see them at first. She was too busy watching a dark bush. Suddenly a bold little firefly flew up and sat right on the kitten's nose. It flashed its bright light.

The firefly ate the kitten
The kitten kept looking at the dark bush
The kitten did not see the firefly
The kitten shook the firefly off its nose

8. The children were tired of their sparklers. They wanted a new kind of fireworks. They thought it would be fun to catch some fireflies and put them in a bottle. John ran into the kitchen and brought out a milk bottle. Dorothy caught a firefly under a bush and Louise found one in her hair. Soon they had about ten fireflies inside the bottle.

The children killed all the flies
The children watched their new fireworks
John broke the useless milk bottle
The children played drop-the-handkerchief

9. Johnny had been told not to eat any of the cherries before they were ripe, because they would make him sick. He had been watching a certain cherry tree for days and days. They were not ripe yet, although they looked so juicy and fine. Johnny could wait no longer. He climbed the tree and ate as many of the juicy balls as he could.

Johnny ate another pailful of cherries
Johnny's mother said he was a good boy
Johnny went home sick
Johnny went home hungry

10. A woodpecker family lived in a hole near the top of a telephone pole. The pole stood between a busy road and the wall of a green park. One day one of the four young woodpeckers leaned too far out of the hole. It fell to the ground but it was not hurt. A kind boy saw the woodpecker in the road. He knew that cars might run over it.

The woodpecker was run over
The boy left it in the busy road
He put the woodpecker in the green park
He cut down the telephone pole

11. Pat Dolan lived in a crowded part of New York City. His parents were very poor. What money he earned selling papers he gave to them. One day a woman gave him a quarter. Pat had always longed to ride on a big green bus. He could hardly wait until Sunday when he did not have to go to school or sell papers. At last Sunday came.

Pat bought a toy dog with a squeak
He went to church in his father's car
He took a long ride on a big bus
He sold a hundred papers that day

12. One winter day a country boy was driving a team of horses. It began to snow, and the wind blew the snow in his face. All around him the falling snow was like a thick curtain. He drove the horses where he thought the road was. Soon he knew he was lost. Then he remembered that horses always know the way home, even in a bad storm.

The horses ate the grass by the road
He let the horses find the way home
He made the horses stand still
He took his sister in out of the storm

13. A black cat used to watch a bright goldfish in its bowl. His eyes followed its every motion. Sometimes he would put his paw into the bowl but the water would make him draw it back. One afternoon as he watched the goldfish it swam near the surface. It made too big a flop and fell out of the bowl. It lay at the cat's feet.

The goldfish swam away
The cat got into the bowl
The cat ate the goldfish
The hungry cat went to sleep

14. There was once a child who had no toys. She lived with her parents in a hut on a sandy shore. All day she played with shells in the sand. The shells were beautiful but she grew tired of nothing but shells and sand. One day she walked farther than ever before. She saw something half buried in the sand. It looked like a pretty little white china swan.

She threw the swan out of sight
She picked up the china swan
She went home with shells in her hands
She broke the ugly swan with her foot

15. Margery's doll house had just under its roof a tiny room with a glass window. The window could not be opened, and there was a lace curtain behind it. Margery had always wanted to see in that room. She thought of all the pretty things that might be there. One day she broke the window. When she looked in there was nothing there!

Margery took a chair out of the little room
Margery laughed to see the pretty things
Margery broke the window again
Margery sat down and cried

16. Two boys had looked forward for a long time to going to the circus. But when the day came there was a bad storm. They had to stay at home. They made a circus of their own. They made cages out of shoeboxes and put string for the bars. They made paper animals. The animals were of just the right size for the cages.

They put the animals in the cages
The boys put shoes in the shoe boxes
They put the animals in paper bags
They tore up the animals

17. There was a little girl who had always wanted a bird for a pet. But nobody had ever given her one. The wind blew very hard one winter night and snow was blown on the bed where the girl slept. When she got up to close the window she found a small live bird on her bed. The wind had blown the bird through her window. She picked it up.

She asked her mother to cook the bird
She made a pet of the bird
She threw the bird out the window
She loved the bird her parents gave her

18. Once a little boy lived in a big house with a garden. He had no playmates and no pets. His parents were too old to play with him. One day he sat in the garden building a little stone bridge over a brook. A big hop-toad went "plop-plop" across the bridge. The toad was not afraid of the boy. He sat still and looked at the boy, who was pleased.

The boy drowned the toad in the brook
The boy went to play with his dog
The boy had fun watching the toad
The boy told his playmate to see the toad

19. Did you ever see a puppet show? Puppets are little dolls with wires fastened to their arms and legs. When the wires are pulled they act just like people. Walter and Robert were getting a puppet show ready to give before their class. Walter was pulling the wires to make one of the dolls walk. Suddenly all of the doll's wires broke.

The doll ran away
The doll flew away
The puppet show started
The doll fell down

20. I know a girl who does not like to eat peanuts, but she loves to make dolls of them. She puts two pins in them for arms, and three pins for legs so they can stand alone. She makes eyes and mouth with a pencil. Peanuts have good noses. Sometimes she puts bright bits of cloth on her peanut dolls for clothing. She is at the corner now buying peanuts.

She will feed the peanuts to squirrels
She will eat all the peanuts
She will make peanut dolls
She will buy stick candy

21. A boy who had never seen snow was taken to a place where snow fell every winter. He could hardly wait to see the snow for he had heard how fluffy and white it was. He had been told that it made fences, roads, and even trash heaps beautiful. One morning when he opened his eyes he saw a strange white world through the window. It had snowed.

He turned over and went back to sleep
He pulled down the window shade at once
He ran to the window and looked out
He waited until the winter came

22. Dorothy had a doll without a wig. Its poor head was hollow like a cup. All the pretty caps Dorothy made for the doll were not so pretty as hair would be. One day she went to her aunt's house. Her aunt found a pretty little doll wig in a trunk. It was just the right size for the doll. Dorothy asked her kind aunt if she might have it.

Dorothy's aunt gave her the doll wig
Dorothy made a pretty rag doll
Dorothy bought a doll wig at the store
Dorothy put her doll in her aunt's trunk

23. A little chick was out looking for some worms one day. Along came a pretty yellow caterpillar. He was so bright and pretty that the little chick could not help eating him. But oh, what a bitter taste he had! It made the little chick feel quite sick. After a while he was able to eat again. Along came another pretty yellow caterpillar.

The caterpillar ate the chick
The chick ate the caterpillar
The chick ate the turtle
The chick did not eat the caterpillar

24. There are a number of plants which catch insects for food. Some of them seem cruel. There is one plant called the Venus flytrap. It has leaves that grow in pairs which will quickly snap together if one of them is touched. One day I was watching one of these plants. A fly flew down and sat on one of the trap leaves.

I ate the fly
The leaves caught the fly
My finger was caught in the leaf
The fly rested and flew away

GATES SILENT READING TEST

Type C. Reading to Understand Precise Directions

Grades 3–8 **FORM 1**

Write your name here..... .....

How old are you?..... ....When is your birthday? .....

School..... .. ..Grade. ... .Date. .. . .

This is to be a reading test. You are to read a number of paragraphs. Each paragraph tells you to make some sort of mark with your pencil to show that you have understood the paragraph. Do exactly what the paragraph tells you to do. Make the marks quickly—do not waste any time trying to make pretty drawings. The purpose of the test is to see how many of the paragraphs you can read in a short time. Don't waste any time. Don't look at anyone else's paper. Remember, you must do exactly what the paragraph tells you to do. Don't make any marks other than those the paragraph tells you to make. Wait until you are told to "Begin," then turn the page and work as quickly and accurately as you can until you are told to "Stop!"

Do Not Turn the Page Until You Are Told to Begin

To the examiner. 1. See that each child has a pencil. If colored pencils are used the tests will be much easier to score. 2. Distribute the papers. 3. Have children fill in the blanks on this page. 4. Read the directions aloud. Hold up one of the inner pages to show the test paragraphs. Tell the children they are to read, in order, as many paragraphs as they can in eight minutes. (Demonstrate the order on all three pages.) 5. This page should be face up when the signal "Begin" is given. The pupils then turn the page and begin. 6 Say **"Stop" at exactly the end of eight minutes.** Be very careful to allow exactly eight minutes' time. 7. Collect the papers immediately. 8. See Manual of Directions for methods of scoring and norms.

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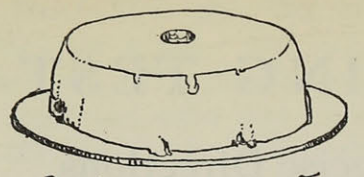
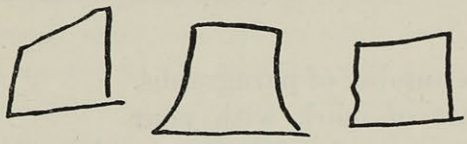
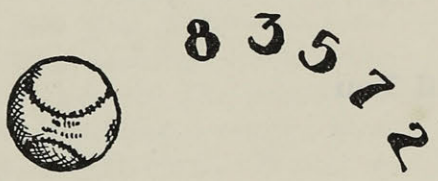
Teachers College, Columbia University
NEW YORK CITY



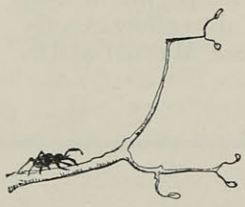
1. This is Mary's birthday cake. Her mother made it for her. There are five candles to go on the cake. Mary's friends will come to see the cake. Mary will cut the cake into eight pieces. Draw a line around the number that tells how many candles should go on Mary's cake.



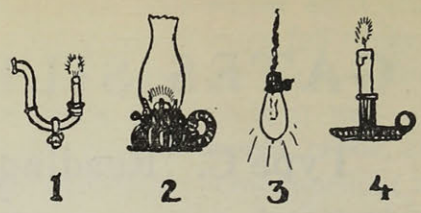
2. Did you ever draw a square? If you have not, try it some time. Ruth, Rose and Nell drew these. They laughed about Nell's square. Hers is the one in the middle. All of them said it was funny. Draw a cross on the one that the girls thought was funny.



3. The third grade boys have a baseball team. It is made up of the best nine players in that grade. They have played seven games this spring and have won five. They hope to win all the others. Draw a line under the number that tells how many games they have played.



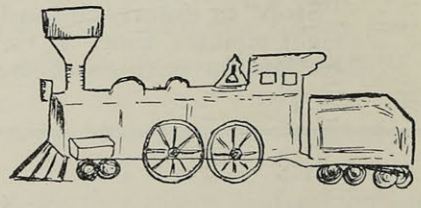
4. This spider is going out on these twigs to spin her web. She will climb up to the highest twig and then spin downward to the lower one. She will swing in the air on the web as she spins it. Draw a cross to show where the spider will begin to spin.



5. There are many different kinds of lights. Here are four of them. 1 is gas light, 2 is lamp light, 3 is electric light and 4 is candle light. Tom's mother used a lamp and his grandmother used a candle. Draw a line under the kind of light Tom's mother used.

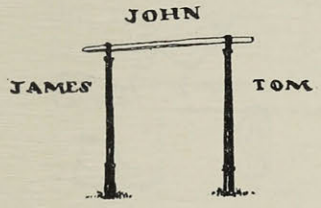
6. When Mother Kitty went out, she told the three kittens to work. Kit got a book to read. Kat sat down and talked, and Kute got his slate to draw on. When Mother Kitty came home she said, "Kit was the best." Draw a cross under the picture that shows what Kit used.

7. This miner is getting ready to go down into a gold mine. He has on a miner's hat with a torch on the front of it. He lights it just before he goes into the dark tunnels. Make a cross where the miner will carry his light.



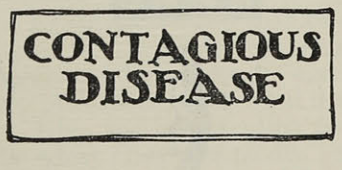
8. This is an old-fashioned engine. It does not look just like the ones we have now. See what a funny smokestack it has. Engines have very small ones now. Make a cross on the part of the engine that makes it look different from the engines we use now.

9. Look for an oak tree when you want to make a swing. The limbs are strong and there is shade all day long. Joe wants a swing in this tree. He thinks the big limb a fine place for it. Make a cross where Joe thinks the swing should be.

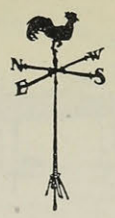


10. This pole is in Tom's back yard. John, James and Tom try to see which can chin it best. All three boys are the same size but James can chin it best. Maybe it is because he is stronger than John or Tom. Draw a line under the name of the boy who can chin the pole best.

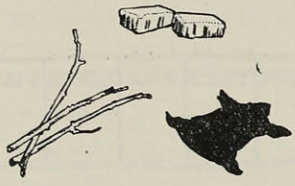
11. Some things grow on trees and some things grow in the ground. Here is an apple, a walnut, a banana, and a beet. Apples, walnuts and bananas grow on trees, and beets grow in the ground. Draw a line under the ones that grow on a tree.



12. Jane has scarlet fever. The health officer came and put this sign on the front door. He also placed a yellow flag close to the left side of the sign. This was to tell people that they were not to come into the house. Make a cross where the yellow flag was placed.



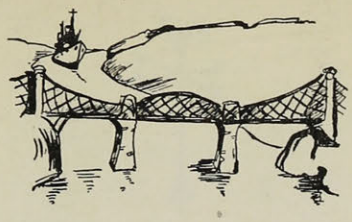
13. A long time ago people used weather cocks to tell about the weather. When the wind blew from the north and it was to be cold, the weather cock faced the north. Draw a line around the letter that shows the way the weather cock should face when a cold wind is blowing.



14. The Eskimos live in a summer home much like an Indian tent. It is made of seal skins, and the poles are of whale bones. Sometimes the Eskimos find bits of wood. These, too, are used for poles in the tents. Draw a line under what the Eskimos sometimes use for tent poles.

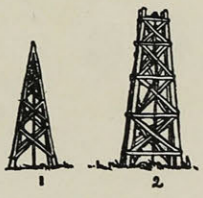
15. Tom thinks it will be a fine windy day for flying kites. He has not yet finished his kite. He needs the string with which to hold it. Put one end of it on the kite and the other in Tom's hand. Now he is ready to run in the wind.

16. If an Eskimo child were to see a cup of whale oil, a dish of ice cream, and a plate of cookies, do you know which he would take? He would take the first because he eats that all the time. Draw a cross on what the little Eskimo would take.



17. The middle part of this bridge is a drawbridge over a river. It is raised to let the ships go through and closed to let the trains go across. Make a cross on the part of the bridge that will be raised up when a ship gets near.

18. James and Mary go to a funny school. Instead of Saturday or Monday being their holiday, they have Wednesday and Sunday. They have to go to school on Saturday. Draw lines around the days of the week that James and Mary do not go to school.

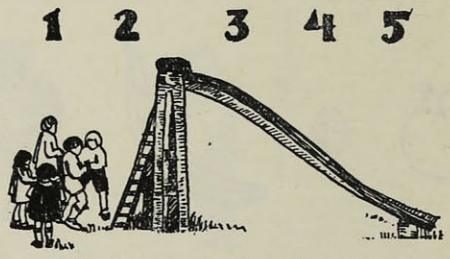


19. The two towers are being built for wells. The first is for a water well, the second for an oil well. When they are finished the water tower will have a wind wheel at the top. Draw a circle for this wheel at the top of the water tower.

20. Walnuts grow on big trees. Tom and Mary want to gather walnuts. Tom has just thrown a stick up to shake down some nuts. The cross shows where his stick hit. Draw another cross showing where Tom and Mary will look for the walnuts that fell.

21. This baby is a year old to-day. She cannot run, hop or skip but she can walk around the room. She will walk over to her dolly if it is on the other side of the room. Draw a line under the word that tells what the baby can do.

22. We sometimes think that our shoes and gloves are made of the same leather. But some of the best gloves are made from the skin of the young goat, while shoes are made from the hide of cattle. Draw a circle around the thing that is made from the goat's skin.



23. The slide is great fun for these children. They like best of all to go down three at a time. Sometimes, however, they go down in fours or fives. Draw a line under the number that tells how these children like best to go down the slide.

24. This is an Indian blanket. It is very pretty and costs more than other blankets. It was made by the Indian squaw. Here are pictures of the Indian Chief, the squaw or Indian woman and the medicine man. Draw a line from the blanket to the one who made it.

GATES SILENT READING TEST

Type D. Reading to Note Details

Grades 3–8 **FORM 1**

Write your name here . . . . . .

How old are you?. . . . When is your birthday?. . . . . .

School. . Grade. . Date. . . . . .

This is a reading test. You are to read a number of paragraphs. Below each paragraph are three questions which you must answer by drawing a line under the one word or phrase which gives the best answer. Let us try a sample before we begin the real test. First read the paragraph. Then underline one—and only one—of the four answers to each of the questions to show that you understand what the paragraph said.

> Next morning she awoke and found herself in a beautiful room. The walls were covered with silken curtains. There were two mirrors made of pure silver. The bed was made of ivory. The coverings were made of silk and velvet. By her bed lay a dress and a pair of slippers. The dress was made of silk. The slippers were covered with diamonds.
>
> Where did the girl find herself?
> barn room garden store
> What were the mirrors made of?
> silver gold pearl silk
> What were on the slippers?
> rubies pearls opals diamonds

On the following pages are more paragraphs just like this one. When the signal "Begin" is given you should turn the page, read the first paragraph and underline the best of the four answers to each question, just as you did here. When you finish the first go on with the second and so on until the signal "Stop" is given. The purpose of the test is to see how many paragraphs you can read and mark correctly in a short time. Don't waste any time. Don't look at anyone's paper.

Do Not Turn the Page Until You Are Told to Begin

To the Examiner. See that each child has a pencil. If colored pencils are used the tests are much easier to score. 2. Distribute the papers. 3. Have children fill in the blanks on this page. 4. Read the directions (above) aloud. Explain them with great care. Have the children try the test paragraph (above). Ask them which word they marked. Explain carefully why one answer is correct and the others wrong. Give special attention to those who marked the wrong answer. **See that all understand exactly what they are to do.** 5. Show the order in which the paragraphs are to be read on all three pages by holding up a copy of the tests. Tell them to read in this order. 6. This front page should be up when the signal "Begin" is given. 7. **Say "Stop" at the end of exactly eight minutes.** 8. Collect papers immediately. 9. Score according to directions given in the Manual of Directions.

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Teachers College, Columbia University
NEW YORK CITY

1. Lampy was a firefly. Here it was the Fourth of July and he did not even have a firecracker! Anyway he was going to stay out and enjoy the night air. He flashed in and out among the trees. Suddenly he heard some one say, "Oh, see those pretty fireflies! They are lovelier than any of the firecrackers I have seen to-day." Lampy was very happy.

Lampy was a—
beetle firecracker firefly ladybug

Some one thought Lampy was lovelier than a—
robin firecracker firefly tree

Lampy was very—
sad angry weary happy

2. Jean and Betty were playing store. They made a big soda fountain out in the yard. They used their mother's old jelly glasses for their soda glasses. They made all kinds of flavors. Mud made chocolate, rose petals made strawberry, and dandelions made pine-apple. It was fun to mix them up with washing soda and watch the bubbles break.

What did Jean and Betty make in the yard?
tent soda fountain house jelly

What made their chocolate flavor?
mud dandelions rose petals glass

What made the bubbles?
soap washing soda blowpipe jelly

3. There are many hot pools in Yellowstone Park. They are a beautiful blue. Around the edges they are a lovely orange. This orange is made by the little shell animals that live there in the warm water. Often a hot pool is near a cold one. You could catch a fish in the cold pool. Then you could toss it over into the hot one to cook.

Around the edges of the pool the color is—
green orange pink blue

The orange color is made by—
fruit animals grass water

You could toss a fish into the hot pool to—
catch eat cook hatch

4. A mother dog had four little puppies. They had a nice bed in the yard. One day a big rain storm came and filled the yard with water. Soon the mother found that her babies were drowning and she could not save them. She hurried to her master and barked for him to follow her. When he saved the puppies, the mother dog was very happy.

What were the puppies doing during the rain storm?
sleeping eating drowning barking

What did the mother dog do when she found her master?
jump whine roll bark

What did the master do?
feed her follow her pat her coax her

5. If you watch an oak tree on a nice warm day in the South, you may see a tree toad. You must watch very carefully because its color is always the color of the tree. If the toad is on the trunk, its color is brown. If it moves up among the green leaves, its color is green. It can change its color at once to the color of whatever it is on.

What may you see on an oak tree?
wagon frog toad flower

How soon can a toad change its color?
at once in 10 minutes in an hour
in a day

What color is it when it is on the trunk?
green red brown yellow

6. A maiden stood in the door of the castle. She was cut out of stiff paper, and she wore a dress of the clearest gauze with dainty blue ribbons. She was stretching out both arms for she was a dancer. One of her legs was raised so high behind her that the tin soldier could see nothing of it. He supposed that she, like himself, had but one leg.

Where did the maiden stand?
castle hut barn cellar

What was the maiden?
cook singer dancer pianist

What was raised high behind her?
arms head soldier leg

7. One day a toad and a frog talked. Said the frog, "Why, certainly, I was once a tadpole, and every frog is a tadpole before he is full-grown. I had a tail, but when my legs began to grow my tail went away. Now I have no tail, but I have four strong legs. I am now a real frog. I use my legs when I swim and when I hop."

What was the frog once?
fish worm tadpole turtle

What went away?
legs tail head eyes

What does the frog use when he swims?
hop tail legs tadpole

8. The brook sang all summer. Jane said it sang about shining palaces more beautiful than man had ever made. One cold morning in winter Jane saw no brook. In its place was a smooth white path. She broke into the path but found no water. She looked under the thin roof of ice, and saw a beautiful palace full of shining stairs and sparkling walls.

Jane said the brook sang about shining—
stars stairs palaces paths

In the place of the brook there was a white—
field garden tree path

When Jane looked under the thin ice roof she found—
water paths walls fish

9. When you go into the fields in the spring to hunt flowers, one of the first flowers you may find in bloom is the primrose. Its name means "first rose." You can find many, many primroses, and they make a large field look as yellow as gold. If you smell of them, you will like their odor, and they will make your nose yellow, too.

What is one of the first spring flowers?
daisy clover primrose aster

What kind of rose does primrose mean?
"pretty rose" "first rose"
"yellow rose" "little rose"

What do they make a large field look like?
silver fairyland fall gold

10. In the mountains we find many pretty flowers. Among those that can be found in the early fall are the golden rod and purple aster. Think of the color they give to the sides of the hills. A story tells that these two flowers were once two little girls who wanted to make every one happy. So a fairy changed them into golden rod and asters.

When are golden rod and asters found?
spring summer fall winter

What does a story say these flowers were once upon a time?
stars girls sunbeams boys

How did they want to make every one feel?
gay excited young happy

11. A boy woke up one morning, turned over, rubbed his eyes, and looked around him. His bed wasn't nice and soft, and he didn't have pretty warm covers over him. He didn't have any clothes on, either. He was lying on the hard ground, and what do you think he had for a blanket? A tiger's skin. This was thousands of years ago.

What kind of bed did the boy have?
nice white soft hard

What did he have for a cover?
blanket quilt skin sheet

How many years ago did the boy live?
ten thousands hundred twenty

12. Did you know that the stars are shining all the time? We see them only at night. During the day the sun is so bright that the stars cannot be seen. Often at night the moon is so bright that there seem to be few stars. A very dark night is the best time to see the greatest number of stars. Watch for a dark night, and see if this is true.

What keeps the stars from shining because of its brightness?
lights clouds sun fires

When do the stars shine brightest?
morning noon afternoon night

What kind of night is best to see many stars?
stormy bright dark moonlight

13. People used to think that night air was bad for them. They thought it was full of sickness and they kept their windows shut at night. We know that night air is good and that we should keep our windows open. We should keep our windows open even in winter. If our bodies are warmly covered, no cold air we breathe can hurt us.

People thought that night air was full of—
health stars sickness airplanes

At night we should keep our windows—
closed shut broken open

Even on cold nights we should keep open our—
mouths windows gates doors

16. At first when man wanted to cross a deep stream, he had to swim across. It was not long before he found a better way. A log drifting in a stream gave him the hint. He could rest his body on it and by using his hands, he could move along fairly fast. So the log was the first boat and the human arm was the first oar.

Man first crossed the stream by—
riding rowing swimming driving

When resting on a log he moved along by means of his—
feet hands oar stick

The first boat was a—
canoe motorboat raft log

14. There is no neater, gentler bug than a ladybug. It wears a bright red jacket. It never bites you as flies do, nor eats your woolen clothing as moths do. But to the tiny white insects on leaves the ladybug is a great red dragon with cruel jaws. It eats the tiny insects without mercy. Because it does this, it helps to save our bushes and trees.

The gentle bug told about wears a coat of what color?
red green white gray

Which eats your woolen clothing?
fly ladybug moth ant

What does the ladybug eat without mercy?
clothing gray moths small toads
tiny insects

17. Yellowstone Park has many queer sights. One of the most interesting sights is the "Paint Pots." These are a lot of bubbling holes. The holes are close together but are of different colors. Red, blue, and orange are the main colors. They are so hot that steam rises out of them. They look like paints that children have been playing with.

The bubbling holes look like—
steam engines children paint pots
painted houses

The holes are—
same color different colors no color
one color

Steam rises from them because they are so—
close together queer cold hot

15. A little boy who lived long ago saw a strange creature in a cave. It was something like a lizard but longer than the tallest man the boy had ever seen. It had a row of yellow spines which stood up all the way down his back bone to the tip of his tail. But the strangest thing about this animal was that he had three eyes instead of two.

What did the strange creature look like?
snake lizard tiger man

What color were his spines?
green blue yellow red

How many eyes did he have?
two four three one

18. A book written nearly three hundred years ago tells a story about a tree which grew in America. The story said that this tree cried when it was cut. It also said that a juice came from the cut which dried into a sweet sugar. Now we know that this crying tree was the sugar maple, and the sweet juice became maple sugar when it dried.

An old book tells a story about an American—
flag tree book man

The story said if this tree was cut it would—
laugh cry sigh eat

The sweet juice from the tree became—
salt pepper sugar flour

APPENDIX D.

RECORD BOOKLET FOR READING DIAGNOSIS

By Arthur I. Gates

Name..... School..... Birthday..... Date.....

Examiner..... Referred by..... Grade.....

	Raw Score	Age or Grade Score	Rating
I. Age and Grade			
1. Chronological Age			
2. Actual Grade Position.....			
II. Intelligence			
1. _____Binet I.Q._____			
2. _____ I.Q._____			
III. Gates Primary Reading			
1. Word Recognition			
2. Sentence Reading.....			
3. Paragraph Reading			
IV. Gates 3–8 Silent Reading			
A. General Impression: Speed.....			
B. Predict Outcome: Speed			
C. Directions: Speed			
D. Details: Speed.....			
Average: Speed			
A. General Impression: Accuracy			
B. Predict Outcome: Accuracy			
C. Directions: Accuracy			
D. Details: Accuracy.....			
Average: Accuracy.....			
V. Other Silent Reading Tests			
.....			
.....			

	Raw Score	Age or Grade Score	Rating
VI. Oral Reading			
1. Gray's Oral.....			
2. Gates Oral Context (Total Score)			
a. Omissions, Words.....			
b. Additions, Words			
c. Repetitions			
d. Mispronunciations			
e. Full Reversals.....			
f. Reversal of Parts			
g. Wrong Order (e + f)			
h. Wrong Beginning.....			
i. Wrong Middle.....			
j. Wrong Ending			
k. Wrong Several Parts.....			
VII. Word Pronunciation			
1. Gates Graded Words.....			
VIII. Perceptual Orientation			
1. Gates Isolated Words			
a. Percentage Reversals.....			
2. Gates Word Recognition — Visual Presentation			
a. Reversals			
b. Part Reversals.....			
c. Wrong Beginning.....			
d. Configuration			
e. Wrong Ending			
f. Wrong Orientation (sum of a, b, c)			

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	Raw Score	Age or Grade Score	Rating
3. Gates Word Recognition — Auditory Presentation			
a. Reversals			
b. Part Reversals			
c. Wrong Beginning			
d. Configuration			
e. Wrong Ending			
f. Wrong Orientation (sum of a, b, c)			
IX. Visual Perception Techniques			
1. Phonogram Combinations			
2. Initial Vowel Syllables			
3. Initial Consonant Syllables			
4. Vowel-Consonant Phonogram			
5. Vowel Phonograms			
6. Consonant Phonograms			
7. Consonant-Vowel Phonograms			
8. Blending			
9. Letter Sounds			
10a. Name Capital Letters: Speed			
10b. Name Capital Letters: Errors			
11a. Name Lower Case Letters: Speed			
11b. Name Lower Case Letters: Errors			
X. Auditory Perception Techniques			
1. Blend Letter Sounds			
2. Give Letters for Sound — Total Score			
a. Consonants			
b. Vowels			
c. Diphthongs			
3. Give Words — Beginning Sounds			
4. Give Words — Ending Sounds			

	Raw Score	Age or Grade Score	Rating
XI. Auditory Discrimination			
1. Repeat Nonsense Words			
2. Distinguish Words			
XII. Visual Perception			
1. Same-Different Figures			
2. Same-Different Numbers			
3. Selections of Figures			
XIII. Spelling and Writing			
1. Write or Spell Words			
2. Write Spelled Words			
3. Write Letters			
XIV. Associative Learning			
A1. Visual-Visual			
A2. Visual-Visual			
B1. Auditory-Visual			
B2. Auditory-Visual			
XV. Memory Span			
1. Digits			
2. Letters			
3. Nonsense Syllables			
4. Familiar Words			
XVI. Other Tests			
1.			
2.			
3.			
4.			
5.			
6.			
7.			

Diagnosis of methods of working out recognition, pronunciation, and meaning of words based on Tests VI,1, VI,2, and VII,1.

Diagnosis of perceptual orientation, direction of eye-movements, reversal errors, etc., based on Tests VI,2, and VIII,1,2, and 3.

Diagnosis of Visual Perception Techniques based on Tests IX,1 to IX,11.

Records of Responses in Tests X,1 to X,4, Auditory Perception Techniques.

Test X,1. Blend the Letter Sounds

b-y a-n u-p m-e-n f-l-y e-n-d

m-a-n-y dr-i-n-k a-n-o-th-er ai-r-p-l-a-ne

Test X,2. Give Letters for following Letter Sounds

A. y-yet w-we r-ray l-live n-no z-zebra m-me v-van g-get
d-do s-see j-jet b-be f-file k-key t-to p-pay h-he

B. a-ah e-ear o-or a-ale e-ebb i-it o-odd a-at o-old u-up

C. th-thy ch-chew sh-she

Test X,3. Give Words Beginning with following Sounds

c — can 1. 2. 3. n — now 1. 2. 3.

s — saw 1. 2. 3.

Test X,4. Give Words En ling with following Sounds

an — can 1. 2. 3. ay — pay 1. 2. 3.

eep — keep 1. 2. 3.

Stimulus Words for Auditory Discrimination Tests XI,1 and XI,2

Test XI,1. Repeat Nonsense Words

2.	3.	4.	5.	6.
do-par	ho-min-us	de-bot-eye-bus	du-ran-gib-a-lin	hip-po-tack-ul-bo-sack
un-co	art-eye-zub	kick-a-sag-or	shak-ho-muz-zel-hop	si-mul-tan-er-tamp-us
se-bu	mit-o-gate	sap-in-not-or	mu-rise-ap-pel-go	ar-tie-fick-kon-ib-ble

Test XI,2. Distinguish Words, Same—Different

do-do be-by are-air dim-din pay-pay bib-big shall-shell after-after

morning-morning weather-water ceiling-seeing mountain-fountain

SUMMARY OF DIAGNOSIS OF AUDITORY TECHNIQUES AND CAPACITIES

Diagnosis of Visual Perception based on Tests XII,1, XII,2, and XII,3 and such tests of vision, eye-muscle control, etc., as were given.

Records for Tests XIII,1, XIII,2, and XIII,3, Spelling and Writing

Test XIII,1. Write the following Spoken Words

1. at 2. no 3. boy 4. was 5. cat 6. face 7. stop 8. girl 9. house 10. forget

Test XIII,2. Write the following Spelled Words

1. me 2. on 3. dog 4. now 5. toy 6. hand 7. read 8. game 9. money 10. farmer

Test XIII,3. Write the following Letters

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

Associative Learning. Record here results of Tests XIV,1 to XIV,4.

A1. Easy figures, visual-visual.

Test	Number on Card. 1	2	3	4	5	6	7	8	9	10	Total
1.											
2.											
3.											
4.											
Total											

A2. Word-like figures.

Test	Number on Card. 1	2	3	4	5	6	7	8	9	10	Total
1.											
2.											
3.											
4.											
5.											
Total											

B1. Simple figures—word sounds.

Test	Number on Card. 1	2	3	4	5	6	7	8	9	10	Total
1.											
2.											
3.											
4.											
Total											

B2. Word-like figures—word sounds. NUMBER ON CARD.

Test	1	2	3	4	5	6	7	8	9	10	Total
1.											
2.											
3.											
4.											
5.											
Total											

COMMENTS ON PUPIL'S TECHNIQUE OF LEARNING

Tests of Memory Span. **Mark** + if correct. Mark — if wrong.

Test XV,1.

364	2863	19348	372541	4718523	BLD	STPA	NCTLU	BERTMA	RFBMTFA
582	5194	62573	863759	7463892	AXQ	GLBK	FXMGK	LKNCKX	NKLFCXD
716	8279	94182	516247	1859465	RLM	OMQR	HWXOC	CRGPHY	HCPMRAV

Test XV,2.

Test XV,3.

3	4	5	6	7
nup-an-gob	hif-pek-sev-ruck	hix-rup-lab-weg-onk	lis-vem-nuz-lep-zun-gif	arz-tut-bok-sem-huc-hif-fod
zic-put-hock	dag-wiff-tor-donk	kob-jeb-zak-pel-tuz	tak-nog-ruf-yen-quam-zim	zik-mor-cug-mep-huz-bal-suz
dac-nib-koff	mup-ore-pum-gug	hob-tum-uke-sag-doop	poe-tig-ark-sim-lub-cag	pam-quat-loz-mer-fic-gub-ick

Test XV,4.

3	4	5	6
hat barn cow	peg board ink girl	spoon house card pet tool	fork horse pin wrench chair hat
top bell mop	man floor watch cup	pen fish tree coat mild	plum tar stick hop bread fish
soap bat tree	door cart pan stick	tub ball cork cheese boy	girl cup belt rope door soap

7

knife song pin bread horse shell top
clam bat coat pan cow shoe hen
ball up big hat watch store board

Tests of Eye and Hand Dominance.

Tests or Observations of Speech Defects: lisping, stuttering, etc.; cleft-palate, partial paralysis, foreign pronunciation, unclear articulation, etc.

Motor Defects: general motor control; writing and hand control; tremors; mirror-writing, etc

Miscellaneous Tests and Observations: character of eye-movements; use of finger, etc.; whispering or lip-movements during reading; head movements; arm, leg, body movements; tensions; embarrassment, etc.

Personality Tests and Observations: summary concerning emotional, temperamental, and volitional characteristics.

Motivation: pupil's attitude toward reading.

Home Influences: summary concerning attitude of parents toward reading difficulty, school, teacher, etc.; influence of other children and adults; outside influences, etc.

School History: summary concerning changes in school; grades repeated; history of reading difficulty; conduct record; difficulties in other subjects; parent-teacher-pupil relationships; remedial instruction previously given, etc.

General Summary of Diagnosis.

General Summary of Recommendation for Treatment.

GATES READING DIAGNOSIS TESTS

Name.....Age.....Grade.....

Examiner.....School.....Date.....

To the Examiner

This booklet contains the test materials to be placed in the pupil's hands. The examiner should also have a copy. The subject and examiner must interchange copies for certain tests in order to have in one booklet all records—those written in some cases by the pupil and those written in others by the examiner.

Another booklet, called Record Booklet for Reading Diagnosis, is provided for recording results of all oral tests, summaries of diagnosis, quantitative records, recommendations for remedial work, etc. Directions, norms, and other material to be used with these tests are contained in A. I. Gates, *The Improvement of Reading,* Revised Edition, 1934 (The Macmillan Company, 60 Fifth Avenue, New York City).

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COLUMBIA UNIVERSITY, NEW YORK CITY

ORAL CONTEXT—READING, TEST VI, 2

1.

The boy had a dog.
The dog's face was black.
The dog's body was brown.
He had no tail at all.

2.

Once the dog saw a rat.
It was a bad rat.
The dog did not like the rat
on his place.
So he ran the rat into his hole.

3.

After the rat got into his hole,
he began to peek at the dog.
This drove the dog nearly mad.
He said: "I like raw meat to eat.
If you do not stop, I will eat you."
Then he left the rat alone.

4.

This talk only made the rat smile.
He could not stop smiling.
He stuck out his chin and cried:
"You are as dull as a donkey,
You are as silly as a monkey.
Let me give you a good tip.
You had better find a doctor now,
before it is too late.
Maybe he can do something for your head."

GRADED WORD PRONUNCIATION, TEST VII, 1

FORM I

so	we	an	is	do	
as	go	us	at	or	10
the	not	did	can	hen	
how	may	out	son	net	20
king	here	door	ball	came	
grow	late	hear	east	year	30
every	about	after	broom	child	
paper	blind	peach	climb	point	40
window	family	bridge	lonely	scratch	
perhaps	plaster	harvest	servant	frighten	50
passenger	wander	eighty	counter	shepherd	
interest	chocolate	motion	citizen	elegant	60
dispute	portion	continue	mansion	brilliant	
conductor	brightness	punishment	guardian	restaurant	70
intelligent	construct	impatient	protection	temperature	
position	profitable	instrument	reverence	astonishment	80
irregular	schoolmaster	manufacture	revolution	unnecessary	
lamentation	community	examination	intelligence	national	90
satisfactory	illustrious	countenance	congratulate	preparation	
superstition	affectionate	substantial	philosopher	treacherous	100

TESTS OF WORD RECOGNITION TECHNIQUES

TEST VIII, 1. Reversible Words

1. on ma bad was no am war net rat now
2. raw ton saw dab won pot tar saw star peek
3. nap spot dear top war ma won team pal even

Test VIII, 2 is on pages 6 and 7; Test VIII, 3 is on pages 6 and 8.

TEST IX, 1. Phonogram Combinations

inmo oade urlo ilry ader
reha foter rowad divar delow

TEST IX, 2. Initial Vowel Syllables

ing ear ight ick ill eat ock ake ell ind
ugh ate ose ast old one eep ine ark ove

TEST IX, 3. Initial Consonant Syllables

ter low pla lea row ther ver sho hing sta

TEST IX, 4. Vowel—Consonant Phonograms

in er es ed il ar en al ow ir
ol ic el un et ig ad ur ay ac

TEST IX, 5. Vowel Phonograms

ea ee ou oo ai ie oa au ay io

TEST IX, 6. Consonant Phonograms

st th ch sh cl tr br gr sp str

TEST IX, 7. Consonant—Vowel Phonograms

re la se ro ne li de su ri ha
wi co ca di lo ni wa fo mi ry

TEST IX, 8. Blending Letter Sounds

t-a	u-m	b-o-f	a-n-k	p-e-z	q-i-s
g-e-x	y-o-g	h-i-l-d	c-o-r-y	j-a-w-l	v-i-b-s

TEST IX, 9. Letter Sounds

u	o	y	i	e	a	s	t	c	p	x	f	d
b	z	r	m	l	q	j	k	w	g	h	n	v

TEST IX, 10. Capital Letters

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

TEST IX, 11. Lower Case Letters

e	o	a	u	i	y	w	r	b	k	d	m	t
f	x	v	c	g	h	j	n	z	s	q	l	p

TEST VIII, 2. Ability to Recognize Word Seen (Word List)

no	am	bad	saw	pat
now	war	net	tar	god
star	peek	dear	flow	spin
mouse	tulip	intend	monkey	careful

TEST VIII, 3. Ability to Recognize Word Spoken (Word List)

1. on 2. ma 3. dew 4. pan 5. saw 6. lap 7. not 8. dab 9. won
10. ten 11. keep 12. read 13. flow 14. meat 15. tops 16. seven
17. water 18. please 19. forget 20. answer

TEST VIII, 2. Ability to Recognize Word Seen

1.	mo	na		ua	no	on
2.	ma	ase		um	ow	am
3.	bag	hob	sad	adb	dab	bad
4.	rom	aws	saw	sam	was	raw
5.	pad	qol	tap	bat	pat	atp
6.	uam	nose	sow	won	now	own
7.	raw	man	war	xar	arw	was
8.	nek	etn	pet	rul	ten	net
9.	loe	bar	tan	art	rat	tar
10.	got	yab	god	hod	dog	odg
11.	rear	star	rlos	rats	stop	tsar
12.	keep	qssh	peal	epke	peek	seek
13.	deep	baes	soar	read	ader	dear
14.	olfw	prow	flow	wolf	ltim	flare
15.	thin	spin	equi	nips	spun	pins
16.	moing	wanrs	mouse	wruse	usemo	esuom
17.	tulip	lnteq	bilip	pilut	liput	tuler
18.	endint	intarp	uilsrh	intend	dnetni	urkend
19.	monark	monkey	warkey	nniuhsg	keymon	yeknom
20.	messful	luferac	soertnf	careful	fulcare	carstip

TEST VIII, 3. Ability to Recognize Word Spoken

1.	an	ou		no	on	au
2.	mo	wo		ma	wa	am
3.	ewd	dew	dem	bsm	wed	bew
4.	qan	par	nap	qou	anp	pan
5.	aws	saw	raw	sam	was	eom
6.	tug	tap	laq	alp	pal	lap
7.	otn	ual	not	vot	ton	nol
8.	bad	day	bod	dab	abd	bab
9.	own	mau	won	ron	woe	now
10.	hen	lru	net	ent	ten	ter
11.	keep	epke	key	peep	hrrq	peek
12.	dear	ader	mad	read	siob	reap
13.	ltam	flow	blow	flam	owfl	wolf
14.	seat	weel	meat	atme	team	mean
15.	toyr	laqr	post	spot	tops	paps
16.	seven	vense	raven	never	sevir	renau
17.	terwa	retaw	moter	water	uolse	walis
18.	brease	please	aselep	qtaers	pleat	esaelp
19.	taspel	forman	target	tegrof	forget	getfor
20.	werans	answer	rewsna	ourwer	ousuae	ansmip

VISUAL PERCEPTION

TEST XII, 1. Same—Different Figures

Look at each pair of objects. Draw a line around each pair, when the two pictures are NOT alike.

VISUAL PERCEPTION

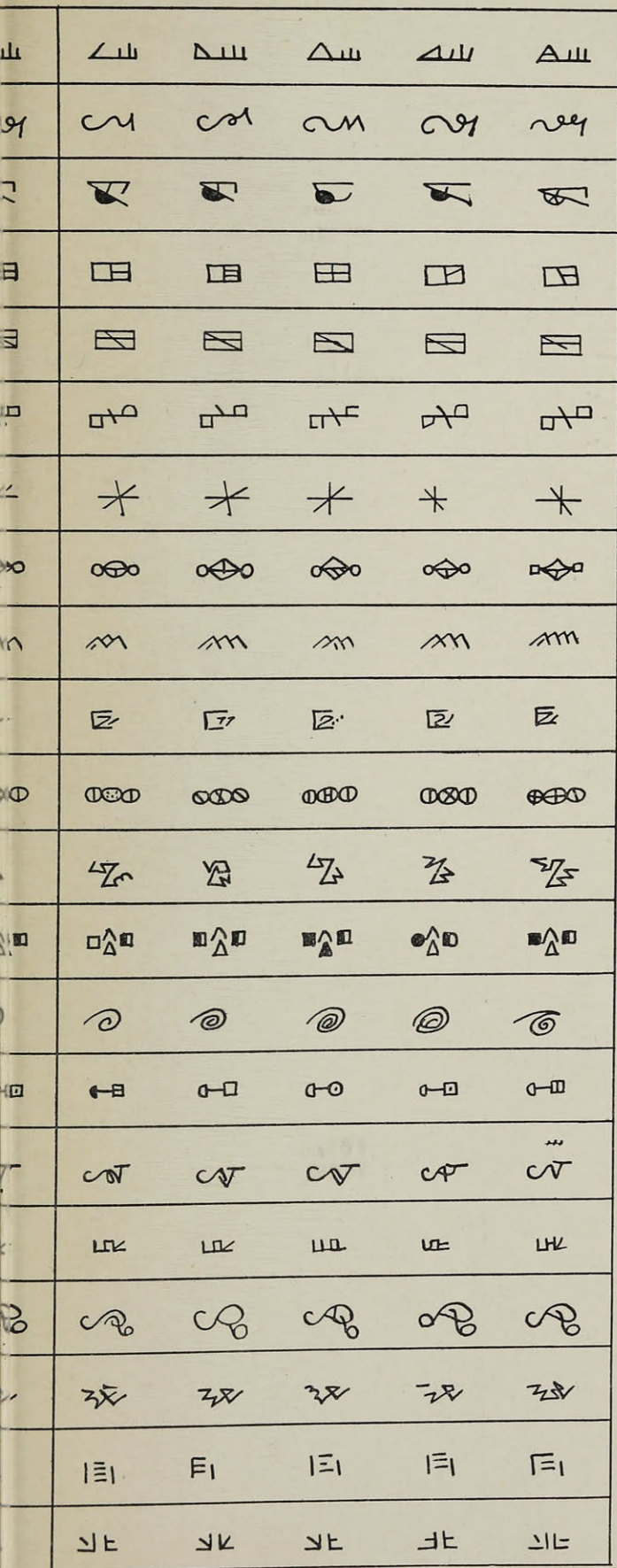
TEST XII, 2. Same—Different Numbers

Look at each pair of figures. Draw a line under each pair that is NOT the same.

21	12	3280	3380	56391	56391
42	42	4870	4870	48203	46203
36	36	9658	9658	95721	95721
98	99	3721	2721	84386	84336
53	53	4800	4830	05928	65928
47	47	9605	9005	36542	36542
66	60	4219	4219	19850	19850
13	13	3345	3345	21722	12722
44	44	6060	6060	20066	20066
18	19	7186	9186	53222	53222
263	263	4392	4382	59184	59814
448	448	5084	5084	30369	30669
583	563	5299	5399	15161	15151
974	074	1312	1312	23942	23942
286	286	4708	4708	38476	38476
509	509	2205	2265	22493	22493
636	633	6374	6370	13648	12648
742	742	9282	9283	54393	53393
906	986	5050	5050	95048	95048
345	245	3913	3918	16611	16611
002	002	0066	0666	83650	86350
563	563	7241	7271	00606	00606
872	672	5660	5660	85302	85502
483	483	9342	6342	31176	31176
196	106	3876	3876	97148	97148
754	754	5738	5738	05938	05038
322	332	1611	1011	18562	18625
809	800	5273	5273	58328	58328
244	244	4617	4617	78825	78825
597	579	7083	7088	62633	62622

VISUAL PERCEPTION

TEST XII, 3. Selection of Figures



APPENDIX E.

APPENDIX E [x]

Aim: To promote ability to see likenesses in phrases.

Directions: Read each phrase at the right of the page. Find the same phrase in the opposite sentence and draw a ring around it.

Mother said, "Come	Mother said
Come to dinner."	to dinner
Father said, "Run, run!	Run, run
One, two, three!"	One, two, three
Dick ran to Mother.	ran to Mother
Jane ran to Mother	Jane ran
Father ran to Mother	to Mother
They ran to dinner.	They ran

---

x 170, No. 13.

APPENDIX E[x] (Cont'd)

Aim: To promote ability to find answers to specific questions.

Directions: Read each question in the upper part of the page. Then read the sentences in the lower part until you find the one which answers the question. Write the same number before the answer that the question has.

1. What did the little old woman have?

2. Where did she go?

3. Who sang?

4. What did the pig want?

5. Who was white?

6. Who said, "Come to town with me"?

7. What did they all see in the big basket?

8. Where did they all go?

9. What did every one give the old woman?

The pig wanted to look into the big basket.

They saw nothing at all in the basket.

The little old women had a very big basket.

Every one gave the old woman a penny.

She went down the road.

The hen was white.

They all went to the town.

The little old woman sang.

The little old woman said, "Come to town with me."

---

x 170, No. 81.

APPENDIX F.

APPENDIX F [xx]

Vocabulary Test [x]

Sight Words

1	6	11	16	21
liked	winter	out	bluejay	doing
lived	wet	tree	bird	don't
gave	what	oak	blacking	didn't
let	water	ask	blue	want
2	7	12	17	22
blew	along	acorns	lived	back
fly	again	corn	called	head
grew	away	apples	climb	ready
flew	began	again	time	place
3	8	13	18	23
hungry	out	cookies	not	play
angry	along	fly	nose	grass
hump	about	cried	shoes	bear
eat	away	liked	surprise	place
4	9	14	19	24
think	now	dear	circle	stand
thought	know	barn	crows	heard
elephant	kitten	bird	tricks	head
night	never	bear	circus	bird
5	10	15	20	25
give	dinner	hungry	parade	walk
save	bricks	Honey	pocket	tall
gave	fast	money	picnic	talk
game	breakfast	good	made	back

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x The underlined words are the ones which the pupil is required to find.

xx 96, page 109.

APPENDIX F [xx] (Cont'd)

Vocabulary Test [x]

Phonetic Words

1	6	11	16	21
pig	feet	swell	nut	green
dug	need	smell	cat	dress
dig	feel	smash	cut	grass
gun	feed	well	cuff	guess
2	**7**	**12**	**17**	**22**
black	ask	bee	well	hot
back	fast	wee	will	hat
shack	last	boo	fell	hit
peck	lash	beet	wet	hut
3	**8**	**13**	**18**	**23**
became	plan	sting	sheep	bit
between	plant	swing	sleep	bite
began	slant	swung	sweep	beet
begun	plank	stung	steep	bet
4	**9**	**14**	**19**	**24**
has	good	gum	fast	green
ask	foot	hum	fat	go
as	wood	drum	fist	grow
is	moon	drip	staff	snow
5	**10**	**15**	**20**	**25**
broom	whiff	stay	meet	not
town	skiff	say	sweet	woke
brown	sniff	tray	tweet	note
brow	stiff	sing	twack	wake

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x The underlined words are the ones which the pupil is required to find.

xx 96, page 110.